



DataPRO User's Manual



Version 4.0
July 2023

Contents

DTS Support	7
Introduction	8
PC Requirements	8
Software Installation	9
Database Configuration.....	10
Local Database	10
Centralized Database.....	12
Both Local and Centralized Databases	13
Launching DataPRO	14
Licensing	15
Data Collection Concepts.....	16
Data Collection Modes.....	16
Circular Buffer Mode	17
Recorder Mode	17
Hybrid Recorder Mode	17
Multiple-Event Modes.....	17
Continuous Recorder Mode	17
Circular and Stream Sub Sample Mode	17
Recorder and Stream Sub Sample Mode.....	18
Active Mode	18
Scheduled Mode	18
UART Modes	18
Auto Arm.....	18
Streaming.....	19
Sampling Rates	20
How to Calculate Maximum Recording Time	22
SLICE Circular Buffer Limitations.....	24
Navigating DataPRO	25
Tab Options	26
Status Bar	29

Quick Start	30
Physical Hardware	31
Data Recorders	31
Detect	31
Add	35
Hardware Usage Report.....	41
Sensor Templates	44
Add	44
Sensor Database	49
Import.....	50
Add	53
Export	59
Prepare	61
Groups	61
Add	61
Import.....	72
Export	74
Test Setups	78
Add	78
Import.....	105
Export	108
Quick Build.....	110
Change Test Setup	113
Refresh	113
Layout Report	114
Additional Details	115
Lab Details	115
Customer Details.....	116
Engineer Details.....	117
Channel Code Details	117
Diagnostics	119
Check Channels	119
Realtime - Level Triggers Off.....	124
Realtime - Level Triggers On.....	129

Check Trigger	130
Quick Checkout.....	134
Record.....	137
Run Test	137
Download Data	160
Review.....	162
View Data.....	162
Viewer Layout	162
Selection Pane.....	168
Chart Pane.....	177
Modification Pane.....	180
Generate Reports.....	183
Export Data.....	184
Copy & Trim	187
Administrative	189
Manage Users.....	189
System Settings	193
Test Settings	194
Test Setup Settings.....	202
Test History Settings	212
Realtime Settings	213
Channel Code Settings	216
UI Settings	217
Network Settings.....	219
Power Settings.....	220
Sensor Settings.....	221
TSR AIR Settings	225
Database.....	227
Restoring, Importing, and Exporting System Settings.....	229
Appendix A: Common Sensor Types and Bridge Connections.....	231
Accelerometer	231
Upper Neck Load Cell	231
ARS – Angular Rate Sensors	232

Linear Potentiometer	232
Non-linear Devices.....	232
IRTRACC for WorldSID and THOR Dummies	233
Digital Input/Output Options	233
Squib Options	233
Sensors with External Conditioning Modules.....	233
Appendix B: Sensor Database Import.....	244
Appendix C: Discover Hardware.....	245
Appendix D: Quick Arm	251
Appendix E: DataPRO File Structure.....	254
Appendix F: DataPRO .dts File Format	258
Appendix G: DataPRO Binary File Format.....	265
Appendix H: SQL Server Setup.....	267
SQL Server Management Studio Installation	275
Firewall Configuration	281
SQL Server Configuration Manager.....	284
SQL Server Management Studio.....	287
Connecting to the DataPRO Database.....	292
Using SQL Server for the DataPRO Database.....	296
Backing Up the Centralized (SQL Server) DataPRO Database	297
Restoring the Centralized (SQL Server) DataPRO Database	302
Appendix I: SLICE6 AIR Setup	306
Hardware Settings.....	306
DataPRO Settings	307
Test Setup Configuration	308
Record In Place with Analog and UART data	310
Streaming Data with SLICE6 AIR.....	311
Running a SLICE6 AIR Streaming Test	314
Appendix J: TSR AIR Setup	321

Test Setup Configuration 321

Document Revision History 324

DTS Support

DTS systems are designed to be reliable and simple to operate. If you ever need assistance, DTS has support engineers worldwide with extensive product knowledge and test experience ready to help.

- Registered users can access the DTS Help Center web portal: support.dtsweb.com

Registration also gives you access to additional self-help resources and non-public support information. To register, go to support.dtsweb.com/registration.

Introduction

This manual supports the DataPRO software application, part number 10920-04010.

DataPRO is a comprehensive software application that supports SLICE PRO, SLICE6, SLICE6 AIR, SLICE MICRO/NANO and legacy TDAS PRO and TDAS G5 hardware. DataPRO allows seamless integration of SLICE and TDAS systems in a single test setup. Suitable for both small facility and multi-user lab settings, DataPRO includes extensive diagnostics and hardware checks, a customizable user interface with access control, support for sensor templates and group templates, an off-line test builder, and multiple data export formats.

Please contact DTS Support for the latest software information.

PC Requirements

DataPRO is a Windows®-based program. Minimum PC specifications are:

- Windows 8 and later (64-bit). *Please note that support for Windows 8 ended on January 12, 2016, and support for Windows 8.1 ended on January 10, 2023, so Windows 10 is highly recommended. 32-bit systems are no longer supported as of DataPRO version 4.0.*
- Microsoft .NET Runtime version 4.5.2
- Microsoft SQL Server 2014 Express or later
- Intel-compatible processor with minimum speed of 1.6 GHz; 1.8 GHz recommended
- 8 GB RAM; 16 GB recommended (more RAM is important for high channel counts and longer/higher sample rates)
- 2 GB disk space for DataPRO, plus 4.2 GB for SQL Server 2014 Express, plus additional storage as needed for test data
- 1366 x 768 minimum screen resolution; 1920 x 1080 recommended

Additionally, DTS recommends a network that supports gigabit Ethernet (GbE).

NOTE: DTS recommends setting the PC power plan to high or max performance for best response when in Realtime.

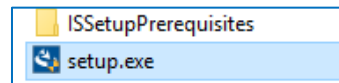
NOTE: Later versions of SQL Server Express may have different minimum requirements. Refer to Microsoft's documentation for details.

Software Installation

During installation, DataPRO can be configured to work with a local database, a centralized SQL server database, or both. If installing with a local database, the existing database can be migrated during installation. It may be necessary to contact facility IT to install a centralized SQL server database.

Initial installation steps, as well as completing installation and launching the software, are the same regardless of database configuration.

1. Locate the installation files (e-media or downloaded from the Help Center).
2. Run the setup file to install DataPRO.

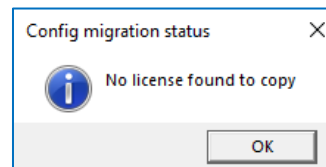


3. Follow the prompts to:
 - a. Start InstallShield Wizard for DataPRO.
 - b. Install drivers if necessary.
 - c. Change the install directory if desired.

NOTE: *The default installation location for DataPRO is C:\DTS\DTS.Suite\ and is organized in folders by version number.*

NOTE: *The configuration file DataPRO.exe.config will be automatically updated from the previously installed version. To install DataPRO with a non-migrated config file, simply rename the config file in the previous installation before running the installer.*

4. If a DataPRO license was included with the installer, or if you are upgrading from a previous version which contains a license, the license will be copied automatically. Otherwise, you will see a message indicating that no license was found. Click OK to proceed.



Database Configuration

Next, choose whether DataPRO will use a local database, centralized database, or both.

Local Database

5. Select **Local database**.

The following database properties will be used:

- Local database
- Centralized database
- Both

The following database properties will be used:

- Copy data from previous Local database to new Local database
 - Copy configuration from previous installation
- Initialize database to Aero settings
- Initialize database to Crash settings
- Initialize database to TSR AIR settings
- Start with blank database

Database hostname:

Database name:

Use NTLM authentication

Database user:

Database password:

Show password

OK Abort

6. Choose whether to copy data from a previous local database, initialize the database to Aero, Crash lab, or TSR AIR settings, or start with a blank database.
- Copy data from previous Local database to new Local database** will migrate the database from the previous version of DataPRO for use with the version being installed.
 - Initialize database to Aero settings** will set up the database with settings common for SLICE6 AIR streaming and aerospace testing. The user “AeroUser” (default password: “AeroUser123”) should be used to log in and stream or collect data.

- c. **Initialize database to Crash settings** will set up the database with settings common for Crash Lab use. The user “CrashUser” (default password: “CrashUser123”) should be used to log in and collect data.
- d. **Initialize database to TSR AIR settings** will set up the database to use and record data with TSR AIR devices. The user “TSRAIRUser” (default password: “TSRAIRUser123”) should be used to log in and collect data.
- e. **Start with blank database** will not initialize the database at all and the installation will have a blank database.

NOTE: See [Manage Users](#), page 189, for more information on these user roles.

7. When starting with a new database (blank or pre-initialized for Aero, Crash, or TSR AIR), you may optionally check the box to **copy configuration from previous installation**. This will migrate only the configuration settings from the previous database. Configuration settings are always copied when copying a previous local database.

NOTE: It is advised to use “DataPro” as the Database name.

8. Select **OK**, then **Finish** to complete DataPRO installation.

Centralized Database

NOTE: SQL Server must be set up and connected to a database prior to installation. See [Appendix H: SQL Server Setup](#), page 267, for additional information on SQL Server initial setup.

5. Select **Centralized Database**.

DataPRO Database Information

The following database properties will be used:

Local database

Centralized database

Both

Copy data from previous Local database to new Local database

Copy configuration from previous installation

Initialize database to Aero settings

Initialize database to Crash settings

Initialize database to TSR AIR settings

Start with blank database

Database hostname:
your db host here

Database name:
DataPro

Use NTLM authentication

Database user:
DataPROUser

Database password:
.....

Show password

OK Abort

- a. Enter Database hostname.
 - b. Select the option to use NTLM authentication, or enter user login credentials.
6. Optionally, check the box to **copy configuration from previous installation**. This will migrate only the configuration settings from the previous database.
7. Select **OK**, then **Finish** to complete DataPRO installation.

Both Local and Centralized Databases

NOTE: SQL Server must be set up and connected to a database prior to installation. See [Appendix H: SQL Server Setup](#), page 267, for additional information on SQL Server initial setup.

See [System Settings](#), page 221, for information on database connection when using “Both”.

5. Select **Both**.

The following database properties will be used:

- Local database
- Centralized database
- Both

Copy data from previous Local database to new Local database
 Copy configuration from previous installation
 Initialize database to Aero settings
 Initialize database to Crash settings
 Initialize database to TSR AIR settings
 Start with blank database

Database hostname:
your db host here

Database name:
DataPro

Use NTLM authentication

Database user:
DataPROUser

Database password:
••••••••

Show password

OK Abort

a. Enter **Database hostname** and **Database name**.

b. Select to use NTLM authentication or enter user login credentials.

6. Choose whether to copy data from a previous local database or start with a blank database.

a. **Copy data from previous Local database to new Local database** will migrate the local database from the previous version of DataPRO for use with the version being installed.

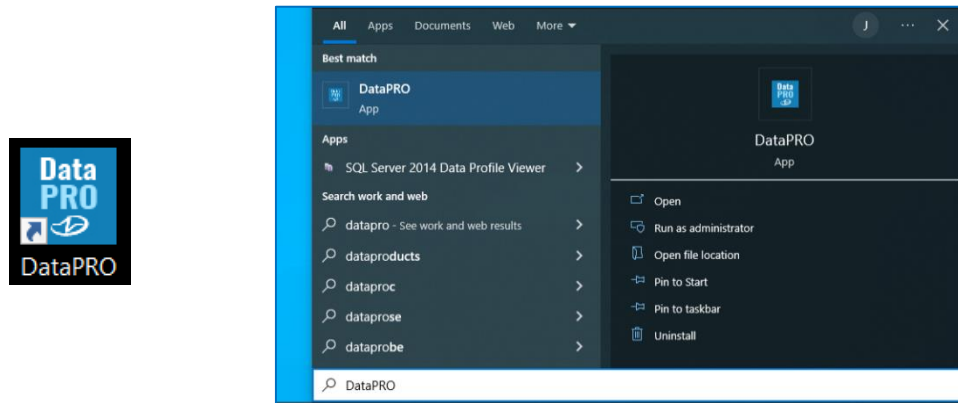
b. **Start with blank database** will not initialize the local database at all, and the installation will have a blank database.

7. Select “OK”, then “Finish” to complete DataPRO installation.

NOTE: You can change the Database type at any moment. See [Database](#), page 227, for more information.

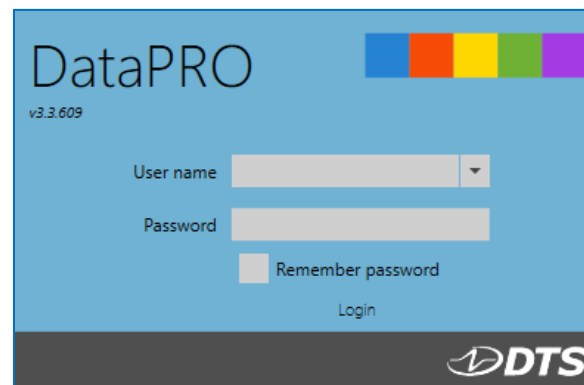
Launching DataPRO

8. When installation is complete, open DataPRO using the desktop icon or Start menu:



NOTE: Windows may ask you to reinstall the hardware driver each time you connect a SLICE Stack to a different USB port.

9. Log in as the Administrator (Admin). The default Admin password is “DTSAAdmin” (without the quotes). *This password can be changed in the System Settings tab after logging in.*
- If the database was migrated during installation, all user profiles will be available with the same passwords and settings. All previously stored sensors, test setups, and system settings will also be available.
 - Features and functions available to all other users are controlled by the DataPRO Administrator (see [Manage Users](#), page 189).

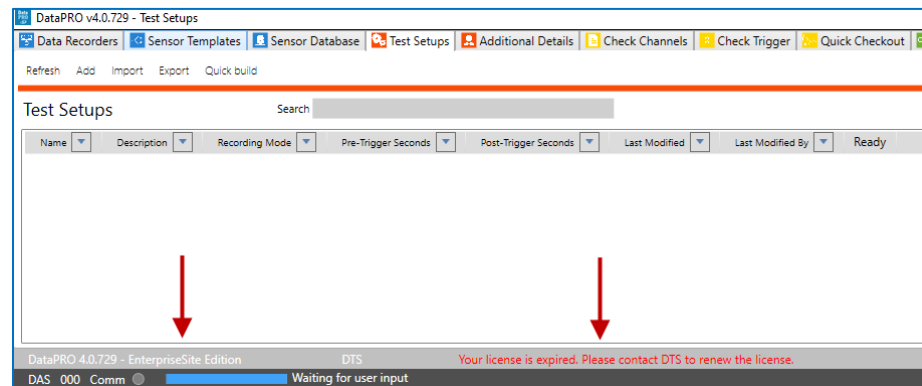


Licensing

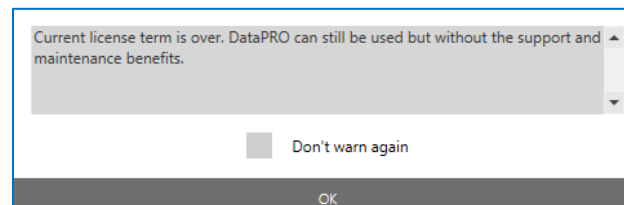
DataPRO requires a license to receive support and maintenance updates. A variety of different license forms are available, including seat licenses and site licenses. Contact DTS Sales and support to obtain a license.

NOTE: Licenses may be packaged with the installer for new installations. When upgrading to a new version of DataPRO, the license is automatically copied from the existing install when upgrading from a version which contains a license.

- The current license level and status is shown in the status bar at the bottom of the application.



- DataPRO can still be used with a local database without a license, or as normal with an expired license.
- Users will see an information prompt when logging in to DataPRO with an expired license. This prompt can be dismissed and prevented from reappearing.



- The license warnings may be disabled or reenabled in [System Settings](#) → [UI Settings](#).

Data Collection Concepts

SLICE and TDAS DAS are standalone data loggers. Once the DAS is armed, the PC may be disconnected, however the DAS must remain powered throughout data collection. Power can be supplied from internal batteries when available, or from an external power supply. After receiving a Start Record or Event (trigger) signal, the DAS autonomously collects data, storing it to memory with no user interaction. After the test, the user can reconnect the PC to download the data.

DataPRO includes a Realtime mode that allows the user to check channel inputs on an oscilloscope-style screen. Realtime also includes an optional audible beep that can be used to help complete polarity checks on systems (see [Realtime - Level Triggers Off](#), page 124, for more information).

NOTE: DataPRO is capable of logging real-time data at a low sample rate but cannot simultaneously display the data while the system is recording (see [Check Channels](#), page 119, for more information).

DataPRO supports a Streaming Mode for use with SLICE6 AIR DAS. See [Appendix I: SLICE6 AIR](#), page 306, for information on SLICE6 AIR Streaming Mode.

Data Collection Modes

By default, four data collection modes are available: 'Circular buffer', 'Recorder', 'Circular buffer multiple-events', and 'Recorder multiple-events'.

Additional modes can be enabled in [System Settings](#) → [Test Setup Settings](#):

- If 'Allow advanced recording modes' is checked, then 'Hybrid recorder', 'Hybrid recorder multiple-events', 'Continuous recorder', 'Circular and stream sub sample', and 'Recorder and stream sub sample' are enabled.
- If 'Allow TSR AIR recording modes' is checked, then 'Active' and 'Scheduled' are enabled.
- If 'Allow UART recording modes' is checked, then 'Circular buffer + UART' and 'Recorder + UART' are enabled.

NOTE: Only Circular Buffer and Recorder modes are available for TDAS PRO, TDAS G5 and SLICE PRO Gen2 hardware. Circular Buffer + UART, Recorder + UART, Circular and Stream Sub Sample, and Recorder and Stream Sub Sample modes are only supported by SLICE6 AIR DAS. Only Active and Scheduled modes are supported by TSR AIR.

Circular Buffer Mode

In Circular Buffer mode, the user can program the DAS to record pre- and post-trigger data. Time Zero (T=0) is marked when the trigger signal is received. An Event (T=0) signal is required to record data in Circular Buffer Mode.

Recorder Mode

Recorder mode starts recording data when a Start Record signal is received and continues for the time specified in the test setup. If a trigger signal is received some time after Start Record, this is marked as T=0.

Hybrid Recorder Mode

Hybrid recorder mode starts recording data when a Start Record signal is received and continues until the unit receives a trigger signal, after which it records for the post-trigger time specified by the test setup. The trigger signal marks Time Zero (T=0) and all data recorded is available for download.

Multiple-Event Modes

To record multiple events, choose the desired multiple-event recording mode (Circular buffer multiple-events, Recorder multiple-events, or Hybrid recorder multiple-events). In these modes, the maximum number of events is specified, and the DAS is re-armed after each event has completed. The DAS may be disarmed at any time before the final event has been collected, but will disarm automatically if the maximum number of events specified has been reached.

Continuous Recorder Mode

The Continuous Recorder mode records for as long as the start button is held. The trigger event is the stop indication, and it will disarm instead of marking the event. Continuous Recorder mode also supports multiple event recording.

Circular and Stream Sub Sample Mode

For SLICE6 AIR DAS only. The DAS will record in Circular Buffer mode while also streaming the same information. Information can be recorded on the DAS at a higher rate than it can be streamed, so the streaming rate may not match the recording sample rate.

Recorder and Stream Sub Sample Mode

For SLICE6 AIR DAS only. The DAS will record in Recorder mode while also streaming the same information. Information can be recorded on the DAS at a higher rate than it can be streamed, so the streaming rate may not match the recording sample rate.

Active Mode

Only supported by TSR AIR. Enables the TSR AIR to record as soon as it is armed, and will also arm on boot if power or the On signal are removed and then later reapplied. This mode supports recording pre- and post-event data. Time Zero (T=0) is marked when the event signal is received. The maximum pre-event data is .0512 s. There are three options for this mode:

- Level trigger: Only available when “start recording with event line” is not used.
- Start recording with event line: Pre-event data is not available with this option. This is the lowest power option.
- Wake up with motion: The TSR AIR will wake up when sensing motion.

Scheduled Mode

Only supported by TSR AIR. Enables the TSR AIR to wake and record at a scheduled time (UTC) or interval (in minutes). The TSR AIR will remain in very low power mode until the scheduled time and will then arm and begin recording. Pre-event data is not available when using this mode.

UART Modes

SLICE6 AIR DAS supports Circular Buffer + UART and Recorder + UART modes. These data collection modes allow for simultaneous sampling from analog sensors (bridge, IEPE and thermocouple) as well as a UART GPS device. When collecting data in these modes, half of the internal flash memory is available for analog data and half is available for UART data.

Auto Arm

DataPRO is also capable of configuring DAS in Auto Arm mode, which causes the unit to arm automatically after being power cycled. This mode is useful when the unit needs to be configured before being placed in a location with limited access.

Here are the steps to use the Auto Arm mode:

1. Once the recording mode and settings (pre-/post-trigger times, test ID, etc.) are chosen, then Auto Arm the DAS;
2. Remove power (or the ON signal);
3. Place the DAS in test location – it does not matter how long the DAS stays unpowered, it will keep the arming settings in its internal memory, ready to be configured at the next boot;
4. Reapply power (or the ON signal) – the unit will boot;
5. The unit will either arm directly or perform Diagnostics on all channels (see [Test Setups](#), page 78, for more details on how to enable the Diagnostics when using the Auto Arm mode and how to configure the delay before performing the Diagnostics);
6. Depending on the LED scheme of the DAS, the LED will indicate that the DAS is armed and ready to record data – it will still need either a Start Record or a Trigger signal to record data.

[Streaming](#)

DataPRO can configure SLICE6 AIR DAS for streaming data applications. In this mode, no data will be recorded to the internal flash memory and all data will be streamed to a third-party application for viewing and analysis. See [Appendix I: SLICE6 AIR Setup](#), page 306, for more information.

Sampling Rates

DataPRO allows collecting data from DAS configured with different sample rates in the same test. Sample rates can be set per DAS; each SLICE PRO module can be configured with a different sample rate, each TDAS PRO Rack must have the same sample rate, each SLICE MICRO/NANO stack must have the same sample rate.

SLICE and TDAS equipment support different sampling rates. Additionally, TDAS G5 DAS, TDAS PRO TOM and all SLICE DAS will record all channels even if they are not programmed, so these unused channels must be included when calculating recording time.

Number of SLICES*	SLICE MICRO/NANO Maximum Sampling Rate	
	Base	Base+
1	120,000 sps	500,000 sps
2	60,000 sps	400,000 sps
3	40,000 sps	300,000 sps
4	30,000 sps	200,000 sps
5	24,000 sps	200,000 sps
6	20,000 sps	200,000 sps
7	17,000 sps	200,000 sps
8	15,000 sps	200,000 sps

* All channels are recorded even if they are not programmed.

Sampling Rate	9-channel SLICE PRO SIM/DIM	18-channel SLICE PRO SIM/DIM
100-500,000 sps	9 channels available*	18 channels available*
>500,000-1 Msps		9 channels available*

* All channels are recorded even if they are not programmed.

The SLICE PRO TOM has sampling rates from 100 sps to 1 Msps. All 9 channels are recorded even if they are not programmed.¹

	# of Channels*	Maximum Sampling Rate (per channel)
SLICE6	6	400,000 sps
SLICE6 AIR	6	400,000 sps via record in place 20,000 sps via data streaming

* All channels are recorded even if they are not programmed.

Number of Channels	Maximum Sampling Rate (per channel)			
	TDAS G5 DAS*	TDAS PRO SIM (16 MB)	TDAS PRO SIM (4 MB)	TDAS PRO TOM*
4				38,000 sps**
8		38,000 sps	38,000 sps	
32	100,000 sps			

* All channels are recorded even if they are not programmed.

** Records current and voltage for each channel (i.e., records 8 channels).

¹ Each squib channel uses 2 data channels; 1 data channel is used for all digital output channels.

How to Calculate Maximum Recording Time

SLICE MICRO/NANO, SLICE PRO, SLICE6, TDAS G5 and TDAS PRO have different data storage capacities.

	SLICE MICRO/ NANO Base	SLICE MICRO/NANO Base+, SLICE PRO SIM/TOM/DIM, SLICE6/SLICE6 AIR
Data Capacity	6.48 GB	15 GB
Samples Available*	3,240,000,000	7,500,000,000

* 1 sample = 2 bytes

	TDAS G5 DAS*	TDAS G5 DAS*	TDAS PRO SIM*	TDAS PRO SIM*	TDAS PRO TOM
Data Capacity	100 MB (RAM)	50 MB (RAM)	16 MB**	4 MB**	16 MB
Samples Available	50,000,000	25,000,000	8,000,000	2,000,000	8,000,000

* Contact DTS if you need help determining the capacity of your unit.

** Flexibly allocated to programmed channels only.

To determine the recording time possible, use the equation below:

$$\frac{\text{Samples available}}{\text{Sampling rate (sps) X number of channels}} = \text{number of seconds}$$

Example 1: 10,000 sps using a 9-channel SLICE NANO/MICRO stack

$$\frac{3,240,000,000}{10,000 \times 9} = 36,000 \text{ sec (10 hours)}$$

Example 2: 25,000 sps using an 18-channel SLICE PRO SIM

$$\frac{7,500,000,000}{25,000 \times 18} = 16,667 \text{ sec (4.63 hours)}$$

Example 3: 20,000 sps using 6 channels of a 16 MB TDAS PRO SIM

$$\frac{8,000,000}{20,000 \times 6} = 66 \text{ sec}$$

SLICE Circular Buffer Limitations

Due to the nature of flash memory, SLICE systems cannot be armed in Circular Buffer mode indefinitely. To determine the maximum time available in Circular Buffer mode, use the equation below:

$$0.8 * \text{recording time} = \text{maximum time available in Circular Buffer mode}$$

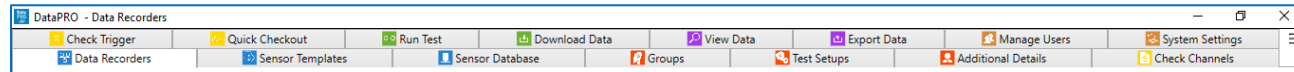
Example:

$$0.8 * 16,667 \text{ sec} = 13,333.6 \text{ sec (222.227 minutes)}$$

In this example, the test must occur within 222 minutes, after which time the unit stops recording data.

Navigating DataPRO

DataPRO's user interface color-codes tabs by function. Not all tabs will be available to all users. Account Administrators can configure DataPRO to allow access to certain tabs and functions within tabs as necessary.



Tabs with blue icons contain Physical Hardware information:

- Data Recorders
- Sensor Templates
- Sensor Database

Tabs with orange icons contain Preparation information:

- Groups
- Test Setups
- Additional Details; Channel Codes, Customer/Engineer/Lab Details

Tabs with yellow icons perform Diagnostic routines:

- Check Channels
- Check Trigger
- Quick Checkout

Tabs with green icons perform Data Collection routines:

- Run Test/Data Collection
- Download Data

Tabs with purple icons perform Data Review routines:

- View Data
- Export Data

Tabs with brown icons contain Administrative functions:

- Manage Users
- System Settings

Tab Options

Within tabs, most screens have menus along the left side (navsteps), along the top (page buttons), or both. Some screens have additional options (action buttons, radio buttons) that allow for quickly filtering tables or manipulating data. In general, proceed from top to bottom when using the navsteps; if there are no navsteps, use the page buttons. Not all navsteps or page buttons need to be completed on each menu. Use the Done button to return to the tab home screen. On most pages, DataPRO will alert the user if changes have been made and not saved. However, it is recommended to save early and often.

Page buttons (pointing to the top navigation bar of the 'Data Recorders' tab)

Navsteps (pointing to the left-hand menu in the 'System Settings' tab)

Radio buttons (pointing to the 'Assigned', 'Unassigned', 'All', and 'Online' filters in the 'Sensors Available' table)

Action buttons (pointing to the 'Check All', 'Check None', and 'Check Found' buttons at the bottom of the 'Sensors Found' table)

Sensors Available Table:

Serial Number	Name	IEPE	Capacity (EU)	Units	Out Of Date	In Warning Per
2kg034	Little load cell		2,000.00	g		
2KG035	This is a sample DTS Load Cell entry		2,000.00	g		
6DXG20055-A1	Head ACX		2,000.00	g		
6DXG20055-A2	Head ACY		2,000.00	g		
6DXG20055-A3	Head ACZ		2,000.00	g		

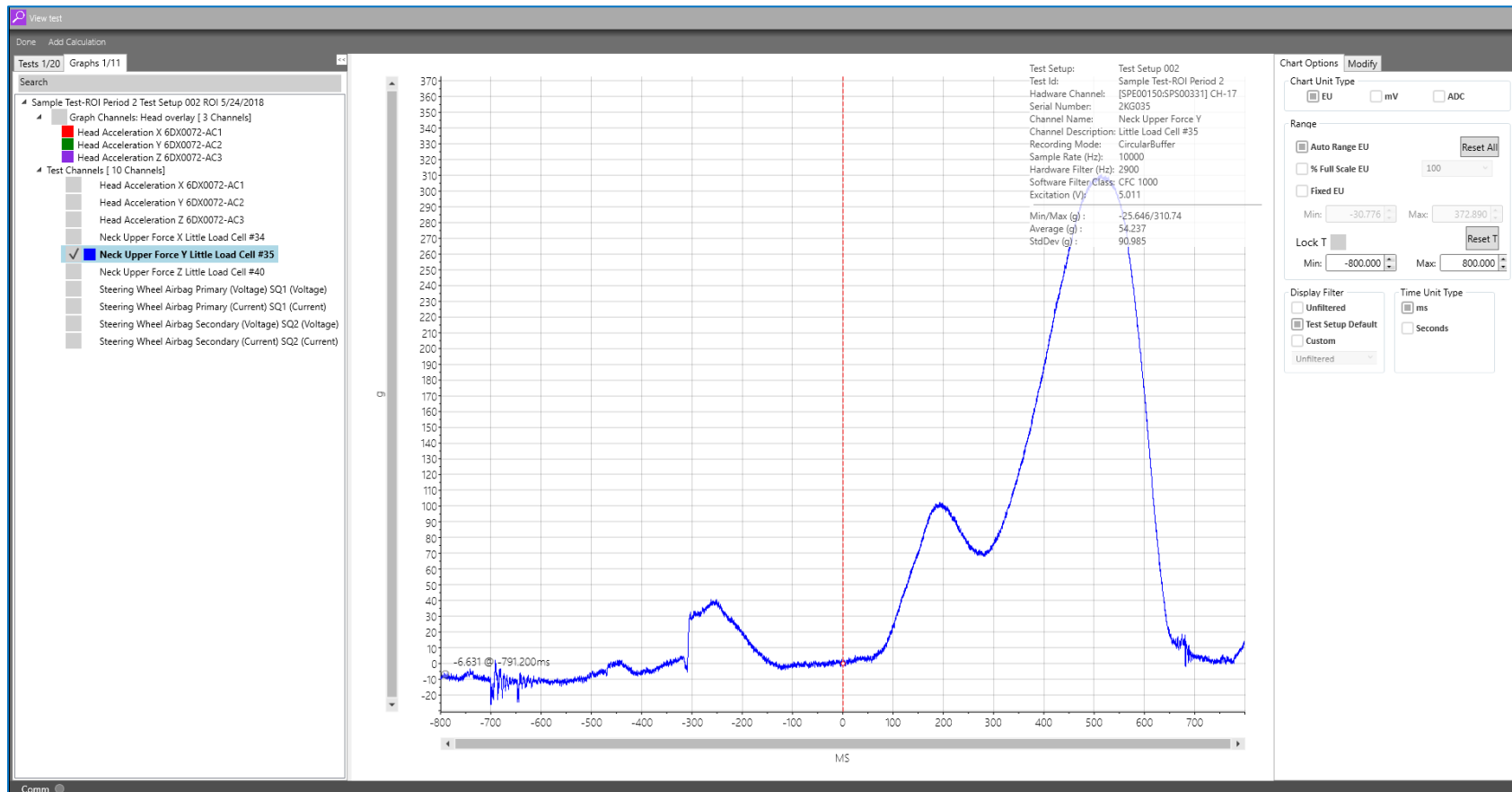
Sensors Found Table:

Measure Bridge	Data Recorders	Channel	IEPE	ID	Serial num
	SPE00150:SPS00331	CH-01		760000075066DD2D	BP01 (Bridge Plug 1)
	SPE00150:SPS00331	CH-02		CB000007508CEC2D	BP02 (Bridge Plug 1)
	SPE00150:SPS00331	CH-03		220000075066312D	BP03 (Bridge Plug 3)
	SPE00150:SPS00331	CH-04		No Id found	---
	SPE00150:SPS00331	CH-05		No Id found	---
	SPE00150:SPS00331	CH-06		No Id found	---
	SPE00150:SPS00331	CH-07		E70000075082312D	BP04 (Bridge Plug 4)
	SPE00150:SPS00331	CH-08		2B000007508D2A2D	BP05 (Bridge Plug 5)
	SPE00150:SPS00331	CH-09		60000007508DA22D	BP06 (Bridge Plug 6)

Up and down arrows indicate menus that can be expanded or collapsed. Required fields are indicated in red.

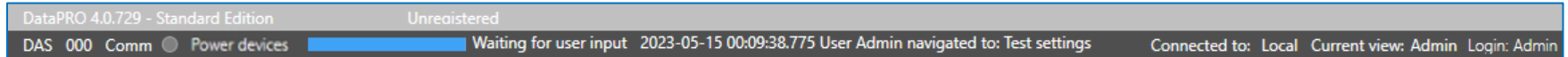
The screenshot shows a configuration interface for a sensor. The 'Serial number' field is highlighted with a red border and labeled 'Required field'. The 'Display' and 'Physical' menu items are collapsed, indicated by an upward arrow and labeled 'Collapsed menu'. The 'Calibration' menu item is expanded, indicated by a downward arrow and labeled 'Expanded menu'. The form includes fields for 'Property' (Axis 1), 'Sensor type' (Full bridge), 'Supported excitation' (2V, 5V, 10V), 'Sensor Offset (mV)' (Check, Low, High), 'Shunt' (Emulation, Resistance), 'Sensor ID', and 'Calibration' options (Proportional to Excitation, Remove offset, Based on Output at Capacity, Non-Linear, Software zero Method).

When viewing test data, available channels are listed on the left side. The modification pane offers on-the-fly customizable data views, filter options and the ability to modify a data channel. (These features are explained in more detail in [Review](#), page 162.)



Status Bar

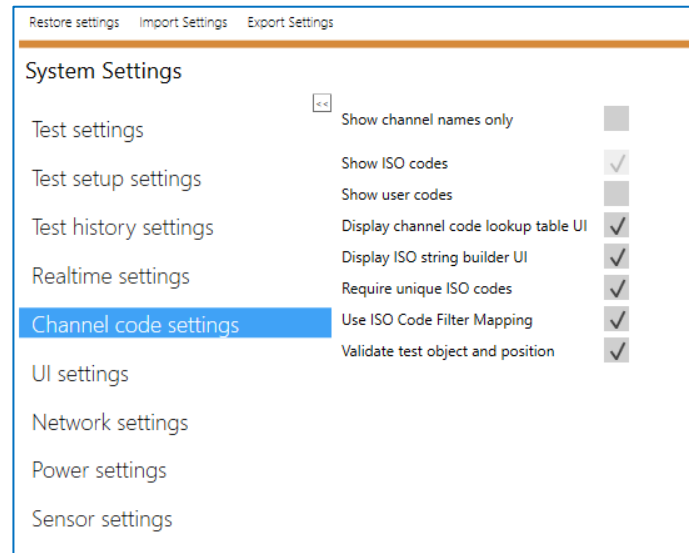
The status bar at the bottom of DataPRO displays various information relating to the DataPRO version and license, account details, status information, and recent actions.







If a POWER PRO or SLICE Distributor is connected, a **Power devices** button will be available next to the **Comm** LED in the lower right. Clicking this button launches the configuration web page where you can change device settings. For more information on the available settings, refer to the [POWER PRO User's Manual](#) or [SLICE Distributor User's Manual](#).

Quick Start

DataPRO allows for the use of ISO Codes, User Codes, or both. To select which code type to use, go to “System Settings → Channel Code Settings” and enable the appropriate options. This manual was written with only ISO Codes enabled (see <https://www.iso-mme.org/> for more information on using ISO Codes).



To collect data with the least amount of setup, complete the following steps:

<p>1. Add Hardware (DAS and sensors)</p> <p> Data Recorders</p> <p> Sensor Database</p>	<p>2. Prepare test setup</p> <p> Test Setups</p>	<p>3. Record test event and download data</p> <p> Run Test</p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------

While this may be the quickest way to begin testing, DTS highly recommends implementing a documented test procedure and using the diagnostic functions available to provide the most reliable and consistent testing experience.

Physical Hardware

The tabs in the Physical Hardware group manage and maintain configurations and parameters for all DAS and sensors.

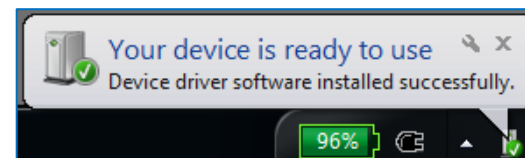
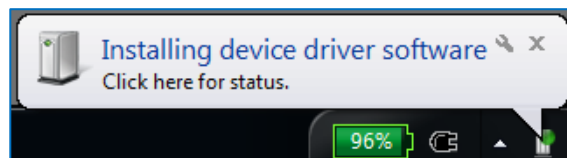
Data Recorders

- To detect (auto-discover) DAS, start at step 1.
- To update hardware configuration, go to step 8.
- To add DAS manually, go to step 9.
- To edit DAS, go to step 13.
- To delete DAS, go to step 14.
- To export DAS, go to step 15.
- To import DAS, go to step 16.
- To generate a DAS hardware usage report, go to step 18.

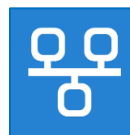
NOTE: *Detecting DAS and updating hardware configuration can also be done from the Groups and Test Setups tabs while adding or editing groups and test setups.*

Detect

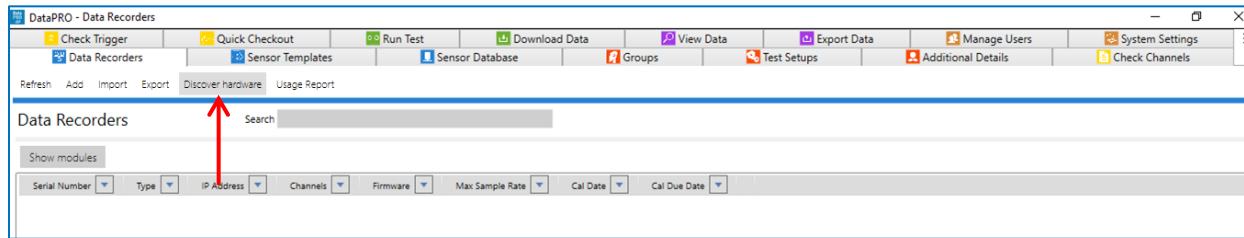
1. To detect DAS, power up and connect the DAS to the PC. (Windows may install a device driver to support USB communication and ask to reinstall the driver each time a SLICE Stack is connected to a different USB port.)



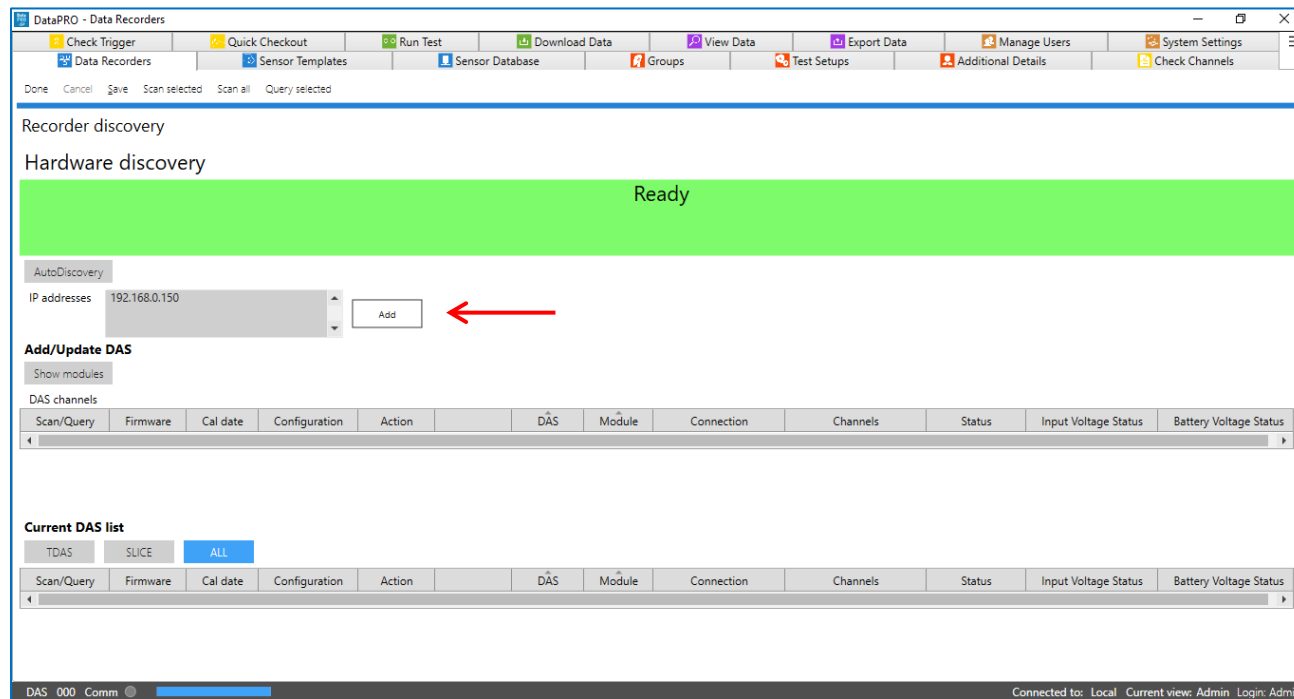
2. Select the "Data Recorders" tab:



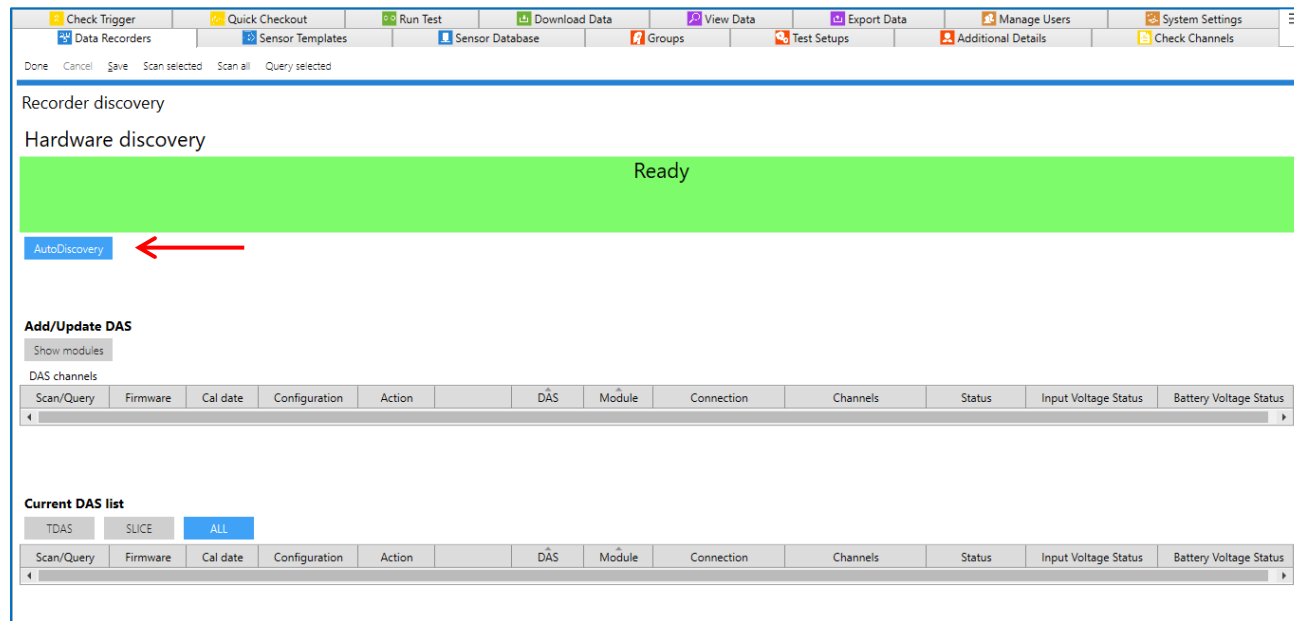
3. From the Data Recorder home screen, select “Discover Hardware” to find all connected DAS:



4. If IP address(es) of connected DAS is known, enter IP address(es) for Ethernet DAS and select “Add”. IP address(es) will populate the Add/Update DAS table. *Note: AutoDiscovery must be toggled off to enter IP addresses.*



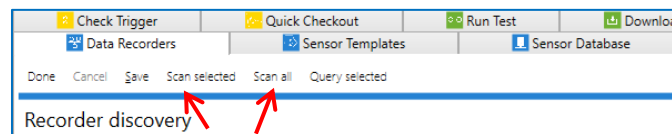
- a. If IP address(es) are not known, enable AutoDiscovery to ping all available IP addresses in the compatible range:



- Optionally, you may specify a range of IP addresses by including a list of start/end pairs in a file named *HWIPRanges.txt* in the *C:\DTS\DTS.Suite\<version>\DataPRO* folder, as follows:

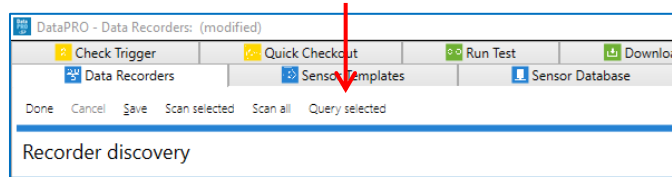
```
192.168.1.85, 192.168.1.93
192.168.3.1, 192.168.5.99
etc.
```

- Select “Scan all” or “Scan selected” to confirm IP address(es) and to discover USB connected DAS:
 - Scan all will attempt to confirm communication with all DAS in the database, or in the compatible range if AutoDiscovery is enabled.
 - Scan selected will attempt to confirm communication only with selected DAS.

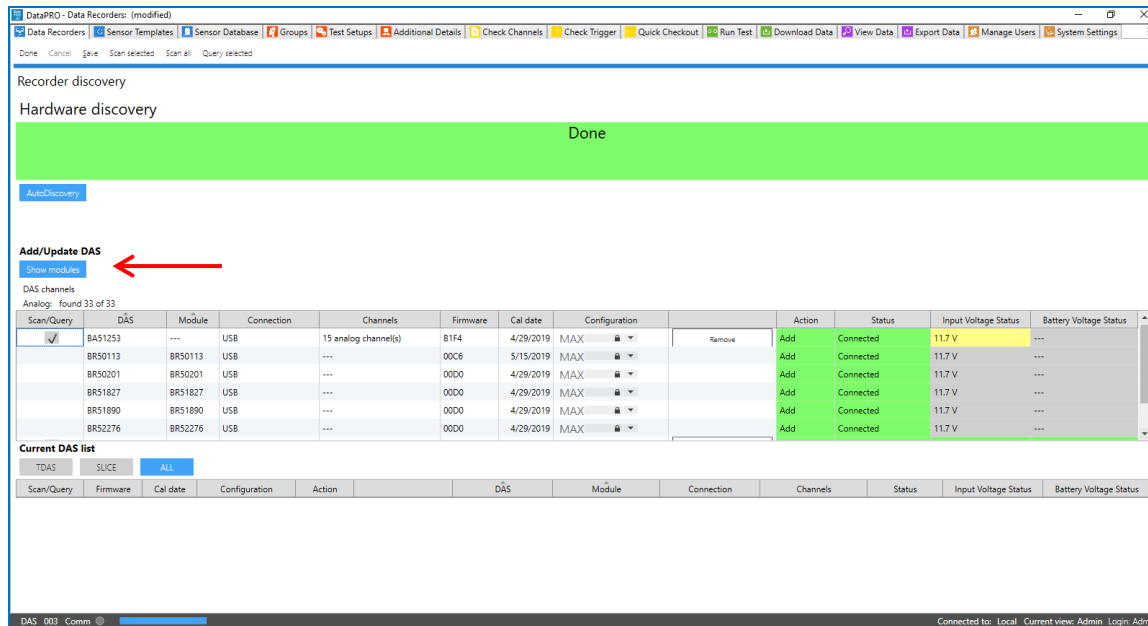


–or–

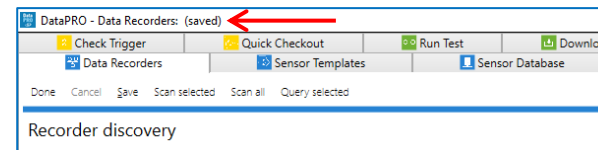
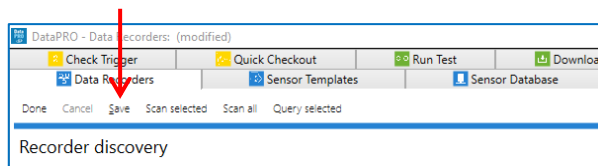
6. Select “Query Selected” to establish communication and query the hardware configuration of discovered or selected DAS:



- a. Select “Show Modules” to display modules connected to each discovered DAS:



7. Select “Save” to add DAS to the database:

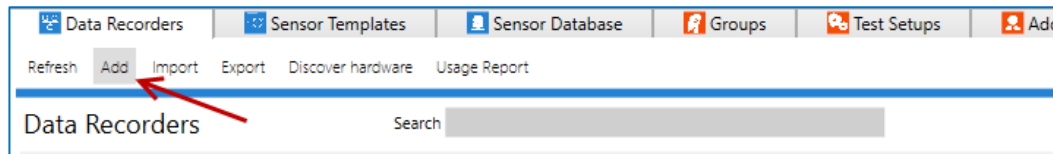


Update

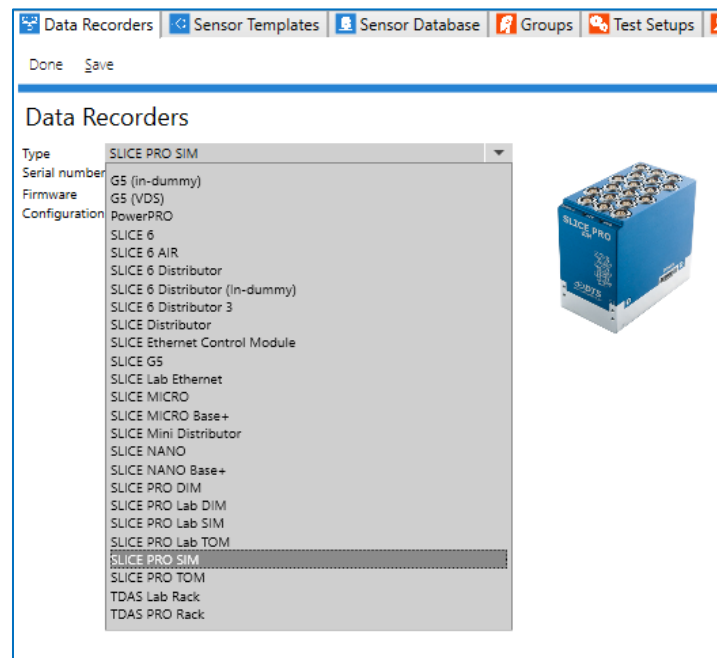
- To update the configuration of DAS that has already been added to the database, select the desired DAS from the table and follow steps 6 and 7.

Add

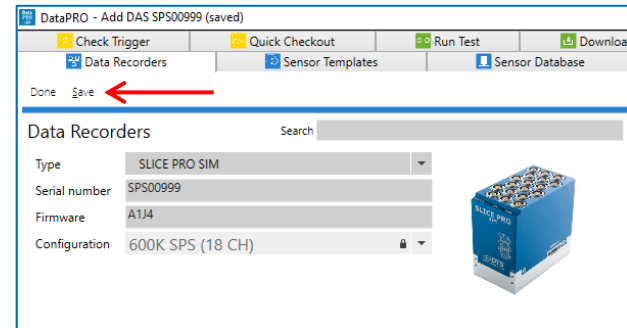
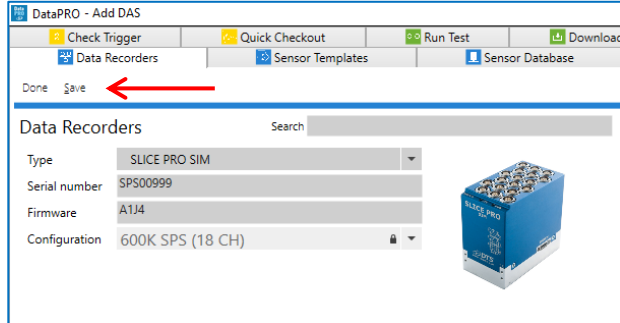
- To add DAS manually, select “Add” from Data Recorder home screen:



- Select DAS type from the dropdown list:

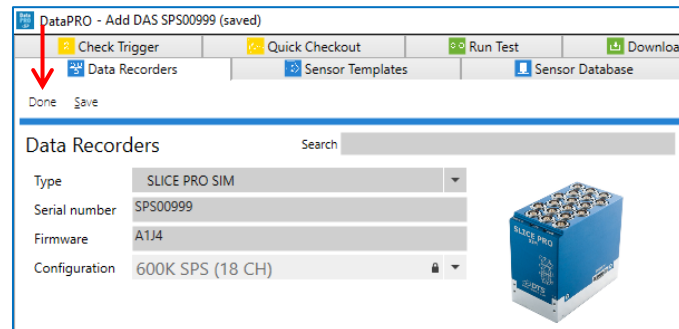


11. Select “Save” to add DAS to the database:



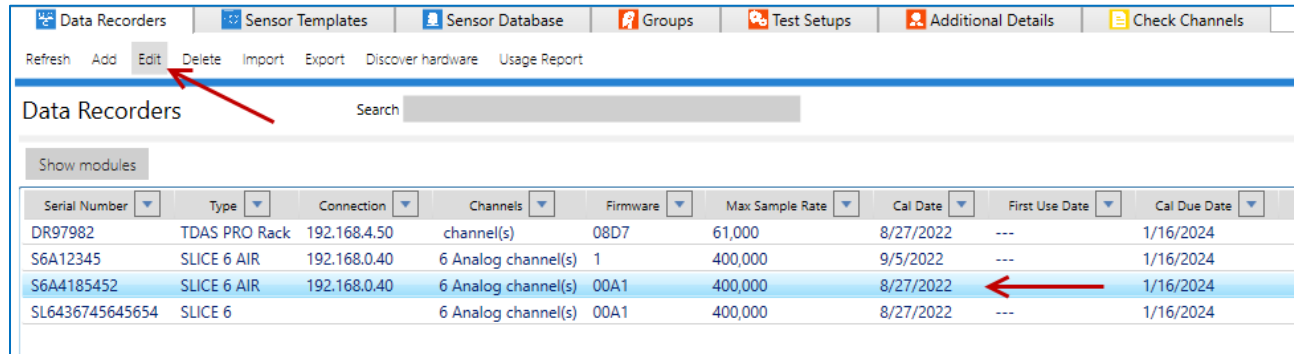
NOTE: *Firmware and calibration date (if supported by the DAS/firmware) will be updated upon establishing communication with the hardware.*

12. Select “Done” to return to the Data Recorder tab Home screen:

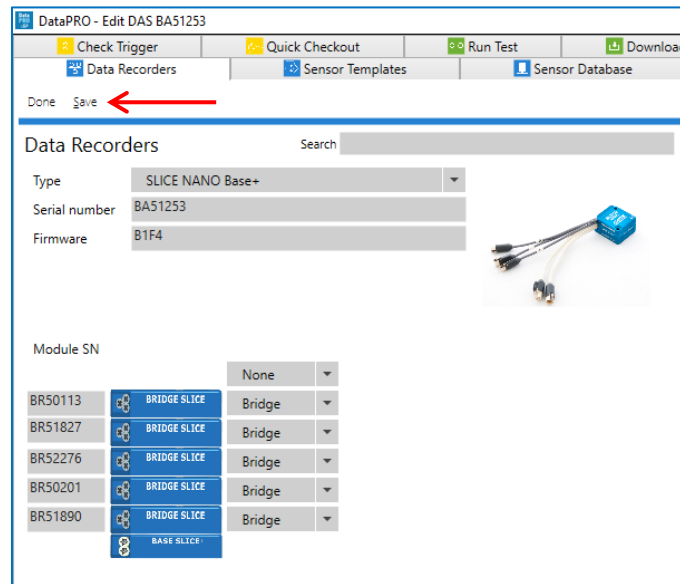


Edit

13. To edit DAS information (IP address, Firmware), select the DAS from the “Data Recorders” home screen. Select “Edit” to change the information. Select “Save” to record the changes to the database.



Serial Number	Type	Connection	Channels	Firmware	Max Sample Rate	Cal Date	First Use Date	Cal Due Date
DR97982	TDAS PRO Rack	192.168.4.50	channel(s)	08D7	61,000	8/27/2022	---	1/16/2024
S6A12345	SLICE 6 AIR	192.168.0.40	6 Analog channel(s)	1	400,000	9/5/2022	---	1/16/2024
S6A4185452	SLICE 6 AIR	192.168.0.40	6 Analog channel(s)	00A1	400,000	8/27/2022	---	1/16/2024
SL6436745645654	SLICE 6		6 Analog channel(s)	00A1	400,000	8/27/2022	---	1/16/2024



DataPRO - Edit DAS BA51253

Check Trigger Quick Checkout Run Test Download

Data Recorders Sensor Templates Sensor Database

Done Save

Data Recorders

Type: SLICE NANO Base+

Serial number: BA51253

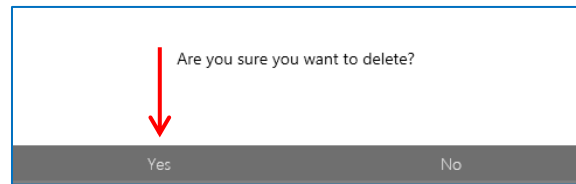
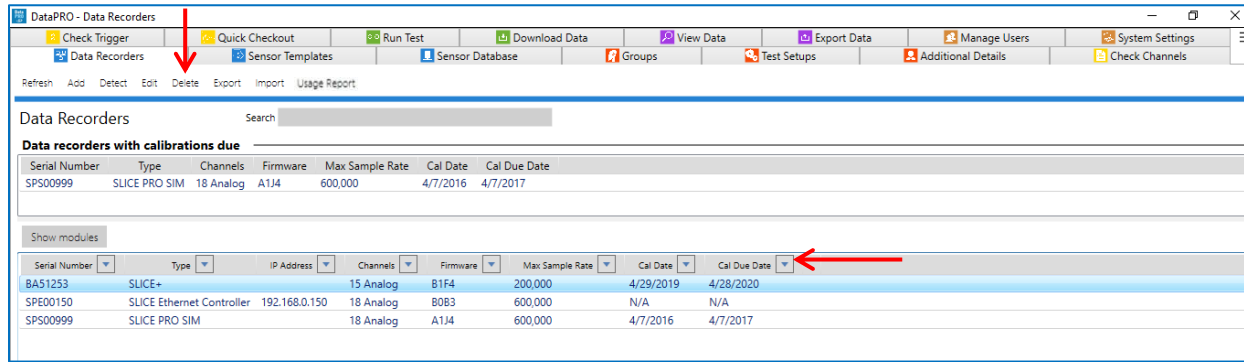
Firmware: B1F4

Module SN

Module SN	Type
BR50113	BRIDGE SLICE
BR51827	BRIDGE SLICE
BR52276	BRIDGE SLICE
BR50201	BRIDGE SLICE
BR51890	BRIDGE SLICE
	BASE SLICE

Delete

14. To delete a DAS from the database, select the DAS, select “Delete” and then “Yes” to confirm:



a. Select and delete multiple DAS by using Shift or CTRL.

Export

15. To export DAS information to an XML file, select “Export”. Select one or more DAS and browse to the desired location to save the file. Enter a file name and select “Save”. Select “Export” to export the DAS, then select “Done” when finished:

The screenshots illustrate the export process in three stages:

- Step 1:** The user clicks the **Export** button in the top menu of the **Data Recorders** window.
- Step 2:** A **Waiting** dialog box appears. The **Export File** field contains `C:\DTS\DTS.Suite\3.3.609\DataPRO\ExampleDAS.xml`. A red arrow points to the **Browse** button.
- Step 3:** The **Done** dialog box is displayed, indicating the export is complete. Below the dialog, a table lists the exported data:

Serial Number	IP Address	Type	Channels	Firmware	Max Sample Rate	Cal Date	First Use Date	Cal Due Date
✓ DR97982	192.168.4.50	TDAS PRO Rack	channel(s)	08D7	61,000	8/27/2022	---	1/16/2024
✓ S6A12345	192.168.0.40	SLICE 6 AIR	6 Analog channel(s)	1	400,000	9/5/2022	---	1/16/2024
✓ S6A4185452	192.168.0.40	SLICE 6 AIR	6 Analog channel(s)	00A1	400,000	8/27/2022	---	1/16/2024
✓ SL6436745645654		SLICE 6	6 Analog channel(s)	00A1	400,000	8/27/2022	---	1/16/2024

Import

16. To import DAS information from an XML file, select “Import”. Browse to select the file and then select “Import”. Select one or more DAS to import and select “Save”. Select “Done” when finished:

The screenshots illustrate the following steps in the import process:

- The user clicks the **Import** button in the top menu.
- The user browses to select an XML file (e.g., `C:\DTS\DTS.Suite\3.3.609\DataPRO\ExampleDAS.xml`).
- The user selects one or more data recorders from the list and clicks **Save**.
- The user clicks **Done** to complete the import.

The final screenshot shows the imported data recorders in the following table:

Included	Serial number	Type	Number of channels	Firmware version	Max sample rate
✓	BA51253	SLICE NANO Base+	15 analog channel(s)	B1F4	200,000
✓	BR50113	Bridge	---	00C6	---
✓	BR50201	Bridge	---	00D0	---
✓	BR51827	Bridge	---	00D0	---
✓	BR51890	Bridge	---	00D0	---
✓	BR52276	Bridge	---	00D0	---
✓	SPE00150	SLICE PRO Ethernet Controller	18 analog channel(s)	B0B3	---
✓	SPE00150:SPS00331	SLICE PRO SIM	18 analog channel(s)	A1Q1	600,000
✓	SPS00999	SLICE PRO SIM	18 analog channel(s)	A1J4	600,000

Refresh

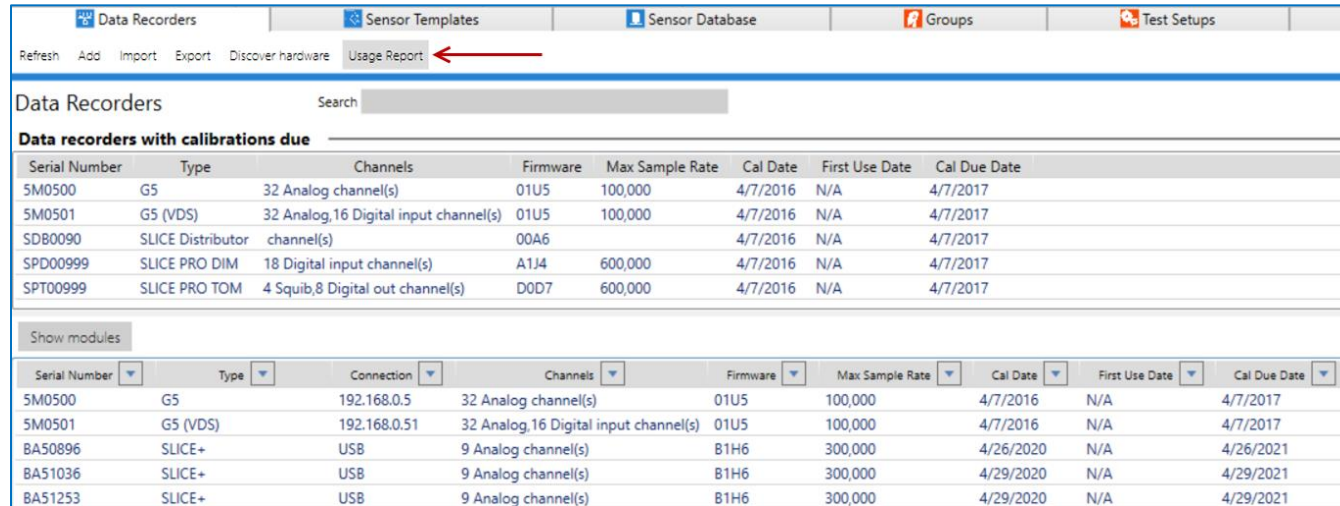
17. Select Refresh to update the display with any updates made while connected to a SQL Server Database.

Hardware Usage Report

18. To generate an XML report for the DAS in the database, select “Usage Report”. The report will include DAS usage as outlined in the below table.

DAS Type	Group/Test Setup
TDAS G5	TDAS G5 DAS module only
TDAS PRO	Rack and modules with channels assigned
SLICE MICRO/NANO/IP68	Base and Bridges with channels assigned
SLICE PRO	All modules
SLICE G5	All modules
SLICE6/SLICE6 AIR	All modules
SLICE/SLICE6/SLICE6 AIR Distributor	All modules

- a. Select Usage Report from the Data Recorder tab.

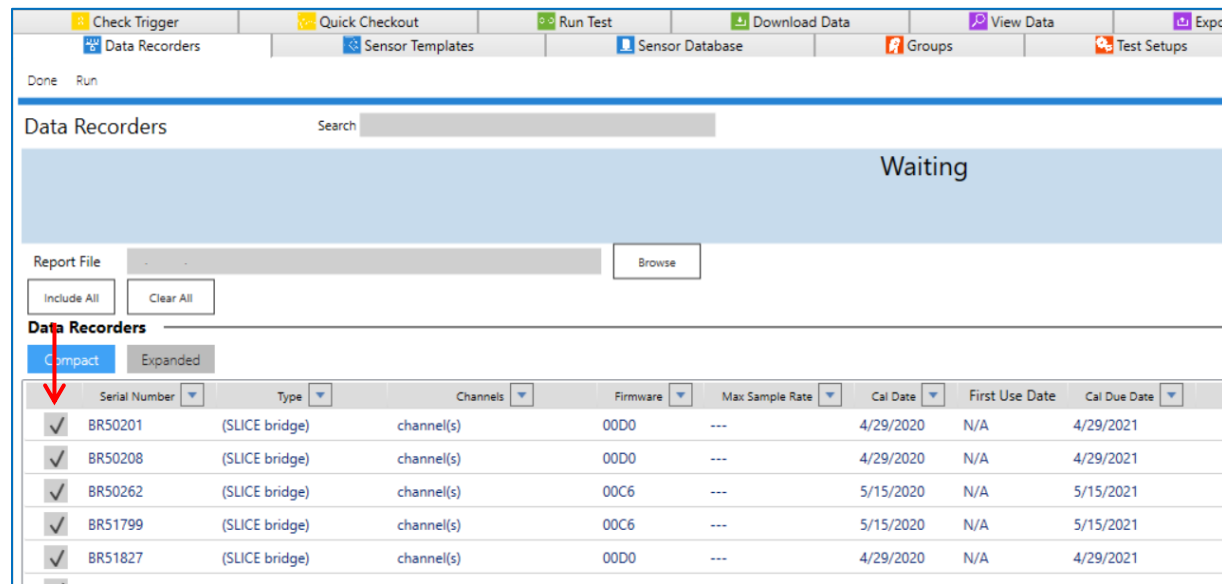


The screenshot shows the 'Data Recorders' tab selected in the software interface. The 'Usage Report' button is highlighted with a red arrow. Below the navigation bar, there is a search field and a table of data recorders with calibrations due. The table has columns for Serial Number, Type, Channels, Firmware, Max Sample Rate, Cal Date, First Use Date, and Cal Due Date. Below this table is a 'Show modules' button and another table with columns for Serial Number, Type, Connection, Channels, Firmware, Max Sample Rate, Cal Date, First Use Date, and Cal Due Date.

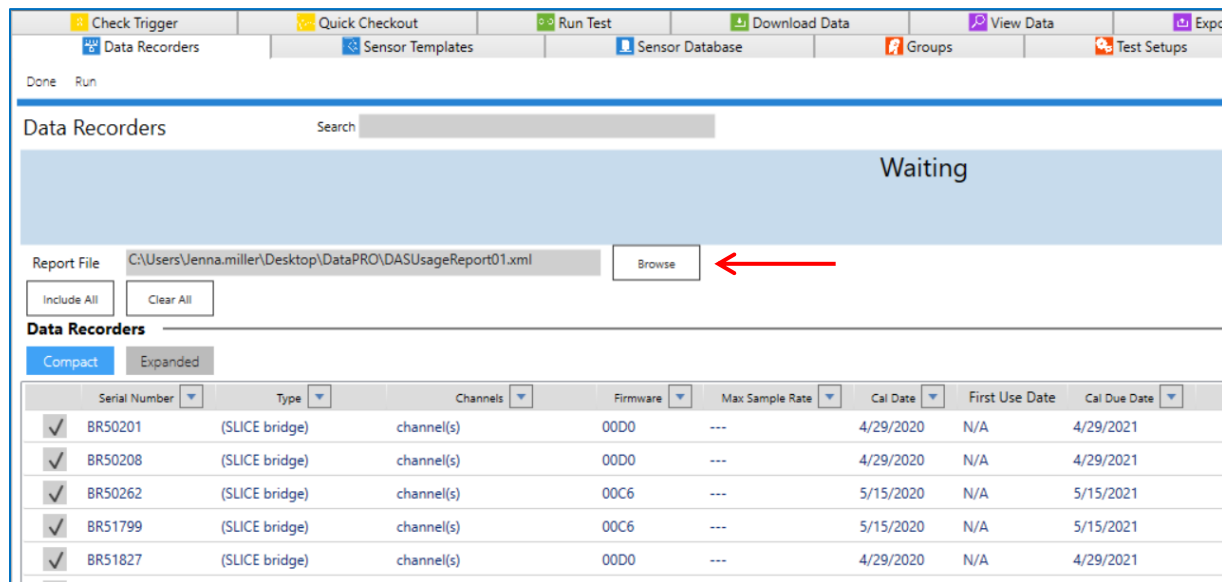
Serial Number	Type	Channels	Firmware	Max Sample Rate	Cal Date	First Use Date	Cal Due Date
5M0500	G5	32 Analog channel(s)	01U5	100,000	4/7/2016	N/A	4/7/2017
5M0501	G5 (VDS)	32 Analog,16 Digital input channel(s)	01U5	100,000	4/7/2016	N/A	4/7/2017
SDB0090	SLICE Distributor	channel(s)	00A6		4/7/2016	N/A	4/7/2017
SPD00999	SLICE PRO DIM	18 Digital input channel(s)	A1J4	600,000	4/7/2016	N/A	4/7/2017
SPT00999	SLICE PRO TOM	4 Squib,8 Digital out channel(s)	D0D7	600,000	4/7/2016	N/A	4/7/2017

Serial Number	Type	Connection	Channels	Firmware	Max Sample Rate	Cal Date	First Use Date	Cal Due Date
5M0500	G5	192.168.0.5	32 Analog channel(s)	01U5	100,000	4/7/2016	N/A	4/7/2017
5M0501	G5 (VDS)	192.168.0.51	32 Analog,16 Digital input channel(s)	01U5	100,000	4/7/2016	N/A	4/7/2017
BA50896	SLICE+	USB	9 Analog channel(s)	B1H6	300,000	4/26/2020	N/A	4/26/2021
BA51036	SLICE+	USB	9 Analog channel(s)	B1H6	300,000	4/29/2020	N/A	4/29/2021
BA51253	SLICE+	USB	9 Analog channel(s)	B1H6	300,000	4/29/2020	N/A	4/29/2021

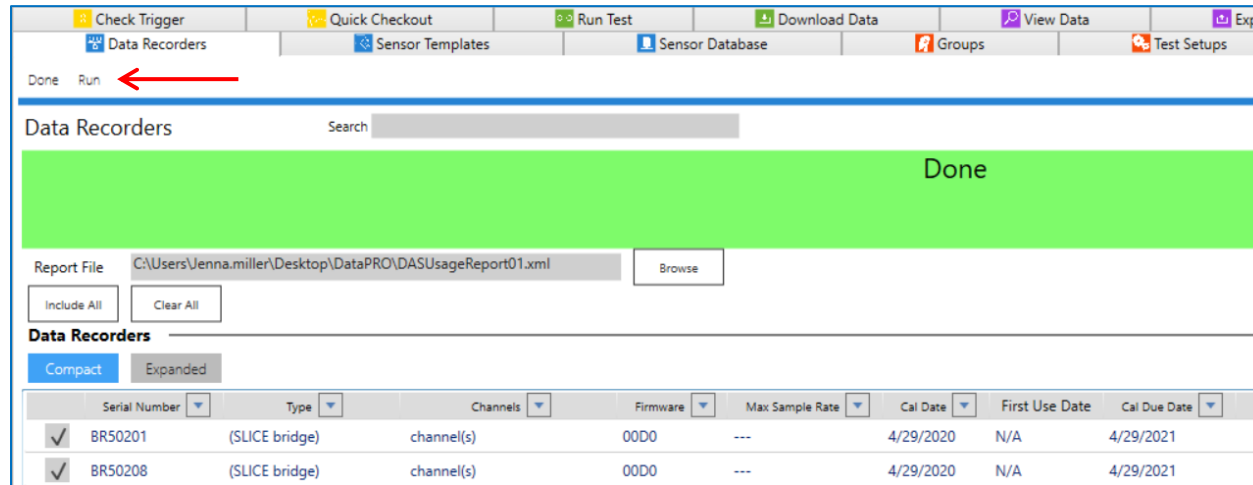
b. Select DAS to include in the report.



c. Navigate to/enter file path and name.



d. Select "Run".



e. Excerpt from example Usage Report:

```

1 <?xml version="1.0"?>
2 <UsageReport xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
3   <SelectedDevices>
4     <DeviceSelected>
5       <Type>DAS</Type>
6       <SerialNumber>5M0500</SerialNumber>
7       <CalDueDate>2017-04-07T16:03:30.017</CalDueDate>
8       <Groups />
9       <TestSetups />
10    </DeviceSelected>
11    <DeviceSelected>
12      <Type>DAS</Type>
13      <SerialNumber>5M0501</SerialNumber>
14      <CalDueDate>2017-04-07T16:03:30.017</CalDueDate>
15      <Groups />
16      <TestSetups />
17    </DeviceSelected>
18    <DeviceSelected>
19      <Type>DAS</Type>
20      <SerialNumber>BA50896</SerialNumber>
21      <CalDueDate>2021-04-26T00:00:00</CalDueDate>
22      <Groups />
23      <TestSetups>
24        <UsedIn>
25          <Type>Test Setup</Type>
26          <Name>Example Test Setup 2</Name>
27        </UsedIn>
28      </TestSetups>

```

19. To return to the Quick Start steps, return to page 30.

Sensor Templates

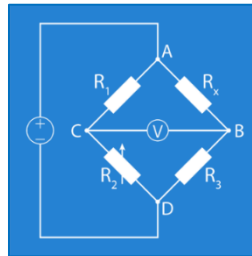
Create an optional sensor template to support commonly used sensors and to speed up sensor entry and promote accuracy. A template is easily applied when creating a new sensor and the sensor specifics (S/N, calibration data, etc.) can be added or modified for each unique sensor.

- To add a sensor template, start at step 1.
- To edit a sensor template, go to step 5.
- To delete a sensor template, go to step 6.

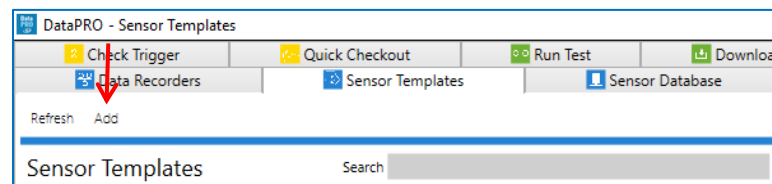
NOTE: In the below screenshots, both ISO Codes and User Codes are enabled. To enable only ISO Codes or User Codes, see [System Settings](#), page 193.

Add

1. Select the “Sensor Templates” tab:



2. To add a sensor template, select “Add”:



3. Only the Manufacturer and Model must be completed, however completing more fields in the template will help with sensor setup and avoid the need to revisit this information during sensor creation. It is useful to have a transducer data sheet available to complete sensor template entry:

- **Manufacturer:** Select from list of existing sensor manufacturers.
- **New Manufacturer Name:** Use to enter new manufacturer name if not available in above list.
- **Model:** Enter new model number/name.
- **Property:** Each sensor entry can have only one axis. (A multi-axis sensor is added as individual sensor entries.)
- **User Code:** Optional code used to identify measurement channel.
- **User Name:** Optional description for measurement channel.

- **ISO Code:** Optional code to identify measurement channel. Can be restricted to/required to be 16-character length.
- **ISO Name:** Optional description for measurement channel. See <https://www.iso-mme.org/> for more information on using ISO Codes.
- **Capacity:** Maximum measurable capacity of sensor in Engineering Units (EU).
- **Range High/Medium/Low:** Optional, selectable measurement ranges in EU.
- **Units:** Engineering Units for the sensor.
- **Polarity:** Negative (-) value indicates output from sensor will be inverted before converting to engineering units.
- **Default Filter:** The default frequency of a software filter to be applied to the data when viewing. This only affects the viewed data as all data stored will be collected with the hardware anti-alias filter.

NOTE: Range, polarity and filter can be changed once a sensor is added to a Group or a Test Setup. Any changes to the Group or the Test Setup will not affect the settings in the sensor database.

- **Sensor Type:** Select IEPE, Quarter bridge, Half bridge or Full bridge (see [Appendix A: Common Sensor Types and Bridge Connections](#), page 231 for more details).
- **Supported Excitation:** Select one or more options. DataPRO can support multiple active calibration entries for each sensor entry.
 - DataPRO will apply the first entered calibration record that is supported. For example:
 - A SLICE PRO SIM can support 2 V, 5 V and 10 V excitation.
 - An accelerometer was calibrated at 2 V, 5 V and 10 V excitation.
 - The 10 V record was entered first, followed by the 2 V record, followed by the 5 V record.
 - When supported, the 10 V record will be the calibration factor used.
 - If 10 V excitation is not supported, 2 V excitation will be applied.
 - If neither 10 V nor 2 V excitation are supported, the calibration record with 5 V excitation will be applied.
- **Sensor Offset:** Enable “Check” to measure average output during Diagnostics and compare against the low/high values entered.
- **Shunt:** Select Emulation to perform a shunt check (verify sensor impedance and signal path from sensor to analog-to-digital converter (ADC)).
 - Shunt check requires accurate bridge resistance value.
 - Select None or enter Bridge Resistance value of 0 to bypass shunt check.

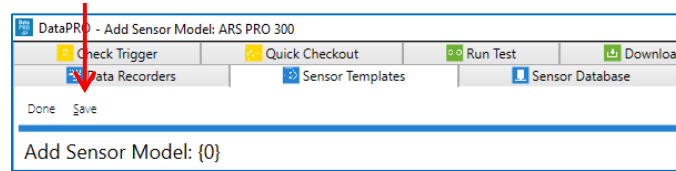
NOTE: Shunt checks are unreliable at over 4000 Ω . If using sensors with a high bridge resistance, the shunt tolerance may have to be expanded.

- **Non-Linear:** Used to indicate a sensor's output is not linear and will use an IR-TRACC or cubic polynomial equation for the sensitivity. A non-linear sensor can have an additional linear sensitivity value entered. This can be collected as a separate channel.
- **Proportional to Excitation:** Used to indicate sensor output is proportional to applied excitation.
 - If selected, actual excitation voltage applied will be used in calculating EU values.
 - If not selected, desired excitation voltage (2 V, 5 V, 10 V) will be used in calculating EU values.
- **Remove Offset:** Enable to attempt to zero ADC offset measured during diagnostics. This option is not available for all sensor types, notably non-linear sensors.
- **Based on Output at Capacity:** Used to indicate sensor output is based on the capacity of the sensor. If enabled, capacity of sensor must be entered.
- **Software Zero Method:** The type of post-download software zeroing to perform before displaying engineering units.
 - **Average over time:** Used in conjunction with Start (sec)/End (sec), the average EU value during the defined window will be used to zero the collected data. The Start/End window must be included in the collected data. If using a window pre-T=0, the recording time specified in the Test Setup must include this time window.
 - **Diagnostic level:** The Zero Measured Output (ZMO) of the sensor during diagnostics will be used to set the EU zero of the downloaded data.
 - **Absolute zero:** For SLICE hardware, the actual recorded input will not be adjusted or compensated for zero level. This setting can be used to show the actual mV offset. An example may be to record a logic level signal and see the actual on/off state. For TDAS and SLICE PRO hardware, a calibrated signal of 0 mV is directly injected and measured to be removed via software.
- **Sensitivity:** Enter nominal sensitivity value for the sensor type, select appropriate sensitivity units and excitation voltage.
- **Sensitivity Units:** Select mV/V/EU or mV/EU based on sensitivity value entered.
- **Valid for excitation:** If "Proportional to Excitation" is selected, the excitation voltage for which the sensitivity is valid must be selected.

NOTE: Use the plus (+) sign to add additional calibration entries for different excitation voltages.

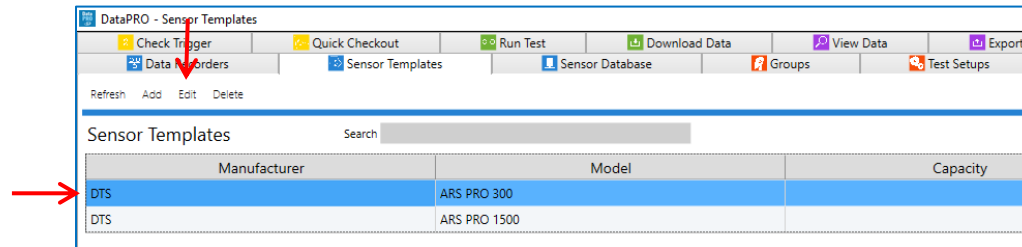
- **Initial Offset:** Used to indicate the EU that should be offset by a constant value to account for the starting point or value of the sensor. Can be entered as either EU or EU @ mV.
 - Select EU, EU @ mV, LHS, RHS, or Frontal to define the offset type. Select Offset type in Parameters navstep when configuring a Group or Test Setup.

4. Select “Save” to record sensor template to database:



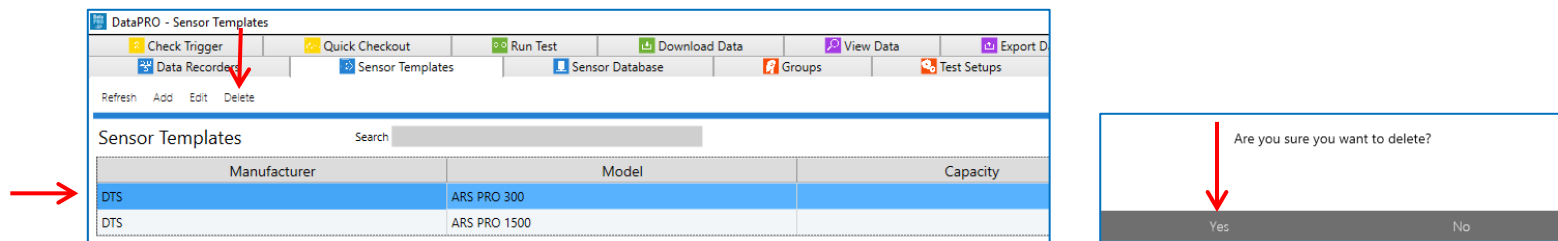
Edit

5. To edit a sensor template, select the sensor template from the list. Select “Edit” to change the information. Select “Save” to record the changes to the database:



Delete

6. To delete a sensor template from the database, select the sensor template from the list, select “Delete” and then “Yes” to confirm:



7. To return to the Quick Start steps, return to page 30.

Sensor Database

- To import an existing database (DataPRO *.xml, SLICEWare *.xml, TDAS Control CSV or SIF files, EQX (.e2x), or TDAS Manager CSV) start at step 1.
- To add sensors manually, go to step 7.
- To edit sensors, go to step 10.
- To export sensors, go to step 11.
- To delete sensors, go to step 13.

Sensors in the Sensor Database will be shaded based on their calibration status. Sensors shaded orange have a calibration due date that is within the Warning Period; see Sample Sensor 1 in image below. Sensors that are shaded red have a calibration that is past due; see Sample Sensor 2 in image below. See [System Settings](#), page 193, for more information on Sensor Calibration Policies.

The screenshot shows the 'Sensor Database' interface with a search bar and a table of sensors. The table has columns for Serial Number, Name, Manufacturer, Model, IEPE, Capacity (EU), and Sensitivity. Two sensors, 'Sample Sensor 1' and 'Sample Sensor 2', are highlighted in orange and red respectively, indicating their calibration status.

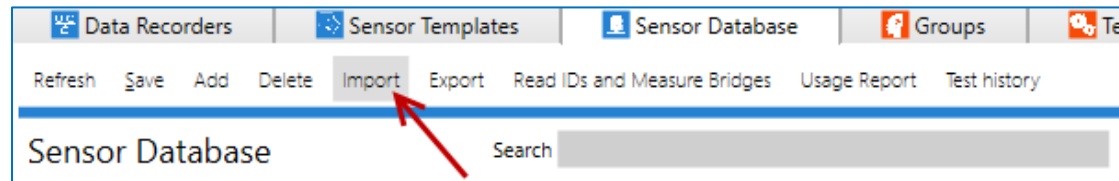
Serial Number	Name	Manufacturer	Model	IEPE	Capacity (EU)	Sensitivity
2kg033	Upper Neck				2,000.00	0.00042000 mV
2kg040	Upper Neck				2,000.00	0.00040300 mV
6DX0082 AC1	6DX0082 AC	DTS	(None)		2,000.00	0.01755000 mV
6DX0082 AC2	6DX0082 AC	DTS	(None)		2,000.00	-0.01700000 mV
6DX0082 AC3	6DX0082 AC	DTS	(None)		2,000.00	0.01825000 mV
6DX0082 AR1	6DX0082 AR	DTS	(None)		18,000.00	0.09440000 mV
6DX0082 AR2	6DX0082 AR	DTS	(None)		18,000.00	0.09370000 mV
6DX0082 AR3	6DX0082 AR	DTS	(None)		18,000.00	-0.09456000 mV
Sample Sensor 1					2,400.00	0.02000000 mV
Sample Sensor 2					2,400.00	0.02000000 mV

Import

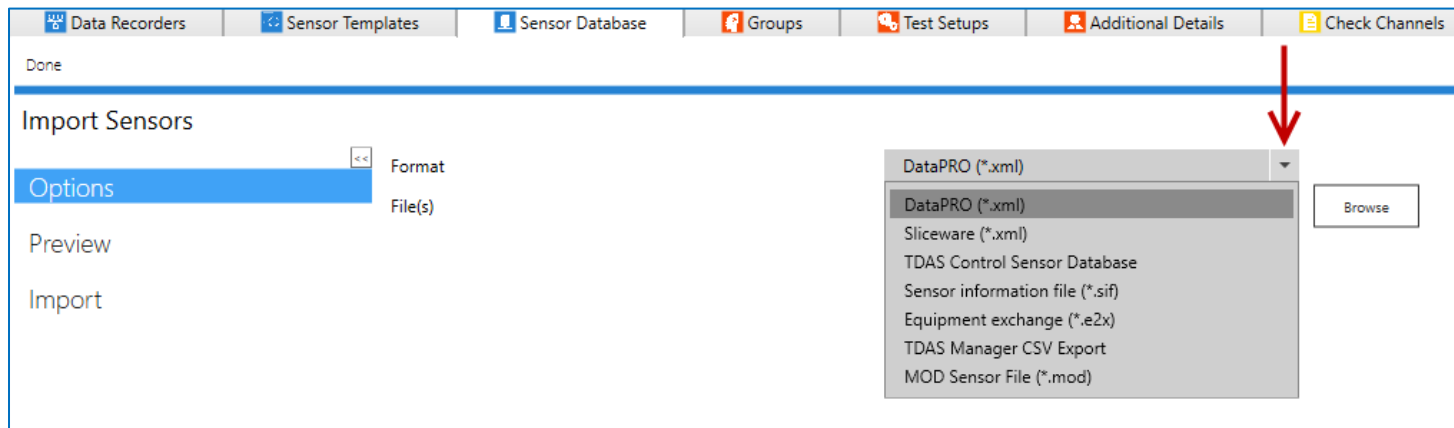
1. Select the “Sensor Database” tab:



2. Select “Import” from the menu:



3. Select database format and browse to select the file to import. Select “Open” to continue:



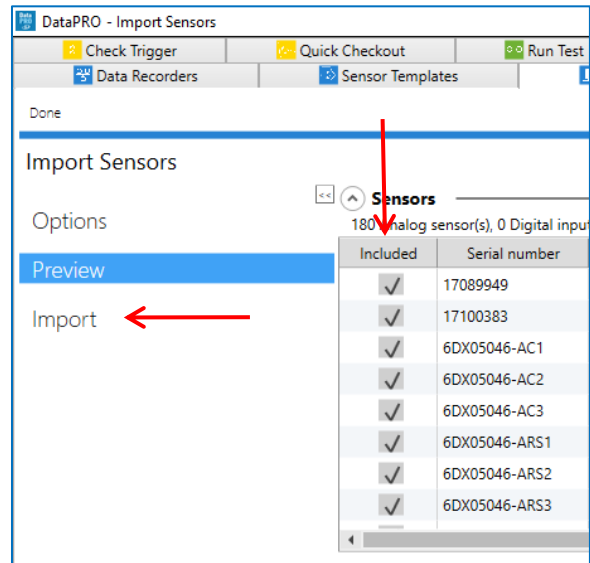
4. The **Preview** navstep lists the sensors available for import. (Other import options such as Models may be available to include or remove from the import.)

The screenshot shows the 'DataPRO - Import Sensors' window. The 'Preview' tab is selected in the left sidebar. The main area displays a table of sensors with the following columns: Included, Serial number, Name, Manufacturer, Model, IEPE, Capacity (EU), Sensitivity, Resistance (Ω), and Excitatio. The table contains 8 rows of sensor data, all with the 'Included' checkbox checked. Below the table, there are sections for 'Models', 'Sensor groups', and 'Test Setups', each with a dropdown arrow. At the bottom of the window, there are buttons for 'Select all sensors', 'Clear sensor selections', 'Select all models', and 'Clear model selections'. The status bar at the bottom indicates 'DAS 001 Comm' and 'User Admin navigated to: Hardware_Sensors_ImportSensors_Page_Preview'.

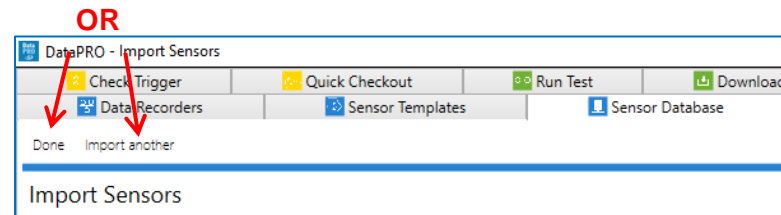
Included	Serial number	Name	Manufacturer	Model	IEPE	Capacity (EU)	Sensitivity	Resistance (Ω)	Excitatio
<input checked="" type="checkbox"/>	17089949	17089949	Humanetics	String Pot		36.00	23.19600000 mV/V/EU (5V)	350.00	5.0
<input checked="" type="checkbox"/>	17100383	17100383	Humanetics	String Pot		36.00	23.23460000 mV/V/EU (5V)	350.00	5.0
<input checked="" type="checkbox"/>	6DX05046-AC1		unknown			1,000.00	1.01474000 mV/V/EU (5V)	3,024.00	5.0
<input checked="" type="checkbox"/>	6DX05046-AC2		unknown			1,000.00	-1.01442000 mV/V/EU (5V)	3,024.00	5.0
<input checked="" type="checkbox"/>	6DX05046-AC3		unknown			1,000.00	1.01393000 mV/V/EU (5V)	3,024.00	5.0
<input checked="" type="checkbox"/>	6DX05046-ARS1		unknown			1,000.00	1.19990000 mV/EU	3,024.00	5.0
<input checked="" type="checkbox"/>	6DX05046-ARS2		unknown			1,000.00	1.22330000 mV/EU	3,024.00	5.0
<input checked="" type="checkbox"/>	6DX05046-ARS3		unknown			1,000.00	-1.19810000 mV/EU	3,024.00	5.0

NOTE: Sensors with critical exceptions (including no excitation, no calibration record, no sensitivity, duplicate electronic ID (EID)) will not be imported.

5. Select sensors to import and select **Import** navstep:

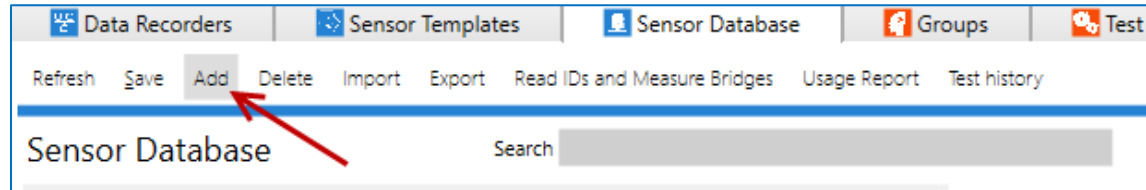


6. Select “Done” to return to the sensor table or “Import another” to continue (back to step 3):



Add

7. Select “Add” to add a sensor manually:



- a. Only fields noted below as *Required* must be completed, however having correct information in the sensor database is critical to ensuring the accuracy of collected data. It is useful to have calibration documentation available to complete sensor entry.
- b. Generic sensor fields are completed if using a Sensor Template. Some generic sensor fields are optional, but all unique sensor fields must be completed in the sensor database. (Refer to [Sensor Templates](#), page 44, for generic sensor fields.)

Analog channel type:

- **Serial Number (Required):** Used to identify the sensor; each sensor serial number must be unique. The default display of the sensor database is sorted by sensor serial number.
- **Name:** Used as a secondary identifier of the sensor.
- **Bypass AAF:** Enable to bypass/remove the hardware anti-alias filter (AAF). (Not available for all DAS types.)
- **Tags:** Used for Meter Mode display in Realtime. See [Check Channels](#), page 119, for more information on using Meter Mode display.
- **Unipolar:** Used to indicate that a sensor's output is 0 → Capacity, not +/- Capacity.
- **User Value 1, 2, 3:** Additional descriptor fields for sensors.
 - If enabled, these fields are also available in Groups and Test Setups.
 - Values entered will be included in the *.dts export.
- **Sensor ID:** Unique 16-character sensor identifier. No sensor ID may be associated with more than one active sensor at a time.
- **Last Calibration Date (Required):** Date sensor was last calibrated.
- **Calibration Interval:** Number of days in each valid calibration cycle.

- **Has been used since calibration:** If manually entering a First Use Date (see below), check this box. This option is only available when “Calibration interval starts after sensor’s first use” is checked in [System Settings](#) → [Sensor Settings](#).
- **First use date:** You can enter the First Use Date for a sensor manually, or let it populate automatically when a destructive test is run (see Run Test, page 137).
- **Sensitivity (Required):** If using sensor templates, this will be populated with a nominal value but should be updated based on the individual sensor’s calibration documentation.
- **Documents:** Link to calibration (or other) documents.

NOTE: DataPRO stores the link, not the document. If the document is moved, DataPRO will not be able to retrieve it to view.

- **Calibration History:** This will populate when the sensor is saved as it is updated.

Digital Input channel type:

- **Name:** Used as a primary identifier of a Digital Input sensor.
- **Mode:** How the signal will be generated.
 - Transition Low-to-High
 - Transition High-to-Low
 - Contact Closure Normally Open
 - Contact Closure Normally Closed
- **Default/Active value:** The expected values for the Digital Input signal in a default/rest state and the active/signaled state.
- **Sensor ID:** Unique 16-character sensor identifier. No ID may be associated with more than one active sensor at a time.
- **Tags:** Used for Meter Mode display in Realtime. See [Check Channels](#), page 119, for more information on using Meter Mode display.

Squib channel type:

- **Name:** Used as a primary identifier of a Squib sensor.
- **Define delay in test:** If enabled, the delay time can only be defined in a Test Setup.
- **Delay (ms):** Time after T=0 for squib to fire.

- **Limit Duration:** Yes/No
- **Duration:** If enabled, time limit for signal sent to squib.
- **Low/High tolerance:** Min/Max allowable resistance values for squib.
- **Firing Mode:** How the signal will be generated.
 - Capacitor Discharge
 - Constant Current
- **Sensor ID:** Unique 16-character sensor identifier. No ID may be associated with more than one active sensor at a time.
- **Tags:** Used for Meter Mode display in Realtime. See [Check Channels](#), page 119, for more information on using Meter Mode display.

Digital Output channel type:

- **Name:** Used as a primary identifier of a Digital Output sensor.
- **Mode:** How the signal will be generated.
 - 5 V Low-to-High Transition
 - 5 V High-to-Low Transition
 - Contact Closure Normally Open
 - Contact Closure Normally Closed
- **Delay (ms):** Time after T=0 for signal to be sent.
- **Limit Duration:** Yes/No
- **Duration:** If enabled, time limit for signal sent to Digital Output.
- **Tags:** Used for Meter Mode display in Realtime. See [Check Channels](#), page 119, for more information on using Meter Mode display.

UART channel type:

- **Name:** Used as a primary identifier of a UART device.
- **Baud rate:** Rate that information is transferred, in bits per second.
- **Data bits:** Number of bits used to represent device commands, readings, or error messages. Note: Most serial ports use between 5 and 8 data bits. Binary data is typically transmitted as 8 bits.
- **Stop bits:** Number of bits used to indicate the end of a byte (1, 1.5, or 2).
- **Parity:** Parity bit setting used to determine transmission errors (None, Odd, Even, Mark, or Space).
- **Flow control:** Method for controlling the rate of data being transferred (None, XonXoff, RTS, or RTS/XonXoff).

- **Data format:** The format in which data should be stored (Binary, Text, or National Marine Electronics Association [NMEA]). UART data is downloaded in the Download All step of Run Test. Only recording modes which include UART will download UART data.

Stream Input channel type:

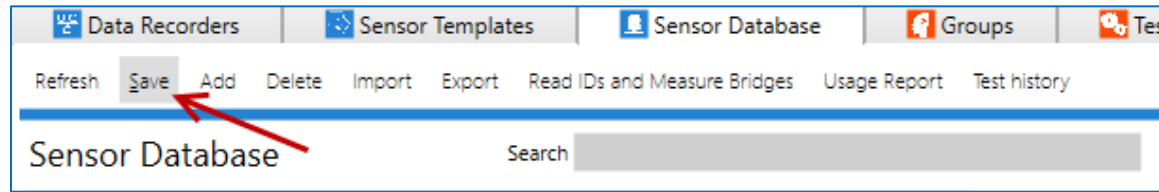
- **Name:** Used as a primary identifier of a Stream Input Ethernet listening device.
- **UDP address:** Location that UDP packets should be received on. This can be a broadcast address or an IPv4 address and port on the listening device itself.

Stream Output channel type:

- **Name:** Used as a primary identifier of a Stream Output sensor like a SLICE6 AIR.
- **Stream profile:** Format of the stream.
 - Ch10 Analog
 - Ch10 Analog Time Format 2
 - Ch10 128bit PCM
 - Ch10 128bit PCM Time Format 2
 - TmNS 144bit PCM
 - TmNS Supercom (4xADCscan) PCM
- **UDP address:** Address to which UDP packets will be streamed to. This can be a broadcast address or an IPv4 address.
- **Time channel id:** Numeric ID of a time channel for streaming profiles that contain a time channel (CH10).
- **Data channel id:** Numeric ID of a data channel for streaming profiles that contain a data channel (CH10).
- **TmNS config:** Additional configuration options for TmNS. Contact DTS for more information and help.
- **IRIG time packet interval (ms):** Interval at which time packets should be sent.

8. See [Appendix A: Common Sensor Types and Bridge Connections](#), page 231, for more information on entering common sensor types.

9. Select "Save" to record sensor to database:



Edit

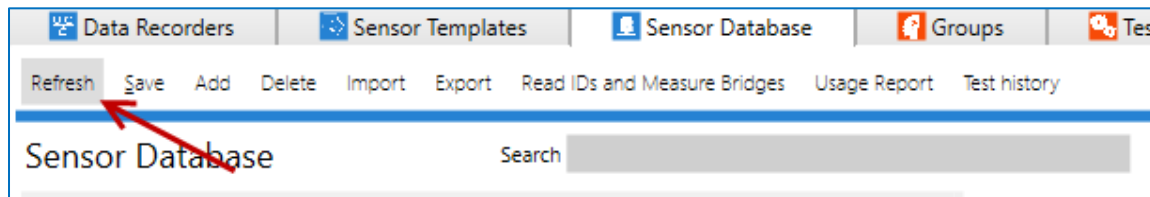
10. To edit a sensor, select the sensor from the list. Edit the information on the right side of the screen (see step 7). Select "Save" (step 9) to record the changes to the database:

The screenshot shows the 'Sensor Database' interface. The top bar indicates 'DataPRO v3.3.770 - Edit: 2kg033 (modified)' with a red arrow pointing to the word 'modified' and a note: '"modified" = sensor has been changed but not saved'. The 'Sensors' table is visible, with the '2kg033' sensor selected. The 'Info' panel on the right shows various parameters for the selected sensor, including Capacity (2,400.00), Units (g), Polarity (+), Sensor type (Full bridge), Last Calibration Date (15), and Sensitivity (0.00000000 mV/EU). The 'Sensitivity' field is highlighted with a red box.

Serial Number	Name	Manufacturer	Model	IEPE	Capacity (EU)	Sensitivity	Resistance (Ω)	Excitation (V)
2kg033	Upper Neck				2,000.00	0.00042000 mV/V/EU	350	5
2kg040	Upper Neck				2,000.00	0.00040300 mV/V/EU	350	5
6DX0082 AC1	6DX0082 AC1	DTS			2,000.00	0.01755000 mV/V/EU	350	5
6DX0082 AC2	6DX0082 AC2	DTS			2,000.00	-0.01700000 mV/V/EU	350	5
6DX0082 AC3	6DX0082 AC3	DTS			2,000.00	0.01825000 mV/V/EU	350	5
6DX0082 AR1	6DX0082 AR1	DTS			18,000.00	0.09440000 mV/V/EU	350	5
6DX0082 AR2	6DX0082 AR2	DTS			18,000.00	0.09370000 mV/V/EU	350	5
6DX0082 AR3	6DX0082 AR3	DTS			18,000.00	-0.09456000 mV/V/EU	350	5
Sample Sensor 1					2,400.00	0.02000000 mV/V/EU	350	5
Sample Sensor 2					2,400.00	0.02000000 mV/V/EU	350	5

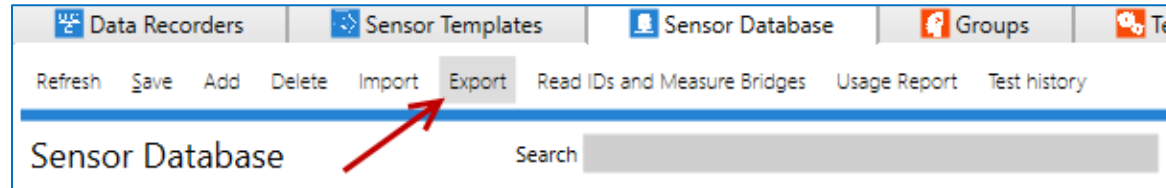
- Different sensor types are managed using separate sensor tabs.
- Select the appropriate sensor tab to view and modify parameters for those sensor types.

NOTE: If multiple users are modifying the sensor database, select "Refresh" to get the latest sensor settings.

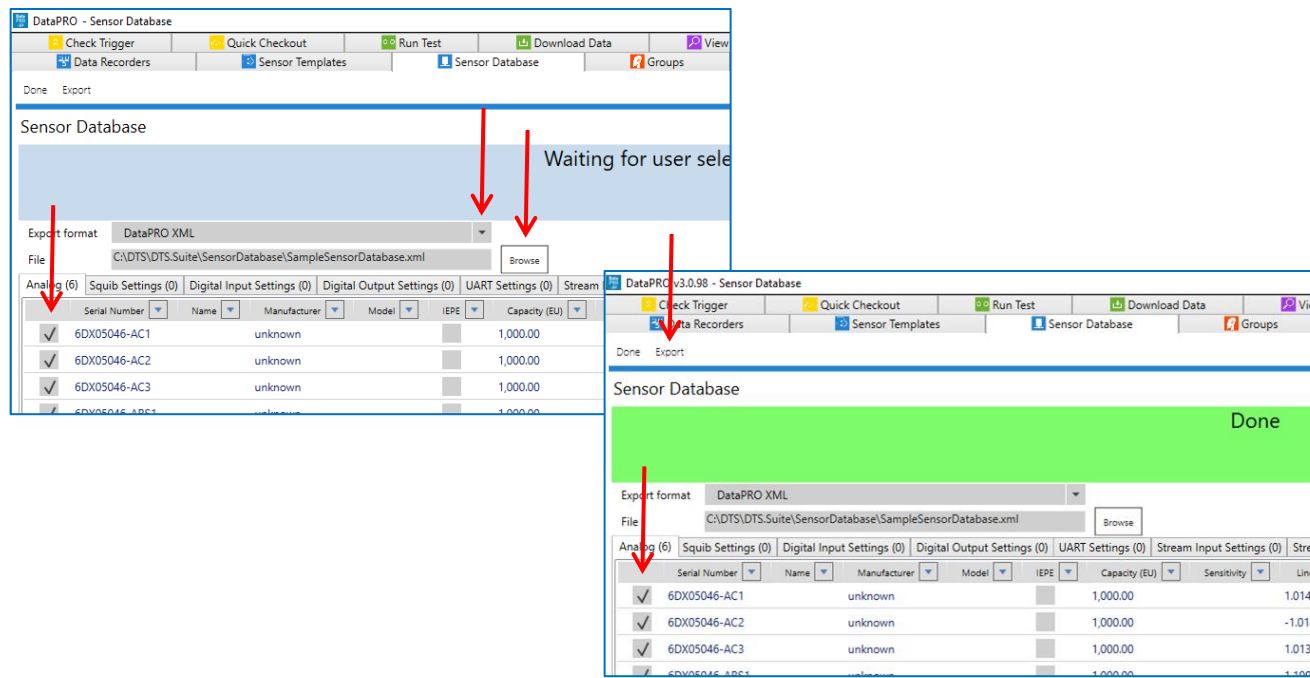


Export

11. To export sensor information, select “Export”:

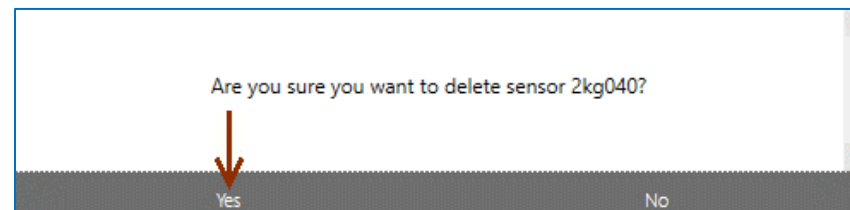
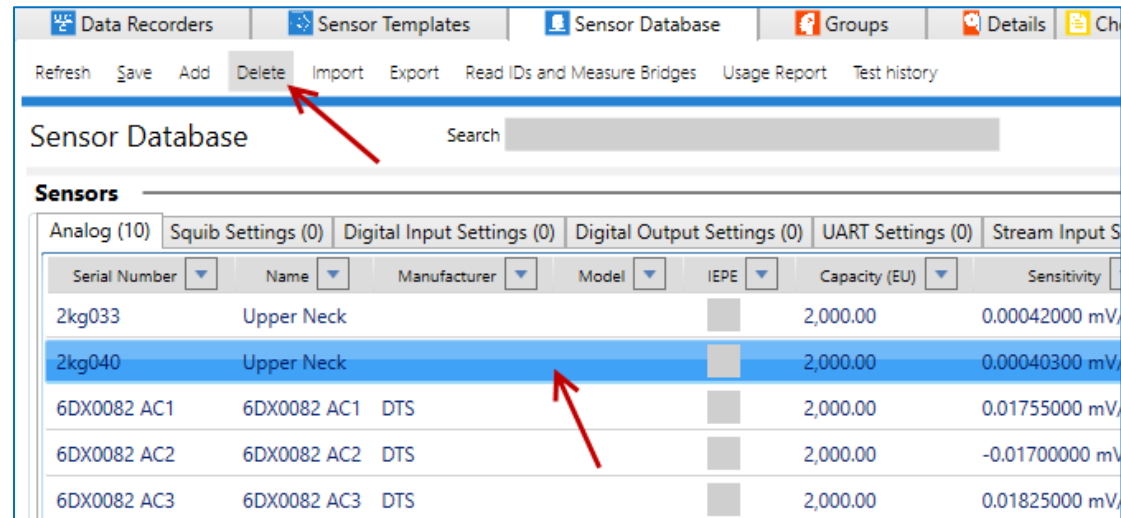


12. Select export format and browse to the desired location to save the file. Supported export file types include DataPRO XML, SliceWare XML, TDAS Control Sensor Database, or EQX v1.5. (If exporting to TDAS Control Sensor Database format, enable “Export only TDC compatible sensors” to export only sensors compatible with TDAS Control.) Browse to the desired location to save database file, and modify the export file name if desired. (The default location is *C:\DTS\DTS.Suite\3.0.311\SensorDatabase*.) Select the sensors to include in the export. Select “Export” to save. Select “Done” when finished.



Delete

13. To delete a sensor from the database, select the sensor from the list, select “Delete” and then “Yes” to confirm:



a. Select and delete multiple sensors by using Shift or CTRL.

14. To delete *all* sensors from the database, select “Delete all” and then “Yes” to confirm.

a. The ability to delete all sensors must first be enabled in the *DataPRO.exe.config* file by setting ShowDeleteAllSensorsButton to True.

NOTE: DTS recommends making a backup copy of the database before deleting all sensors.

15. To return to the Quick Start steps, return to page 30.

Prepare

The tabs in the Prepare group allow for creation and management of commonly used test devices, test setup configurations and records used for certain data export formats.

Groups

Creating a group combines the sensors and (optional) DAS into one operational test device. Groups can be created using sensors, ISO Codes, User Codes, DAS or any combination thereof. Groups can also be imported/exported as *.xml or *.grp files. To import a group file, all sensors must already exist in the sensor database.

- To add a group, start at step 1.
- To import a group, go to step 8.
- To export a group, go to step 12.
- To edit a group, go to step 19.
- To delete a group, go to step 20.
- To copy a group, go to step 21.

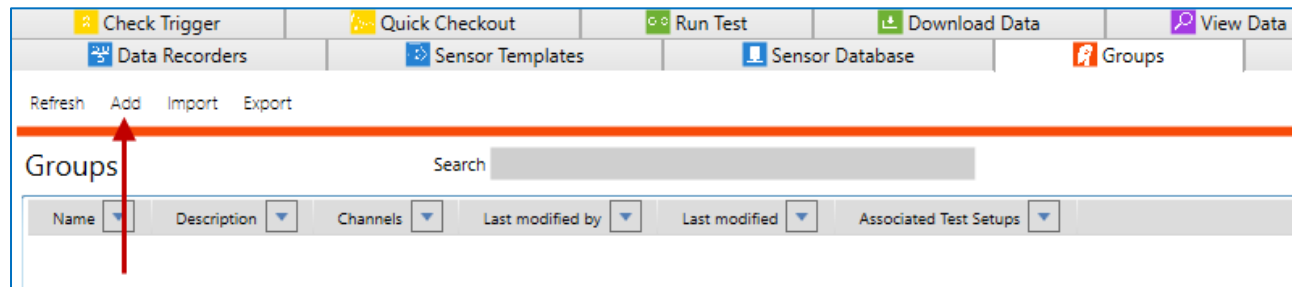
NOTE: Only ISO Codes are displayed in the below images. To enable User Codes see [System Settings](#), page 193.

Add

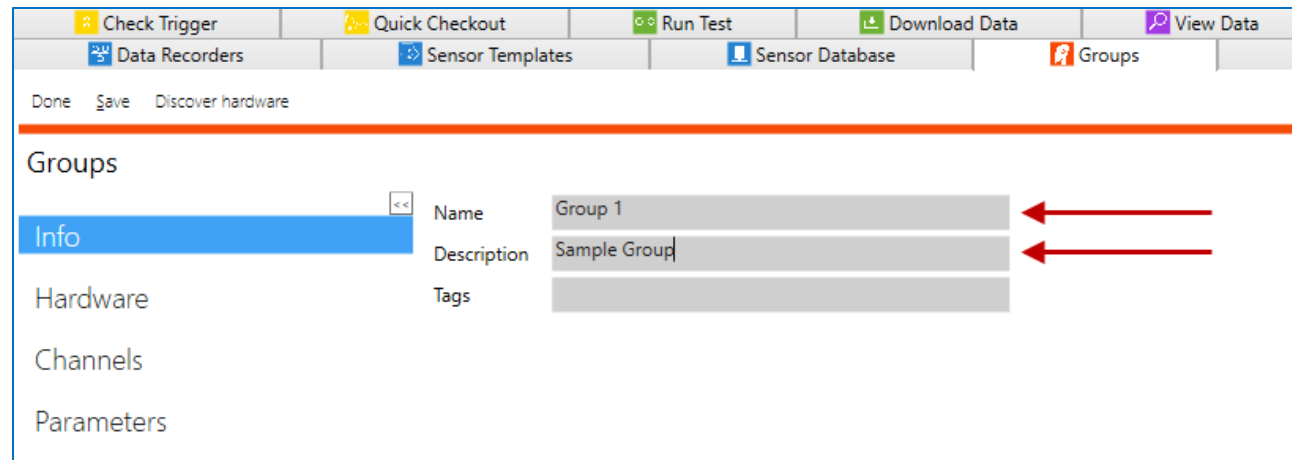
1. Select the “Groups” tab:

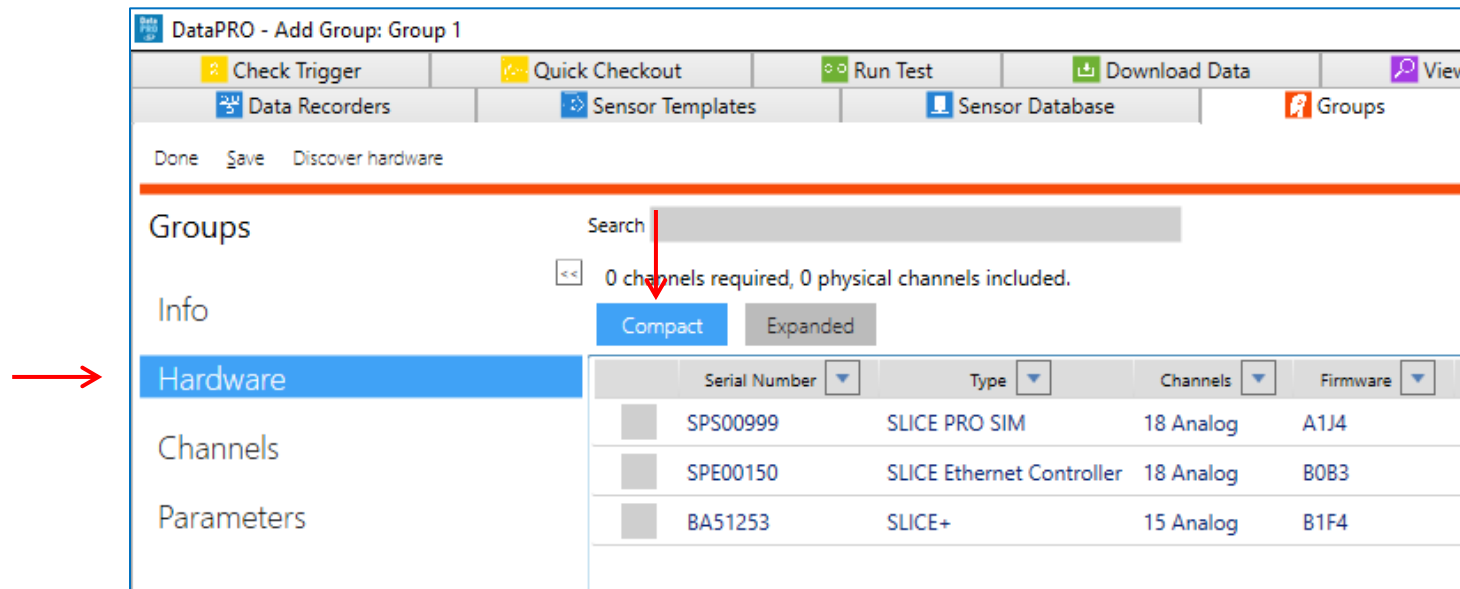


2. Select "Add" to create a group:



3. Enter a name for the group, and an optional description:



4. Add **Hardware** (optional), otherwise skip to step 5:

- a. Select Compact or Expanded to configure display of DAS table.
 - i. Expanded will show all selectable DAS units (SLICE PRO modules, SLICE MICRO/NANO Base units, SLICE6/SLICE6 AIR units, Distributors, TDAS PRO Racks and TDAS G5 units).
 - ii. Compact will display the Distributor or Base of configured DAS systems as well as modules that are not currently configured in a DAS system.
- b. If the DAS is known and has been added to the data recorder database, select the appropriate checkboxes.
- c. To add DAS to the list when the DAS is powered on and connected, select "Discover Hardware". See [Appendix C: Discover Hardware](#), page 245, for instructions on how to use Discover Hardware.

5. On the **Channels** navstep, assign channels to groups and (optionally) DAS hardware channels to the group:

The screenshot shows the DataPRO software interface for channel assignment. The 'Channels' section on the left has a sidebar with options like 'Analog', 'Digital In', 'Squib', 'Digital Out', 'All', and 'Parameters'. The 'Sensors Available' table has filter buttons for 'Unassigned', 'All', and 'Online'. The 'Hardware' table has columns for 'DAS', 'CH #', 'Type', and 'Channel'. A legend at the bottom indicates that highlighted cells in the Hardware table use ID for assignment.

- a. Use the 'Snap Arrows' to collapse the Navigation Pane.
- b. Channel List table displays all channels assigned to the Group.
- c. Sensors Available table displays all sensors in the Sensor Database; use toggle buttons to filter the table.
 - i. "Assigned" - displays only sensors that have been assigned to the group.
 - ii. "Unassigned" - displays only sensors that have not been assigned and are available.
 - iii. "All" - displays all sensors, regardless of assignment.
 - iv. "Online" - displays only sensors that were found during Discover Hardware.
- d. If hardware is included in the group, available DAS channels will be displayed in the Hardware table.
 - i. DAS channels highlighted green indicate channel assignment, either manually or by EID.

- e. Use search bar to search within table.
- f. Add channels to the group.
 - i. Select sensors from Sensors Available table and drag to Channel List table to add channels to group:

The screenshot displays the 'DataPRO - Add Group: Group 1' window. It features a top navigation bar with buttons like 'Check Trigger', 'Quick Checkout', 'Run Test', 'Download Data', 'View Data', 'Export Data', 'Manage Users', and 'System Settings'. Below this is a toolbar with 'Done', 'Save', and 'Discover hardware'. The main area is divided into two primary sections: 'Channel List' and 'Sensors Available'.

The 'Channel List' section shows a search bar and a table with 6 channels. The table has columns for 'ISO (13499) code', 'ISO channel name', 'Type', and 'Sensor (SN)'. The 'Sensors Available' section includes a search bar, filter buttons for 'Assigned', 'Unassigned', and 'All', and a table with columns for 'Serial Number', 'Name', 'IEPE', 'Capacity (EU)', 'Units', 'Out Of Date', and 'In Warning'. A red arrow points from the 'Sensors Available' table to the 'Channel List' table, indicating the drag-and-drop action.

The 'Hardware' section at the bottom shows a table with columns for 'DAS', 'CH #', 'Type', 'Channel', and 'Sensor'. The status bar at the bottom indicates 'DAS 000 Comm' and 'User Admin navigated to: Prepare_TestObjects_EditObject_Page_Sensors'.

- Sensors that have EIDs will be shaded green in the Hardware column of the Channel List table.
- Sensors that do not have EIDs will have standard grey/white shading and will need to be manually assigned to a hardware channel before collecting data. (This can be done in the group, the Test Setup, or in the Check Sensor ID navstep.)

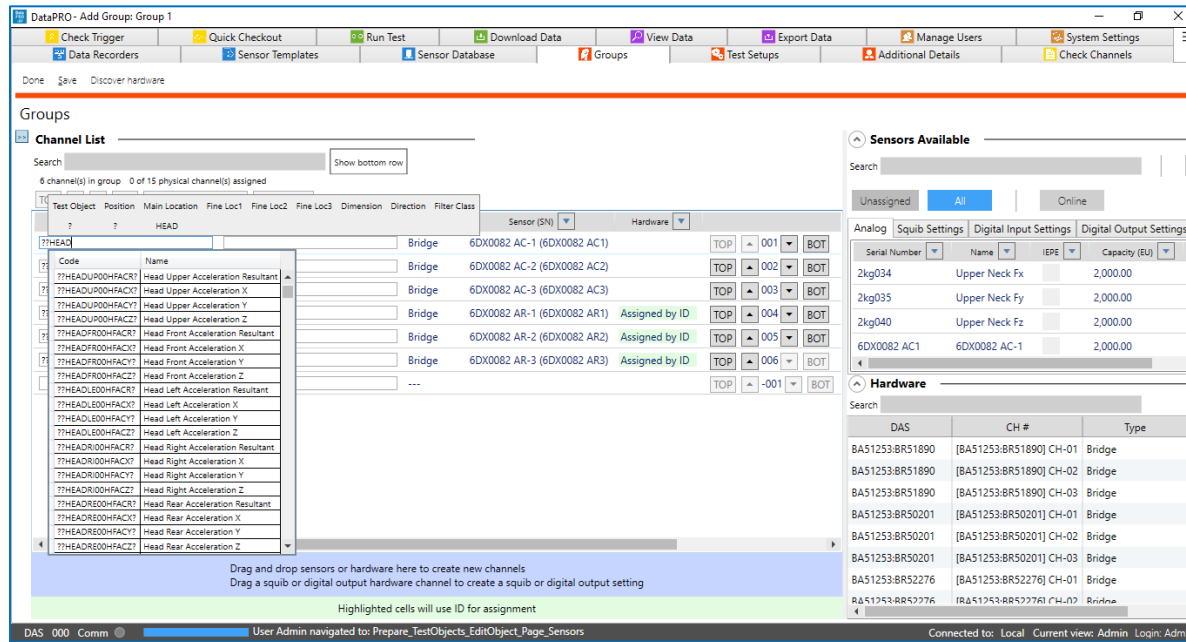
- ii. Select hardware channels from Hardware table and drag to Channel List to add channels to group:

The screenshot shows the DataPRO software interface for adding channels to a group. The main window is titled "DataPRO - Add Group: Group 1". The interface includes a top navigation bar with various icons and a main content area divided into several sections:

- Channel List:** A table with 6 rows and 5 columns: ISO (13459) code, ISO channel name, Type, Sensor (SN), and Hardware. The first three rows are highlighted in green. Below the table is a blue instruction box: "Drag and drop sensors or hardware here to create new channels. Drag a squib or digital output hardware channel to create a squib or digital output setting. Highlighted cells will use ID for assignment."
- Sensors Available:** A table with 4 columns: Serial Number, Name, IEPE, and Capacity (EU). It lists sensors like 2kg034, 2kg035, 2kg040, and 6DX0082 AC1.
- Hardware:** A table with 3 columns: DAS, CH #, and Type. It lists hardware channels like BA51253:BR51890 CH-01, BA51253:BR51890 CH-02, etc.

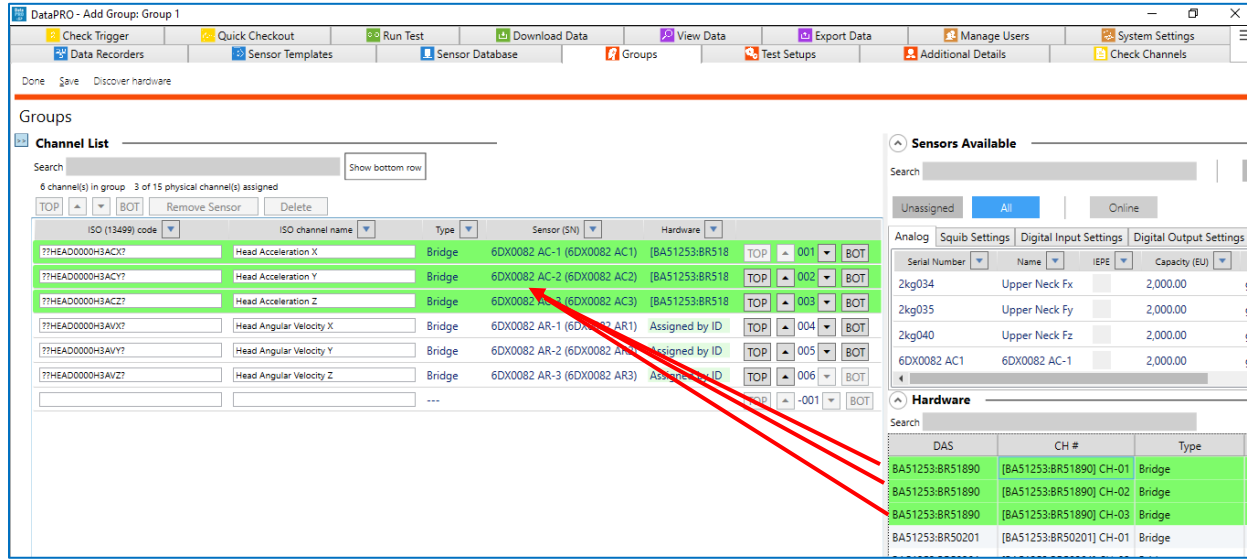
- Group Channels created by adding hardware channels will have default settings as defined in [System Settings](#), page 193.
- All channel types can be created by adding Hardware Channels to Channel List, however Digital Input and Analog channels require a sensor to be assigned prior to use.

- iii. Add ISO Code(s), User Code(s), or Channel Name(s) to add channels to the group:



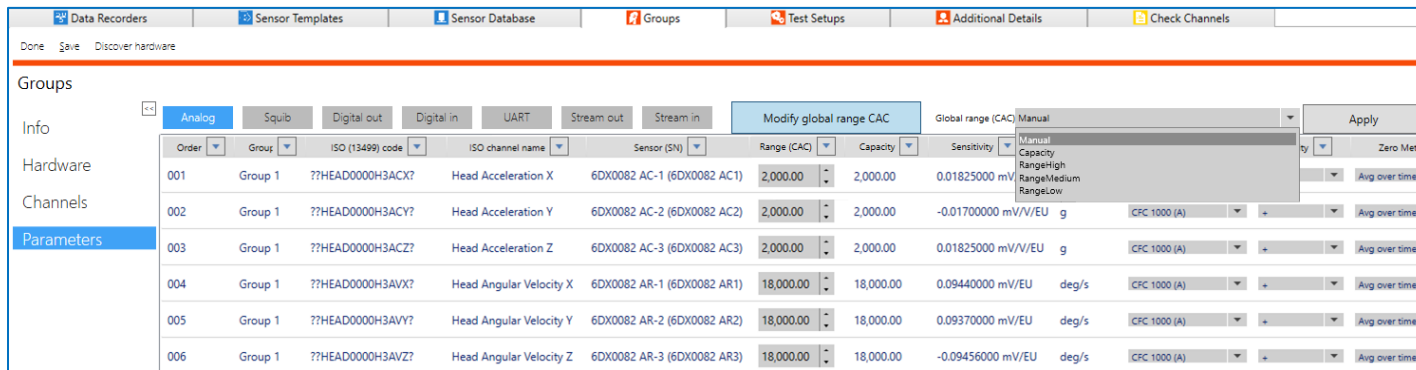
- Manually add ISO/User Code(s) or Chanel Name(s), or copy/paste multiple to create multiple Group Channels.
 - ISO Code Builder and Lookup Table are optional and can be disabled in **System Settings**, page 193.
- g. Select sensors from the Sensors Available table and drag to Channel List to assign to channels.
- i. A Group can be saved with channels added that do not have sensors assigned. These sensor-less channels must have a sensor assigned once added to a Test Setup.

h. Manually assign hardware channels to sensors without EIDs by dragging from the Hardware table to the Channel List table:



6. The **Parameters** navstep allows for modifications to certain channel parameters. These changes apply only to the Group. Select channel type to display parameters for that channel type. (See [Appendix A: Common Sensor Types and Bridge Connections](#), page 231, for more information about different sensor types and options during sensor entry.)

a. Analog Channels:



- i. Modify Range, Channel Filter Class, Polarity, Software Zero Method, Average Over Time Start/End and Initial Offset for individual Analog channels.
- ii. Select Modify Global Range CAC to modify the range for all Analog Channels based on High, Medium, Low Range and Capacity settings in Sensor Database.

b. Squib Channels:

Order	Group	Ch.	ISO (13499) code	ISO channel name	Sensor (SN)	Fire mode	Delay (ms)	Limit duration	Duration (ms)	Current (A)
009	Group 1		??AIRBFRLE01CU00	Standard Front Airbag Primary	Squib	Capacitor discharge	17.00	✓	10.0	
010	Group 1		??AIRBFRLE02CU00	Standard Front Airbag Secondary	Squib	Capacitor discharge	20.00	✓	10.0	

- i. Modify Fire Mode, Delay, Limit Duration, Duration and Current (if Constant Current is the selected Fire Mode).

c. Digital Output Channels:

Order	Group	Ch.	ISO (13499) code	ISO channel name	Sensor (SN)	Output mode	Delay (ms)	Limit duration	Duration (ms)
011	Group 1		????????????????	T=0 Strobe	Digital output	SV low to high transition	0.00	✓	10.0
012	Group 1		????????????????	Airbag Primary Strobe	Digital output	SV low to high transition	0.00	✓	10.0

- i. Modify Output mode, Delay, Limit duration and Duration.

d. Digital Input Channels:

Order	Group	Ch	ISO (13499) code	ISO channel name	Sensor (SN)	Input mode	Default value	Active value
007	Group 1		??ENGNFR01000000	Engine Front Initial Contact		Contact closure normally open	0	1
008	Group 1		??ENGNFR02000000	Engine Front Secondary Contact		Contact closure normally open	0	1

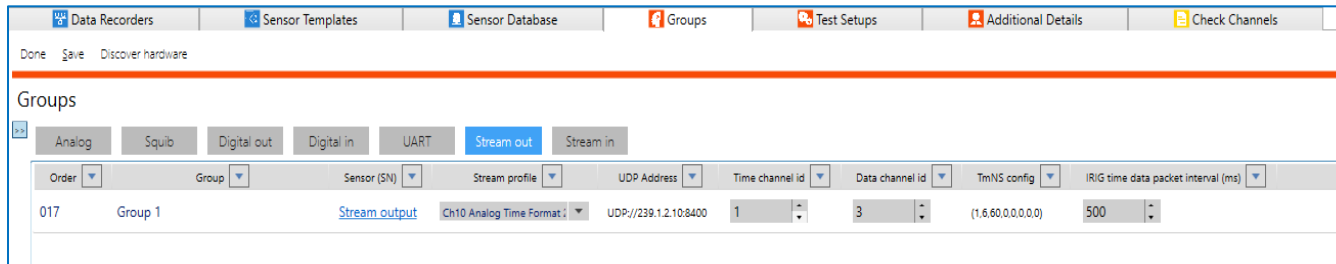
i. Modify Input Mode, Default Value and Active Value.

e. UART Channels:

Order	Group	Sensor (SN)	Baud rate	Data bits	Stop bits	Parity	Flow control	Data format
001	Group 1	Test sensor 1	57,600	8	One	Odd	RequestToSend	Binary

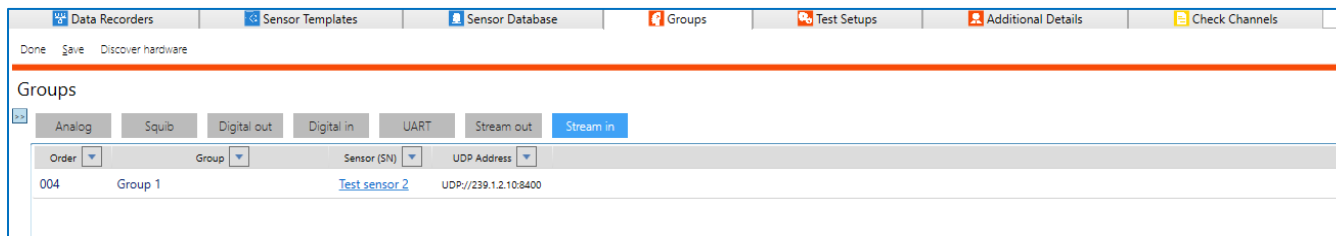
i. Modify Baud rate, Data bits, Stop bits, Parity, Flow control, and Data format.

f. Stream Output Channels:



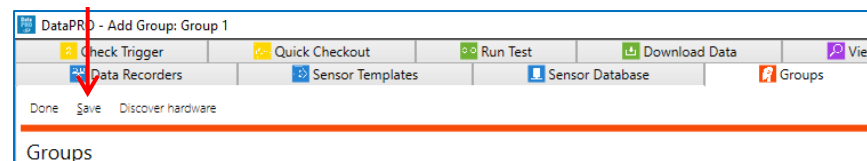
- i. Modify Stream profile, UDP Address, Time channel id, Data channel id, TmNS config, and IRIG time data packet interval.

g. Stream Input Channels:



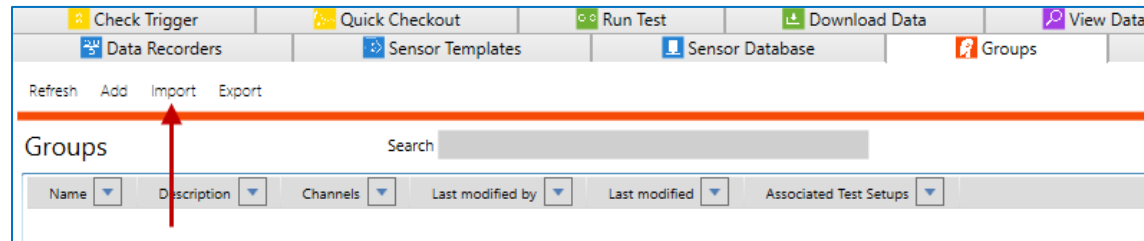
- i. Modify UDP Address.

7. To save the changes to the group, select “Save”:



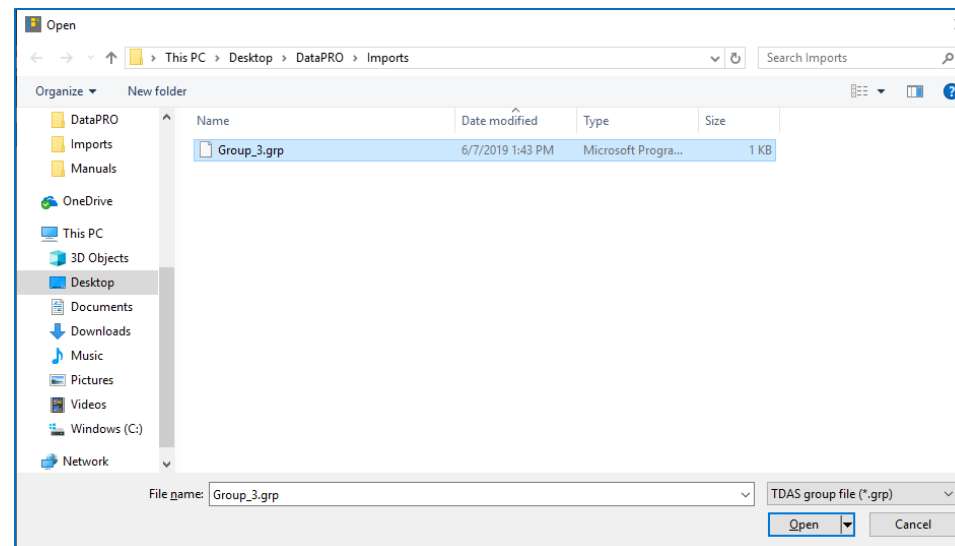
Import

8. To import a group, select “Import”:



NOTE: Groups can be imported as *.xml or TDAS *.grp files. When importing a group, all sensors must already exist in the Sensor Database.

9. Select “Browse” and navigate to and select the *.xml or *.grp file to import:



10. Make any necessary modifications in the preview:

Done **Save** ←

Import group(s)

Waiting

Import File C:\DTS\DTS.Suite\3.3.770\DataPRO\ChannelGroupFormat-3446.grp

Included	Overwrite	Group name	Tags	File
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	ChannelGroupFormat-3446		C:\DTS\DTS.Suite\3.3.770\DataPRO\ChannelGroupFormat-3446.grp

Channels that will be imported

Group name	Display name	Sensor serial number	Full scale	Invert	Warnings
ChannelGroupFormat-3446	450 Channel (Id,Name) LOAD CELL BARRIER		1000	<input type="checkbox"/>	

Channels that will not be imported

Group name	Display name	Sensor serial number	Full scale	Invert	Issue
ChannelGroupFormat-3446	FLOOR_G_X1	A183556	1000	<input type="checkbox"/>	Sensor not found
ChannelGroupFormat-3446	FLOOR_G_Y1	A160669	1000	<input type="checkbox"/>	Sensor not found
ChannelGroupFormat-3446	FLOOR_G_Z1	A177755	1000	<input checked="" type="checkbox"/>	Sensor not found
ChannelGroupFormat-3446	SIS_ROW1_L_G_Y1	A160780	400	<input type="checkbox"/>	Sensor not found
ChannelGroupFormat-3446	SIS_ROW1_L_G_X1	A187207	1000	<input type="checkbox"/>	Sensor not found
ChannelGroupFormat-3446	SS_L_MID_TOP_G_X1	A160888	1000	<input type="checkbox"/>	Sensor not found
ChannelGroupFormat-3446	FOOTREST_G_X1	A172534	1000	<input type="checkbox"/>	Sensor not found
ChannelGroupFormat-3446	HEEL_STOPPER_G_X1	A160855	1000	<input type="checkbox"/>	Sensor not found

11. Select “Save” to import the group.

Done **Save**

Import group(s)

Done

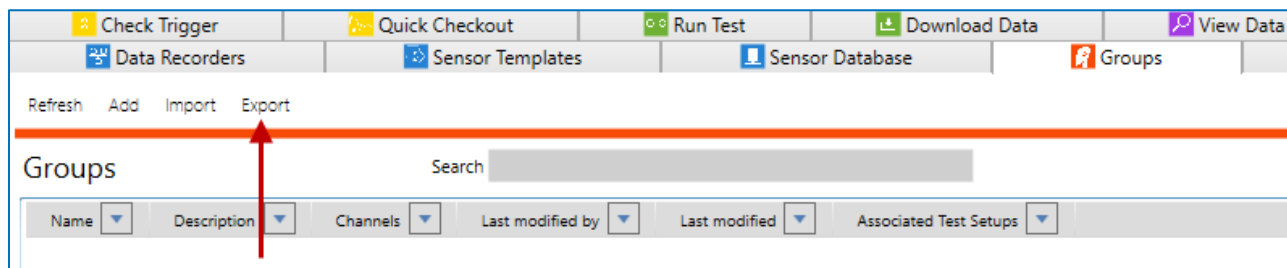
Import File C:\DTS\DTS.Suite\3.3.770\DataPRO\ChannelGroupFormat-3446.grp

Import first use date if present

Sensor templates	0
Sensors	1
Groups	1
DAS	2

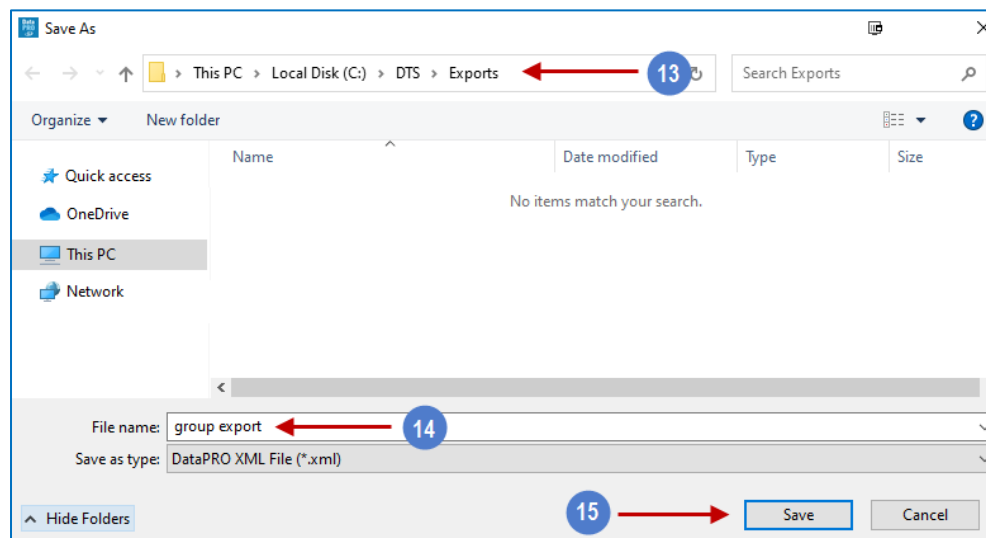
Export

12. To export a group, select “Export”:



NOTE: Groups are exported as *.xml files.

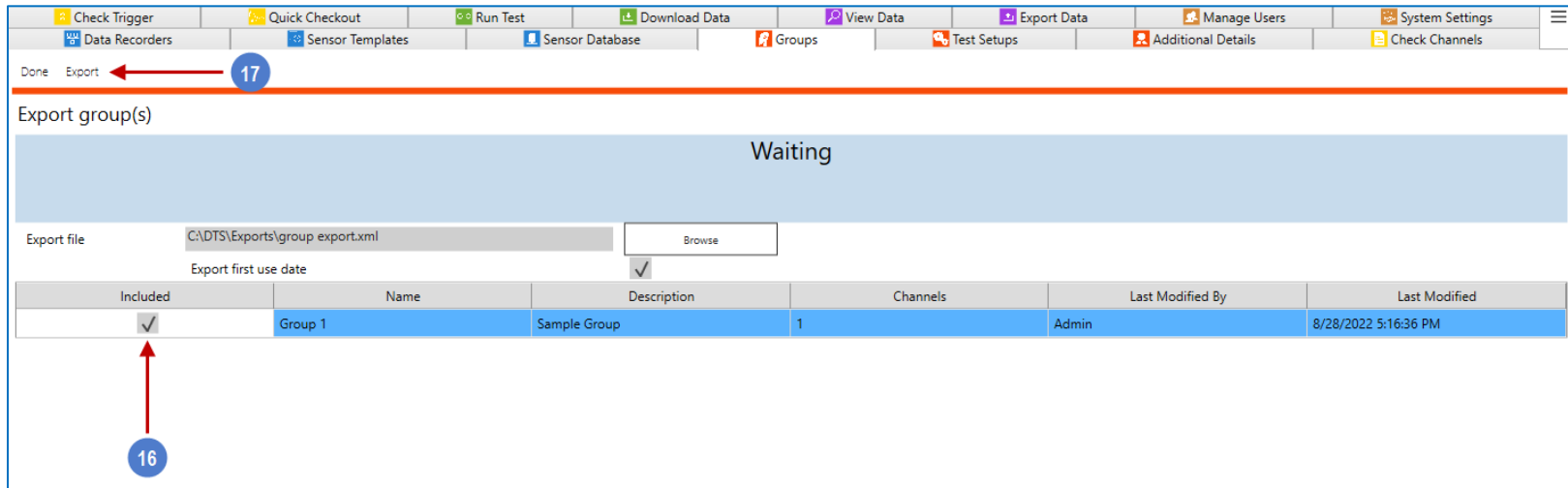
13. Browse for the location you wish to save the export file:



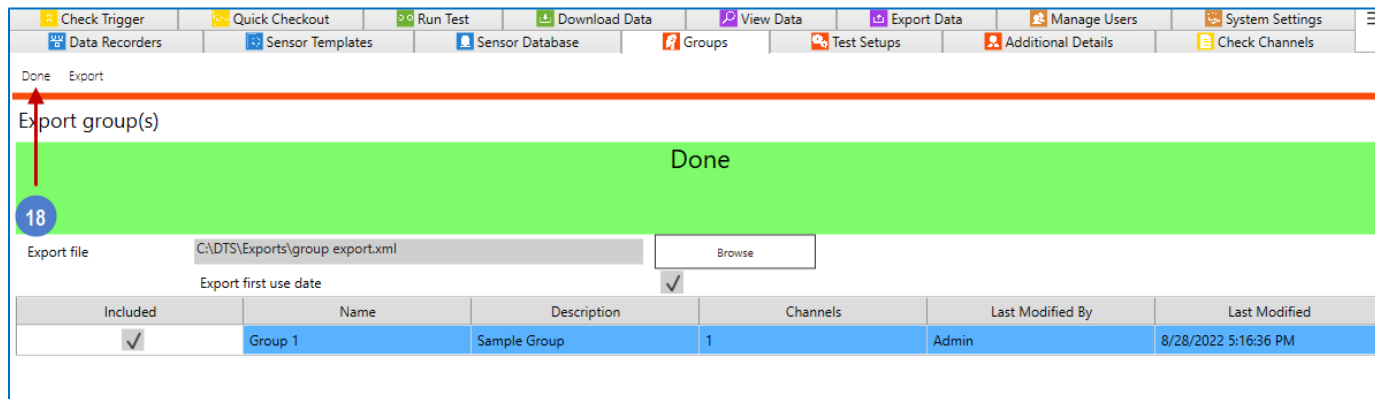
14. Type in the desired file name.

15. Select **Save**.

16. For each group you want to include in the export file, check the **Included** box next to that group.



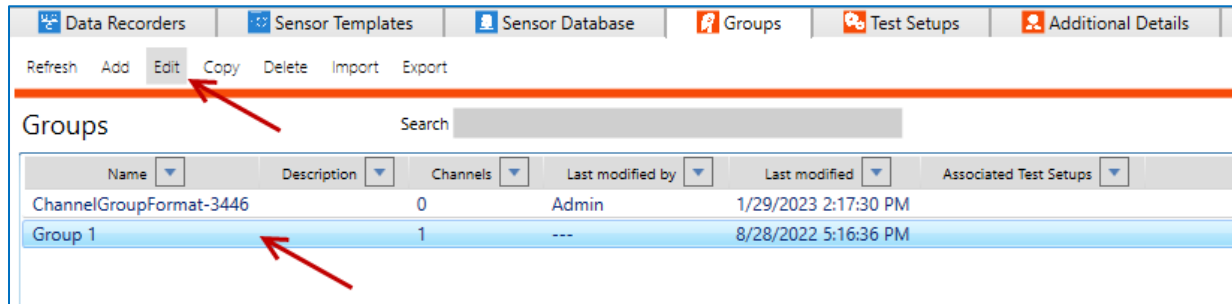
17. Select **Export**. When the export completes, the file will be saved to the location you selected.



18. Select **Done** to return to the Groups screen.

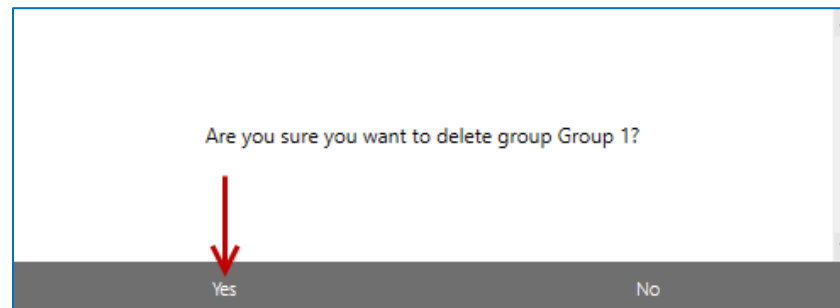
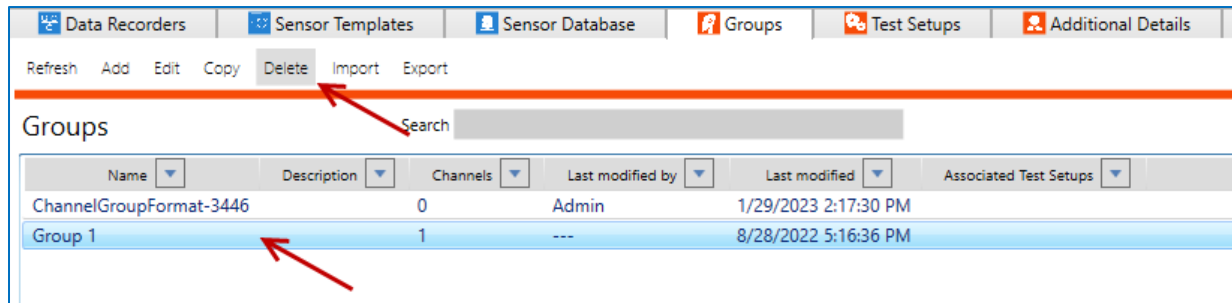
Edit

19. To edit a group, double-click on the group –or– select the group and select “Edit” (see steps 3-7):



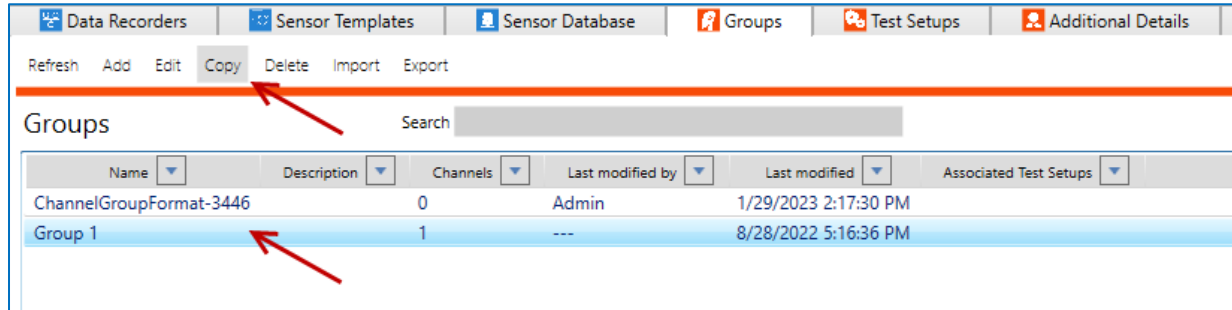
Delete

20. To delete a group from the database, select the group from the list, select “Delete” and then “Yes” to confirm:

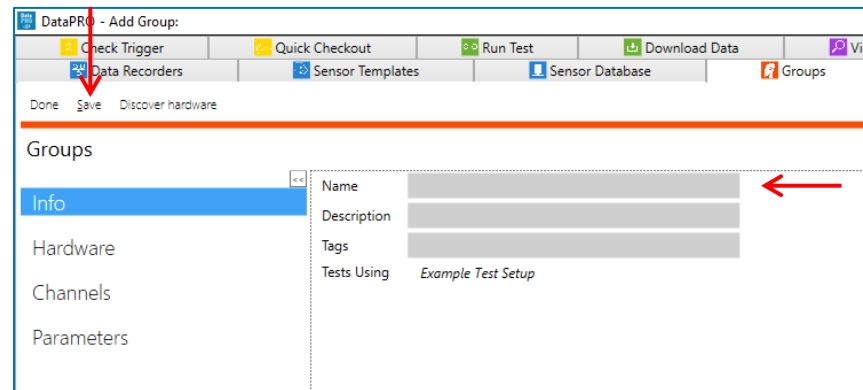


Copy

21. To copy a group, select the group to copy and select Copy:



a. Enter a new Name and optionally enter a Description and Tag(s):



b. Select Save to save the new group to the database.

22. To return to the Quick Start steps, return to page 30.

Test Setups

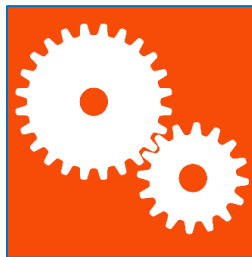
Test Setups are collections of measurement channels, hardware, and recording parameters used for data collection. Test Setups can contain existing predefined “Groups” or dynamic groups, or random collections of measurement locations and sensors. Each Test Setup can be used for multiple data collection events. (See [Groups](#), page 61 for instructions on creating a Group.)

The steps and images below are for a “Record in Place” test, where data is stored on the internal flash memory of the DAS. For information on configuring SLICE6 AIR DAS for a Streaming test, see [Appendix I: SLICE6 AIR Setup](#), page 306.

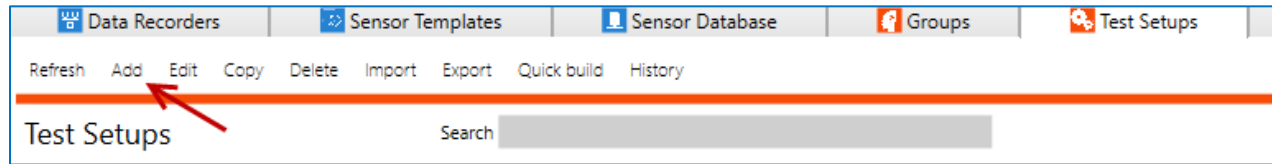
- To add a test setup, start at step 1.
- To edit a test setup, go to step 14.
- To copy a test setup, go to step 15.
- To delete a test setup, go to step 16.
- To import a test setup, go to step 17.
- To export a test setup, go to step 18.
- To perform a quick build, go to step 20.
- To change the current/default test setup, go to step 21.
- To update to the latest SQL Server Test Setup settings, go to step 22.
- To generate a Test Setup Layout Report, go to step 23.

Add

1. Select the “Test Setups” tab:

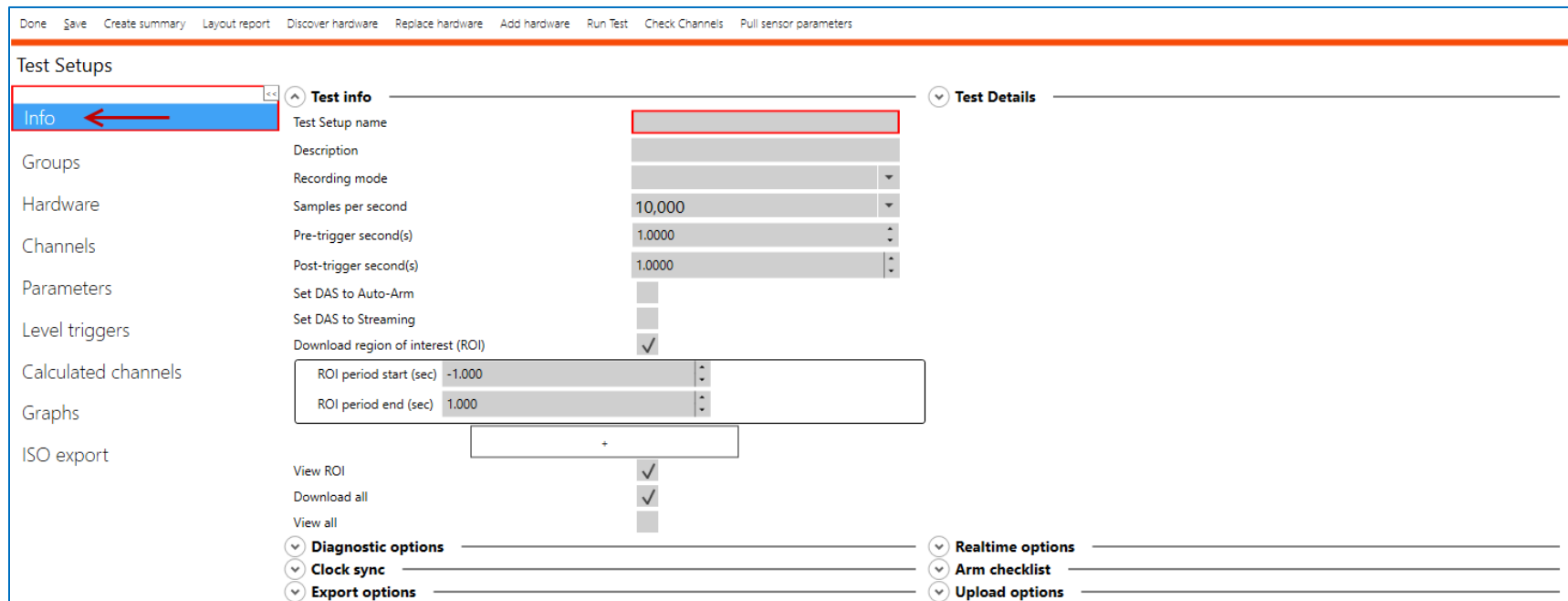


2. Select “Add” to create a new test setup:



Info

3. The **Info** navstep contains various test details and options. All fields in **red** must be completed:



a. The default settings for these values can be configured on the System Settings tab (see page 193).

NOTE: *Level triggers and Calculated channels are optional navsteps that may be enabled by checking the “Enable level-trigger UI” and/or “Allow calculated channels” checkboxes in System Settings → Test Settings.*

b. Use the arrows to expand/collapse each section menu:

The screenshot displays the 'Test Setups' configuration window. At the top, there are tabs for 'Data Recorders', 'Sensor Templates', 'Sensor Database', 'Groups', 'Test Setups', 'Additional Details', and 'Check Channels'. Below the tabs is a menu bar with options: 'Done', 'Save', 'Create summary', 'Layout report', 'Discover hardware', 'Replace hardware', 'Add hardware', 'Run Test', 'Check Channels', and 'Pull sensor parameters'. The main area is divided into two columns. The left column contains a sidebar with expandable sections: 'Info' (highlighted in blue), 'Groups', 'Hardware', 'Channels', 'Parameters', 'Level triggers', 'Calculated channels', 'Graphs', and 'ISO export'. The right column contains two main sections: 'Test info' and 'Test Details'. Both sections have a small upward-pointing arrow next to their headers, indicating they are currently collapsed. A red arrow points to the arrow next to the 'Test Details' header. Below these sections are several expandable options: 'Diagnostic options', 'Clock sync', 'Export options', 'Lab details', 'Customer details', 'Test engineer details', 'Realtime options', 'Arm checklist', and 'Upload options'. The 'Test info' section includes fields for 'Test Setup name', 'Description', 'Recording mode', 'Samples per second' (set to 10,000), 'Pre-trigger second(s)' (1.0000), 'Post-trigger second(s)' (1.0000), and checkboxes for 'Set DAS to Auto-Arm', 'Set DAS to Streaming', and 'Download region of interest (ROI)'. It also features a table for 'ROI period start (sec)' (-1.000) and 'ROI period end (sec)' (1.000), and buttons for 'View ROI', 'Download all', and 'View all'. The 'Test Details' section includes a 'Tags' field, 'Calibration Behavior' (with a dropdown for 'Use non-linear sensitivity, if available'), and several checkboxes for warnings and steps like 'Suppress missing sensors warning', 'Suppress quit test warning', 'Real-time: suppress view all channels warning', 'Viewer: suppress view all channels warning', 'Check Trigger step', 'Measure squib resistances step', 'Common status line', 'Automatic mode', 'Warn on missing or failed battery', 'Invert start record completion', and 'Invert trigger completion'. It also has a 'Lab preset' dropdown and sections for 'Lab details', 'Customer details', 'Test engineer details', 'Realtime options', 'Arm checklist', and 'Upload options'.

c. Test info:

Test info	
Test Setup name	Sample Test
Description	
Recording mode	Circular buffer
Samples per second	10,000
Pre-trigger second(s)	1.0000
Post-trigger second(s)	1.0000
Set DAS to Auto-Arm	<input type="checkbox"/>
Set DAS to Streaming	<input type="checkbox"/>
Download region of interest (ROI)	<input checked="" type="checkbox"/>
ROI period start (sec)	0.000
ROI period end (sec)	1.000
	+
View ROI	<input checked="" type="checkbox"/>
Download all	<input checked="" type="checkbox"/>
View all	<input type="checkbox"/>

- i. **Test Setup name:** Name to identify Test Setup. (Each data collection event will have an additional, unique Test ID.)
- ii. **Description:** Optional description of Test Setup.
- iii. **Recording mode:** Default recording mode options are Circular Buffer and Recorder Mode. Optional Hybrid Record and Continuous Recorder modes, and Active/Scheduled modes for TSR AIR devices, can be turned on in System Settings. (See [Data Collection Concepts](#) page 16, for more information on recording modes. See [System Settings](#) page 193, to enable Advanced Recording Options.)
- iv. **Number of events:** The number of events to record. Only applies to multiple event and continuous recorder modes.
- v. **Samples per second:** Choose from options in list to set one sample rate for all DAS in the Test Setup. If DAS in Test Setup have different sample rates, "Multiple" will be displayed. See [Hardware](#), page 90, for more information on selecting multiple sample rates.
- vi. **Pre-trigger second(s):** The amount of data (in seconds) to be collected pre-trigger. Only applies to Circular Buffer Mode.
- vii. **Post-trigger second(s):** The amount of data (in seconds) to be collected post-trigger.

- viii. **Event length in seconds:** The length of the event to record. Only available for TSR AIR in Scheduled recording mode.
- ix. **RTC Schedule start time (UTC):** The time at which recording should start, in UTC. Only available for TSR AIR in Scheduled recording mode.
- x. **Start recording with event line:** Low power option that begins recording when the event is received. Pre-event data is not available with this option. Only available for TSR AIR in Active recording mode.
- xi. **Wake up with motion:** The TSR AIR will wake up when sensing motion. Only available for TSR AIR in Active recording mode.
- xii. **Set DAS to Auto-Arm:** When enabled, devices will be set to auto-arm rather than armed during the Arm step of Run Test. When devices are auto-armed they can be powered off or have the ON signal removed. The device will then arm after booting up when the ON signal is reapplied or the power is turned back on.
- xiii. **Set DAS to Streaming:** If enabled, SLICE6 AIR DAS will be configured to stream data when armed (see [System Settings](#), page 193, to enable Streaming Mode.)
- xiv. **Download region of interest (ROI):** A period of time within the full dataset that contains the dynamic test data. Must be enabled in System Settings. If enabled, DataPRO will download a dataset containing only the time window indicated as the ROI.
 - o Use the plus sign (+) to add additional ROI segments to the test setup.
 - o Use the minus sign (-) to remove ROI segments from the test setup.

NOTE: If additional Regions of Interest are added, an "ROI x Channels" navstep will be present to allow the user to select which channels to include in each ROI.

- xv. **ROI period start (sec):** Defines the amount of time pre-trigger to begin the ROI.
 - o Define ROI period Start for each included segment.
- xvi. **ROI period end (sec):** Defines the amount of time post-trigger to end the ROI.
 - o Define ROI period end for each included segment.
- xvii. **View ROI:** If enabled, data collection process will include a navstep to view the ROI.
- xviii. **Download all:** If enabled, DataPRO will download a dataset containing the full dataset defined in Recording Options.
- xix. **View all:** If enabled, data collection process will include a navstep to view the full dataset.

d. Test Details:

Setting	Value/Status
Tags	[Text Input Field]
Calibration Behavior	Use both sensitivities, if available, as se [Dropdown]
Suppress missing sensors warning	<input checked="" type="checkbox"/>
Suppress quit test warning	<input type="checkbox"/>
Real-time: suppress view all channels warning	<input type="checkbox"/>
Viewer: suppress view all channels warning	<input type="checkbox"/>
Check Trigger step	<input checked="" type="checkbox"/>
Measure squib resistances step	<input checked="" type="checkbox"/>
Common status line	<input checked="" type="checkbox"/>
Automatic mode	<input type="checkbox"/>
Lab details	[Dropdown]
Customer details	[Dropdown]
Test engineer details	[Dropdown]
Warn on missing or failed battery	<input type="checkbox"/>

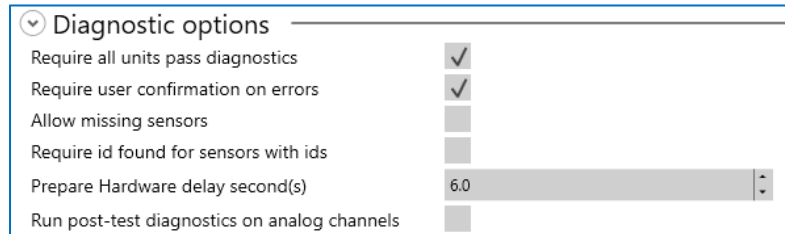
- i. **Tags:** Can be used to filter display/access to Test Setups. Must correspond to tags used in User Profiles.
- ii. **Calibration Behavior:** Select how to collect data from non-linear sensors that also have linear sensitivities.
 - o Always use linear sensitivity: Only collect data using the linear sensitivity, regardless of non-linear sensitivity entry.
 - o Use non-linear sensitivity, if available: Collect data with the non-linear sensitivity.
 - o Use both sensitivities, if available, as separate channels: Collect two data channels for each sensor; one for the non-linear sensitivity and one for the linear sensitivity.
- iii. **Suppress missing sensors warning:** If enabled, DataPRO will allow user to progress without warning if not all sensors are found/channels resolved at Check Sensor ID step.
- iv. **Suppress quit test warning:** If enabled, DataPRO will not warn if user selects “Done” before completing all steps of a data collection event.
- v. **Real-time: suppress view all channels warning:** If enabled, DataPRO will not warn if user does not view Realtime output from all channels in a test setup.
- vi. **Viewer: suppress view all channels warning:** If enabled, DataPRO will not warn if user does not review data collected from all channels in a test.
- vii. **Check Trigger step:** Select to include a trigger check during the data collection event.

- viii. **Measure squib resistances step:** Select to include a squib resistance measurement step for TOM channels during the data collection event.
- ix. **Common status line:** Select if all DAS shares same communication path to PC. A typical non-common status line would be a vehicle test that includes a mobile barrier.

NOTE: Tests that have multiple sample rates cannot have a common status line.

- x. **Automatic mode:** Select to automatically progress through data collection sequence. If selected, define an optional delay before DataPRO progresses to the next step.
- xi. **Lab details:** Select Lab details record from list (see [Lab Details](#), page 115). Lab details can be modified if a record is selected, or manually entered if no records exist.
- xii. **Customer details:** Select Customer details record from list (see [Customer Details](#), page 116). Customer details can be modified if a record is selected, or manually entered if no records exist.
- xiii. **Test engineer details:** Select Test engineer details record (see [Engineer Details](#), page 117). Test engineer details can be modified if a record is selected, or manually entered if no records exist.
- xiv. **Warn on missing or failed battery:** If selected, DataPRO will alert user if SLICE NANO DAS battery is missing or if measured voltage is outside thresholds set in System Settings (see [Power Settings](#), page 220).

e. Diagnostic options:



Option	Status
Require all units pass diagnostics	<input checked="" type="checkbox"/>
Require user confirmation on errors	<input checked="" type="checkbox"/>
Allow missing sensors	<input type="checkbox"/>
Require id found for sensors with ids	<input type="checkbox"/>
Prepare Hardware delay second(s)	6.0
Run post-test diagnostics on analog channels	<input type="checkbox"/>

- i. **Require all units pass diagnostics:** If enabled, DataPRO will not advance beyond Diagnostics navstep if any channels fail or if measured DAS voltage is outside thresholds set in System Settings.
- ii. **Require user confirmation on errors:** If enabled, DataPRO will require user confirmation to progress if any errors are detected.
- iii. **Allow missing sensors:** If enabled, DataPRO will allow user to progress if sensors in Test Setup still require hardware channel assignments.

- iv. **Require id found for sensors:** If enabled, DataPRO will require the EID to be detected for any sensor that has an EID listed in the sensor database.
 - v. **Prepare hardware delay second(s):** Optional delay at the start of Diagnostics for sensor/hardware warm up.
 - vi. **Run post-test diagnostics on analog channels:** If enabled, Post-Test Diagnostics will be included as a step in the data collection process. For tests that include TDAS G5 DAS, pre-test diagnostics will be displayed.
- f. Realtime options:

Realtime options

Show realtime

Number of graphs 6

- i. **Show realtime:** If enabled, Realtime navstep will be included in data collection process.
 - ii. **Number of graphs:** Select to display 1, 3 or 6 separate charts at Realtime landing. This can be changed from Realtime navstep.
- g. **Clock sync:** Choose desired clock sync options for devices which support it, such as SLICE6, SLICE6 AIR and TSR AIR. This section is only visible if “Enable input and output clock source options” is enabled in System Settings → Test Settings. More information on the various clock sync options can be obtained from DTS support.

Clock sync

Clock Master Input Clock Type None

Clock Master Output Clock Type None

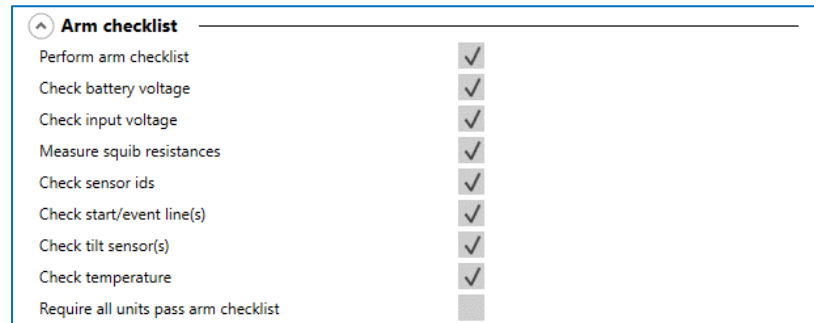
Manage master clocks outside DataPRO?

Clock Slave Input Clock Type None

Manage slave clocks outside DataPRO?

- i. **Clock Master Input Clock Type:** Choose from None, IRIG, GPS, 1PPS, IRIG + 1PPS, or GPS + 1PPS.
- ii. **Clock Master Output Clock Type:** Choose from None or PTP. If PTP is selected, select PT Type/Mode (E2E/P2P).
- iii. **Manage master clocks outside DataPRO?:** Check this option if master clock settings will be managed outside of DataPRO. This can be useful if you wish DataPRO to manage only the clock slave configuration.
- iv. **Clock Slave Input Clock Type:** Choose from None or PTP. If PTP is selected, select PT Type/Mode (E2E/P2P).

- v. **Manage slave clocks outside DataPRO?**: Check this option if slave clock settings will be managed outside of DataPRO. This can be useful if you wish DataPRO to manage only the clock master configuration.
- h. **Arm checklist**: The Arm checklist is automatically added and required to pass for tests that include a TOM. This behavior can be changed by modifying the configuration file. (See the *DataPRO Settings Manual*² for information regarding making changes to the config file.)



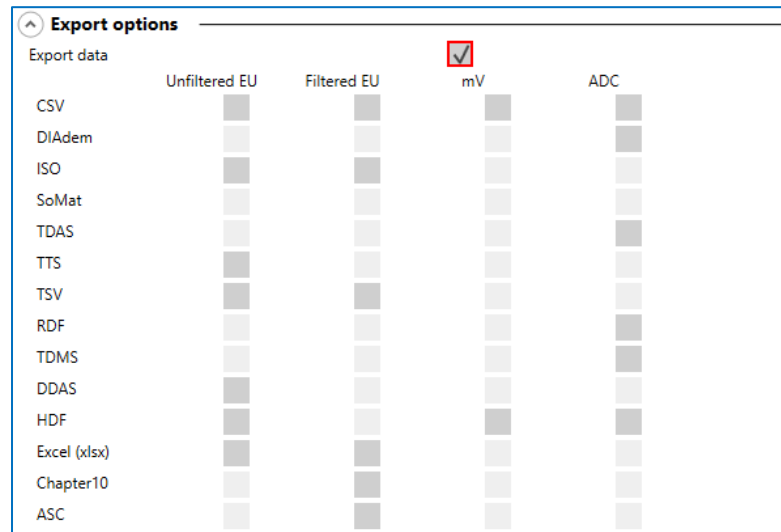
- i. **Perform arm checklist**: If enabled, DataPRO will perform Arm checklist during data collection. Arm checklist test options will only be displayed if Arm checklist is enabled.
- ii. **Check battery voltage**: If enabled, Arm checklist will include battery voltage measurement. Arm checklist will fail if measured battery voltage is outside thresholds set in [System Settings](#) (see page 193).
- iii. **Check input voltage**: If enabled, Arm checklist will include input voltage measurement. Arm checklist will fail if measured input voltage is outside thresholds set in [System Settings](#) (see page 193).
- iv. **Measure squib resistances**: If enabled, Arm checklist will include squib resistance check on TOM channels. Arm checklist will fail if measured squib resistance is outside threshold set in [Sensor Database](#) (see page 49).
- v. **Check sensor ids**: If enabled, Arm checklist will include sensor EID check. Arm checklist will fail if expected EIDs are not found.
- vi. **Check start/event line(s)**: If enabled, Arm checklist will include check of start/event status lines. Arm checklist will fail if DataPRO detects a short on either.
- vii. **Check tilt sensor(s)**: If enabled, Arm checklist will include check of SLICE6 tilt sensor(s). Measured values will only be displayed.

² The DataPRO Settings Manual is located in the Manuals subfolder.

- viii. **Check temperature:** If enabled, Arm checklist will include check of SLICE6 temperature. Measured values will only be displayed.
- ix. **Require all units pass arm checklist:** If enabled, DataPRO will not progress to Arm System if any faults are detected in any tests included in Arm checklist.

NOTE: *Squib resistance failure will prevent progressing to Arm navstep regardless of “Require all units to pass arm checklist” setting.*

- i. Export options:



- i. **Export data:** If enabled, DataPRO will export a data set in each of the selected format(s). Raw data is always downloaded.
- ii. **CSV:** All test data is contained in one Comma Separated Variable (CSV) file.
- iii. **DIAdem:** Data format comprised of one .dat header file for the test and one binary file for each channel in the test.
- iv. **ISO:** Data format that follows the ISO/TS 13499 requirements.
- v. **SoMat:** Data format compatible with SoMat DAQ.
- vi. **TDAS:** Data format compatible with TDAS Control.
- vii. **TTS:** Customer-specific data format.
- viii. **TSV:** All test data is contained in one Tab Separated Value file.

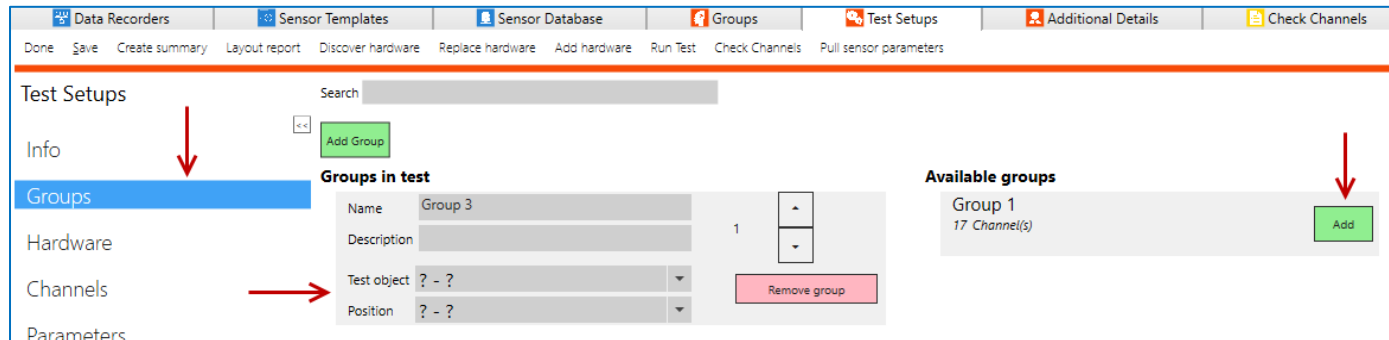
- ix. **RDF**: Customer-specific data format.
 - x. **TDMS**: Data format that follows the TDM Streaming file format.
 - xi. **DDAS**: Customer-specific data format.
 - xii. **HDF**: Hierarchical Data Format; designed to store and organize large amounts of data.
 - xiii. **Excel (.xlsx)**: Data format compatible with Microsoft Excel.
 - xiv. **Chapter10**: IRIG 106 Chapter 10 Digital On-Board Recorder Standard for flight data recorders.
 - xv. **ASC**: Customer-specific data format.
- j. Upload options:

Upload options	
Upload data	<input checked="" type="checkbox"/>
Upload folder	<input type="text"/> <input type="button" value="Browse"/>
Upload Export file(s) only	<input type="checkbox"/>

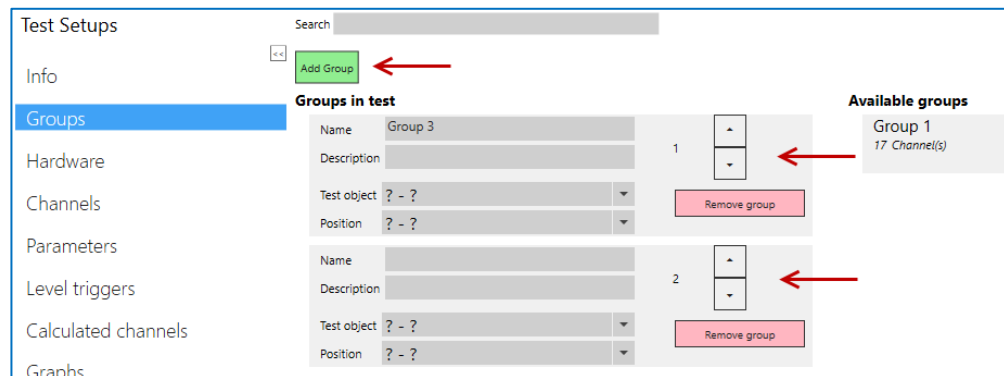
- i. **Upload data**: If enabled, collected data will be uploaded to a specified location during the data collection process. Data will still be downloaded to the default location (*C:\DTS\DTS.Suite\Data*) or other location defined in the configuration file.
- ii. **Upload folder**: File location for collected data to be uploaded to during data collection process.
- iii. **Upload Export file(s) only**: If enabled, will upload only data export files.

Groups

4. Select the **Groups** navstep to add groups to the Test Setup:



- a. Add predefined groups to the “Groups in test” by selecting “Add” for the appropriate available group.
 - i. If using ISO Codes, enter/update the Test Object and Position for each group that has been added. Test Object and Position can be modified per channel in the Channels navstep; “Mixed” will be displayed if a single group contains multiple values. Note: If the option to “Use dropdown lists for test object and position” is enabled in System Settings → Test Settings, these fields will be a dropdown list instead of text entry.
- b. Remove a group from a test by selecting “Remove group” for the appropriate group. Predefined groups will be returned to the list of Available Groups.
- c. A temporary, dynamic group can be added by selecting “Add Group” or by adding additional channels in the Channels navstep and assigning a group name to these added channels:



- i. Use the arrows to change the order of groups in the test setup.

Hardware

5. Select the **Hardware** navstep to add DAS to the test setup:

The screenshot shows the 'Test Setups' page in the DataPRO application. The left sidebar has a navigation menu with 'Hardware' selected. The main area shows a table of hardware units. The table has columns for Serial Number, Type, First Use Date, Channels, Firmware, Max Sample Rate, Test Sample Rate, Cal Date, and Cal D. The table is currently in 'Expanded' view, showing individual units. A red arrow points to the 'Hardware' navstep, and another red arrow points to the 'Expanded' view button.

Serial Number	Type	First Use Date	Channels	Firmware	Max Sample Rate	Test Sample Rate	Cal Date	Cal D
SPT00999	SLICE PRO TOM	N/A	4 Squib,8 Digital out channel(s)	D0D7	600,000		4/7/2016	4/7/2017
SPT00107	SLICE PRO TOM	N/A	4 Squib,8 Digital out channel(s)	DOM1	1,000,000		5/15/2020	5/15/2021
<input checked="" type="checkbox"/>	SPS00331	SLICE PRO SIM	18 Analog channel(s)	A1R4	600,000	10,000	5/15/2020	8/20/2021
<input type="checkbox"/>	SPS00123	SLICE PRO SIM	18 Analog channel(s)	A1J4	600,000		4/7/2016	4/7/2017
<input checked="" type="checkbox"/>	SPE00150	SLICE Ethernet Controller	18 Analog channel(s)	B0B3	---		5/15/2020	8/20/2021
<input type="checkbox"/>	SPD00999	SLICE PRO DIM	18 Digital input channel(s)	A1J4	600,000		4/7/2016	4/7/2017
<input type="checkbox"/>	SDB0090	SLICE Distributor	---	00A6	---		4/7/2016	4/7/2017

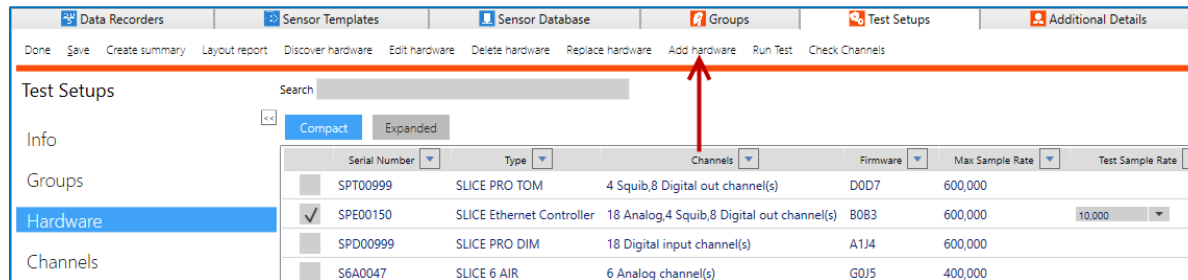
- Any hardware that is assigned to a predefined group that is included in the 'Groups in test' will be automatically added to the Test Setup.
- Additional DAS can be added by selecting the appropriate checkbox in the Included column or by selecting "Discover hardware" to auto-detect DAS (see [Appendix C: Discover Hardware](#), page 245, for more information), or "Add hardware" (see step **d**) to add DAS manually or add generic DAS.
- Select "Expanded" to display all selectable DAS units or "Compact" to display DAS systems and individual units that are not configured with a DAS system.

The screenshot shows the 'Test Setups' page in the DataPRO application, specifically the 'Expanded' view. The table displays hardware units with checkboxes in the 'Included' column. The table has columns for Serial Number, Type, Channels, Firmware, Max Sample Rate, Test Sample Rate, Cal Date, and Cal Due Date.

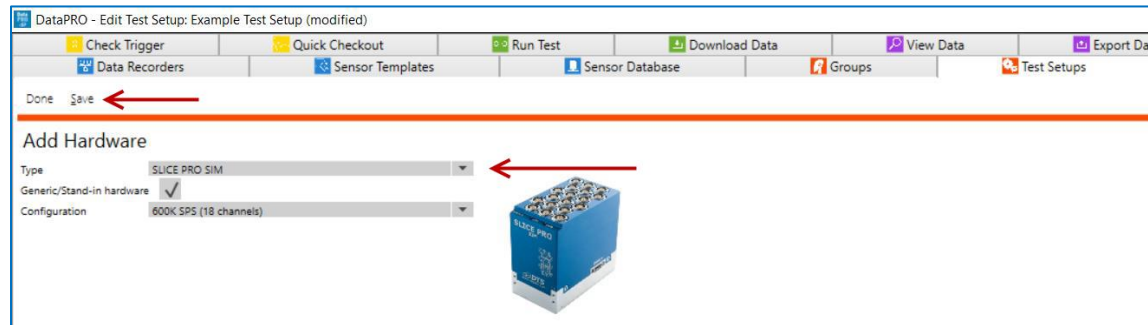
Serial Number	Type	Channels	Firmware	Max Sample Rate	Test Sample Rate	Cal Date	Cal Due Date	
<input type="checkbox"/>	BA51253	SLICE+	15 Analog	B1F4	200,000	4/29/2019	4/28/2020	
<input type="checkbox"/>	SPD00999	SLICE PRO DIM	18 Digital input	A1J4	600,000	4/7/2016	4/7/2017	
<input checked="" type="checkbox"/>	SPE00150	SLICE Ethernet Controller	---	B0B3	---	5/15/2019	5/14/2020	
<input checked="" type="checkbox"/>	SPS00331	SLICE PRO SIM	18 Analog	A1Q1	600,000	10,000	5/15/2019	5/14/2020
<input type="checkbox"/>	SPS00999	SLICE PRO SIM	18 Analog	A1J4	600,000	4/7/2016	4/7/2017	
<input checked="" type="checkbox"/>	SPT00107	SLICE PRO TOM	4 Squib,8 Digital out	D0L0	1,000,000	10,000	5/15/2019	5/14/2020
<input type="checkbox"/>	SPT00999	SLICE PRO TOM	4 Squib,8 Digital out	D0D7	600,000	4/7/2016	4/7/2017	

- Selectable DAS units are SLICE PRO modules (ECM, SIM, DIM, TOM), SLICE MICRO/NANO/IP68 Base/Base+, SLICE/SLICE6/SLICE6 AIR Distributor, TDAS PRO Rack, TDAS G5 or TDAS G5/VDS.
- A DAS system is a SLICE MICRO/NANO/IP68 stack, SLICE PRO or TDAS Rack, integrated SLICE/SLICE6 system with a Distributor.

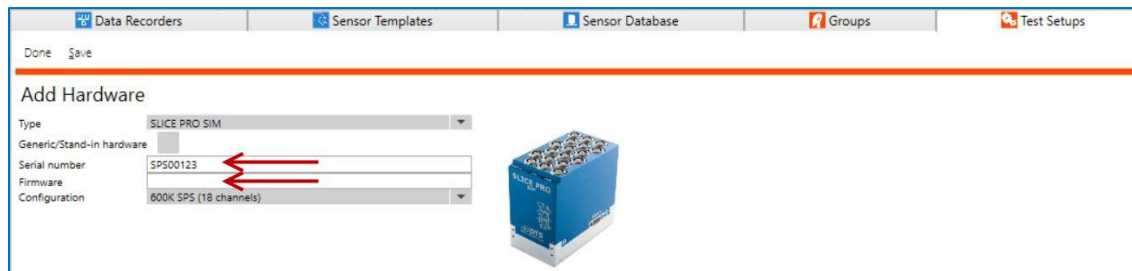
- d. The “Add hardware” option allows new DAS/DAS not present in the database to be entered manually from Test Setups. You can also create generic DAS for temporary use to allow for completing channel assignments. The generic DAS (or any other DAS) can be replaced later using the “Replace hardware” option.



- i. For generic DAS, select the DAS type and configuration (if applicable), then select Save.



- ii. For new DAS, uncheck the Generic/Stand-in hardware box. Then enter the serial number and firmware, if known.



- iii. Firmware will auto-update when connecting to DAS.
- iv. Select Save; the DAS will now be included in the DAS list.

The screenshot shows the 'Test Setup' window with a table of hardware configurations. The table has columns for Serial Number, Type, Channels, Firmware, Max Sample Rate, Test Sample Rate, Cal Date, First Use Date, and Cal Due Date. The 'Hardware' and 'Channels' sections in the left sidebar are highlighted with red arrows.

Serial Number	Type	Channels	Firmware	Max Sample Rate	Test Sample Rate	Cal Date	First Use Date	Cal Due Date
5M0500	G5	32 Analog channel(s)	01U5	100,000		4/7/2016	N/A	4/7/2017
5M0501	G5 (VDS)	32 Analog, 16 Digital input channel(s)	01U5	100,000		4/7/2016	N/A	4/7/2017
<input checked="" type="checkbox"/>	SLICE PRO SIM	18 Analog channel(s)	A1J4	600,000	10,000	4/7/2016	---	8/19/2021
BA50896	SLICE+	9 Analog channel(s)	B1H6	300,000		4/26/2020	N/A	4/26/2021
BA51036	SLICE+	9 Analog channel(s)	B1H6	300,000		4/29/2020	N/A	4/29/2021
BA51253	SLICE+	9 Analog channel(s)	B1H6	300,000		4/29/2020	N/A	4/29/2021
S6A0041	SLICE 6 AIR	6 Analog channel(s)	GOJ5	400,000		10/10/2019	N/A	10/9/2020
S6A0047	SLICE 6 AIR	6 Analog channel(s)	GOJ5	400,000		10/10/2019	N/A	10/9/2020
SDB0090	SLICE Distributor	channel(s)	00A6	---		4/7/2016	N/A	4/7/2017
SPD00999	SLICE PRO DIM	18 Digital input channel(s)	A1J4	600,000		4/7/2016	N/A	4/7/2017
<input checked="" type="checkbox"/>	SPE00150	SLICE Ethernet Controller	B0B3	600,000	10,000	5/15/2020	N/A	5/15/2021
<input checked="" type="checkbox"/>	SP500123	SLICE PRO SIM	A1J4	600,000	10,000	4/7/2016	N/A	4/7/2017
SPT00107	SLICE PRO TOM	4 Squib, 8 Digital out channel(s)	DOM1	1,000,000		5/15/2020	N/A	5/15/2021
SPT00999	SLICE PRO TOM	4 Squib, 8 Digital out channel(s)	D0D7	600,000		4/7/2016	N/A	4/7/2017

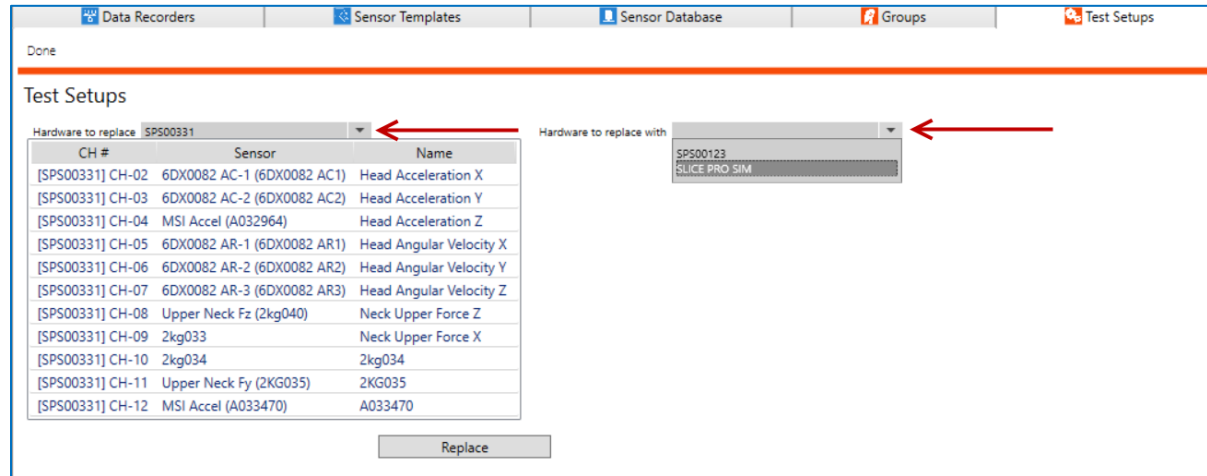
NOTE: Generic DAS will only be available in the Test Setup it was created for.

- e. The “Replace hardware” option allows for the exchange of any hardware, such as a generic DAS, with a different one.

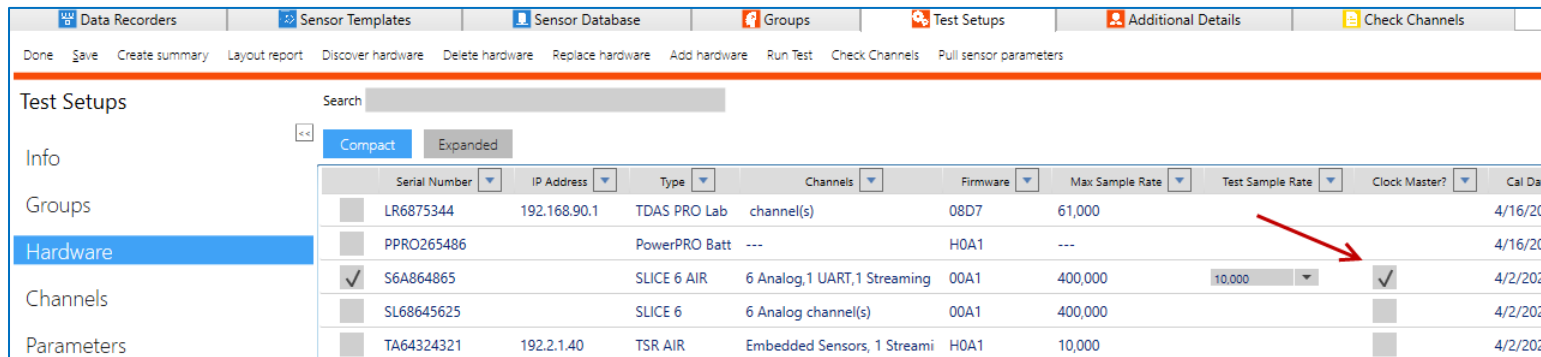
The screenshot shows the 'Test Setup' window with the 'Channel List' and 'Sensors Available' sections. A red arrow points to the 'Replace hardware' button in the top menu.

Group	ISO (13489) code	ISO channel name
Group 1	11HEA0000H3ACXA	Head Acceleration X
Group 1	11HEA0000H3ACY?	Head Acceleration Y

- i. Select the hardware to be replaced in the list on the left, and the hardware to replace it with from the list on the right. Then, select Replace.



- ii. All channel assignments will be carried to the new hardware.
- f. Hardware which supports it (SLICE6, SLICE6 AIR, and TSR AIR) will have a Clock Master checkbox that allows the device to be set as a clock master for time synchronization.



Channels

6. The **Channels** navstep lists the sensors and channels included in the Test Setup:

The screenshot shows the 'Channels' navstep in the 'Test Setup' section. The interface includes a sidebar with navigation options like 'Info', 'Groups', 'Hardware', and 'Channels'. The main area displays a 'Channel List' table with columns for Group, ISO (13499) code, and ISO channel name. A red arrow points to the 'Channels' option in the sidebar. To the right, there are sections for 'Sensors Available' and 'Hardware'.

Group	ISO (13499) code	ISO channel name
Test channels	10BUMPFRG000ACXB	Bumper Front Center AX
Test channels	10BUMPFRRT00ACXB	Bumper Front Right AX
Test channels	10BUMPFRLT00ACXB	Bumper Front Left AX
Group_3	11NECKUP00H3FOX?	Neck Upper Force X
Group_3	11NECKUP00H3FOY?	Neck Upper Force Y
Group_3	11NECKUP00H3FOZ?	Neck Upper Force Z
Group_3	11HEAD0000H3ACX?	Head Accel AX
Group_3	11HEAD0000H3ACY?	Head Accel AY
Group_3	11HEAD0000H3ACZ?	Head Accel AZ
Group_3	11HEAD0000H3AVX?	Head Angular Rate WX
Group_3	11HEAD0000H3AVY?	Head Angular Rate WY
Group_3	11HEAD0000H3AVZ?	Head Angular Rate WZ

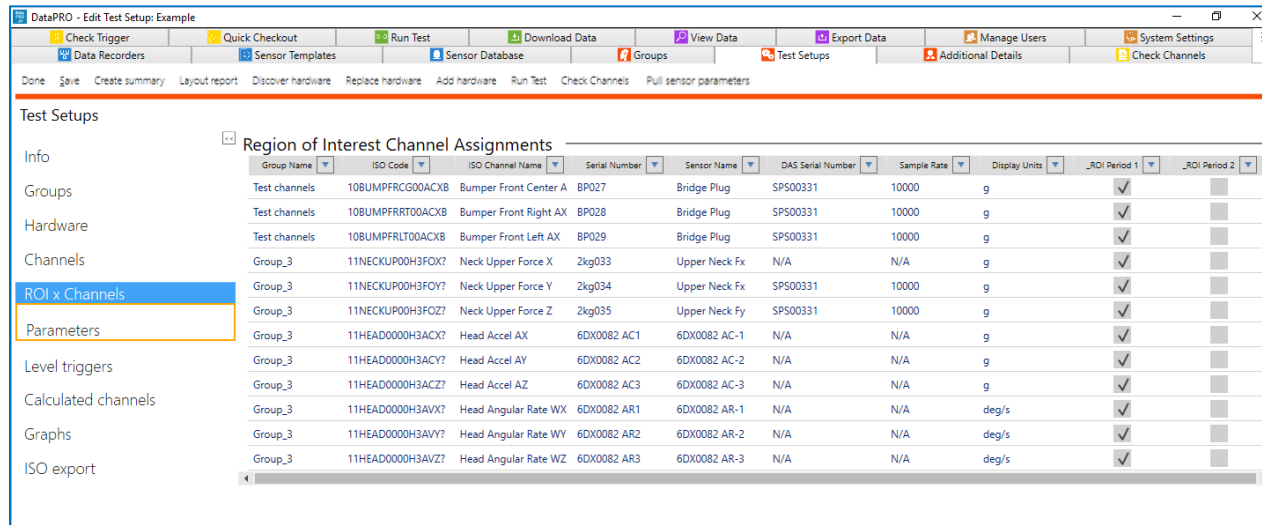
Serial Number	Name	IEPE	Capacity (EU)	Units	Out Of Date
2kg033	Upper Neck Fx		2,000.00	g	
2kg034	Upper Neck Fx		2,000.00	g	
2kg035	Upper Neck Fy		2,000.00	g	
2kg040	Upper Neck Fz		2,000.00	g	

DAS	CH #	Type	Channel
SPE00150:SPS00331	[SPE00150:SPS00331] CH-15	Bridge/IEPE	---
SPE00150:SPS00331	[SPE00150:SPS00331] CH-16	Bridge/IEPE	Neck Upper Force X
SPE00150:SPS00331	[SPE00150:SPS00331] CH-17	Bridge/IEPE	Neck Upper Force Y
SPE00150:SPS00331	[SPE00150:SPS00331] CH-18	Bridge/IEPE	Neck Upper Force Z
SPE00150:SPT00107	[SPE00150:SPT00107] SQ-01	Squib	---
SPE00150:SPT00107	[SPE00150:SPT00107] SQ-02	Squib	---
SPE00150:SPT00107	[SPE00150:SPT00107] SQ-03	Squib	---

- a. The controls of the Channels navstep in Test Setup are the same as the controls for the Channels navstep in Group. (See [Groups](#), page 61, for more information.)

NOTE: DataPRO allows the same sensor to be assigned to multiple channels for more easily building Test Setups prior to sensor placement. Reusable sensor(s) must not have an EID.

7. The **ROI x Channels** navstep will only be present if there are multiple Regions of Interest included in the Test Setup:



- Select channels to be included in each ROI segment.
- Selection can be modified prior to ROI Download.
- Every channel must be included in at least one ROI segment.

Parameters

8. The **Parameters** navstep allows for modifications to certain channel parameters. These changes apply only to the Test Setup. Select channel type to display with sub navsteps. (See [Appendix A: Common Sensor Types and Bridge Connections](#), page 231, for more information about different sensor types and options during sensor entry.)

a. Analog Channels:

	Sensor (SN)	Range (CAC)	Capacity	Sensitivity	Units	Channel filter class	Polarity	Zero Method	Start (sec)	End (sec)	Initial offset
X	Bridge Plug (BP027)	2,000.00	2,000.00	0.02000000 mV/V/EU	g	CFC 600 (B)	+	Avg over time	-0.05000	-0.02000	None
	Bridge Plug (BP028)	2,000.00	2,000.00	0.02000000 mV/V/EU	g	CFC 600 (B)	+	Avg over time	-0.05000	-0.02000	None
	Bridge Plug (BP029)	2,000.00	2,000.00	0.02000000 mV/V/EU	g	CFC 600 (B)	+	Avg over time	-0.05000	-0.02000	None
	Upper Neck Fx (2kg033)	1,000.00	2,000.00	0.00042000 mV/V/EU	g	CFC 1000 (A)	+	Avg over time	-0.05000	-0.02000	None
	Upper Neck Fx (2kg034)	1,000.00	2,000.00	0.00042000 mV/V/EU	g	CFC 1000 (A)	+	Avg over time	-0.05000	-0.02000	None
	Upper Neck Fy (2kg035)	1,000.00	2,000.00	0.00040500 mV/V/EU	g	CFC 1000 (A)	-	Avg over time	-0.05000	-0.02000	None
	6DX0082 AC-1 (6DX0082 AC1)	2,000.00	2,000.00	0.01755000 mV/V/EU	g	CFC 1000 (A)	+	Avg over time	-0.05000	-0.02000	EU
	6DX0082 AC-2 (6DX0082 AC2)	2,000.00	2,000.00	-0.01700000 mV/V/EU	g	CFC 1000 (A)	+	Avg over time	-0.05000	-0.02000	
	6DX0082 AC-3 (6DX0082 AC3)	2,000.00	2,000.00	0.01825000 mV/V/EU	g	CFC 1000 (A)	-	Avg over time	-0.05000	-0.02000	
	6DX0082 AR-1 (6DX0082 AR1)	300.00	18,000.00	0.09440000 mV/EU	deg/s	CFC 1000 (A)	+	Avg over time	-0.05000	-0.02000	
	6DX0082 AR-2 (6DX0082 AR2)	300.00	18,000.00	0.09370000 mV/EU	deg/s	CFC 1000 (A)	+	Avg over time	-0.05000	-0.02000	
	6DX0082 AR-3 (6DX0082 AR3)	300.00	18,000.00	-0.09456000 mV/EU	deg/s	CFC 1000 (A)	-	Avg over time	-0.05000	-0.02000	

- i. Modify Range, Channel Filter Class, Polarity, Software Zero Method, Average Over Time Start/End and Initial Offset for individual Analog channels.
- ii. Select Modify Global Range CAC to modify the range for all Analog Channels based on High, Medium, Low Range and Capacity settings in Sensor Database.

NOTE: If "Allow push/pull of sensors" is enabled, any difference from the Sensor Database will be indicated in orange. See [System Settings](#), page 193, for more information.

b. Squib Channels:

Order	Group	ISO (13499) code	ISO channel name	Sensor (SN)	Fire mode	Delay (ms)	Limit duration	Duration (ms)	Current (A)
007	Group 1	11AIRBFRLE01CU00	Standard Front Airbag Primary	Squib	Capacitor discharge	17.00	✓	10.0	
008	Group 1	11AIRBFRLE02CU00	Standard Front Airbag Secondary	Squib	Capacitor discharge	20.00	✓	10.0	

- i. Modify Fire Mode, Delay, Limit Duration, Duration and Current (if applicable based on fire mode).

c. Digital Output Channels:

Order	Group	ISO (13499) code	ISO channel name	Sensor (SN)	Output mode	Delay (ms)	Limit duration	Duration (ms)
009	Group 1	11TIME01????????	T=0 Strobe	Digital output	SV low to high transition	0.00	✓	10.0
012	Group 1	11TIME02????????	Airbag Primary Strobe	Digital output	SV low to high transition	0.00	✓	10.0

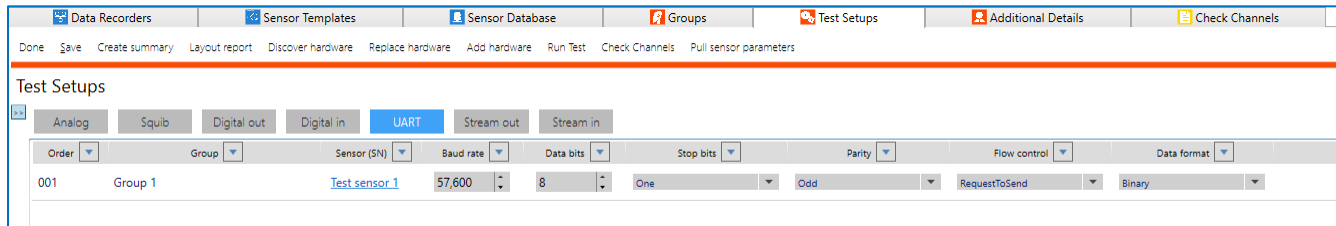
- i. Modify Output mode, Delay, Limit duration and Duration.

d. Digital Input Channels:

Order	Group	ISO (13499) code	ISO channel name	Sensor (SN)	Input mode	Default value	Active value
013	Test channels	11FRAMCG01000000	Frame Center Initial Contact	DI01	Contact closure normally open	0	1
014	Test channels	11FRAMCG02000000	Frame Center Second Contact	DI02	Contact closure normally open	0	1

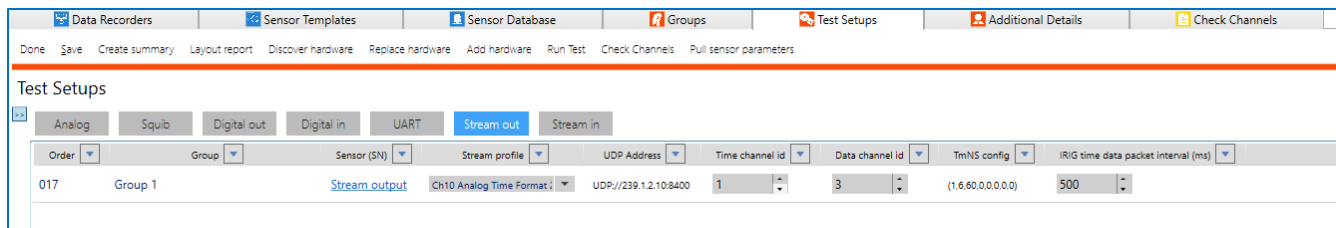
- i. Modify Input mode, Default Value and Active Value.

e. UART Channels:



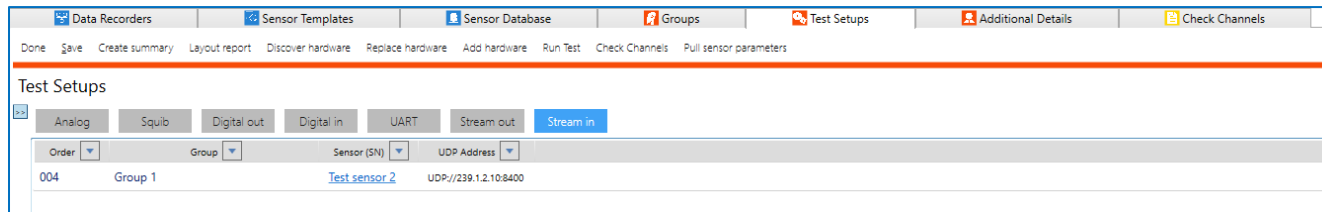
- i. Modify Baud rate, Data bits, Stop bits, Parity, Flow control, and Data format.

f. Stream Output Channels:



- i. Modify Stream profile, UDP Address, Time channel id, Data channel id, TmNS config, and IRIG time data packet interval.

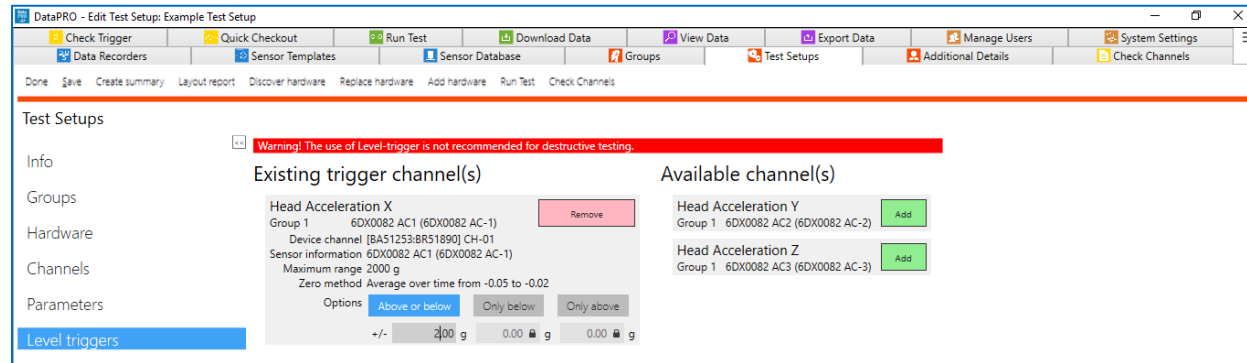
g. Stream Input Channels:



- i. Modify UDP Address.

Level Triggers

9. To designate a channel as a **Level Trigger**, the “Enable level-trigger UI” checkbox must be checked in System Settings (see [System Settings](#), page 193, for more information). Level Triggers are also available when configuring a test containing a TSR AIR device using the Active recording mode.



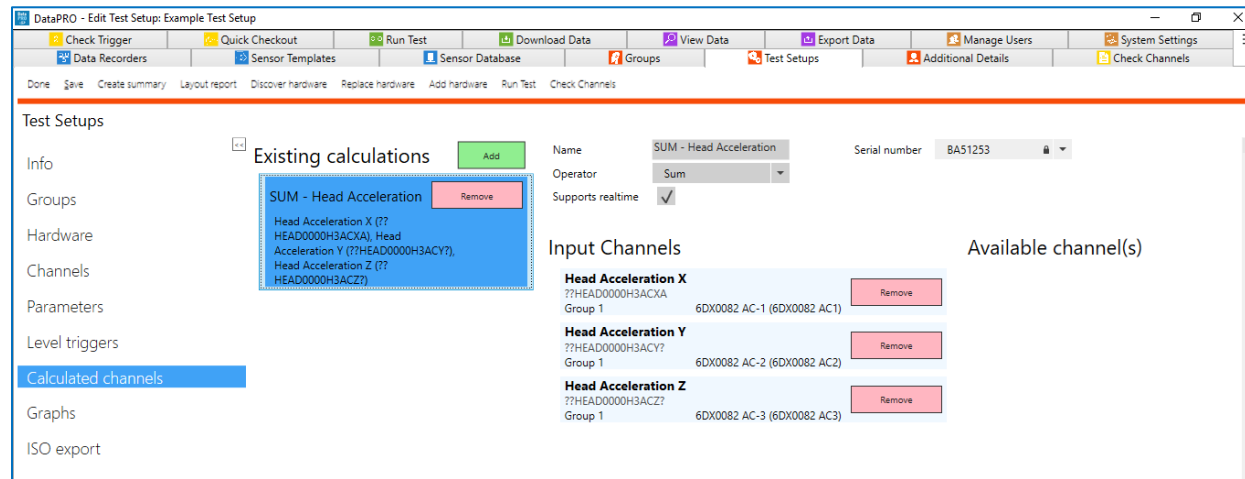
- a. A level trigger will initiate data collection or mark T=0 when a predetermined sensor threshold is exceeded. Five (5) consecutive samples at or above the specified threshold is required for the level trigger to be considered valid.
- b. Only channels with hardware channel assignments will be listed as Available channels to designate as a level trigger.
 - i. Channels must be manually assigned to a hardware channel or discovered by EID for them to be listed as an Available channel.

NOTE: *DTS does not recommend using a level trigger for destructive testing.*

NOTE: *When using level triggers, allow adequate time for sensors to warm up before performing a diagnostic checkout, as sensors may drift from the measured zero level.*

- c. To designate a channel as a level trigger, select Add.
- d. Select Triggering option (Above or below, Above only, or Below only).
 - i. Available triggering options depend on hardware connection.
- e. Enter trigger threshold value.
- f. Select Save to save level trigger to Test Setup.

10. To add **Calculated Channels** to a Test Setup, the “Allow calculated channels” checkbox must be checked in System Settings (see [System Settings](#), page 193, for more information). Calculated channels can also be added in the data viewer.



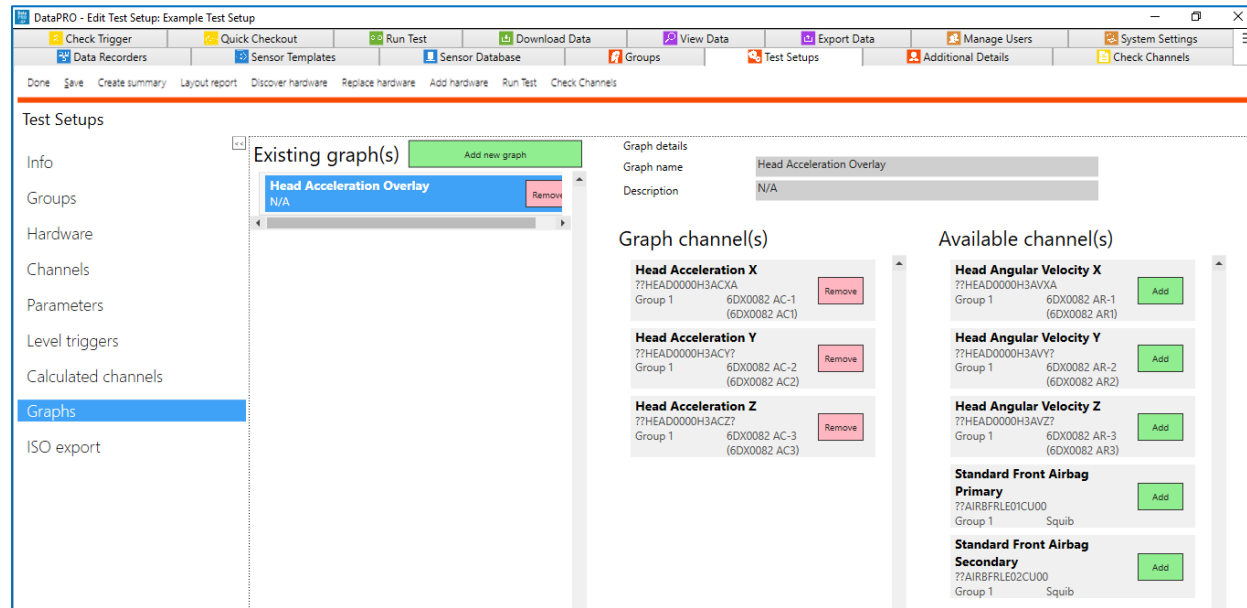
NOTE: Only channels with hardware channel assignments will be listed as Available channel(s).

NOTE: All input channels must be assigned to the same DAS.

- Select Add to add a calculated channel.
- Enter name for calculated channel.
- Choose calculated channel type from Operator dropdown list.
- Select DAS from Serial Number dropdown list.
- Select channels to include in calculation from Available channel(s).
- Select Calculated channel from Existing calculations to display Input Channels.
- Enable “Supports Realtime” to view the calculated channel in Realtime.

Graphs

11. The **Graphs** navstep allows configuring predefined channel overlays for post-test data viewing. Channel overlays can also be added in the data viewer:



- To add an overlay graph, select Add new graph.
- Enter Graph name and optional Description.
- Select channels to include in the graph overlay from Available Channels.
- Select Existing graph to display included Graph channels.

ISO Export

12. ISO Export:

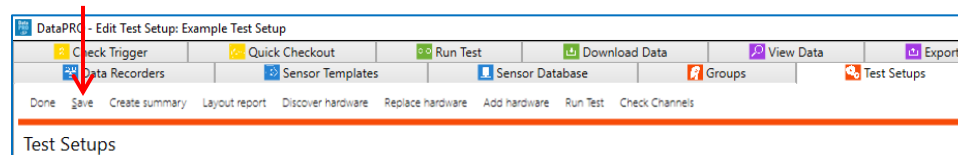
The screenshot shows the 'Test Settings' window in DataPRO. The left sidebar has 'ISO export' selected. The main area is divided into several sections:

- Test settings:** Fields for Title (Example Test Setup), Medium no./number of media (1/1), Comments (NOVALUE), Type of the test ((new)), New type (Add to list), Reference temperature (NOVALUE), Relative air humidity (NOVALUE), Regulation (NOVALUE), Subtype of the test (NOVALUE), and Date of the test (2020-01-22).
- Extra Properties:** A table with columns 'Key' and 'Value'. It contains:

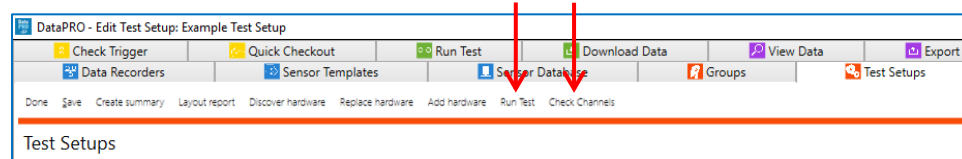
Key	Value
Test Operator	R. Smith
Test Conditions	Ideal
- Test objects:** A list containing 'Group 1'.
- Comments:** A section for entering comments for test objects.
- Test object details:** Fields for Name of test object '1' (NOVALUE), Velocity test object '1' (m/sec), and Mass test object '1' (kg).

- Enter preliminary metadata required for ISO MME export.
- ISO Export metadata can be entered in the Info navstep of Run Test, as well as before each data export. All metadata must be entered in order for the ISO Export to run.
- Enter optional Extra Properties under Test Settings or Test Objects as desired.

13. Select “Save” when finished:



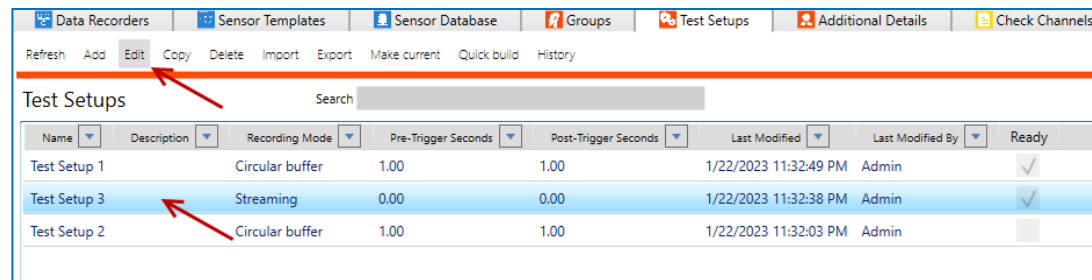
- a. Once a Test Setup is saved, “Run Test” and “Check Channels” are enabled as options:



- i. Select “Run Test” to go directly to the “Run Test” tab and begin a data collection with the current Test setup.
- ii. Select Check Channels to go directly to the Check Channels tab and begin a Diagnostic test with the current Test Setup.

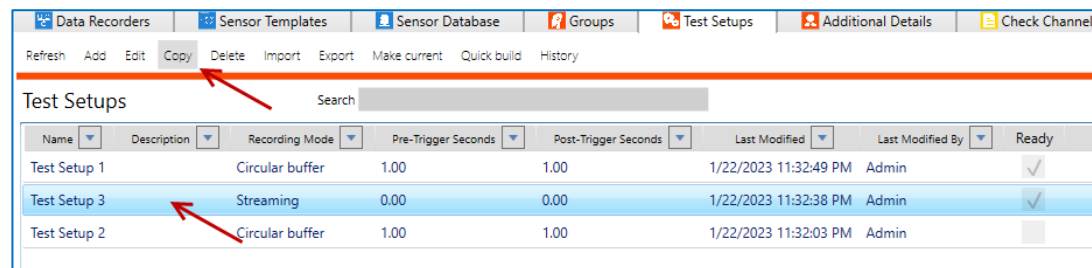
Edit

14. To edit a test setup, double-click on the test setup –or– select the test setup and select “Edit” (see steps 4-13):

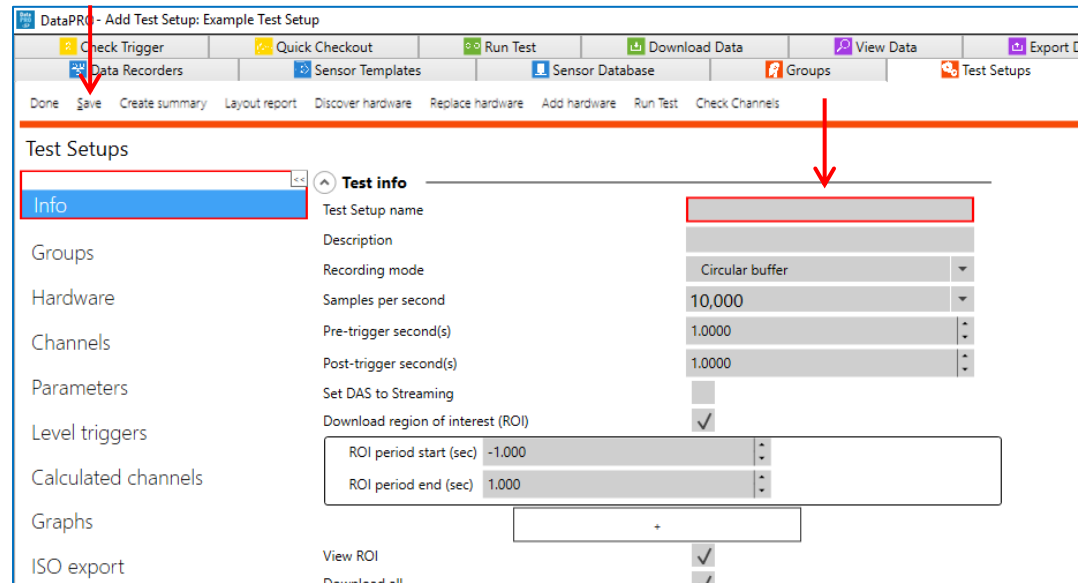


Copy

15. To Copy a test setup, select “Copy” from the menu:

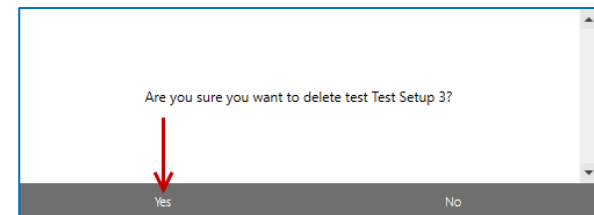
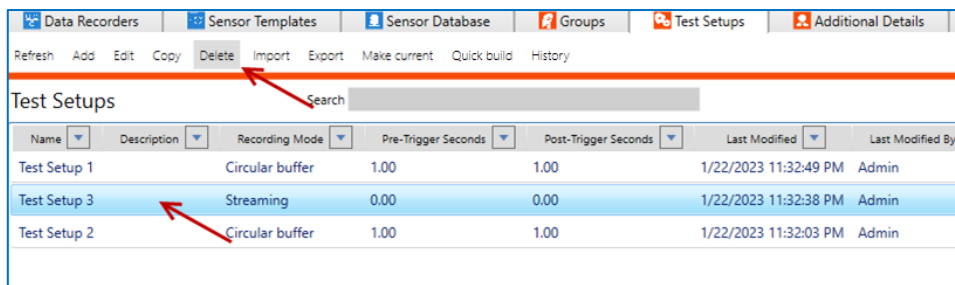


- a. All groups, hardware and test parameters will be copied.
- b. Enter a unique Test Setup name and select Save:



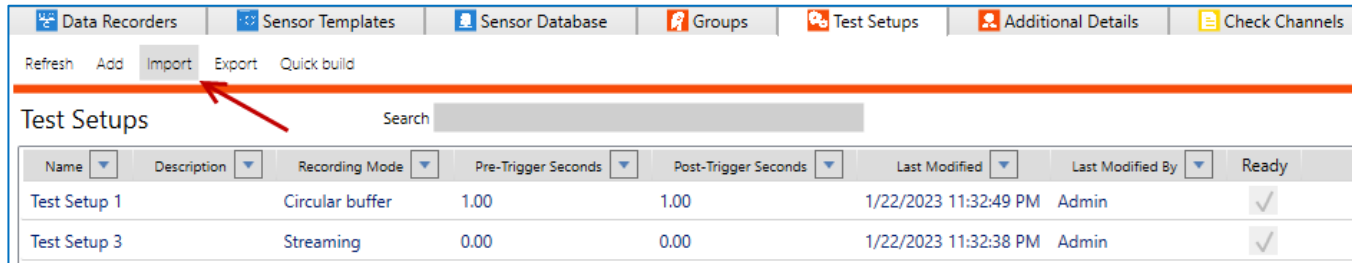
Delete

16. To delete a test setup from the database, select the test setup from the list, select “Delete” and then “Yes” to confirm:



Import

17. To import a test setup, select “Import” from the menu.



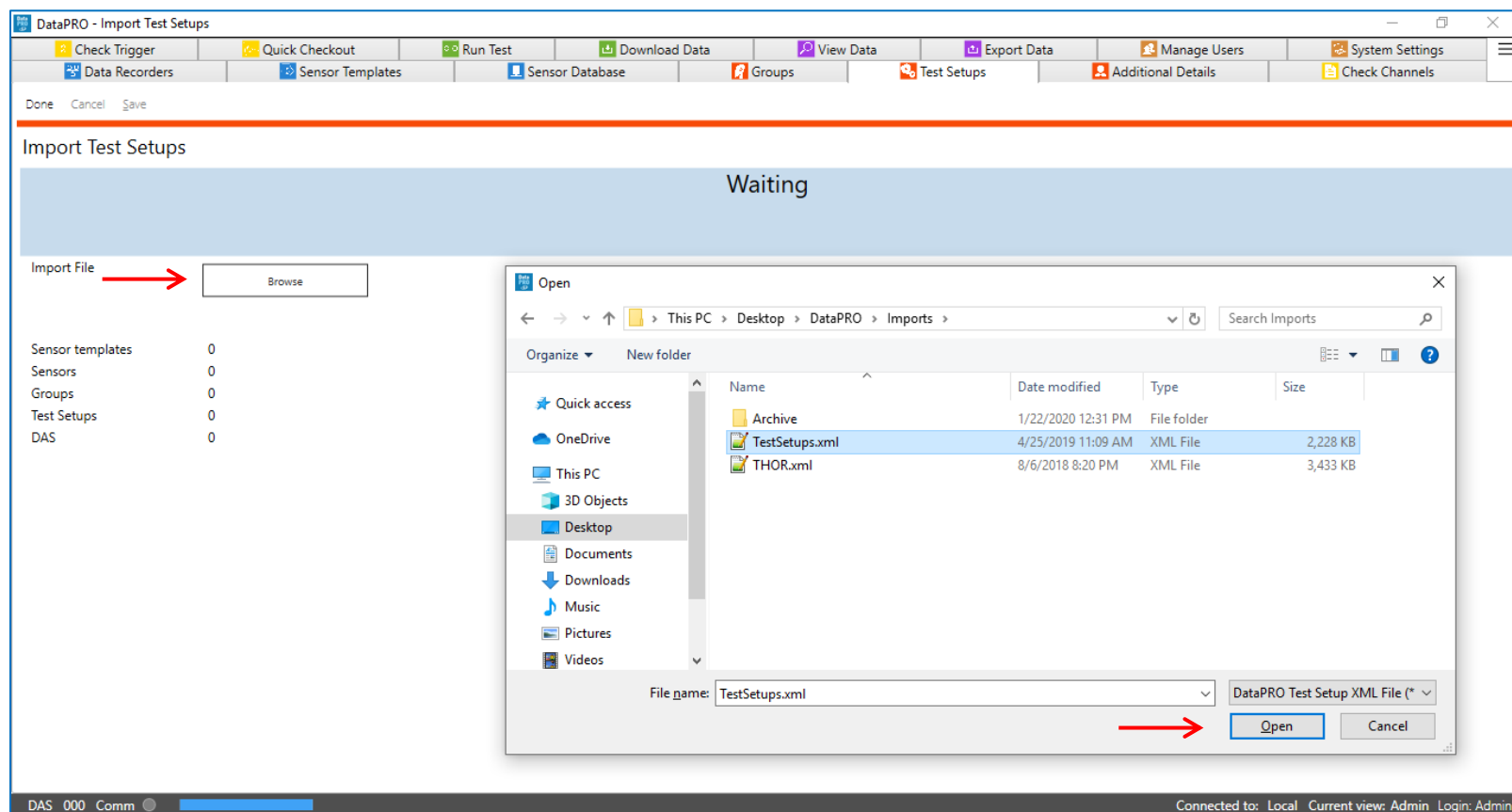
NOTE: The import performed in this manual uses a DataPRO Test Setup XML. There are multiple format options for a Test Setup import. The format option selected will dictate the files available for selection. Some import types require additional files; see table below for more details regarding import type requirements.

NOTE: Some imports add new sensors and DAS to the database, and some require that all items in the import exist in the database prior to import.

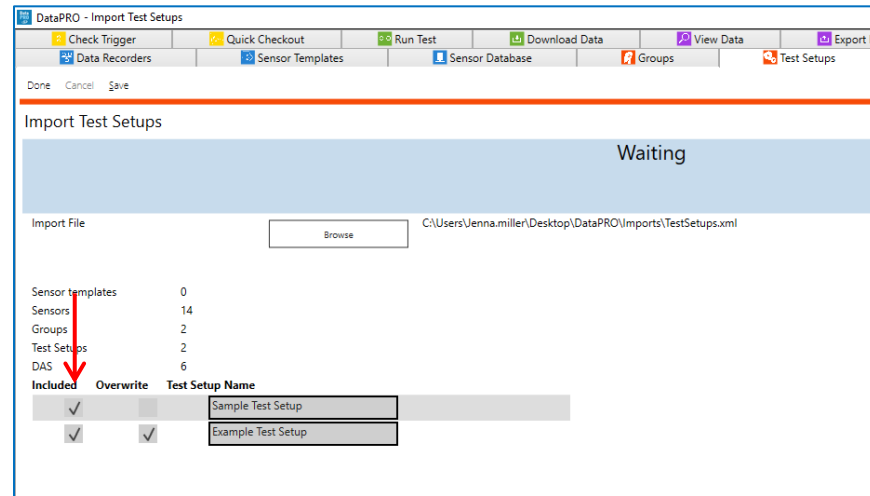
Test Setup Import Requirements

Type	Additional Files Required	Options	Database Requirements
DataPRO XML	None	Multiple test setups can be imported with one *.xml file	Additional sensors and DAS will be added to database
TDC Test Setup File (*.tsf)	*.ini	All hardware used in the *.tsf must be in the database	Additional sensors will be added to database, all DAS must be in database
DataPRO Test Sensor Import File (*.csv)	None	System Settings option to create static groups from imported groups	Additional sensors will be added to database
TTS (*.csv, *.xml)	None	Customer-specific import	All sensors and DAS must be in database

18. Browse to select the file, then select “Open”.

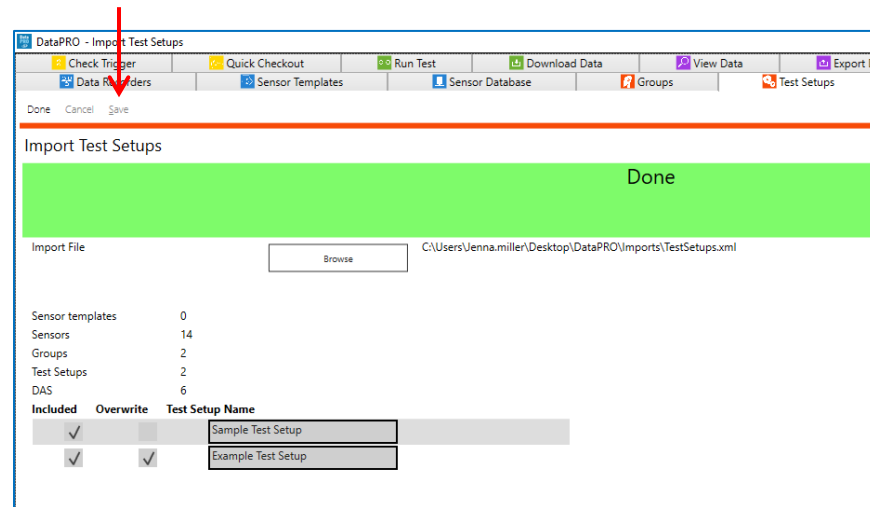


a. Select the Test Setup(s) to be imported:



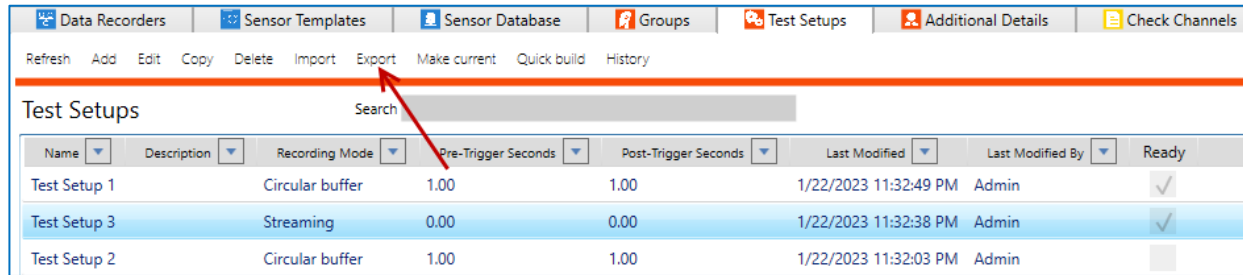
- i. “Red Boxed” Test Setups indicate a naming conflict.
- ii. Either select Overwrite or change duplicate name(s) to import any test setups with naming conflicts.

b. Select Save once all conflicts are resolved. Select Done when import is complete:

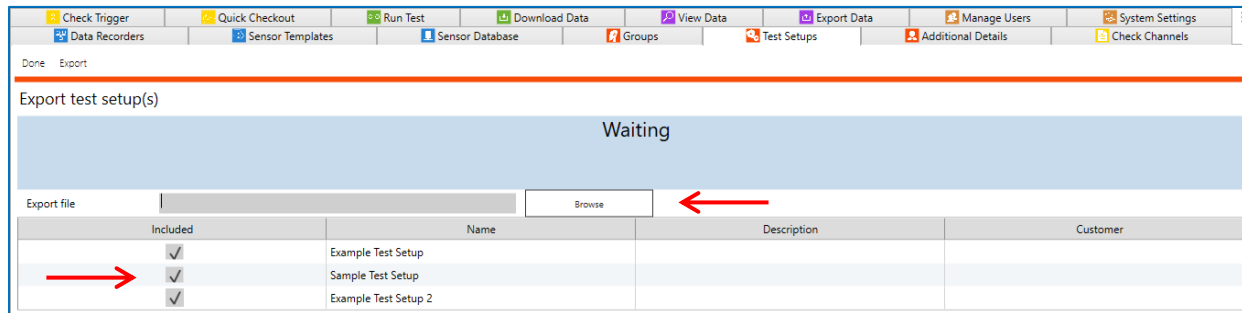


Export

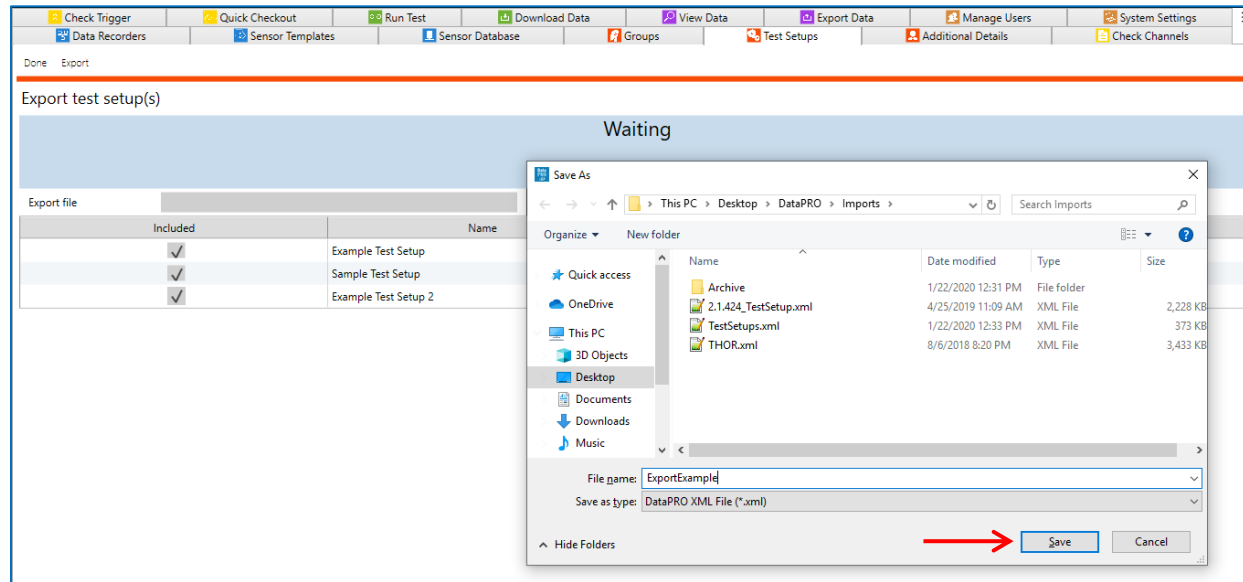
19. To export a test setup, select “Export” from the menu:



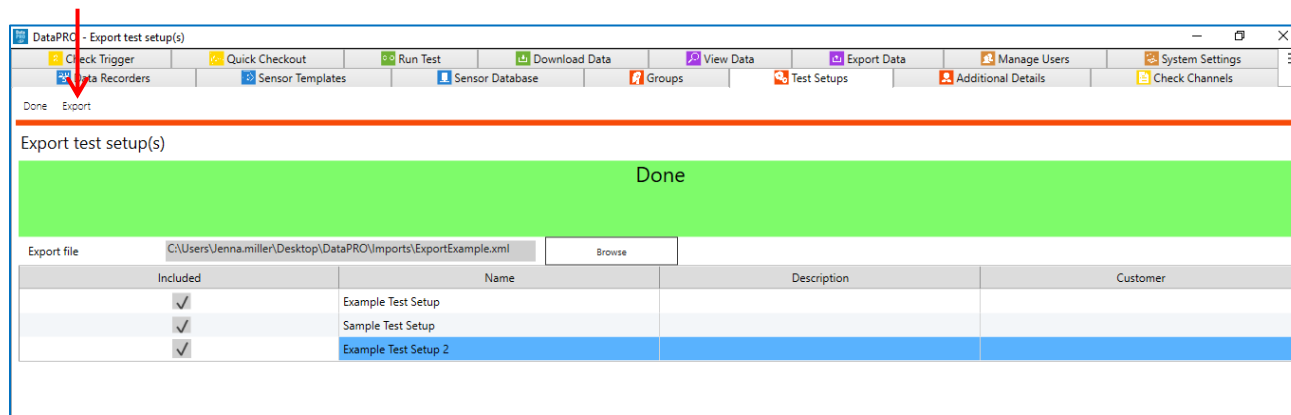
a. Select the test(s) to be exported and select “Browse”. Select “Export”.



- b. Navigate to the desired location, enter a name for the test setup export file and select “Save”.



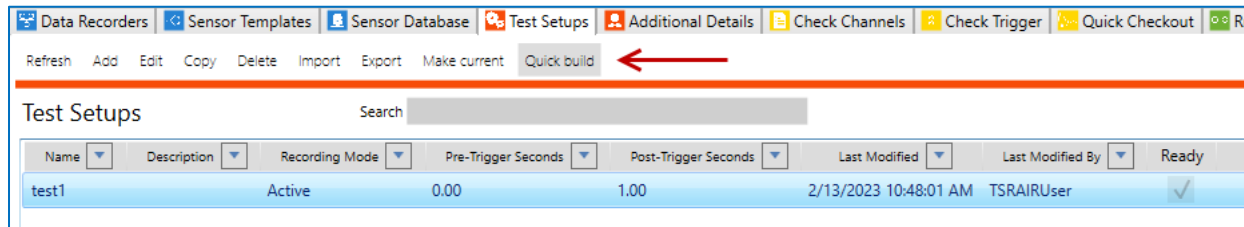
- c. Select “Export”.



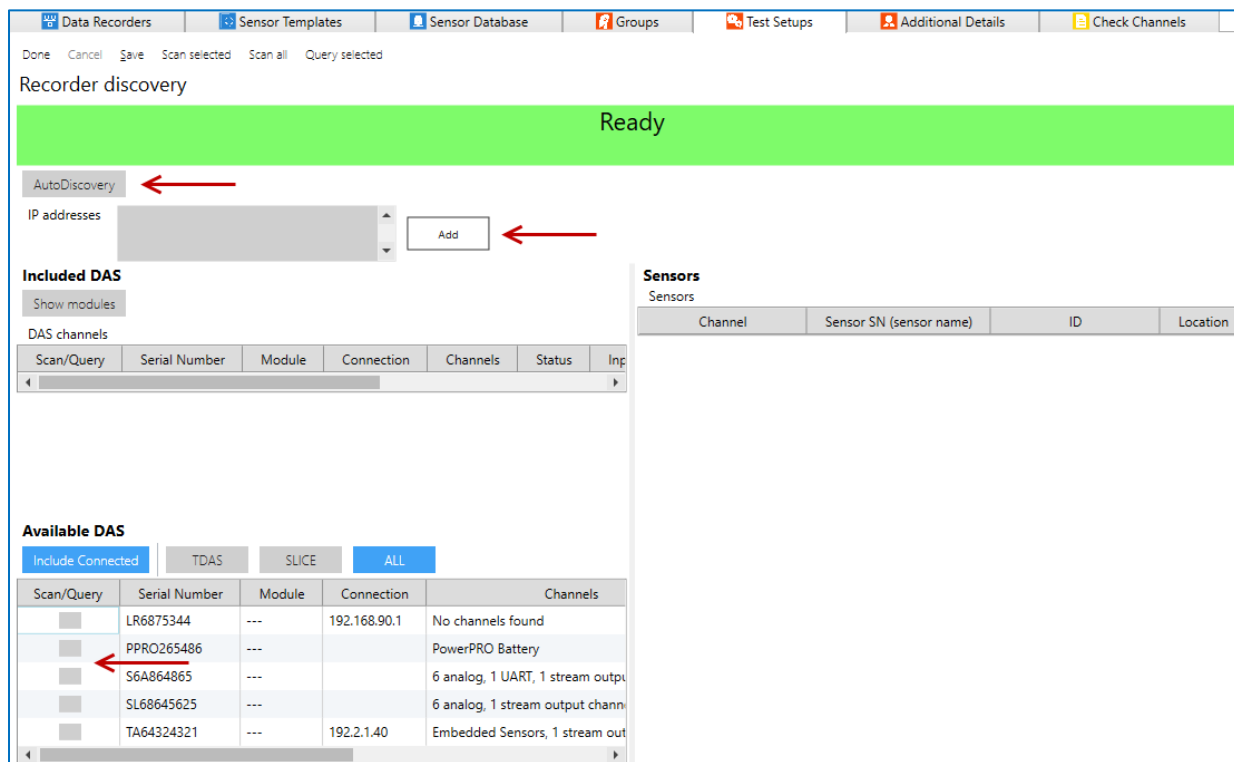
- d. Select “Done” when finished.

Quick Build

20. The Quick Build option allows you to quickly build a test setup using DAS from a previous test. (Quick Build is only available if it has been enabled in System Settings → Test Settings → Allow Quick Build.)



a. From the Quick Build screen, you may connect to DAS from UDP discovery using the AutoDiscovery toggle, by manually entering IP addresses, or by selecting hardware from the Available DAS list at the bottom of the screen.



- Choose Scan All or Scan Selected to ping devices. If AutoDiscovery is toggled on, scanning will do UDP discovery of devices on the network.
- Select the desired DAS from the Included DAS list.
- Select Query Selected to connect to the detected devices and gather sensor information.
- Any EIDs on the DAS will be shown under Sensors, as well as any sensors that were on the DAS the last time it was used to collect data.

The screenshot shows the DataPRO software interface during a recorder discovery process. The main window is titled "Recorder discovery" and has a green "Done" status bar at the top. Below the status bar, there are several sections:

- Recorder discovery:** A green bar with the text "Done".
- AutoDiscovery:** A button labeled "AutoDiscovery".
- IP addresses:** A text input field and an "Add" button.
- Included DAS:** A section with a "Show modules" button and a "DAS channels" label. Below it, a table shows the discovered devices. The first row is selected, with a checkmark in the "Scan/Query" column. A red arrow points to this checkmark.
- Available DAS:** A section with buttons for "Include Connected", "TDAS", "SLICE", and "ALL". Below it, a table lists available devices.
- Sensors:** A section with a "Sensors" label and a table showing the discovered sensors. A red arrow points to this table.

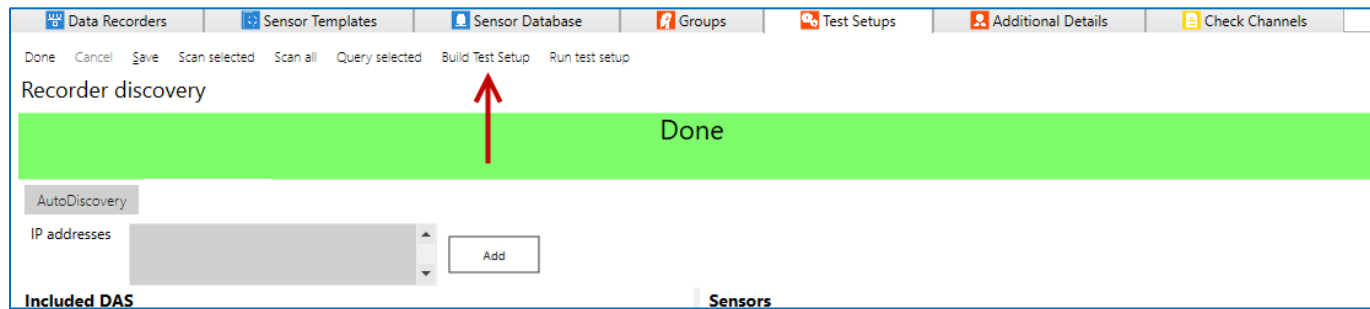
The "Included DAS" table has the following data:

Scan/Query	Serial Number	Module	Connection	Channels	Status	Imp
<input checked="" type="checkbox"/>	SPS0021	---	USB	18 analog cha	Connected	12.6 V

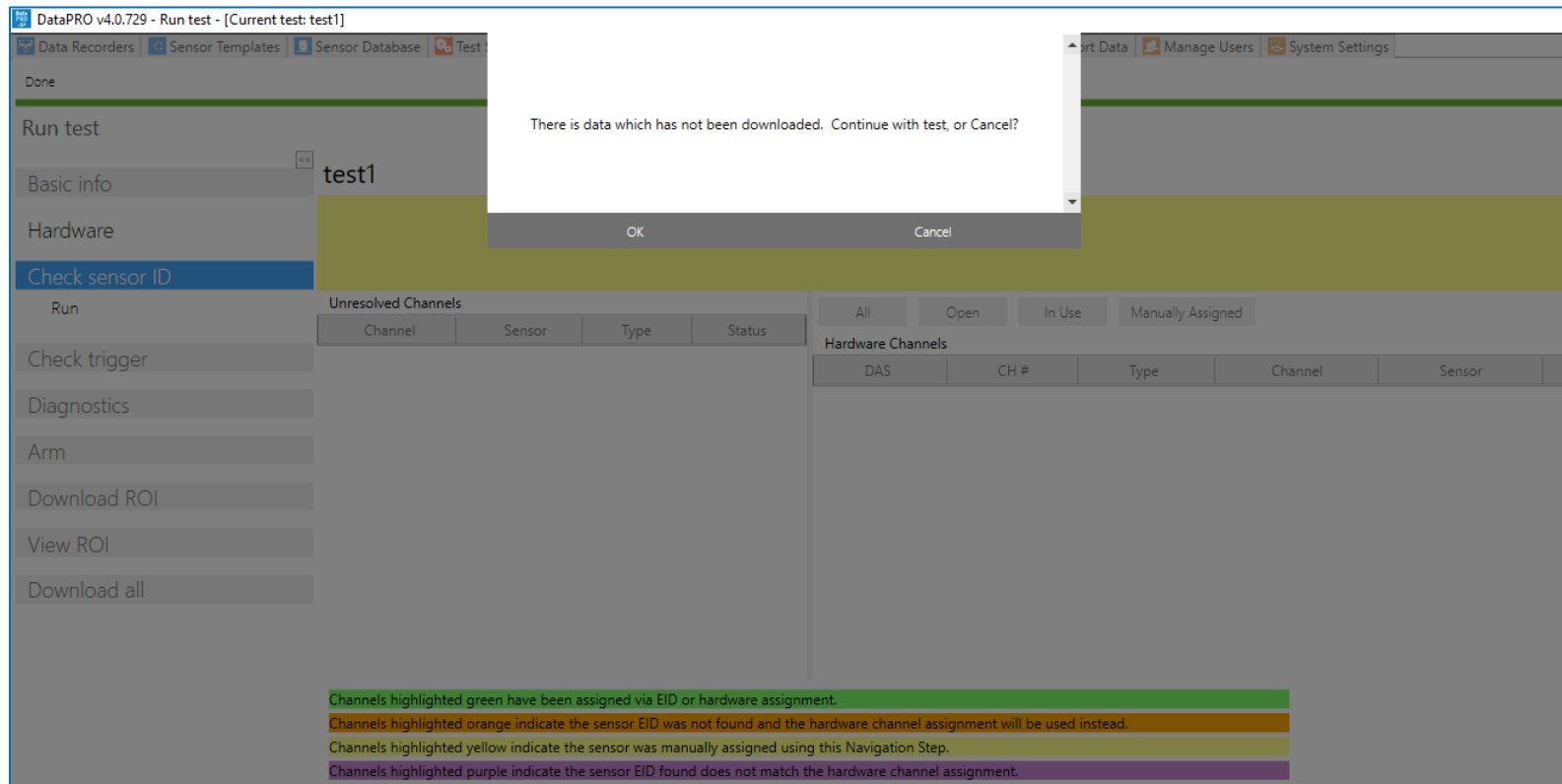
The "Sensors" table has the following data:

Channel	Sensor SN (sensor name)	ID	Location
DTS Scale LC	2KG005(DTS Scale LC)	DC00000126A7CF2D	Assigned by ID

- f. Build Test Setup creates a test setup based on the test that was detected on any DAS queried.

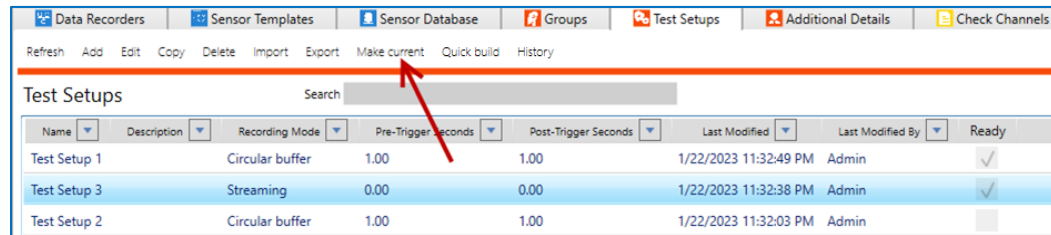


- g. Run Test Setup starts running a test based on the test that was detected on any DAS queried, and will jump to the Check Sensor IDs step of Run Test.

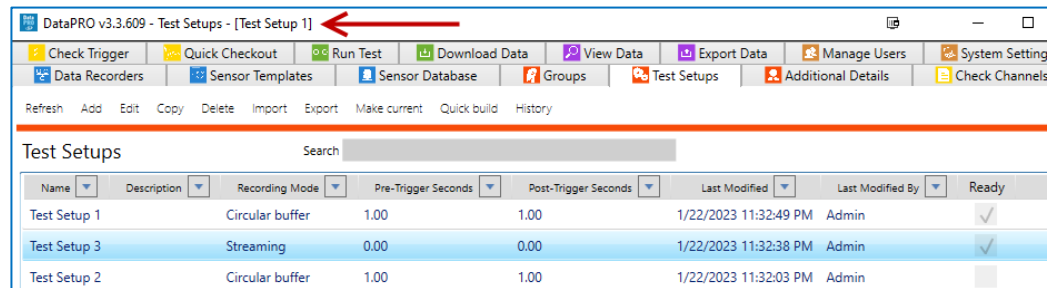


Change Test Setup

21. To change the active Test Setup, select the desired test setup and select “Make Current”:

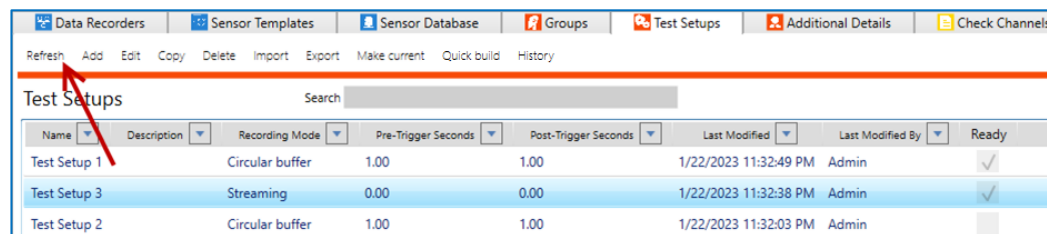


- A test must be indicated as “Ready” to permit designation as the Current Test Setup.
- The Current Test Setup will be displayed in brackets in the DataPRO header bar:



Refresh

22. If using a SQL Server Networked Database, use Refresh to ensure the latest test setup settings are used:



Layout Report

23. The Layout Report option allows you to generate the same layout report that is run during the Run Test step, at any point prior to running the test. One report is generated for each DAS included in the test. The report contains the sensor serial number, hardware channel connection, sensitivity, filter and excitation voltage. ISO Code, level trigger parameters, squib fire mode, delay and duration are also recorded if applicable to the channel.
- a. Select Layout Report from the active, open Test Setup.

The screenshot shows the DataPRO software interface. The top menu bar includes 'Data Recorders', 'Sensor Templates', 'Sensor Database', 'Groups', 'Test Setups', 'Additional Details', and 'Check Channels'. The 'Layout report' option is highlighted in the top menu bar. The main window displays a 'Channel List' table with columns for ISO channel name, Type, and Sensor (SN). The table lists 8 channels, including Head Acceleration X, Y, Z, Head Angular Velocity X, Y, Z, and Neck Upper Force Z, X. A 'Sensors Available' panel on the right shows a table of sensors with columns for Serial Number, Name, IEPE, Capacity (EU), Units, and First use date. The 'Hardware' panel at the bottom right shows a table with columns for DAS, CH #, Type, and Channel.

ISO channel name	Type	Sensor (SN)
Head Acceleration X	Bridge	6DX0082 AC-1 (6DX0082 AC-1)
Head Acceleration Y	Bridge	6DX0082 AC-2 (6DX0082 AC-2)
Head Acceleration Z	Bridge	6DX0082 AC-3 (6DX0082 AC-3)
Head Angular Velocity X	Bridge	6DX0082 AR-1 (6DX0082 AR-1)
Head Angular Velocity Y	Bridge	6DX0082 AR-2 (6DX0082 AR-2)
Head Angular Velocity Z	Bridge	6DX0082 AR-3 (6DX0082 AR-3)
Neck Upper Force Z	Bridge	Upper Neck Fz (2kg040)
Neck Upper Force X	Bridge	2kg033

Serial Number	Name	IEPE	Capacity (EU)	Units	First use date
2kg033			2,000.00	g	---
2kg034			2,000.00	g	---
2KG035	Upper Neck Fy		2,000.00	g	---
2kg040	Upper Neck Fz		2,000.00	g	---

DAS	CH #	Type	Channel
SPE00150-SPS00331	[SPE00150-SPS00331] CH-01	Bridge/IEPE	Head Acceleration X
SPE00150-SPS00331	[SPE00150-SPS00331] CH-02	Bridge/IEPE	Head Acceleration Y
SPE00150-SPS00331	[SPE00150-SPS00331] CH-03	Bridge/IEPE	Head Acceleration Z
SPE00150-SPS00331	[SPE00150-SPS00331] CH-04	Bridge/IEPE	Head Angular Velocity X
SPE00150-SPS00331	[SPE00150-SPS00331] CH-05	Bridge/IEPE	Head Angular Velocity Y
SPE00150-SPS00331	[SPE00150-SPS00331] CH-06	Bridge/IEPE	Head Angular Velocity Z
SPE00150-SPS00331	[SPE00150-SPS00331] CH-07	Bridge/IEPE	---

- b. The Excel file generated can be found in *C:/DTS/DTS.Suite/Version/DataPRO/TEMP/Reports*, organized by DAS serial number.

24. To return to the Quick Start steps, return to page 30.

Additional Details

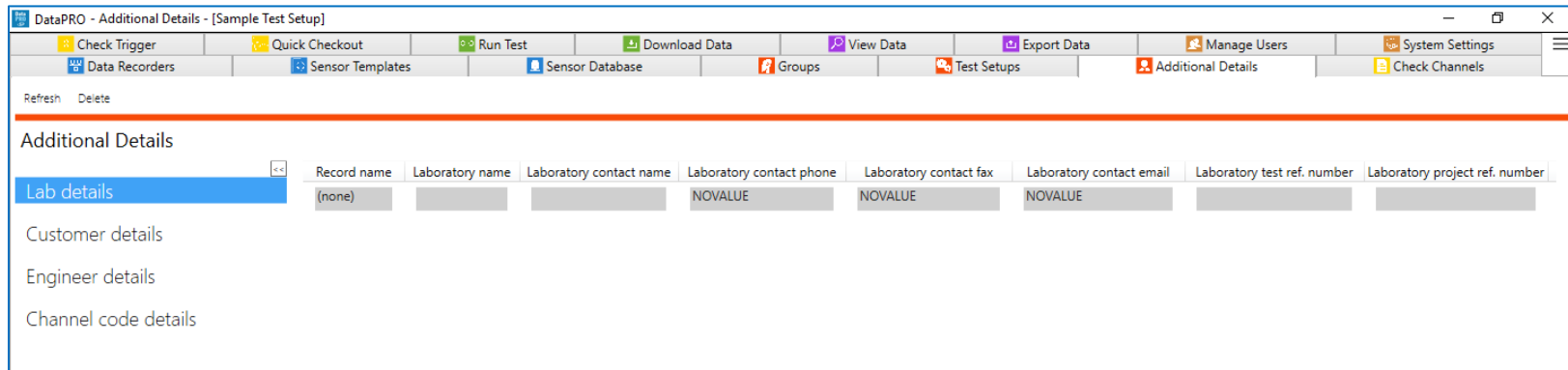
Lab Details

Exporting data for “Lab Details” is a required component when following ISO MME protocol. Completing “Lab Details” is optional for use with data exports.

1. Select the “Additional Details” tab:



2. Select the Lab details navstep and enter the information for each Lab Record:



DataPRO - Additional Details - [Sample Test Setup]

Check Trigger Quick Checkout Run Test Download Data View Data Export Data Manage Users System Settings

Data Recorders Sensor Templates Sensor Database Groups Test Setups Additional Details Check Channels

Refresh Delete

Additional Details

Lab details (selected)

Record name	Laboratory name	Laboratory contact name	Laboratory contact phone	Laboratory contact fax	Laboratory contact email	Laboratory test ref. number	Laboratory project ref. number
(none)			NOVALUE	NOVALUE	NOVALUE		

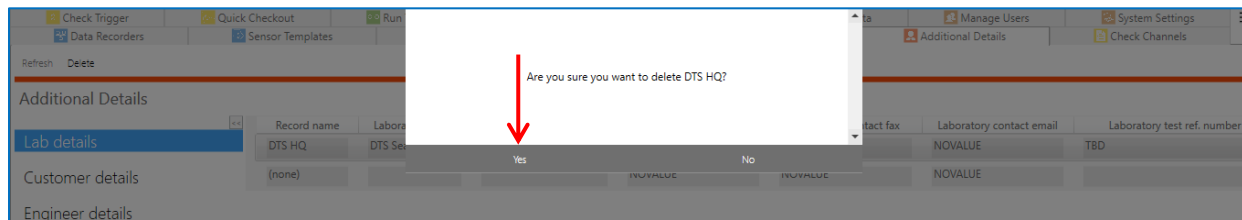
Customer details

Engineer details

Channel code details

- a. This information can be modified before exporting data.
- b. Records are automatically saved.

- To delete a Lab Details Record, select the record from the list and select “Delete”:

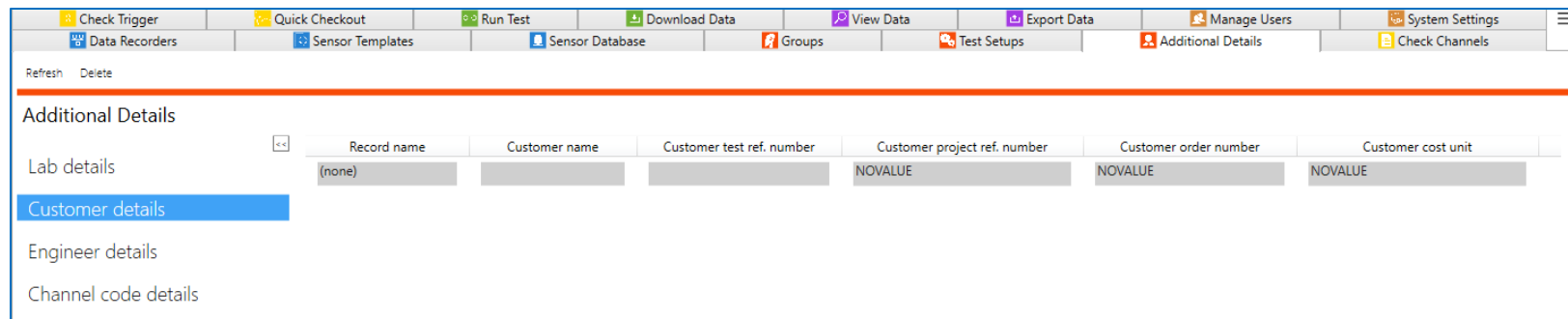


- To return to the **Quick Start** steps, return to page 30.

Customer Details

Exporting data for Customer Details is a required component when following ISO MME protocol. Completing Customer Details is optional for use with data exports.

- Select the “Additional Details” tab.
- Select the Customer details navstep and enter the information for each Customer Record:



- This information can be modified before exporting data.
 - Records are automatically saved.
- To delete a Customer Details Record, select the record from the list and select “Delete”.
 - To return to the **Quick Start** steps, go back to page 30.

Engineer Details

Exporting data for “Engineer Details” is a required component when following ISO MME protocol. Completing “Engineer Details” is optional for use with data exports.

1. Select the “Additional Details” tab.
2. Select the Engineer details navstep and enter the information for each Engineer Record:

The screenshot shows the DataPRO web application interface. The 'Additional Details' tab is selected. Underneath, there are several navigation options: Lab details, Customer details, Engineer details (highlighted in blue), and Channel code details. Below these, a table is displayed with the following columns and values:

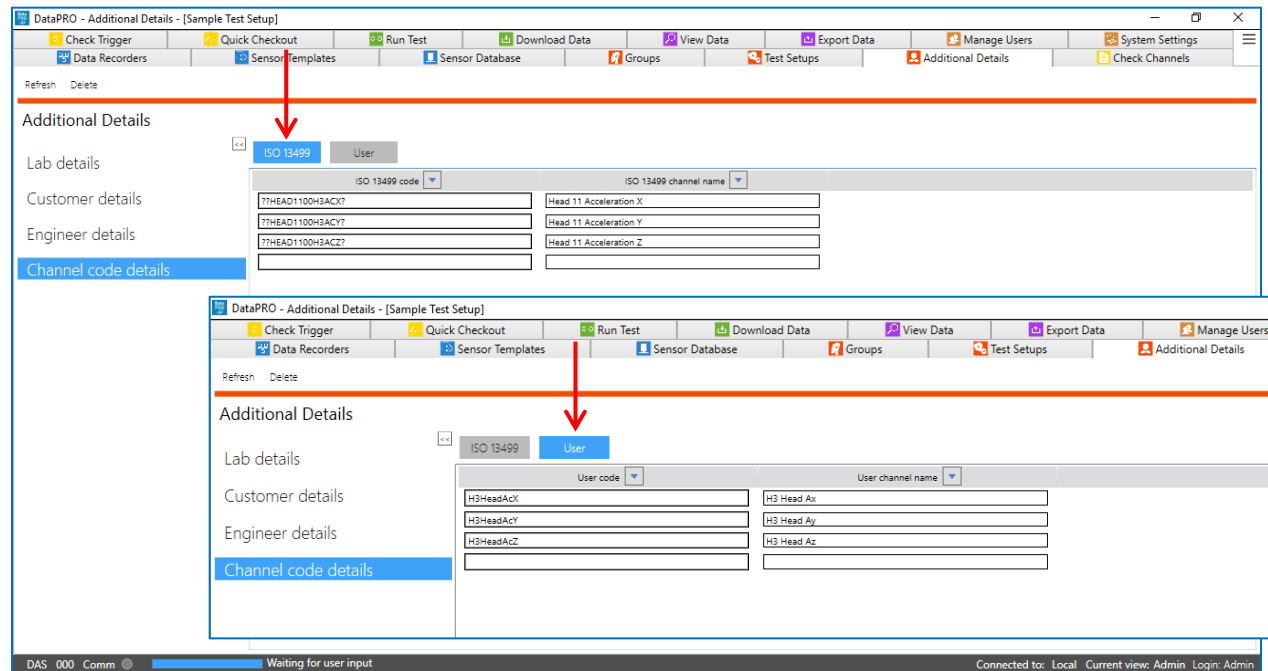
Record name	Test engineer name	Test engineer phone	Test engineer fax	Test engineer email
(none)	NOVALUE	NOVALUE	NOVALUE	NOVALUE

- a. This information can be modified before exporting data.
 - b. Records are automatically saved.
3. To delete an Engineer Details Record, select the record from the list and select “Delete”.
 4. To return to the Quick Start steps, return to page 30.

Channel Code Details

A Channel Code is a shorthand code used to describe a measurement channel. Channel Codes can either follow the ISO MME protocol of 16 alpha-numeric characters, or they can be “User Codes” and contain an unrestricted number of characters of any type. See <https://www.iso-mme.org/> for more information on ISO Codes.

1. Select the “Additional Details” tab.
2. Select “ISO 13499” or “User” to display the current available channel codes:



- a. Any ISO Codes used that are not defined by ISO/TS 13499 will be listed in and managed through the Channel codes details table in the Additional Details tab.
 - b. All User Codes will be listed in and managed through the Channel codes details table in the Additional Details tab.
3. Create new Channel Codes by typing in the last field.
 - a. Multiple codes can be created by pasting multiple Channel Codes/Channel Names into the last field.
 4. To edit a Channel Code or Channel Name, select the field to edit and enter the corrected information.
 5. To delete a Channel Code from the database, select the Channel Code from the list and select “Delete.”
 - a. Select and delete multiple Channel Codes using Shift or Ctrl during code selection.
 6. To return to the Quick Start steps, return to page 30.

Diagnostics

Diagnostic functions (channel, sensor, hardware and trigger checks) are performed as a part of a data collection sequence. The Diagnostic tabs allow for these functions to be performed separately, outside of a data collection routine, to verify proper functioning of the system.

DataPRO automatically generates a series of reports during use of the Diagnostic and Record tabs. See [Appendix E: DataPRO File Structure](#), page 254, for more information.

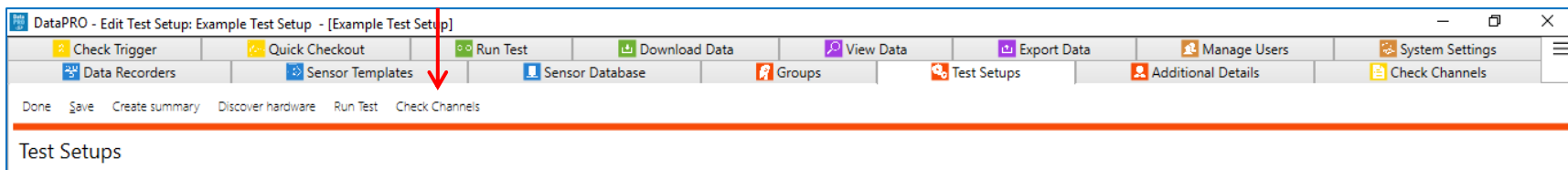
Check Channels

Check Channels confirms the hardware connection and sensor assignment, then performs a diagnostic/channel checkout routine and allows verification of channel output(s) in Realtime Mode.

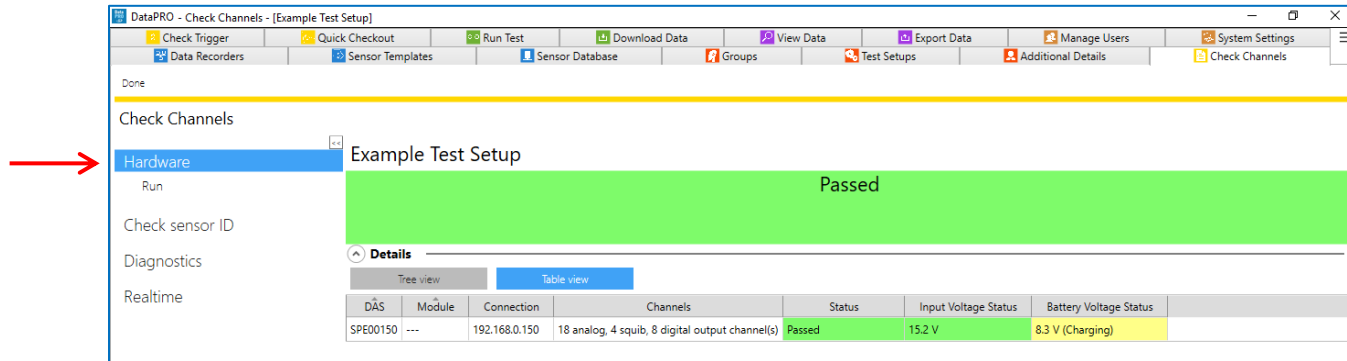
1. Select the “Check Channels” tab:



- a. Optionally, select Check Channels from within a completed, saved Test Setup:

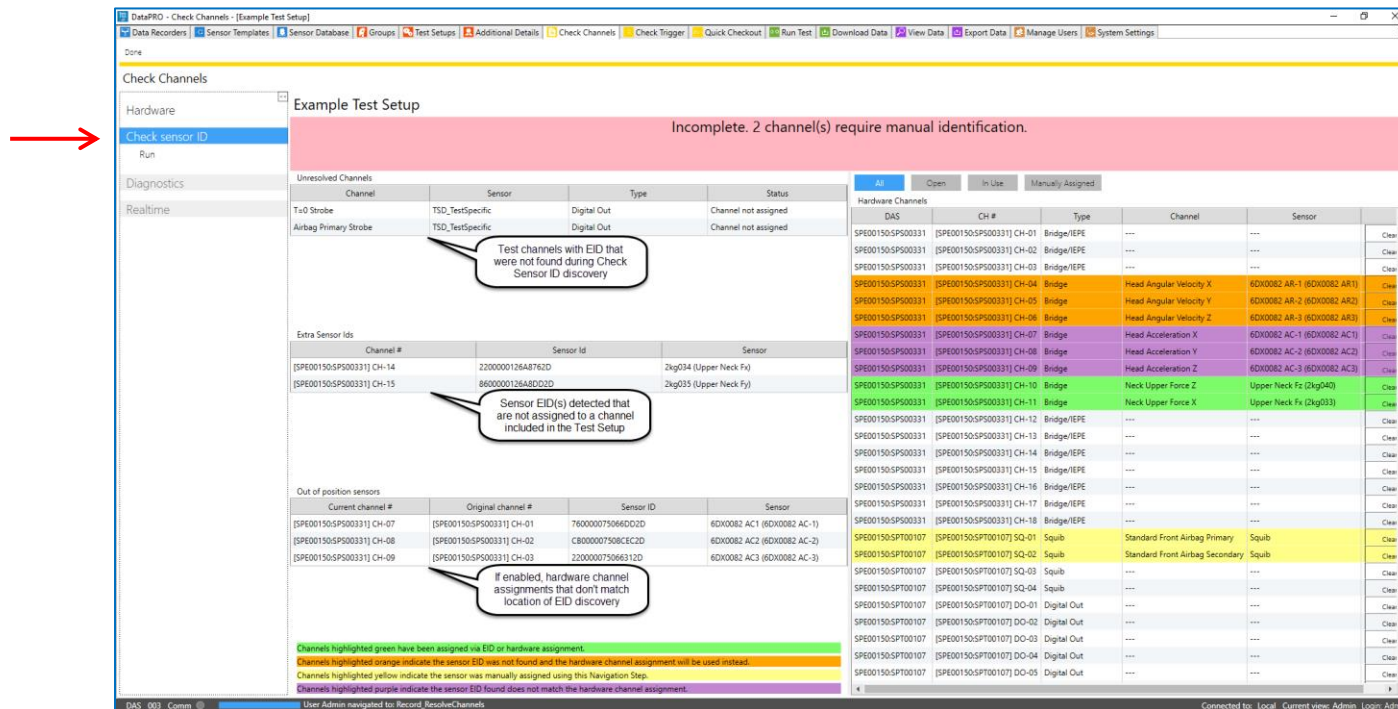


- The **Hardware** navstep will automatically attempt to connect to the hardware associated with the active test setup, as well as any attached USB device:



- Select "Run" to re-run the Hardware navstep.

- Select the **Check sensor ID** navstep to perform a sensor check:



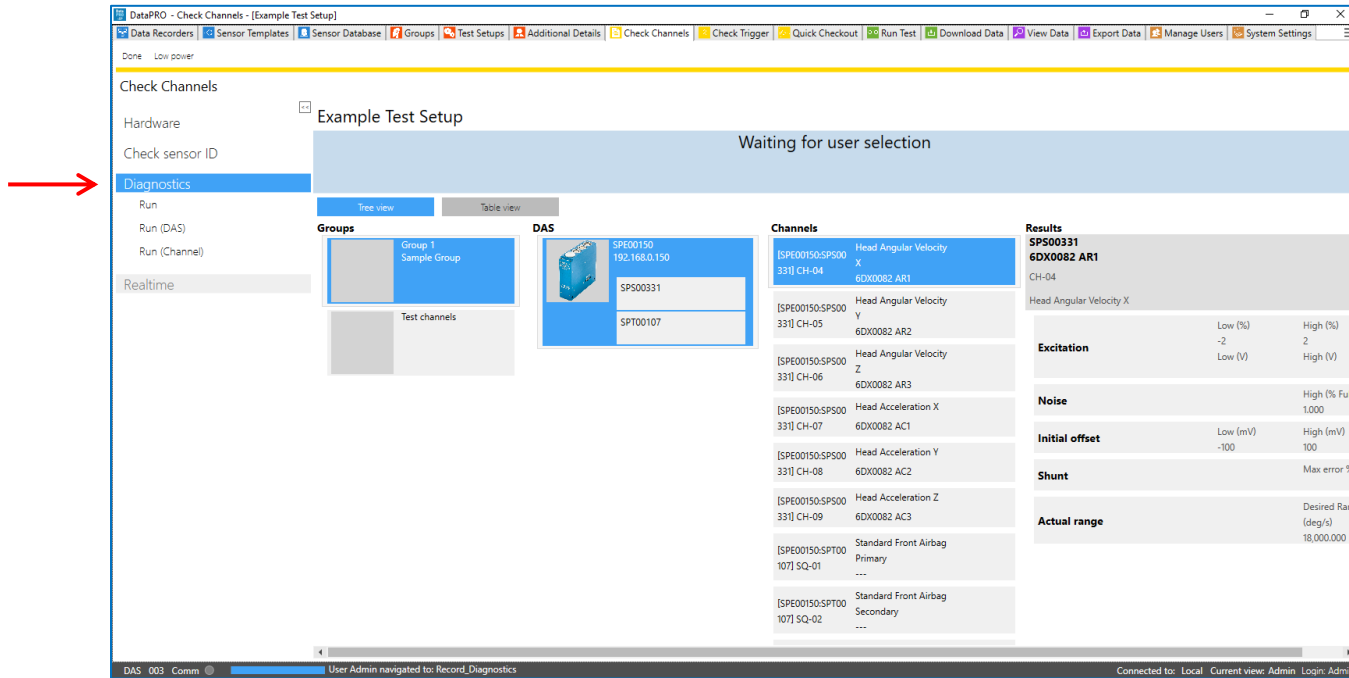
- a. The Check Sensor ID step verifies each channel in the Test Setup has been configured with a hardware channel.
 - i. Sensors with EID will automatically populate with the hardware channel assignment.
 - ii. Sensors without EID will need to be resolved and manually assigned to a hardware channel.

NOTE: Manual assignments of hardware channels performed in Check Channels or in Run Test will have to be repeated for subsequent Check Sensor ID initiations.

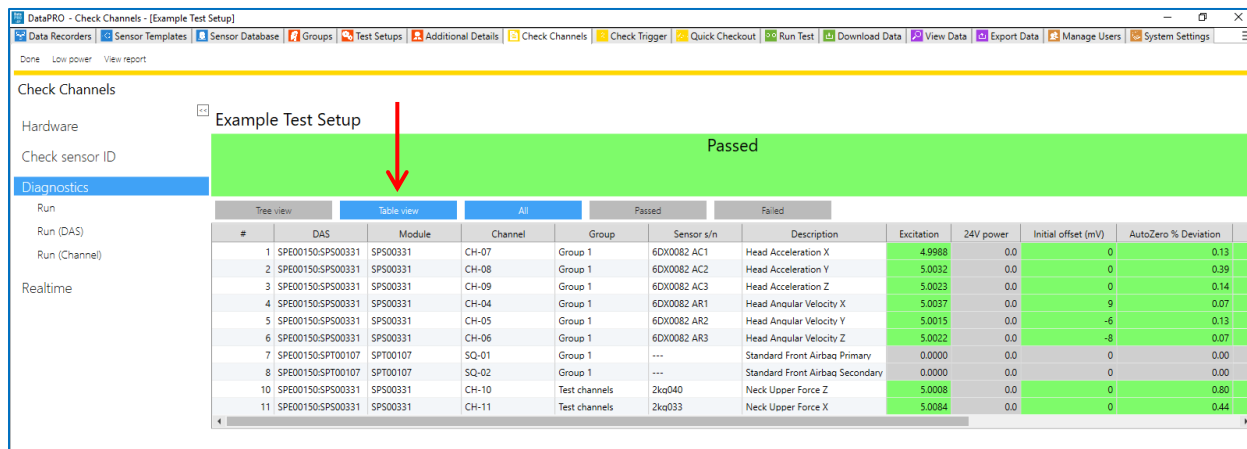
- b. DataPRO indicates the following EID conditions with different tables:
 - i. Unresolved Channels: Channels that have not been configured with a hardware channel assignment. These channels need to be manually assigned.
 - ii. Extra Sensor IDs: Sensor EID(s) detected that are not assigned to a channel included in the Test Setup.
 - iii. Out of position sensors (if enabled): Sensor EID(s) that are detected on a hardware channel that differs from the Test Setup configuration.
- c. DataPRO indicates the following channel configuration conditions with highlighting:
 - i. Green: EID or manual hardware assignment completed in Group or Test Setup.
 - ii. Orange: EID not found, hardware assignment completed in Group or Test Setup.
 - iii. Yellow: Manual hardware assignment completed in current step.
 - iv. Purple: EID found does not match hardware assignment completed in Group or Test Setup (Channel is Out of Position).

NOTE: Channel Out of Position indication is optional and must be enabled in [System Settings](#), page 193.

- Select the **Diagnostics** navstep. Select “Run” to perform a diagnostic check on all channels, “Run (DAS)” to perform a diagnostic check on one DAS module, or “Run (Channel)” to perform a diagnostic check on one channel:



- Tree View (above) is the default display. Select Table View (below) to display diagnostic data in table format:



b. Select individual channels in Tree View to display diagnostic results for that channel:

The screenshot displays the DataPRO software interface for an 'Example Test Setup'. The main window shows a 'Passed' status for the overall test. The interface is organized into several sections:

- Check Channels:** Shows 'Hardware' and 'Check sensor ID' sections, both marked as 'Passed'.
- Diagnostics:** A sidebar on the left contains 'Run', 'Run (DAS)', 'Run (Channel)', and 'Realtime' options.
- Groups:** Displays 'Group 1 Sample Group' and 'Test channels', both marked as 'Passed'.
- DAS (Data Acquisition System):** Lists several sensors with their status:
 - SPE00150: 192.168.0.150, Input (V): 15.150, Battery (V): 8.330, **Passed**
 - SP500331: Input (V): 12.300, Battery (V): 8.360, **Passed**
 - SPT00107: Input (V): 12.300, Battery (V): 8.360, **Passed**
- Channels:** Lists various channels, all marked as 'Passed':
 - [SPE00150-SP500 331] CH-04: Head Angular Velocity X, 6DX0082 AR1, **Passed**
 - [SPE00150-SP500 331] CH-05: Head Angular Velocity Y, 6DX0082 AR2, **Passed**
 - [SPE00150-SP500 331] CH-06: Head Angular Velocity Z, 6DX0082 AR3, **Passed**
 - [SPE00150-SP500 331] CH-07: Head Acceleration X, 6DX0082 AC1, **Passed**
 - [SPE00150-SP500 331] CH-08: Head Acceleration Y, 6DX0082 AC2, **Passed**
 - [SPE00150-SP500 331] CH-09: Head Acceleration Z, 6DX0082 AC3, **Passed**
 - [SPE00150-SPT00 107] SQ-01: Standard Front Airbag Primary, **Passed**
- Results:** Includes a graph of Current (A) vs. Time (ms) showing a peak at approximately 17,000 ms. Below the graph is a table of performance metrics:

Delay	Passed	Expected delay (ms)	17,000
Duration	Passed	Expected duration (ms)	10,000
Output Peak (A)			7.815

i. Test Setups can be configured to require all channels to pass Diagnostics before progressing to Realtime.

5. Select the **Realtime** navstep to verify sensor output.

Realtime - Level Triggers Off



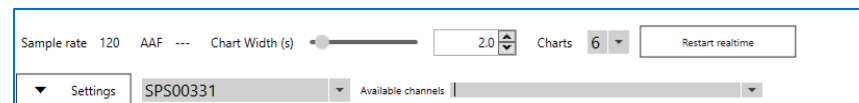
NOTE: If `UseTestChannelOrder` is enabled in the `DataPRO.exe` config file, only one chart will be available and one channel will be displayed at a time in Realtime.

NOTE: Realtime AAF ratio is 1:1 by default. This setting can be changed in the `DataPRO.exe.config` file. See [DataPRO Settings Manual](#) for more information about the config file.

- a. The initial display is defined by the test setup.
- b. Realtime display selection. See [Test History Settings](#), page 212, for more information on configuring the initial Realtime display.

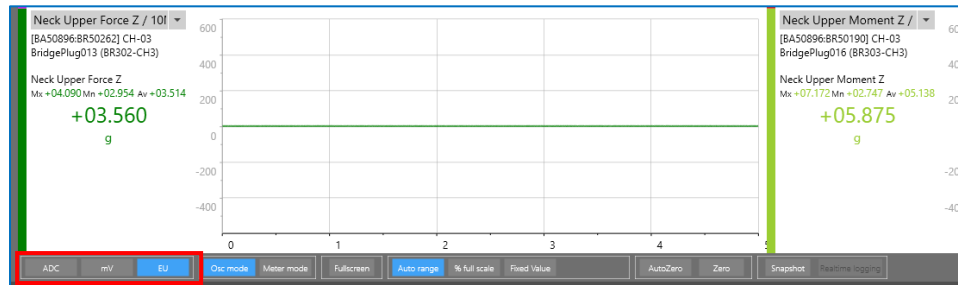


1. Select Prev/Next to backtrack/advance 1/3/6 channel(s) based on chart(s) displayed.
2. Use snap arrows to hide or display the navstep menu.
3. Select Settings to display additional Realtime settings and options.



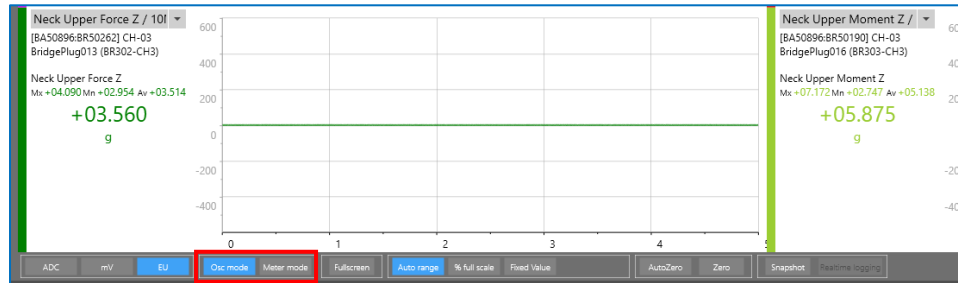
- a. Current Sample Rate and AAF value displayed.
- b. Modify chart width.
- c. Select 1, 3, or 6 charts.
- d. Restart Realtime to apply changes.
4. Select DAS from dropdown list to choose channels to display.
 - a. Channels can only be displayed from one DAS at a time.
5. Use Available Channels dropdown list to select from all channels in Test Setup.
 - a. Type Serial Number, Sensor Description, Channel Name or ISO Code to search.
6. Use chart dropdown list to select channel(s) from current DAS.

c. Display units:



i. Select ADC, mV or EU.

d. Oscopce/Meter Mode:

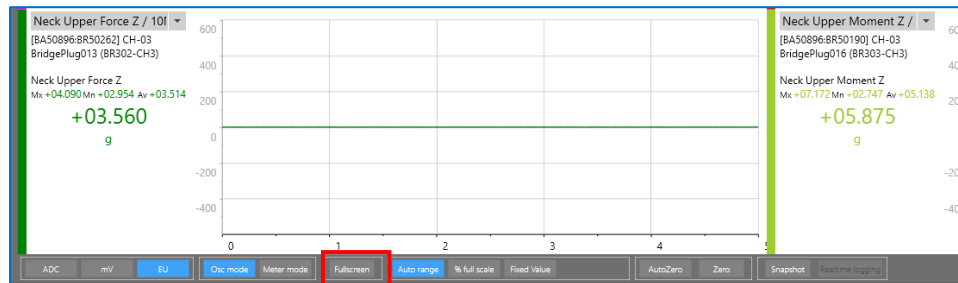


i. Osc mode (Oscilloscope) displays 1, 3 or 6 charts of analog output.

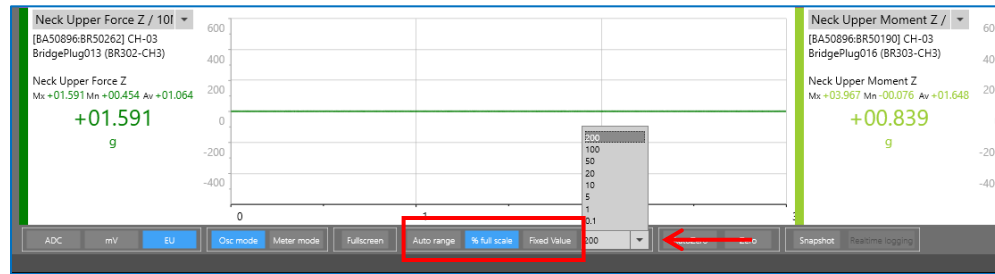
ii. Meter Mode displays digital readout of all channels in Test Setup.

1. Select subgroups of channels to display based on Tags applied in Sensor Database.

e. Select "Fullscreen" to enlarge active chart to fullscreen:

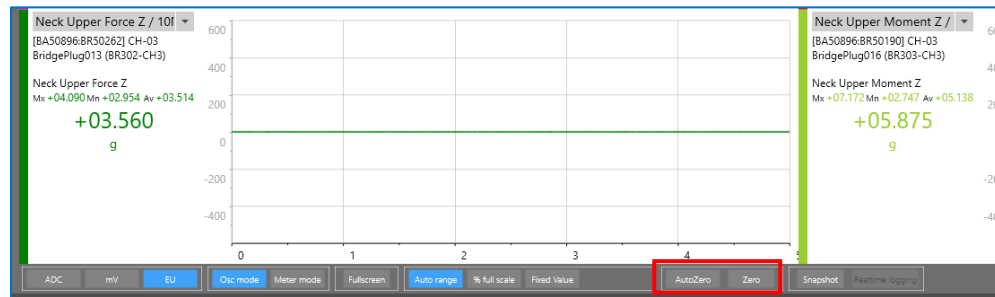


f. Display range:



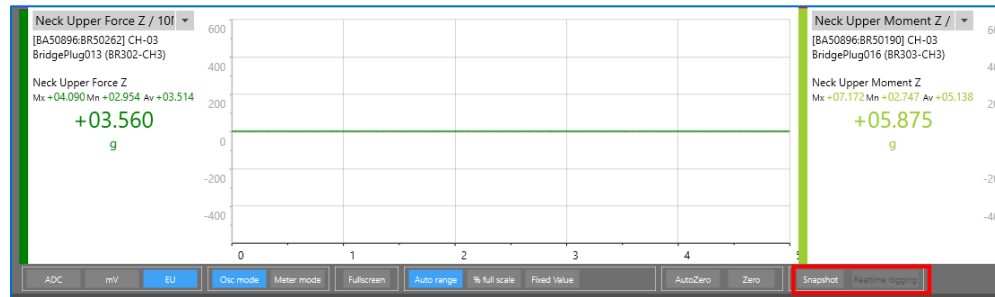
- i. Select “Auto range” to display a predefined percentage of the full scale range.
 1. Default Auto range value is 6.6% of full scale and can be modified in *DataPRO.exe.config* file.
- ii. Select “% full scale” to select the percentage of full scale to display.
- iii. Select “Fixed value” to select a fixed value to display.

g. AutoZero/Zero:



- i. Select “AutoZero” to automatically software zero channels when selecting a new channel to display.
- ii. Select “Zero” to software zero all channels.

h. Snapshot/Realtime logging:



- i. Select “Snapshot” to output an Excel file for each displayed channel with the ADC, mV and EU data for that sample. Snapshot files will be saved in the Data folder. (See [Appendix E: DataPRO File Structure](#), page 254, for more information.)
- ii. Select “Realtime logging” to enable Realtime logging for all channels displayed on the chart. Realtime logging files will be saved in the Data folder.



NOTE: Realtime logging is only available when 1 Chart is displayed.

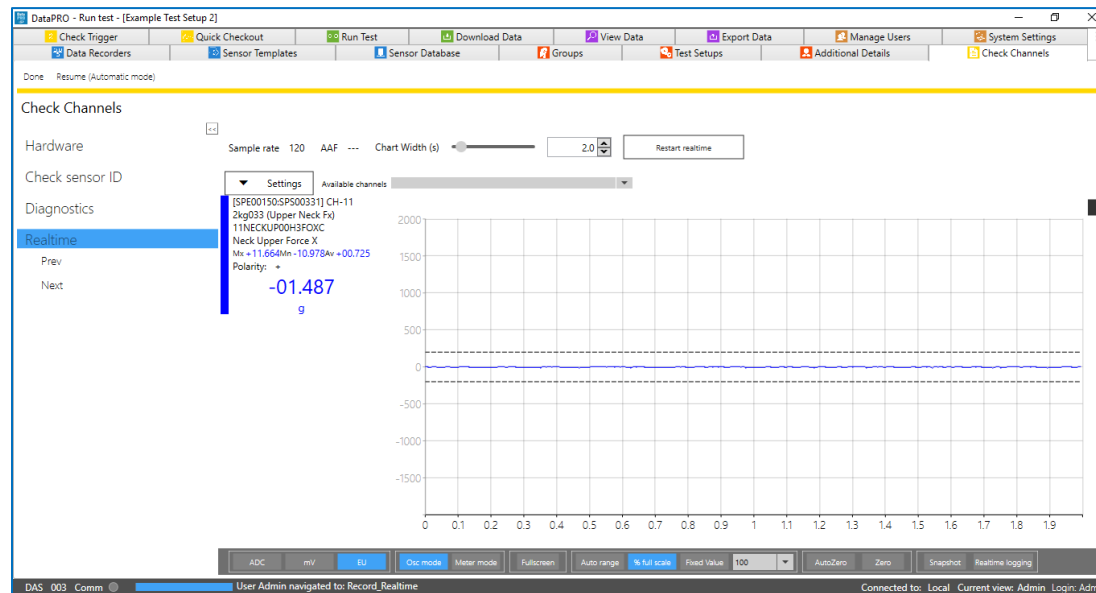
Realtime - Level Triggers On

DataPRO includes an optional “Level Trigger” check in Realtime. The level trigger threshold is set as a percentage of the sensor’s full scale output and can be modified in Realtime. This can be used to verify polarity or channel output.

To configure DataPRO to have “Level triggers on” in Realtime:

- Enable UseTestChannelOrder in the DataPRO.exe config file.
- Enable Level triggers on in System Settings tab → Realtime navstep.

If DataPRO is configured to have “Level triggers on” in Realtime, the Realtime display will allow only one channel to be displayed on a single chart.



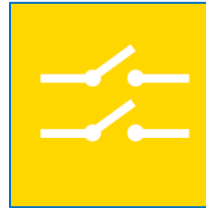
- Level Trigger threshold is indicated by the dashed line and can be moved for easier sensor output verification.
- Optional audible beeping indicates waiting for trigger and trigger received. (See [Realtime Settings](#), page 213.)
- If enabled, displayed channel will advance once level trigger has been received.
- DataPRO will automatically save *.png and *.CSV files of the data and plot to the Realtime folder of the dataset. See [Appendix E: DataPRO File Structure](#), page 254, for more information.

6. Select “Done” to return to the previous location. To return to the [Quick Start](#) steps, return to page 30.

Check Trigger

Check Trigger confirms the hardware connection and sensor assignment, and also allows for verification of the Event signal. (See [System Settings](#), page 193, to configure the system to test the Start Record signal as well.) The Arm Checklist provides a squib resistance measurement if squibs are included in the Test Setup.

1. Select the “Check Trigger” tab:



2. The **Hardware** navstep will automatically attempt to connect to the hardware associated with the active test setup.
 - a. Select “Run” to re-test the hardware connection.
3. Select the **Check sensor ID** navstep to perform a sensor check.
 - a. Select “Run” to re-scan for sensor IDs.

4. Select the **Check trigger** navstep, select “Run”, then generate a hardware trigger signal. Select “Cancel trigger check” to bypass the trigger check, or “Software trigger” to send a trigger signal command and progress to Arm Checklist:

The screenshot shows the DataPRO interface for the 'Check Trigger' step. The left sidebar has 'Check trigger' selected, indicated by a red arrow. The main area shows 'Waiting for trigger check' in a yellow box. Below this, a status bar shows 'Trigger: waiting' in a blue box and 'Faults: clear' in a green box. A 'Details' table is visible below the status bar.

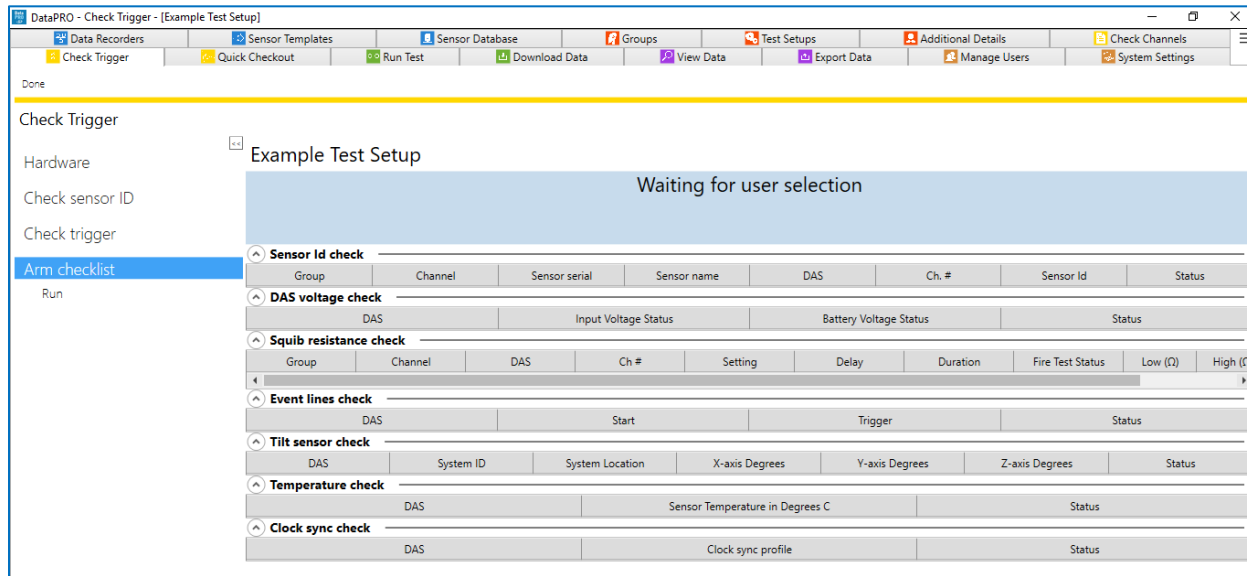
Group	DAS	Triggered	Faults	Status
Group 1	SPE00150			Waiting
Test channels	SPE00150			Waiting
Group 1	SPE00150:SPS00331			Waiting for trigger check
Test channels	SPE00150:SPS00331			Waiting for trigger check
Group 1	SPE00150:SPT00107			Waiting for trigger check

... Trigger signal is sent ...

The screenshot shows the DataPRO interface after the trigger signal is sent. The left sidebar has 'Check trigger' selected. The main area shows 'Passed' in a green box. Below this, a status bar shows 'Triggered' in a green box and 'Faults: clear' in a green box. A 'Details' table is visible below the status bar.

Group	DAS	Triggered	Faults	Status
Group 1	SPE00150	✓		Waiting
Test channels	SPE00150	✓		Waiting
Group 1	SPE00150:SPS00331	✓		Passed
Test channels	SPE00150:SPS00331	✓		Passed
Group 1	SPE00150:SPT00107	✓		Passed

5. Select “Arm checklist”, then select “Run” to perform tests defined in Test Setup:



a. Sensor ID check:

Sensor Id check								
Group	Channel	Sensor serial	Sensor name	DAS	Ch. #	Sensor Id	Status	
Group 1	Head Acceleration X	6DX0082 AC1	6DX0082 AC-1	SPE00150:SP500331	CH-07	760000075066DD2D	Passed	
Group 1	Head Acceleration Y	6DX0082 AC2	6DX0082 AC-2	SPE00150:SP500331	CH-08	CB000007508CEC2D	Passed	
Group 1	Head Acceleration Z	6DX0082 AC3	6DX0082 AC-3	SPE00150:SP500331	CH-09	220000075066312D	Passed	
Group 1	Head Angular Velocity X	6DX0082 AR1	6DX0082 AR-1	SPE00150:SP500331	CH-04	EC0000173C278B01	Passed	
Group 1	Head Angular Velocity Y	6DX0082 AR2	6DX0082 AR-2	SPE00150:SP500331	CH-05	380000173C27C301	Passed	
Group 1	Head Angular Velocity Z	6DX0082 AR3	6DX0082 AR-3	SPE00150:SP500331	CH-06	250000173C116001	Passed	

i. Performs a scan and compares Sensor IDs found to assignments defined in Test Setup.

b. DAS voltage check:

DAS voltage check				
DAS	Input Voltage Status	Battery Voltage Status	Status	
SPE00150:SP500331	12.3 V	8.4 V (Charging)	Passed	
SPE00150:SP700107	12.3 V	8.3 V (Charging)	Passed	
SPE00150	15.1 V	8.3 V (Charging)	Passed	

i. Measures input voltage and battery voltage of connected DAS and compares to power threshold settings defined in System Settings (see [System Settings](#), page 193).

c. Squib resistance check:

Squib resistance check											
Group	Channel	DAS	Ch #	Delay	Dur...	Fire Test Status	Low (Ω)	High (Ω)	Resistance (Ω)	Status	Setting
Group 1	Standard Front Airbag Primary	SPE00150:SPT00107	SQ-01	17.00	10.00	N/A	0.9	8.0	3.66	Passed	---
Group 1	Standard Front Airbag Secondary	SPE00150:SPT00107	SQ-02	20.00	10.00	N/A	0.9	8.0	3.66	Passed	---

- i. Measures resistance of squib channels and compares measurement to threshold values defined in Test Setup Parameters.

NOTE: *Delay, Duration and Fire Test Status are only tested/reported if using “Slow Trigger Check” method (see [System Settings](#), page 193). If not using “Slow Trigger Check” method, requested values from Test Setup will be displayed.*

d. Event lines check:

Event lines check				
DAS	Start	Trigger	Status	
SPE00150:SP500331	<input type="checkbox"/>	<input type="checkbox"/>	Passed	
SPE00150:SPT00107	<input type="checkbox"/>	<input type="checkbox"/>	Passed	
SPE00150	<input type="checkbox"/>	<input type="checkbox"/>	Passed	

- i. Checks Start and Event lines and reports current status of connected DAS.

e. Tilt sensor check – SLICE6 only:

Tilt sensor check						
DAS	System ID	System Location	X-axis Degrees	Y-axis Degrees	Z-axis Degrees	Status
SL60014	010	Example 1	NaN	-0.8	-87.4	N/A
SL60023	020	Example 3	0.3	NaN	-87.3	N/A

- i. Reports current tilt measurements from SLICE6 DAS.

NOTE: *Tilt sensors are configured using the Tilt Sensor Control utility.*

f. Temperature check – SLICE6 DB only

- i. Reports current temperature reading of connected SLICE6 Distributor.

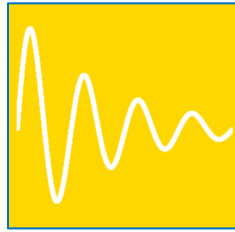
g. Clock sync check

6. Select “Done” to return to the previous location. To return to the [Quick Start](#) steps, return to page 30.

Quick Checkout

Quick Checkout allows for quickly creating a single-use test setup based on connected channels. This test setup will not be saved but will allow a diagnostic checkout and Realtime verification of connected or manually-assigned channels.

1. Select the “Quick Checkout” tab:



NOTE: Optional setting in *DataPRO.exe.config* to automatically Query Hardware when using Quick Checkout. If this setting is set to true, start at step 3.

2. Select DAS to be used during Quick Checkout.
 - a. If using EID, select “Query selected”:

The screenshot shows the DataPRO software interface with the 'Quick Checkout' tab selected. A red arrow points to the 'Query selected' button. The interface displays a 'Waiting' status and a table of Data Recorders.

Included	Serial number	Type	Number of channels	Firmware version	Max sample rate	Cal date	Cal due date	Sample rate
<input type="checkbox"/>	BA51253	SLICE NANO Base+	15 analog channel(s)	B1F4	200,000	4/29/2019	4/28/2020	
<input type="checkbox"/>	SPD00999	SLICE PRO DIM	18 digital input channel(s)	A1J4	600,000	4/7/2016	4/7/2017	
<input checked="" type="checkbox"/>	SPE00150	SLICE PRO Ethernet Controller	SLICE PRO Ethernet Controller	B0B3	---			
<input type="checkbox"/>	SPS00999	SLICE PRO SIM	18 analog channel(s)	A1J4	600,000	4/7/2016	4/7/2017	
<input type="checkbox"/>	SPT00999	SLICE PRO TOM	4 squib, 8 digital output channel(s)	D0D7	600,000	4/7/2016	4/7/2017	

Manual assignments

Channel List

Search Show bottom row

0 channel(s) in test 0 of 0 physical channel(s) assigned

TOP [] BOT Remove Sensor Delete

Group [] ISO (13499) code [] ISO channel name [] Type [] Sensor (SN) [] Hardware []

TOP [] -001 [] BOT Remove Sensor Delete

- b. If not using EID or to assign additional, undiscovered channels for checkout, select “Manual assignments” to enable manually assigning sensors to hardware channels:

The screenshot displays the DataPRO Quick Checkout window. At the top, there's a navigation bar with tabs like Data Recorders, Sensor Templates, Sensor Database, Groups, Test Setups, Additional Details, and Check Channels. Below this is a toolbar with buttons for Check Trigger, Quick Checkout, Run Test, Download Data, View Data, Export Data, Manage Users, and System Settings. The main area is titled "Quick Checkout" and shows a "Waiting" status. A table of "Data Recorders" is visible, with columns for Included, Serial number, Type, Number of channels, Firmware version, Max sample rate, Cal date, Cal due date, and Sample rate. The row for SPE00150 (SLICE PRO Ethernet Controller) is highlighted. Below the table, there's a section for "Manual assignments" with a red arrow pointing to the "Manual assignments" checkbox. The "Channel List" section is empty, and the "Sensors Available" section shows a list of sensors with columns for Serial Number, Name, EPE, Capacity (EU), Units, Out Of Date, and In Warning Period. The "Hardware" section shows a list of hardware channels with columns for DAS, CH #, Type, Channel, and Sensor.

- i. Quick Checkout channel assignments are the same as those for Groups and Test Setups (see [Groups](#), page 61, for more information).

3. Select "Run Check" after all channel assignments have been made:

The screenshot shows the DataPRO Quick Checkout window. At the top, there are tabs for Data Recorders, Sensor Templates, Sensor Database, Groups, Test Setup, Additional Details, and Check Channels. Below the tabs, there are buttons for Check Trigger, Quick Checkout, Run Test, Download Data, View Data, Export Data, Manage Users, and System Settings. The main area is titled 'Quick Checkout' and contains a large green 'Done' button. Below this, there is a 'Data Recorders' table with the following data:

Included	Serial number	Type	Number of channels	Firmware version	Max sample rate	Cal date	Cal due date	Sample rate
<input checked="" type="checkbox"/>	SPE00150	SLICE PRO Ethernet Controller	SLICE PRO Ethernet Controller	8083	---			

Below the table, there is a 'Manual assignments' section with a 'Channel List' table. The 'Channel List' table has columns for Group, ISO (13449) code, ISO channel name, and Type. It lists 8 channels, all of which are Bridge type.

Group	ISO (13449) code	ISO channel name	Type
Test channels	11HEAD0000H3AVYA	60X0082 AR1	Bridge
Test channels	11HEAD0000H3AVYA	60X0082 AR2	Bridge
Test channels	11HEAD0000H3AVZA	60X0082 AR3	Bridge
Test channels	11HEAD0000H3ACXA	60X0082 AC1	Bridge
Test channels	11HEAD0000H3ACYA	60X0082 AC2	Bridge
Test channels	11HEAD0000H3ACZA	60X0082 AC3	Bridge

On the right side, there is a 'Sensors Available' section with a search bar and buttons for Assigned, Unassigned, and All. Below this, there is a 'Hardware' section with a search bar and a table with columns for DAS, CH #, Type, Channel, and Sensor. The table shows one entry:

DAS	CH #	Type	Channel	Sensor
SPE00150:SPS00331	[SPE00150:SPS00331] CH-01	Bridge/IEPE	---	---

4. This will begin the Check Channel process (see [Check Channels](#), page 119, for more information).

Record

Run Test

Use the “Run Test” tab to initiate a data collection sequence based on the active Test Setup. The settings and parameters in the Test Setup and the System Settings tabs determine the navsteps and behavior of DataPRO during the data collection process. (See [Test Setups](#), page 78, or [System Settings](#), page 193, for more information.)

The steps and images below are for a “Record In Place” test where data is stored on the internal flash memory of the DAS. For information on configuring SLICE6 AIR DAS for a streaming test, see [Appendix I: SLICE6 AIR Setup](#), page 306.

DTS recommends using the Diagnostic tab(s) prior to collecting data. However, many of the same steps will be repeated with each data collection sequence.

Navsteps are configurable for each Test Setup. Not all navsteps listed are required, therefore some steps listed below may not be applicable.

1. Select the “Run Test” tab:



2. The **Basic info** navstep displays an overview of the test setup:

The screenshot shows the 'Basic info' tab for an 'Example Test Setup'. The 'Test id' field has a dropdown menu. The 'Recording Mode' is set to 'Circular buffer'. The 'Samples Per Second' is 10,000. The 'Pre-Trigger Seconds' and 'Post-Trigger Seconds' are both 1.00. The 'Destructive/impact test' checkbox is checked. The 'Sensor details' table lists the following sensors:

Serial Number	Name	Manufacturer	Model	IEPE	Capacity (EU)	Sensitivity	Linear Sensitivity	Resistance (Ω)	Excitation (V)	Units
2kg033	Upper Neck				2,000.00		0.00042000 mV/V/EU	985	5	g
2kg040	Upper Neck				2,000.00		0.00040300 mV/V/EU	999	5	g
6DX0082 AC1	6DX0082 AC	DTS	(None)		2,000.00		0.01755000 mV/V/EU	347	5	g
6DX0082 AC2	6DX0082 AC	DTS	(None)		2,000.00		-0.01700000 mV/V/EU	348	5	g
6DX0082 AC3	6DX0082 AC	DTS	(None)		2,000.00		0.01825000 mV/V/EU	348	5	g
6DX0082 AR1	6DX0082 AR	DTS	(None)		18,000.00		0.09440000 mV/EU	3004	5	deg/s
6DX0082 AR2	6DX0082 AR	DTS	(None)		18,000.00		0.09370000 mV/EU	3007	5	deg/s
6DX0082 AR3	6DX0082 AR	DTS	(None)		18,000.00		-0.09456000 mV/EU	3004	5	deg/s

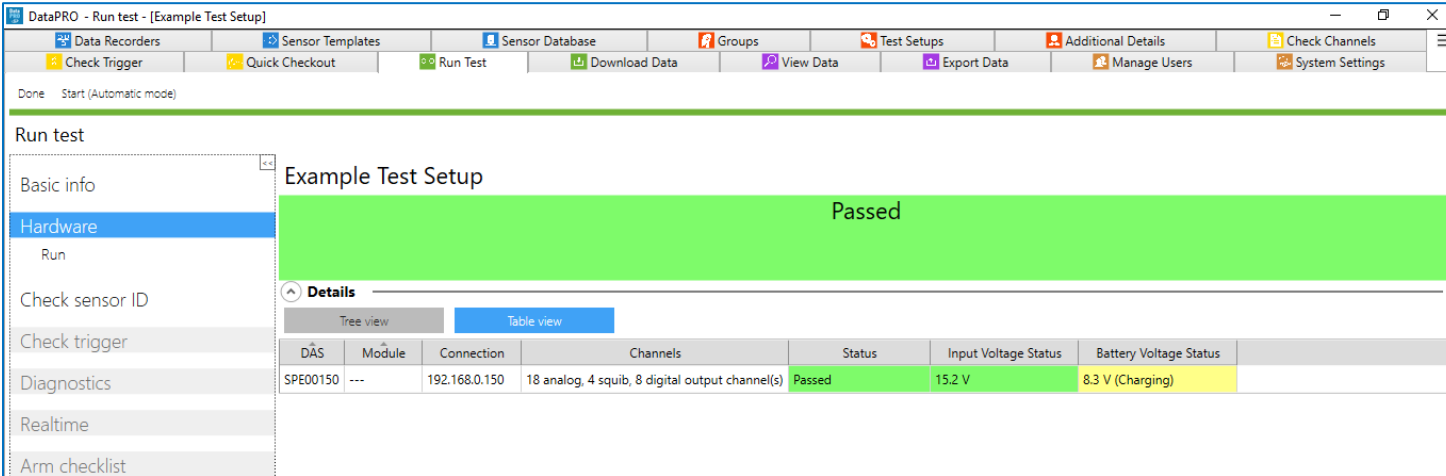
The 'Groups' table at the bottom shows:

Name	Test Object	Position
Group 1	1	1
Test channels	?	?

- Test Setup and Test ID are displayed throughout the data collection sequence.
- Test ID prefix and suffix can be selected from predefined options. Set predefined options in System Settings tab (see [System Settings](#), page 193, for more information).
- Verify recording mode/parameters as defined in Test Setup.
- If the Destructive/Impact Test box is checked, running the test will set the First Use Date for DAS or sensors that have not been used since the last calibration. Note: This feature is only supported for SLICE hardware and must be enabled on the hardware by DTS personnel.
- Verify sensors included in test by reviewing the Sensor details table.

NOTE: DataPRO can be configured to allow or to prevent running a test with sensors and hardware that is past due for calibration (see [System Settings](#), page 193, for more information).

- f. Verify Groups in test. Select up/down arrows to hide/display sensor list.
 - g. Select Start to start Automatic test progression, if enabled. Select View Summary to review Test Summary. (Test Summary will be automatically generated and saved with data files. See [Appendix E: DataPRO File Structure](#), page 254, for more information.)
3. Continue to the **Hardware** navstep. DataPRO will attempt to communicate with the hardware associated with the active Test Setup:



The screenshot shows the DataPRO software interface. The main window is titled "DataPRO - Run test - [Example Test Setup]". The left sidebar contains a navigation menu with the following items: Basic info, Hardware (highlighted in blue with a red arrow pointing to it), Run, Check sensor ID, Check trigger, Diagnostics, Realtime, and Arm checklist. The main content area displays "Example Test Setup" with a large green bar indicating "Passed". Below this, there is a "Details" section with a "Table view" tab selected. The table shows the following data:

DAS	Module	Connection	Channels	Status	Input Voltage Status	Battery Voltage Status
SPE00150	---	192.168.0.150	18 analog, 4 squib, 8 digital output channel(s)	Passed	15.2 V	8.3 V (Charging)

- a. If needed, select "Run" to re-run Hardware navstep and reattempt hardware connection.

4. Proceed to **Check sensor ID** navstep to confirm sensors in test setup are properly configured with a hardware channel. Sensors without EID that have not yet been configured with hardware channels will need to be manually assigned before proceeding:

Channels highlighted green have been assigned via EID or hardware assignment.
 Channels highlighted orange indicate the sensor EID was not found and the hardware channel assignment will be used instead.
 Channels highlighted yellow indicate the sensor was manually assigned using this Navigation Step.
 Channels highlighted purple indicate the sensor EID found does not match the hardware channel assignment.

- a. Channels that are included in the Test Setup but not yet assigned to hardware channels will be listed in the Unresolved Channels table.
 - i. Select from Unresolved Channels table and drag to Hardware Channels table to make assignments.
 - ii. Each Test Setup can be configured to allow progressing with missing sensors (unresolved channels). (See [Test Setups](#), page 78, for more information.)
- b. Sensor IDs that were detected but are not included in the Test Setup will be displayed in the Extra Sensor IDs table. If the sensor ID(s) are associated with sensors in the Sensor Database, the serial number(s) will be displayed.
- c. The key defines what different shading in the Hardware Channels table indicates (see [Check Channels](#), page 119, for more information).

5. The **Check Trigger** navstep allows the Event signal to be verified. The Check Trigger step is optional and can be configured in multiple ways in the System Settings tab. (See [System Settings](#), page 193, for more information.)

NOTE: *DataPRO can be configured with the Check Trigger navstep to occur after Diagnostics. See [System Settings](#), page 193, for more information.*

The screenshot shows the 'DataPRO - Run test - [Example Test Setup]' window. The left sidebar has 'Check trigger' selected, indicated by a red arrow. The main content area shows 'Example Test Setup' with a large blue box saying 'Waiting for user selection'. Below this, there are two status boxes: 'Trigger: waiting' (blue) and 'Faults: clear' (green). A 'Details' table is visible below:

Group	DAS	Triggered	Faults	Status
Group 1	SPE00150			Waiting
Test channels	SPE00150			Waiting
Group 1	SPE00150:SPS00331			Waiting
Test channels	SPE00150:SPS00331			Waiting
Group 1	SPE00150:SPT00107			Waiting

- a. Select “Run” to perform a Trigger Check or Bypass check (if enabled) to bypass the trigger check:

The screenshot shows the 'DataPRO - Run test - [Example Test Setup]' window. The left sidebar has 'Run' selected, indicated by a red arrow. The main content area shows 'Example Test Setup' with a large yellow box saying 'Waiting for trigger check'. Below this, there are two status boxes: 'Trigger: waiting' (blue) and 'Faults: clear' (green). A 'Details' table is visible below:

Group	DAS	Triggered	Faults	Status
Group 1	SPE00150			Waiting
Test channels	SPE00150			Waiting
Group 1	SPE00150:SPS00331			Waiting for trigger check
Test channels	SPE00150:SPS00331			Waiting for trigger check
Group 1	SPE00150:SPT00107			Waiting for trigger check

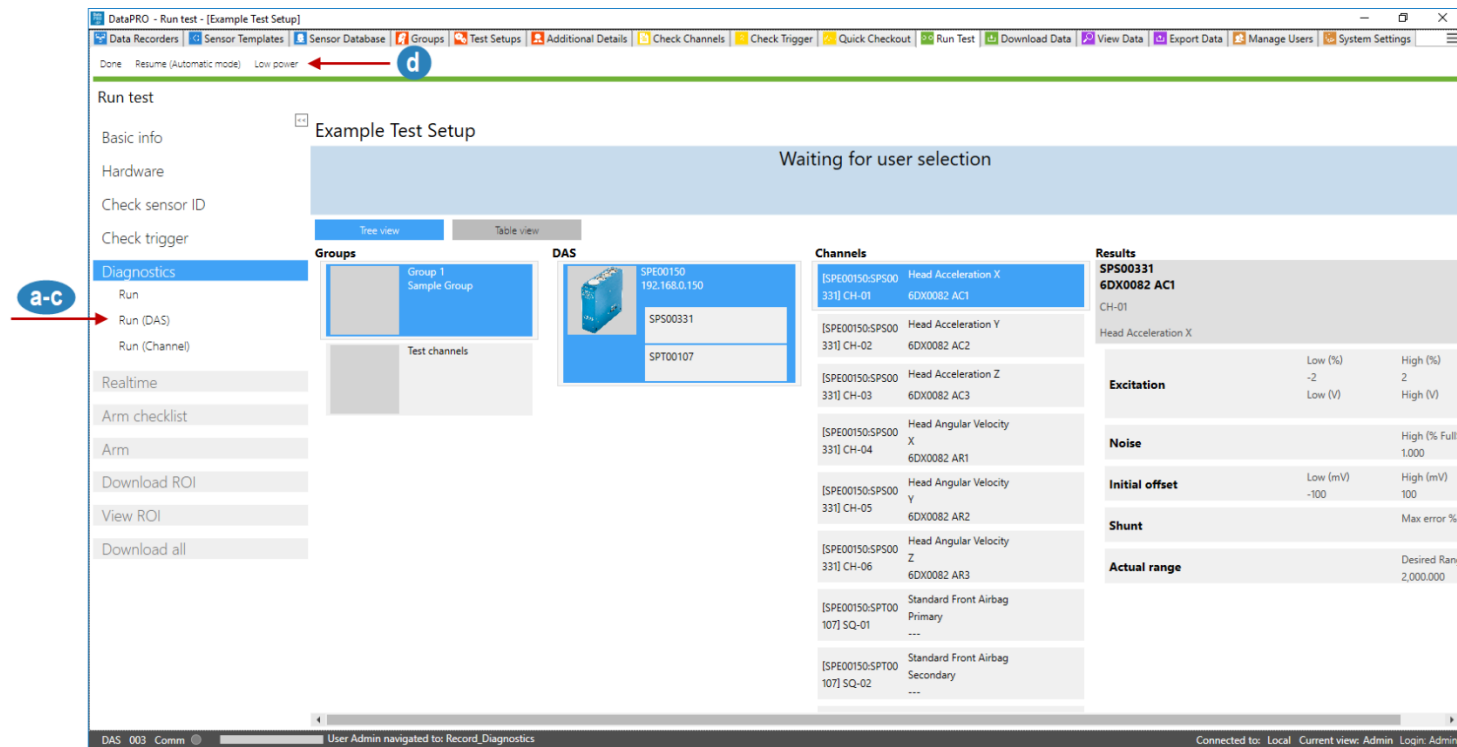
- i. After Trigger Check has been run, options to Cancel Trigger Check and issue Software Trigger are available.

b. DAS indicates individual status:

The screenshot shows the 'Run test' interface for 'Example Test Setup'. The summary bar indicates the overall test status as 'Passed', with a sub-section for 'Triggered' and 'Faults: clear'. A red arrow points from the 'Triggered' section to a table below. The table lists test groups and channels with their individual statuses.

Group	DAS	Triggered	Faults	Status
Group 1	SPE00150	✓		Waiting
Test channels	SPE00150	✓		Waiting
Group 1	SPE00150:SPS00331	✓		Passed
Test channels	SPE00150:SPS00331	✓		Passed
Group 1	SPE00150:SPT00107	✓		Passed

6. Continue to **Diagnostics** navstep. DataPRO will automatically configure the DAS:



- Select "Run" to perform a diagnostic checkout on all DAS/Channels included in the Test Setup.
- Select "Run (DAS)" to perform a diagnostic checkout on only the selected DAS.
- Select "Run (Channel)" to perform a diagnostic checkout on only the selected Channel.
- Select Low Power to turn off excitation voltage. Diagnostics will have to be performed again to resume data collection sequence.

7. A pre-test diagnostics report will be automatically generated and saved with the test data folder. (See [Appendix E: DataPRO File Structure](#), page 254, for more information.)
 - a. Select View Report to display this report:

The screenshot shows the DataPRO software interface with the 'View report' button highlighted by a red arrow. The main content area displays a diagnostics report for 'Example Test Setup' with an overall status of 'Passed'.

Groups

- Group 1: Sample Group
- Test channels

DAS

SPE00150	192.168.0.150	Input (V): 15.130	Battery (V): 8.270	Passed
SPS00331	12.300	Battery (V): 8.360	Passed	
SPT00107	12.300	Battery (V): 8.360	Passed	

Channels

[SPE00150:SPS00331] CH-01	Head Acceleration X	6DX0082 AC1	Passed
[SPE00150:SPS00331] CH-02	Head Acceleration Y	6DX0082 AC2	Passed
[SPE00150:SPS00331] CH-03	Head Acceleration Z	6DX0082 AC3	Passed
[SPE00150:SPS00331] CH-04	Head Angular Velocity X	6DX0082 AR1	Passed
[SPE00150:SPS00331] CH-05	Head Angular Velocity Y	6DX0082 AR2	Passed
[SPE00150:SPS00331] CH-06	Head Angular Velocity Z	6DX0082 AR3	Passed
[SPE00150:SPT00107] SQ-01	Standard Front Airbag Primary		Passed

Results

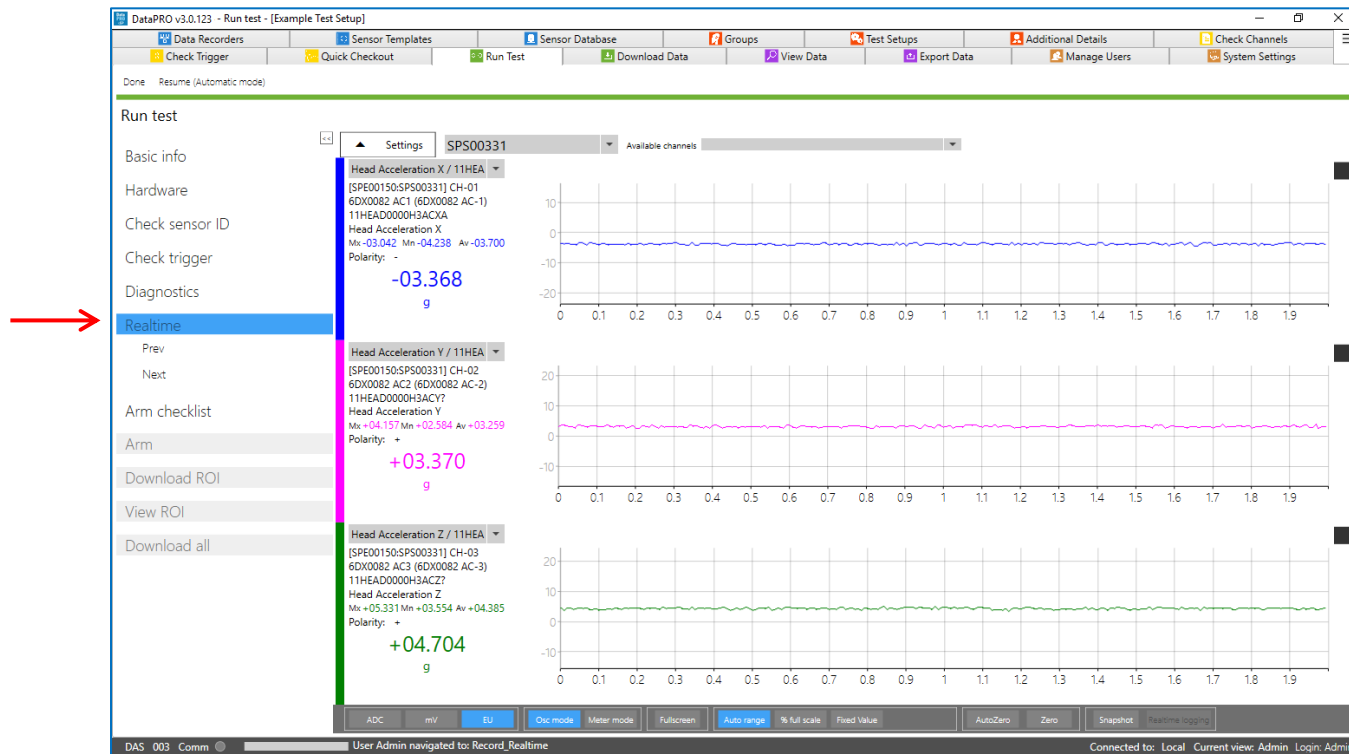
SPS00331 6DX0082 AC1

CH-01

Head Acceleration X

Excitation	0.0%	Low (%)	High (%)
		-2	2
	5.0	Low (V)	High (V)
		4.9	5.1
Noise	0.009	High (%) FullS	1.000
Initial offset	0	Low (mV)	High (mV)
		-100	100
AutoZero % deviation	0.16	Low (%)	High (%)
		0.00	5.00
Shunt	0.3	Max error %	5.0
Actual range	3,559.884	Desired Rang	2,000.000

8. The **Realtime** navstep allows for Realtime verification of each channel:



- The controls of Realtime in a data collection sequence are the same as the controls for the Check Channels diagnostic tab. (See [Check Channels](#), page 119, for more information.)

NOTE: Realtime AAF ratio is 1:1 by default. This setting can be changed in the DataPRO.exe. config file. See [DataPRO Settings Manual](#) for more information about the config file.

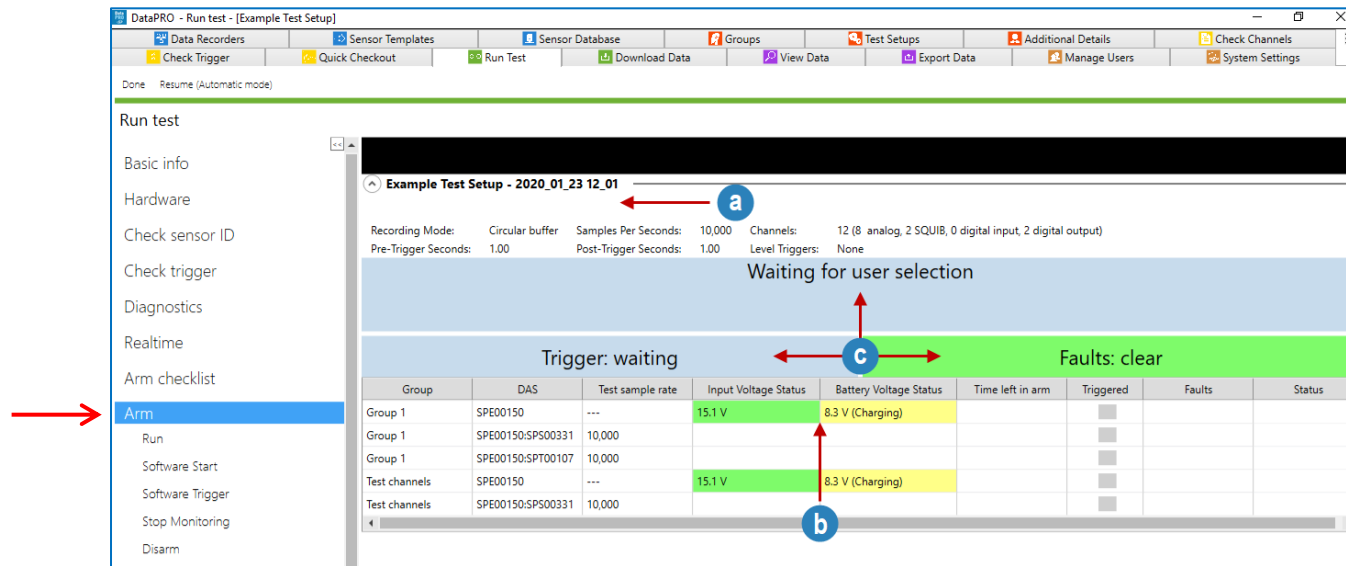
9. Continue to the **Arm Checklist** navstep (if enabled):

The screenshot displays the 'DataPRO - Run test - [Example Test Setup]' window. The 'Arm checklist' is expanded, showing a 'Passed' status for the entire test setup. The checklist includes the following sections:

- Sensor id check:** A table listing sensor groups, channels, serial numbers, names, DAS IDs, channel numbers, and sensor IDs, all with a 'Passed' status.
- DAS voltage check:** A table showing input and battery voltage status for different DAS units, all with a 'Passed' status.
- Squib resistance check:** A table listing squib groups, channels, DAS IDs, channel numbers, delay, duration, fire test status, and resistance values, all with a 'Passed' status.
- Event lines check:** A table showing event lines for different DAS units, all with a 'Passed' status.
- Tilt sensor check:** A table showing tilt sensor data for different DAS units, all with a 'Passed' status.

a. If enabled, the Arm Checklist will run system tests as defined in the Test Setup.

NOTE: If a TOM is included in the hardware used in the test, the Arm Checklist is automatically included.

10. Continue to the **Arm** navstep:

- a. Confirm Test Setup, Test ID, recording mode and parameters, channel count, group(s) and associated DAS.
- b. Verify Input Voltage (if present) and Battery Voltage (if present).
- c. System status displays:
 - i. “Waiting for user selection”: Select “Run” to arm the system.
 - ii. “Trigger: waiting” indicates that a trigger has not been received.
 - iii. “Faults: clear” indicates that no faults have been detected.

NOTE: If enabled, additional *Arm Prepare* navstep will be present. See Appendix D: Quick Arm for more information.

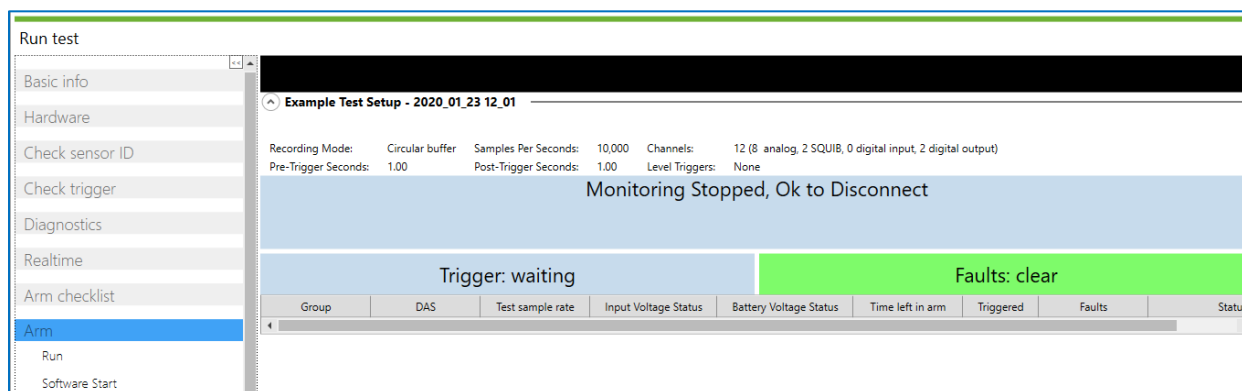
11. Select “Run” to arm the system.
 - a. Circular Buffer recording mode:

The screenshot shows the DataPRO software interface during a test run. The main display area is titled "Armed" and shows "Recording, waiting for trigger 1s" with a 50% progress bar. Below this, a table lists test groups and channels with their respective parameters and statuses.

Group	DAS	Test sample rate	Input Voltage Status	Battery Voltage Status	Time left in arm	Triggered	Faults	Status
Group 1	SPE00150	---	15.1 V	8.3 V (Charging)	---	<input type="checkbox"/>		
Group 1	SPE00150:SPS00331	10,000	12.3 V	8.4 V (Charging)	12:35:39	<input type="checkbox"/>		Recording
Group 1	SPE00150:SPT00107	10,000	12.3 V	8.3 V (Charging)	1:01:10:59	<input type="checkbox"/>		Recording
Test channels	SPE00150	---	15.1 V	8.3 V (Charging)	---	<input type="checkbox"/>		
Test channels	SPE00150:SPS00331	10,000	12.3 V	8.4 V (Charging)	12:35:39	<input type="checkbox"/>		Recording

- i. Once armed, the status bar indicates “Recording, waiting for trigger”. Displays time remaining in predefined test parameters.
- ii. “Time left in arm” is only displayed for SLICE hardware and displays total time available on 16 GB internal memory. (See [How to Calculate Maximum Recording Time](#), page 22, for more information.)
- iii. Each DAS reports individual status.
- iv. Select “Software Trigger” to apply a software trigger.

- v. Select “Stop Monitoring” to disconnect the control PC from the DAS for data collection.



NOTE: Do not disconnect Ethernet or USB communication until the “Monitoring Stopped, OK to Disconnect” message appears.

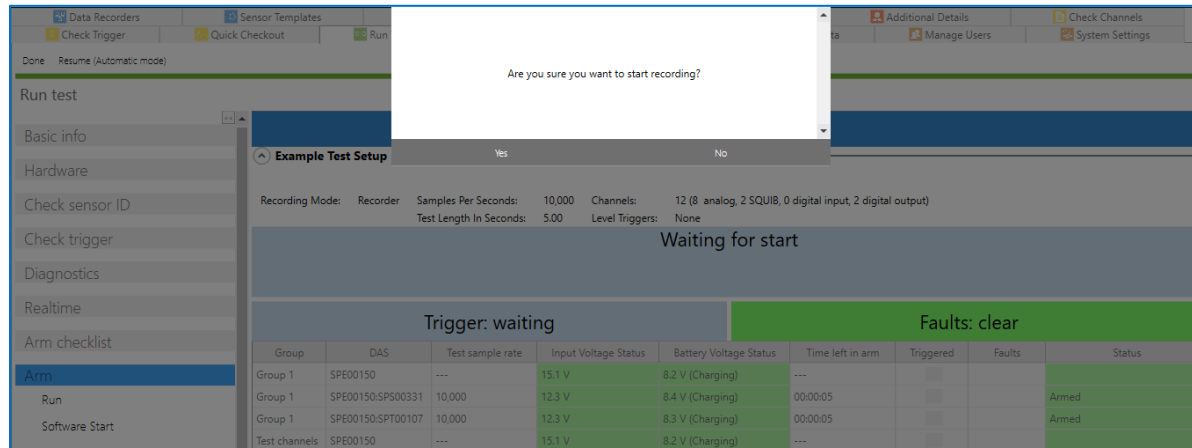
- vi. Select “Disarm” to disarm the system and abort the test.

b. Recorder Mode:

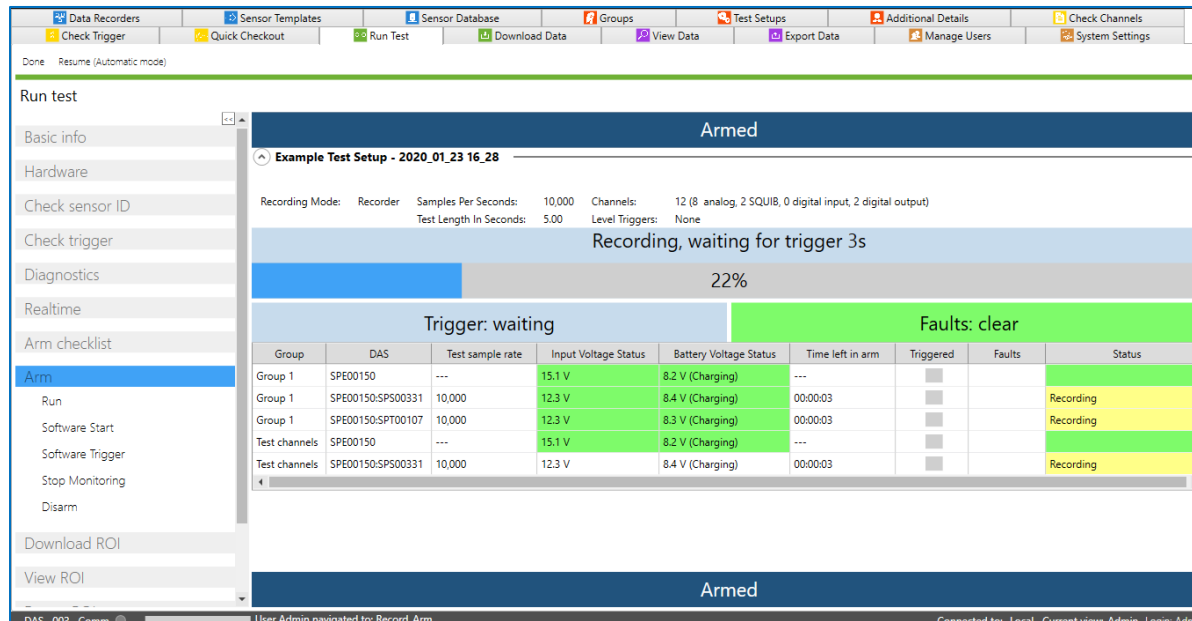
Group	DAS	Test sample rate	Input Voltage Status	Battery Voltage Status	Time left in arm	Triggered	Faults	Status
Group 1	SPE00150	---	15.1 V	8.3 V (Charging)	---	<input type="checkbox"/>		
Group 1	SPE00150:SP500331	10,000	12.3 V	8.4 V (Charging)	00:00:05	<input type="checkbox"/>		Armed
Group 1	SPE00150:SPT00107	10,000	12.3 V	8.3 V (Charging)	00:00:05	<input type="checkbox"/>		Armed
Test channels	SPE00150	---	15.1 V	8.3 V (Charging)	---	<input type="checkbox"/>		
Test channels	SPE00150:SP500331	10,000	12.3 V	8.4 V (Charging)	00:00:05	<input type="checkbox"/>		Armed

- i. Once armed, the status bar indicates “Waiting for start”.
- ii. “Time left in arm” displays total test length.
- iii. Each DAS reports individual status.

- iv. Generate Start Record signal either via hardware or by selecting “Software Start”. (“Software Trigger” will be enabled once DAS receives Start Record signal.)



- v. “Time left in arm” will start counting down once Start Record signal has been received:



- vi. Generate trigger/T=0 signal either via hardware or by selecting “Software Trigger”.

- vii. Select “Stop Monitoring” to disconnect the control PC from the DAS for data collection.

NOTE: Do not disconnect Ethernet or USB communication until the “Monitoring Stopped, OK to Disconnect” message appears.

- viii. Select “Disarm” to disarm the system and abort the test.

c. Hybrid Mode:

The screenshot shows the 'Run test' interface. At the top, a blue status bar indicates 'Armed'. Below this, a light blue bar shows 'Waiting for start'. The main area displays test parameters: Recording Mode: Hybrid recorder, Samples Per Seconds: 10,000, Channels: 12 (8 analog, 2 SQUIB, 0 digital input, 2 digital output), Post-Trigger Seconds: 5.00, Level Triggers: None. Below the parameters, there are two status bars: 'Trigger: waiting' (light blue) and 'Faults: clear' (green). A table below shows the status of various DAS units:

Group	DAS	Test sample rate	Input Voltage Status	Battery Voltage Status	Time left in arm	Triggered	Faults	Status
Group 1	SPE00150	---	15.1 V	8.2 V (Charging)	---	<input type="checkbox"/>		Armed
Group 1	SPE00150:SPS00331	10,000	12.3 V	8.4 V (Charging)	12:36:08	<input type="checkbox"/>		Armed
Group 1	SPE00150:SPT00107	10,000	12.3 V	8.3 V (Charging)	1:01:11:29	<input type="checkbox"/>		Armed
Test channels	SPE00150	---	15.1 V	8.2 V (Charging)	---	<input type="checkbox"/>		Armed
Test channels	SPE00150:SPS00331	10,000	12.3 V	8.4 V (Charging)	12:36:08	<input type="checkbox"/>		Armed

At the bottom, another blue status bar indicates 'Armed'. The bottom status bar shows 'DAS 003 Comm', 'User Admin navigated to: Record_Arm', and 'Connected to: Local Current view: Admin Login: Admin'.

- i. Status bar indicates “Waiting for start”.
- ii. “Post-Trigger Seconds” displays total test length defined in Test Setup. “Time left in arm” displays total record time based on available DAS memory.
- iii. Each DAS reports individual status.
- iv. Select “Software Start” to apply a software Start Record signal. (“Software Trigger” will be enabled once DAS receives Start Record signal.)

- v. "Time left in arm" begins counting down once Start Record signal is received. Data is being written to flash memory and will be included in "Download All" dataset:

The screenshot shows the DataPRO software interface. The top navigation bar includes tabs for Data Recorders, Sensor Templates, Sensor Database, Groups, Test Setups, Additional Details, Check Channels, Check Trigger, Quick Checkout, Run Test, Download Data, View Data, Export Data, Manage Users, and System Settings. The main panel is titled 'Armed' and shows 'Example Test Setup - 2020_01_23 16_38'. The recording mode is 'Hybrid recorder' with 10,000 samples per second and 12 channels. The status is 'Recording, waiting for trigger 5s' with a progress bar at 0%. Below this, there are sections for 'Trigger: waiting' and 'Faults: clear'. A table at the bottom lists test parameters for various groups and channels.

Group	DAS	Test sample rate	Input Voltage Status	Battery Voltage Status	Time left in arm	Triggered	Faults	Status
Group 1	SPE00150	---	15.1 V	8.2 V (Charging)	---	<input type="checkbox"/>		
Group 1	SPE00150:SPS00331	10,000	12.3 V	8.4 V (Charging)	12:35:28	<input type="checkbox"/>		Recording
Group 1	SPE00150:SPT00107	10,000	12.3 V	8.3 V (Charging)	1:01:10:49	<input type="checkbox"/>		Recording
Test channels	SPE00150	---	15.1 V	8.2 V (Charging)	---	<input type="checkbox"/>		
Test channels	SPE00150:SPS00331	10,000	12.3 V	8.4 V (Charging)	12:35:28	<input type="checkbox"/>		Recording

- vi. Specified Post-Trigger Seconds begins counting down once Event signal has been received:

The screenshot shows the DataPRO software interface. The top navigation bar includes tabs for Data Recorders, Sensor Templates, Sensor Database, Groups, Test Setups, Additional Details, Check Channels, Check Trigger, Quick Checkout, Run Test, Download Data, View Data, Export Data, Manage Users, and System Settings. The main content area is titled 'Armed' and shows a test setup for 'Example Test Setup - 2020_01_23 16_38'. The recording mode is 'Hybrid recorder' with 10,000 samples per second and 12 channels (8 analog, 2 SQUIB, 0 digital input, 2 digital output). The post-trigger seconds are set to 5.00. The progress bar shows 'Recording 3s' and '26%' completion. Below the progress bar, there are sections for 'Triggered' and 'Faults: clear'. A table below shows the test parameters for various groups and channels.

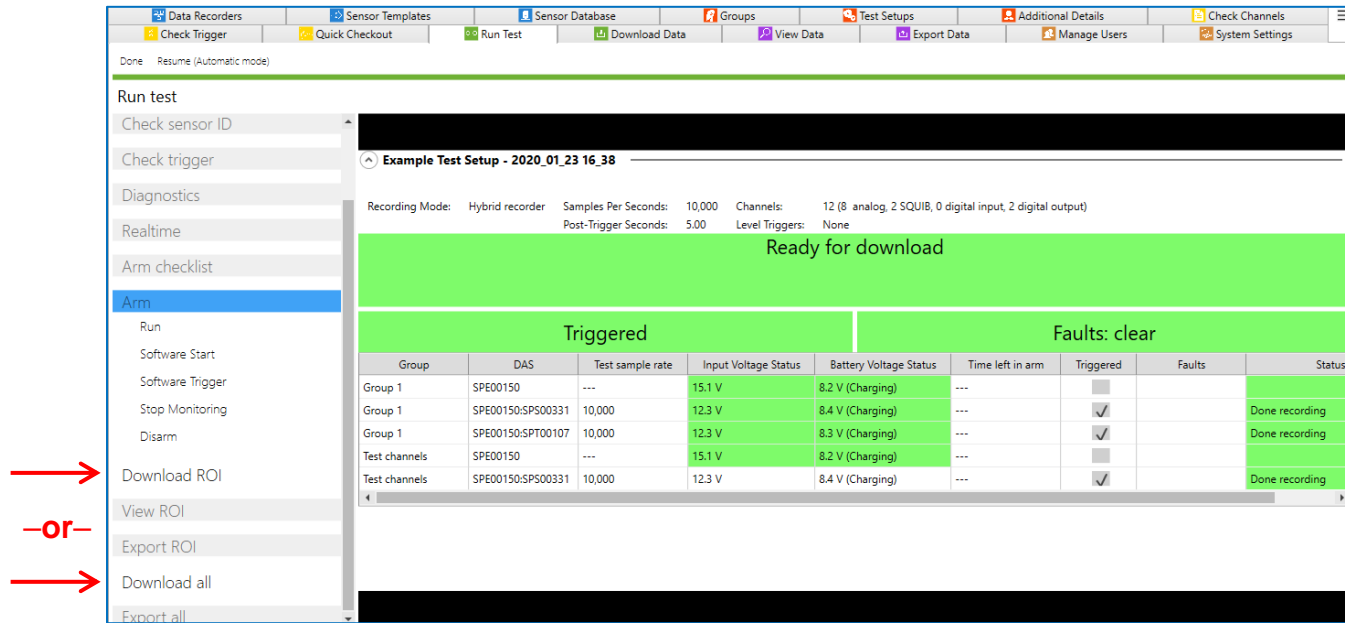
Group	DAS	Test sample rate	Input Voltage Status	Battery Voltage Status	Time left in arm	Triggered	Faults	Status
Group 1	SPE00150	---	15.1 V	8.2 V (Charging)	---	<input type="checkbox"/>		
Group 1	SPE00150:SPS00331	10,000	12.3 V	8.4 V (Charging)	12:35:20	<input checked="" type="checkbox"/>		Recording
Group 1	SPE00150:SPT00107	10,000	12.3 V	8.3 V (Charging)	1:01:10:42	<input checked="" type="checkbox"/>		Recording
Test channels	SPE00150	---	15.1 V	8.2 V (Charging)	---	<input type="checkbox"/>		
Test channels	SPE00150:SPS00331	10,000	12.3 V	8.4 V (Charging)	12:35:20	<input checked="" type="checkbox"/>		Recording

- vii. Select “Stop Monitoring” to disconnect the control PC from the DAS for data collection.

NOTE: Do not disconnect Ethernet or USB communication until the “Monitoring Stopped, OK to Disconnect” message appears.

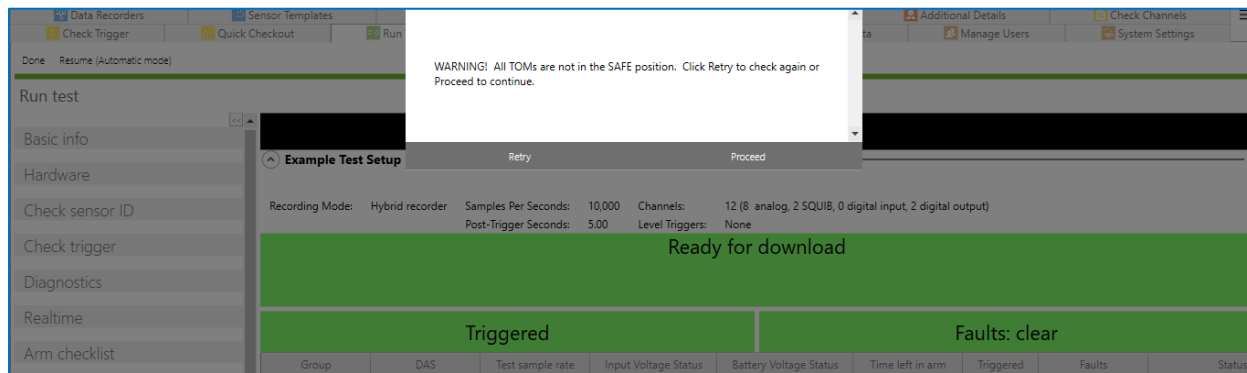
- viii. Select “Disarm” to disarm the system and abort the test.

12. When the test is complete and DAS has been detected (if applicable), select the **Download ROI** –or– **Download all** navstep. Skip to step 15 to proceed with Download All. Continue to the next step to proceed with Download ROI:



a. Download and export options are configurable for each Test Setup. (See Test Setups, page 78, for more information.)

NOTE: DataPRO will indicate if squib resistance is still present or TOMs are not in “Safe Position”. See DataPRO Settings Manual for options to configure DataPRO to allow or prevent progression:



13. Modify the ROI period start/end if desired:

The screenshot shows the DataPRO Run test interface. The main window is titled "DataPRO - Run test - [Example Test Setup]". The interface includes a top menu bar with options like "Data Recorders", "Sensor Templates", "Sensor Database", "Groups", "Test Setups", "Additional Details", "Check Channels", "Check Trigger", "Quick Checkout", "Run Test", "Download Data", "View Data", "Export Data", "Manage Users", and "System Settings".

The "Run test" section is active, showing "Example Test Setup" and "Waiting for user selection". The "ROI Details" section displays the following information:

- Data start (sec): -46.150
- Data end (sec): 5.184
- Sample rate (sps): 10,000
- Test ID Suffix: ROI Period 1 ROI period start (sec) -1.000 ROI period end (sec) 1.000
- Test ID Suffix: ROI Period 2 ROI period start (sec) 0.000 ROI period end (sec) 5.000

Below the ROI Details is the "Region of Interest Channel Assignments" table:

ISO Code	ISO Channel Name	Serial Number	Sensor Name	DAS Serial Number	Sample Rate	Display Units	_ROI Period 1	_ROI 1
11AIRBFRLE01CU00	Standard Front Airbag Primary	TSQ_TestSpecific	TSQ_TestSpecific	SPT00107	10000	V	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11AIRBFRLE02CU00	Standard Front Airbag Secondary	TSQ_TestSpecific	TSQ_TestSpecific	N/A	10000	V	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
??NECKUP00H3FOZC	Neck Upper Force Z	2kg040	Upper Neck Fz	SPS00331	10000	g	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11NECKUP00H3FOXC	Neck Upper Force X	2kg033	Upper Neck Fx	SPS00331	10000	g	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

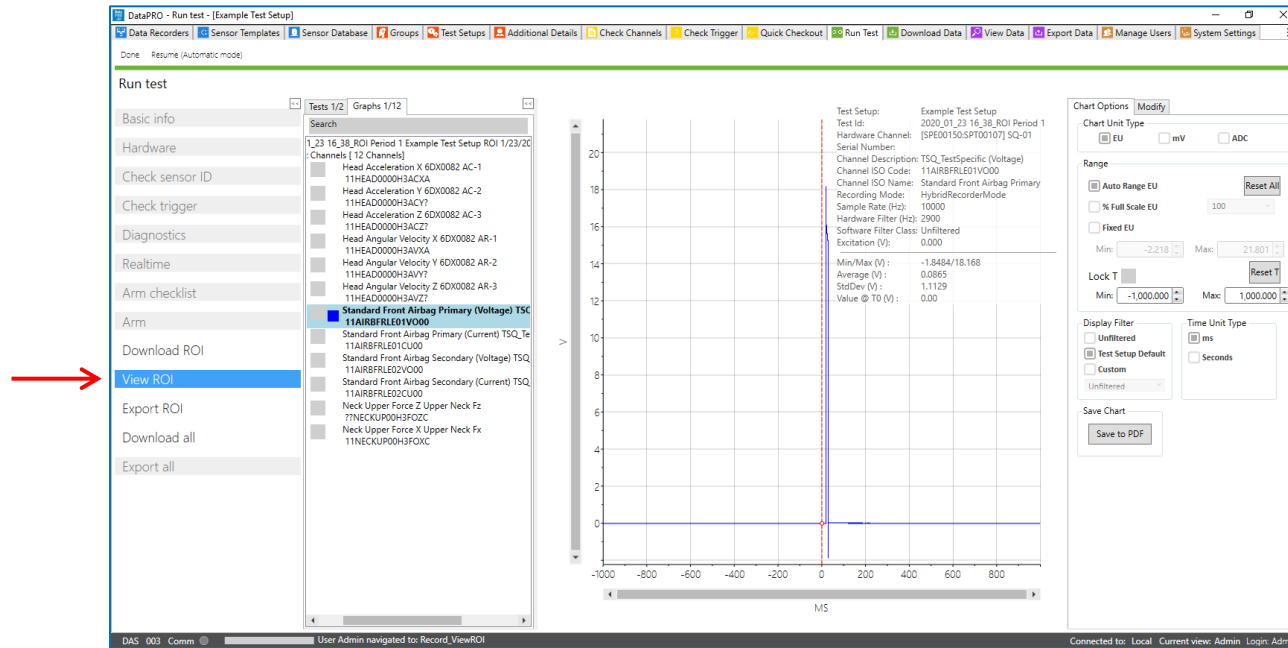
Annotations in the image include:

- a**: Points to the "Run" button in the left sidebar.
- i**: Points to the plus (+) button used to add ROI segments.
- ii**: Points to the minus (-) button used to remove ROI segments.
- b**: Points to the checkmarks in the "_ROI 1" column of the table.

At the bottom, the "Details" section shows "Groups" (Group 1 Sample Group) and "DAS" (SPE00150 192.168.0.150 IDLE).

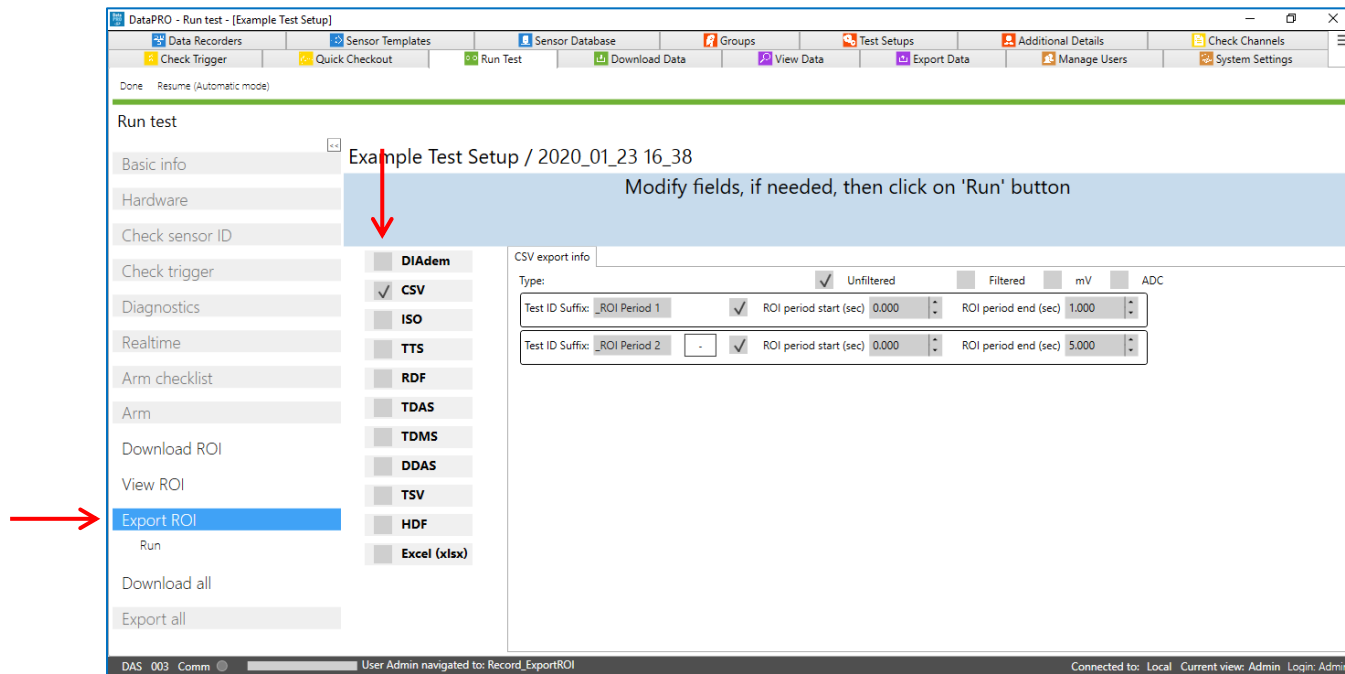
- a. Select "Run" to download the defined ROI Segment(s).
 - i. Add additional ROI Segment(s) with the plus (+).
 - ii. Remove ROI Segment(s) with the minus (-).
- b. If multiple ROIs are included, channels to be included in each ROI must be defined.
 - i. Each channel in a test must be included in at least one ROI.

14. Select “View ROI” (optional) to display the downloaded data in the ROI:



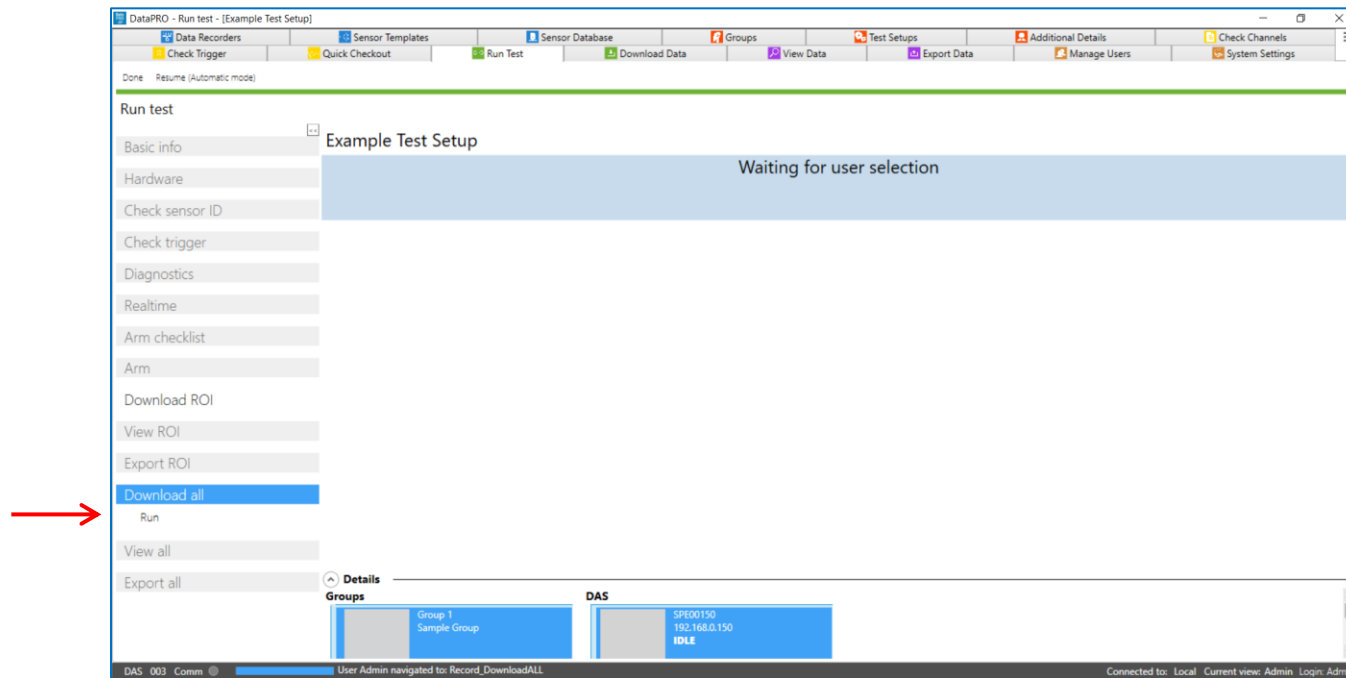
- The data set(s) displayed in the “View ROI” Test Selection pane are the ROI Segment(s) just downloaded.
- See [View Data](#), page 162, for information on Viewer controls.

15. Select “Export ROI” to export the downloaded data in the ROI Segment(s) (optional):



- a. Add or remove export types and configure as needed.
- b. Select “Run” to export ROI data.

16. Select “Download all”, then “Run” to download the full data set (optional):



17. Select “View All” to display the full data set (optional):

- a. The data set displayed in the View All Test Selection Pane is the full data set just downloaded.
- b. See [View Data](#), page 162, for information on Viewer controls.

18. Select “Export all” to export the full data set (optional):

- a. Add or remove export types and configure as needed.
- b. Select “Run” to export all data (see [Appendix E: DataPRO File Structure](#), page 254).

19. Select “Done” to return to the previous location. To return to the [Quick Start](#) steps, return to page 30.

NOTE: Automatic mode is enabled in the Test Setup used for the images used above.

Download Data

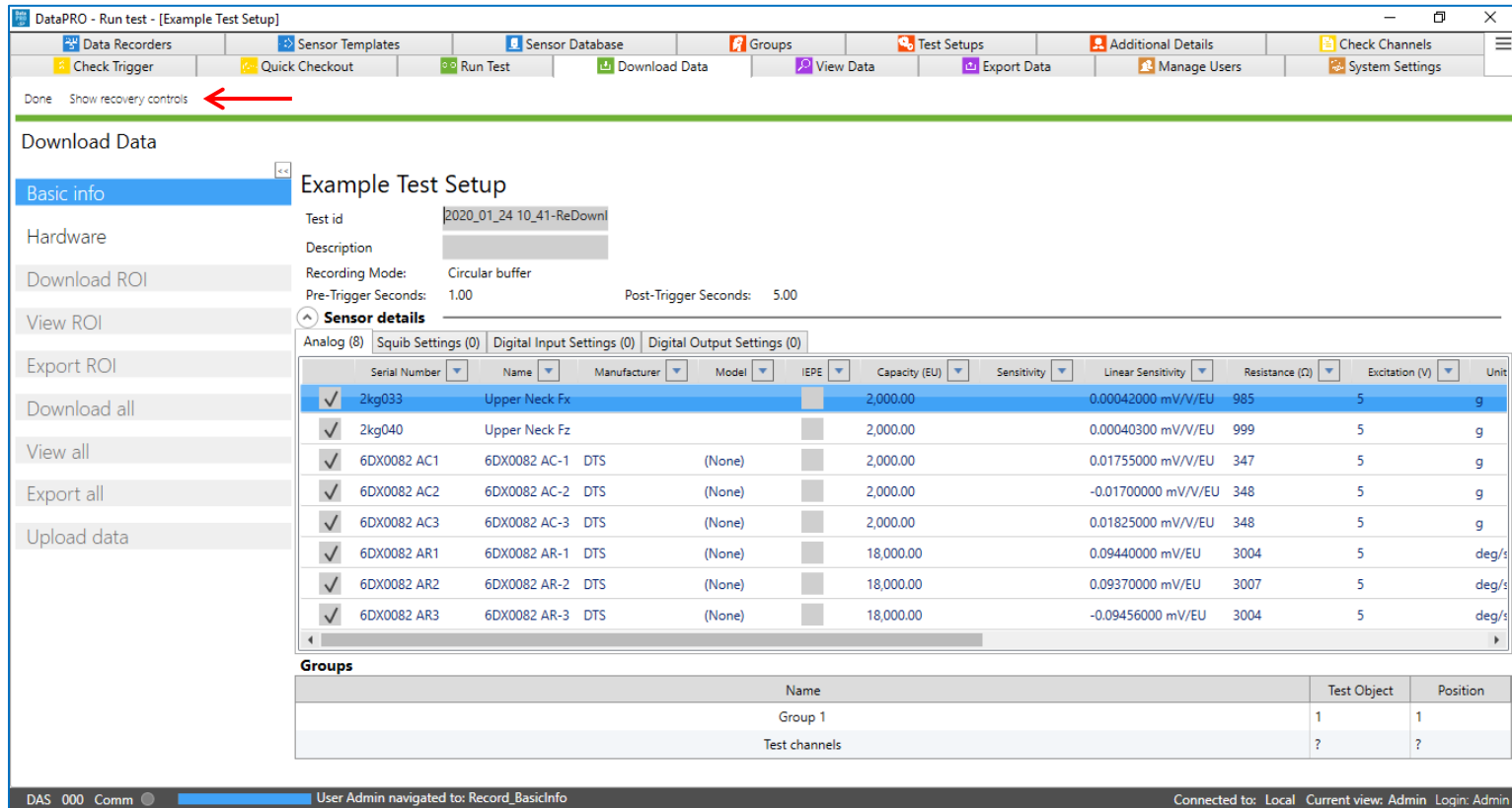
Use the Download Data tab to re-download a data set that has already been collected and is still present on the DAS internal memory.

1. Ensure the correct Test Setup is selected as the Active Test Setup.
2. Select the “Download Data” tab:



3. Select “Show recovery tools” to browse to test setup if necessary.
4. Modify the Test id if desired.
 - a. DataPRO defaults to using the most recently run Test Setup .xml file when downloading data via the Download Data tab.

- b. If a different Test Setup is desired, select “Show Recovery Controls” to browse to and use a different Test Setup .xml file:



The screenshot shows the DataPRO software interface for configuring a test setup. The top toolbar includes buttons for 'Check Trigger', 'Quick Checkout', 'Run Test', 'Download Data', 'View Data', 'Export Data', 'Manage Users', and 'System Settings'. A red arrow points to the 'Show recovery controls' button. The main window displays the 'Example Test Setup' configuration page, which includes a sidebar with navigation options (Basic info, Hardware, Download ROI, View ROI, Export ROI, Download all, View all, Export all, Upload data) and a main content area with the following details:

Example Test Setup

Test id: 2020_01_24_10_41-ReDownl
 Description: [Redacted]
 Recording Mode: Circular buffer
 Pre-Trigger Seconds: 1.00 Post-Trigger Seconds: 5.00

Sensor details

Analog (8) Squib Settings (0) Digital Input Settings (0) Digital Output Settings (0)

Serial Number	Name	Manufacturer	Model	IEPE	Capacity (EU)	Sensitivity	Linear Sensitivity	Resistance (Ω)	Excitation (V)	Unit
2kg033	Upper Neck Fx				2,000.00		0.00042000 mV/V/EU	985	5	g
2kg040	Upper Neck Fz				2,000.00		0.00040300 mV/V/EU	999	5	g
6DX0082 AC1	6DX0082 AC-1	DTS	(None)		2,000.00		0.01755000 mV/V/EU	347	5	g
6DX0082 AC2	6DX0082 AC-2	DTS	(None)		2,000.00		-0.01700000 mV/V/EU	348	5	g
6DX0082 AC3	6DX0082 AC-3	DTS	(None)		2,000.00		0.01825000 mV/V/EU	348	5	g
6DX0082 AR1	6DX0082 AR-1	DTS	(None)		18,000.00		0.09440000 mV/EU	3004	5	deg/s
6DX0082 AR2	6DX0082 AR-2	DTS	(None)		18,000.00		0.09370000 mV/EU	3007	5	deg/s
6DX0082 AR3	6DX0082 AR-3	DTS	(None)		18,000.00		-0.09456000 mV/EU	3004	5	deg/s

Groups

Name	Test Object	Position
Group 1	1	1
Test channels	?	?

The status bar at the bottom shows 'DAS 000 Comm' and 'User Admin navigated to: Record_BasicInfo'. The connection status is 'Connected to: Local' and the current view is 'Admin'.

- Continue to the **Hardware** navstep.
- Continue from step 11 above under **Run Test**, page 137.

Review

View Data

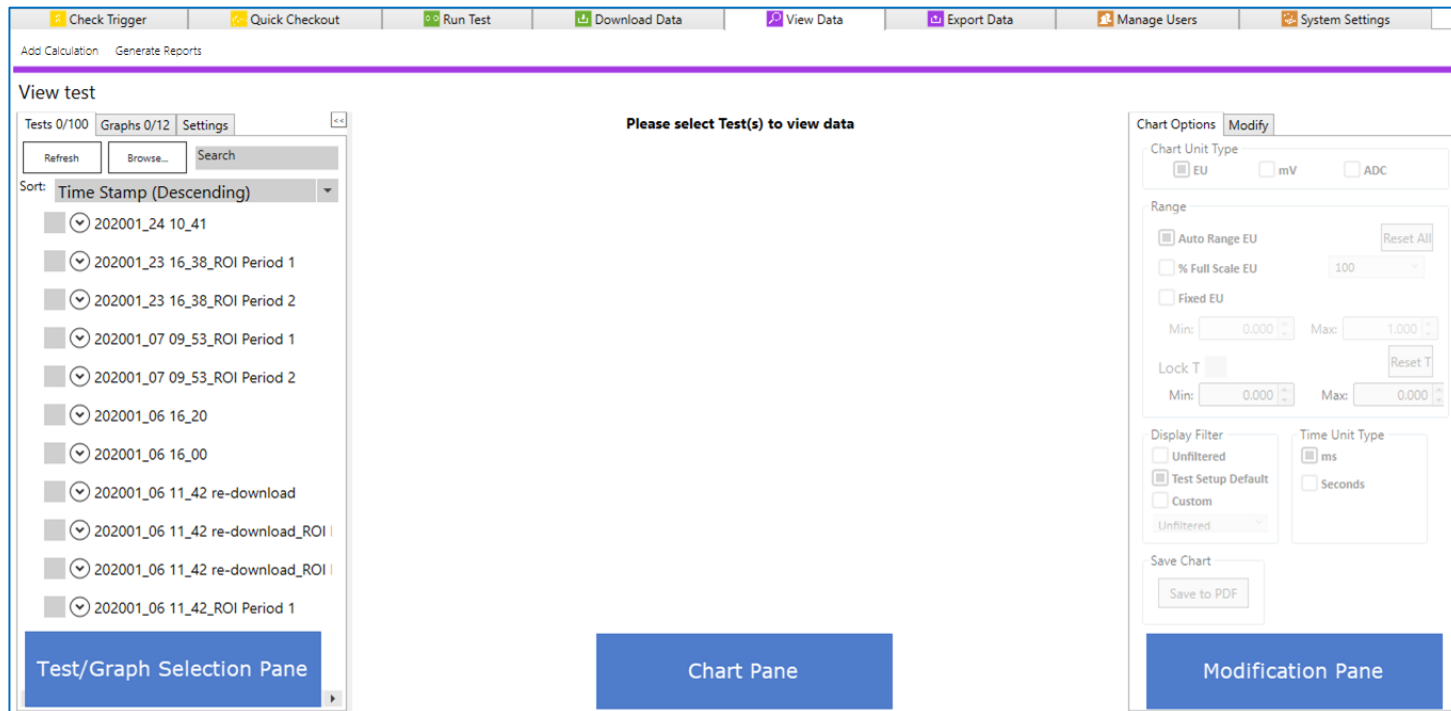
Review a data set that has been collected and downloaded with any version of DataPRO. Perform basic manipulations of data channels, add calculated channels, or modify certain parameters for the full data set.

To view data from a test not listed in the table, start at step 1.

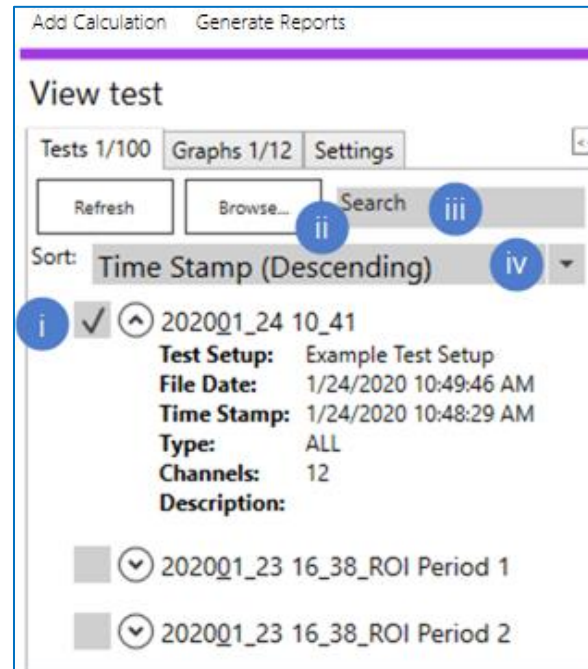
To view data from a test in the table, see [Selection Pane](#), page 168.

Viewer Layout

The viewer is divided into three panes:

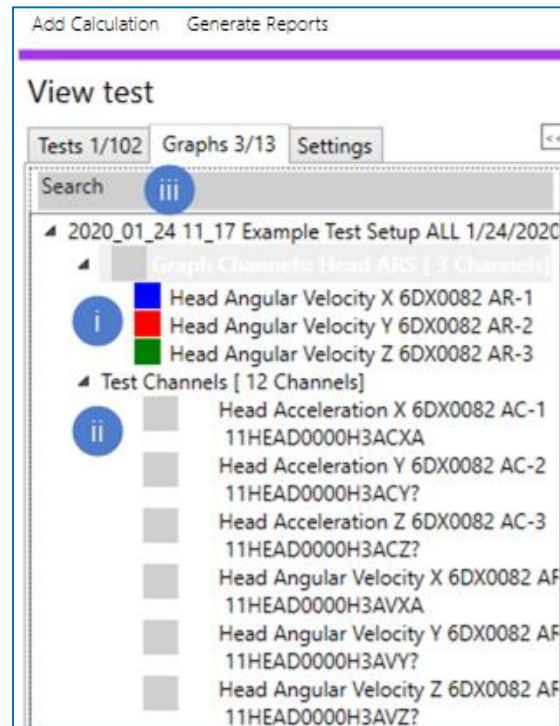


1. Test/Graph Selection Pane (see [Selection Pane](#) for more details).
 - a. Test Selection:



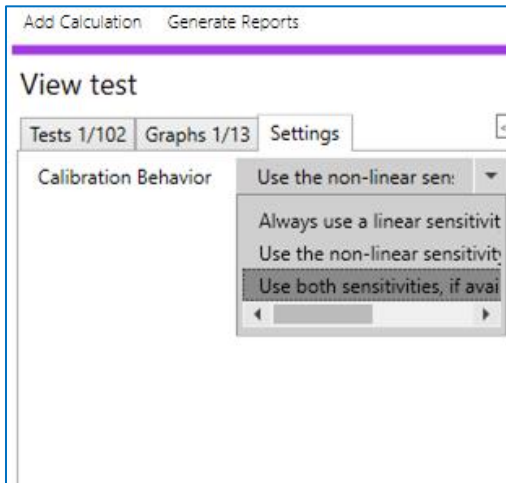
- i. Select tests from data directory.
- ii. Browse to other datasets.
- iii. Search for text in test descriptors.
- iv. Sort display order of data.

b. Graph Selection:



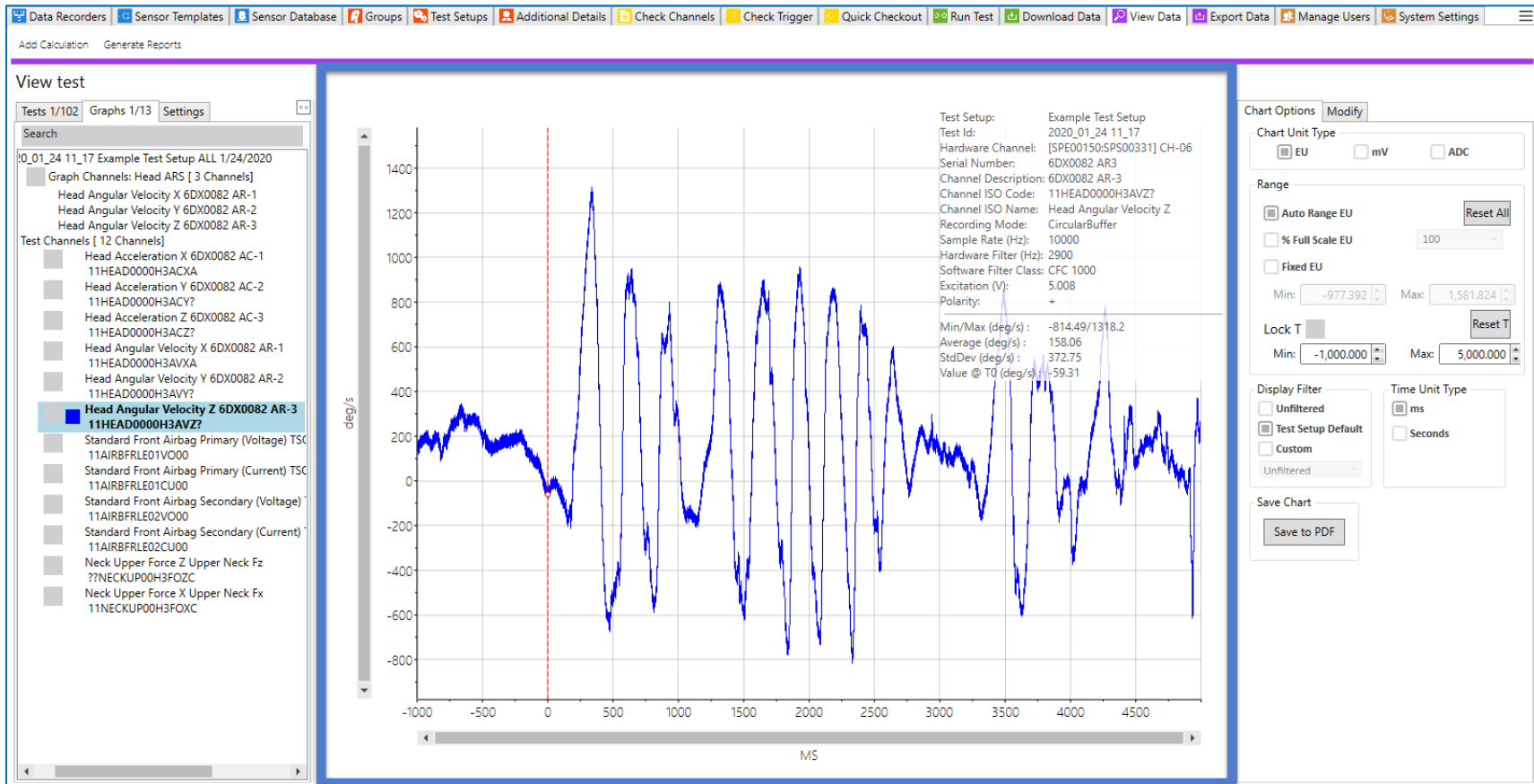
- i. Select predefined graphs, individual channels or calculated channels to display.
- ii. Select/lock multiple channels to chart to dynamically review and compare.
- iii. Search for channel(s) by Channel name or Channel description.

c. Settings:



- i. Select Calibration Behavior for any dual-calibration sensors in a test (sensors that include both a linear and a non-linear definition).
- "Always use a linear sensitivity" will only use the linear calibration in the viewer.
 - "Use the non-linear sensitivity if available" will only use the non-linear calibration in the viewer.
 - "Use both sensitivities, if available" will show both linear and non-linear calibrations as separate channels.

2. Chart Pane (see [Chart Pane](#), page 177, for more details):



- Select channel(s) to review test data.
- Dynamically zoom as desired by clicking and dragging a box around the area to enlarge.
- Use Modification Pane to manipulate chart display or write modifications to test data.

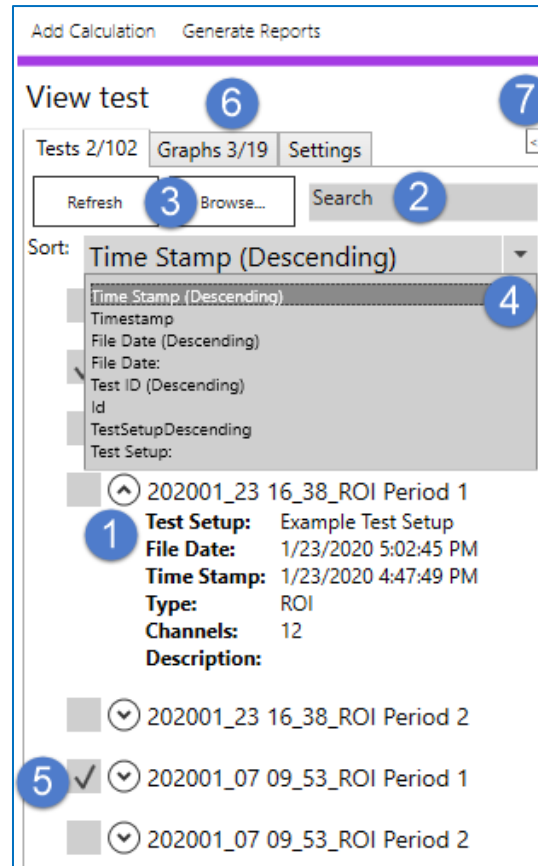
3. Modification Pane (see [Modification Pane](#), page 180, for more details):

- a. Chart Options tab allows for real-time manipulation of the channel(s) displayed in the chart.
 - i. Select “Save to PDF” to save the current graph as a PDF. The PDF is currently saved with the binary data. [Appendix E: DataPRO File Structure](#), page 254.
- b. Modify tab allows for single-channel modifications that are written to the data.
 - i. Multiple modifications can be made to each channel.
 - ii. “Restore All” will undo all changes and revert data to original, as collected values.

Selection Pane

Tests Tab

Select Test(s) to review individual channel data:

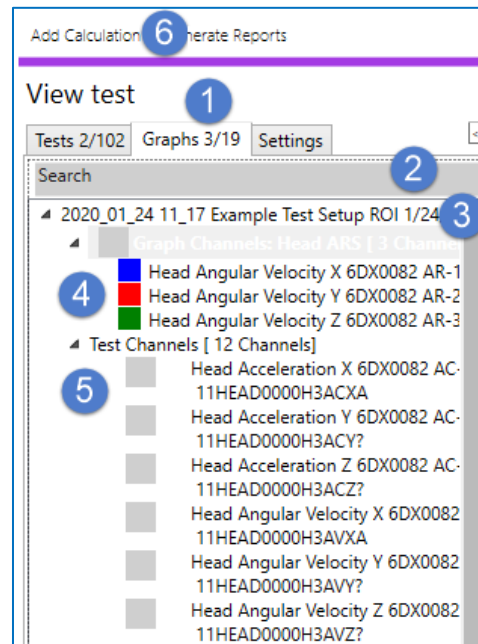


1. Use arrows to expand/collapse test description.
2. Search for test descriptors (Test Setup, Test ID, Type, Description, etc.).
3. Browse to dataset(s) in other locations.
 - a. DataPRO and SLICEWare data can be imported and viewed.

4. Sort datasets by Time Stamp, File Date, Test ID, Test Setup.
5. Select dataset(s) from DataPRO data directory.
 - a. Selecting a dataset adds the channels (individual test channels, predefined graphs and calculated channels) to the Graphs tab.
6. Tests tab displays number of tests selected/number of tests available. Graphs tab displays number of graphs displayed/number of graphs available.
7. Use snap arrows to expand/collapse menu.

Graphs Tab

Select channels (predefined graphs, individual test channels and calculated channels) to display and review:



1. Channels (individual test channels, predefined graphs and calculated channels) from selected test(s) are displayed in the Graphs tab.
 - a. Selected/locked channels displayed in numerator (**3/19**).
 - b. Available channels displayed in denominator (**3/19**).

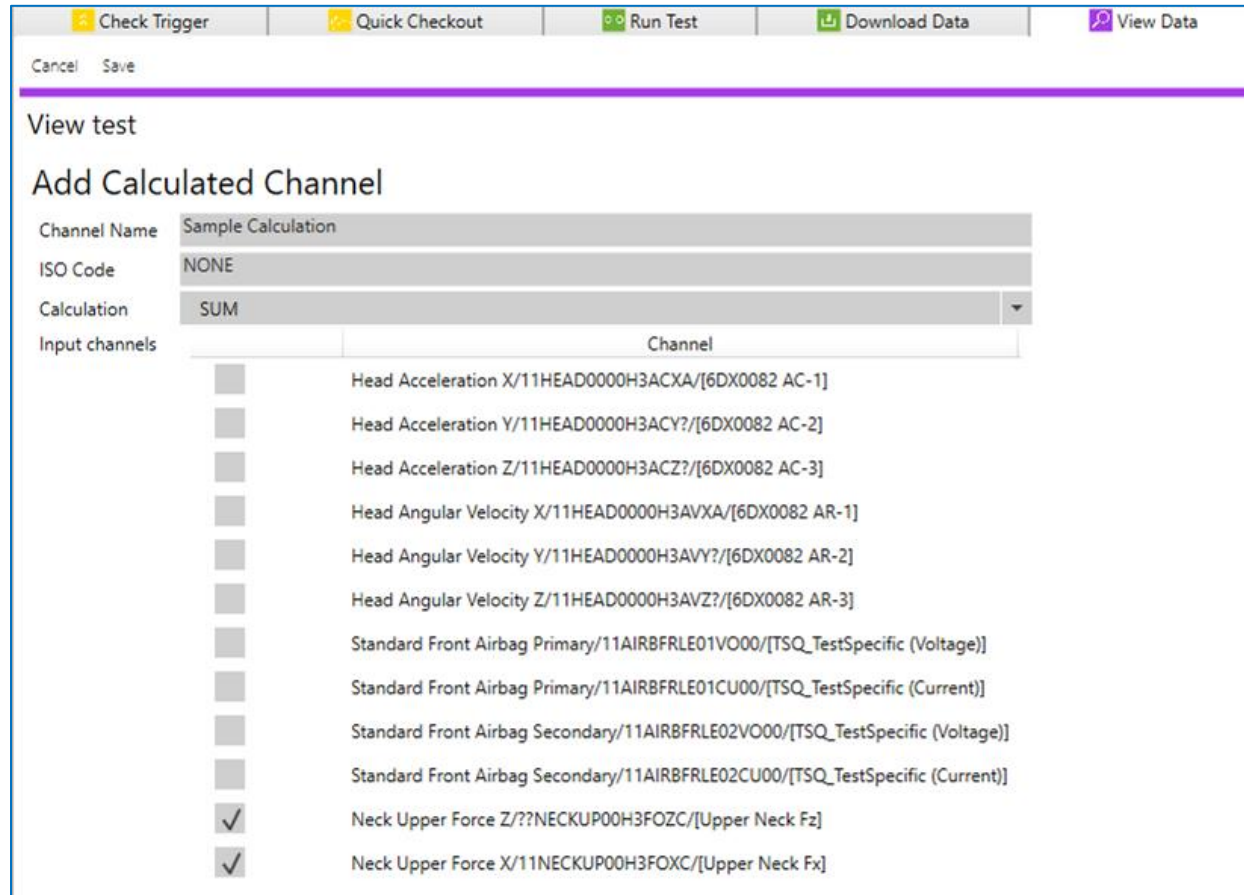
2. Search for channel name, channel description or channel code.
3. Test Setup name/Test ID for test(s) selected in Tests tab.
 - a. Expand or collapse test ID to hide or display available channels.
4. Predefined graphs will be displayed first.
5. Select individual channels, predefined graphs or calculated channels.
 - a. Select channels by highlighting description.
 - b. Lock channels to chart with checkbox.
6. Select Add Calculation to add a Calculated Channel:

The screenshot shows a software window titled "View test" with a purple header bar. At the top, there is a toolbar with icons and labels for "Check Trigger", "Quick Checkout", "Run Test", "Download Data", "View Data", "Export Data", and "Manage Users". Below the toolbar are "Cancel" and "Save" buttons. The main content area is titled "Add Calculated Channel" and contains the following fields:

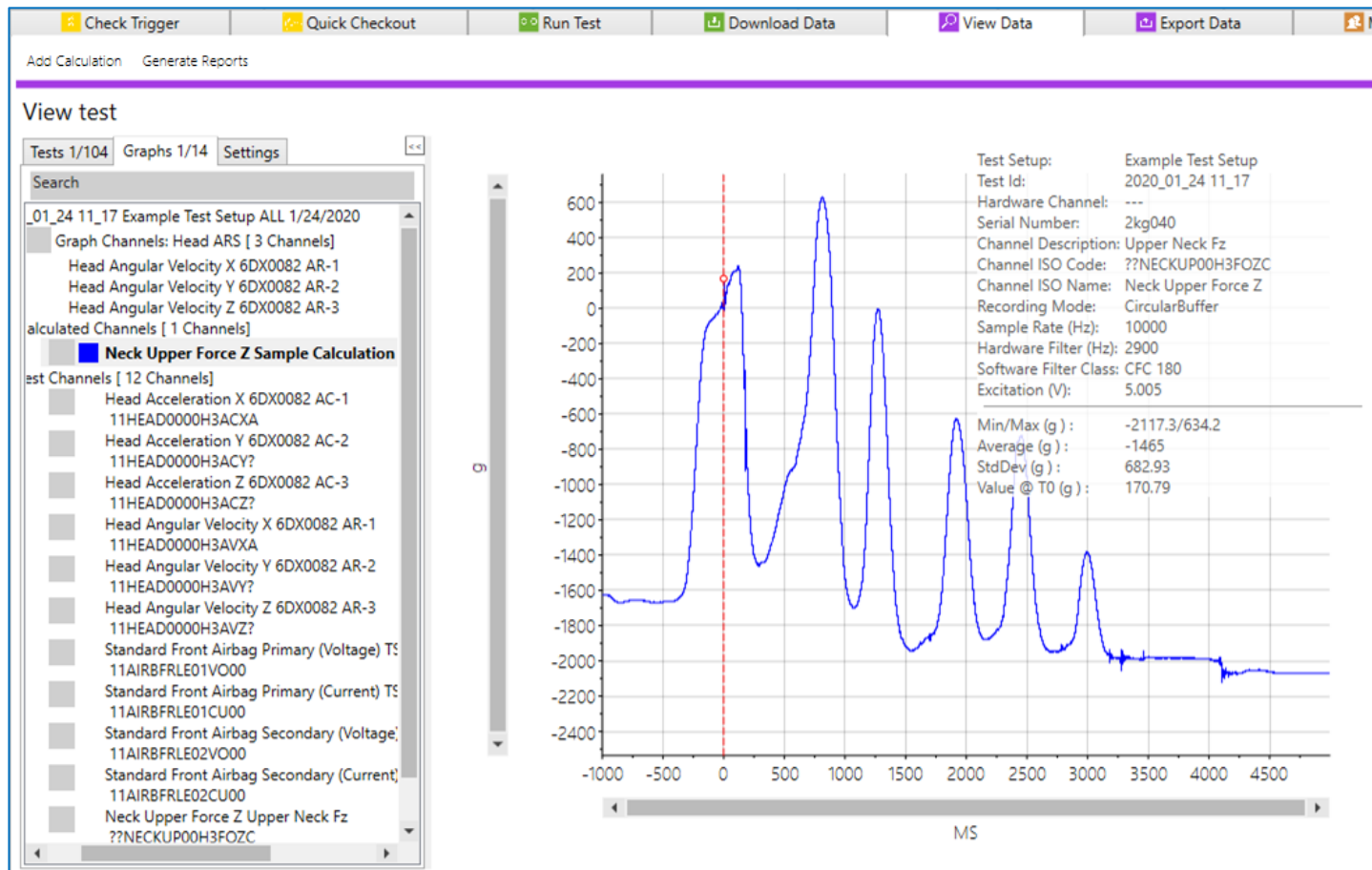
- Channel Name: New Channel
- ISO Code: NONE
- Calculation: Integral (with a dropdown arrow)
- Calculation Input Channel: 6DX0082 AC-1 (with a dropdown arrow)

- a. Enter Channel name and (optional) ISO Code.

- b. Select Calculation type and included channels:
 - i. Coefficients for 3D IR-TRACC calculations can be found in the *DataPRO.exe.config* file.

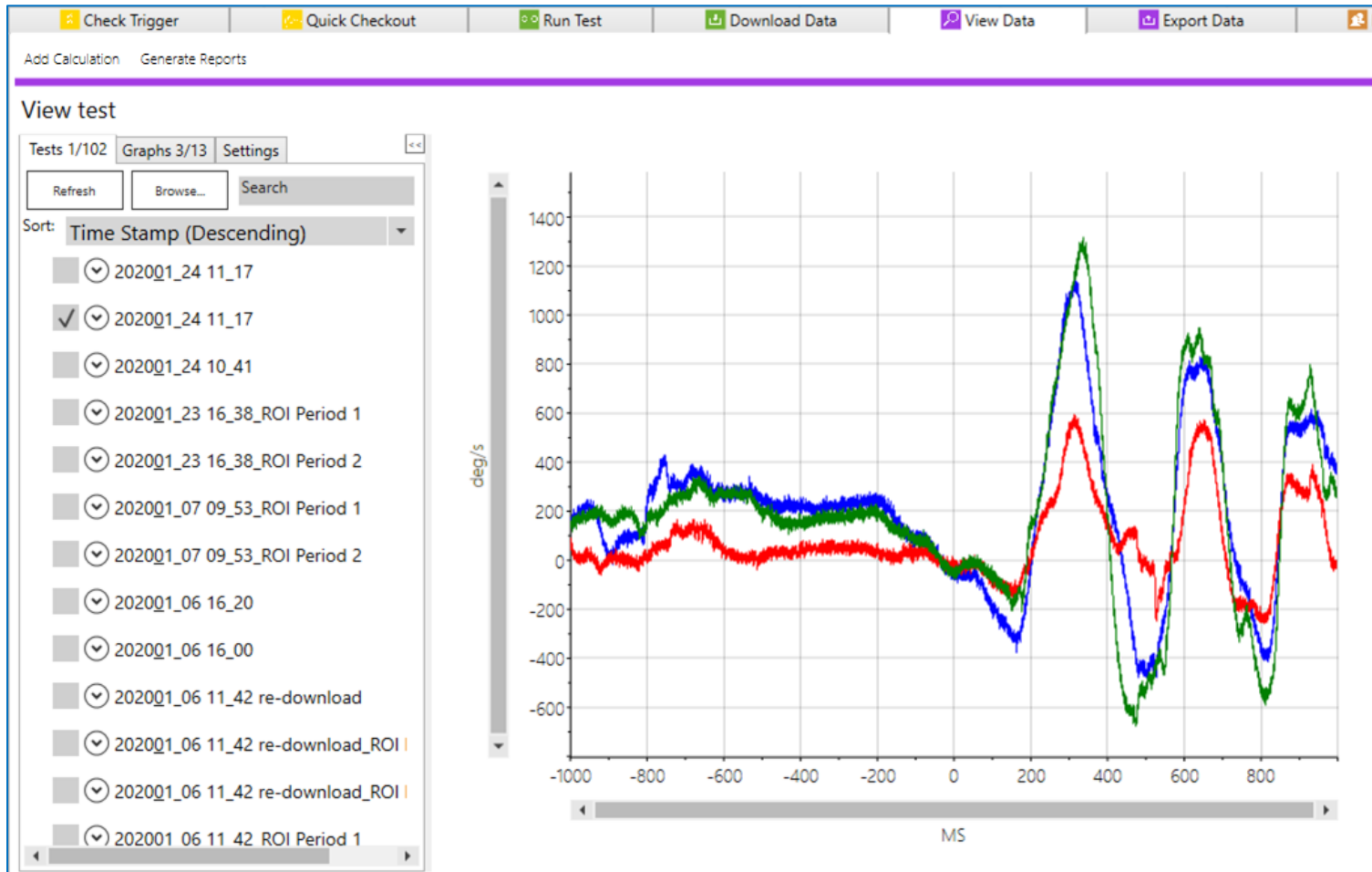


- c. Select “Save” to add calculated channel to dataset.

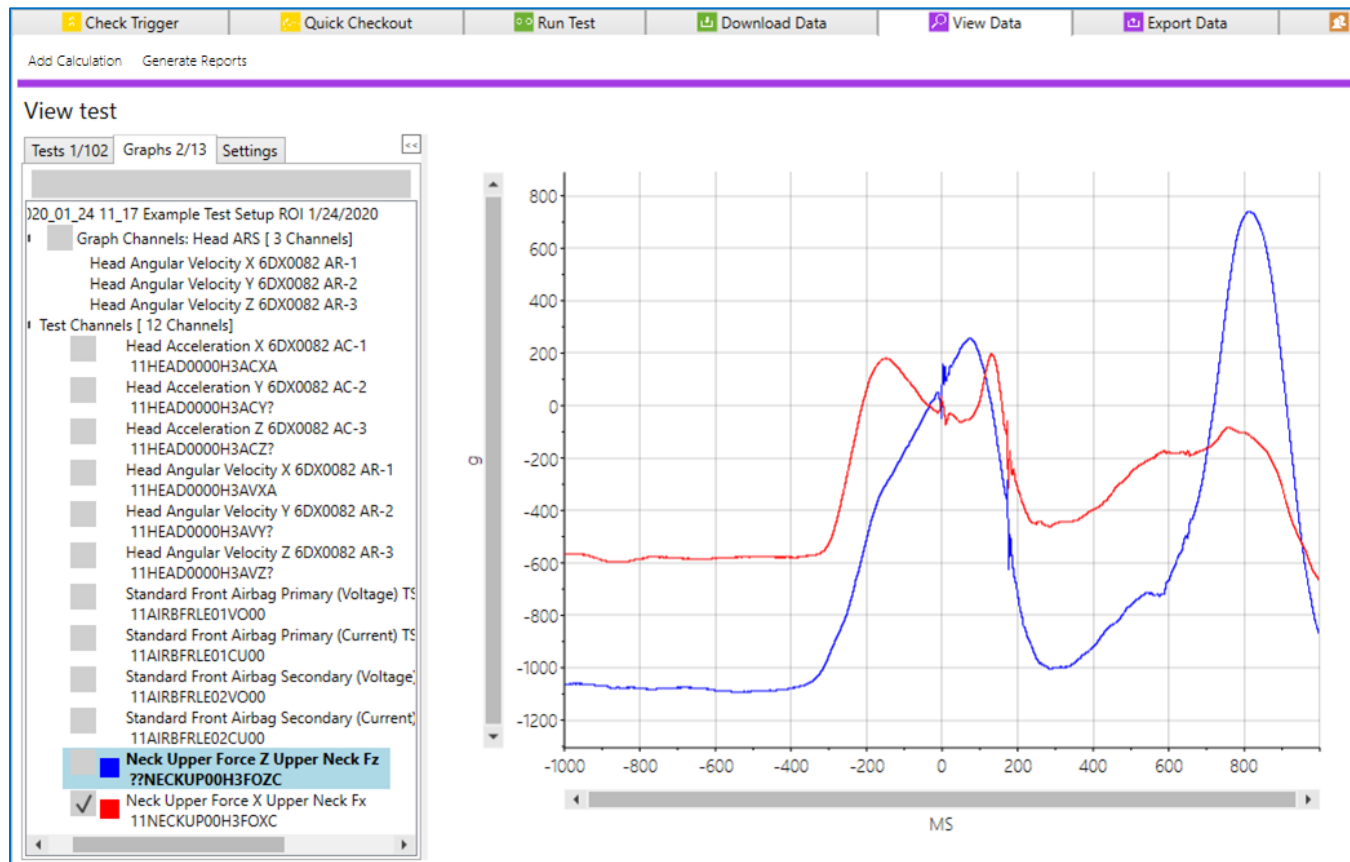


Graph Selection

1. Selecting a dataset adds the channels (individual test channels, predefined graphs and calculated channels) to the Graphs tab:

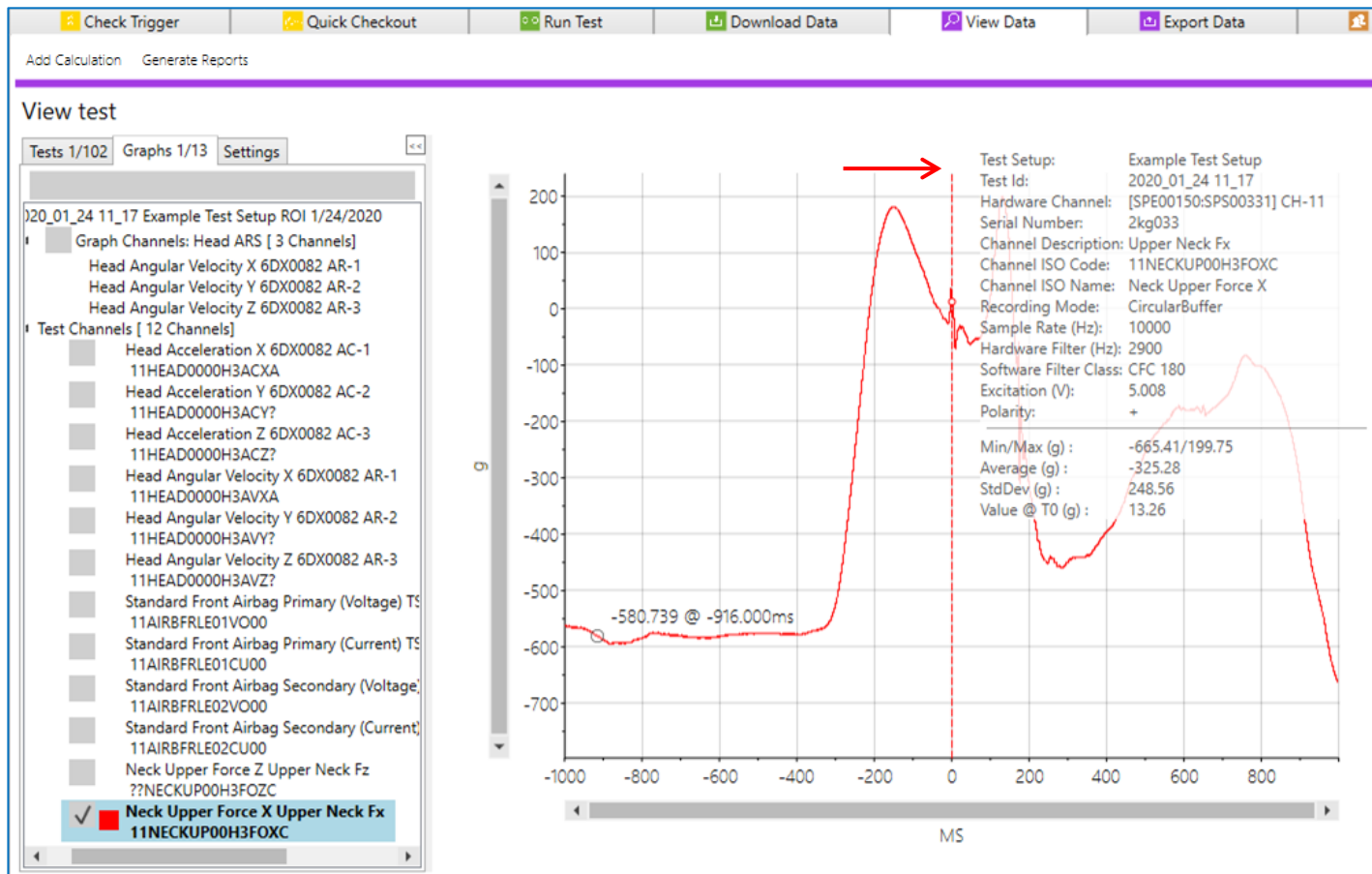


2. Selecting a channel adds that graph to the chart:



- a. If a test contains predefined graphs, these will be displayed first in the Chart pane. If there are no predefined graphs, the first channel in the test will be displayed.
- b. A single channel, predefined graph or calculated channel can be selected and displayed in the chart or locked to the chart.
 - i. In the above example, Neck Upper Force X is locked to the chart and Neck Upper Force Z is selected.
 - ii. Use the arrow keys or click to change the selected channel.

- c. When a single channel is displayed on the chart, channel details will also be displayed on the chart:



- iii. Hover over the channel details to hide.

3. Select "Calibration Behavior" for dual-calibration sensors in the Settings tab:

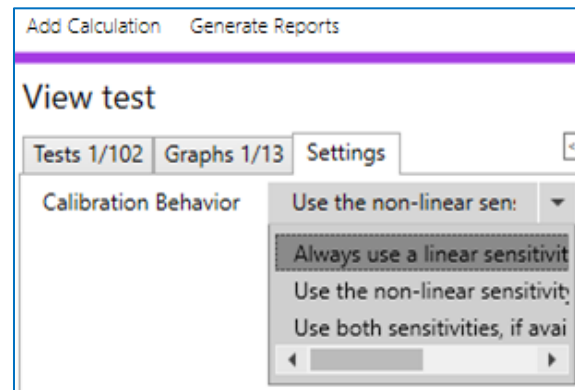
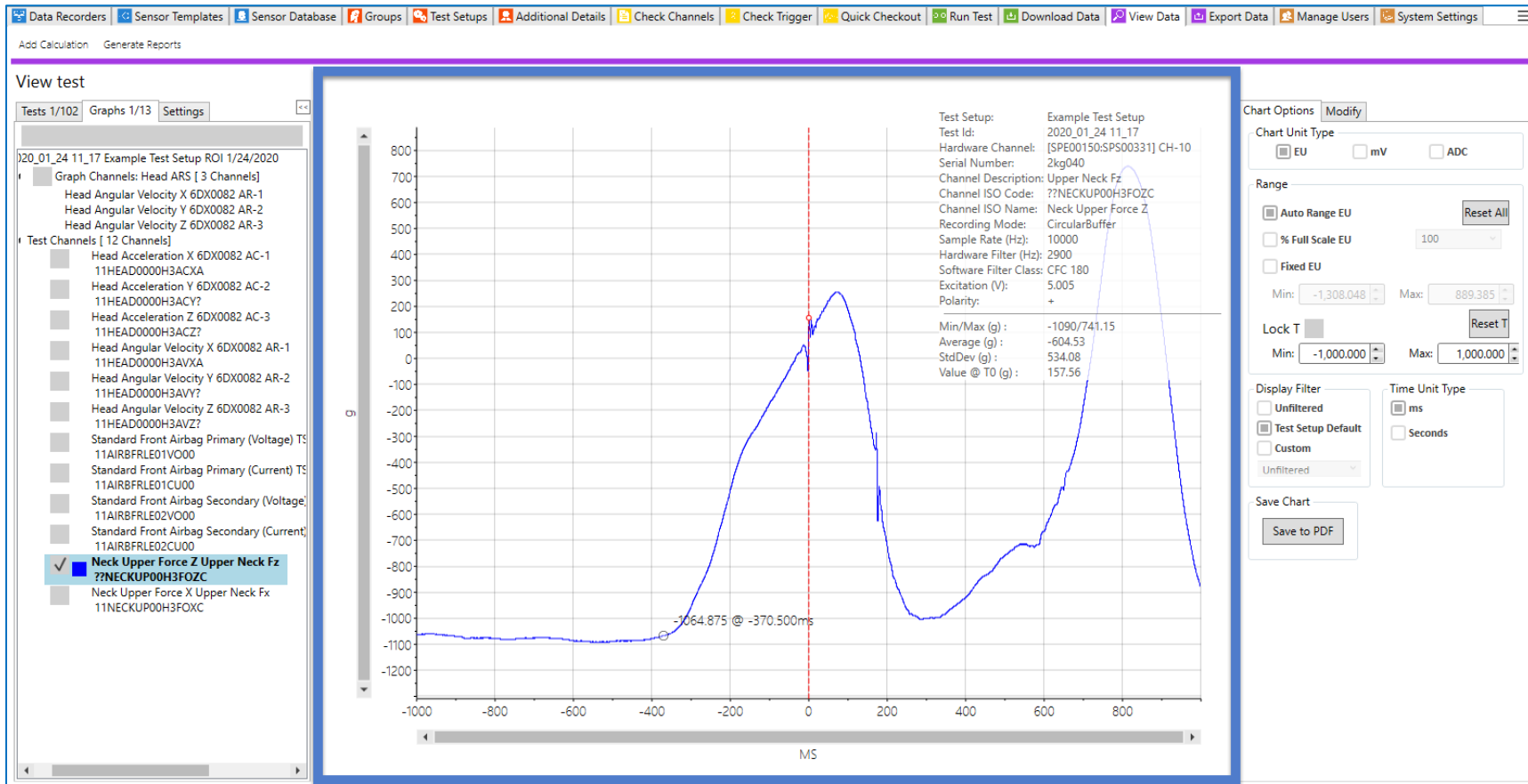
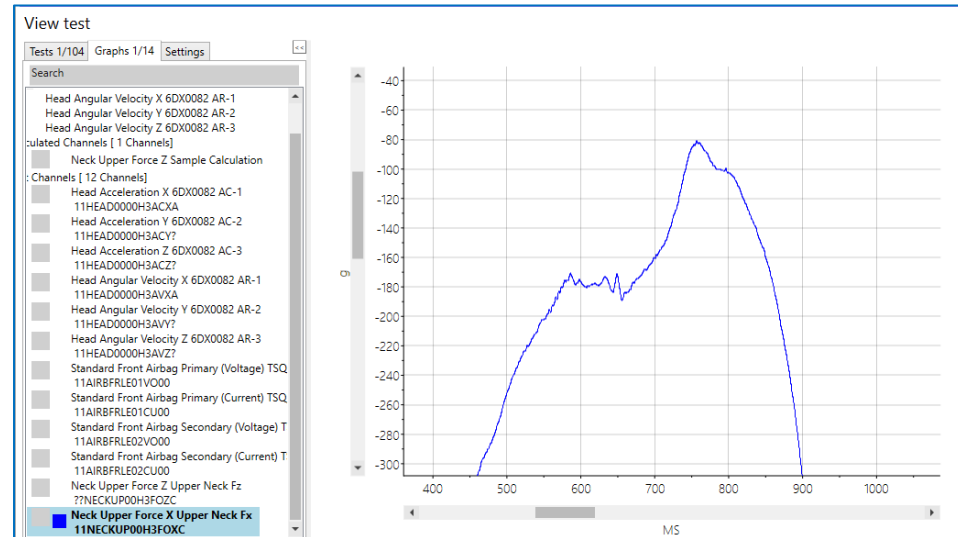
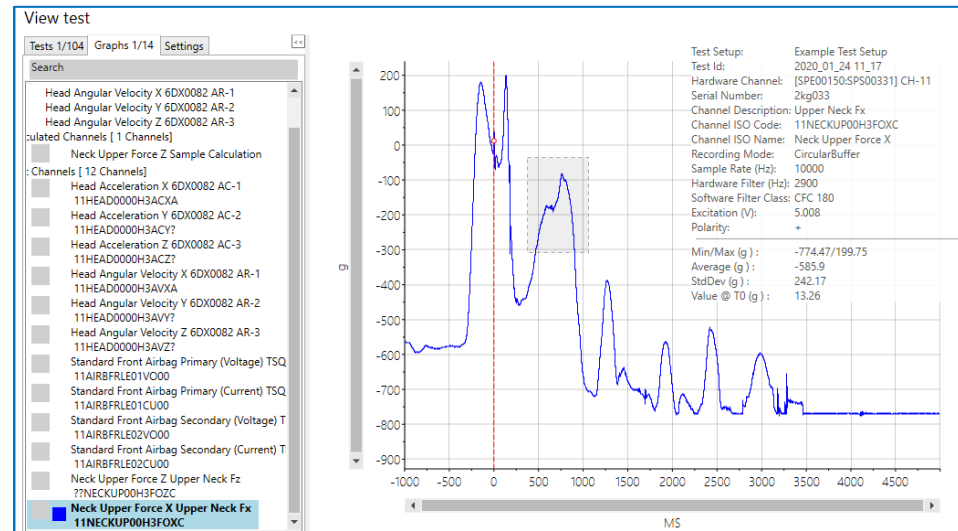


Chart Pane

Selected/locked channels are displayed in the Chart pane:

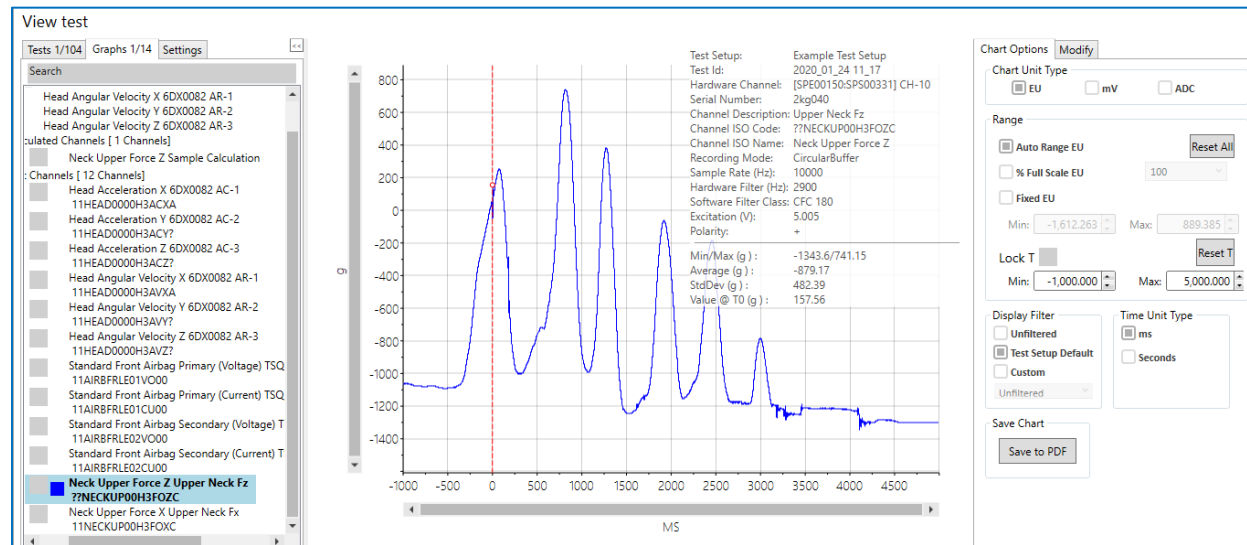


1. Dynamic Zoom selection:
 - a. Click and drag to draw a box around the region to enlarge.



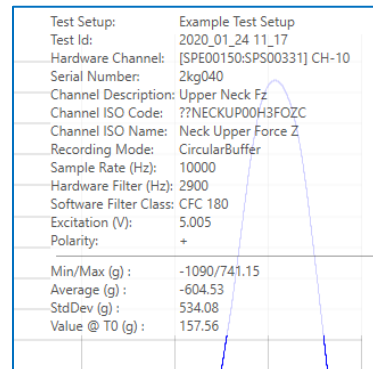
- b. Select Reset All or use ESC key to return to full chart view.

2. Red T=0 indicator is present when a single channel is displayed.



a. Move with right mouse click or via entry in Modification pane.

3. Channel overlay is present when a single channel is displayed.



a. Hover over details to hide channel overlay.

Modification Pane

Use controls to temporarily modify the displayed view or to write changes to collected data.

1. Chart Options: Changes made in Chart Options temporarily modify the display view:

- a. Select to display EU, mV, or ADC as chart unit.
- b. Select Range to display.
 - i. Reset All reverts to Auto Range.
 - ii. Lock T locks X axis at displayed values.
 - iii. Reset T reverts X axis to default/full range values.
- c. Select filter type to apply to chart view.
- d. Select to display time in milliseconds or seconds.
- e. Select to save current graph view to PDF. See [Appendix E: DataPRO File Structure](#), page 254, for more

information.

2. Modify: Changes made in Modify can be written to the collected data set:

Chart Options		Modify	
Description:	Upper Neck Fz		
Filter:	CFC 180	▼	
Data Flag:	Normal	▼	
Shift T ₀ (ms):	0.000	▲▼	Test ▼
EU Multiplier:	1.00000000	▲▼	
EU Offset:	0.00000000	▲▼	
Sensitivity:	0.000403000000	▲▼	
Line Fit:			
T ₁ (ms):	0.000	▲▼	
T ₂ (ms):	0.000	▲▼	
Cancel		Write	
Restore All			

a. Filter: Optionally filter the data by Channel Frequency Class before viewing.

- i. None
- ii. CFC 10 – 10-17 Hz
- iii. CFC 60 – 60-100 Hz
- iv. CFC 180 – 180-300 Hz
- v. CFC 600 – 600-1000 Hz
- vi. CFC 1000 – 1000-1650 Hz
- vii. Unfiltered

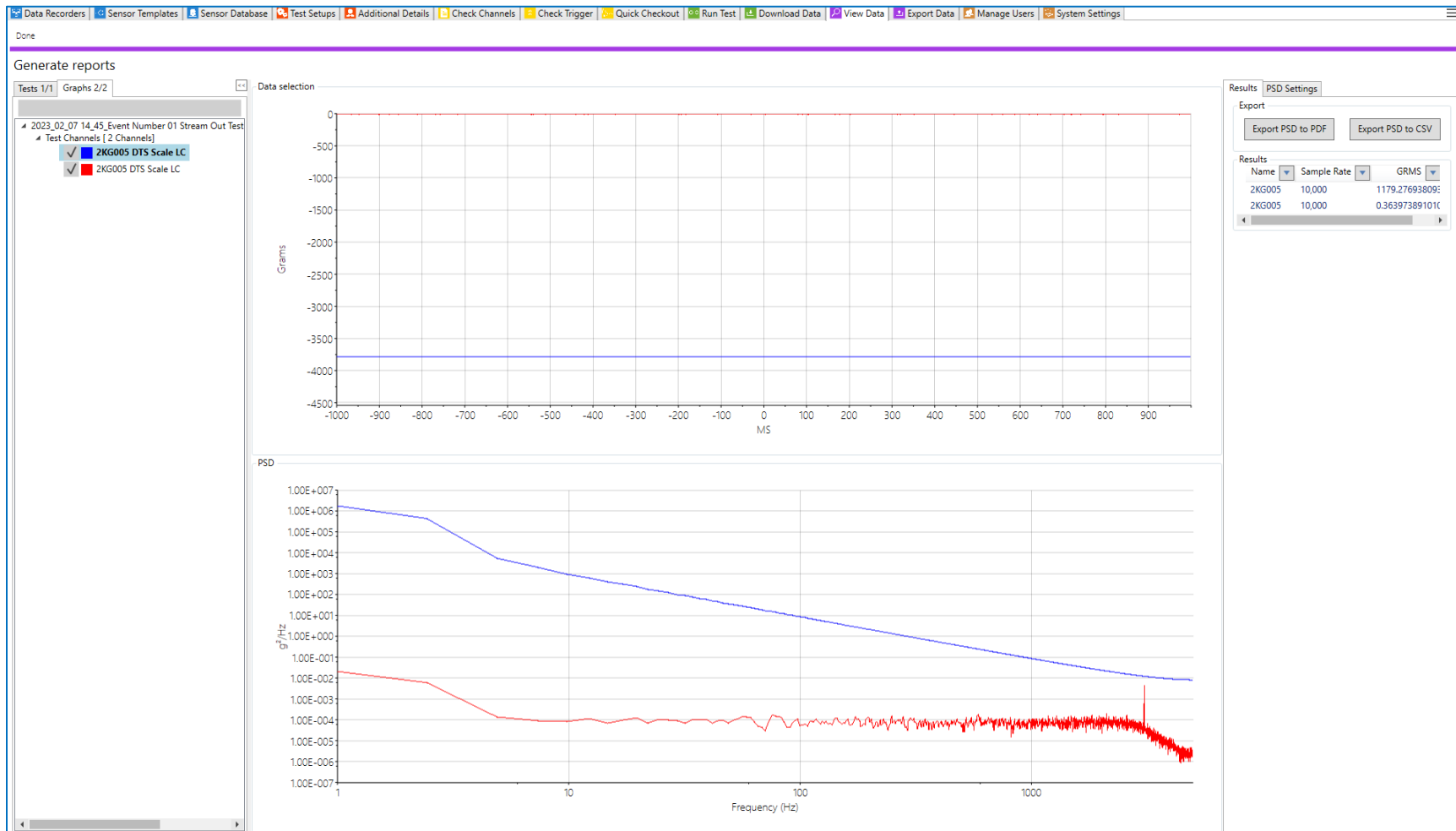
b. Data flag options:

- i. None
- ii. Normal
- iii. Saturated
- iv. Zero Crossing Error
- v. Broken Wire
- vi. Other

- c. Shift T=0:
 - i. If T=0 indicator is moved with a mouse click, the new location will be displayed.
 - ii. Enter value to move T=0 indicator.
 - iii. Apply shift to DAS or to test.
- d. Select Cancel to prevent changes from being saved and revert values.
- e. Select Write to write changes to data.
- f. Select Restore All to revert to original as-collected data.

Generate Reports

The Generate Report option allows you to generate Power Spectral Density (PSD) reports, which display a measurement of a signal's power content versus frequency.



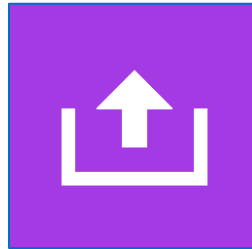
- The **Results** tab on the right allows you to export PSD reports to PDF or CSV.
- The **PSD Settings** tab contains various configuration options for the PSD report.

Export Data

Export a data set that has been collected and downloaded with any version of DataPRO.

- To export data from a test not listed in the table, go to step 2.
- To export a file listed in the table, go to step 4.
- To copy and trim a dataset by start and end times, go to step 9.

1. Select the “Export Data” tab:



2. To export data collected in DataPRO but not listed in the table, select “Browse”:

DataPRO - Export Data - [Example Test Setup]

[Data Recorders](#) | [Sensor Templates](#) | [Sensor Database](#) | [Groups](#) | [Test Setups](#)

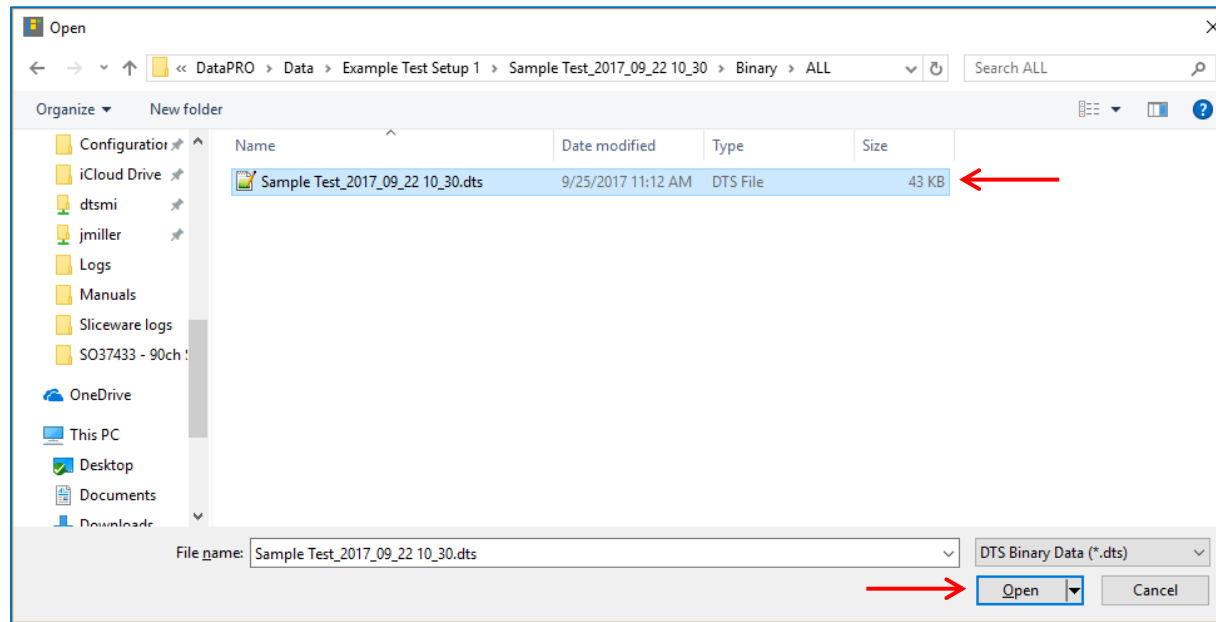
[Check Trigger](#) | [Quick Checkout](#) | [Run Test](#) | [Download Data](#) | [View Data](#) | [Export Data](#)

Export | **Browse** | Copy & Trim

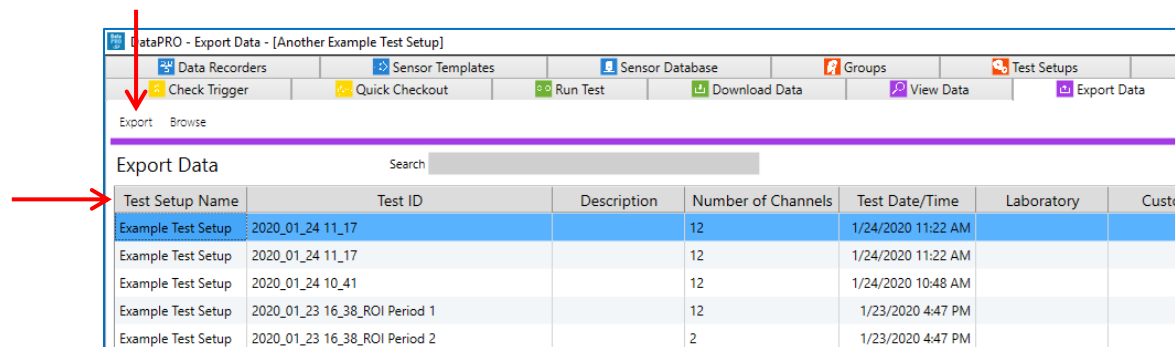
Export Data

Test Setup Name	Test ID	Description	Number of Channels	Test Date/Time	Laboratory	Customer
Example Test Setup	2020_08_20 08_24		11	8/20/2020 8:27 AM		
SLICE PRO Test	2020_08_11 14_10		11	8/11/2020 2:18 PM		
Add DAS	2020_08_05 14_41		9	8/5/2020 2:46 PM		
SLICE PRO Test	2020_08_04 15_36_ROI Period 1		8	8/4/2020 3:39 PM		
SLICE PRO Test	2020_08_04 15_36_ROI Period 2		8	8/4/2020 3:39 PM		

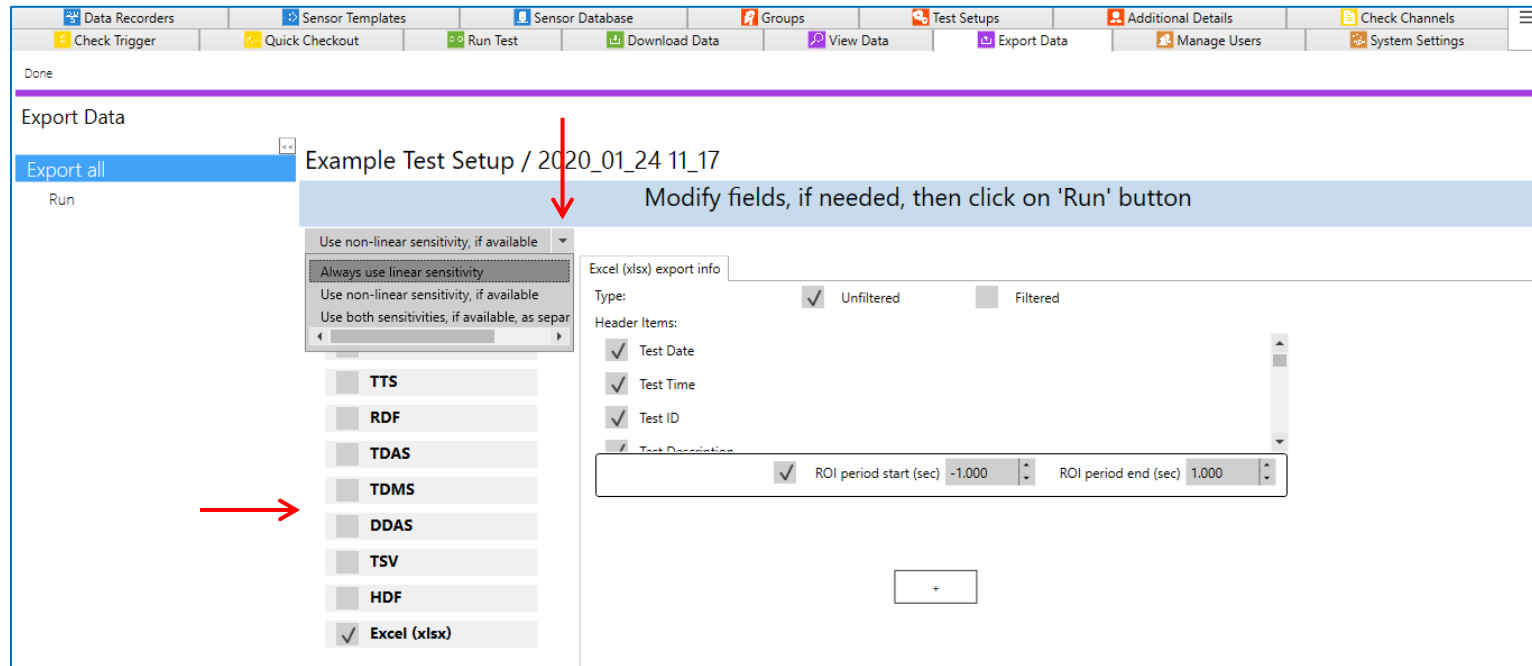
- Browse to the desired location (`C:\DTS\DTS.Suite\Data` is the default location for data) and select the DataPRO.dts file from the desired test data folder. Test data is organized by Test Setup name, then by the name of the individual dataset:



- To export data from a test listed in the table, double-click on the desired test or highlight and select Export. The table is populated from the DataPRO Data folder. See [Appendix E: DataPRO File Structure](#), page 254:

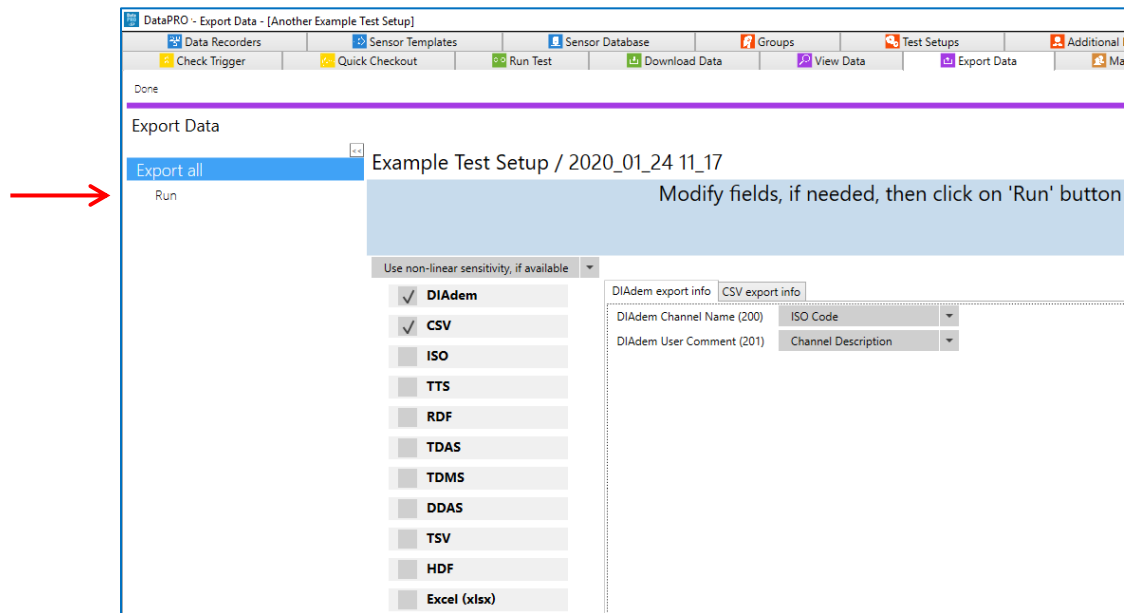


5. Select the calibration behavior and the data export format(s) and modify fields as needed. All fields in red must be completed:



- a. DIAdem: Choose descriptor for line 200 and 201.
- b. CSV: Choose Filtered or Unfiltered, whether to include mV and/or ADC data, and which header items to include.
- c. ISO: See ISO/TS13499 RED A for information on export fields.
- d. TTS: Customer-specific export format. Choose subsample intervals.
- e. RDF: Customer-specific export format. No export options.
- f. TDAS: Export format compatible with TDAS Control. No export options.
- g. TDMS: Export format compatible with TDAS Manager. No export options.
- h. DDAS: Customer-specific export format. No export options.
- i. TSV: Choose Filtered or Unfiltered.
- j. HDF: Choose to include logs, reports, test setup file, ADC data, mV data, EU data.
- k. Excel (xlsx): Choose Filtered or Unfiltered and which header items to include.

6. Select “Run” to export data:

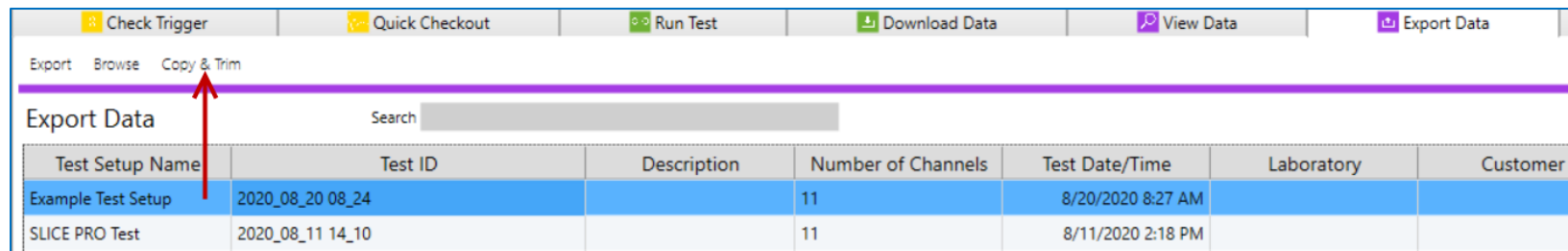


7. The export file(s) will be saved in the original test folder. See [Appendix E: DataPRO File Structure](#), page 254.

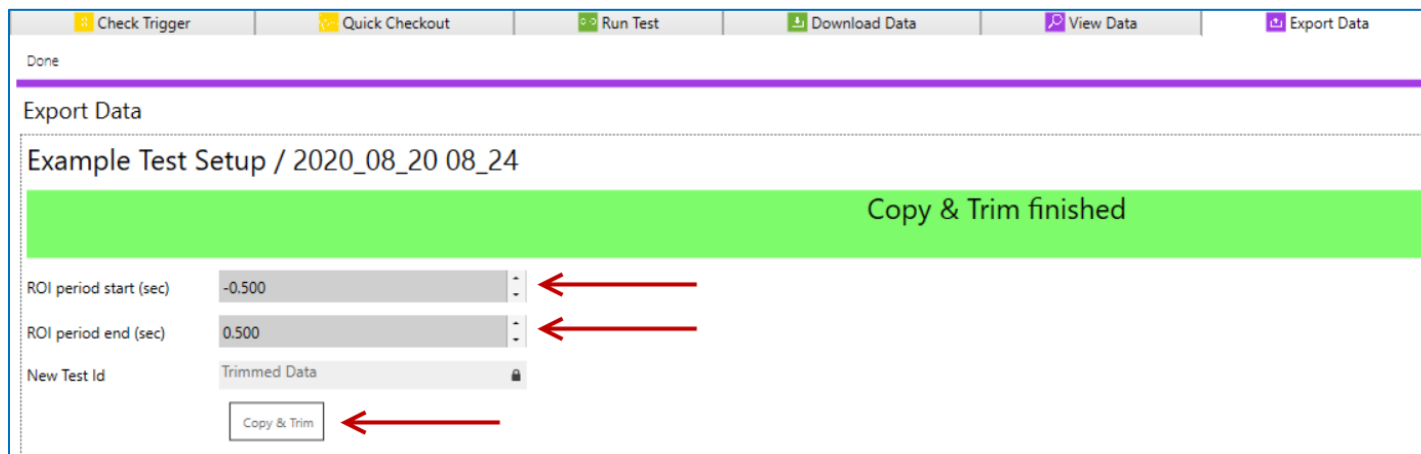
8. When finished, select “Done” to return to previous location. To return to the [Quick Start](#) steps, return to page 30.

Copy & Trim

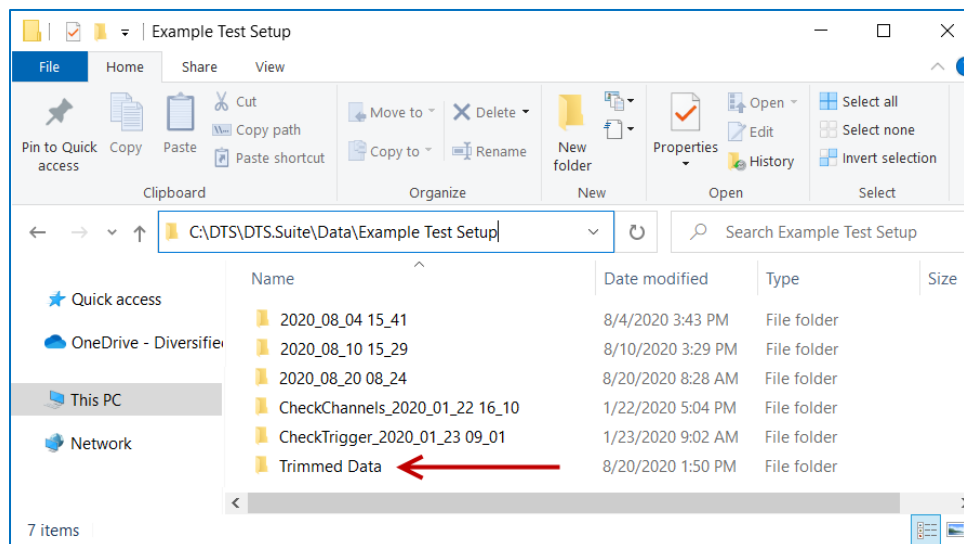
9. To copy and trim a dataset by start and end time, select the dataset and then select Copy & Trim.



10. Enter the desired ROI period start and end times, and a name for the new dataset. Then click the Copy & Trim button.



11. The trimmed data will be stored in the Test Setup folder.



12. To return to the Quick Start steps, return to page 30.

Administrative

Manage Users

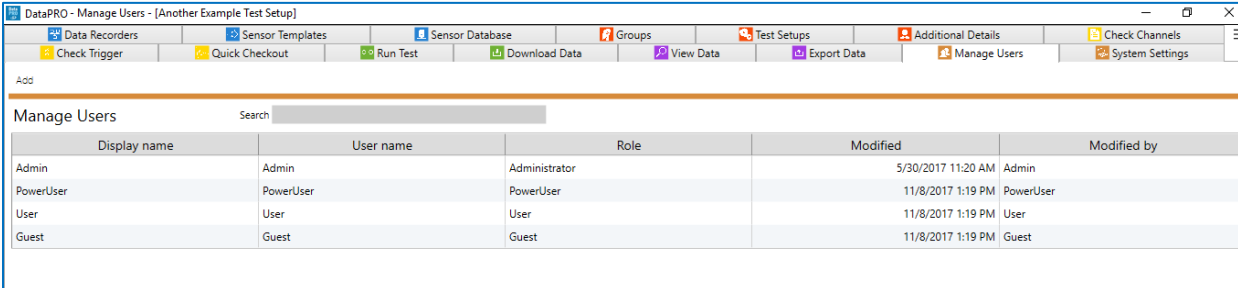
This tab allows the Administrator to add, edit and delete users and user settings. Features and functions available to all DataPRO users are controlled by the Administrator. Contact your Administrator if you need access to features or functions you do not currently have.

REMEMBER:

After initial installation, the Administrator should change the password as soon as possible.

Default Admin password = DTSAAdmin

Four user templates are included and available to use when creating additional users. The templates can be used in the default configuration or modified prior to use.



The screenshot shows the 'Manage Users' window in DataPRO. It features a search bar and a table with the following data:

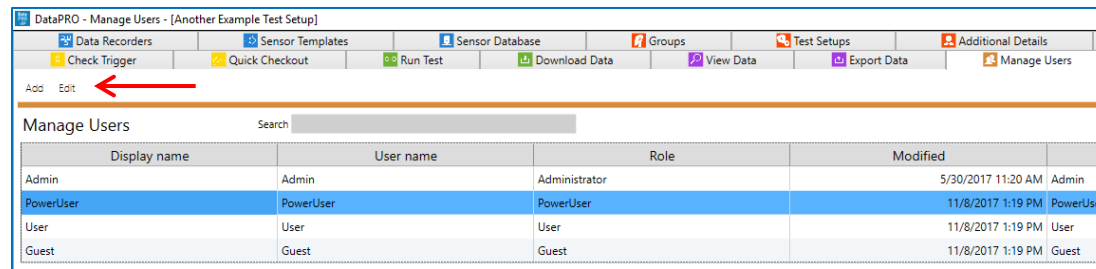
Display name	User name	Role	Modified	Modified by
Admin	Admin	Administrator	5/30/2017 11:20 AM	Admin
PowerUser	PowerUser	PowerUser	11/8/2017 1:19 PM	PowerUser
User	User	User	11/8/2017 1:19 PM	User
Guest	Guest	Guest	11/8/2017 1:19 PM	Guest

To modify an existing user or edit user templates (Admin, PowerUser, User and Guest), start at step **1**.
To add a user using existing user templates, go to step **4**.

1. To add or edit users, select the “Manage Users” tab:

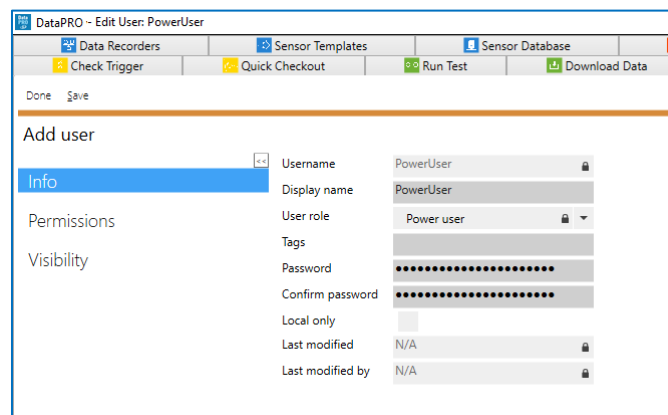


2. To modify a user, highlight the desired user and then select “Edit”:



3. Use the navsteps to edit the user “Info”, “Permissions” and “Visibility”:

Default Passwords for New Users	
Admin	<i>DTSAdmin</i>
PowerUser	<i>PowerUser123</i>
User	<i>UserNormal</i>
AeroUser	<i>AeroUser123</i>
CrashUser	<i>CrashUser123</i>
TSRAIRUser	<i>TSRAIRUser123</i>



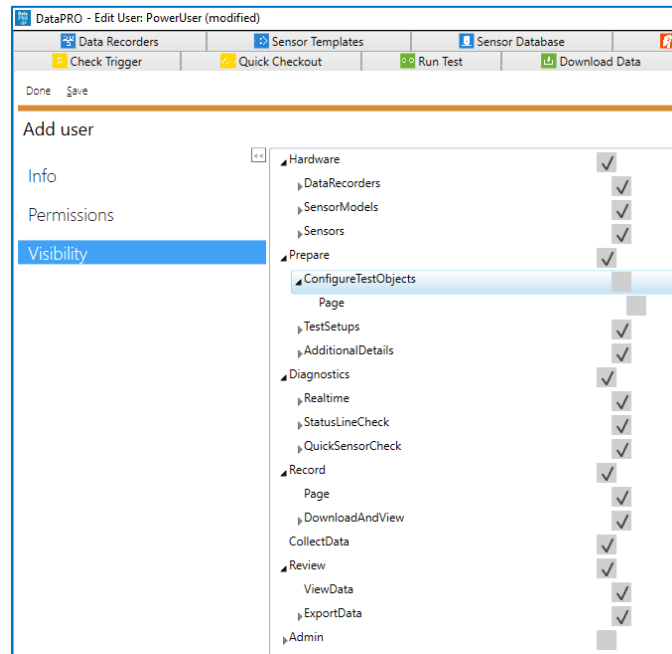
Change the user's display name.

Use Tags to filter/restrict visibility of Test Setups

Change/confirm the user's password.

Important: Users should change their passwords as soon as possible.

NOTE: It is recommended to use Visibility to limit user access to features and functions:



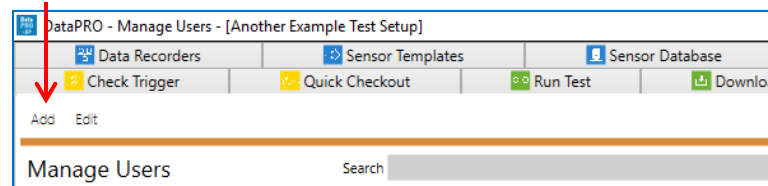
Use arrows to expand menus as necessary

Check to enable a tab

Uncheck to hide a tab

a. Select Save to save changes.

4. To create a new user, select “Add”:



5. Complete the information and select the user template to assign to the user:

- a. Each user template contains default access settings that can be modified when creating new users:
 - i. **Administrator:** Contains access to all tabs with Admin privileges; Edit, Read, and Execute all steps in all tabs.
 - ii. **Power User:** Contains access to all but “Administrative” tabs with Edit privileges.
 - iii. **User:** Contains access to all but “Administrative” tabs with Read and Execute privileges.
 - iv. **Guest:** Contains access to all but “Administrative” tabs with Read privileges.
- b. If the database was initialized with Aero, Crash, or TSR AIR settings, a special type of power user is automatically created to streamline functionality and simplify the home screen for these use cases:
 - i. **AeroUser:** User created when the database has been initialized for SLICE6 AIR streaming and aerospace tests. The AeroUser user does not have access to Sensor Templates, Groups, Additional Details, Check Channels, Check Trigger, and Quick Checkout tabs as these are not typically used in the Aero user workflow.
 - ii. **CrashUser:** User created when the database has been initialized for crash lab use. The CrashUser user can see all non-administrative tabs.
 - iii. **TSRAIRUser:** User created when the database has been initialized for use with TSR AIR devices. The TSRAIRUser user has a similarly paired down home screen as the AeroUser, with just Sensor Database, Test Setups, Run Test, Download Data, View Data, and Export Data available.

6. Make any changes to “Permissions” or “Visibility” unique to this user (see step **3**) and select “Save” to continue.

7. When finished, select “Done” to return to the previous location.

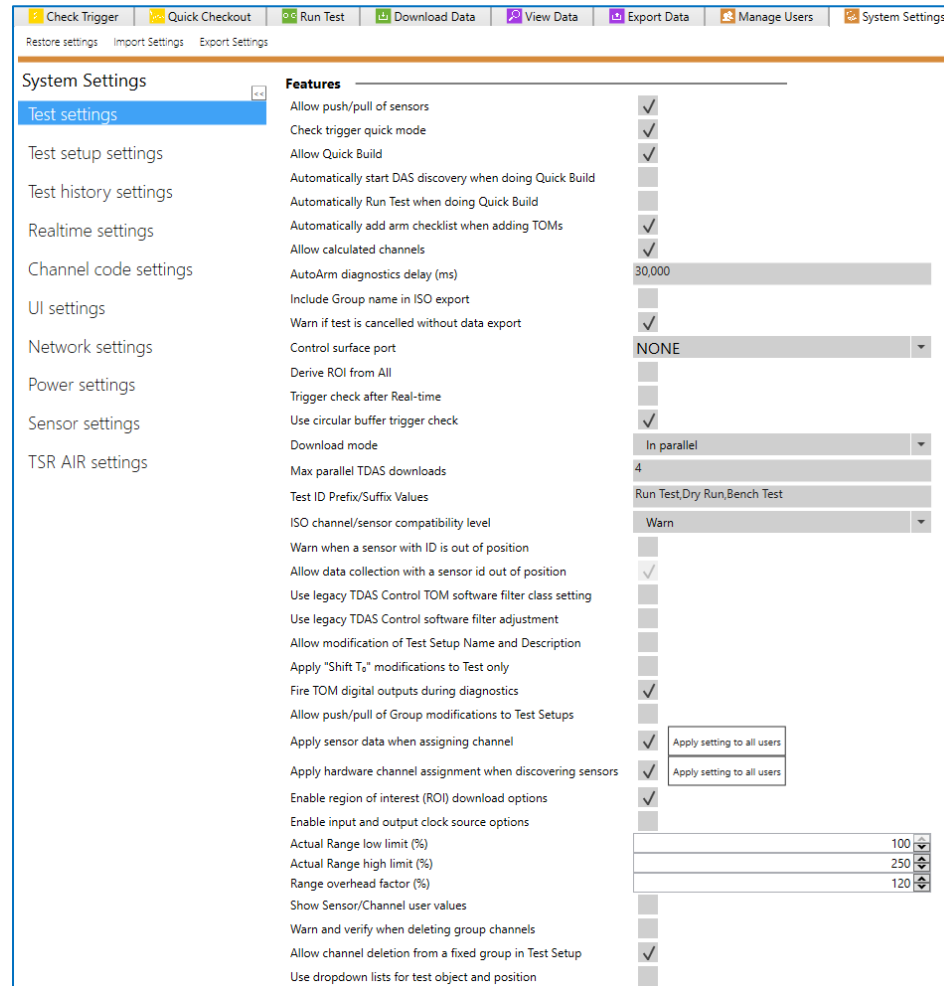
System Settings

Use the System Settings tab to configure DataPRO default Test Setup settings, table layout, ISO settings, Network settings and Power settings:



Test Settings

Configure default settings for new Test Setups, AAF settings, DAS Calibration Intervals, etc.



1. Features:

- Allow push/pull of sensors:** If enabled, DataPRO will allow users to push updates made in the Sensor Database to any Groups and Test Setups that include the updated sensor(s). DataPRO will also allow users to pull updates from the Sensor Database to Groups and Test Setups by adding a "Pull sensor parameters" option on these screens.

- **Check trigger quick mode:** If enabled, hardware will be dummy armed for trigger check.

*NOTE: Level triggers can only be verified if this is **NOT** selected.*

- **Allow Quick Build:** Enables the Quick Build option for test setups, which will quickly build a test setup given DAS used in a test before.
- **Automatically start DAS discovery when doing Quick Build:** If enabled, the Quick Build step will automatically scan for and query all DAS in the database. DAS which responds with configuration information will be added to the Test Setup.
- **Automatically Run Test when doing Quick Build:** If enabled, after discovering DAS previously used in a test, the Quick Build will create and run a new Test Setup starting at the Check Sensor ID step.
- **Automatically add arm checklist when adding TOMs:** If enabled, Arm Checklist will automatically be added to any Test Setup that contains TOMs.
- **Allow calculated channels:** If enabled, user can add calculated channels to dataset(s).

NOTE: Channels included in each calculation must be part of the same DAS.

- **AutoArm diagnostics delay (ms):** Time to wait after rebooting before running diagnostics when configured to AutoArm.
- **Include Group name in ISO export:** If enabled, Group name will be included in ISO export.
- **Warn if test is cancelled without data export:** If enabled, DataPRO will warn user if Run Test is exited before data download.

NOTE: If not selected, user will be warned of undownloaded data present on hardware during next diagnostic check.

- **Control surface port:** Customer-specific setting.
- **Derive ROI from All:** If enabled, the ROI dataset will be automatically generated from the full dataset. If T=0 is modified in View Data, the ROI dataset will be automatically regenerated.
- **Trigger check after Real-time:** If enabled, Trigger Check step will happen after Realtime. If not enabled, Trigger Check step will happen before Check Sensor ID.
- **Use circular buffer trigger check:** If enabled, Trigger Check will only test the Event line, regardless of recording mode chosen.

- **Download Mode:** Refers to how the data will be downloaded post-test. Options are *In parallel*, *Parallel by DAS type*, or *Sequentially*.
 - TDAS systems should select either parallel by DAS type or sequentially.
- **Max parallel TDAS downloads:** Maximum number of TDAS systems to download data at the same time.
- **Test ID Prefix/Suffix Values:** Modify or enter additional options to choose as Test ID prefix or suffix.
- **ISO channel/sensor compatibility level:** Options are Don't warn, Warn, Don't allow.
 - Don't warn will allow sensors of any physical dimension to be assigned to any ISO channel without any indication.
 - Warn will indicate physical dimension conflicts but will allow them.
 - Don't allow will require corresponding physical dimension settings in both sensors and ISO channel.
- **Warn when a sensor with ID is out of position:** If enabled, DataPRO will indicate if a sensor's EID is detected on a different hardware channel than what was assigned in Test Setup.
- **Allow data collection with a sensor ID out of position:** If enabled, an out-of-position sensor EID will not be considered a fault and DataPRO will be able to continue to data collection.
- **Use legacy TDAS Control TOM software filter class setting:** If enabled, TOM channels acquired at >8,000 sps will be filtered at 1650 Hz, while TOM channels acquired at ≤8,000 sps will remain unfiltered.
- **Use legacy TDAS Control software filter adjustment:** If enabled, data will be shifted one sample when filtered to match legacy TDAS Control filter methods.
- **Allow modification of Test Setup Name and Description:** If enabled, modifications to Test Setup Name and Description will be allowed.
- **Apply "Shift T₀" modifications to Test only:** If enabled, T=0 modifications will be applied to test only, option to apply to DAS will not be present.
- **Fire TOM Digital Outputs during Diagnostics:** If enabled, DataPRO will initiate Digital Output signals during diagnostics.
- **Allow push/pull of Group modifications to Test Setup:** If enabled, DataPRO will allow users to push updates made to Groups to any Test Setups that include the updated Group(s). DataPRO will also allow users to pull updates from Group(s) to a Test Setup.
- **Apply sensor data when assigning channel:** If enabled, parameters from the Sensor Database will be applied when adding a sensor to a Group or Test Setup.
- **Apply hardware channel assignment when discovering sensors:** If enabled, applies a hardware channel assignment when discovering sensors.
- **Enable region of interest (ROI) download options:** If enabled, an option to download the ROI will be present in Test Setup.

- **Enable input and output clock source options:** If enabled, an additional menu “Clock sync” will be available in Test Setup to define Master/Slave Clock options.
- **Actual Range low limit (%):** User-configurable value for the Actual Range Low Limit used in Diagnostics.
- **Actual Range high limit (%):** User-configurable value for the Actual Range High Limit used in Diagnostics.
- **Range overhead factor (%):** User-configurable value for the overhead to be added to the capacity of the sensor.
- **Show Sensor/Channel user values:** Will display the “User Value 1, User Value 2 and User Value 3” fields in Parameters navstep of Groups and Test Setups.
 - Values entered will be included in the *.dts export.
- **Warn and verify when deleting group channels:** Enable an additional “Are you sure?” warning to reconfirm deletion of channels in a group or test setup.
- **Allow channel deletion from a fixed group in Test Setup:** Enables the Delete button for channels which were added as part of a fixed group in the Test Setup → Channels navstep. Note that deleting the channel here only removes it from the test setup, not the actual group.
- **Use dropdown lists for test object and position:** If enabled, when configuring groups for a test setup, the text entry fields for Test object and will be changed to dropdown lists prepopulated with commonly used values.

2. Level Triggers:

Level Triggers	
Enable level-trigger UI	<input checked="" type="checkbox"/>
Level Trigger max percentage	0.75
Level Trigger min percentage	0.005

- **Enable level-trigger UI:** If enabled, a sensor can be set up as a level trigger in Test Setup. Note: Level triggers are always enabled for TSR AIR tests even when this option is not enabled.
- **Level Trigger min/max percentage:** With respect to the level trigger in realtime, the min and max percentages are relative to whatever the full scale is defined as for the sensor on the channel.

3. Communication timeouts:

Communication timeouts	
Diagnostics timeout TDAS (sec)	480
Diagnostics timeout SLICE (sec)	240
Query download timeout TDAS (sec)	240
Query download timeout SLICE (sec)	120
Query config timeout TDAS (sec)	240
Query config timeout SLICE (sec)	120
Connect timeout TDAS (sec)	90
Connect timeout SLICE (sec)	120

- Specify maximum time to wait for communication responses from hardware.

4. Sample rates and AAF (anti-alias filter) rates:

Sample rates and AAF rates	
Import sample rates and AAF settings from TDAS.ini	<input type="button" value="Browse"/>
Valid sample rates	5,50,100,200,250,500,1000,2000,2500,5000,8000,10000,12500,20000,25000,40000,50000,60000,75000,100000,150000,300000,400000,500000
SLICE AAF rates	1@5,10@50,20@100,40@200,50@250,100@500,200@1000,400@2000,500@2500,1000@5000,1600@8000,2900@10000,2900@12500,4000@20000,5000@25000,8000@40000,10000@50000,12000@60000,15000@75000,20000@100000,30000@150000,60000@300000,80000@400000,100000@500000
Max AAF TDAS PRO	4,300
Max AAF G5	3,620
TDAS AAF rates	50@250,100@500,200@1000,500@2000,500@2500,1000@5000,2000@8000,2900@10000,2900@12500,3620@20000,3620@25000,0@40000,0@50000,0@60000,0@75000,0@100000,0@150000,0@300000
Enable editing device AAF rate	<input type="checkbox"/>

- Import existing values from TDAS.ini (available in TDAS Control setup folder, located under C:\DTS\TDAS Control by default).
- Default valid sample rates and AAF filtering rates. Each value needs to be separated from another by a comma “,”.

- Add additional sample/filter rates for any hardware type. Each value needs to be written according to the following syntax: *AAF_Value@Sample_Rate*. Separate each value with a comma “,”.
- **Enable editing device AAF rate:** When enabled, displays and allows editing of the AA Filter (Hz) for each data recorder enabled on the Hardware screen of test setups.

5. DAS calibration intervals (days):

DAS calibration intervals (days)	
TDAS cal interval (days)	365
G5 cal interval (days)	365
SLICE 1.0 cal interval (days)	365
SLICE Base+ cal interval (days)	365
SLICE PRO cal interval (days)	365
PowerPRO cal interval (days)	365
SLICE 6 cal interval (days)	365
SLICE 6 AIR cal interval (days)	365
SLICE 6 Distributor cal interval (days)	365
TSR AIR cal interval (days)	365
Calibration due warning period (days)	30
HW calibration due grace period (days)	30
HW calibration policy	Allow data collection with a grace period on hardware calibration due dates

- Specify calibration interval for each hardware type.
- Specify 'Calibration Due' warning period.
- Choose hardware calibration due grace period and hardware calibration policy.

6. Data export options:

Data export options	
DIAdem Channel Name (200)	ISO Code
DIAdem User Comment (201)	Sensor Serial Number
Export INI file	<input type="text"/> <input type="button" value="Browse"/> <input type="button" value="Clear"/>
Use Test Setup for Test ID header in CSV export	<input type="checkbox"/>
Keep ROI and Multiple Events downloads within test folder	<input checked="" type="checkbox"/>
Use flat folder structure	<input type="checkbox"/>
Use UTC time in CSV exports	<input type="checkbox"/>
Use actual range for ISO-MME	<input type="checkbox"/>
Export dual sensitivity sensors in the same file (CSV, XLSX)	<input type="checkbox"/>

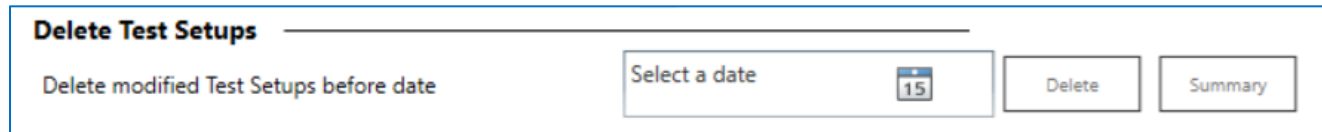
- Specify DIAdem export settings.
- Specify where INI file (compatible with TDAS Control) will be saved.
- Select additional options for CSV/XLSX exports, folder structure and ROI downloads.

7. Test Setups Import Options:

Test Setups Import Options	
Clear database before TSF import	<input type="checkbox"/>
Use dynamic groups with CSV import	<input checked="" type="checkbox"/>

- **Clear database before TSF import:** Enable this option to erase sensors and objects currently in the database when importing a TSF.
- **Use dynamic groups with CSV import:** Enable this option to create dynamic groups when importing a CSV Test Setup. These groups will only be available for use in the Test Setup created by the import; they will not be stored in the database for use with additional tests.

8. Delete Test Setups:



Delete Test Setups

Delete modified Test Setups before date

Select a date 15

Delete Summary

This section allows you to bulk delete older or historical Test Setups based on their last-modified date.

- a. Select a date. All test setups in the database with a Modified Date prior to the selected date will be included.
- b. Select Summary to generate an .xml summary report of the test setups that will be deleted. The report will be stored in Logs\Delete_Multiple and will be named according to the date range selected.
- c. Select "Delete" to proceed with deleting the selected tests.

Test Setup Settings

Select to configure default settings for new Test Setups. The Admin can configure the default settings for each user. Default settings can be configured for and applied to individual users or multiple users at one time.

The screenshot displays the 'System Settings' window with the 'Test setup settings' tab selected. The 'Test setup settings for user: Admin' section is active, showing the 'TestSetupDefaults' configuration. The settings are organized into two sections: '(1) Test info' and '(2) Test Details'.

(1) Test info

- Auto expand info sections:
- Allow advanced recording modes:
- Allow TSR AIR recording modes:
- Allow UART recording modes:
- Recording mode: Circular buffer (dropdown)
- Number of events to record: 1
- Default samples per second: 10000 (dropdown)
- Default pre-trigger second(s): 1
- Default post-trigger/Test length second(s): 1
- Allow streaming modes:
- Set DAS to streaming:
- Set DAS to auto-arm:
- Enable repeat when auto-arm/streaming:
- Preserve run test diagnostics for auto-arm/streaming:
- Download region of interest (ROI):
- ROI period start second(s): -1
- ROI period end second(s): 1
- View ROI:
- Download all:
- View all:
- Warn on missing trigger in Recorder mode:
- Default test setup tag:
- Interval between event starts, in minutes: 1

(2) Test Details

- Suppress missing sensors warning:
- Calibration behavior: Use non-linear sei (dropdown)

On the right side of the interface, there is a table listing users and their roles. The table has columns for Display name, User name, Role, Modified, and Modified by.

Display name	User name	Role	Modified	Modified by
Admin	Admin	Administrator	5/30/2017 11:20:14 AM	Admin
PowerUser	PowerUser	PowerUser	11/8/2017 1:19:48 PM	PowerUser
User	User	User	11/8/2017 1:19:48 PM	User
Guest	Guest	Guest	11/8/2017 1:19:49 PM	Guest
AeroUser	AeroUser	PowerUser	8/2/2022 12:00:00 AM	SYSTEM
CrashUser	CrashUser	PowerUser	8/2/2022 12:00:00 AM	SYSTEM
TSRAIRUser	TSRAIRUser	PowerUser	8/2/2022 12:00:00 AM	SYSTEM

Below the table is an 'Apply to:' button.

Make changes as needed. All changes are automatically saved to the database for the currently active user profile. To make changes to the default settings for another user, first select that user from the dropdown to display their current default settings.

1. Test info:

(1) Test info	
Auto expand info sections	<input type="checkbox"/>
Allow advanced recording modes	<input type="checkbox"/>
Allow TSR AIR recording modes	<input type="checkbox"/>
Allow UART recording modes	<input type="checkbox"/>
Recording mode	Circular buffer ▾
Number of events to record	1
Default samples per second	10000 ▾
Default pre-trigger second(s)	1
Default post-trigger/Test length second(s)	1
Allow streaming modes	<input type="checkbox"/>
Set DAS to streaming	<input type="checkbox"/>
Set DAS to auto-arm	<input type="checkbox"/>
Enable repeat when auto-arm/streaming	<input type="checkbox"/>
Preserve run test diagnostics for auto-arm/streaming	<input type="checkbox"/>
Download region of interest (ROI)	<input checked="" type="checkbox"/>
ROI period start second(s)	-1
ROI period end second(s)	1
View ROI	<input checked="" type="checkbox"/>
Download all	<input checked="" type="checkbox"/>
View all	<input type="checkbox"/>
Warn on missing trigger in Recorder mode	<input checked="" type="checkbox"/>
Default test setup tag	
Interval between event starts, in minutes	1

- **Auto expand info sections:** If enabled, will automatically expand any sections that were previously collapsed on the Test Setups Info screen when creating or editing a test setup.
- **Allow advanced recording modes:** If enabled, it will add Hybrid Recorder and Continuous Recorder modes to the Recording Mode dropdown in Test Setup (see [Data Collection Concepts](#), page 16, for more information).
- **Allow TSR AIR recording modes:** Enable the Active and Scheduled recording modes used by TSR AIR devices.
- **Allow UART recording modes:** If enabled, options for collecting data in Circular Buffer + UART and Recorder + UART modes will be present.
- **Recording mode:** Default recording mode options are Circular Buffer and Recorder Mode. Optional Hybrid Record mode can be turned on in System Settings. (See [Data Collection Concepts](#), page 15, for more information on recording modes. See [System Settings](#), page 193, to enable Advanced Recording Options.)
- **Number of events to record:** The number of events to record per test, when using a multiple-event recording mode.

- **Default samples per second:** Choose from options in list. Sample rate chosen must be supported by all DAS in test setup (see [System Settings](#), page 193, to add additional options to list).
- **Default pre-trigger second(s):** The amount of data (in seconds) to be collected pre-trigger. It does not apply to Recorder mode.
- **Default post-trigger/Test length second(s):** The amount of data (in seconds) to be collected post-trigger.
- **Allow streaming modes:** Controls whether streaming modes are available in new test setups.
- **Set DAS to streaming:** Exclusive to SLICE6 AIR DAS. If enabled, SLICE6 AIR DAS will be set to streaming by default for new test setups.
- **Set DAS to auto-arm:** If enabled, it will set DAS to Auto-Arm by default for new test setups.
- **Enable repeat when auto-arm/streaming:** Exclusive to SLICE6 AIR DAS. If enabled, DAS will automatically boot in an armed or streaming state if auto-arm or streaming is enabled.
- **Preserve run test diagnostics for auto-arm/streaming:** If enabled, diagnostic results from Run Test will be preserved and used when DAS is armed for either auto-arm or streaming applications.
- **Download region of interest (ROI):** A period of time, within the full dataset, that contains the dynamic test data. If selected, DataPRO will download a dataset containing only the time window indicated as the ROI.
- **ROI period start (sec):** Defines the amount of time pre-trigger to begin the ROI.
 - Define ROI period start for each included segment.
- **ROI period end (sec):** Defines the amount of time post-trigger to end the ROI.
 - Define ROI period end for each included segment.
- **View ROI:** If selected, data collection process will include a navstep to view the ROI.
- **Download All:** If selected, DataPRO will download a dataset containing the full dataset defined in Recording Options.
- **View All:** If selected, data collection process will include a navstep to view the full dataset.
- **Warn on missing trigger in Recorder mode:** If selected, DataPRO will warn the user when downloading data that includes units which did not receive any trigger during the data collection event in Recorder mode.
- **Default test setup tag:** Tag to apply to new test setups, by default.
- **Interval between event starts, in minutes:** Number of minutes from the start of one event to the start of the next.

2. Test Details:

(2) Test Details	
Suppress missing sensors warning	<input checked="" type="checkbox"/>
Calibration behavior	Use non-linear sei ▾
Suppress quit test warning	<input type="checkbox"/>
Realtime: suppress view all channels warning	<input type="checkbox"/>
Viewer: suppress view all channels warning	<input type="checkbox"/>
Common status line	<input checked="" type="checkbox"/>
Check trigger step	<input checked="" type="checkbox"/>
Measure Squib Resistances step	<input type="checkbox"/>
Automatic mode	<input type="checkbox"/>
Automatic mode delay second(s)	0.5
Warn on missing or failed battery	<input type="checkbox"/>

- **Suppress missing sensors warning:** If selected, DataPRO will allow user to progress without warning if not all sensors are found/channels resolved at Check Sensor ID step.
- **Calibration behavior:** Select to define how test data will be collected for any dual-calibration sensors (sensors which have both a linear and a non-linear definition).
 - Always use linear sensitivity.
 - Use non-linear sensitivity, if available.
 - Use both sensitivities, if available, as separate channels.
- **Suppress quit test warning:** If selected, DataPRO will not warn if user selects “Done” before completing all steps of a data collection event.
- **Real-time: suppress view all channels warning:** If selected, DataPRO will not warn if user does not view Realtime output from all channels in a test setup.
- **Viewer: suppress view all channels warning:** If selected, DataPRO will not warn if user does not review data collected from all channels in a test.
- **Common status line:** Select if all DAS shares the same communication path to PC. A typical non-common status line would be a vehicle test that includes a mobile barrier.
- **Check Trigger step:** Select to include a trigger check during data collection event.
- **Measure Squib Resistances step:** Controls whether the squib resistance measurement step is enabled by default for new test setups.
- **Automatic Mode:** Select to automatically progress through data collection sequence. If selected, define an optional delay before DataPRO progresses to the next step.

- **Automatic mode delay second(s):** Optional delay before advancing to next navstep when using Automatic Mode.
- **Warn on missing or failed battery:** If selected, DataPRO will alert user if DAS battery is missing or if measured voltage is outside thresholds set in System Settings (see [Power Settings](#), page 220).

3. Diagnostic options:

(3) Diagnostic options	
Require all units pass diagnostics	<input checked="" type="checkbox"/>
Require user confirmation on errors	<input checked="" type="checkbox"/>
Allow missing sensors	<input type="checkbox"/>
Require id found for sensors with ids	<input checked="" type="checkbox"/>
Prepare hardware delay second(s)	6
TOM warmup time (ms)	20000
IEPE warmup time (ms)	30000
Run post-test diagnostics on analog channels	<input type="checkbox"/>
Use tree mode in diagnostics	<input checked="" type="checkbox"/>
Run diagnostics on next step	<input type="checkbox"/>

- **Require all units pass diagnostics:** If selected, DataPRO will not advance beyond the “Realtime” step in Run Test, preventing data collection if any channels fail or if measured DAS voltage is outside thresholds set in System Settings.
- **Require user confirmation on errors:** If selected, DataPRO will require user confirmation to progress if any errors are detected.
- **Allow missing sensors:** If selected, DataPRO will allow user to progress if not all sensors are found/channels resolved at Check Sensor ID step.
- **Require id found for sensors:** If selected, DataPRO will require the EID to be detected for any sensor that has an EID listed in the sensor database.
- **Prepare hardware delay seconds:** Optional delay at the start of Diagnostics for sensor/hardware warm up.
- **TOM warmup time (ms):** Optional delay at the start of Diagnostics for TOM hardware to warm up.
- **IEPE warmup time (ms):** Optional delay at the start of Diagnostics for IEPE sensors to warm up.
- **Run post-test diagnostics on analog channels:** If selected, Post-Test Diagnostics will be included as a step in the data collection process.
- **Use tree mode in diagnostics:** If selected, diagnostic results will be displayed in Tree mode.

- **Run diagnostics on next step:** If selected, diagnostics will automatically run after preparing the configuration.

4. Realtime options:

(4) Realtime options	
Show realtime	<input checked="" type="checkbox"/>
Number of graphs	6
Chart width second(s)	2
Mask EU meta data	<input type="checkbox"/>
Ethernet SLICE Rate (SPS)	120
SLICE 6 Rate (SPS)	1000
USB SLICE Rate (SPS)	400
TDAS G5 Rate (SPS)	1000
TDAS SIM Rate (SPS)	200

- **Show Realtime:** If selected, Realtime navstep will be included in data collection process.
- **Number of graphs:** Select to display 1, 3, or 6 separate charts at Realtime landing. This can be changed from Realtime navstep.
- **Chart width second(s):** Time interval to be displayed in Realtime. This can also be modified in Realtime navstep.
- **Mask EU meta data:** Masks information related to EU and scaling in TMATs streaming.
- **Ethernet SLICE Rate (SPS):** Realtime sample rate to be used for SLICE hardware with an Ethernet connection.
- **SLICE6 Rate (SPS):** Realtime sample rate to be used by SLICE6 DAS.
- **USB SLICE Rate (SPS):** Realtime sample rate to be used for SLICE hardware with a USB connection.
- **TDAS G5 Rate (SPS):** Realtime sample rate to be used for TDAS G5 hardware.
- **TDAS SIM Rate (SPS):** Realtime sample rate to be used for TDAS SIM hardware.

5. Arm checklist:

(5) Arm checklist	
Perform arm checklist	<input type="checkbox"/>
Check battery voltage	<input checked="" type="checkbox"/>
Check input voltage	<input checked="" type="checkbox"/>
Require arm checklist when TOM present	<input checked="" type="checkbox"/>
Check squib resistance	<input checked="" type="checkbox"/>
Check sensor ids	<input checked="" type="checkbox"/>
Check start/event line(s)	<input checked="" type="checkbox"/>
Check tilt sensors	<input checked="" type="checkbox"/>
Check temperatures	<input checked="" type="checkbox"/>
Check clock sync	<input checked="" type="checkbox"/>
Require all units pass arm checklist	<input type="checkbox"/>

- **Perform arm checklist:** If enabled, DataPRO will perform Arm Checklist during data collection. Arm checklist test options will only be displayed if Arm Checklist is selected.
- **Check battery voltage:** If enabled, Arm Checklist will include battery voltage measurement. System will fault if measured battery voltage is outside thresholds set in System Settings.
- **Check input voltage:** If enabled, Arm Checklist will include input voltage measurement. System will fault if measured battery voltage is outside thresholds set in System Settings.
- **Require arm checklist when TOM present:** If enabled, Arm Checklist will be automatically added to a Test Setup if a TOM is included in the hardware.
- **Check squib resistance:** If enabled, Arm Checklist will include squib resistance check on TOM channels. System will fault if measured squib resistance is outside threshold set in sensor database.
- **Check sensor ids:** If enabled, Arm Checklist will check sensor IDs. System will fault if expected IDs are not found.
- **Check start/event line(s):** If enabled, Arm Checklist will include check of start/event status lines. System will fault if DataPRO detects a short on either.
- **Check tilt sensor(s):** If enabled, Arm Checklist will include check of SLICE6 tilt sensor(s). Only measured values will be displayed.
- **Check temperature:** If enabled, Arm Checklist will include check of SLICE6 temperature. Only measured values will be displayed.
- **Check clock sync:** If enabled, Arm Checklist will include a check of the Clock Sync.
- **Require all units pass arm checklist:** If enabled, DataPRO will not progress to Arm System if any faults are detected in any tests included in Arm Checklist.

6. Export options:

(6) Export options	
Export data	<input type="checkbox"/>
CSV unfiltered EU	<input type="checkbox"/>
CSV filtered EU	<input type="checkbox"/>
CSV unfiltered mV	<input type="checkbox"/>
CSV unfiltered ADC	<input type="checkbox"/>
DIAdem ADC	<input type="checkbox"/>
ISO unfiltered EU	<input type="checkbox"/>
ISO filtered EU	<input type="checkbox"/>
TDAS ADC	<input type="checkbox"/>
TTS unfiltered EU	<input type="checkbox"/>
TSV unfiltered EU	<input type="checkbox"/>
TSV filtered EU	<input type="checkbox"/>
RDF ADC	<input type="checkbox"/>
TDMS ADC	<input type="checkbox"/>
DDAS unfiltered EU	<input type="checkbox"/>
HDF unfiltered EU	<input type="checkbox"/>
HDF mV	<input type="checkbox"/>
HDF ADC	<input type="checkbox"/>
XLSX unfiltered EU	<input type="checkbox"/>
XLSX filtered EU	<input type="checkbox"/>
Export ASC	<input type="checkbox"/>

- **Export data:** If enabled, DataPRO will export a data set in each of the selected format(s). Raw data is always downloaded.
- **CSV unfiltered EU/filtered EU/unfiltered mV/unfiltered ADC:** Select desired data types to be exported in one Comma Separated Variable file.
- **DIAdem ADC:** Data format comprised of one .dat header file for the test and one binary file for each channel in the test.
- **ISO unfiltered EU/filtered EU:** Data format that follows the ISO/TS 13499 requirements.
- **TDAS ADC:** Data format compatible with TDAS Control.
- **TTS unfiltered EU:** Customer-specific data format.
- **TSV unfiltered EU/filtered EU:** All test data is contained in one Tab Separated Value file.

- **RDF ADC:** Customer-specific data format.
- **TDMS ADC:** Data format that follows the TDM Streaming file format.
- **DDAS filtered EU:** Customer-specific data format.
- **HDF unfiltered EU/mV/ADC:** Hierarchical Data Format; designed to store and organize large amounts of data.
- **XLSX unfiltered EU/filtered EU:** Data format compatible with Microsoft Excel.
- **Export ASC:** Customer-specific data format.

7. Upload Options:

(7) Upload options	
Upload data	<input checked="" type="checkbox"/>
Upload folder	<input type="checkbox"/>
Upload Export file(s) only	<input type="checkbox"/>

- **Upload data:** If enabled, collected data will be uploaded to a specified location during the data collection process. Data will still be downloaded to the default location of *C:\DTS\DTS.Suite\Data* or other location as defined in the configuration file.
- **Upload folder:** File location for collected data to be stored/uploaded during data collection process.
- **Upload Export file(s) only:** If enabled, only the data export files will be uploaded to the designated location.

8. Clock sync options:

(8) Clock sync options	
Clock master default profile	None ▼
Clock slave default profile	None ▼

These settings define the default clock sync behavior for supported hardware in new test setups. Changing these options will not affect any existing tests. Note that “Enable input and output clock source options” must be enabled in System Settings → Test Settings for the clock sync options to be visible on the Test Setup → Info navstep.

- **Clock master default profile:** Select the default Clock Master profile for new test setups. Make sure to choose the proper In AND Out clock types for the Master default.
- **Clock slave default profile:** Select the default Clock Slave profile for new test setups.

9. UART options (exclusive to SLICE6 AIR):

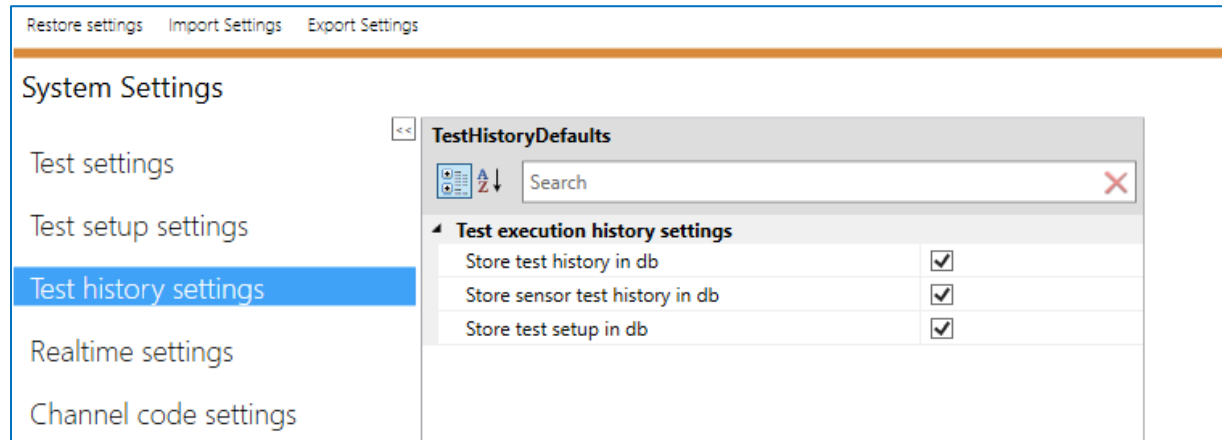
(9) UART options	
Baud rate	57600
Data bits	8
Stop bits	None ▾
Parity	None ▾
Flow control	None ▾

- **Baud rate:** Set the transmission speed of the UART communication.
- **Data bits:** Set the number of bits of Data in the transmitted package.
- **Stop bits:** Set how many bits define the end of the transmitted package (None, One, OnePointFive or Two).
- **Parity:** Set the parity of the transmitted package (Odd, Even, Mark or Space).
- **Flow control:** Set the method used to start/stop the flow of transmissions (None, XOnXOff, RequestToSend, RequestToSendXOnXOff).

Test History Settings

Specify default behavior for settings related to the test history.

NOTE: The test history can be viewed in sensor database usage reports, or when selecting a test setup when one or more of these settings is enabled.

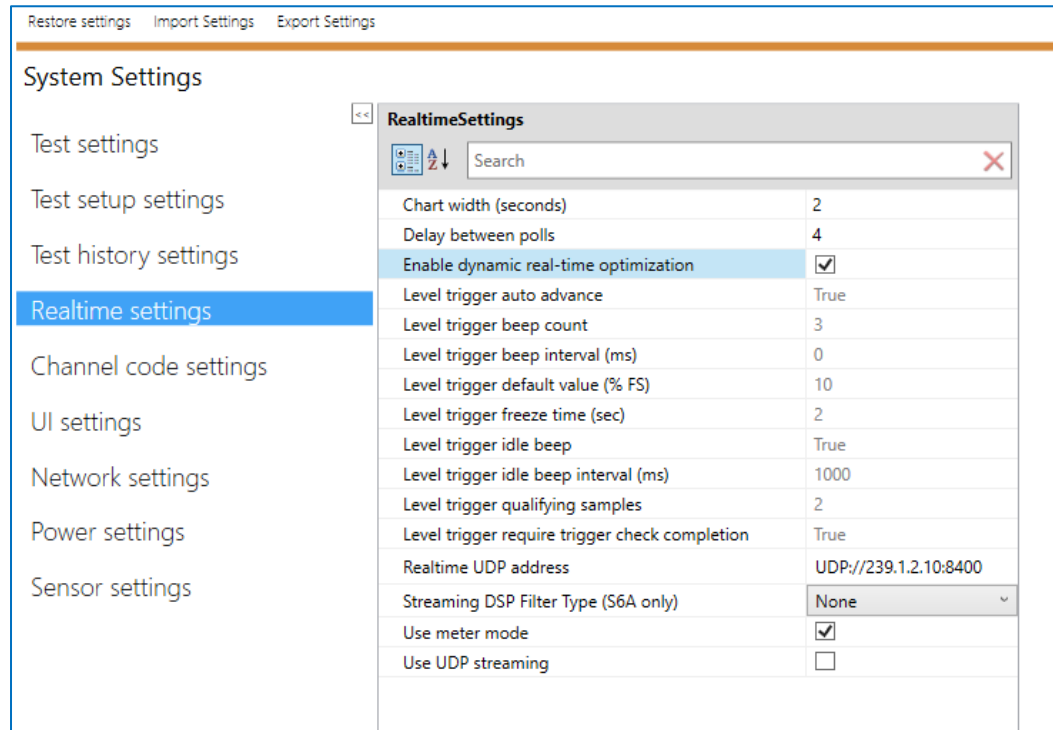


1. Test execution history settings:

- **Store test history in db:** If enabled, will store the test execution history in the DataPRO database. Selecting this option will enable the following two configuration options:
 - **Store sensor test history in db:** If enabled, will store the sensor information in the database when the test is run.
 - **Store test setup in db:** If enabled, will store the test setup information in the database when the test is run.

Realtime Settings

View/change default Realtime settings.



- **Chart width:** Period of time to display in Realtime view panel. (Also adjustable in Realtime navstep.)
- **Delay between polls:** Time, in ms, between calls to DAS for Realtime data.

NOTE: Realtime Data will be streaming from SLICE hardware, rather than polling, if the installed firmware supports this feature. (See table below.)

Hardware Type	Firmware Required
SLICE Base 1.0	Not supported
SLICE Base+	B1F8
SLICE PRO SIM	A1N1
SLICE6	F0L7

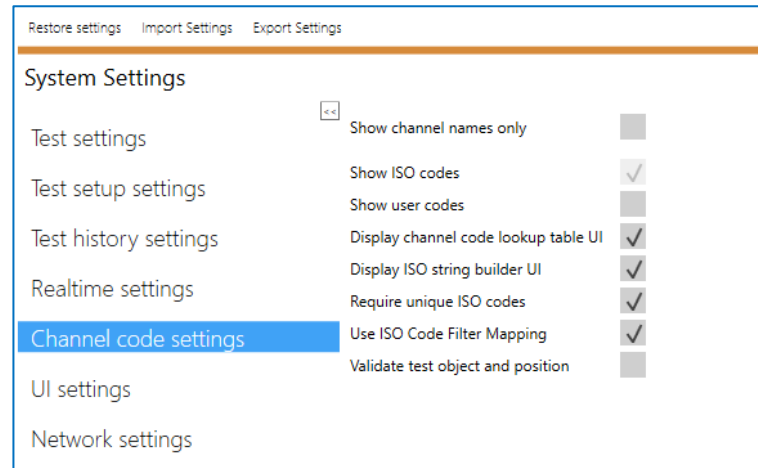
NOTE: Realtime AAF ratio is 1:1 by default. This setting can be changed in the DataPRO.exe.config file. See DataPRO Settings Manual for more information about the config file.

- **Enable dynamic real-time optimization:** If True, DataPRO will dynamically adjust sampling rates in the realtime viewer based on tested download speeds. Only models defined in RealtimeOptimizationSettings.xml will be affected.
- **Level trigger auto advance:** If True, channel will automatically advance once Realtime level trigger threshold has been met. Level triggers on must be enabled to allow modification.
- **Level trigger beep count:** Number of audible beeps once Realtime level trigger threshold has been met. Level triggers on must be enabled to allow modification.
- **Level trigger beep interval (ms):** Interval for audible beeps indicating Realtime level trigger threshold has been met. Level triggers on must be enabled to allow modification.
- **Level trigger default value (%FS):** Default value for Realtime level trigger threshold. Level triggers on must be enabled to allow modification.
- **Level trigger freeze time (sec):** Amount of time for Realtime display to freeze once Realtime level trigger threshold has been met. Level triggers on must be enabled to allow modification.
- **Level trigger idle beep:** If True, an audible beep will be heard at the interval specified in “Level trigger idle beep interval” when Realtime signal is not within the Realtime level trigger bounds. Level triggers on must be enabled to allow modification.
- **Level trigger idle beep interval (ms):** Interval for audible beeps indicating Realtime level trigger threshold is not within Realtime level trigger bounds. Level triggers on must be enabled to allow modification.
- **Level trigger qualifying samples:** Number of consecutive samples within Realtime level trigger bounds required to validate Realtime level trigger. Level triggers on must be enabled to allow modification.

- **Level trigger require trigger check completion:** If True, DataPRO will require that all channels included in Test Setup complete the Realtime level trigger check. Level triggers on must be enabled to allow modification.
- **Realtime UDP address:** UDP streaming address and port to be used for SLICE6 AIR streaming applications. DataPRO will increment the port for each SLICE6 AIR unit included in the test.
- **Streaming DSP Filter Type (S6A only):** Exclusive to SLICE6 AIR. Applies an optional digital signal processing filter when streaming. Available filters include:
 - CH10 6th IIR Butterworth
 - CH10 6th FIR Dual-Step 45T → 65T Flat Response
 - Real-Time 6th IIR Butterworth
 - Real-Time 6th FIR Dual-Step 45T → 65T Flat Response
- **Use meter mode:** If enabled, Meter Mode will be available as a display option during Realtime.
- **Use UDP streaming:** Enables UDP streaming with SLICE6 AIR in Realtime.

Channel Code Settings

Choose Channel code settings for use in Sensor Database, Group and Test Setup tabs.



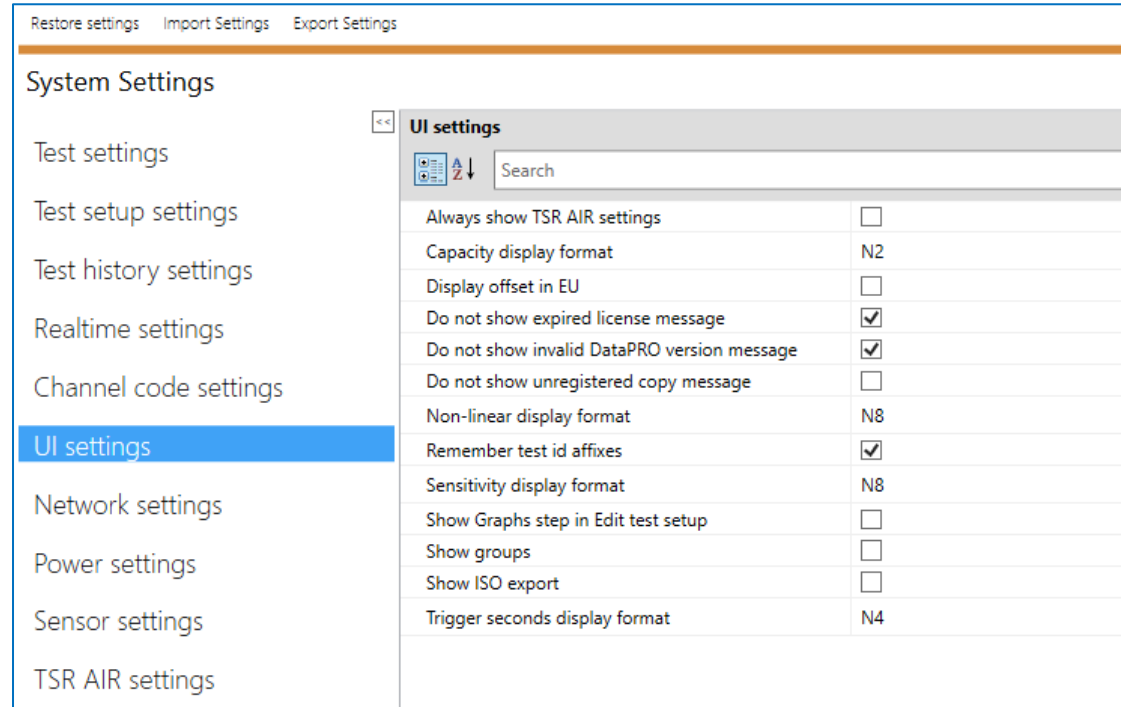
DataPRO allows for the use of three different channel identifiers: Channel Names, ISO Codes and User Codes. If no ISO or User codes are used, select “Show channel names only”. If “Show channel names only” is selected, all other options are disabled. If “Show ISO codes” is selected, the following options are enabled:

- **Display channel code lookup table UI:** If selected, a table listing all available Channel Codes will be displayed to assist in code selection.
- **Display ISO string builder UI:** If selected, a table identifying each ISO Code parameter will be displayed to assist in creating ISO Codes.
- **Require unique ISO codes:** If selected, each channel in a Test Setup must have a unique ISO Code to be considered a valid test setup.
- **Use ISO Code Filter Mapping:** If selected, the ISO Code must match the sensor filter setting. Changing one of these options will change the other to match.
- **Validate test object and position:** When saving/editing a test setup, warn if the test object or position (first two digits of the channel ISO code) are invalid.

If only “Show user codes” is selected, only the **Display channel code lookup table UI** option is available.

UI Settings

The user interface settings include various display and formatting options.



- **Always show TSR AIR settings:** Controls whether TSR AIR settings should always be shown in Edit Test Setup.
- **Display offset in EU:** Display offset in EU rather than mV.
- **Do not show expired license message:** Suppress the warning message for expired DataPRO licenses.
- **Do not show invalid DataPRO version message:** Suppress the warning message for invalid versions of DataPRO.
- **Do not show unregistered copy message:** Suppress the warning message for unregistered copies of DataPRO.
- **Remember test id affixes:** Remember the last values chosen for the test id prefix and suffix on the “Run Test” tab.
- **Show Graphs setup in Edit test setup:** Controls whether the Graphs navstep is shown in Edit Test Setup.
- **Show groups:** Controls whether the Groups tab is visible, and whether groups are shown in Edit Test Setup and other areas.

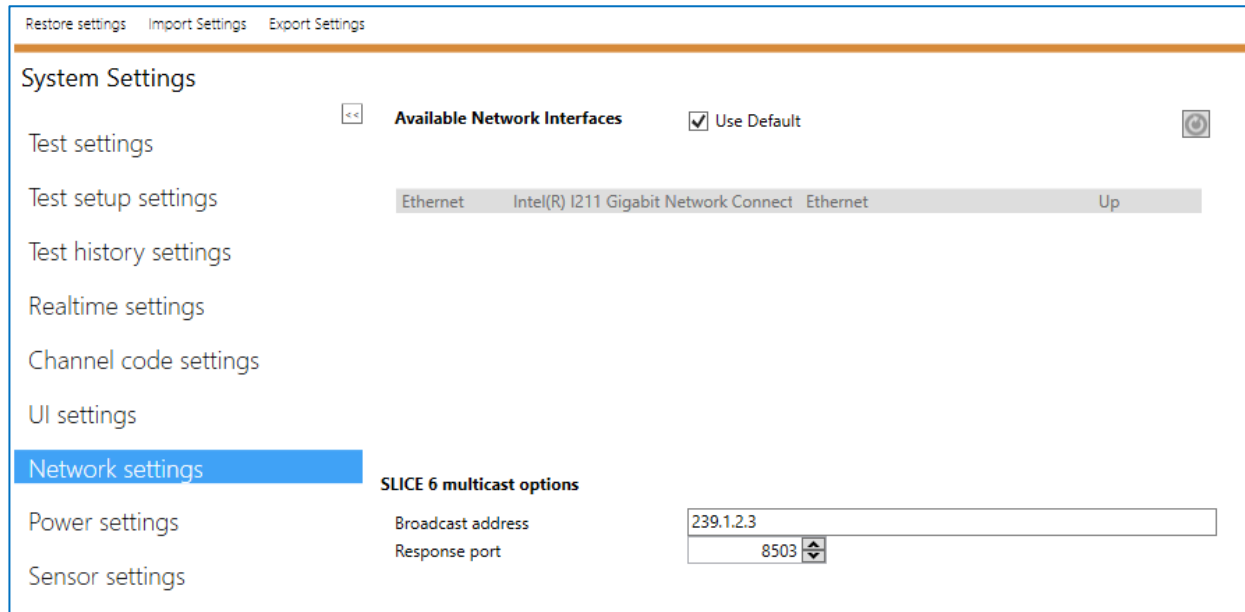
- **Show ISO export:** Controls whether ISO 13499 export options are shown in Export and Test Setup.
- **Configurable formats** include the **capacity display format**, **non-linear display format**, **sensitivity display format**, and **trigger seconds display format**. These formats use standard numeric format strings and can be specified as follows:

Description	Format and Precision Specifier	Example
Number: Integers and decimals, group and decimal separators, with optional negative sign	N or n <i>Number of decimal places</i>	N where 1234.567 = 1,234.57 N1 where 1234 = 1,234.0 N3 where -1234.56 = -1,234.560
Decimal: Integers with optional negative sign	D or d <i>Minimum number of digits</i>	D where 1234 = 1234 D6 where -1234 = -001234
Exponential (scientific): Exponential notation	E or e <i>Number of decimal digits</i>	E where 1052.0329 = 1.052033E+003 E2 where -1052.0329 = -1.05e+003
Fixed-point: Integers and decimals with optional negative sign	F or f <i>Number of decimal digits</i>	F where 1234.567 = 1234.57 F4 where -1234.56 = -1234.5600

For more information, see <https://docs.microsoft.com/en-us/dotnet/standard/base-types/standard-numeric-format-strings>.

Network Settings

Specify network settings for DAS.



1. **Available Network Interfaces:** Select the network interface to which the DAS is connected. Check the “Use Default” option to let DataPRO chose the default network interface. Click on the circled arrow in the upper right to refresh the list.
2. **SLICE6 Multicast Options:**
 - Broadcast address: Specify the IP address used to broadcast data.
 - Response port: Specify the port used to receive responses from the DAS.

Power Settings

Input power/battery warning thresholds are specified here. While these specifications can be changed by the user, DTS does not recommend doing so without first consulting with DTS Support.

The screenshot shows the 'System Settings' page with 'Power settings' selected. The settings are organized by device type, with each device having 'Input' and 'Battery' threshold tables. The 'Power settings' menu item is highlighted in blue.

Device	Category	Diagnostics (low)	Diagnostics (med)	Diagnostics (high)	Armed (low)	Armed (med)	Armed (high)	Min valid	Max valid
TDAS PRO Rack	Input	11.50	12.50	13.20	11.50	12.50	13.20	4.00	16.00
	Battery	11.50	12.50	13.20	11.50	12.50	13.20	4.00	16.00
G5 (VDS)	Input	10.90	11.30	13.20	10.90	11.30	13.20	4.00	16.00
	Battery	10.90	11.30	13.20	10.90	11.30	13.20	4.00	16.00
G5 (In-dummy)	Input	11.00	11.50	15.00	11.00	11.50	15.00	4.00	16.00
	Battery	11.00	11.50	15.00	11.00	11.50	15.00	4.00	16.00
SLICE Distributor	Input	10.00	12.70	15.30	6.50	10.90	15.30	4.00	19.00
	Battery	7.80	8.40	9.00	6.80	7.90	9.00	4.00	9.00
	Input								

Sensor Settings

Specify the default settings for new sensor database entries of various sensor types.

The screenshot shows the 'System Settings' window with the 'Sensor settings' tab selected. The settings are organized into several sections:

- Test settings:** Delay (ms) is set to 0.00.
- Test setup settings:** Limit duration is checked, and Duration (ms) is set to 10.0.
- Test history settings:** Low tolerance (Ω) is set to 0.9 and High tolerance (Ω) is set to 8.0.
- Realtime settings:** Firing mode is set to Capacitor discharge.
- Channel code settings:** Digital output defaults are set to 5V low to high transition.
- UI settings:** Delay (ms) is set to 0.00.
- Network settings:** Limit duration is checked, and Duration (ms) is set to 10.00.
- Power settings:** Digital input defaults are set to Constant current breakpoint (ADC) at 19,005.00 and Voltage input breakpoint (ADC) at 19,661.00. Display SPD analog data is unchecked.
- TSR AIR settings:** IEPE defaults are set to 24V Power low (V) at 23.0 and 24V Power high (V) at 26.5.

1. Squib defaults:

The close-up shows the 'Squib defaults' section with the following settings:

- Delay (ms): 0.00
- Limit duration: checked
- Duration (ms): 10.0
- Low tolerance (Ω): 0.9
- High tolerance (Ω): 8.0
- Firing mode: Capacitor discharge

- See [Sensor Templates](#), page 44, and [Sensor Database](#), page 49, for more information on these options.

2. Digital output defaults:

Digital output defaults	
Output mode	5V low to high transition
Delay (ms)	0.00
Limit duration	<input checked="" type="checkbox"/>
Duration (ms)	10.00

- See [Sensor Templates](#), page 44, and [Sensor Database](#), page 49, for more information on these options.

3. Digital input defaults:

Digital input defaults	
Constant current breakpoint (ADC)	19,005.00
Voltage input breakpoint (ADC)	19,661.00
Display SPD analog data	<input type="checkbox"/>

- See [Sensor Templates](#), page 44, and [Sensor Database](#), page 49, for more information on these options.

4. IEPE defaults:

IEPE defaults	
24V Power low (V)	23.0
24V Power high (V)	26.5
Actual range low limit (x full scale)	1.0
Actual range high limit (x full scale)	100.0
Disable auto-sense	<input type="checkbox"/>

- Select default low/high power and low/high range limits for IEPE sensors.
- Disable auto-sense:** If checked, Auto-Sense will not be used to detect IEPE sensors and will instead rely on test configuration.

5. Sensor calibration policies:

Sensor calibration policies	
Calibration interval starts after sensor's first use	<input checked="" type="checkbox"/>
Policy	Do not allow data collection with overdue sensor calibration
Warning period (days)	14

- **Calibration interval starts after sensor's first use:** Begin the calibration interval after a sensor has been used for the first time. This may be useful in cases where the calibration interval should not begin until the sensor has been used in a destructive test.
- **Policy:** Controls whether data can be collected using sensors that are past due for calibration.
- **Warning period (days):** The number of days before the calibration due date that DataPRO should alert the user of the upcoming calibration deadline. Sensors that are used within this warning period will be shaded orange.

6. Analog defaults:

Analog defaults	
Define Default Filter	1650 (CFC1000)

- **Define Default Filter:** Select the default software filter for new sensors.

7. UART defaults:

UART defaults	
Baud rate	57,600
Data bits	8
Stop bits	None
Parity	None
Flow control	None
Data format	Binary

- **Baud rate:** Rate that information is transferred, in bits per second.
- **Data bits:** Number of bits used to represent device commands, readings, or error messages. Note: Most serial ports use between 5 and 8 data bits. Binary data is typically transmitted as 8 bits.

- **Stop bits:** Number of bits used to indicate the end of a byte (1, 1.5 or 2).
- **Parity:** Parity bit setting used to determine transmission errors (None, Odd, Even, Mark, or Space).
- **Flow control:** Method for controlling the rate of data being transferred (None, XonXoff, RTS, or RTS/XonXoff).
- **Data format:** The format in which data should be stored (Binary, Text, or National Marine Electronics Association [NMEA]).

8. Stream output defaults:

- **Stream profile:** Data format for streaming realtime data over UDP.
 - Ch10 Analog
 - Ch10 Analog Time Format 2
 - Ch10 128bit PCM
 - Ch10 128bit PCM Time Format 2
 - TmNS 144bit PCM
 - TmNS Supercom (4xADCscan) PCM
- **UDP address:** Address to which UDP packets will be streamed to. This can be a broadcast address or an IPv4 address.
- **Time channel id:** Numeric id of a time channel for streaming profiles that contain a time channel (CH10).
- **Data channel id:** Numeric id of a data channel for streaming profiles that contain a data channel (CH10).
- **TmNS config:** Additional configuration options for TmNS. Values are Packet ID, TmNS Message ID, and read only 60 minor frame/major frames. Contact DTS for more information.
- **IRIG time packet interval (ms):** Amount of time between time data packets.

TSR AIR Settings

Configure default settings for TSR AIR devices on a per-user basis. Default settings can be configured for and applied to individual users or multiple users at one time.

The screenshot shows the 'System Settings' interface. On the left is a navigation menu with 'TSR AIR settings' selected. The main area displays 'TSR AIR family test setup settings for user: Admin'. Below this is a 'TSRAIRDefaults' window with a search bar and two sections: '(1) Motion defaults' and '(2) Trigger defaults'. The 'Motion defaults' section includes: Motion detect delay (ms) = 100, Motion qualification period (ms) = 100, Motion detect inactivity (sec) = 10, and Time session duration = 00:00:00. The 'Trigger defaults' section includes: High g linear acceleration (checkbox), High g trigger above and below = 100, Timed interval trigger (checkbox), Interval between event starts, in minutes = 100, Timed interval unit = Seconds, Timed interval event duration (ms) = 1000, Timed interval number of events = 100, RTC Schedule trigger (checkbox), RTC Schedule start time, and RTC Schedule event duration (hh:mm:ss) = 00:00:00. An 'Apply to:' button is visible. On the right, there is a 'Tags:' field, a 'Search:' field, and a table of users.

Display name	User name	Role	Modified	Modified by
Admin	Admin	Administrator	5/30/2017 11:20:14 AM	Admin
PowerUser	PowerUser	PowerUser	11/8/2017 1:19:48 PM	PowerUser
User	User	User	11/8/2017 1:19:48 PM	User
Guest	Guest	Guest	11/8/2017 1:19:49 PM	Guest
AeroUser	AeroUser	PowerUser	8/2/2022 12:00:00 AM	SYSTEM
CrashUser	CrashUser	PowerUser	8/2/2022 12:00:00 AM	SYSTEM
TSRAIRUser	TSRAIRUser	PowerUser	8/2/2022 12:00:00 AM	SYSTEM

1. Motion defaults:

- **Motion detect delay (ms):** Number of milliseconds to delay before notification.
- **Motion qualification period (ms):** Number of milliseconds of activity to decide in-motion state.
- **Motion detect inactivity (sec):** Number of seconds of inactivity before returning to sleep.
- **Time session duration:** Length of time for measurement before returning to sleep.

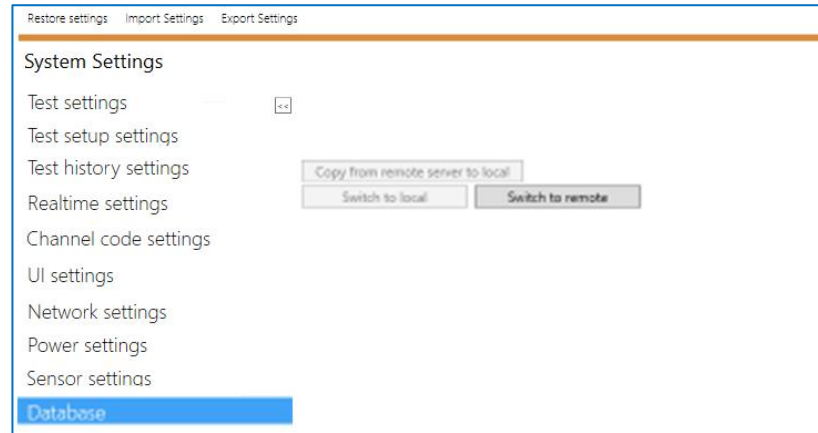
2. Trigger defaults:

- **High g linear acceleration:** Enable or disable high-g linear accelerometer trigger.
- **High g trigger above and below:** Trigger above and below value on high-g linear accelerometer.
- **Timed interval trigger:** Enable or disable pressure trigger.
- **Interval between event starts, in minutes:** Time in minutes from the start of one event to the start of the next.
- **Timed interval unit:** Time measurement unit for interval frequency.
- **Timed interval event duration (ms):** Number of milliseconds per timed interval event.
- **Timed interval number of events:** Number of timed interval events to record.
- **RTC Schedule trigger:** Enable or disable RTC schedule trigger.
- **RTC Schedule start time:** Time for wake up alarm.
- **RTC Schedule event duration (hh:mm:ss):** Length of time for measurement before returning to sleep.

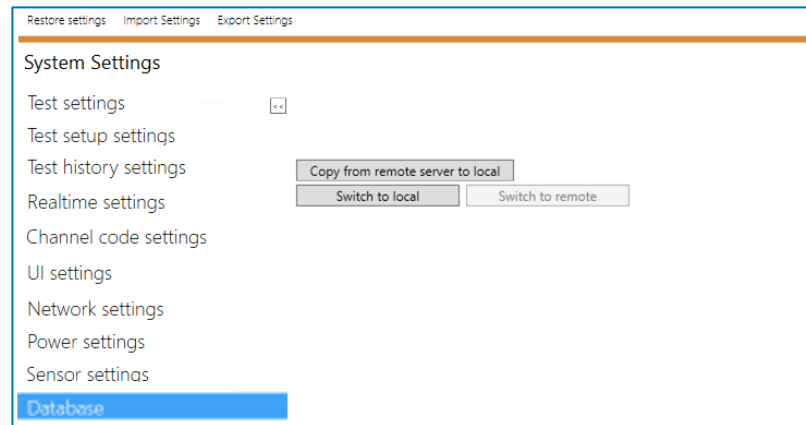
Database

This navstep is only enabled when DataPRO is configured to operate with both a local database and a SQL server database.

1. When configured to connect to the local database, DataPRO will give the option to “Switch to remote”:

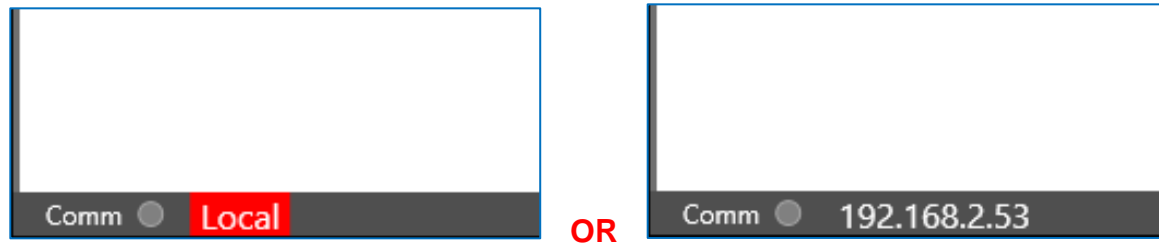


2. When configured to connect to a remote/SQL database, DataPRO will give the option to “Switch to local”:



- Select “Copy from remote to local” to make a copy of the SQL server database for use while operating with a local database connection.

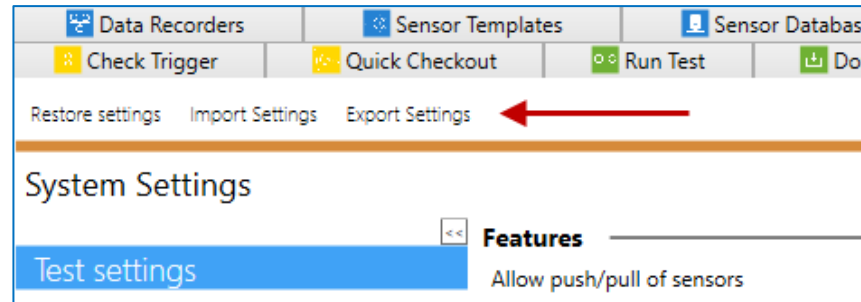
NOTE: The database connection type will be displayed in the lower left corner when configured to operate with both.



NOTE: To manually change the Database type (local, remote or both) if you haven't selected "both" when installing the software, open the *DataPRO.exe.config* file in the software folder and modify the "DBType" setting to the following:

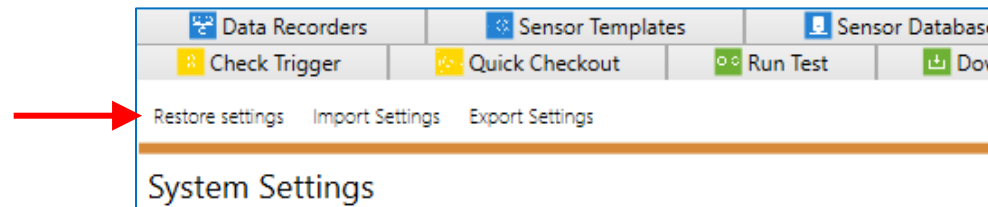
- "0" for centralized SQL database;
- "1" for local database;
- "2" for both databases.

Restoring, Importing, and Exporting System Settings



Restore Settings

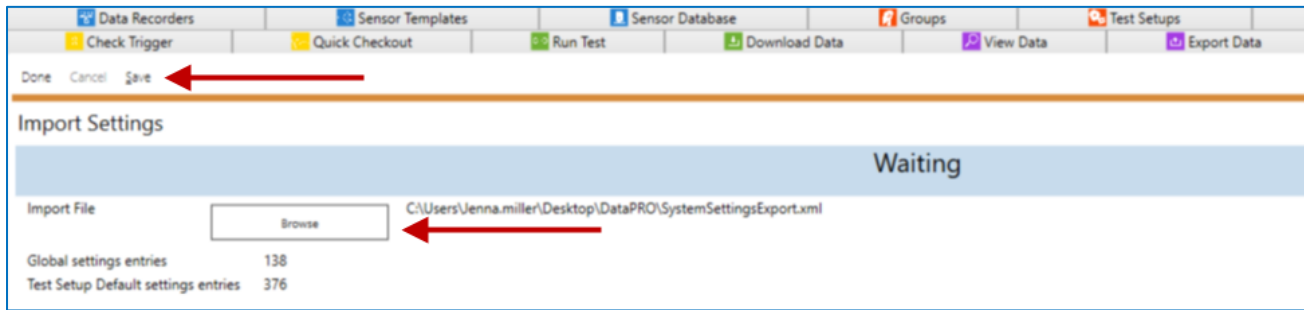
To restore all System Settings to the original, as-installed factory default settings, select Restore Settings.



NOTE: A single press of this button will revert any changes made in System Settings back to the default.

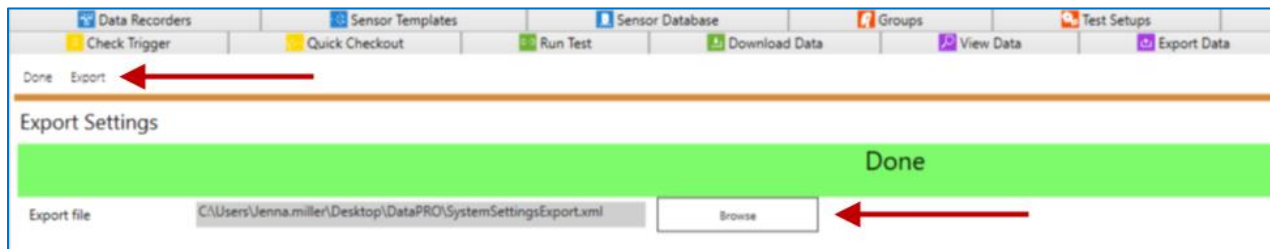
Import Settings

1. To import the System Settings, select Import Settings.
2. Browse to and select the desired System Settings file that was previously exported.
3. Select Save.



Export Settings

1. To export the System Settings, select Export Settings.
2. Browse to the desired location and enter the name for the export file:
3. Select Export.



Appendix A: Common Sensor Types and Bridge Connections

The sensor setup application notes are general and apply broadly to categories of sensors. Please contact DTS for more information or with specific questions. Sensor setup information and application diagrams for many commonly used sensors are available on the Help Center. To effectively use the connector diagrams, both the pin configuration of the hardware and the wire scheme of the sensor must be known.

See [Sensor Templates](#), page 44, and [Sensor Database](#), page 49, for more information on sensor fields.

NOTE: DTS recommends the use shunt checks whenever possible except for bridges above 4k Ω , active sensors or unbalanced bridges.

Accelerometer

- Typical Capacity of 400 to 2,000 g
- Typical Units of “g”
- Sensor type is typically “Full Bridge”
- Typical bridge resistance of 500-510 ohms
- Output is Proportional to Excitation
- Enter Sensitivity in mV/V/g

Upper Neck Load Cell

- Enter Capacity same as load cell capacity
- Sensor type is typically “Full Bridge”
- Typical bridge resistance of 350 or 700 ohms
- Output is Proportional to Excitation
- Enter Sensitivity in mV/V/N (lbf, etc.)

ARS – Angular Rate Sensors

- Enter Capacity same as ARS capacity
- Sensor type is “Full Bridge”
- Equivalent bridge resistance is 3000 ohms
- Output is NOT Proportional to Excitation
- Enter Sensitivity in mV/deg/sec

Linear Potentiometer

- Enter Capacity same as potentiometer capacity
- Potentiometer is part of a half- or full-bridge
- Bridge resistance varies according to design
- Output is Proportional to Excitation
- Do not remove offset
- Enter Sensitivity in mV/V/mm (inch, etc.)

Non-linear Devices

Certain ATD displacement sensors

- Enter Capacity same as potentiometer capacity
- Potentiometer is part of a half- or full-bridge
- Bridge resistance varies according to design
- Sensor is Non-Linear
- Select correct non-linear format
 - Typically, Cubic Polynomial for chest displacement potentiometers
- Enter calibration coefficients into Sensitivity Details table

IRTRACC for WorldSID and THOR Dummies

- Enter Capacity same as potentiometer capacity
- Potentiometer is part of a half- or full-bridge
- Bridge resistance varies according to design
- Sensor is Non-Linear
- Select correct non-linear format:
 - IR-Tracc Legacy
 - IR-Tracc Diagnostic Zeroed
 - IR-Tracc mV for 0 mm
 - IR-Tracc Average over time
 - IR-Tracc Radius Cal with Cal Factor – use for NCAP 0 position intercept
- Enter calibration information based on selected non-linear format

Digital Input/Output Options

- All options other than Name can be modified in Group and Test Setup

Squib Options

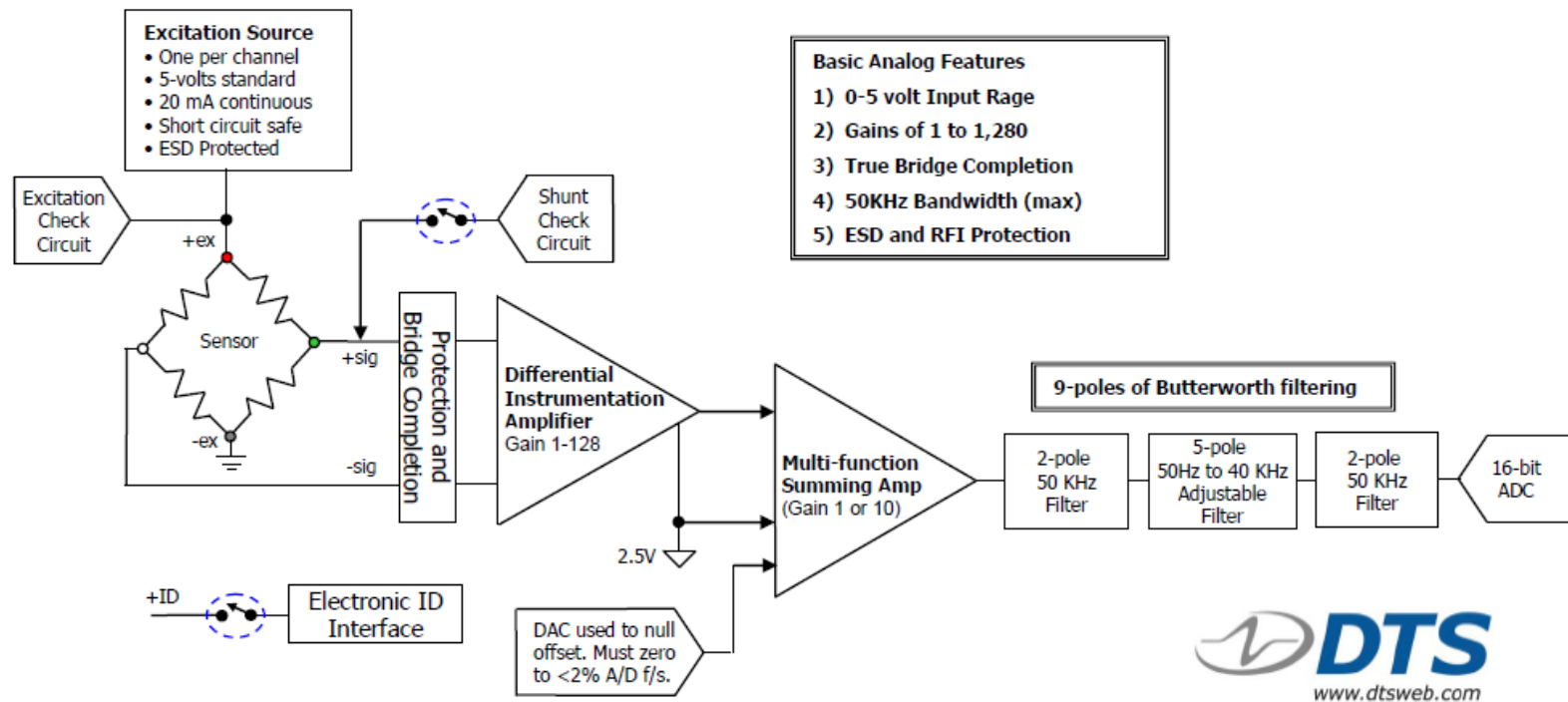
- All options other than Name can be modified in Group and Test Setup

Sensors with External Conditioning Modules

Contact your Support representative for assistance with setting up these sensors.

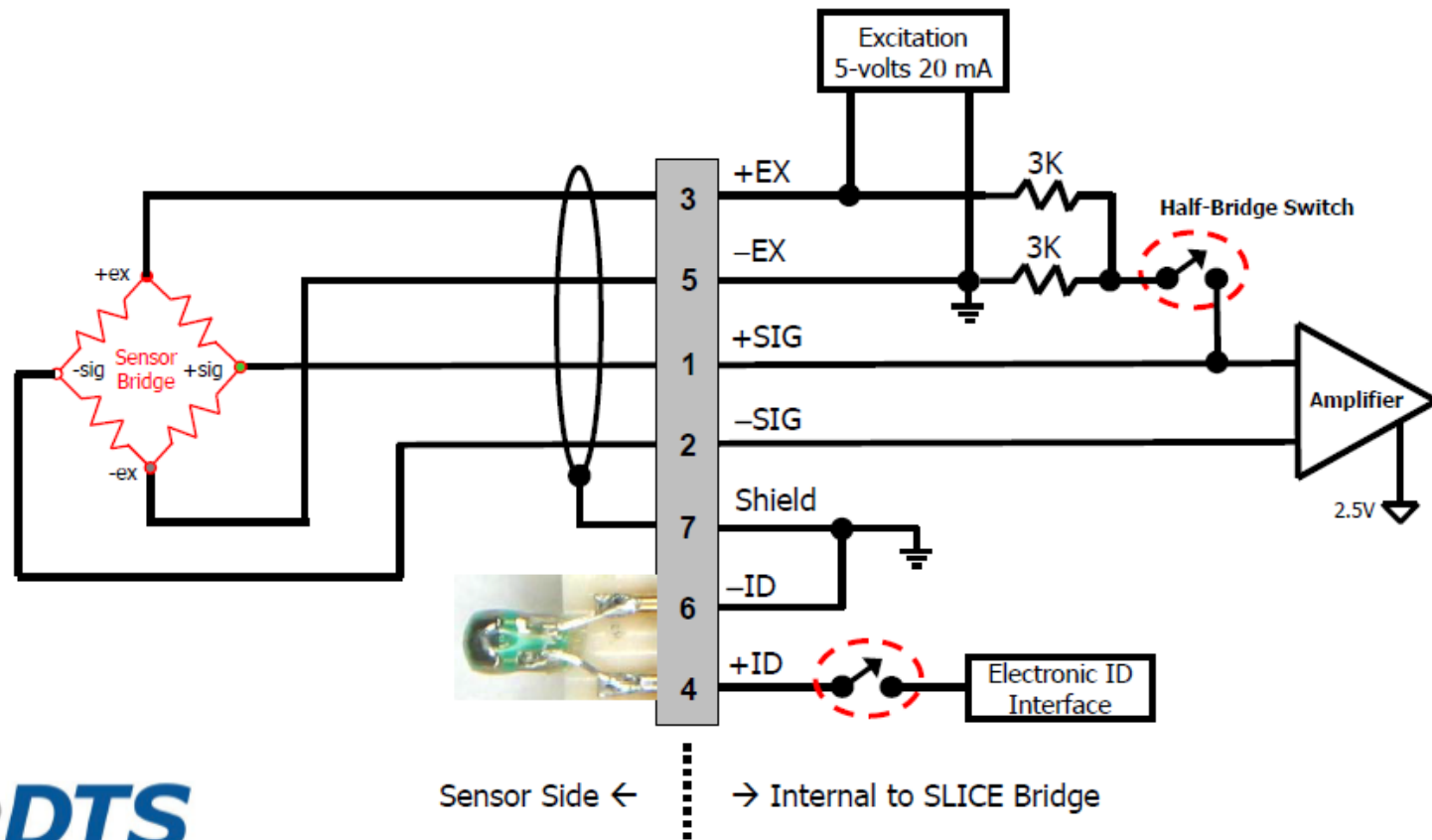
- Thermocouples
- Voltage sources

Example SLICE Bridge - Sensor Interface



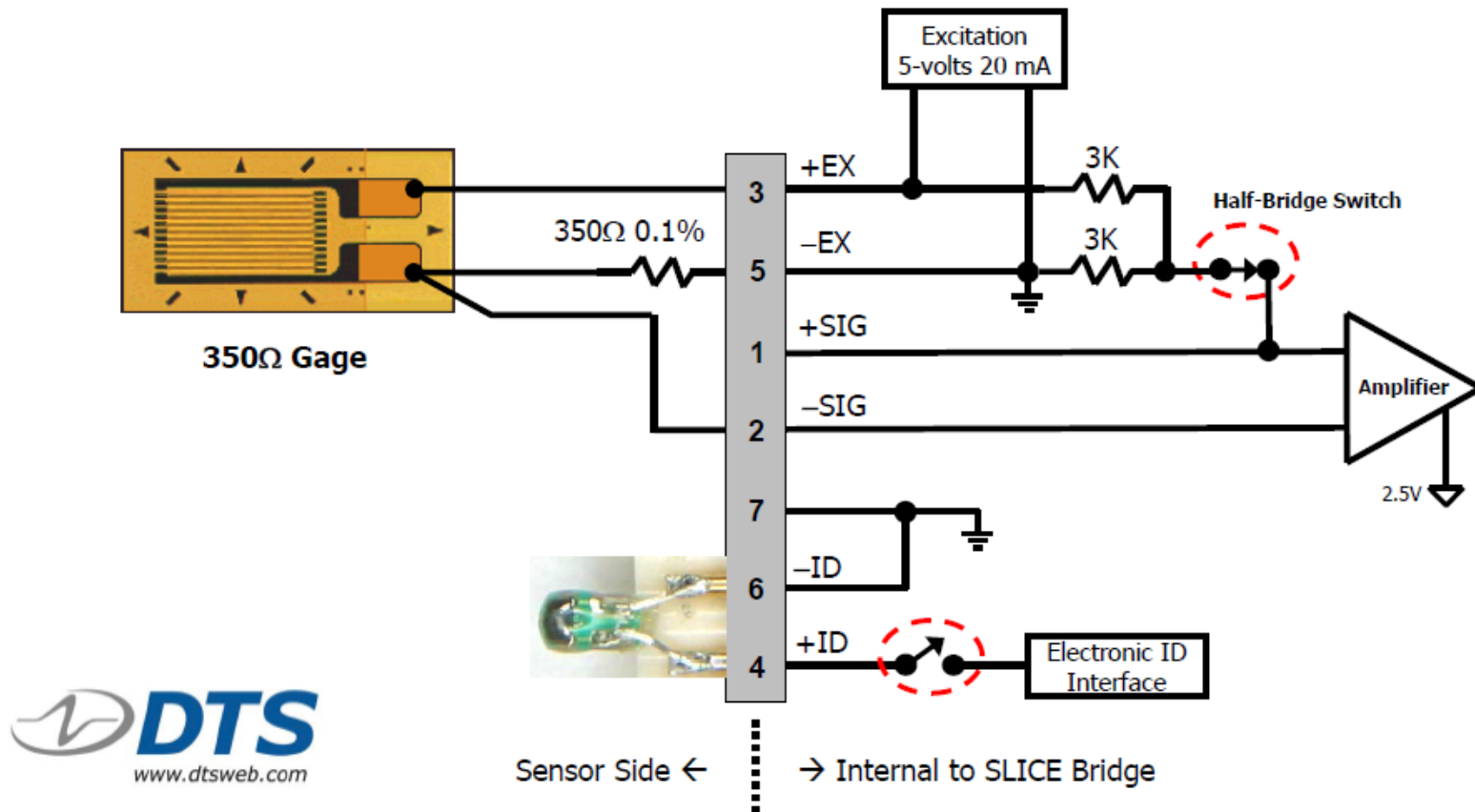
NOTE: Device-specific diagrams are available in the manual for each device.

Standard 4-wire Bridge Connection

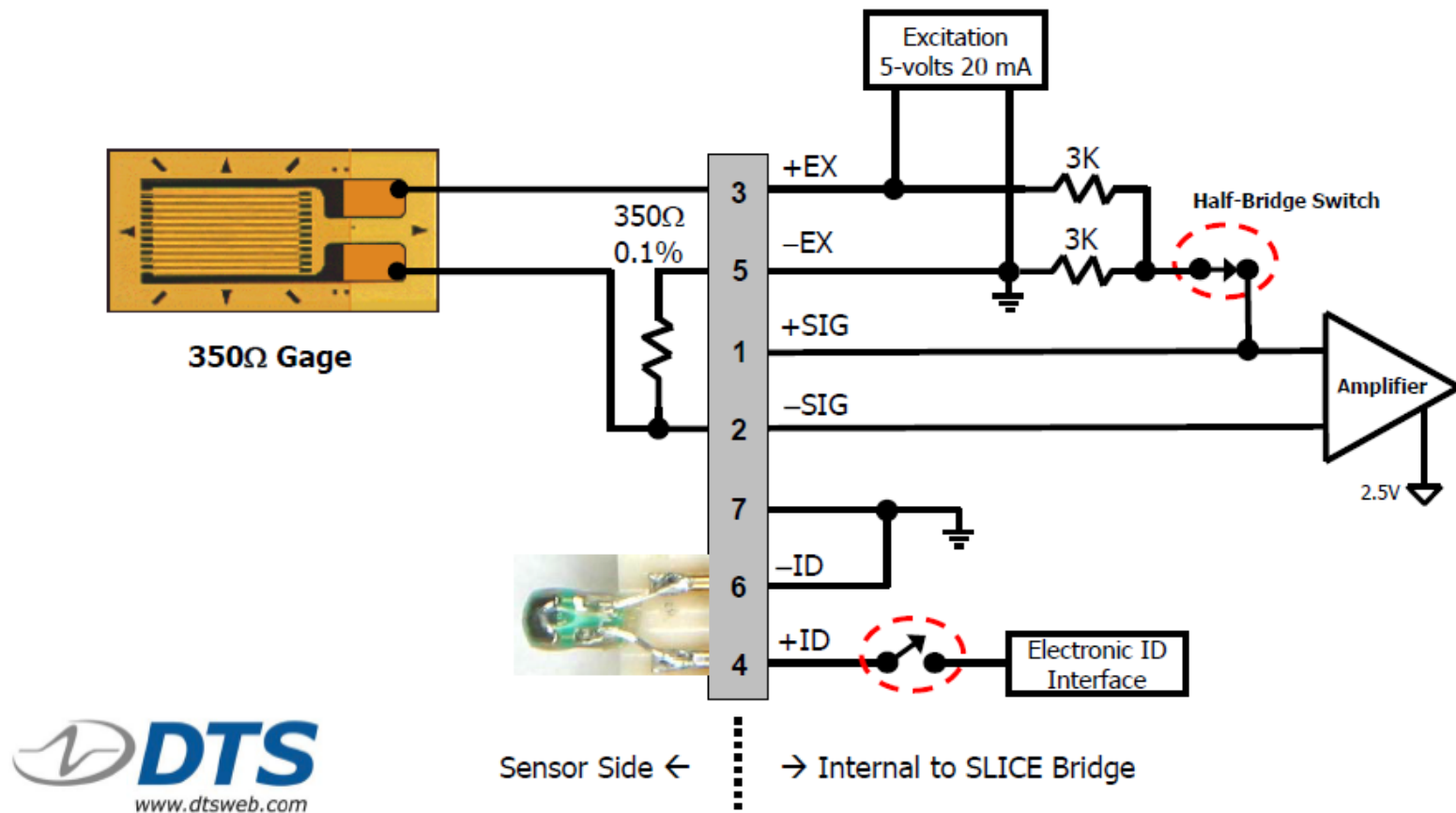


Sensor Side ← → Internal to SLICE Bridge

Strain Gage 3-wire Connection



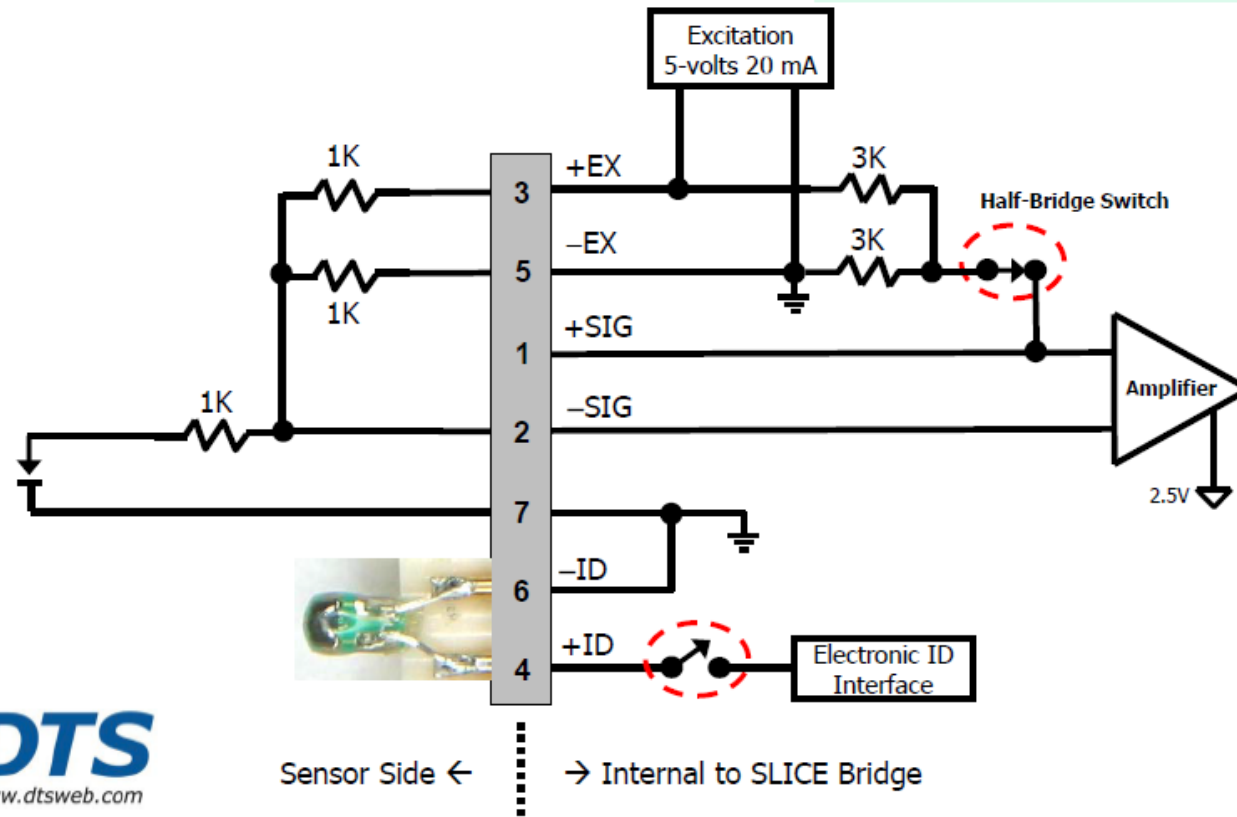
Strain Gage 2-wire Connection



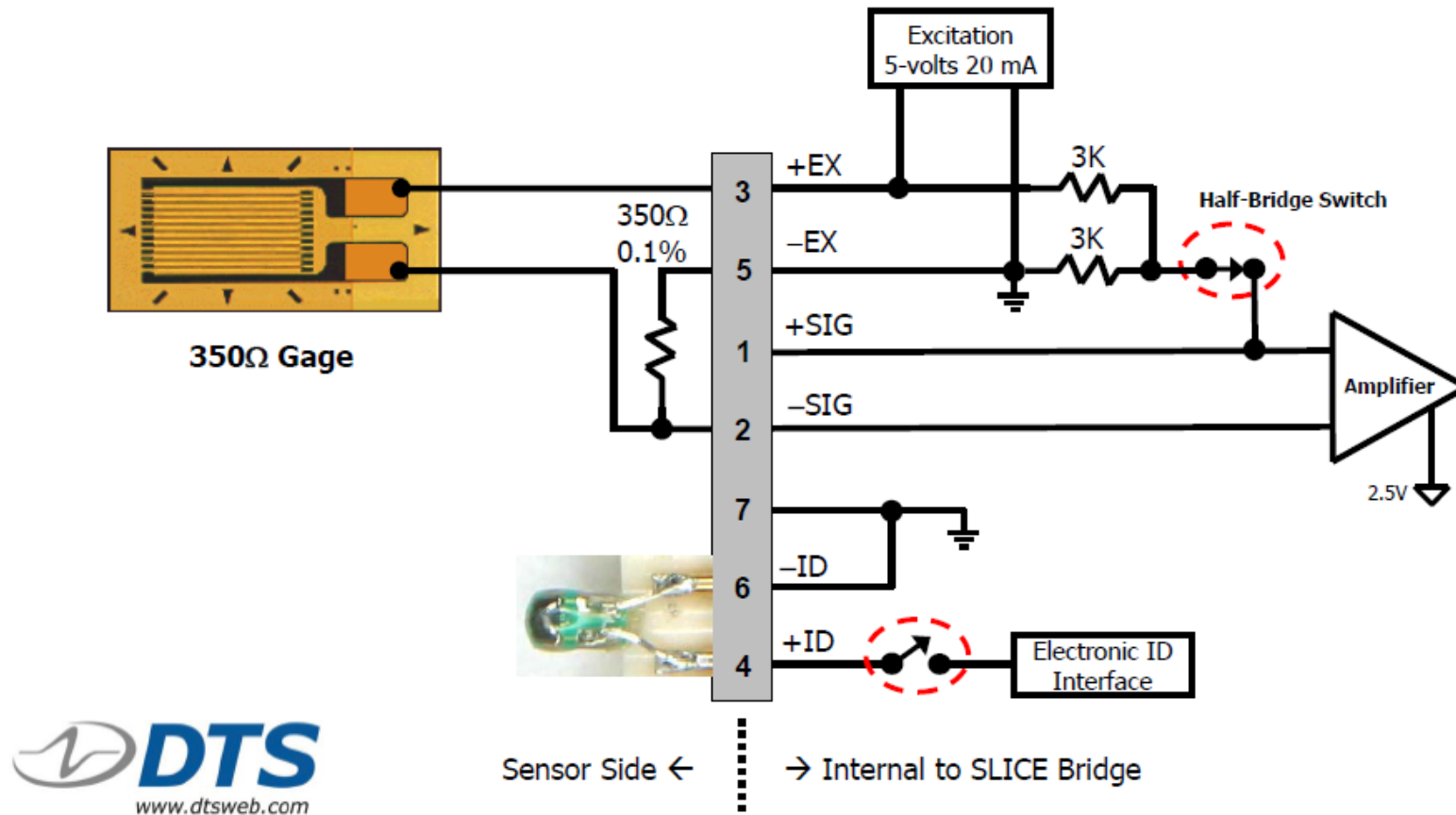
Switch Closure

Example Sensor Settings

- Half-Bridge Mode
- Proportional to Excitation = No
- Sensitivity = 1.000 mV/EU will scale data in mV at input. Switch closure as shown gives 833 mV deflection.



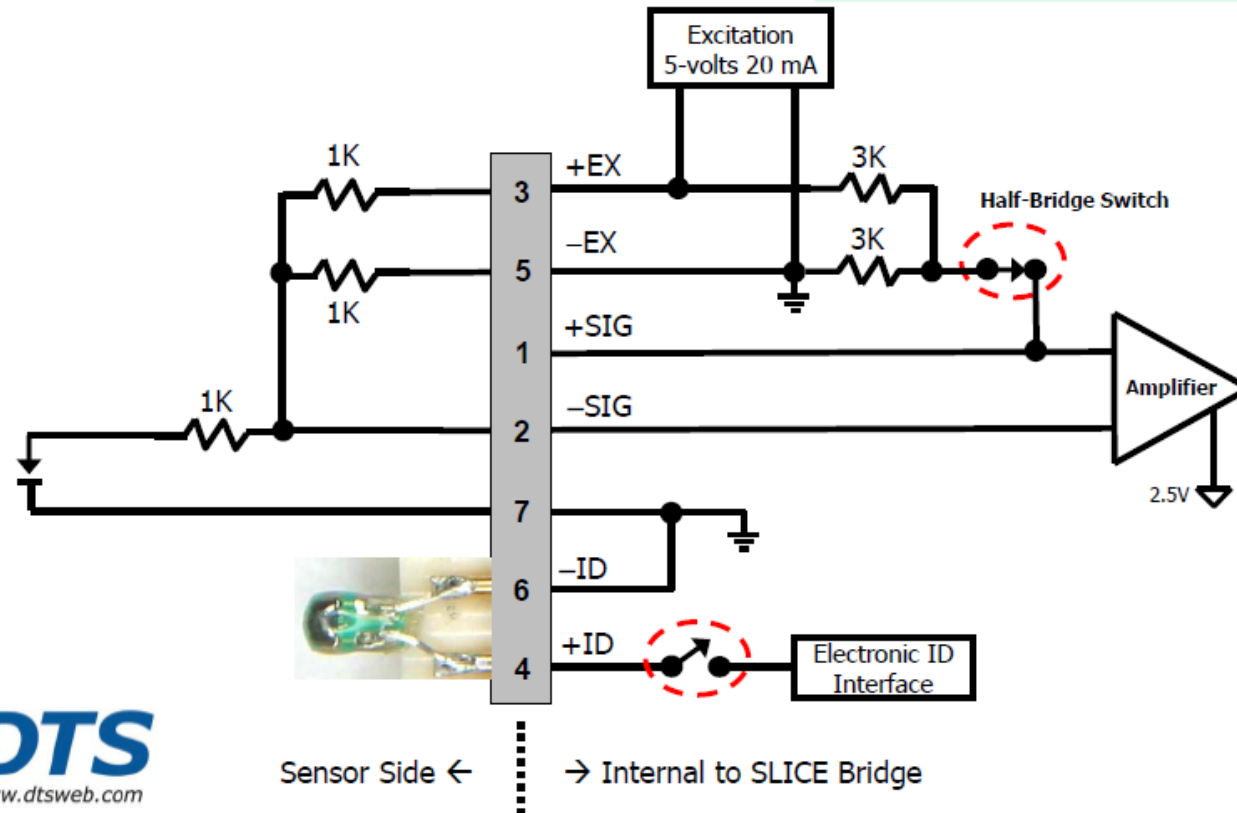
Strain Gage 2-wire Connection



Switch Closure

Example Sensor Settings

- Half-Bridge Mode
- Proportional to Excitation = No
- Sensitivity = 1.000 mV/EU will scale data in mV at input. Switch closure as shown gives 833 mV deflection.



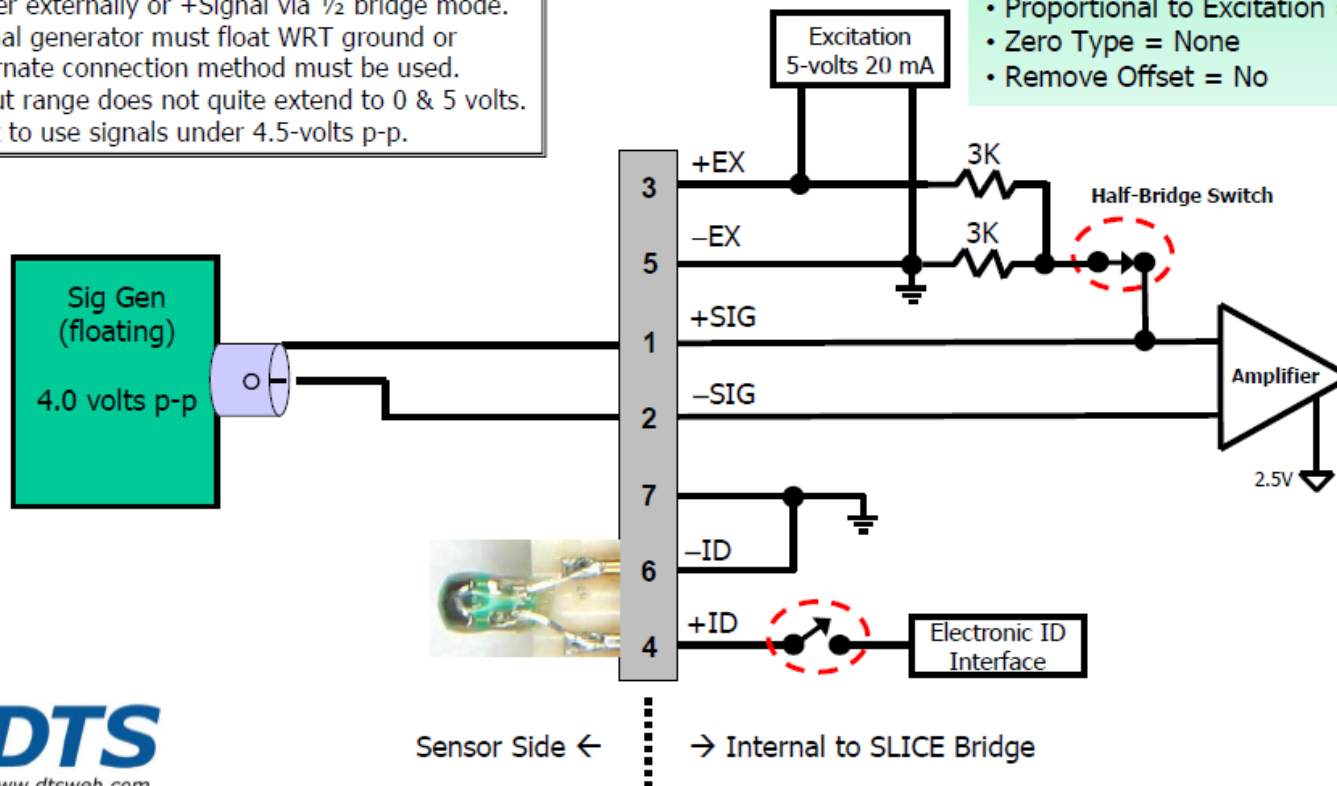
Signal Generator w/floating output

Notes:

- SLICE input range is 0-5 volts WRT SLICE power ground and -Excitation.
- Both sides of input amplifier must be connected either externally or +Signal via ½ bridge mode.
- Signal generator must float WRT ground or alternate connection method must be used.
- Input range does not quite extend to 0 & 5 volts. Best to use signals under 4.5-volts p-p.

Sample Sensor Settings

- Desired Range = 2000
- Sensitivity = 1.000 mV/EU
- Units = mV
- Sensor Type = Half-Bridge
- Proportional to Excitation = No
- Zero Type = None
- Remove Offset = No



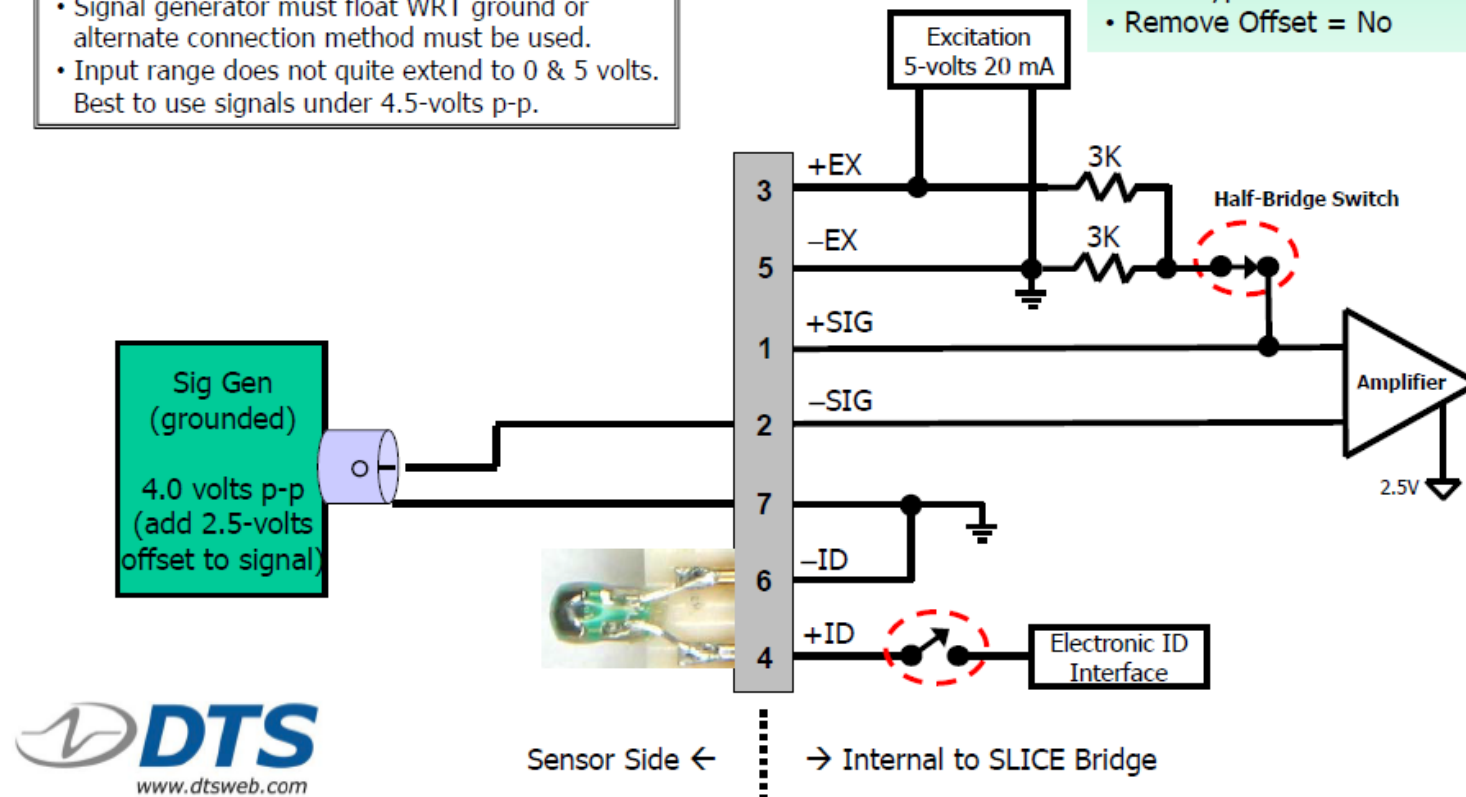
Signal Generator w/grounded output

Notes:

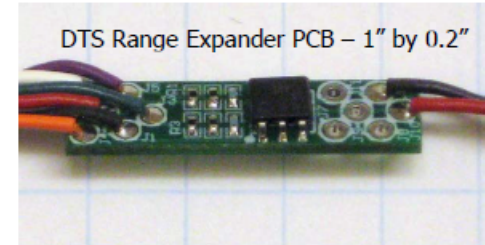
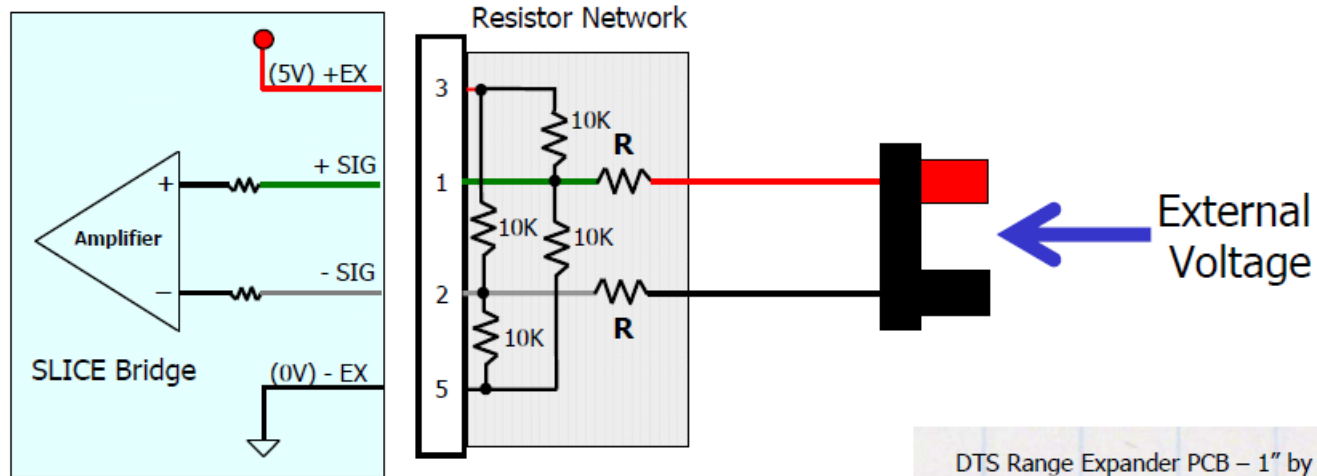
- SLICE input range is 0-5 volts WRT SLICE power ground and -Excitation.
- Both sides of input amplifier must be connected either externally or +Signal via ½ bridge mode.
- Signal generator must float WRT ground or alternate connection method must be used.
- Input range does not quite extend to 0 & 5 volts. Best to use signals under 4.5-volts p-p.

Sample Sensor Settings

- Desired Range = 2000
- Sensitivity = 1.000 mV/EU
- Units = mV
- Sensor Type = Half-Bridge
- Proportional to Excitation = No
- Zero Type = None
- Remove Offset = No



Measuring Large Differential Voltages



Approx MAX External Voltage Vmax	Resistance R	* Sensitivity mV/V
+/-20V	49.9K	91.07
+/-40V	95.3K	49.85
+/-60V	150K	32.26

* Sensitivity calculation....

$$\left(\frac{5}{(5 + R)} \right) \times 1000$$



Appendix B: Sensor Database Import

An existing sensor database can be imported into the DataPRO Sensor Database.

Supported import formats include:

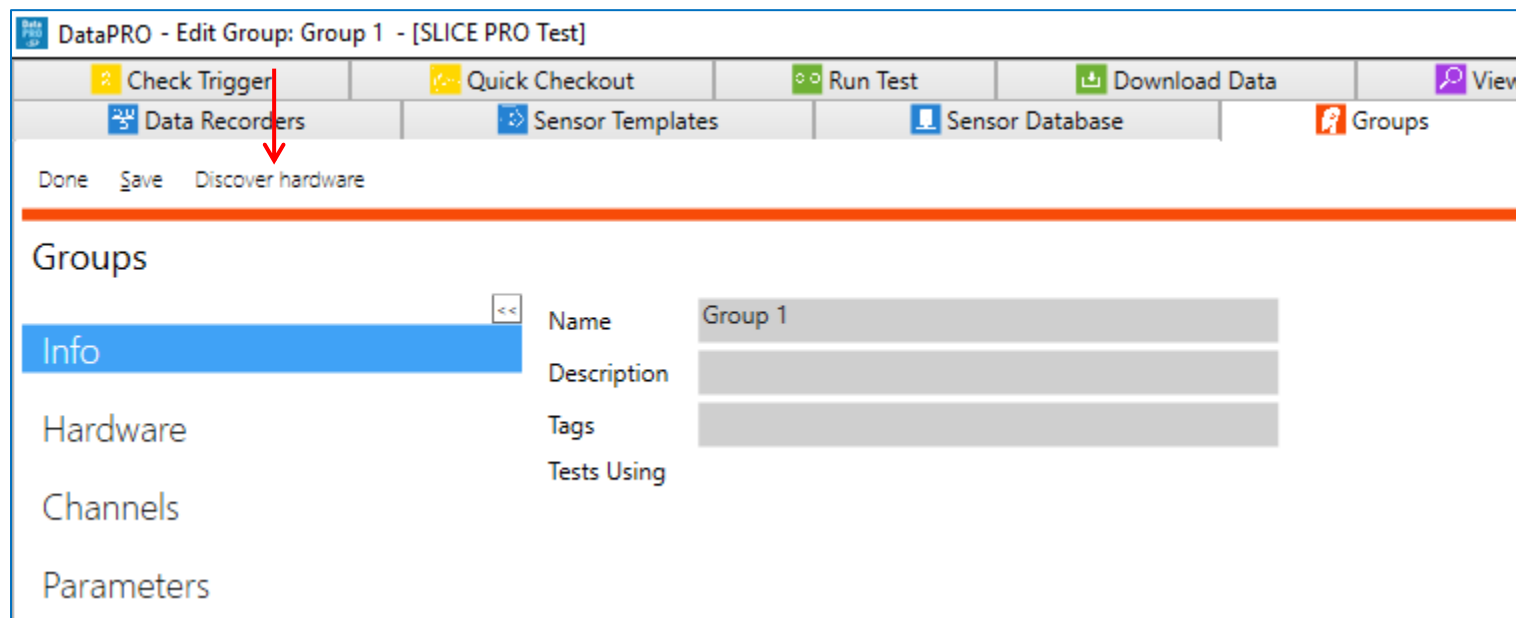
- **DataPRO (*.xml)**
Native DataPRO Sensor Database format. Will import sensors and sensor templates contained in selected file.
- **SLICEWare (*.xml)**
Requires both Data.SensorDB.xml and Calibration.SensorDB.xml to import sensor data.
- **TDAS Control Sensor Database**
CSV file created from TDC Sensor Database.
- **Sensor Information File (*.sif)**
Individual Sensor Information Files from TDAS Control.
- **Equipment Exchange (*.e2x)**
DataPRO fully supports e2x version 1.2, with limited support for version 1.5.
- **TDAS Manager CSV Export**
“Sensors” CSV file generated from TDAS Manager.
- **Command Line Import**
A batch file can be run to import a CSV sensor database file.

Appendix C: Discover Hardware

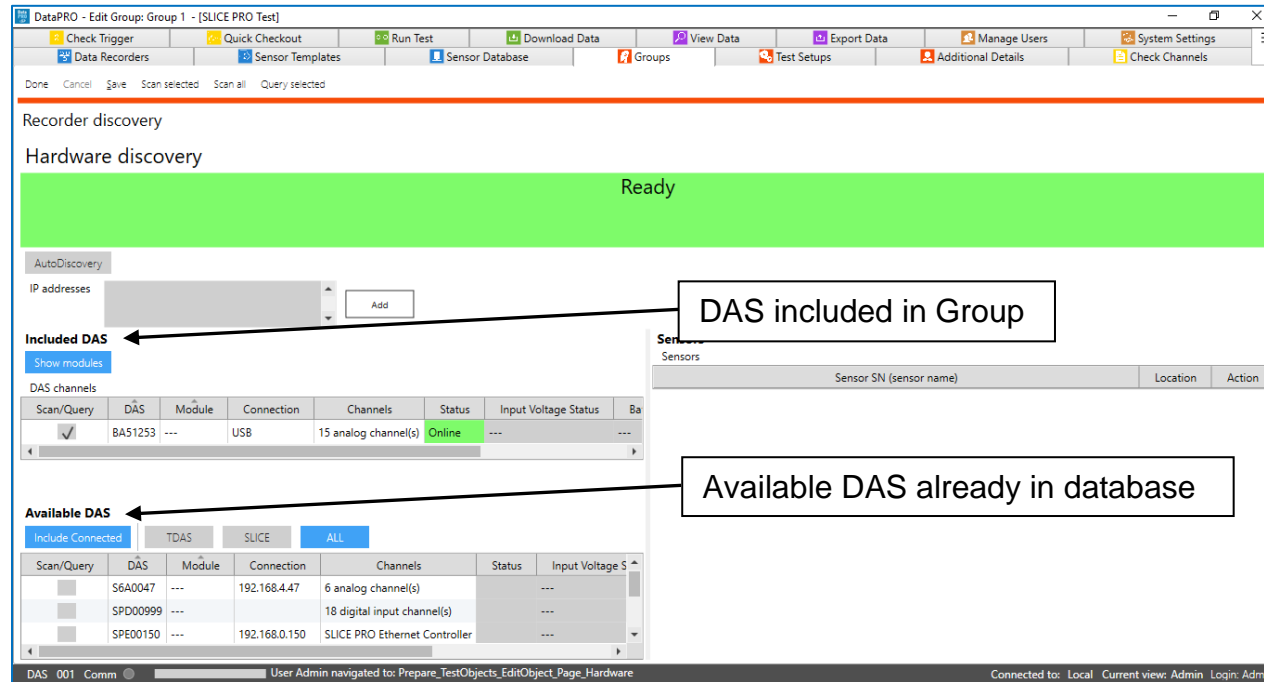
Discover Hardware is a feature that allows in-process addition of connected hardware to the database and discovery of connected sensors with EID. This feature is available in both Groups and Test Setups.

All hardware to be discovered and added to the database must be powered on and connected. All sensors to be discovered must a) already exist in the sensor database, b) be connected, and c) have EID installed.

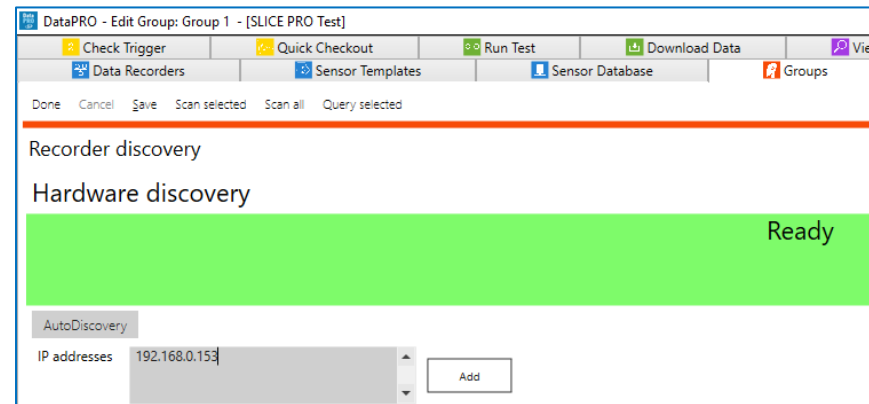
1. To quickly add DAS to the data recorder database or to detect powered on and connected DAS (and sensors with EID), select “Discover Hardware”:



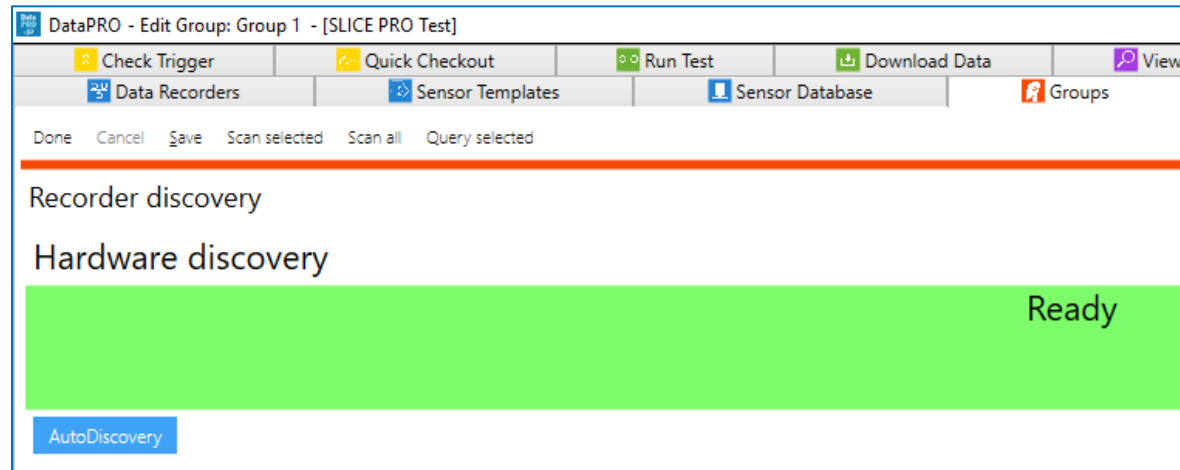
2. DAS that are already in the database will be listed in the Available DAS table. DAS that have been added to the group will be listed in the Included DAS table:



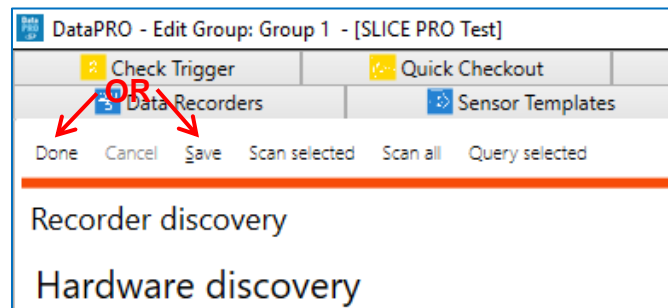
3. To add new Ethernet DAS to the database, enter the IP address and select "Add". USB connected DAS will be discovered automatically during the scan:



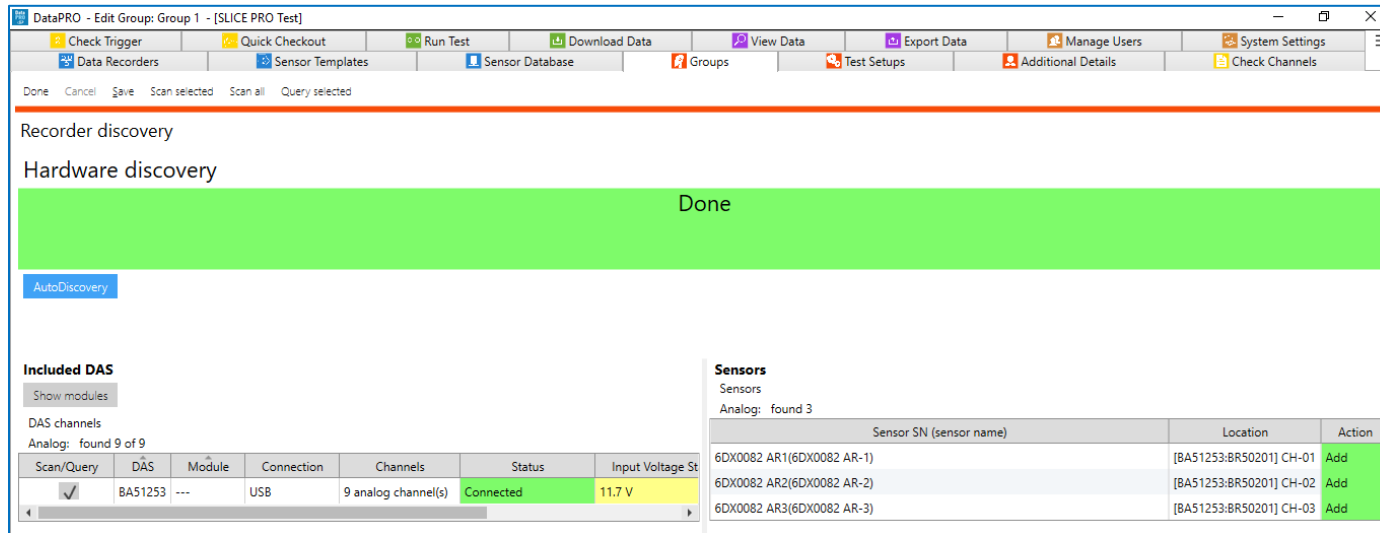
- a. If IP address(es) are not known, enable “AutoDiscovery” to ping all available IP addresses in the compatible range:



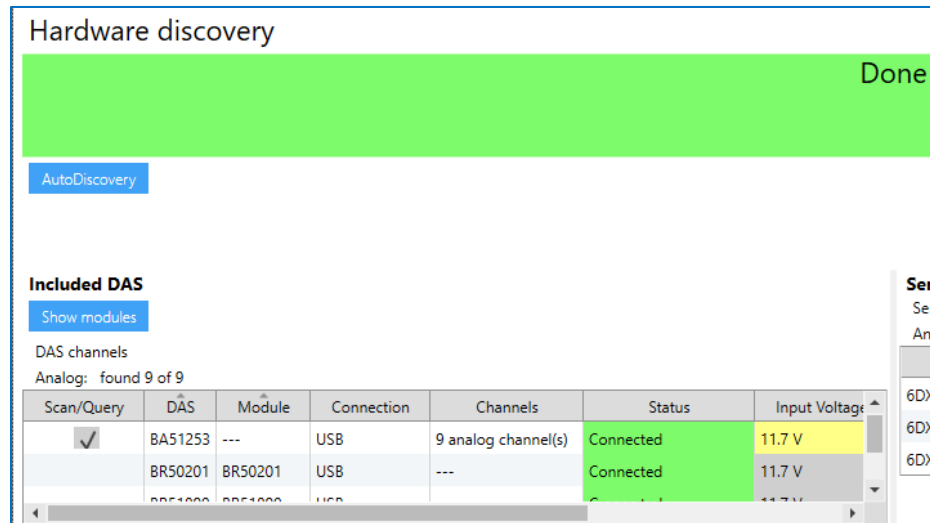
4. Select “Scan all” or “Scan selected” to confirm IP address(es) and discover USB DAS:



5. Select “Query selected” to establish communication and confirm DAS configuration. DAS that is powered on and connected will be displayed in the Included DAS table. Connected sensors with EID will be displayed in Sensors table:



- a. Enable “Show modules” to display modules (SIM/TOM/Bridge) connected to each DAS (TDAS Rack, ECM, Base):



- Once DAS has been discovered and added to the database, it can be removed from the group by selecting “Remove” from the Discover Hardware screen or by unselecting the box from the Hardware navstep:

Remove DAS from group by selecting “Remove” on Discover Hardware screen.

Included DAS

Show modules

DAS channels

Analog: found 9 of 9

Scan/Query	DAS	Module	Connection	Channels	Status	Input Voltage Status	Battery Voltage Status	Action
<input checked="" type="checkbox"/>	BA51253	---	USB	9 analog channel(s)	Connected	11.6 V	---	Update Remove
	BR50201	BR50201	USB	---	Connected	11.6 V	---	Update
	BR51890	BR51890	USB	---	Connected	11.6 V	---	Update

Remove DAS by unselecting box on Hardware navstep.

DataPRO - Edit Group: Group 1 - [SLICE PRO Test]

Check Trigger Quick Checkout Run Test Download Data View

Data Recorders Sensor Templates Sensor Database Groups

Done Save Discover hardware

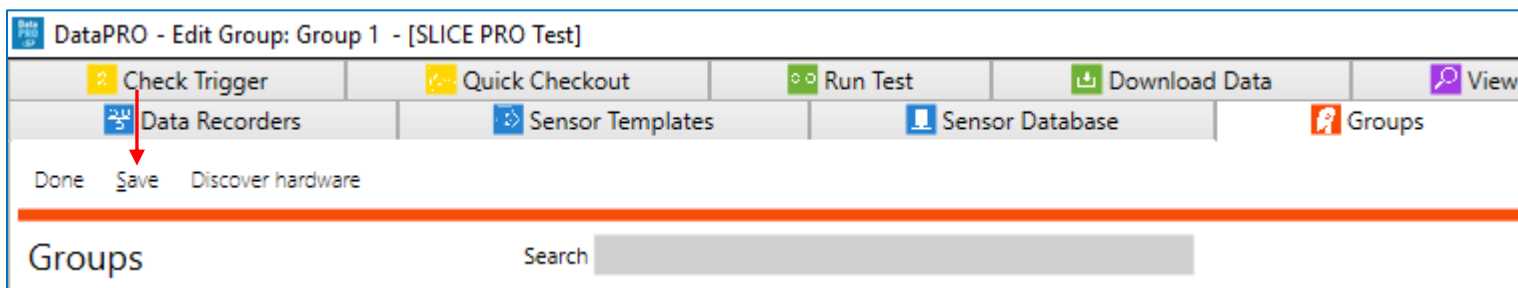
Groups Search

Info 0 channels required, 9 physical channels included.

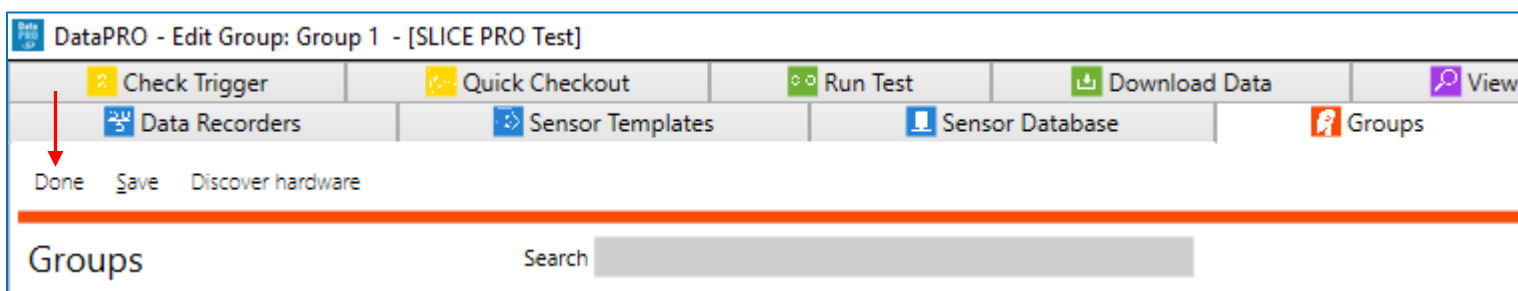
Compact Expanded

Hardware	Serial Number	Type	Channels	Firmware
<input type="checkbox"/>	SPT00999	SLICE PRO TOM	4 Squib,8 Digital out	D0D7
<input type="checkbox"/>	SPT00107	SLICE PRO TOM	4 Squib,8 Digital out	D0L0
<input type="checkbox"/>	SPS00331	SLICE PRO SIM	18 Analog	A1Q1
<input type="checkbox"/>	SPE00150	SLICE Ethernet Controller	---	B0B3
<input type="checkbox"/>	SPD00999	SLICE PRO DIM	18 Digital input	A1J4
<input type="checkbox"/>	S6A0047	SLICE 6 AIR	6 Analog	G0I5
<input checked="" type="checkbox"/>	BA51253	SLICE+	9 Analog	B1F4

7. Select “Save” to add the discovered DAS to the database and to the group:



8. Select “Done” to return to the Groups home screen:

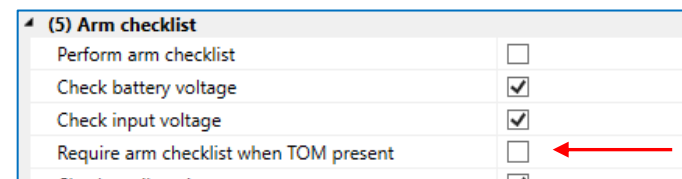


Appendix D: Quick Arm

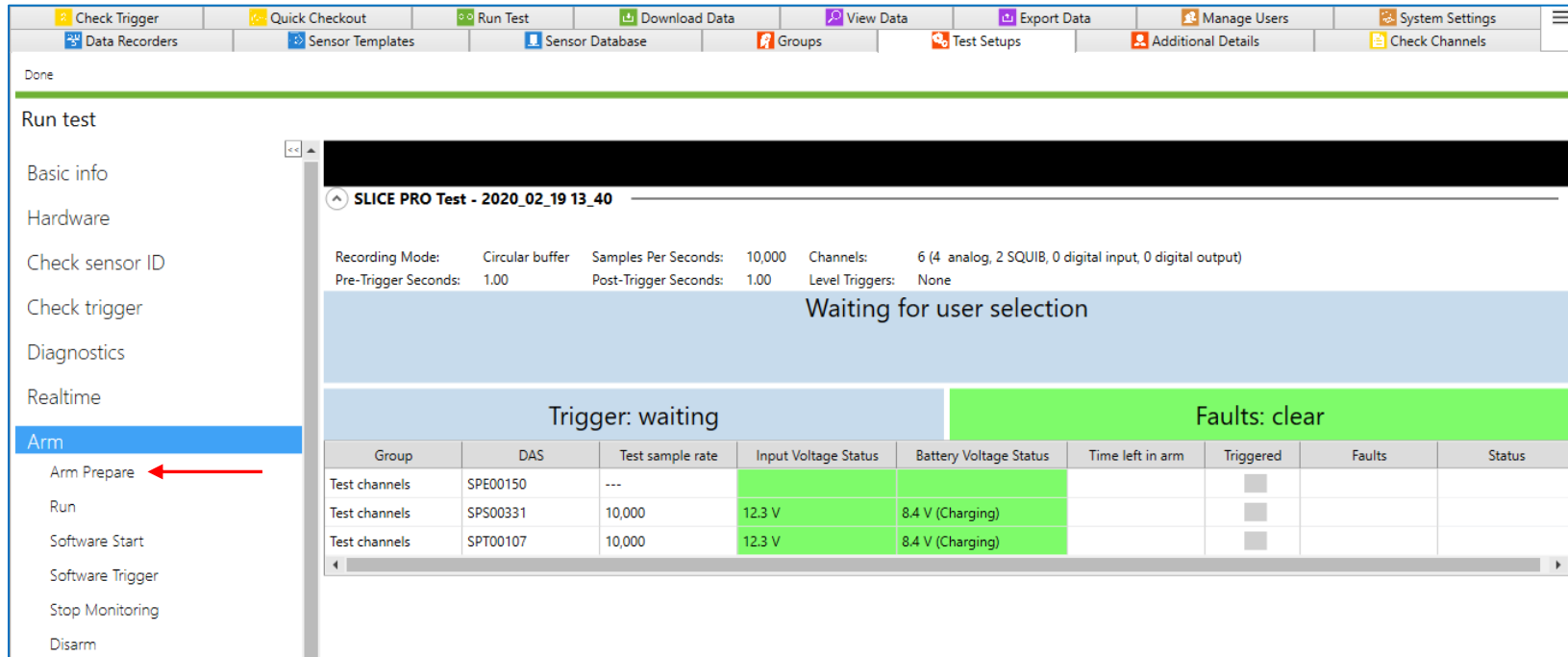
Quick Arm is a feature that will add an additional Arm Prepare sub-navstep to the Arm navstep. This allows the TOM to remain unarmed until the full system is armed, thereby allowing for shorter DAS set times and helping to ensure safety when conducting time-sensitive airbag deployment tests.

Configuring the system to use Quick Arm requires modifying the *DataPRO.exe.config* file as well as changing the default Test Settings in System Settings.

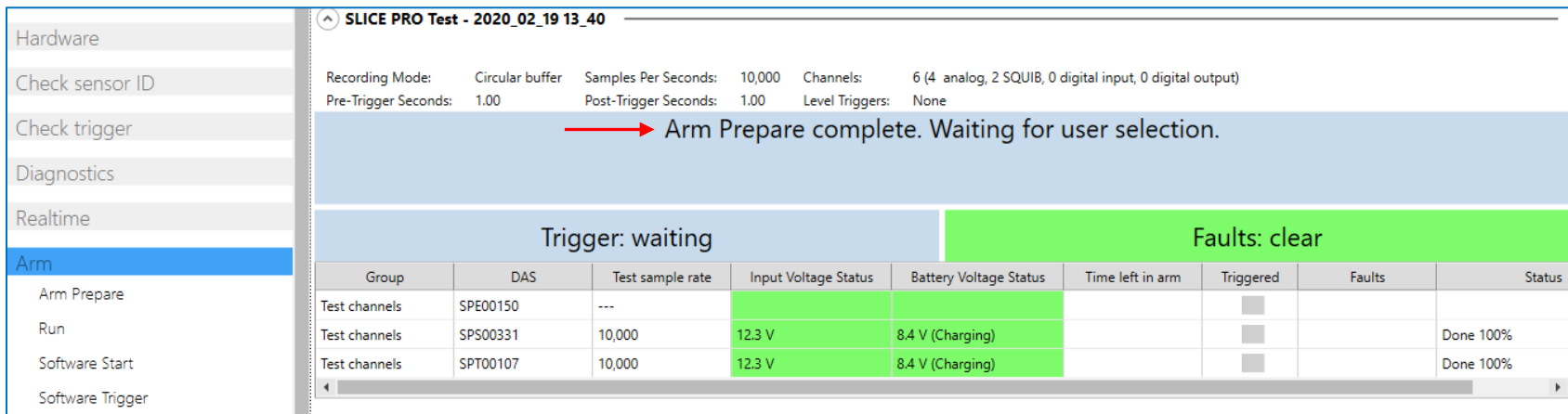
1. With DataPRO closed, open the *DataPRO.exe.config* file with a text editor.
2. Change the following settings:
 - a. "ArmArmPrepareStepCheckTOMSafety"
 - i. Default setting is True.
 - ii. Change to False to enable Quick Arm.
 - b. "ArmIncludeArmPrepareStep"
 - i. Default setting is False.
 - ii. Change to True to enable Quick Arm.
 - c. "ArmChecklistRequiredIfTOM"
 - i. Default setting is True.
 - ii. Change to False to enable Quick Arm.
3. Save and close the *DataPRO.exe.config* file.
4. Launch DataPRO.
5. Go to the System Settings tab.
6. Under Test Setup Settings, scroll down to "(5) Arm checklist".
7. Disable "Require arm checklist when TOM present".



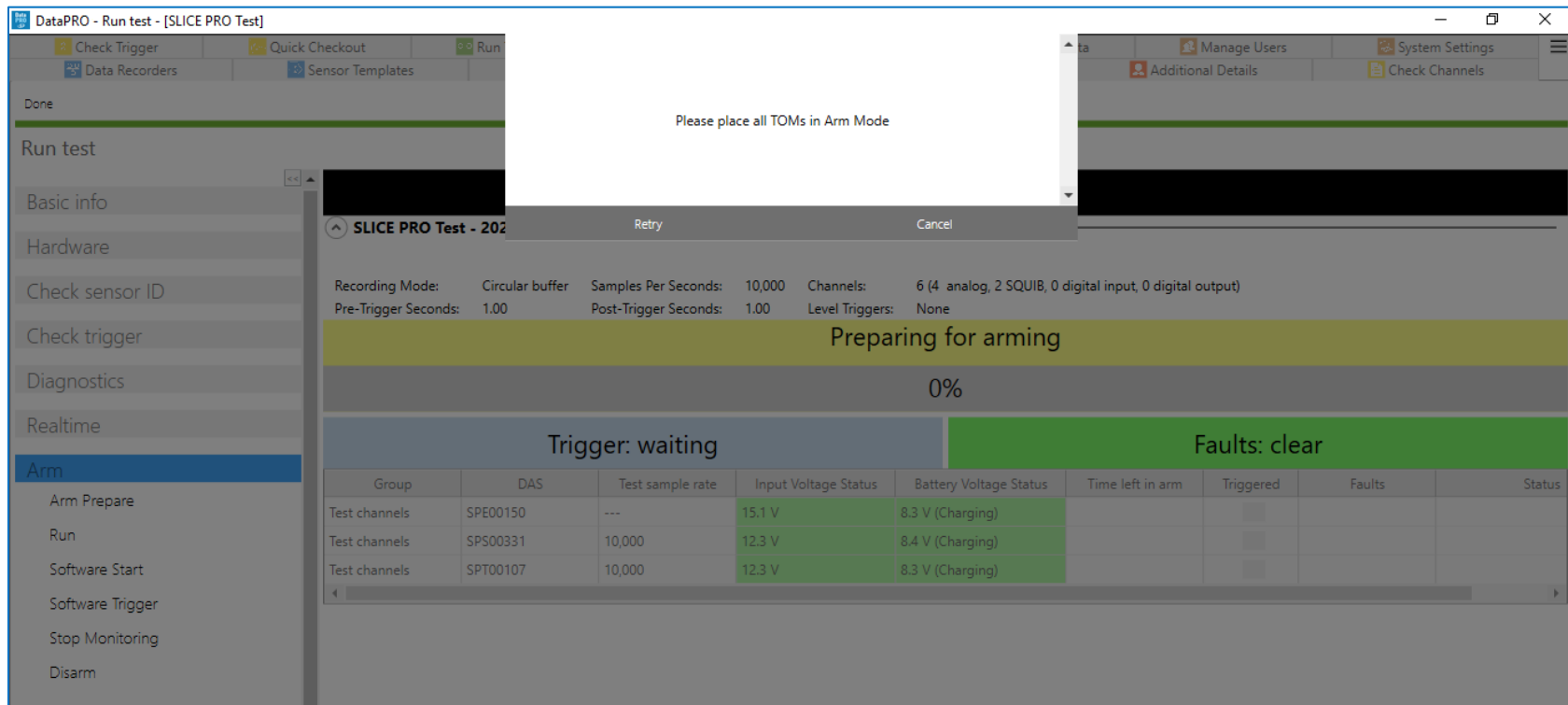
8. Arm Prepare sub-navstep will be present in Arm navstep of the Test Setups tab:



a. Arm Prepare configures system:



- b. TOMs do not have to be Armed until Run is selected (enabled after Arm Prepare is completed):



9. Continue data collection from Run Test, select "Run" to arm the system.

Appendix E: DataPRO File Structure

NOTE: All locations listed below are default installation locations.

C:\DTS\DTS.Suite

Contains DataPRO software organized in folders by version number.

C:\DTS\DTS.Suite\SensorDatabase

Contains sensor database export files for all versions of DataPRO.

C:\DTS\DTS.Suite\ImportArchive<test ID>

Contains XML backup of a TTS Test Setup import.

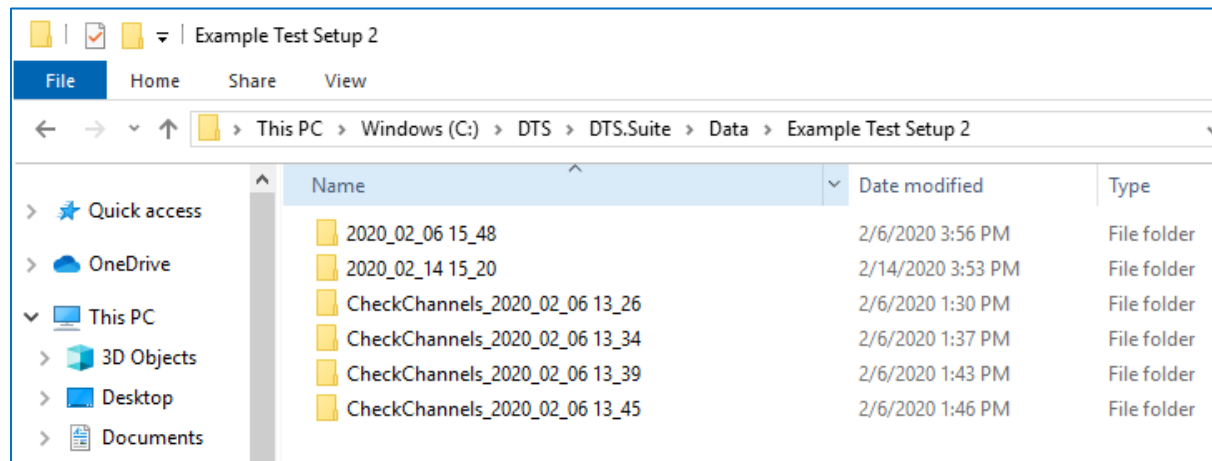
C:\DTS\DTS.Suite\Data

Contains data files organized in folders by Test Setup/Test ID. This file location is used for all versions of DataPRO.

C:\DTS\DTS.Suite\Data<test setup name>

Contains test data organized by unique Test ID for a given test setup.

NOTE: All instances of *Diagnostic tabs* automatically generate a new test data folder. Instances of *Run Test* generate a new test data folder on progressing to *Hardware* navstep.



C:\DTS\DTS.Suite\Data<test setup name><test ID>\Binary<ROI or ALL>

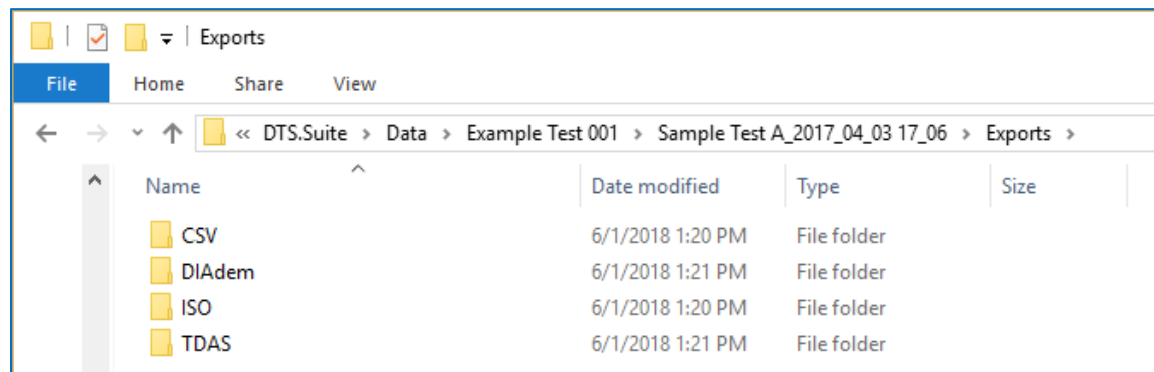
Contains channel data files (.CHN) from a given test. Subfolders for ALL versus ROI will be present based on user's selection during download. UART data collected with SLICE6 AIR will be saved as a .bin file.

C:\DTS\DTS.Suite\Data<test setup name><test ID>\DASConfigs

Contains the XML configuration file for each DAS with sensor(s) and recording parameters. These files can be used for re-importing tests that have already been run or in certain emergency download situations.

C:\DTS\DTS.Suite\Data<test setup name><test ID>\Exports

Contains test data in the user-selected export format(s) (DIAdem, CSV, ISO, TTS, RDF, TDAS, TDMS, TSV, HDF, Excel) after test completion.

**C:\DTS\DTS.Suite\Data<test setup name><test ID>\Logs**

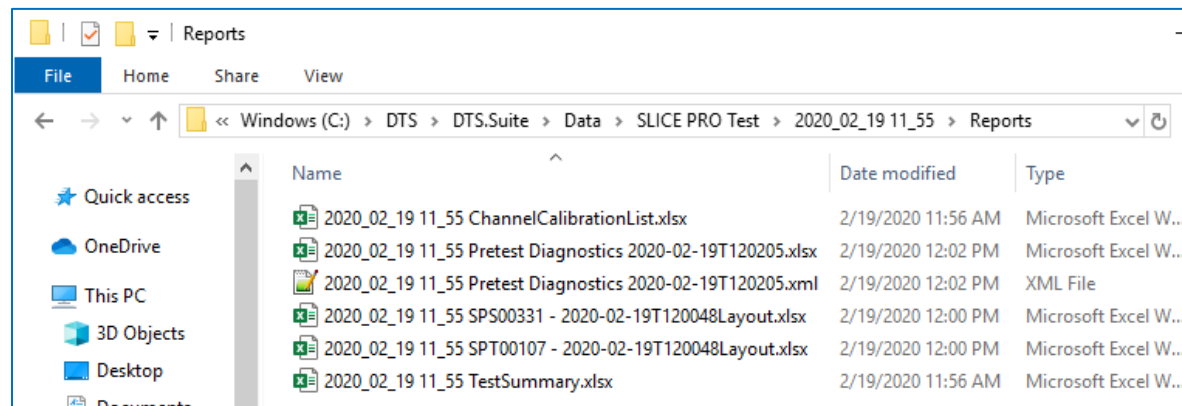
Contains log files generated during instance of Diagnostic tab or data collection. Some log files are limited in size and will create archived, *.bz2 files. These archived files will include the date and timestamp as they are created.

- *IP Address.log*: A heartbeat log for each Ethernet device in the test.
- *DASConfigs.log*: Configuration information for all DAS included in the test.
- *DataPRO.log*: Communication and information generated between software, firmware and DAS during instance of Diagnostic tab or data collection.
- *Ping.log*: Log of ping attempts during instance of Diagnostic tab or data collection.
- *TDAScomm.log*: Communication and information generated between TDAS PRO hardware, software and firmware during instance of Diagnostic tab or data collection.

C:\DTS\DTS.Suite\Data<test setup name><test ID>Reports

Contains test reports and summaries for the hardware channels included in the test. PDF versions of reports can be enabled in the config file.

- **Layout Reports:** Created when leaving Check Sensor ID navstep. One report generated for each DAS included in test. Sensor serial number, hardware channel connection, sensitivity, filter and excitation voltage are recorded. ISO Code, level trigger parameters, squib fire mode, delay and duration are also recorded if applicable to the channel.
- **Channel Calibration List:** Created when leaving Check Sensor ID navstep. Lists all channels used in test with ISO Code, channel name, sensor serial number, sensor name, manufacturer, sensitivity, calibration date and calibration due date.
- **Post-test Diagnostics:** Created during Post-test Diagnostics, if included in Test Setup. Report with results from post-test diagnostics, if included in test.
- **Pre-test Diagnostics:** Created after Diagnostics is run. Report with results from pre-test diagnostics.
- **Test Summary:** Created when leaving Basic Info navstep. Report that includes DAS/DAS information, channels and channel configuration, and ISO export information.
- **Squib Resistances:** Created after Arm Checklist is complete. Report included if Squib Resistance measurement is performed during Arm Checklist. Contains squib resistance measurements if squibs are included in test.

**C:\DTS\DTS.Suite<version number>DataPRO\DASConfigs**

Contains current configuration file(s) for DAS in database.

C:\DTS\DTS.Suite\<version number>\DataPRO\db

Contains DataPRO database files (includes sensors, DAS, group templates, groups, test setups, etc.).

NOTE: *The db files should not be opened or modified outside of DataPRO.*

C:\DTS\DTS.Suite\<version number>\DataPRO\Logs

Contains log file(s). To assist troubleshooting, DTS Support may ask you to send these files.

C:\DTS\DTS.Suite\<version number>\DataPRO\Manuals

Contains manuals for SLICE equipment and DataPRO software that are current at time of software release.

C:\DTS\DTS.Suite\<version number>\DataPRO\ReportTemplates

Contains default and user-defined report templates. Changes or additions to Report Templates must be manually carried over to new versions of DataPRO.

C:\DTS\DTS.Suite\<version number>\DataPRO\Sounds

Contains files used for Realtime Level Triggers. Beep.wav is the sound when the sensor is idle/below the trigger threshold. TriggeredBeep.wav is the sound when the sensor has reached the trigger threshold. Either file can be replaced, but the naming convention must remain the same.

C:\DTS\DTS.Suite\<version number>\DataPRO\TMATemplates

Contains the TMATS files used for SLICE6 AIR and TSR AIR streaming applications. The files included with DataPRO support the following UDP streaming profiles:

- Ch10 Analog
- Ch10 Analog Time Format 2
- Ch10 128bit PCM
- Ch10 128bit PCM Time Format 2
- TmNS 144bit PCM
- TmNS Supercom (4xADCscan) PCM

Appendix F: DataPRO .dts File Format

The .dts file is an XML-based file that contains information about the overall test and the individual channels. Some of the information may be redundant with information stored in the binary channel header.

The attributes and relationships of each XML node are described below.

<Test>

The Test tag is the outer most tag. It contains the following attributes and describes details common to the entire test.

Name	Data Type	Description
Test Id	String	The name of the Test Setup, as well as the name of the subfolder in the "Data" folder which contains the data, reports and exports for all occurrences of runs of this Test Setup (further organized by the "Test Id" which may be modified by the user in the "Basic info" step of the "Run Test" tab). The "Test Id" is typically the same as the .dts file name.
Description	String	The text optionally modified by the user in the "Description" field of the "Basic info" step of the "Run Test" tab.
Guid	Windows UUID string	A unique identifier assigned to each event.
FaultFlags	Integer (UInt16)	16-bit bit array <ul style="list-style-type: none"> • Bit 0: Incoming status line dropped • Bit 1: ADC buffer overrun • Bit 2: Flash CRC error • Bit 3: Trigger before start • Bit 4: Input voltage low • Bit 5: Input voltage high • Bit 6: Backup voltage low • Bit 7: Backup voltage high • Bit 8-15: Unused
Software	String	Identifies DataPRO as the software used for data collection.
SoftwareVersion	String	Identifies the version of DataPRO used.

<Modules>

Within the Test node is a list of modules contained within a <Modules></Modules> tag. Module definitions depend on the DAS type. A <module> corresponds to a SLICE MICRO or NANO Base; a SIM, TOM or DIM in a TDAS PRO Rack; 1 of 4 internal, 8-channel modules in a TDAS G5 DAS; 1 of 6 [or 1 of 3] internal, 3-channel modules in an 18-channel [or 9-channel] SLICE PRO SIM or DIM; or an entire SLICE PRO TOM.

Name	Data Type	Description
AaFilterRateHz	Integer	The cut off frequency of the hardware anti-alias filter used during the test.
Number	Integer	A sequential number assigned to each module within the test.
SerialNumber	String	The factory assigned serial number of the SLICE Base.
BaseSerialNumber	String	For TDAS modules installed in a rack, this is the rack's serial number. All other DAS use the unit's serial number.
NumberOfSamples	Integer	The number of samples stored in each channel file. This will be fewer than the number of samples originally requested by the user if the data has been subsampled or if only a portion of the data was downloaded.
UnsubsampledNumberOfSamples	Integer	The total number of samples collected during data acquisition.
RequestedPostTriggerSeconds	Double	The exact number of seconds specified in the "Default post-trigger second(s)" field of a Test Setup. This may differ slightly from PostTriggerSeconds which reflects the amount of actual data recorded.
RequestedPreTriggerSeconds	Double	The exact number of seconds specified in the "Default pre-trigger second(s)" field of a Test Setup. This may differ slightly from PreTriggerSeconds which reflects the amount of actual data recorded.
PostTriggerSeconds	Double	The number of seconds of recorded data that the user requested after T=0.
PreTriggerSeconds	Double	The number of seconds of recorded data that the user requested before T=0.
RecordingMode	String	Options are RecorderMode, CircularBuffer, AutoRecorderMode, AutoCircularBufferMode, ContinuousRecorderMode, HybridRecorderMode and MultiHybridRecorderMode.
SampleRateHz	Integer	The rate at which sampling occurred during data collection.
StartRecordSampleNumber	Integer	The sample number at which the start signal was first detected. The value will always be 0 when RecordingMode = CircularBuffer.
NumberOfChannels	Integer	The number of user-configured channels within the module.

Name	Data Type	Description
InlineSerializedData	Boolean	Reserved.
StartRecordTimestampSec	Integer	Seconds since 1/1/1970 for when start record was initiated if precision time is available.
StartRecordTimestampNanoSec	Integer	Nano seconds portion for timestamp for when start record was initiated if precision time is available (seconds and nano seconds since 1/1/1970).
TriggerTimestampSec	Integer	Seconds portion of timestamp for when trigger was recorded if precision time is available. Timestamp is stored as time since 1/1/1970.
TriggerTimestampNanoSec	Integer	Nano seconds portion of timestamp for when trigger was recorded if precision time is available.
PTPMasterSync	Boolean	True if unit is connected to a Precision Time Protocol source and is marked as a master clock sync for other devices.

<TriggerSampleNumbers>

This is a list (possibly 0 length) of trigger sample numbers. In the Circular Buffer case, there will be one trigger sample number. In Recorder mode, the trigger is optional. In the case of multiple event mode, there may be more than one trigger sample number.

<Channels>

The Channels tag contains a list of channel elements. It should have the same number of entries as NumberOfChannels in the Module tag. The type of the child elements will depend on the type of channel.

<AnalogInputChanel>

The AnalogInputChanel tag is used for any DAS input channel (analog or digital). (Note: There is a typo in the tag name and "Chanel" is misspelled. It has been retained for backward compatibility). Many of the attributes indicate how the channel was configured during the test. The AnalogInputChanel element has the following properties:

Name	Data Type	Description
ChannelType	String	This identifies the representation of the data contained in the .BIN file. Currently this value is always expected to be DTS.Serialization.Test+Module+AnalogInputChannel.

Name	Data Type	Description
Number	Integer	The channel number within the DAS <module>. For SLICE Bridge, channels are numbered 0–2. For TDAS PRO SIM, channels are numbered 0-7. For TDAS PRO TOM, channels are numbered 0-7 where channel 0 is the voltage measurement for TOM external channel 1 and channel 1 is the current measurement for TOM external channel 1; channel 2 is the voltage measurement for TOM external channel 2 and channel 3 is the current measurement for TOM external channel 2, etc. For SLICE PRO SIM, channels are numbered 0-2 for each module. For TDAS G5 DAS, channels are numbered 0-7 for each module.
DigitalMultiplier	String	Used for digital input channels only. The channel's form of multiplier (currently only ArbitraryLowAndHigh), the low value (typically 0) and the high value (typically 1).
DigitalMode	String	Used for digital input channels only. CCNO = Contact Closure Normally Open (the default for digital inputs and the only mode that the TDAS G5 DAS supports) CCNC = Contact Closure Normally Closed TLH = Transition Low to High THL = Transition High to Low
Start	Date	Currently unused.
Bridge	String	Either FullBridge or HalfBridge.
BridgeResistanceOhms	Integer	The specified bridge resistance used during the shunt check.
ZeroPoint		
ChannelDescriptionString	String	The user-provided description for the channel.
ChannelName2	String	For channels created in ISO mode, the name of the channel from the Group Template. For channels created in non-ISO mode, the name of the sensor used to create the channel.
ChannelId	String	An internal representation of the channel based on its Group name and position in the hardware.

Name	Data Type	Description
HardwareChannelName	String	For SLICE Bridge = [<BR sn>] CH-01 through 03 For TDAS PRO SIM = [<SIM sn>] CH-01 through 08 For TDAS PRO TOM = [<TOM sn>] SQ-01 through 04 TOM digital outputs = [<TOM sn>] DO-01 through 08 For TDAS PRO DIM = [<DIM sn>] DI-01 through 16 For TDAS G5 DAS = [<G5 sn>] CH-01 through 32 G5 DAS digital inputs = [<G5 sn>] DI-01 through 16 For SLICE PRO SIMs = [<SPS sn>] CH-01 through 18 For SLICE PRO TOM = [<SPT sn>] SQ-01 through 04 TOM digital outputs = [<SPT sn>] DO-01 through 08 For SLICE PRO DIM = [<SPD sn>] DI-01 through 18
Description	String	The user-provided description for the sensor; currently the same as ChannelDescriptionString.
DesiredRange	Integer	The user-requested full scale.
Sensitivity	Double	The sensitivity of the sensor in either mv/V/EU or mv/EU depending on ProportionalToExcitation.
SoftwareFilter	String	The requested filtering to apply to this channel. Stored data is unfiltered and this value must be used to apply proper filtering. Typical values are "1650hz" for CFC1000.
ProportionalToExcitation	Boolean	Indicates if the output of this sensor is proportional to excitation. Used in conjunction with Sensitivity.
IsInverted	Boolean	<i>(Optional)</i> Indicates if the data should be inverted before presenting to the user. If missing, this attribute is considered 'false'.
LinearizationFormula	String	The formula used to generate a graph of data collected using a non-linear sensor.
IsSubsampled	Boolean	<i>(Optional)</i> Indicates if the data stored on disk is at a lower sample rate than the original data collection. If missing, this attribute is considered 'false'.
AbsoluteDisplayOrder	Integer	The nominal ordering of channels in reports, graphs and exports.
LastCalibrationDate	Date	The most recent date that a sensor was calibrated.
SensorID	String	A sensor's electronic ID.

Name	Data Type	Description
OffsetToleranceLowMv	Double	The most that a sensor's offset is allowed to vary below 0 mV and still pass a diagnostic offset check.
OffsetToleranceHighMv	Double	The most that a sensor's offset is allowed to vary above 0 mV and still pass a diagnostic offset check.
DataFlag	Boolean	A value that can be assigned to a channel when viewing data. Possible values are "0" (None), "1" (Normal), "2" (Saturated), "3" (ZeroCrossing), "4" (BrokenWire) and "5" (Other).
ExcitationVoltage	String	The voltage specified in a sensor's definition.
Eu	String	The user provided Engineering Units (EU) (e.g., mm, g, or msec ²).
SerialNumber	String	The serial number of the sensor used with this channel.
CalSignalEnabled	Boolean	Applies to SLICE IEPE only.
ShuntEnabled	Boolean	For SLICE Bridge only. Indicates if the user requested the channel be shunted during diagnostics.
VoltageInsertionCheckEnabled	Boolean	True = check enabled or False = no check performed.
RemoveOffset	Boolean	Indicates if the user requested hardware offset compensation be used during diagnostics.
ZeroMethod	String	Identifies the type of software offset compensation that should be used. If the value is "UsePreCalZero," then the pre-calibration zero value stored in the channel file should be used. If the value is "AverageOverTime," then an average value computed from the channel data should be used.
ZeroAverageWindowBegin	Double	If ZeroMethod = AverageOverTime, this is the beginning of the window to be used for computing the average.
ZeroAverageWindowEnd	Double	If ZeroMethod = AverageOverTime, this is the end of the window to be used for computing the average.
InitialEu	Double	A value provided by the user that should be subtracted from all scaled data in addition to the selected ZeroMethod.
InitialOffset	Double	A sensor's offset when last calibrated.
UnsubsampledSampleRateHz	Integer	The sampling rate used during data collection. Valid only if IsSubsampled = True.

Name	Data Type	Description
MeasuredExcitationVoltage	Double	<i>(Optional)</i> The measured excitation voltage, if available. Used by DataPRO for scaling proportional-to-excitation sensor data if "factory" excitation voltage is not available.
FactoryExcitationVoltage	Double	<i>(Optional)</i> The factory excitation voltage, if available. Used by DataPRO for scaling proportional-to-excitation sensor data.
TimeOfFirstSample	Double	The time relative to T=0 of the first sample.
Multiplier	Double	Additional multiplier to apply if needed for EU scaling. Default is 1, which is no additional scaling.
UserOffsetEU	Double	Any additional offset in EU to add when calculating EU. Default is 0, which is add no additional EU to calculated EU output.
UnitConversion	Double	The factor used to calculate displayed EU given a sensor's sensitivity and desired range.
AtCapacity	Boolean	Whether or not a sensor was calibrated based on its maximum output.
CapacityOutputIsBasedOn	Double	If AtCapacity = True, the sensor's output that calibration was based on.
SensitivityUnits	String	The units that a sensor's sensitivity is based on; either "NONE", "mV", "mvPerV" (mv/V), "mvPerVperEU" (mV/V/EU), or "mvPerEU" (mV/EU).
SensorCapacity	Double	The capacity of the sensor in EU.
ChannelGroupName	String	What group the channel belongs to.
MeasuredShuntDeflectionMv	Double	<i>(Optional)</i> If a shunt test was performed, the actual deflection of the shunt.
TargetShuntDeflectionMv	Double	<i>(Optional)</i> If a shunt test was performed, the expected shunt deflection.
MeasuredCalSignalMv	Double	Diagnostic results from calibration signal used to determine gain (IEPE 1.0 only).
TargetCalSignalMv	Double	Diagnostic results from calibration signal used to determine gain (IEPE 1.0 only).

Appendix G: DataPRO Binary File Format

Bin File Header Version 4*

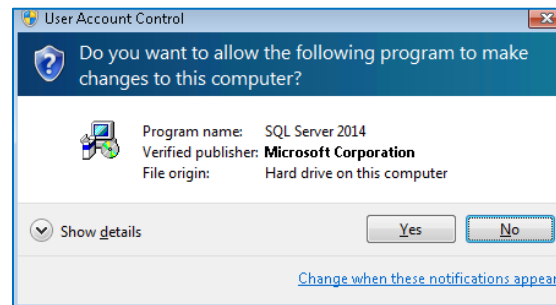
Offset	# of bytes	Data Type	Description
0	4	UInt32	Magic key to identify file: 0x2C36351F
4	4	UInt32	Version number of this file header*
8	8	UInt64	Offset (in bytes) from start of file to where data samples start
16	8	UInt64	Number of samples in this file
24	4	UInt32	Number of bits per sample
28	4	UInt32	0 = unsigned samples; 1 = signed samples
32	8	Double	Sample rate
40	2	UInt16	Number of triggers (may be 0)
42	N = number of triggers * 8	UInt64	Trigger sample number
N + 42	4	Int32	Pre-test zero level (in counts)
N + 46	4	Int32	Removed ADC (in counts)
N + 50	4	Int32	Pre-test diagnostics level (in counts)
N + 54	8	Double	Pre-test noise (percentage of full scale)
N + 62	4	Int32	Post-test zero level (in counts)
N + 66	4	Int32	Post-test diagnostics Level (in counts)
N + 70	4	Int32	Data zero level (in counts)
N + 74	8	Double	Scale factor mV (mV/Count)
N + 82	8	Double	Scale factor EU (mV/EU or mV/V/EU)
N + 90	2	Int16	EU field length (with terminator)
N + 92	X = length of EU field	Char	Engineering units (without NULL termination)

Offset	# of bytes	Data Type	Description
$N + 92 + X$	8	Double	Excitation
$N + 100 + X$	4	Int32	Trigger adjustment samples (reserved)
$N + 104 + X$	4	Int32	Zero mV (in counts)
$N + 108 + X$	4	Int32	Window average (in counts)
$N + 112 + X$	4	Int32	Original offset (in counts)
$N + 116 + X$	16	Char []	ISO code
$N + 132 + X$	4	Int32	CRC16 for binary header information from byte 0 to $(N + 132 + X - 1)$
$N + X + 136$ 64bit (ulong) offset found in 3rd file field	Size of sample data	16-, 24-, or 32- bit depending on "Number of bits per sample"	DATA SAMPLES START HERE

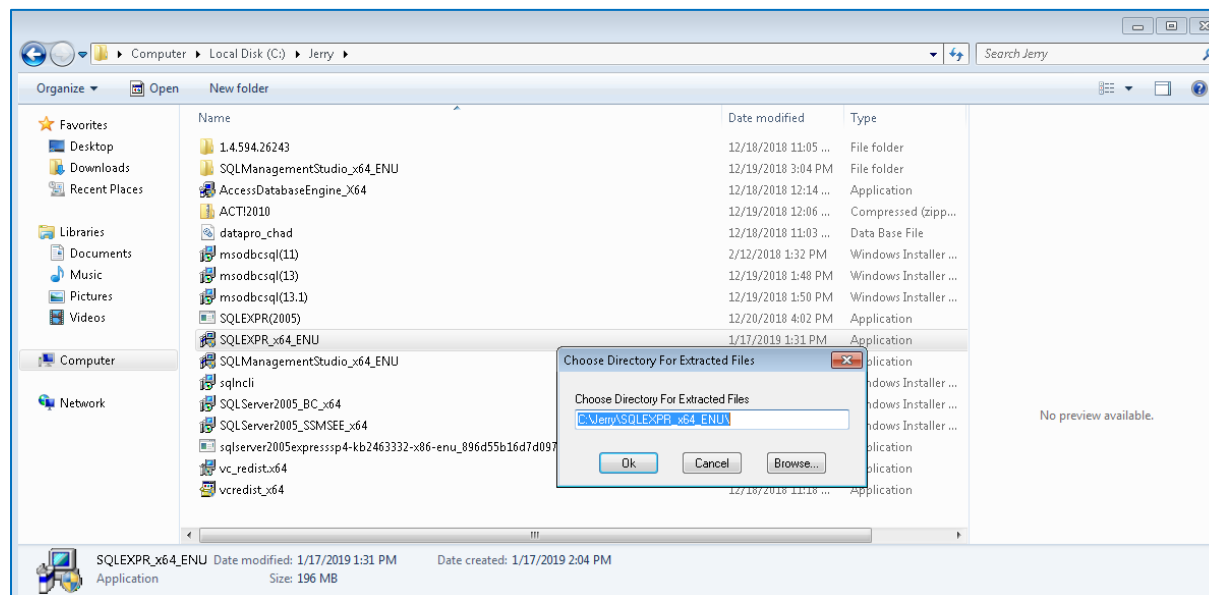
Appendix H: SQL Server Setup

This section shows the configuration of SQL Server 2014 on Windows 10. Please refer to the [PC Requirements](#) section (page 8) for information on supported versions.

1. Launch the SQL Server Express setup, SQLEXP_x64_ENU.exe:

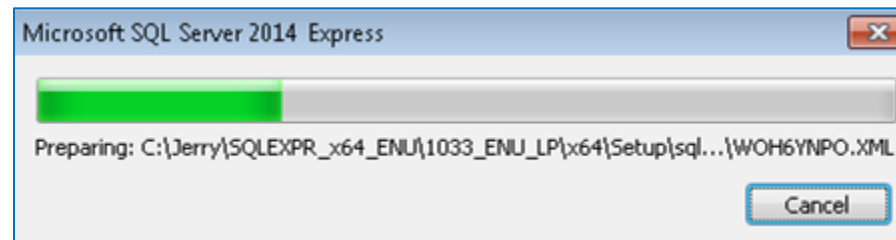


2. Select "Run":

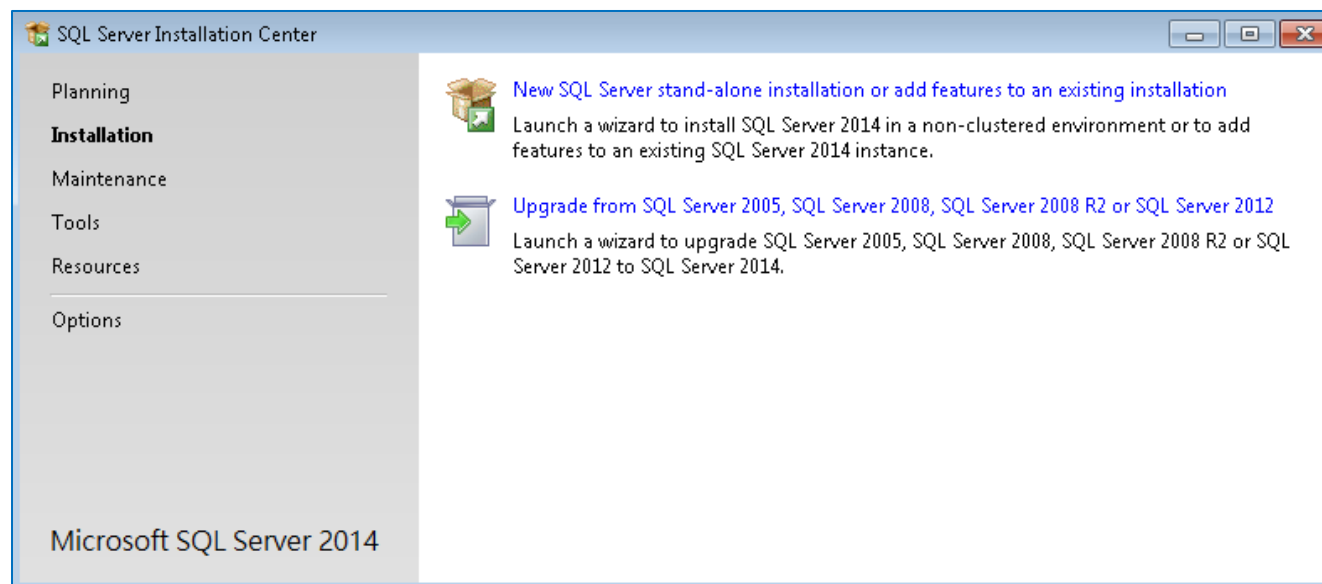


3. Click OK.

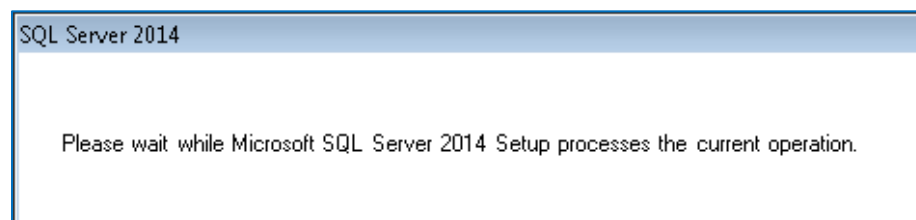
4. Wait...



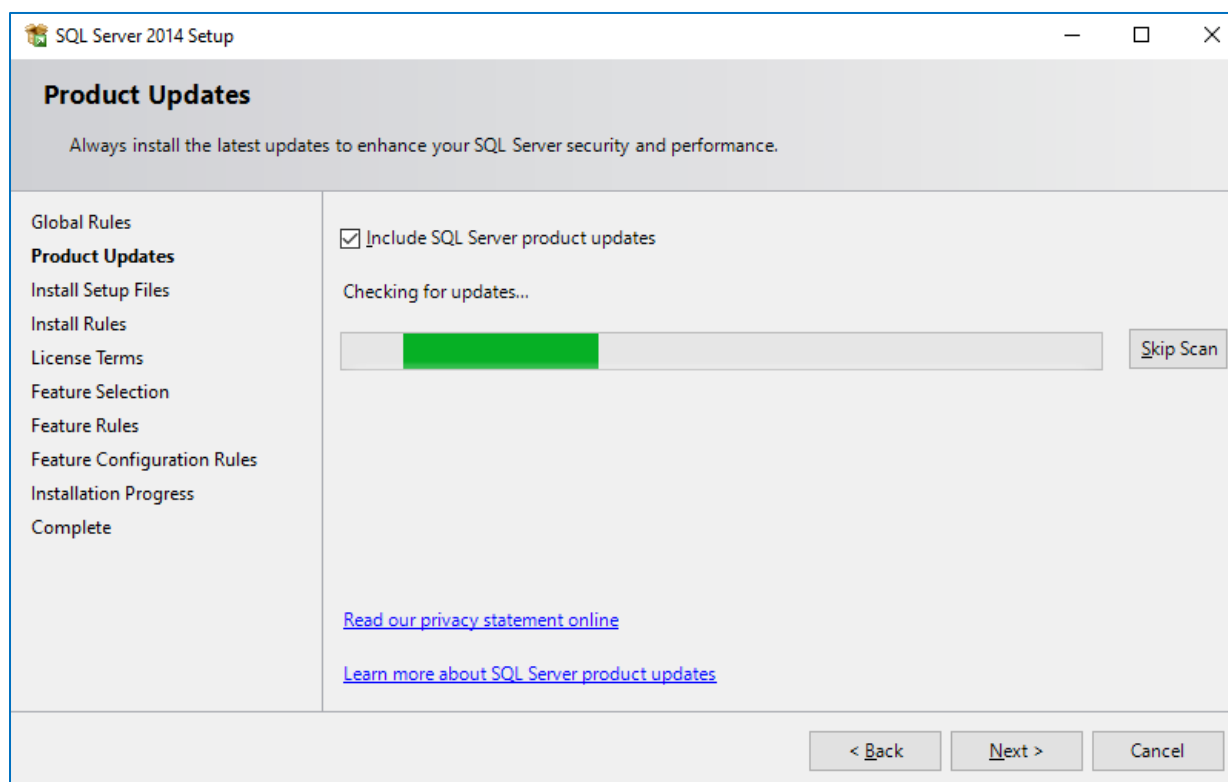
5. Click "New SQL Server stand-alone installation or add features to an existing installation":



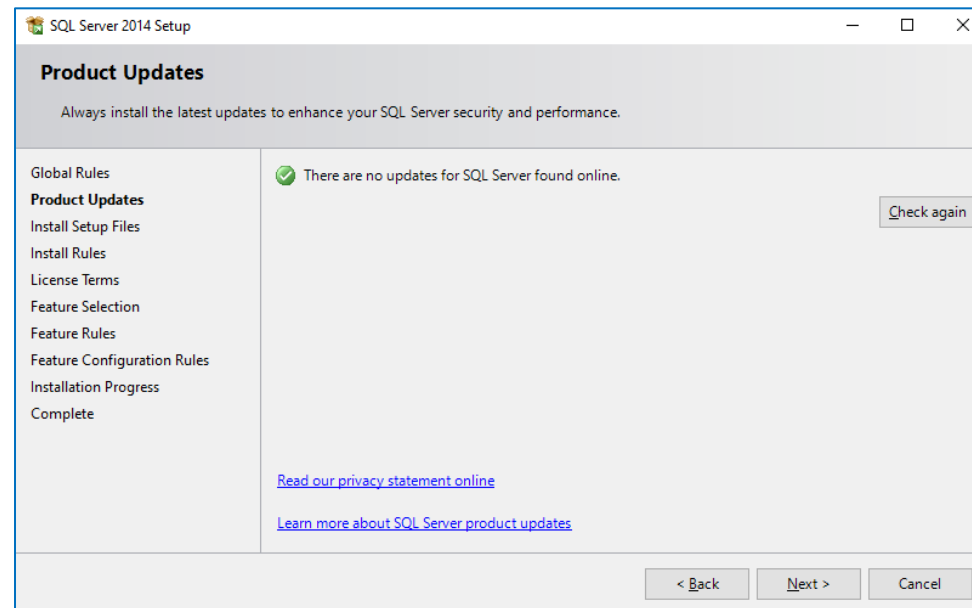
6. Wait...



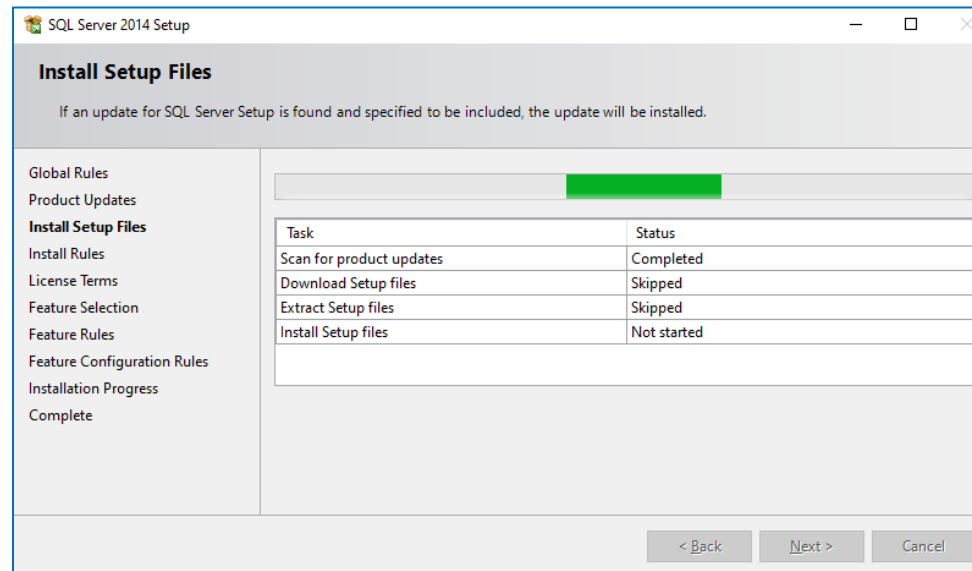
7. Click "Next":



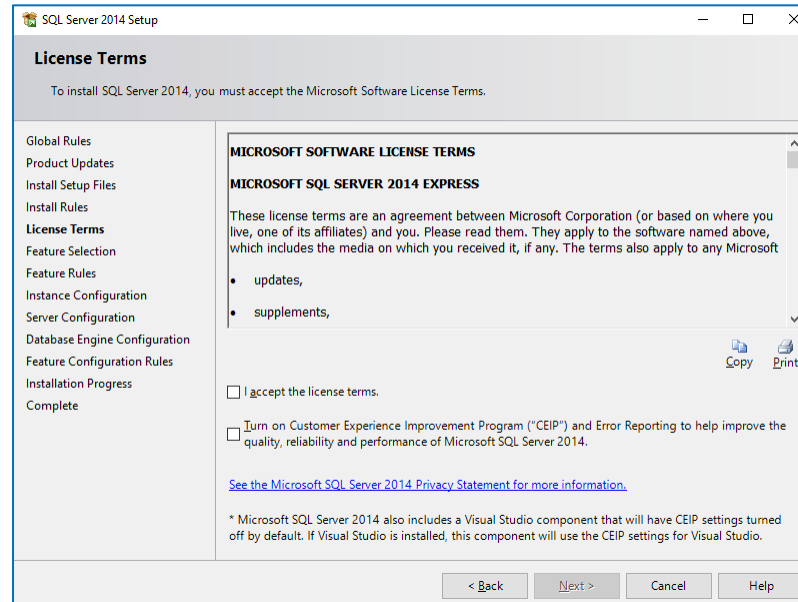
8. Click "Next":



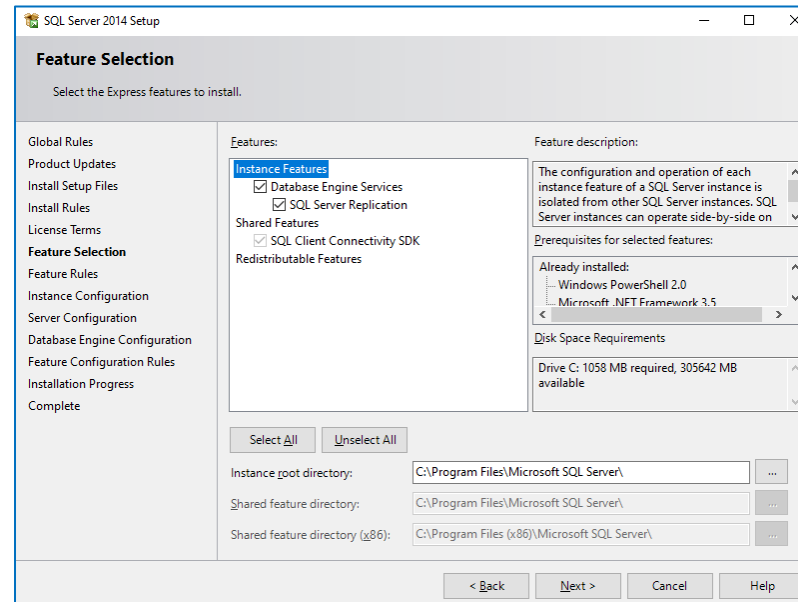
9. Wait...



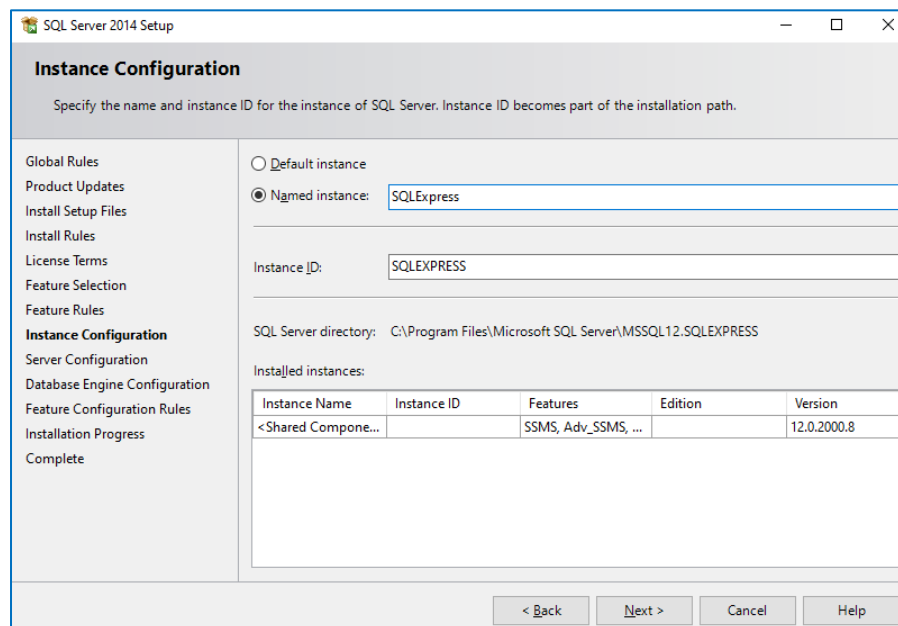
10. Check the “I accept the license terms” box, then click “Next”:



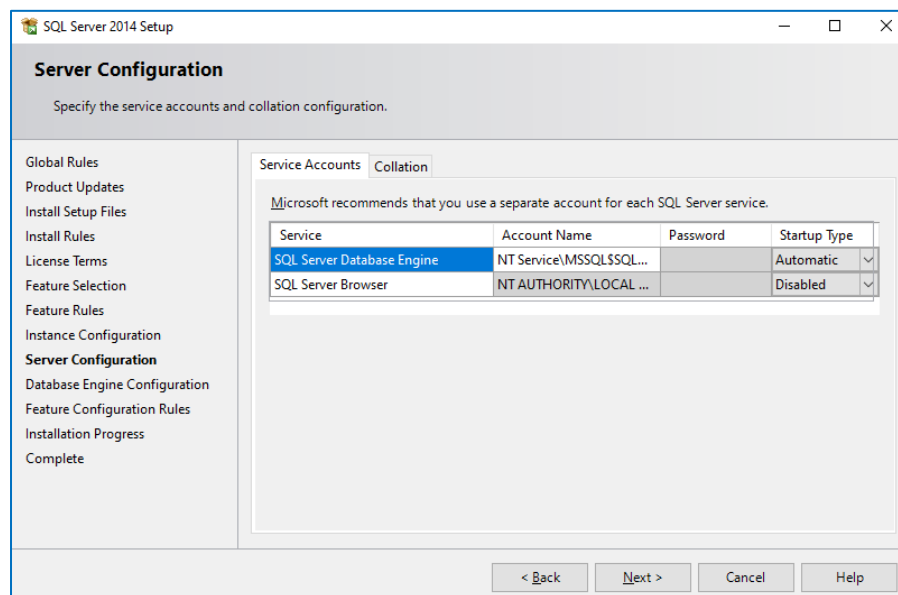
11. Click “Next”:



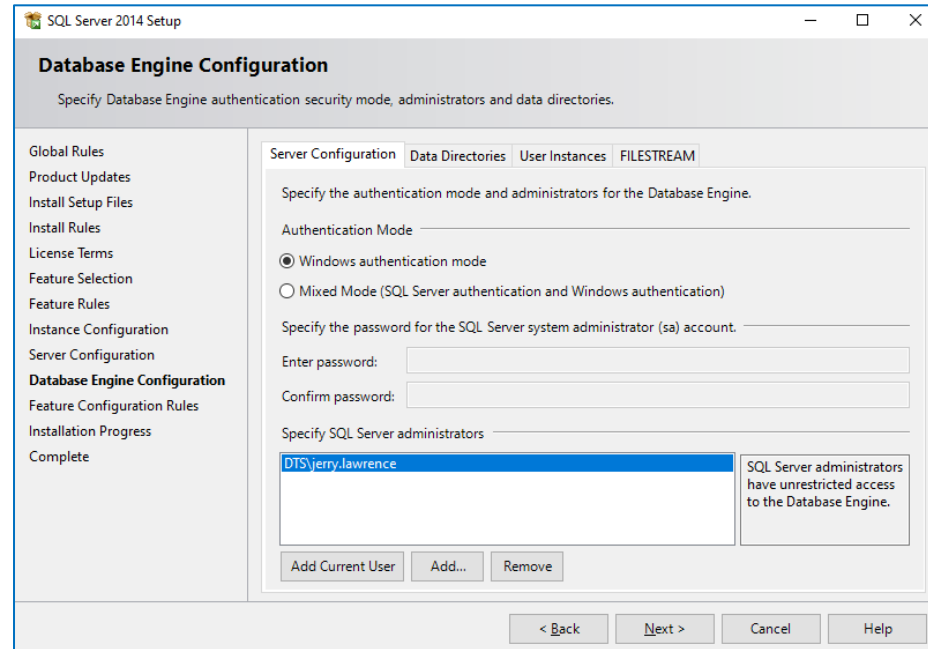
12. Click “Next”:



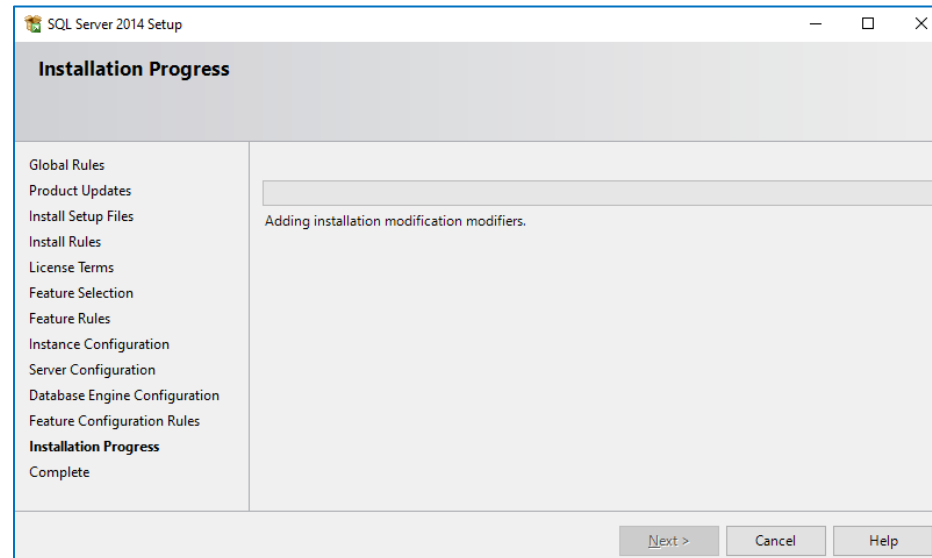
13. Click “Next”:



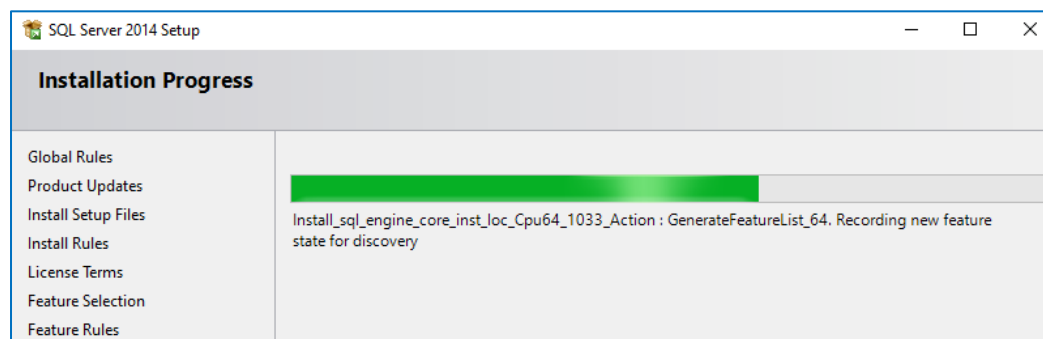
14. Click "Next":



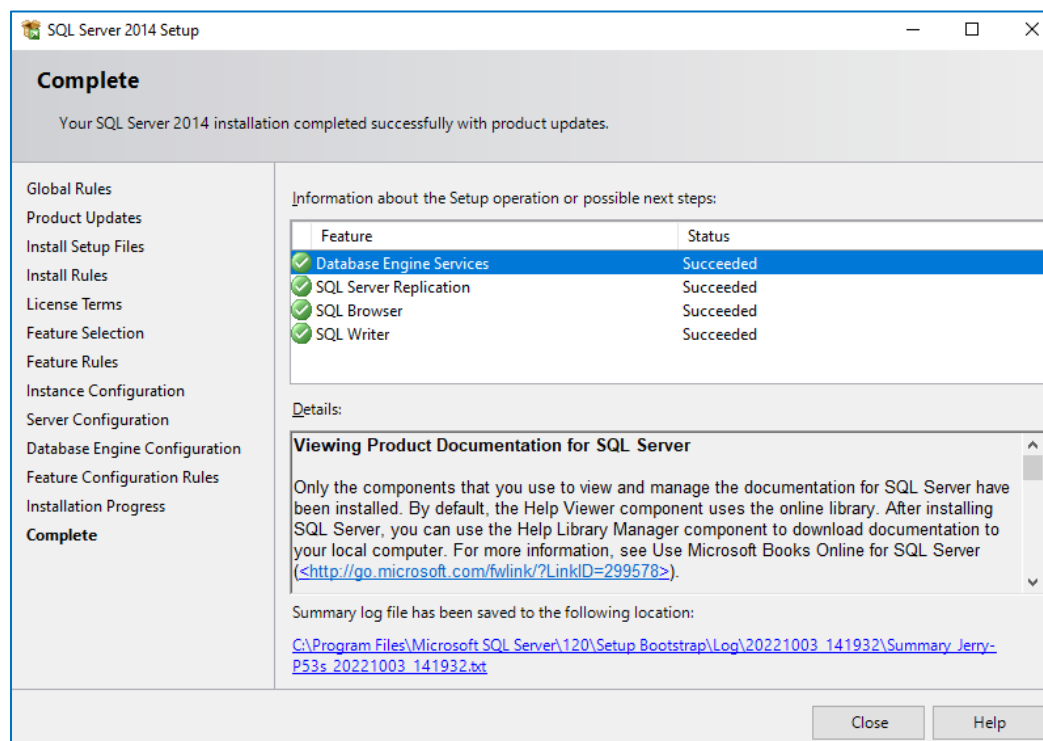
15. Wait...



16. Keep waiting...

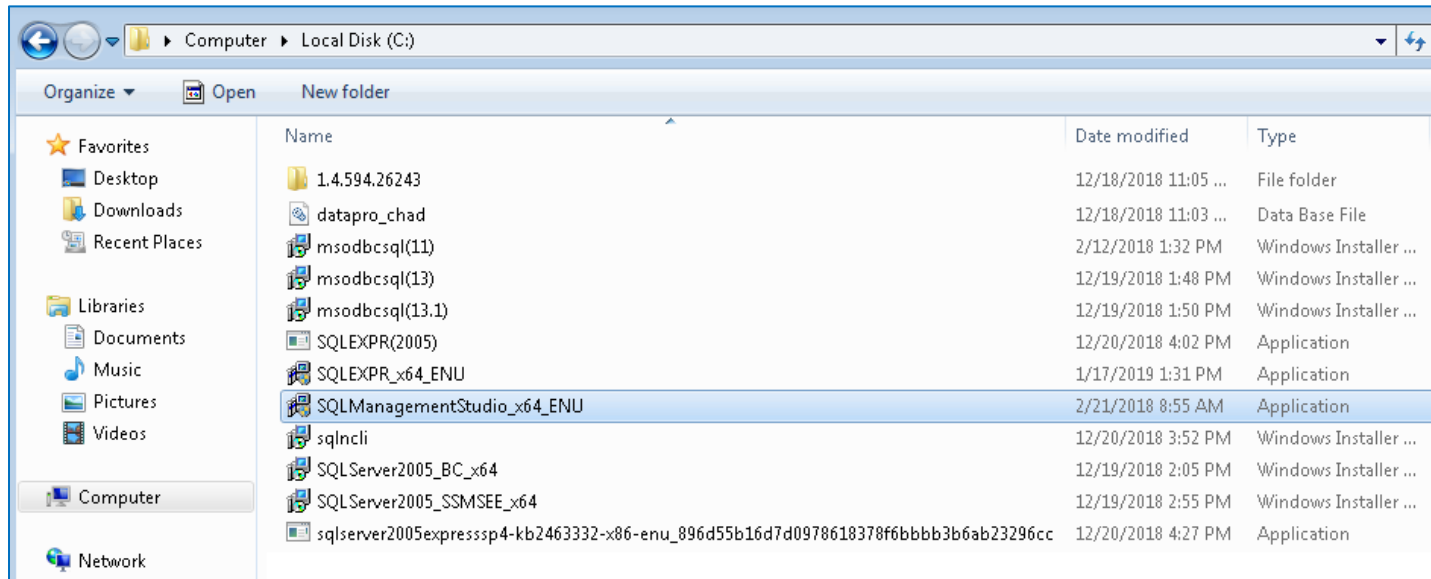


17. Click "Close":

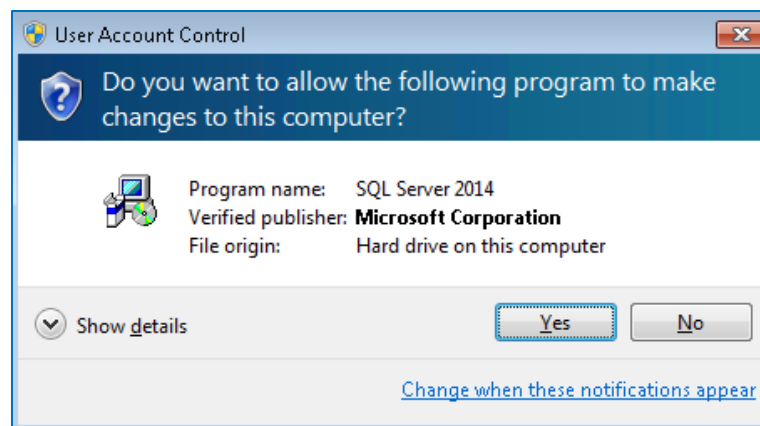


SQL Server Management Studio Installation

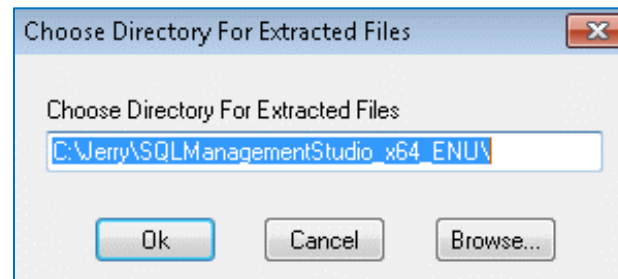
18. Install SQL Server Management Studio 2014 by running SQLManagementStudio_x64_ENU.exe:



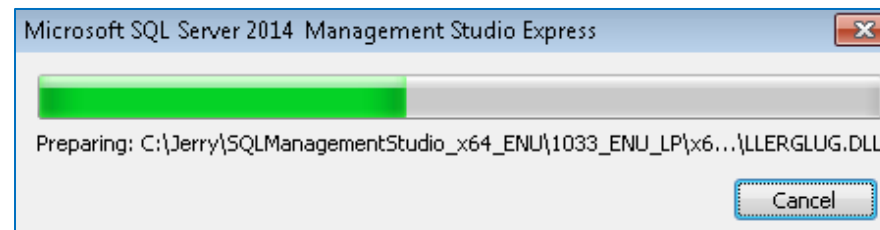
19. Click "Yes":



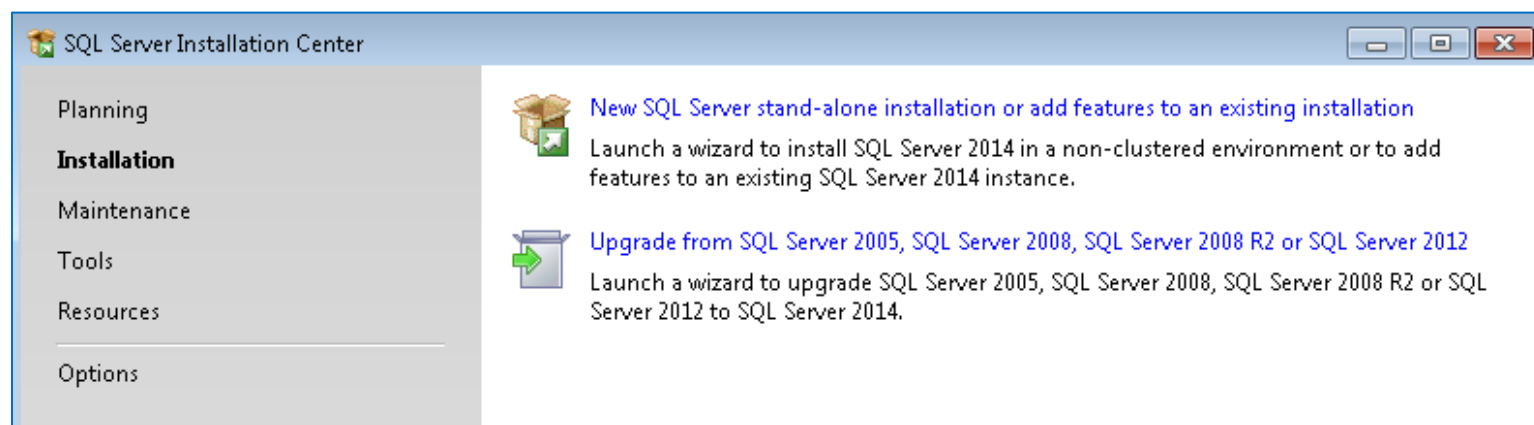
20. Modify the path if desired, then click "OK":



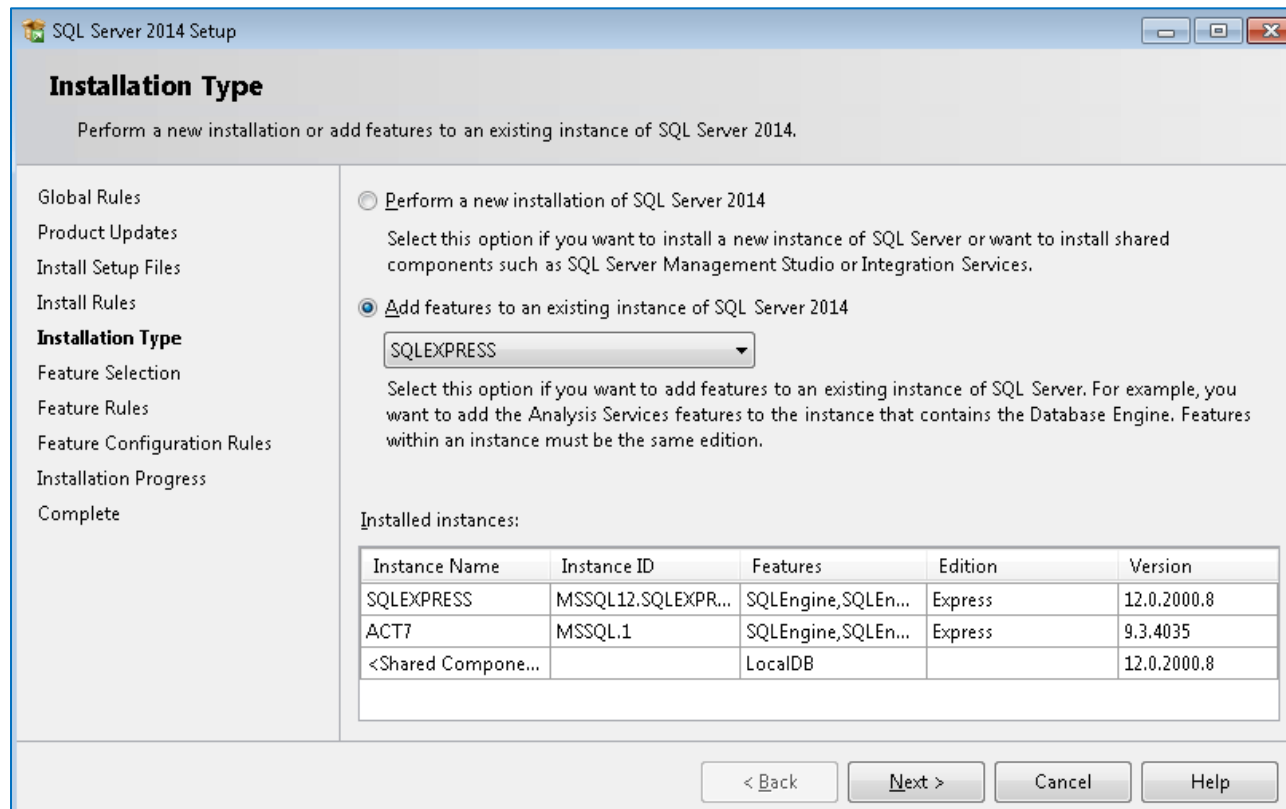
21. Wait...



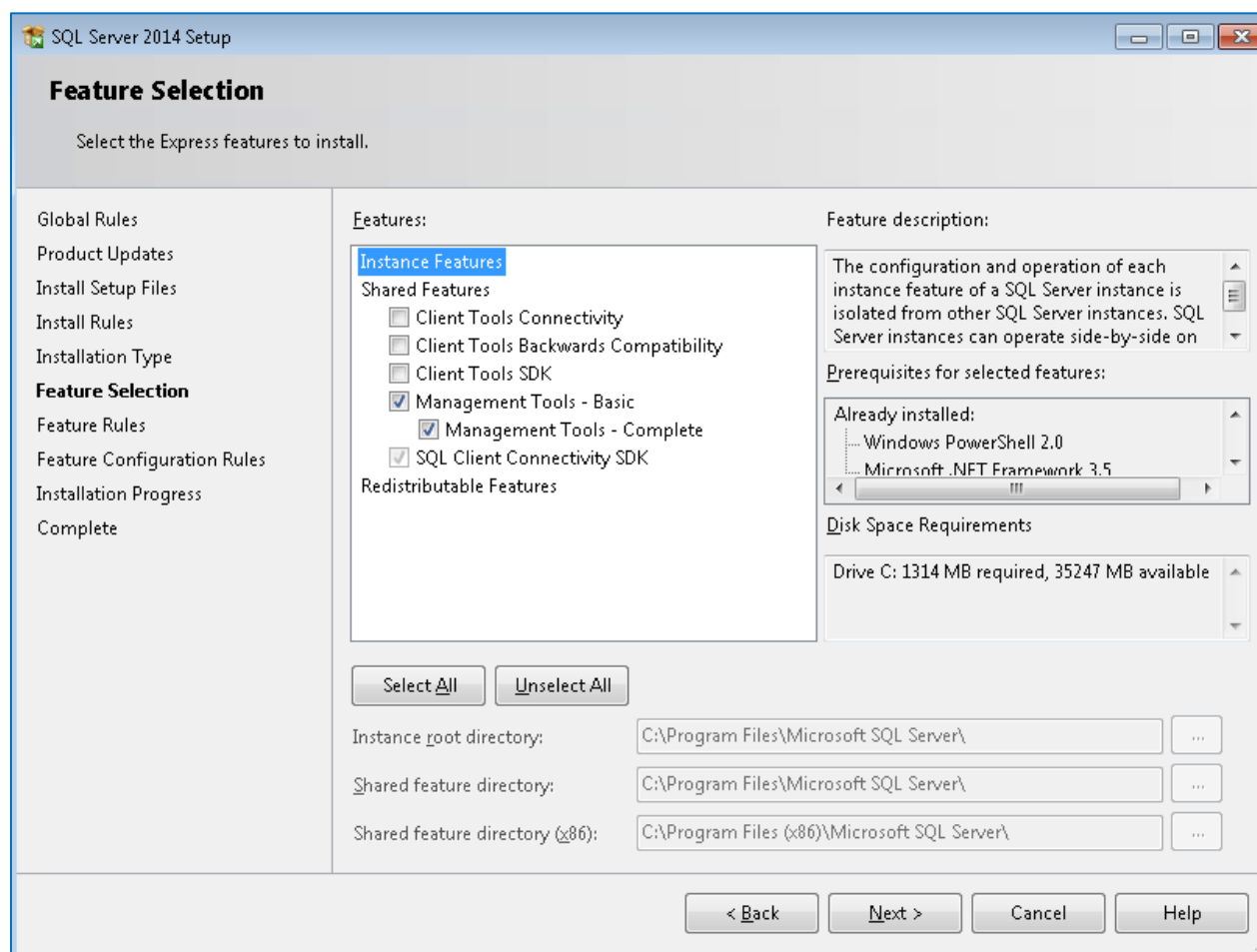
22. Click "New SQL Server stand-alone installation or add features to an existing installation":



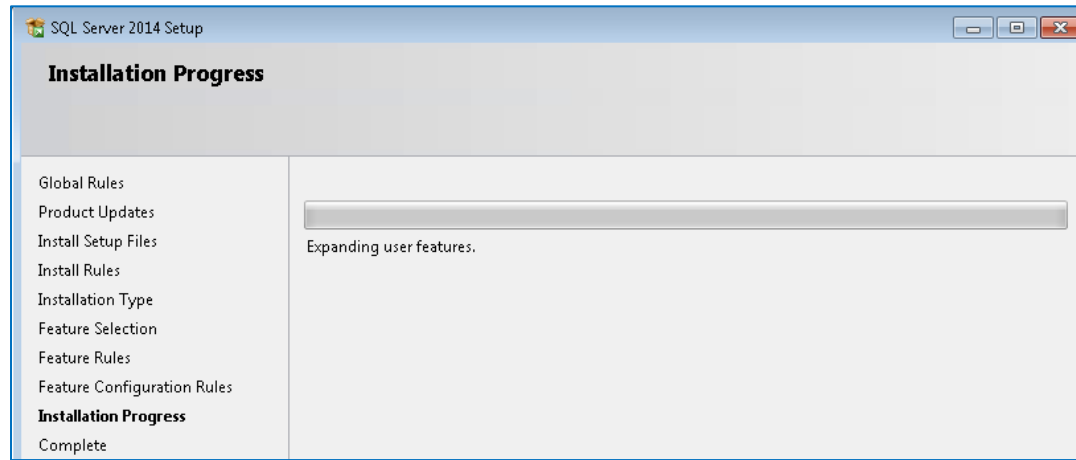
23. Change selection to “Add features to an existing instance of SQL Server 2014”, then click “Next”:



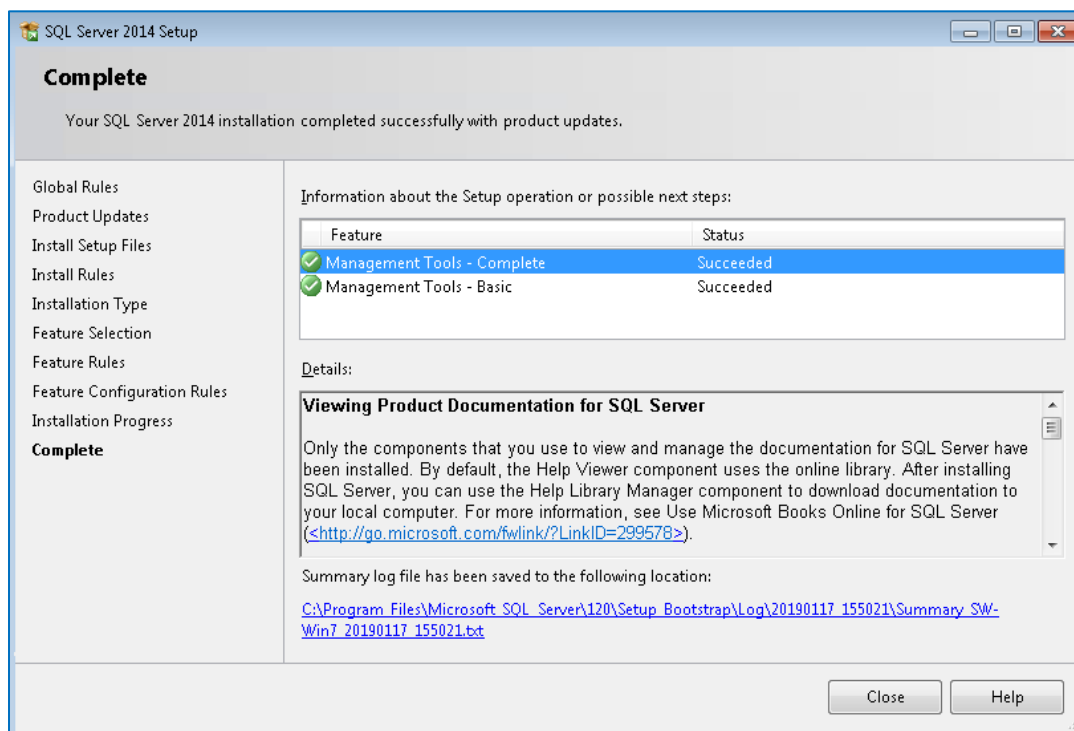
24. Check the “Management Tools – Basic” and “Management Tools – Complete” boxes, then click “Next”:



25. Wait...

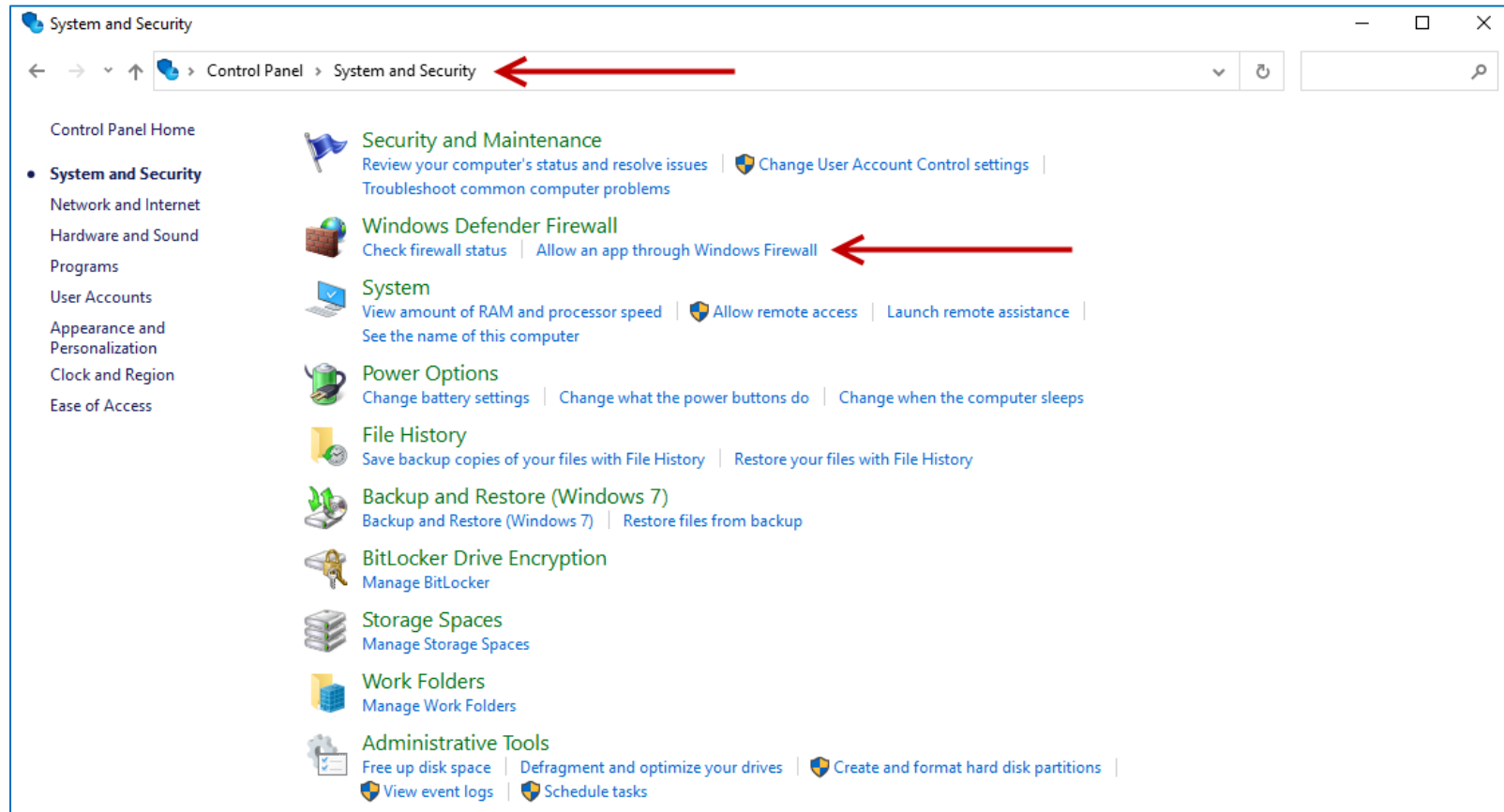


26. Click "Close".



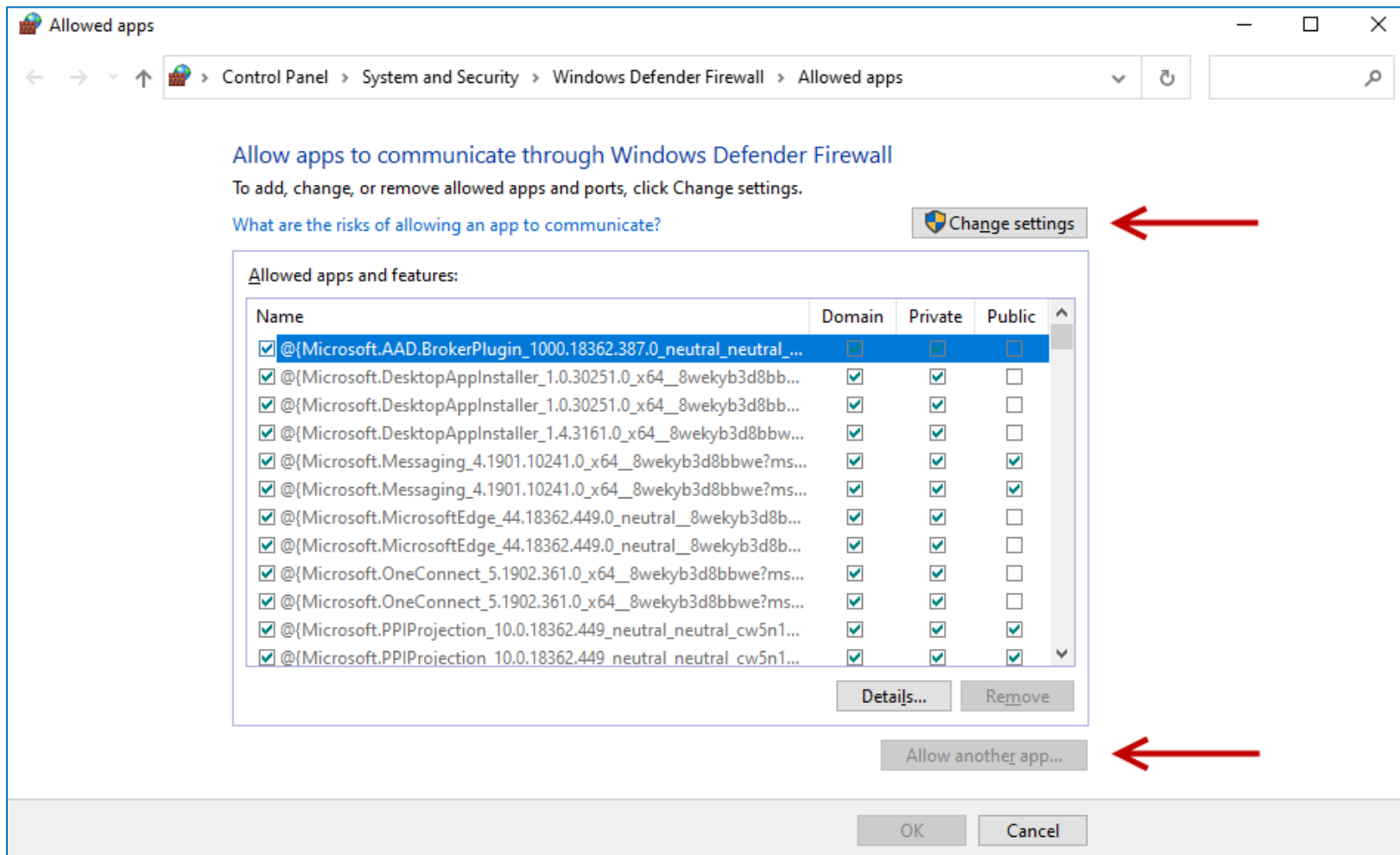
Firewall Configuration

27. Go to Control Panel | System and Security:

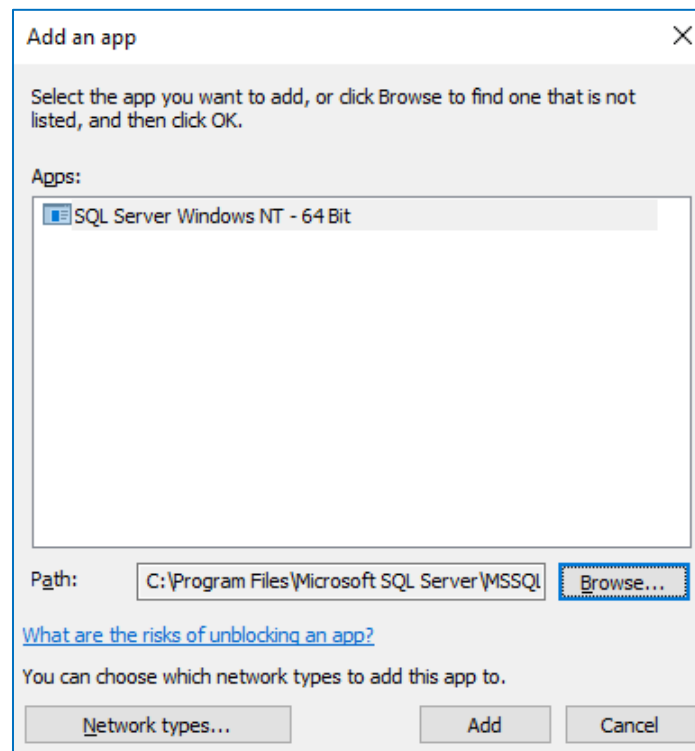


28. Click on "Allow an app through Windows Firewall".

29. Click on “Change settings”, then click on “Allow another app...”:



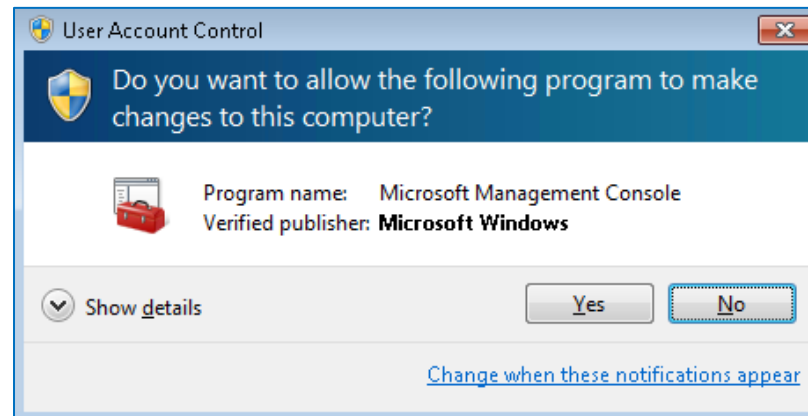
30. Click on “Browse...”, then browse to *C:\Program Files\Microsoft SQL Server\MSSQL12.SQLEXPRESS\MSSQL\Binn\sqlservr*, then click “Open”:



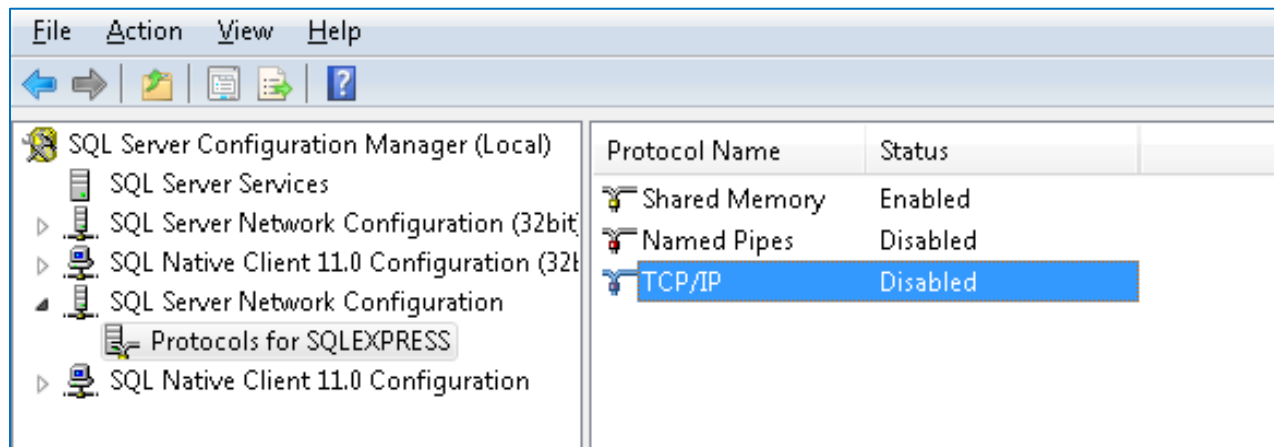
31. Click “Add”.
32. Click “OK”, then close the “System and Security” window.

SQL Server Configuration Manager

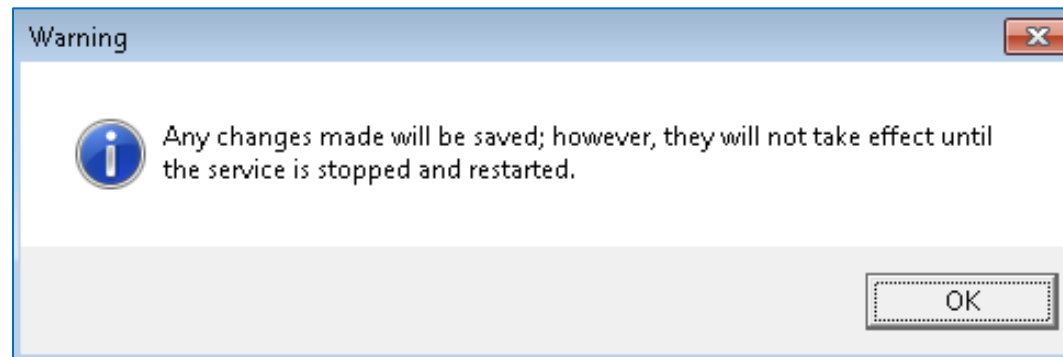
33. Run the SQL Server Configuration Manager application that was installed previously. Click “Yes” to let the program through the firewall:



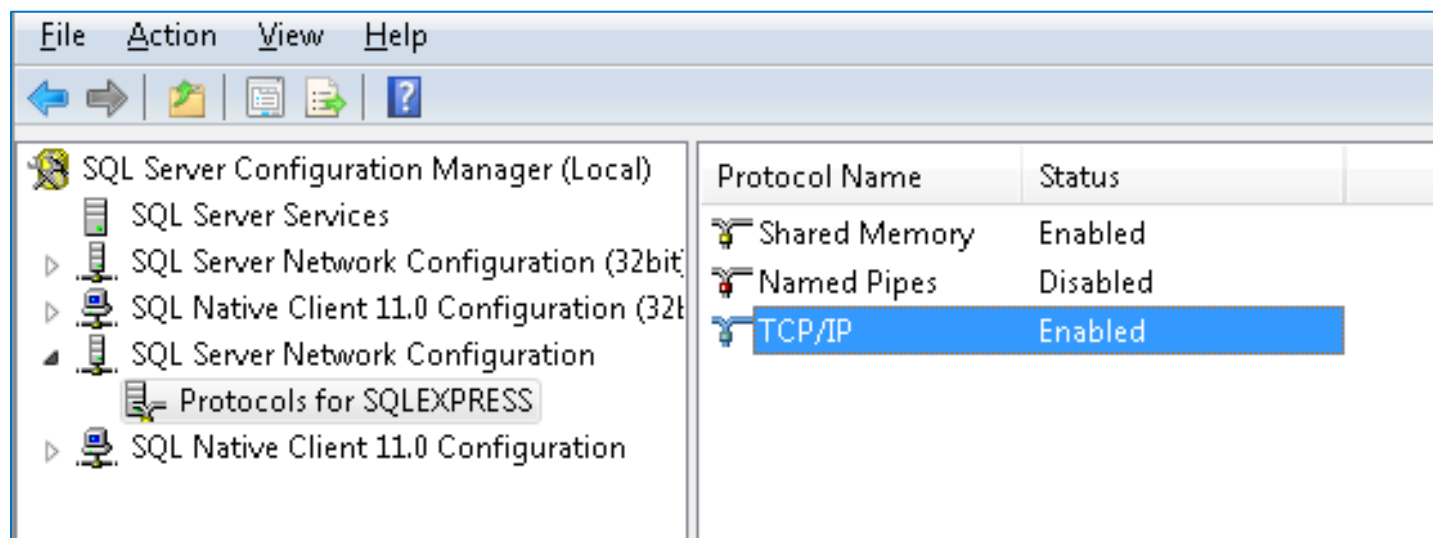
34. Expand “SQL Server Network Configuration”, select “Protocols for SQLEXPRESS”, right-click on “TCP/IP” and select “Enable”:



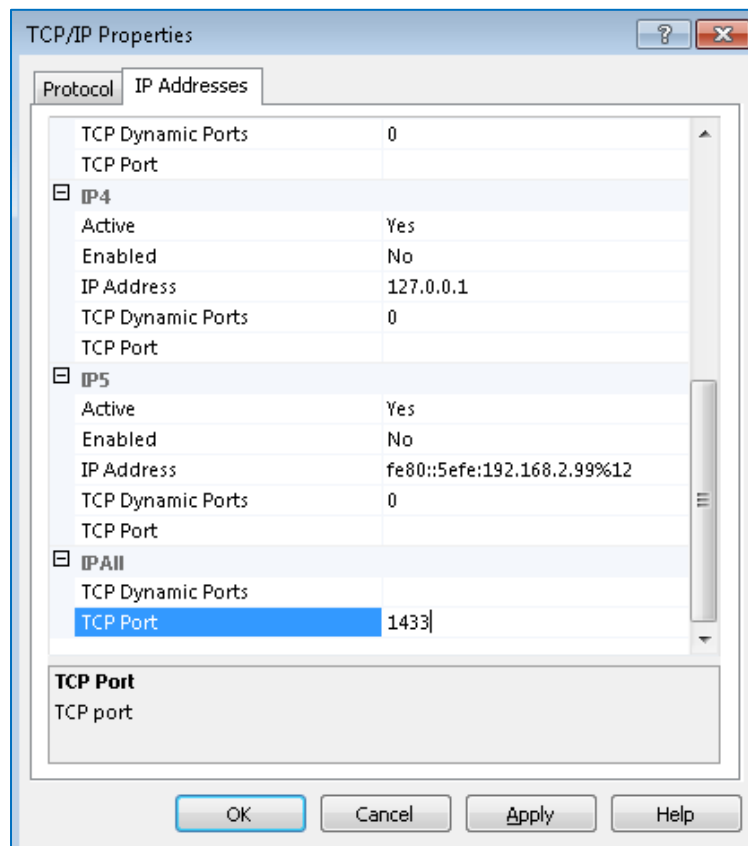
35. Click "OK":



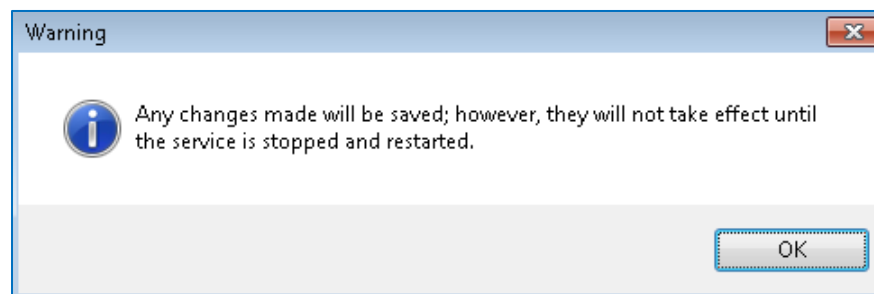
36. Double-click on the "TCP/IP" Protocol Name:



37. Select the “IP Addresses” tab, scroll to the bottom, blank out the “TCP Dynamic Ports” value and add “1433” as the “TCP Port” value under “IP All”:

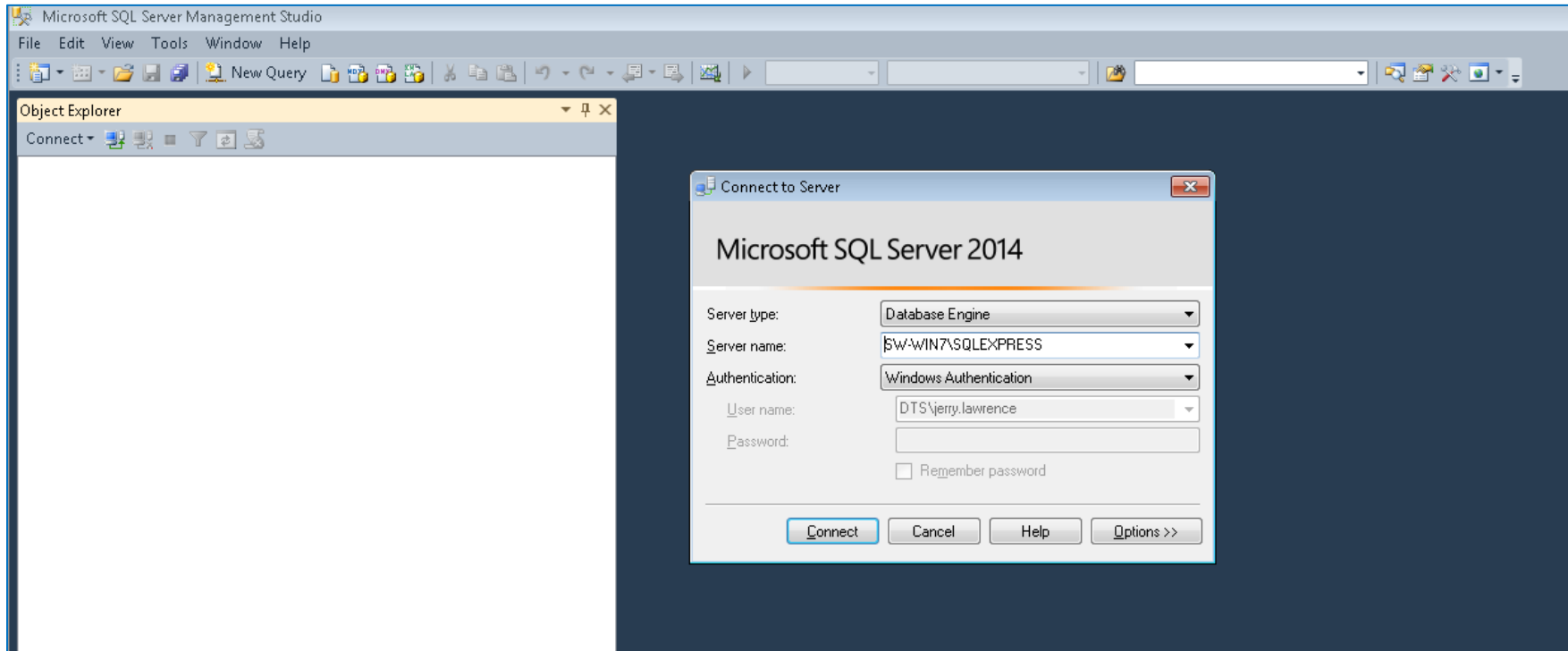


38. Click “OK”:

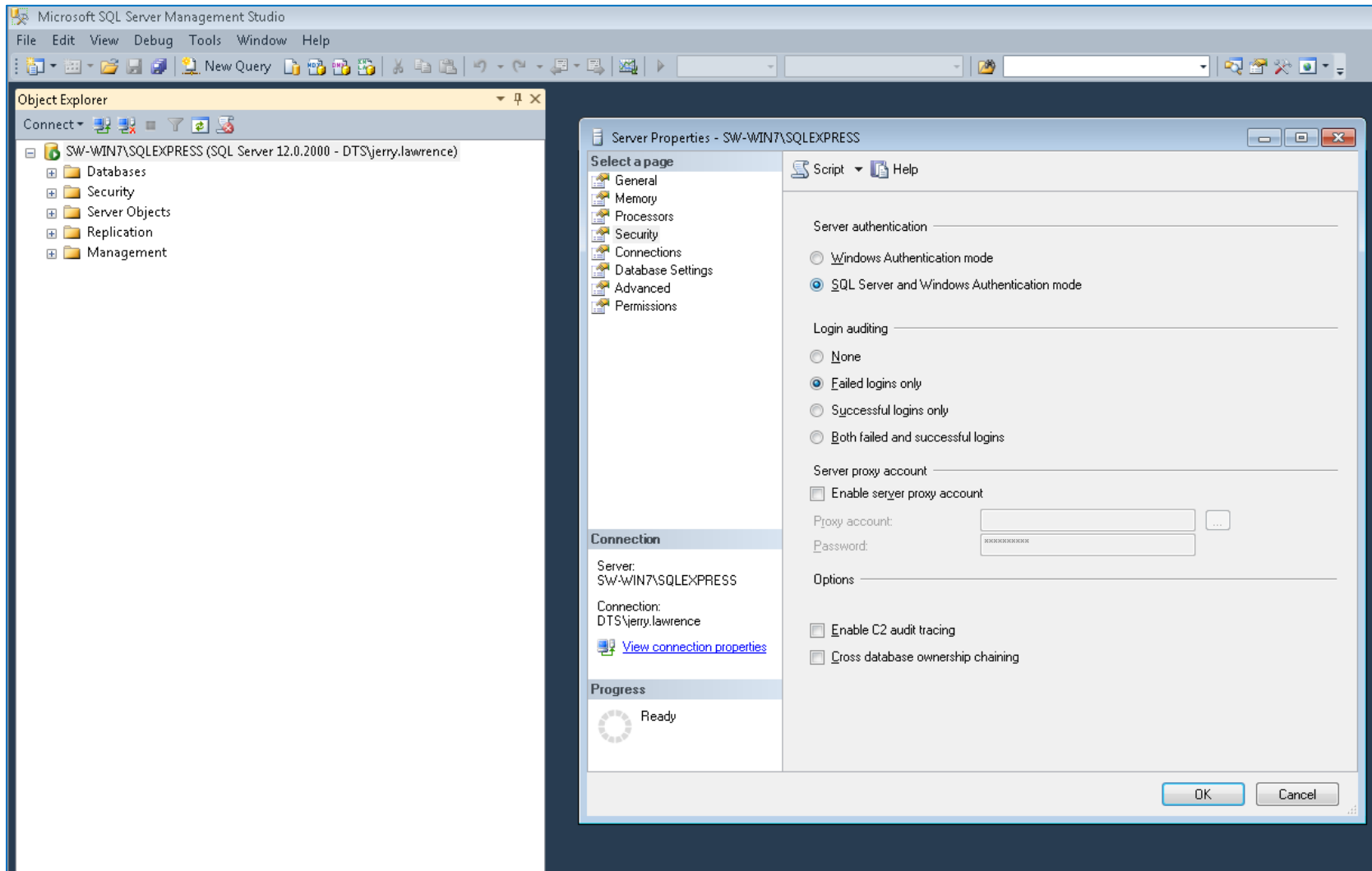


SQL Server Management Studio

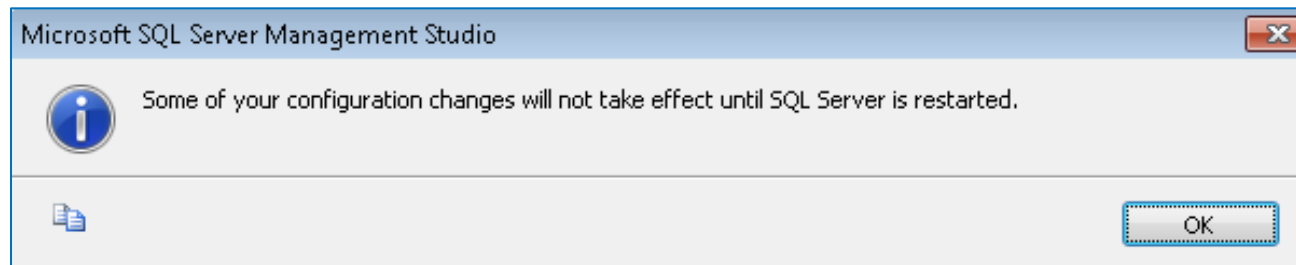
39. Run the SQL Server Management Studio application.
40. Set “Server name” to “<your host name>\SQLEXPRESS”, then click “Connect”:



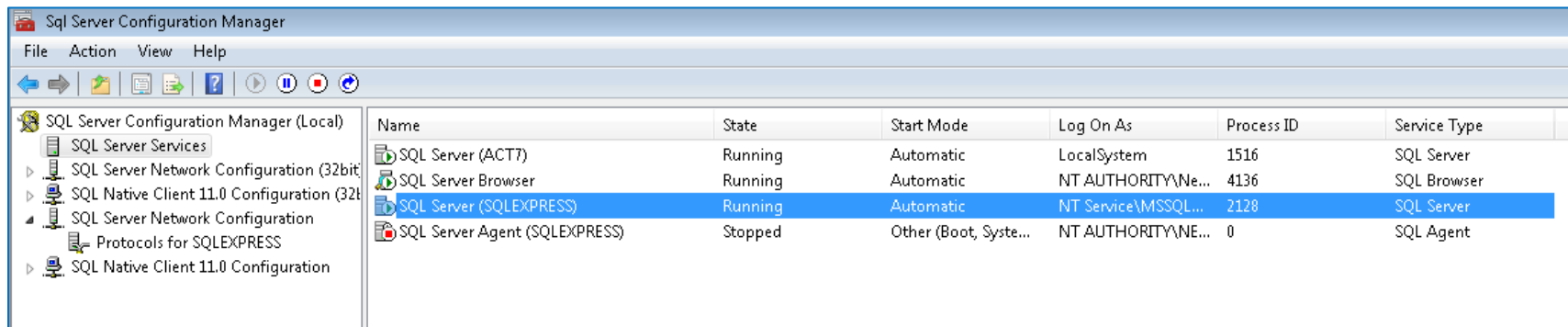
41. Right-click on the top-most level of the tree and select “Properties”. On the “Security” page, select “SQL Server and Windows Authentication mode”, then click “OK”:



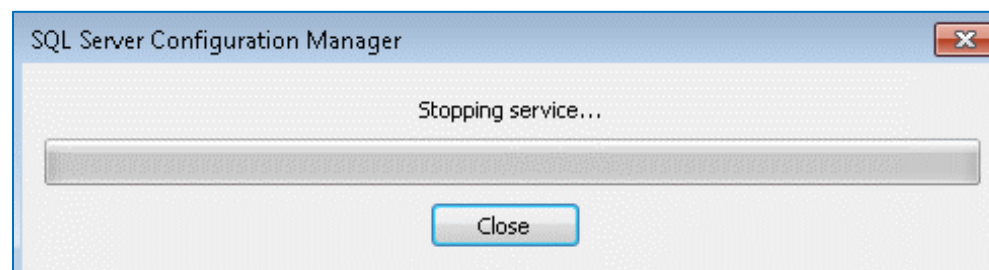
42. Click "OK":



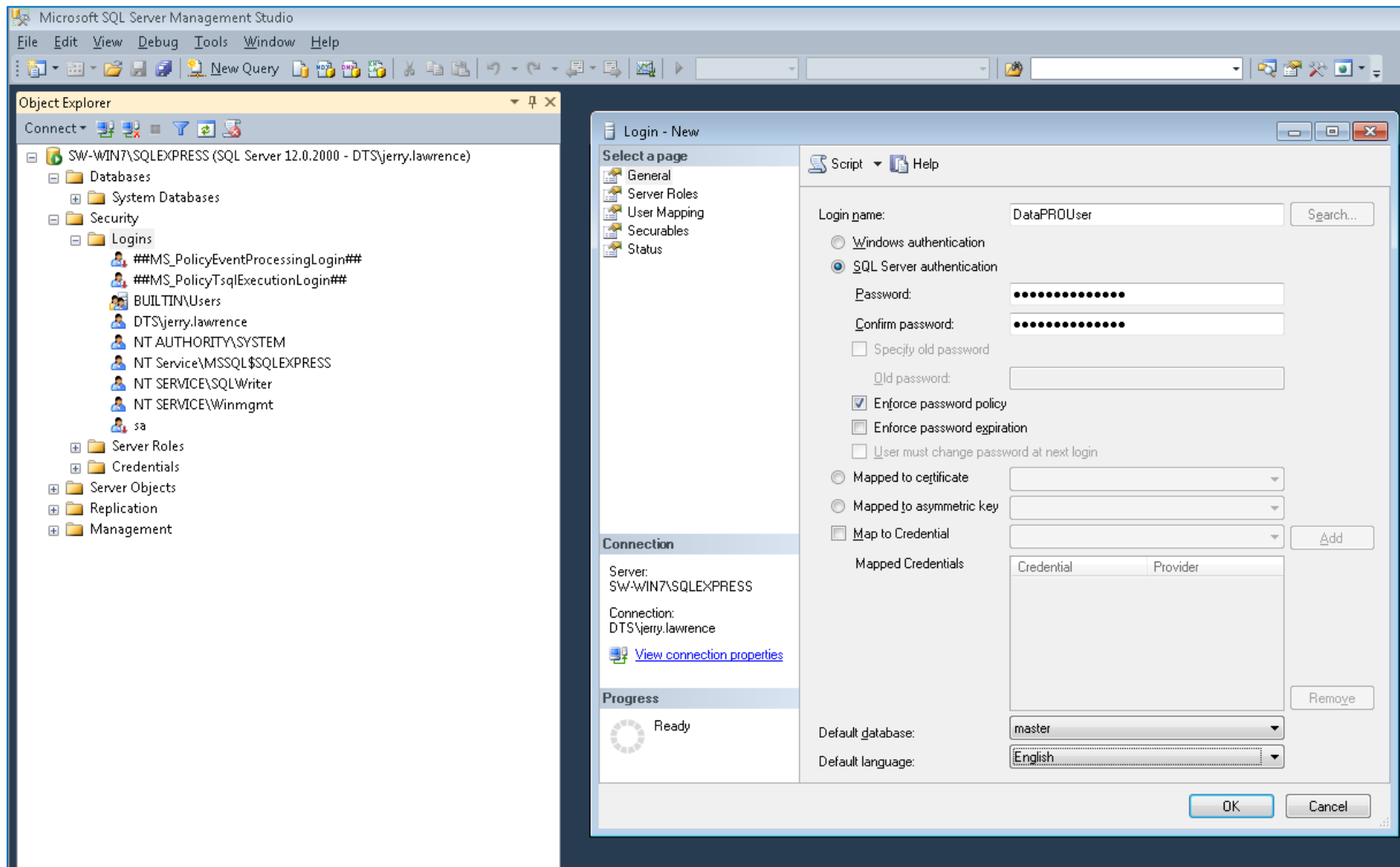
43. Return to SQL Server Configuration Manager, select "SQL Server Services", right-click on "SQL Server (SQLEXPRESS)" then click "Restart":



44. Wait...

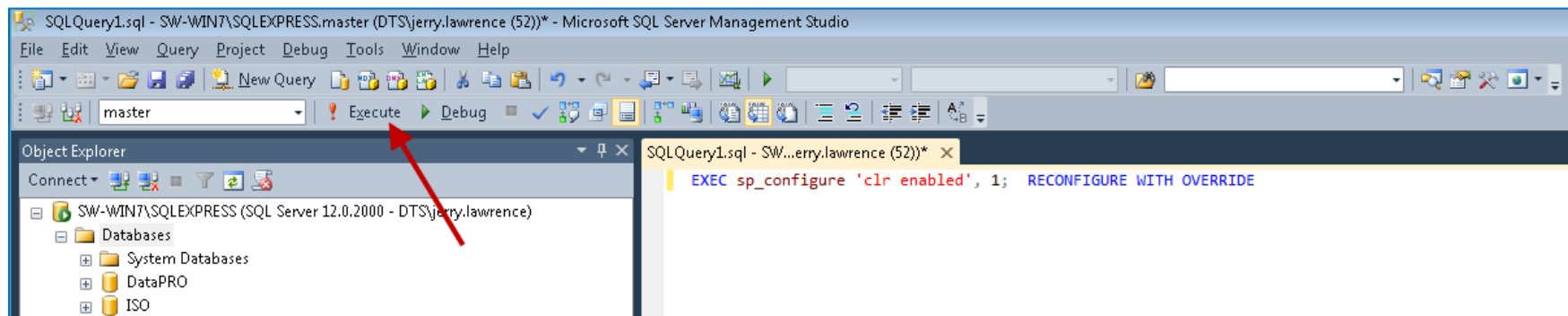
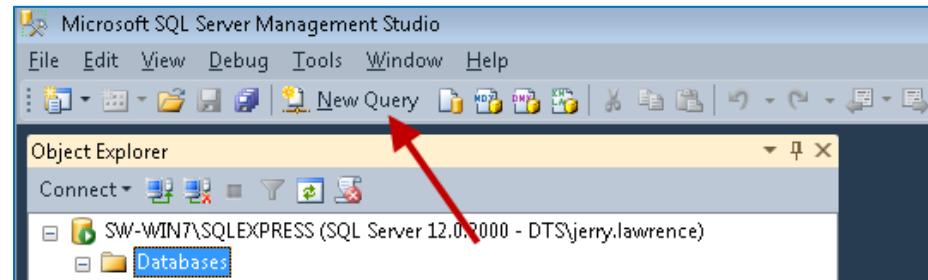


45. Return to SQL Server Management Studio, right-click on Security | Logins and select “New Login...”:

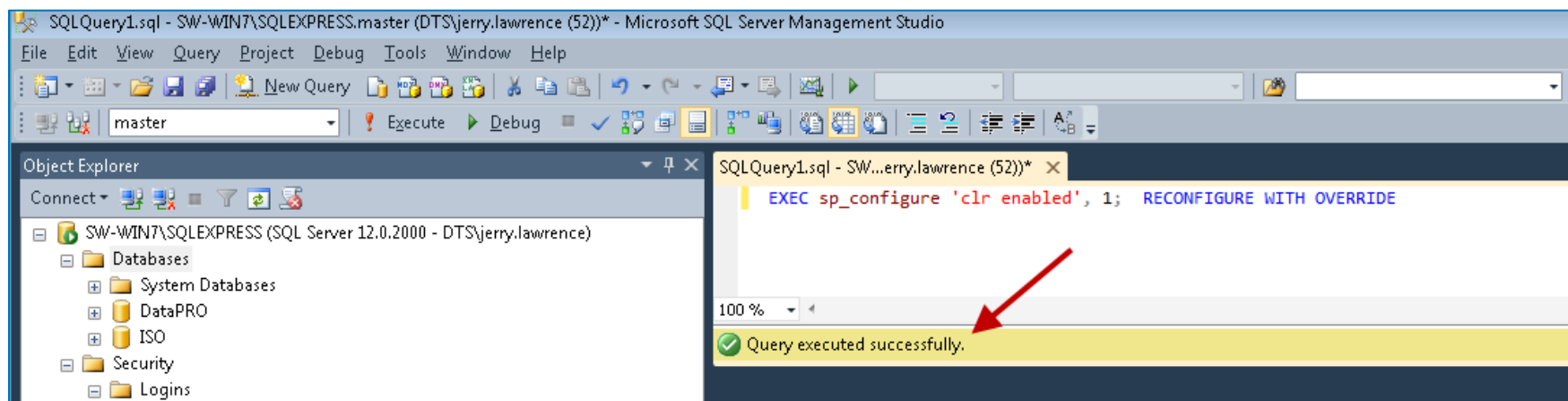


46. Enter “DataPROUser” in the “Login name” field, select “SQL Server authentication”, enter “DTSSealBeachHQ” in the “Password” and “Confirm password” fields (this is arbitrary and can be changed to match the contents of the “LocalDBPassword” setting in the “DataPRO.exe.config” file that is installed as part of the DataPRO installation). Then click “OK”.

47. Click “New Query” to open a query window, enter “EXEC sp_configure 'clr enabled', 1; RECONFIGURE WITH OVERRIDE” and click “! Execute”:

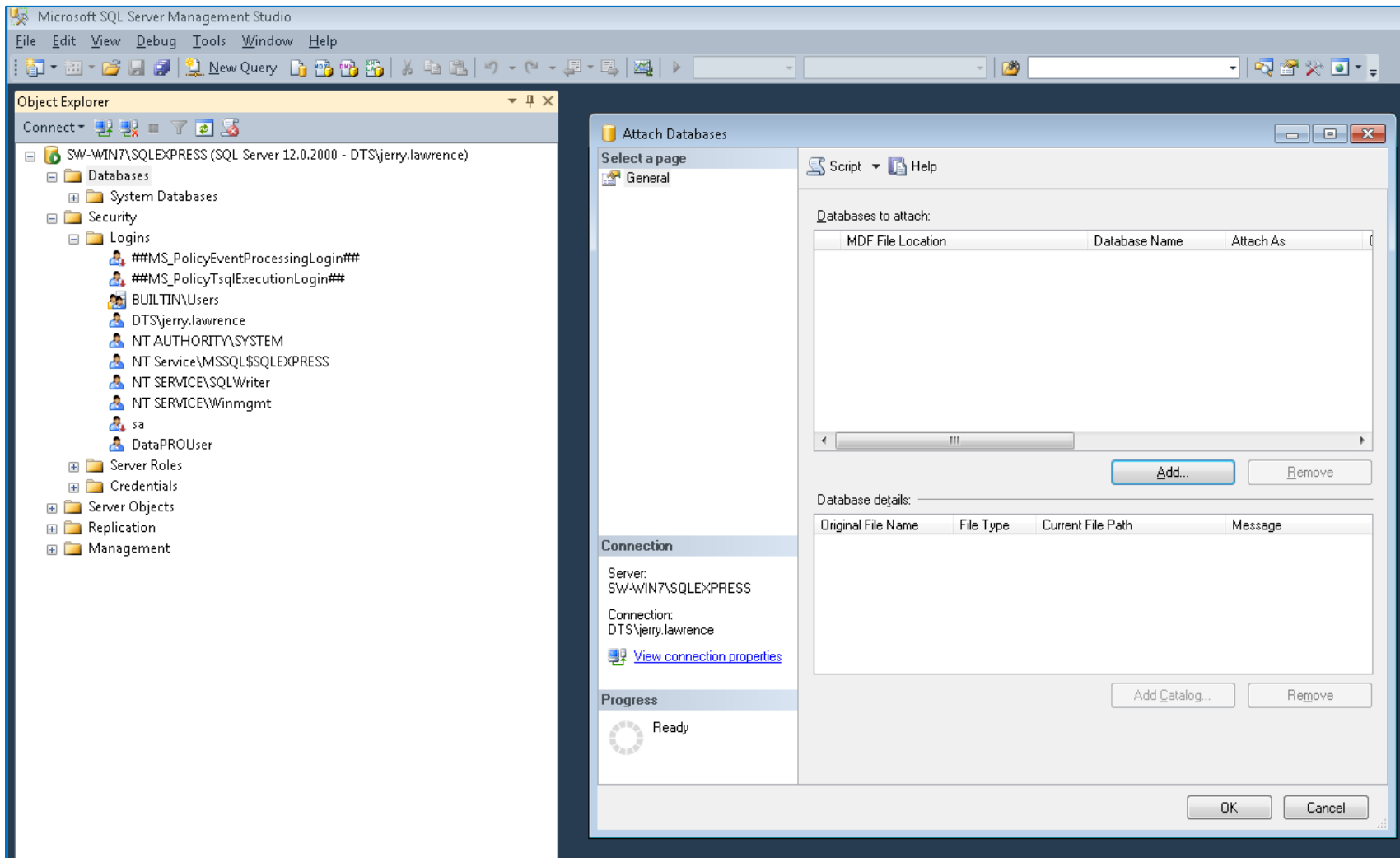


48. Note the successful response:



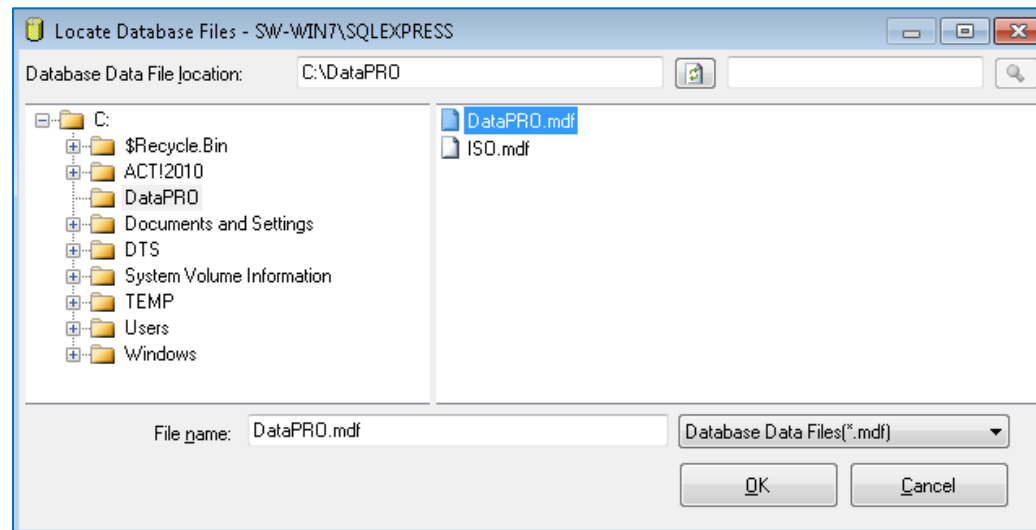
Connecting to the DataPRO Database

49. After DataPRO has been installed on a client system, copy the “DataPRO.mdf”, “DataPRO_log.ldf”, “ISO.mdf” and “ISO_log.ldf” files to the server, then right-click “Databases” and select “Attach...”:

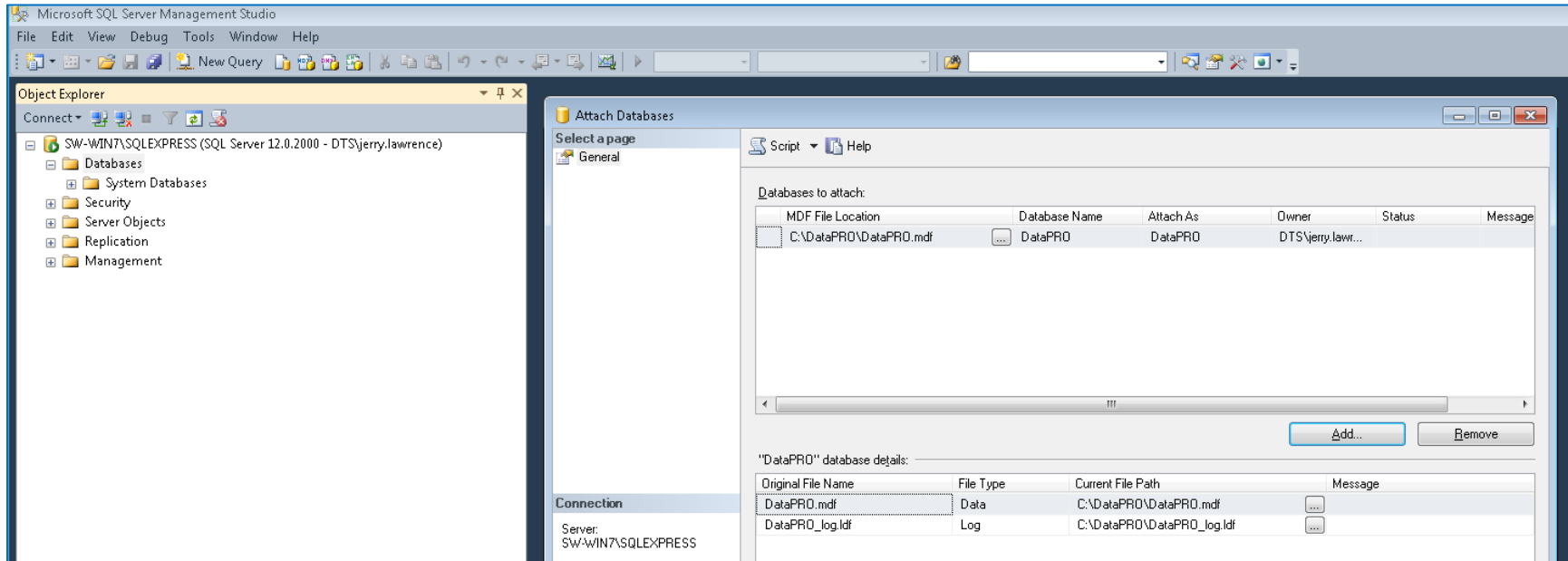


50. Click “Add...”.

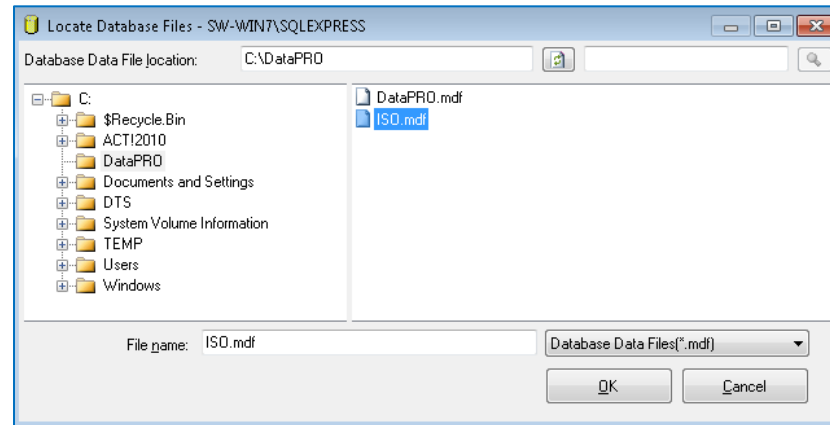
51. Browse to the folder where the .mdf/.ldf files were copied, select “DataPRO.mdf” and click “OK”:



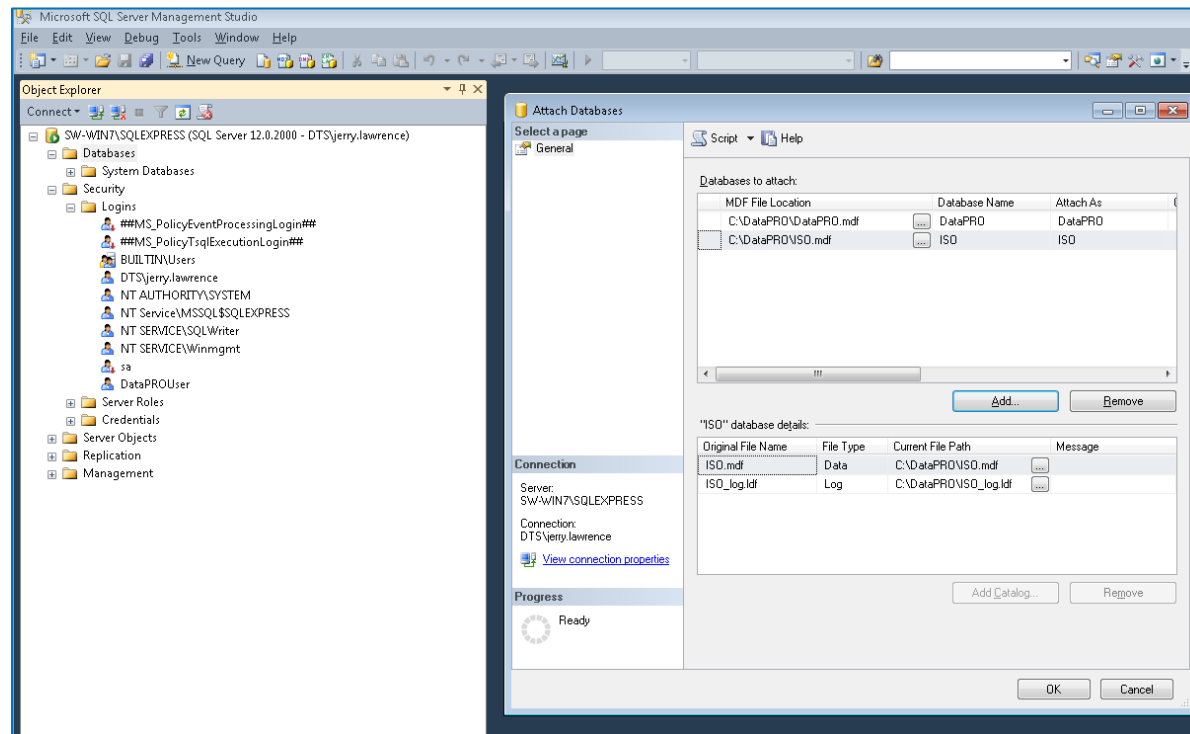
52. Click “Add...” again:



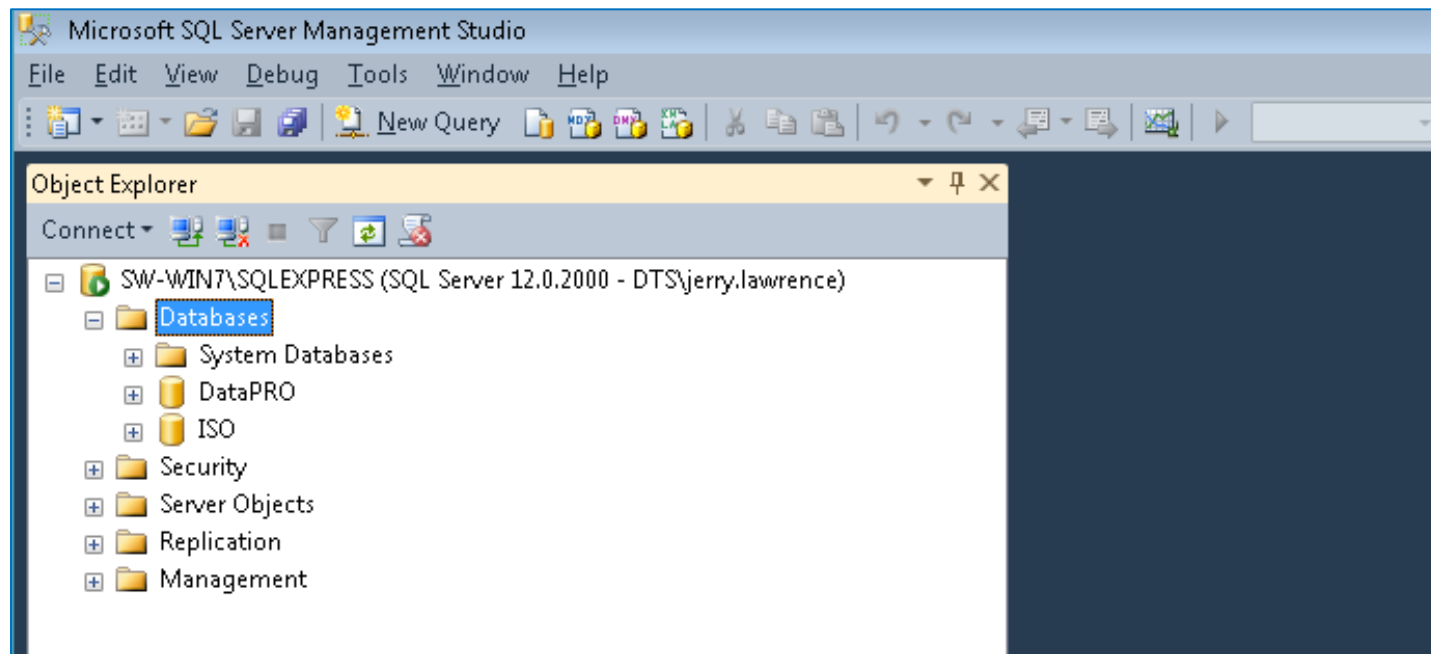
53. Select "ISO.mdf" and click "OK":



54. Click "OK":



55. Note the "DataPRO" and "ISO" databases under "Databases".



Using SQL Server for the DataPRO Database

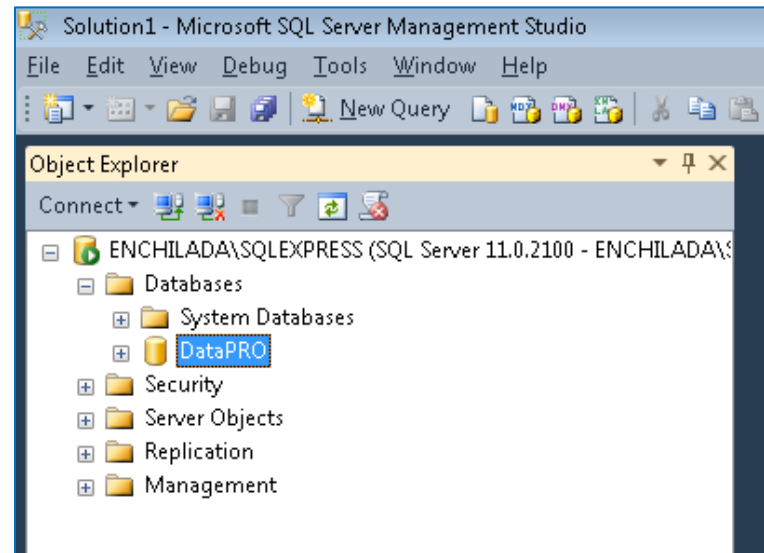
After installing DataPRO, modify the following options in the *DataPRO.exe.config* file found in the *C:\DTS\DTS.Suite\<version>* folder:

1. Set DBType to 0 (the default when installed is 1 which causes DataPRO to use a local SQLite database).
2. Set LocalDbHost to the address where SQL Server is installed (either an IP address or a hostname that resolves to that IP address). The config file initially contains “your db host here” for this option.
3. If you want to use Windows authentication when accessing the SQL Server database, thereby avoiding the need to use a clear-text password (LocalDBPassword in the *DataPRO.exe.config* file), set UseNTLMAuthentication to True. (The default is False.)

If connectivity fails when you run DataPRO, ensure that the LocalDBPassword option in the *DataPRO.exe.config* file matches the password that was used when setting up DataPROUser in SQL Server (or, if UseNTLMAuthentication is True, that SQL Server allows the user's login) and that the server's firewall has allowed access to SQL Server.

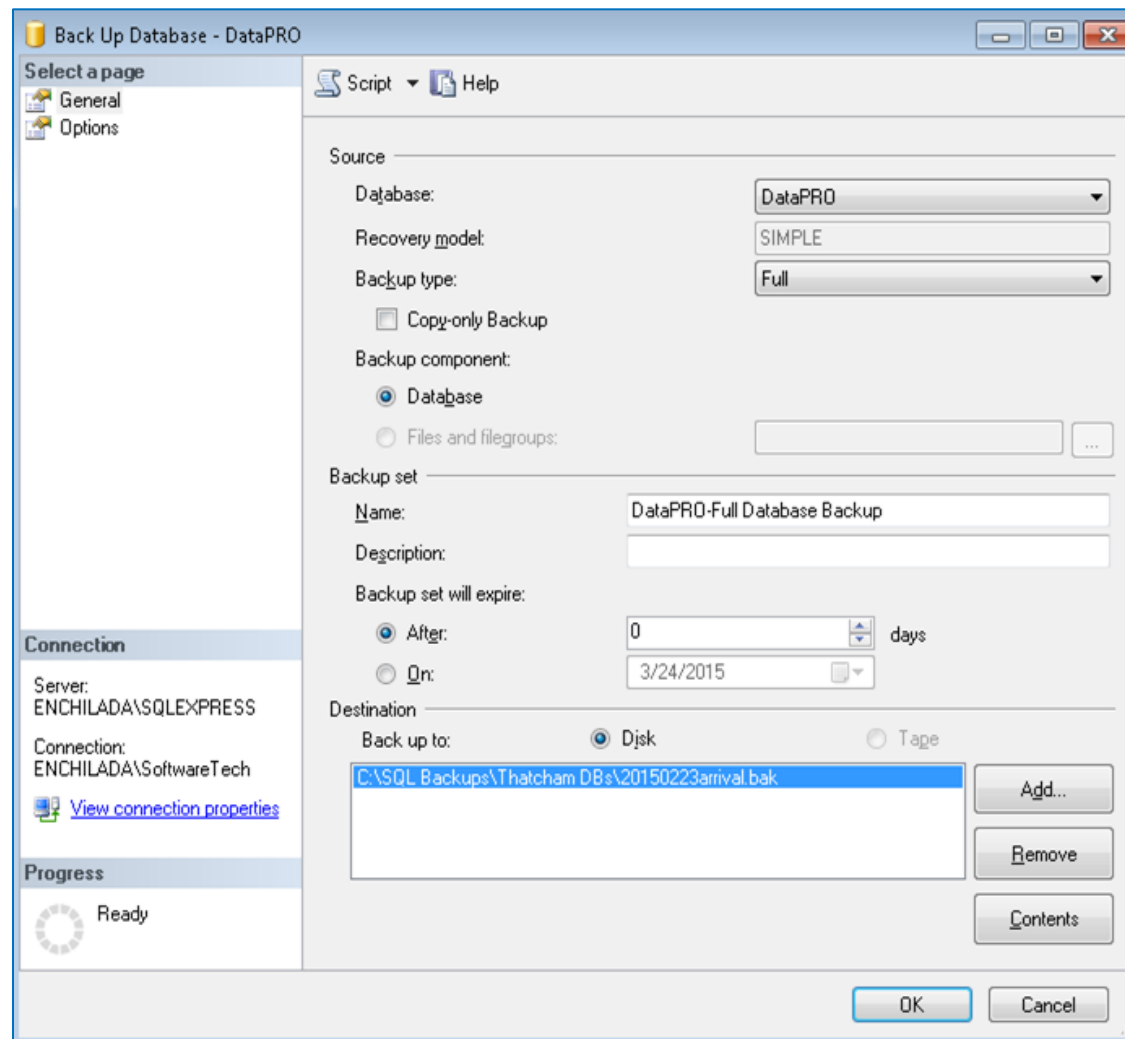
Backing Up the Centralized (SQL Server) DataPRO Database

1. In SQL Server Management Studio, right-click on “DataPRO”:

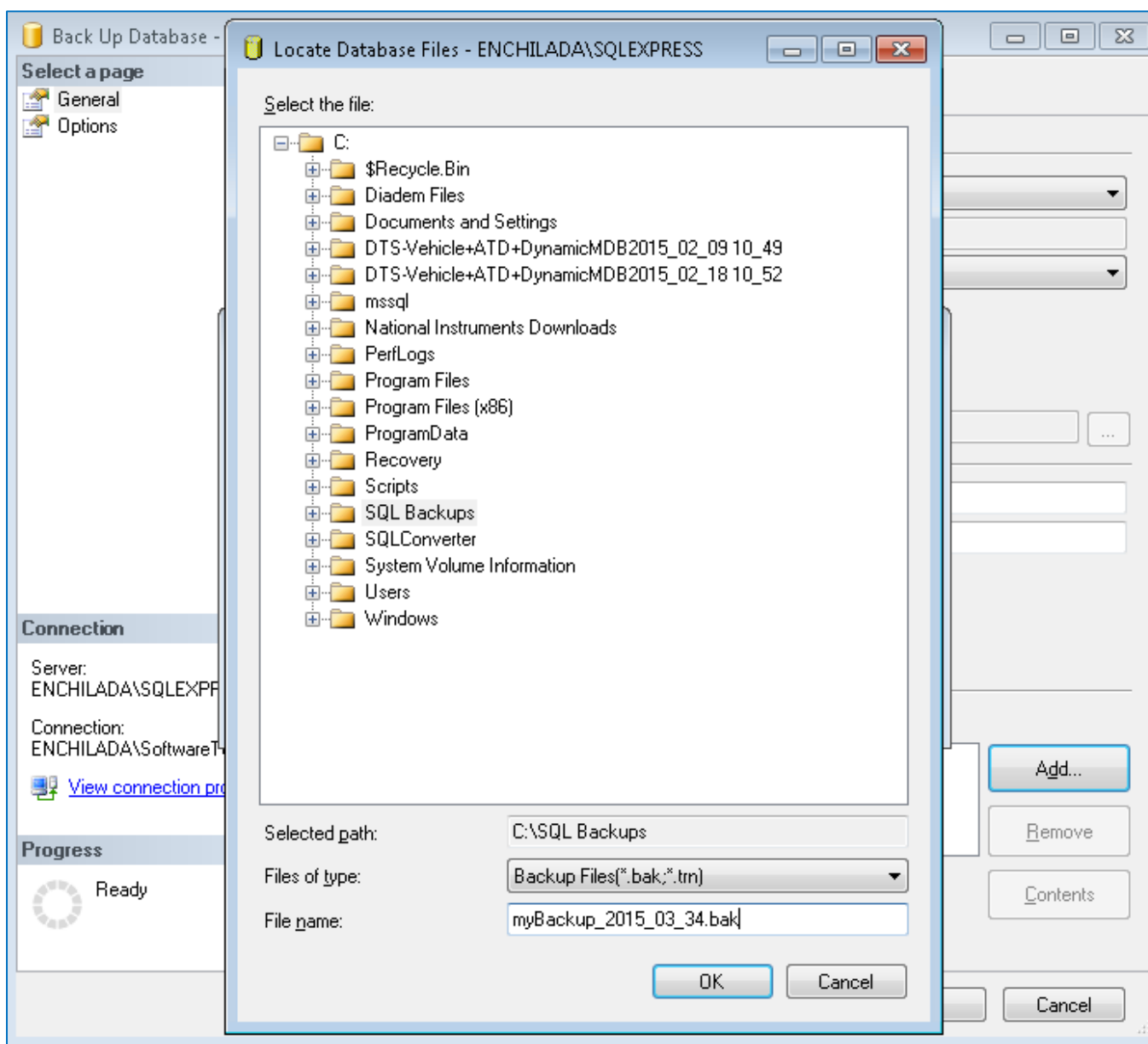


2. Select “Tasks”, “Backup...”.

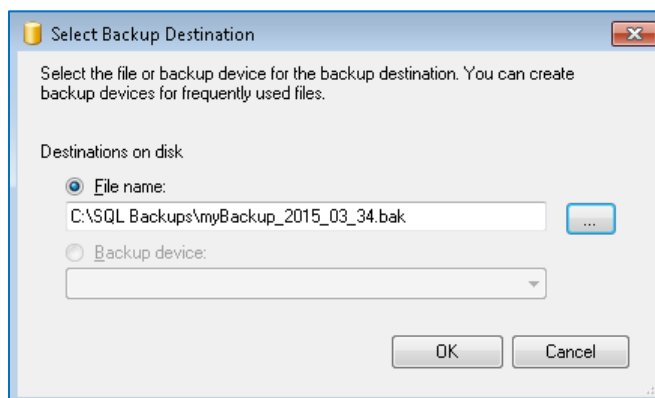
3. Select "Remove" to delete the file name in the "Destination" box:



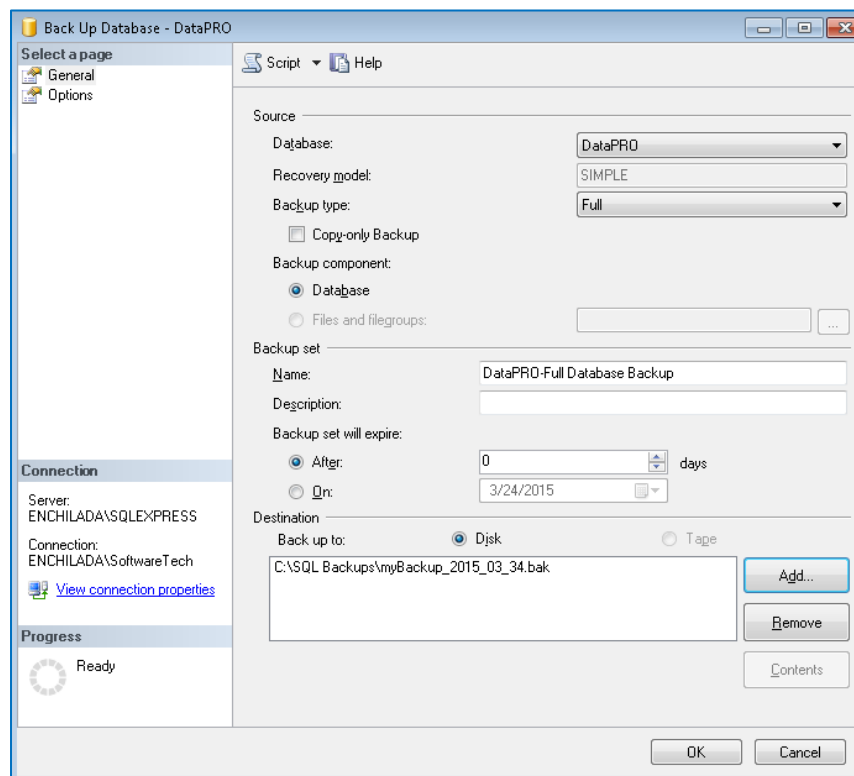
4. Select "Add...", then browse to your desired location:



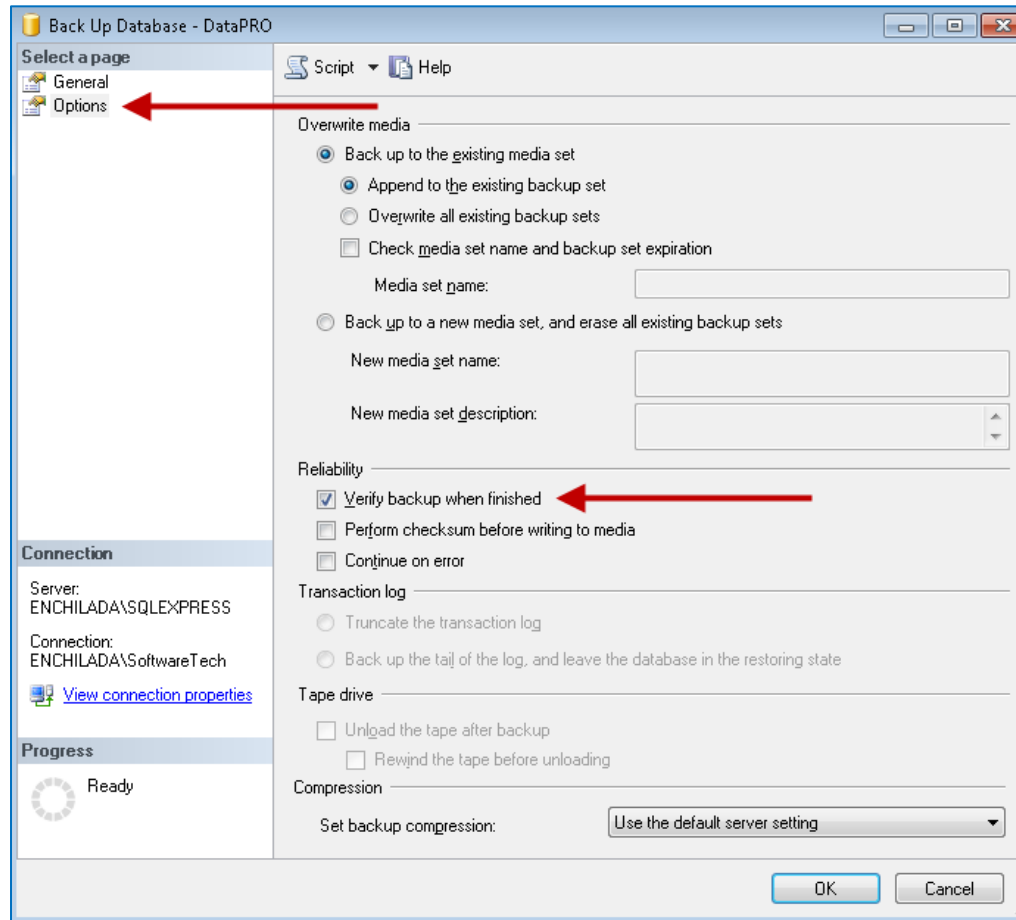
5. Enter your file name and select “OK”:



6. Select “OK” again:

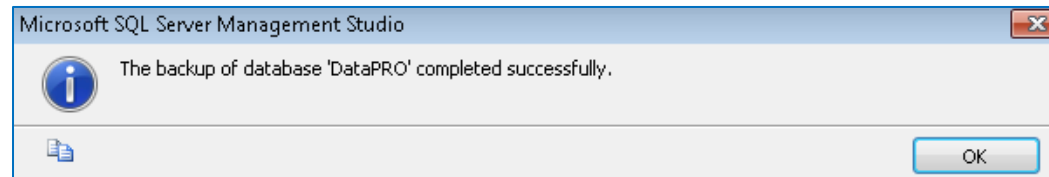


7. In the “Select a page” pane, select “Options”:



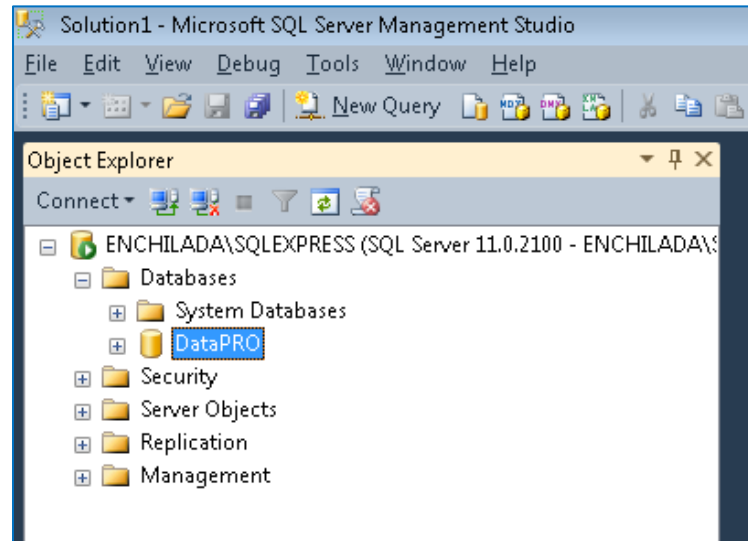
8. Check the “Verify backup when finished” box and select “OK”.

9. Select “OK”:



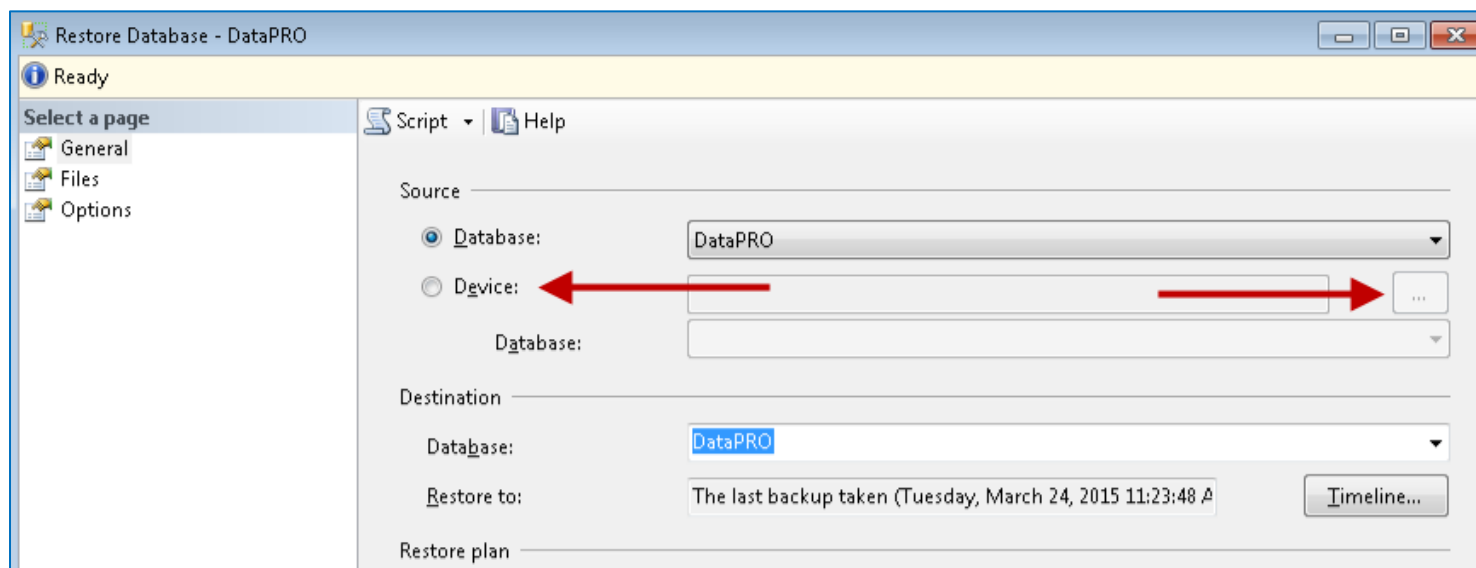
Restoring the Centralized (SQL Server) DataPRO Database

1. If you need to restore the database from a backup, in SQL Server Management Studio, right-click “DataPRO”:

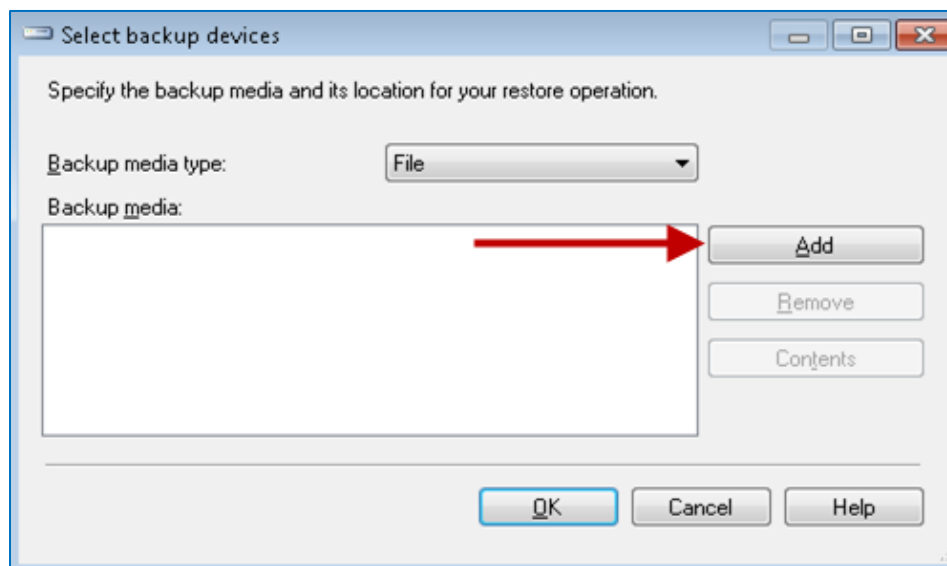


2. Select “Tasks”, “Restore”, “Database...”.

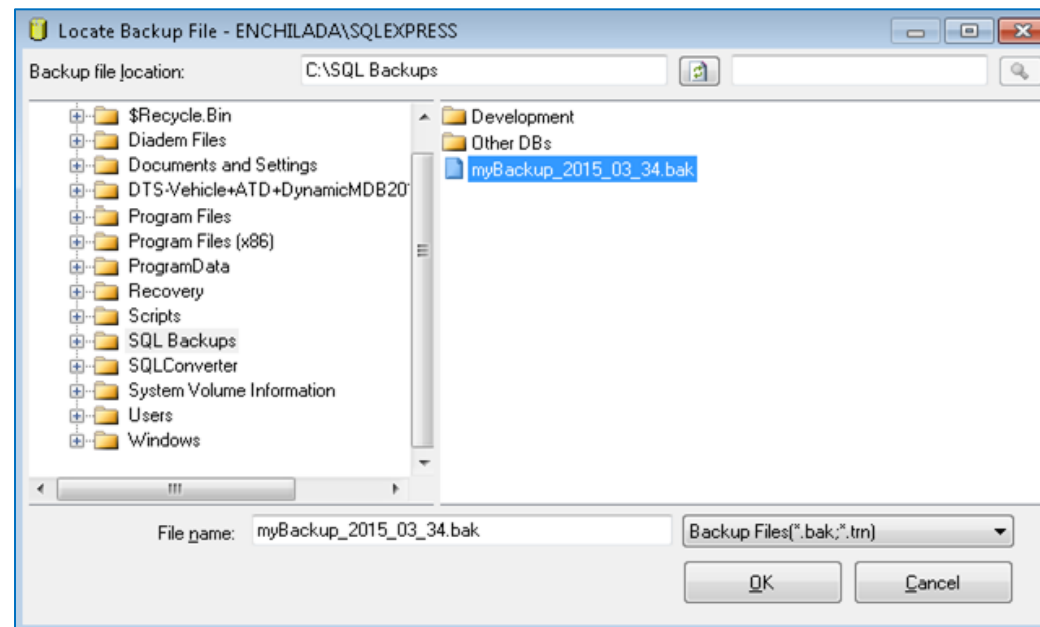
3. In the “Source” box, select “Device” and then the Browse ellipsis:



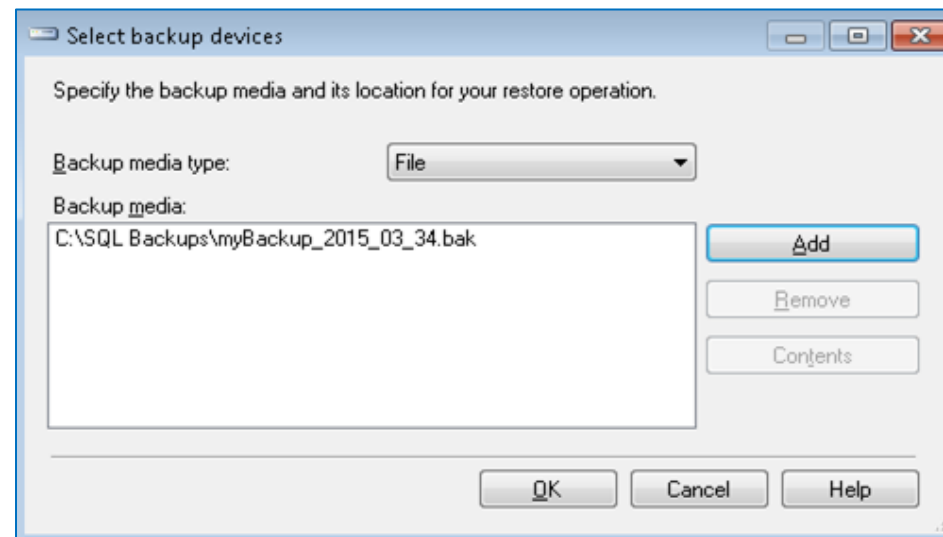
4. Select “Add” and browse to the backup file that you want to be used for the Restore:



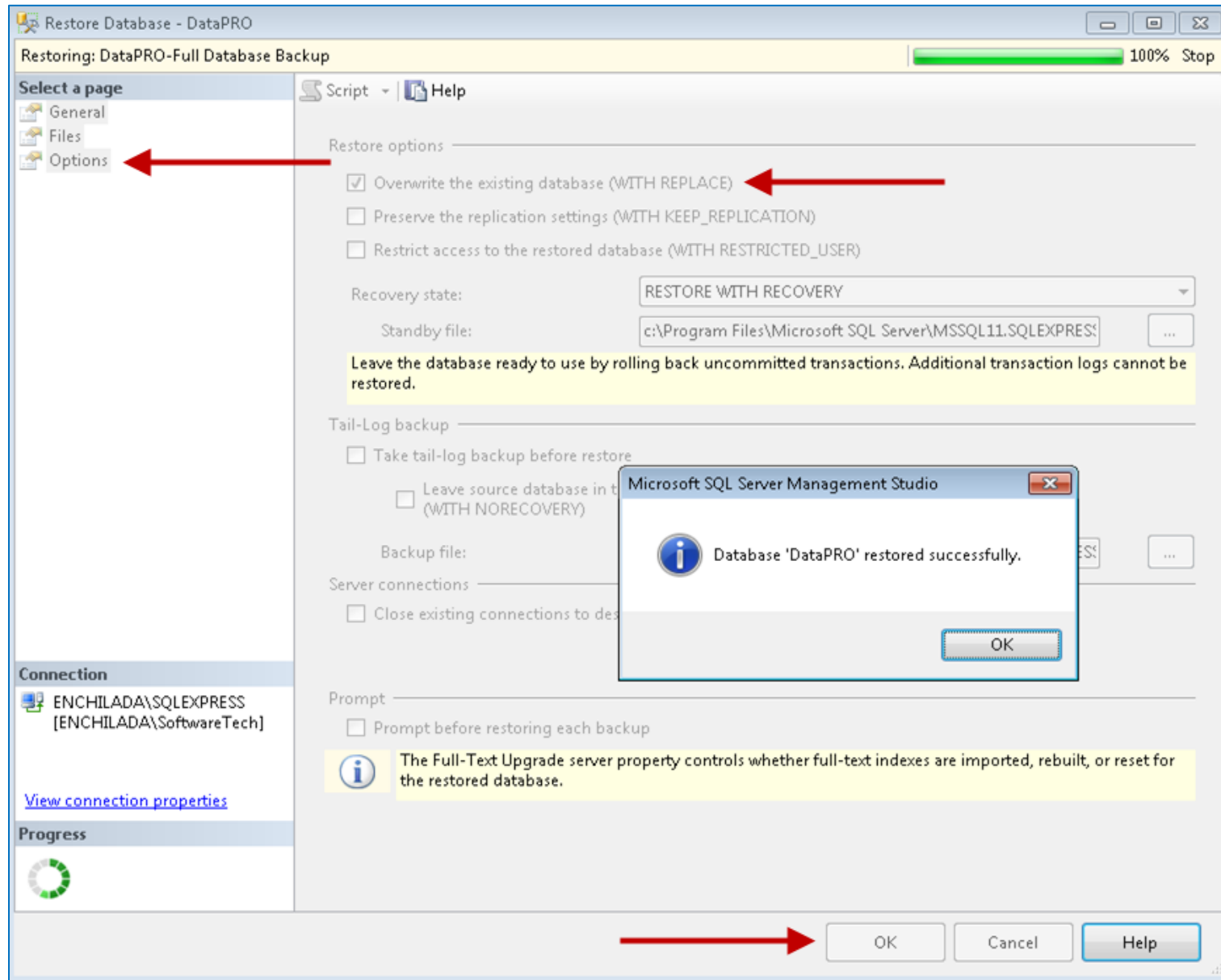
5. Select "OK":



6. Select "OK":



7. In the “Select a page” pane, select “Options” and then in the “Restore options” box, select “Overwrite the existing database (WITH REPLACE)” box. Select “OK”:



Appendix I: SLICE6 AIR Setup

Because SLICE6 AIR is capable of both Record In Place and Streaming data collection modes, there are a number of additional options for configuring SLICE6 AIR DAS. These options are outlined below, followed by instructions for setting up and running a SLICE6 AIR streaming test.

Hardware Settings

1. Each SLICE6 AIR can have a streaming IP address and port. When multiple SLICE6 AIR units are used in a test, they each need to have a unique IRIG streaming IP address and port. DataPRO will configure this during Test Setup.
 - a. The streaming profile for each individual SLICE6 AIR DAS can optionally be configured using a .csv file by placing a file named "StreamProfileOverride.CSV" in the DataPRO.exe directory (C:\DTS\DTS.Suite*<version>*\DataPRO).
 - b. The format of the .csv file is: "Serial Number, UDP Address and Port, Profile, CH10TimeDataChannelId, CH10DataChannelId, TMNSPacketID, TMNSMessageID".
 - c. No header row is required but the columns must be in that order.
2. SLICE6 AIR units must have the latest firmware installed to allow access to all features of SLICE6 AIR.

DataPRO Settings

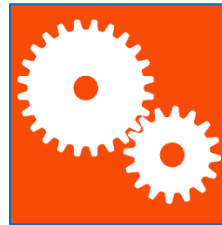
1. "Allow Streaming Modes" must be enabled.
 - a. Found in System Settings tab → Test Settings navstep.
2. "Enable input and output clock source options" should be enabled.
 - a. Found in System Settings tab → Test Settings navstep.
 - b. If enabled, a Clock sync menu will be present in Test Setup tab → Info navstep to allow choosing Clock Master/Slave Input Clock Type and Clock Slave Input Clock Type.
3. "Allow UART recording modes" will enable SLICE6 AIR units to record both analog data and UART data to flash memory.
 - a. Found in System Settings tab → Test Setup Defaults navstep → Test Info.
 - b. 4 GB of data storage will be available for analog data and 4 GB of data storage will be available for UART data.
 - c. UART data will be downloaded and stored as .bin files with analog data.
4. Select the appropriate UDP Stream Profile from the dropdown list options.
 - a. Found in System Settings tab → Test Setup Defaults navstep → Realtime options.
5. Set the appropriate UDP Stream Time Channel ID.
 - a. Found in System Settings tab → Test Setup Defaults navstep → Realtime options.
6. Set the appropriate UDP Stream Data Channel ID.
 - a. Found in System Settings tab → Test Setup Defaults navstep → Realtime options.
7. UDP Stream TmNS Config.
 - a. This should not be modified unless advised to do so by DTS.
8. IRIG Time Data Packet Interval (ms).
 - a. Found in System Settings tab → Test Setup Defaults navstep → Realtime options.
 - b. Defines the delay in milliseconds between sending time data packets.

Test Setup Configuration

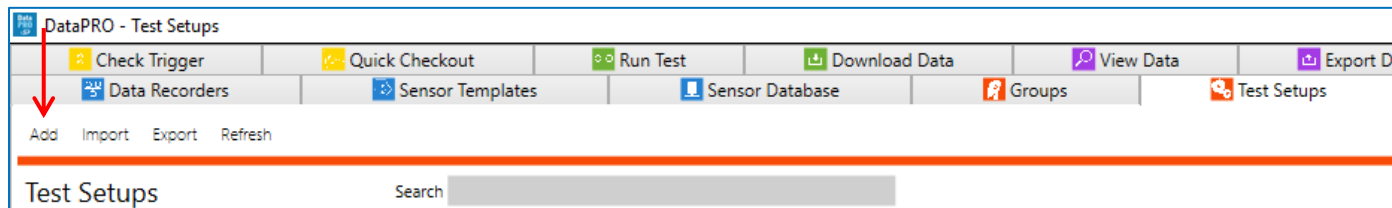
Test Setups are collections of measurement channels, hardware and recording parameters used for data collection. Test Setups can contain existing predefined “Groups” or dynamic groups (random collections of measurement locations and sensors). Each Test Setup can be used for multiple data collection events. (See [Groups](#) on page 61 for instructions on creating a group.)

SLICE6 AIR is capable of both Record In Place data acquisition as well as Streaming data applications. The below steps will outline how to configure SLICE6 AIR for streaming data applications, as well as record in place for applications that deal with both UART and analog (bridge, IEPE, thermocouple sensor) data. For information on configuring and using SLICE6 AIR units for record in place applications using only analog inputs, see [Test Setups](#), page 78, and [Run Test](#), page 137.

1. Select the “Test Setups” tab:



2. Select “Add” to create a new test setup:



3. The **Info** navstep contains the test parameters. All fields in **red** must be completed:

The screenshot shows the 'DataPRO - Add Test Setup' window. The 'Test info' section is expanded, and the 'Info' navstep is selected. The 'Test Setup name' field is highlighted in red, indicating it is a required field. Other fields include 'Description', 'Recording mode' (set to 'Circular buffer'), 'Samples per second' (set to '10,000'), 'Pre-trigger second(s)' (set to '1.0000'), 'Post-trigger second(s)' (set to '1.0000'), 'Set DAS to Streaming' (checkbox), 'Download region of interest (ROI)' (checkbox), 'ROI period start (sec)' (set to '-1.000'), 'ROI period end (sec)' (set to '1.000'), 'View ROI' (checkbox), 'Download all' (checkbox), and 'View all' (checkbox). Below these are expandable sections for 'Diagnostic options', 'Clock sync', 'Export options', 'Realtime options', 'Arm checklist', and 'Upload options'.

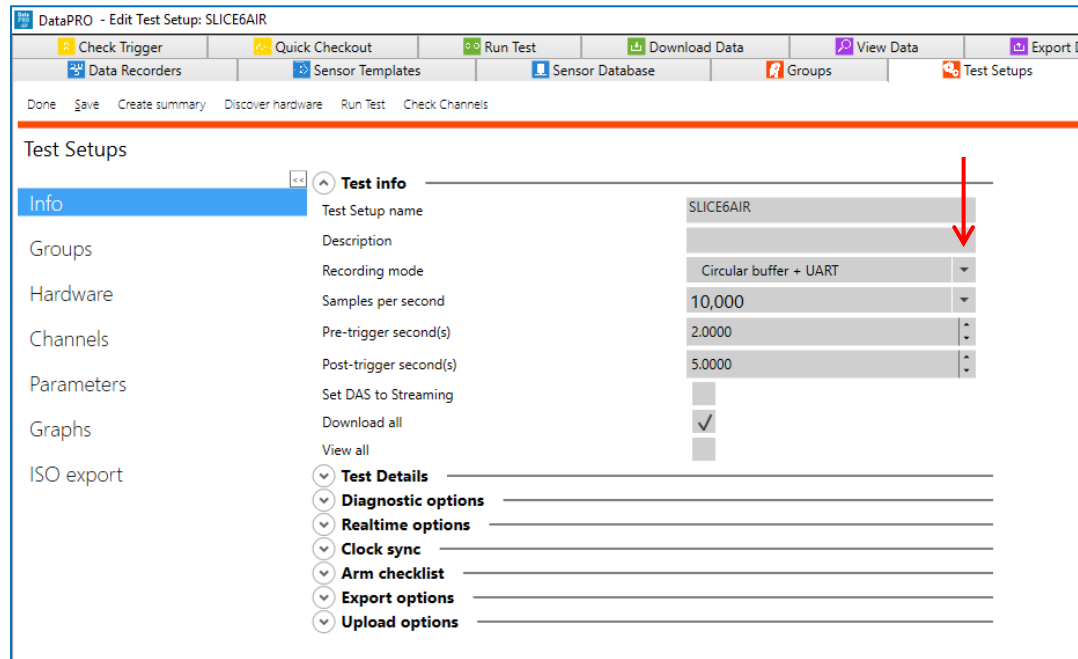
a. The default settings for test parameters can be set in the System Settings tab (see [System Settings](#), page 193).

NOTE: *Level triggers and Calculated channels are optional navsteps that must be enabled in [System Settings](#), page 193.*

b. Use the arrows to expand/collapse each section menu.

Record In Place with Analog and UART data

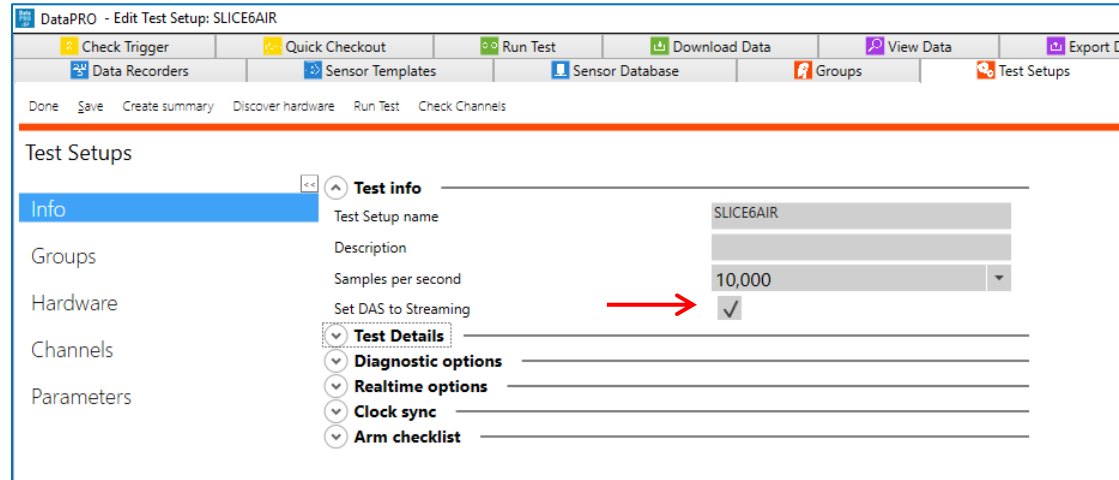
4. If recording analog and UART data, select Recording Mode from dropdown list:



- a. When recording analog and UART data:
 - i. Ensure “Allow UART recording modes” is enabled in System Settings tab → Test setup defaults navstep.
 - ii. Half the internal memory is available for analog data and half is available for UART.
 - iii. Download ROI is not available.
 - iv. UART data will be downloaded as a .bin file in the Binary folder with analog channel data.

Streaming Data with SLICE6 AIR

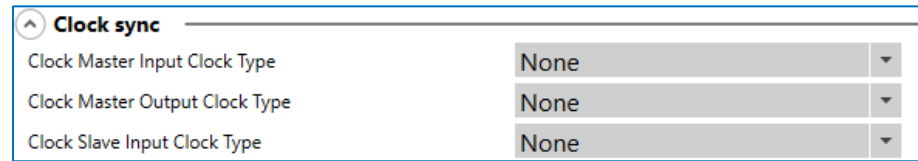
4. Enable Set DAS to Streaming if configuring for streaming data applications:



- Ensure “Allow Streaming Modes” is enabled in System Settings → Test Setup Settings.
- Download/View ROI and All and Export Data options are not available with streaming applications.

NOTE: To configure a Test Setup for streaming, all DAS included in test must be SLICE6 AIR.

5. Configure Clock Sync options:



^ Clock sync

Clock Master Input Clock Type	None	▼
Clock Master Output Clock Type	None	▼
Clock Slave Input Clock Type	None	▼

- a. Select Clock Master Input from dropdown list:
 1. None
 2. IRIG
 3. GPS
 4. 1PPS
 5. IRIG + 1PPS
 6. GPS + 1PPS

- b. Select Clock Master Output from dropdown list:
 1. None
 2. PTP: If PTP is selected, select PT Type/Mode:
 - E2E
 - P2P

- c. Select Clock Slave Input type:
 1. None
 2. PTP: If PTP is selected, select PTP Type/Mode:
 - E2E
 - P2P

6. Select Hardware navstep to define SLICE6 AIR unit to act as Clock Master:

The screenshot shows the DataPRO software interface with the 'Test Setups' table. The 'Hardware' navstep is selected in the left sidebar. A red arrow points to the 'Clock Master?' column for the SLICE 6 AIR unit with serial number S6A0047, which has a checkmark in that column.

Serial Number	Type	Channels	Firmware	Max Sample Rate	Test Sample Rate	Clock Master?	Cal Date	Cal D
BA51253	SLICE+	15 Analog	B1F4	200,000			4/29/2019	4/28/20
✓ S6A0041	SLICE 6 AIR	6 Analog	00A1	400,000	10,000			
✓ S6A0047	SLICE 6 AIR	6 Analog	G0I5	400,000	10,000	✓	10/10/2019	10/9/20
SPD00999	SLICE PRO DIM	18 Digital input	A1J4	600,000			4/7/2016	4/7/20
SPE00150	SLICE Ethernet Controller	18 Analog,4 Squib,8 Digital out	B0B3	600,000			5/15/2019	5/14/20
SPT00999	SLICE PRO TOM	4 Squib,8 Digital out	D0D7	600,000			4/7/2016	4/7/20

NOTE: See the [IEEE 1588 - 2008 Standard](#) for more information on Precision Clock Synchronization Protocol.

NOTE: Continue steps in Prepare: [Test Setups](#), page 78, to configure the Test Setup.

Running a SLICE6 AIR Streaming Test

Use the “Run Test” tab to initiate a data collection sequence based on the active Test Setup. The settings and parameters in the Test Setup and the System Settings tabs determine the navsteps and behavior of DataPRO during the data collection process (see [Test Setups](#), page 78, or [System Settings](#), page 193, for more information).

The steps and images below are for a streaming test, where data is not stored on the internal flash memory of the DAS. For information on using SLICE6 AIR DAS in a Record In Place test, see [Run Test](#), page 137.

DTS recommends using the Diagnostic tab(s) prior to collecting data, however many of the same steps will be repeated with each data collection sequence.

Navsteps are configurable for each Test Setup. Not all navsteps listed are required, therefore some steps listed below may not be applicable.

NOTE: See [Run Test](#), page 137, for more information on navsteps and options within each navstep common to Record In Place and Streaming tests.

Select the “Run Test” tab:



1. The **Basic info** navstep displays an overview of the test setup:

The screenshot shows the DataPRO v3.0.172 - Run test - [SLICE6AIR] interface. The 'Basic info' navstep is selected, displaying details for 'SLICE6AIR'. The 'Sensor details' section is expanded, showing a table of sensor configurations. The 'Groups' section shows a table with one entry for 'Test channels'.

Serial Number	Name	Manufacturer	Model	IEPE	Capacity (EU)	Sensitivity	Linear Sensitivity	Resistance (Ω)	Excitation (V)	Units
ARS-2872	ARS300-287	DTS	(None)		300.00		4.80000000 mV/EU	3004	5	deg/s

Name	Test Object	Position
Test channels	1	1

2. Continue to the **Hardware** navstep. DataPRO will attempt to communicate with the hardware associated with the active Test Setup.
 - a. If needed, select “Run” to re-run the Hardware navstep and reattempt hardware connection.
3. Proceed to **Check sensor ID** navstep to confirm sensors in test setup are properly configured with a hardware channel. Sensors without EID that have not yet been configured with hardware channels will need to be manually assigned before proceeding.
 - a. Channels that are included in the Test Setup but not yet assigned to hardware channels will be listed in the Unresolved Channels table.
 - i. Select from Unresolved Channels table and drag to Hardware Channels table to make assignments.
 - ii. Each Test Setup can be configured to allow progressing with missing sensors (unresolved channels). (See [System Settings](#), page 193, for more information.)
 - b. Sensor IDs that were detected but are not included in the Test Setup will be displayed in the Extra Sensor IDs table. If the sensor ID(s) are associated with sensors in the Sensor Database, the serial number(s) will be displayed.

- c. The key defines what different shading in the Hardware Channels table indicates (see [Check Channels](#), page 119, for more information).
 4. Continue to **Diagnostics** navstep. DataPRO will automatically configure the DAS.
 - a. Select “Run” to perform a diagnostic checkout on all DAS/Channels included in Test Setup.
 - b. Select “Run” (DAS) to perform a diagnostic checkout on only the selected DAS.
 - c. Select “Run” (Channel) to perform a diagnostic checkout on only the selected Channel.
 - d. Select Low Power to turn off excitation voltage. Diagnostics will have to be performed again to resume data collection sequence.
 5. A pre-test diagnostics report will be automatically generated and saved with the test data folder (see [Appendix E: DataPRO File Structure](#), page 254, for more information).
 - a. Select View report to display this report.
 6. The (optional) **Realtime** navstep allows for Realtime verification of each channel.
 - a. The controls of Realtime in a data collection sequence are the same as the controls for the Check Channels diagnostic tab (see [Check Channels](#), page 119, for more information).
- NOTE: Realtime AAF ratio is 1:1 by default. This setting can be changed in the DataPRO.exe.config file. See DataPRO Settings Manual for more information about the config file.*
7. Continue to the **Arm Checklist** navstep (if enabled).
 - a. If enabled, the Arm Checklist will run system tests as defined in the Test Setup.

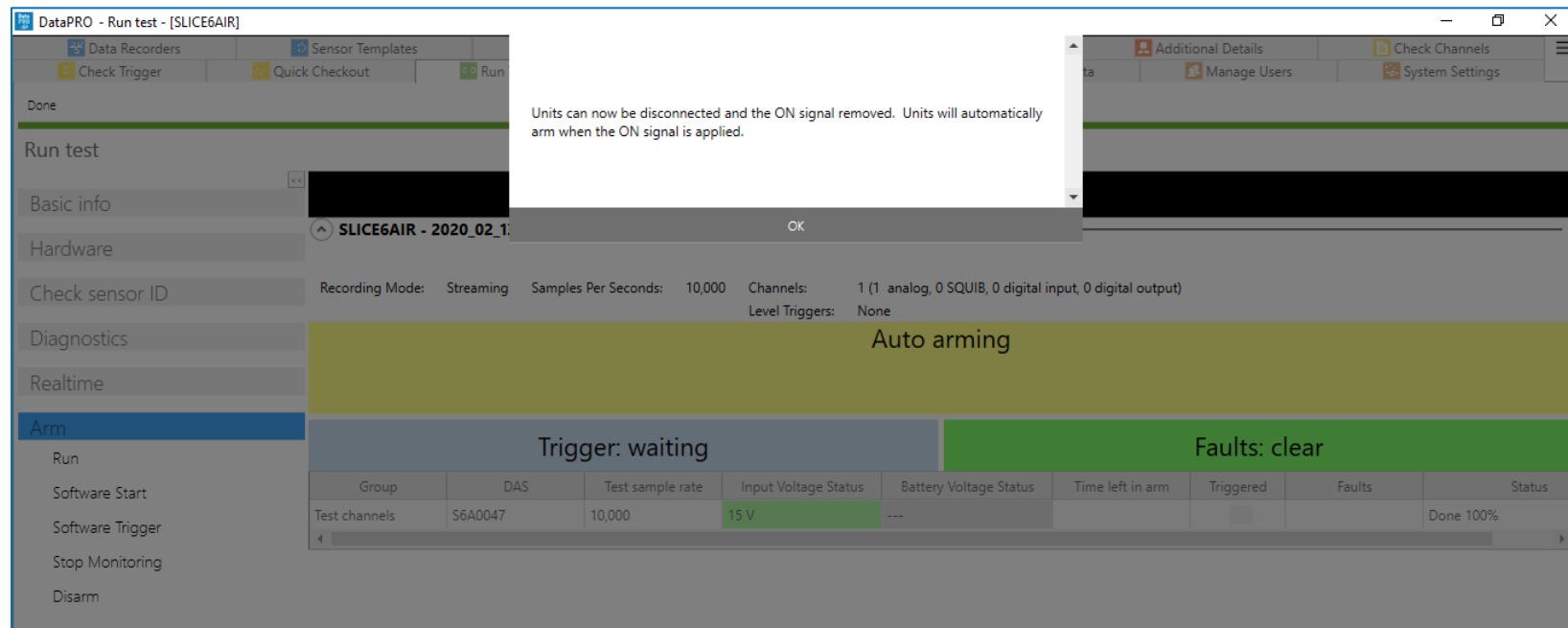
8. Continue to the **Arm** navstep:

Group	DAS	Test sample rate	Input Voltage Status	Battery Voltage Status	Time left in arm	Triggered	Faults	Status
Test channels	S6A0047	10,000	14.9 V	---		<input type="checkbox"/>		

- a. Confirm Test Setup, Test ID, recording mode and parameters, channel count, group(s) and associated DAS.
- b. Verify Input Voltage.
- c. System status displays:
 - i. “Waiting for user selection”: Select “Run” to arm the system.
 - ii. “Trigger: waiting” indicates that a trigger has not been received.
 - iii. “Faults: clear” indicates that no faults have been detected.

NOTE: If enabled, additional *Arm Prepare* navstep will be present. See [Appendix D: Quick Arm](#) for more information.

9. Select “Run” to arm the system:



- DataPRO will configure the SLICE6 AIR for streaming data collection.
- Status LED will flash blue to indicate DAS is being configured for streaming.

10. Select Done to complete the process.

11. Power cycle or remove and reapply the ON signal.

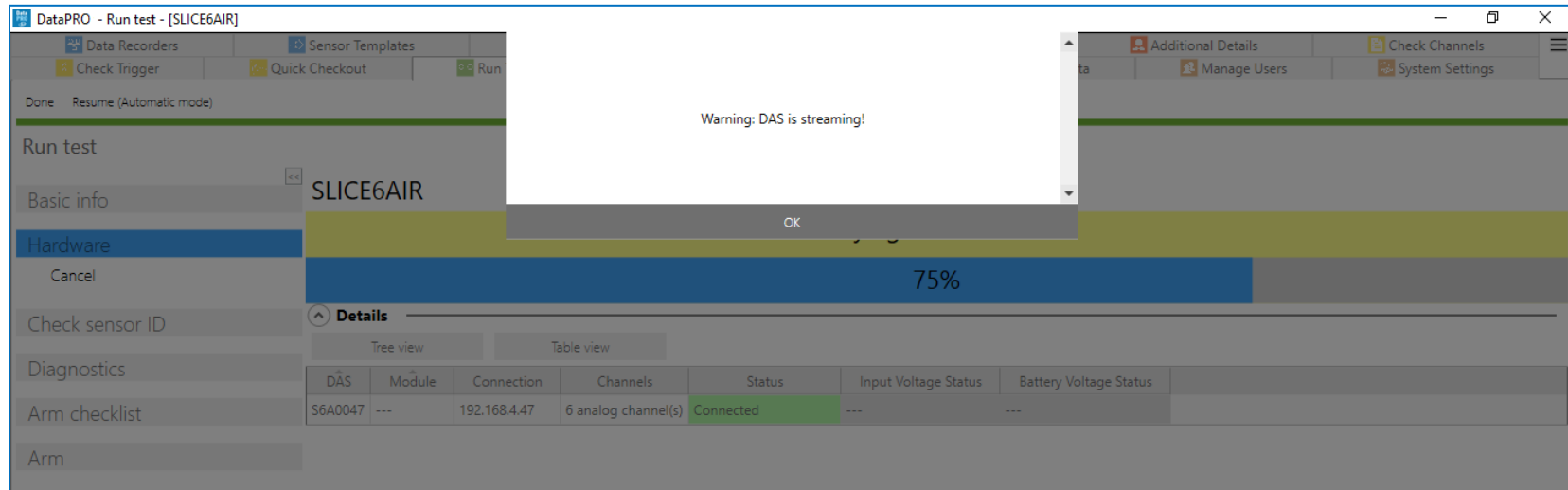
- Once the device is actively streaming, both LEDs should be solid green.

NOTE: Streaming data can now be viewed with a third-party viewer. See that manufacturer's documentation for configuring the display.

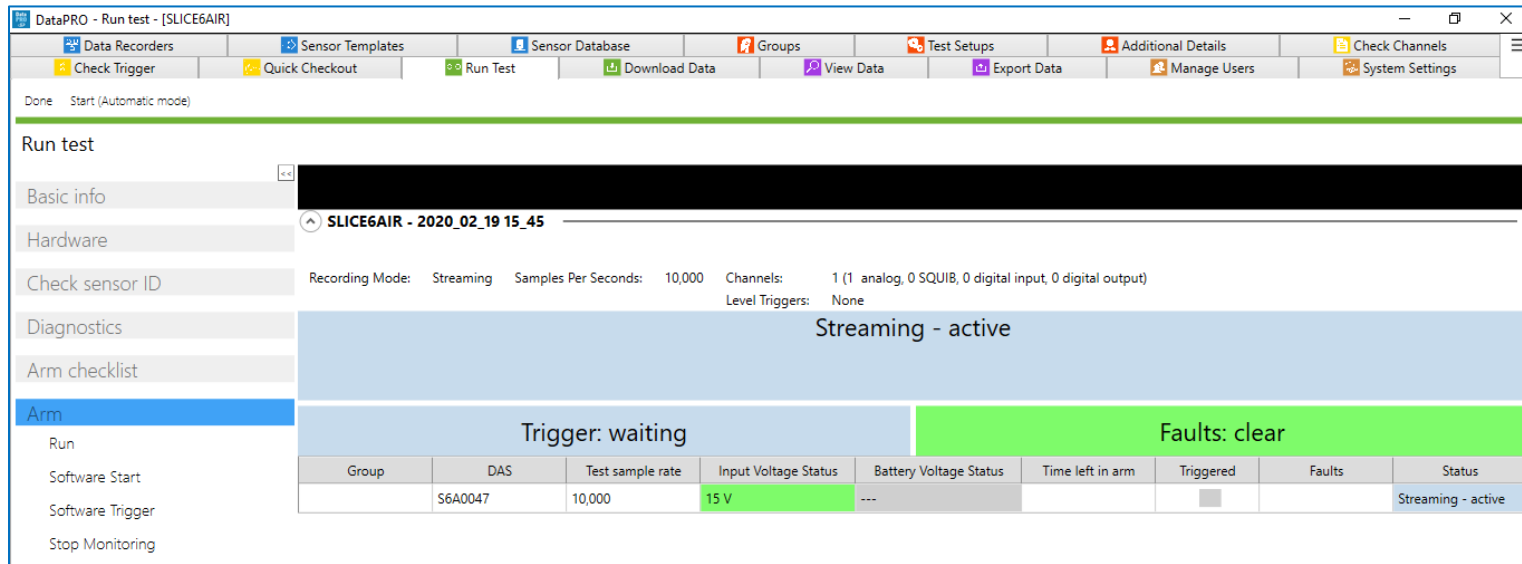
12. The SLICE6 AIR will continue to stream data until power is cycled or it is disarmed.

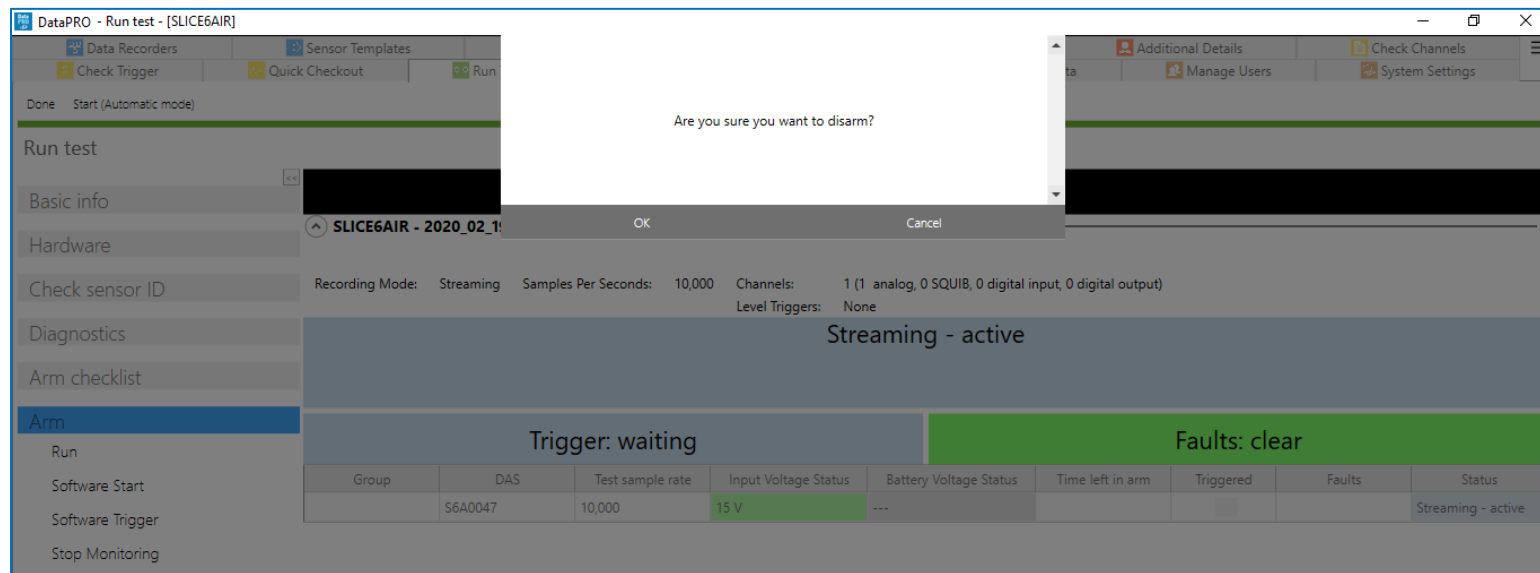
NOTE: If the DAS is configured to “Enable repeat when auto-arm/streaming”, it will continue to boot into streaming mode and must be disarmed by selecting Stop Streaming from within the Arm navstep.

- a. On reconnecting the DAS, start a new Run Test instance with the appropriate active Test Setup.
- b. DataPRO will detect the SLICE6 AIR is streaming in the Hardware navstep:



- c. The Arm navstep will be the only available navstep.
 - i. Select Stop Streaming and OK when prompted:





- d. DAS will no longer be streaming data and can be reconfigured for another test.

Appendix J: TSR AIR Setup

Test Setup Configuration

TSR AIR devices have embedded sensors and therefore operate somewhat differently than other devices in DataPRO. Adding the TSR AIR into a test automatically adds all of the embedded sensors in that TSR AIR unit as channels in the test.

TSR AIR devices can be detected in Edit/Add Test Setup in Discover Hardware:

Recorder discovery

Done

AutoDiscovery

Included DAS

Show modules

DAS channels

Analog: found 19 of 19

Scan/Query	Serial Number	Module	Connection	Channels	Status	Input Voltage Status	Battery Voltage Status	Action
<input type="checkbox"/>	TA0032	---	192.168.6.32	No channels found	---	---	---	
<input checked="" type="checkbox"/>	TA0173	---	192.168.6.173	Embedded Sensors, 1 stream output channel(s)	Connected	14.7 V	4 V (Charging)	Add

Available DAS

Include Connected TDAS SLICE ALL

Scan/Query	Serial Number	Module	Connection	Channels	Status	Input Voltage Status	Battery Voltage Status	Action
------------	---------------	--------	------------	----------	--------	----------------------	------------------------	--------

Sensors

Channel	Sensor SN (sensor name)	Location
---------	-------------------------	----------

The Channels navstep shows all of the channels that were added for the embedded sensors:

The screenshot displays the 'Test Setups' interface. On the left, a sidebar lists navigation options: Info, Hardware, Channels (selected), Parameters, and Level triggers. The main content area is split into two primary sections: 'Channel List' and 'Sensors Available'.

Channel List: This section shows 12 channels assigned to the test. It includes a search bar and a 'Show bottom row' button. Below the search is a table with columns for Channel name, Type, Sensor (SN), Hardware, and control buttons (TOP, BOT). The channels listed are:

Channel name	Type	Sensor (SN)	Hardware	TOP	BOT
TA0173-Low g Linear 1	Bridge	TA0173-Low g Linear 1	TA0173-Low g CH-01	001	
TA0173-Low g Linear 2	Bridge	TA0173-Low g Linear 2	TA0173-Low g CH-02	002	
TA0173-Low g Linear 3	Bridge	TA0173-Low g Linear 3	TA0173-Low g CH-03	003	
TA0173-High g Linear 1	Bridge	TA0173-High g Linear 1	TA0173-High g CH-01	004	
TA0173-High g Linear 2	Bridge	TA0173-High g Linear 2	TA0173-High g CH-02	005	
TA0173-High g Linear 3	Bridge	TA0173-High g Linear 3	TA0173-High g CH-03	006	
TA0173-Angular Rate 1	Bridge	TA0173-Angular Rate 1	TA0173-ARS CH-01	007	
TA0173-Angular Rate 2	Bridge	TA0173-Angular Rate 2	TA0173-ARS CH-02	008	
TA0173-Angular Rate 3	Bridge	TA0173-Angular Rate 3	TA0173-ARS CH-03	009	
TA0173-Temperature	Bridge	TA0173-Temperature	TA0173-Atm CH-01	010	
TA0173-Humidity	Bridge	TA0173-Humidity	TA0173-Atm CH-02	011	
TA0173-Pressure	Bridge	TA0173-Pressure	TA0173-Atm CH-03	012	

Sensors Available: This section shows a list of sensors with columns for Serial Number, Name, IEPE, Capacity (EU), Units, First use date, and Cal Due Date.

Serial Number	Name	IEPE	Capacity (EU)	Units	First use date	Cal Due Date
2KG005	DTS Scale LC		2,000.00	Grams	---	6/3/2023
8769-1A-190	S2 Kulite 100 PSI		100.00	PSI	---	6/3/2023
9743	3055B1T	✓	500.00	g	---	6/3/2023
A641001	A64C Accel		500.00	g	---	6/3/2023

Hardware: This section shows a table of hardware components with columns for DAS, CH #, Type, Channel, Sensor, and a 'Clear' button.

DAS	CH #	Type	Channel	Sensor	Clear
TA0173	TA0173-Low g CH-01	Bridge	TA0173-Low g Linear 1	TA0173-Low g Linear 1	Clear
TA0173	TA0173-Low g CH-02	Bridge	TA0173-Low g Linear 2	TA0173-Low g Linear 2	Clear
TA0173	TA0173-Low g CH-03	Bridge	TA0173-Low g Linear 3	TA0173-Low g Linear 3	Clear
TA0173	TA0173-High g CH-01	Bridge	TA0173-High g Linear 1	TA0173-High g Linear 1	Clear
TA0173	TA0173-High g CH-02	Bridge	TA0173-High g Linear 2	TA0173-High g Linear 2	Clear
TA0173	TA0173-High g CH-03	Bridge	TA0173-High g Linear 3	TA0173-High g Linear 3	Clear
TA0173	TA0173-ARS CH-01	Bridge	TA0173-Angular Rate 1	TA0173-Angular Rate 1	Clear
TA0173	TA0173-ARS CH-02	Bridge	TA0173-Angular Rate 2	TA0173-Angular Rate 2	Clear

At the bottom of the 'Channel List' section, there is a note: "Drag and drop sensors or hardware here to create new channels. Drag a squib or digital output hardware channel to create a squib or digital output setting. Highlighted cells will use ID for assignment."

You may remove or delete channels as desired. If a channel has been removed, you can add it again by dragging the hardware channel back into the test in the area below the current channel list.

This release of DataPRO does not support changing the range of TSR AIR channels or enabling/disabling AC coupling. Contact DTS Support if you require a version which has these features.

The screenshot shows the 'Test Setups' window in DataPRO. The 'Parameters' tab is selected, displaying a table of 12 channels. The table columns include Order, Channel name, Sensor (SN), Range (CAC), Capacity, Sensitivity, Units, Channel filter class, Polarity, Zero Method, Start (sec), End (sec), and Initial offset. The channels are listed as follows:

Order	Channel name	Sensor (SN)	Range (CAC)	Capacity	Sensitivity	Units	Channel filter class	Polarity	Zero Method	Start (sec)	End (sec)	Initial offset
001	TA0173-Low g Linear 1	TA0173-Low g Linear 1	---	---	---	---	1650 (CFC1000)	+	Avg over time	-0.05000	-0.02000	---
002	TA0173-Low g Linear 2	TA0173-Low g Linear 2	---	---	---	---	1650 (CFC1000)	+	Avg over time	-0.05000	-0.02000	---
003	TA0173-Low g Linear 3	TA0173-Low g Linear 3	---	---	---	---	1650 (CFC1000)	+	Avg over time	-0.05000	-0.02000	---
004	TA0173-High g Linear 1	TA0173-High g Linear 1	---	---	---	---	1650 (CFC1000)	+	Avg over time	-0.05000	-0.02000	---
005	TA0173-High g Linear 2	TA0173-High g Linear 2	---	---	---	---	1650 (CFC1000)	+	Avg over time	-0.05000	-0.02000	---
006	TA0173-High g Linear 3	TA0173-High g Linear 3	---	---	---	---	1650 (CFC1000)	+	Avg over time	-0.05000	-0.02000	---
007	TA0173-Angular Rate 1	TA0173-Angular Rate 1	---	---	---	---	1650 (CFC1000)	+	Avg over time	-0.05000	-0.02000	---
008	TA0173-Angular Rate 2	TA0173-Angular Rate 2	---	---	---	---	1650 (CFC1000)	+	Avg over time	-0.05000	-0.02000	---
009	TA0173-Angular Rate 3	TA0173-Angular Rate 3	---	---	---	---	1650 (CFC1000)	+	Avg over time	-0.05000	-0.02000	---
010	TA0173-Temperature	TA0173-Temperature	---	---	---	---	1650 (CFC1000)	+	Avg over time	-0.05000	-0.02000	---
011	TA0173-Humidity	TA0173-Humidity	---	---	---	---	1650 (CFC1000)	+	Avg over time	-0.05000	-0.02000	---
012	TA0173-Pressure	TA0173-Pressure	---	---	---	---	1650 (CFC1000)	+	Avg over time	-0.05000	-0.02000	---

Things to note:

- **Level Triggers** can only be defined on the high g linear acceleration channels on the TSR AIR. Level triggers are always available in a TSR AIR test even when the level trigger UI is not enabled in **System Settings** → **Test Settings**.
- TSR AIR devices only support Active and Scheduled recording modes and DataPRO will not arm them in the same test with non-TSR AIR devices.
 - **Scheduled Mode** allows the device to have a set schedule when to wake and record.
 - **Active Mode** can record as soon as it is armed, and will also arm on boot if power or the on signal are removed and then later reapplied.
- TSR AIR devices have limited diagnostic abilities and always have Realtime enabled as part of the TSR AIR diagnostics.

Document Revision History

Rev	Date	Changed By	Description
0	10 Dec 2015	EK/TR	Initial release.
1	6 Sept 2016	DQ/EK	Updated the Binary File (Appendix C) description for CRC32. Completed missing sections and updated entire document for v1.1.
2	2 Oct 2017	JC	Updates for v1.4.
3	6 June 2018	JC	Updates for v1.9.
4	3 April 2019 28 May 2019	JC EK	Updates for v2.0.
5	7 April 2020	JC/MR	Updates for v3.0.
6	6 Nov 2021	PV	Updates for v3.1.
7	Jan 2023	---	Updates for v3.3.
8	13 July 2023	A. Durham/ E. Kippen	Updates for v4.0.