SLICE Pedestrian Headform User's Manual

August 2023

13000-40540-MAN (Rev. 1)

Table of Contents

DTS Support

SLICE data acquisition systems are designed to be reliable and simple to operate. Should you need assistance, DTS has support engineers worldwide with extensive product knowledge and test experience ready to help via telephone, e-mail, or on-site visits.

The best way to contact a DTS support engineer is to submit a request through the DTS Help Center web portal (support.dtsweb.com). You must be registered (support.dtsweb.com/registration) to submit a request (https://support.dtsweb.com/hc/en-us/requests/new). Registration also enables access to additional self-help resources and non-public support information.

This manual supports the following products:

13000-40540: Pedestrian Headform DAS kit for DTS ACC3 PRO
13000-40600: Pedestrian Headform DAS Kit for 7264 Accels
13000-40610: Pedestrian Headform DAS Kit for Kyowa Accels
13000-40620: Pedestrian Headform 3.5 kg Skin & Skull Kit
13000-40630: Pedestrian Headform 4.5 kg Skin & Skull Kit
13000-40640: Pedestrian Headform 3.5 kg Backplate Kit
13000-40650: Pedestrian Headform 4.5 kg Backplate Kit

Introducing the SLICE Pedestrian Headform System

The SLICE Pedestrian Headform system is a miniature data acquisition system (DAS) designed for integration into a Pedestrian Headform. It includes a battery sufficient to run the system for up to 20 minutes and supports autonomous operation after arming. After the test, reconnecting the system to a PC and the provided power supply allows data download, viewing and post-processing, and recharges the battery for the next use.

Overview of SLICE Pedestrian Headform System

A typical 3-channel system is discussed below. Your system may vary if you have additional channels or custom features.

Detailed information about the SLICE DAS Kit can be found in *Appendix C: SLICE Pedestrian Headform DAS Kit Contents*.

Detailed assembly procedures can be found in *Appendix D: SLICE Pedestrian Headform Assembly Procedure*.

The Pedestrian Headform is integrated with DTS's SLICE NANO Base+, SLICE NANO Bridge, and SLICE NANO Pedestrian Headform Battery. Detailed specifications for the SLICE Base+ and Bridge can be found on page 19 (*Appendix A: SLICE Hardware Specifications*) or at support.dtsweb.com. Details on charging the SLICE NANO Pedestrian Headform Battery can be found on page 8 (*Power/Charging Requirements*). For information on operation of the SLICE system, please see the SLICE User's Manual.

13000-40630/13000-40620: Pedestrian Headform 4.5/3.5 kg Skin & Skull Kit
This component is available in two options, 4.5 kg (adult) or 3.5 kg (child) and is standard on all Pedestrian Headforms.

Figure 1: 4.5 kg/3.5 kg Skin & Skull Kit (13000-40630/13000-40620)

13000-40650/13000-40640: Pedestrian Headform 4.5/3.5 kg Backplate Kit

This kit is available in two options, 4.5 kg (adult) or 3.5 kg (child) and is used to integrate the SLICE Data Acquisition and sensors into the Pedestrian Headform. Several parts are similar among the two kits, but the backplate itself and the M8 fasteners are different.

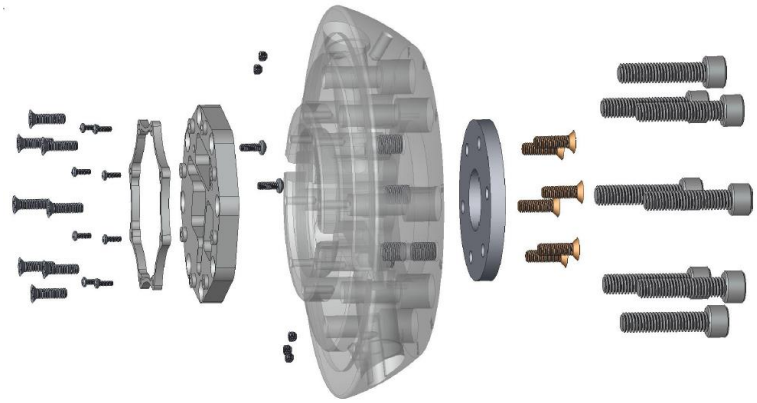


Figure 2: 4.5 kg/3.5 kg Backplate Kit (13000-40650/13000-40640)

13000-40540/13000-40600/13000-40610: Pedestrian Headform DAS Kit

This kit is available in three options depending on the accelerometer. The SLICE NANO Bridge and the accelerometer mounting blocks change depending on the sensor types. Details of this kit can be found in *Appendix C: SLICE Pedestrian Headform DAS Kit Contents*.

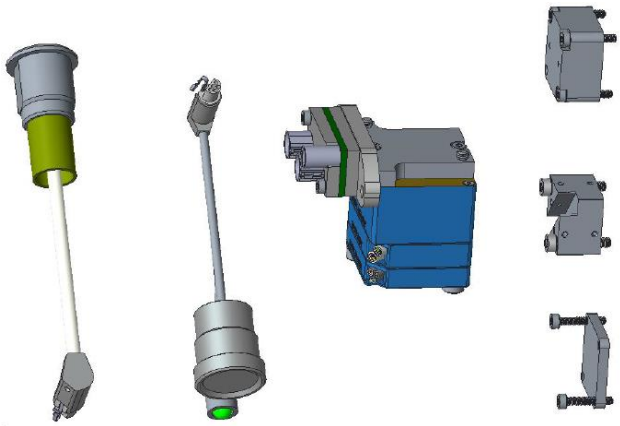


Figure 3: Pedestrian Headform DAS Kit (13000-40540/13000-40600/13000-40610)

13000-30980: Cable, SLICE UI/EI/SMDB to Pedestrian Headform (4 m)
This cable connects to the USB port on your PC and the power supply provided with your system to the Pedestrian Headform via the backplate.

Figure 4: Cable (13000-30980) and Headform Interface

10400-00060: 15 V, 4 A power supply (90-240 VAC input)
A 15 V, 4 A power supply is provided with your system. It will simultaneously charge the battery and power the SLICE Pedestrian Headform system until it is disconnected prior to the test. Battery capacity and charging requirements can be found on page 8 (*Power/Charging Requirements*).

Figure 5: Power Supply (10400-00060)

13000-30461: SLICE USB Interface

The SLICE USB Interface connects the Pedestrian Headform SLICE system to a PC via USB. It also powers the SLICE system and charges the on-board battery.

Figure 6: SLICE USB Interface (13000-30461)

Communications

A USB-to-PC communication and power cable (DTS P/N 13000-30980) is provided with your system. All communication signals and power/battery charging are supported via the LEMO interface. Information on installing the software, initializing the system, downloading, and viewing the data begins on page 11 (*Power/Charging Requirements*).

Power/Charging Requirements

The SLICE NANO Pedestrian Headform Battery contains an integrated, 8.4 V, 80 mAh, rechargeable lithium battery sufficient to operate the system for cable-free testing. When the 15 V, 4 A power supply is connected to your system, it will simultaneously charge the battery and power the SLICE Pedestrian Headform system until it is disconnected prior to the test.

Battery life (fully charged)	Up to 20 minutes (full sensor load)
Charge time	~1 hour from complete discharge to full charge; always charges when connected to power supply

Charging the system using a maximum of 15 V and without the USB connected minimizes system self-heating. Additional details can be found in *Appendix E: Minimizing System Self-Heating*.

Status LED

This LED is green and provides information on arming and recording status. It is on, off or blinking.

Blinking	After unit is turned on, LED will blink during sensor warm-up and system arming.
ON	If armed in Circular Buffer mode, the LED will begin recording after sensor warm-up and the LED will go solid green. The LED will also go solid green in Recorder mode if the system received a START signal.
OFF	If armed in Recorder Mode, the system will stop blinking and go OFF, waiting for a START signal to begin recording.

Circular Buffer Mode	**Recorder Mode**
(Rate increases) Arming; sensor warm-up (~30 sec)	
(LED is ON) System is recording 	(LED is OFF) Waiting for START signal 
(Rate steady) If the LED continues to blink after 45 sec, the system did not initialize properly. See page 14 (*Troubleshooting*).	

To arm the system, press and hold the push button switch for ≥3 sec. After 7 sec, the LED will begin to blink, indicating the system is performing the auto-arm initialization sequence. After 32 sec, the LED will be either on (Circular Buffer mode) or off (Recorder mode). *Note: The SLICE Pedestrian Headform system's auto-arm feature must be software-enabled prior to pushbutton initialization*. Only Circular Buffer mode is recommended for use with the Pedestrian Headform. Details on software installation and use begin on page 11 (*SLICEWare Software*).

Basic Care and Handling

The SLICE Pedestrian Headform is a high precision measurement system designed to operate reliably in dynamic testing environments. Though resistant to many environmental conditions, care should be taken not to subject the unit to harsh chemicals, submerge it in water, or use it in a manner inconsistent with its intended purpose.

The SLICE NANO Base, Bridge and Pedestrian Headform Battery are supplied with calibration data from the factory. DTS recommends annual recalibration to ensure that the system is performing within factory specifications. SLICE hardware is not user-serviceable and should be returned to DTS for service or repair.

Shock Rating

The SLICE Pedestrian Headform system is rated for 500 g, 4 ms duration, in all axes. All mounting considerations should be thoroughly addressed to ensure the system is adequately integrated to survive the expected shock loads.

Mounting Considerations

To provide the best shock protection, the system should be securely bolted inside the Pedestrian Headform skull using the proper hardware and recommended torque specifications. Care must be taken to restrain the cables to permit adequate strain relief and minimal movement upon impact.

Thermal Considerations

SLICE NANO DAS is an extremely low power system with negligible self-heating. Should any self-heating be a concern, this can be addressed by charging the system properly and minimizing the time it takes to arm the system and perform the test (see *Appendix E: Minimizing System Self-Heating*). Should you have any questions about using SLICE in your environment, please contact DTS.

SLICEWare Software

Software Installation

1. Locate the set-up.exe file on the CD or USB drive provided. Double-click the file to begin the installation and follow the prompts on your screen.

2. When installation is complete, copy the XML file found in the folder "*copy contents to SLICEWare directory after software install*" to the SLICEWare directory. (The XML file contains the sensor information.) If you were not provided an XML file, you will have to enter this information later.

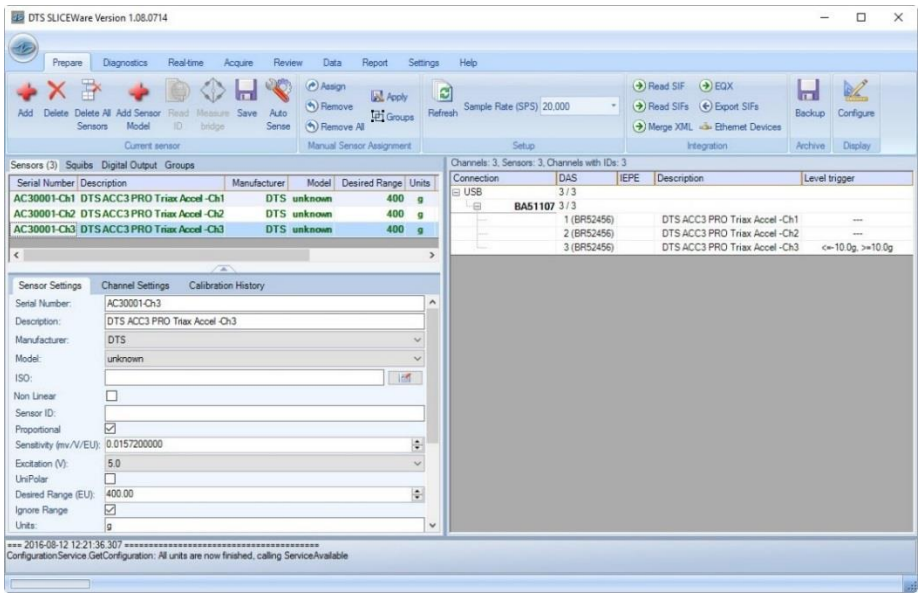
3. Start SLICEWare by double-clicking the desktop icon or go to Programs/ SLICEWare.

If you have any questions about software installation, please contact DTS Support. For a detailed software manual, please see support.dtsweb.com.

Communicating with the SLICE Pedestrian Headform System

4. Connect cable 13000-30980 to the LEMO receptacle on the backplate (Figure 4). Next, connect the cable to the power supply provided (Figure 5) and your PC. (The SLICE Pedestrian Headform system can be connected to the PC before or after starting the software.)

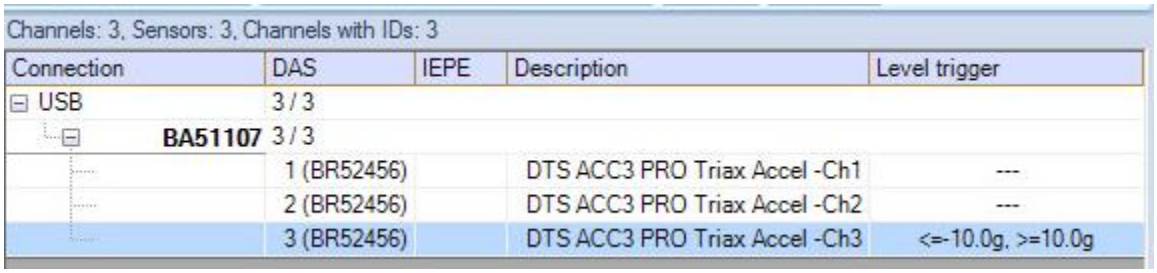
5. If you provided your own sensors or had to replace a sensor, you can manually enter the sensor information into the SLICEWare software before using your SLICE Pedestrian Headform system. (Check that the sensors that are installed in the Pedestrian Headform are visible on the Prepare tab. If any sensor is missing, you need to manually install it.) You will need the calibration data provided with your sensors to do this. Each sensor must also be assigned to the correct axis and optional ISO code.



Level Trigger Setup

The SLICE Pedestrian Headform system works best when a "level trigger" is set on one or multiple channels. This will trigger the system and record data when the sensors see g-levels outside of a specified range.

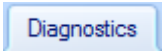
6. With SLICEWare running and the SLICE Pedestrian Headform system connected (step 4 above), select the sensor you want to use for the level trigger.



7. Select the checkboxes and enter the desired level trigger. Choose a g-value that is well under your expected test value but not too low that handling or a small bump will trigger the system. Click the Apply button when finished.

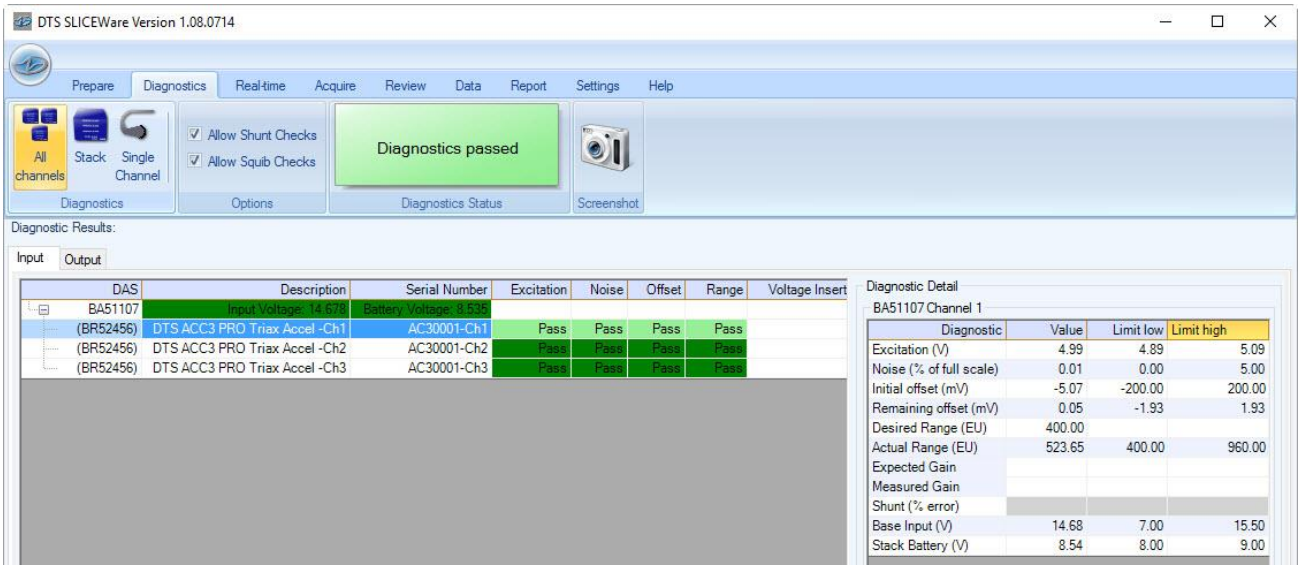
How to Auto-Arm the SLICE Pedestrian Headform System

The "Auto-Arm on Boot" feature allows users to automatically arm the system using user-selected parameters at system power-up/initialization. To use the auto-arm feature, all DAS in the test must support the auto-arm function.

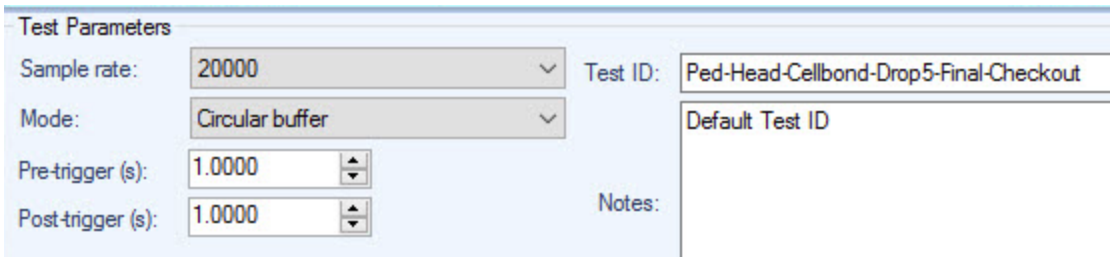
8. With SLICEWare running and the SLICE Pedestrian Headform system connected (step 4 above), go to the 

tab and perform a quick check to verify the hardware is working properly.

   Note: You will see a red box if your battery voltage is too low. The system should be charged for up to an hour before you start your test.



9. Open the Acquire tab. Complete the test set-up information (data collection mode, length of time, sample rate, etc.).



10. Click the Auto-Arm button. Click OK.

11. Close SLICEWare and disconnect cable 13000-30980 from the backplate.

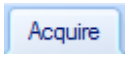
12. To arm the system, press and hold the LED/pushbutton switch for >3 sec. After 7 sec, the LED will begin to blink, indicating the system is performing the auto-arm initialization sequence. After 32 sec, the LED will be either on (Circular Buffer mode) or off (Recorder mode).

Troubleshooting

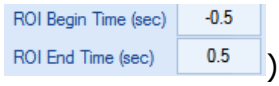
If the LED continues to blink after 45 sec, the system does not initialize properly. To clear the fault, reconnect the system to the power supply and PC (step 4 above), then start SLICEWare. Manually arm and test the SLICE Pedestrian Headform system to clear the fault. (You must clear the fault before the system powers down.) After clearing the fault, repeat steps 8-12 above.

Downloading Data

1. Reconnect the system to the power supply and PC (step 4 above). Start SLICEWare.

2. Open the 

tab. To download the total time specified by the initial test set-up, select 

. To download a region-of-interest only, enter the desired timeframe (for example, 

) and then select 

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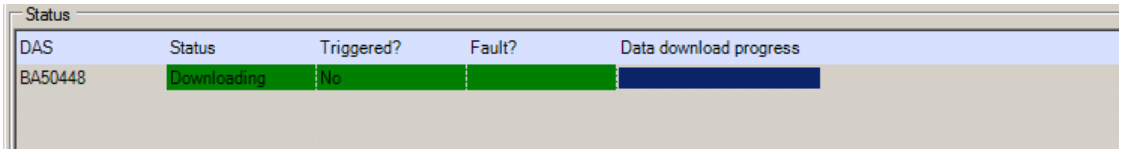
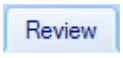
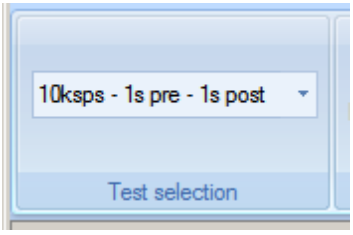
3. Depending on the length of the test, it may take several minutes or longer to download the data. A download progress bar is shown in the center of the screen alongside the corresponding DAS.



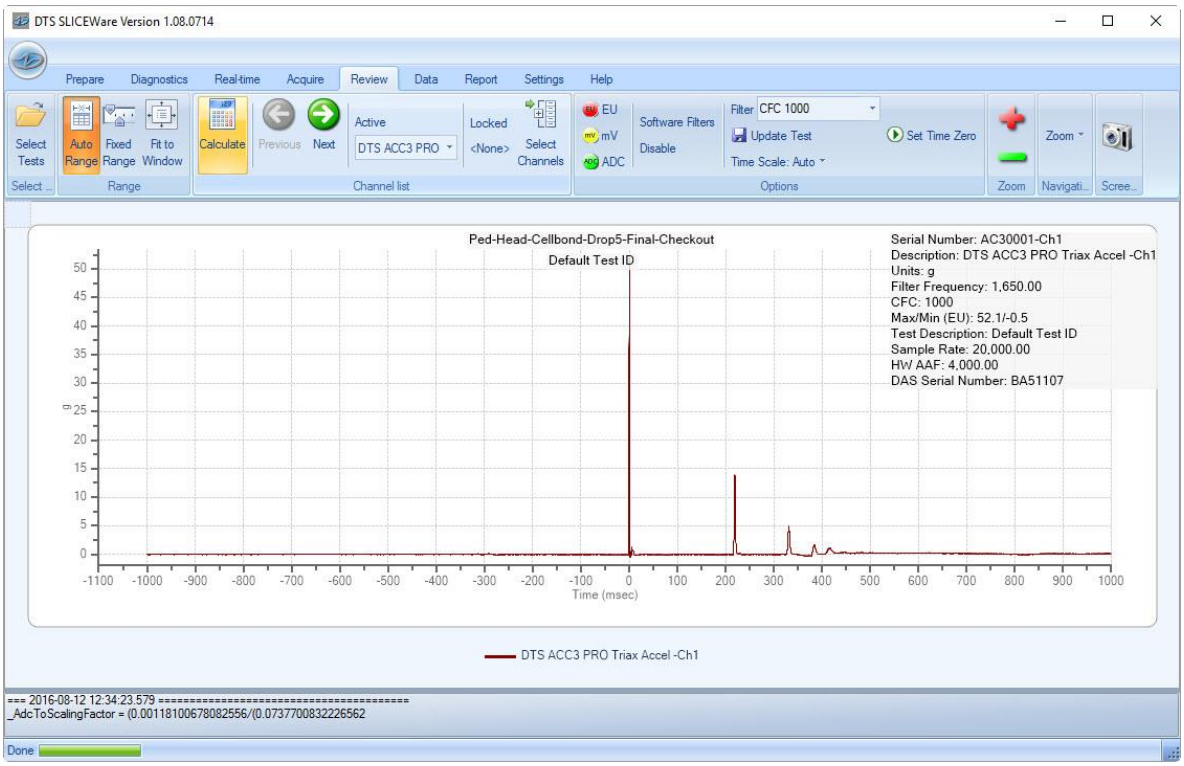
Viewing Data

1. Open the 

tab. Available data sets for viewing are shown on the left. These data sets are stored on your PC, not the SLICE DAS.

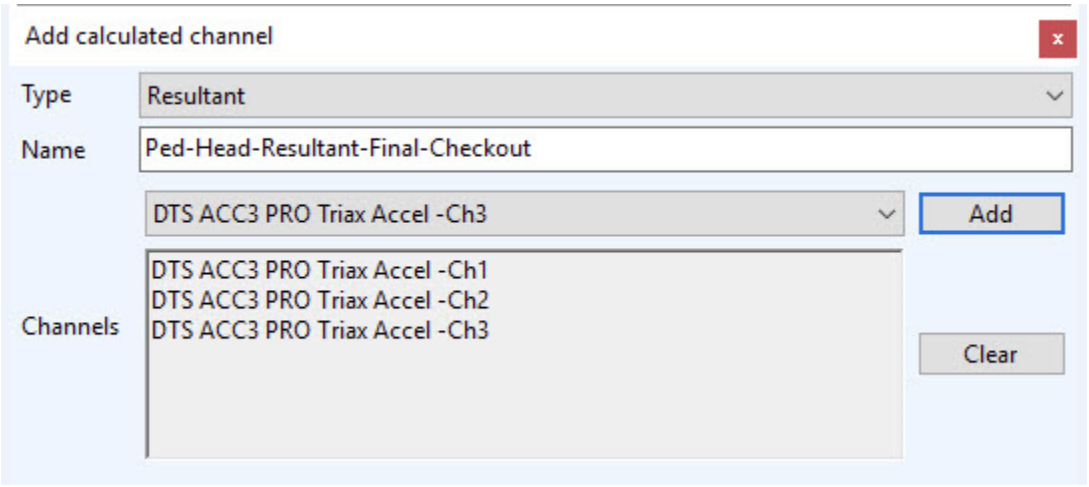


2. Selecting a test will load it in the viewing area.



3. To calculate the resultant, Select the Calculate button 

. Select "Resultant" from the drop-down list, give this new calculated channel a name, and add the three accelerometer channels. Lastly, select the bottom "Add" button.



4. Multiple data channels can be viewed on the graph at one time. You can choose which channels to view using 
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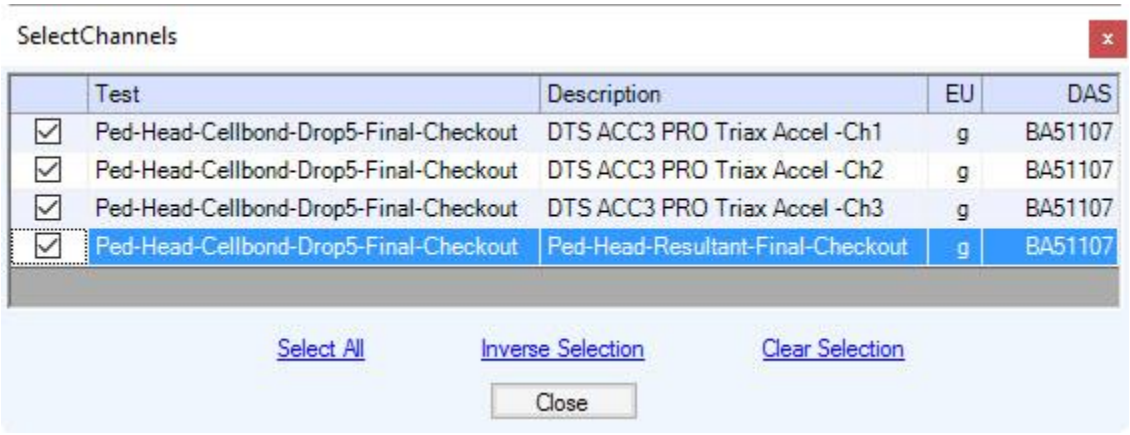
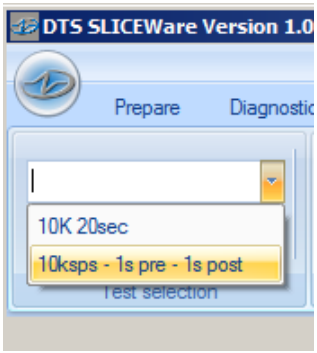


5. You can zoom by drawing a window around a region of interest.

6. The data can be viewed unfiltered or using a selected filter.

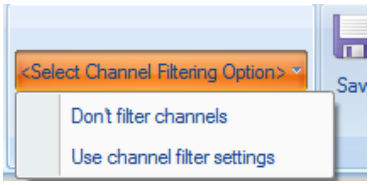
Exporting Data

1. Open the Data tab and select the data set you wish to export from the tests available.



2. Select an export format for the data.

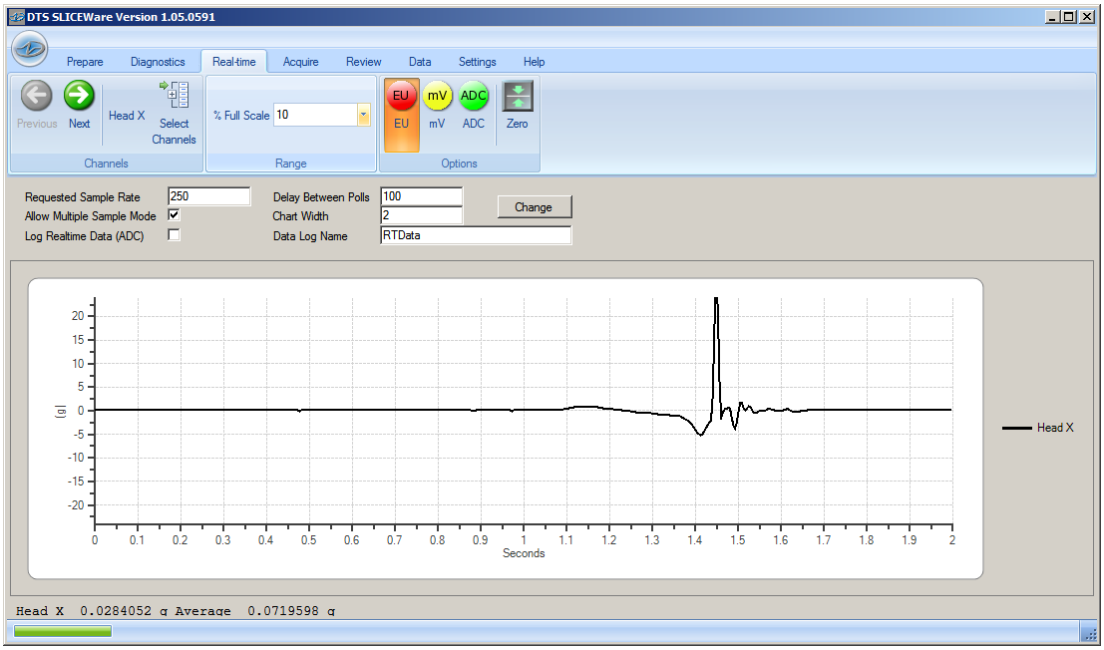
3. Select whether you want the exported data to be filtered or unfiltered. If filtered is selected, SLICEWare will apply the software filter associated with each sensor in the test.



4. To export the data using the settings you selected above, select  . A 'save as' dialog will open and allow you to choose where to save the exported data.

Real-Time Mode

To view data from the channels real-time, click the Real-time tab. You can view any or all three channels. Note that the data is being sampled continuously at a relatively low sample rate. For example, you may not see a short duration data pulse when hitting the SLICE against a surface.



Appendix A: SLICE Hardware Specifications

The details below outline the basic specifications of the SLICE system. The SLICE Pedestrian Headform System uses SLICE NANO.

Specifications

BASE+ SLICE (NANO & MICRO)	
One (1) required per stack – system microprocessor & memory	
Size:	MICRO 42 x 42 x 8 mm (1.65 x 1.65 x 0.32")
	NANO 26 x 31 x 6.5 mm (1.02 x 1.22 x 0.26")
Mass:	MICRO 28 g (0.99 oz), NANO 14.2 g (0.50 oz)
Connectors:	Omnetics, circular locking, 12-pin
	MICRO integrated, NANO cable assembly
Compatibility:	BASE+ works will all legacy NANO & MICRO
ENVIRONMENTAL	
Military Standard:	MIL-STD-810E
Operating Temp:	-40° to 60°C (-40° to 140°F) (Method 501,502)
Altitude:	-40°C @ 15240 m (50000 ft) (Method 500)
Vibration (Random):	Exceeds 810-E vibration (Method 514)
Humidity:	95% RH non-condensing
Shock:	500 g, 4 msec half sine
	5000 g option (SLICE NANO only)
DATA RECORDING	
Modes:	Recorder, circular buffer, multiple event, arm on power-up, and other modes available
Memory:	16 GB non-volatile flash per SLICE stack
Sample Rate:	Minimum 10 sps per channel
<See Chart for Max:	Up to 200k sps on ≤24 channels per stack
	Up to 500k sps on ≤3 channels per stack
TRIGGERING	
Hardware Trigger:	Contact closure & TTL logic-level (active low)
Level Trigger:	Positive and/or negative level on any active sensor channel (first level crossing of any programmed sensor triggers system)
POWER	
Supply Voltage:	9-15 VDC; >11 VDC when using Battery SLICE (NANO)
Current (Maximum):	70 mA @ 12 V plus sensor input SLICEs
Power Control:	Remote power control input for on/off
Protection:	Reverse current, ESD
SOFTWARE	
Control:	SLICEWare, DataPRO, API
Operating Systems:	Windows® Vista/7/8 (32/64-bit)
Communication:	USB; Ethernet available via SLICE Distributor

BRIDGE SLICE (NANO & MICRO)	
Three (3) inputs for external sensors	
Size:	MICRO 42 x 42 x 7 mm (1.65 x 1.65 x 0.32")
	NANO 26 x 31 x 5.5 mm (1.02 x 1.22 x 0.22")
Mass:	MICRO 25 g (0.88 oz), NANO 13.8 g (0.49 oz)
Connectors:	Omnetics, circular locking; 3 single-channel 7-pin or 1 three-channel 16-pin
SIGNAL CONDITIONING	
Number of Channels:	3 differential, programmable
Input Range:	±2.4 V (2.5 V center)
Bandwidth:	DC to 40 kHz, programmable
Gain Range:	1.0-1280, programmable
Auto Offset Range:	100% of effective input range
Bridge Support:	Software controlled half-bridge completion
Shunt Check:	Emulation method, automatically calculated
Sensor ID:	Maxim Integrated (Dallas) silicon serial number
Linearity (typical):	≤0.2% (gain 1 to 320), ≤0.5% (gain >320)
Accuracy:	0.5% including reference uncertainty
ANALOG-TO-DIGITAL CONVERSION	
Type:	16-bit SAR (Successive Approximation Register) ADC, one per channel, simultaneous sample of all channels.
EXCITATION	
Method:	Independent regulator for each channel
Voltage:	5.0 V, up to 20 mA, short circuit safe
Power Management:	Shutdown when not armed or recording
POWER	
Voltage:	Supplied via BASE SLICE
Current (Maximum):	110 mA with 350 ohm bridges all channels
	Power varies significantly with sensor load
ANTI-ALIAS FILTER	
Fixed Low Pass:	4-pole Butterworth, standard knee frequency at 40 kHz
Adjustable Low Pass:	5-pole Butterworth set by software from 1 Hz to 40 kHz
Response:	Meets SAE J211/ISO6487 response corridors

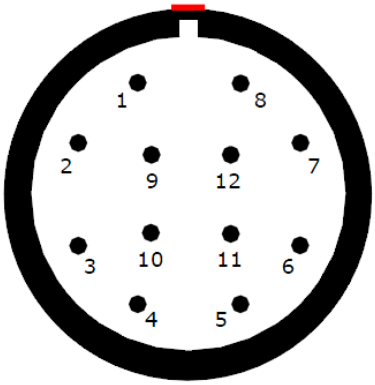
Appendix B: Pin Assignments

13000-30131 Termination Specifications

(Looking into the connector)

Pin	Wire color		Function	Notes
1	Green		+Sig	
2	White		-Sig	
3	Red		+Ex	
4	Yellow		+ID	
5	Black		-Ex	
6	Shield		-ID/Shield	Solder bridge on pins 6 and 7

12-pin Interface Connector
(LEMO ECG.2B.312.CLL)

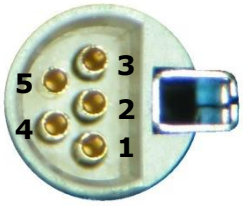


(Panel view)

Pin	Function
1	/ON
2	/START
3	/EVENT
4	Status
5	12-15 VDC IN
6	12-15 VDC IN

Pin	Function
7	Ground
8	Ground
9	USB power
10	USB_DP
11	USB_DM
12	Ground

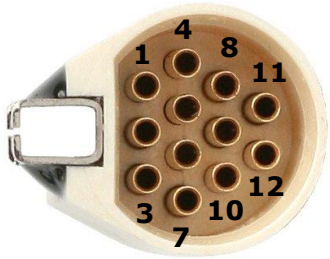
5-socket Pedestrian Head Interface Connector



(Looking into the connector)

Pin	Function
1	−Status
2	Ground
3	+Status
4	$\overline{\text{On}}$
5	$\overline{\text{Event}}$

12-socket Pedestrian Head Interface Connector*



(Looking into the connector)

Pin	Function
1	$\overline{\text{On}}$ (contact closure input to ground)
2	$\overline{\text{Start}}$ (contact closure input to ground)
3	$\overline{\text{Event}}$ (contact closure input to ground)
4	Status output (5 V via 10K with respect to ground)
5	12–15 VDC
6	12–15 VDC
7	Ground
8	Ground
9	USB_PWR
10	USB_DP
11	USB_DM
12	Ground

* These connectors are identical.

Accessories/Support Equipment

13000-40660: Pedestrian Headform USB Interface Kit
13000-30461: SLICE USB Interface
13000-30980: Cable, SLICE UI/EI/SMDB to Pedestrian Headform (4 m)
10400-00060: Power supply; 15 VDC, 4 A

Appendix C: SLICE Pedestrian Headform DAS Kit Contents

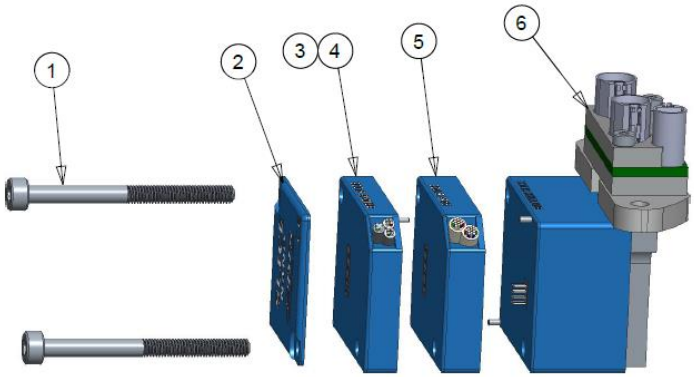
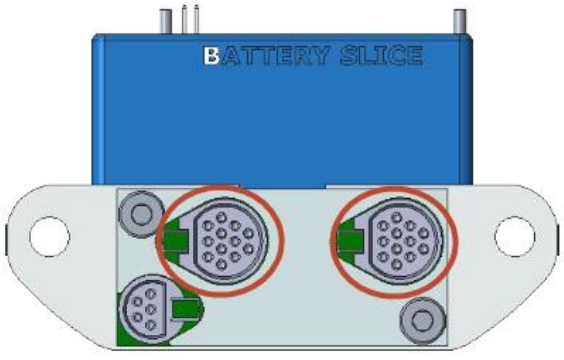


Figure 7: 3-channel SLICE NANO Stack for Pedestrian Headform

13000-20107: ***SLICE NANO Base+ for Pedestrian Headform***
13000-20021: ***SLICE NANO Bridge (1 MCS-16) (10 cm) (Use for ACC3 PRO)***
13000-20022: ***SLICE NANO Bridge (3 MCS-07) (6 cm; 10 cm; 14 cm) (Use for 7264 or Kyowa accels)***
13000-20110: ***SLICE NANO Pedestrian Headform Battery***
13000-30340: ***SLICE NANO Stack Cover***
93000-S0013: ***Screw, SHC, 18-8; M3 x 35 mm, 0.5 mm pitch (2 ea.)***
99000-00310-R: ***Cable Tie, black nylon (not shown)***

Figure 7 shows a typical 3-channel, SLICE Pedestrian Headform Stack that includes a SLICE NANO Base [5], a SLICE NANO Bridge [3, 4], a SLICE NANO Pedestrian Headform Battery [6], a stack cover plate [2], and two mounting screws [1].

Detailed specifications for the SLICE NANO Base and Bridge can be found on page 19 (*Appendix A: SLICE Hardware Specifications*) or at support.dtsweb.com. Details on charging the SLICE NANO Pedestrian Headform Battery can be found on page 8 (*Power/Charging Requirements*). For information on operation of the SLICE system, please see the SLICE User's Manual.



The 12-socket connectors are functionally identical.

Figure 8: Pedestrian Headform Interface

24000-00210: SLICE Pedestrian Headform LED Switch Cable Assembly

This cable is used inside the headform and connects to the 5-socket connector shown in Figure 2 and the Pedestrian Headform endplate. The pushbutton enables the auto-arm sequence, and the LED provides information on arming status. Additional information on the LED can be found on page 9; details on arming the system begin on page 12 (*How to Auto-Arm the SLICE Pedestrian Headform System*).

Figure 9: LED Switch Cable Assembly (24000-00210)

24000-00211: SLICE Pedestrian Headform Connector Cable Assembly

This cable is used inside the Pedestrian Headform and connects to the 12-socket connector shown in Figure 2. It mounts to the endplate and provides both communication and power to the SLICE System.

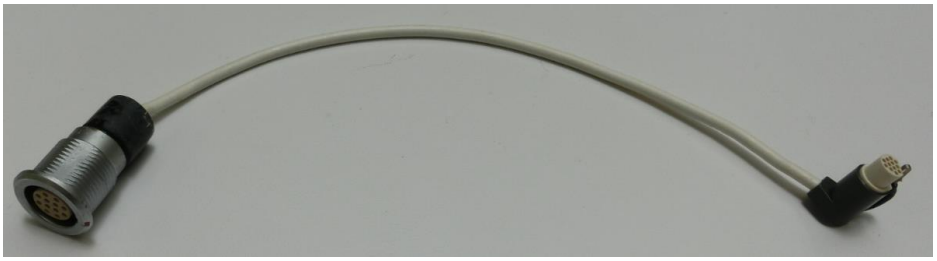


Figure 10: Connector Cable Assembly (24000-00211)

24000-00216/24000-00217/24000-00218: Accelerometer Mounts

An accelerometer mount and hardware will always be supplied depending on the type of accelerometer used.

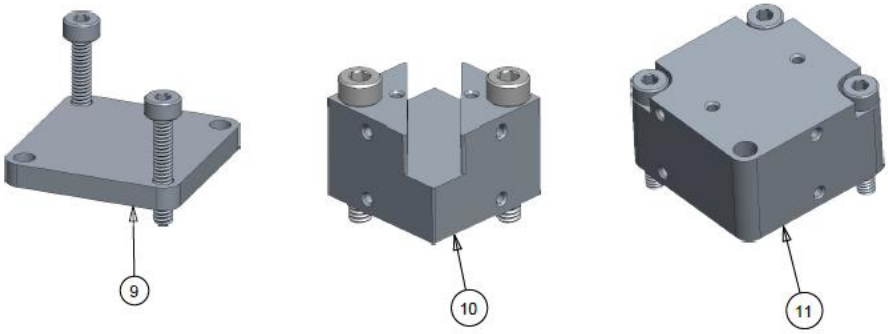
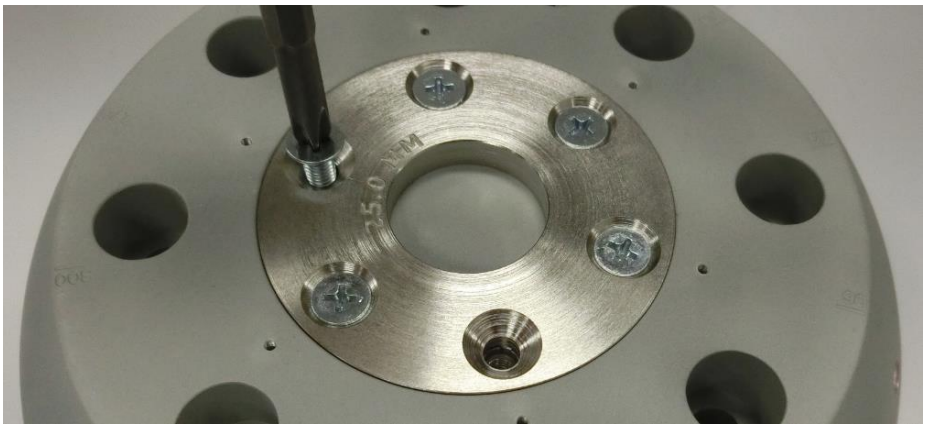


Figure 11: Accelerometer Mounts (24000-00216/24000-00217/24000-00218)

Appendix D: SLICE Pedestrian Headform Assembly Procedure

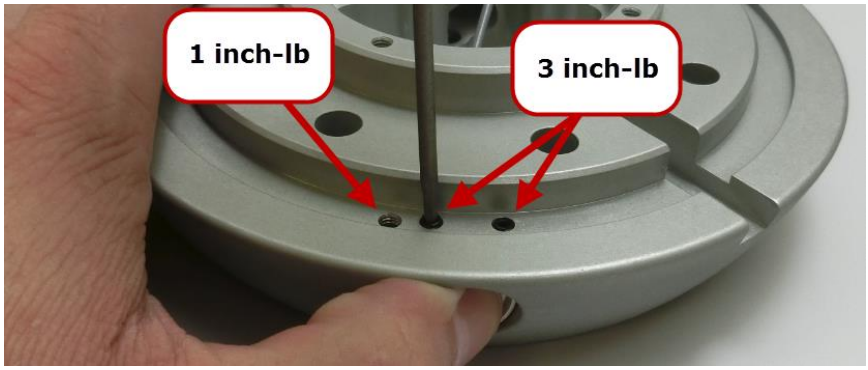
Note: If Loctite is called out in this procedure, use a small amount of *Loctite 222MS Low Strength*. Use standard bolt torques unless specifically called out for in these procedures.

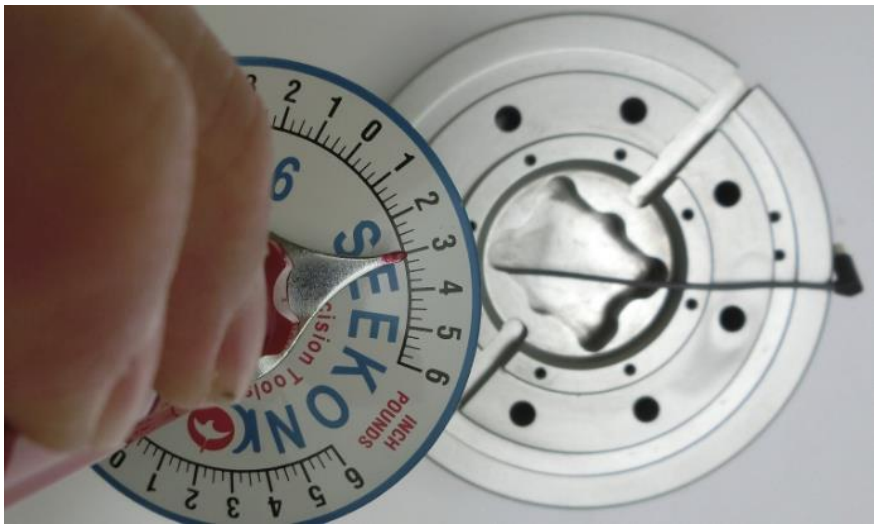
1. Install Steel Washer: Insert Steel Washer (89100-19460) into rear pocket of backplate, then mount using 6X M5 x 16 mm Zinc Plated Steel Flat Head Phillips Screws (93000-S0096-R). Apply Loctite to screws before installing.



2. Insert Switch LED Assembly: Flip backplate over and carefully insert the right-angle connector of the Switch LED Assembly (24000-00210) through the hole.

3. Secure Switch LED Assembly: Apply Loctite to 3X M4 x 4 mm Alloy Steel Cup Point Set Screws (93000-S0095) and insert a few threads into the holes above the Switch and LED. While applying pressure inward into the LED and Switch, tighten the set screws. The LED set screw only requires 1 inch-pound of torque. The two Switch set screws should be each torqued to 2 inch-pounds, then final torqued to 3 inch-pounds.

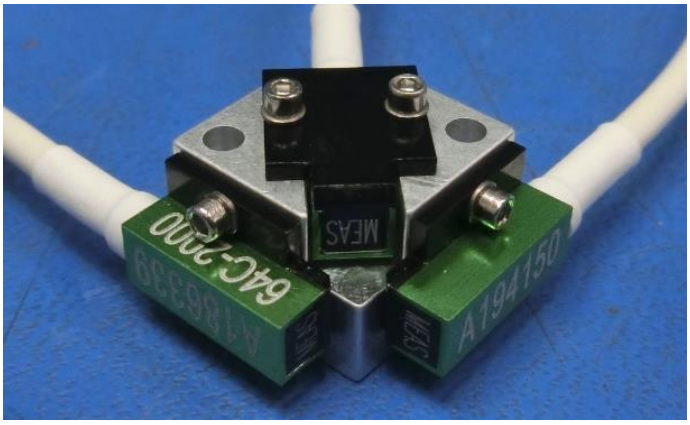


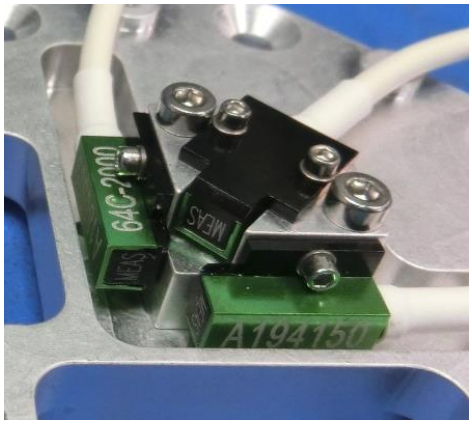


4. Insert Connector Assembly: Similar to the LED Switch, carefully insert the right-angle connector of the Connector Assembly (24000-00211) through the hole opposite the LED Switch. Note the orientation of the connector key to the right.

5. Secure Connector Assembly: Apply Loctite to 2X M4 x 4 mm Alloy Steel Cup Point Set Screws (93000-S0095) and insert a few threads into the holes above the Connector. While applying pressure inward into the Connector, tighten the set screws. The two Connector set screws should be each torqued to 2 inch-pounds, then final torqued to 3 inch-pounds.

6. Accelerometer Mounting: Mount accelerometers to manufacturer's instructions and torque. When using the DTS ACC3 PRO or ACC3 PRO-A accelerometer, do not forget to use the included spacer (89100-19440) to bring the sensor to the correct height.



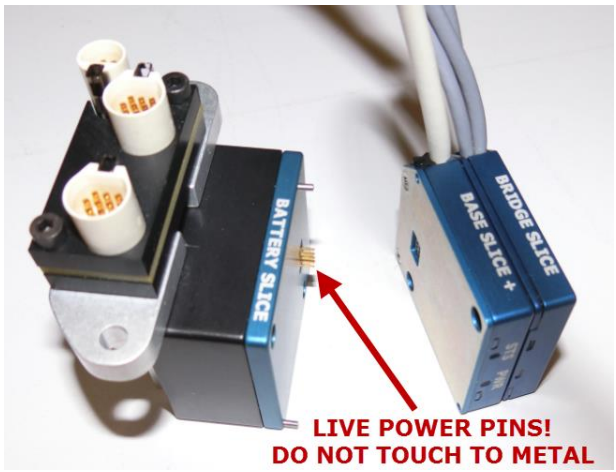


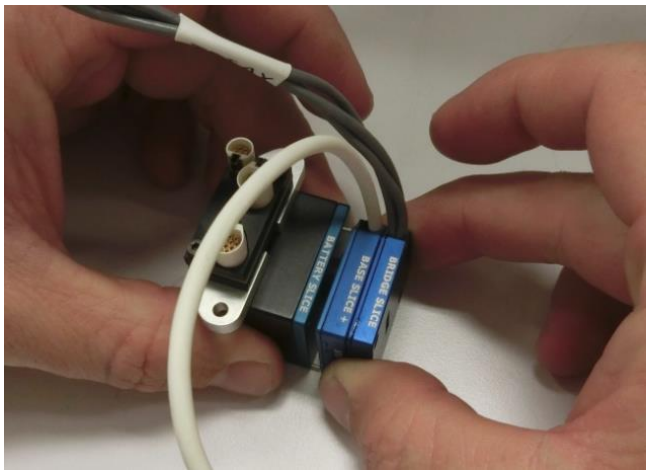
7. SLICE Stack Assembly: First, plug the SLICE NANO Bridge to the top of the SLICE NANO Base. Next, carefully plug the SLICE NANO Pedestrian Headform Battery to the bottom of the SLICE NANO Base. Lastly, add the SLICE Stack Cover and install 2X M3 x 35 mm Stainless Steel Socket Head Cap Screws (93000-S0013). Use a very light coat of Loctite on the last few threads.

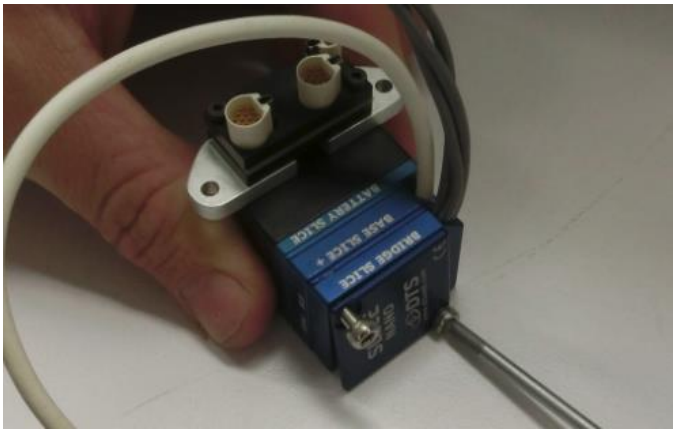
   Note: Your SLICE NANO Bridge could have one or three connectors depending on the type of accelerometer requested.

WARNING:

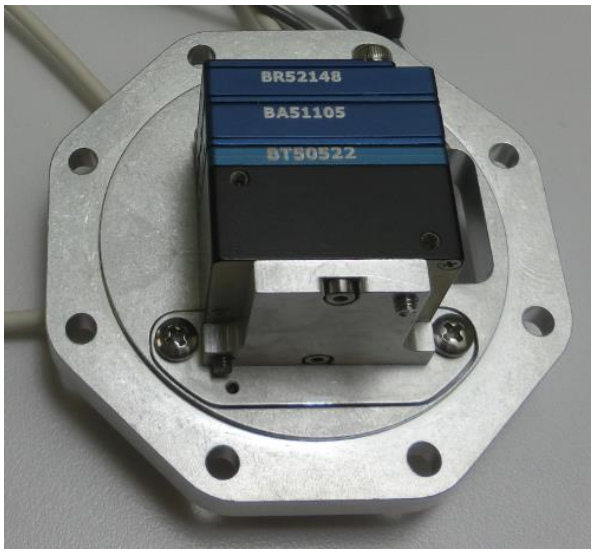
The power pins on the battery are LIVE and the battery could be damaged if the pins touch any metal, including the bottom of the SLICE NANO Base metal enclosure.

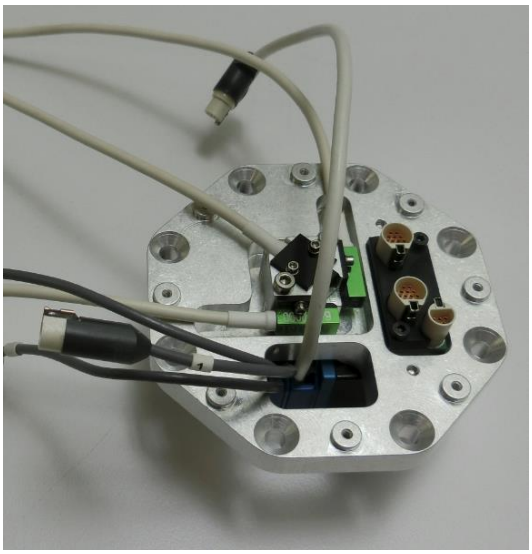




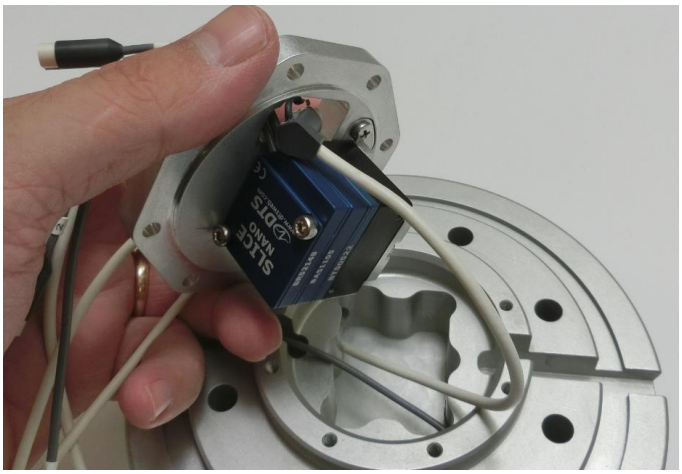


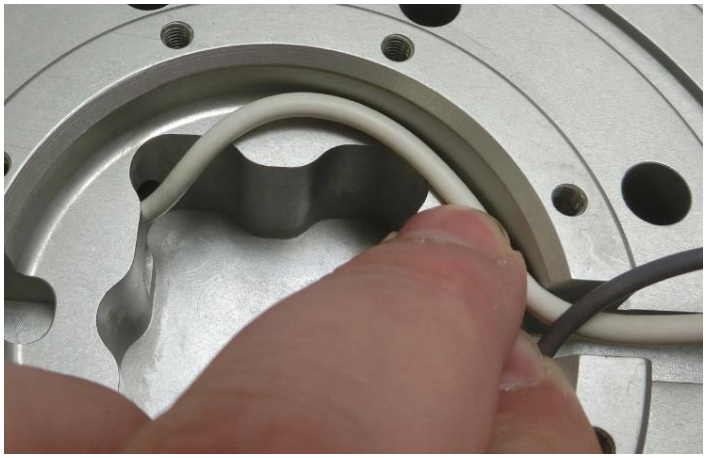
8. Mount SLICE Assembly: Install the SLICE Assembly using 2X M3 x 8 mm Stainless Steel Pan Head Phillips screws (93000-S0091). Apply Loctite.

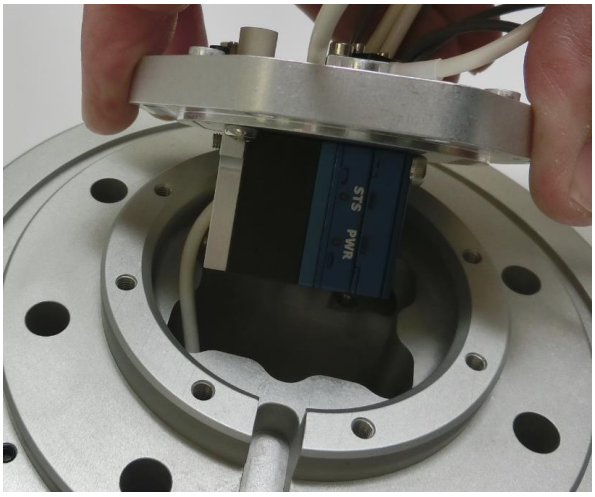


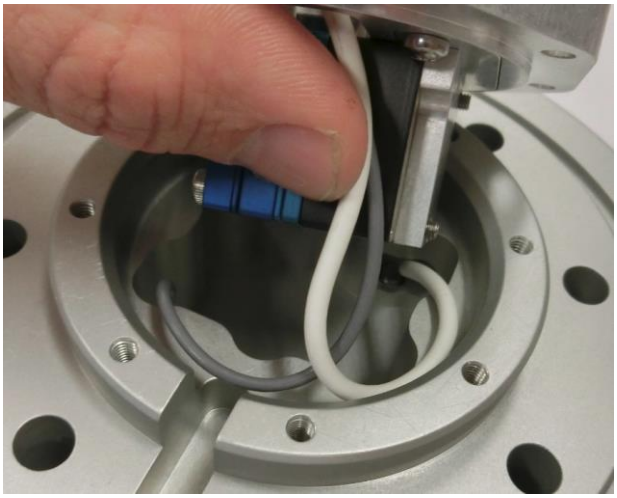


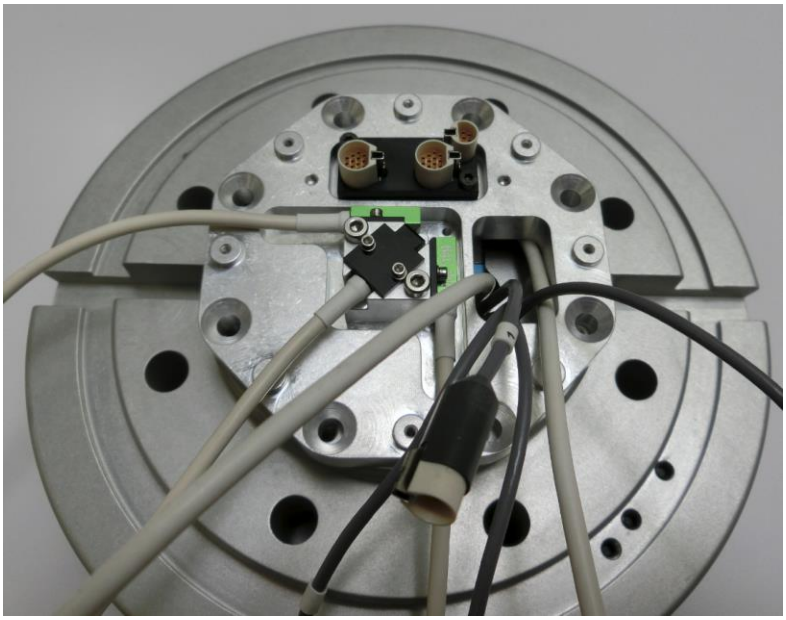
9. Positioning SLICE Integration Plate onto Backplate: Feed the Switch LED Cable Assembly and Connector Cable Assembly connectors through the bottom of the Integration Plate. Use the following pictures as a guide to route the cables, and to be careful to orient the Integration Plate and Backplate correctly. It might be helpful to use plastic or wood picks to position the cables.



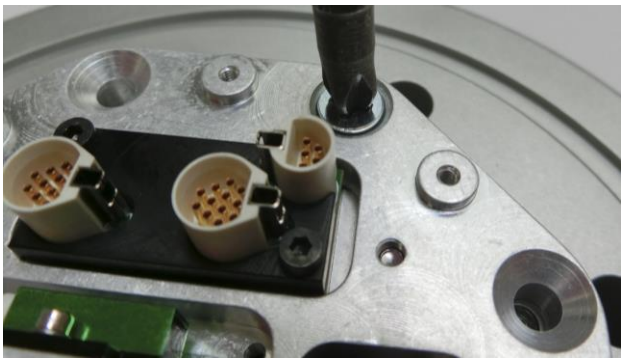



STS
PWR

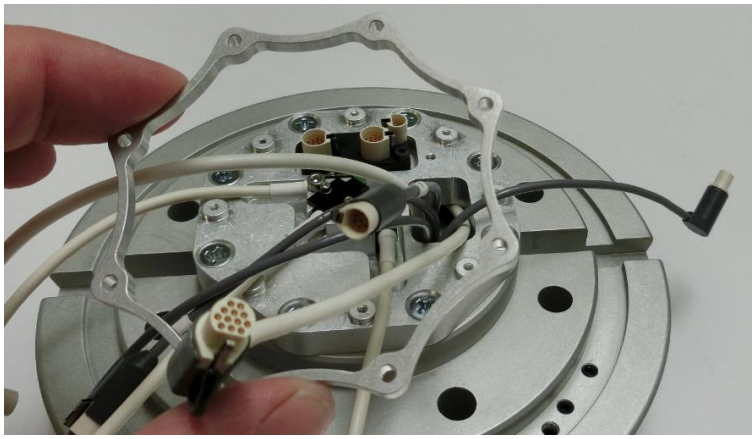




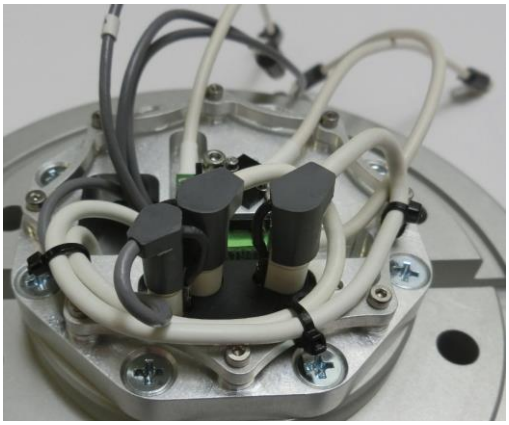
10. Mounting SLICE Integration Plate Assembly: Install the Integration Plate using 8X M4 x 14 mm Zinc Plated Steel Flat Head Phillips Screws (93000-S0094-R). Apply Loctite.

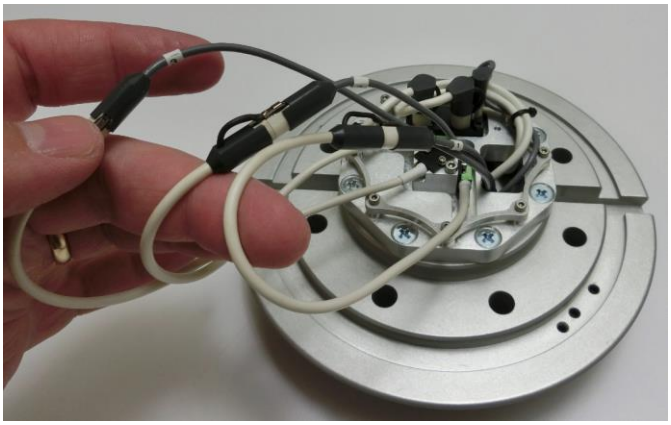


11. Install Cable Management Ring: Install the Cable Management Ring (89100-18230) using 8X M2 x 6 mm Stainless Steel Pan Head Phillips Screws (93000-S0092-R). Apply Loctite.

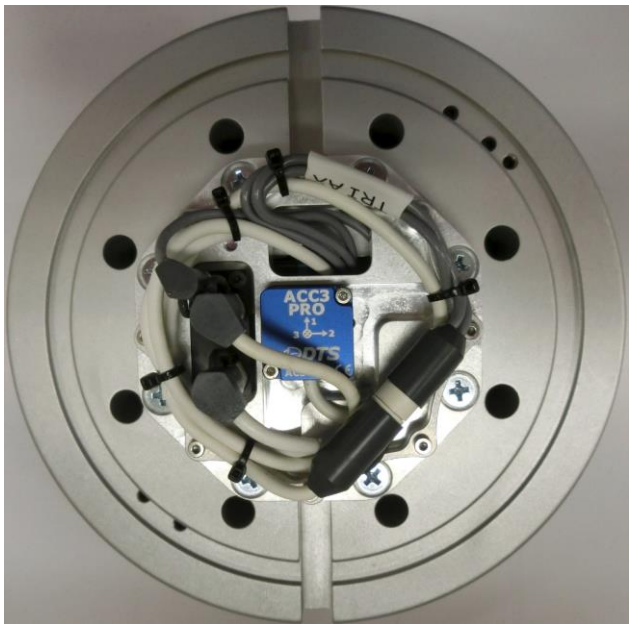


12. Plug In All Connectors: Connect two 12-pin and one 5-pin connector as shown. Note: The two 12-pin connectors are functionally identical and can be plugged into either side.



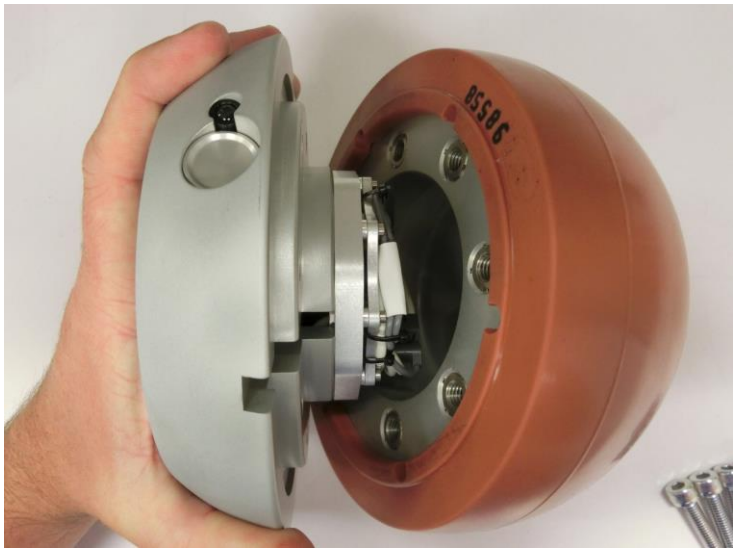


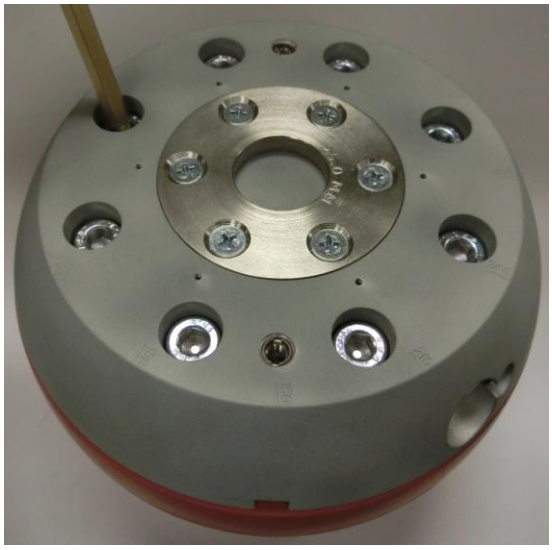
13. Strain Relief Cables: Use the provided Micro Cable Ties (99000-00310) to tie down and strain relief all cables. The pictures below provide examples using 7264 style connectors and the DTS ACC3 PRO sensor.




14. Install Skull and Skin Assembly: For the 4.5 kg headform, install 8X M8 x 35 mm Zinc Plated Steel Socket Head Cap Screws (93000-S0099). For the 3.5 kg headform, install 6X M8 x 30 mm Zinc Plated Steel Socket Head Cap Screws (93000-S0097-R). Apply Loctite.





15. Assembly Compete!

Appendix E: Minimizing System Self-Heating

Following the procedure outlined below will avoid any unnecessary heat generation more than ~1°C.

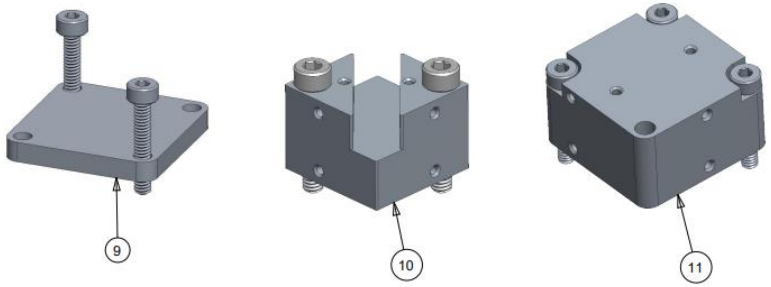
1. Charge the system using a 15 V power supply. 15 V is the minimum required by the SLICE system; anything in excess will contribute to heat generation.

2. Do not connect your PC to the system while it is charging. While this prevents checking system status, continual PC communications keep the microprocessor active. If the battery is not completely discharged and you do not want to wait for the maximum recharge time (1 hour), you may wish to implement a hardware interface that allows you to check battery charge status. When the input current drops to 75 mA, the battery is fully charged.

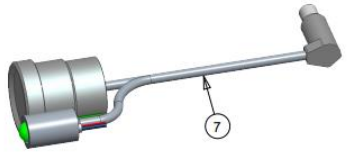
3. Complete the software auto-arm sequence and disconnect the system from the PC and power supply within 2 minutes. Completing this step quickly minimizes system and sensor self-heating. Once auto-arm and disconnect are completed, the system is in a low-power state and awaiting initialization.

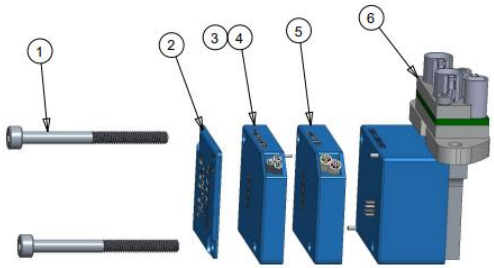
4. Initialize the system and perform your test quickly. To initialize the system, press the LED/pushbutton switch for ≥3 sec. When the LED becomes solid, the system is ready for testing. Performing your test as soon as possible after system initialization minimizes self-heating.

Appendix F: DAS Kit BOM



RECOMMENDED OPTION





REVISIONS			
REV	DESCRIPTION	DATE	APPR
1	ADDED P/N'S FOR KITS	8/1/16	GN
2	REMOVED ITEM 13 "CONNECTORIZE"	8/16/16	GN

13000-40540 : PEDESTRIAN HEADFORM, DAS KIT FOR DTS ACC3 PRO

ITEM	QTY	P/N	DESC
1	2	93000-S0013	Screw, M3 x 35mm Socket Head Cap Screw, Stainless Steel
2	1	13000-30340	SLICE Nano, Stack Cover
3	1	13000-20021	SLICE Nano, Standard Bridge BR-1 (ACC3 PRO Accelerometer)
5	1	13000-20107	SLICE Nano, Base, Pedestrian Headform
6	1	13000-20110	SLICE Nano, Battery, Pedestrian Headform
7	1	24000-00210	Pedestrian Headform, LED Switch Assembly
8	1	24000-00211	Pedestrian Headform, Connector Assembly
9	1	24000-00216	Accelerometer Mounting Assembly, ACC3 PRO
12	10	99000-00310	Cable Ties, Micro (Not Shown)
---------- ACCELEROMETERS NOT INCLUDED IN BOM. ORDER SEPERATELY ----------			
RECOMMENDED: DTS ACC3 PRO TRIAX 2000G (DTS P/N 13000-91010)			

13000-40600 : PEDESTRIAN HEADFORM, DAS KIT FOR 7264 TYPE ACCELS

ITEM	QTY	P/N	DESC
1	2	93000-S0013	Screw, M3 x 35mm Socket Head Cap Screw, Stainless Steel
2	1	13000-30340	SLICE Nano, Stack Cover
4	1	13000-20022	SLICE Nano, Standard Bridge BR-3 (7264 or Kyowa Accelerometer)
5	1	13000-20107	SLICE Nano, Base, Pedestrian Headform
6	1	13000-20110	SLICE Nano, Battery, Pedestrian Headform
7	1	24000-00210	Pedestrian Headform, LED Switch Assembly
8	1	24000-00211	Pedestrian Headform, Connector Assembly
10	1	24000-00217	Accelerometer Mounting Assembly, 7264
12	10	99000-00310	Cable Ties, Micro (Not Shown)
---------- ACCELEROMETERS NOT INCLUDED IN BOM. ORDER SEPERATELY ----------			
USE WITH: PCB 3651 2000G, ENDEVCO 7264H-2K 1000G			

13000-40610 : PEDESTRIAN HEADFORM, DAS KIT FOR KYOWA ACCELS

ITEM	QTY	P/N	DESC
1	2	93000-S0013	Screw, M3 x 35mm Socket Head Cap Screw, Stainless Steel
2	1	13000-30340	SLICE Nano, Stack Cover
4	1	13000-20022	SLICE Nano, Standard Bridge BR-3 (7264 or Kyowa Accelerometer)
5	1	13000-20107	SLICE Nano, Base, Pedestrian Headform
6	1	13000-20110	SLICE Nano, Battery, Pedestrian Headform
7	1	24000-00210	Pedestrian Headform, LED Switch Assembly
8	1	24000-00211	Pedestrian Headform, Connector Assembly
11	1	24000-00218	Accelerometer Mounting Assembly, Kyowa
12	10	99000-00310	Cable Ties, Micro (Not Shown)
---------- ACCELEROMETERS NOT INCLUDED IN BOM. ORDER SEPERATELY ----------			
USE WITH: KYOWA ASE-A-500 500G			

UNLESS OTHERWISE SPECIFIED
DIMENSION ARE IN MM
TOLERANCES ARE:
DECIMALS: ANGLES:
DO NOT SCALE DRAWING

DTS 909 ELECTRIC AVE, SUITE 206 SEAL BEACH, CA 90740 562-493-0158

NAME/DESC: PEDESTRIAN HEADFORM, DAS KIT BOMS

MATERIAL: N/A
DRAWING NO:
REV: 2
DRAWN BY: G NEWTON 7/21/16
SIZE: B
SCALE: 1:2
SHEET: 1 OF 1

Appendix G: Backplate Kit BOM

REVISIONS			
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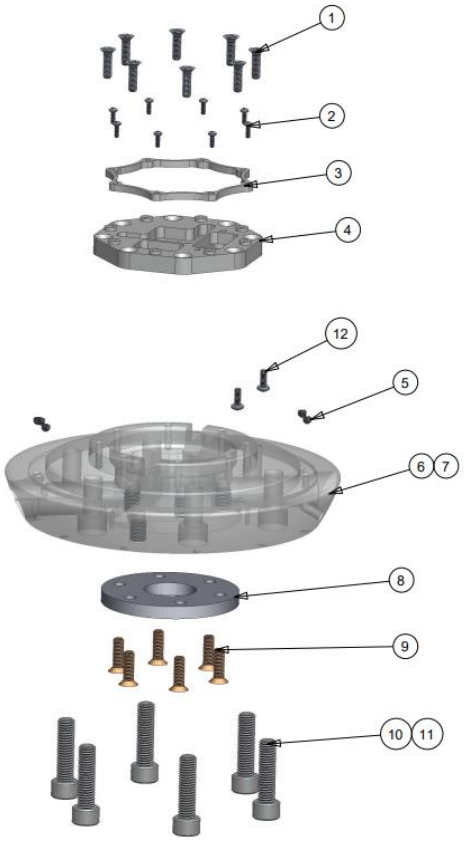
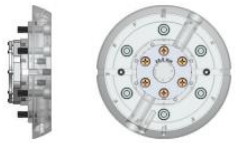


13000-40640 : PEDESTRIAN HEADFORM, 3.5KG BACKPLATE KIT

ITEM	QTY	P/N	DESC
1	8	93000-S0094	Screw, M4 x 14mm Flat Head Phillips, Zinc Plated Steel
2	8	93000-S0092	Screw, M2 x 6mm Pan Head Phillips, Stainless Steel
3	1	89100-18230	Pedestrian Headform, Cable Management Ring
4	1	89100-19400	Pedestrian Headform, Integration Plate
5	5	93000-S0095	Set Screw, M4 x 4mm, Alloy Steel
6	1	89100-19390	Pedestrian Headform, Endplate 3.5kg
8	1	89100-19460	Pedestrian Headform, Steel Back Plate 25.0MM
9	6	93000-S0096	Screw, M5 x 16mm Flat Head Phillips, Zinc Plated Steel
10	6	93000-S0097	Screw, M8 x 30mm Socket Head Cap Screw, Zinc Plated Steel
12	2	93000-S0091	Screw, M3 x 8mm Pan Head Phillips, Stainless Steel

13000-40650 : PEDESTRIAN HEADFORM, 4.5KG BACKPLATE KIT

ITEM	QTY	P/N	DESC
1	8	93000-S0094	Screw, M4 x 14mm Flat Head Phillips, Zinc Plated Steel
2	8	93000-S0092	Screw, M2 x 6mm Pan Head Phillips, Stainless Steel
3	1	89100-18230	Pedestrian Headform, Cable Management Ring
4	1	89100-19400	Pedestrian Headform, Integration Plate
5	5	93000-S0095	Set Screw, M4 x 4mm, Alloy Steel
7	1	89100-19380	Pedestrian Headform, Endplate 4.5kg
8	1	89100-19460	Pedestrian Headform, Steel Back Plate 25.0MM
9	6	93000-S0096	Screw, M5 x 16mm Flat Head Phillips, Zinc Plated Steel
11	8	93000-S0097	Screw, M8 x 30mm Socket Head Cap Screw, Zinc Plated Steel
12	2	93000-S0091	Screw, M3 x 8mm Pan Head Phillips, Stainless Steel



UNLESS OTHERWISE SPECIFIED
DIMENSION ARE IN MM
TOLERANCES ARE:
DECIMALS ANGLES:
.X ± .25 ± .5°
.XX ± .1
DO NOT SCALE DRAWING

DTS 909 ELECTRIC AVE, SUITE 206 SEAL BEACH, CA 90740 562-493-0158

NAME/DESC: PEDESTRIAN HEADFORM, BACKPLATE KIT BOMS

MATERIAL: N/A
DRAWING NO:
REV: 1
DRAWN BY: G NEWTON 7/21/16
SIZE: B
SCALE: 1:2
SHEET: 1 OF 1

Appendix H: Skull/Skin Kit BOM

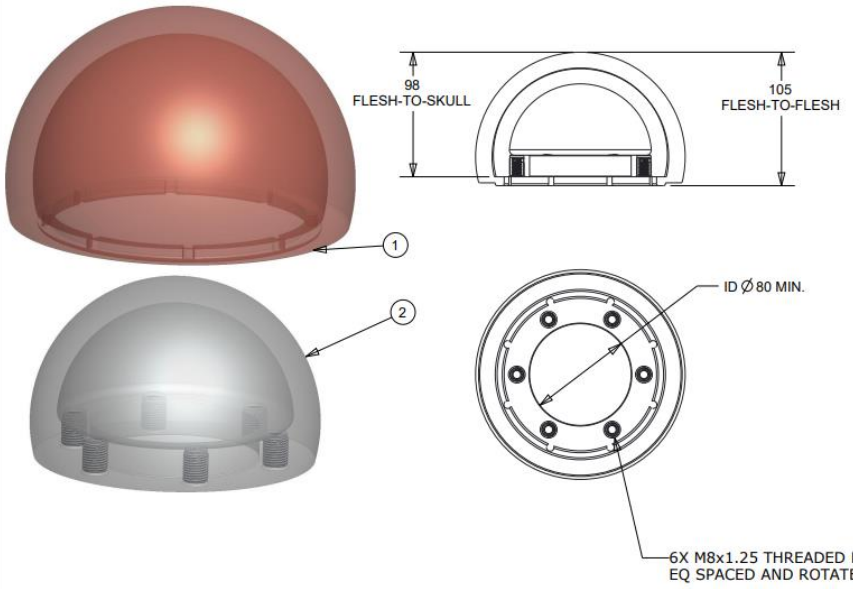
REVISIONS			
REV	DESCRIPTION	DATE	APPR
1	ADDED P/N'S FOR KITS	8/1/16	GN
2	SKULL DIMENSIONS	1/15/18	GN

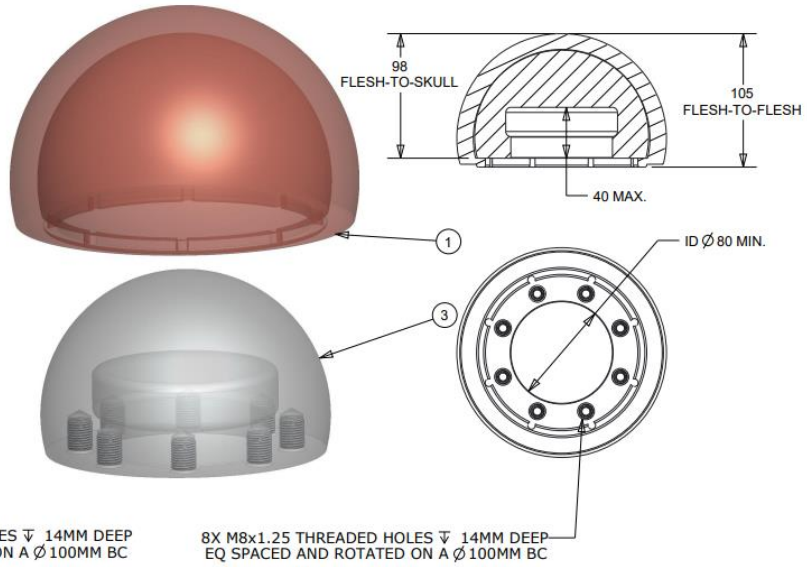
13000-40620 : PEDESTRIAN HEADFORM, 3.5KG SKIN & SKULL KIT

ITEM	QTY	P/N	DESC
1	1	89100-19560	Pedestrian Headform, Skin
2	1	89100-19570	Pedestrian Headform, Skull 3.5kg

13000-40630 : PEDESTRIAN HEADFORM, 4.5KG SKIN & SKULL KIT

ITEM	QTY	P/N	DESC
1	1	89100-19560	Pedestrian Headform, Skin
3	1	89100-19580	Pedestrian Headform, Skull 4.5kg





UNLESS OTHERWISE SPECIFIED
DIMENSION ARE IN MM
TOLERANCES ARE:
DECIMALS ANGLES:
X ± .25 ± 0°
XX ± 1
DO NOT SCALE DRAWING

DTS 909 ELECTRIC AVE, SUITE 206 SEAL BEACH, CA 90740 562-493-0158

NAME/DESC: PEDESTRIAN HEADFORM, SKIN & SKULL KITS

MATERIAL: N/A

DRAWING NO:

REV: 2

DRAWN BY: G NEWTON 7/21/16

SIZE: B

SCALE: 1:2

SHEET: 1 OF 1

Revision History

Rev	Date	By	Description
1	31 Aug 2023	WC	Removed P/N 13000-30460 replaced with 13000-30461, removed 13000-30541 & replaced with 10400-00060. Added kit BOM to pages 35, 36 & 37. Added reference to ACC3 PRO-A to pg 27
0	22 Aug 2016	GSN	Initial release.