DATAQ INSTRUMENTS
The way PC-based instrumentation should be

DI-2108-P

8-Channel High Speed USB Data Acquisition System with Programmable Gain

User's Manual

Manual Revision G

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DATAQ INSTRUMENTS

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1. Introduction

This manual contains information designed to familiarize you with the features and functions of the DI-2108-P USB data acquisition system.

Features

The **DI-2108-P** data acquisition instrument is a portable data recording module that communicates through your computer's USB port. Power is derived from the interface port so no external power is required. Features include:

- 8 fixed differential analog inputs protected to ±150V (transient).
- Free WinDaq/Lite data acquisition recording software. Records up to four channels of data. Purchase an unlock code to record more than four channels.
- 7 digital ports protected to +25V.
- 16-bit measurement resolution
- Programmable measurement ranges of ±2.5, ±5, ±10, 0-5, and 0-10 Volts.
- Up to 160 kHz maximum throughput sampling rate.
- A push-button to tag remote events in WINDAQ software.
- LED indication for easy notification of device status.
- Counter channel for counter/timer applications up to 65,536 points.
- Frequency/Rate channel measuring 10Hz to 50kHz.
- ChannelStretch™ Technology allows you to sync up to 16 units with a total throughput of 480kHz or more .
- Included .Net Class supports programming the DI-2108-P under any .Net programming language.*
- Fully documented instrument protocol for programming the device in operating systems other than Windows.*

Analog Inputs

The DI-2108-P features eight differential channel inputs located on a single sixteen-position screw terminal block for easy connection and operation. Measurement ranges of ±2.5, ±5, ±10, 0-5, or 0-10 Volts are programmable on a per channel basis. Analog channels are protected to ±150 V dc or peak ac.

Digital I/O

The DI-2108-P contains seven digital ports, that may be used individually as a general-purpose digital input or for a specific function as designated on the device. Digital port D0 may be used for WinDaq Events; Digital port D1 may be used for WinDaq remote Start/Stop; Digital port D2 may be used for rate measurements; Digital port D3 may be used for counts; Digital ports D4-D6 are general purpose digital input port. Please Note: Digital outputs are not supported in WinDaq software. Each port may be configured as a switch using third-party software.

Software

All software required to record and playback waveforms is included with the purchase of any DI-2108-P data acquisition system.

WinDaq Dashboard

The WinDaq Dashboard utility allows you to start WinDaq software, configure and start stand-alone data logging, and set the instrument clock to your PC. Units available for synchronized recording using ChannelStretch™ are shown in compatible blocks of devices.

WINDAQ® Recording and Playback Software

WINDAQ Acquisition and WINDAQ Waveform Browser allow you to record and playback data acquired through your instrument. WINDAQ software is an invaluable resource to record and analyze your data and is available for free from our web site (www.dataq.com).

WINDAQ Lite Data Acquisition software (free) can be used to record waveforms directly and continuously to disk while monitoring a real time display of the waveforms on-screen. It operates, displays, and records up to four channels in real time. An optional unlock code is available to record the rest of the channels on the device or to allow you to sync multiple units.

WINDAQ Waveform Browser playback software (also known as "WWB") offers an easy way to review and analyze acquired waveforms. A built-in data file translator allows the user to display multiple waveforms acquired by WINDAQ Acquisition software or any of a wide range of data acquisition packages. The software's disk-streaming design allows data files of any length to be graphically displayed rapidly, in normal or reverse time directions. Seven standard cursor-based measurements, frequency domain, and statistical analysis functions help simplify waveform analysis and interpretation. WINDAQ Waveform Browser is free and installed when installing WINDAQ Software.

Help

All WINDAQ software utilizes context-sensitive help. Help may be accessed through the Help menu or by pressing the F1 key with any pull-down menu item selected. This will take you directly to the Help topic most relevant to that particular function or feature. Help topics discuss in detail each function available in the software.

2. Specifications

Analog Inputs

Number of Channels:	8
Channel Configuration:	Differential
Measurement range per channel:	Programmable ±2.5, ±5, ±10, 0-5, 0-10 Volts
Input impedance:	800 kΩ differential
DC accuracy:	±0.05% of range 25°C, excluding common mode error
Absolute maximum input without damage:	±150 V dc or peak ac (normal mode + common mode)
Common mode range:	±228 V dc or peak ac
Common mode rejection ratio: dc to 60 Hz 0Ω unbalanced	90 dB typical
Channel-to-channel crosstalk rejection:	110 dB typical

Digital Ports

Number of Ports:	7
Type:	MOSFET switch
Configuration:	Programmable as digital input or switch
Pull-up value:	4.7 kΩ
Input high voltage threshold:	2.4V
Input low voltage threshold:	0.8V
Absolute maximum applied voltage (V):	$0 \leq V \leq 25$ V

Reserved Digital Inputs

Port 1:	WINDAQ remote events
Port 2:	WINDAQ remote start/stop
Port 3:	Rate input
Port 4:	Count input

ADC Characteristics

Resolution:	16-bit
Resolution applied to measurements:	>15.6-bit
Max. sample throughput rate:	160 kHz throughput
Min. sample throughput rate:	Hardware: 1.831 kHz with WinDaq software: 0.305 Hz
Sample rate timing accuracy:	100 ppm (typical over 24 hours)

Digital Ports Programmed as Switch

Maximum drain voltage:	25V
Maximum sink current:	100 mA

Synchronized Performance

Number of synced units (PC-dependent):	16 units max; Throughput ≤ 480 kHz
Channel skew between any 2 units:	10 µS, typical
Setup constraints:	Syncs only with other model DI-2108-P instruments. Same number of enabled channels per synced unit (type does not matter) Same sample throughput rate per synced unit. All units connected to the same USB controller using one or more hubs.

Count/Rate

Digital port assignment:	Count: Port 2 configured as input Rate: Port 3 configured as input
Internal pull-up value:	4.7 kΩ
Input high voltage threshold:	2.4V
Input low voltage threshold:	0.8V
Terminal count:	65,535
Maximum rate frequency:	50 kHz (with total160 kHz burst rate)
Minimum rate frequency:	0.5 Hz
Maximum count frequency:	50 kHz

Removable Memory

Type:	MLC, pSLC, or SLC flash memory (with USB SD card reader); USB thumb drive
Required Format:	FAT32
Number of Channels:	1; Unlock code required to record 2 or more channels to thumb drive

Indicators and Connections

Interface:	USB 2.0 (mini-B style connector)
Indicator light:	Multi-color LED
USB A Connector (Drive):	USB drive for Stand-alone data logging Cannot be used concurrently with the USB interface
Input connections:	Two 16-position screw terminal strips

Power

Power Consumption:	<1.0 Watt, via USB interface

Environmental

Operating Temperature:	0°C to 50°C (32°F to 122°F)
Operating Humidity:	0 to 90% non-condensing
Storage Temperature:	-20°C to 60°C (-4°F to 140°F)
Storage Humidity:	0 to 90% non-condensing

Physical Characteristics

Enclosure:	Polycarbonate ABS, 0.080 inch thickness
Mounting:	Desktop; bulkhead
Dimensions:	6.68D × 3.28W × 1.13H in. (169.67D × 83.31W × 28.7H cm.)
Weight:	5.7 oz. (162 grams)

Software Support

WINDAQ software:	OS support: Check online at http://www.dataq.com/products/windaq/windows-compatability/
Programming:	Instrument Protocol, .NET class

3. Installation

The following items are included with each DI-2108-P USB Data Acquisition System. Verify that you have the following:

- A DI-2108-P USB data acquisition instrument.
- 6-foot USB cable.
- A DATAQ Instruments screwdriver for signal lead connections.
- A 32GB USB flash drive with WinDaq software and an NIST-traceable calibration certificate (.pdf). This drive can also be used for stand-alone data logging.

If an item is missing or damaged, call DATAQ Instruments at 330-668-1444. We will guide you through the appropriate steps for replacing missing or damaged items. Save the original packing material in the unlikely event that your unit must, for any reason, be sent back to DATAQ Instruments.

Install WINDAQ Software Suite

All software for the DI-2108-P can be installed via a download-able executable directly from the DATAQ Instruments web site. The software is also available on the provided USB flash drive.

1. Disconnect all DATAQ Instruments USB devices from your Computer.

2. Remove the USB flash drive from your device and connect it to your computer's USB port. Alternately download software at run.dataq.com.
3. Save the executable (Dataq Software Suite Web Setup.exe) to your local hard drive.
4. Double-click on the executable to extract the program and begin software installation.

5. Follow the on-screen prompts and enter all required information.

6. Software installation is complete - you will now see a “Successful Installation” box - click **OK** to exit WINDAQ Installation.

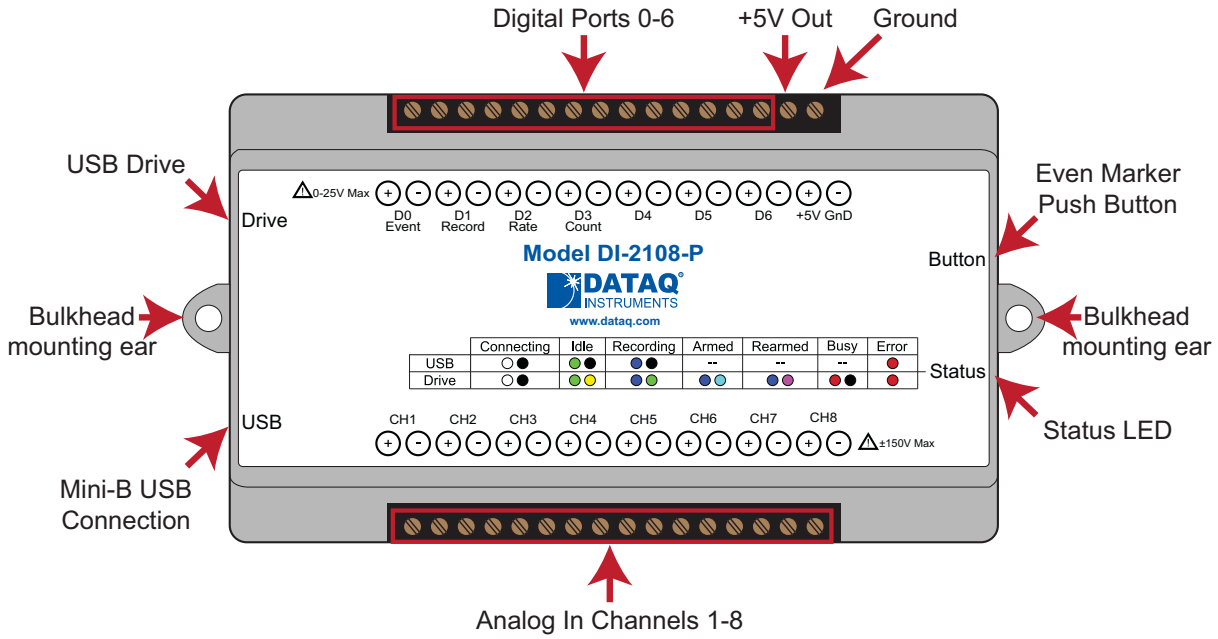
You can now plug the device(s) into your PC. Click on the “WinDaq Dashboard” shortcut to access WINDAQ software and stand-alone setup.

Connect the Instrument to Your Computer

DI-2108-P instruments can be connected to your computer’s USB port using the provided USB cable. No external power is required. Connect one end of the communications cable to the instrument port and the other to your PC’s port. WinDaq Dashboard will recognize your device and appear in the device list.

Note: *Use a powered USB hub or a USB port on your PC. Non-powered USB hubs may not have sufficient power to run the instrument.*

4. Controls, Indicators, and Connections



Mini-B USB Connection

Use the supplied USB cable to connect and power the instrument through your computer's USB port.

Screw Terminals

All input signal connections are made to the 16-port screw terminals. Each terminal is labeled on the instrument case.

⚠ CAUTION ⚠

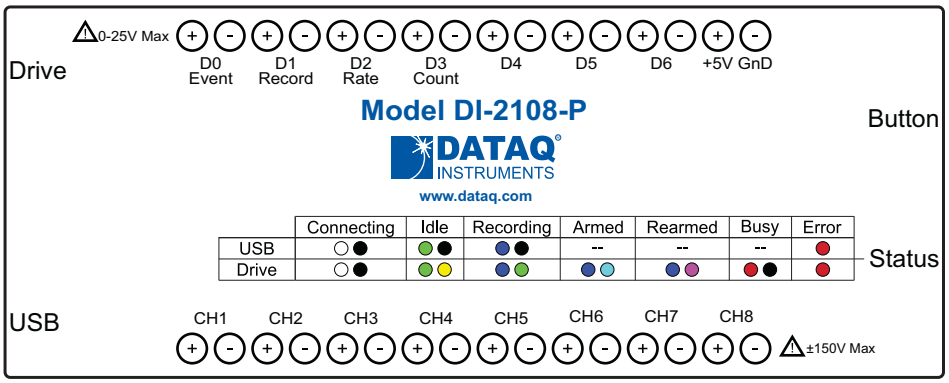
Never touch exposed screw terminal connector pins or screws.

To avoid ESD damage in handling the device, take the following precautions:

Ground yourself with a grounding strap or by touching a grounded object before and during your handling of the instrument.

DI-2108-P Signal Connections

Refer to the following for screw terminal port identification.



CH#: Analog channels 1-8 (Programmable ±2.5, ±5, ±10, 0-5, 0-10 Volts, ±150V transient max.)

D#: Digital port (0-6). Can also be used for specific WINDAQ functions (+25 Vmax).
- **D0 Event** — WINDAQ Remote Event Marker (or general-purpose)
- **D1 Record** — WINDAQ Remote Start/Stop (or general-purpose)
- **D2 Rate** — Rate Input (or general-purpose)
- **D3 Count** — Counter Input (or general-purpose)
- **D4** and **D5** — General-purpose digital ports
- **D6 Ext Trig** — General-purpose for DI-2108-P

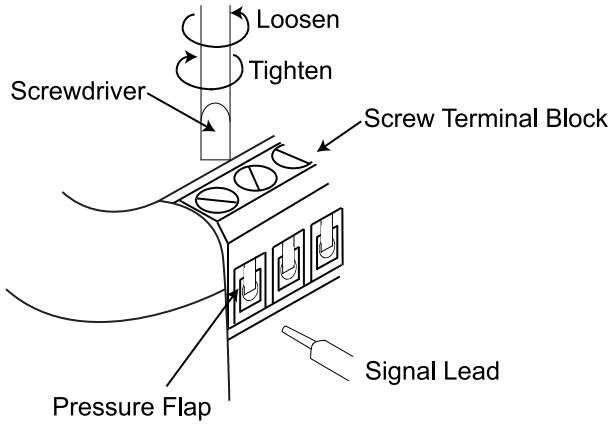
+5V: +5V out. Max current = 100mA.

GnD: Ground.

Connecting Signal Leads

Connect signal leads to the DI-2108-P:

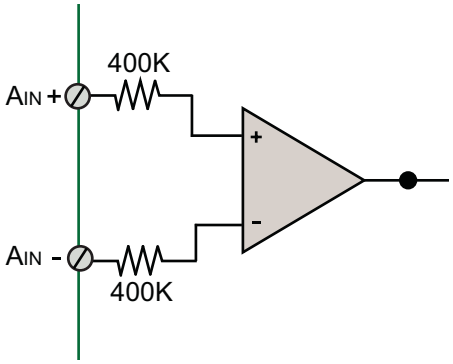
1. Insert the stripped end of a signal lead into the desired terminal directly under the screw.
2. Tighten the pressure flap by rotating the screw clockwise with a small screwdriver. Make sure that the pressure flap tightens only against the signal wire and not the wire insulation. Do not over-tighten.
3. Tug gently on the signal lead to ensure that it is firmly secured.



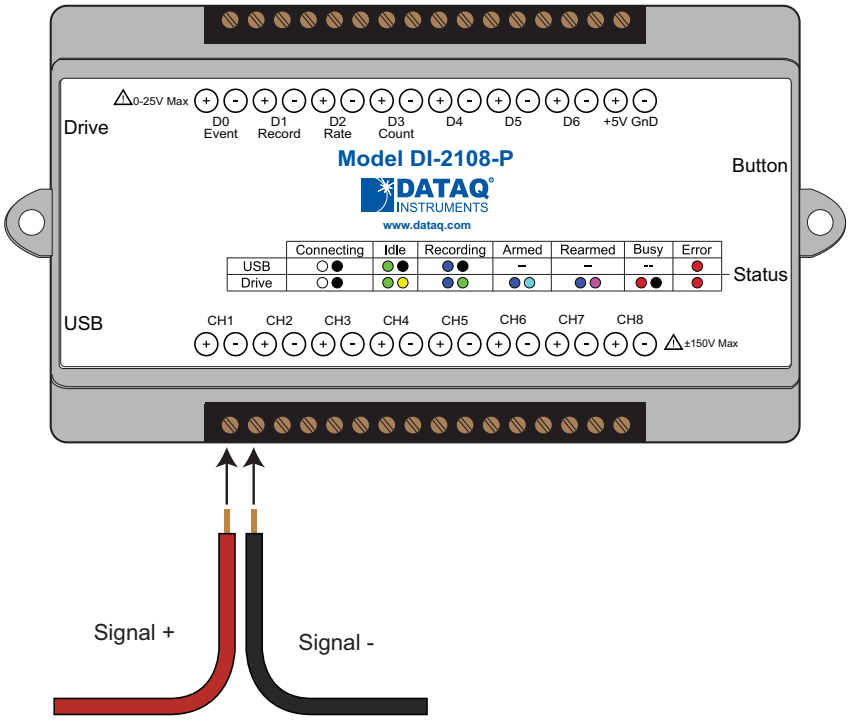
When an input signal is connected and WINDAQ Acquisition software is run, WINDAQ's real time display immediately reveals the input waveform on your computer's monitor.

Analog Inputs

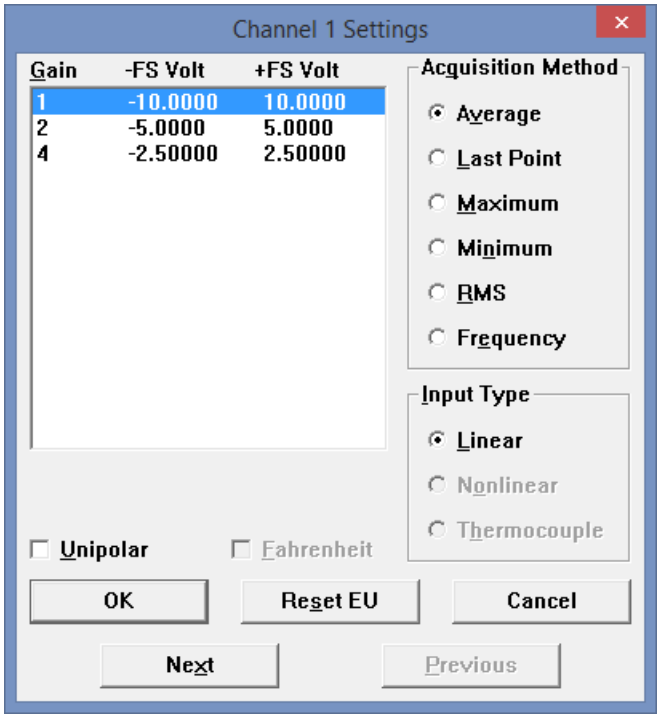
Eight differential analog inputs measure ±2.5, ±5, ±10, 0-5, 0-10 Volts (CH1 to CH8, programmable per channel). Designed to withstand ±150 V dc or peak ac.



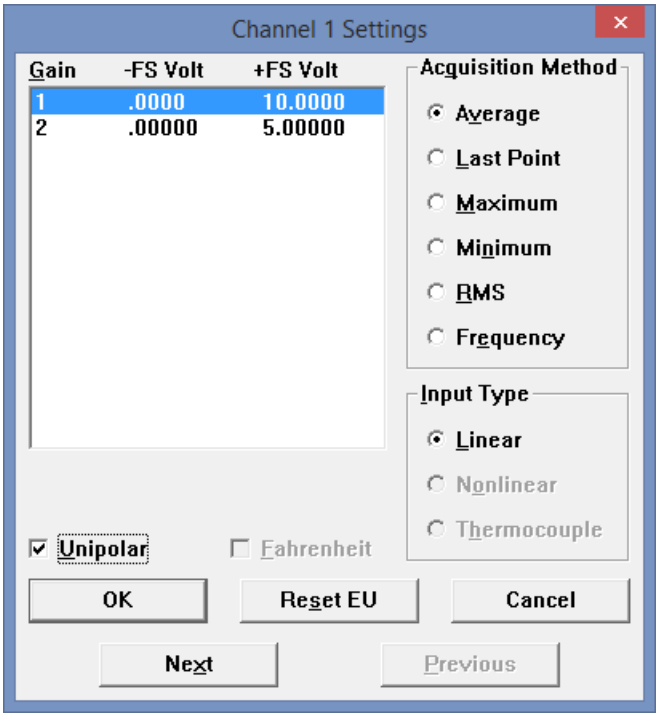
Use the following diagram to connect Analog Input Channel 1.



Specify a full scale range for the channel in the menu item **Edit** > **Channel Settings**.



±2.5, ±5, and ±10 Volts are available. Select Unipolar for ranges of 0-5V or 0-10V.



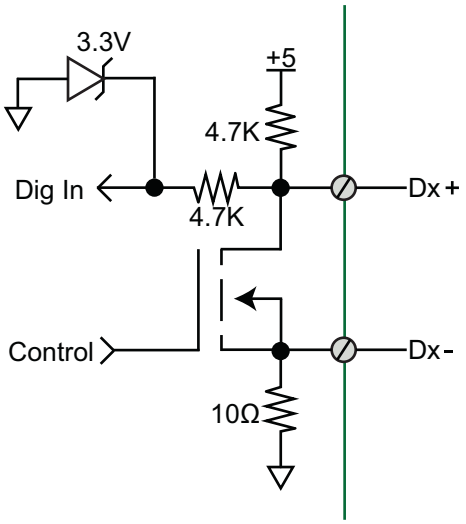
Scroll through all enabled channels with the **Next** and **Previous** buttons.

Digital Ports

The DI-2108 contains 7 general-purpose digital ports. Each digital port can be configured as a digital input or used as a switch to control an external load (up to 25 V and 100 mA). Many of the ports can also provide specific functionality in WINDAQ or a third-party program.

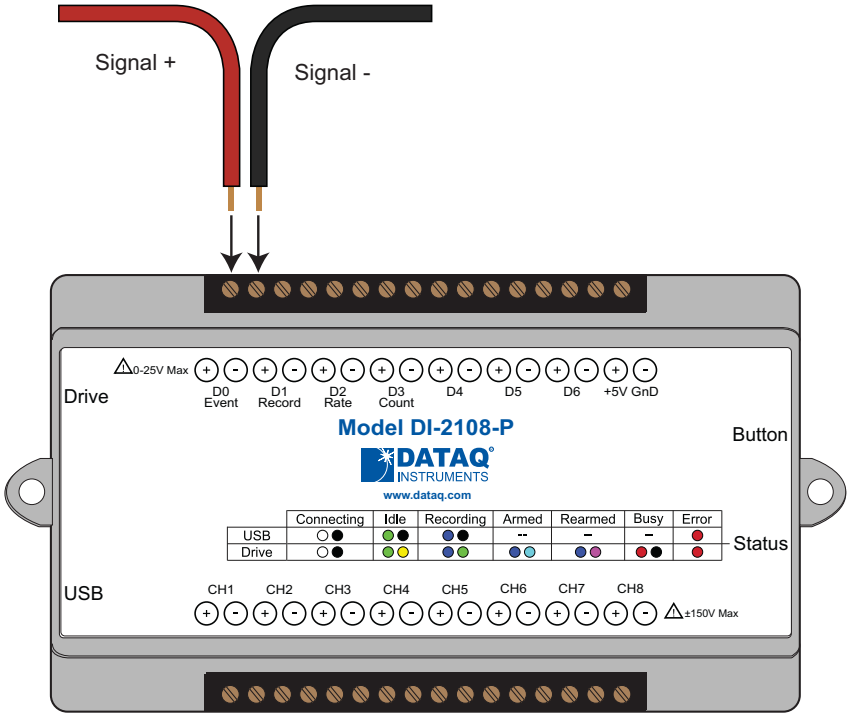
D0 Event is for WINDAQ Remote Events. This bit inserts an event marker in your data.
D1 Record is for WINDAQ Remote Storage. This bit can be programmed to begin recording data.
D2 Rate is for Rate measurements: 10Hz to 50kHz.
D3 Count is for Counter/Timer measurements up to 65,536.
D4 and D5 are general-purpose digital inputs.
D6 Ext Trig is a general-purpose digital input on the DI-2108-P.

Equivalent Digital I/O Circuit:



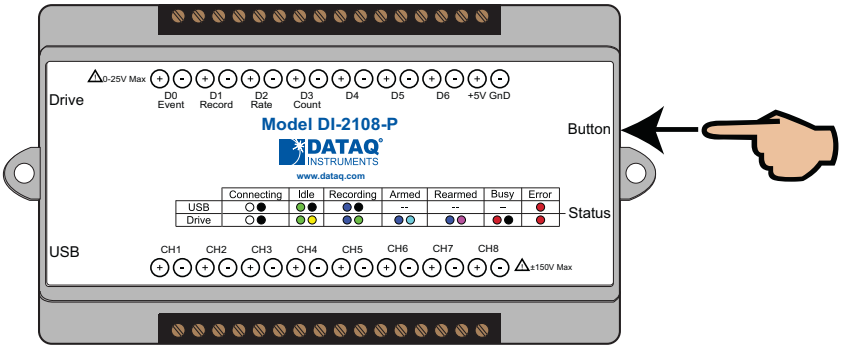
WINDAQ Remote Events (D0 Event)

To use a switch closure or TTL signal to record WINDAQ Event Markers, connect signal leads to the appropriate Remote Control Event terminals on the DI-2108-P as shown below.

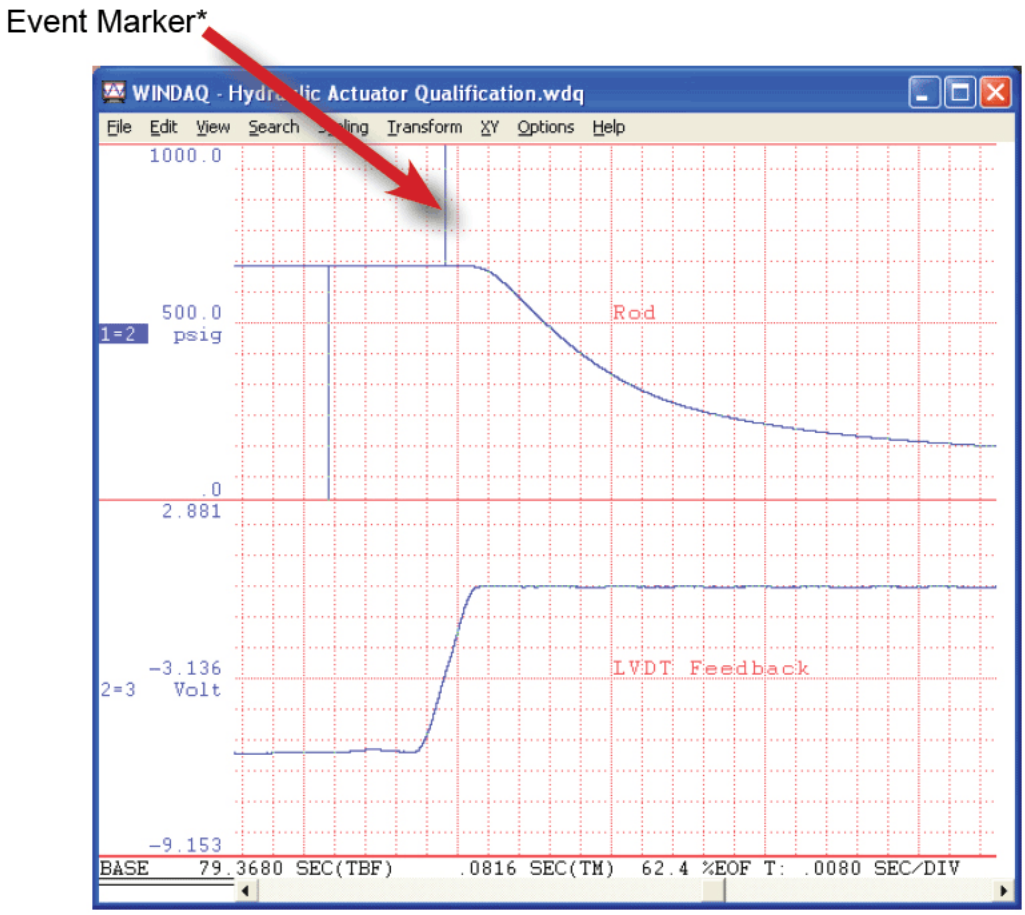


Once the switch closure or TTL signal is connected, activate Remote Events through WINDAQ Acquisition Software. Events may be automatically placed on the rising or falling edge of the trigger signal. Use the menu command **Options** > **Remote Events +** to set WINDAQ to place event markers on low-to-high transitions of the Event input. Use the menu command **Options** > **Remote Events -** to set WINDAQ to place event markers on high-to-low transitions of the Event input.

Event markers may also be placed in your data file manually by pressing the push button on the DI-2108-P Instrument. You must enable Remote Events in WINDAQ to use the button (use the menu command **Options** > **Remote Events +***or* **Options** > **Remote Events -**).



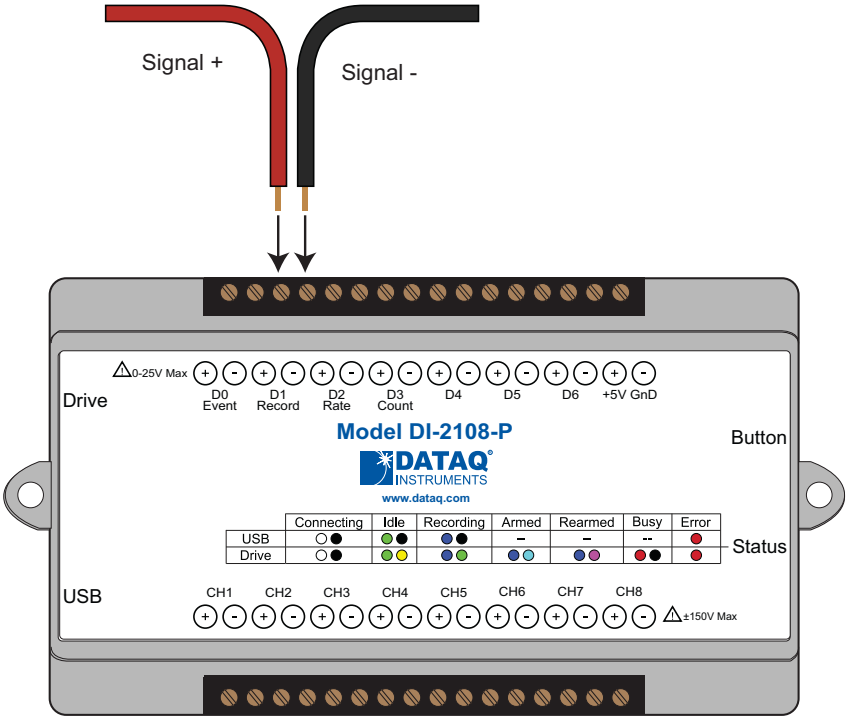
An example event marker in a WINDAQ data file is shown below.



***Please Note:** Event Markers do not display in the real-time WINDAQ acquisition software - they only display in the WINDAQ playback software (WWB).*

WINDAQ Remote Storage (D1 Record)

To use a switch closure or TTL signal to begin recording data remotely, connect signal leads to the appropriate Remote Control Record terminals on the DI-2108-P as shown below.

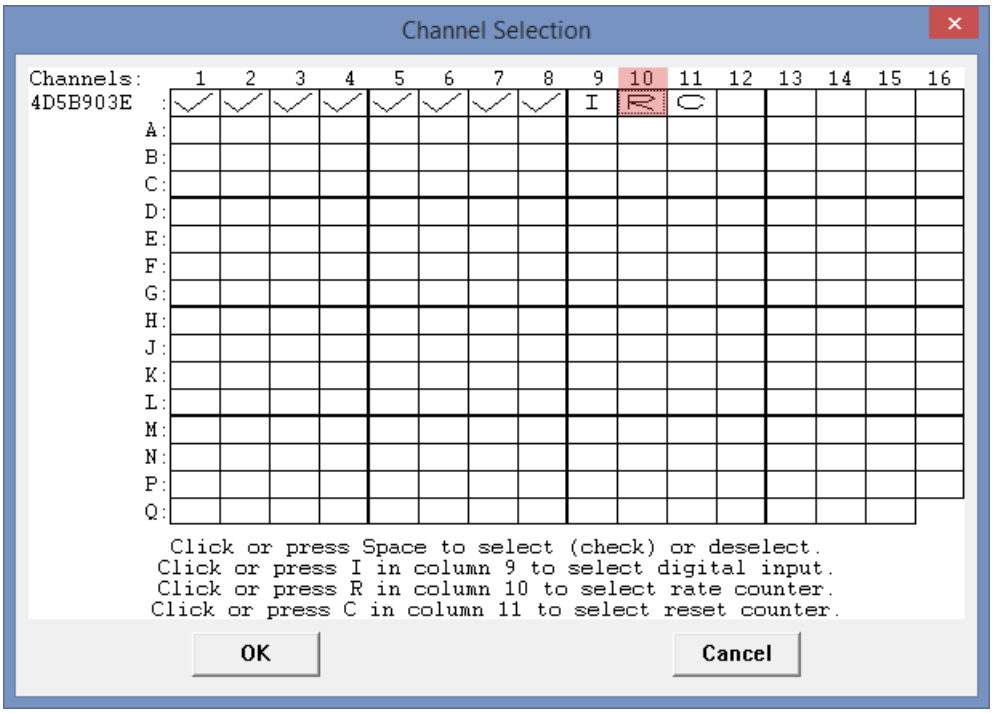


Once the switch closure or TTL signal is connected, activate Remote Storage (Record) through WINDAQ Acquisition Software. Storage to Disk may be automatically placed on the rising or falling edge of the trigger signal. Use the menu command **Options** > **Remote Storage 1** to set WINDAQ to begin recording on low-to-high transitions of the Record input. Use the menu command **Options** > **Remote Storage 0** to set WINDAQ to begin recording on high-to-low transitions of the Record input.

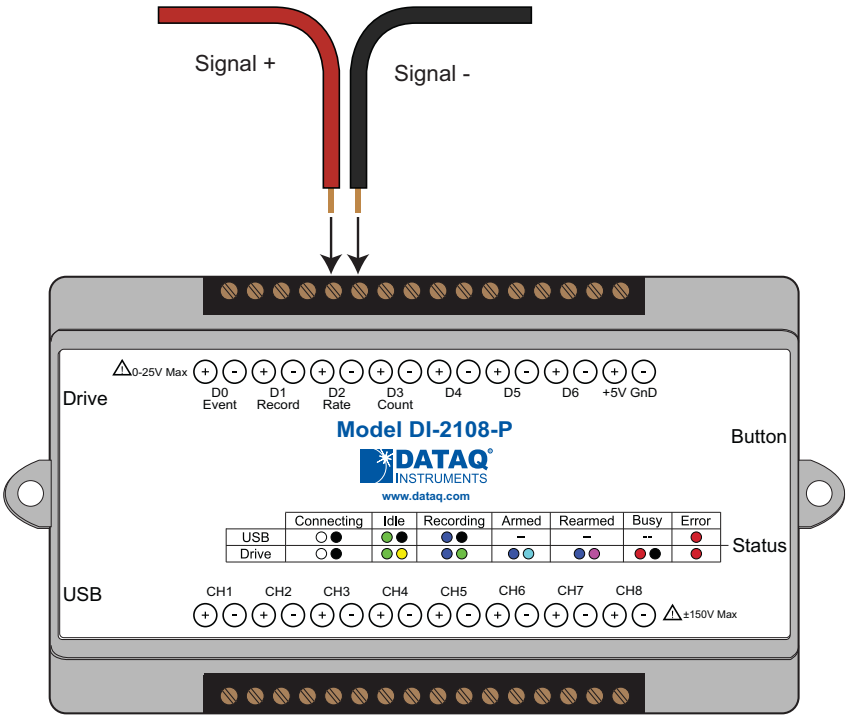
WINDAQ Rate (D2 Rate)

Enable channel 10 to record Rate, or the number of falling-edge transitions per unit of time, that are applied to this input. Click on **Edit** > **Channels** in the WINDAQ Acquisition menu to open the Channel Selection grid. Channel 10 is

the designated Rate channel. Click on the Channel 10 channel box to enable/disable Rates. The Channel 10 channel box will display an “R” when enabled.

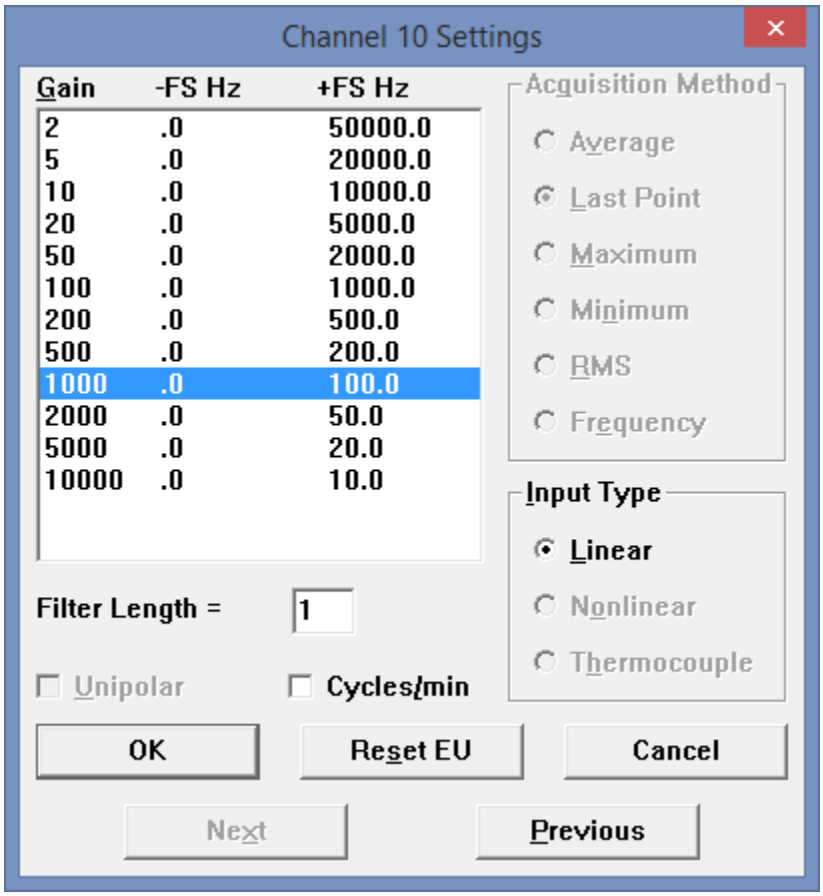


Connect any TTL pulse stream (25 VDC max) to the D2 Rate channel on the DI-2108-P.



Select Channel 10 in the channel display, then select **Edit** > **Channel Settings** in the menu to specify a full scale range for the Rate channel. Ranges of 10, 20, 50, 100, 200, 500, 1000, 2000, 5000, 10000, 20000, and 50000 Hz are available. Choose a range that comes closest to your expected full scale rate or frequency. For example, if you need to measure the output of a flow meter that can measure a maximum flow rate of 100 gallons per minute, and the output

frequency at that rate is 100 Hz, you would choose the 100 Hz range setting. A range setting of 200 Hz full scale sacrifices half of the instrument's resolution at 200 gallons per minute, and a range of 50 Hz allows measurements to only 50 gallons per minute full scale.



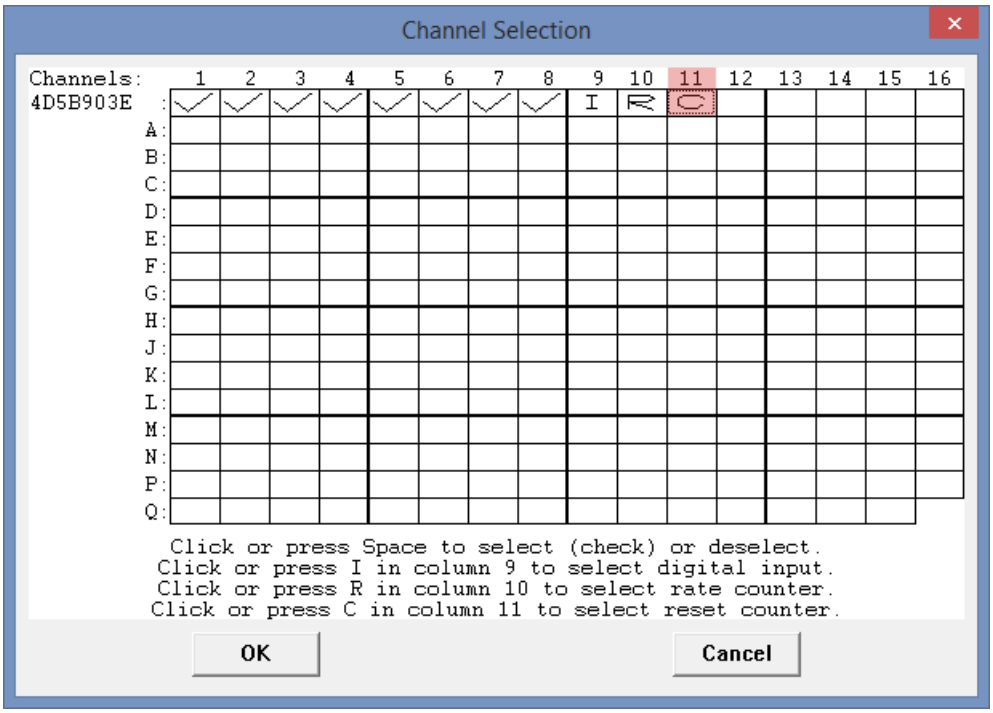
Check the "Cycles/min" box to display and select frequencies reported in cycles per minute instead of cycles per second (the measurement interval remains the same). Tachometer measurements in units of RPM (revolutions per minute) is just one example that benefits from selecting this option. For example, if the 100 Hz range setting is selected and "Cycles/min" is checked, the full scale range is actually 6000 cycles per minute.

Please Note: *To measure the maximum rate, which is defined as 2 times the Maximum Sample Rate/Channel , the current values of Maximum Sample Rate/Channel divided by Sample Rate per Channel MUST be an integer.*

WINDAQ Counter (D3 Count)

Enable channel 11 to record Counts, or the number of falling-edge transitions that are applied to this input. The count may be reset via WINDAQ software or under program control as necessary. Click on **Edit** > **Channels** in the WINDAQ

Acquisition menu to open the Channel Selection grid. Channel 11 is the designated Count channel. Click on the Channel 11 channel box to enable/disable Counts. The Channel 11 channel box will display a “C” when enabled.



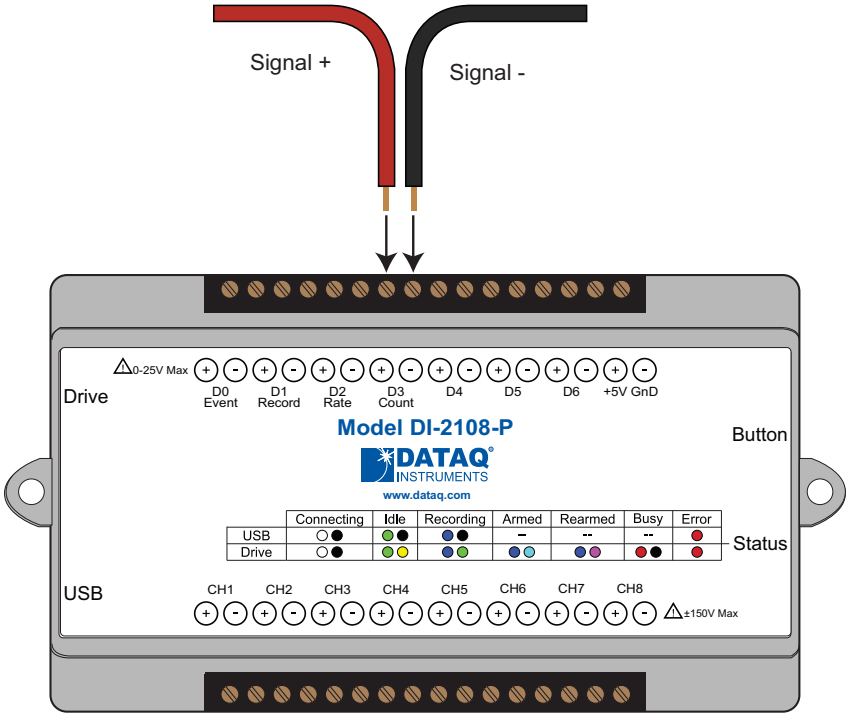
The counter channel accumulates counts over time whether recording or in standby mode as soon as the Counter channel is enabled. The *accumulated* values will be recorded to your data file unless you reset the counts to zero. The maximum count value is 65,535 before the counter resets to zero automatically.

Use the Edit > **Reset Count** command in WINDAQ Acquisition software to reset counts immediately to zero. This feature is available in both standby and record modes.

Use the Edit > Preferences > **Reset Count on New File Record** in WINDAQ Acquisition software to reset the count at the start of a new file or when using the Edit > Preferences > Record Next File on Full or Open Next File on Full feature to reset counts to zero every time a new file is started.

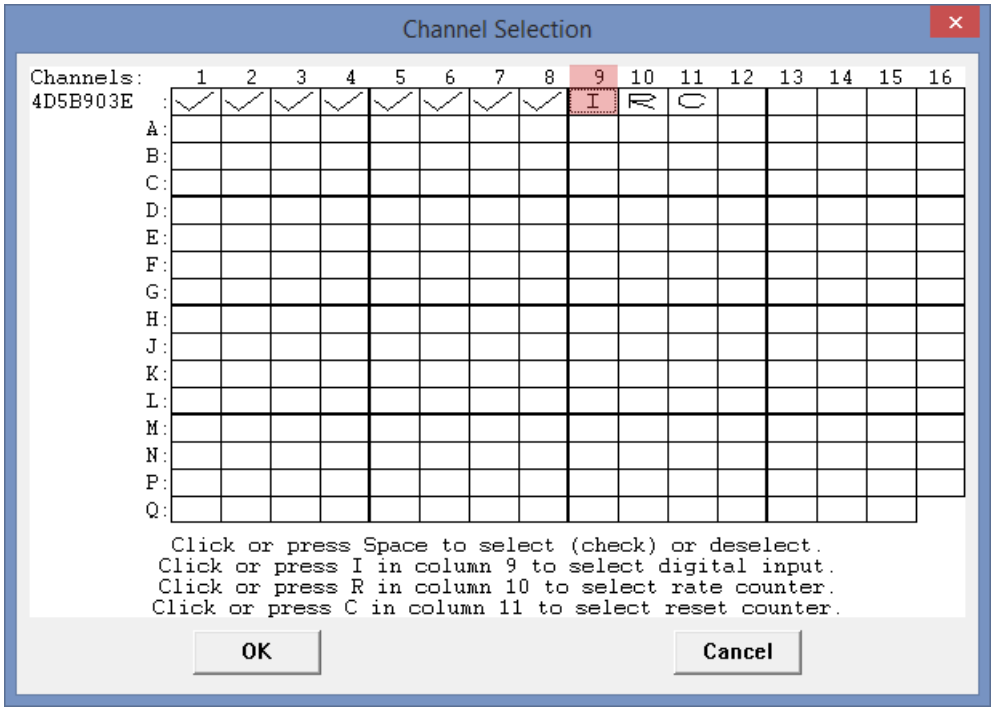
Use the Edit > Preferences > **Reset Count on Manual Record** in WINDAQ Acquisition software to reset counts to zero every time you begin or resume recording a data file using the File > Record command (F4).

Connect any TTL pulse stream (25 VDC max) to the D3 Count channel on the DI-2108-P.



General Purpose Digital Inputs

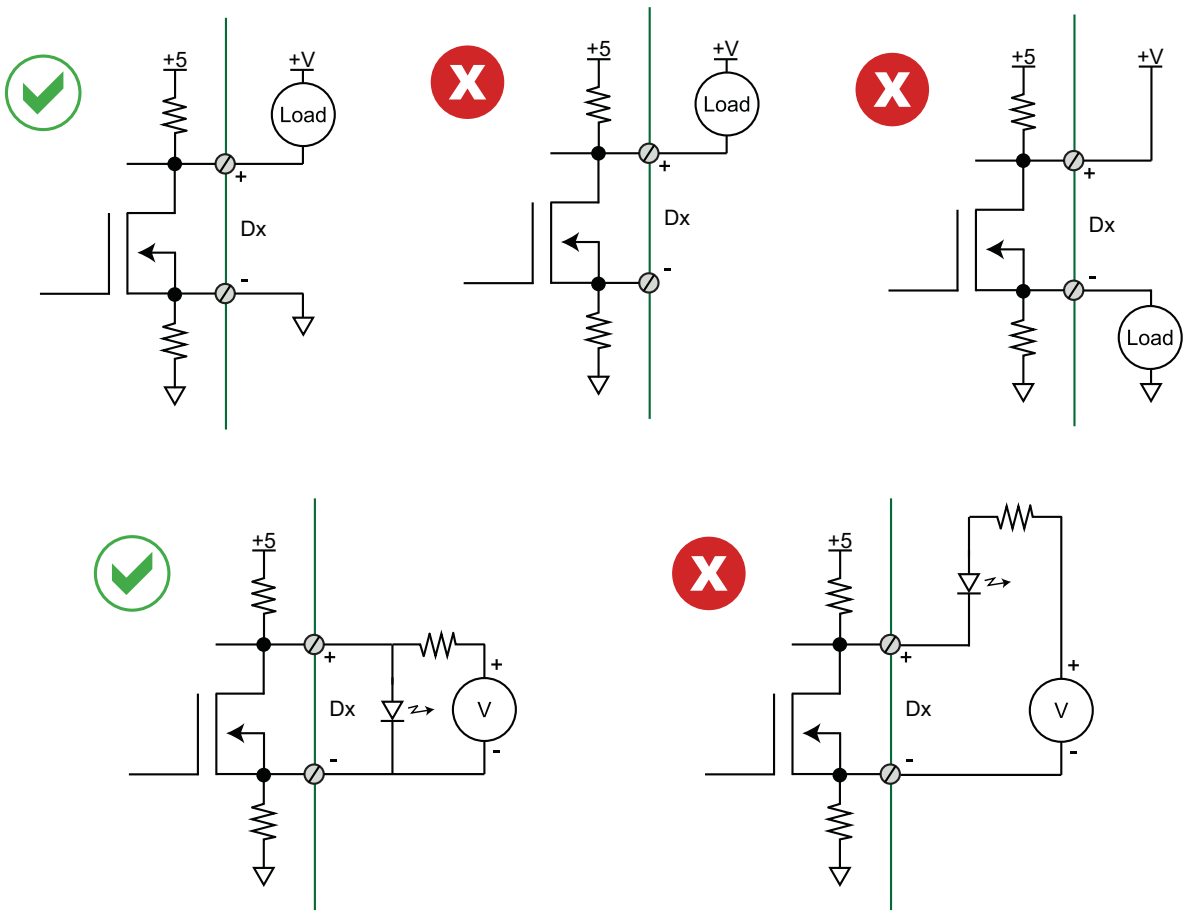
Enable Channel 9 for general-purpose digital input functions. Click on **Edit** > **Channels** in the WINDAQ Acquisition menu to open the Channel Selection grid. Channel 9 is the designated Digital Input channel. Click on the Channel 9 channel box to enable/disable the digital inputs. The Channel 9 channel box will display an "I" when enabled.



Channel 9 records and displays all the digital inputs, even the state of the Rate and Count inputs if those channels are enabled. With Channel 9 selected in the display window click **Scaling** > **Digital Plot** to show a digital display and make the data more meaningful on-screen using WinDaq.

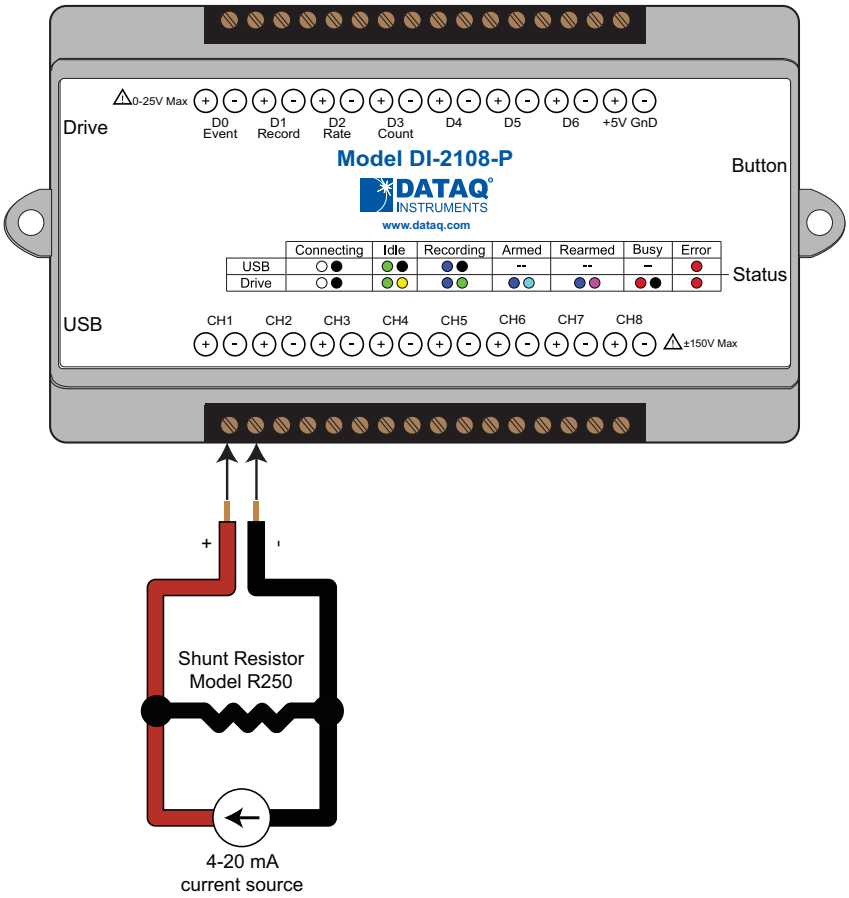
General Purpose Digital Outputs

Take care when configuring the load to be switched to ensure that the digital port is not damaged:

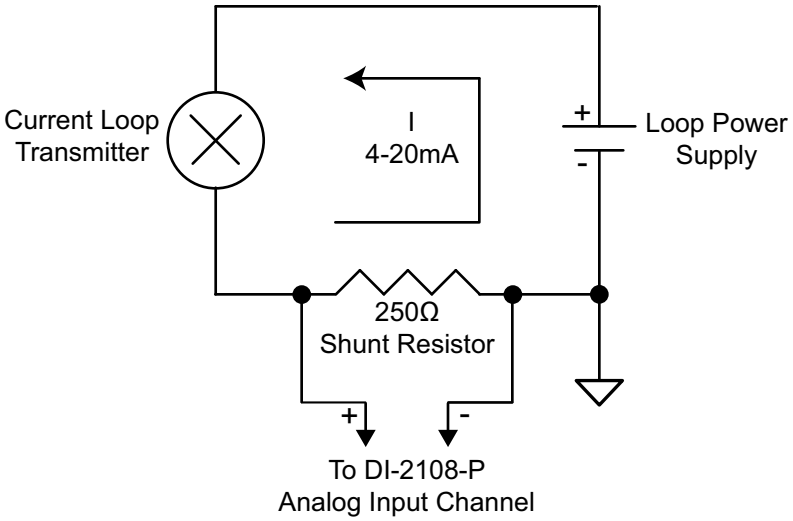


4-20mA Current Loop Measurements

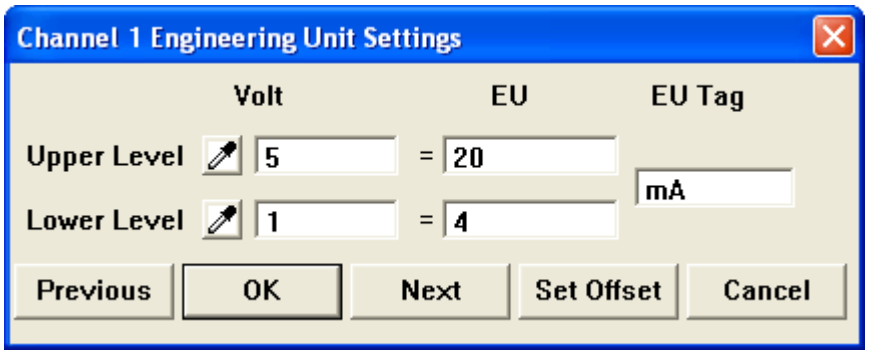
Use the following diagram for 4-20mA current loop measurement connections.



The shunt resistor should be placed on the low side of the circuit as shown below:



Set the engineering units as desired and define upper/lower levels in WINDAQ as 1V = 4mA for the low value and 5V = 20mA for the high value. For example, when using WINDAQ Acquisition software, in the EU Settings dialog box:



Enter the following values:

	Volt	EU	EU Tag
Upper Level	5	20	mA
Lower Level	1	4	

Visit our website at http://www.dataq.com/blog/data-acquisition/4-20-ma-current-loop-measurements/ to address all popular 4-20mA configurations.

You can also associate these values to a physical measurement such as pressure, load, flow, torque, etc. Read the Help files for more information regarding Engineering Units Settings.

LED Status Indicator

The DI-2108-P provides a multicolor LED for instrument status and notification. Use the table below for a detailed description of each available state.

State	Mode	Description
Blinking White	Connecting	The device is looking for a connection to your PC or USB thumb drive. It will check the USB interface first, then the USB thumb drive. Once a connection is established the device will enter Idle mode.
Blinking Green	Idle USB Connected	The device is connected to and communicating with your PC through the USB port. The USB thumb drive and Ethernet port are not accessible.
Blinking Green/ Yellow	Idle USB Drive Connected	The device is in Stand-alone mode. The USB interface is not accessible.
Blinking Blue	Acquiring Data to PC via USB Interface	WinDaq Acquisition Software is running and the device is acquiring data to your PC via the USB interface.

Blinking Blue/ Green	Recording Data to USB thumb Drive	The device is acquiring data and recording to your USB thumb drive. Do not remove power - power interruption could result in data file corruption.
Blinking Blue/ Cyan	Armed USB thumb Drive is waiting for a trigger condition	The device is acquiring data and waiting for a trigger condition to begin recording to your USB thumb drive. Do not remove power or the USB thumb drive - either could result in data file corruption.
Blinking Blue/ Cyan	Re-armed USB thumb Drive is waiting for a trigger condition	The device is acquiring data and waiting for another trigger condition to continue recording to your USB thumb drive. Do not remove power or the USB thumb drive - either could result in data file corruption.
Blinking Red	Busy USB thumb Drive is busy	The device is reading from or writing to the USB thumb drive. Do not remove power or the USB thumb drive - either could result in data file corruption.
Solid Red	Error	The device is unable to perform any operations. Use the control button or cycle power to resolve the error.
Solid White	Button Pushed	The LED turns white to indicate the control button is engaged.
Blinking Yellow	Idle USB connected in CDC mode	The device is connected to and communicating with your PC through the USB port in CDC mode. WinDaq software will not run. The USB thumb drive and Ethernet port are not accessible.

USB Drive Port

Allows you to record to any USB flash memory device. Not all flash memory is fast enough to record at higher sample rates. Use the provided USB flash drive for rates below 20,000 S/s Throughput. **Please Note:** The mini-USB interface cannot be used in conjunction with the USB Drive. You MUST disconnect the device from the computer to record to the USB thumb drive.

Control Button

The Control Button can be used to stop or start recording data to your memory card (SD) when using the instrument as a stand-alone data logger. The Control Button can also be used to reconfigure the instrument to factory default settings and to re-format memory card files left open due to power failure or other circumstance. The Control Button is inoperable while running WINDAQ Acquisition software.

Record Data to USB Thumb Drive

Record data to an installed USB thumb drive. The device must be in Idle mode and set for USB Drive (mode LED must be flashing Green/Yellow). After the button is pressed, the mode LED will flash Blue/Green or Blue/Cyan to indicate it is in a recording mode.

Stop Recording to USB Thumb Drive

Manually stop recording to the USB thumb drive (when the mode LED is flashing Blue/Green, Blue/Cyan, or Blue/Magenta). After the button is pressed the mode LED witll flash Green/Yellow to indicate Idle.

Fix Errors

The Control Button can also be used to fix some common operating errors. When the instrument is in Error mode (mode LED is solid red), some action must be taken to fix the error before you can use it. Generally, the Control Button can be used to make the instrument operational again when in Error mode.

Switching between LibUSB and CDC Modes

The native communication mode of the DI-2108-P is LibUSB but it can be switched to the USB CDC (Communication Device Class). CDC mode allows the USB port of DI-2108-P devices to appear like a traditional RS-232 port, which is common across most operating systems and development languages. ***Please note:*** *LibUSB communication is* ***required*** *for WinDaq Acquisition software and programming with our .NET SDK. Only switch to CDC mode when writing your own programs at the protocol level (for example, Python applications).* Use the following sequence to switch your device to/from LibUSB/CDC modes:

1. Connect the device to your PC via the USB port.
2. Apply power to the device.
3. When mode LED stops blinking white and is in Idle mode, push and hold the Control button. This must be completed within five seconds after the device is in Idle mode.
4. When the mode LED turns red, release the Control button.
5. The Mode LED will flash white then indicate Idle in either LibUSB or CDC mode:
    - CDC mode: Blinking Yellow
    - LibUSB mode: Blinking Green

Save Stand-alone configuration to Thumb Drive

Save stand-alone configuration settings using the Control Button. Stand-alone configurations can also be saved to the thumb drive via the Dashboard (preferred method). Device must be in Idle mode for USB thumb Drive (mode LED blinks green/yellow). The Unlock Code must be purchased for your device in order to save the stand-alone configuration.

1. Format your USB thumb drive using your PC.
2. Confirm device is in Idle mode for USB Flash Drive (mode LED blinks Green/Yellow).
3. Push and hold the Control button.
4. Plug the formatted (empty) thumb drive into the device (Drive) while holding the button in.
5. Release the button when the mode LED changes to Red/Black.
6. The device will read and load the configuration files to the thumb drive and revert to Idle mode when complete.

Configuration files include config.whd or config.whc. Use the WinDaq Dashboard to create configuration files.

Apply Stand-alone Configuration to Device

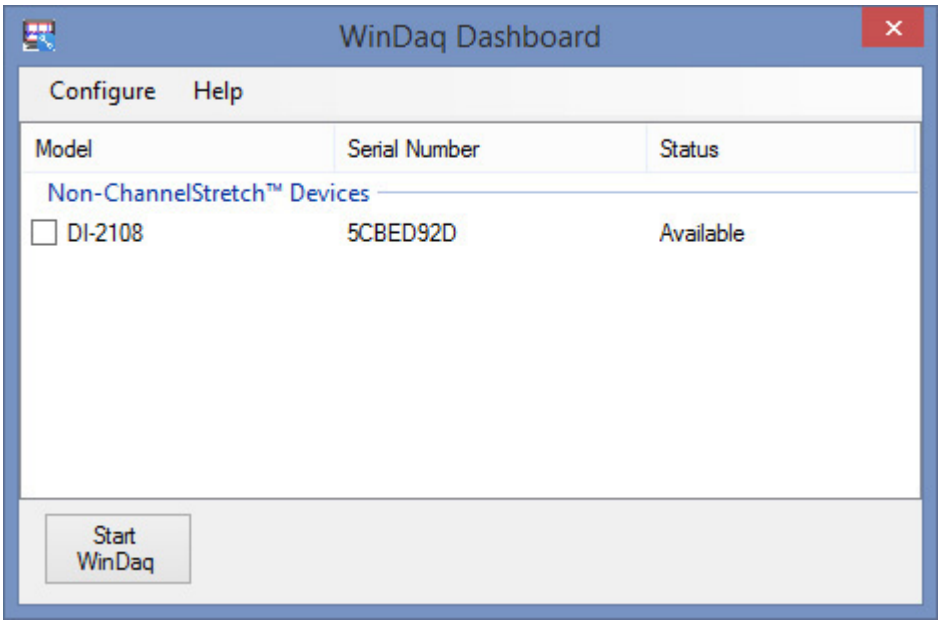
Load stand-alone configuration settings using the Control Button. Stand-alone configurations can also be applied via the Dashboard (preferred method). Device must be in Idle mode for USB thumb Drive (mode LED blinks green/yellow). The Unlock Code must be purchased for your device in order to apply the stand-alone configuration.

1. Save configuration files to your USB thumb drive.
2. Confirm device is in Idle mode for USB Flash Drive (mode LED blinks Green/Yellow).
3. Push and hold the Control button.
4. Plug the thumb drive into the device (Drive) while holding the button in.
5. Release the button when the mode LED changes to Red/Black.
6. The device will read and load the configuration files to the device and revert to Idle mode when complete.

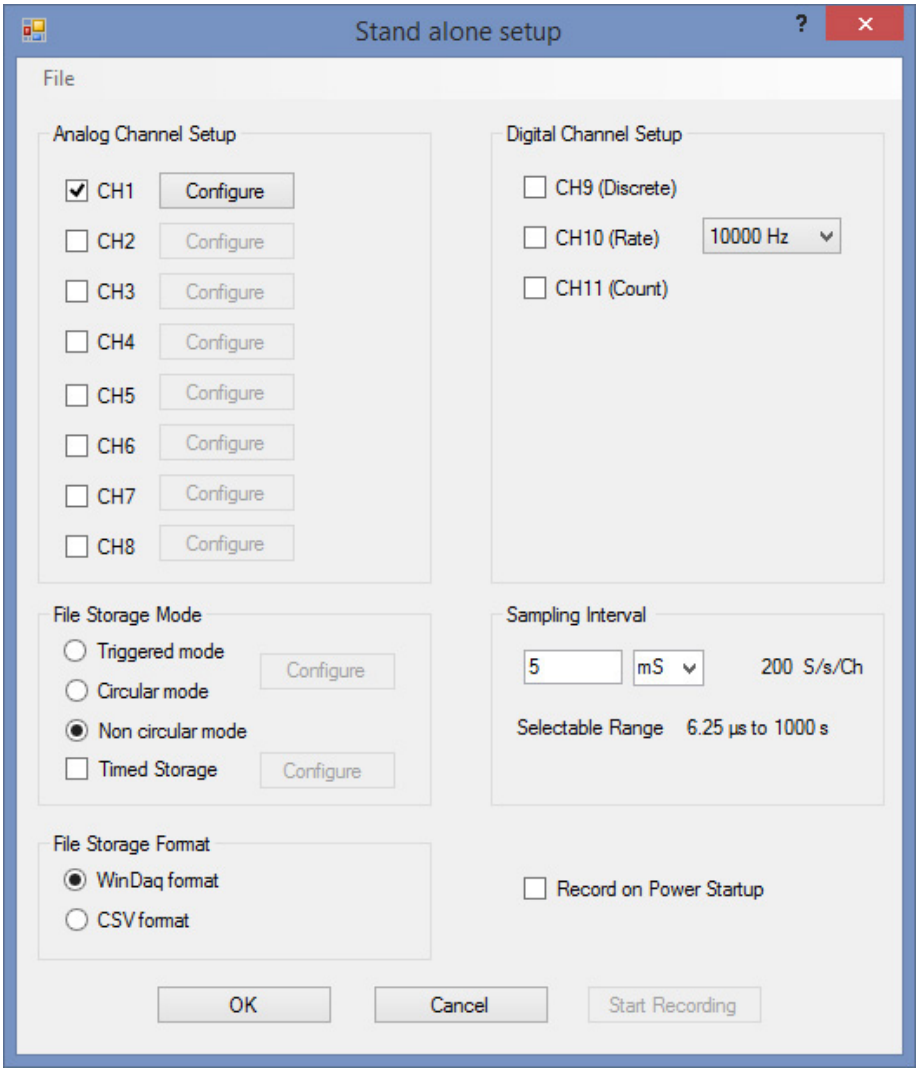
Configuration files include config.whd or config.whc. Use the WinDaq Dashboard to create configuration files.

WinDaq Dashboard

The WinDaq Dashboard allows you to run WinDaq Data Acquisition software, sync the device clock with your PC, and configure your instrument for stand-alone data logging to record data to a USB flash drive.



Use the Configure menu to access the Stand alone setup window.



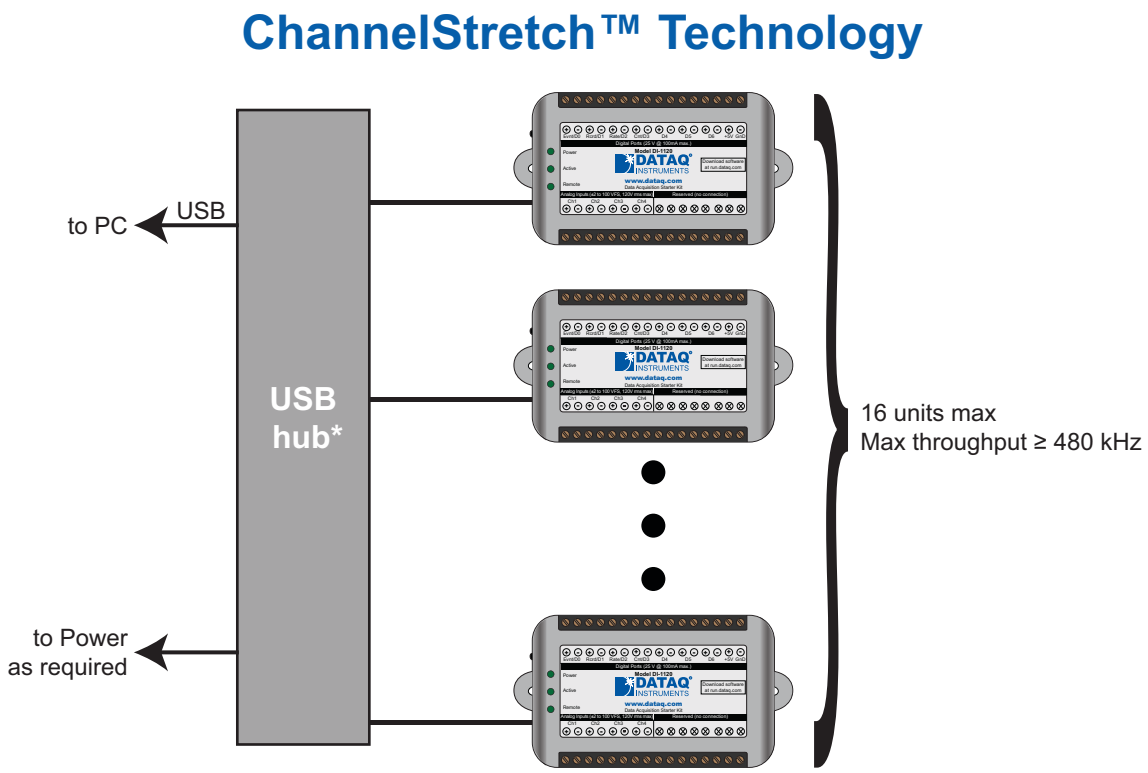
Select and configure all channels available on your device, select a sampling interval, and setup recording Trigger conditions. The Stand alone configuration also allows you to Save/Load configurations via the File menu. Use the help file provided in WinDaq Dashboard to learn more.

ChannelStretch™

Connect up to 16 DI-2108-P devices with a powered USB hub (or multiple cascaded/connected powered USB hubs) to record more than 8 channels of data to a single WinDaq file. This provides a total of up to 128 analog channels and 112 digital ports at a maximum throughput rate of 480 kHz. Cascade multiple USB hubs to expand port count. Synchronized instruments must have the same sample rate and have the same number of enabled channels independent of channel type or gain factor. The WinDaq/Unlock option **per instrument** is required to synchronize two or more DI-2108-P devices when using WinDaq software.

Connection

All device must be on the same USB hub or controller* in order to synchronize data acquisition.

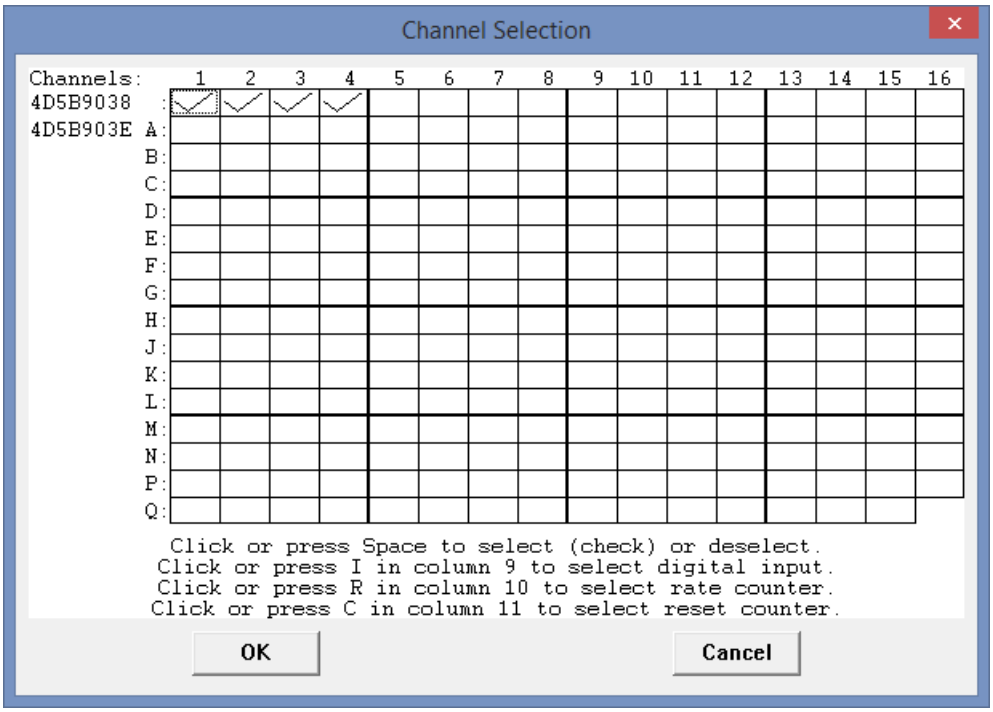


*DATAQ Instruments 7-port USB hub (part number 2000310). Cascade for a higher port count.

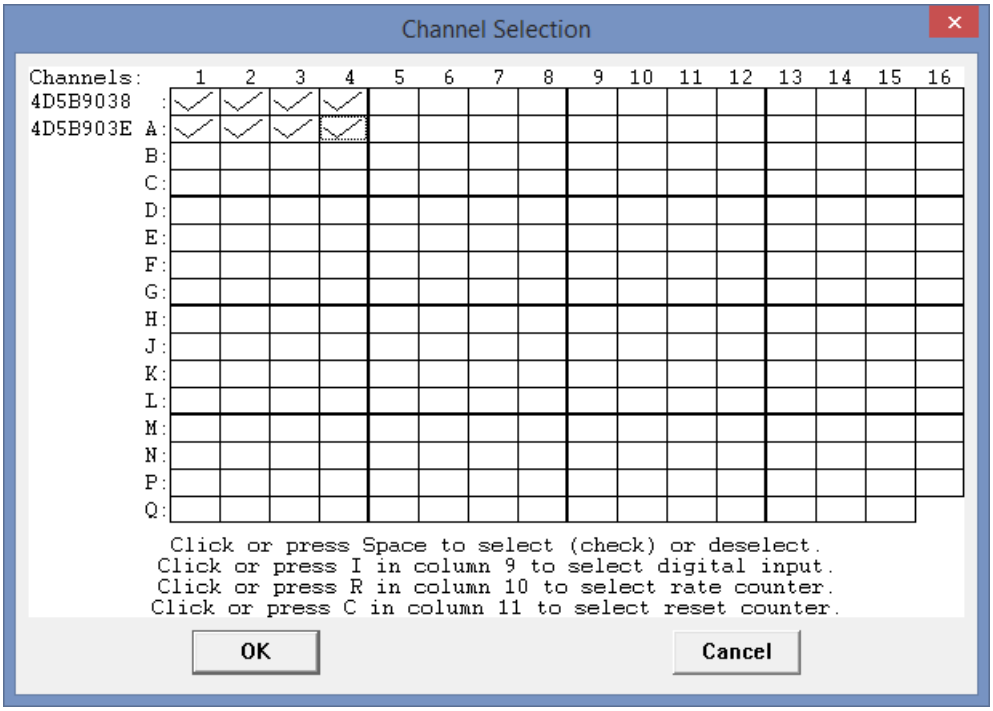
***Please Note:** Because of the way Windows operating systems manage USB controllers, the only way to be absolutely sure you are on the same controller is to use a powered USB hub.*

Channel Selection

Devices are listed in the Channel Selection grid in alpha-numeric order of the serial numbers of the device. Devices must be connected to the USB hub before starting WinDaq.

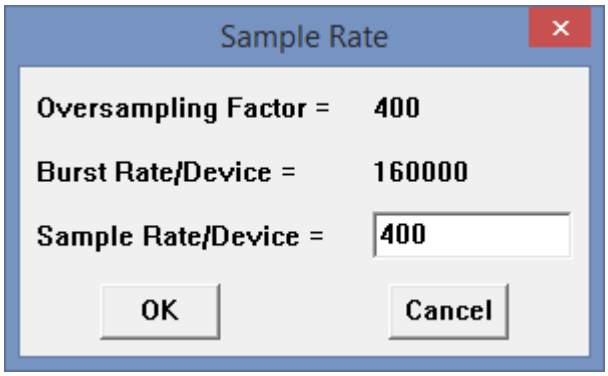


Enable the same number of channels in each device you would like to record data from.

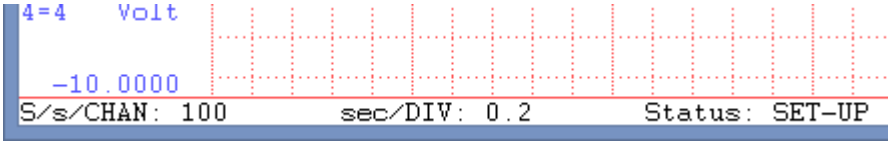


Sample Rate

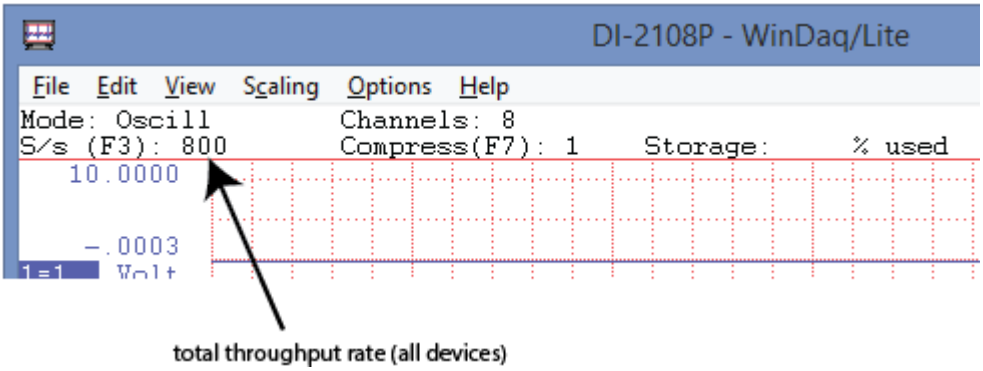
The sample rate for DI-2108-P devices is set as a per device throughput rate or "Sample Rate/Device." Select **Edit** > **Sample Rate** in the main menu or press **F3**.



The sample rate per channel is displayed in the lower left corner of the WinDaq screen at S/s/CHAN: (samples per second per channel).



Total throughput rate is displayed in the top-left portion of the WinDaq screen at S/s (F3). For example, if two devices are connected and the Sample Rate/Device is 400, S/s would be 800.



5. Unlock WinDaq for Stand-alone Operation

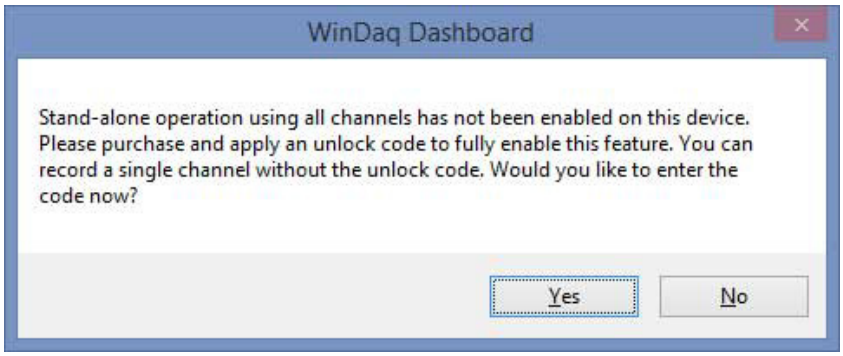
The DI-2108-P comes with 8 channels for recording and ChannelStretch technology enabled. There is a Stand-alone unlock codes available for the DI-2108-P at https://www.dataq.com/products/di-2108/ (go to Accessories) or call 330-668-1444. Once purchased, you will be given a Key code to enter into WinDaq or the WinDaq Dashboard. *Devices ordered with a Stand-alone Unlock Code will already be unlocked permanently within the device and do not require this procedure.*

Please Note: Some units purchased prior to January 2026 had a limit of recording up to four channels using WinDaq/Lite software and a single channel to the USB thumb drive. To unlock all 8 channels, ChannelStretch and Stand-alone on older units, please purchase the SA-Enabled software.

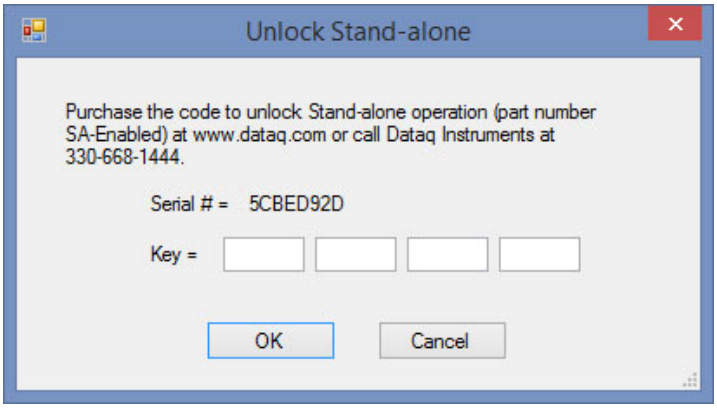
SA-Enabled

Allows you to unlock all channels for stand-alone data logging as well as all the channels in WinDaq.

1. Start WinDaq Dashboard software.
2. Select your device and click the menu item **Configure** > **Stand Alone Setup**.



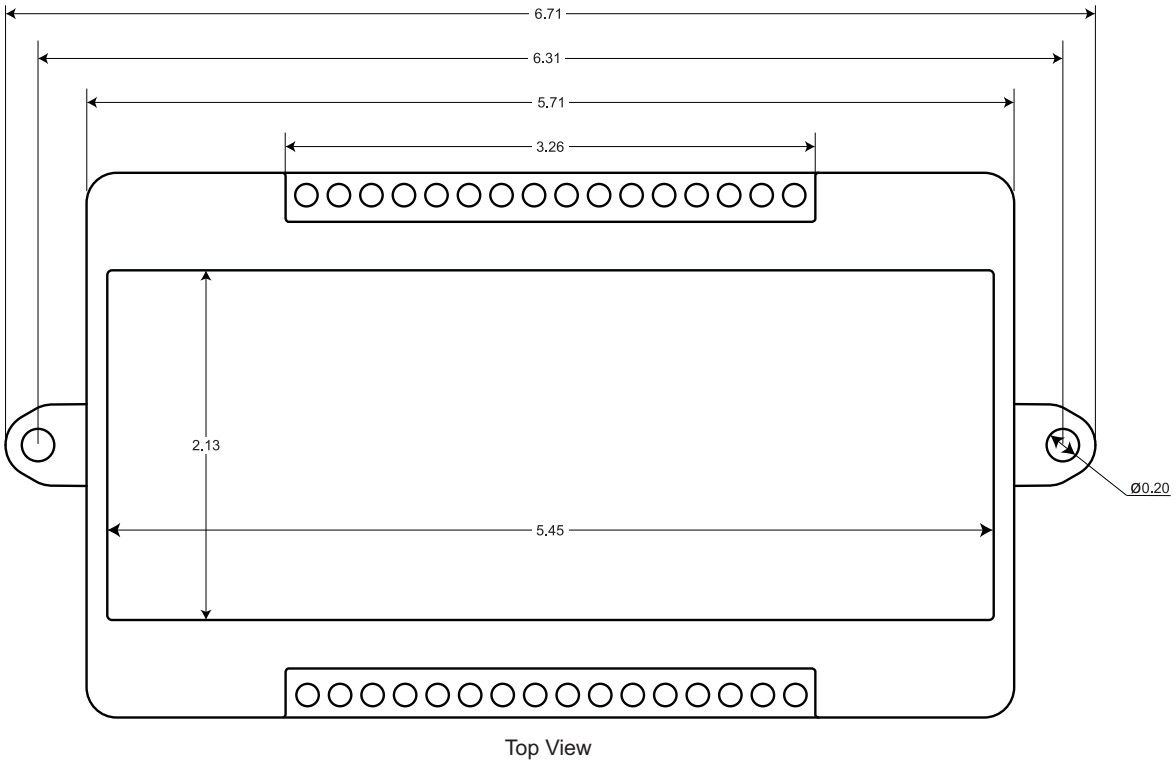
3. Click on the **Yes** button to enter your code. Click on the **No** button to go to Stand-alone configuration for a single channel.



4. Enter the Key in the appropriate dialog boxes.

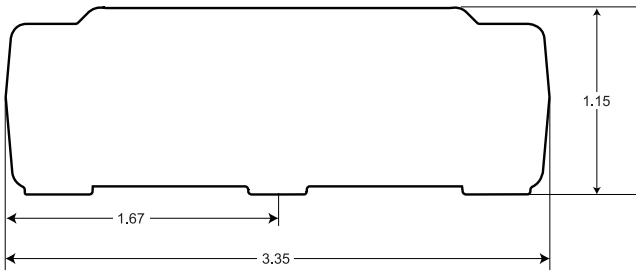
Click **OK**.

6. Dimensional Drawing



Top View

Side View



All dimensions in inches

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Submit a support ticket to: www.dataq.com/ticket

Direct Product Links

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