



DataPRO
User's Manual

The title is centered on the page. It features the DataPRO logo, which consists of a blue square containing a white stylized 'D' icon above the word 'DataPRO' in a dark gray, sans-serif font. Below 'DataPRO' is the title 'User's Manual' in a larger, bold, dark gray, sans-serif font.

**Version 3.0
April 2020**

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DTS Support

DTS 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 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:

10920-04010: DataPRO Software

Introducing DataPRO

DataPRO is a comprehensive software application that supports SLICE PRO, SLICE 6, 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, 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. PC specifications are:

- Windows 8 and later (32- and 64-bit versions are supported)
- Microsoft .NET Runtime version 4.5.2
- i5 processor minimum; i7 processor recommended
- 8 GB RAM minimum; 16 GB RAM recommended (more RAM is important for high channel counts and longer/higher sample rates)
- 2 GB disk space for software plus additional storage 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 ensuring the PC power plan is set to High Performance or Max Performance for best response when in Realtime

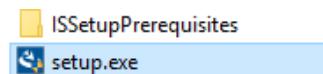
Software Installation

During installation, DataPRO can be configured to work with a local database, a 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 in order to install DataPRO.

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. DataPRO can be installed as a 32- or 64-bit system. Ensure the correct installer is chosen for your PC operating system.

3. Run the setup file to install DataPRO.



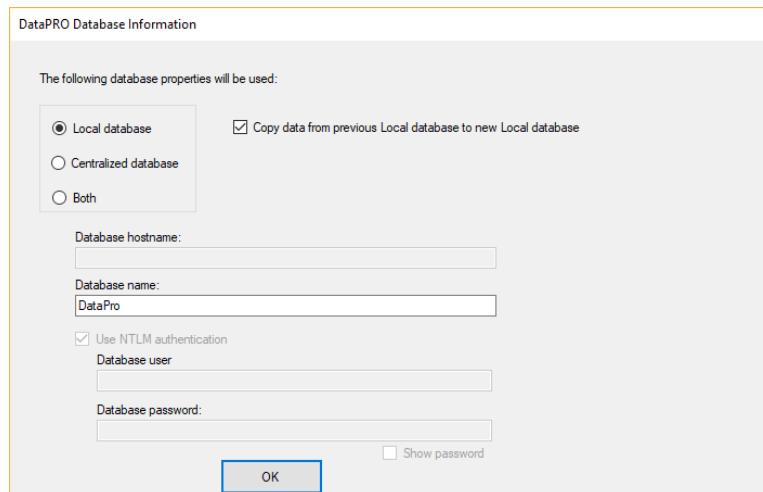
4. Follow the prompts to:
 - a. Start InstallShield Wizard for DataPRO.
 - b. Install drivers if necessary. You may be asked several times to permit installation of drivers.
 - c. Change the install directory if desired.

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

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

Local Database Installation

5. Select “Local database”.
6. Optionally enable “Copy data from previous Local database to new Local database”.



- a. This will migrate the database from the previous version of DataPRO for use with the version being installed.

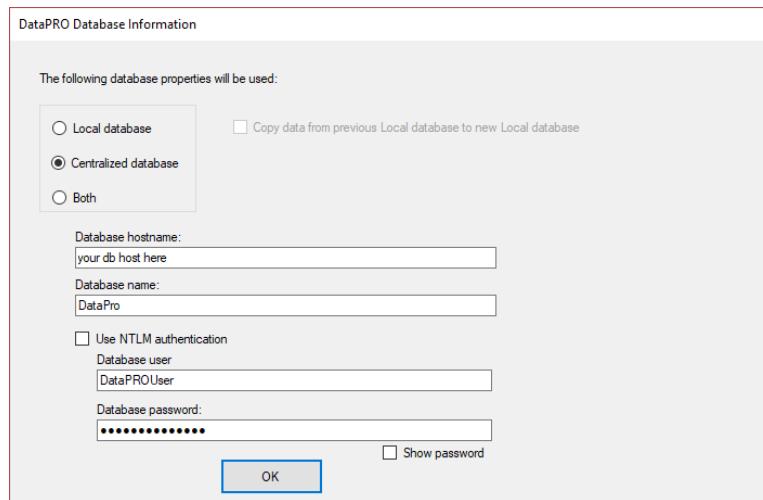
NOTE: *It is advised to use “DataPRO” as the Database name.*

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

Centralized Database Installation

NOTE: *SQL Server must be set up and connected to a database prior to installation. See Appendix H: SQL Server Setup (Windows 7), page 173, for additional information on SQL Server initial setup.*

5. Select Centralized Database.

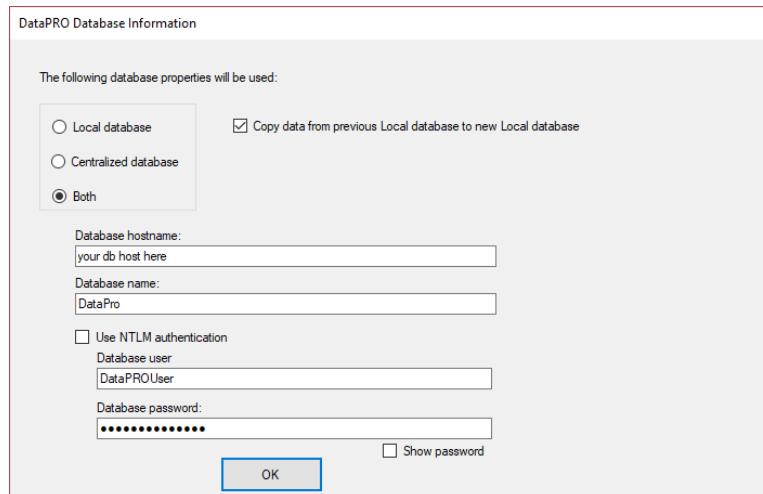


- a. Enter Database hostname and Database name.
- b. Select to use NTLM authentication or enter user login credentials.
6. Select "OK", then Finish to complete DataPRO installation.

Both Installation

NOTE: SQL Server must be set up and connected to a database prior to installation. See [Appendix H: SQL Server Setup \(Windows 7\)](#), page 173, for additional information on SQL Server initial setup.

5. Select Both.
- i. See [System Settings](#), page 139, for information on database connection when using a database configured with "Both".
6. Optionally enable "Copy data from previous Local database to new Local database":

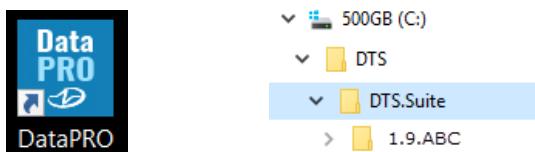


- a. Enter Database hostname and Database name.

- b. Select to use NTLM authentication or enter user login credentials.
7. Select "OK", then Finish to complete DataPRO installation.

NOTE: You can change the Database type at any moment. See **Database**, page 141 for more information.

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). Admin password = DTSAdmin
 - a. If the database was migrated during installation, all user profiles will be available with the same passwords and settings.
 - b. Features and functions available to all other users are controlled by the DataPRO Administrator (see section **Manage Users**, page 119). This password can be changed the in the System Settings tab.



Data Collection Concepts

SLICE and TDAS DAS are standalone data loggers. Once the DAS is armed, the PC can be disconnected if desired. However, DAS must remain powered throughout data collection. Power can be supplied from internal batteries, when available, or from a suitable 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 configured with “Level triggers off”*, page 74, 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 71, for more information).

DataPRO supports a Streaming Mode for use with SLICE6 AIR DAS. See *Appendix I: Setting up SLICE6 AIR*, page 209, for information on SLICE6 AIR Streaming Mode.

Data Collection Modes

Three data collection modes are supported: Circular Buffer, Recorder and Hybrid.

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.

Circular Buffer Mode + UART

This data collection mode is available with SLICE6 AIR DAS. This data collection mode will allow for simultaneously sampling from analog (bridge, IEPE and thermocouple) sensors as well as a UART GPS device. When collecting data in this mode, half the internal flash memory will be available for analog data and half will be available for UART data.

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.

Recorder Mode + UART

This data collection mode is available with SLICE6 AIR DAS. This data collection mode will allow for simultaneously sampling from analog (bridge, IEPE and thermocouple) sensors as well as a UART GPS device. When collecting data in this mode, half the internal flash memory will be available for analog data and half will be available for UART data.

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.

NOTE: *Hybrid Recorder Mode is not available in TDAS PRO, TDAS G5 and SLICE PRO Gen2 hardware.*

Auto Arm

DataPRO is also capable of configuring DAS in Auto Arm mode, which will cause 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, you can 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 48, 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 is capable of configuring 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: Setting up SLICE6 AIR](#), page 209, 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 Nano/Micro 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 Channels*	Maximum Sampling Rate (per channel)				
	SLICE MICRO/NANO		SLICE PRO		SLICE6/ SLICE6 AIR
	Base	Base+	SIM (Gen 2/3), DIM	TOM	
3	120,000 sps	500,000 sps	1,000,000 sps		
4				1,000,000 sps**	
6	60,000 sps	400,000 sps	1,000,000 sps		400,000 sps
9	40,000 sps	300,000 sps	1,000,000 sps		
12	30,000 sps	200,000 sps	500,000 sps		
15	24,000 sps	200,000 sps	500,000 sps		
18	20,000 sps	200,000 sps	500,000 sps		
21	17,000 sps	200,000 sps			
24	15,000 sps	200,000 sps			

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

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

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).

How to Calculate Maximum Recording Time

SLICE MICRO/NANO, SLICE PRO, SLICE 6, TDAS G5 and TDAS PRO have different data storage capacities.

	SLICE MICRO/ NANO Base	SLICE MICRO/NANO Base+, SLICE PRO SIM (Gen 2/3), SLICE6/SLICE6 AIR	SLICE PRO TOM	SLICE PRO Trig Dist
Data Capacity	6.48 GB	15 GB	15 GB	15 GB
Samples Available*	3,240,000,000	7,500,000,000	7,500,000,000	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:

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

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 uses tabs color-coded 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 Database 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

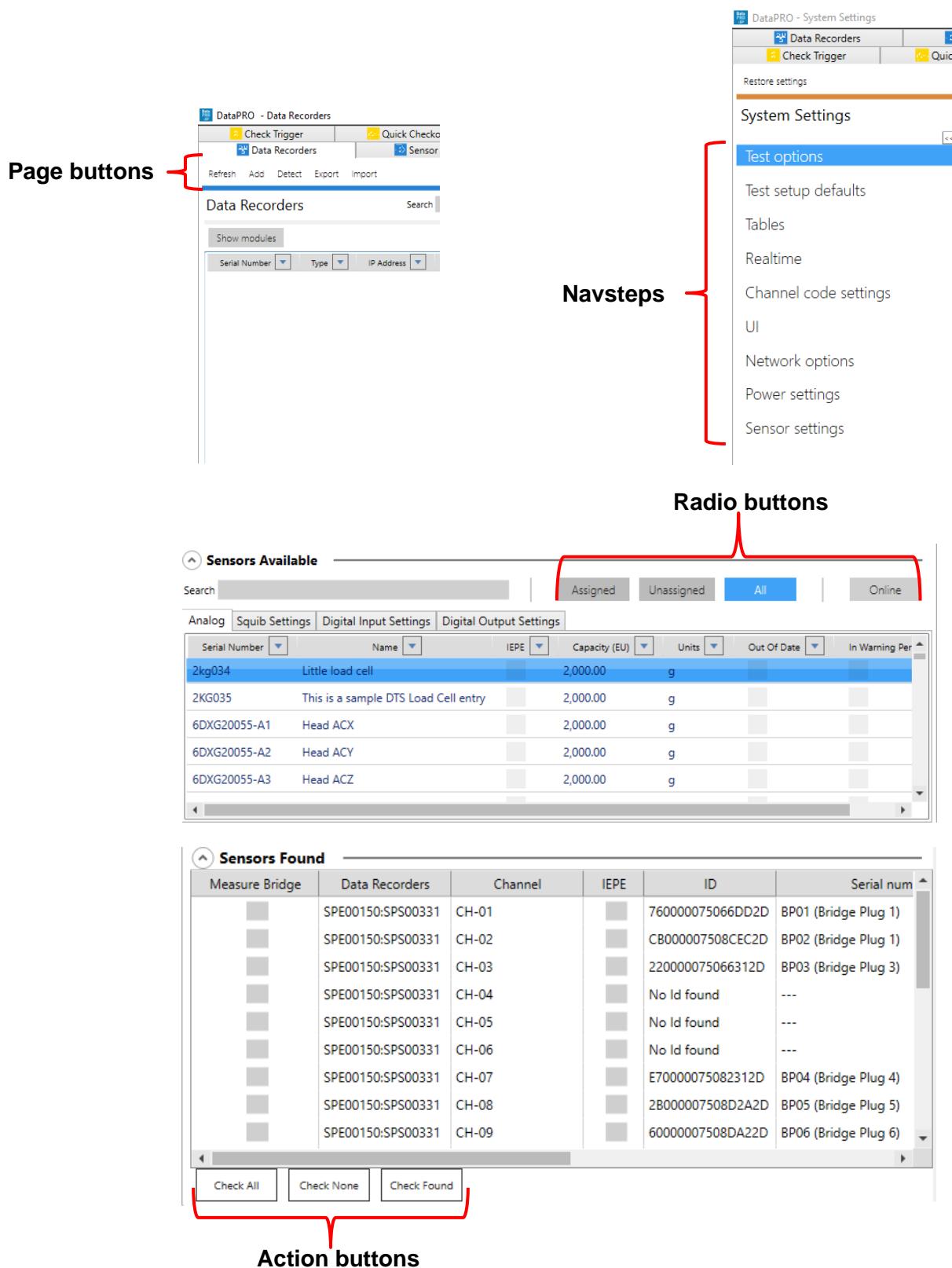
- View Data
- Export Data

Tabs with brown icons contain Administrative functions

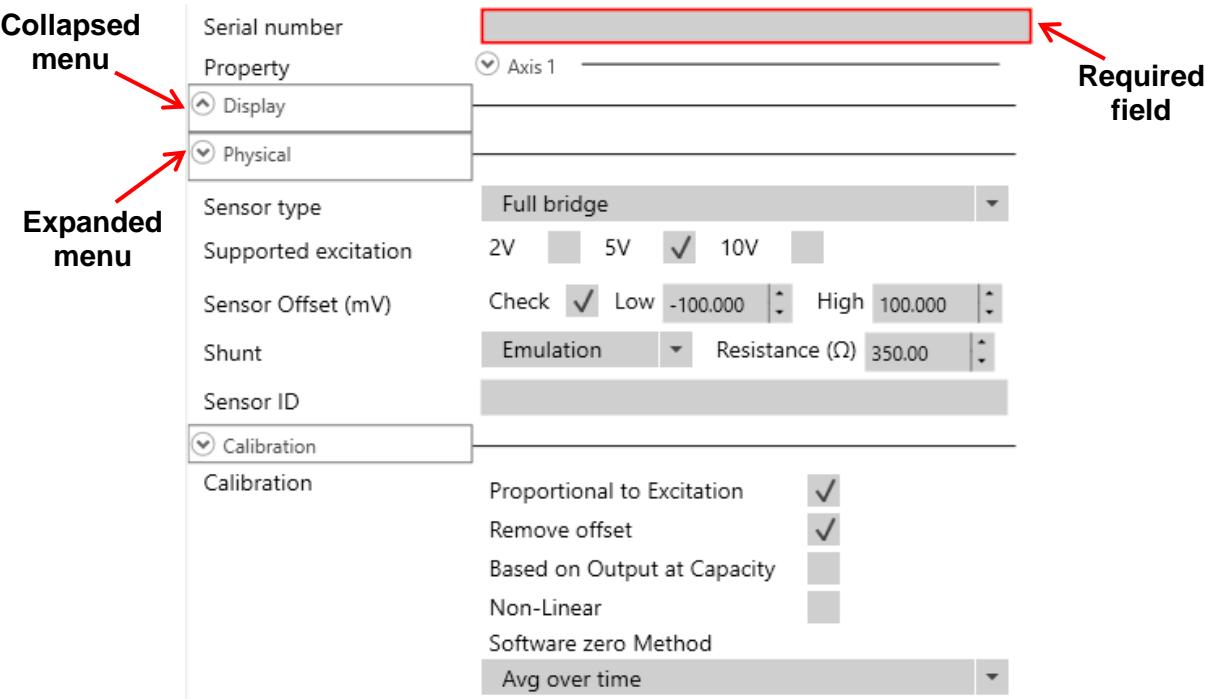
- Manage Users
- System Settings



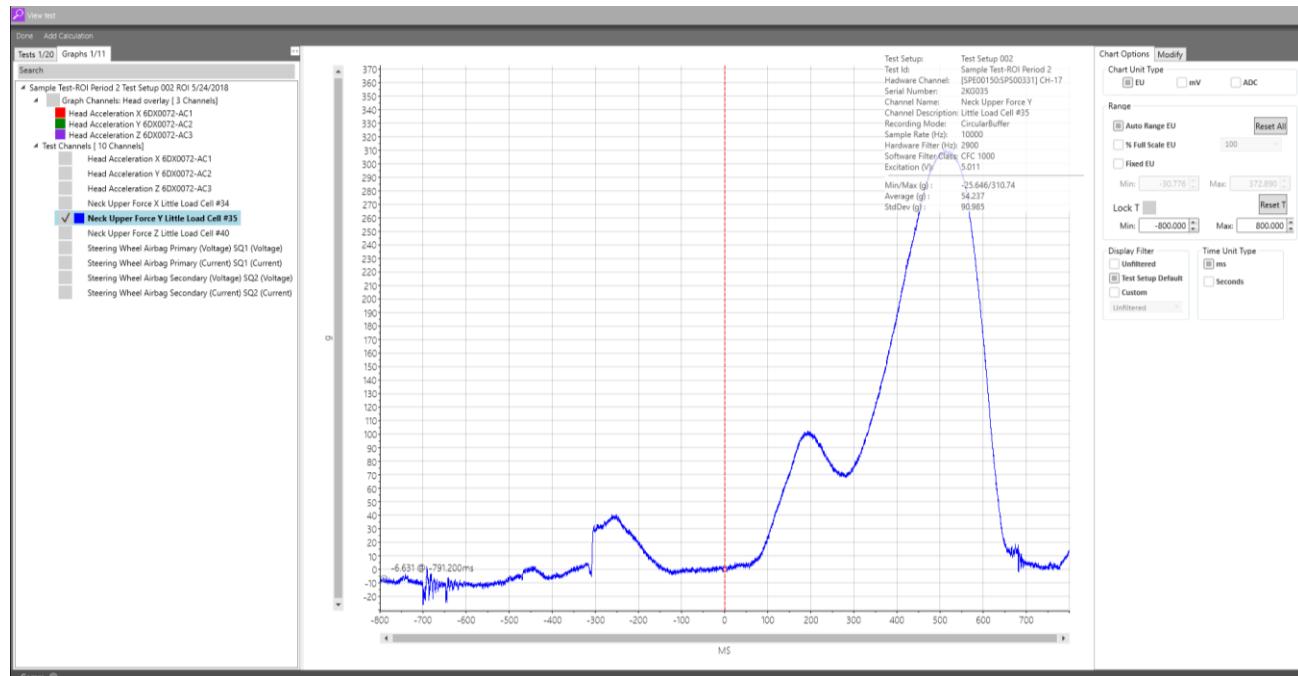
Within tabs, most screens have menus along the left side (navsteps), along the top (page buttons), or both. Some screens have additional options (action buttons, radio buttons) that allow for quickly filtering tables or manipulating data. In general, proceed from top to bottom when using the navsteps; 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 if changes have been made and not saved. However, it is recommended to save early and often.



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

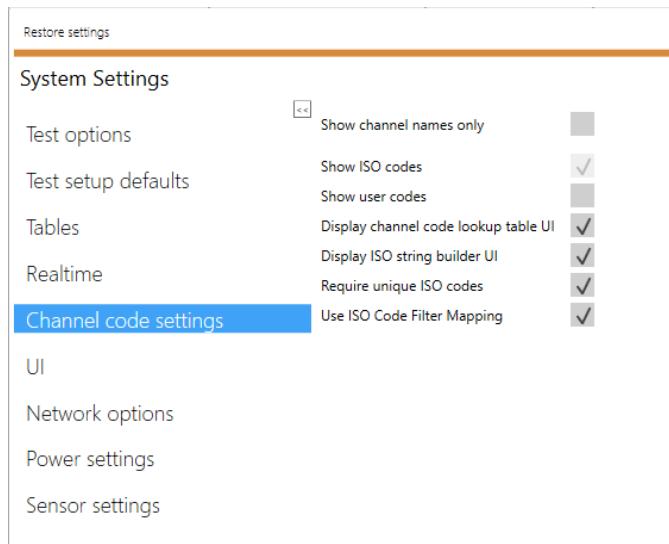


When viewing test data, available channels are listed on the left side. The modification pane offers on-the-fly customizable data views, filter options and the ability to modify a data channel (These features are explained in more detail in [Review](#), page 102).



Using DataPRO

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).



Quick Start Steps

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

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

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.

Database

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

Data Recorders: Refresh, Add, Detect, Edit, Delete, Export, Import

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.

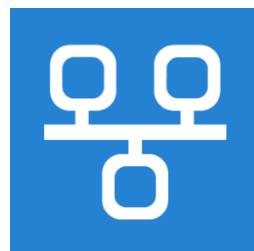
To import DAS, go to step 16.

NOTE: *Detecting DAS and updating hardware configuration can also be done from within groups and test setups.*

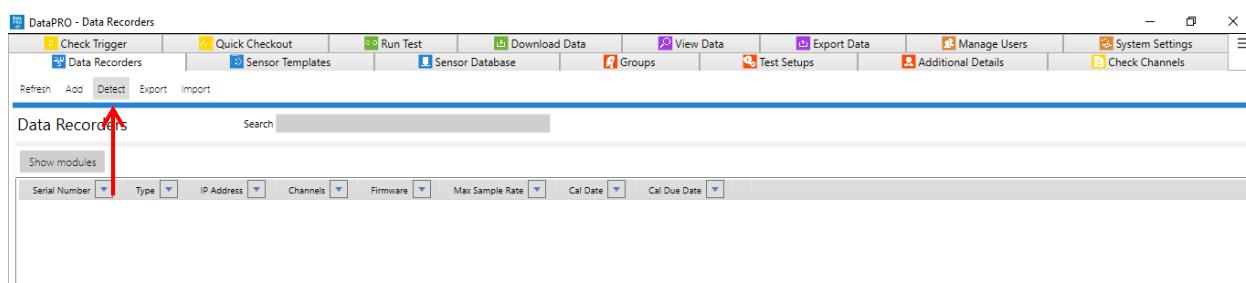
1. To detect DAS, power up and connect DAS to the PC (Windows may install a device driver to support USB communications and ask to reinstall the hardware driver each time a SLICE Stack is connected to a different USB port):



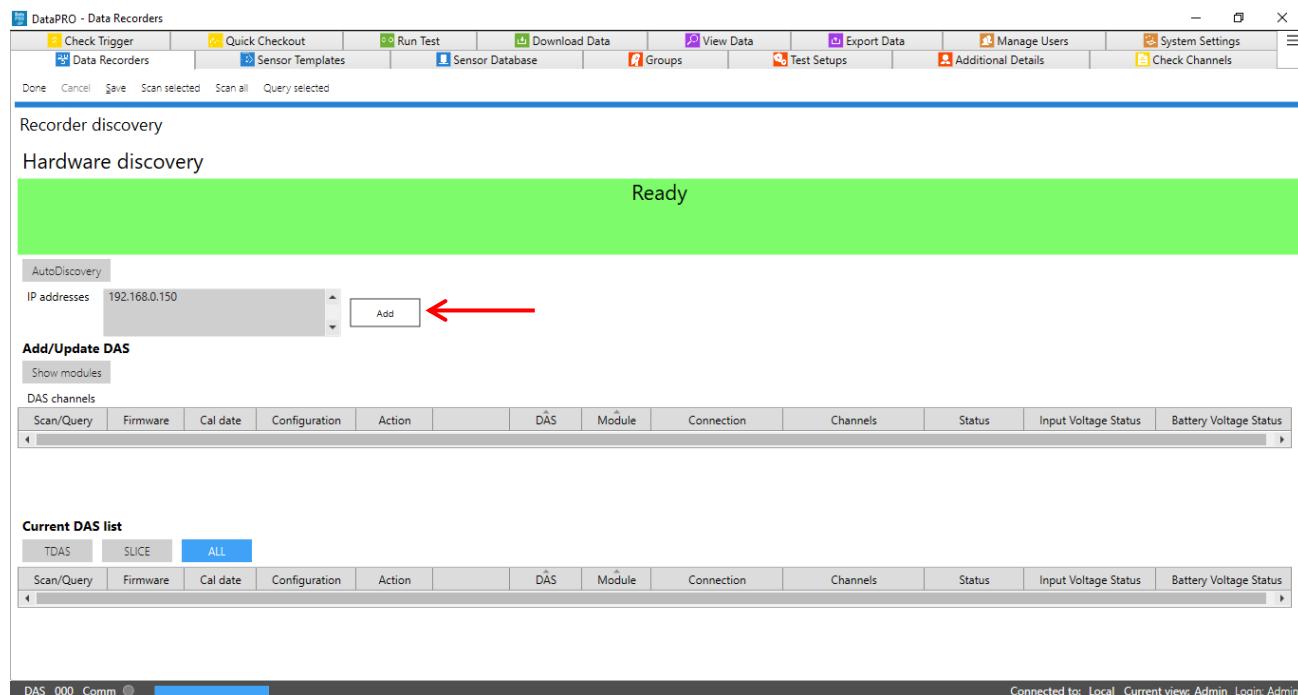
2. Select the “Data Recorders” tab:



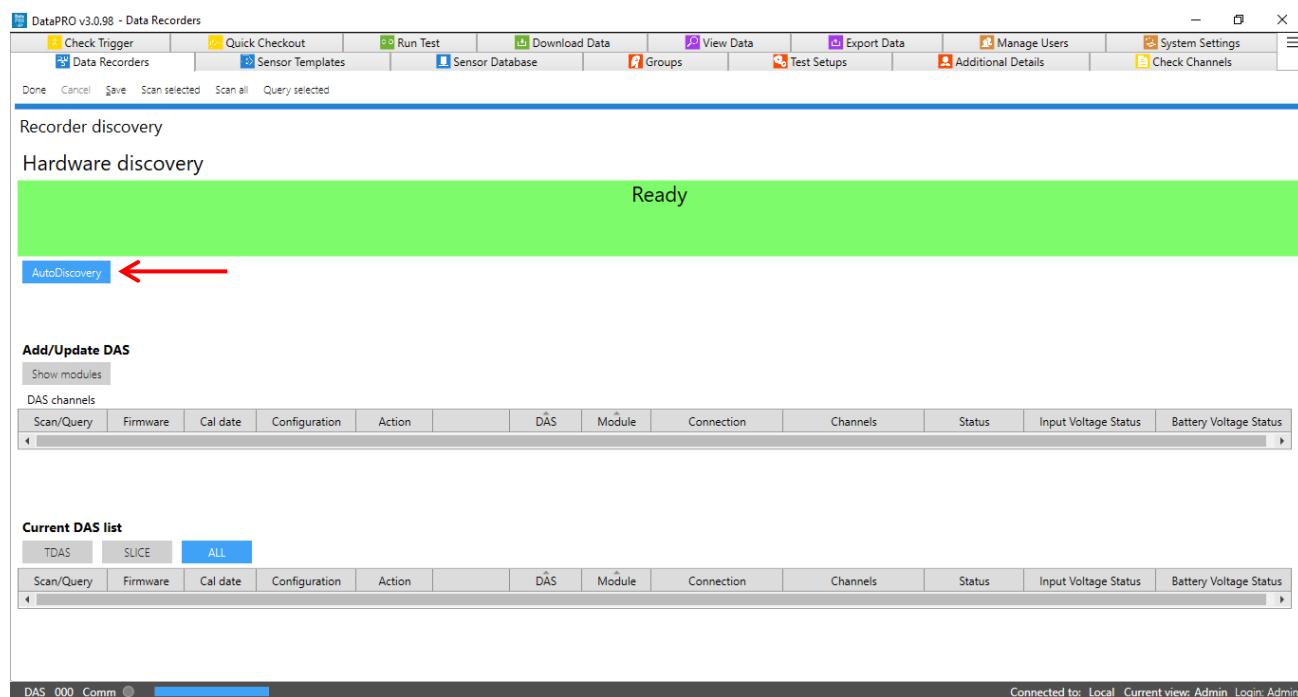
3. From Data Recorder home screen, select “Detect” to find all connected DAS:



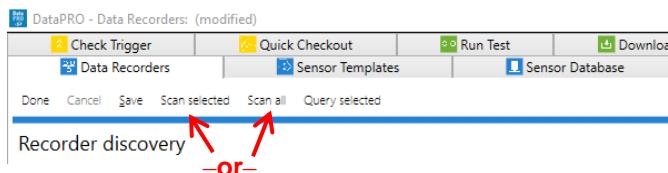
4. If IP address(es) of connected DAS is known, enter IP address(es) for Ethernet DAS and select “Add”. IP address(es) will populate Add/Update DAS table:



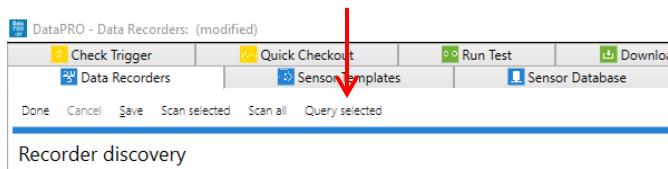
- a. If IP address(es) are not known, enable AutoDiscovery to ping all available IP addresses in the compatible range:



5. 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



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

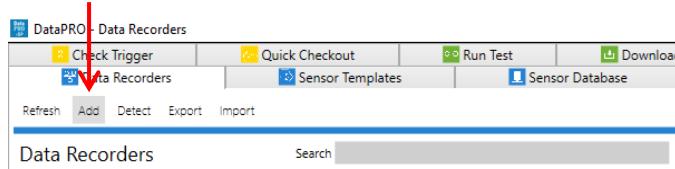


- a. Select “Show Modules” to display modules connected to each discovered DAS:

Scan/Query	DAS	Module	Connection	Channels	Firmware	Cal date	Configuration	Action	Status	Input Voltage Status	Battery Voltage Status
✓	BA51253	...	USB	15 analog channel(s)	B1f4	4/29/2019	MAX	Remove	Connected	11.7 V	...
	BR50113	BR50113	USB	...	00C6	5/15/2019	MAX	Add	Connected	11.7 V	...
	BR50201	BR50201	USB	...	00D0	4/29/2019	MAX	Add	Connected	11.7 V	...
	BR51827	BR51827	USB	...	00D0	4/29/2019	MAX	Add	Connected	11.7 V	...
	BR51890	BR51890	USB	...	00D0	4/29/2019	MAX	Add	Connected	11.7 V	...
	BR52276	BR52276	USB	...	00D0	4/29/2019	MAX	Add	Connected	11.7 V	...

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

8. 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.
9. To add DAS manually, select “Add” from Data Recorder home screen:

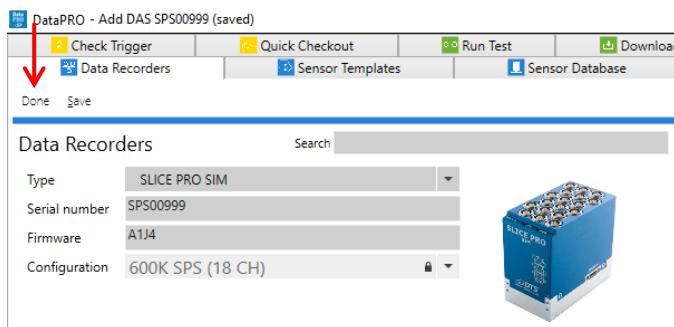


10. Select DAS type from the pull-down menu. All fields in red must be completed:

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:

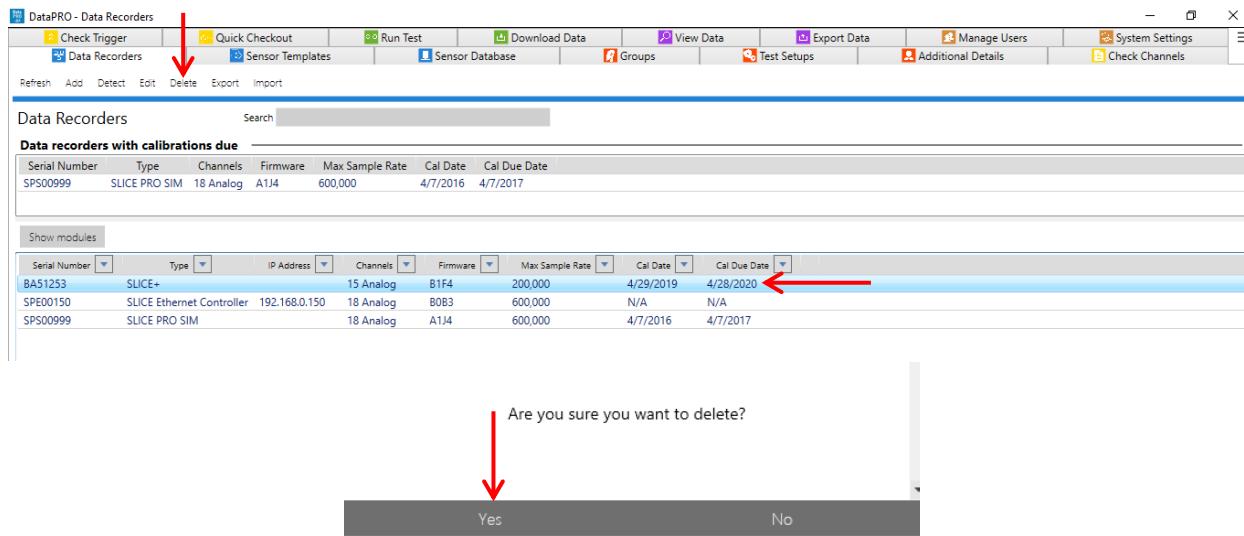


13. To edit DAS information (“Type”, “IP address”, “Serial number” and “Firmware”), select the DAS from the “Data Recorders” home screen. Select “Edit” to change the information. Select “Save” to record the changes to the database:

The image contains three screenshots of the DataPRO interface:

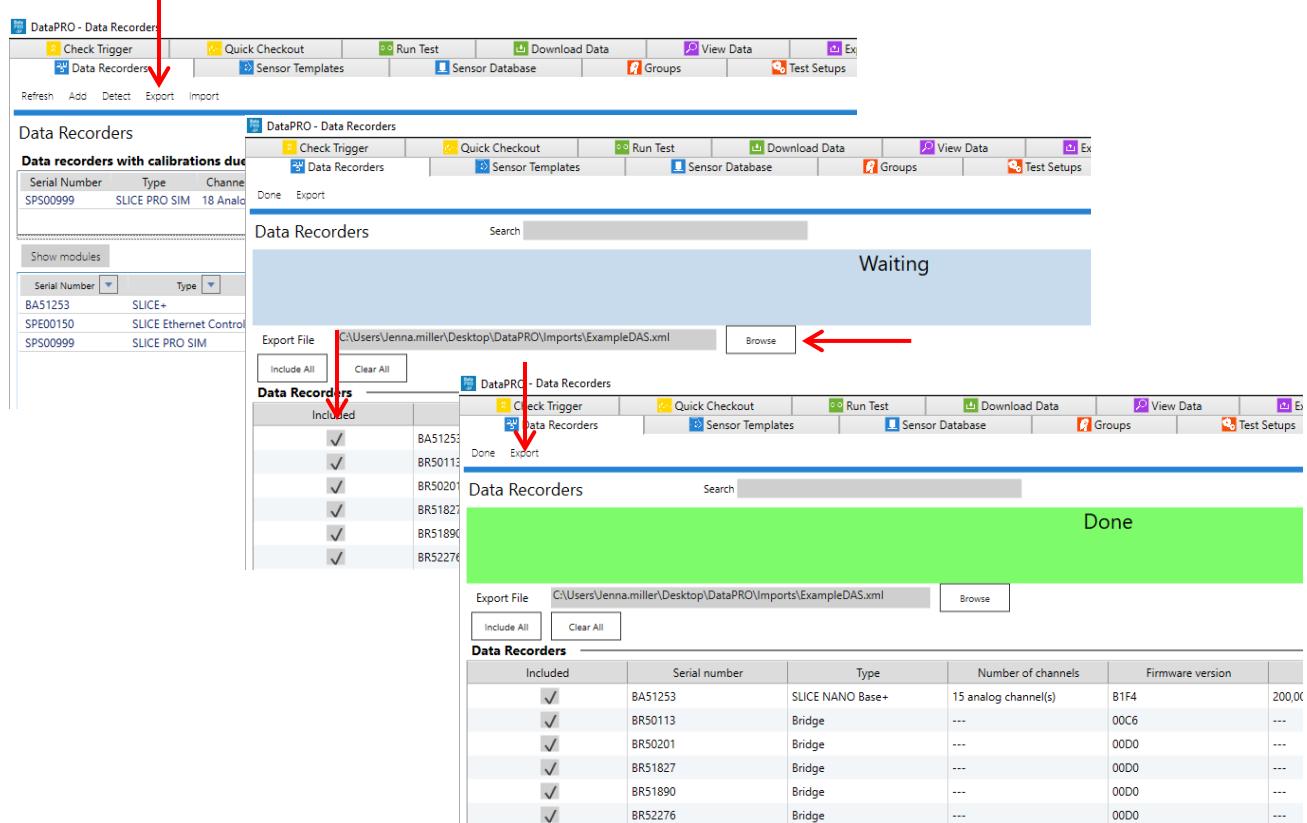
- Screenshot 1:** Shows the 'Data PRO - Data Recorders' window. The 'Edit' button in the toolbar is highlighted with a red arrow. The table below lists a single DAS entry: SPS00999, Type: SLICE PRO SIM, Channels: 18 Analog, Firmware: A1J4, Max Sample Rate: 600,000, Cal Date: 4/7/2016, and Cal Due Date: 4/7/2017.
- Screenshot 2:** Shows the 'Data PRO - Edit DAS BA51253' window. The 'Save' button at the top is highlighted with a red arrow. The configuration details are identical to the first screenshot.
- Screenshot 3:** Shows the 'Data PRO - Add DAS SPS00999 (saved)' window again, with the 'Save' button highlighted with a red arrow. This window also displays the same configuration details as the others.

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

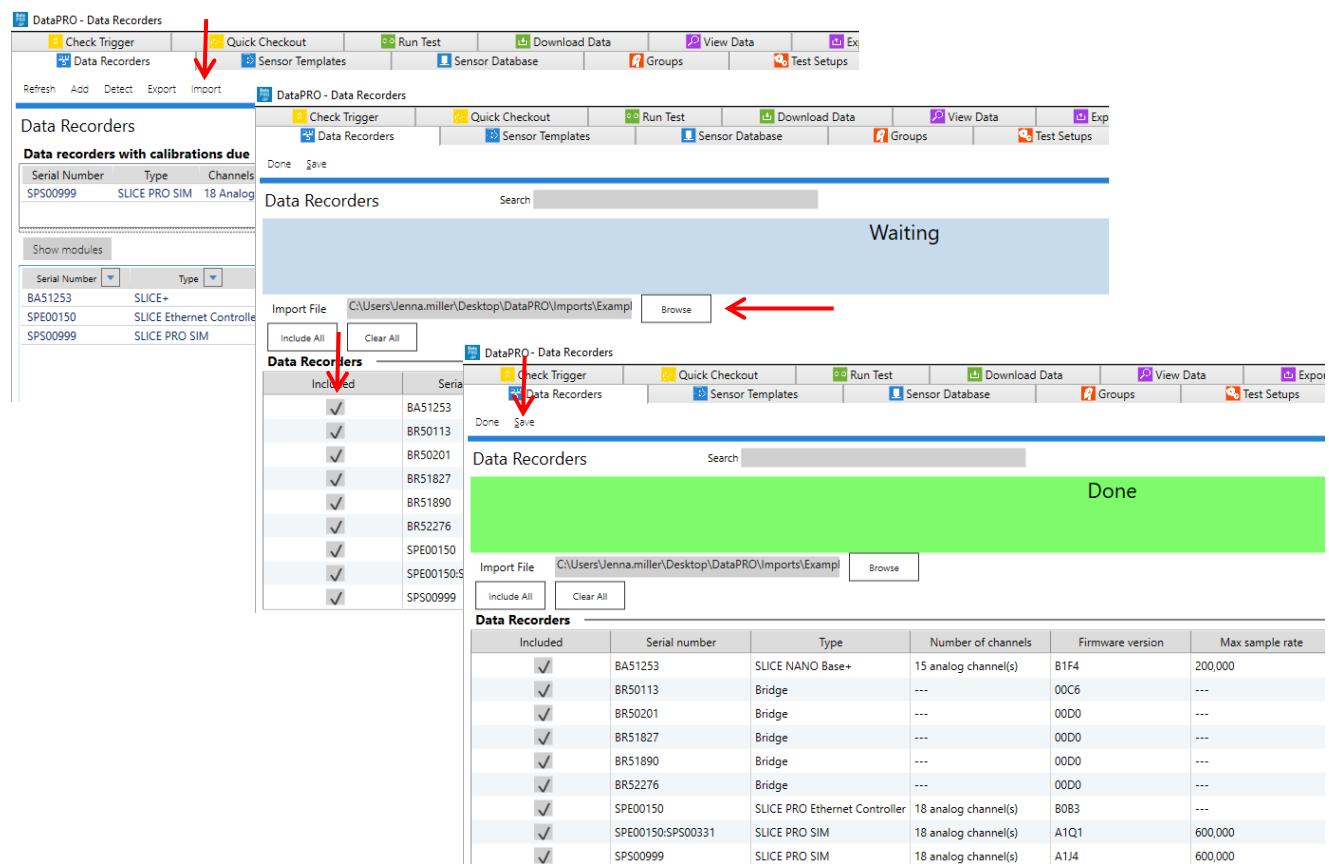


- a. Select and delete multiple DAS by using Shift or CTRL.

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, select “Done” when finished:



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:



17. Select Refresh to update the display with any updates made while connected to a SQL Server Database.
18. To return to the Quick Start Steps, click [here](#) (page 17).

Sensor Templates: Add, Edit, Delete

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.

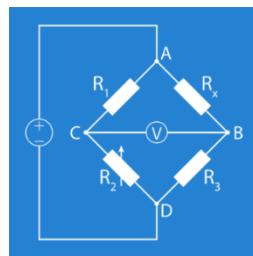
To add a sensor template, start at step 1.

To edit a sensor template, go to step 5.

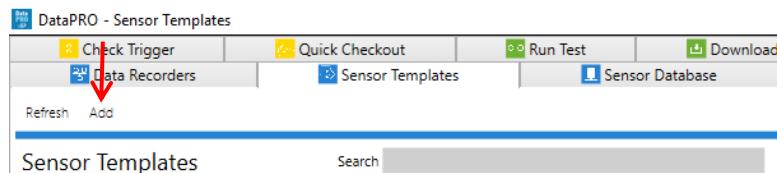
To delete a sensor template, go to step 6.

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 122.

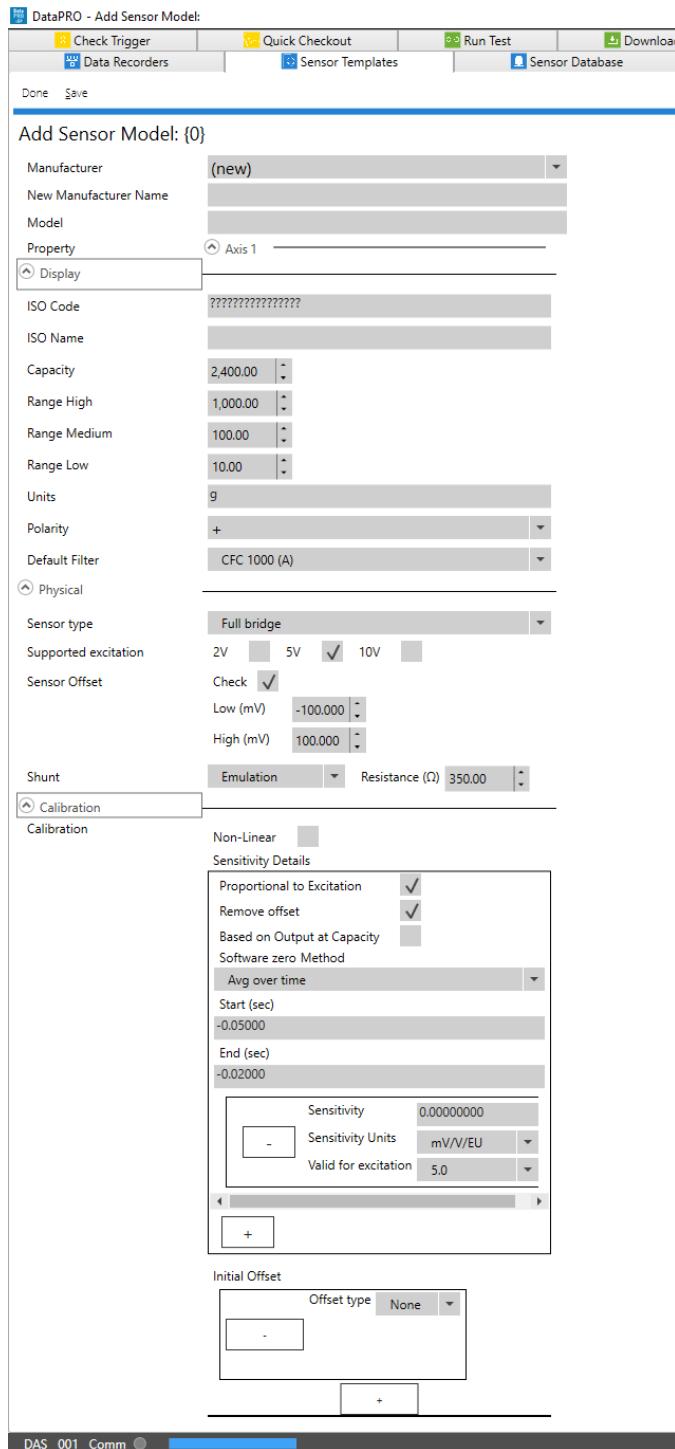
1. Select the “Sensor Template” tab:



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:** Use to 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:** Currently each sensor entry can have only one axis. Future versions of DataPRO will support multiple axes per sensor entry.
- **User Code:** Optional code used to identify measurement channel.
- **User Name:** Optional description for measurement channel.
- **ISO Code:** Optional code used to identify measurement channel. Can be restricted/required to 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 143 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).
 - 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 4kΩ. If using sensors with a high bridge resistance, the shunt tolerance may have to be expanded.*

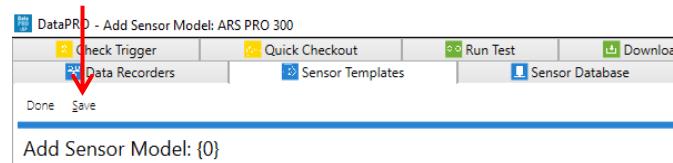
- **Non-Linear:** Used to indicate a sensor’s output is not linear and will use an IR-TRACC or Cubic Polynomial equation for the sensitivity. A non-linear sensor can have an additional linear sensitivity value entered. This can be collected as a separate channel.
- **Proportional to Excitation:** Used 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 0mV 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/V 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.

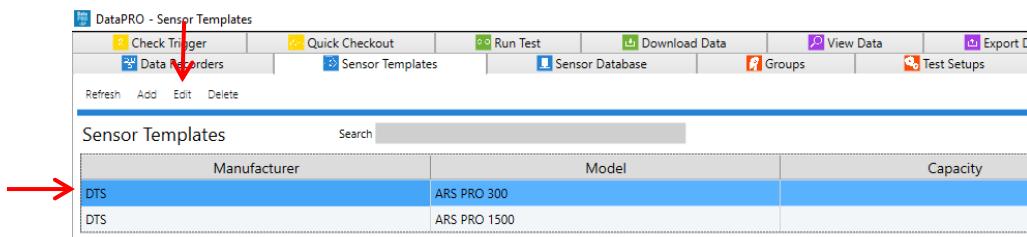
NOTE: Use the plus (+) sign to add additional calibration entries for different excitation voltages.

- 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 at mV, LHS, RHS, or Frontal to define the offset type. Select Offset type in Parameters navstep when configuring a Group or Test Setup.

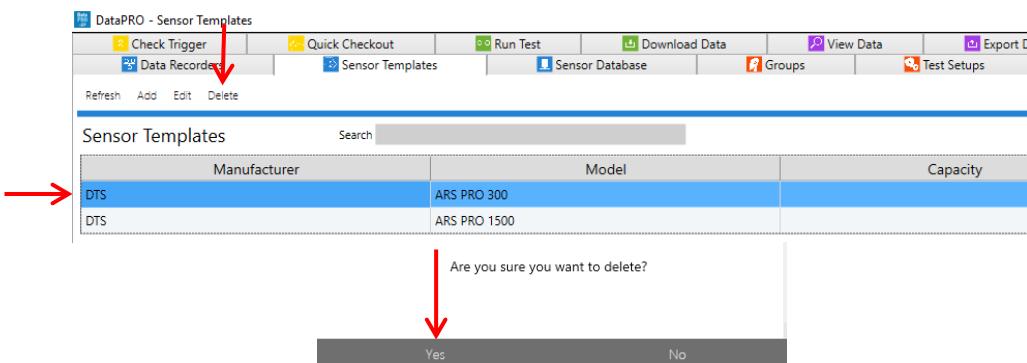
4. Select “Save” to record sensor template to database:



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:



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, click [here](#) (page 17).

Sensor Database: Refresh, Save, Add, Import, Export, Delete, Delete all

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.

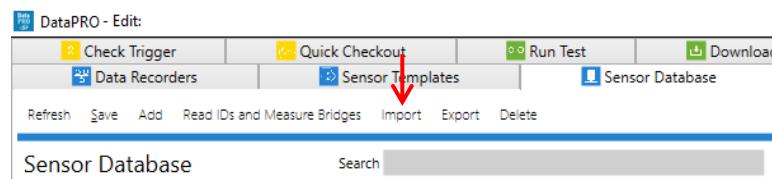
Sensors in the Sensor Database will be shaded based on their calibration status. Sensors shaded orange have a calibration due date that is within the Warning Period; Sample Sensor 1 in below image. Sensors that are shaded red have a calibration that is past due; Sample Sensor 2 in below image. See [System Settings](#), page 122, for more information on Sensor Calibration Policies.

Analog (10)		Squib Settings (0)	Digital Input Settings (0)	Digital Output Settings (0)		
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

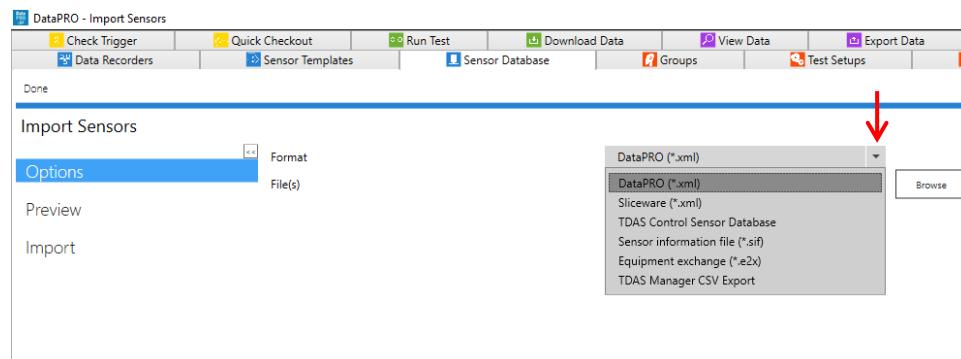
1. Select the “Sensor Database” tab:



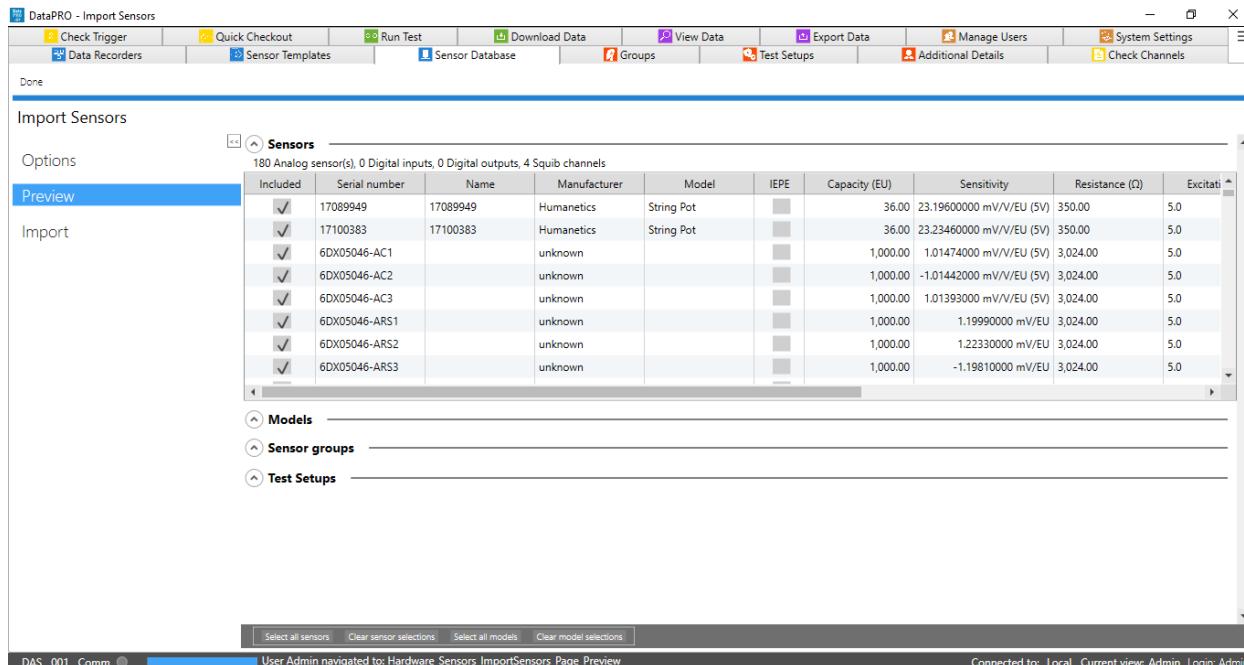
2. Select “Import” from the menu:



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

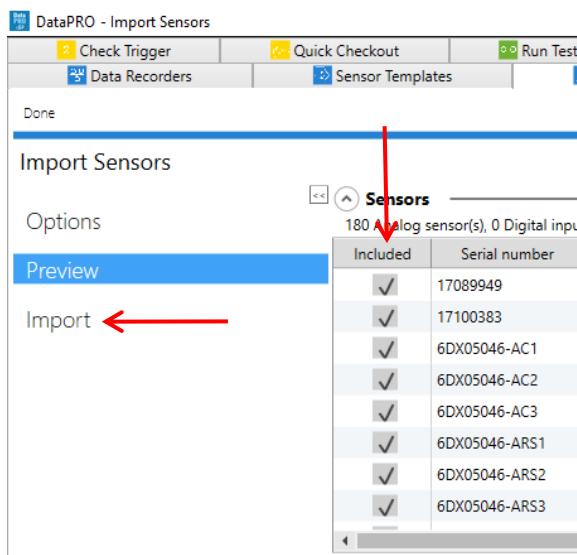


4. The **Preview** navstep lists the sensors available for import (Other import options such as Models may be available to include or remove from the import):

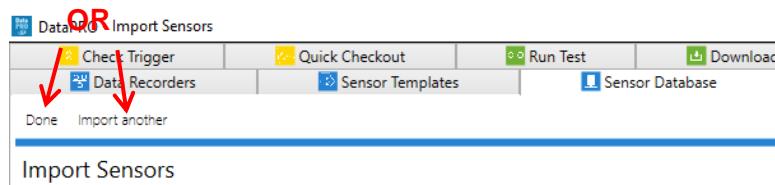


NOTE: Sensors with critical exceptions (including no excitation, no calibration record, no sensitivity, duplicate EID) will not be imported.

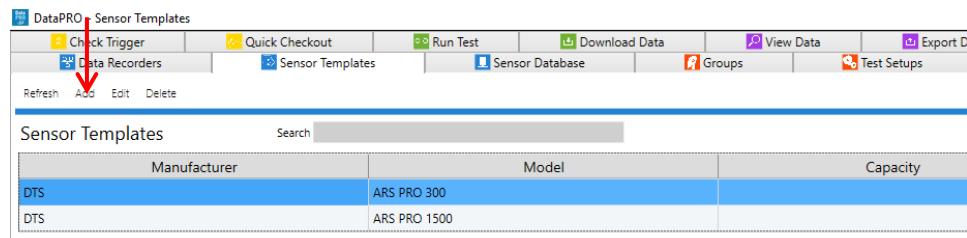
5. Select sensors to import and select **Import** navstep:



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



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



- 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.
- 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: Add, Edit, Delete*, page 25, 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 71, 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.
- **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/signalized 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 71, for more information on using Meter Mode display.

Squib channel type:

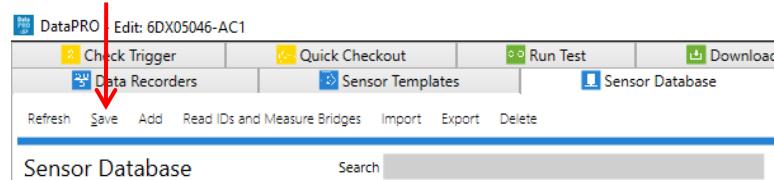
- **Name:** Used as a primary identifier of a Squib sensor.
- **Define delay in test:** If enabled, the delay time can only be defined in a Test Setup.
- **Delay (ms):** Time after T=0 for squib to fire.

- **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 71, for more information on using Meter Mode display.

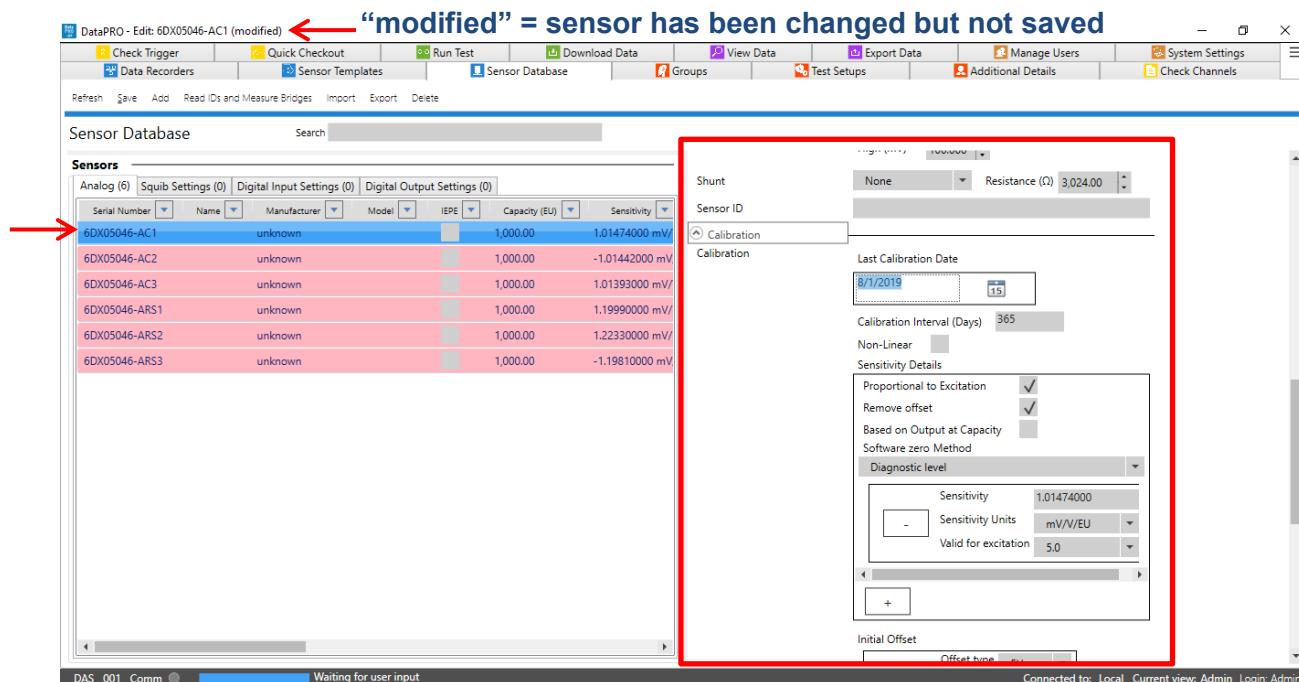
Digital Output channel type:

- **Name:** Used as a primary identifier of a Digital Output sensor.
- **Mode:** How the signal will be generated.
 - Five Volt Low-to-High Transition
 - Five Volt 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 71, for more information on using Meter Mode display.

8. See *Appendix A: Common Sensor Types and Bridge Connections*, page 143, for more information on entering common sensor types.
9. Select “Save” to record sensor to database:

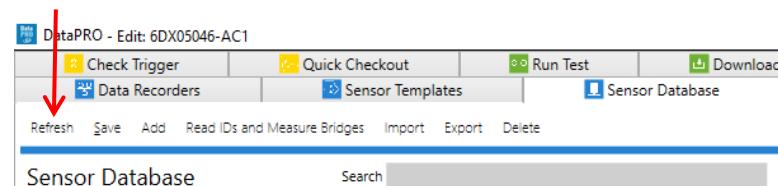


10. To edit a sensor, select the sensor from the list. Edit the information on the right side of the screen (see step 7). Select “Save” (step 9) to record the changes to the database:

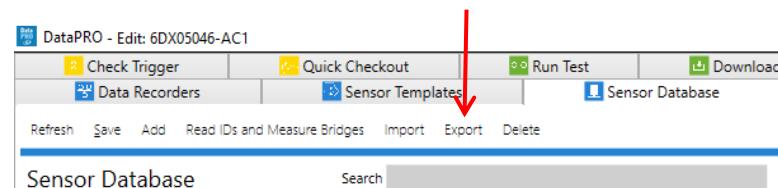


- Different sensor types are managed using separate sensor tabs.
- Select the appropriate sensor tab to view and modify parameters for those sensor types.

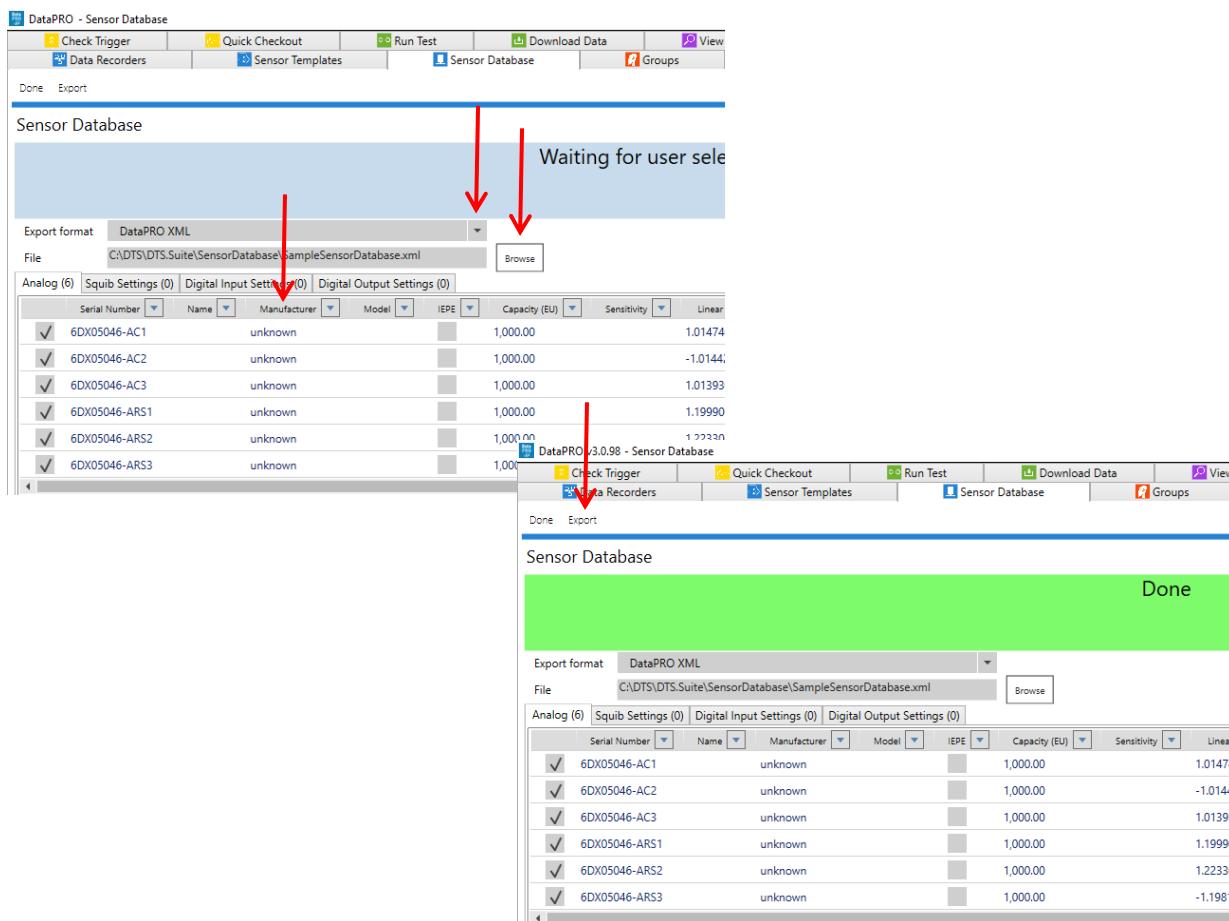
NOTE: If multiple users are modifying the sensor database, select “Refresh” to update the latest sensor settings.



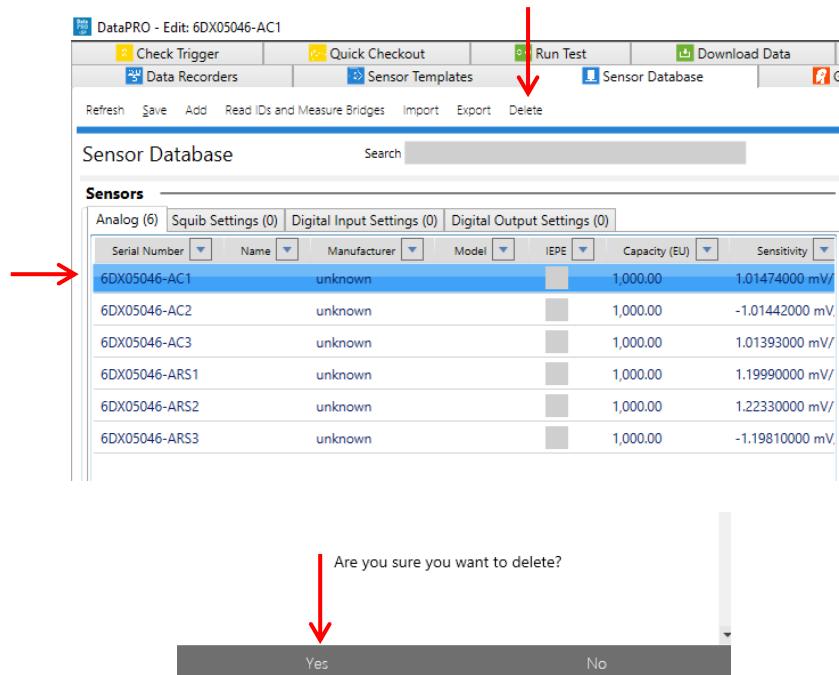
11. To export sensor information, select “Export”:



12. Select export format and browse to the desired location to save the file. (If exporting to TDAS Control Sensor Database format, enable “Export only TDC compatible sensors” to export only sensors compatible with TDAS Control). Browse to desired location to save database file and modify export file name if desired (Default location is C:\DTS\TDTS.Suite\3.0.311\SensorDatabase). Select sensors to include in export. Select “Export” to save. Select “Done” when finished:



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.

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

15. To return to the Quick Start Steps, click [here](#) (page 17).

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: Add, Import, Edit, Delete, Copy

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 as *.grp files; all sensors must exist in the sensor database in order to import the *.grp file.

To add a group, start at step 1.

To import a group, go to step 8.

To edit a group, go to step 12.

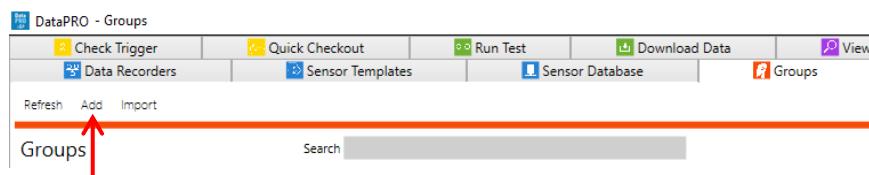
To delete a group, go to step 13.

NOTE: Only ISO Codes are displayed in the below images. To enable User Codes see [System Settings, page 122](#).

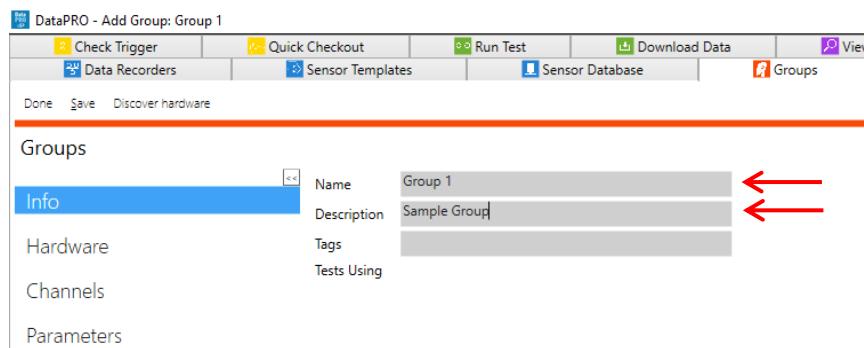
1. Select the “Groups” tab:



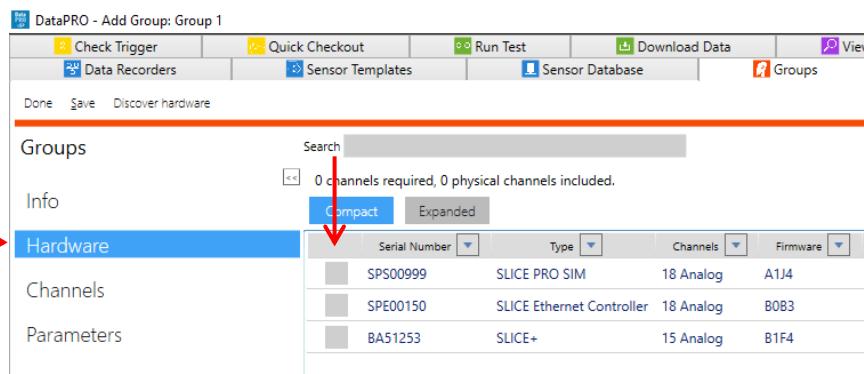
2. Select “Add” to create a group:



3. Enter Name and (optional) Description for the group:

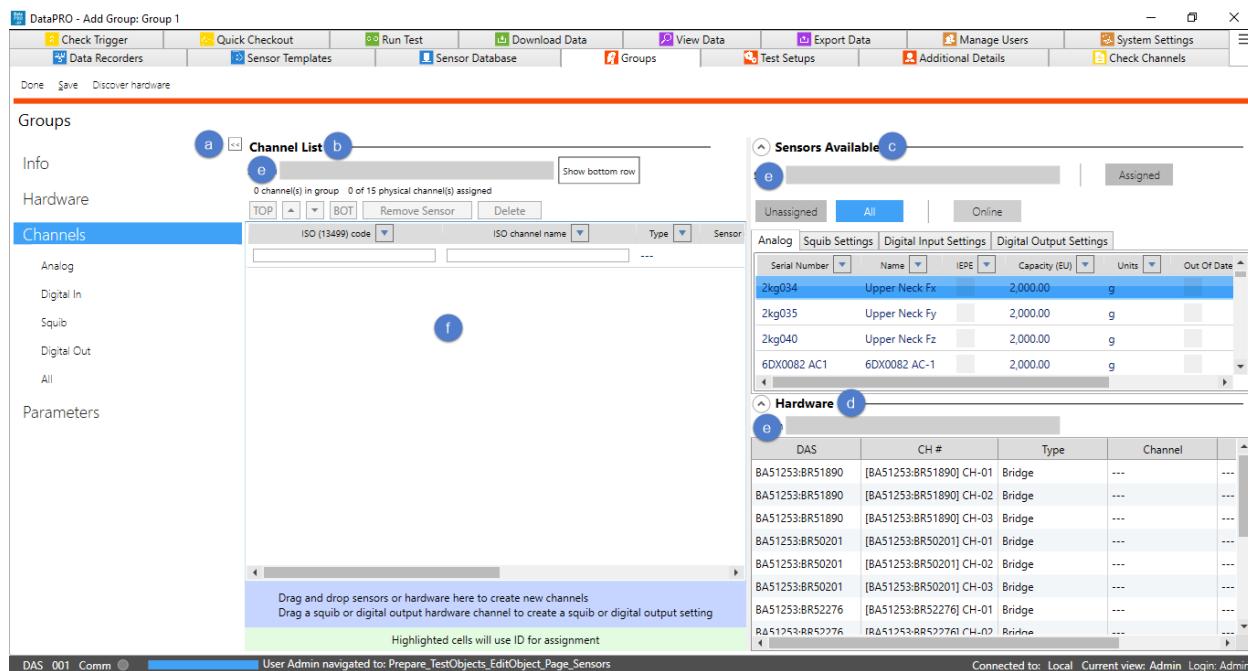


4. Add **Hardware** (optional), otherwise skip to step 5:

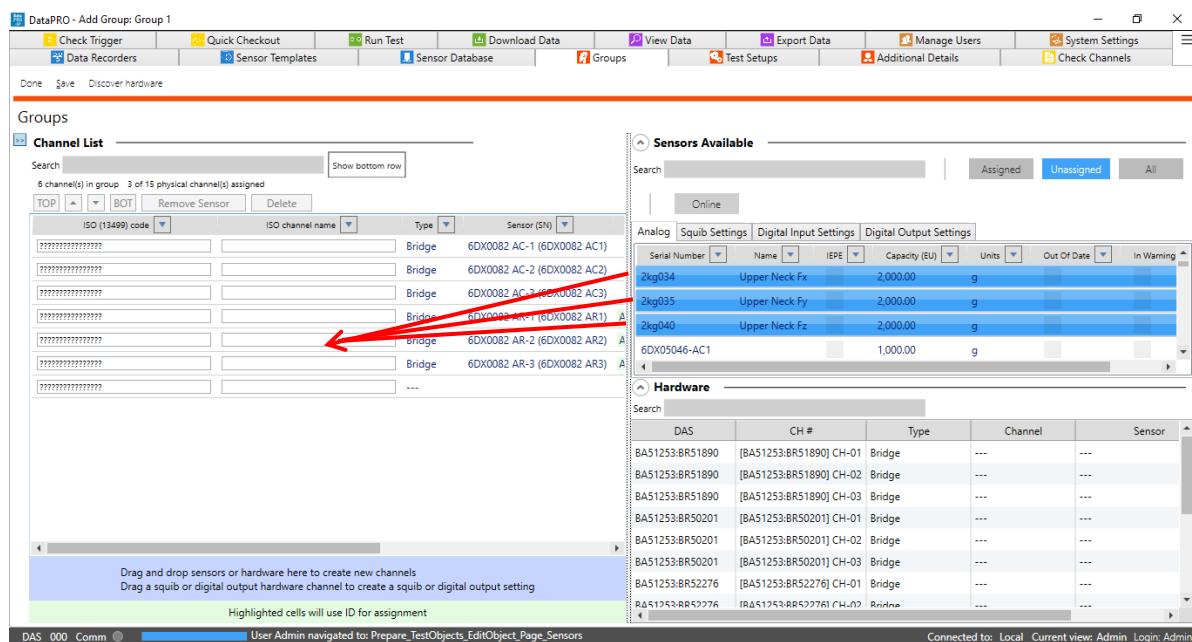


- Select Compact or Expanded to configure display of DAS table.
 - Expanded will show all selectable DAS units (SLICE PRO modules, SLICE Micro/Nano Base units, SLICE 6/SLICE6 AIR units, Distributors, TDAS PRO Racks and TDAS G5 units).
 - Compact will display the Distributor or Base of configured DAS systems as well as modules that are not currently configured in a DAS system.
- If the DAS is known and has been added to the data recorder database, select the appropriate boxes in the Included column.
- If the DAS is powered on and connected, select "Discover Hardware". See *Appendix C: Discover Hardware*, page 156, for instructions on how to use Discover Hardware.

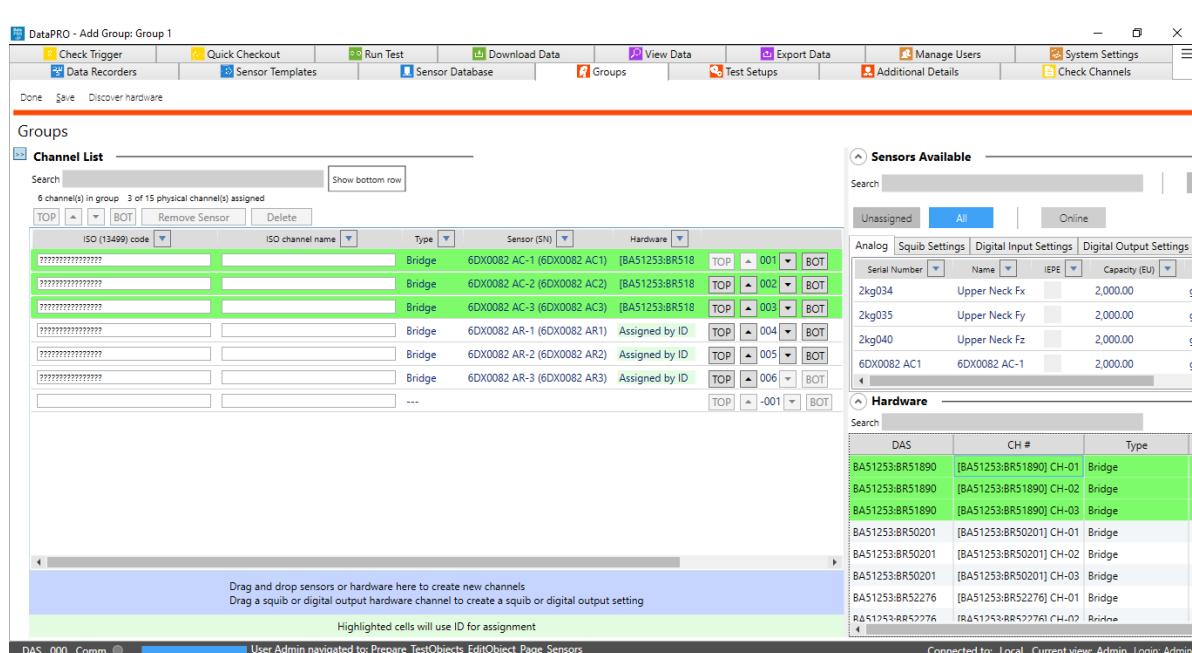
5. On the **Channels** navstep, assign channels to groups and (optionally) DAS hardware channels to the group:



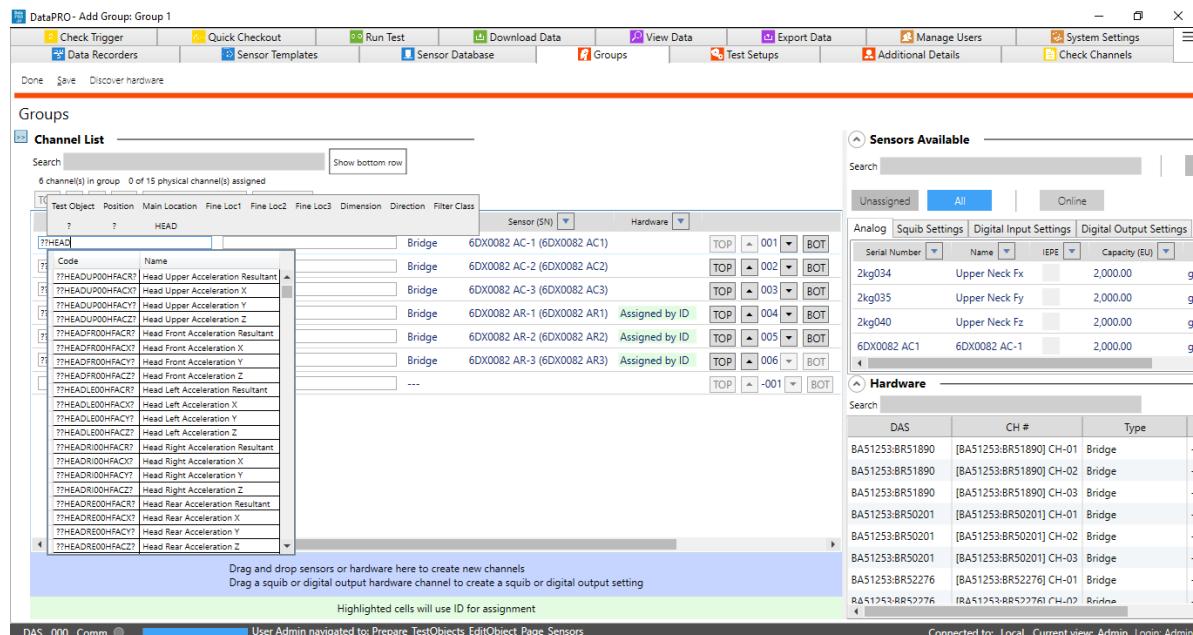
- Use the 'Snap Arrows' to collapse the Navigation Pane;
- Channel List table displays all channels assigned to the Group;
- Sensors Available table displays all sensors in the Sensor Database; use radio buttons to filter table display.
 - Assigned displays only sensors that have been assigned to the group;
 - Unassigned displays only sensors that have not been assigned and are available;
 - All displays all sensors, regardless of assignment;
 - Online displays only sensors that were found during Discover Hardware;
- If hardware is included in the group, available DAS channels will be displayed in the Hardware table.
 - DAS channels highlighted green indicate channel assignment, either manually or by EID;
- Use search bar to search within table;
- Add channels to the group.
 - Select sensors from Sensors Available table and drag to Channel List table to add channels to group:



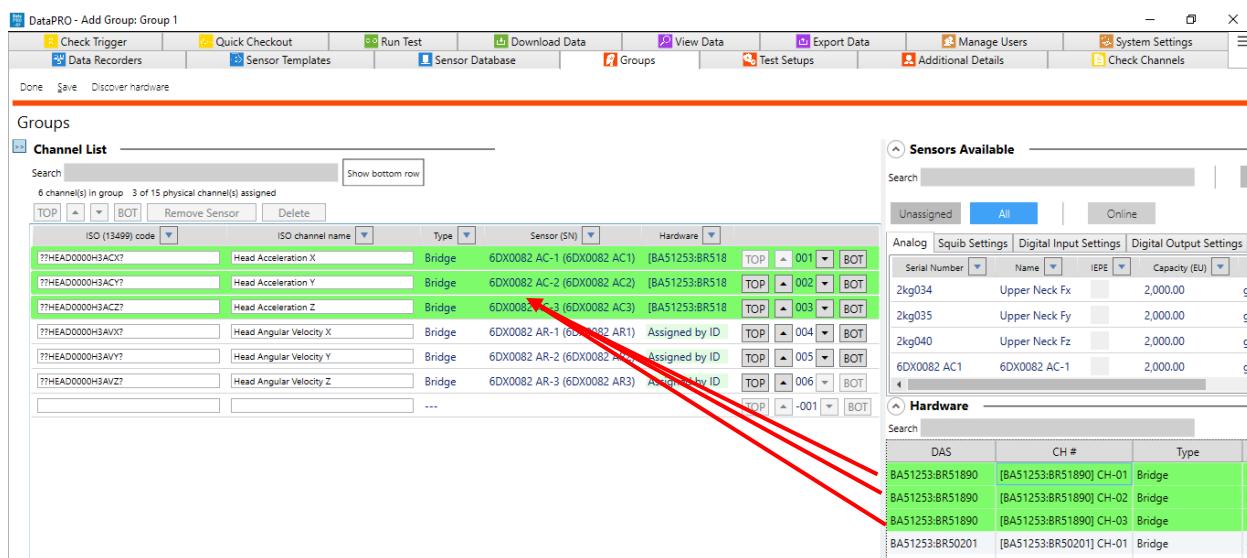
- Sensors that have EIDs will be shaded green in the Hardware column of the Channel List table;
 - Sensors that do not have EIDs will have standard grey/white shading and will need to be manually assigned to a hardware channel before collecting data. (This can be done in the group, the Test Setup, or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



- Group Channels created by adding hardware channels will have default settings as defined in **System Settings**, page 122;
 - 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:

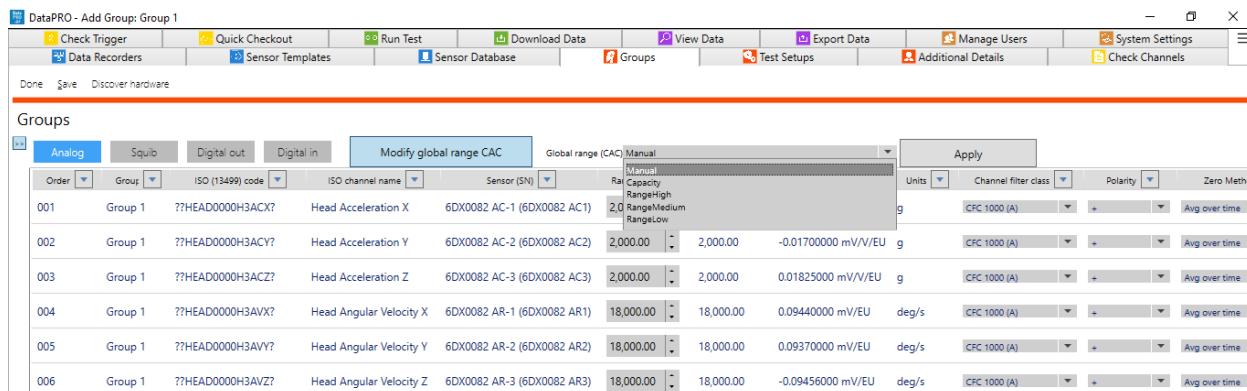


- Manually add ISO/User Code(s) or Chanel Name(s), or copy/paste multiple to create multiple Group Channels;
 - ISO Code Builder and Lookup Table are optional and can be disabled in **System Settings**, page 122;
- g. Select sensors from the Sensors Available table and drag to Channel List to assign 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:



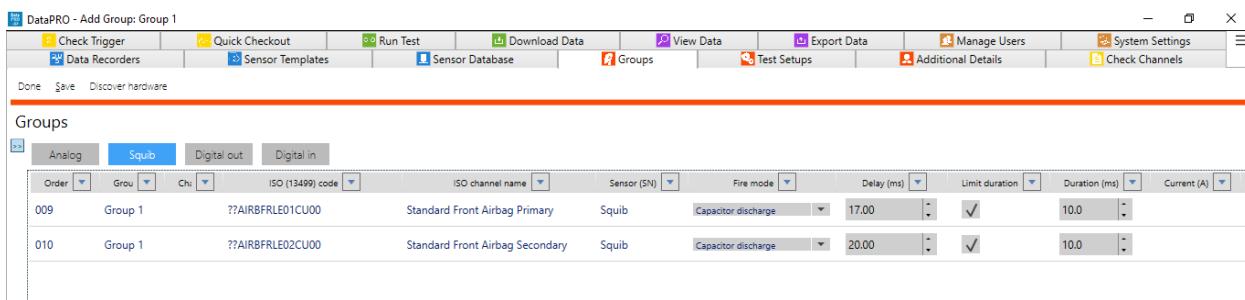
6. The **Parameters** navstep allows for modifications to certain channel parameters. These changes apply only to the Group. Select channel type to display parameters for that channel type (See *Appendix A: Common Sensor Types and Bridge Connections*, page 143, for more information about different sensor types and options during sensor entry).

a. Analog Channels:



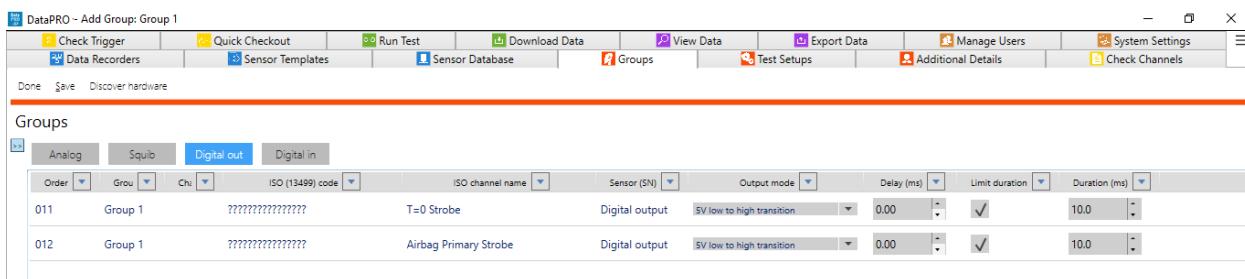
- i. Modify Range, Channel Filter Class, Polarity, Software Zero Method, Average Over Time Start/End and Initial Offset for individual Analog channels;
- ii. Select Modify Global Range CAC to modify the range for all Analog Channels based on High, Medium, Low Range and Capacity settings in Sensor Database;

b. Squib Channels:



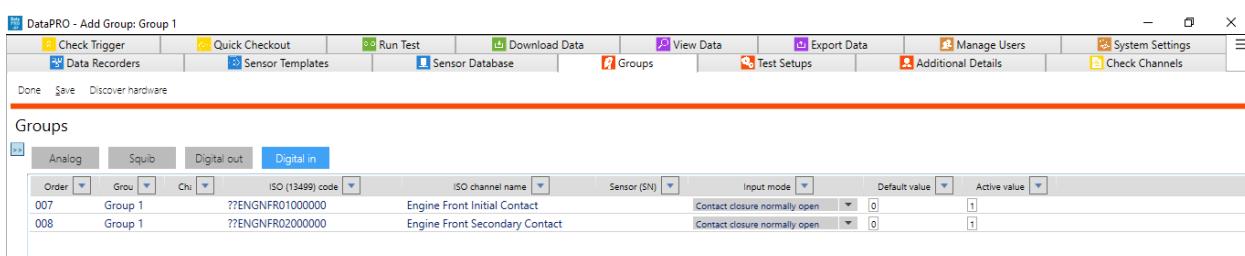
- Change Fire Mode, Delay, Limit Duration, Duration and Current (if Constant Current is the selected Fire Mode);

c. Digital Output Channels:



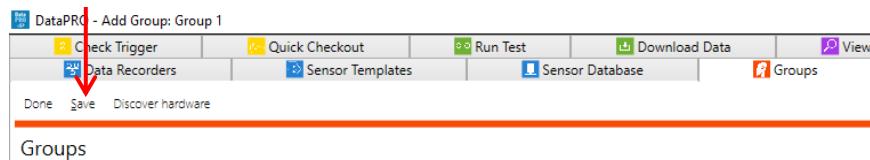
- Modify Output mode, Delay, Limit duration and Duration;

d. Digital Input Channels:

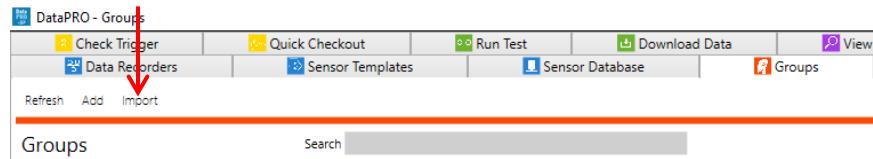


- Change Input Mode, Default Value and Active Value;

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

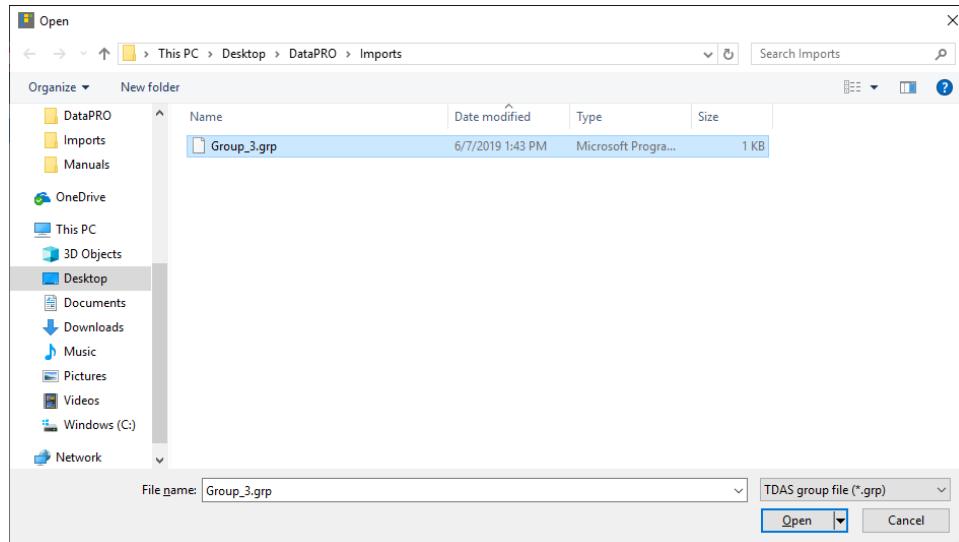


8. To import a group, select “Import”:

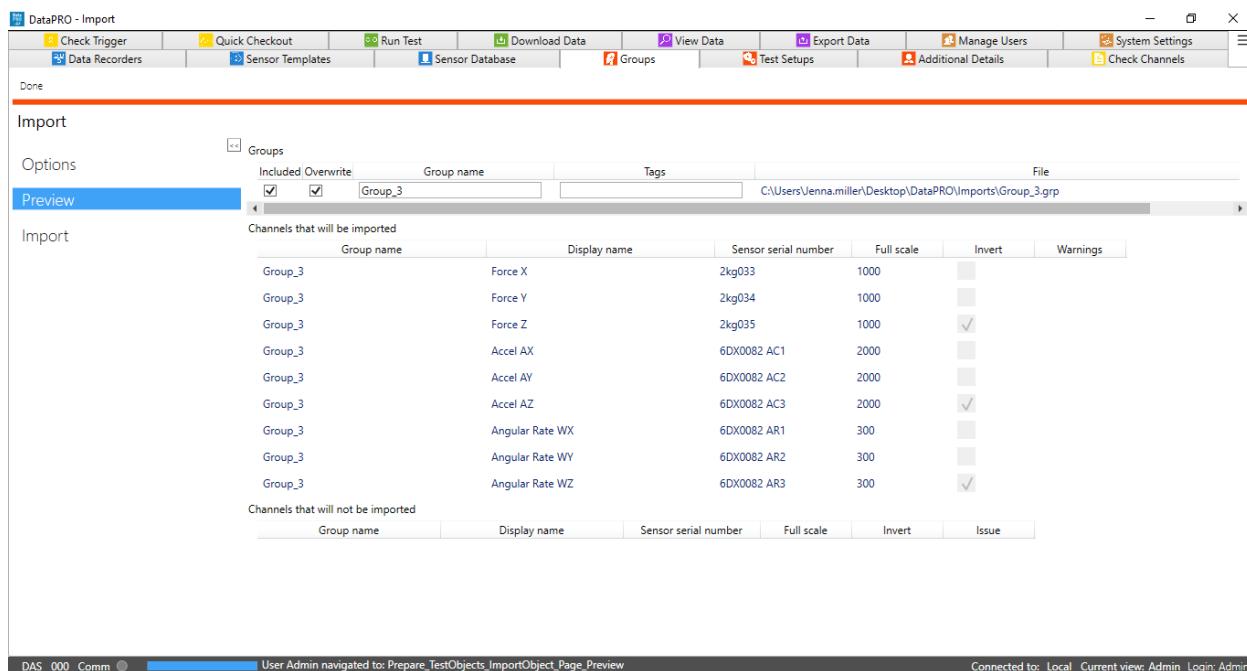


NOTE: Groups can be imported as *.grp files. All sensors must exist in the Sensor Database in order for the group to be imported.

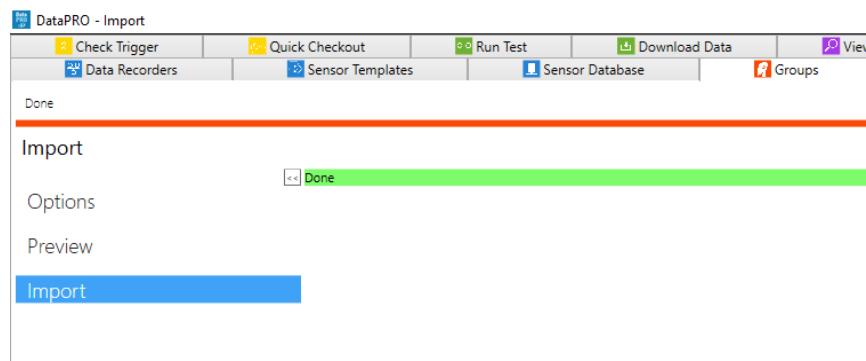
9. Select “Browse” and navigate to and select *.grp file to import:



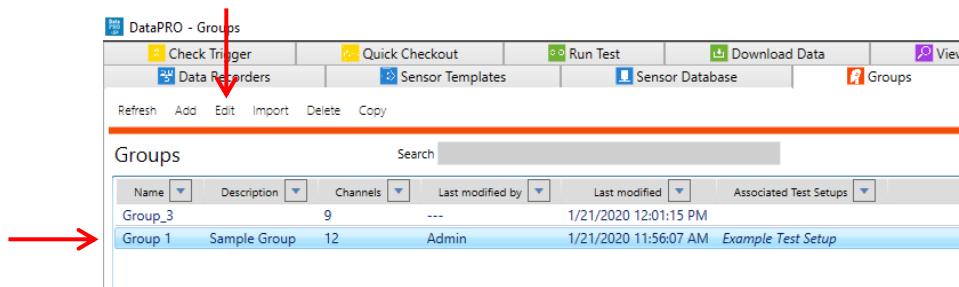
10. Make any necessary modifications in the **Preview** navstep:



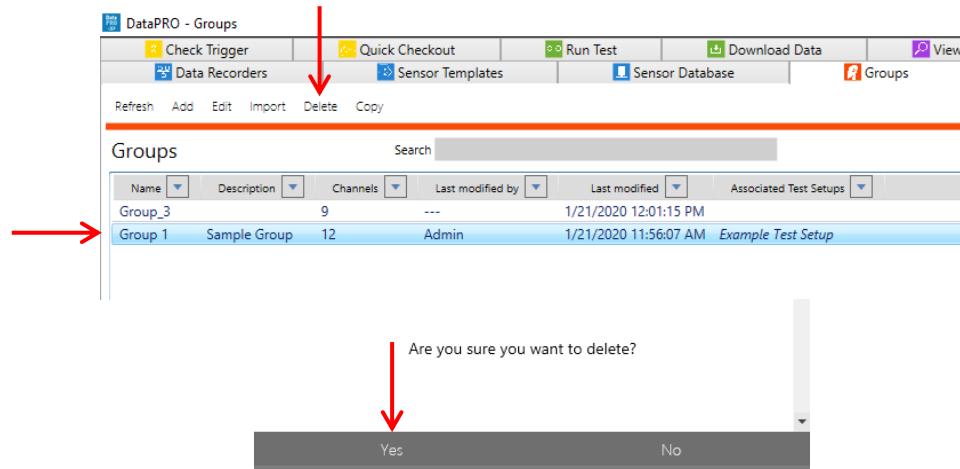
11. Select **Import** to import the group:



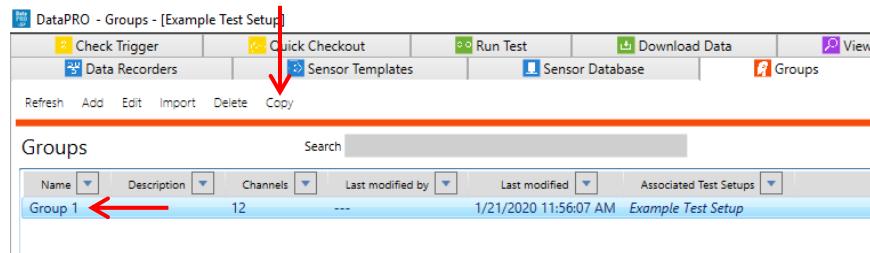
12. To edit a group, double-click on the group –or– select the group and select “Edit” (see steps 3-7):



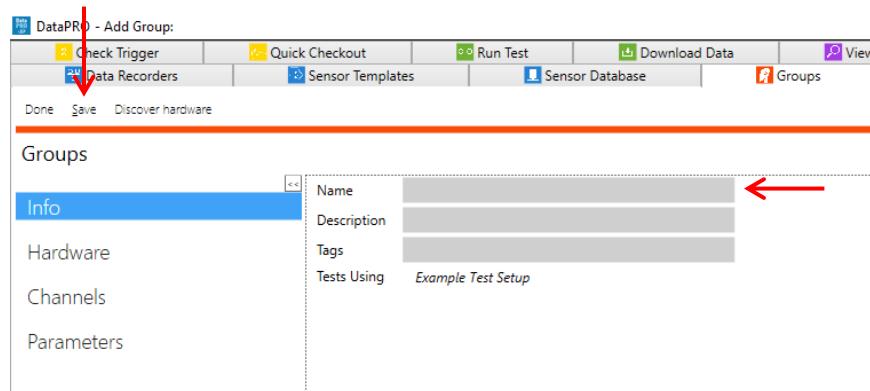
13. To delete a group from the database, select the group from the list, select “Delete” and then “Yes” to confirm:



14. 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.

15. To return to the Quick Start Steps, click [here](#) (page 17).

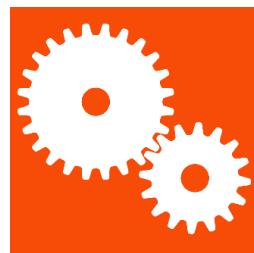
Test Setups: Add, Edit, Refresh, Import, Export, Delete, Copy

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: Add, Import, Edit, Delete, Copy*, page 38 for instructions on creating a Group).

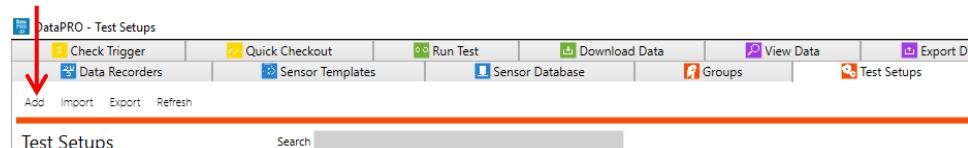
The steps and images below are for a “Record in Place” test, where data is stored on the internal flash memory of the DAS. For information on configuring SLICE6 AIR DAS for a Streaming test, see *Appendix I: Setting up SLICE6 AIR*, page 209.

- 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 change the current/default test setup, go to step 19.
- To update latest SQL Server Test Setup settings, go to step 20.

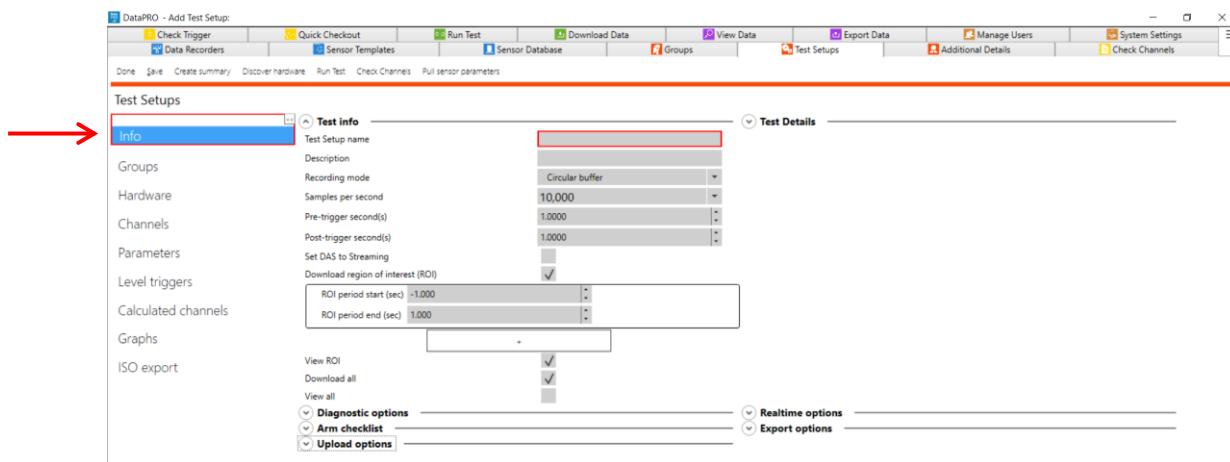
1. Select the “Test Setups” tab:



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



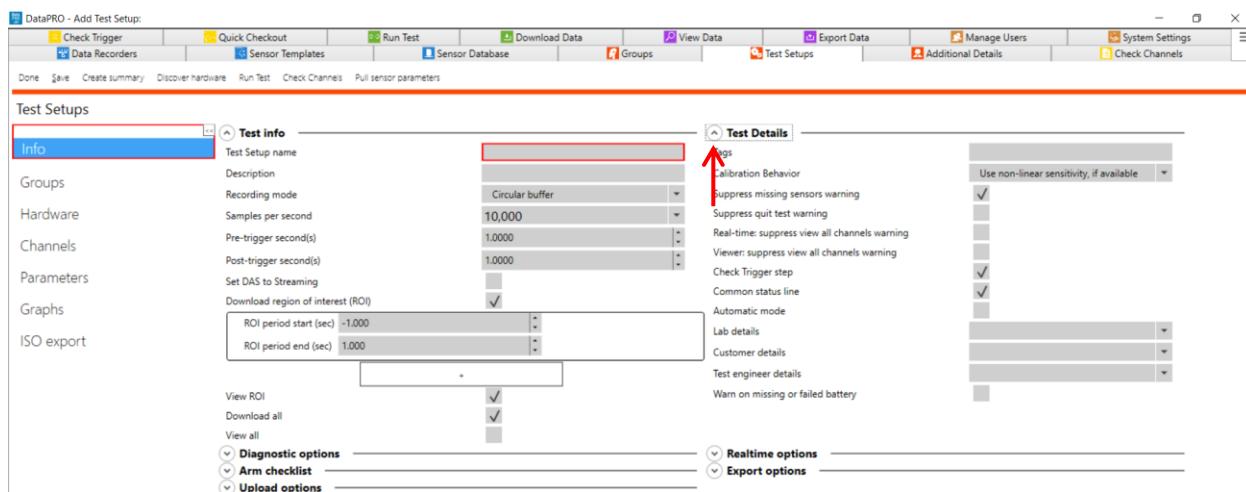
3. The **Info** navstep contains the test parameters. All fields in red must be completed:



- a. The default settings for test parameters can be set in the **System Settings** tab (page 122).

NOTE: *Level triggers and Calculated channels are optional navsteps that must be enabled in System Settings.*

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



c. Test info:

Setting	Value
Test Setup name	[Redacted]
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 Streaming	<input type="checkbox"/>
Download region of interest (ROI)	<input checked="" type="checkbox"/>
ROI period start (sec)	-1.000
ROI period end (sec)	1.000
View ROI	<input checked="" type="checkbox"/>
Download all	<input checked="" type="checkbox"/>
View all	<input type="checkbox"/>

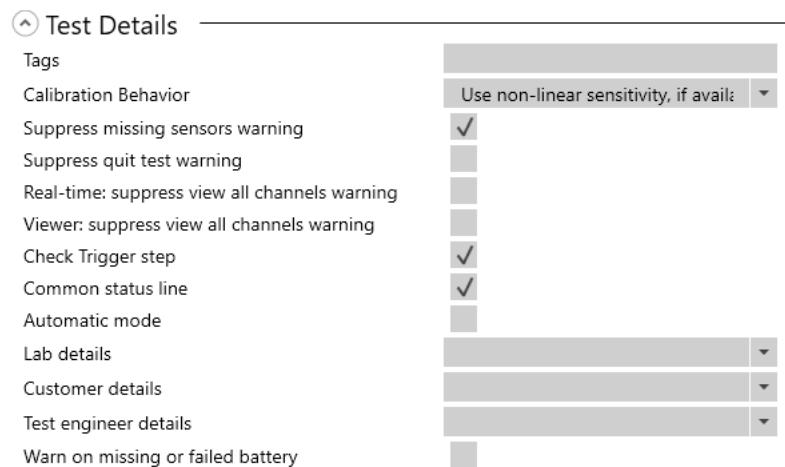
- i. **Test Setup name:** Name to identify Test Setup. (Each data collection event will have an additional, unique Test ID).
- ii. **Description:** Optional description of Test Setup.
- iii. **Recording mode:** Default recording mode options are Circular Buffer and Recorder Mode. Optional Hybrid Record mode can be turned on in System Settings (See *Data Collection Concepts* page 9, for more information on recording modes. See *System Settings* page 122, to enable Advanced Recording Options).
- iv. **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 56, for more information on selecting multiple sample rates.
- v. **Pre-trigger second(s):** The amount of data (in seconds) to be collected pre-trigger. Only applies to Circular Buffer Mode.
- vi. **Post-trigger second(s):** The amount of data (in seconds) to be collected post-trigger.
- vii. **Set DAS to Streaming:** If enabled, SLICE6 AIR DAS will be configured to stream data when armed (See *System Settings*, page 122, to enable Streaming Mode).
- viii. **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.

- ix. **ROI period start (sec):** Defines the amount of time pre-trigger to begin the ROI.
 - o Define ROI period Start for each included segment.

- x. **ROI period end (sec):** Defines the amount of time post-trigger to end the ROI.
 - o Define ROI period end for each included segment.
- xi. **View ROI:** If enabled, data collection process will include a navstep to view the ROI.
- xii. **Download All:** If enabled, DataPRO will download a dataset containing the full dataset defined in Recording Options.
- xiii. **View All:** If enabled, data collection process will include a navstep to view the full dataset.

d. Test Details:



- 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 data collection event.

- viii. **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.

- ix. **Automatic Mode:** Select to automatically progress through data collection sequence. If selected, define an optional delay before DataPRO progresses to the next step.
- x. **Lab details:** Select Lab Details record from list (See *Lab Details*, page 68). Lab Details can be modified if a record is selected, or manually entered if no records exist.
- xi. **Customer details:** Select Customer Details record from list (See *Customer Details*, page 69). Customer Details can be modified if a record is selected, or manually entered if no records exist.
- xii. **Test Engineer details:** Select Engineer Details record (See *Engineer Details*, page 69). Engineer Details can be modified if a record is selected, or manually entered if no records exist.
- xiii. **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 139).

e. Diagnostic options:

<input checked="" type="radio"/> 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 type="checkbox"/>
Prepare Hardware delay second(s)	6.0 <input type="button" value="::"/>
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 in order 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 data collection process. For tests that include TDAS G5 DAS, pre-test diagnostics will be displayed.

f. Realtime options:



- 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. **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 for information regarding making changes to the config file):

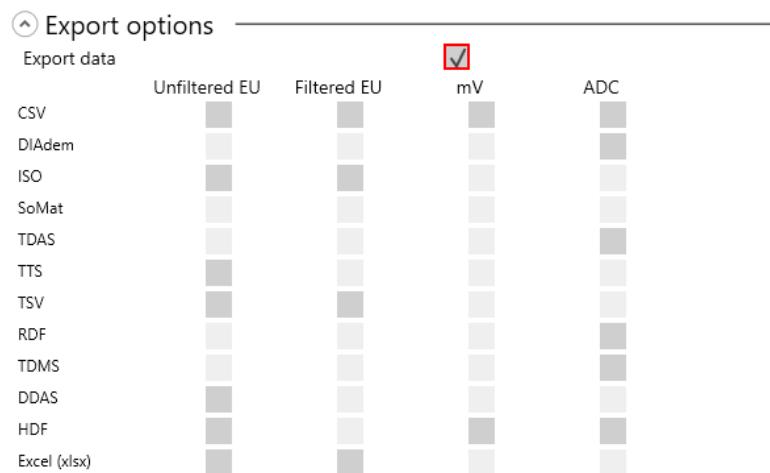
Arm checklist	
Perform arm checklist	<input checked="" type="checkbox"/>
Check battery voltage	<input checked="" type="checkbox"/>
Check input voltage	<input checked="" type="checkbox"/>
Check squib resistance	<input checked="" type="checkbox"/>
Check sensor ids	<input checked="" type="checkbox"/>
Check start/event line(s)	<input checked="" type="checkbox"/>
Check tilt sensor(s)	<input checked="" type="checkbox"/>
Check temperature	<input checked="" type="checkbox"/>
Require all units pass arm checklist	<input type="checkbox"/>

- 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 122).
- 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 122).
- iv. **Check squib resistance:** 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 30).
- v. **Check sensor ids:** If enabled, Arm Checklist will include sensor ID check. Arm Checklist will fail if expected IDs 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.
- 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.*

h. Export options:



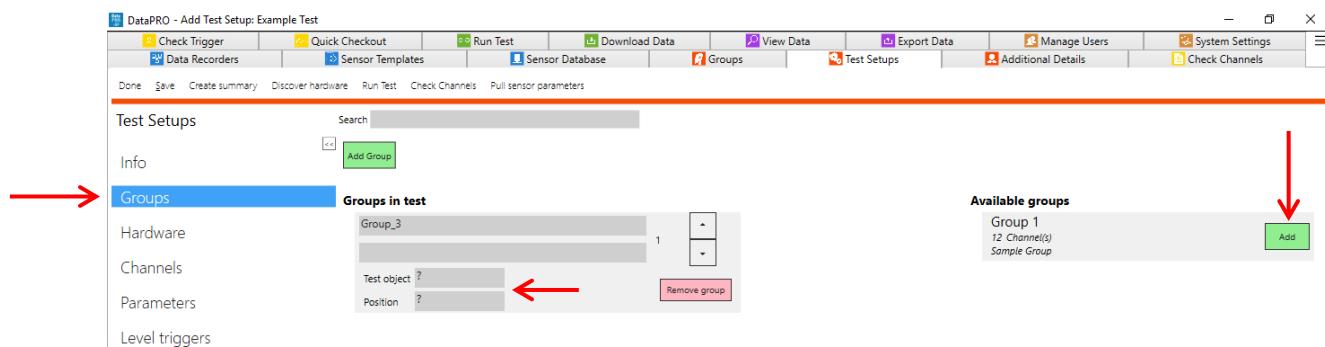
- i. **Export data:** If enabled, DataPRO will export a data set in each of the selected format(s). Raw data is always downloaded.
- ii. **CSV:** All test data is contained in one Comma Separated Variable file.
- iii. **DIAdem:** Data format comprised of one .dat header file for the test and one binary 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.

i. Upload options:

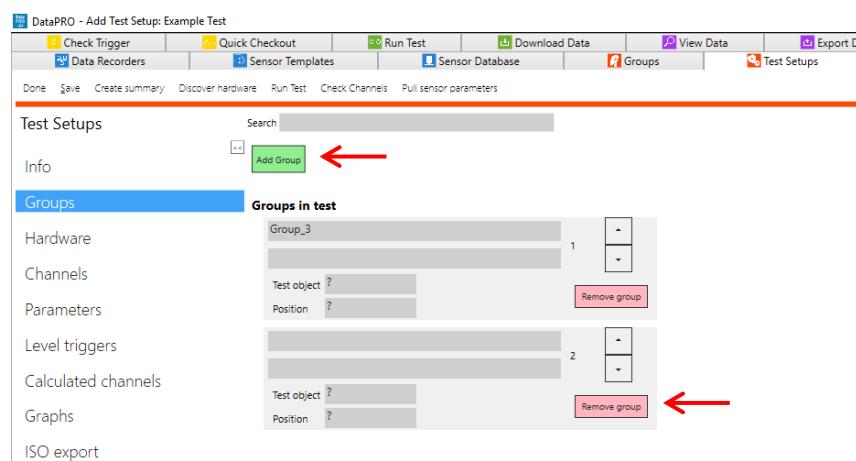


- i. **Upload data:** If enabled, collected data will be uploaded to a specified location during the data collection process. Data will still be downloaded to the default location (C:\DTS\DTSSuite\Data), or other location defined in the configuration file.
- ii. **Upload folder:** File location for collected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

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

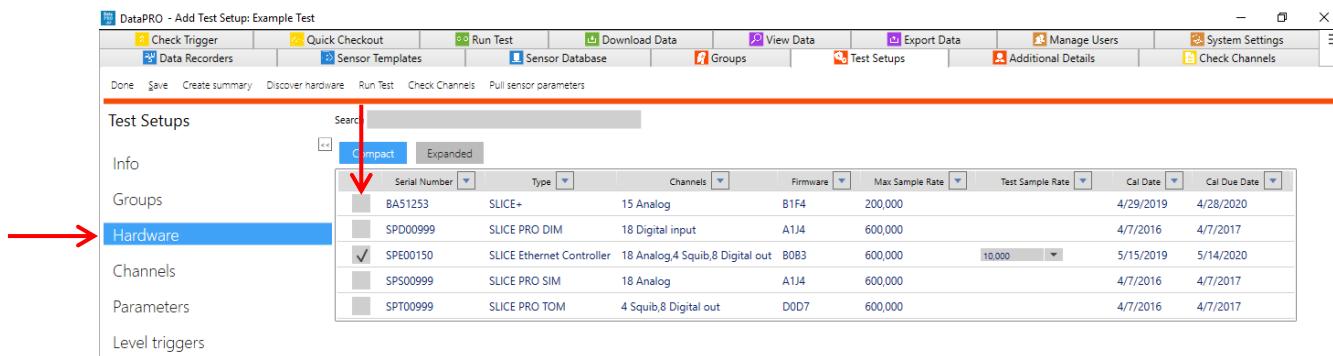


- a. Add pre-defined groups to the “Groups in test” by selecting “Add” for the appropriate available group.
 - i. If using ISO Codes, enter/update the Test Object and Position for each group that has been added. Test Object and Position can be modified per channel in the Channels navstep; “Mixed” will be displayed if a single group contains multiple values.
- b. Remove a group from a test by selecting “Remove group” for the appropriate group. Pre-defined 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.

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



- Any hardware that is assigned to a pre-defined group that is included in the 'Groups in test' will automatically be added to the Test Setup.
- Additional DAS can be added by selecting the appropriate check box in the Included column, or by selecting "Discover hardware" (See [Appendix C: Discover Hardware](#), page 156, for more information).
- 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 same DataPRO software window with the "Expanded" button now selected. The data grid displays the same hardware list as the previous screenshot, but the "Included" column is now visible, showing whether each unit is included in a group or not. The "SPE00150" entry has a checked checkbox in the "Included" column.

Serial Number	Type	Channels	Firmware	Max Sample Rate	Test Sample Rate	Cal Date	Cal Due Date
BA51253	SLICE+	15 Analog	B1F4	200,000		4/29/2019	4/28/2020
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
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
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.

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

Group	ISO (13499) code	ISO channel name
Test channels	108UMPFRG00ACXB	Bumper Front Center AX
Test channels	108UMPPRRT00ACXB	Bumper Front Right AX
Test channels	108UMPFLT00ACXB	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	---
SPE00150:SPT00107	[SPE00150:SPT00107] SQ-04	Squib	---

- The controls of the **Channels** navstep in Test Setup are the same as the controls for the **Channels** navstep in Group (See [Groups: Add, Import, Edit, Delete, Copy](#), page 38, for more information).

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

Group Name	ISO Code	ISO Channel Name	Serial Number	Sensor Name	DAS Serial Number	Sample Rate	Display Units	_ROI Period 1	_ROI Period 2
Test channels	108UMPFRG00ACXB	Bumper Front Center A	BP027	Bridge Plug	SPS00331	10000	g	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Test channels	108UMPPRRT00ACXB	Bumper Front Right AX	BP028	Bridge Plug	SPS00331	10000	g	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Test channels	108UMPFLT00ACXB	Bumper Front Left AX	BP029	Bridge Plug	SPS00331	10000	g	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Group_3	11NECKUP00H3FOX?	Neck Upper Force X	2kg033	Upper Neck Fx	N/A	N/A	g	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Group_3	11NECKUP00H3FOY?	Neck Upper Force Y	2kg034	Upper Neck Fx	SPS00331	10000	g	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Group_3	11NECKUP00H3FOZ?	Neck Upper Force Z	2kg035	Upper Neck Fy	SPS00331	10000	g	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Group_3	11HEAD0000H3ACX?	Head Accel AX	6DX0082 AC1	6DX0082 AC-1	N/A	N/A	g	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Group_3	11HEAD0000H3ACY?	Head Accel AY	6DX0082 AC2	6DX0082 AC-2	N/A	N/A	g	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Group_3	11HEAD0000H3ACZ?	Head Accel AZ	6DX0082 AC3	6DX0082 AC-3	N/A	N/A	g	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Group_3	11HEAD0000H3AVX?	Head Angular Rate WX	6DX0082 AR1	6DX0082 AR-1	N/A	N/A	deg/s	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Group_3	11HEAD0000H3AVY?	Head Angular Rate WY	6DX0082 AR2	6DX0082 AR-2	N/A	N/A	deg/s	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Group_3	11HEAD0000H3AVZ?	Head Angular Rate WZ	6DX0082 AR3	6DX0082 AR-3	N/A	N/A	deg/s	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- 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.

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 143, for more information about different sensor types and options during sensor entry).

a. Analog 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	<input checked="" type="checkbox"/>	10.0	
008	Group 1	11AIRBFRLE02CU00	Standard Front Airbag Secondary	Squib	Capacitor discharge	20.00	<input checked="" type="checkbox"/>	10.0	

- 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.

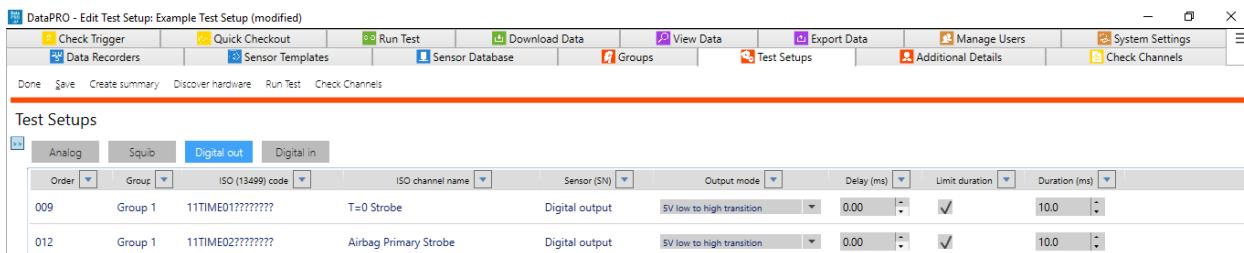
NOTE: If “Allow push/pull of sensors” is enabled, any difference from the Sensor Database will be indicated in orange. See **System Settings**, page 122, for more information.

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	<input checked="" type="checkbox"/>	10.0	
008	Group 1	11AIRBFRLE02CU00	Standard Front Airbag Secondary	Squib	Capacitor discharge	20.00	<input checked="" type="checkbox"/>	10.0	

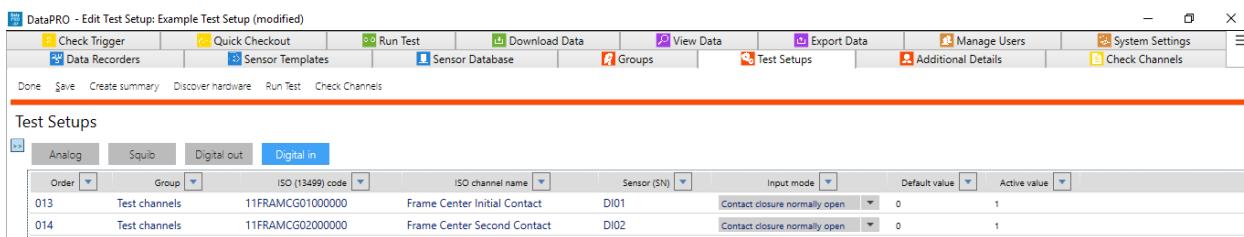
- i. Change Fire Mode, Delay, Limit Duration, Duration and Current (if applicable based on fire mode).

c. Digital Output Channels:



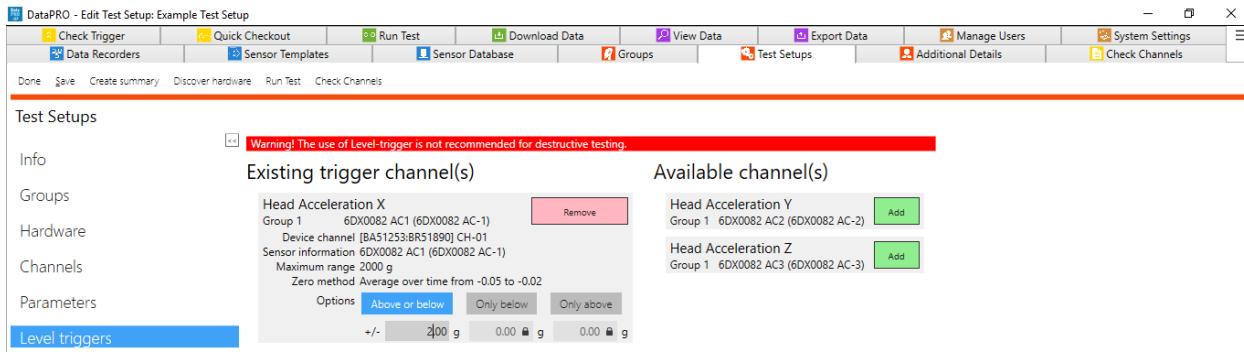
- Modify Output mode, Delay, Limit duration and Duration.

d. Digital Input Channels:



- Change Input mode, Default Value and Active Value.

- In order to designate a channel as a **Level Trigger**, the Level Trigger option must be enabled in System Settings (See **System Settings**, page 122, for more information):

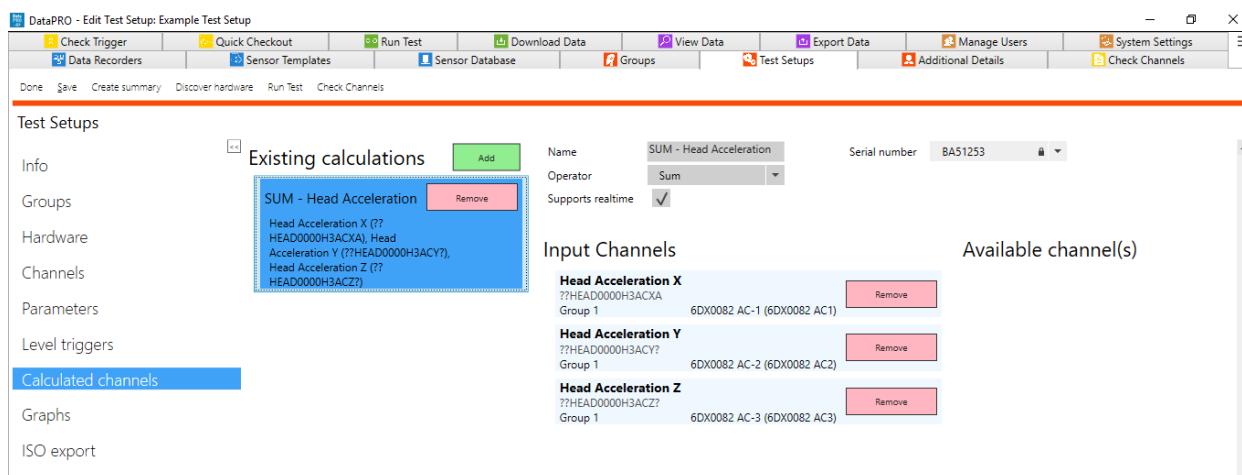


- A level trigger will initiate data collection or mark T=0 when a predetermined sensor threshold is exceeded. Five (5) consecutive samples at or above the specified threshold is required for the level trigger to be considered valid.
- Only channels with hardware channel assignments will be listed as Available channels to designate as a level trigger.
 - Channels must be manually assigned to a hardware channel or discovered by EID in order 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. In order to add **Calculated Channels** to a Test Setup, the Calculated channels option must be enabled in System Settings to add Calculated Channels to Test Setup (See **System Settings**, page 122, for more information). Calculated Channels can also be added in the data viewer.

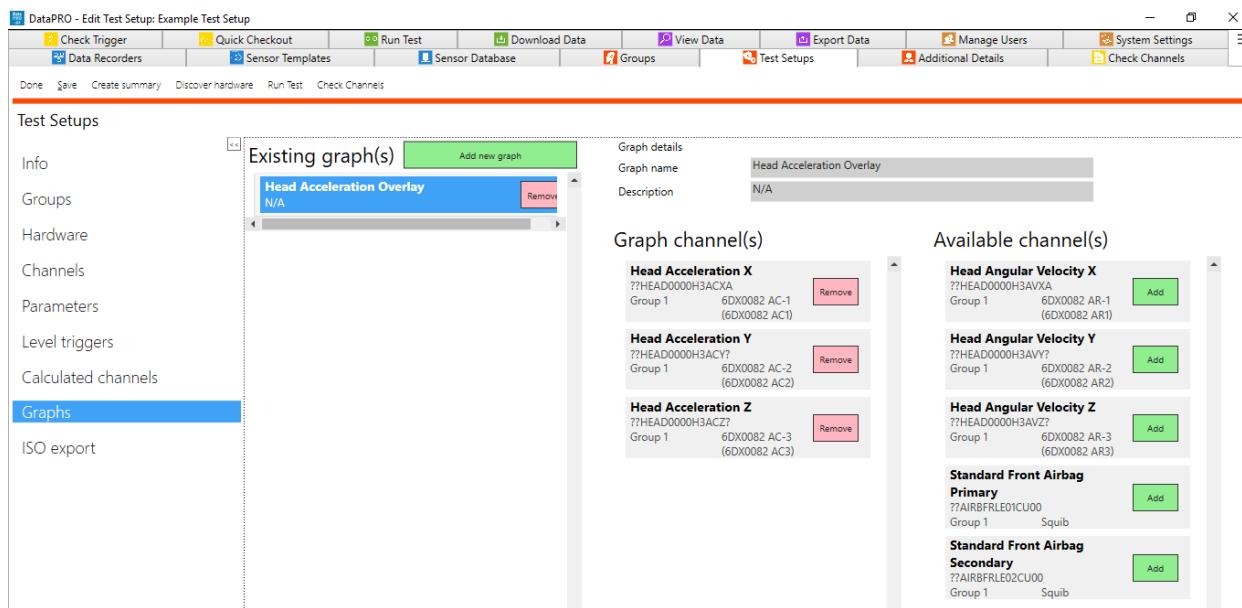


NOTE: Only channels with hardware channel assignments will be listed as Available channel(s).

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

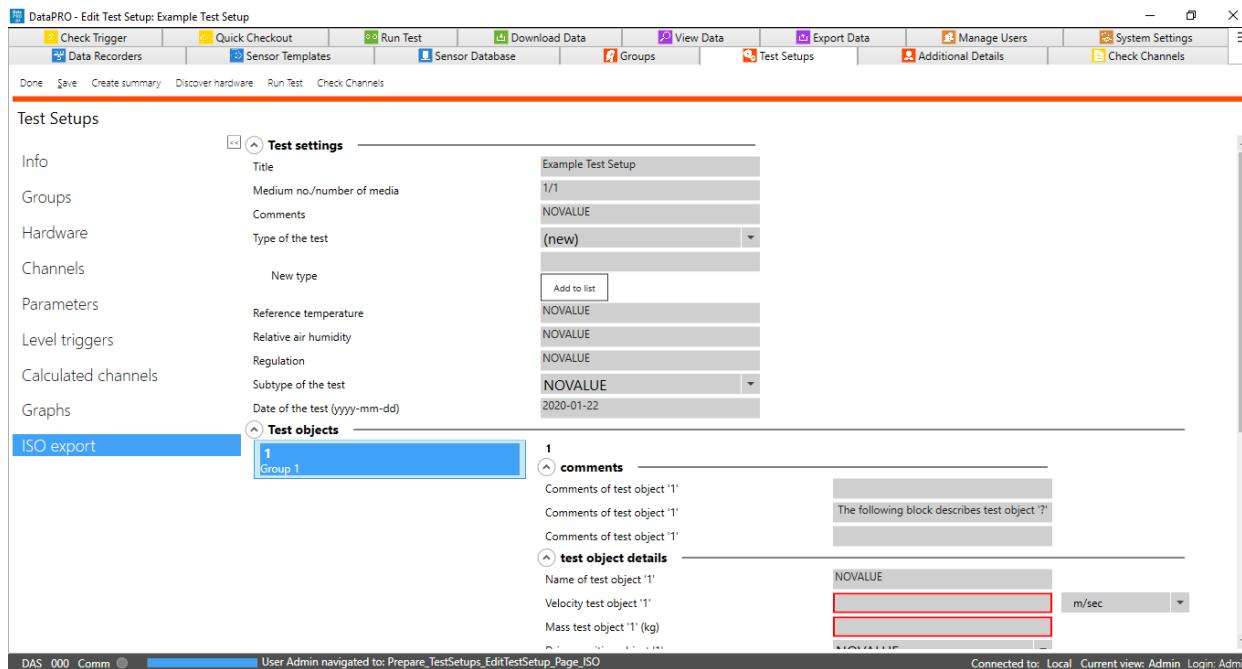
- a. Select Add to add a calculated channel.
- b. Enter name for calculated channel.
- c. Choose calculated channel type from Operator drop-down.
- d. Select DAS from Serial Number drop-down.
- e. Select channels to include in calculation from Available channel(s).
- f. Select Calculated channel from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

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



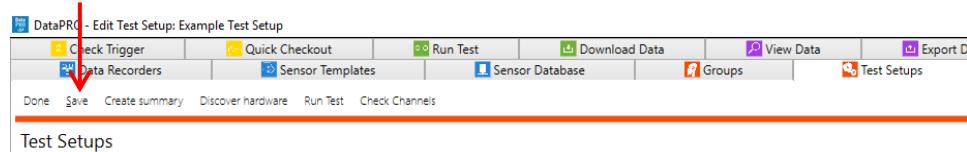
- To add an overlay graph, select Add new graph.
- Enter Graph name and optional Description.
- Select channels to include in the graph overlay from Available Channels.
- Select Existing graph to display included Graph channels.

12. ISO Export:

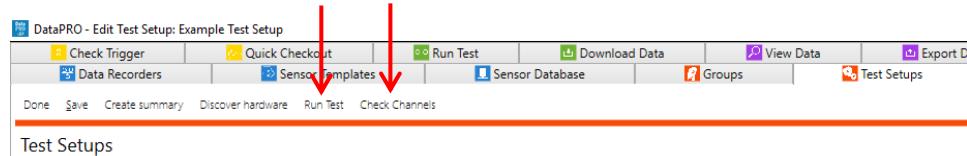


- Enter preliminary metadata required for ISO MME export.
- ISO Export metadata can be entered in the Info navstep of Run Test, as well as before each data export. All metadata must be entered in order for the ISO Export to run.

13. Select “Save” when finished:

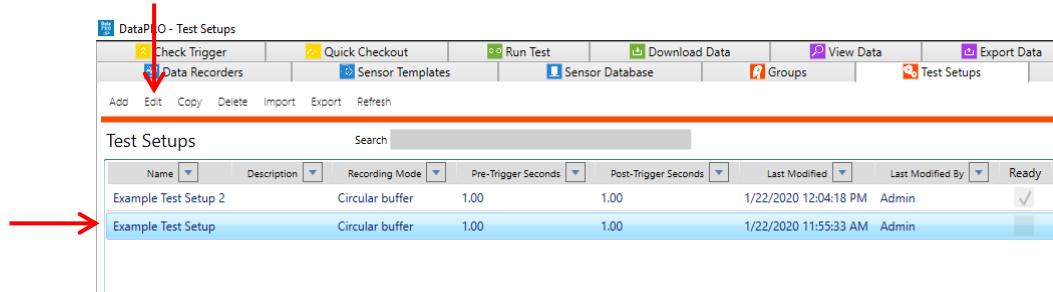


- Once a Test Setup is saved, “Run Test” and “Check Channels” are enabled as options:

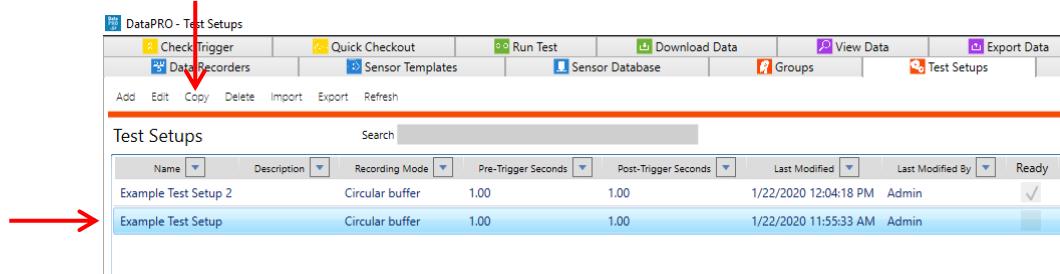


- Select Run Test to go directly to the Run Test tab and begin a data collection with the current Test setup.
- Select Check Channels to go directly to the Check Channels tab and begin a Diagnostic test with the current Test Setup.

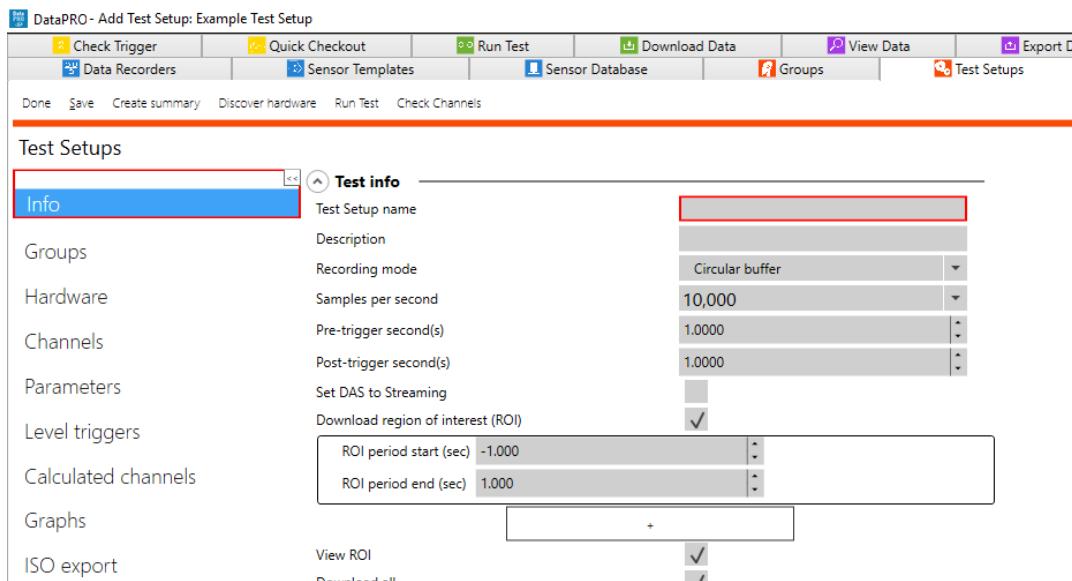
14. To edit a test setup, double-click on the test setup –or– select the test setup and select “Edit” (see steps 4-13):



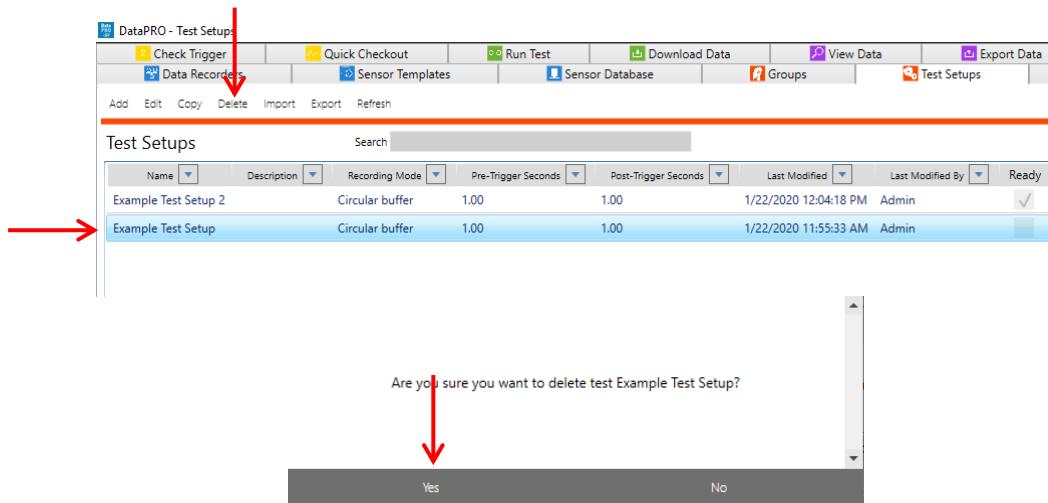
15. To Copy a test setup, select “Copy” from the menu:



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



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



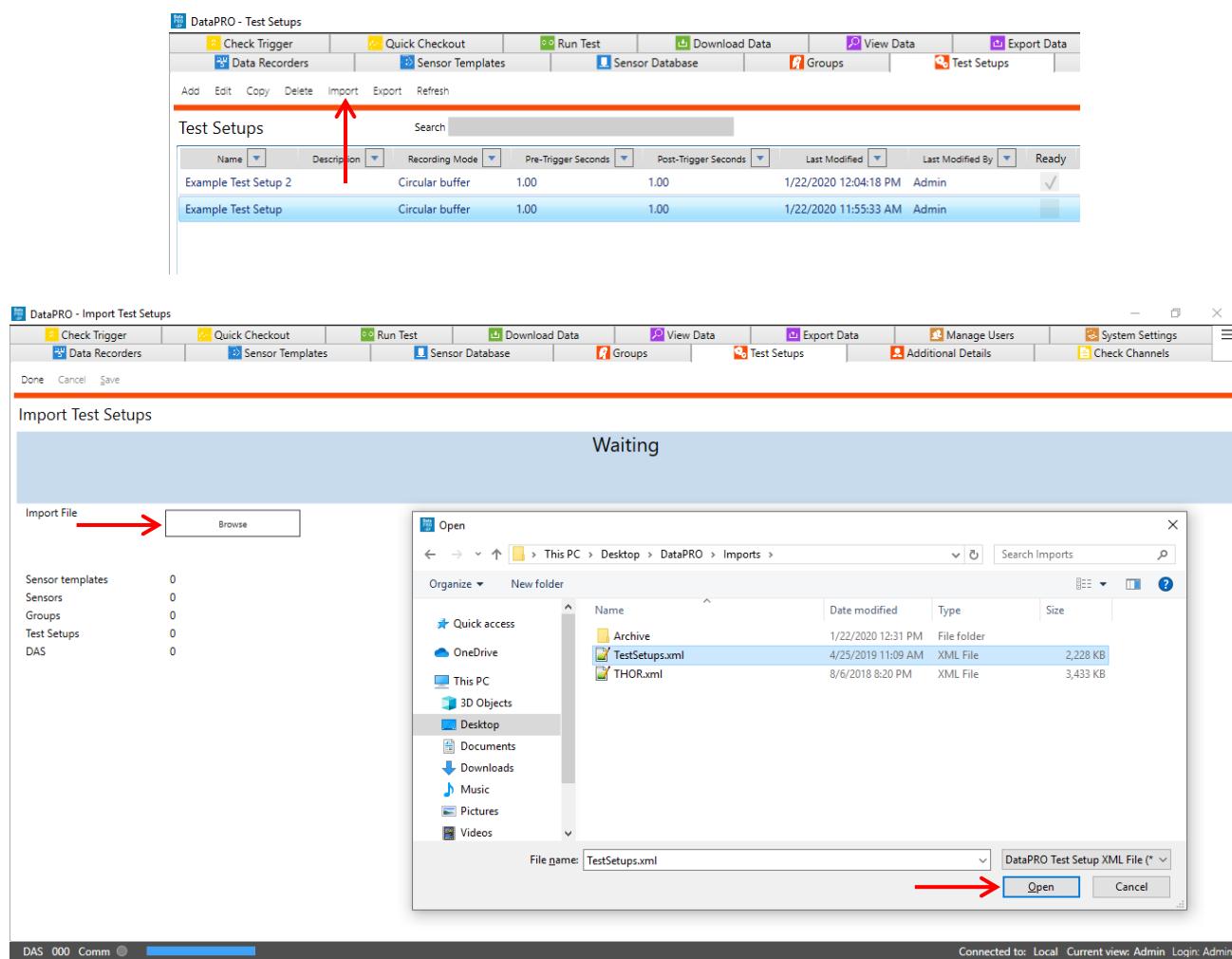
- To import a test setup, select “Import” from the menu. Browse to select the file and then select “Open”.

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.

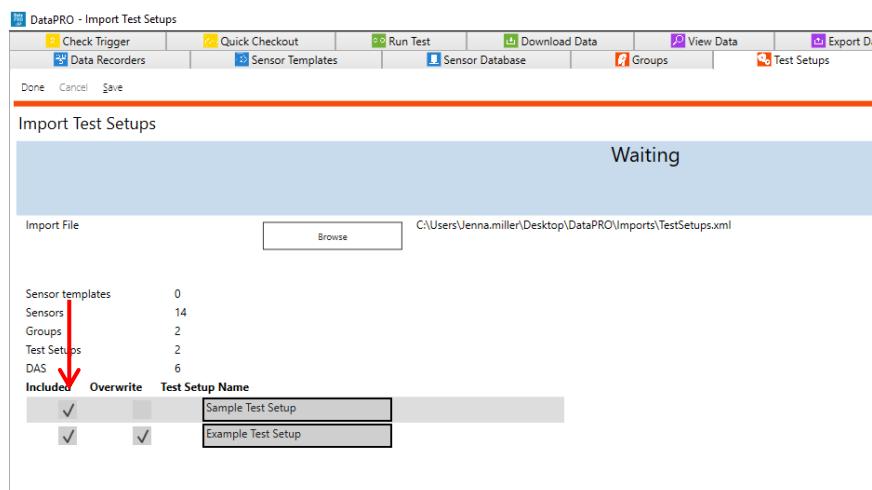
NOTE: Some imports add new sensors and DAS to the database, some require that all items in the import exist in the database prior to import.

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

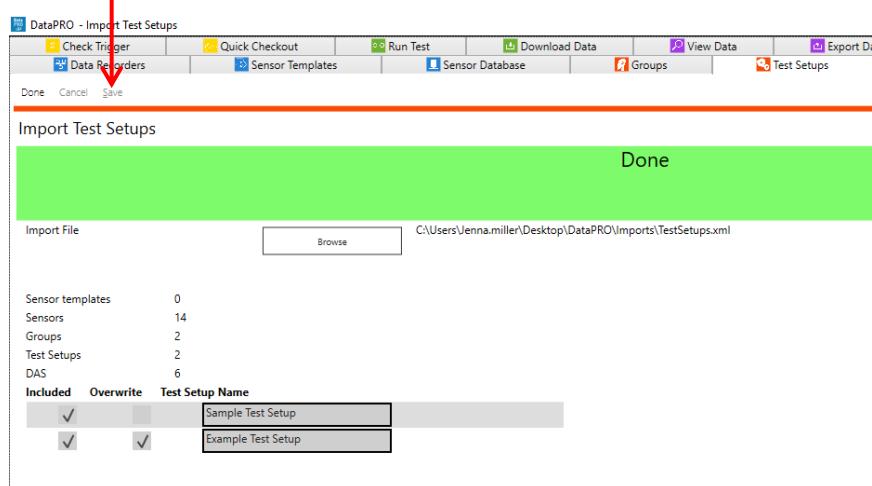


a. Select the Test Setup(s) to be imported:

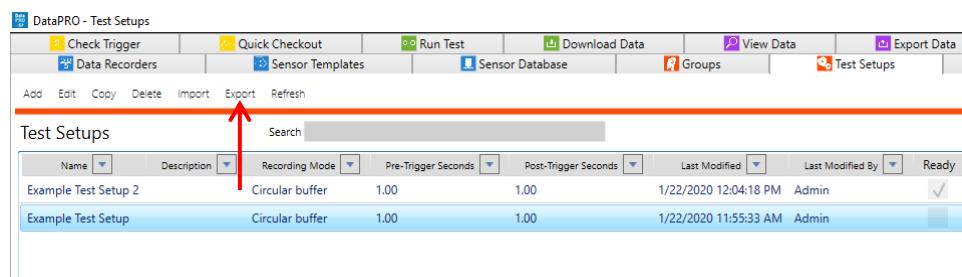


- i. “Red Boxed” Test Setups indicate a naming conflict.
- ii. Select Overwrite to import and overwrite any test setups with naming conflicts.

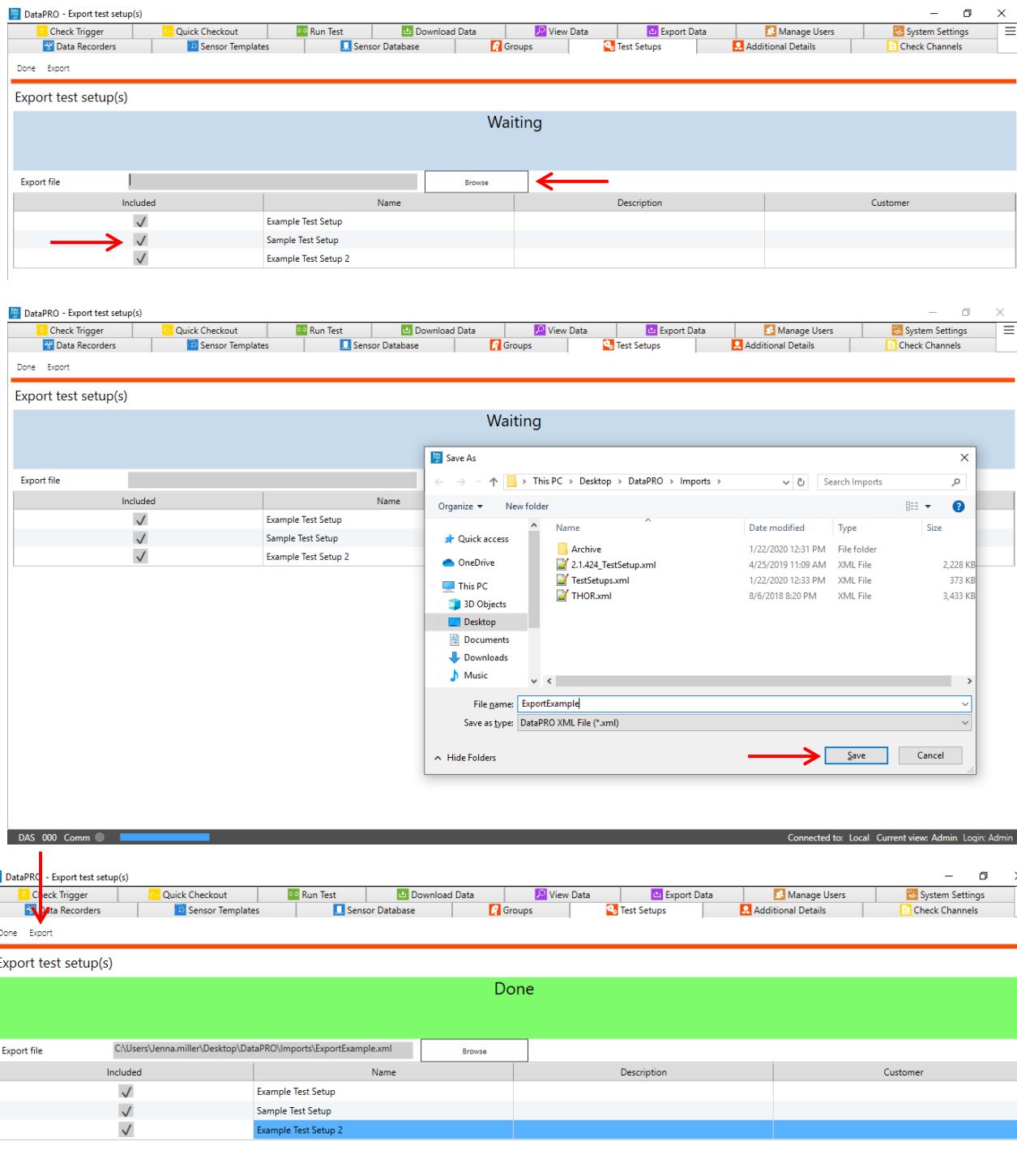
b. Select Save once all conflicts are resolved. Select Done when import is complete:



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



- a. Select the test(s) to be exported and select “Browse”. Navigate to the desired location, enter a name for the test setup export file and select “Save”. Select “Done” when finished:



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

Name	Description	Recording Mode	Pre-Trigger Seconds	Post-Trigger Seconds	Last Modified	Last Modified By	Ready
Example Test Setup	Circular buffer	1.00	1.00		1/22/2020 12:34:09 PM	Admin	<input type="checkbox"/>
Sample Test Setup	Circular buffer	1.00	1.00		1/22/2020 12:34:09 PM	Admin	<input checked="" type="checkbox"/>
Example Test Setup 2	Circular buffer	1.00	1.00		1/22/2020 12:04:18 PM	Admin	<input checked="" type="checkbox"/>

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

Name	Description	Recording Mode	Pre-Trigger Seconds	Post-Trigger Seconds	Last Modified	Last Modified By	Ready
Example Test Setup	Circular buffer	1.00	1.00		1/22/2020 12:34:09 PM	Admin	<input type="checkbox"/>
Sample Test Setup	Circular buffer	1.00	1.00		1/22/2020 12:34:09 PM	Admin	<input checked="" type="checkbox"/>
Example Test Setup 2	Circular buffer	1.00	1.00		1/22/2020 12:04:18 PM	Admin	<input checked="" type="checkbox"/>

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

Name	Description	Recording Mode	Pre-Trigger Seconds	Post-Trigger Seconds	Last Modified	Last Modified By	Ready
Example Test Setup	Circular buffer	1.00	1.00		1/22/2020 12:34:09 PM	Admin	<input type="checkbox"/>
Sample Test Setup	Circular buffer	1.00	1.00		1/22/2020 12:34:09 PM	Admin	<input checked="" type="checkbox"/>
Example Test Setup 2	Circular buffer	1.00	1.00		1/22/2020 12:04:18 PM	Admin	<input checked="" type="checkbox"/>

21. To return to the Quick Start Steps, click [here](#) (page 17).

Additional Details

Lab Details

Exporting data for “Lab Details” is a required component of 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:

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.

3. To delete a Lab Details Record, select the record from the list and select Delete:

Are you sure you want to delete DTS HQ?

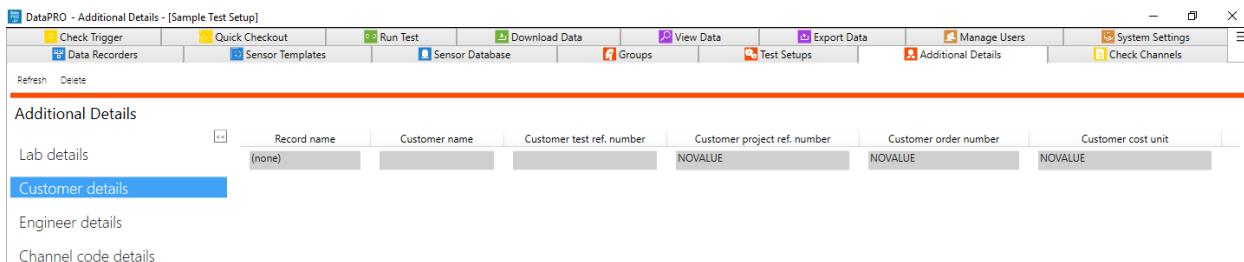
Yes No

4. To return to the Quick Start Steps, click [here](#) (page 17).

Customer Details

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

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

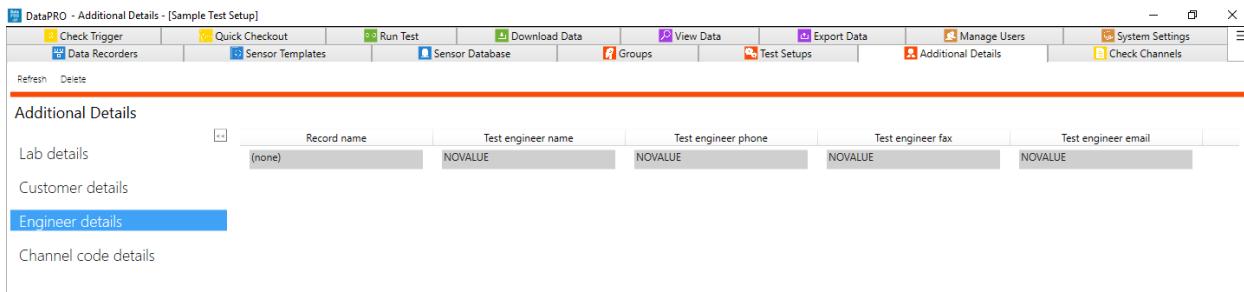


- a. This information can be modified before exporting data.
- b. Records are automatically saved.
3. To delete a Customer Details Record, select the record from the list and select Delete.
4. To return to the Quick Start Steps, click [here](#) (page 17).

Engineer Details

Exporting data for “Engineer Details” is a required component of 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:

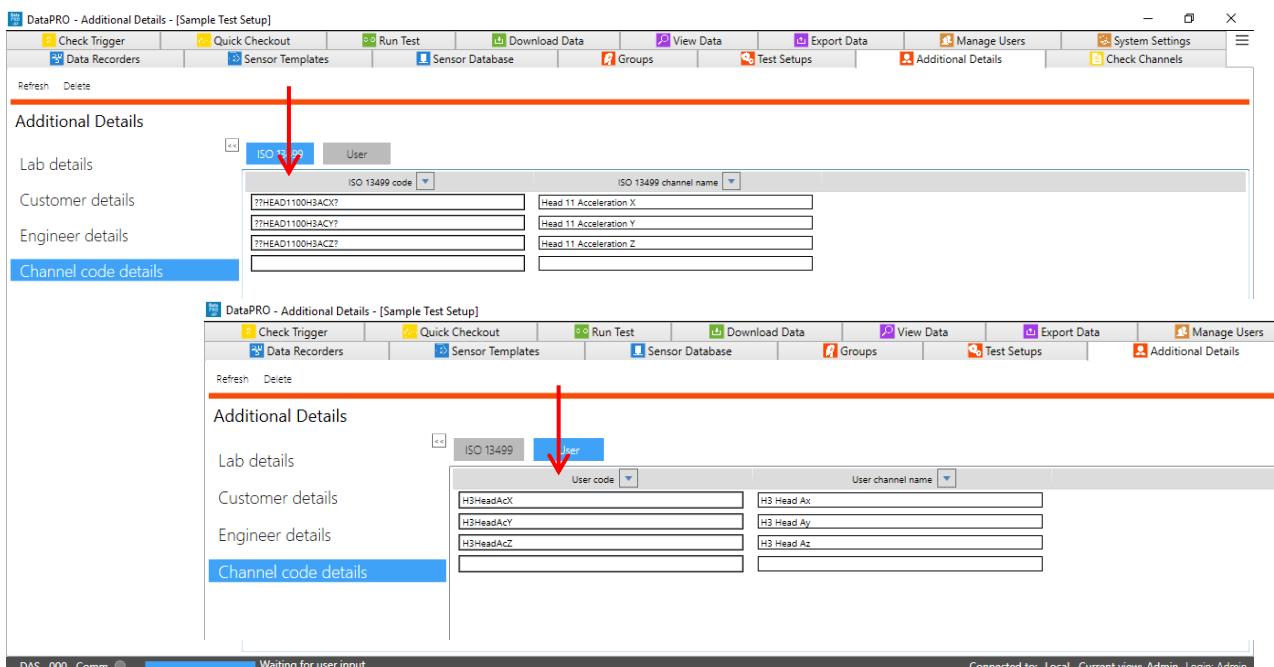


- a. This information can be modified before exporting data.
- b. Records are automatically saved.
3. To delete an Engineer Details Record, select the record from the list and select Delete.
4. To return to the Quick Start Steps, click [here](#) (page 17).

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, select “Delete.”
 - a. Select and delete multiple Channel Codes using Shift or Ctrl during code selection.
6. To return to the Quick Start Steps, click [here](#) (page 17).

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 additionally, 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 163, for more information.

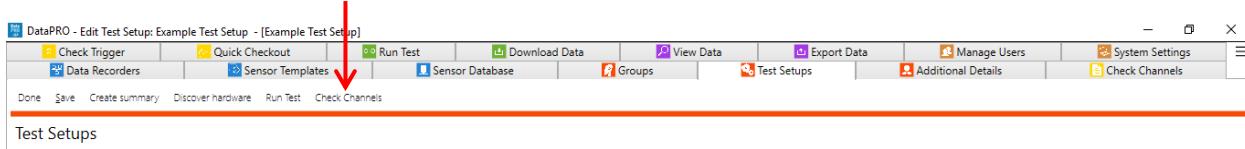
Check Channels

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.

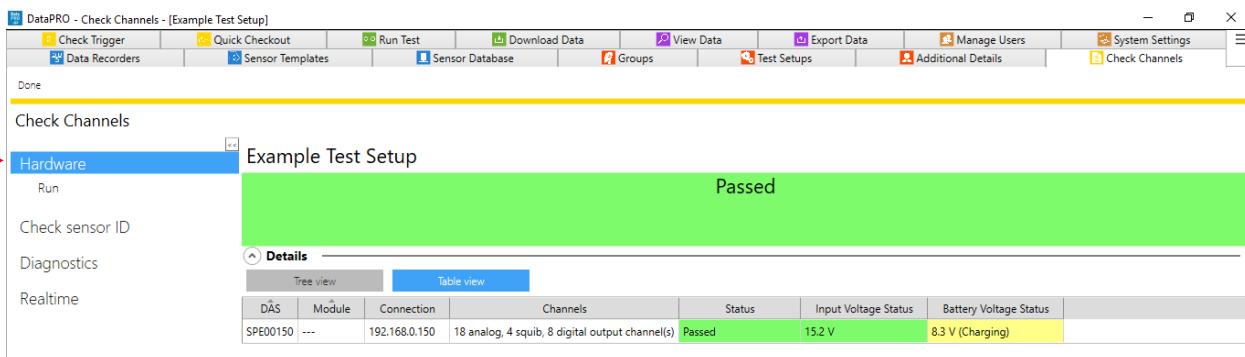
1. Select the “Check Channels” tab:



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

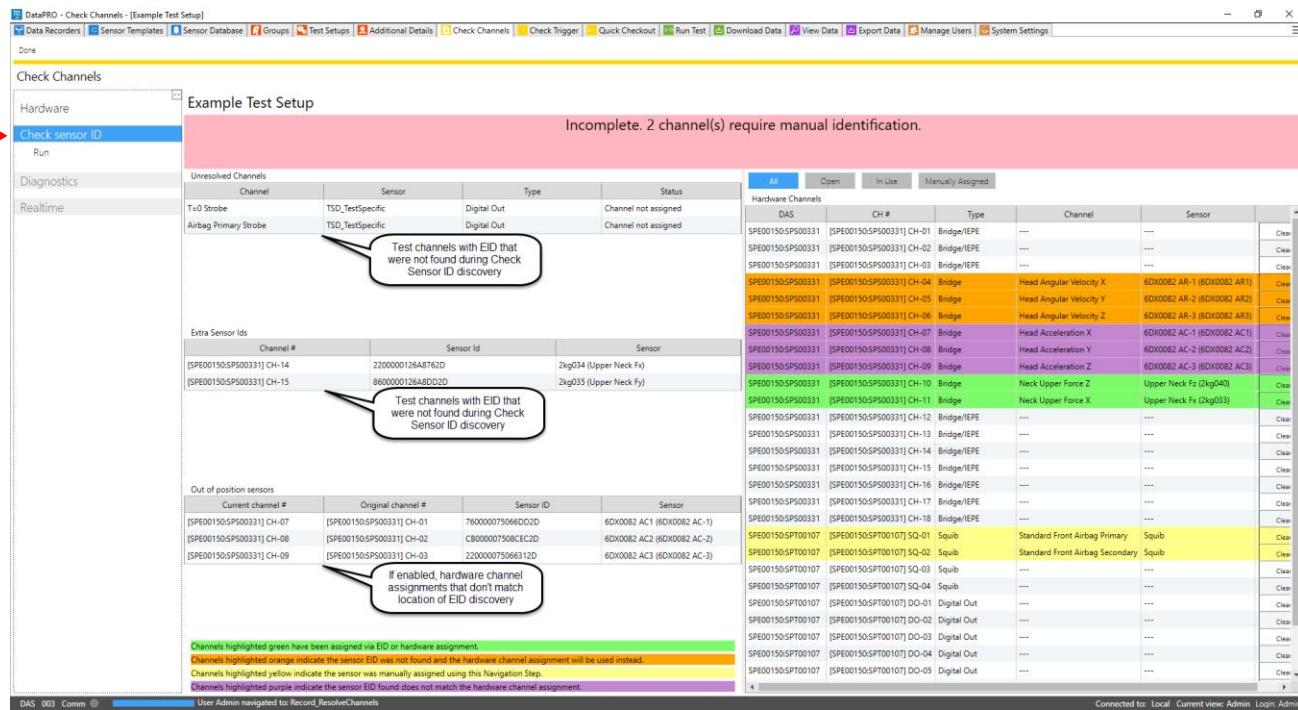


2. The **Hardware** navstep will automatically attempt to connect to the hardware associated with the active test setup:



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

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



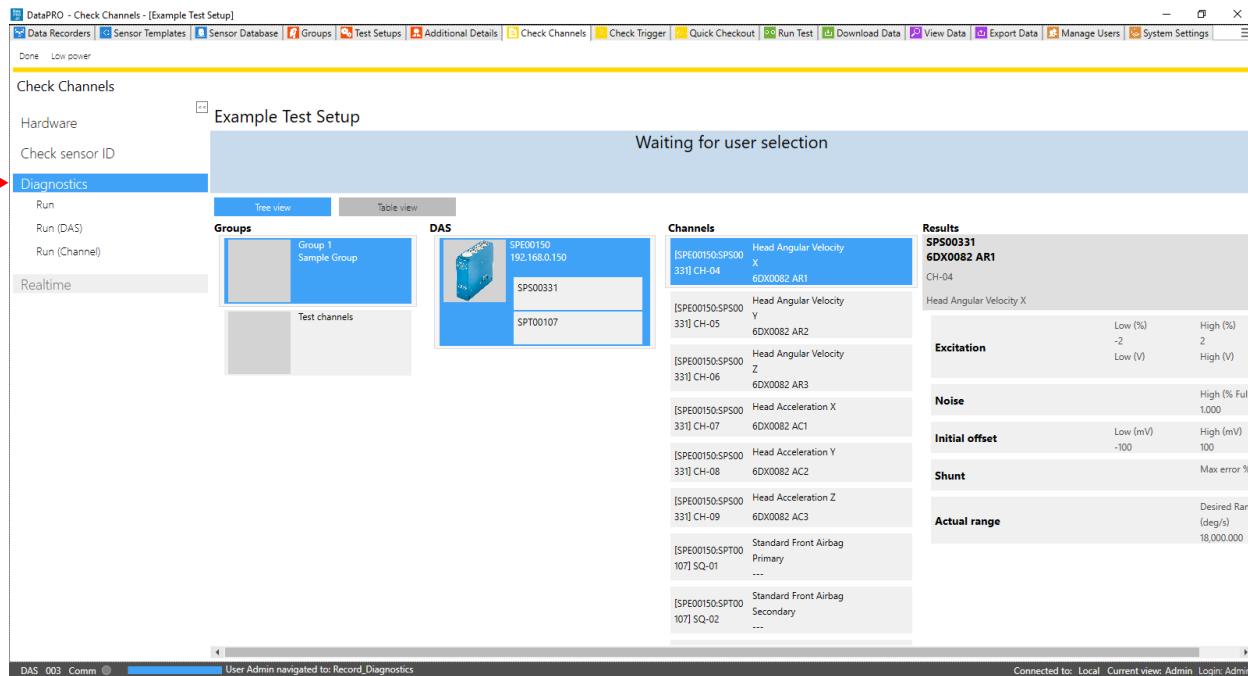
- The Check Sensor ID step verifies each channel in the Test Setup has been configured with a hardware channel.
- Sensors with EID will automatically populate with the hardware channel assignment.
- Sensors without EID will need to be 'resolved' and manually assigned to a hardware channel.

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.*

- DataPRO indicates the following EID conditions with different tables:
 - Unresolved Channels: Channels that have not been configured with a hardware channel assignment. These channels need to be manually assigned.
 - Extra Sensor IDs: Sensor EID(s) detected that are not assigned to a channel included in the Test Setup.
 - Out of position sensors (if enabled): Sensor EID(s) that are detected on a hardware channel that differs from the Test Setup configuration.
- DataPRO indicates the following channel configuration conditions with highlighting:
 - Green: EID or manual hardware assignment completed in Group or Test Setup.
 - Orange: EID not found, hardware assignment completed in Group or Test Setup.
 - Yellow: Manual hardware assignment completed in current step.
 - 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 122.*

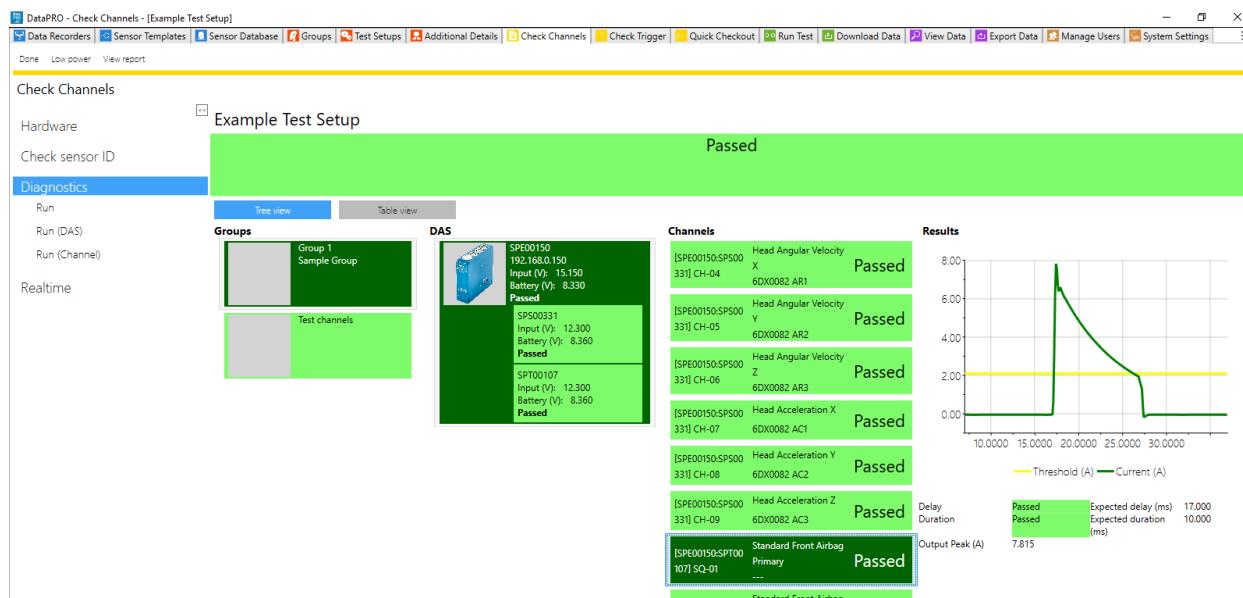
- Select the **Diagnostics** navstep and then select “Run” to perform a diagnostic check on all channels, “Run (DAS)” to perform a diagnostic check on one DAS module or “Run (Channel)” to perform a diagnostic check on one channel:



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

Diagnostics	Passed										
	#	DAS	Module	Channel	Group	Sensor s/n	Description	Excitation	24V power	Initial offset (mV)	AutoZero % Deviation
1 SPE00150:SPS00331	SPS00331	CH-07	Group 1	6DX0082 AC1	Head Acceleration X	4.9988	0.0	0	0	0.13	100.00%
2 SPE00150:SPS00331	SPS00331	CH-08	Group 1	6DX0082 AC2	Head Acceleration Y	5.0032	0.0	0	0	0.39	100.00%
3 SPE00150:SPS00331	SPS00331	CH-09	Group 1	6DX0082 AC3	Head Acceleration Z	5.0023	0.0	0	0	0.14	100.00%
4 SPE00150:SPS00331	SPS00331	CH-04	Group 1	6DX0082 AR1	Head Angular Velocity X	5.0037	0.0	9	0	0.07	100.00%
5 SPE00150:SPS00331	SPS00331	CH-05	Group 1	6DX0082 AR2	Head Angular Velocity Y	5.0015	0.0	-6	0	0.13	100.00%
6 SPE00150:SPS00331	SPS00331	CH-06	Group 1	6DX0082 AR3	Head Angular Velocity Z	5.0022	0.0	-8	0	0.07	100.00%
7 SPE00150:SPT00107	SPT00107	SQ-01	Group 1	...	Standard Front Airbag Primary	0.0000	0.0	0	0	0.00	100.00%
8 SPE00150:SPT00107	SPT00107	SQ-02	Group 1	...	Standard Front Airbag Secondary	0.0000	0.0	0	0	0.00	100.00%
10 SPE00150:SPS00331	SPS00331	CH-10	Test channels	2kq040	Neck Upper Force Z	5.0008	0.0	0	0	0.80	100.00%
11 SPE00150:SPS00331	SPS00331	CH-11	Test channels	2kq033	Neck Upper Force X	5.0084	0.0	0	0	0.44	100.00%

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



- 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 configured with “Level triggers off”:



NOTE: If “Use test channel order” is enabled, only one chart will be available and one channel will be displayed at a time in Realtime. See [System Settings](#), page 122, 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.

NOTE: Realtime data will be streaming with SLICE PRO and SLICE6 with firmware versions A1P8 or F0P9, respectively, or higher. Realtime data will be polling with lower firmware versions (See [System Settings](#), page 122, for more information).

- The initial display is defined by the test setup.
- Realtime display selection. See [Realtime](#), page 135, for more information on configuring the initial Realtime display.



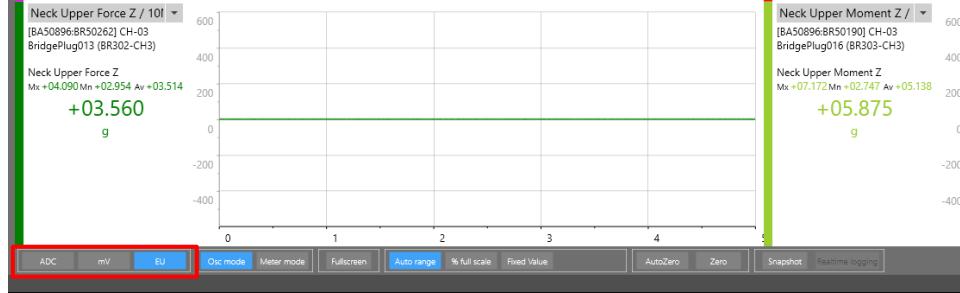
- Select Prev/Next to advance 1/3/6 channel(s) based on chart(s) displayed.
- Use snap arrows to hide or display the navstep menu.
- Select Settings to display additional Realtime settings and options.



- Current Sample Rate and AAF value displayed.
- Modify chart width.
- Select 1, 3, or 6 charts.
- Restart Realtime to apply changes.

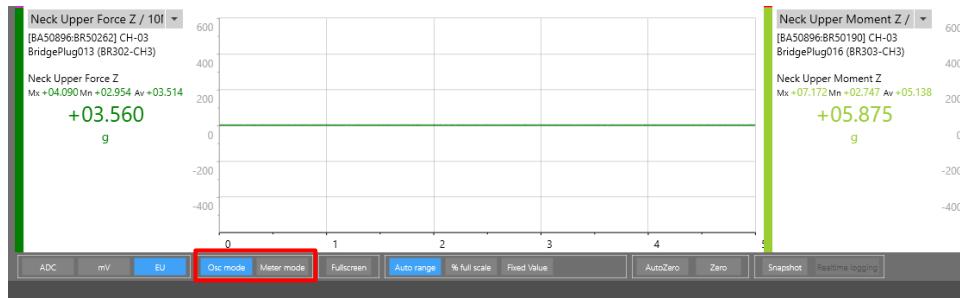
4. Select DAS from drop-down to choose channels to display.
- a. Channels can only be displayed from one DAS at a time.
5. Use Available Channels drop-down to select from all channels in Test Setup.
- a. Type Serial Number, Sensor Description, Channel Name or ISO Code to search.
6. Use chart drop-down to select channel(s) from current DAS.

c. Display units:



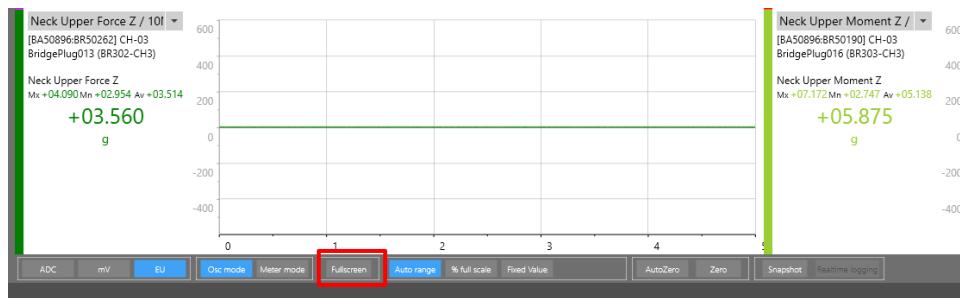
- i. Select ADC, mV or EU.

d. Osc/Meter Mode:

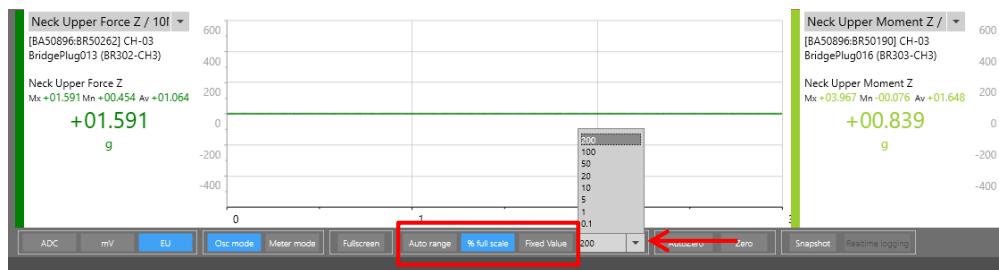


- i. Osc mode (Oscilloscope) displays 1, 3 or 6 charts of analog output.
 - ii. Meter Mode displays digital readout of all channels in Test Setup.
1. Select subgroups of channels to display based on Tags applied in Sensor Database.

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

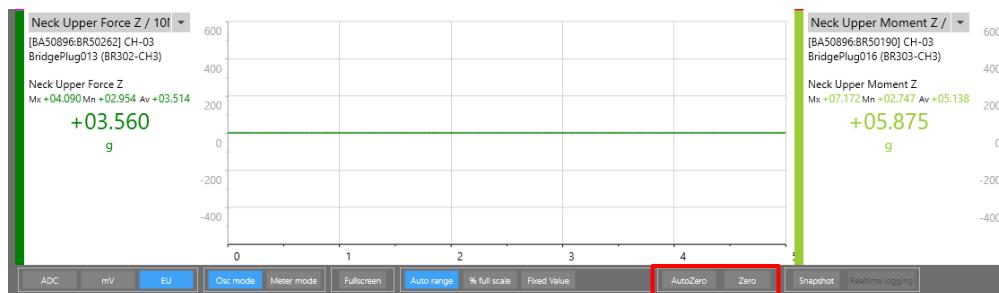


f. Display range:



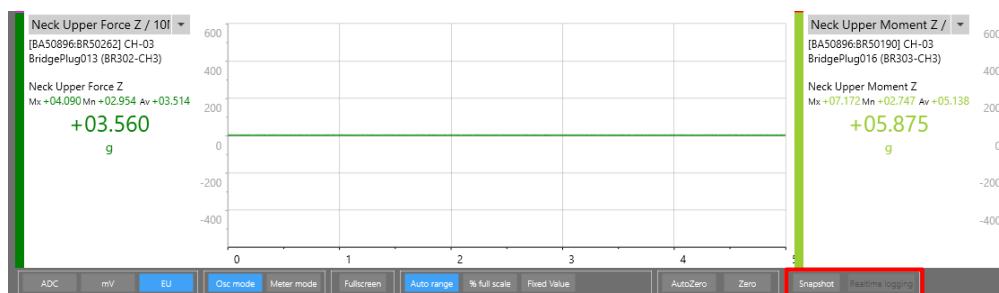
- Select “Auto range” to display a predefined percentage of the full scale range.
 - Default Auto range value is 6.6% of full scale and can be modified in *DataPRO.exe.config* file.
- Select “% full scale” to select the percentage of full scale to display.
- Select “Fixed value” to select a fixed value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

g. AutoZero/Zero:



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

h. Snapshot/Realtime logging:



- 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 163, for more information).
- 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.*

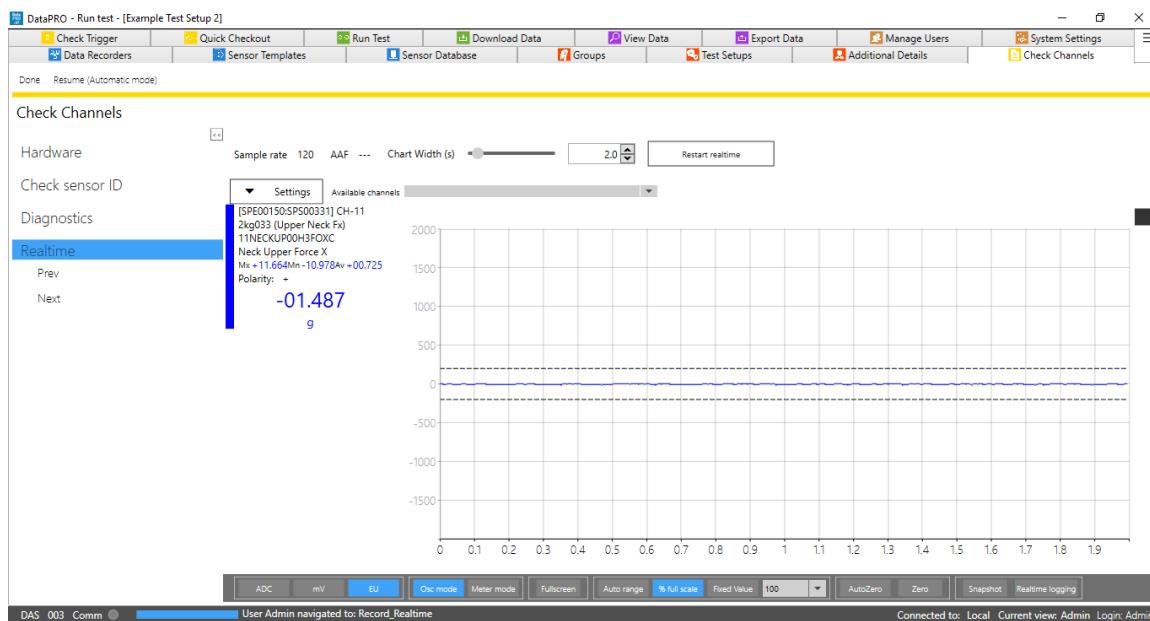
Realtime configured with “Level triggers on”:

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.

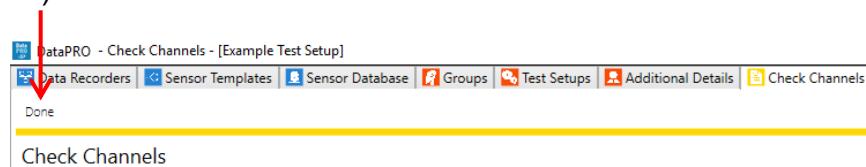
To configure DataPRO to have “Level triggers on” in Realtime:

- Enable Use test channel order in System Settings tab -> Realtime navstep.
- 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.



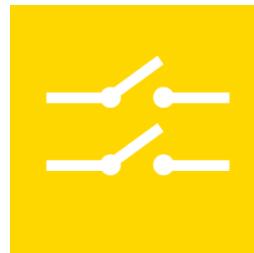
- a. Level Trigger threshold is indicated by the dashed line and can be moved to allow for easier sensor output verification.
 - b. Optional audible beeping indicates waiting for trigger and trigger received.
 - c. If enabled, displayed channel will advance once level trigger has been received.
 - d. 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 163, for more information.
6. Select “Done” to return the previous location. To return to the Quick Start Steps, click [here](#) (page 17).



Check Trigger

Check Trigger confirms the hardware connection and sensor assignment, as well as allows for verification of the Event signal (See *System Settings*, page 122, 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:

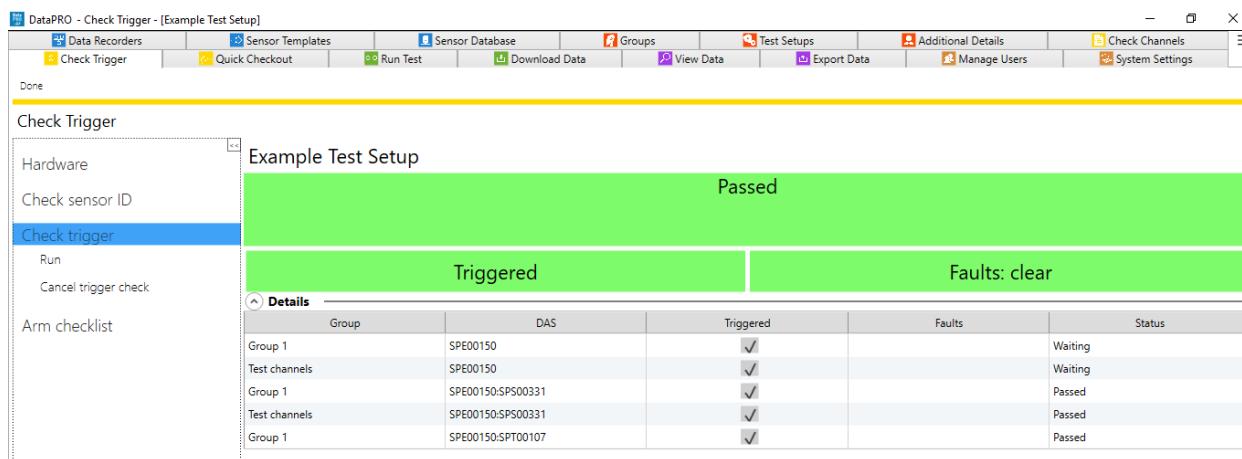


2. The **Hardware** navstep will automatically attempt to connect to the hardware associated with the active test setup.
 - a. Select Run to re-test the hardware connection.
3. Select the **Check sensor ID** navstep to perform a sensor check.
 - a. Select run to re-scan for sensor IDs.
4. Select the **Check trigger** navstep, select “Run”, then generate a hardware trigger signal. Select “Cancel trigger check” to bypass the trigger check, or “Software trigger” to generate a trigger signal and progress to Arm Checklist:

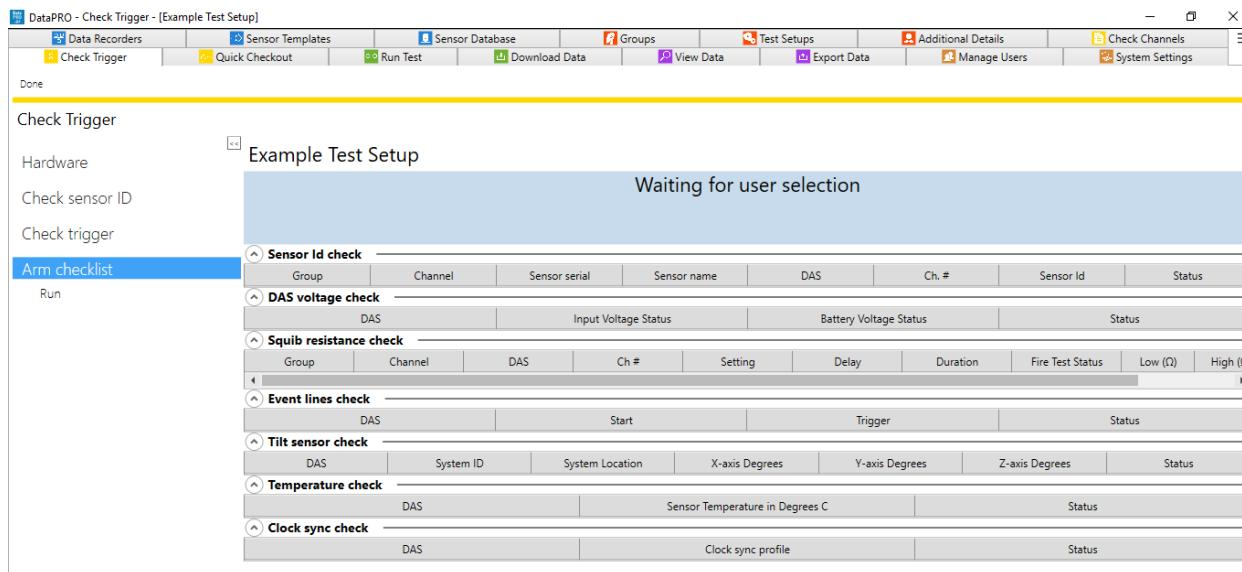
 A screenshot of the DataPRO software interface titled "DataPRO - Check Trigger - [Example Test Setup]". The top navigation bar includes "Data Recorders", "Sensor Templates", "Sensor Database", "Groups", "Test Setups", "Additional Details", "Check Channels", "Quick Checkout", "Run Test", "Download Data", "View Data", "Export Data", "Manage Users", and "System Settings". The main window has a title "Check Trigger" and a sub-section "Example Test Setup". On the left, a sidebar lists "Hardware", "Check sensor ID", and "Check trigger" (which is highlighted with a red arrow pointing from the previous step). Below these are "Run", "Cancel trigger check", and "Software trigger". At the bottom of the sidebar is "Arm checklist". The main area shows a status message "Waiting for trigger check" and a table with two rows. The first row has columns "Trigger: waiting" and "Faults: clear". The second row has columns "Group", "DAS", "Triggered", "Faults", and "Status". The data in the table is as follows:

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 ...



5. Select Arm Checklist, 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:SPS00331	CH-07	760000075066DD2D	Passed
Group 1	Head Acceleration Y	6DX0082 AC2	6DX0082 AC-2	SPE00150:SPS00331	CH-08	CB000007508CEC2D	Passed
Group 1	Head Acceleration Z	6DX0082 AC3	6DX0082 AC-3	SPE00150:SPS00331	CH-09	220000075066312D	Passed
Group 1	Head Angular Velocity X	6DX0082 AR1	6DX0082 AR-1	SPE00150:SPS00331	CH-04	EC0000173C278801	Passed
Group 1	Head Angular Velocity Y	6DX0082 AR2	6DX0082 AR-2	SPE00150:SPS00331	CH-05	380000173C27C301	Passed
Group 1	Head Angular Velocity Z	6DX0082 AR3	6DX0082 AR-3	SPE00150:SPS00331	CH-06	250000173C116001	Passed

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

b. DAS voltage check:

DAS	Input Voltage Status	Battery Voltage Status	Status
SPE00150:SPS00331	12.3 V	8.4 V (Charging)	Passed
SPE00150:SPT00107	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 122).

c. 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 122). If not using “Slow Trigger Check” method, requested values from Test Setup will be displayed.*

d. Event lines check:

DAS	Start	Trigger	Status
SPE00150:SPS00331			Passed
SPE00150:SPT00107			Passed
SPE00150			Passed

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

e. Tilt sensor check – SLICE6 only:

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.*

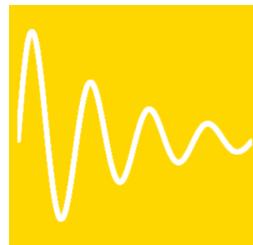
- f. Temperature check – SLICE6DB only
i. Reports current temperature reading of connected SLICE6 Distributor.

6. Select “Done” to return to the previous location. To return to the Quick Start Steps, click [here](#) (page 17).

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”:

Included	Serial number	Type	Number of channels	Firmware version	Max sample rate	Cal date	Cal due date	Sample rate
	BAS1253	SLICE NANO Base+	15 analog channel(s)	B1F4	200,000	4/29/2019	4/28/2020	
	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	---			
	SPS00999	SLICE PRO SIM	18 analog channel(s)	A1J4	600,000	4/7/2016	4/7/2017	
	SPT00999	SLICE PRO TOM	4 squib, 8 digital output channel(s)	D0D7	600,000	4/7/2016	4/7/2017	

Channel List

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

TOP BOT Remove Sensor Delete

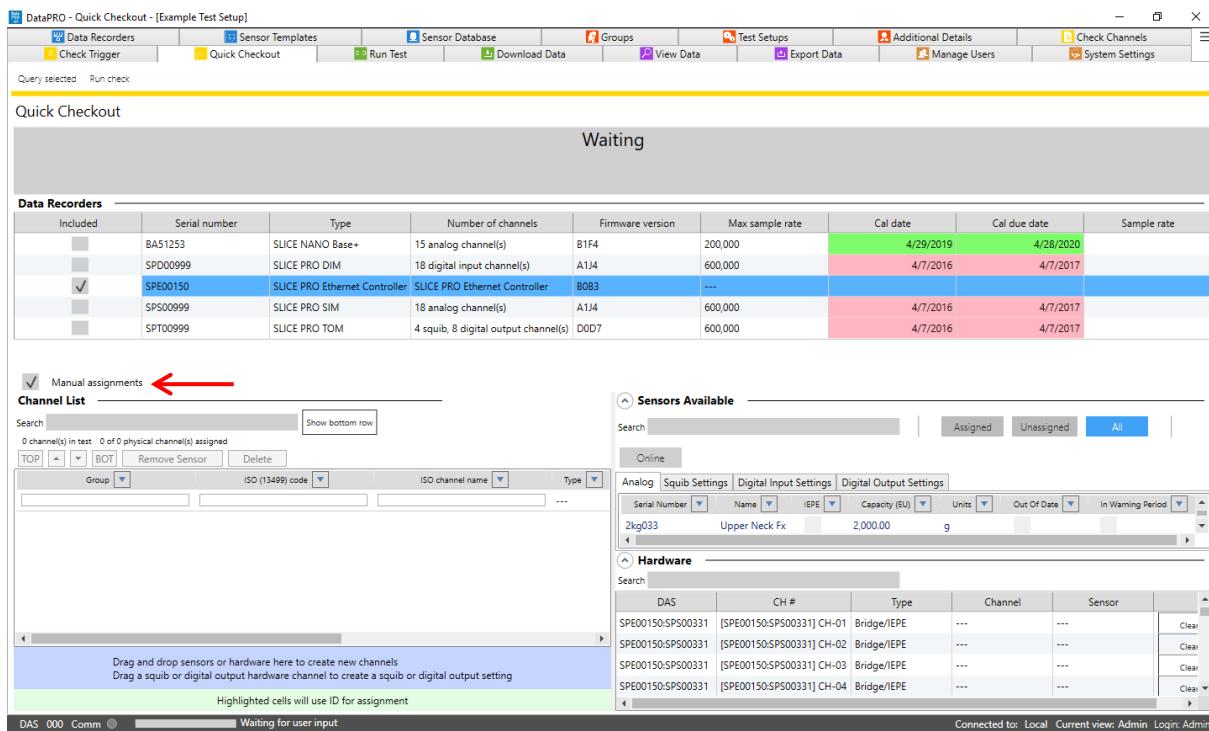
Group ISO (13499) code ISO channel name Type Sensor (SN) Hardware

TOP -001 BOT Remove Sensor Delete

Highlighted cells will use ID for assignment

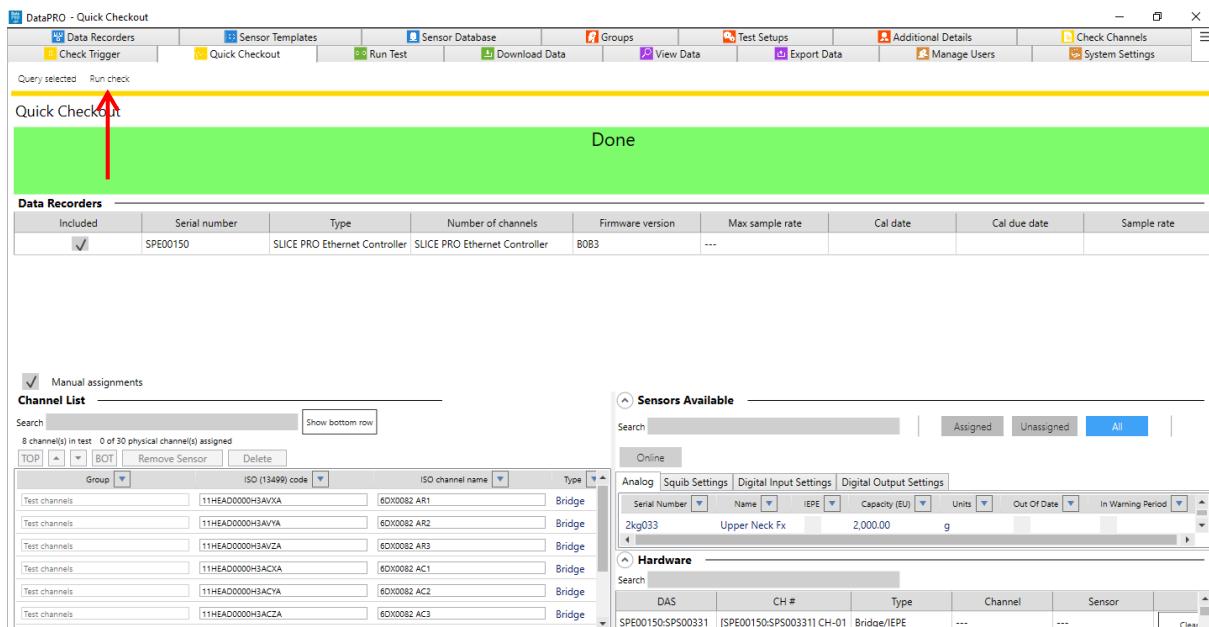
DAS 000 Comm Waiting for user input Connected to: Local Current view: Admin Login: Admin

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



- Quick Checkout channel assignments are the same as those for Groups and Test Setups (See *Groups: Add, Import, Edit, Delete, Copy*, page 38, for more information).

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



- This will begin the Check Channel process (See *Check Channels*, page 71, for more information).

Record

Run Test

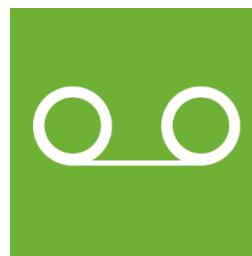
Use the Run Test tab to initiate a data collection sequence based on the active Test Setup. The settings and parameters in the Test Setup and the System Settings tabs determine the navsteps and behavior of DataPRO during the data collection process (See [Test Setups](#), page 48, or [System Settings](#), page 122, 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: Setting up SLICE6 AIR](#), page 209.

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:

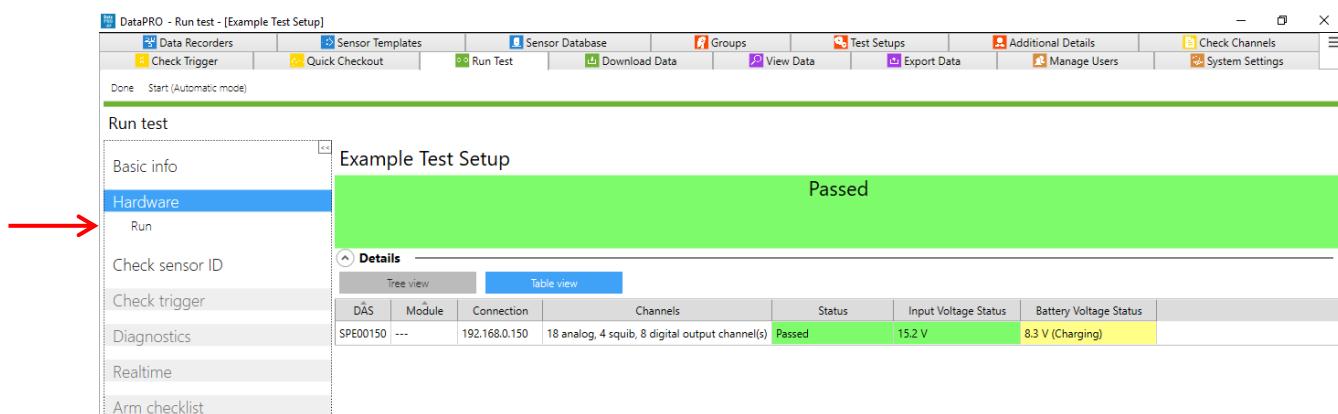
Name	Test Object	Position
Group 1	1	1
Test channels	?	?

- a. Test Setup and Test ID are displayed throughout data collection sequence.
- b. Test ID prefix and suffix can be selected from pre-defined options. Set pre-defined options in System Settings tab (See **System Settings**, page 122, for more information).
- c. Verify recording mode/parameters as defined in Test Setup.
- d. Verify sensors in test in Sensor details table.

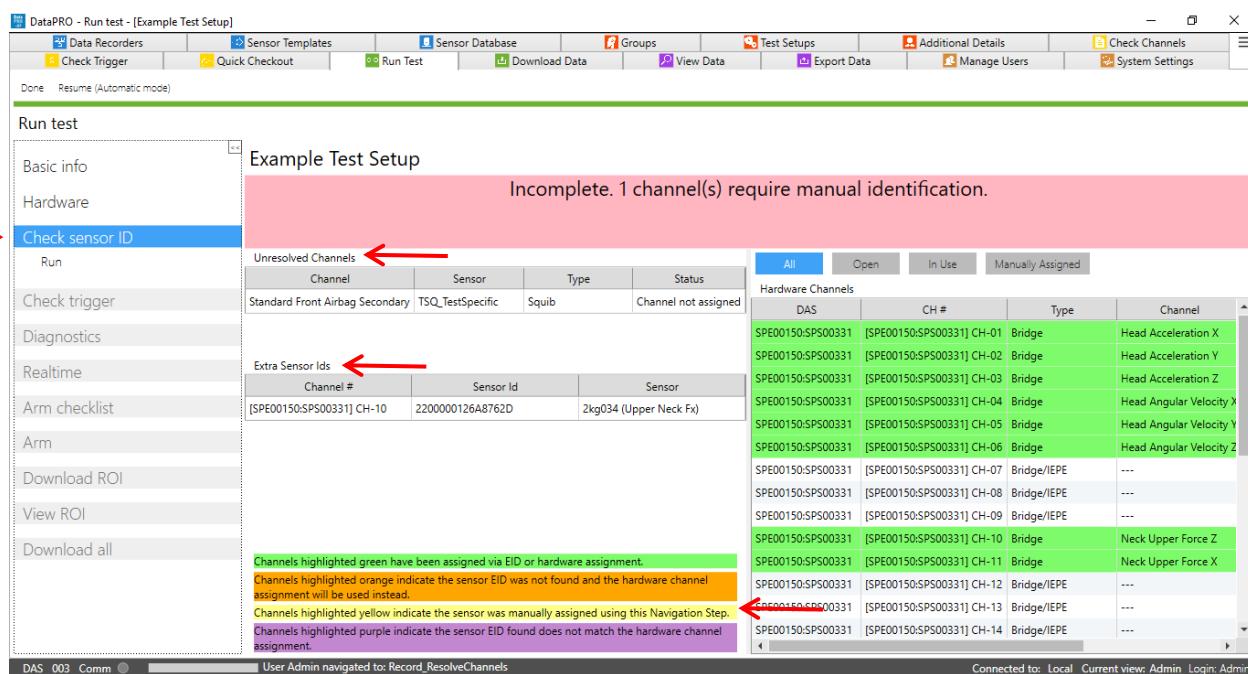
NOTE: *DataPRO can be configured to allow or to prevent running a test with sensors and hardware that is past due for calibration (See **System Settings**, page 122, for more information).*

- e. Verify Groups in test. Select up/down arrows to hide/display sensor list.
- f. 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 163, for more information).

3. Continue to the **Hardware** navstep. DataPRO will attempt to communicate with the hardware associated with the active Test Setup:

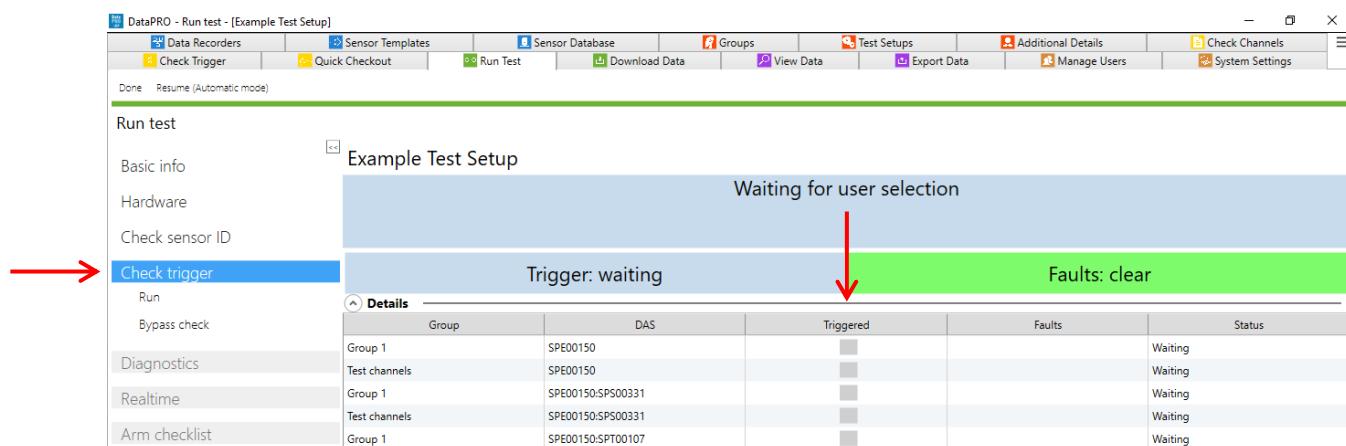


- a. If needed, select Run to re-run Hardware navstep and reattempt hardware connection.
4. Proceed to **Check sensor ID** navstep to confirm sensors in test setup are properly configured with a hardware channel. Sensors without EID that have not yet been configured with hardware channels will need to be manually assigned before proceeding:

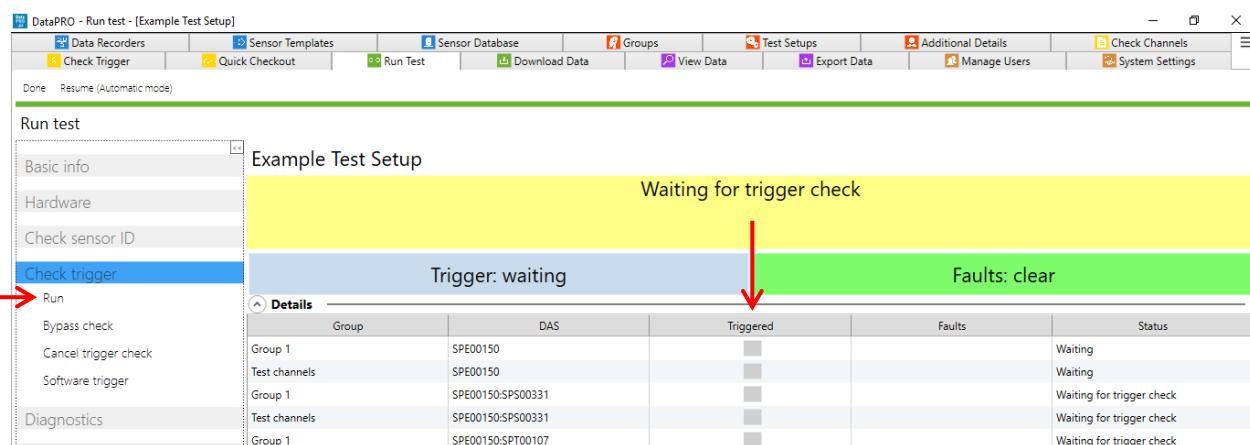


- Channels that are included in the Test Setup but not yet assigned to hardware channels will be listed in the Unresolved Channels table.
 - Select from Unresolved Channels table and drag to Hardware Channels table to make assignments.
 - Each Test Setup can be configured to allow progressing with missing sensors (unresolved channels) (See **Test Setups**, page 48, for more information).
 - 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.
 - The key defines what different shading in the Hardware Channels table indicates (See **Check Channels**, page 71, 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 122, for more information):

NOTE: DataPRO can be configured with the Check Trigger navstep to occur after Diagnostics. See **System Settings**, page 122, for more information.

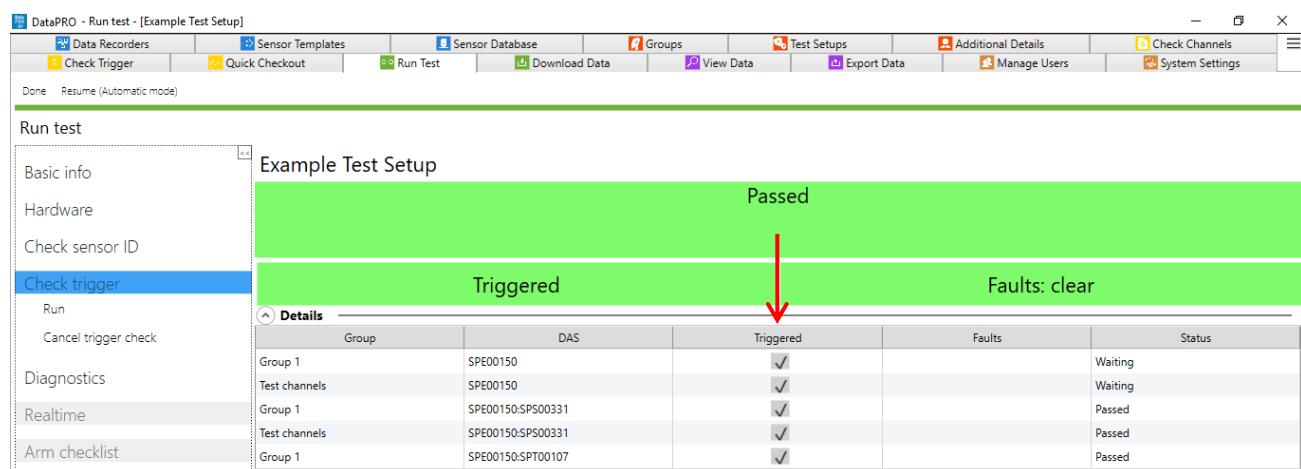


- a. Select Run to perform a Trigger Check or Bypass check (if enabled) to bypass the trigger check:

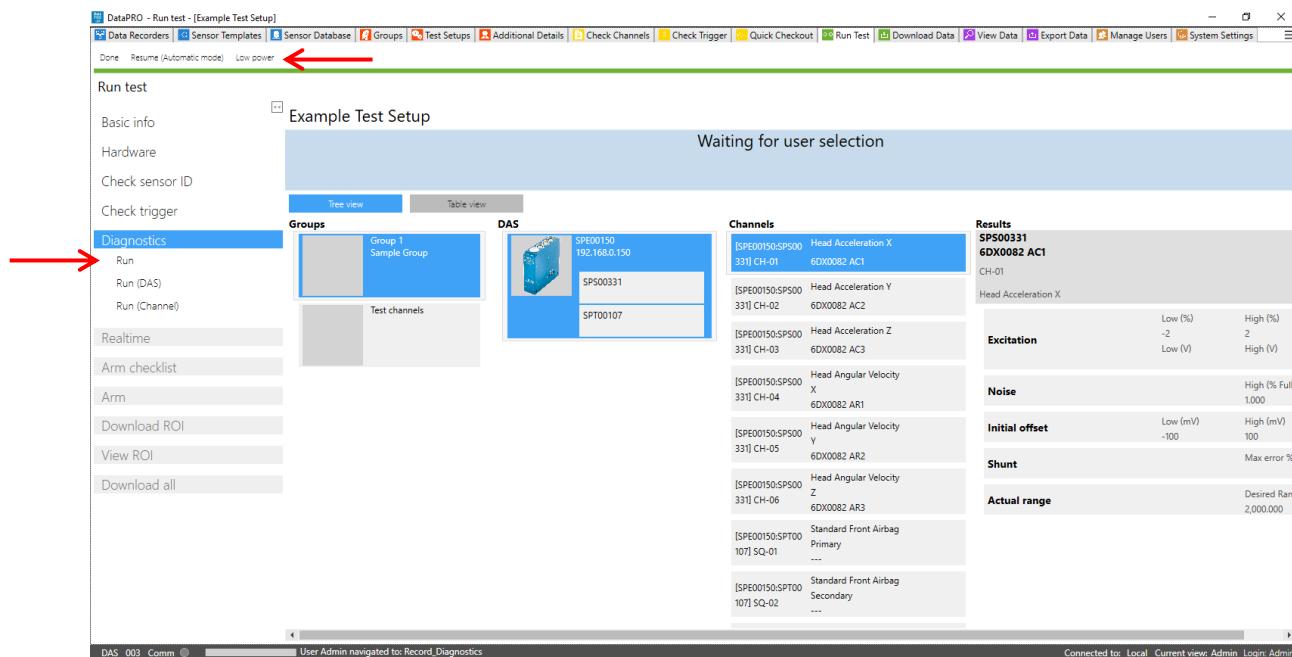


- i. After Trigger Check has been run, options to Cancel Trigger Check and issue Software Trigger are available.

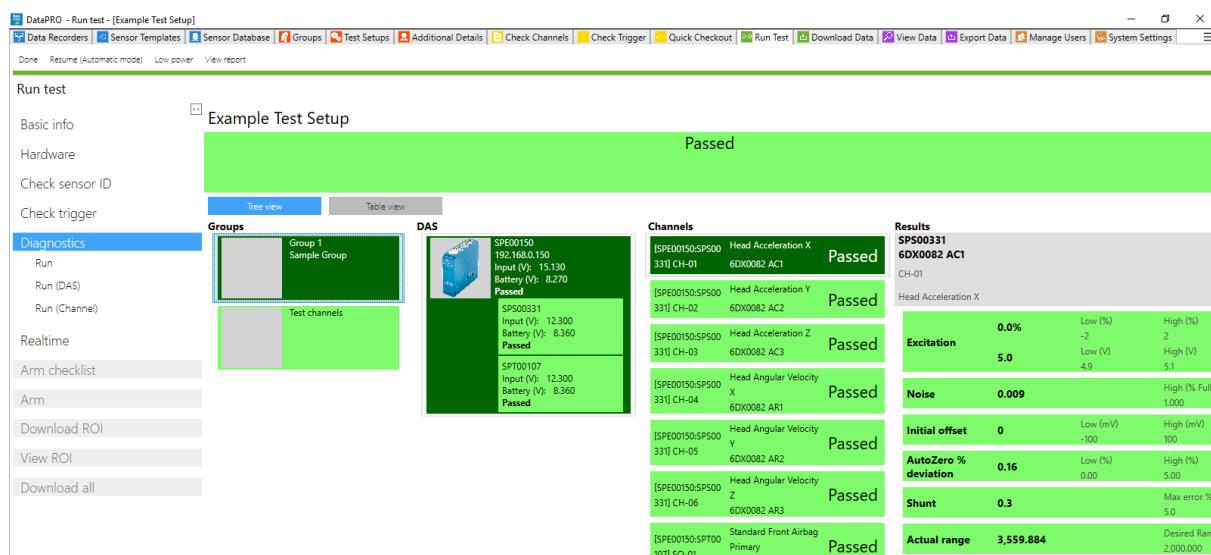
- b. DAS indicates individual status:



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



- Select Run to perform a diagnostic checkout on all DAS/Channels included in 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 163, for more information).
- Select View report to display this report:



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 71, 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):

Basic info

Hardware

Check sensor ID

Check trigger

Diagnostics

Realtime

Arm checklist

- Run
- Arm

Download ROI

View ROI

Download all

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:SPS00331	CH-01	760000075066DD2D	Passed
Group 1	Head Acceleration Y	6DX0082 AC2	6DX0082 AC-2	SPE00150:SPS00331	CH-02	CB000007508CEC2D	Passed
Group 1	Head Acceleration Z	6DX0082 AC3	6DX0082 AC-3	SPE00150:SPS00331	CH-03	220000075066312D	Passed
Group 1	Head Angular Velocity X	6DX0082 AR1	6DX0082 AR-1	SPE00150:SPS00331	CH-04	EC0000173C278B01	Passed
Group 1	Head Angular Velocity Y	6DX0082 AR2	6DX0082 AR-2	SPE00150:SPS00331	CH-05	380000173C27C301	Passed
Group 1	Head Angular Velocity Z	6DX0082 AR3	6DX0082 AR-3	SPE00150:SPS00331	CH-06	250000173C116001	Passed

DAS voltage check

DAS	Input Voltage Status	Battery Voltage Status	Status
SPE00150:SPS00331	12.3 V	8.4 V (Charging)	Passed
SPE00150:SPT00107	12.3 V	8.3 V (Charging)	Passed
SPE00150	15.1 V	8.3 V (Charging)	Passed

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	Passed	0.9	8.0	3.66	Passed	...
Group 1	Standard Front Airbag Secondary	SPE00150:SPT00107	SQ-02	20.00	10.00	Passed	0.9	8.0	3.64	Passed	...

Event lines check

DAS	Start	Trigger	Status
SPE00150:SPS00331			Passed
SPE00150:SPT00107			Passed
SPE00150			Passed

Tilt sensor check

DAS	System ID	System Location	X-axis Degrees	Y-axis Degrees	Z-axis Degrees	Status
DAS						

DAS 003 Comm User Admin navigated to: Record_ArmChecklist Connected to: Local Current view: Admin Login: Admin

- 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:

Basic info

Hardware

Check sensor ID

Check trigger

Diagnostics

Realtime

Arm checklist

Arm

- Run
- Software Start
- Software Trigger
- Stop Monitoring
- Disarm

Example Test Setup - 2020_01_23 12_01

Recording Mode: Circular buffer Samples Per Seconds: 10,000 Channels: 12 (8 analog, 2 SQUIB, 0 digital input, 2 digital output)
Pre-Trigger Seconds: 1.00 Post-Trigger Seconds: 1.00 Level Triggers: None

Waiting for user selection

Trigger: waiting Faults: clear

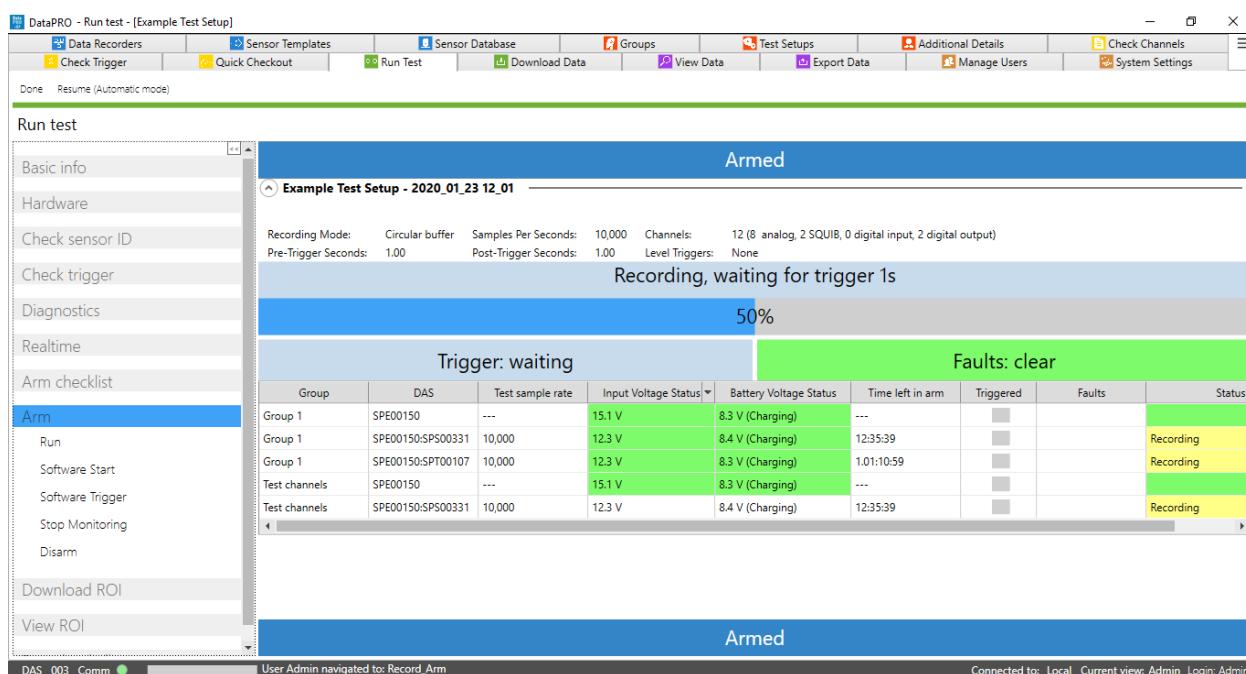
Group	DAS	Test sample rate	Input Voltage Status	Battery Voltage Status	Time left in arm	Triggered	Faults	Status
Group 1	SPE00150	...	15.1 V	8.3 V (Charging)				
Group 1	SPE00150:SPS00331	10,000						
Group 1	SPE00150:SPT00107	10,000						
Test channels	SPE00150	...	15.1 V	8.3 V (Charging)				
Test channels	SPE00150:SPS00331	10,000						

- 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.

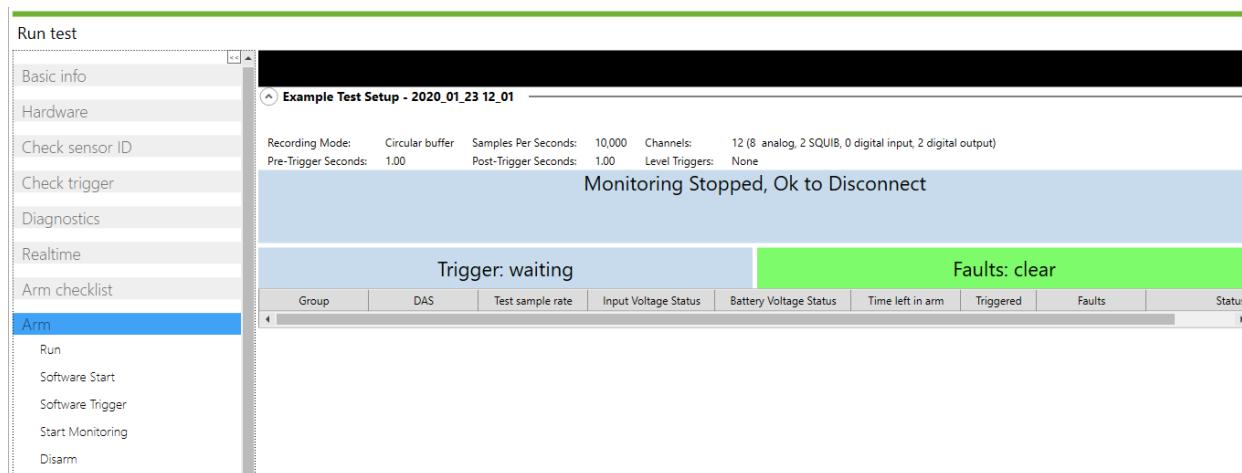
NOTE: *If enabled, additional Arm Prepare navstep will be present. See Appendix D: Quick Arm for more information.*

11. Select Run to arm the system.

- a. Circular Buffer recording mode:



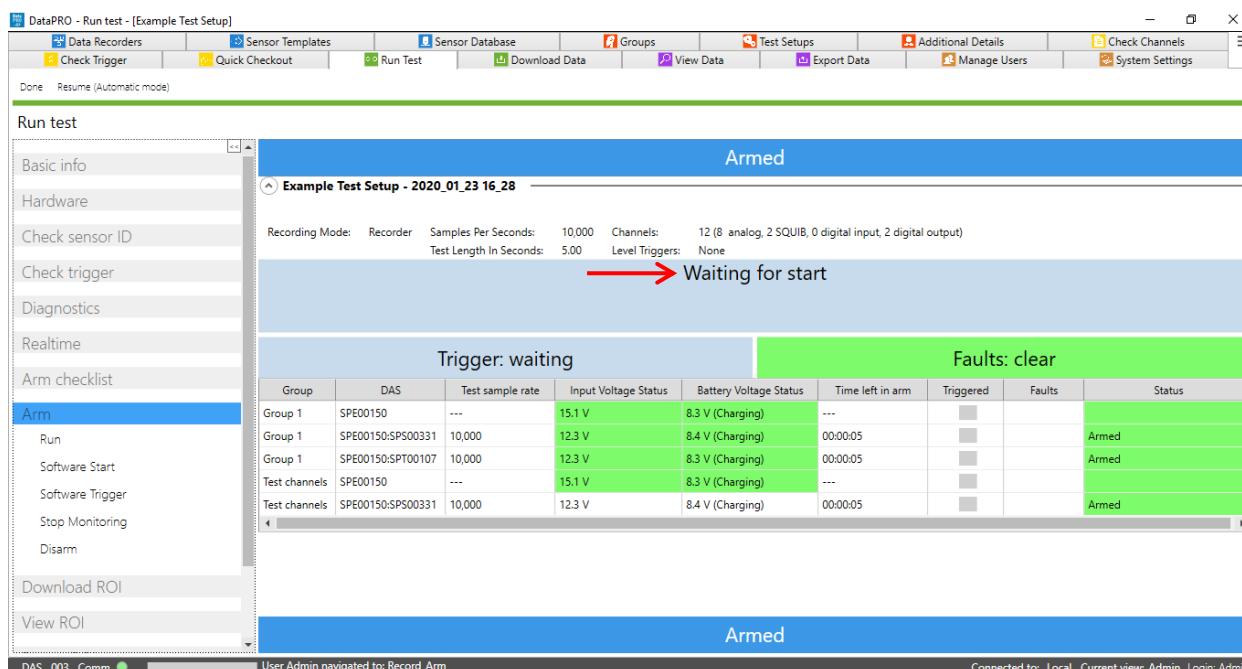
- i. Once armed, status bar indicates recording, waiting for trigger. Displays time left in pre-defined test parameters.
- ii. Time left in arm is only displayed for SLICE hardware and displays total time available on 16 GB internal memory (See *How to Calculate Maximum Recording Time*, page 12, for 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.



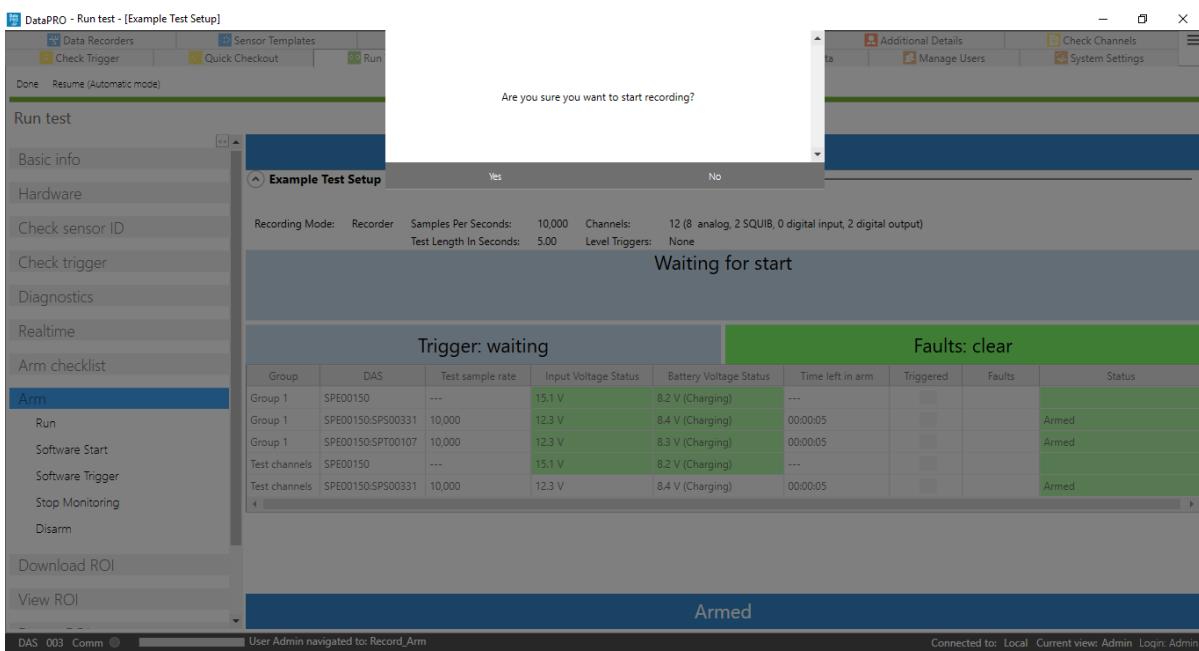
NOTE: *Do not disconnect Ethernet or USB communication until the “Monitoring Stopped, OK to Disconnect” message appears.*

- Select Disarm to disarm the system and abort the test.

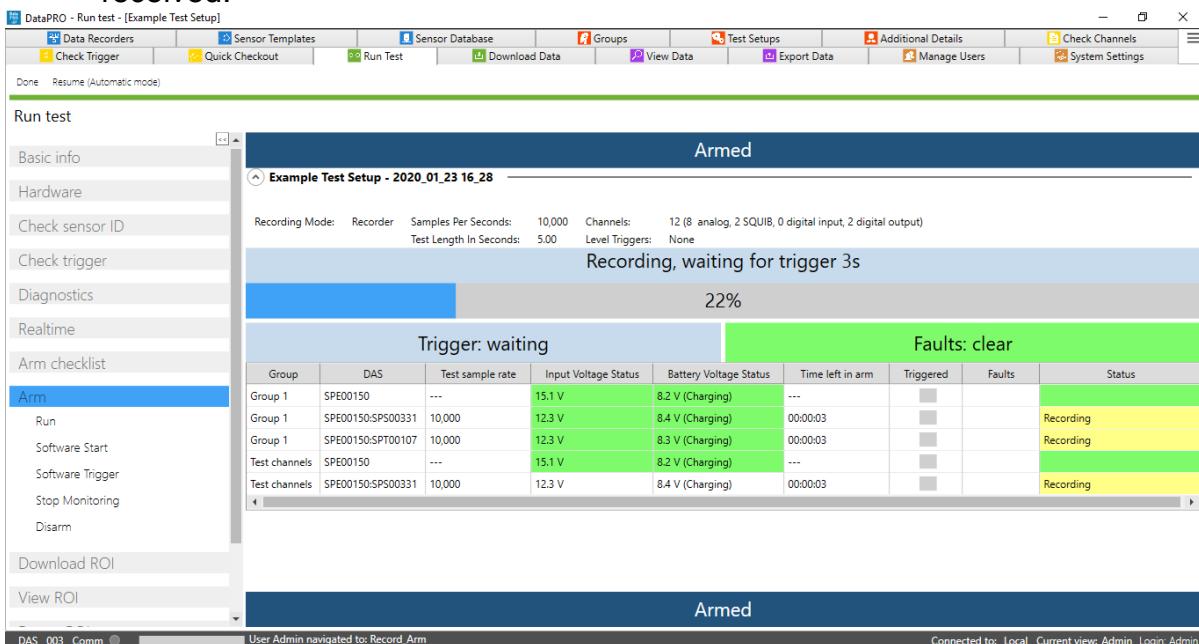
b. Recorder Mode:



- Once armed, status bar indicates Waiting for start.
- Time left in arm displays total test length.
- Each DAS reports individual status.
- 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:

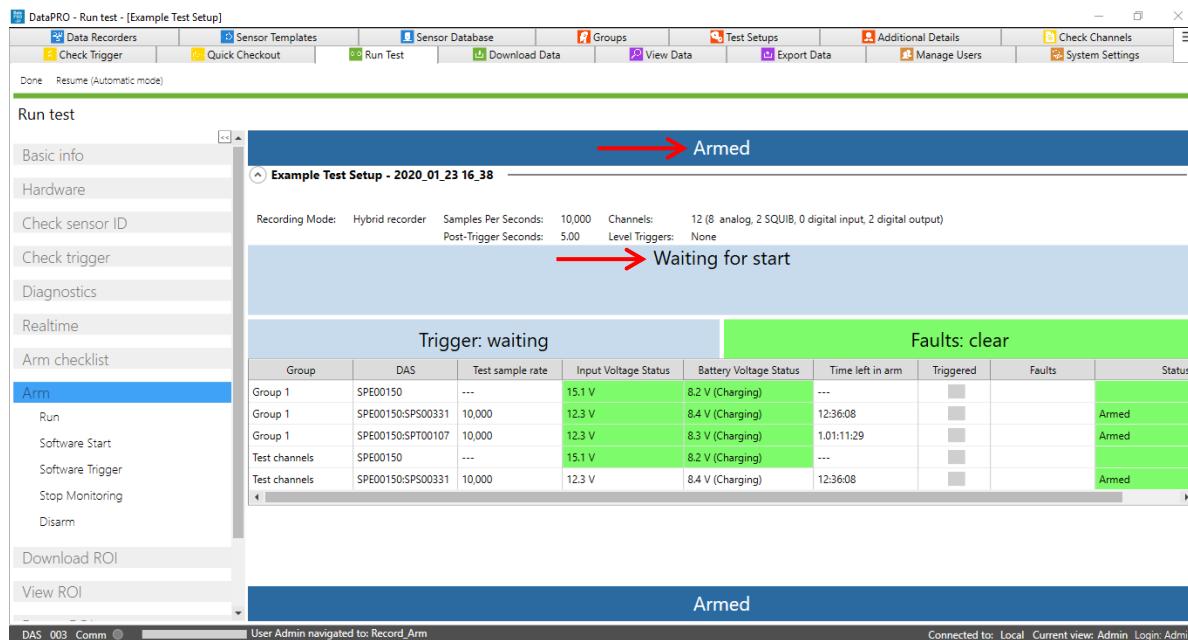


- vi. Generate Trigger/ T=0 signal either via hardware or by selecting Software Trigger.
 vii. Select Stop Monitoring to disconnect the control PC from the DAS for data collection.

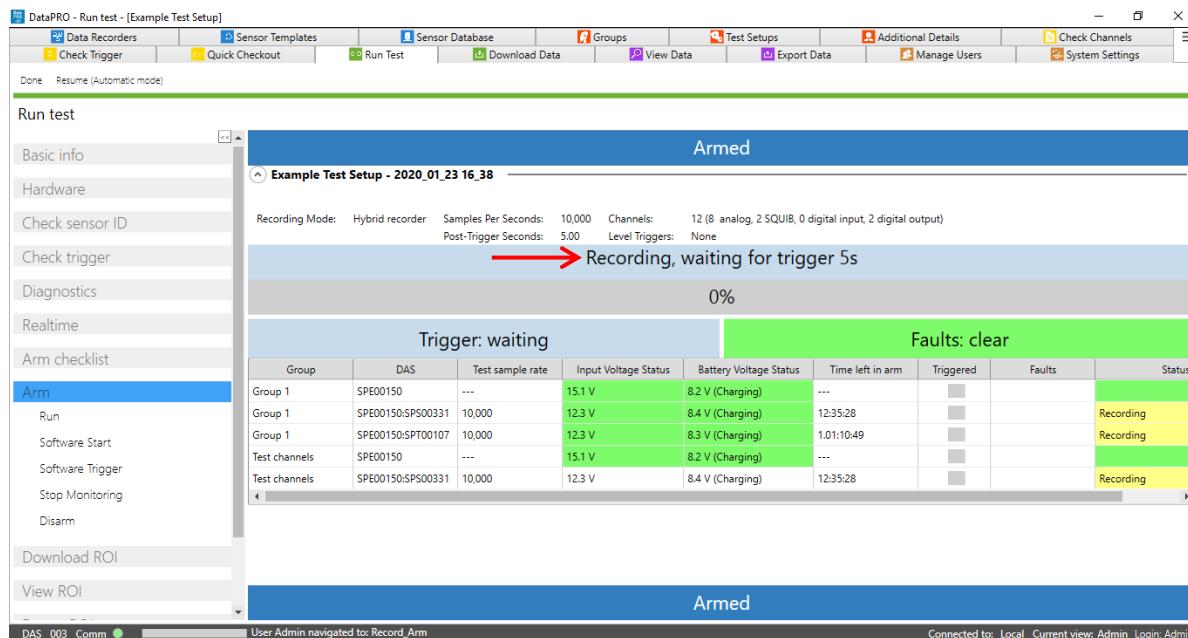
NOTE: *Do not disconnect Ethernet or USB communication until the “Monitoring Stopped, OK to Disconnect” message appears.*

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

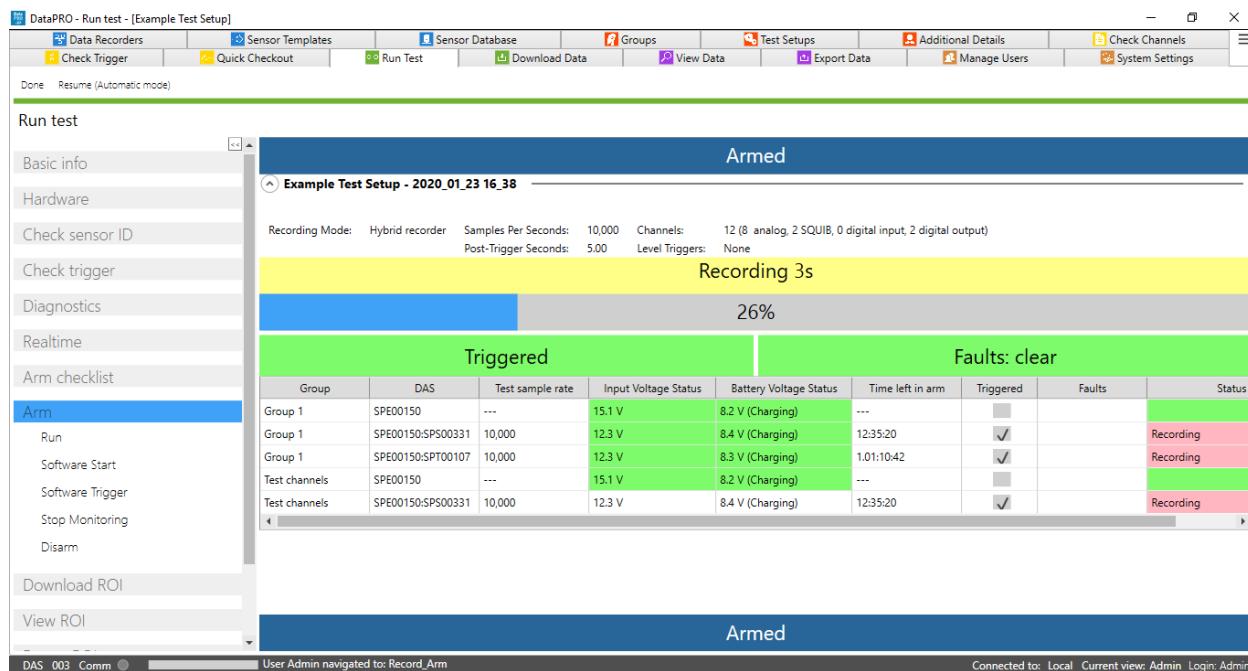
c. Hybrid Mode:



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



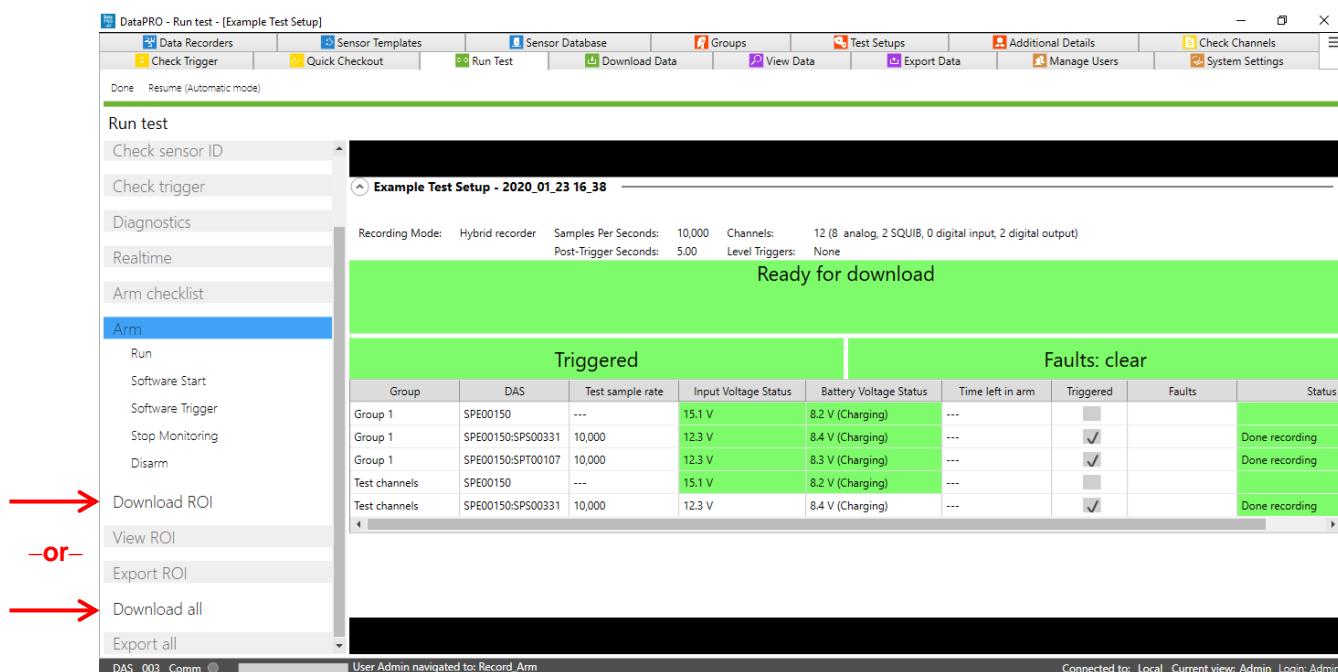
- vi. Specified Post-Trigger Seconds begins counting down once Event signal has been received:



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

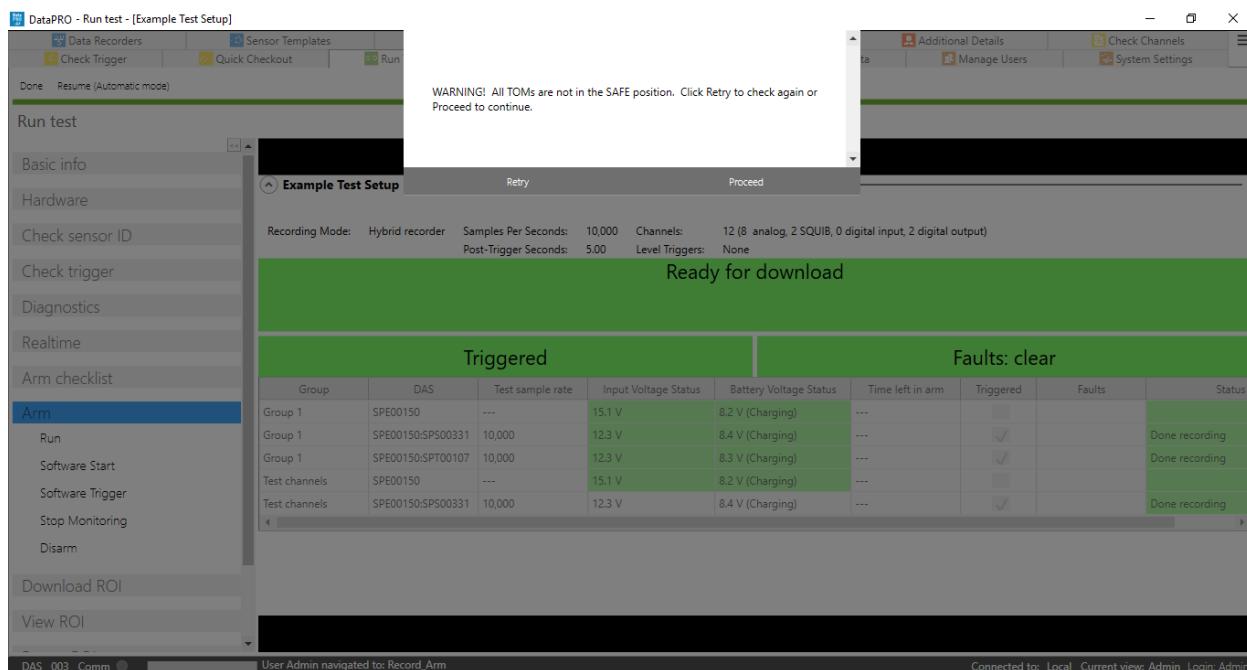
NOTE: *Do not disconnect Ethernet or USB communication until the “Monitoring Stopped, OK to Disconnect” message appears.*

- viii. Select Disarm to disarm the system and abort the test.
12. When the test has been completed 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:

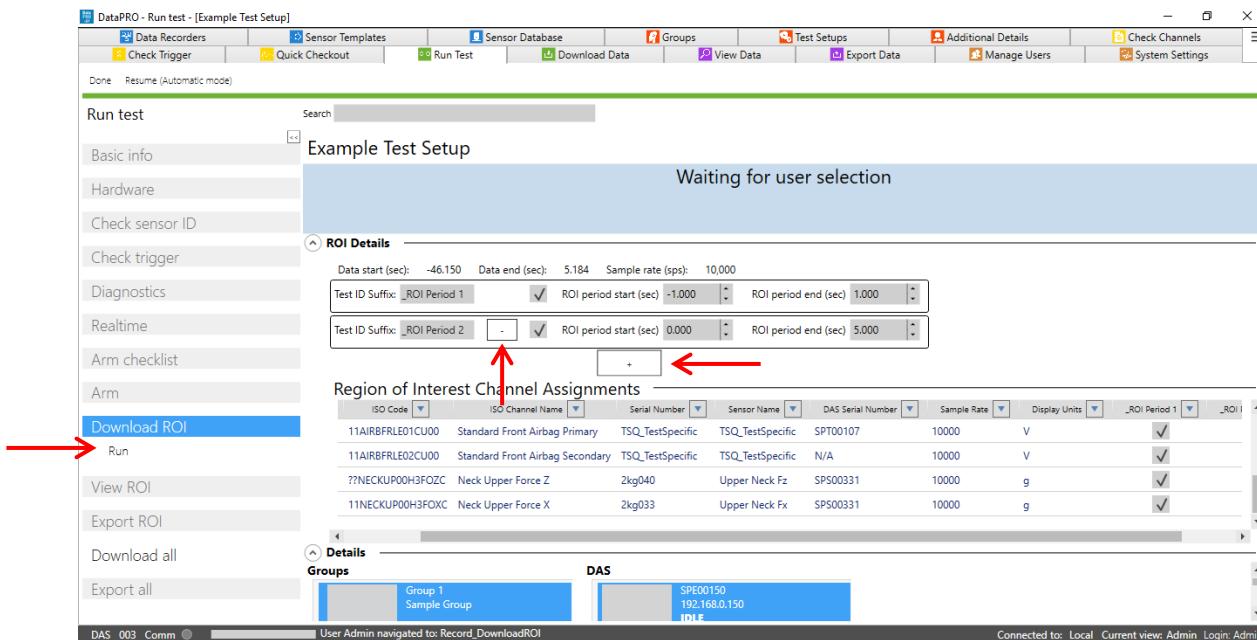


- Download and export options are configurable for each Test Setup (See *Test Setups*, page 48, for more information).

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

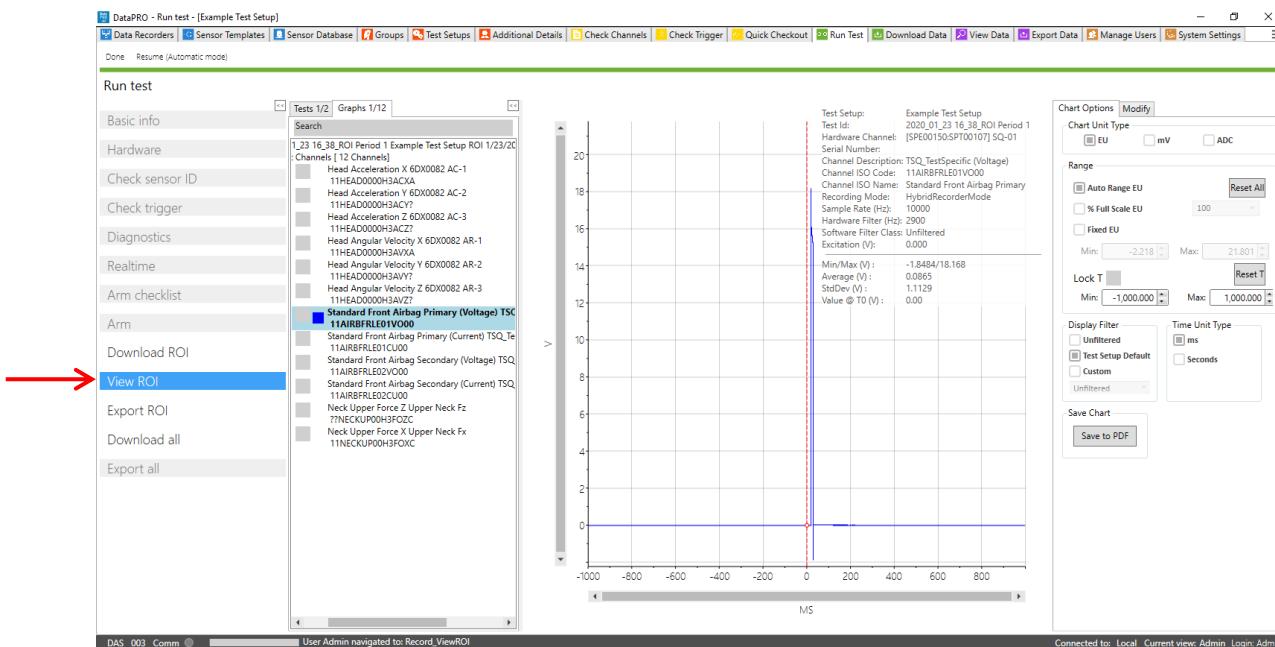


13. Modify the ROI period start/end if desired:



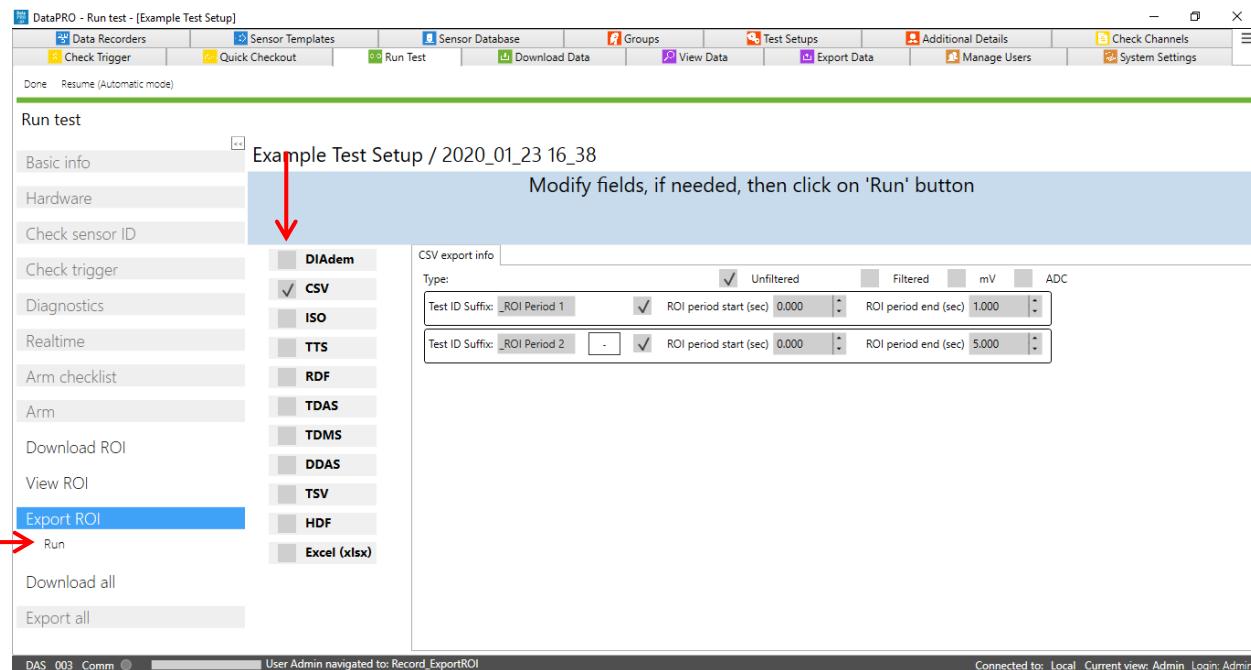
- Select Run to download the defined ROI Segment(s).
 - Add additional ROI Segment(s) with the plus (+).
 - Remove ROI Segment(s) with the minus (-).
- If multiple ROIs are included, channels to be included in each ROI must be defined.
 - Each channel in a test must be included in at least one ROI.

14. Select View ROI to display the downloaded data in the Region Of Interest:



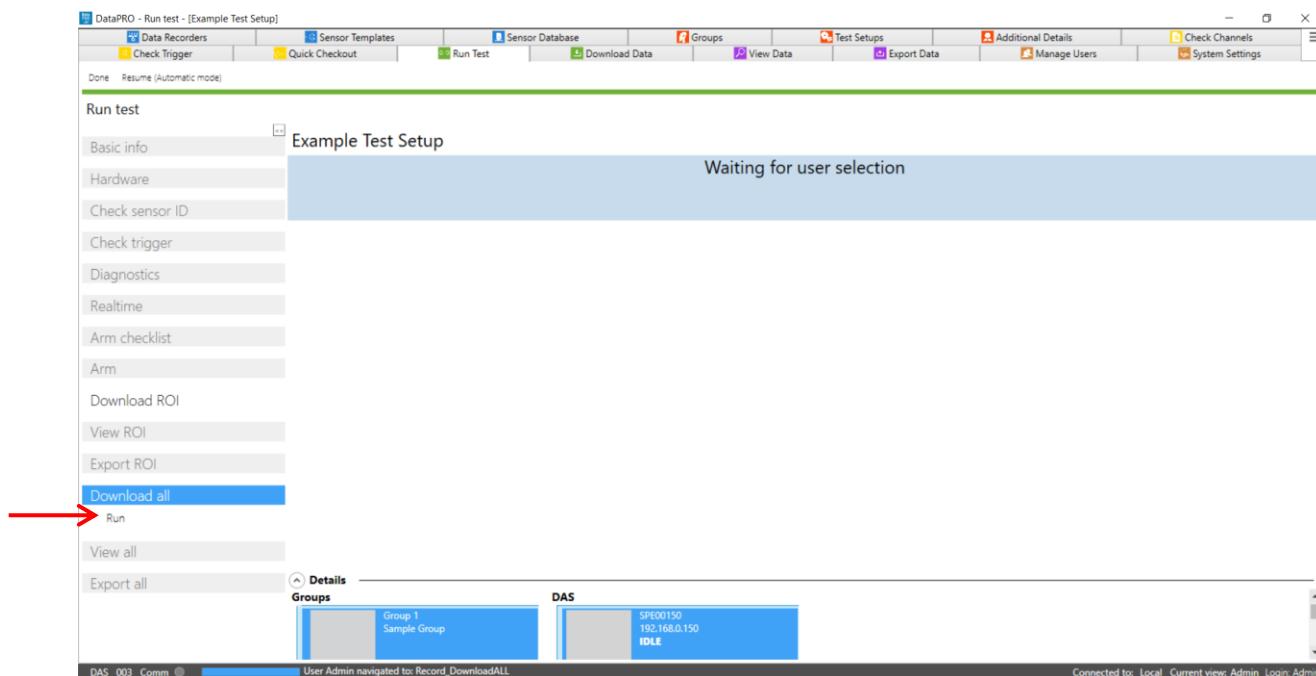
- a. The data set(s) displayed in the View ROI Test Selection pane are the ROI Segment(s) just downloaded.
- b. See [View Data: View, Modify](#), page 102, for information on Viewer controls.

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



- a. Add or remove export types 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.

- The data set displayed in the View All Test Selection Pane is the full data set just downloaded.
- See *View Data: View, Modify*, page 102, for information on Viewer controls.

18. Select Export all to export the full data set (Optional)

- Add or remove export types as needed.
- Select Run to export all data (See *Appendix E: DataPRO File Structure*, page 163).

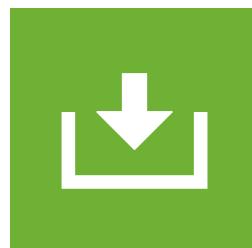
19. Select “Done” to return to the previous location. To return to the Quick Start Steps, click [here](#) (page 17).

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. Select Show recovery controls to browse to and use a different Test Setup .xml file:

The screenshot shows the DataPRO software interface with the following details:

- Top Navigation Bar:** Includes tabs for Data Recorders, Sensor Templates, Sensor Database, Groups, Test Sets, Additional Details, Check Channels, Check Trigger, Quick Checkout, Run Test, Download Data, View Data, Export Data, Manage Users, and System Settings.
- Current View:** The "Download Data" tab is selected.
- Left Sidebar:** Contains links for Done, Show recovery controls (with a red arrow pointing to it), Download Data, Basic info, Example Test Setup, Hardware, Download ROI, View ROI, Export ROI, Download all, View all, Export all, Upload data, Groups, and a status message: User Admin navigated to: Record_BasicInfo.
- Example Test Setup:** Displays basic information like Test id (2020_01_24_10_41_ReDown), Recording Mode (Circular buffer), and various sensor settings.
- Sensor Details:** A table listing sensors with columns for Serial Number, Name, Manufacturer, Model, IPE, Capacity (EU), Sensitivity, Linear Sensitivity, Resistance (Ω), Excitation (V), and Unit. Sensors listed include 2kg033, 2kg040, 6DX0082 AC1, 6DX0082 AC2, 6DX0082 AC3, 6DX0082 AR1, 6DX0082 AR2, and 6DX0082 AR3.
- Groups:** A table showing groups with columns for Name, Test Object, and Position. One group named "Group 1" is listed.
- Bottom Status Bar:** Shows "Connected to: Local Current view: Admin Login: Admin".

5. Continue to the **Hardware** navstep.
6. Continue from step 11 above under *Run Test*, page 85.

Review

View Data: View, Modify

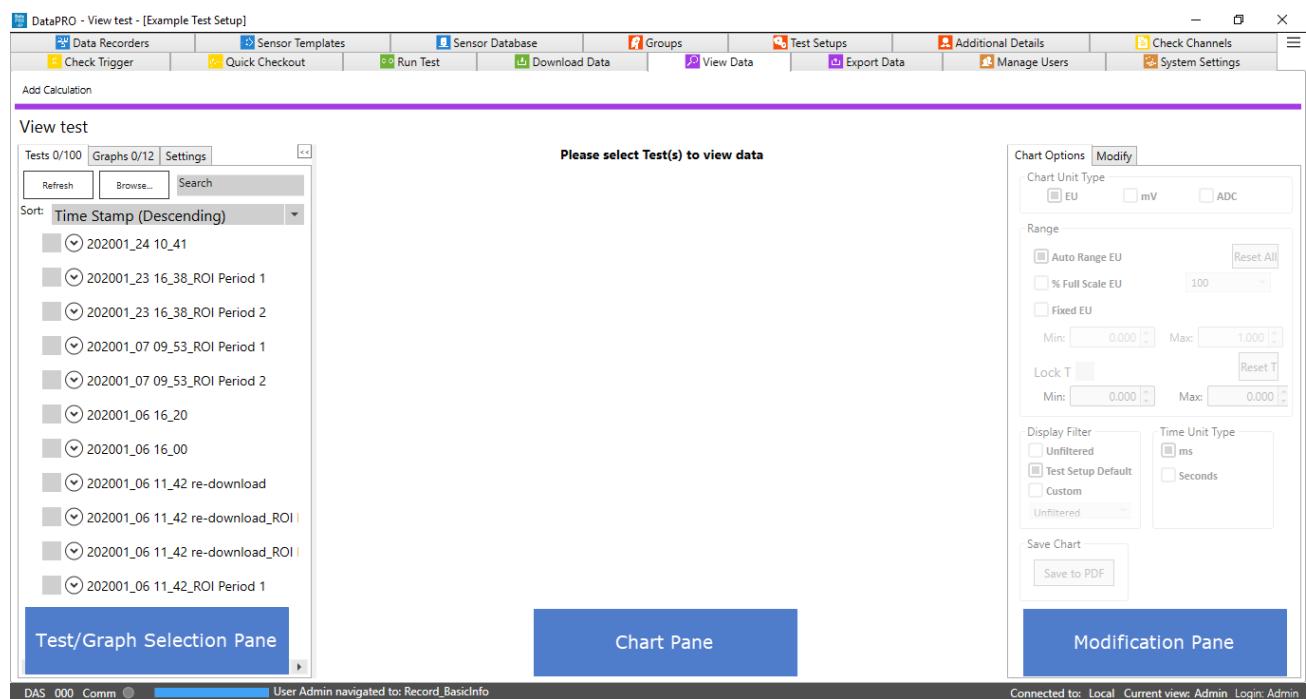
Review a data set that has been collected and downloaded with any version of DataPRO. Perform basic manipulations of data channels, add calculated channels or modify certain parameters for the full data set.

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

To view data from a test in the table, go to step 4.

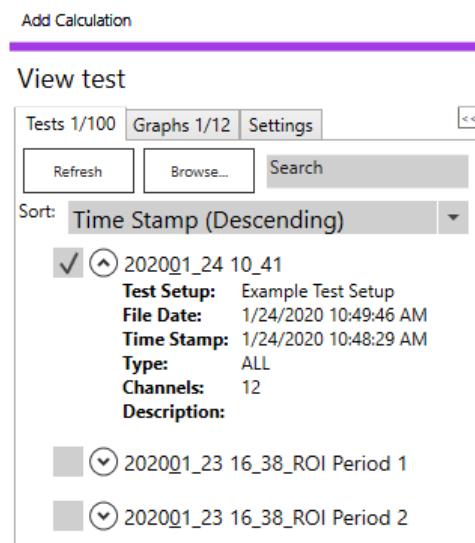
Viewer Layout

The viewer is divided into three panes:



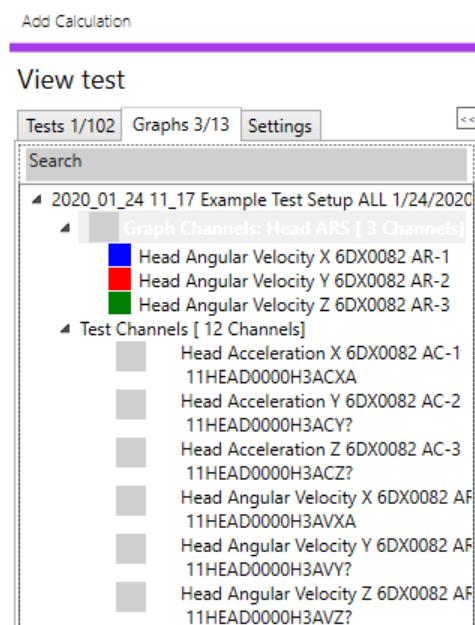
1. Test/Graph Selection Pane (See [Selection Pane](#) for more details).

a. Test Selection:



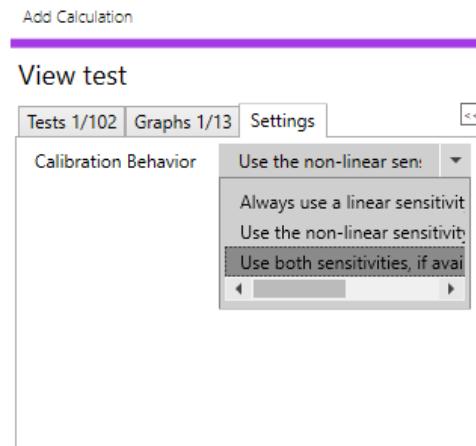
- i. Select tests from data directory.
- ii. Browse to other datasets.
- iii. Search for text in test descriptors.
- iv. Sort display order of data.

b. Graph Selection:



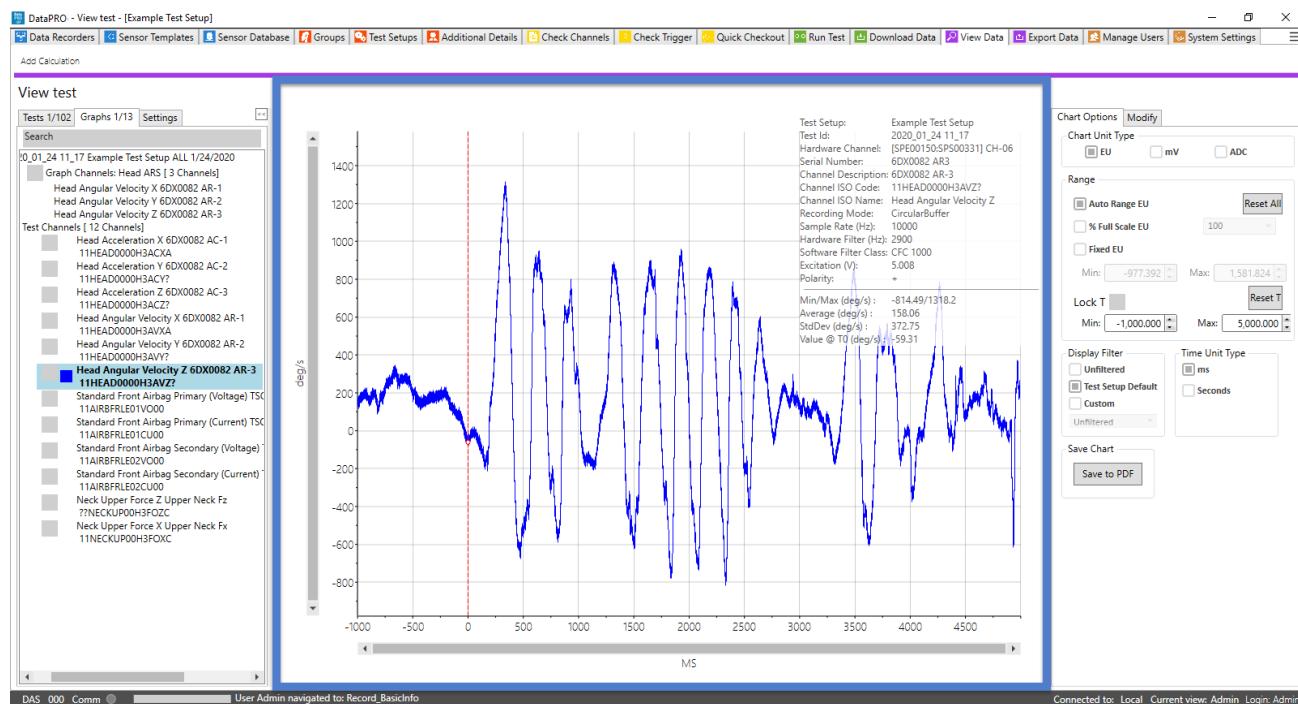
- i. Select pre-defined graphs, individual channels or calculated channels to display.
- ii. Select/lock multiple channels to chart to dynamically review and compare.
- iii. Search for channel(s) by Channel name or Channel description.

c. Settings:



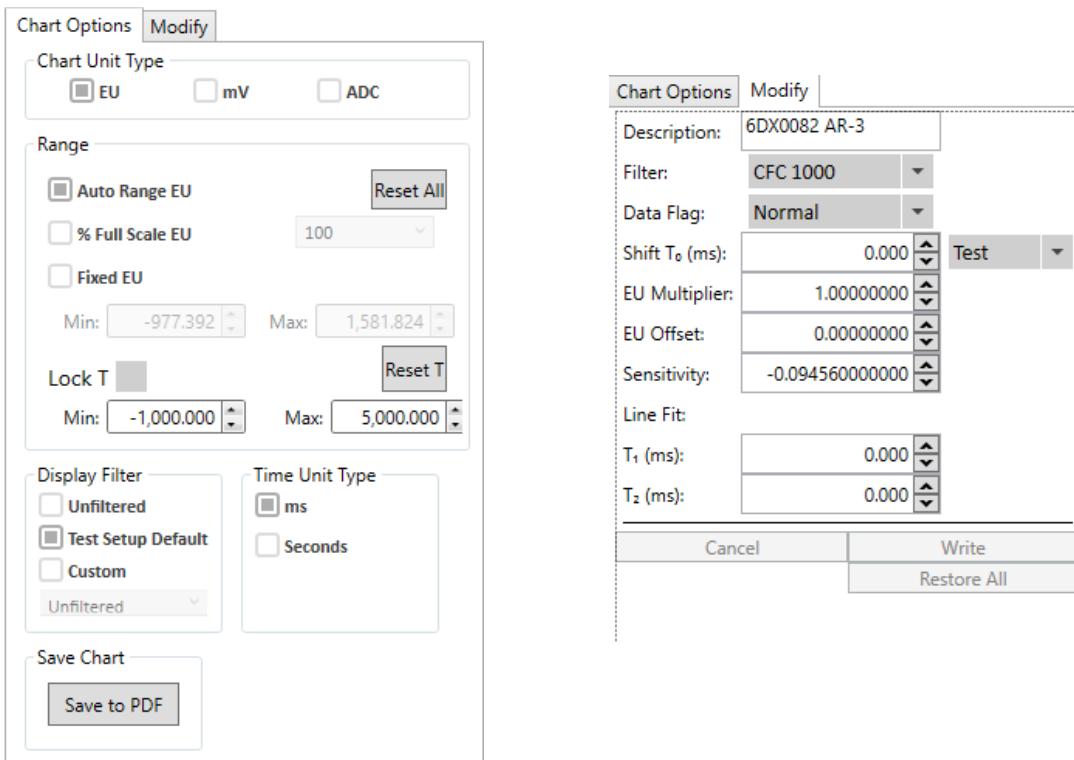
- Select Calibration Behavior for non-linear sensors that also include a linear sensitivity.

2. Chart Pane (See *Chart Pane*, page 112, for more details):



- Select channel(s) to review test data.
- Dynamically zoom.
- Use Modification Pane to manipulate chart display or write modifications to test data.

3. Modification Pane (See *Modification Pane*, page 114, for more details):

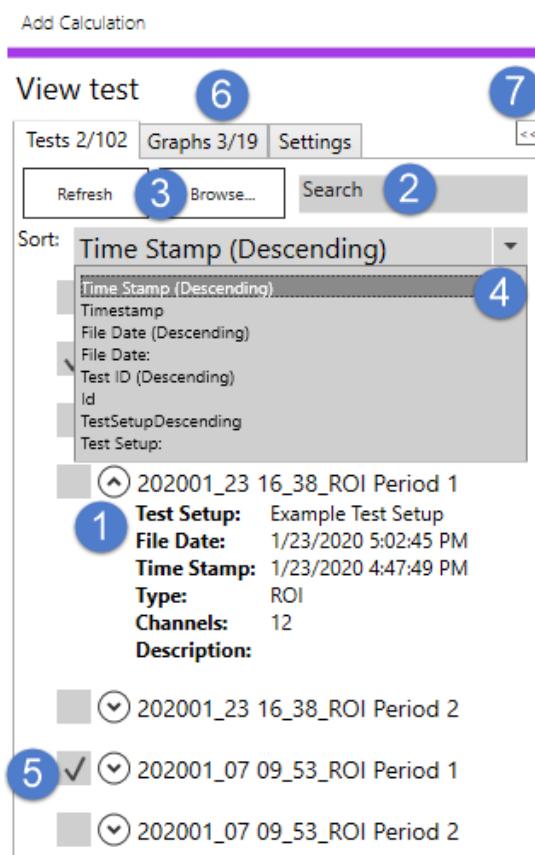


- a. Chart Options tab allows for real-time manipulation of the channel(s) displayed in the chart.
 - i. Select Save to PDF to save the current graph as a PDF. The PDF is currently saved with the binary data. *Appendix E: DataPRO File Structure*, page 163.
- b. Modify tab allows for single-channel modifications 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.

4. Selection Pane:

Tests tab

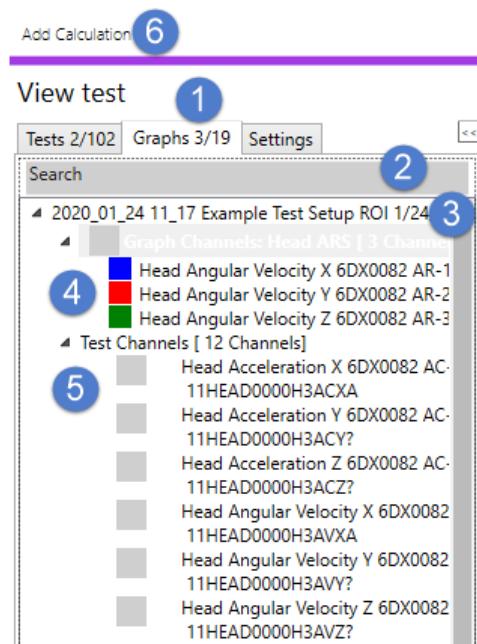
Select test(s) to review individual channel data:



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, pre-defined 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.

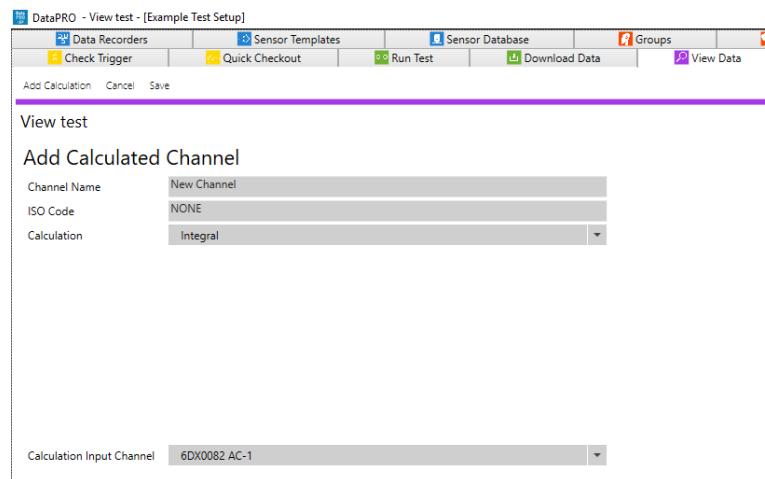
Graphs tab

Select channels (pre-defined graphs, individual test channels and calculated channels) to display and review:

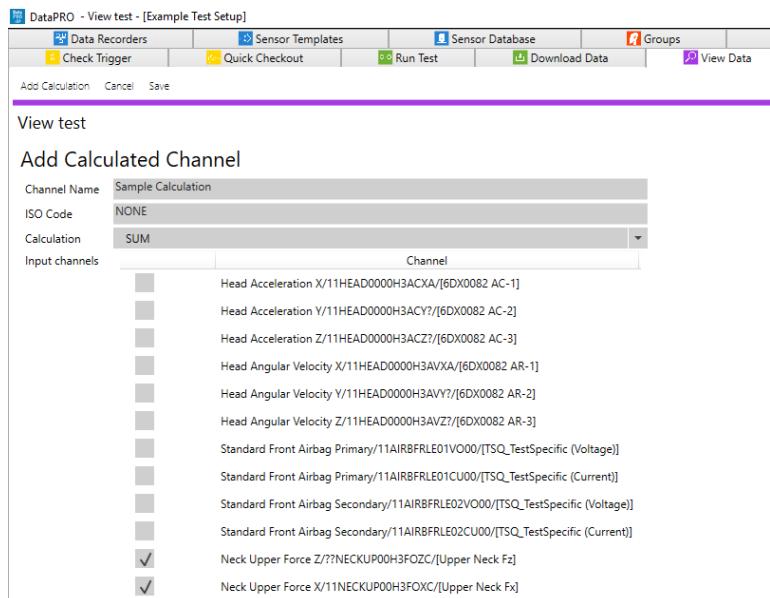


1. Channels (individual test channels, pre-defined graphs and calculated channels) from selected test(s) are displayed in the Graphs tab.
 - a. Selected/locked channels displayed in numerator (**3/19**).
 - b. Available channels displayed in denominator (**3/19**).
2. Search for channel name, channel 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. Pre-defined graphs will be displayed first.
5. Select individual channels, pre-defined graphs, or calculated channels.
 - a. Select channels by highlighting description.
 - b. Lock channels to chart with checkbox.

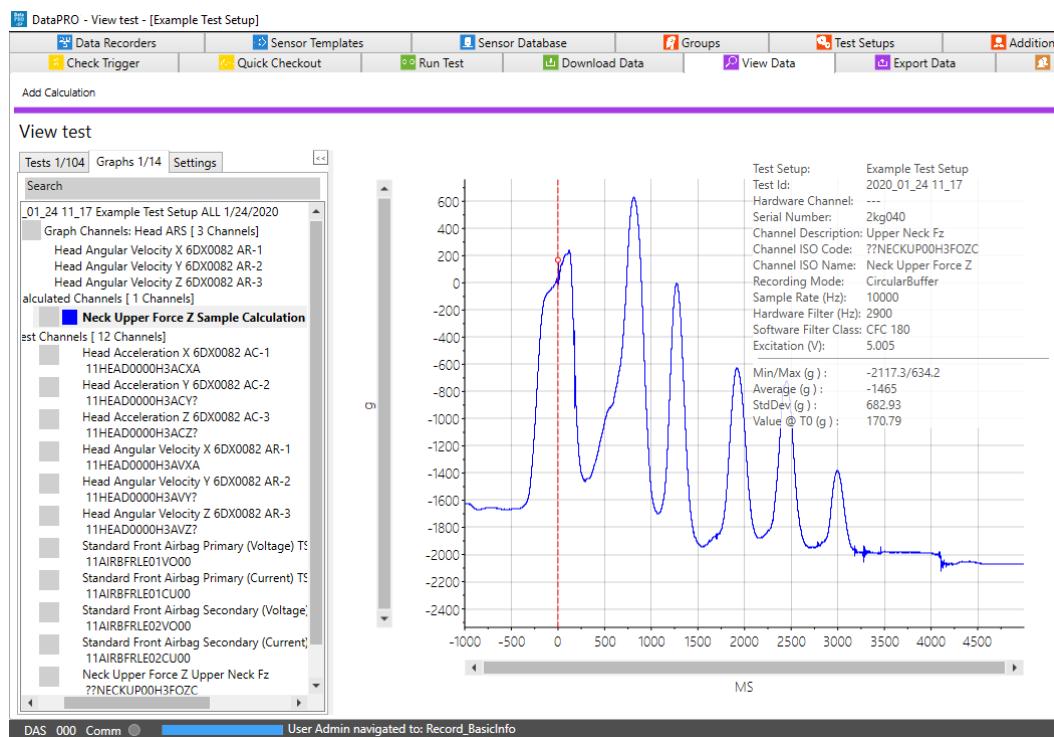
6. Select to add Calculated Channel:



- Enter Channel name and (optional) ISO Code.
- Select Calculation type and included channels:
 - Coefficients for 3D IR-TRACC calculations can be found in the *DataPRO.exe.config* file.

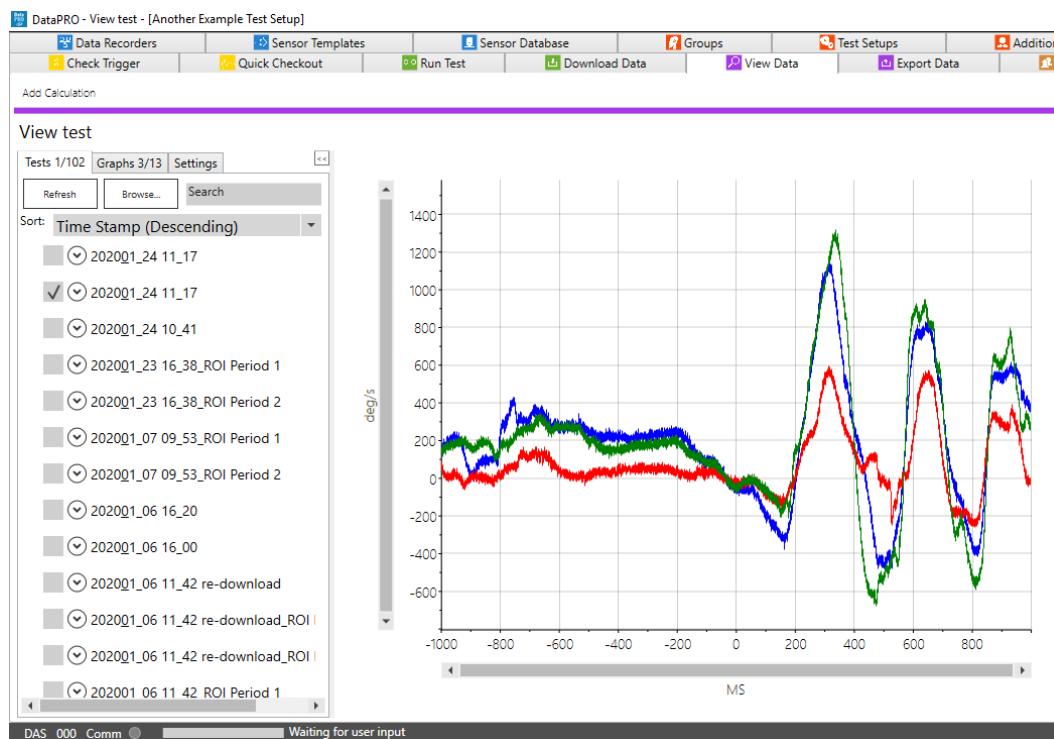


- Select Save to add calculated channel to dataset.

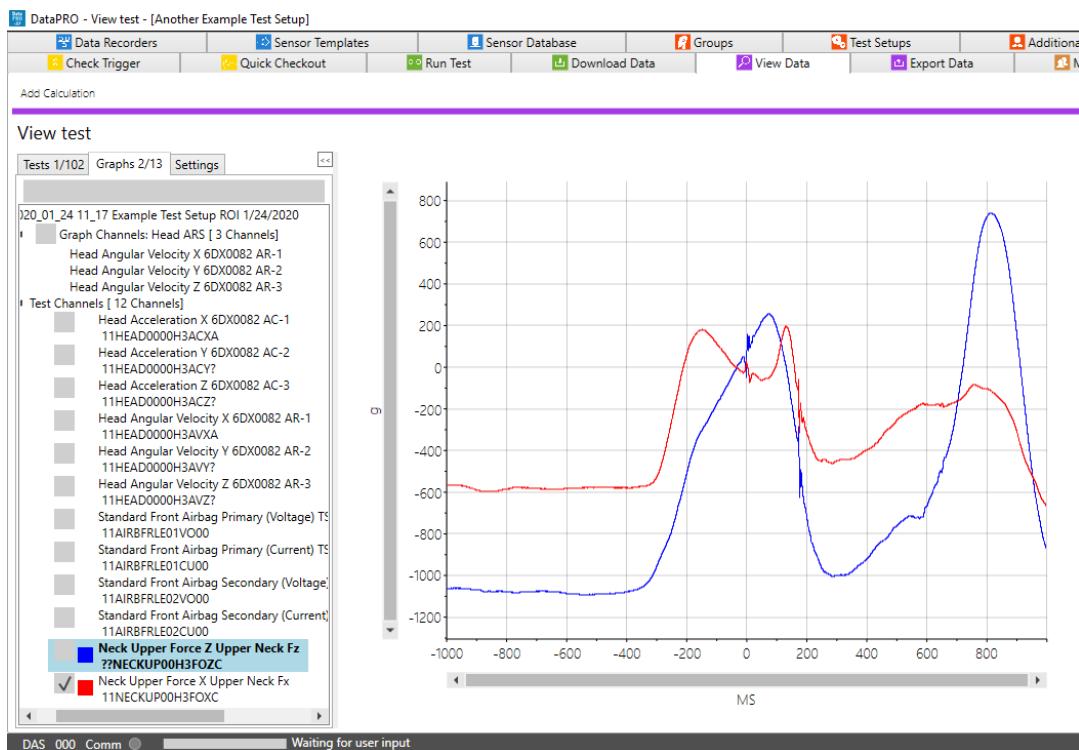


Graph Selection

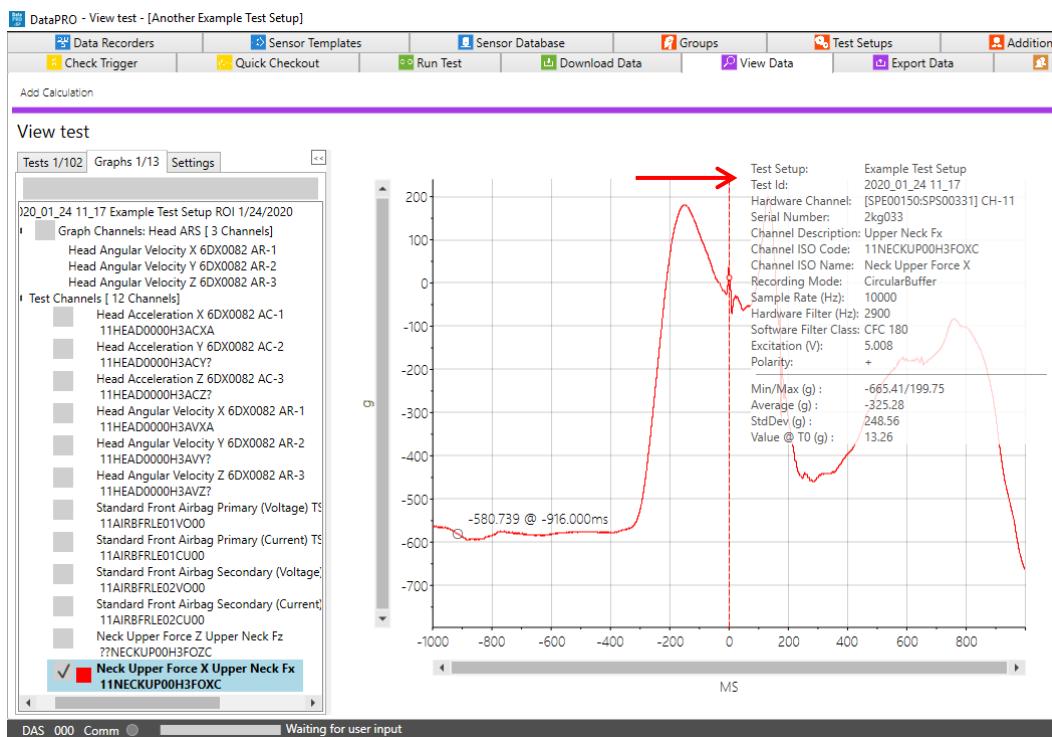
1. Selecting a dataset adds the channels (individual test channels, pre-defined graphs and calculated channels) to the Graphs tab:



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



- 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.
- A single channel, predefined graph, or calculated channel can be selected and displayed in the chart or locked to the chart.
 - In the above example, Neck Upper Force X is locked to the chart and Neck Upper Force Z is selected.
 - Use the arrow keys or click to change the selected channel.
- When a single channel is displayed on the chart, channel details will be displayed on the chart:



- i. Hover over the channel details to hide.
3. Select the Calibration Behavior for non-linear sensors in the Settings tab:

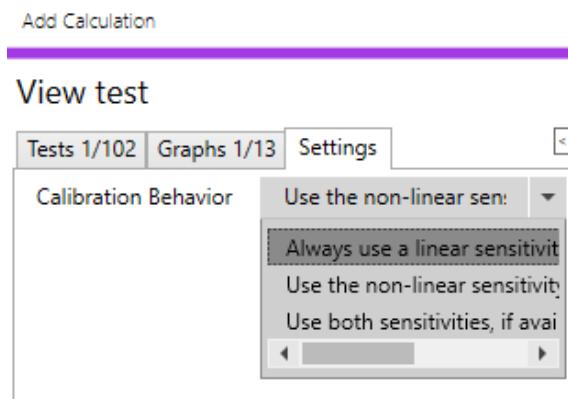
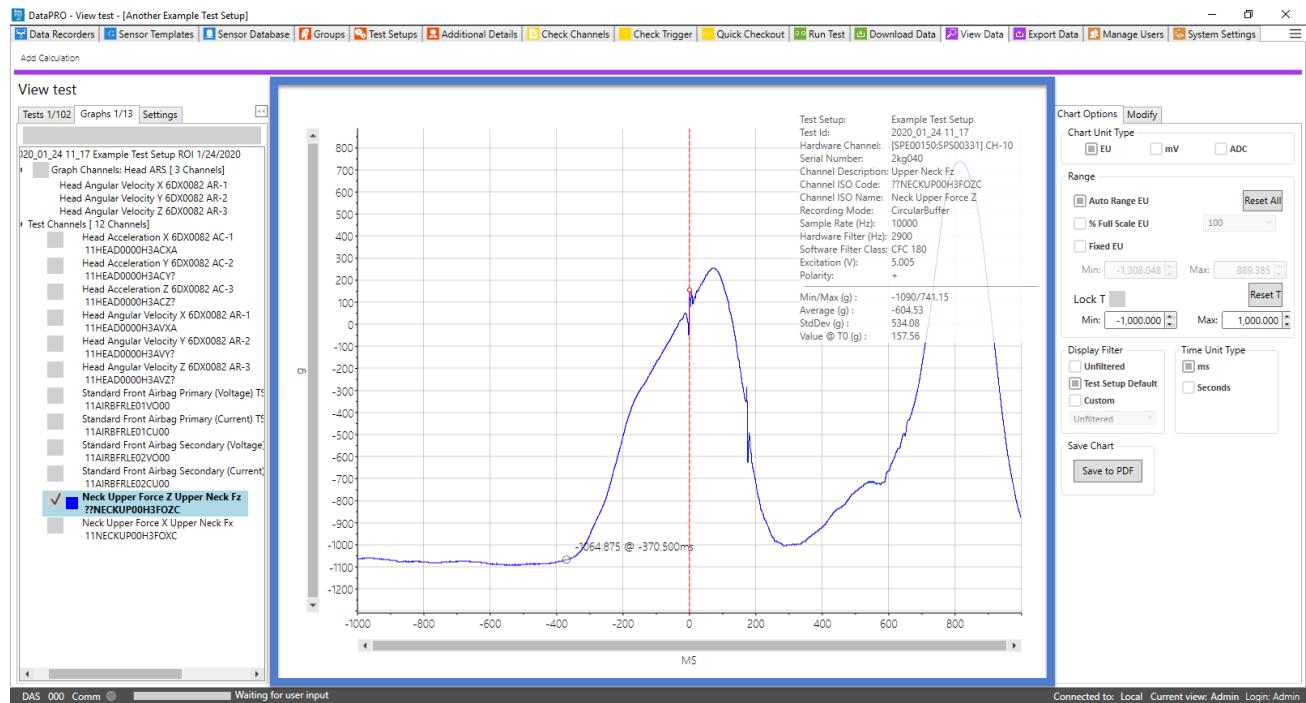
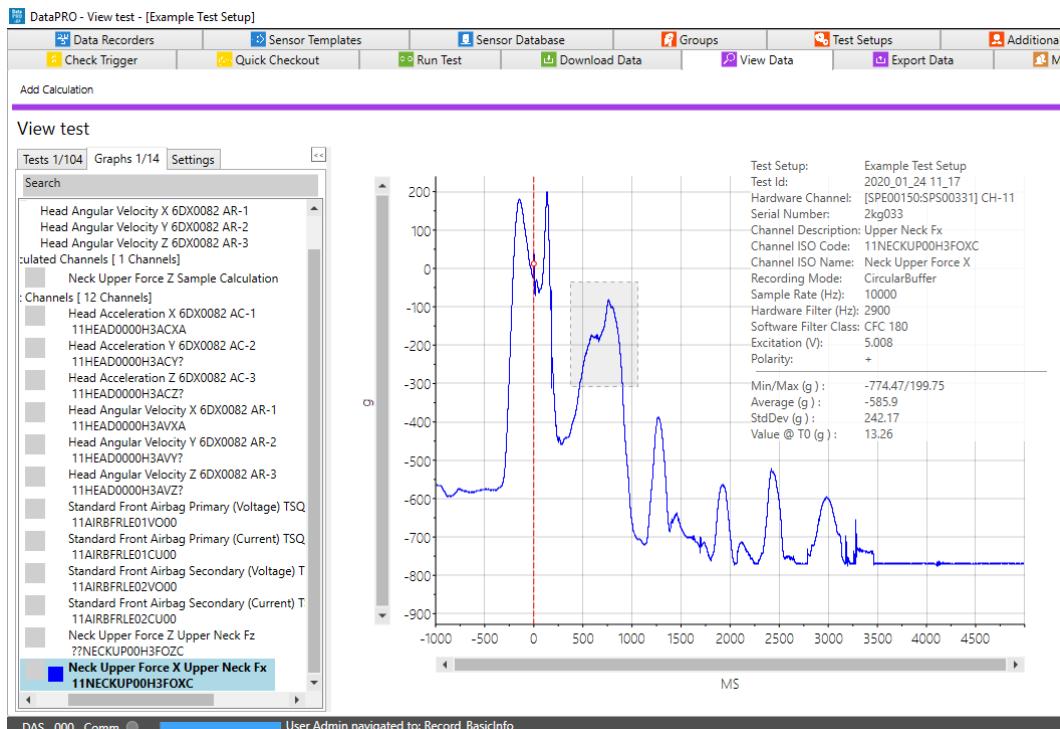


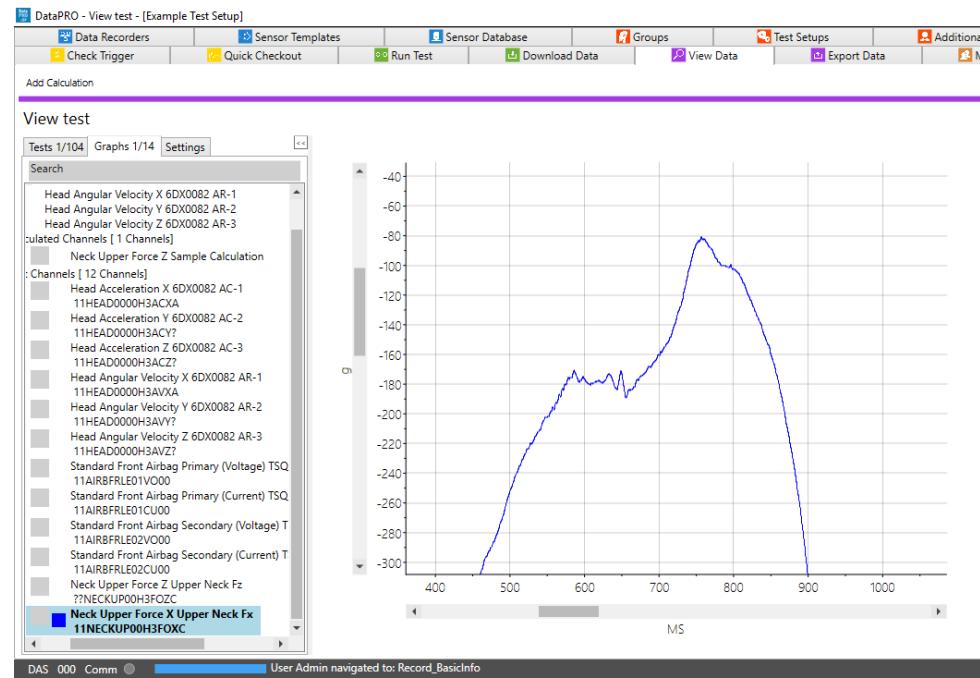
Chart Pane

Selected/locked channels are displayed in the Chart pane:



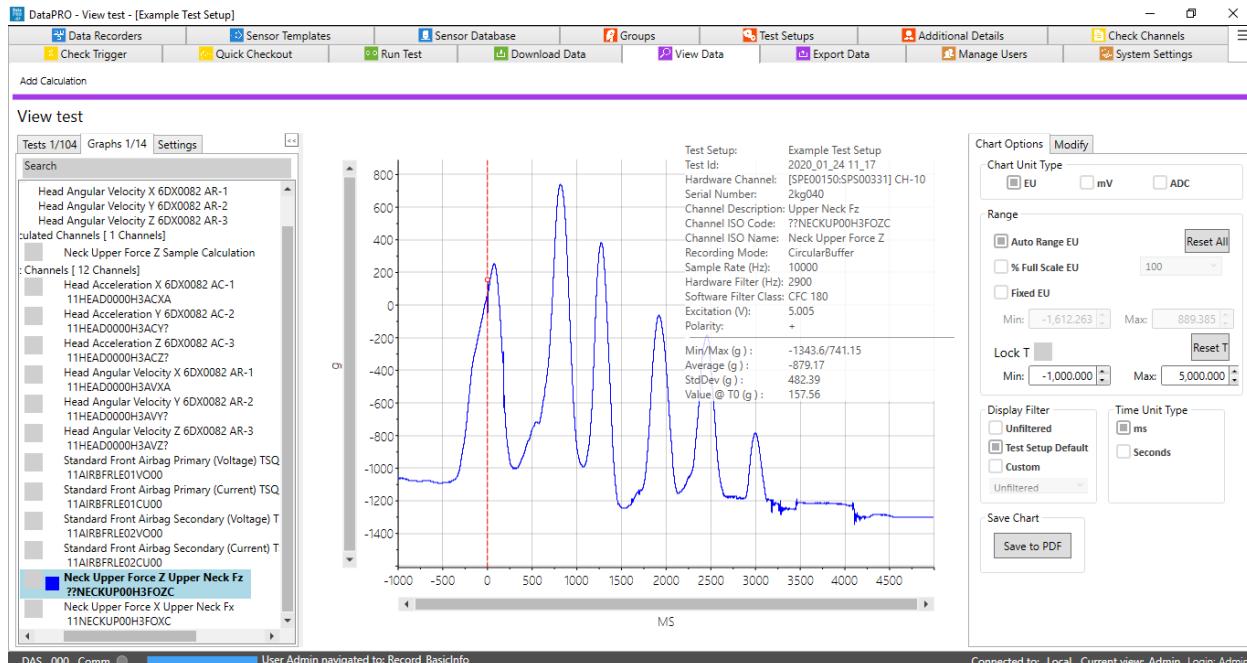
1. Dynamic Zoom selection:





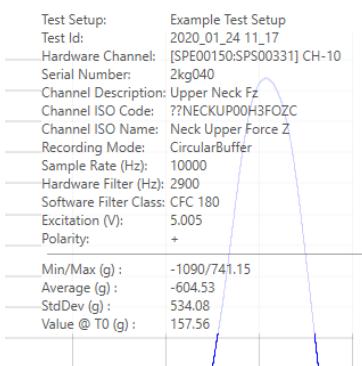
- Select Reset All or use ESC key to return to full chart view.

2. Red T=0 indicator:



- Present when a single channel is displayed.
- Move with right mouse click or via entry in Modification pane.

3. Channel overlay:

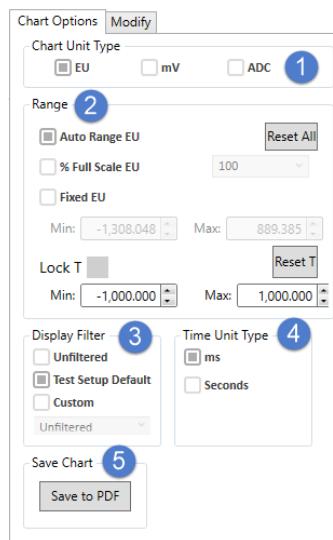


- Present when a single channel is displayed.
- Hover over to hide channel overlay.

Modification Pane

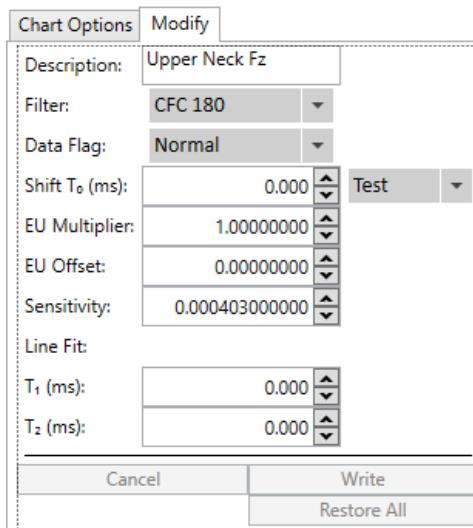
Use controls to temporarily modify the displayed view, or to write changes to collected data.

- Chart Options: Changes made in Chart Options temporarily modify the display view:



- Select to display EU, mV, or ADC as chart unit.
- Select Range to display.
 - Reset All reverts to Auto Range.
 - Lock T locks X axis at displayed values.
 - Reset T reverts X axis to default/full range values.
- Select filter type to apply to chart view.
- Select to display time in milliseconds or seconds.
- Select to save current graph view to PDF. See [Appendix E](#), page 163, for more information.

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



1. Software filter options:
 - a. None.
 - b. CFC 10.
 - c. CFC 60.
 - d. CFC 180.
 - e. CFC 600.
 - f. CFC 1000.
 - g. Unfiltered.
2. Data flag options:
 - a. None.
 - b. Normal.
 - c. Saturated.
 - d. Zero Crossing Error.
 - e. Broken Wire.
 - f. Other.
3. Shift T=0:
 - a. If T=0 indicator is moved with mouse click, new location will be displayed.
 - b. Enter value to move T=0 indicator.
 - c. Apply shift to DAS or to test.
4. Select Cancel to exit and not save changes.
5. Select Write to write changes to data.

Select Restore All to revert to original as-collected data.

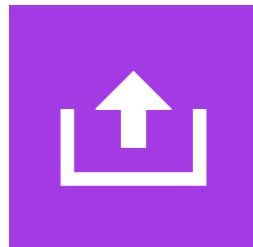
Export Data

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

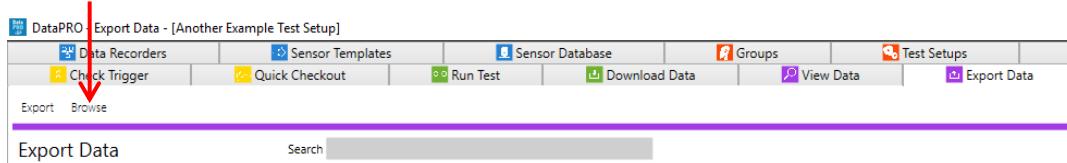
To export data from a test not listed in the table, start at step 1.

To export a file listed in the table, go to step 3.

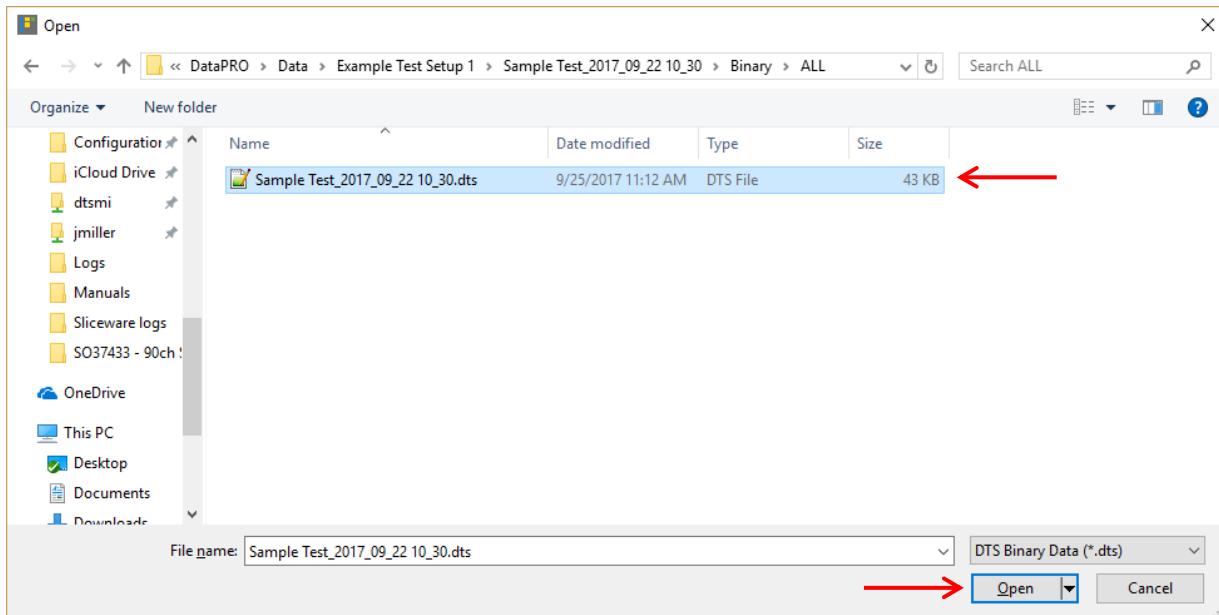
1. Select the “Export Data” tab:



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



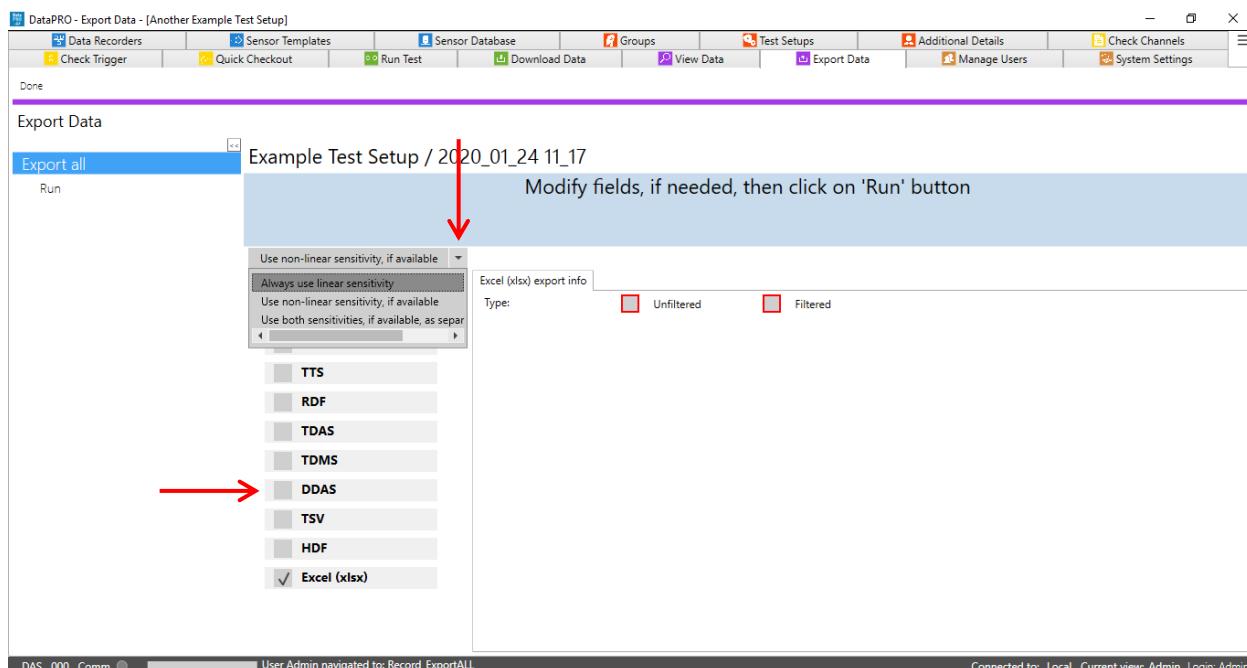
3. Browse to the desired location (*C:\DTS\DTSSuite\Data* is the default location for data) and select the DataPRO.dts file from the desired test data folder. Test data is organized by Test Setup name then by the name of the individual dataset:



4. 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 163:

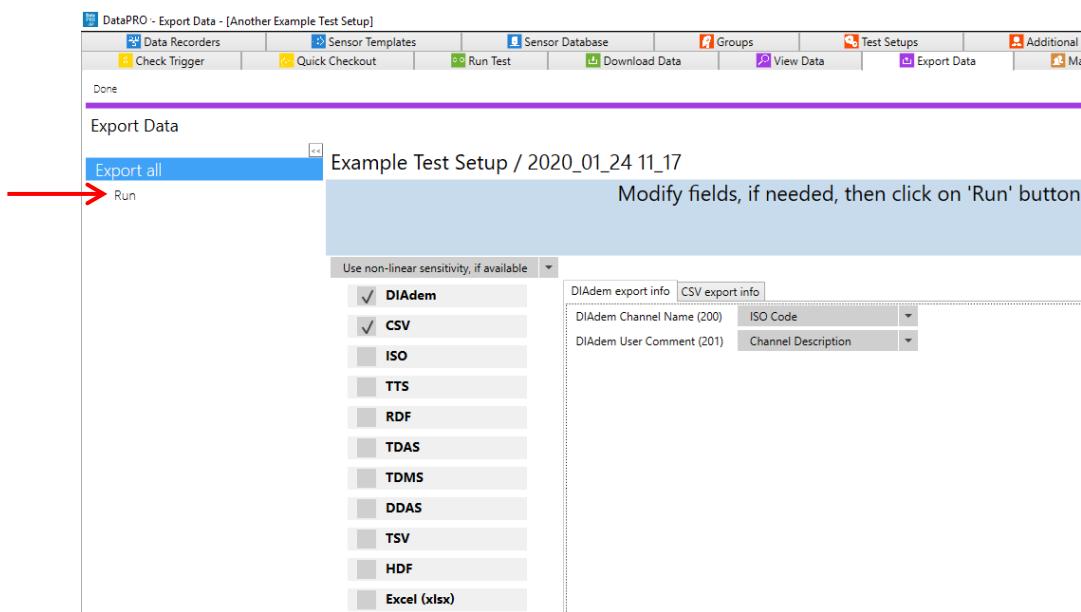
Test Setup Name	Test ID	Description	Number of Channels	Test Date/Time	Laboratory	Custom
Example Test Setup	2020_01_24_11_17		12	1/24/2020 11:22 AM		
Example Test Setup	2020_01_24_11_17		12	1/24/2020 11:22 AM		
Example Test Setup	2020_01_24_10_41		12	1/24/2020 10:48 AM		
Example Test Setup	2020_01_23_16_38_ROI Period 1		12	1/23/2020 4:47 PM		
Example Test Setup	2020_01_23_16_38_ROI Period 2		2	1/23/2020 4:47 PM		

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



- DIAdem: Choose descriptor for line 200 and 201.
- CSV: Choose Filtered or Unfiltered and whether to include mV and/or ADC data.
- ISO: See ISO TS13499 RED A for information on export fields.
- TTS: Customer specific export format. Choose sub sample intervals.
- RDF: Customer specific export format. No export options.
- TDAS: Export format compatible with TDAS Control. No export options.
- TDMS: Export format compatible with TDAS Manager. No export options.
- DDAS: Customer specific export format. No export options.
- TSV: Choose Filtered or Unfiltered.
- HDF: Choose to include logs, reports, test setup file, ADC data, mV data, EU data.
- Excel (xlsx): Choose Filtered or Unfiltered.

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 163.
8. When finished, select “Done” to return to previous location. To return to the Quick Start Steps, click [here](#) (page 17).

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 = DTSAdmin

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.

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”:

Display name	User name	Role	Modified
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

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

Info

- Username: PowerUser
- Display name: PowerUser
- User role: Power user
- Tags: (empty)
- Password: (redacted)
- Confirm password: (redacted)
- Local only: (disabled)
- Last modified: N/A
- Last modified by: N/A

Change the user's display name.

Permissions

Visibility

Use Tags to filter/restrict visibility of Test Setups

Change/confirm the user's password.

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

Visibility

Checkmarks indicate enabled tabs:

- Hardware: ✓
- SensorModels: ✓
- Sensors: ✓
- Prepare: ✓
- ConfigureTestObjects: ✓
- Page: ✓
- TestSetups: ✓
- AdditionalDetails: ✓
- Diagnostics: ✓
- Realtime: ✓
- StatusLineCheck: ✓
- QuickSensorCheck: ✓
- Record: ✓
- Page: ✓
- DownloadAndView: ✓
- CollectData: ✓
- Review: ✓
- ViewData: ✓
- ExportData: ✓
- Admin: (disabled)

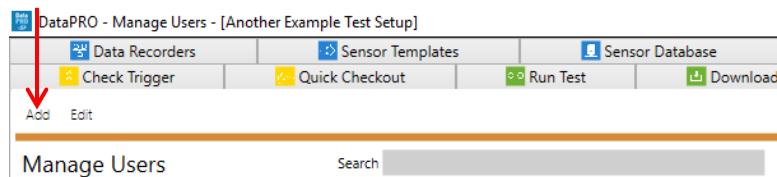
Use arrows to expand menus as necessary

Check to enable a tab

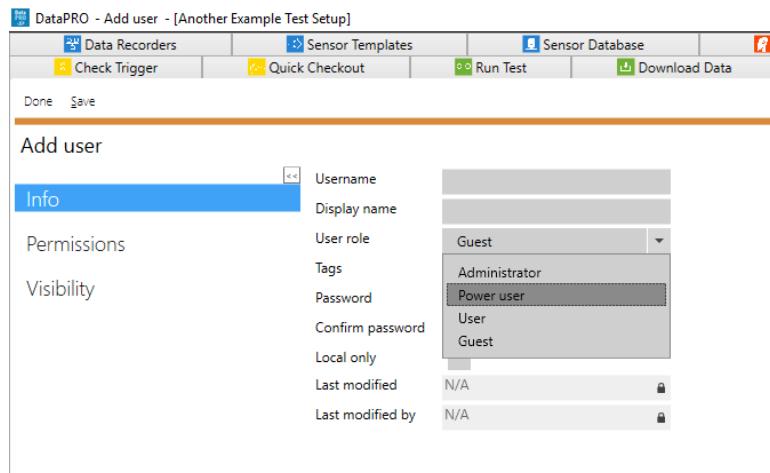
Uncheck to hide a tab

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 of the four user templates contain 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.
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” return to the previous location.

System Settings

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



Test Options

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

1. Features:

DataPRO - System Settings - [SLICE PRO Test]

Features	
Test options	Allow push/pull of sensors
Test setup defaults	Check Trigger quick mode
Realtime	Automatically add ArmCheckList when adding TOMs
Channel code settings	Enable level-trigger UI
UI	Allow calculated channels
Network options	AutoArm diagnostics delay (ms)
Power settings	Include Group name in ISO export
Sensor settings	Warn if test is cancelled without data export
	Control surface port
	Derive ROI from All
	Trigger Check After Real-time
	Use circular buffer trigger check
	Download mode
	Max parallel TDAS downloads
	Test ID Prefix/Suffix Values
	ISO channel/sensor compatibility level
	Warn when a sensor with ID is out of position
	Allow data collection with a sensor id out of position
	Use legacy TDAS Control TOM software filter class setting
	Use legacy TDAS Control software filter adjustment
	Allow modification of Test Setup Name and Description
	Apply "Shift T." modifications to Test only
	Fire TOM digital outputs during diagnostics
	Allow push/pull of Group modifications to Test Setups
	Apply sensor data when assigning channel
	Enable region of interest (ROI) download options
	Enable input and output clock source options
	Actual Range low limit (%)
	Actual Range high limit (%)
	Range overhead factor (%)
	Show Sensor/Channel user values

- **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.
- **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.

- **Automatically add ArmCheckList when adding TOMs:** If enabled, Arm Checklist will automatically be added to any Test Setup that contains TOMs.
- **Enable level-trigger UI:** If enabled, a sensor can be set up as a level trigger in Test Setup.
- **Allow calculated channels:** If enabled, user can add calculated channels to dataset(s).

NOTE: Channels included in each calculation must be in 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 T0 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, In parallel by DAS type, or Sequentially.
 - TDAS systems should select either In 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 greater than 8,000 sps will be filtered at 1650 Hz, while TOM channels acquired at 8,000 sps or less 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.
- **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.

2. 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

- a. Maximum time to wait for communication response from hardware.

3. Sample rates and AAF rates:

Sample rates and AAF rates	
Import sample rates and AAF settings from TDAS.ini	<input type="button" value="Browse"/>
Valid sample rates	5,50,100,200,250,500,1000,2000,2500,5000,8000,100 00,12500,20000,25000,40000,50000,60000,75000,100 000,150000,300000,400000,500000
SLICE AAF Rates	1@5,10@50,20@100,40@200,50@250,100@500,200 @1000,400@2000,500@2500,1000@5000,1600@80 00,2900@10000,2900@12500,4000@20000,5000@2 5000,8000@40000,10000@50000,12000@60000,150 00@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@6 0000,0@75000,0@100000,0@150000,0@300000

- a. Import existing values from TDAS.ini (available in TDAS Control setup folder, located under C:\DTS\TDAS Control\ by default).
- b. Default valid sample rates and AAF filtering rates. Each value needs to be separated from another by a coma “,”.
- c. Add additional sample/filter rates for any hardware type. Each value needs to be written according to the following syntax: *AAF_Value @Sample_Rate*. And separated from another by a coma “,”.

4. 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
Calibration due warning period (days)	30
HW calibration due grace period (days)	30
HW calibration policy	Allow data collection with overdue hardware calibrations

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

5. Data Export Options:

Data Export Options	
DIAdem Channel Name (200)	ISO Code
DIAdem User Comment (201)	Channel Description
Export INI file	<input checked="" type="checkbox"/> Browse <input type="button" value="Clear"/>
Use Test Setup for Test ID Header In CSV Export	<input type="checkbox"/>
Keep ROI downloads within test folder	<input type="checkbox"/>
Use flat folder structure	<input type="checkbox"/>
Use UTC time in CSV Exports	<input type="checkbox"/>

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

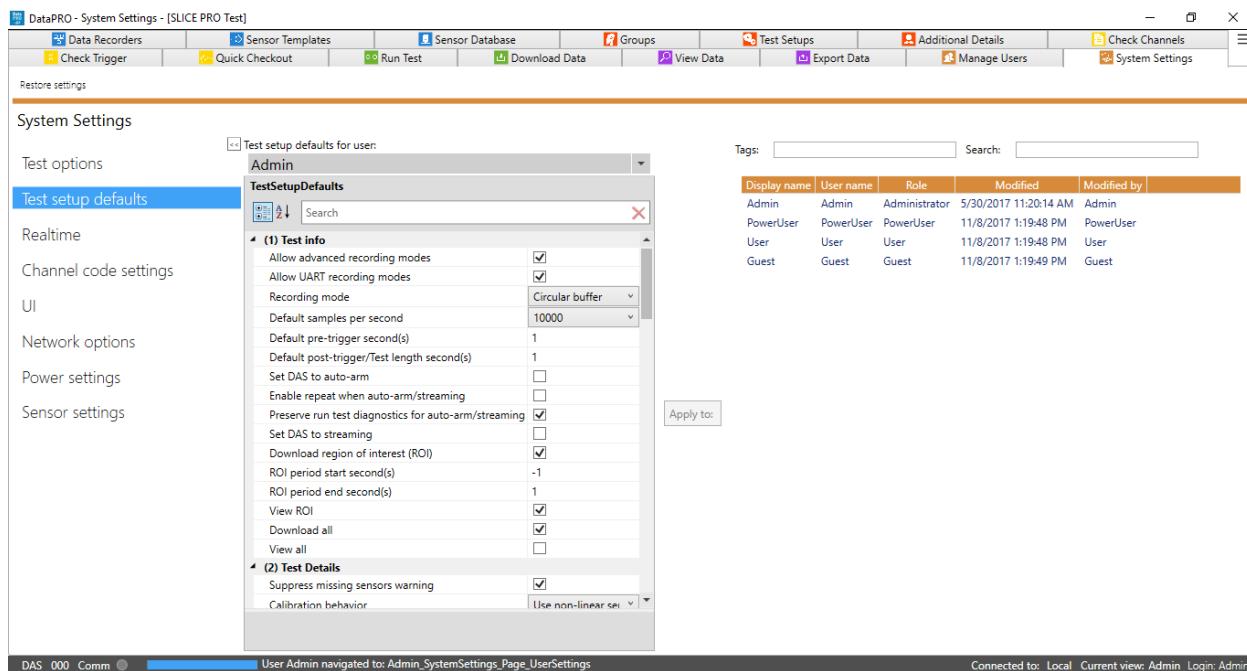
6. Test Setups Import Options:

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

- a. Select the first option to erase sensors and objects currently in the database when importing a TSF.
- b. Select the second option to create dynamic groups when importing a CSV Test Setup.
 - i. 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.

TestSetupDefaults

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.



Make changes as needed, all changes are automatically saved to the db for the current logged-in user's profile. To make changes to the default settings for another user, first select that user from the drop down to display their current default settings.

1. Test info:

(1) Test info	
Allow advanced recording modes	<input checked="" type="checkbox"/>
Allow UART recording modes	<input checked="" type="checkbox"/>
Recording mode	Circular buffer
Default samples per second	10000
Default pre-trigger second(s)	1
Default post-trigger/Test length second(s)	1
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"/>
Set DAS to 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"/>

- **Allow advanced recording modes:** If enabled, it will add Hybrid Record mode to Recording Mode selection in Test Setup (See *Data Collection Concepts*, page 9, for more information).
- **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 9, for more information on recording modes. See *System Settings*, page 122, to enable Advanced Recording Options).
- **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 122, 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.
- **Set DAS to auto-arm:** If enabled, it will configure DAS to Auto Arm.
- **Enable repeat when auto-arm/streaming:** If enabled, DAS will automatically boot in an armed or streaming state if auto-arm or streaming is enabled. This option will only work with SLICE6 AIR product.
- **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.
- **Set DAS to streaming:** If enabled, DAS will be set to streaming.

NOTE: Set DAS to streaming is only available with SLICE6 AIR DAS.

- **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.

2. Test Details:

(2) Test Details	
Suppress missing sensors warning	<input checked="" type="checkbox"/>
Calibration behavior	<input type="button" value="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"/>
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 data from non-linear sensors that also have a linear sensitivity entry will be collected.
 - 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 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.
- **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 the 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 139).

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 “Diagnostics” 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 in order 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 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 on landing 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
UDP Stream Profile	Ch10 w/manual c
UDP Stream Time Channel Id	1
UDP Stream Data Channel Id	3
UDP Stream TmNS Config	(1,6,60,0,0,0,0,0)
IRIG Time Data Packet Interval (ms)	500

- 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.
- UDP Stream Profile:** Select the appropriate UDP streaming method from the drop down. This will dictate how the DAS is programmed to stream data.

NOTE: The TMATS file included with the DataPRO installation will support the following UDP Streaming Profiles:

- Ch10 w/manual config
- Ch10 w/PCM & TDP format 1
- Ch10 w/12-bit PCM
- TmNS w/standard PCM
- TmNS w/supercom PCM

If another UDP Streaming Profile is selected, an appropriate TMATS file must be supplied. See [Appendix E: DataPRO File Structure](#), page 163, for more information.

- UDP Stream Time Channel Id:** Enter the appropriate channel ID for the time channel.
- UDP Stream Data Channel Id:** Enter the appropriate channel ID for the data channel.
- UDP Stream TmNS Config:** Only valid for TmNS streaming. Values are Packet ID, TmNS Message ID and read only 60 minor frame/major frames.
- IRIG Time Data packet Interval (ms):** Interval of time between time data packets that are sent.

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 include sensor ID check. 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). Measured values will only be displayed.
- **Check temperature:** If enabled, Arm Checklist will include check of SLICE6 temperature. Measured values will only 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 filtered 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 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.

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\DTSSuite\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

- **Clock master default profile:** Select appropriate profile for Clock Master. Make sure to choose the proper In AND Out clock type for the Master default.
- **Clock slave default profile:** Select appropriate profile for Clock Slave.

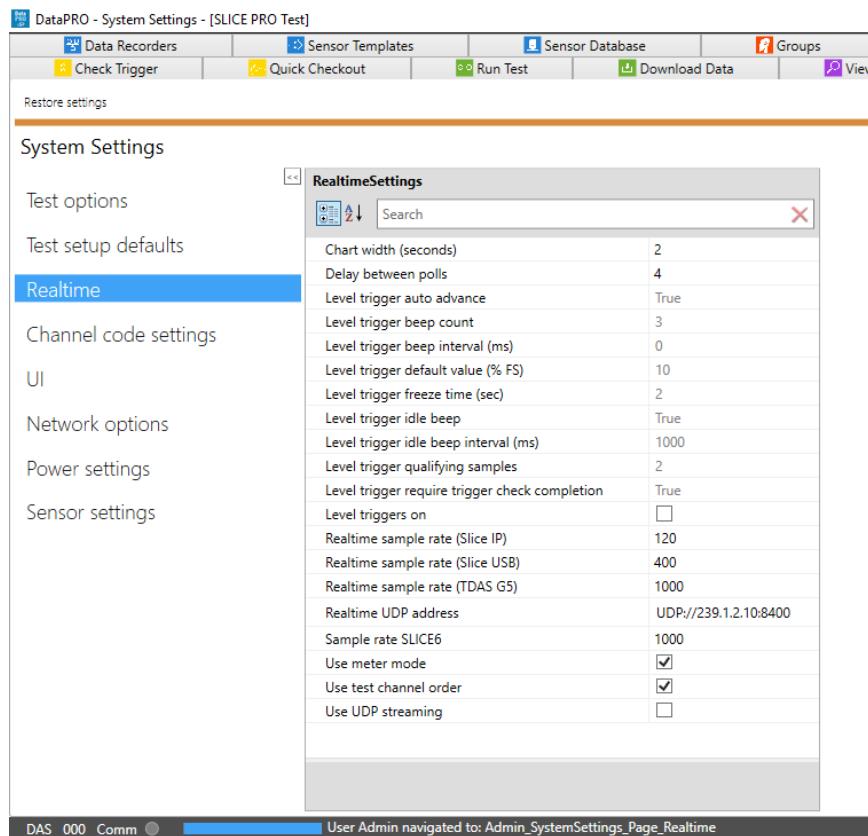
9. UART options:

(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).

Realtime

View/change default Realtime settings:



- ChartWidth:** Period of time to display in Realtime view panel (Also adjustable in Realtime navstep).
- DelayBetweenPolls:** 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

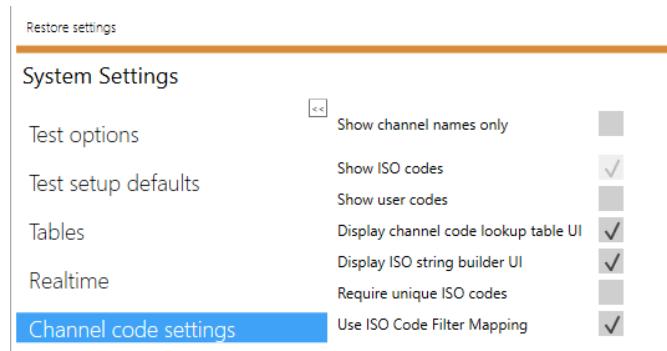
NOTE: *Realtime AAF ratio is 1:1 by default. This setting can be changed in the DataPRO.exe.config file. See DataPRO Settings Manual for more information about the config file.*

- Level trigger auto advance:** If True, channel will automatically advance once Realtime level trigger threshold has been met. Level triggers on must be enabled in order to modify.

4. **Level trigger beep count:** Number of audible beeps once Realtime level trigger threshold has been met. Level triggers on must be enabled in order to modify.
5. **Level trigger beep interval (ms):** Interval for audible beeps indicating Realtime level trigger threshold has been met. Level triggers on must be enabled in order to modify.
6. **Level trigger default value (%FS):** Default value for Realtime level trigger threshold. Level triggers on must be enabled in order to modify.
7. **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 in order to modify.
8. **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 in order to modify.
9. **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 in order to modify.
10. **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 in order to modify.
11. **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 in order to modify.
12. **Level triggers on:** If enabled, above settings can be used to configure Realtime level triggers.
13. **Realtime sample rate (Slice IP):** Realtime sample rate to be used for SLICE hardware with an Ethernet connection.
14. **Realtime sample rate (Slice USB):** Realtime sample rate to be used for SLICE hardware with a USB connection.
15. **Realtime sample rate (TDAS G5):** Realtime sample rate to be used for TDAS G5 hardware.
16. **UDPAddress:** 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.
17. **Sample rate SLICE6:** Sample rate to be used by SLICE6 DAS.
18. **UseMeterMode:** If enabled, Meter Mode will be available as a display option during Realtime.
19. **UseTestChannelOrder:** If enabled, channels will be displayed in Realtime in same order as configured in Test Setup.
20. **UseUDPSreaming:** If enabled, 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:

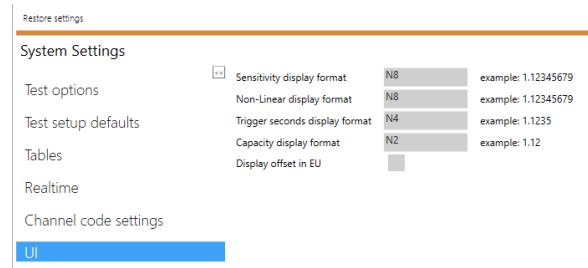
1. **Display Channel Code lookup table UI:** If selected, a table listing all available Channel Codes will be displayed to assist in code selection.
2. **Display ISO string builder UI:** If selected, a table identifying each ISO Code parameter will be displayed to assist in creating ISO Codes.
3. **Require unique ISO codes:** If selected, each channel in a Test Setup must have a unique ISO Code in order to be considered a valid test setup.
4. **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.

If “Show user codes” is selected, the following option is enabled:

1. **Display Channel Code lookup table UI:** If selected, a table listing all available Channel Codes will be displayed to assist in code selection.

UI (User Interface)

These settings affect the display format and use standard numeric format strings:

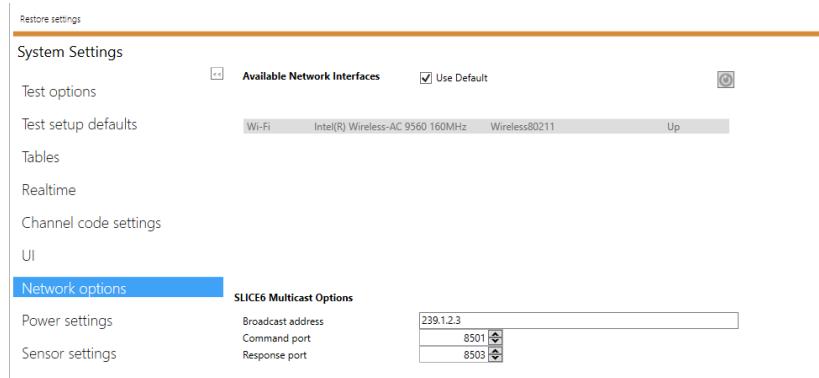


Description	Format and Precision Specifier	Example
Number: Integers and decimals, group and decimal separators, with optional negative sign	N or n <i>Number of decimal places</i>	N where 1234.567 = 1,234.57 N1 where 1234 = 1,234.0 N3 where -1234.56 = -1,234.560
Decimal: Integers with optional negative 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://msdn.microsoft.com/en-us/library/dwhawy9k%28v=vs.110%29.aspx>.

Network Options

Specify network settings for DAS.



- 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 on the top right to refresh the list.
- SLICE6 Multicast Options:**
 - Broadcast address:** Define the IP address used to broadcast data.
 - Command port:** Define the port used to command the DAS.
 - Response port:** Define the port used to receive the response from the DAS.

Power Settings

Specify thresholds for input power/battery warnings:

The screenshot shows the 'Power settings' section of the System Settings page. It displays configuration tables for different hardware components under the TDAS Pro Rack, G5 (VDS), G5 (In-dummy), and SLICE distributor sections. Each section contains two tables: one for 'Input' and one for 'Battery'. The 'Input' table includes columns for Diagnostics (low), Diagnostics (med), Diagnostics (high), Armed (low), Armed (med), Armed (high), Min valid, and Max valid. The 'Battery' table includes columns for Diagnostics (low), Diagnostics (med), Diagnostics (high), Armed (low), Armed (med), Armed (high), Min valid, and Max valid.

		Input							
		Diagnostics (low)	Diagnostics (med)	Diagnostics (high)	Armed (low)	Armed (med)	Armed (high)	Min valid	Max valid
TDAS Pro Rack	11.50	12.50	13.20	11.50	12.50	13.20	4.00	16.00	
	11.50	12.50	13.20	11.50	12.50	13.20	4.00	16.00	

		Battery							
		Diagnostics (low)	Diagnostics (med)	Diagnostics (high)	Armed (low)	Armed (med)	Armed (high)	Min valid	Max valid
TDAS Pro Rack	10.90	11.30	13.20	10.90	11.30	13.20	4.00	16.00	
	10.90	11.30	13.20	10.90	11.30	13.20	4.00	16.00	

		Input							
		Diagnostics (low)	Diagnostics (med)	Diagnostics (high)	Armed (low)	Armed (med)	Armed (high)	Min valid	Max valid
G5 (VDS)	11.00	11.50	15.00	11.00	11.50	15.00	4.00	16.00	
	11.00	11.50	15.00	11.00	11.50	15.00	4.00	16.00	

		Battery							
		Diagnostics (low)	Diagnostics (med)	Diagnostics (high)	Armed (low)	Armed (med)	Armed (high)	Min valid	Max valid
G5 (VDS)	10.90	11.30	13.20	10.90	11.30	13.20	4.00	16.00	
	10.90	11.30	13.20	10.90	11.30	13.20	4.00	16.00	

		Input							
		Diagnostics (low)	Diagnostics (med)	Diagnostics (high)	Armed (low)	Armed (med)	Armed (high)	Min valid	Max valid
G5 (In-dummy)	11.00	11.50	15.00	11.00	11.50	15.00	4.00	16.00	
	11.00	11.50	15.00	11.00	11.50	15.00	4.00	16.00	

		Battery							
		Diagnostics (low)	Diagnostics (med)	Diagnostics (high)	Armed (low)	Armed (med)	Armed (high)	Min valid	Max valid
G5 (In-dummy)	10.00	12.70	15.30	6.50	10.90	15.30	4.00	19.00	
	10.00	12.70	15.30	6.50	10.90	15.30	4.00	19.00	

		Input							
		Diagnostics (low)	Diagnostics (med)	Diagnostics (high)	Armed (low)	Armed (med)	Armed (high)	Min valid	Max valid
SLICE distributor	10.00	12.70	15.30	6.50	10.90	15.30	4.00	19.00	
	10.00	12.70	15.30	6.50	10.90	15.30	4.00	19.00	

		Battery							
		Diagnostics (low)	Diagnostics (med)	Diagnostics (high)	Armed (low)	Armed (med)	Armed (high)	Min valid	Max valid
SLICE distributor	10.00	12.70	15.30	6.50	10.90	15.30	4.00	19.00	
	10.00	12.70	15.30	6.50	10.90	15.30	4.00	19.00	

Sensor Settings

Set the default settings for new sensor database entries of various sensor types:

The screenshot shows the 'Sensor settings' section of the System Settings page. It displays configuration tables for different sensor types under the Squib defaults, Digital output defaults, Digital input defaults, and IEPE defaults sections. Each section contains various parameters such as Delay (ms), Limit duration, Duration (ms), Low tolerance (Ω), High tolerance (Ω), Firing mode, Output mode, and specific sensor parameters like Constant current breakpoint (ADC) and Voltage input breakpoint (ADC).

		Squib defaults	
		Delay (ms)	0.00
Test options	Limit duration	<input checked="" type="checkbox"/>	
	Duration (ms)	10.0	

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

		Digital input defaults	
		Constant current breakpoint (ADC)	19.005.00
Tables	Display SPD analog data		
	Voltage input breakpoint (ADC)	19.661.00	

		IEPE defaults	
		24V Power low (V)	23.0
Realtime	24V Power high (V)	26.5	
	Actual range low limit (x full scale)	1.00	

3. Squib defaults:

Squib defaults

Delay (ms)	0.00
Limit duration	<input checked="" type="checkbox"/>
Duration (ms)	10.0
Low tolerance (Ω)	0.9
High tolerance (Ω)	8.0
Firing mode	Capacitor discharge

- a. See *Sensor Templates*, page 25, and *Sensor Database*, page 30, for more information on options.

4. 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

- a. See *Sensor Templates*, page 25, and *Sensor Database*, page 30, for more information on options.

5. 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"/>

- a. See *Sensor Templates*, page 25, and *Sensor Database*, page 30, for more information on options.

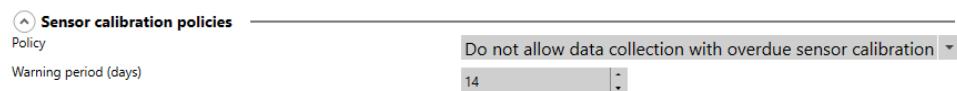
6. IEPE defaults:

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"/>

- a. Select default low/high power and low/high range limits for IEPE sensors.
- b. If enabled, Auto-Sense will not be run to detect IEPE sensors and will instead rely on test configuration.

7. Sensor calibration policies:



- a. Select to allow or disallow data collection with sensors that have past-due calibration entries.
- b. Select desired warning period.
 - i. Sensors that are used within this warning period prior to the calibration due date will be shaded orange and DataPRO will alert the user of the nearing calibration deadline.

8. Analog defaults:

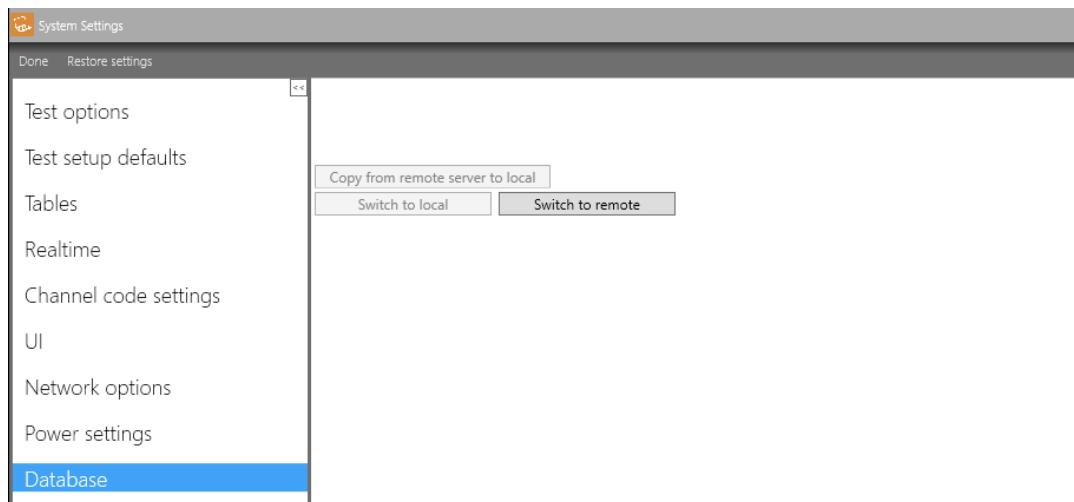


- a. Select the default software filter for new sensors.

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”:

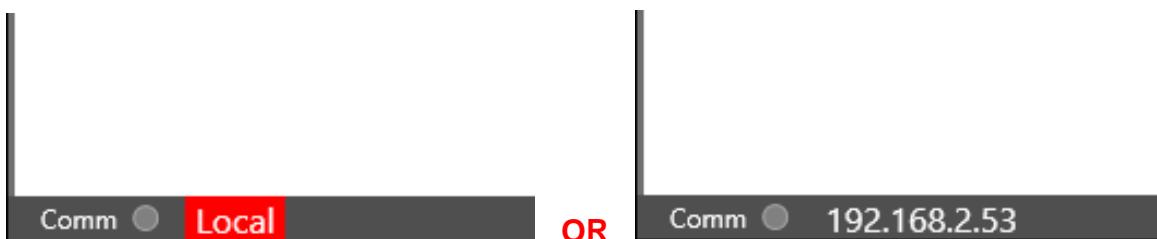


2. When configured to connect to a remote/SQL database, DataPRO will give the option to “Switch to local”:



- 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.

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. In order 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 25, and [Sensor Database](#), page 30, for more information on sensor fields.

NOTE: *DTS recommends to always use shunt checks when possible – except for Bridges above 4kΩ, 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 Options

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

Digital Output Options

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

Squib Options

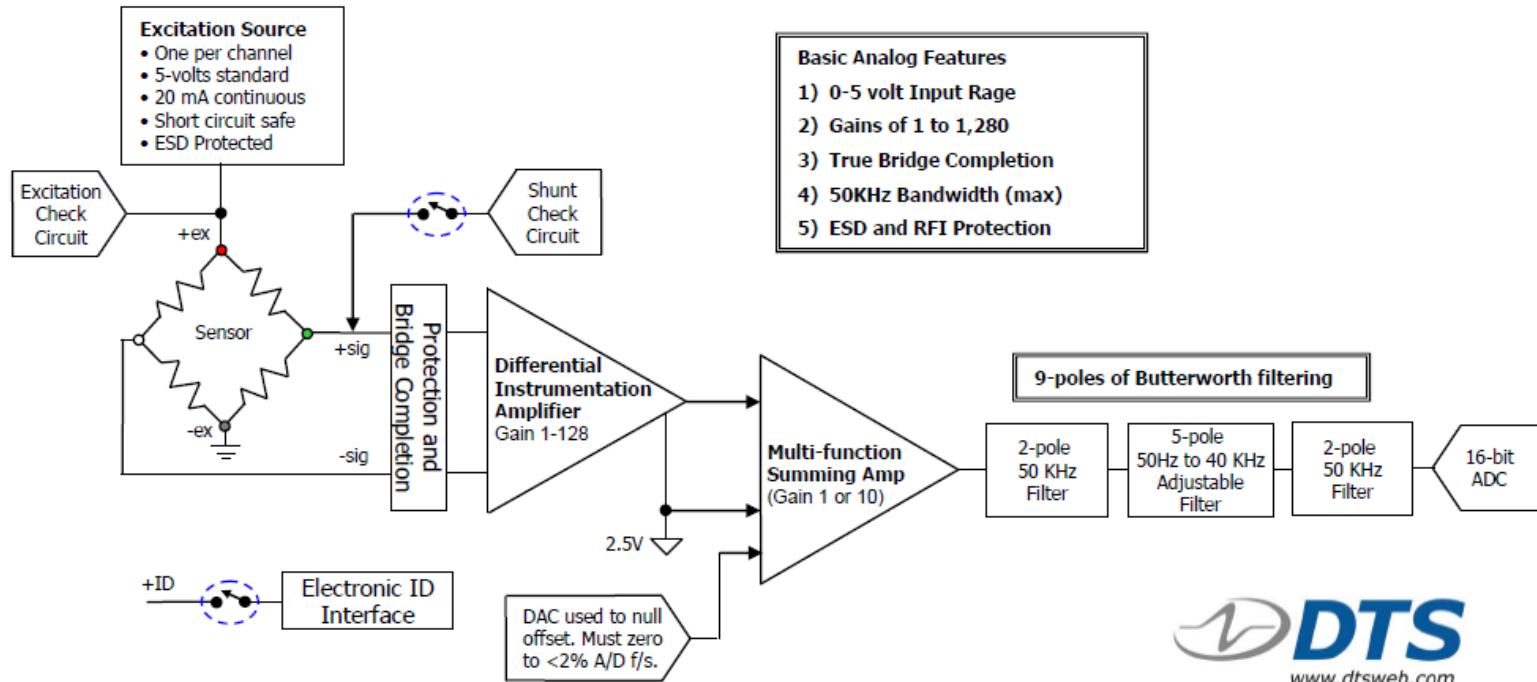
- All options other than Name can be modified in Group and Test Setup

Sensors with External Conditioning Modules

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

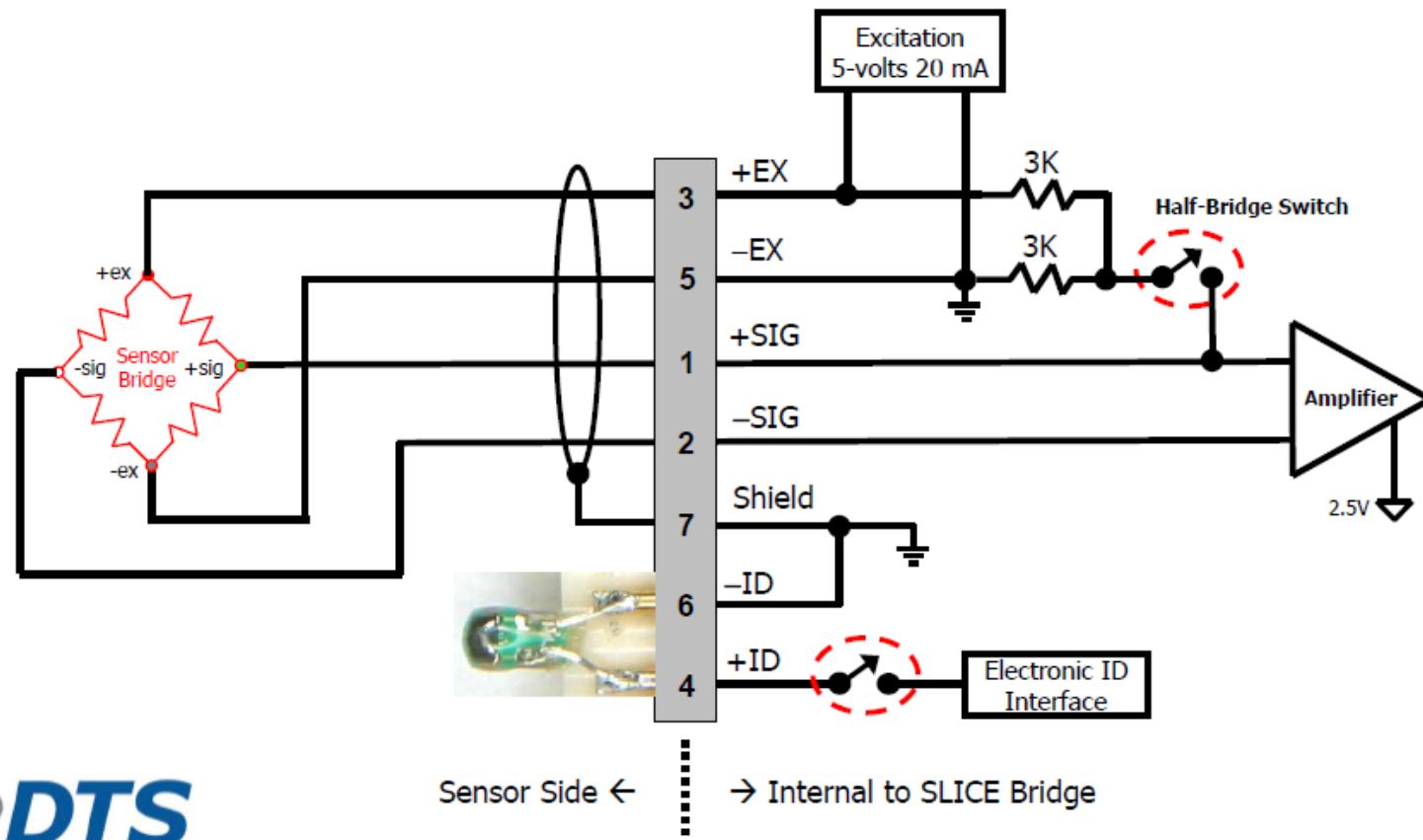
- Thermocouples
- Voltage sources

SLICE Bridge – Sensor Interface

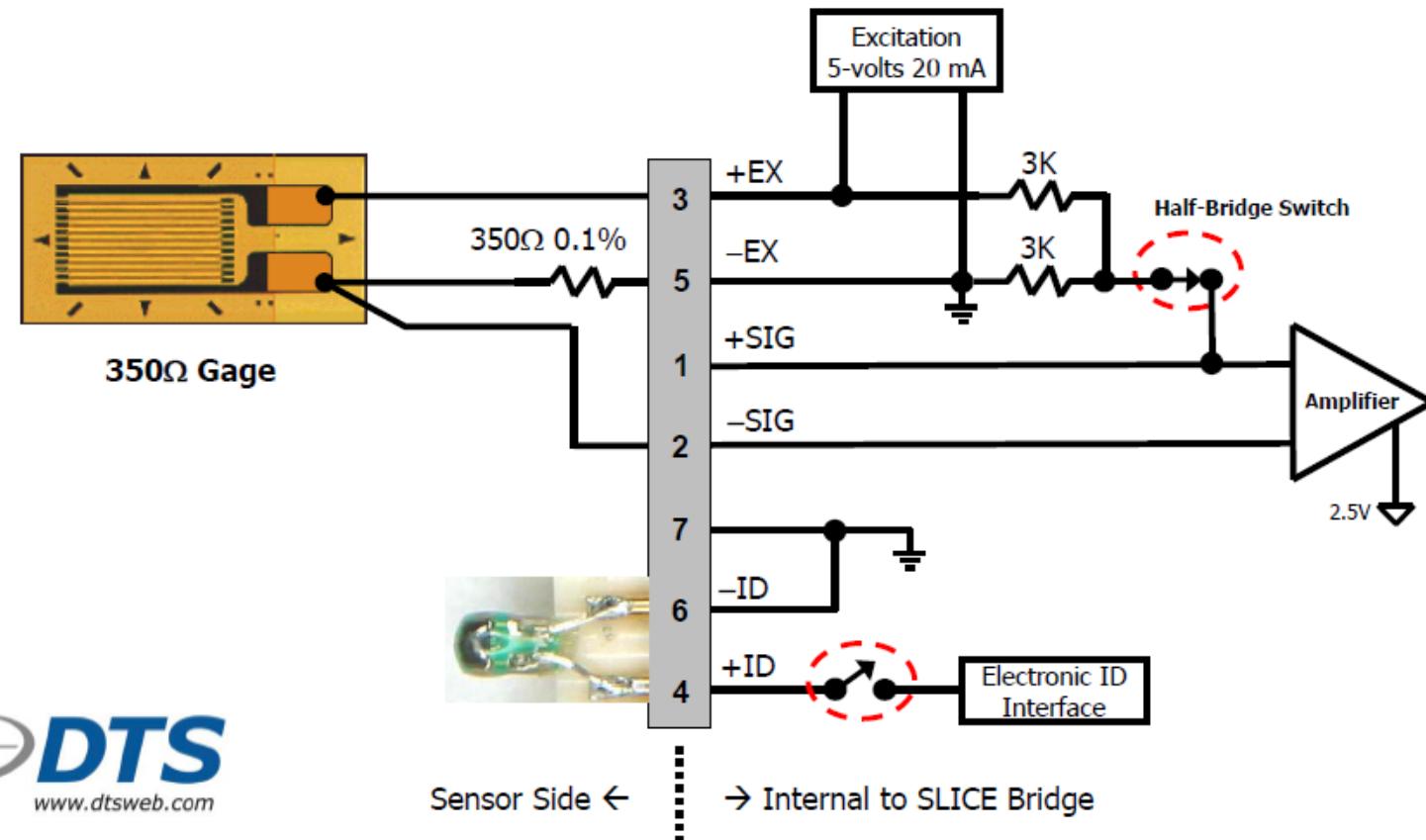


 **DTS**
www.dtsweb.com

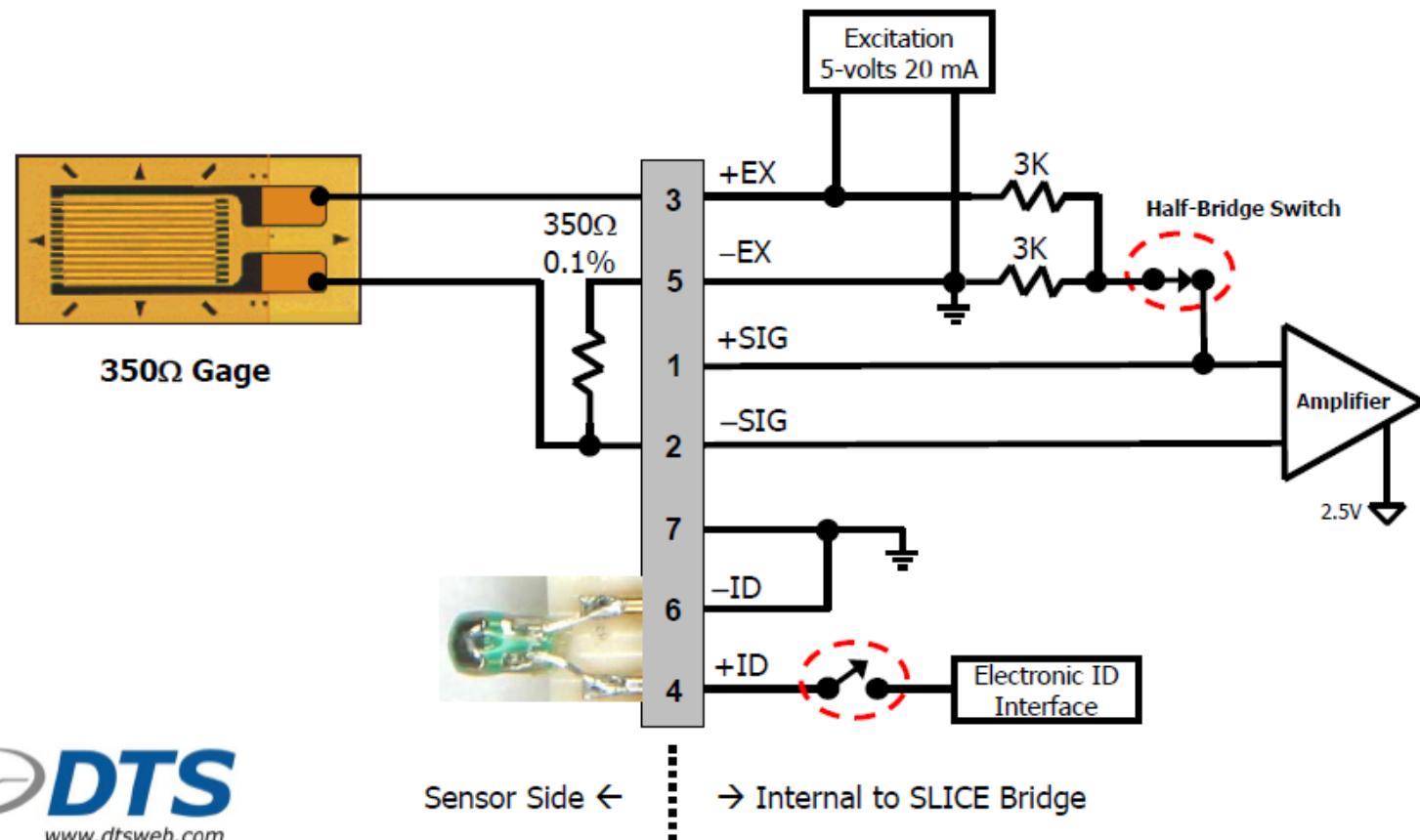
Standard 4-wire Bridge Connection



Strain Gage 3-wire Connection



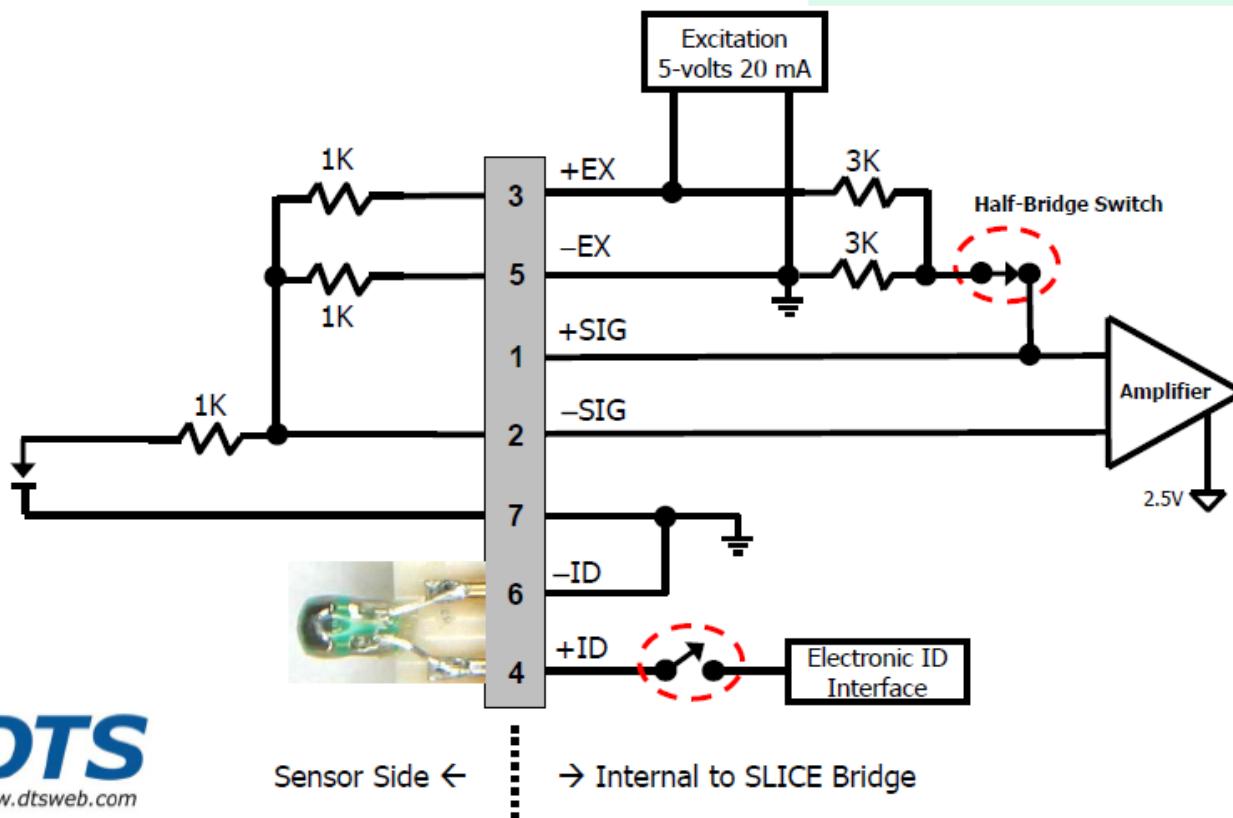
Strain Gage 2-wire Connection



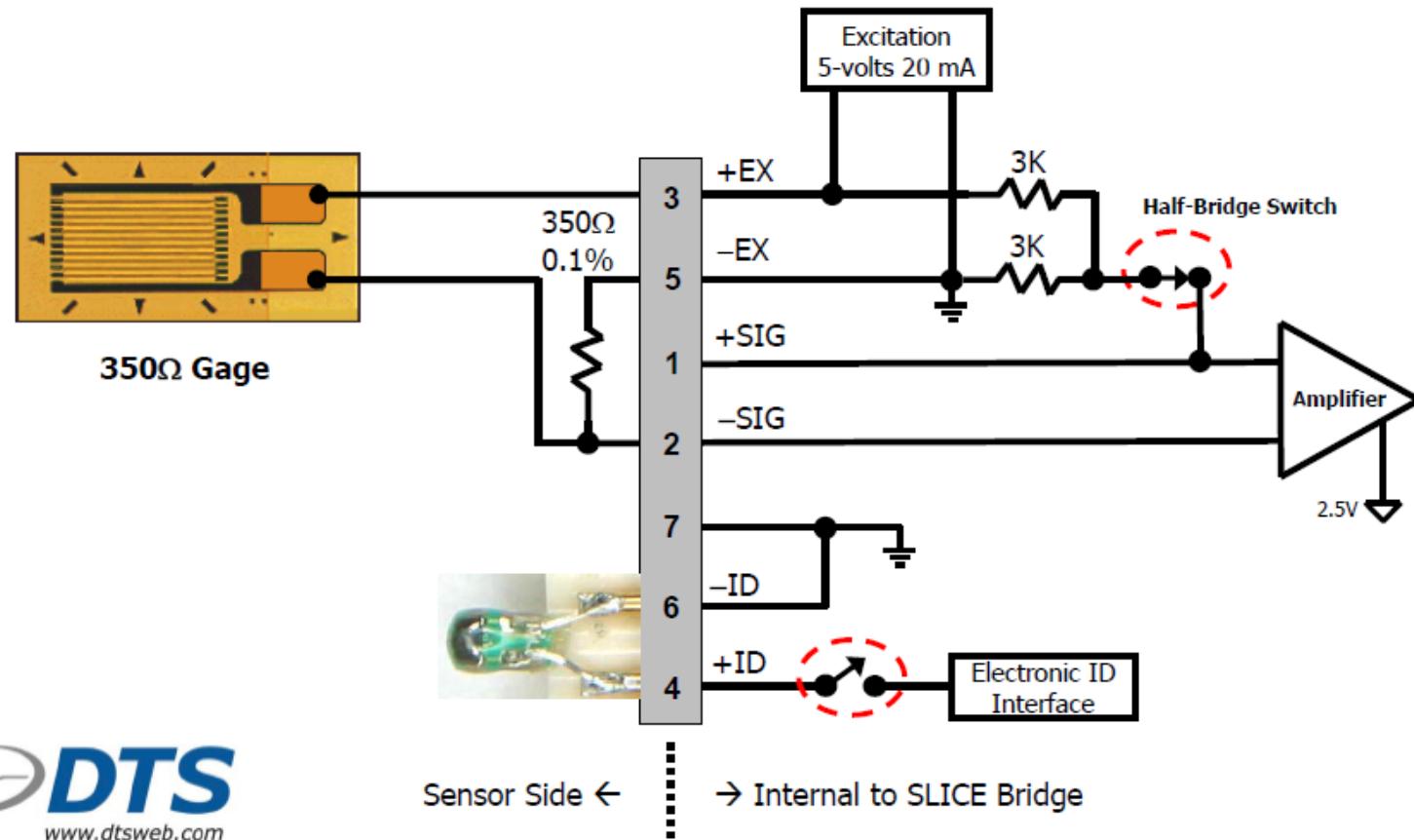
Switch Closure

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.



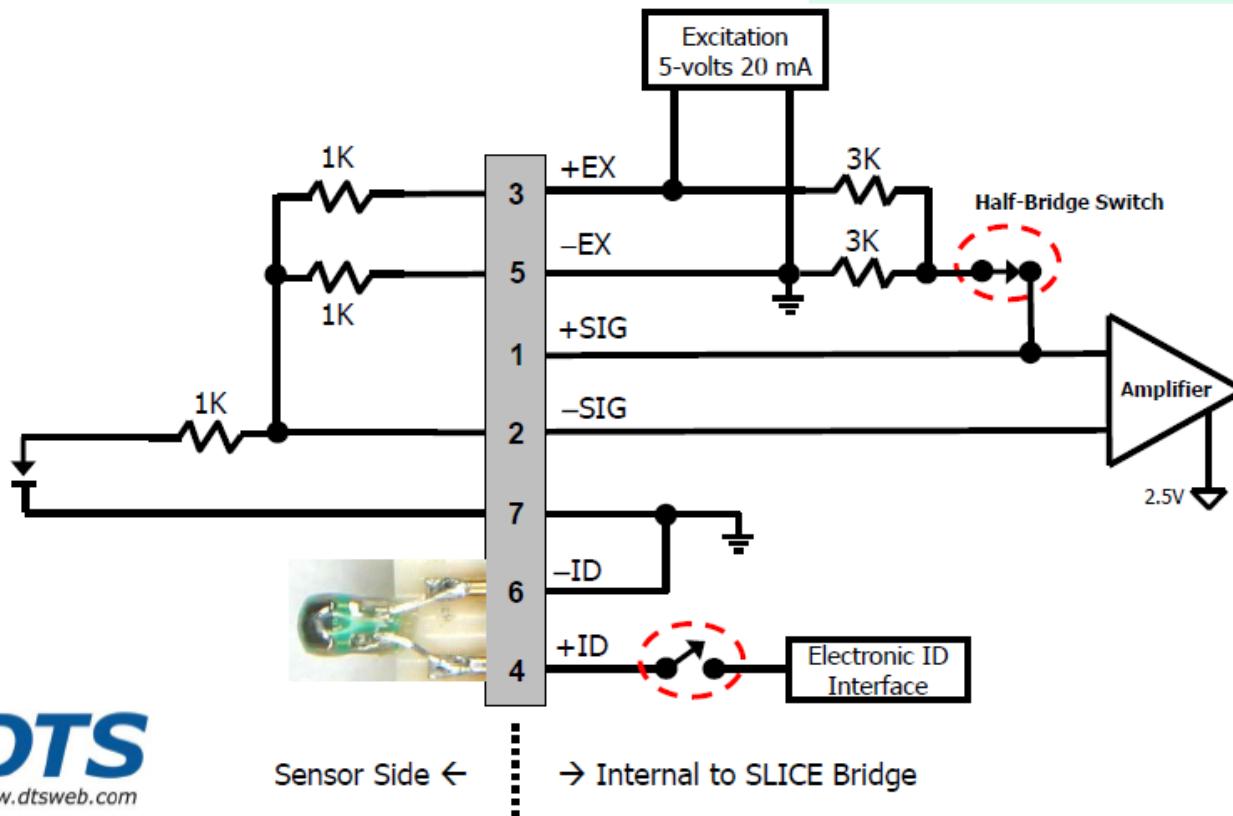
Strain Gage 2-wire Connection



Switch Closure

Example Sensor Settings

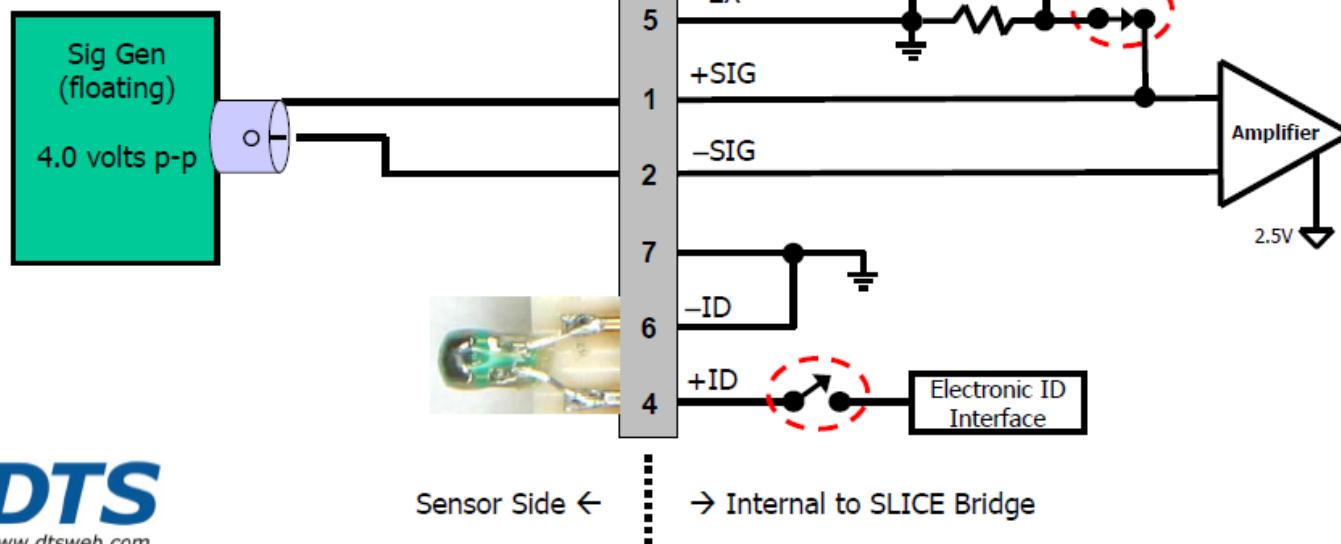
- Half-Bridge Mode
- Proportional to Excitation = No
- Sensitivity = 1.000 mV/EU will scale data in mV at input. Switch closure as shown gives 833 mV deflection.



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.

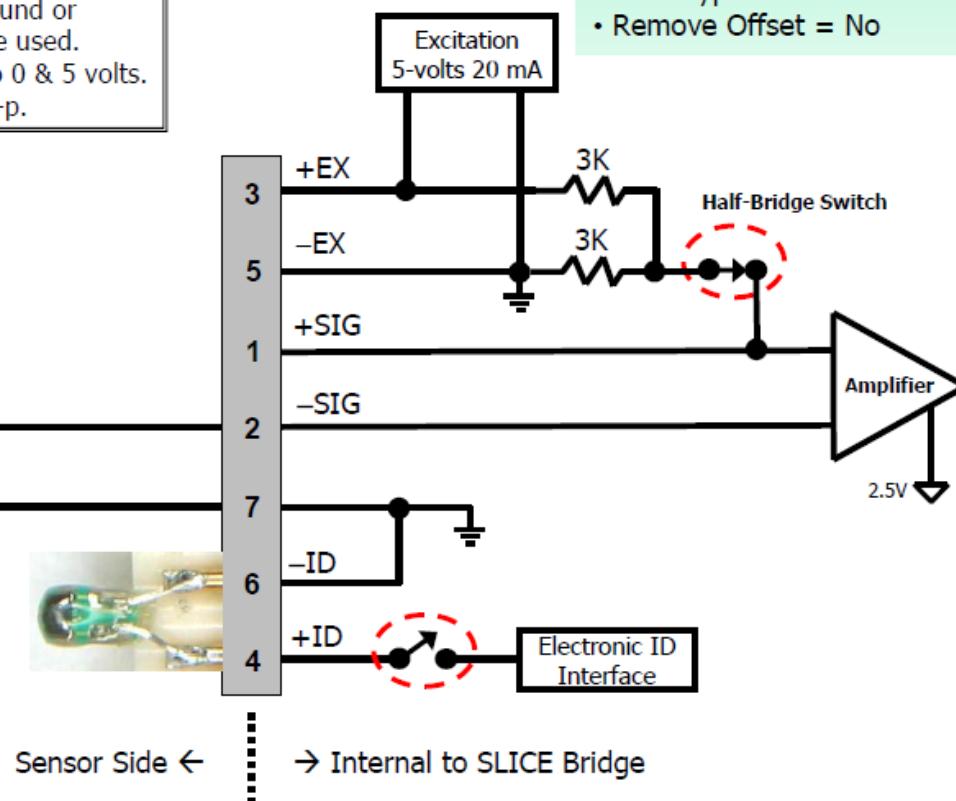


Signal Generator w/grounded output

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.

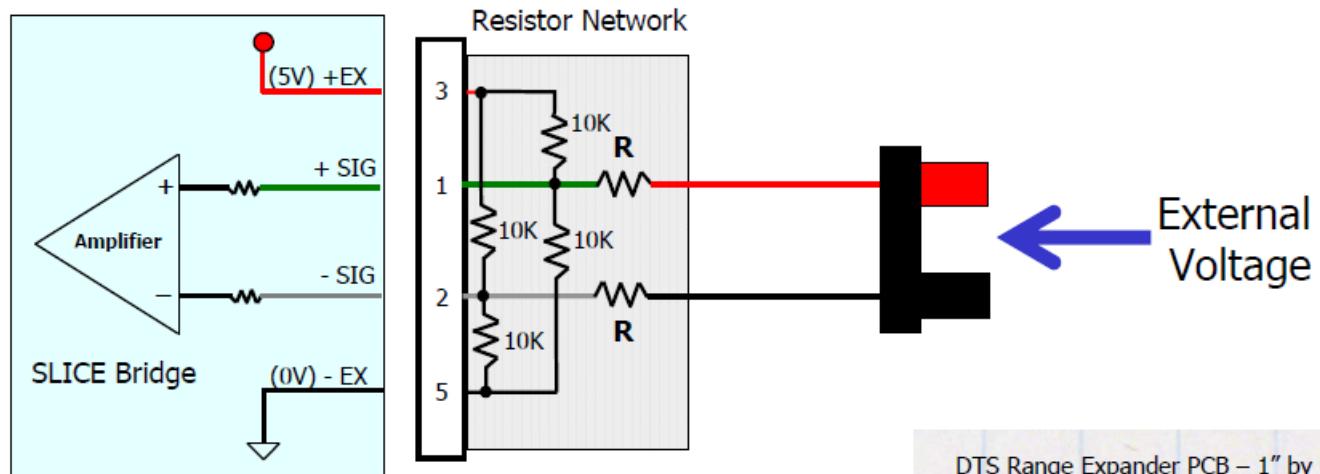
Sig Gen (grounded)
4.0 volts p-p
(add 2.5-volts offset to signal)



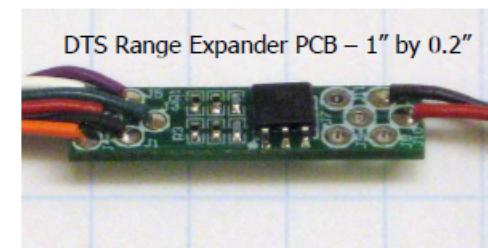
Sample Sensor Settings

- 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 Sensor Database Import Formats

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 in order 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

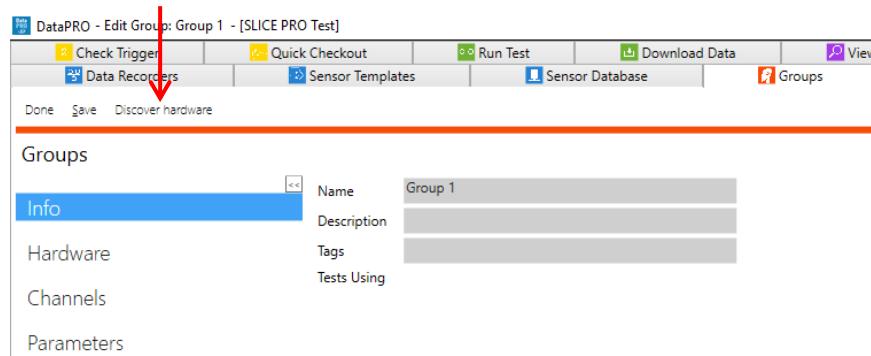
A batch file can be run to import a CSV sensor database file.

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.

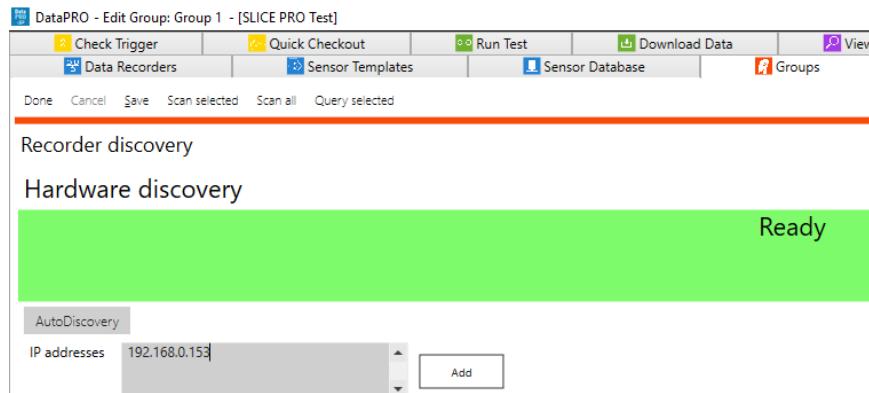
1. To quickly add DAS to the data recorder database, or to detect powered on and connected DAS (and sensors with EID), select “Discover Hardware”:



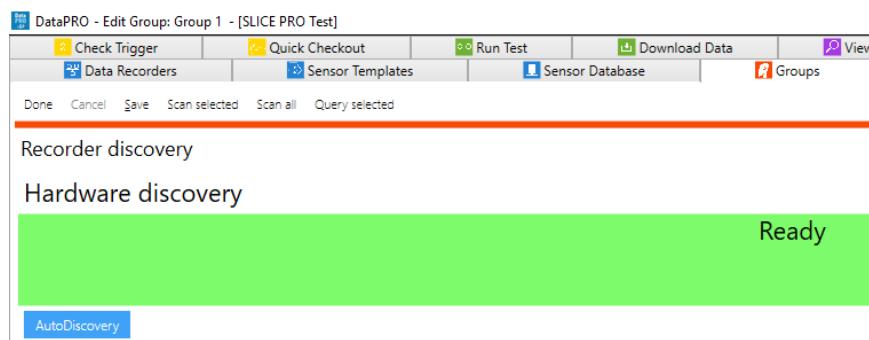
2. DAS that are already in the database will be listed in the Available DAS table. DAS that have been added to the group will be listed in the Included DAS table:

The screenshot shows the 'Edit Group' window for 'Group 1'. The toolbar includes buttons for 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, and Check Channels. The 'Discover hardware' button is also present in the toolbar. The main area is divided into 'Recorder discovery' and 'Hardware discovery'. The 'Hardware discovery' section contains a green 'Ready' bar, an 'AutoDiscovery' tab, and two tables: 'Included DAS' and 'Available DAS'. The 'Included DAS' table shows a single entry: 'BA51253' connected via USB with 15 analog channels. The 'Available DAS' table shows three entries: 'S6A0047' (192.168.4.47, 6 analog channels), 'SPD00999' (18 digital input channel(s)), and 'SPE00150' (SLICE PRO Ethernet Controller). Labels 'Included DAS' and 'Available DAS already in Database' are placed near their respective tables, with arrows pointing to them.

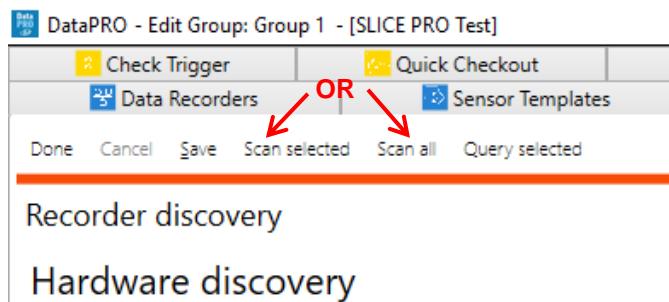
3. To add new Ethernet DAS to the database, enter the IP address and select “Add”. USB connected DAS will be discovered automatically during the scan:



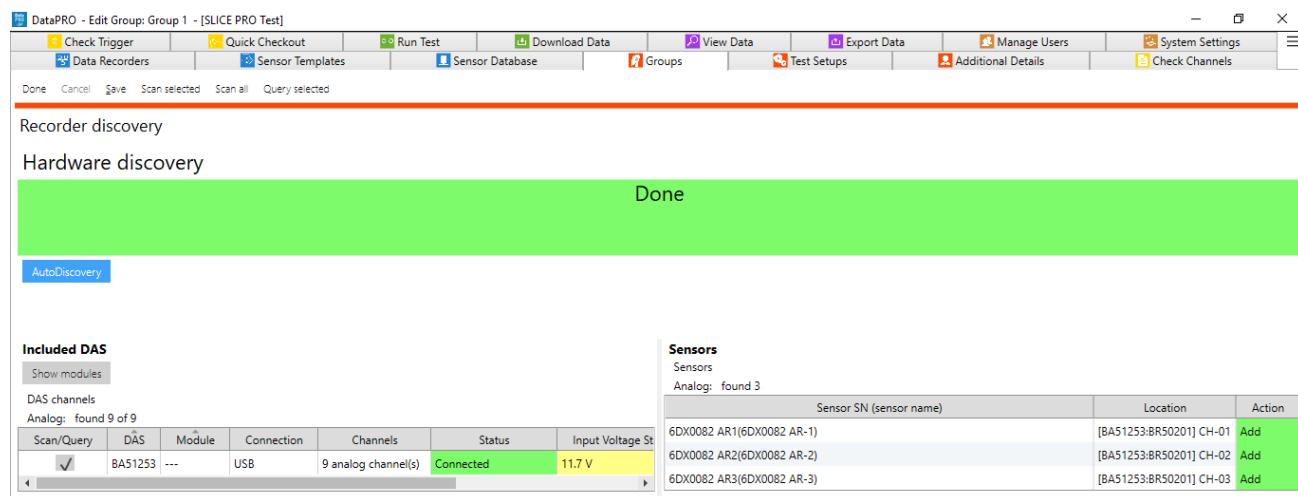
- a. If IP address(es) are not known, enable “AutoDiscovery” to ping all available IP addresses in the compatible range:



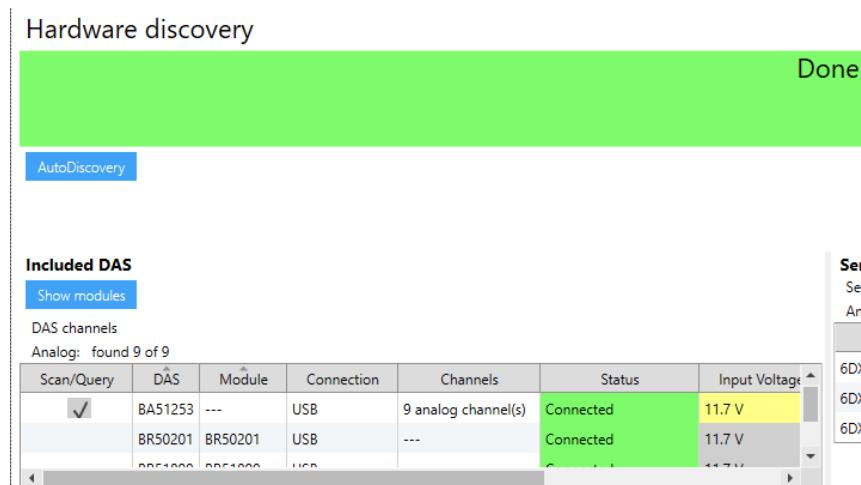
4. Select “Scan all” or “Scan selected” to confirm IP address(es) and discover USB DAS:



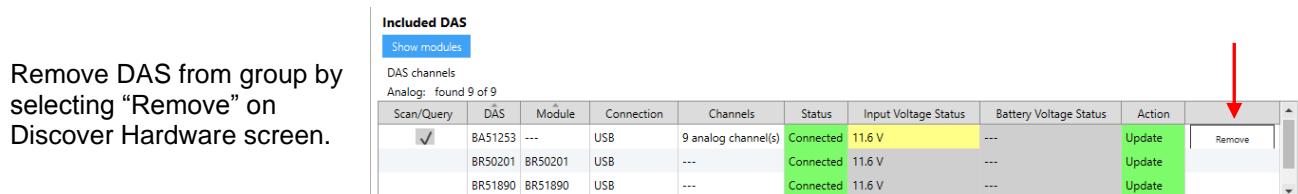
5. Select “Query selected” to establish communication and confirm DAS configuration. DAS that is powered on and connected will be displayed in the Included DAS table. Connected sensors with EID will be displayed in Sensors table:



- a. Enable “Show modules” to display modules (SIM/TOM/Bridge) connected to each DAS (TDAS Rack, ECM, Base):



6. 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.

Remove DAS by unselecting box on Hardware navstep.

Serial Number	Type	Channels	Firmware
SPT00999	SLICE PRO TOM	4 Squib,8 Digital out	D0D7
SPT00107	SLICE PRO TOM	4 Squib,8 Digital out	D0L0
SPS00331	SLICE PRO SIM	18 Analog	A1Q1
SPE00150	SLICE Ethernet Controller	---	B0B3
SPD00999	SLICE PRO DIM	18 Digital input	A1J4
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 un-armed 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 Options in System Settings.

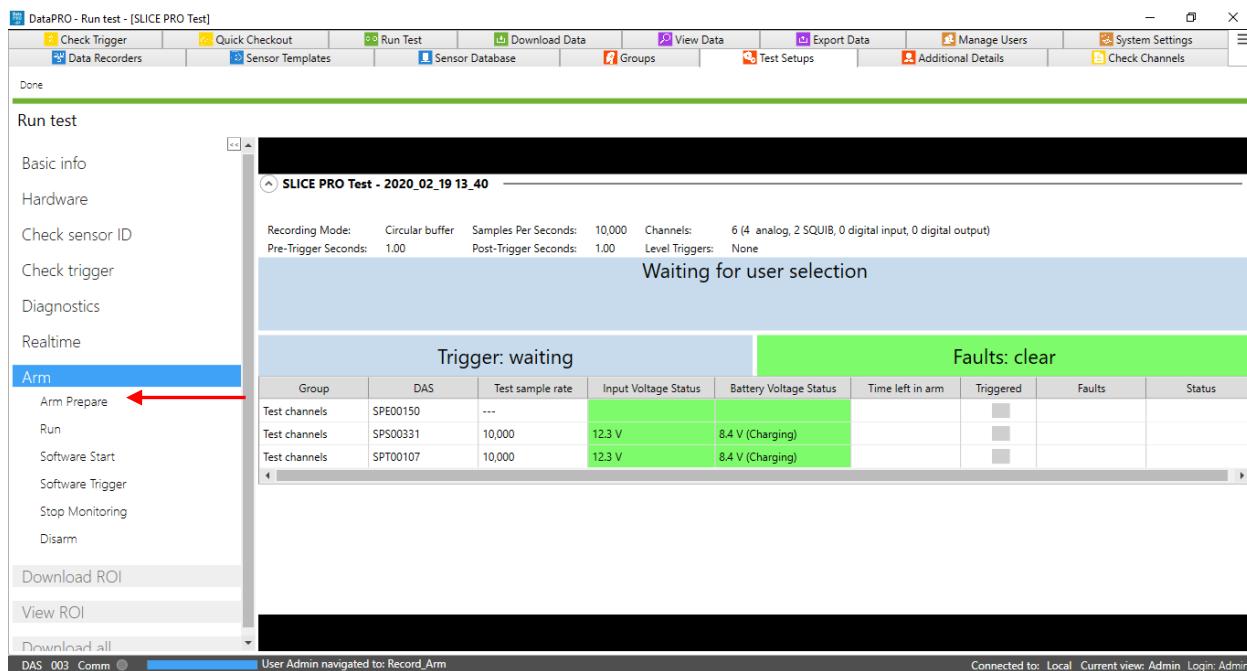
Config file settings:

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. Open System Settings tab.
5. Disable “Require arm checklist when TOM present”:

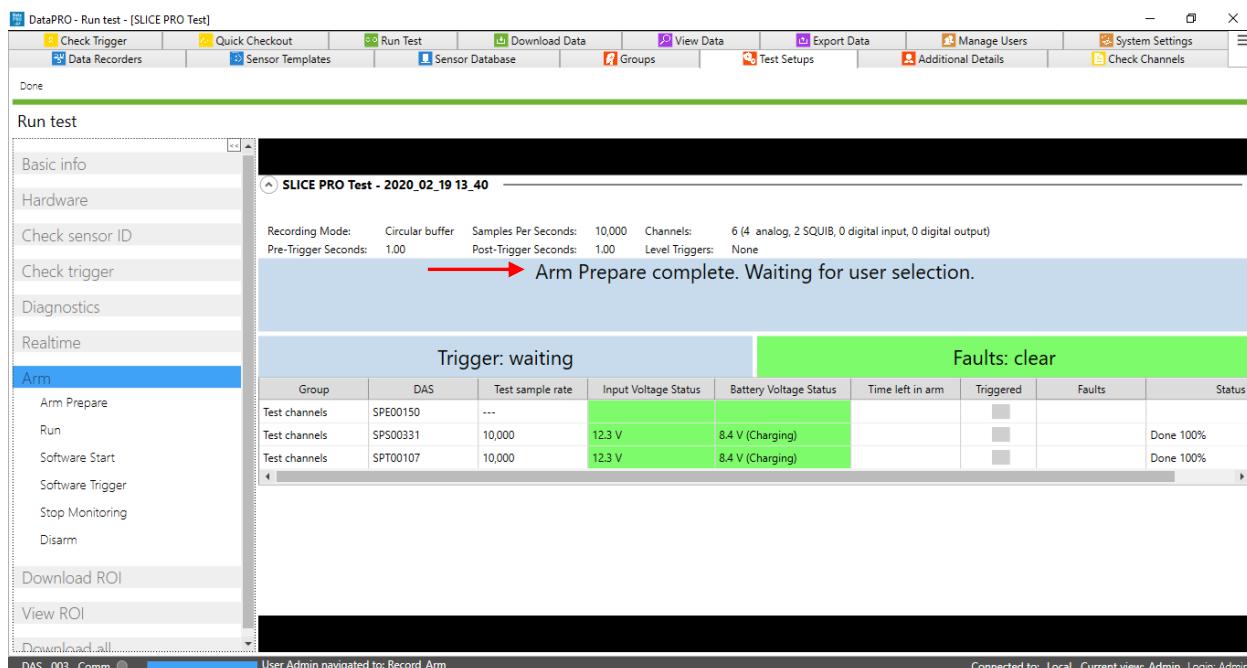
(5) Arm checklist	
Perform arm checklist	<input type="checkbox"/>
Check battery voltage	<input checked="" type="checkbox"/>
Check input voltage	<input checked="" type="checkbox"/>
Require arm checklist when TOM present	<input type="checkbox"/> 
Check squib resistance	<input checked="" type="checkbox"/>
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"/>

6. Select “Done”.

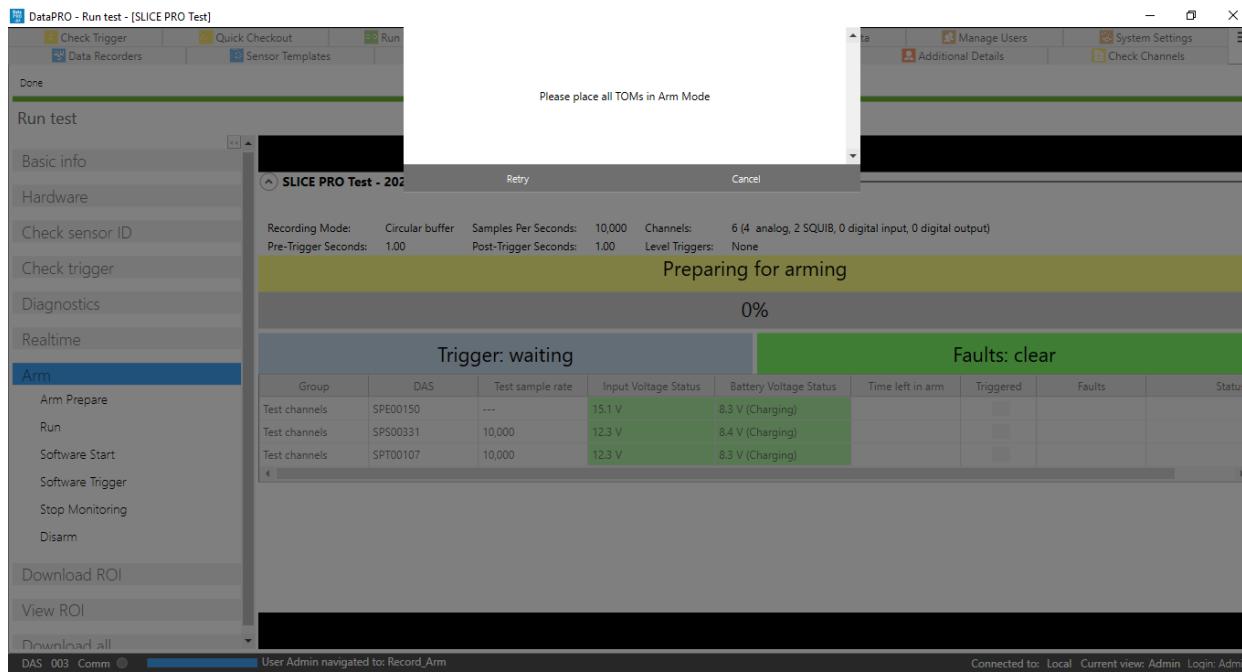
7. Arm Prepare sub-navstep will be present in Arm navstep:



a. Arm Prepare configures system:



- b. TOMs do not have to be Armed until Run is selected (Enabled after Arm Prepare is completed):



8. 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\DTSSuite

Contains DataPRO software organized in folders by version number.

C:\DTS\DTSSuite\SensorDatabase

Contains sensor database export files for all versions of DataPRO.

C:\DTS\DTSSuite\ImportArchive\<test ID>

Contains xml backup of a TTS Test Setup import.

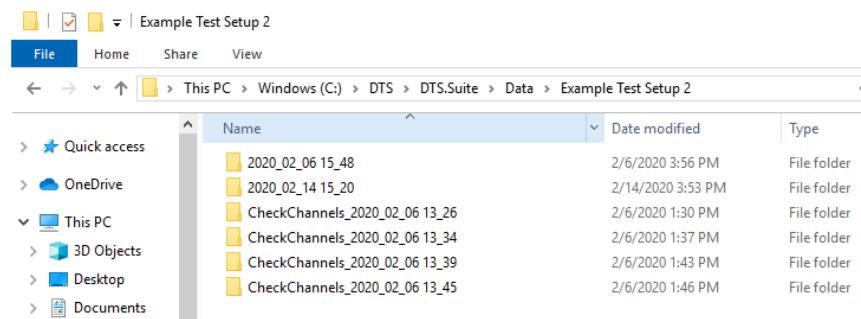
C:\DTS\DTSSuite\Data

Contains data files organized in folders by Test Setup/Test ID. This file location is used for all versions of DataPRO.

C:\DTS\DTSSuite\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\DTSSuite\Data\<test setup name>\<test ID>\Binary\<ROI or ALL>

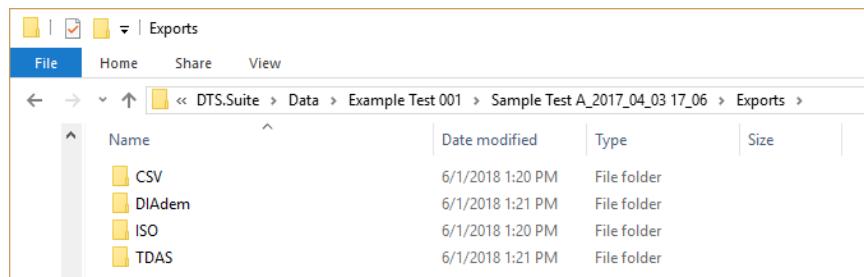
Contains channel data files (.CHN) from a given test. Sub-folders for ALL vs ROI will be present based on user's selection during download. UART data collected with SLICE6 AIR will be saved as a .bin file.

C:\DTS\DTSSuite\Data\<test setup name>\<test ID>\DASConfigs

Contains the xml configuration file for each DAS with sensor(s) and recording parameters.

C:\DTS\DTSSuite\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\Suite\Data\<test setup name>\<test ID>\Logs

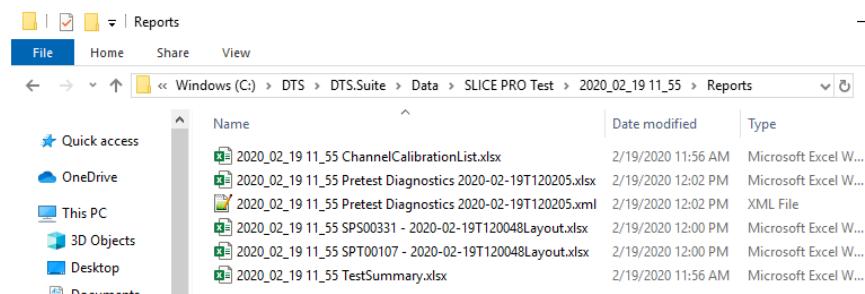
Contains log files generated during instance of Diagnostic tab or data collection. Some log files are limited in size and will create archived, *.bz2 files. These archived files will include the date and timestamp as they are created.

- 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\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.
- Pretest 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 that is included if Squib Resistance measurement is performed during Arm Checklist, contains squib resistance measurements if squibs are included in test.



C:\DTS\DTSSuite\<version number>\DataPRO\DasConfigs
Contains current configuration file(s) for DAS in Database.

C:\DTS\DTSSuite\<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\DTSSuite\<version number>\DataPRO\Logs
Contains log file(s). To assist troubleshooting, DTS Support may ask you to send these files.

C:\DTS\DTSSuite\<version number>\DataPRO\Manuals
Contains manuals for SLICE equipment and DataPRO software that are current at time of software release.

C:\DTS\DTSSuite\<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\DTSSuite\<version number>\DataPRO\Sounds
Contains files used for Realtime Level Triggers. Beep.wav is the sound when the sensor is idle/blow 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\DTSSuite\<version number>\DataPRO\TMTemplate
Contains the TMATS file used for SLICE6 AIR streaming applications. The file included at the time of publication will support the following UDP Streaming Profiles:

- Ch10 w/manual config
- Ch10 w/PCM & TDP format 1
- Ch10 w/12-bit PCM
- TmNS w/standard PCM
- TmNS w/supercom PCM

To use a different UDP Streaming Profile, an appropriate TMATS file will need to be provided. Any supplied TMATS file must be named S6ATMTTemplate.tmt in order to be used.

Appendix F: DataPRO .dts File Format

Overview

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.

XML Structure

<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 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 name 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.
InlineSerializedData	Boolean	
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.
StartRecordTimestampSec	Integer	
StartRecordTimestampNanoSec	Integer	
TriggerTimestampSec	Integer	
TriggerTimestampNanoSec	Integer	
PTPMasterSync	Boolean	

<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.

<AnalogInputChannel>

The AnalogInputChannel 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 AnalogInputChannel 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.
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 TDAS G5 DAS support) 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		

Name	Data Type	Description
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.
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	(Optional) 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	(Optional) 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.
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.

Name	Data Type	Description
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.
MeasuredExcitationVoltage	Double	(Optional) 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	(Optional) 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		
UserOffsetEU		
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.

Name	Data Type	Description
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		
ChannelGroupName		
MeasuredShuntDeflectionMv	Double	(Optional) If a shunt test was performed, the actual deflection of the shunt.
TargetShuntDeflectionMv	Double	(Optional) 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).

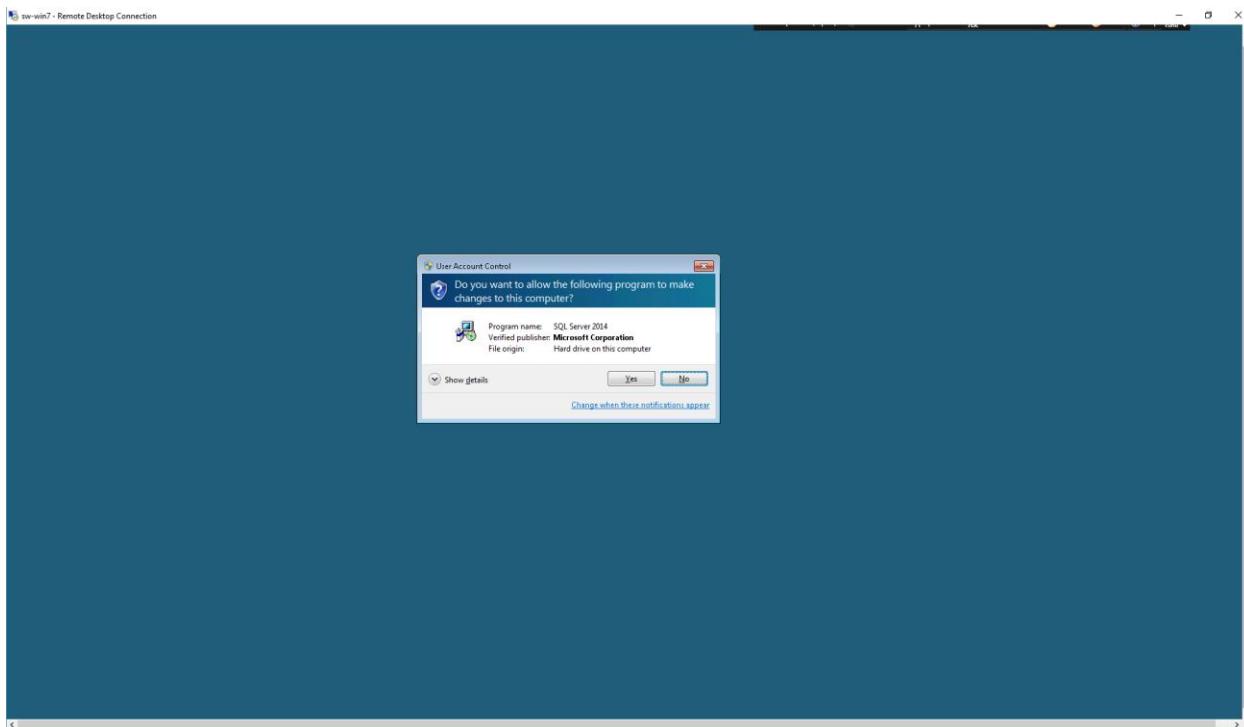
Appendix G: DataPRO Binary File Format

Bin File Header Version 4*

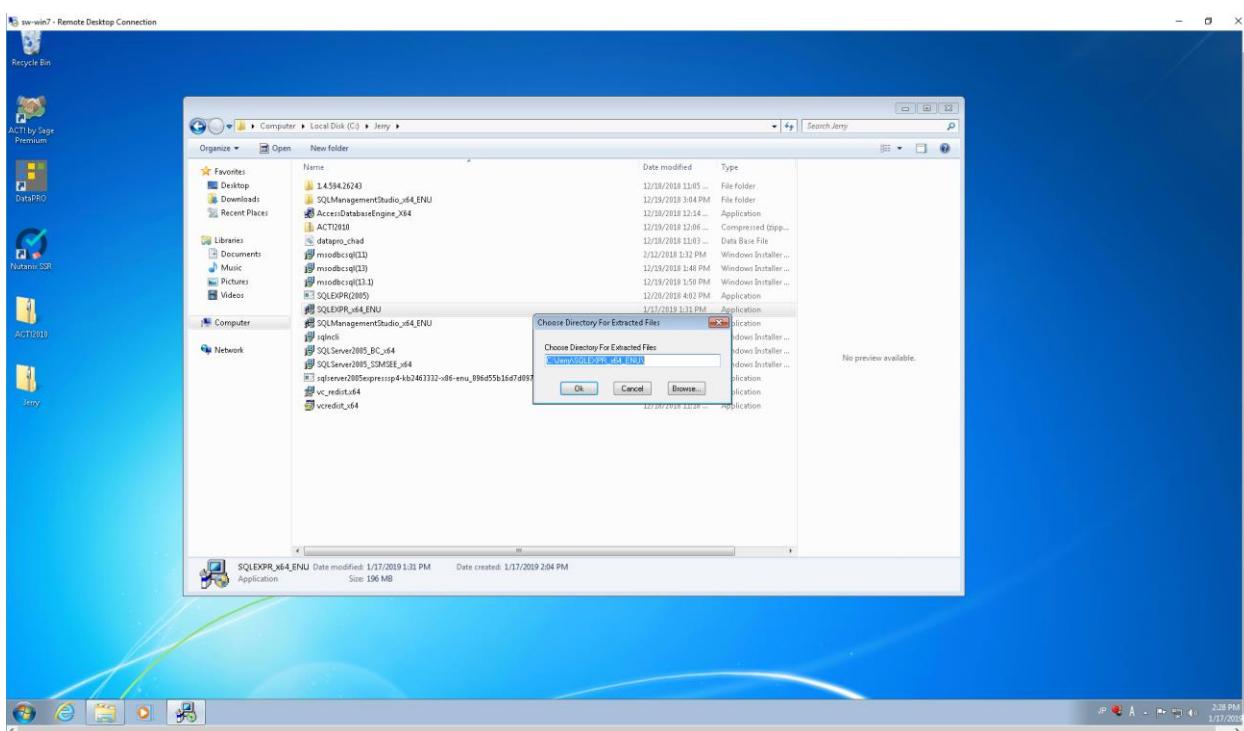
Offset	# of bytes	Data Type	Description
0	4	UInt32	Magic key to identify file: 0x2C36351F
4	4	UInt32	Version number of this file header*
8	8	UInt64	Offset (in bytes) from start of file to where data samples start
16	8	UInt64	Number of samples in this file
24	4	UInt32	Number of bits per sample
28	4	UInt32	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)
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 (Windows 7)

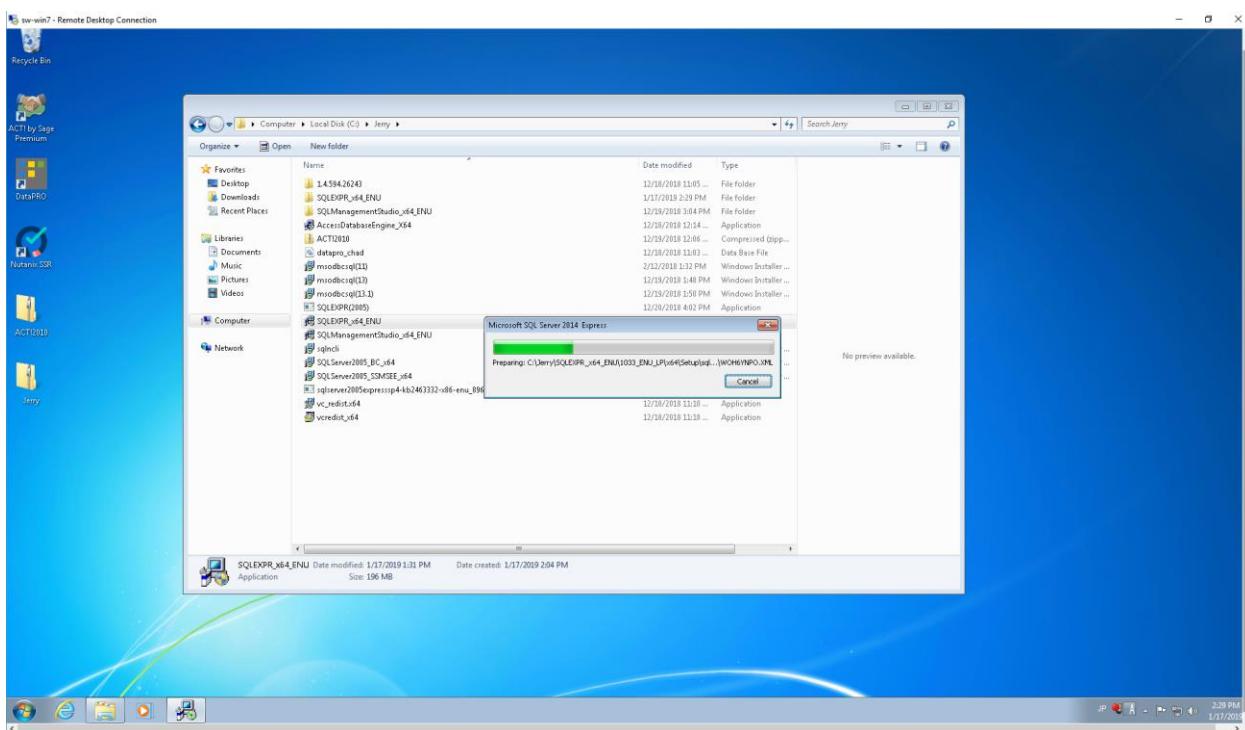
1. In Windows 7 OS, run the 2014 version of SQLEXPR_x64_ENU.exe:



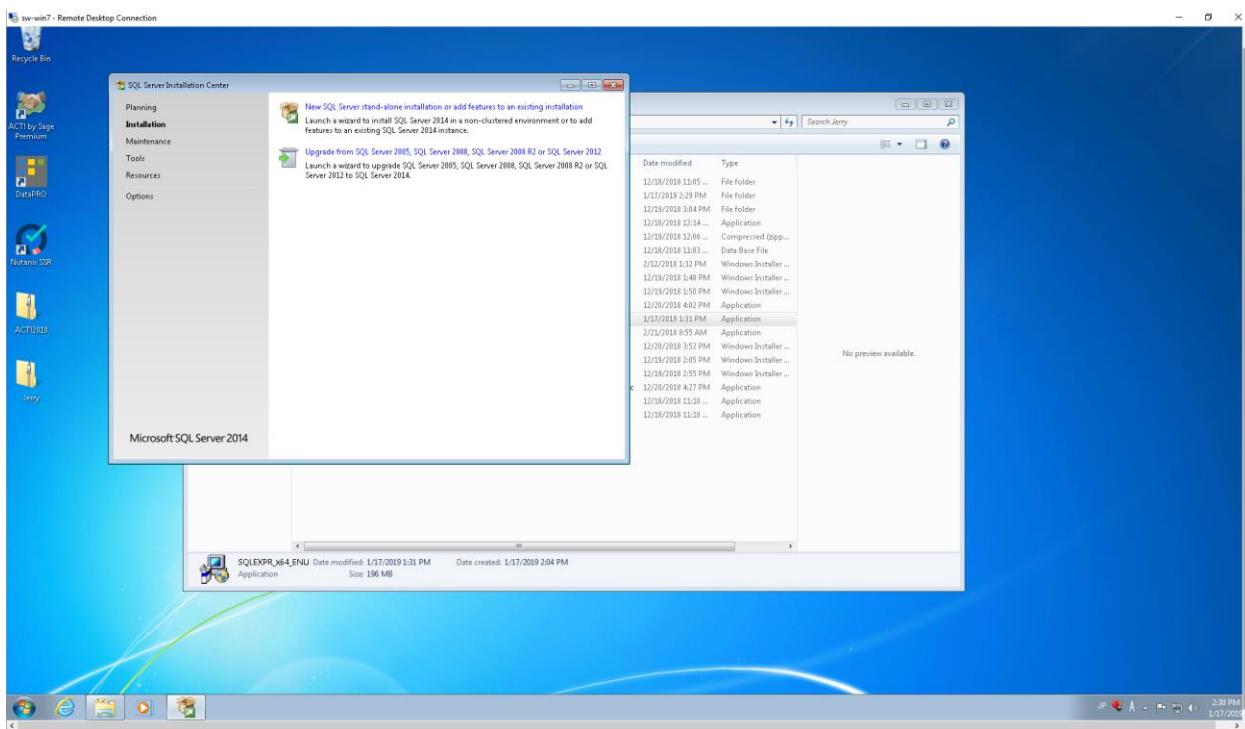
2. Select “Run”:



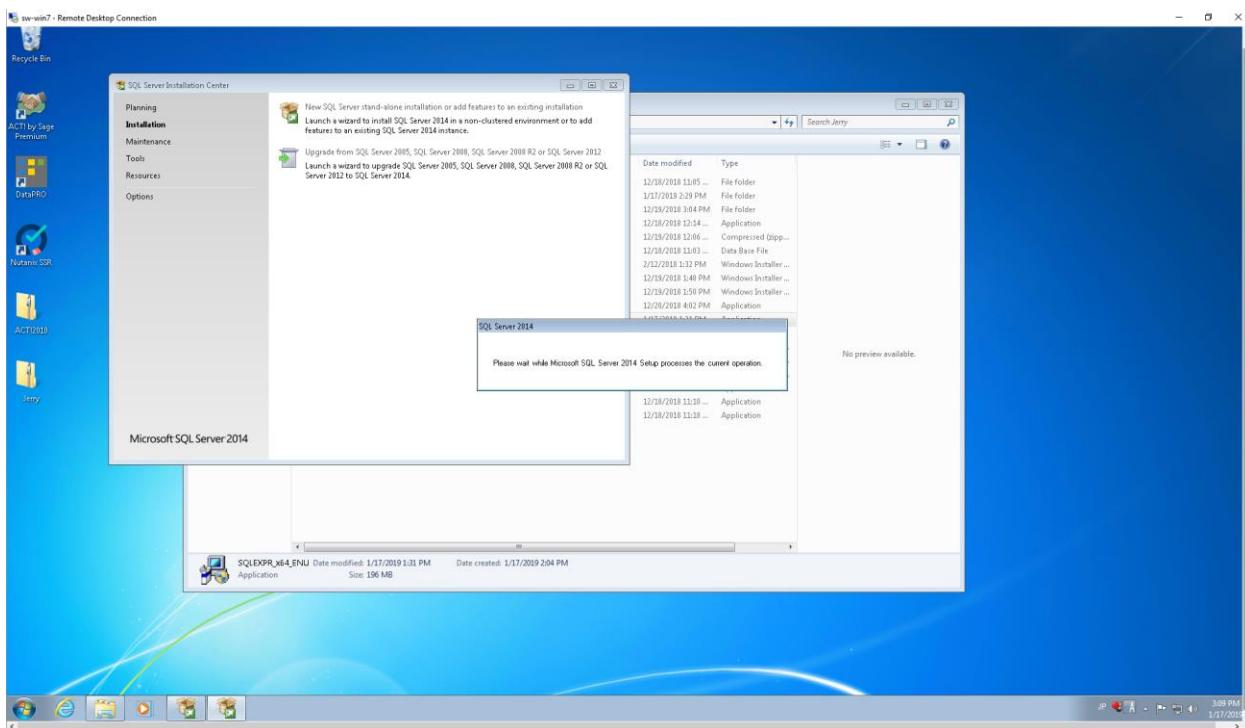
3. Click OK:



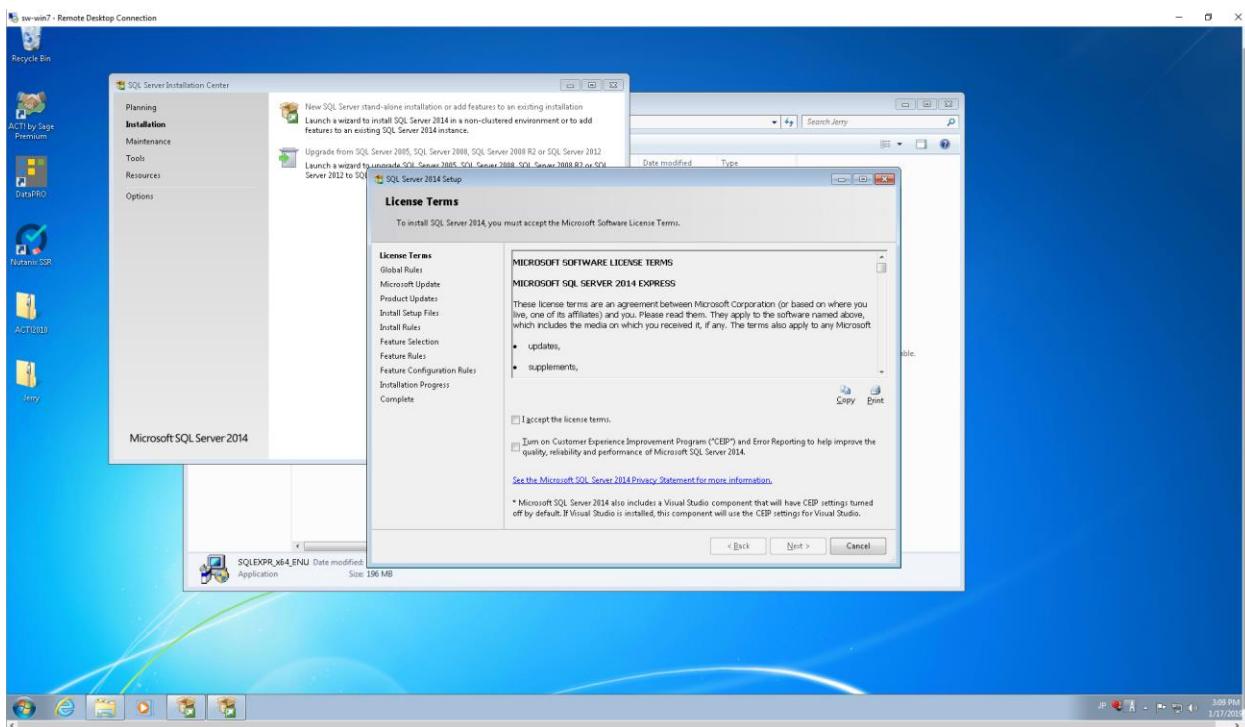
4. Wait...



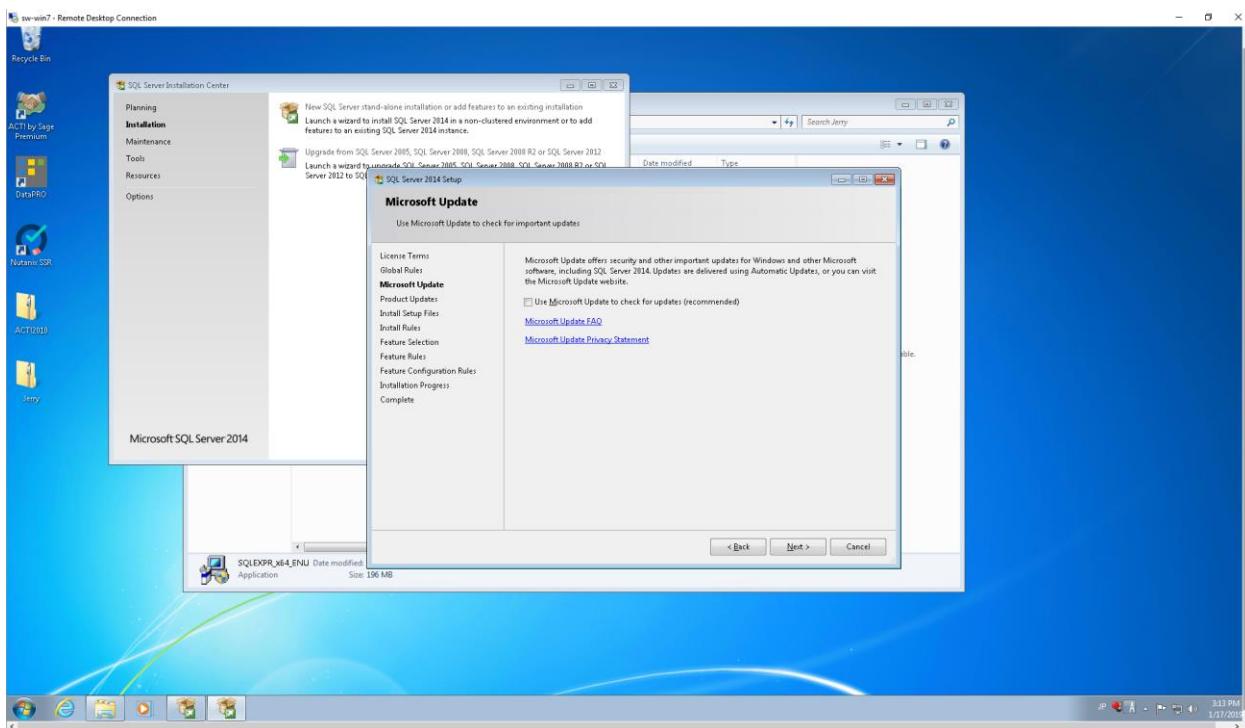
5. Click “New SQL Server stand-alone installation or add features to an existing installation”:



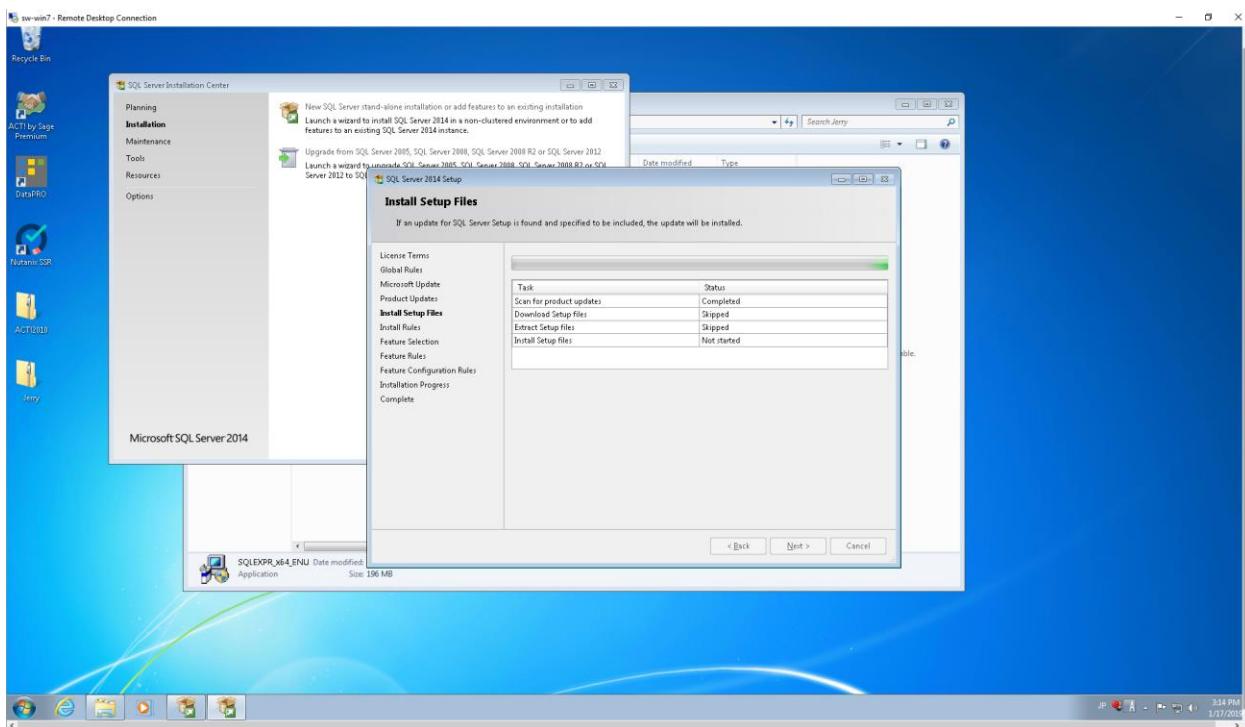
6. Wait...



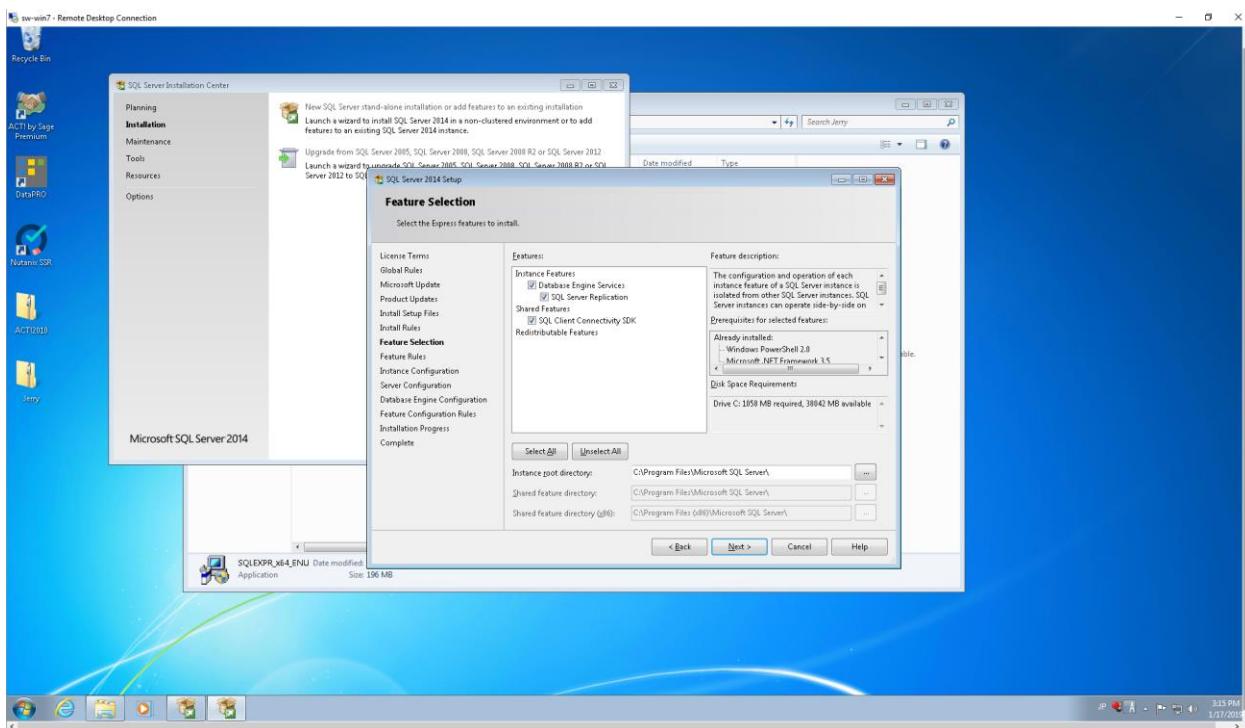
7. Check the “I accept the license terms” box, then click “Next>”:



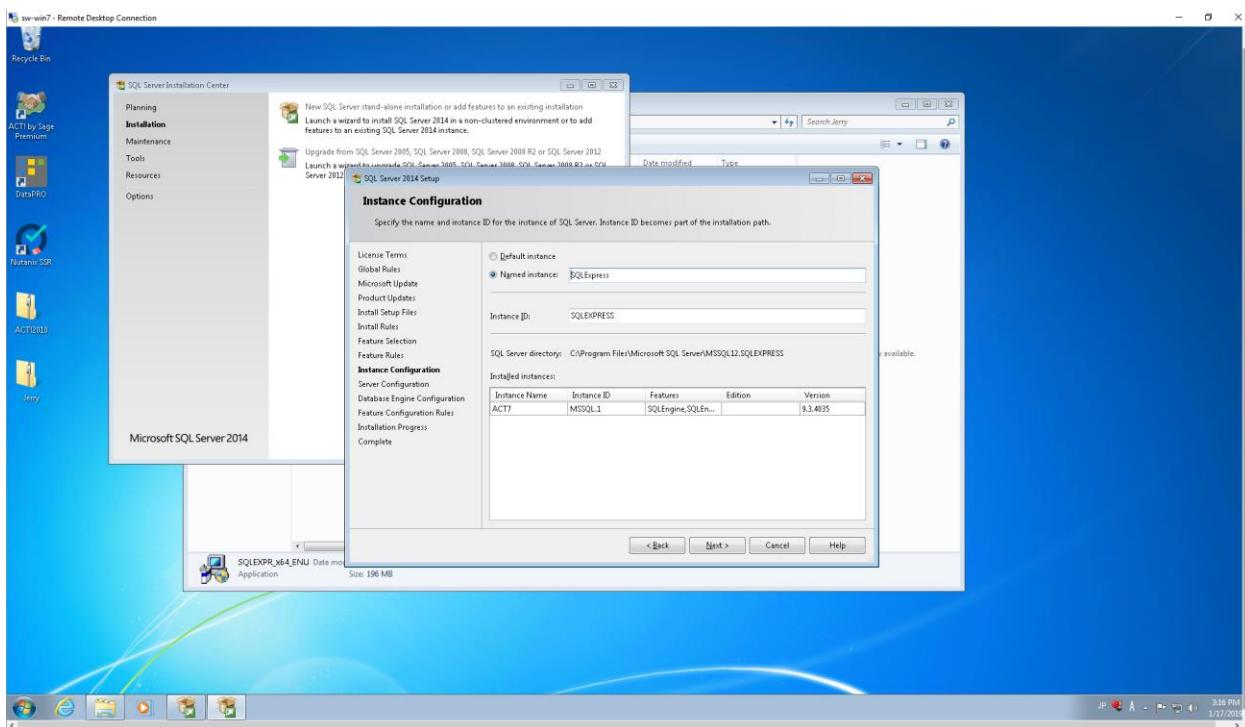
8. Check “Use Microsoft Update to check for updates (rec’ed)” box then click “Next>”:



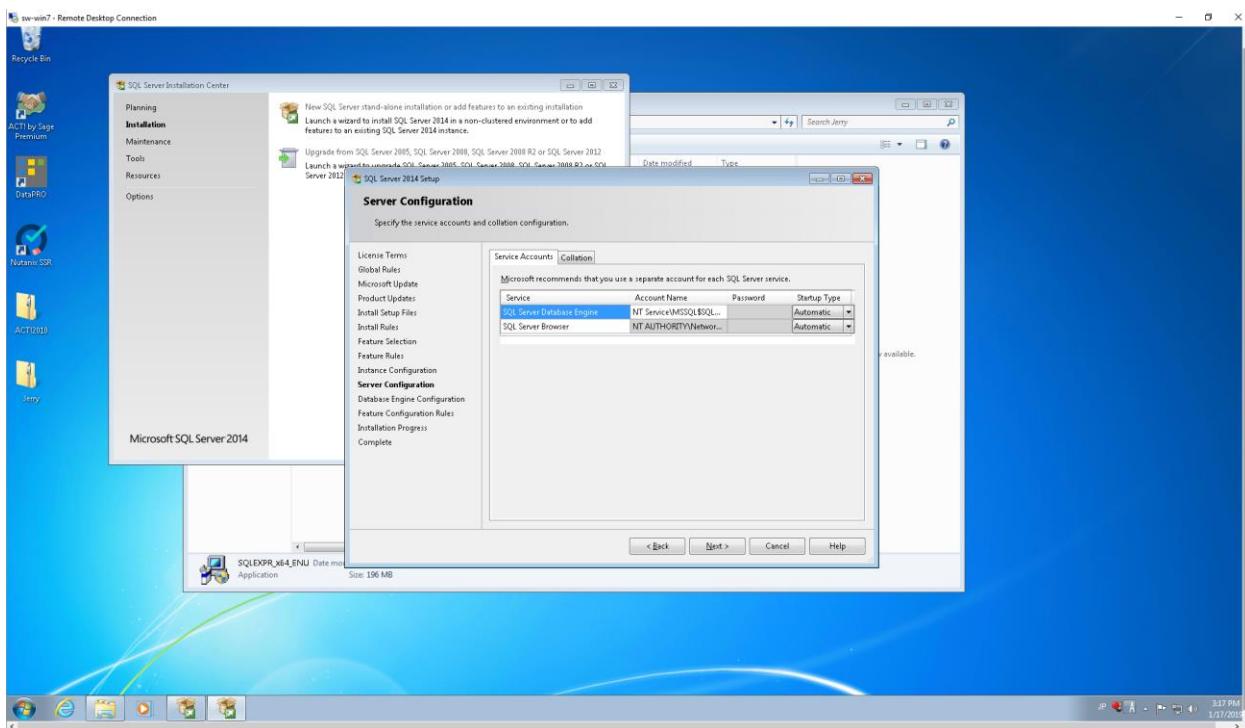
9. Click “Next>”:



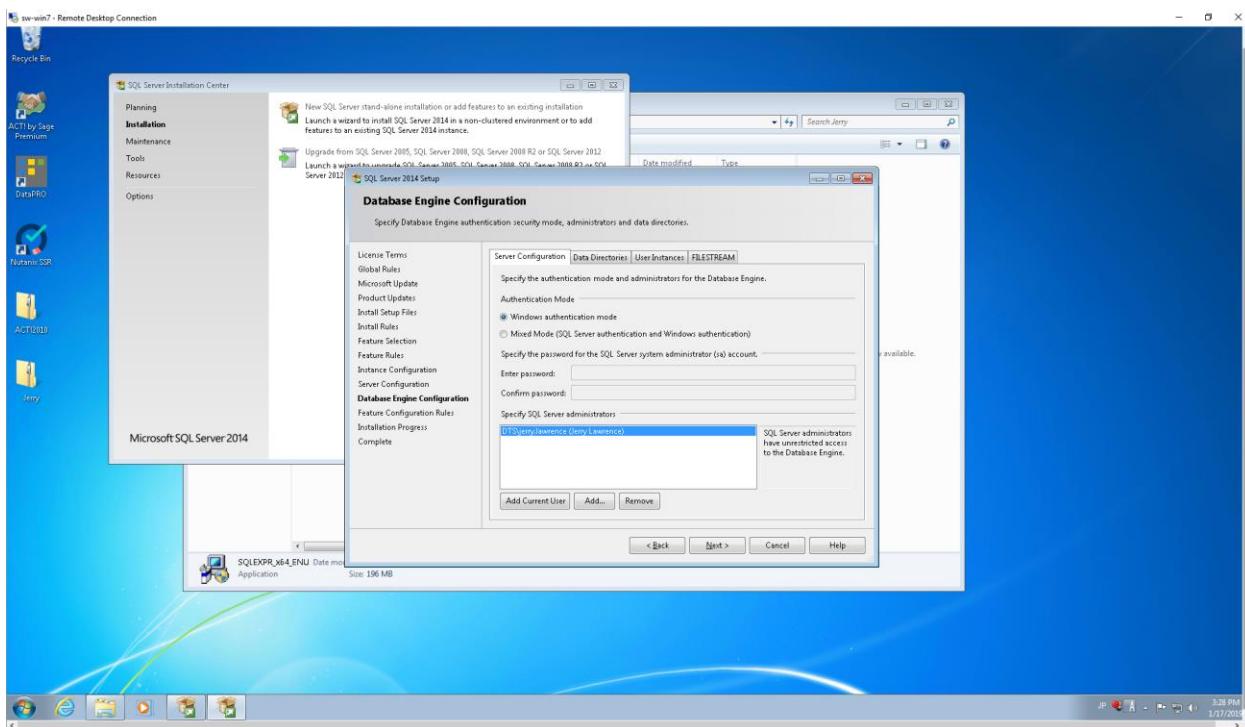
10. Click “Next>”:



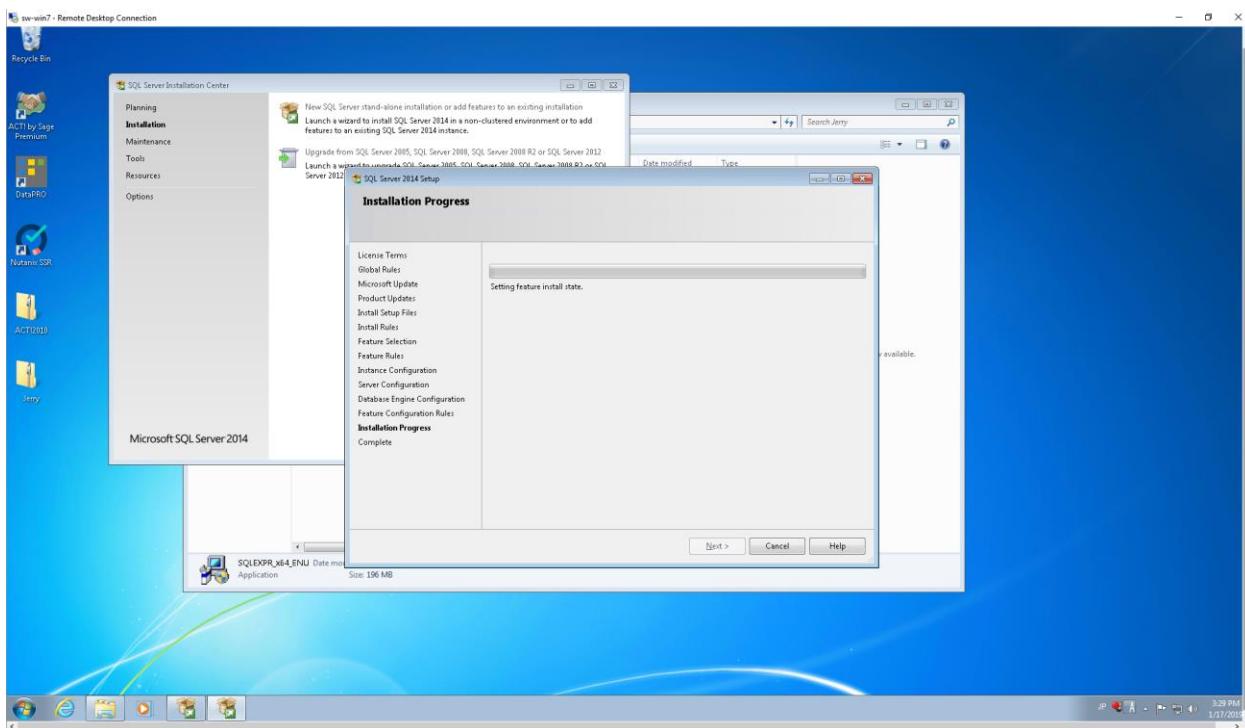
11. Click “Next>”:



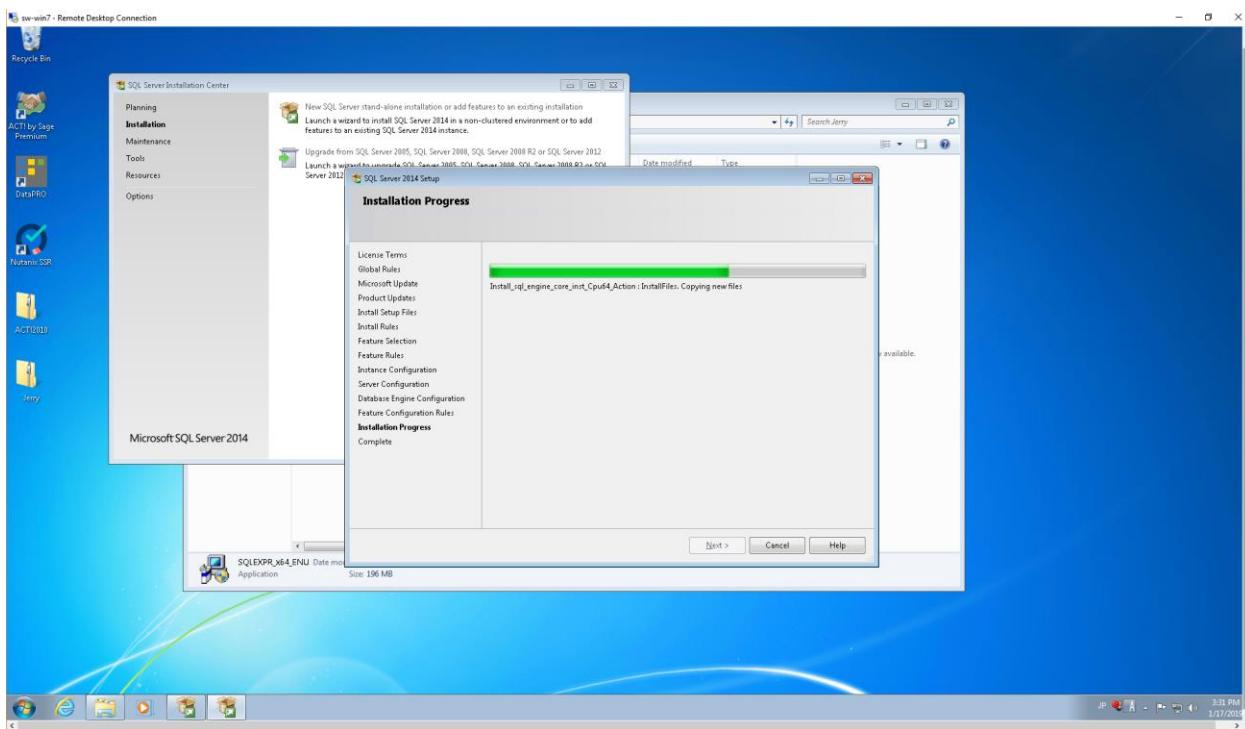
12. Click “Next>”:



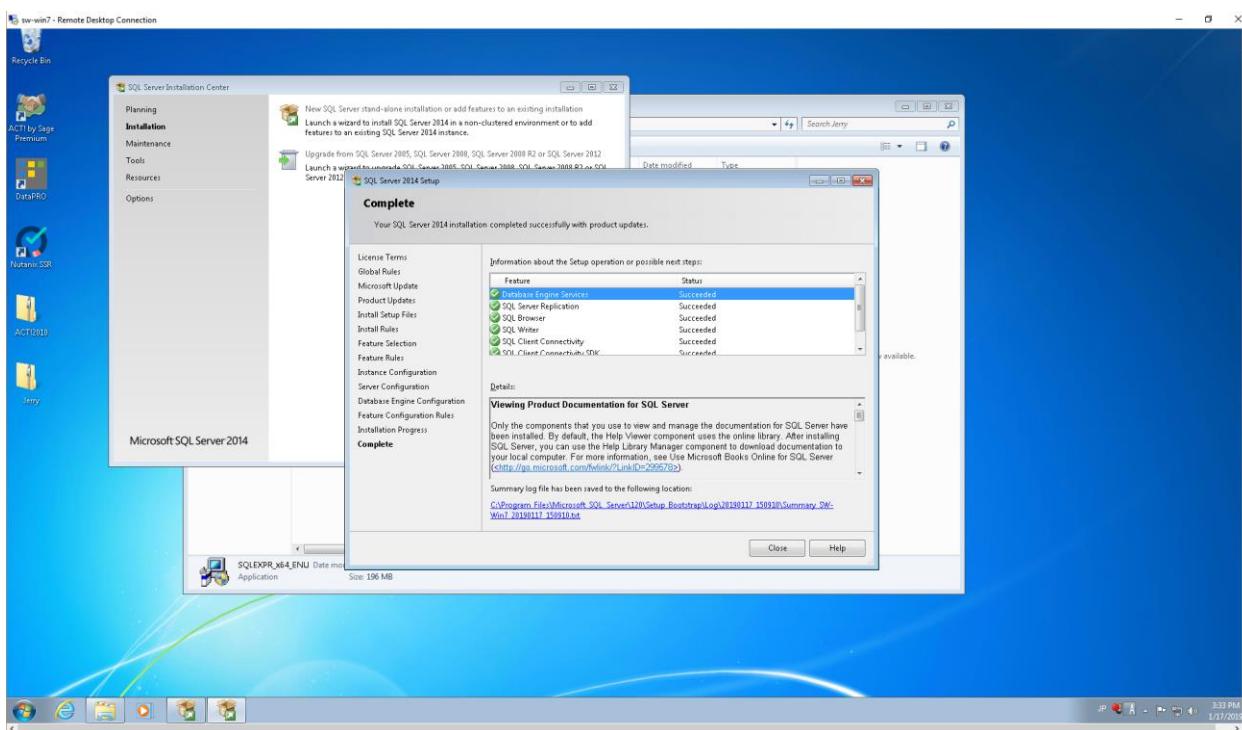
13. Click "Next>":



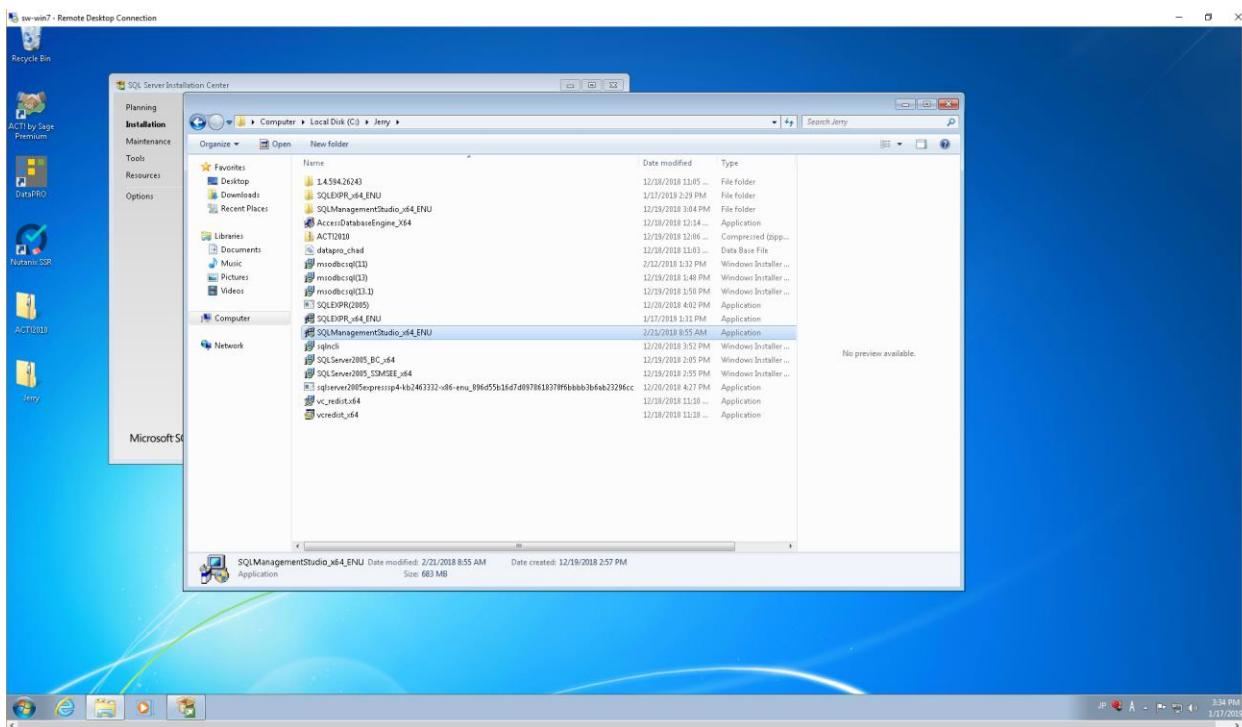
14. Wait...



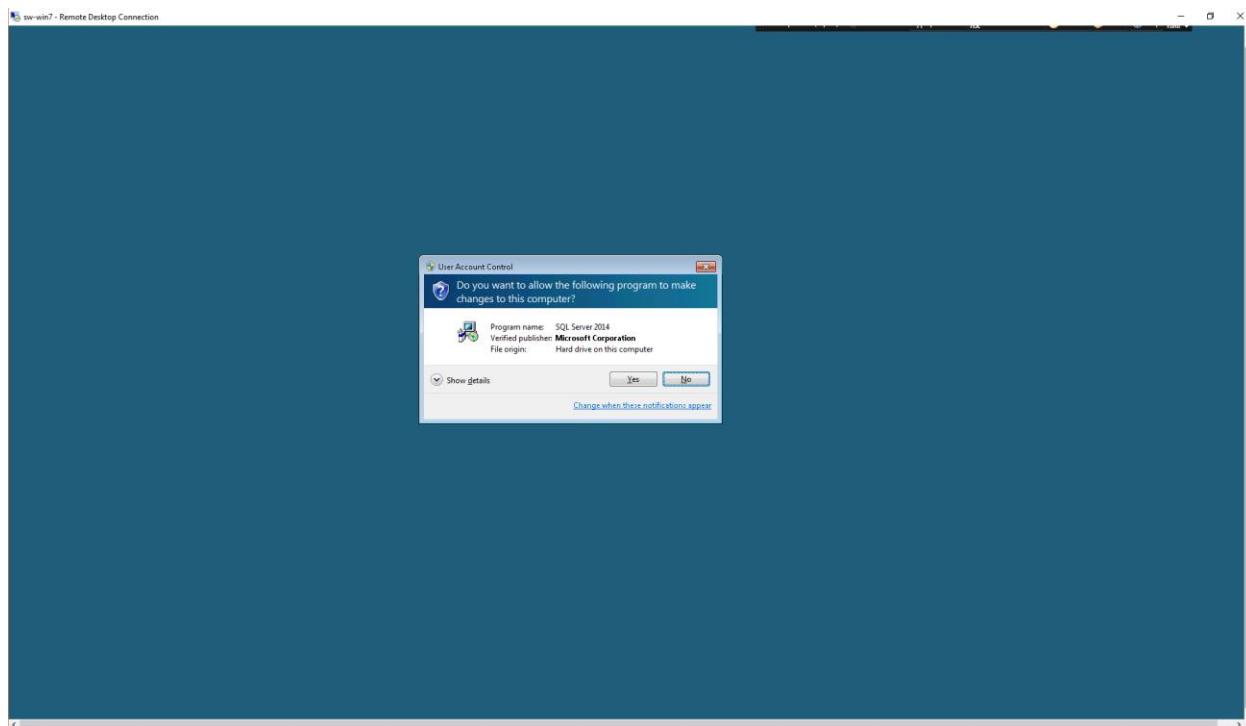
15. Keep waiting...



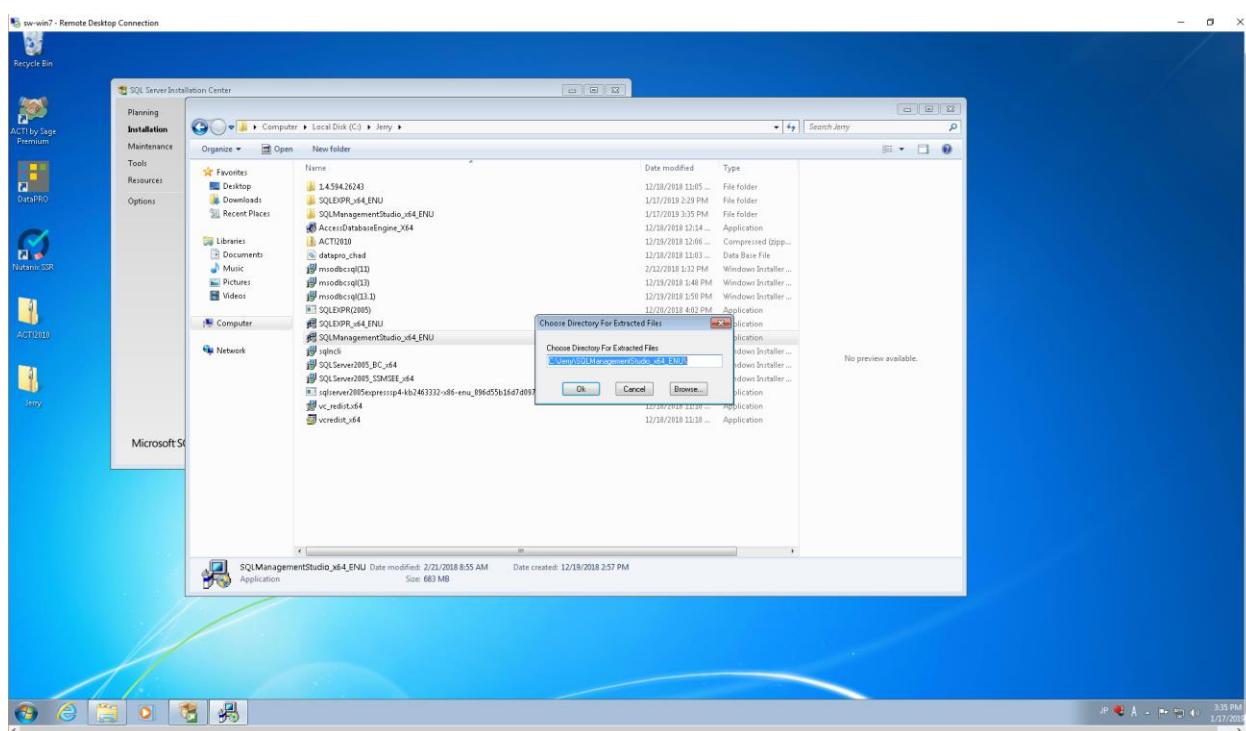
16. Click “Close”:



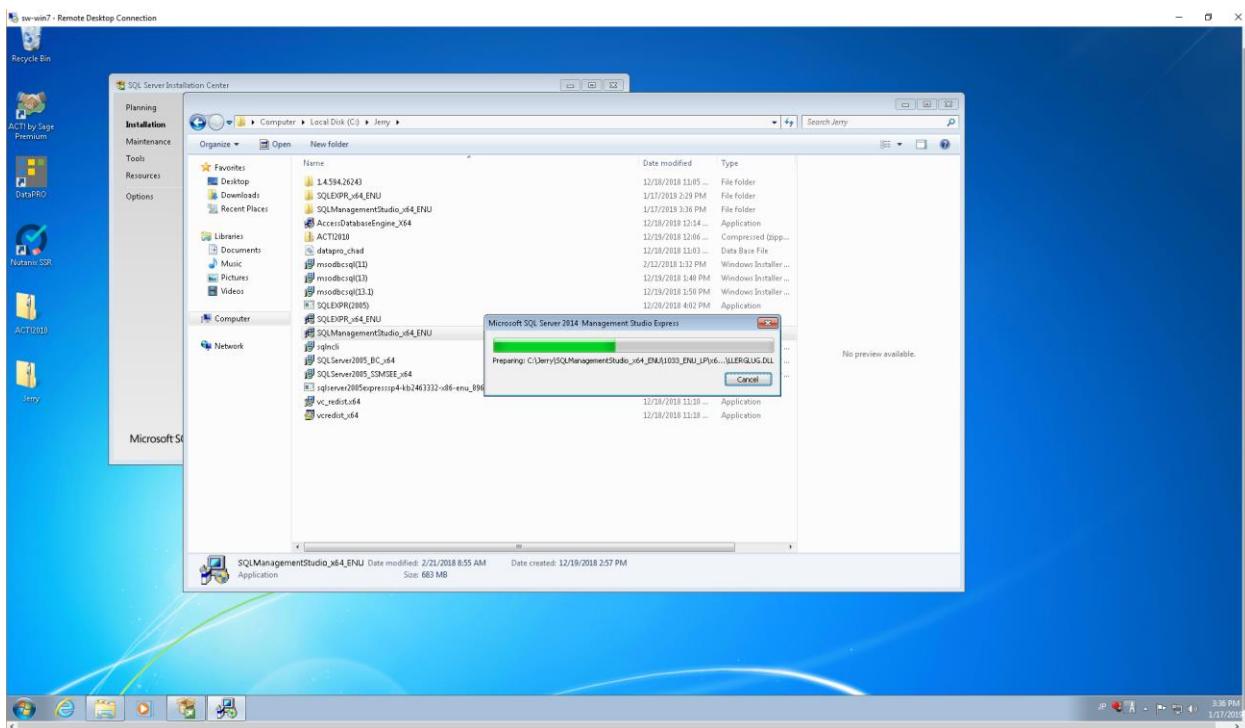
17. Install SQL Server Management Studio 2014 by running SQLManagementStudio_x64_ENU.exe:



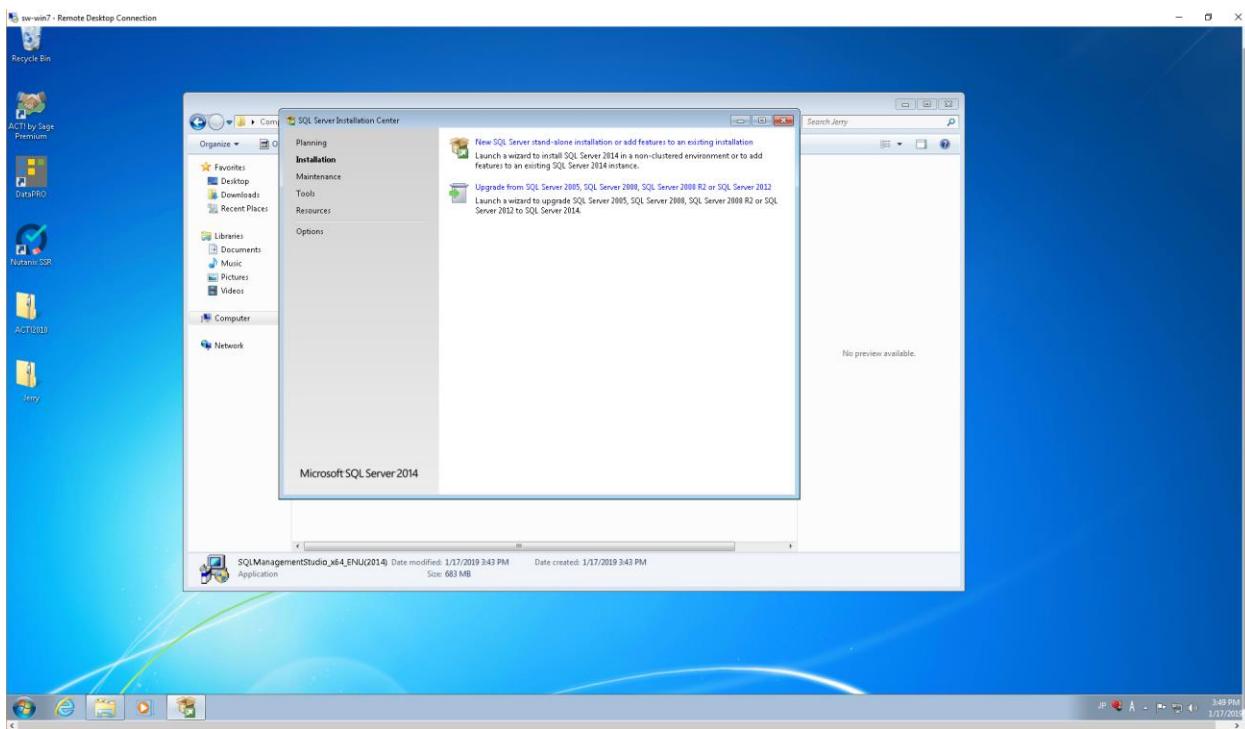
18. Click "Yes":



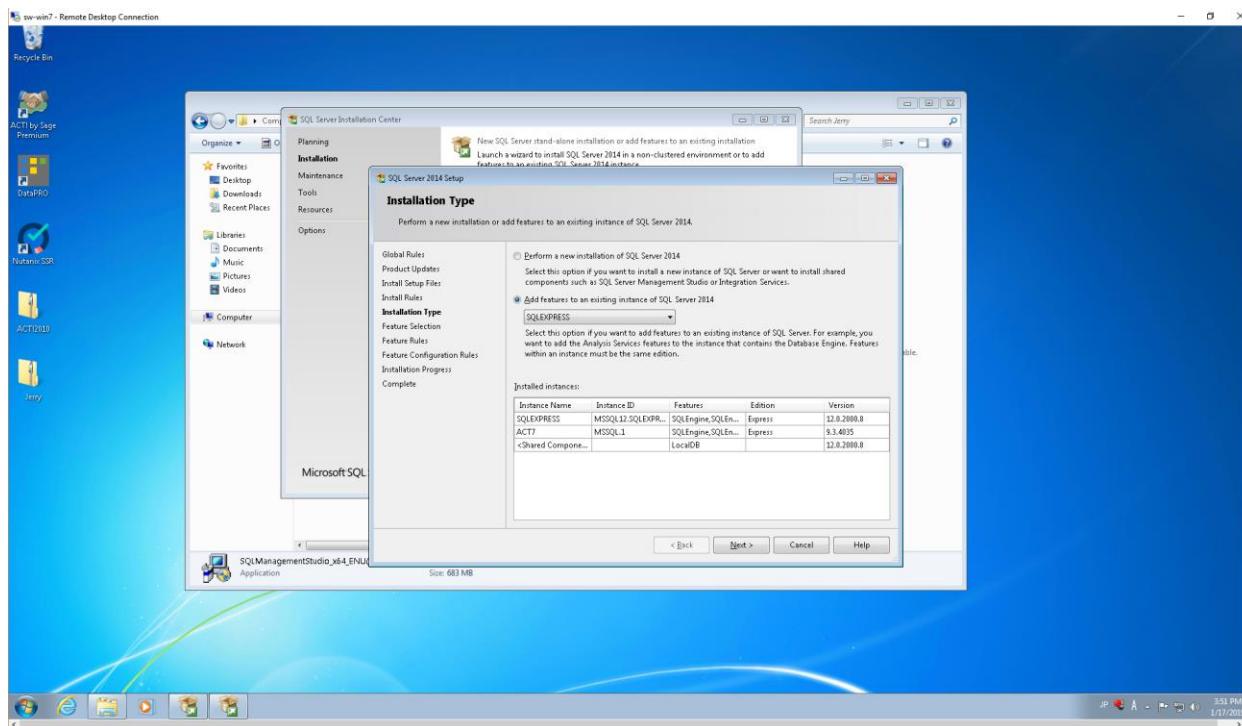
19. Modify the path if desired, then click “OK”:



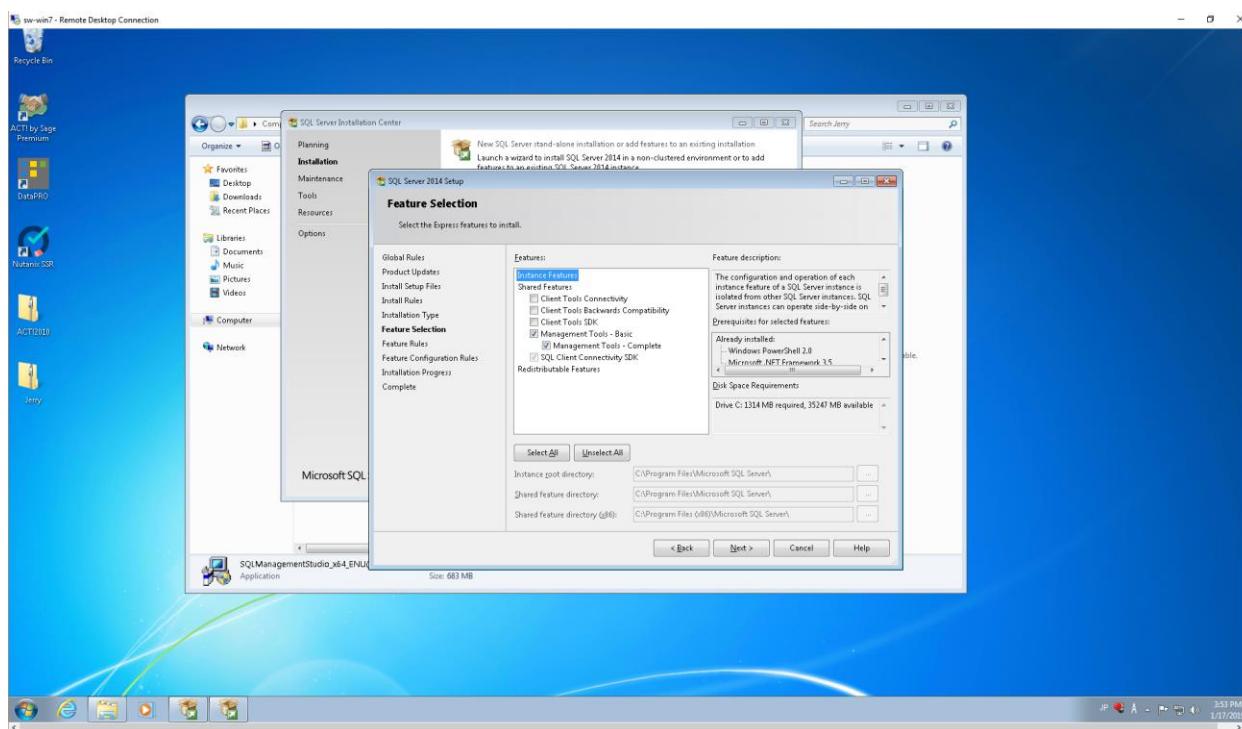
20. Wait...



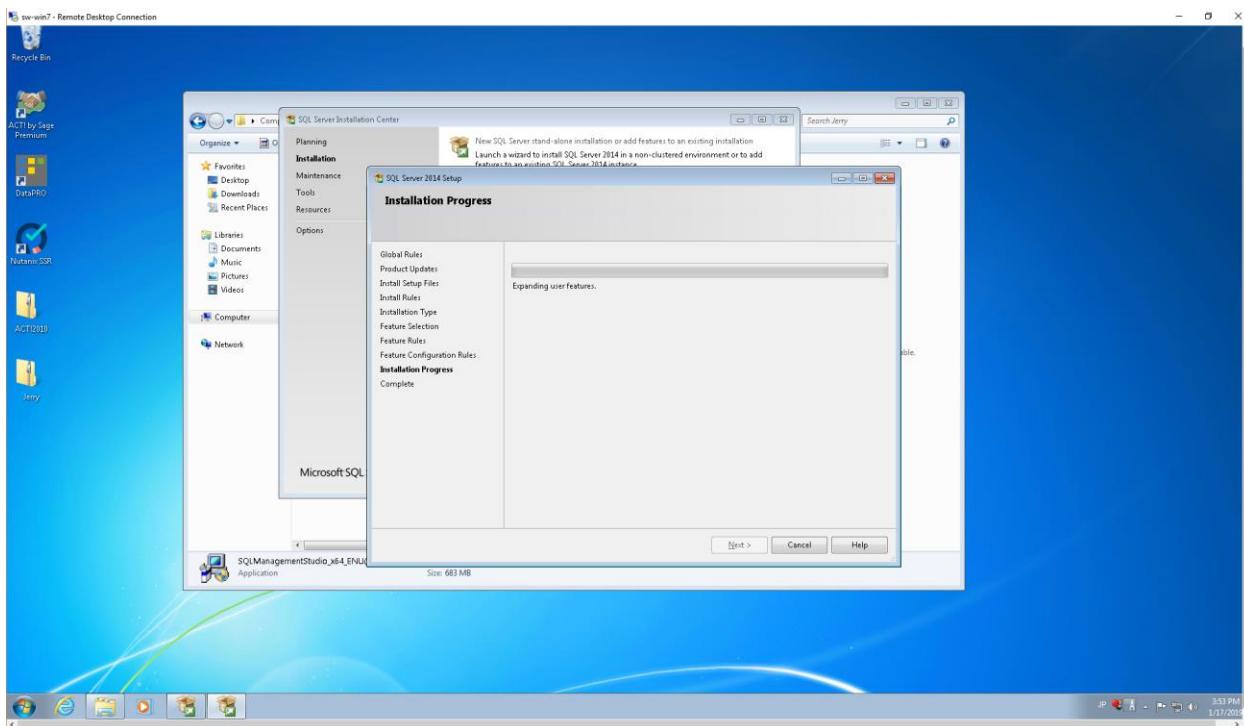
21. Click “New SQL Server stand-alone installation or add features to an existing installation”:



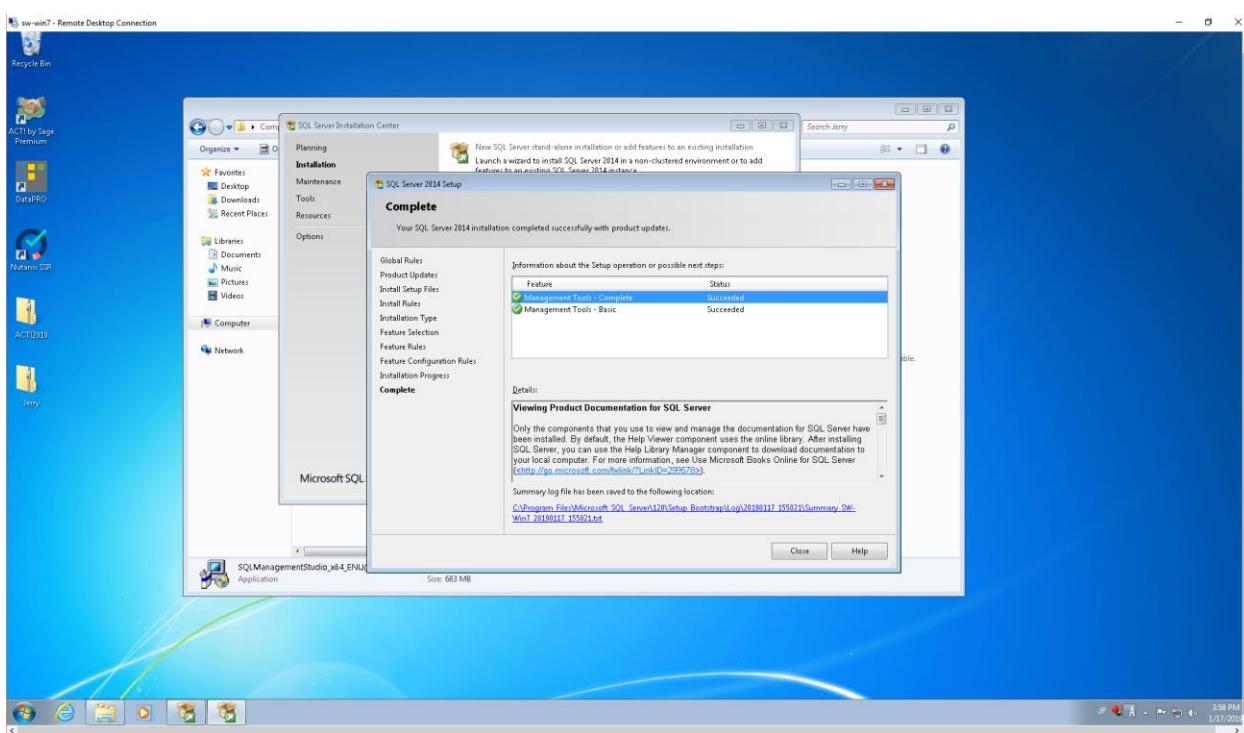
22. Change selection to “Add features to an existing instance of SQL Server 2014”, then click “Next>”:



23. Check the “Management Tools – Basic” and “Management Tools – Complete” boxes, then click “Next>”:

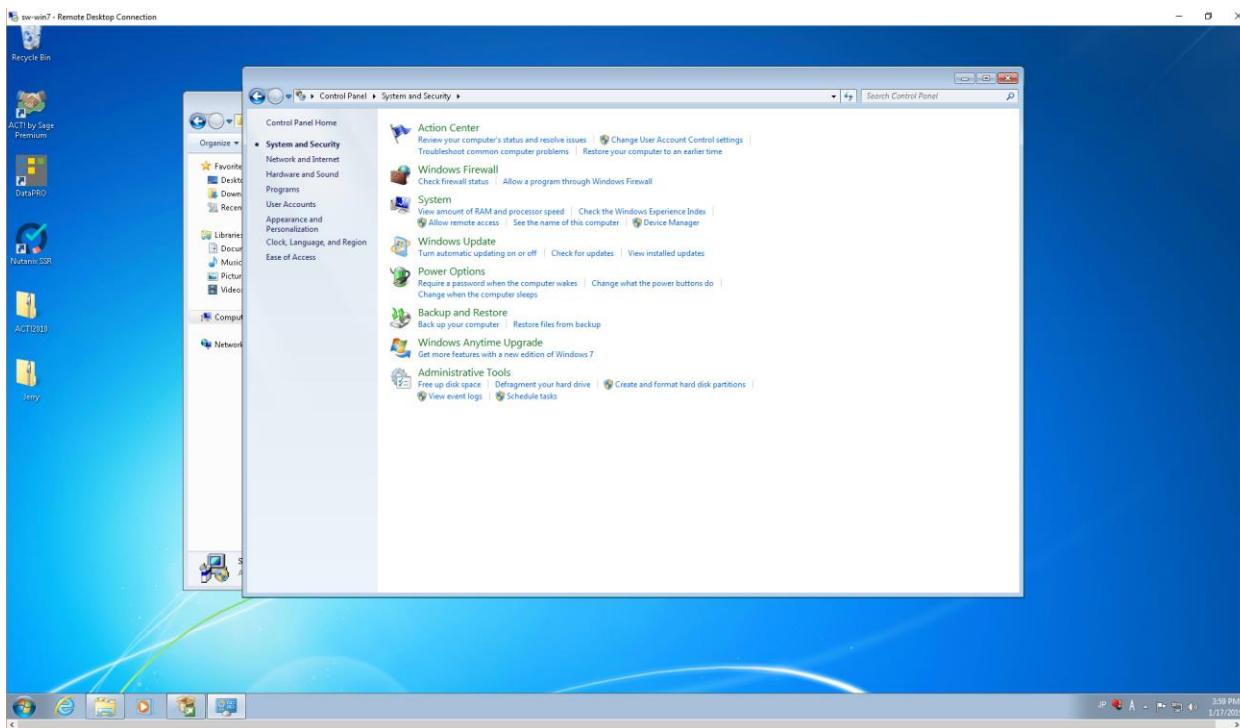


24. Wait...

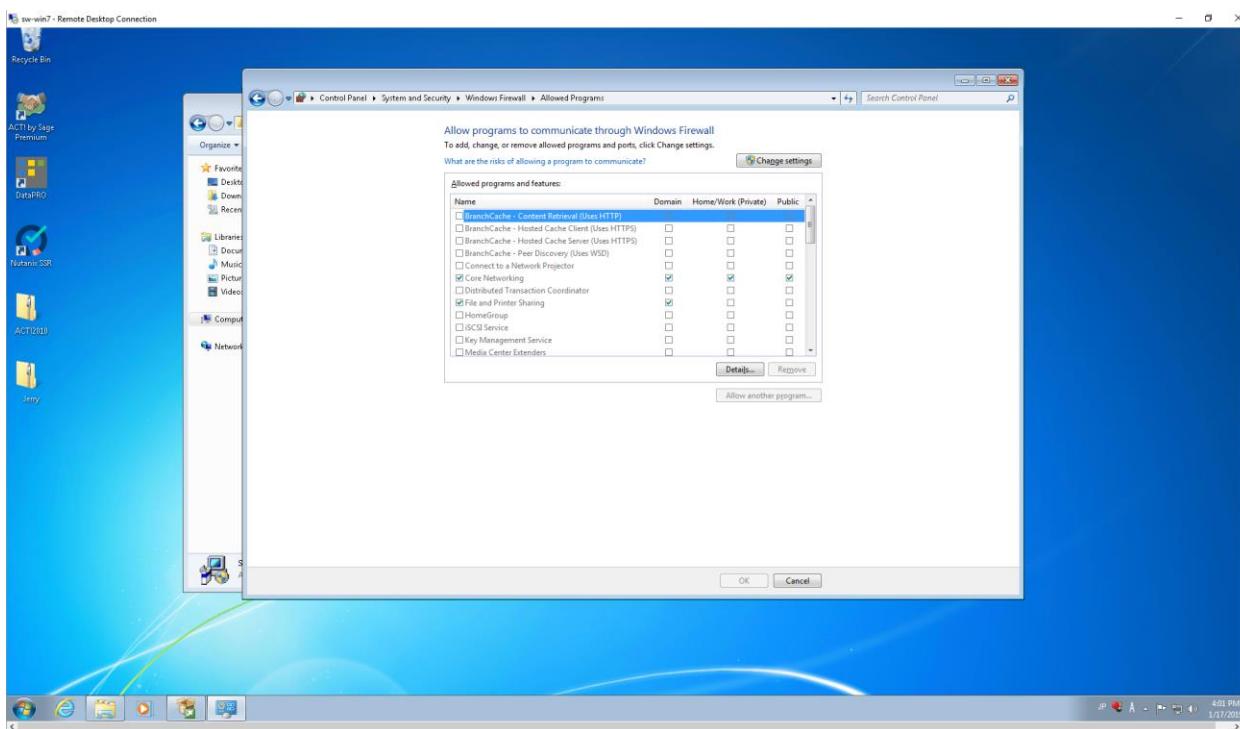


25. Click “Close”.

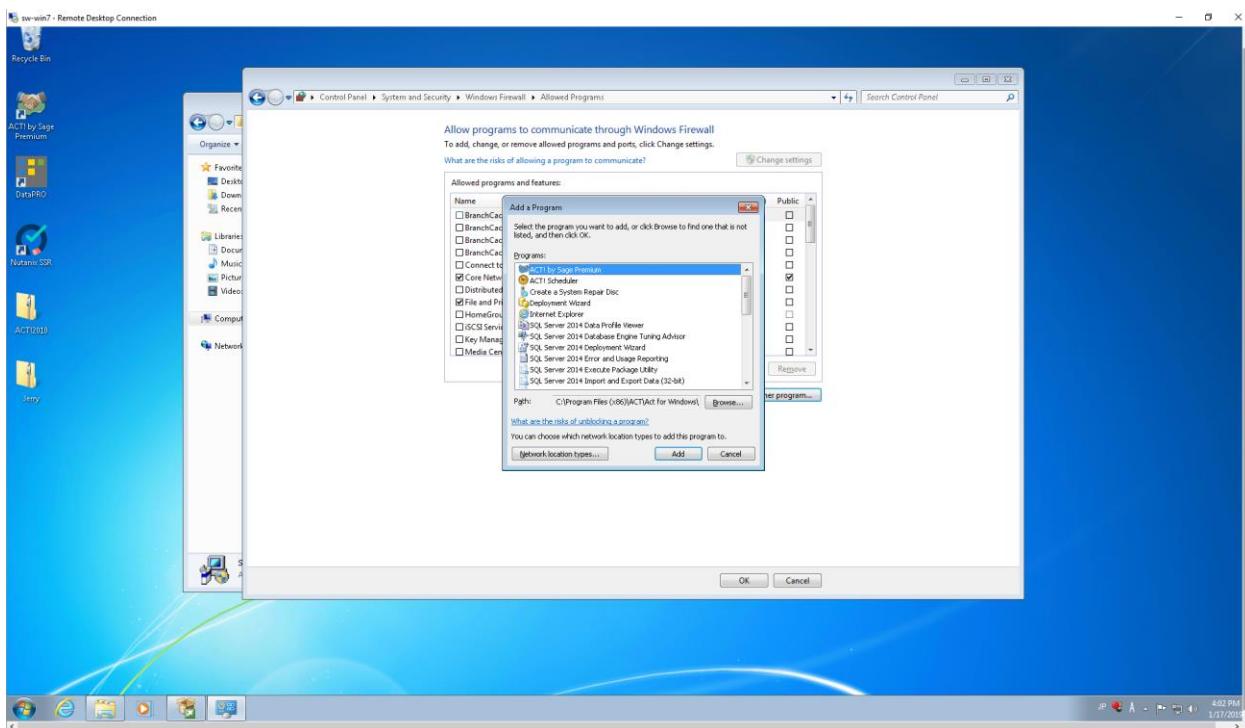
26. Go to Control Panel | System and Security:



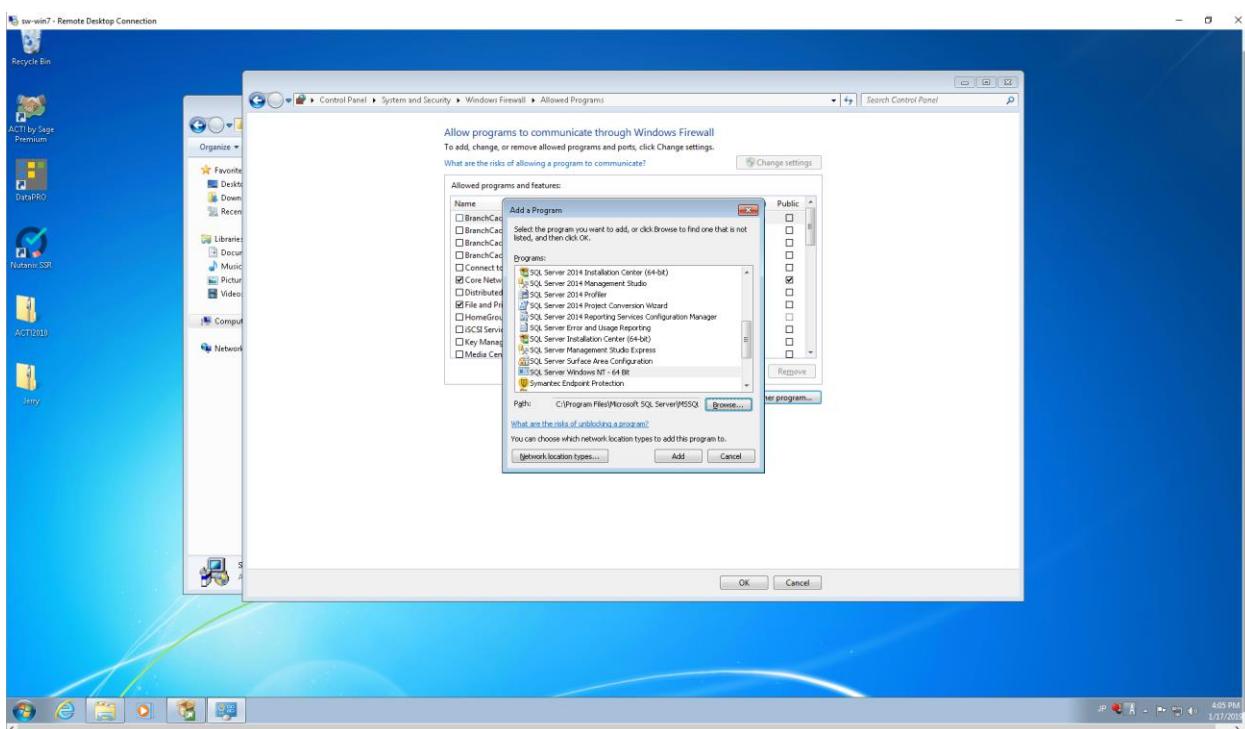
27. Click on “Allow a program through Windows Firewall”:



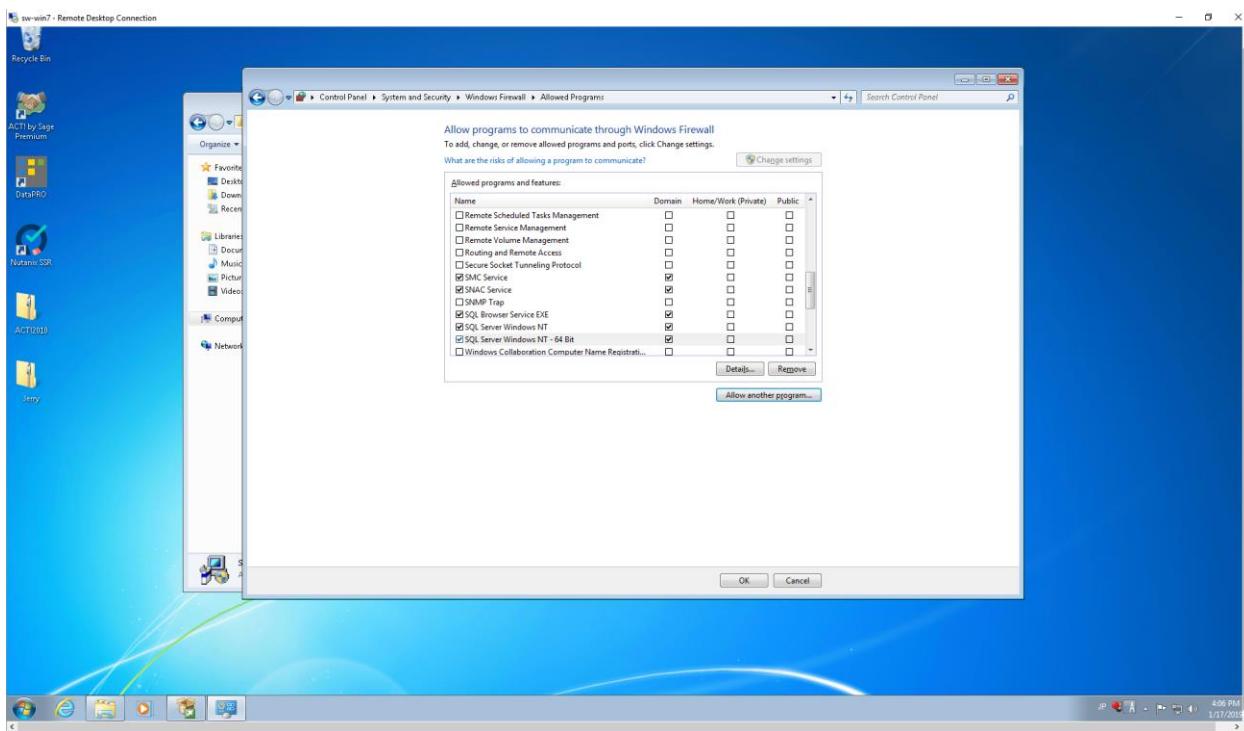
28. Click on “Change settings”, then click on “Allow another program...”:



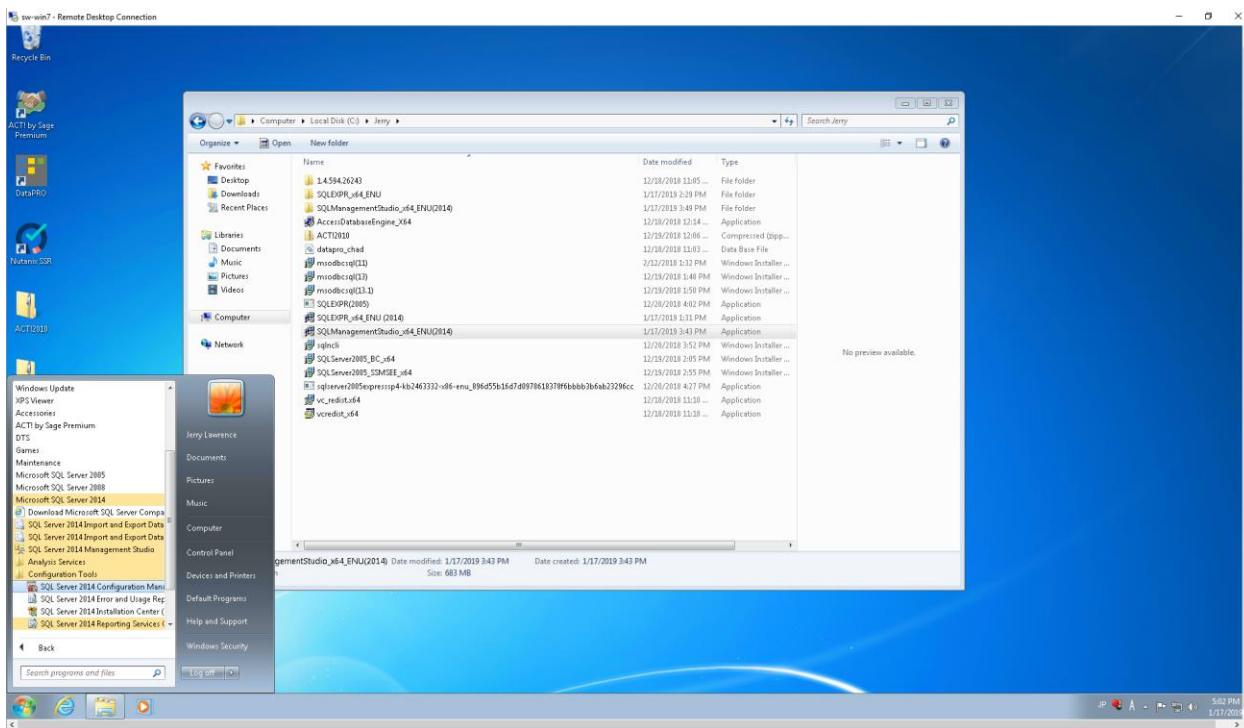
29. Click on “Browse...”, then browse to C:\Program Files\Microsoft SQL Server\MSSQL12.SQLEXPRESS\MSSQL\Binn\sqlservr, click “Open”:



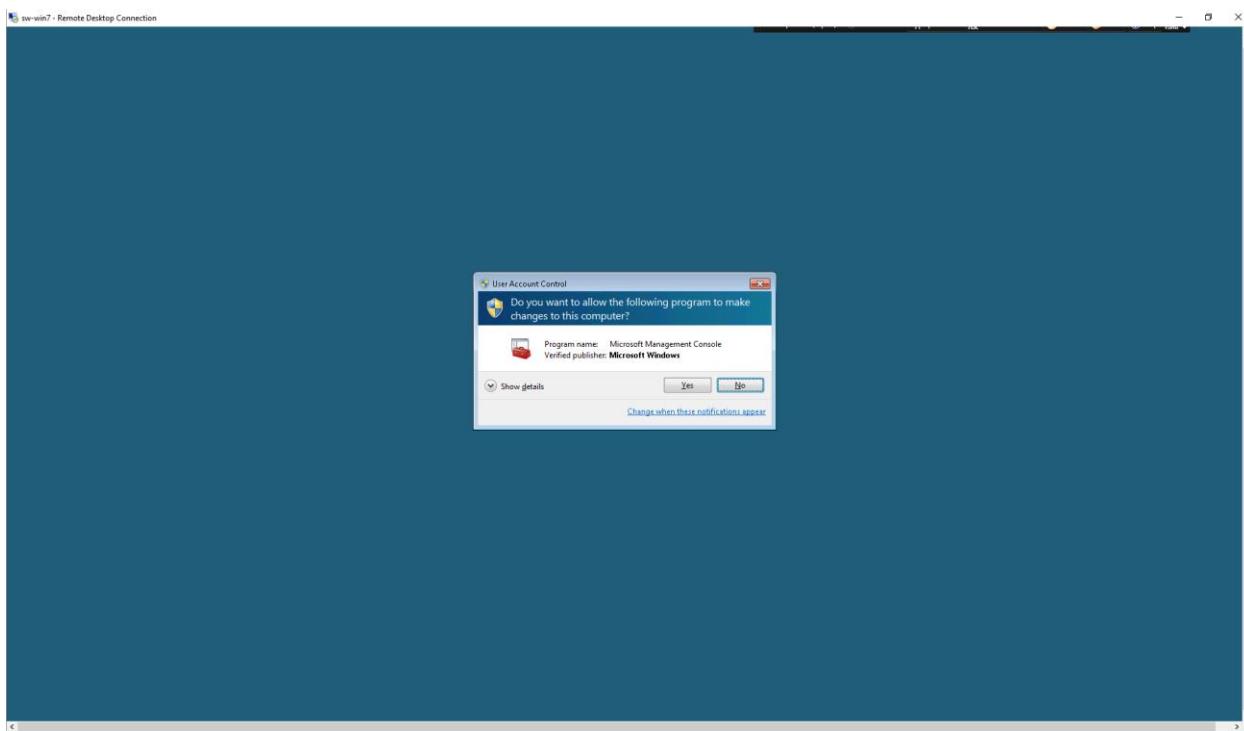
30. Click "Add":



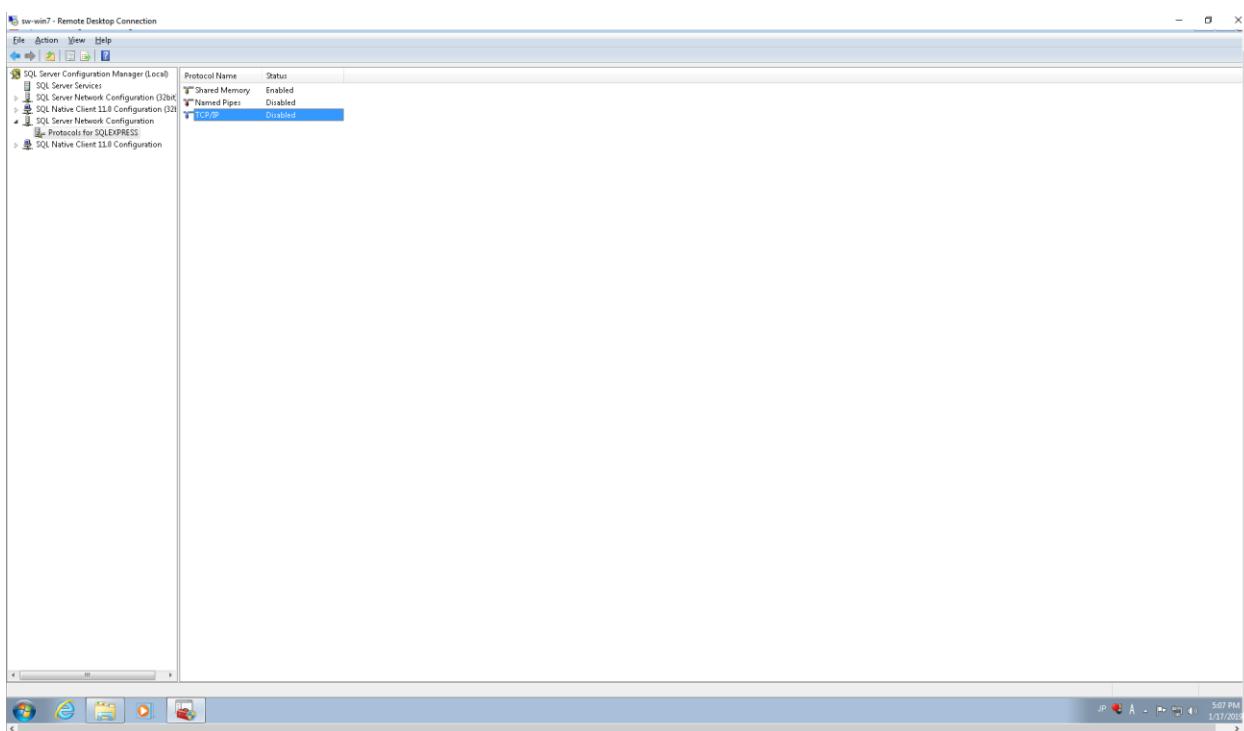
31. Click "OK", then close the "System and Security" window:

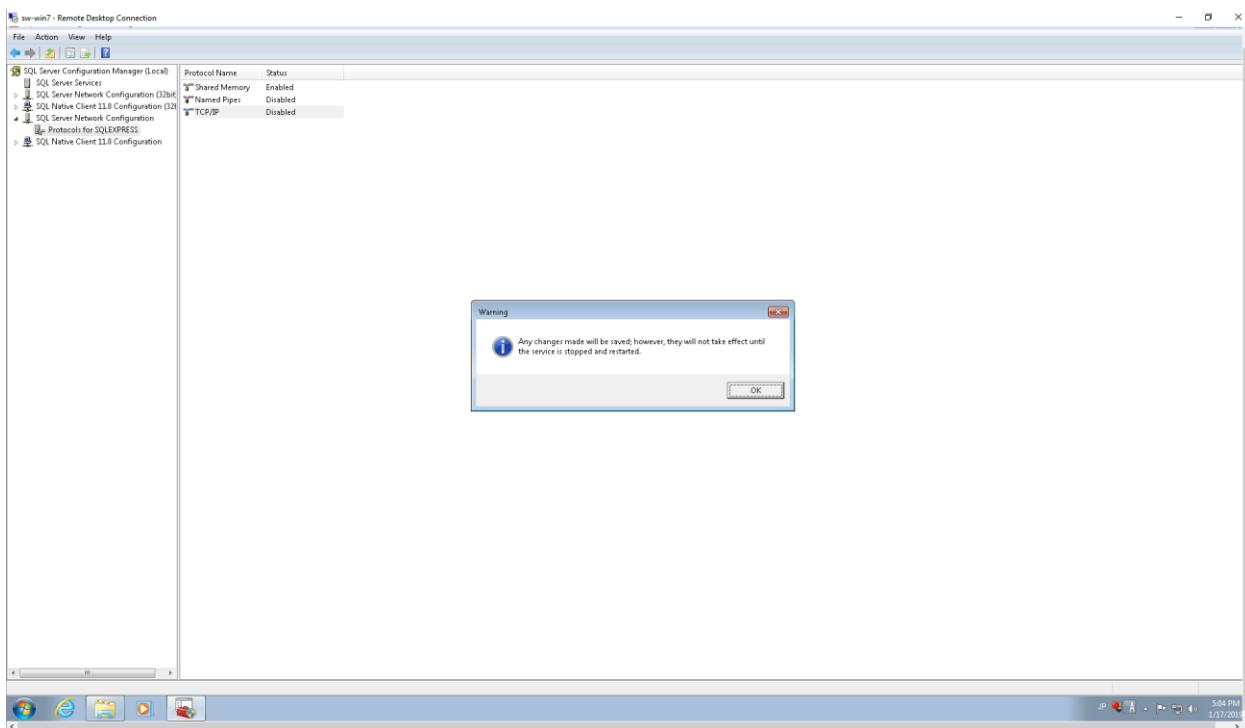
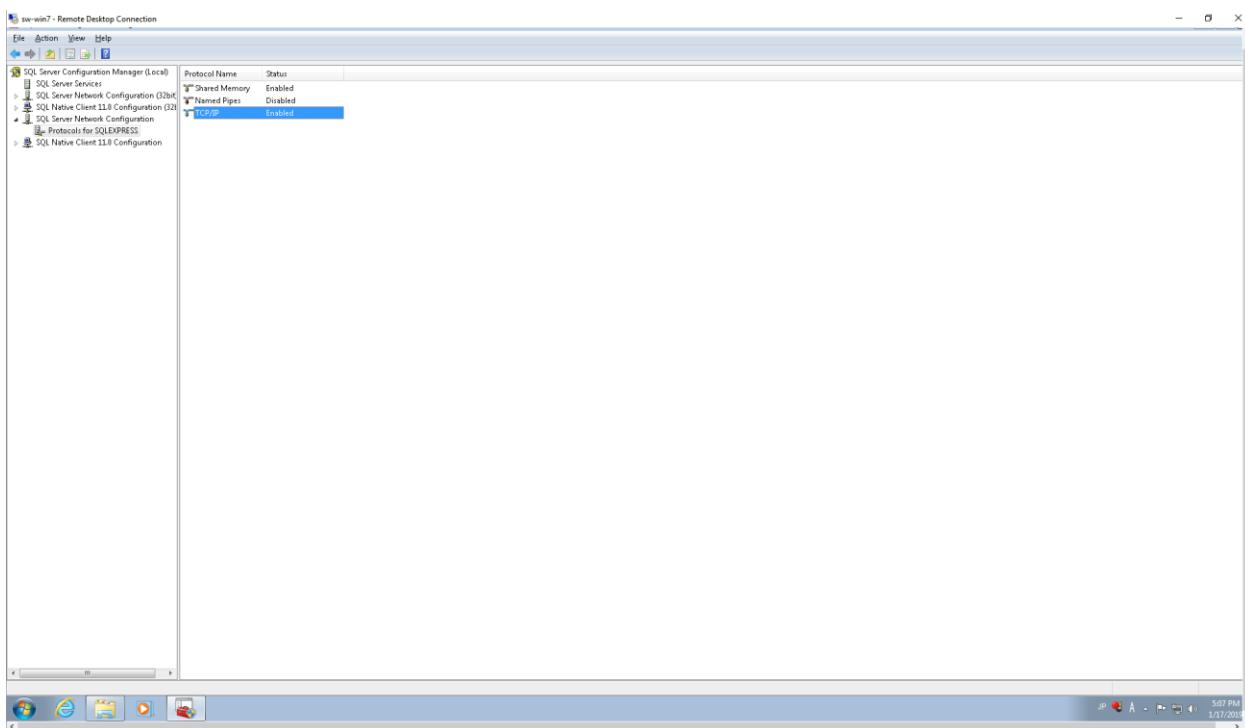


32. Run SQL Server Configuration Manager. Click “Yes” to let the firewall run the program:

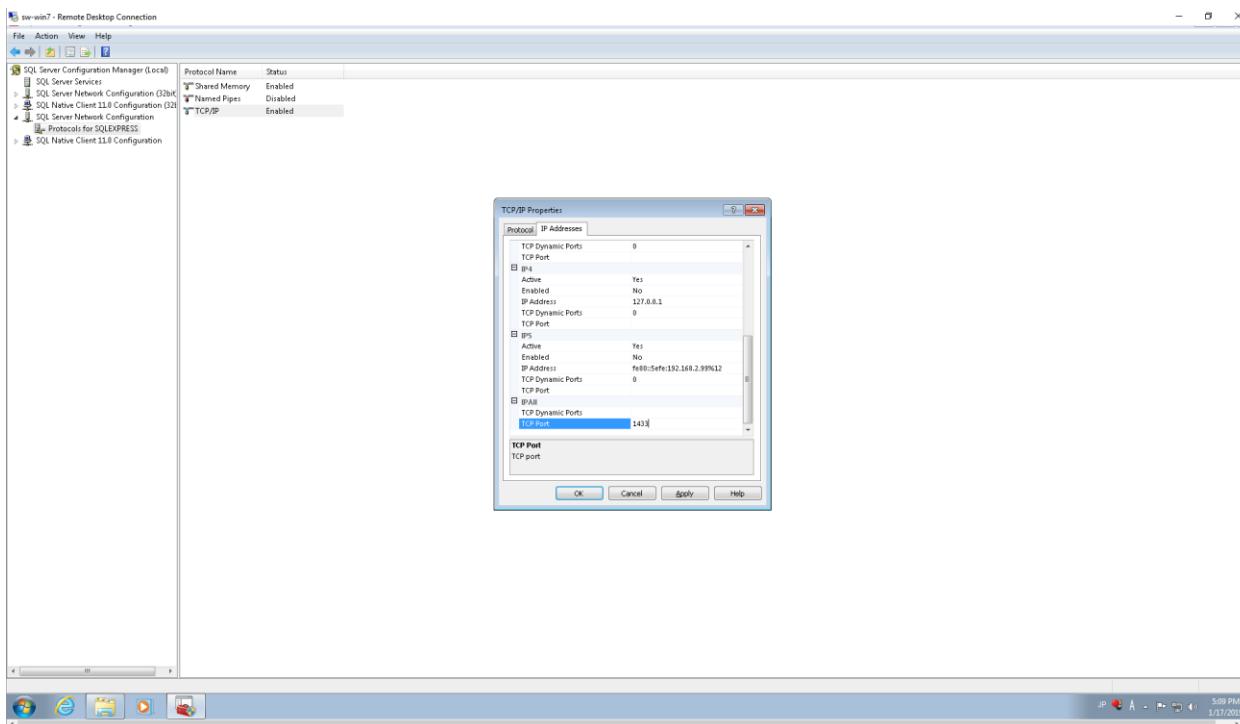


33. Expand “SQL Server Network Configuration”, select “Protocols for SQLEXPRESS”, right-click on “TCP/IP” and select “Enable”:

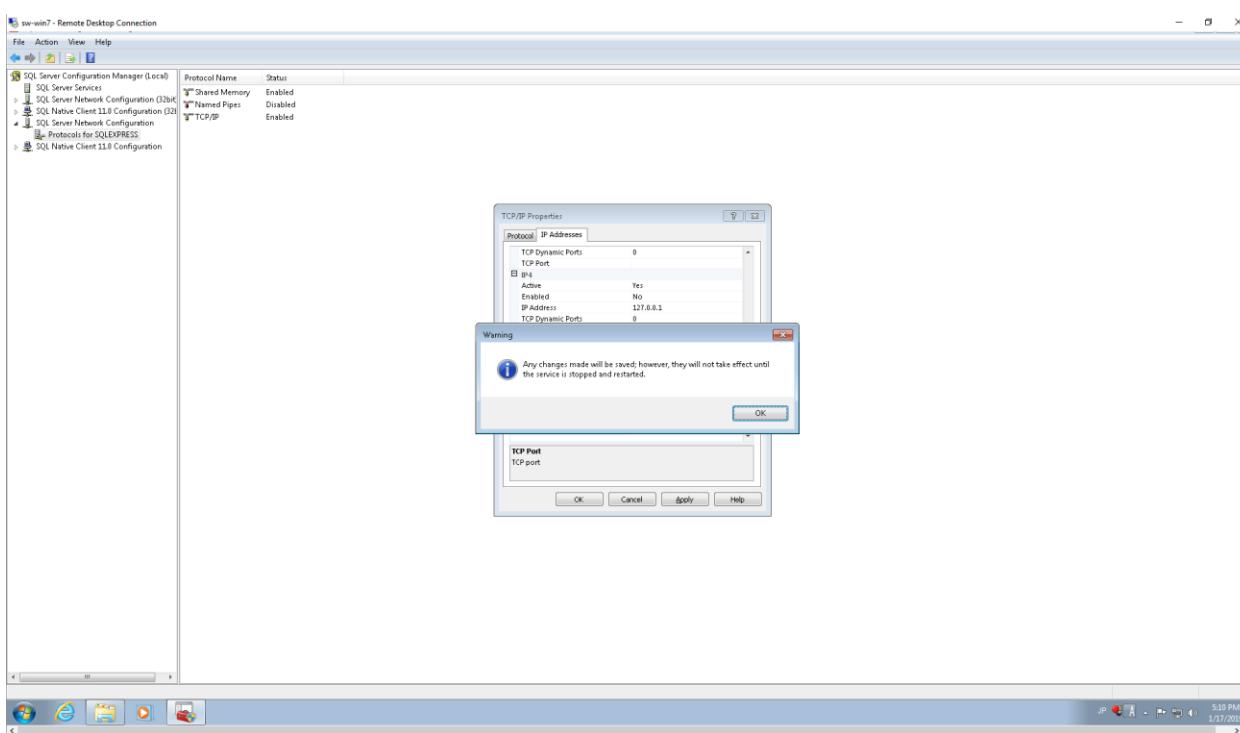


34. Click “OK”:**35. Double-click on the “TCP/IP” Protocol Name:**

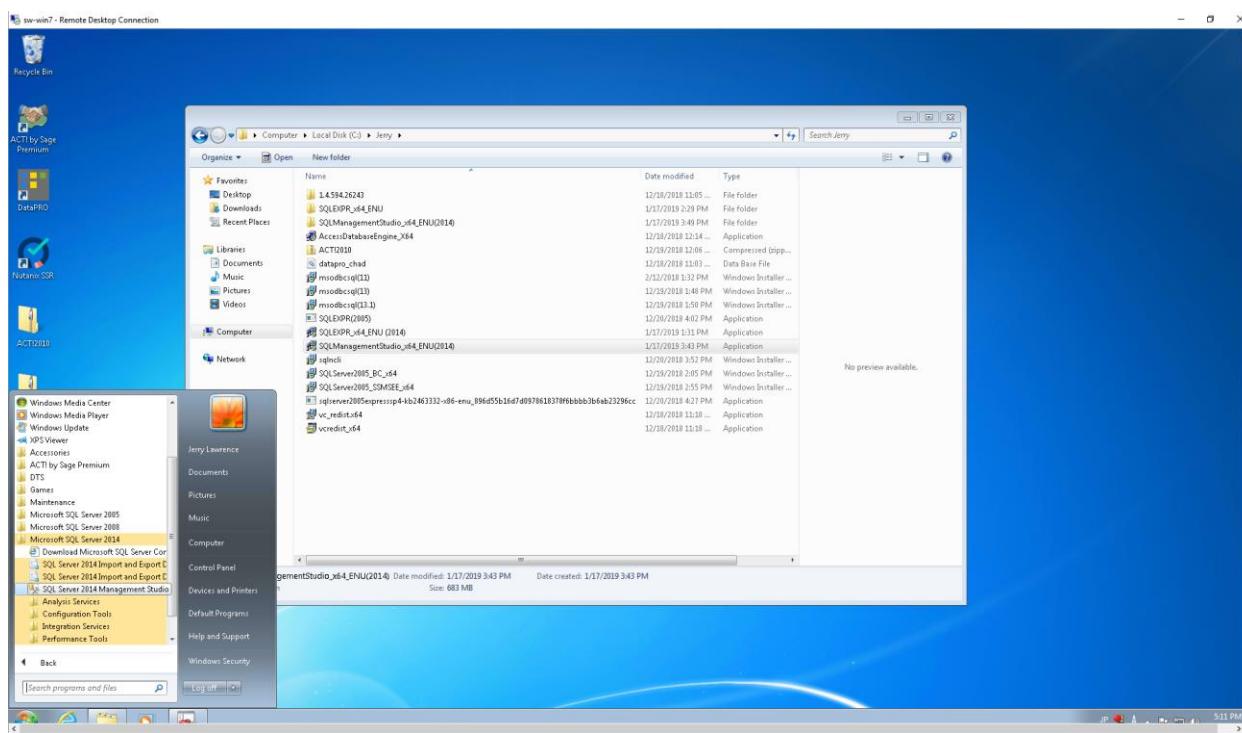
36. Select the “IP Addresses” tab, scroll to the bottom, blank out the “TCP Dynamic Ports” value and add “1433” as the “TCP Port” value under “IP All”:



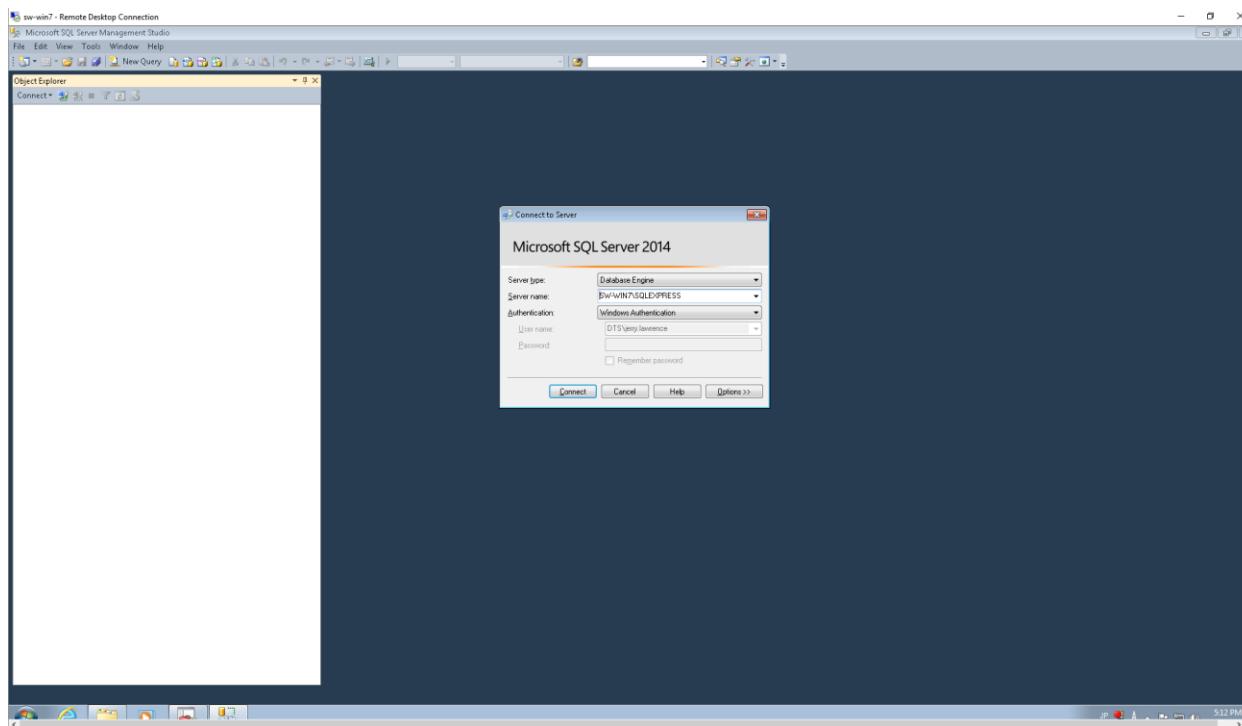
37. Click “OK”:



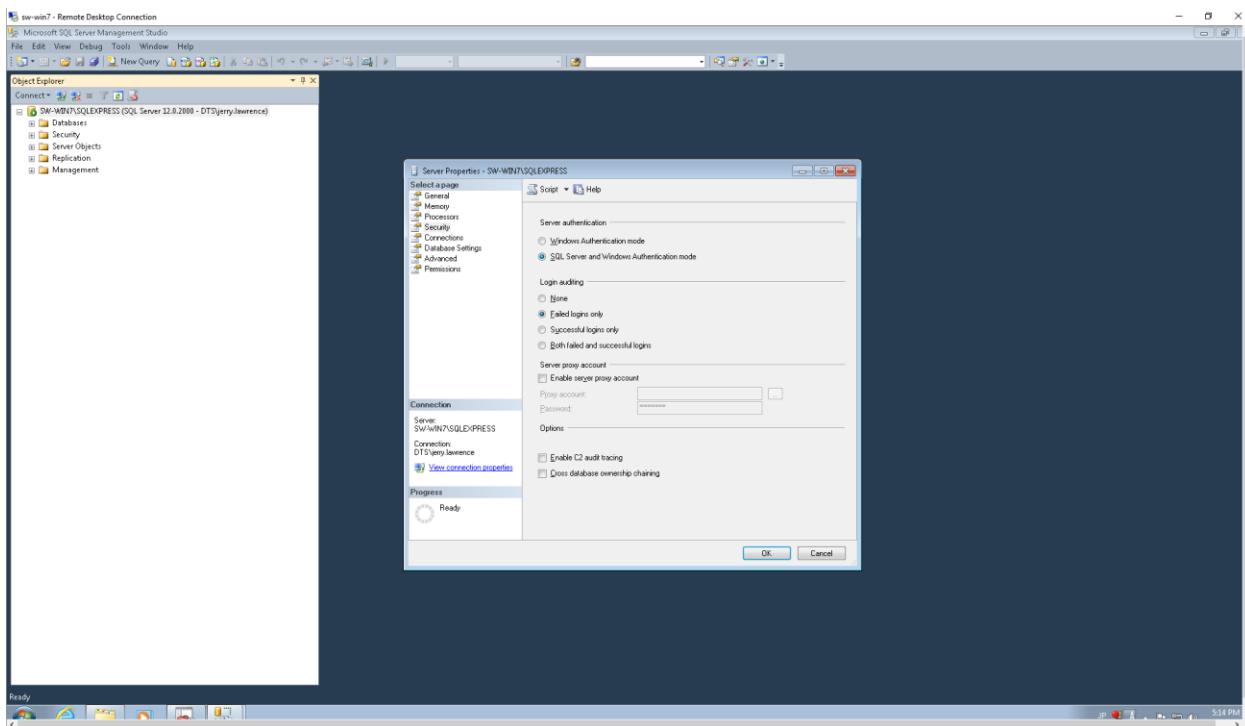
38. Run SQL Server Management Studio:



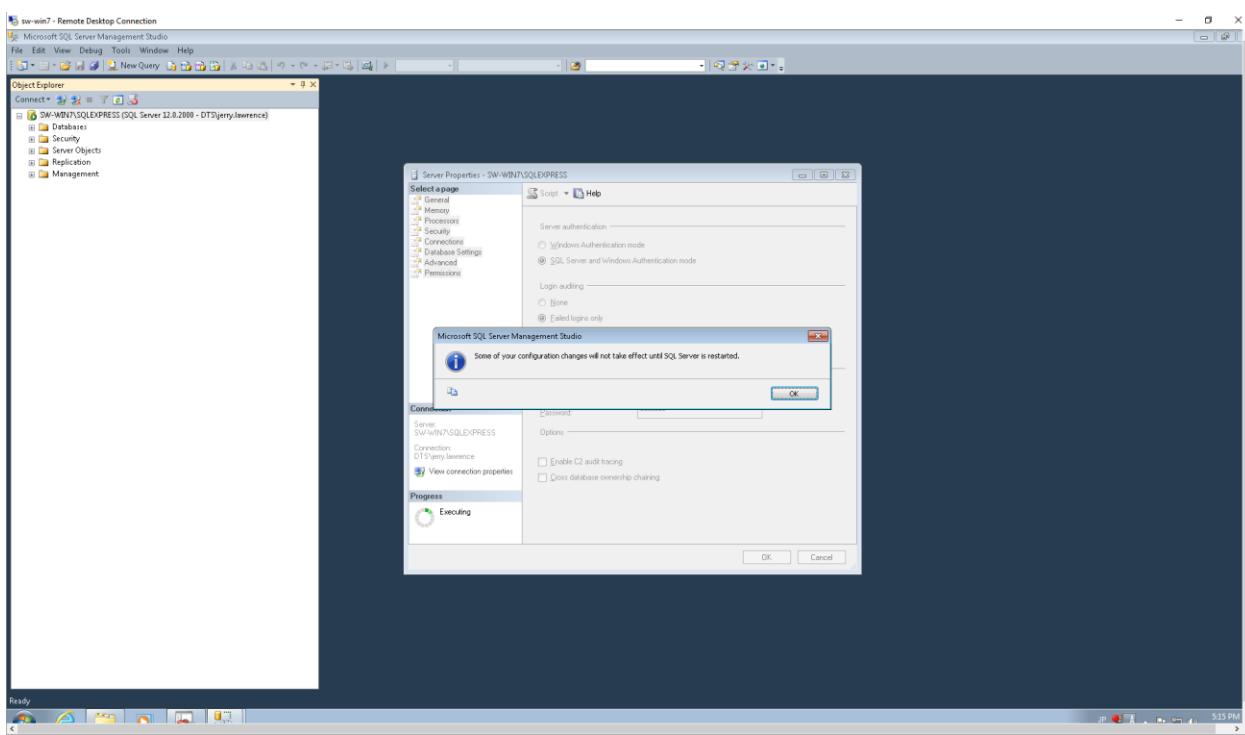
39. Set “Server name” to “<your host name>\SQLEXPRESS”, then click “Connect”:



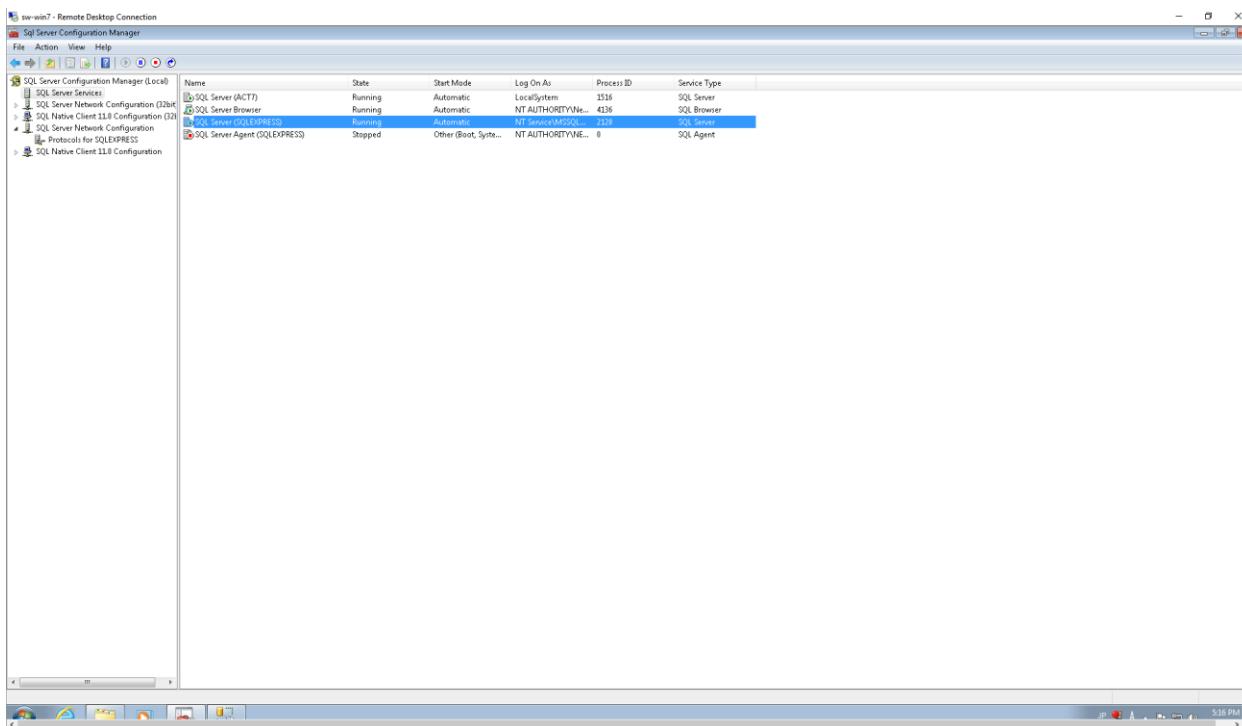
40. Right-click on the top-most level of the tree and select “Properties”. On the “Security” page, select “SQL Server and Windows Authentication mode” then click “OK”:



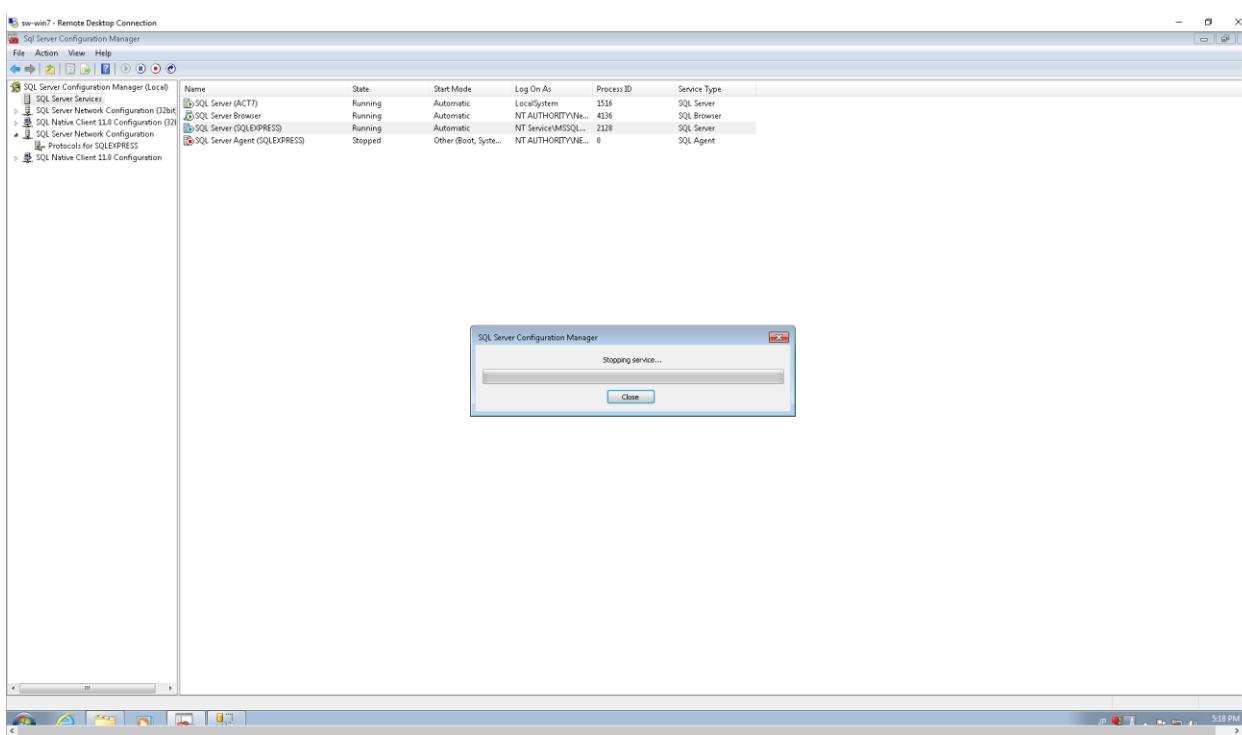
41. Click “OK”:



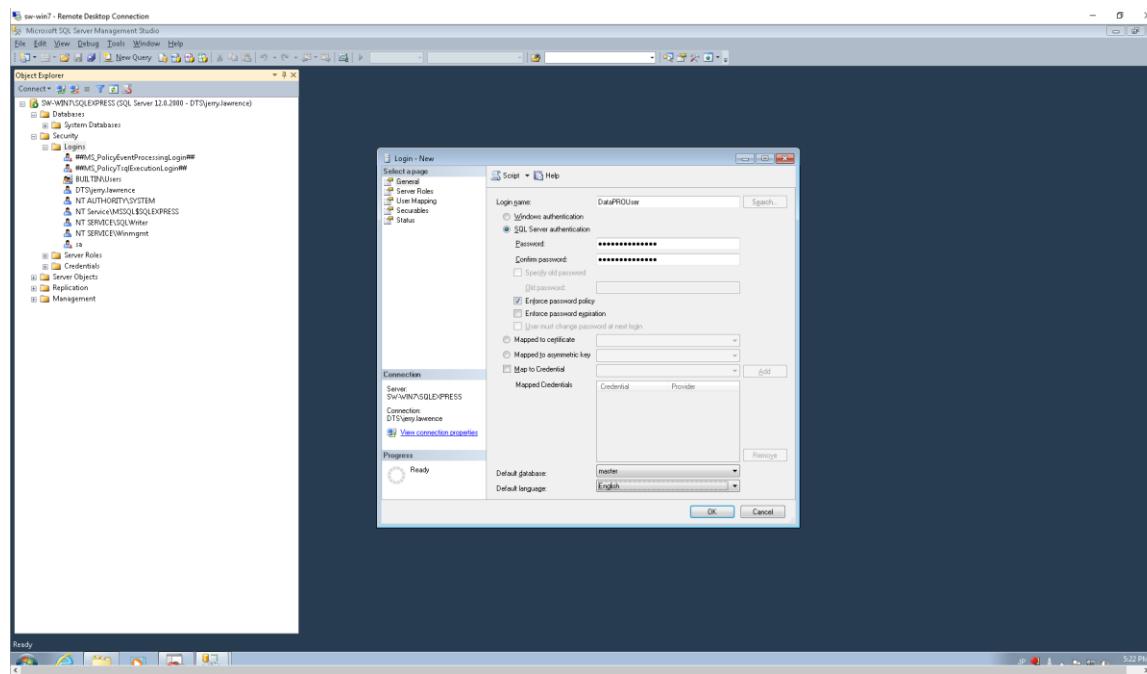
42. Go back to Sql Server Configuration Manager, select “SQL Server Services”, right-click on “SQL Server (SQLEXPRESS)” then click “Restart”:



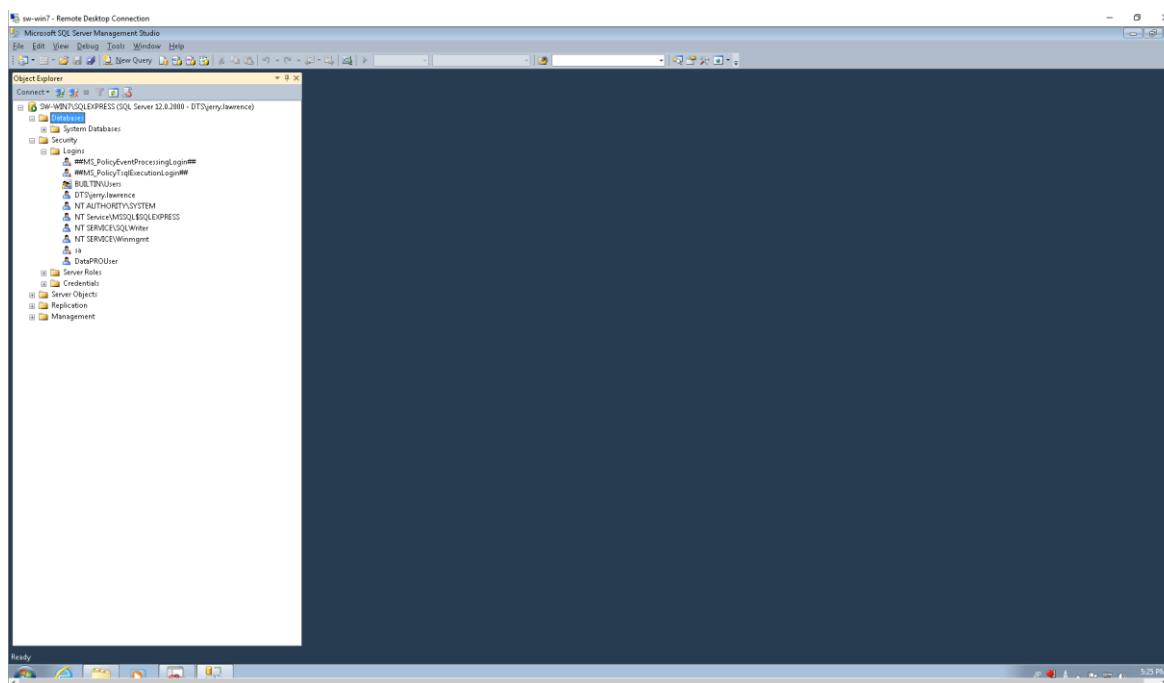
43. Wait...



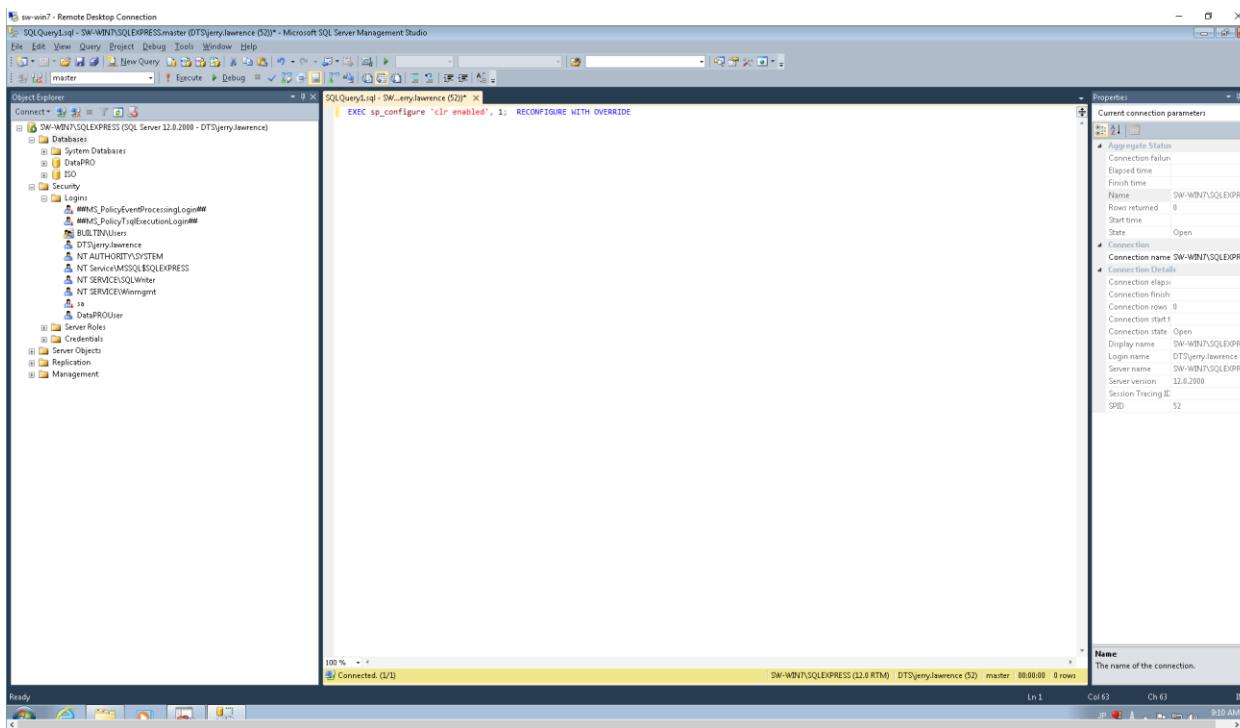
44. Go back to SQL Server Management Studio, right-click on Security | Logins and select “New Login...”:



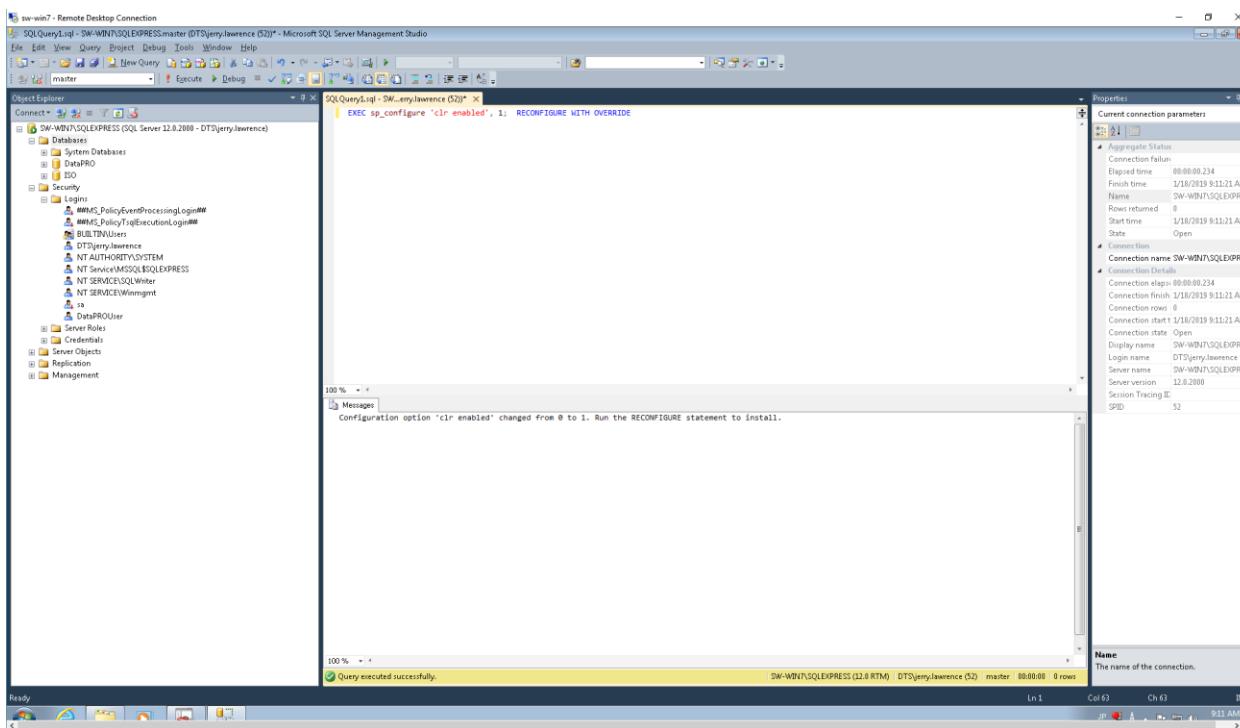
45. Enter “DataPROUser” in the “Login name” field, select “SQL Server authentication”, enter “DTSSealBeachHQ” in the “Password” and “Confirm password” fields (this is arbitrary and can be changed to match the contents of the “LocalDBPassword” setting in the “DataPRO.exe.config” file that is installed as part of the DataPRO installation), then click “OK”.



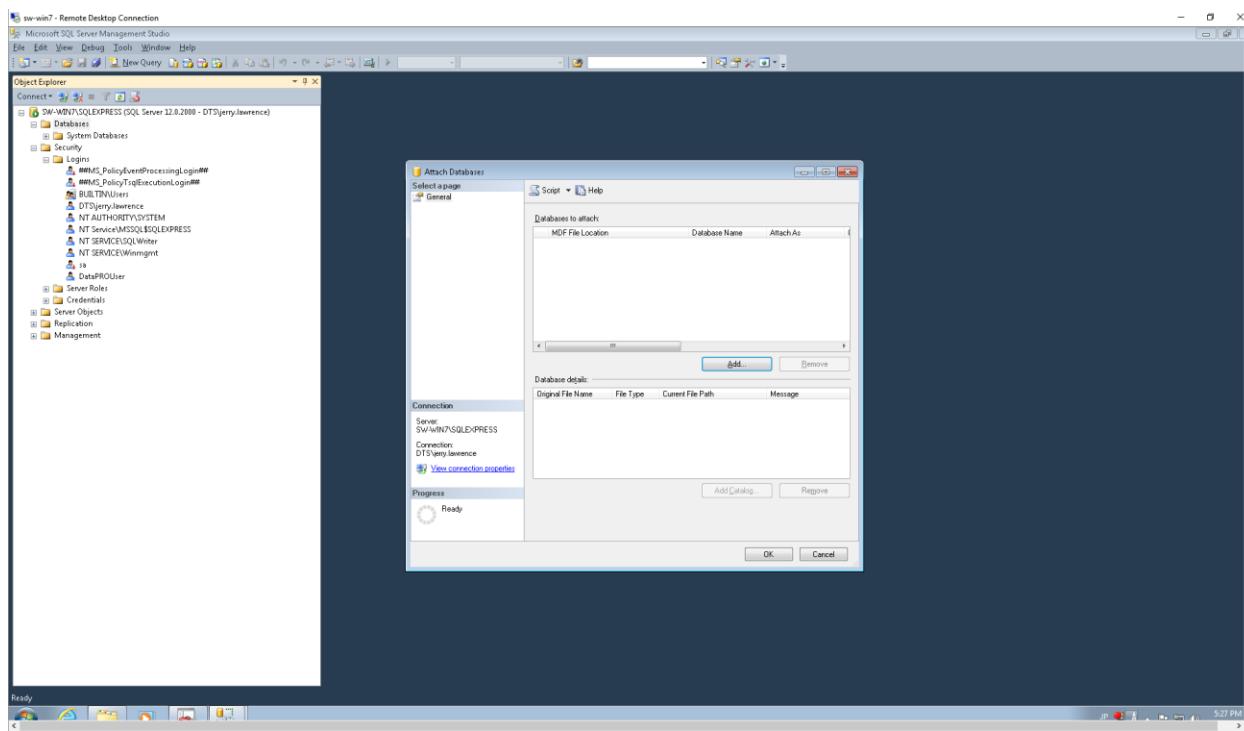
46. Click “New Query” to open a query window, enter “EXEC sp_configure ‘clr enabled’, 1; RECONFIGURE WITH OVERRIDE” and click “! Execute”:



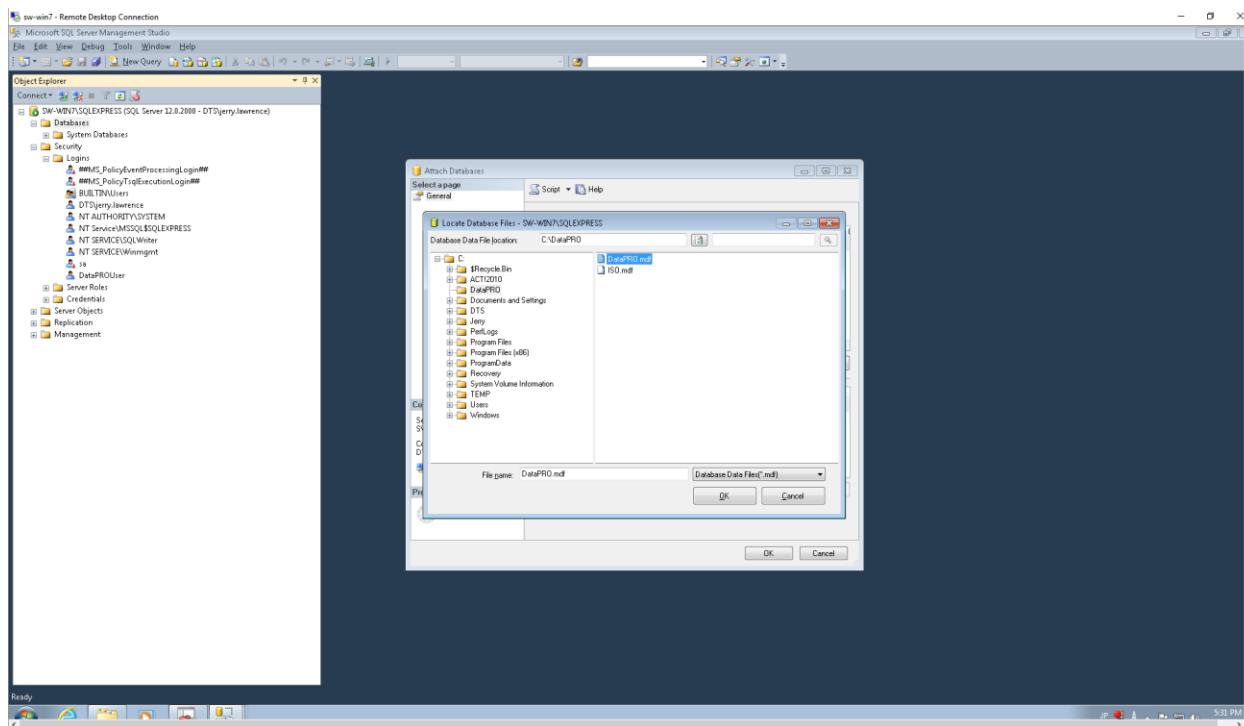
47. Note the successful response:



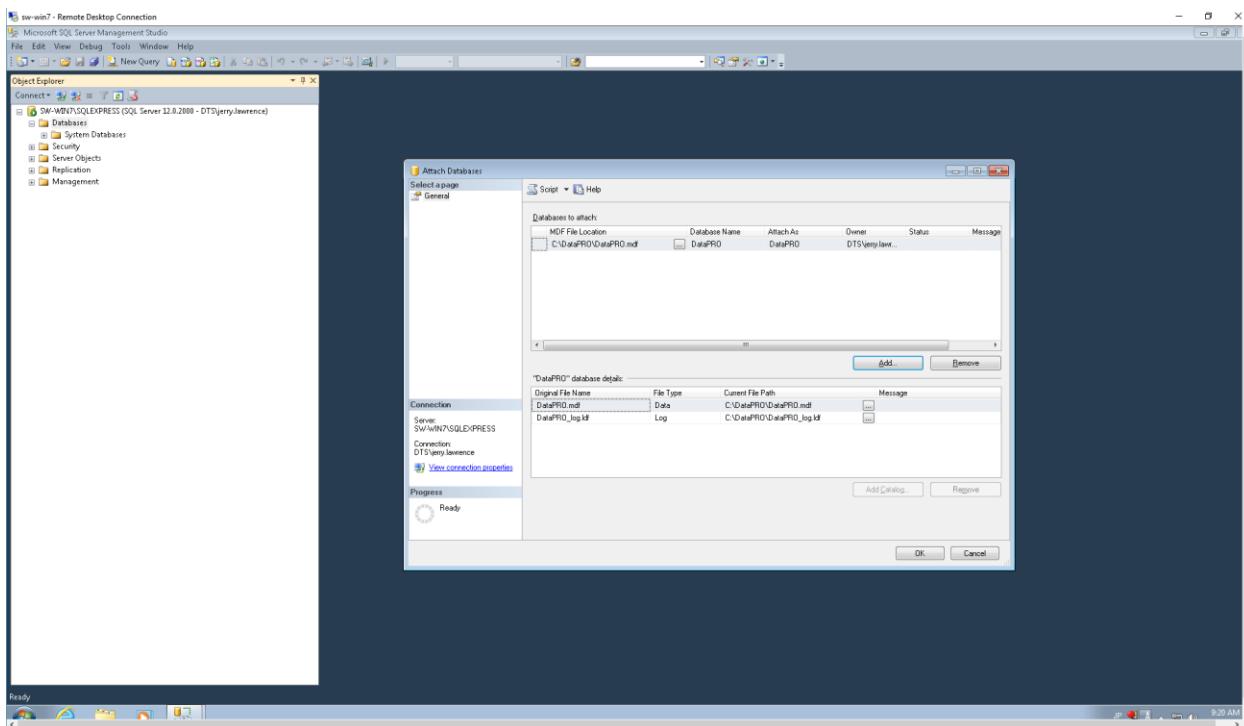
48. After DataPRO has been installed on a client system, copy the “DataPRO.mdf”, “DataPRO_log.ldf”, “ISO.mdf” and “ISO_log.ldf” files to the server, then right-click “Databases” and select “Attach...”:



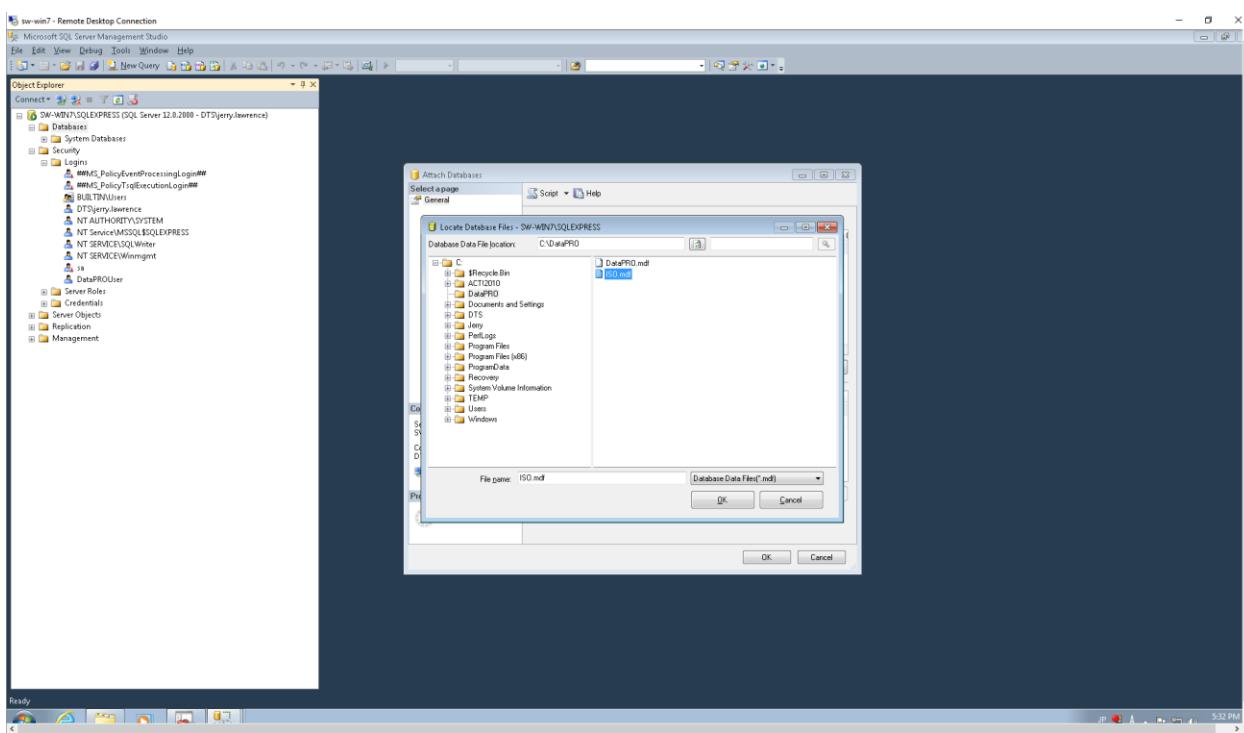
49. Click “Add...”:



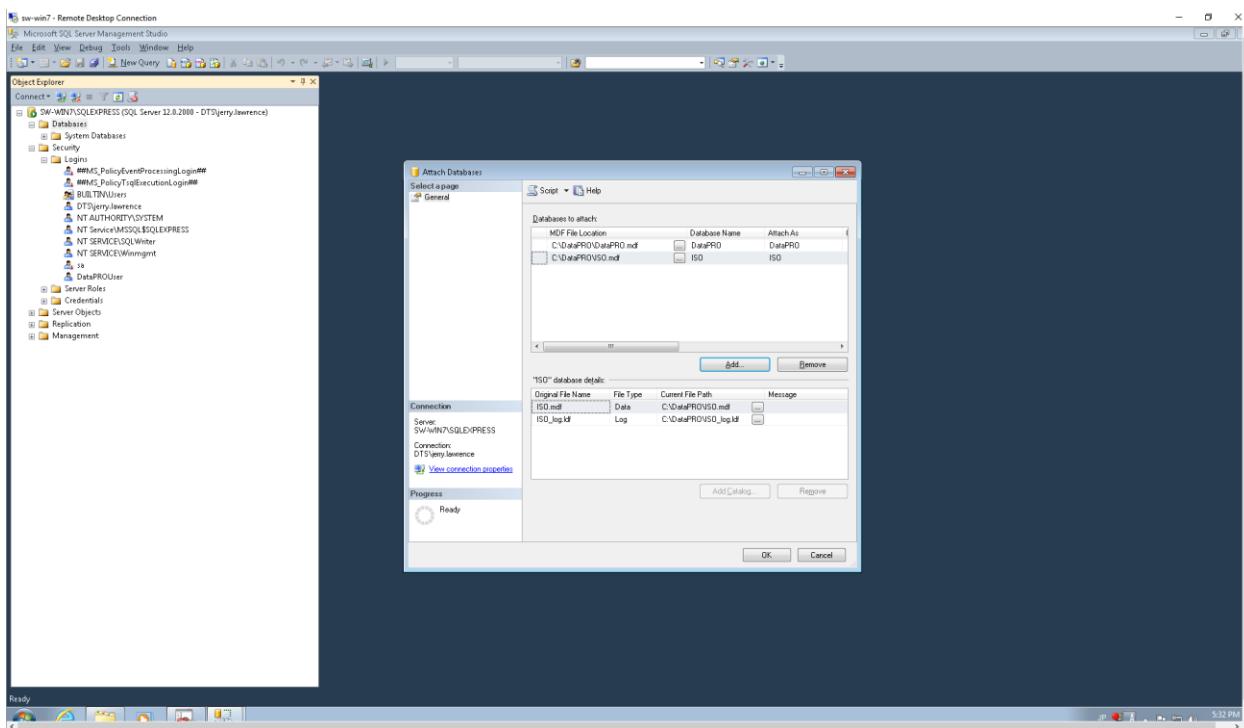
50. Browse to the folder where the .mdf/.ldf files were copied, select “DataPRO.mdf” and click “OK”:



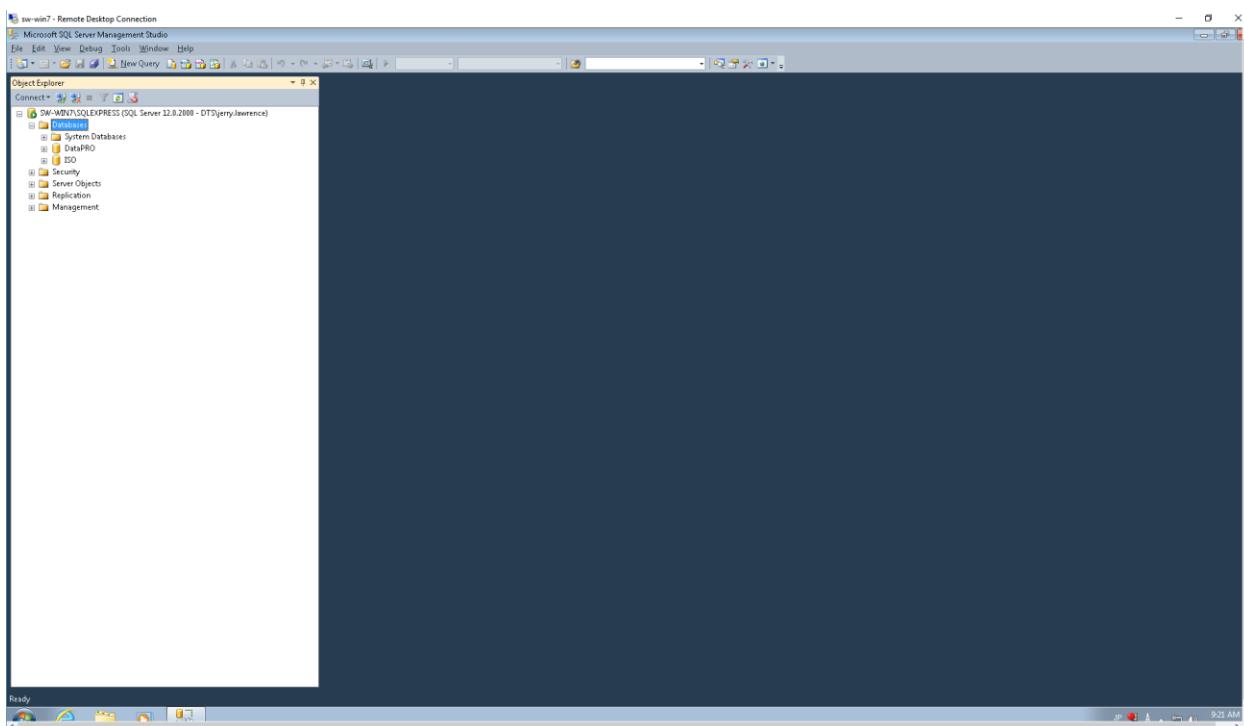
51. Click “Add...”:



52. Select “ISO.mdf” and click “OK”:



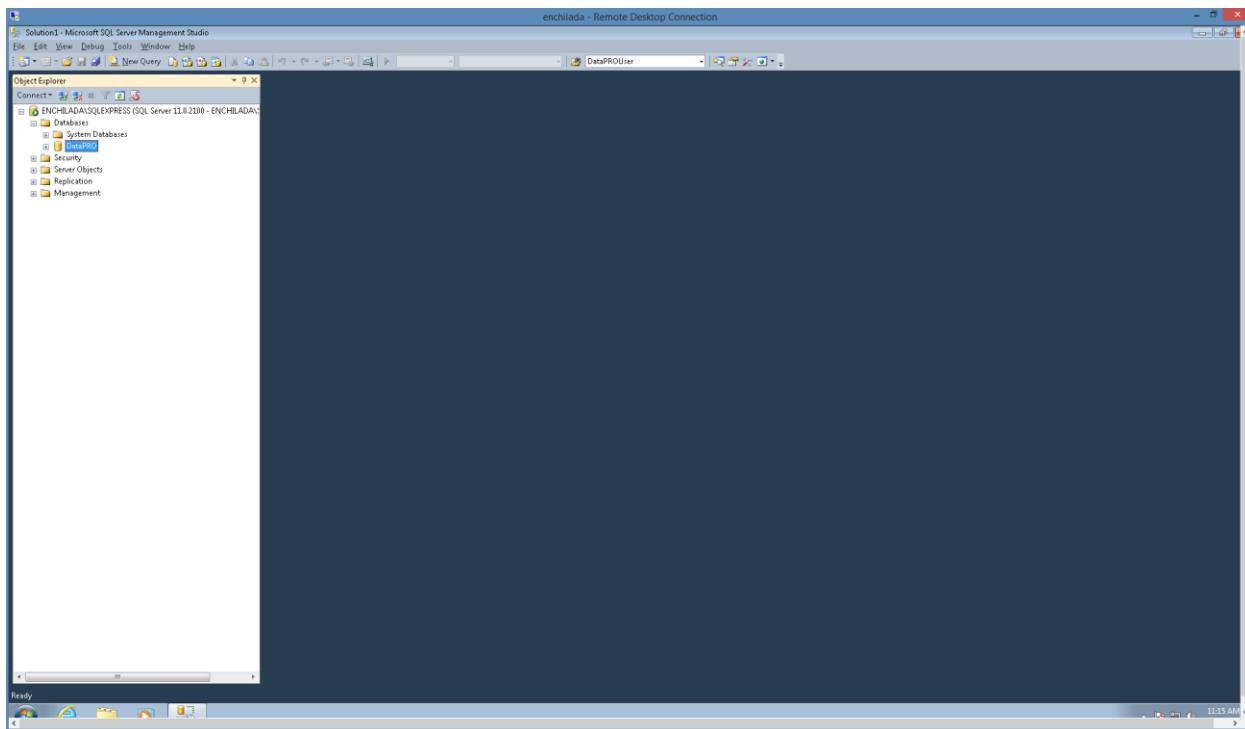
53. Click “OK”:



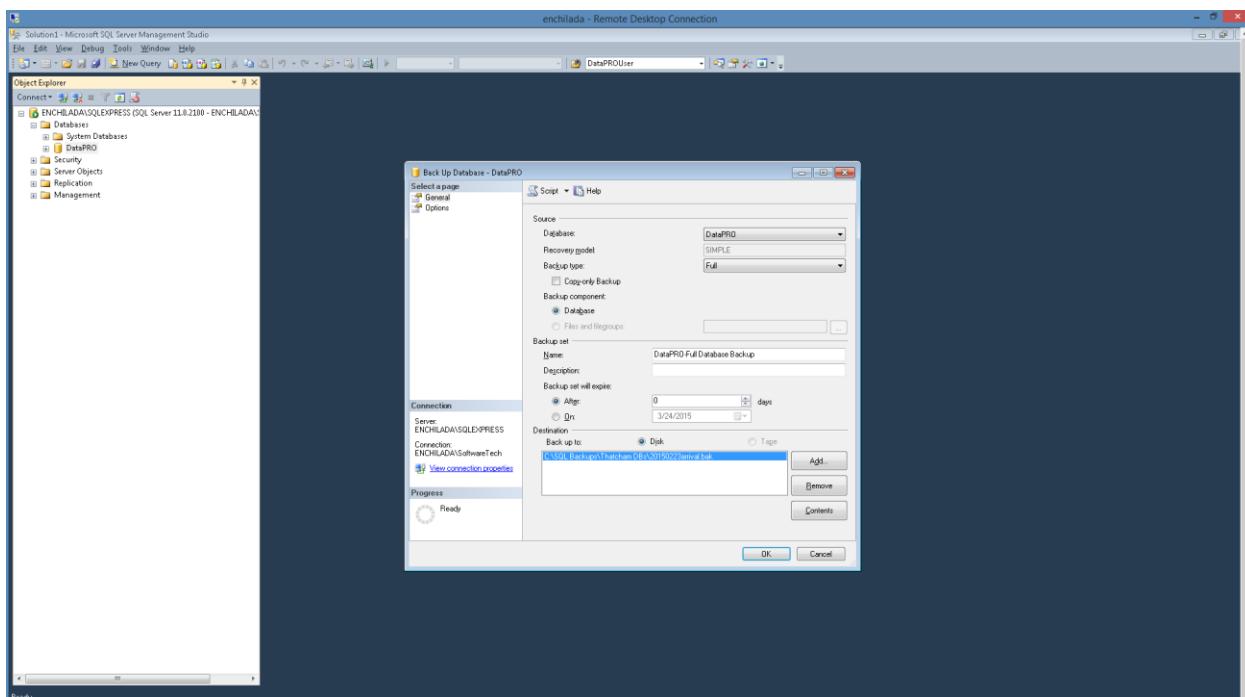
54. Note the “DataPRO” and “ISO” databases under “Databases”.

How to Backup the Centralized (SQL Server) DataPRO Database

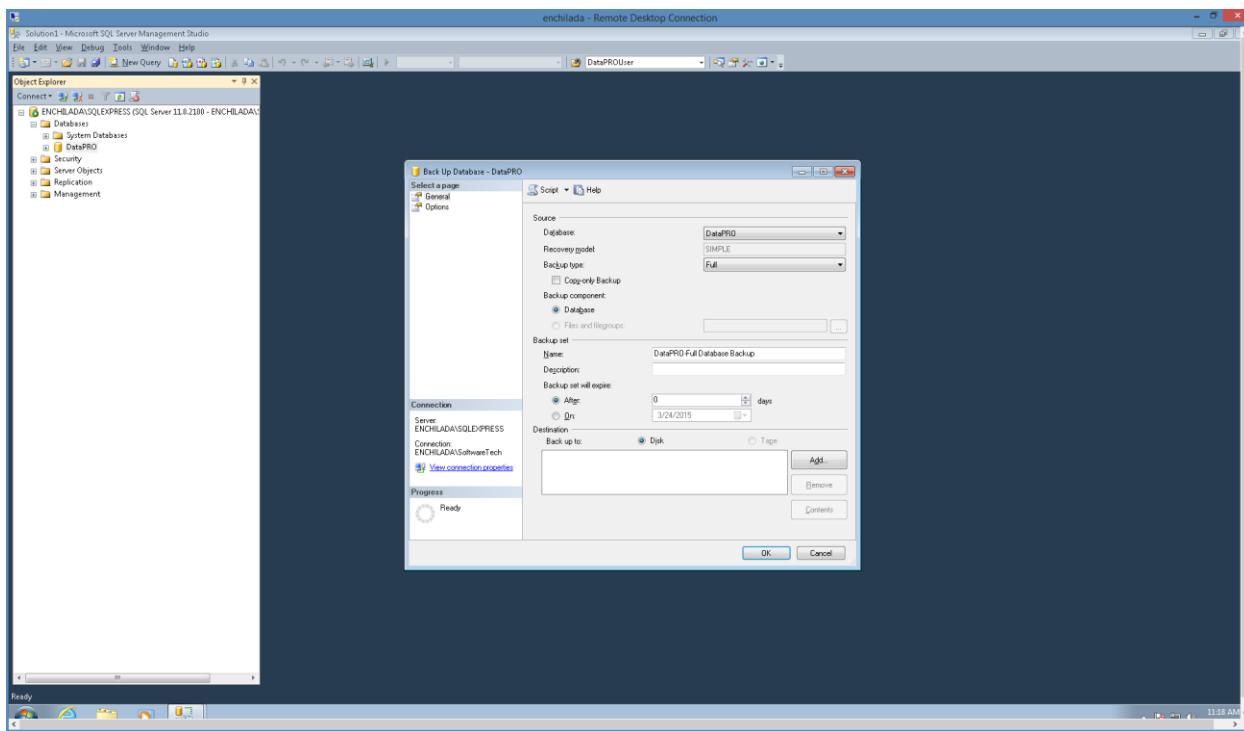
1. In SQL Server Management Studio, right-click on “DataPRO”:



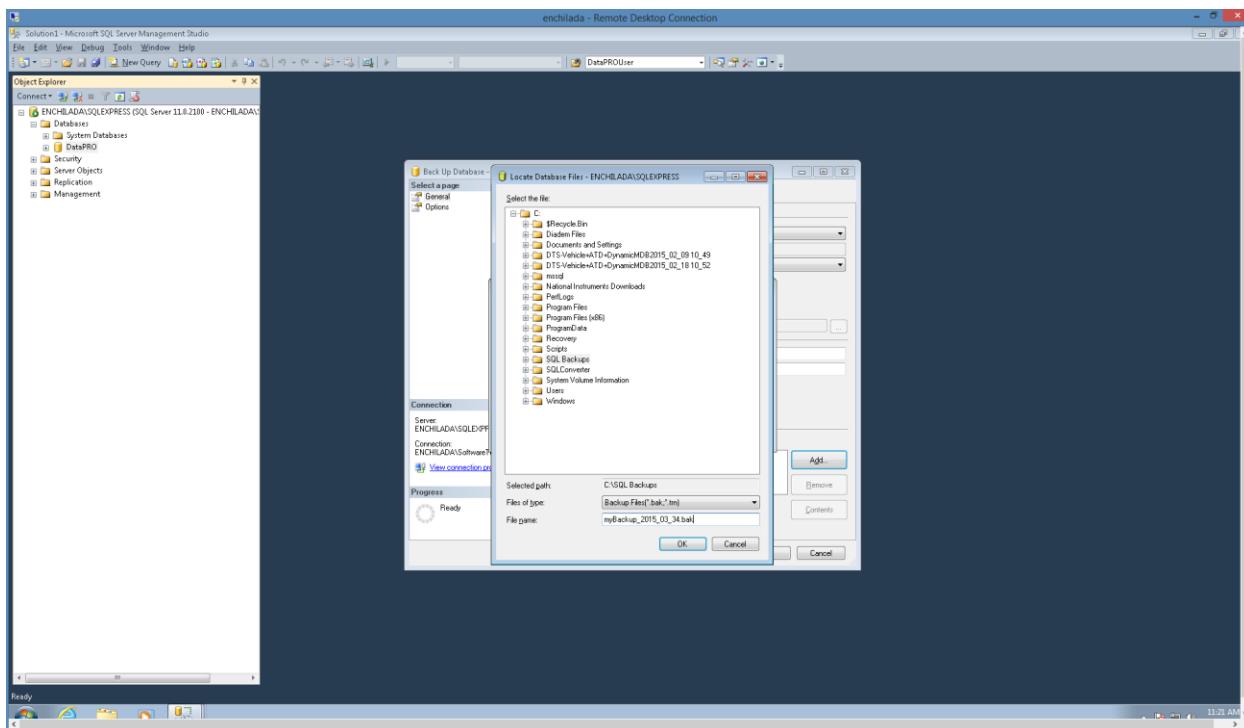
2. Select “Tasks”, “Backup...”:



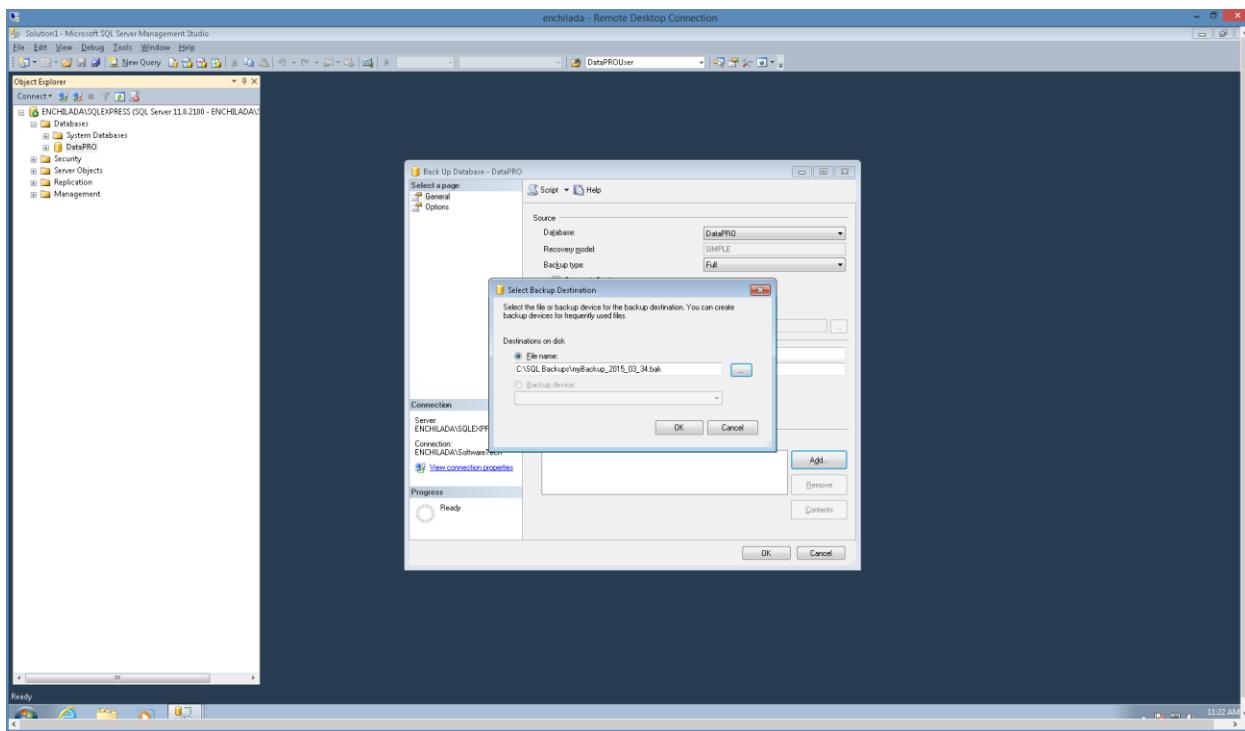
3. Select “Remove” to delete the file name in the “Destination” box:



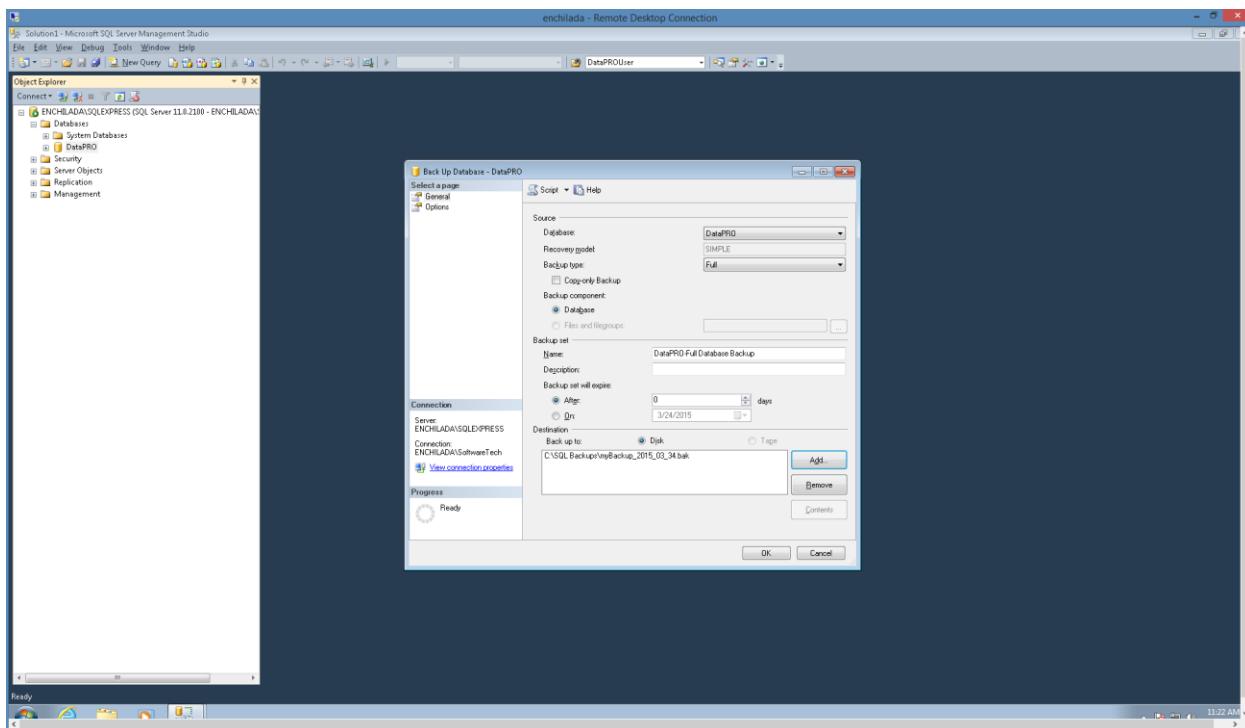
4. Select “Add...”, then browse to your desired location:



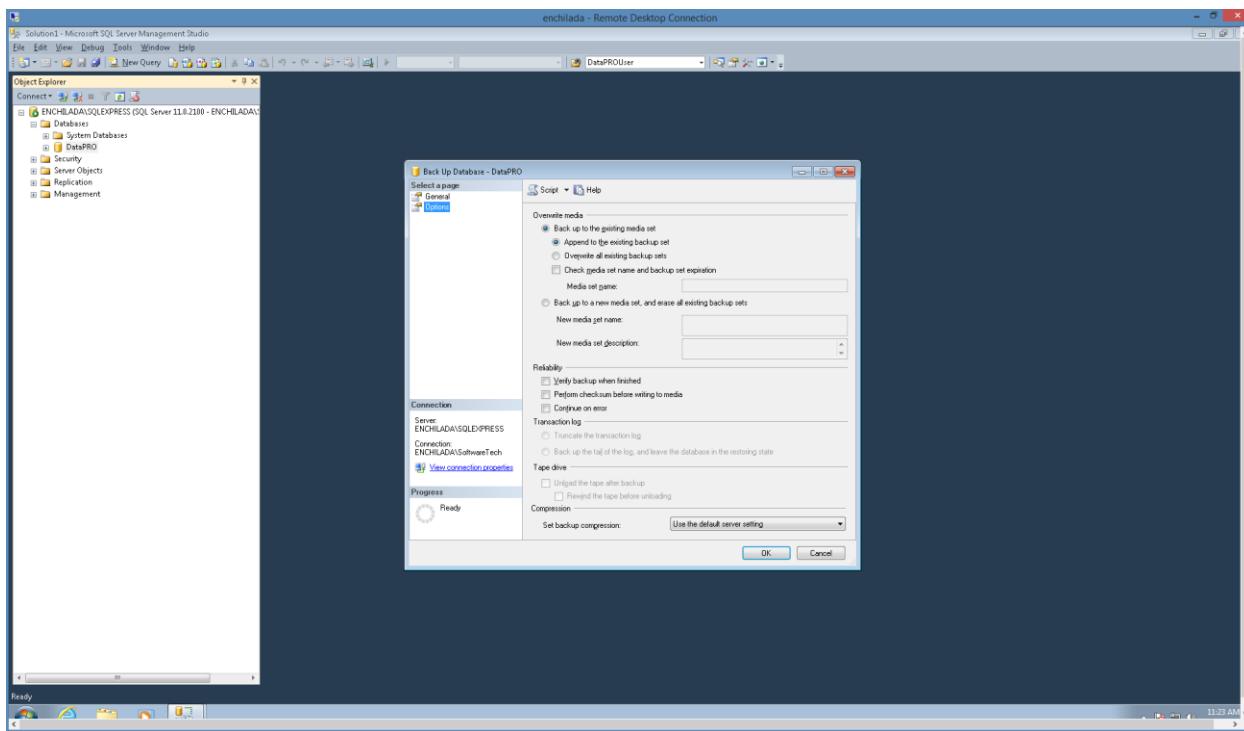
5. Enter your file name and select “OK”:



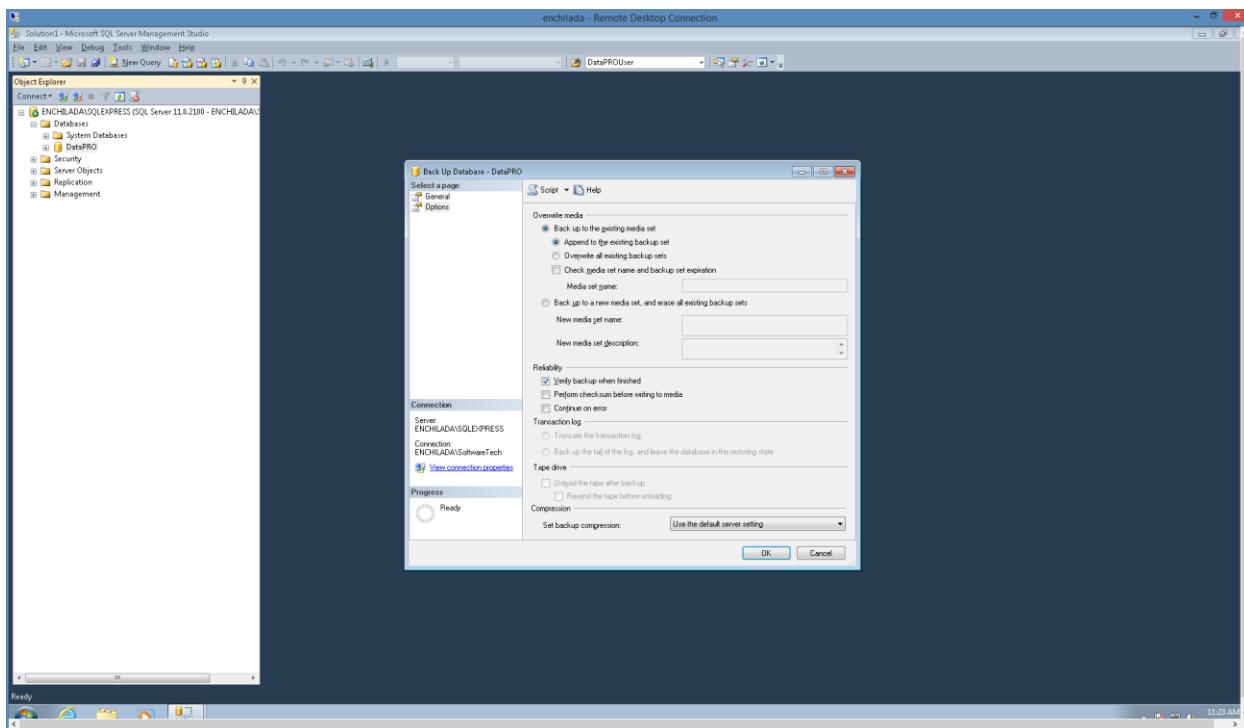
6. Select “OK” again:



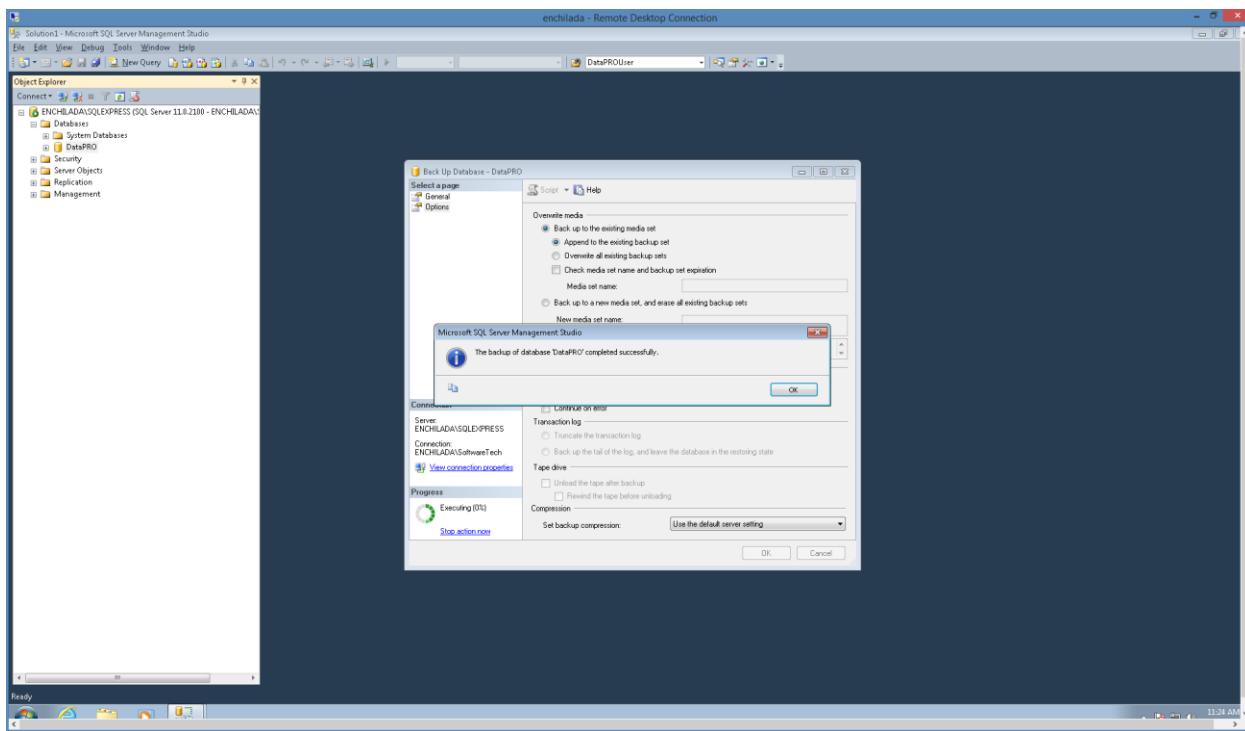
7. In the “Select a page” pane, select “Options”:



8. Check the “Verify backup when finished” box and select “OK”:

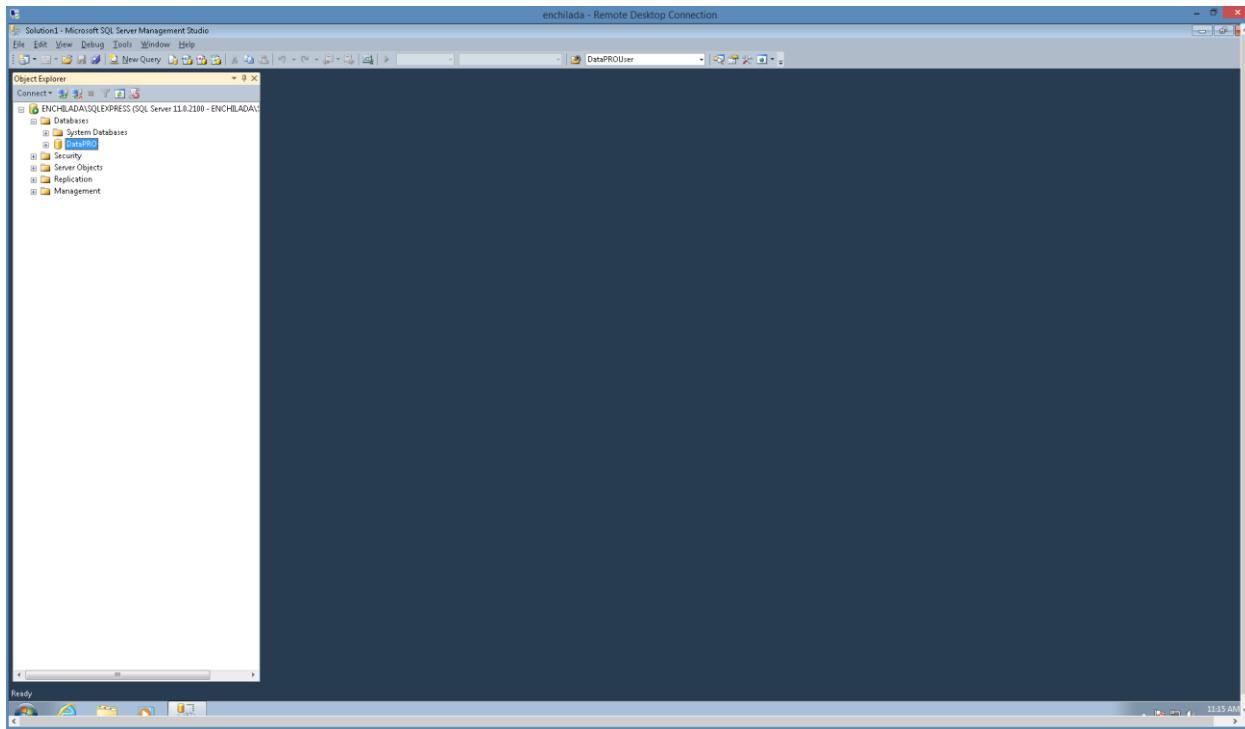


9. Select “OK”:

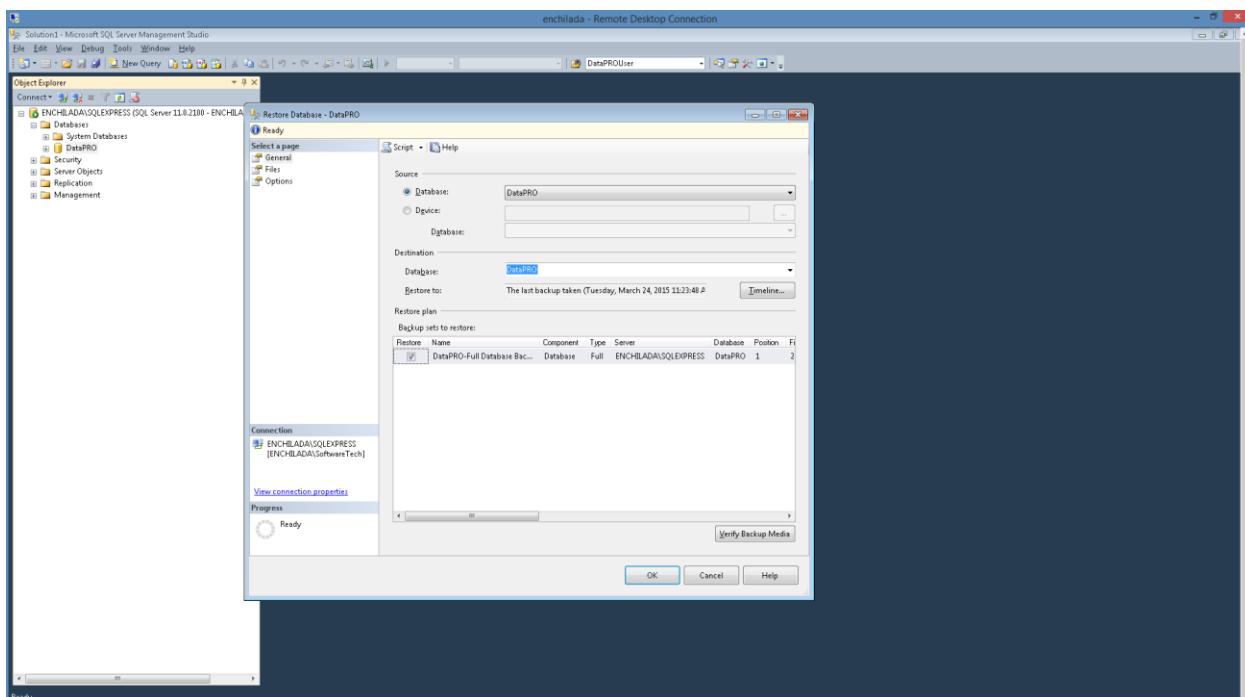


How to Restore the Centralized (SQL Server) DataPRO Database

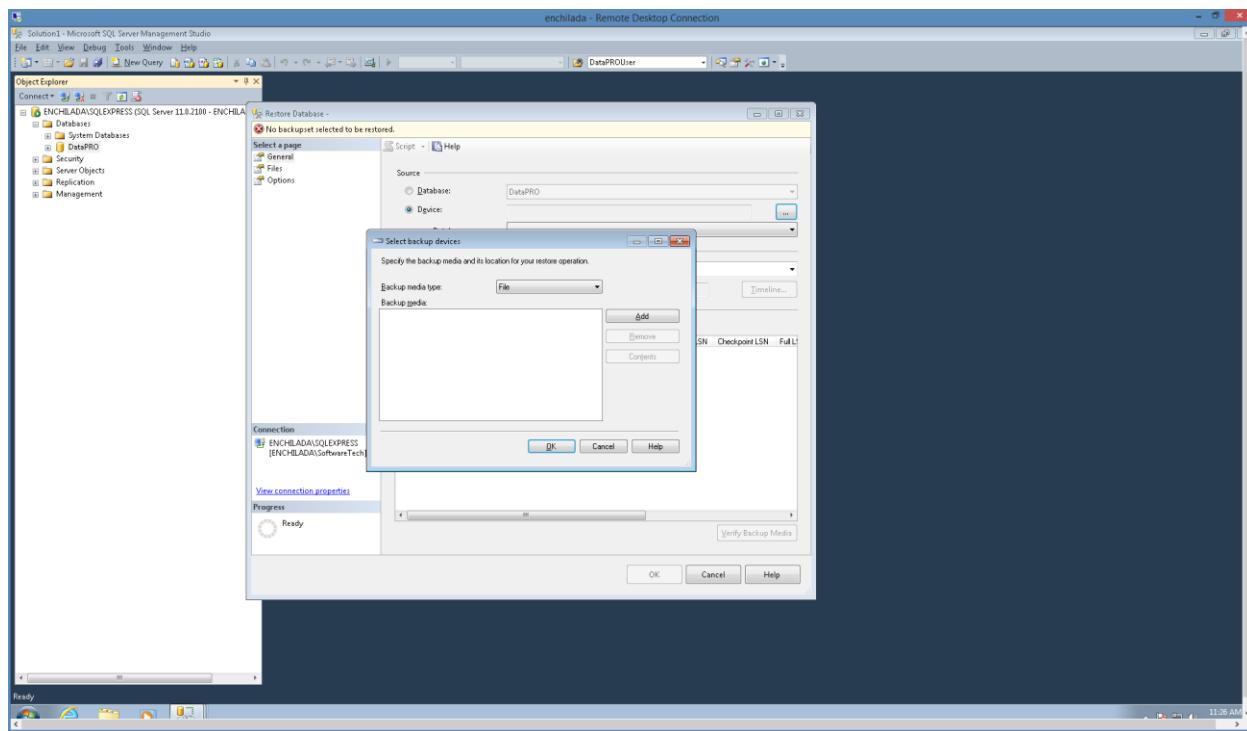
1. In SQL Server Management Studio, right-click “DataPRO”:



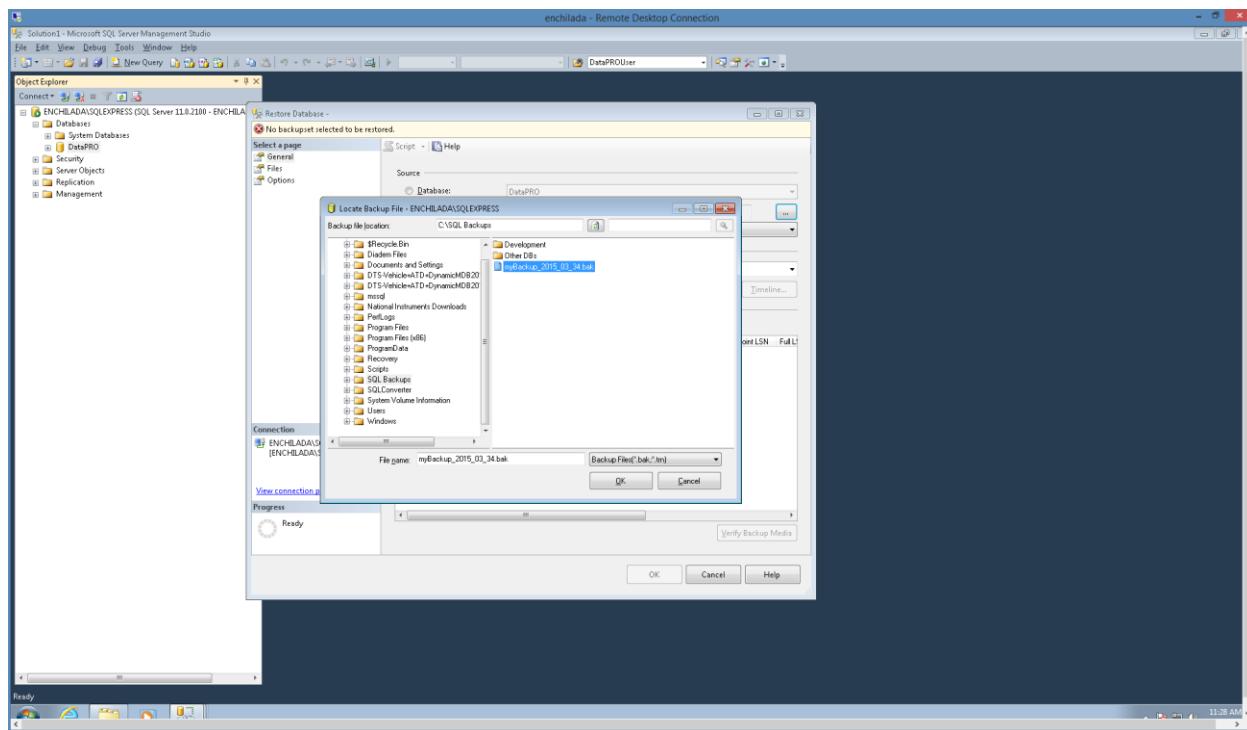
2. Select “Tasks”, “Restore”, “Database...”:



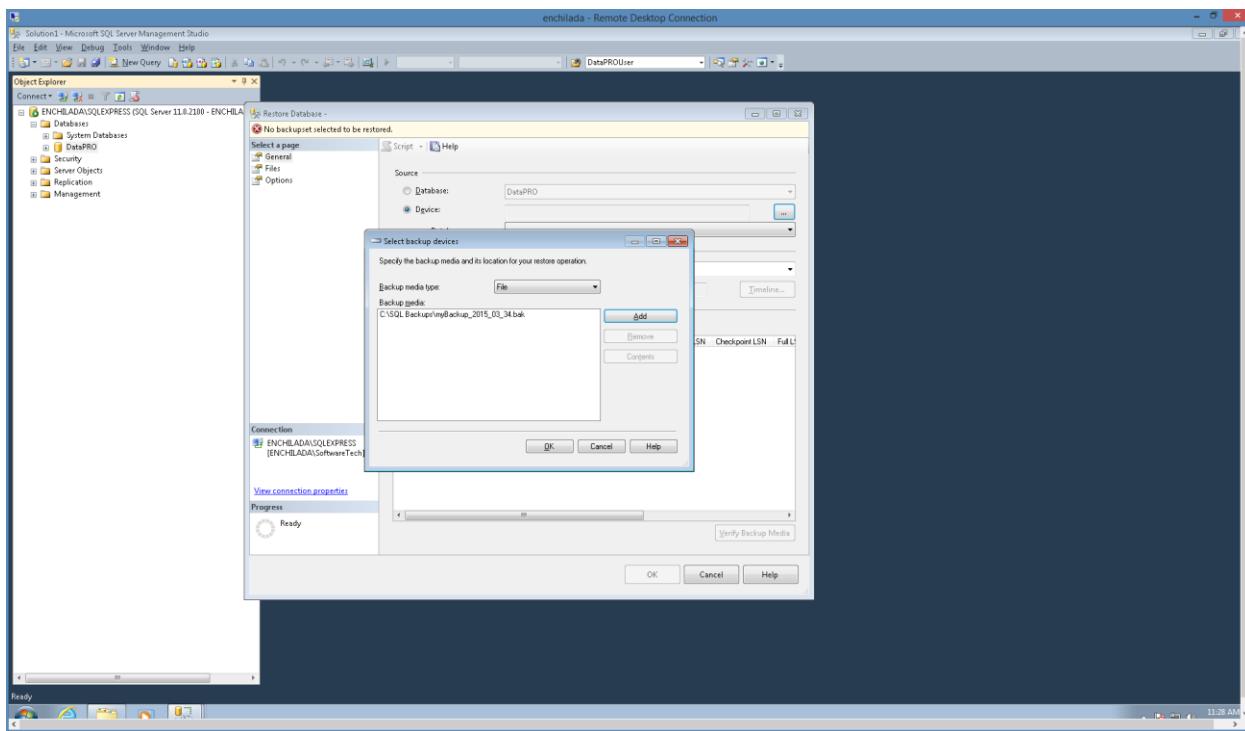
3. In the “Source” box, select “Device” and then the Browse ellipsis:



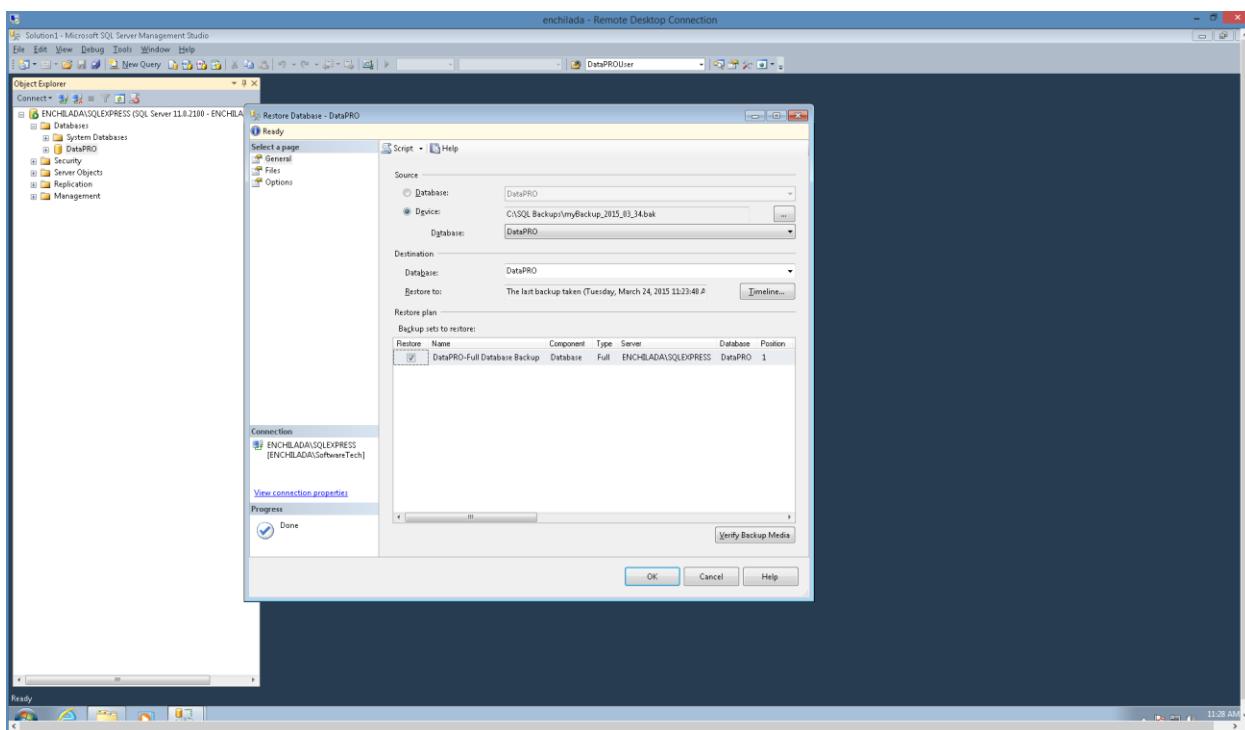
4. Select “Add” and browse to the backup file that you want to be used for the Restore:



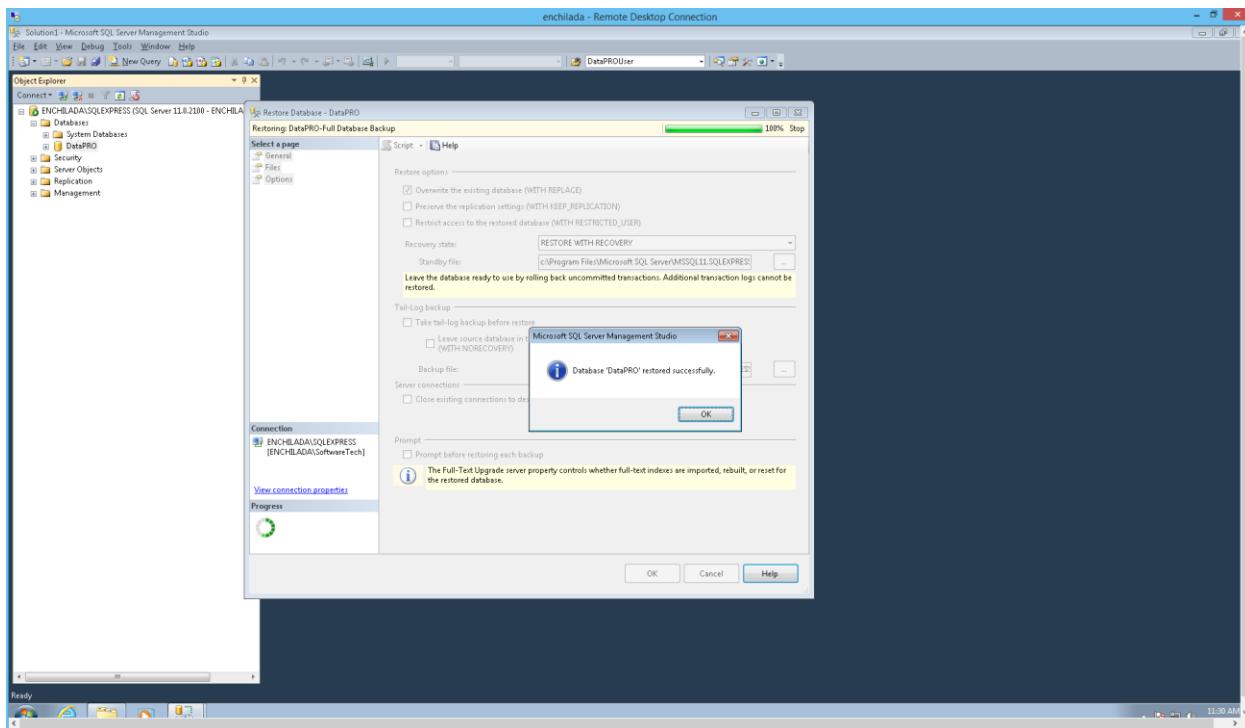
5. Select “OK”:



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”:



Instructions for 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\DTSSuite\<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 resolved 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).

Then, to create the initial, blank DataPRO database, run *DataPROCreationScript_3.0.sql* in SQL Server Management Studio. This script can be found in your *C:\DTS\DTSSuite\<version>\SQL Server Scripts* folder.

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.

Appendix I: Setting up SLICE6 AIR

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 will be outlined here, followed by instructions for setting up and running a SLICE6 AIR Streaming test.

DataPRO.exe.config Settings

- a. “AllowStreaming” setting in *DataPRO.exe.config* file must be set to True for streaming applications.

```
<setting name="AllowStreaming" serializeAs="String">
  <value>True</value>
</setting>
```

Hardware Settings

1. Each SLICE6 AIR has 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.
2. SLICE6 AIR units must have the latest Firmware installed in order to have access to all features of SLICE6 AIR.

DataPRO Settings

1. “Enable input and output clock options” should be enabled.
 - a. Found in System Settings tab -> Test Options 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.
2. “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. 4GB of data storage will be available for analog data and 4GB of data storage will be available for UART data.
 - c. UART data will be downloaded and stored as .bin files with analog data.
3. Select the appropriate UDP Stream Profile from the dropdown options.
 - a. Found in System Settings tab -> Test Setup Defaults navstep -> Realtime.
4. Set the appropriate UDP Stream Time Channel ID.
 - a. Found in System Settings tab -> Test Setup Defaults navstep -> Realtime.
5. Set the appropriate UDP Stream Data Channel ID.
 - a. Found in System Settings tab -> Test Setup Defaults navstep -> Realtime.
6. UDP Stream TmNS Config
 - a. This is currently an editable value in DataPRO, but it will either be hidden or just a displayed value.

7. IRIG Time Data Packet Interval (ms)

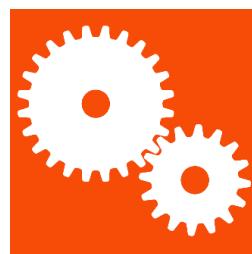
- a. Found in System Settings tab -> Test Setup Defaults navstep -> Realtime.
- b. Defines the delay in milliseconds between sending time data packets.

Configuring a SLICE6 AIR Test Setup

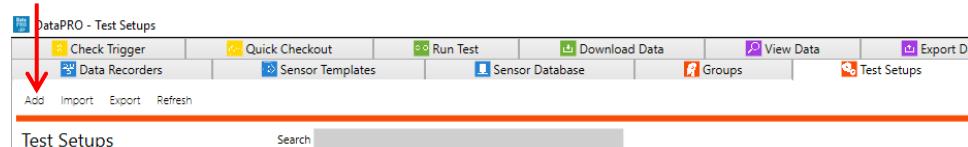
Test Setups are collections of measurement channels, hardware and recording parameters used for data collection. Test Setups can contain existing predefined “Groups” or dynamic groups; random collections of measurement locations and sensors. Each Test Setup can be used for multiple data collection events. (See *Groups: Add, Import, Edit, Delete, Copy*, page 38, 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 48, and *Run Test*, page 85.

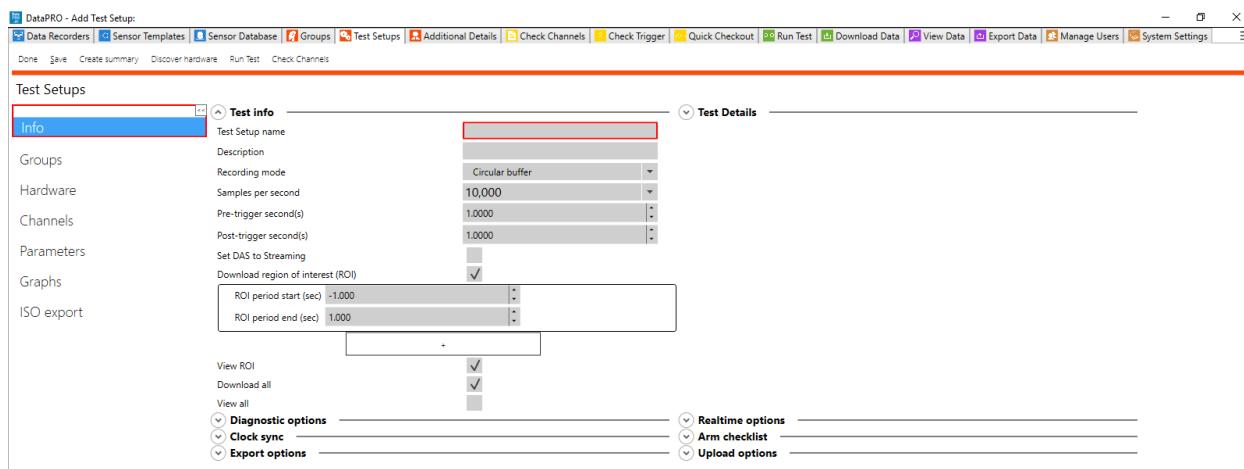
1. Select the “Test Setups” tab:



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



3. The **Info** navstep contains the test parameters. All fields in red must be completed:



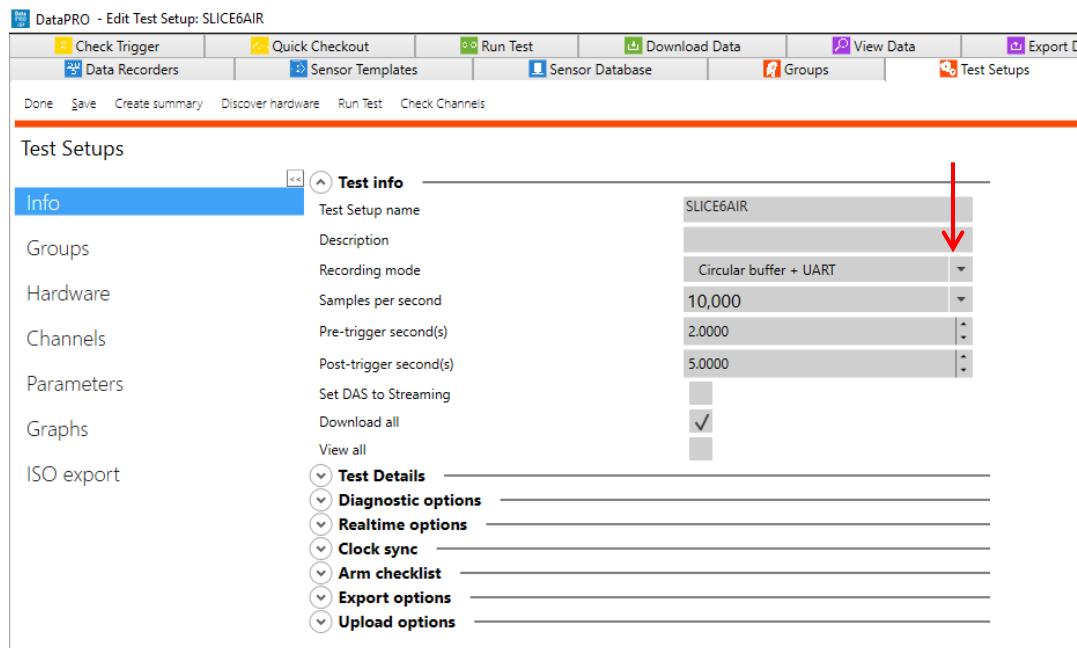
- The default settings for test parameters can be set in the System Settings tab (See [System Settings](#), page 122).

NOTE: *Level triggers and Calculated channels are optional navsteps that must be enabled in System Settings, page 122.*

- Use the arrows to expand/collapse each section menu.

Record In Place with Analog and UART data

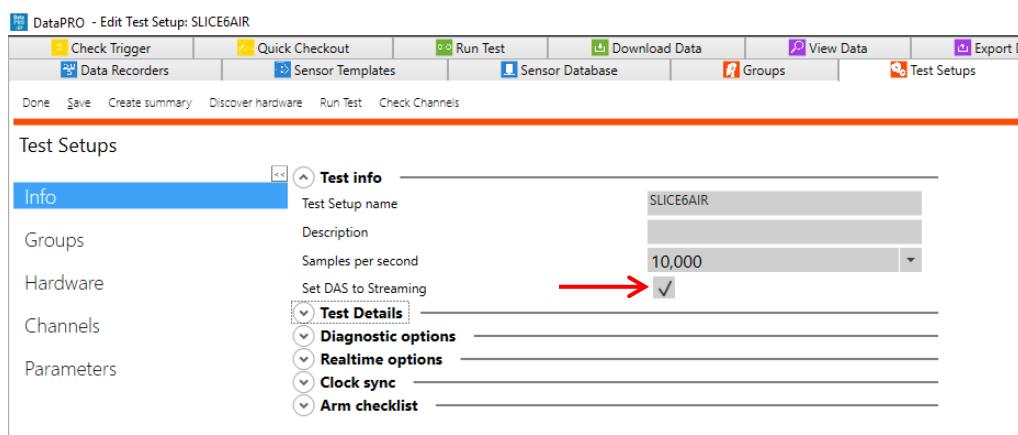
4. If recording analog and UART data, select Recording Mode from dropdown:



- 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 will be available for analog data and half will be available for UART.
 - iii. Download ROI is not available.
 - iv. In Streaming mode, Sample Rate is limited to 30,000 samples per second (sps) or lower (UART Baud Rate needs to be set before. See [TestSetupDefaults](#), page 127, for more information).
 - v. 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:



- a. Ensure “AllowStreaming” is set to true in *DataPRO.exe.config* file.
- b. Download/View ROI and All and Export Data options are not available with streaming applications.

NOTE: All DAS in test must be SLICE6 AIR in order to configure Test Setup for streaming.

5. Configure Clock Sync options:

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:
 - vi. None
 - vii. IRIG

- viii. GPS
- ix. 1PPS
- x. IRIG + 1PPS
- xi. GPS + 1PPS

- b. Select Clock Master Output from dropdown:
- xii. None
- xiii. PTP: If PTP is selected, select PT Type/Mode:
 - 1. E2E
 - 2. P2P
- c. Select Clock Slave Input type:
- xiv. None
- xv. PTP: If PTP is selected, select PTP Type/Mode:
 - 1. E2E
 - 2. P2P

6. Select Hardware navstep to define SLICE6 AIR unit to act as Clock Master:

The screenshot shows the DataPRO software interface with the title bar "DataPRO - Edit Test Setup: SLICE6AIR (modified) - [SLICE6AIR]". The menu bar includes 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, and Check Channels. Below the menu is a toolbar with Done, Save, Create summary, Discover hardware, Run Test, and Check Channels buttons. The main area has tabs for Test Setups, Info, Groups, Hardware (which is selected), Channels, and Parameters. The Hardware table lists various units with columns for Serial Number, Type, Channels, Firmware, Max Sample Rate, Test Sample Rate, Clock Master? (with a red arrow pointing to it), Cal Date, and Cal D. Units listed include S6A0041 (selected), S6A0047, SPD00999, SPE00150, and SPT00999.

Serial Number	Type	Channels	Firmware	Max Sample Rate	Test Sample Rate	Clock Master?	Cal Date	Cal D
8A51253	SLICE+	15 Analog	B1F4	200,000			4/29/2019	4/28/
<input checked="" type="checkbox"/> S6A0041	SLICE 6 AIR	6 Analog	00A1	400,000	10,000		10/10/2019	10/9/
<input checked="" type="checkbox"/> S6A0047	SLICE 6 AIR	6 Analog	G015	400,000	10,000	<input checked="" type="checkbox"/>	4/7/2016	4/7/20
SPD00999	SLICE PRO DIM	18 Digital input	A1J4	600,000			5/15/2019	5/14/
SPE00150	SLICE Ethernet Controller	18 Analog,4 Squib,8 Digital out	B0B3	600,000			4/7/2016	4/7/20
SPT00999	SLICE PRO TOM	4 Squib,8 Digital out	D0D7	600,000				

NOTE: See the [IEEE 1588 - 2008 Standard](#) for more information on Precision Clock Synchronization Protocol.

NOTE: Continue steps in Prepare: [Test Setups](#), page 48, 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 48, or [System Settings](#), page 122, for more information).

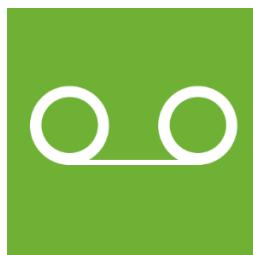
The steps and images below are for a Streaming test, where data is not stored on the internal flash memory of the DAS. For information on using SLICE6 AIR DAS in a Record In Place test, see [Run Test](#), page 85.

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 85, 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:

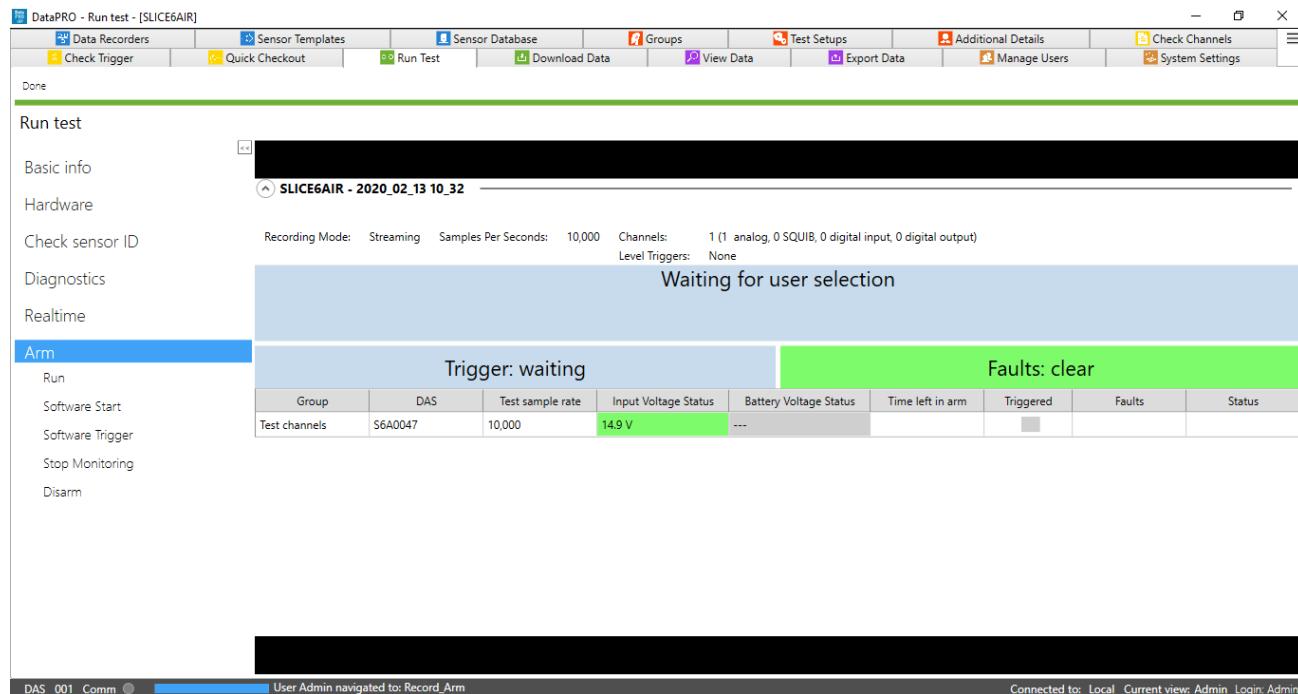
2. Continue to the **Hardware** navstep. DataPRO will attempt to communicate with the hardware associated with the active Test Setup.
 - a. If needed, select Run to re-run the Hardware navstep and reattempt hardware connection.

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 122, 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 71, 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 163, 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 71, 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.

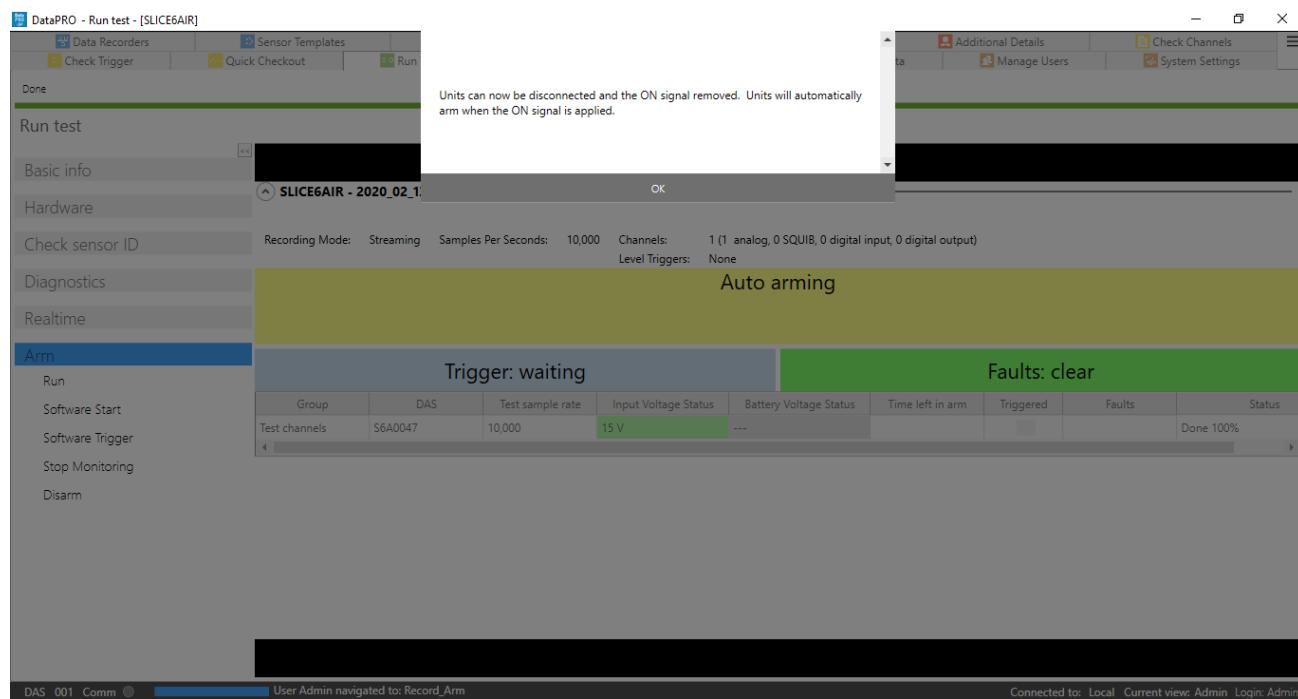
8. Continue to the Arm navstep:



- Confirm Test Setup, Test ID, recording mode and parameters, channel count, group(s) and associated DAS.
- Verify Input Voltage.
- System status displays.
 - “Waiting for user selection”: Select Run to arm the system.
 - “Trigger: waiting” indicates that a trigger has not been received.
 - “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.
- After cycling power/removing and reapplying the ON signal, both LEDs should be solid green to indicate SLICE6 AIR is actively streaming data.

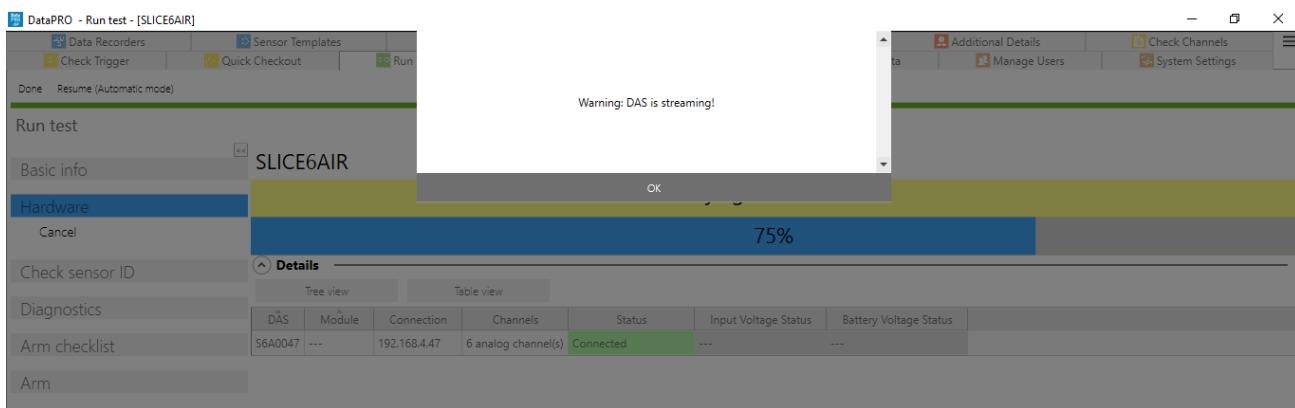
NOTE: *Streaming data can now be viewed with a third-party viewer. See that manufacturer's documentation for configuring the display.*

10. Select Done to return to previous location.

11. 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.*

- On reconnecting the DAS, start a new Run Test instance with the appropriate active Test Setup.
- 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:

Group	DAS	Test sample rate	Input Voltage Status	Battery Voltage Status	Time left in arm	Triggered	Faults	Status
S6A0047	10,000	15 V	---					Streaming - active

- d. DAS will no longer be streaming data and can be re-configured for another test.

Revision History

Rev	Date	By	Description
5	7 April 2020	JC/MR	Updates for v3.0
4	3 April 2019 28 May 2019	JC EK	Updates for v2.0.
3	6 June 2018	JC	Updates for v1.9.
2	2 Oct 2017	JC	Updates for v1.4.
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.
0	10 Dec 2015	EK/TR	Initial release.