PD6210 ProVu Analog Input Batch Controller

Data Sheet

ProVu Series

Super-Bright LEDs Our Brightest Display Ever

MeterView Pro USB Install

c UL us LISTED

CE

- 1/8 DIN Digital Batch Controllers with NEMA 4X, IP65 Front
- 0-20 mA, 4-20 mA, 0-5 V, 1-5 V, and ±10 V Inputs with ±0.03% Accuracy
- Dual-Line 6-Digit Display, 0.6" (15 mm) & 0.46" (12 mm)
- Isolated 24 VDC @ 200 mA Transmitter Power Supply
- 2 or 4 Relays with Interlocking Capability + Isolated 4-20 mA Output Options
- Free PC-Based, On-Board, MeterView Pro USB Programming Software
- No Assembly Required
- Start / Pause / Stop, Change Batch with Front Panel Buttons
- Display Batch Total, Rate, Grand Total, Count or Preset
- Single or Multi-Stage Batch Control (Up to 8 Relays)
- Automatic Overrun Correction
- Automatic or Manual Batch Control
- Low or High Flow Alarms while Batching
- 9 Digit Grand Total with Overflow Feature
- Count Up or Down, Independent for Batch & Grand Total
- Optional SunBright Display Models for Outdoor Applications
- Operating Temperature Range: -40 to 65°C (-40 to 149°F)
- UL & C-UL Listed. E160849; 508 Industrial Control Equipment
- Input Power Options: 85-265 VAC / 90-265 VDC or 12-24 VDC / 12-24 VAC
- Programmable Display, Function Keys & Digital Input
- Wide Assortment of NEMA 4X Enclosures for up to Ten Batch Controllers
- Light/Horn & Button Accessory
- Control Station Accessory For Remote Operation of ProVu
- Stainless Steel Sun Hood Accessory Available
- 3-Year Warranty

PROVU controller mounted in PDA2301 enclosure with PDA18DINSH Sun Hood and MOD-LH Light/Horn accessory. See page 16 for details.

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OVERVIEW

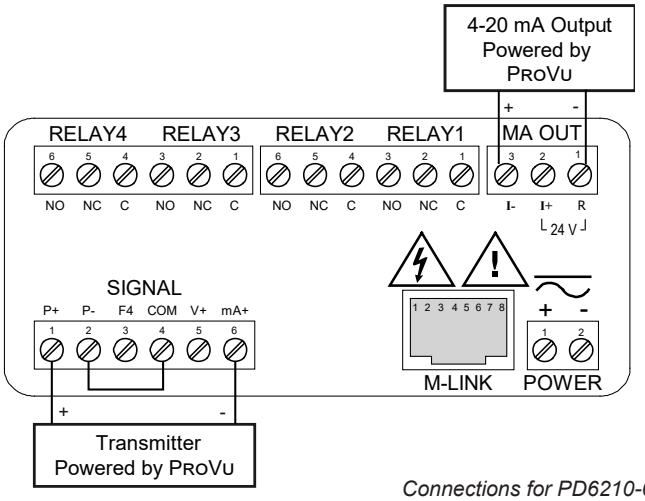
Front

UV Resistant
Sunlight Readable Models

Front Panel
NEMA 4X Rated

MeterView Pro
USB Install

Connections



Connections for PD6210-6H7 & PD6210-7H7

- Form C (SPDT) relays
- Two isolated power supplies available even on 12/24 VDC input power models
- Removable terminal blocks
- 2 or 4 relays + isolated 4-20 mA output option
- Universal 85-265 VAC or 12/24 VDC input power
- Voltage or current inputs
- No jumpers needed for V/mA input selection
- M-Link for adding expansion modules
- Digital Input (F4)

The Only Analog Input Batch Controller You Will Ever Need

The ProVu PD6210 is an easy-to-use batch controller ideal for simplifying independent batch control operations where local control is preferred to expensive and expansive plant operation systems. Its superluminous LED digits make it easily readable in smoke, dust, fog, and, with the optional SunBright display, even direct sunlight. The controller comes programmed for easy front panel start, pause, stop, and batch size (preset) changes. Display line 2 can be programmed to display rate, grand total, batch count, or preset by cycling the Stop (F3) button. A digital input is standard.

Single and multi-stage batching is possible with up to four on-board relays and four external relays with the external relay module. Each pre-close relay may have a unique pre-close amount when used for multi-stage batching. Manual start batching is default, but automatic batching with a restart after a programmed time delay from the completion of the last batch, is also possible.

Overrun correction adjusts the closing of the batch control relays to adjust for inaccuracies from batch to batch. This increases accuracy over time as systems wear out. The overrun correction feature is capable of compensating for inaccuracies of up to 1% of the programmed preset value.

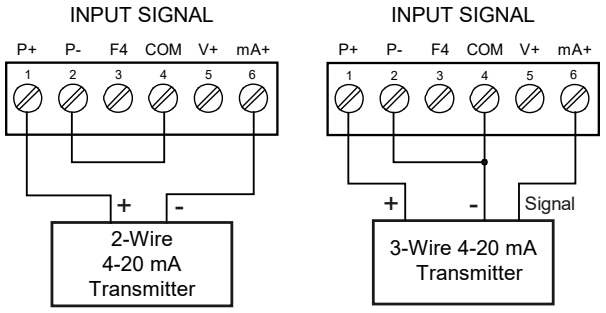
At least two SPDT relays are included for use in batch control or rate alarms. The batch controller also shares all common ProVu Series features, including an isolated 24 VDC transmitter power supply and Modbus RTU Serial communications.

ISOLATED TRANSMITTER POWER SUPPLIES

24 V @ 200 mA Transmitter Power Supply

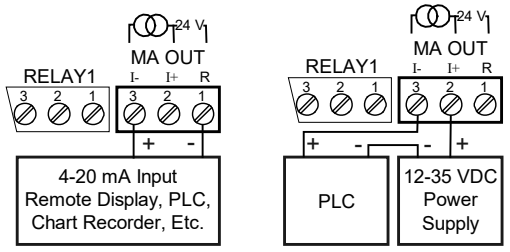
One of the most useful standard features of the AC powered PD6210 is its built-in isolated, 24 V @ 200 mA power supply to power the transmitter. This feature saves money by eliminating an external power supply and also simplifies wiring by reducing the number of devices in the loop. It can be configured for 5, 10, or 24 V (default) by means of a simple internal jumper. This power supply is even available on controllers that are powered from DC power (24 V @ 100 mA). To use an external power supply instead of the internal power supply, simply make connections to different terminals on the PROVU.

The following diagrams illustrate how to wire the PROVU so it will power the transmitter:



24 V @ 40 mA 4-20 mA Output Power Supply

Not only can the PROVU power the 4-20 mA input signal, but an additional power supply of 24 V @ 40 mA is provided with the 4-20 mA output option to power the 4-20 mA output.

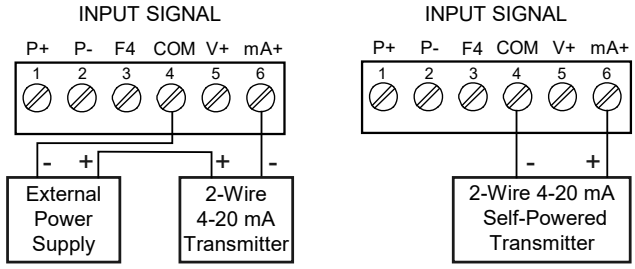


Resettable Fuse Prevents Current Overload

Another very useful aspect of the PROVU is that the current input is protected against current overload by a resettable fuse. The fuse limits the current to a safe level when it detects a fault condition, and automatically resets itself when the fault condition is removed.

External Power Supply for the Loop

For applications that require an external transmitter power supply, the same PROVU is used and merely wired in a different fashion as the following diagrams illustrate:



PDA1024-01 24 VDC Transmitter Power Supply

Precision Digital offers the PDA1024-01 for applications that require more than the 200 mA power that the PROVU can provide.

Specifications

Output Voltage: 24 VDC ±10% @ 1.5A rated current
Dimensions: 1.40" x 3.50" x 2.10"
(35 mm x 90 mm x 54.5 mm) (W x H x D)

ADVANCED DISPLAY FEATURES

Easy to Use

The user-friendly dual-line display makes the PROVU easy to set up & program. No jumpers to set for input selection. All setup & programming is done via the front panel.

Rounding for Even Steadier Display

Input Setup

Display Setup

The rounding feature is used to give the user a steadier display with fluctuating signals. It causes the display to round to the nearest value according to the rounding value selected (1, 2, 5, 10, 20, 50, or 100). For example, with a rounding value of 10, and an input of 12346, the display would indicate 12350.

Quick Preset Changes

The front panel BATCH key is configured by default to access the preset menu. The preset may be changed quickly and easily between batches without the need to enter setup menus.

Non-Resettable Grand Total

The user can set up the grand total to be non-resettable by entering a specific password. Once this is done, the grand total can never be reset.

Total Conversion Factor

The user can enter a conversion factor that allows the controller to display total in different units than the rate. For instance, an operator could measure flow rate in gallons per minute and grand total in hundredths of acre-feet.

On-Board Digital Input

The PD6210 includes a digital input as standard. This digital input can operate with the tare, reset tare, or interlock relays feature, force relays on from a signal from a PLC or relay on other equipment, and much more. This is ideal for installations where the controller is inaccessible behind a cover, or where an additional function key is needed for customized operation.

Clearly Labeled Displays

The main display alternates the display to show the controller state when in pause or stop mode. When displaying rate, grand total, batch count, or preset, the lower display alternates between the display value and the function or unit of measure.

Batch Total & Preset

Alternating Display

BATCH CONTROLLER FEATURES

A PROVU batch controller can be programmed for a wide variety of applications. Setup is easy for single or multi-stage batching. Automatic overrun correction keeps the batch size accurate, even over time and with system wear. It can record grand total, or non-resettable grand total with a time base of seconds, minutes, hours or days. The user can program a conversion factor, and configure a non-resettable grand total, and password protection.

Manual or Automatic Batch Control

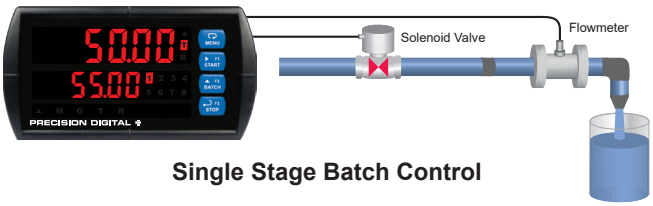
Batches may be started manually with the START front panel button, or with a remote digital input trigger. Batches may also be programmed to start automatically after a 0 to 999.9 second delay after the end of the last completed batch. A manually stopped batch will not automatically restart. The START button or digital input must be used.

Automatic Overrun Correction

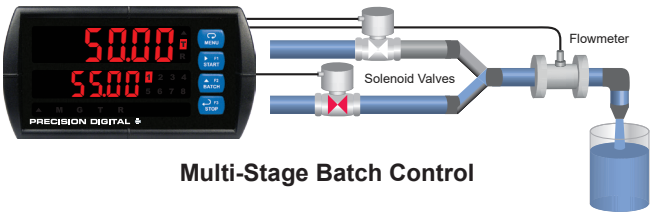
The PROVU batch controller will correct for batch overrun or shortages automatically. By tracking the amount the batch was off by, the controller will automatically adjust the batch by modifying the batch relay deactivation time.

Single and Multi-Stage Batching

The PROVU can be used as a single or multi-stage batch controller. Relays assigned to the total act as batch control relays, with additional relays beyond the first including a preclose value. The preclose deactivates the relay before the batch is finished, to allow slower fill rates and a more accurate batch finish. With expansion module relays, up to eight-stage batching is possible. Each additional stage batching relay has an individually programmable preclose amount.



Single Stage Batch Control



Multi-Stage Batch Control

Easily Choose Your Display Information

Batch Total & Preset
The preset on the second display provides even quicker access to the preset menu just by using the arrow keys to change the value.

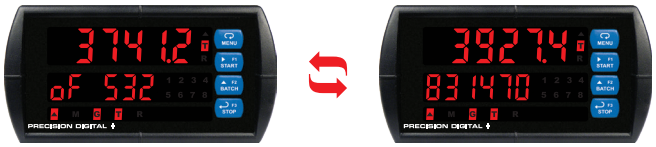
Batch Total & Rate
The rate on the second display may be alternated with units for variable flow batching systems. Rate alarms may also be used during the batch process.

Batch Total & Batch Count
The batch count on the second display, tracks completed batches. The count may be set back to 0 with the reset menu.

Batch Total & Grand Total
A grand total with overflow digits for up to a 9 digit total may be displayed in the second display, with password protection and non-resettable programmable features.

Grand Total Displays Up to 9 Digits

These batch controllers can display up to nine digits of total flow with the grand total feature. In the diagrams below, the batch controller is displaying 532,831,470 by toggling between a display of “oF 532” and “831470”. Notice the (GT with arrow ▲ symbol) is lit up indicating the display is in a grand total overflow mode.



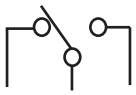
Grand Total & Rate Alarms

The PROVU’s four internal and four external relays can be set up to alarm when the grand total reaches a user-defined set point or when the rate is above or below a certain value. Rate alarms are only activated when the batching process is running. A variety of reset modes are available and the user can also program time delays and fail-safe operation.

Four Types of Password Protection

The PROVU offers 4 types of password protection. Level 1 protection allows the operator use of only the 3 pre-configured function keys on the front panel without a password. Level 2 protection allows the operator use of only the function keys and the ability to change set points without a password. Level 3 protection restricts the function keys and all configuration menus without a password. Grand total reset protection prevents the total from being reset manually.

OUTPUTS



Relay Outputs

The PROVU includes four 3 A Form C relays (SPDT) with multiple programmable functions. One (relay 1) should always be used for batch control. Other relays may be configured as additional batch relays, with or without preclose for multi-stage batching or as alarms for the rate or grand total. Each alarm has multiple power loss fail-safe options. Alarm relays can be configured for proper protective action upon input loop break. Alarm relay ON and OFF delay times are user adjustable. Up to eight front panel indicators show alarm and/or relay state. All alarm relays can be configured for 0-100% deadband. Rate alarms are only active while a batch is running.

Relay Operation/Configuration

There are powerful relay functions that can be configured in the PROVU controller, including:

- Single and multiple stage batch control with preclose
- Manual and automatic batch control modes
- Rate alarms during batch process
- Grand total alarms
- Sampling function
- User selectable fail-safe operation
- Relay action for loss (break) of 4-20 mA input signal (PD8-6210)
- Time delay (on and off), independent for each alarm relay

Analog Output

The isolated analog retransmission signal can be configured to represent the batch total, grand total, maximum (peak) value, minimum (valley) value, the value for any of the eight relay set points, manual setting control, or Modbus input. While the output is nominally 4-20 mA, the signal will accurately accommodate under- and over-ranges from 1 to 23 mA.

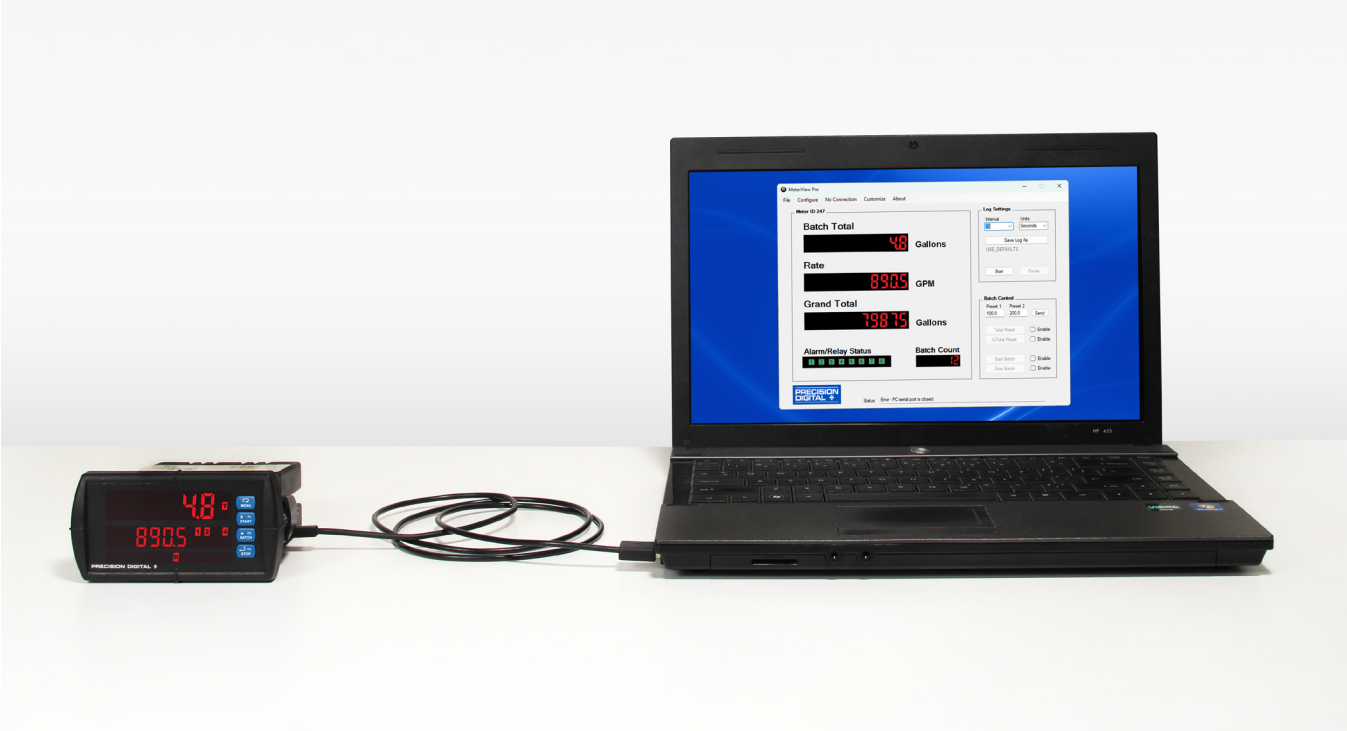
Isolated Transmitter Power Supplies

A powerful 24 V @ 200 mA power supply is a standard feature on the PROVU controller. It can be configured for 5, 10, or 24 V (default) by means of a simple internal jumper (see manual). An additional power supply (24 V @ 40 mA) is standard with the 4-20 mA output option.

QUICK & EASY SCALE & PROGRAMMING METHODS

The PROVU can be programmed either via the front panel push buttons or free, PC-based MeterView Pro software. MeterView Pro is resident on the PROVU and is accessed by a provided USB cable, so it is by far the easiest way to program the PROVU. The PROVU can be calibrated either by applying a known signal or scaled by entering a desired value with the front panel buttons or MeterView Pro software. Most customers will use the scaling method because it is simpler and does not require a calibrated signal source. Selecting the input to be current or voltage is done with the front panel buttons or MeterView Pro software. Once programming is completed it can be locked with a password.

Free PC-Based MeterView Pro USB Programming Software & Cable



The PROVU comes preloaded with free MeterView Pro programming software that connects and installs directly to your PC with a standard USB cable, also provided free with each instrument. This eliminates the need to insert CDs, install drivers, or download software from the internet. When you connect your PROVU to your PC, MeterView Pro is downloaded to your PC, the software automatically selects the model you are programming, and you're ready to start programming immediately. Further simplifying the programming process, the PROVU can be powered from the USB port, so no need to apply external power while programming your controller. In addition to programming, the software will also allow you to monitor, and datalog a PROVU using your PC. You can also generate and save programming files for later use.

Click here to watch the Meterview Pro video

Password Protection

The Password menu is used for programming three levels of security to prevent unauthorized changes to the programmed parameter settings:

Pass 1: Allows use of function keys and digital inputs

Pass 2: Allows use of function keys, digital inputs and editing set/reset points

Pass 3: Restricts all programming, function keys, and digital inputs

4-20 mA OUTPUT & RELAYS

4-20 mA Analog Output

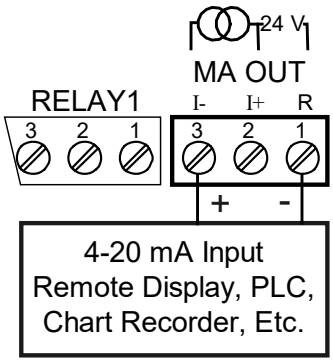
The isolated analog retransmission signal can be configured to represent the process variable (PV), maximum (peak) value, minimum (valley) value, the value for any of the eight relay set points, or Modbus input. While the output is nominally 4-20 mA, the signal will accurately accommodate under- and over-ranges from 1 to 23 mA.

The 4-20 mA output can be reversed scaled such that 4 mA represents the high value and 20 mA represents the low value. For instance, a 4-20 mA output signal could be generated as the controller went from 100.0 to 0.0.

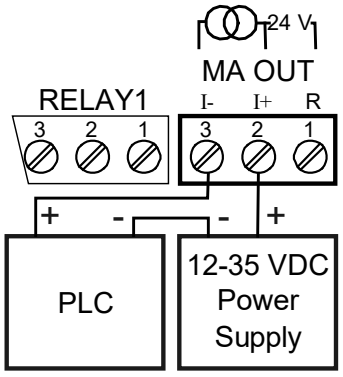
For applications where the input was linearized by the PROVU, the 4-20 mA output will represent that linearized value.

Connections

The PROVU can provide 40 mA at 24 VDC to power the 4-20 mA output signal or an external power supply can be used:



4-20 mA Output Powered by PROVU



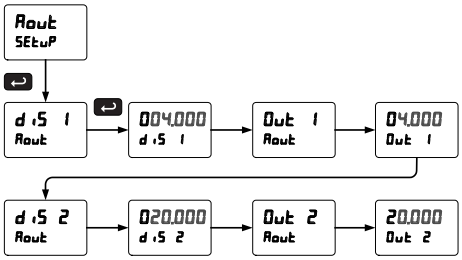
4-20 mA Output Powered by External Power Supply

The internal 24 VDC power supply powering the analog output may be used to power other devices, if the analog output is not used. The I+ terminal is the +24 V and the R terminal is the return.

The 4-20 mA output can either be programmed using the front panel push buttons or free MeterView Pro software.

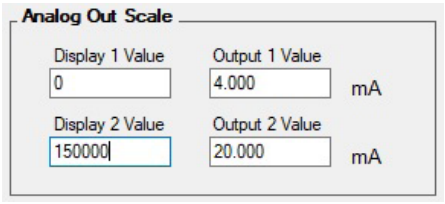
Front Panel Push Button Programming

The 4-20 mA analog output can be scaled to provide a 4-20 mA signal for any display range selected. No equipment is needed to scale the analog output; simply program the display values to the corresponding mA output signal. The Analog Output menu is used to program the 4-20 mA output based on display values.

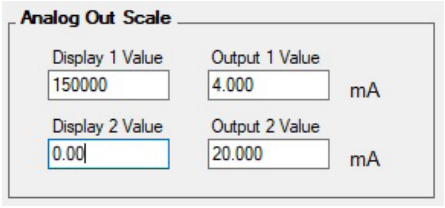


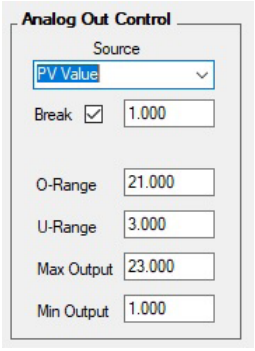
MeterView Pro Software Programming

When a controller is programmed as shown below, the output will be 4.00 mA when the display reads 0 and the output will be 20.00 mA when the display reads 150000.



The controller can be set up for reverse scaling as shown below: the output will be 4.00 mA when the display reads 150000 and the output will be 20.00 mA when the display reads 0.





Source: Source for generating the 4-20 mA output (e.g. PV)

Break: Analog output value when loop break is detected

Overrange: Analog output value with display in overrange condition

Underrange: Analog output value with display in underrange condition

Max: Maximum analog output value allowed regardless of input

Min: Minimum analog output value allowed regardless of input

Front Panel LEDs

The controller is supplied with four alarm points that include front panel LEDs to indicate alarm conditions. This standard feature is particularly useful for alarm applications that require visual-only indication.

Manual Output Control

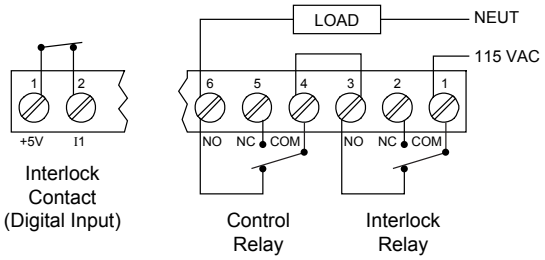
Take control of any output with this feature. All relays can be forced ON or OFF, and the 4-20 mA output signal can be set to any value within its range. When the relays and 4-20 mA output are controlled manually, an LED labeled "M" is turned on and the associated Alarm LEDs (1-8) flash every 10 seconds indicating that the controller is in manual control mode.

Sampling Function (PV Triggered Timed Relay)

The sampling function allows the operator to set a relay as a "sampling" relay. When the PV reaches that set point, it will close that relay's contacts for a preset period of time (0.1 to 5999.9 seconds). An example of its use may be for beer/ale fermentation. When the batch reaches a certain pH, the relay contacts would close and by some means (light, horn, etc.) alert someone to take a sample, or provide the trigger to automatically take a sample of the batch. The utility of this function can, of course, be expanded beyond sampling and be used whenever a timed relay output closure is required when the PV reaches a certain set point.

Interlock Relay(s)

This function allows a process to use one or more very low voltage input signals or simple switch contacts to control the state of one or more internal "interlock" relays. A violation (i.e. loss of input, open switch, or open circuit) forces one or more N/O interlock relay contacts to open. One input can be used in series with a number of interlock switches, or up to eight inputs can be required to force-on one (or more) internal interlock relays. Requires PDA1044 Digital I/O module or use of on-board digital input F4. Please see *PROVU Series Safety Interlock Feature* whitepaper on our website for more information.

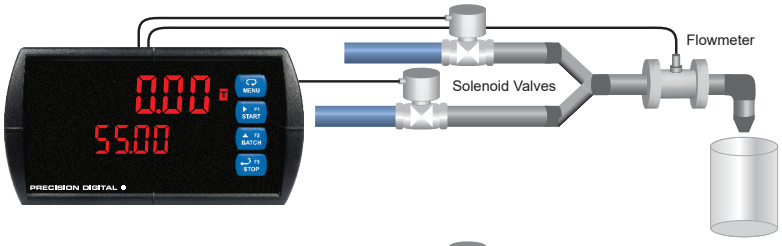


Switching Inductive Loads

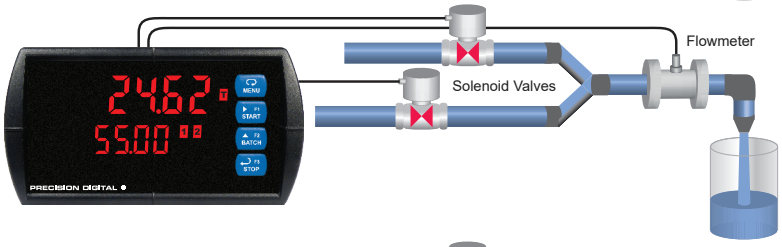
The use of suppressors (snubbers) is strongly recommended when switching inductive loads to prevent disrupting the microprocessor's operation. The suppressors also prolong the life of the relay contacts. Precision Digital offers the PDX6901.

MANUAL MULTI-STAGE BATCH CONTROL OPERATION

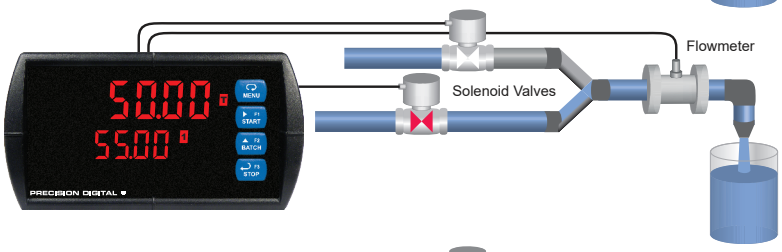
System Setup
Both valves are closed with an empty barrel in place. The batched total is displayed in the upper display, the preset is selected for the lower display.



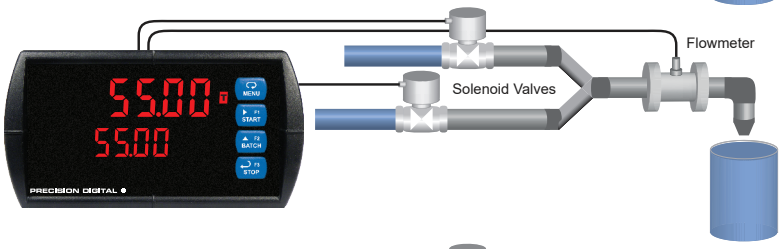
Batch Start
The START button is pressed. Both valves open. The barrel begins to fill.



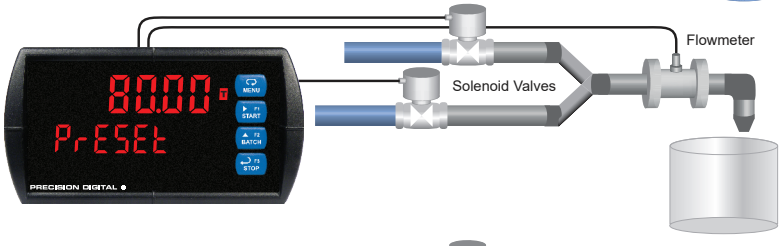
Preclose Valve
When the batch total reaches a value of 50.00 (Preset [55.00] – Preclose [5.00]) the full-flow valve closes. The fill rate of the tank slows as a result.



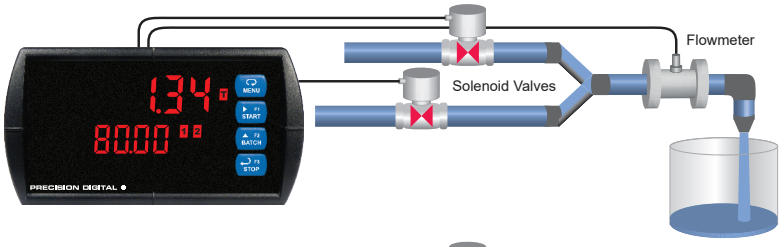
Completed Batch
When the batch total equals the preset amount, the restricted-flow valve closes. The barrel is now full. If some overrun occurs, the next batch will adjust for this offset amount to maintain accuracy.



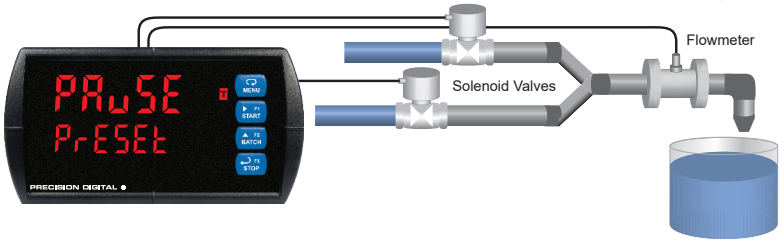
Change Preset
After placing a new, empty barrel, a new preset fill amount may be selected with the Batch key, while the process is stopped.



Begin New Batch
Press the START key and a new batch will begin. With both valves open, the process continues.



Pause/Stop
At any time, the STOP button may be pressed, once to Pause the process, or twice to cancel the batch, which stops the process.



DIGITAL COMMUNICATIONS

Modbus RTU Serial Communications

With the purchase of a serial communication adapter, PROVU controllers can communicate with any Modbus Master device using the ever-popular Modbus communications protocol that is included in every PROVU. In addition to the typical Modbus capabilities of reading PVs and writing set points, below are some examples of other things that can be done with the controller's Modbus communications:

- Send a 6-character message to lower display upon an event
- Convert a digital value to a 4-20 mA signal
- Remote user control (i.e. change set points, acknowledge alarms)
- Input a Modbus digital PV (in place of analog input)
- Remote override of any or all relays and analog outputs

Modbus PV Input

Remote Message

Click here for more information on the PROVU's Modbus capabilities

Serial Communication Devices

Precision Digital provides a variety of serial communication devices to interface the PROVU controller with other devices. For more information visit predig.com/PROVUSerialDevices.

PDA1232 & PDA1485 Communication Modules

Serial communications on the PROVU controller can be added anytime with external PDA1232 (RS-232) or PDA1485 (RS-485) communication adapters. Free Modbus protocol is included for use with the PROVU serial communications modules.

Serial Adapters & Converters*

PDA1232
PROVU RS-232 Serial Adapter

PDA1485
PROVU RS-485 Serial Adapter

PDA7485-I
RS-232 to RS-422/485 Isolated Converter

PDA8232-N
USB to RS-232 Non-Isolated Converter

PDA8485-I
USB to RS-422/485 Isolated Converter

For more info on serial converters click here.

*All adapters and connectors supplied with appropriate cables.

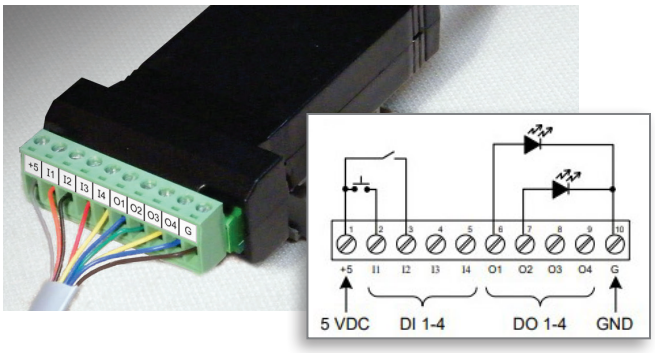
FIELD EXPANSION MODULES

Add functionality to the PROVU in the field with easy-to-install external expansion modules. Add RS-232 or RS-485 communications, I/O modules (up to 2), and 4-relay expansion module. The menu items for these modules do not appear until the module is connected, simplifying the basic menu. Relay and digital I/O modules are shown below with optional DIN rail mounting kit, P/N PDA1002.

PDA1044 I/O Expansion Module

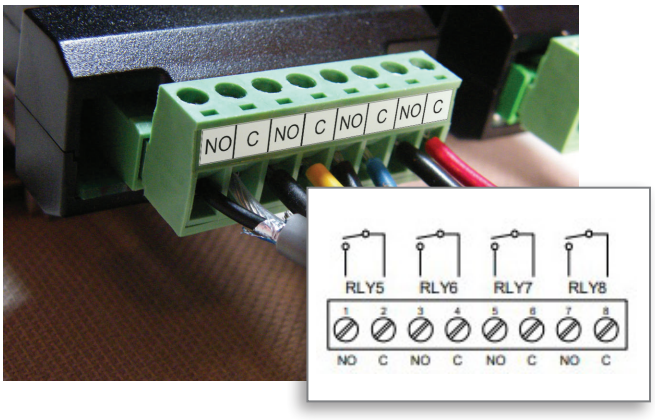
Four digital inputs and four digital outputs are available per expansion module. The PROVU controller will accept two of these modules. External digital inputs can function similarly to the front panel function keys or on-board digital input F4. They can be configured to trigger certain events (i.e. acknowledge/reset alarms, reset max and/or min values, disable/enable all output relays, and hold current relay states), provide direct menu access point, or mimic front panel keys. The I/O module can be used to configure the PROVU remotely, in essence giving the user control of the four front panel push buttons. This feature is particularly useful if the controller is mounted inside an explosion-proof enclosure.

Digital outputs can be used to remotely monitor PROVU's alarm relay output states, or the states of a variety of actions and functions executed by the controller.



PDA1004 Relay Expansion Module

An external module containing four 3 A Form A (SPST) relays can be added to the PROVU at anytime. Removable screw terminal blocks accept 12 to 22 AWG wire.



PHYSICAL FEATURES

The PROVU is designed for ease-of-use in industrial applications. Considerations include a NEMA 4X front panel, wide operating temperature range, removable screw terminal connectors, snap in place mounting brackets, forgiving panel cutout requirement, and UL Listing for electrical safety. All of these features are backed by a 3-year warranty.

Type 4X / NEMA 4X Front Panel

Not only does the PROVU's front panel UL Type 4X approval indicate it is waterproof, but it also indicates it is rugged. Part of the UL Type 4X test is to drop a 2 inch solid stainless steel ball from 8 feet on top of the controller's faceplate.

Wide Operating Temperature Range

The PROVU can operate from -40 to 65°C (-40 to 150°F) meaning it can be installed in a wide variety of indoor and outdoor industrial applications. And over this range, the PROVU will drift no more than 0.005% of calibrated span/°C max from 0 to 65°C ambient and 0.01% of calibrated span/°C max from -40 to 0°C ambient.

Removable Screw Terminal Connectors

Industrial applications require screw terminal connections for easy field wiring and the PROVU goes one step further in convenience by also making them removable.

Easy Plug-in Removable Terminal Connectors

Secured-in-Place Rugged Mounting Brackets

If you're installing the PROVU outdoors in the hot or cold weather, the last thing you want to do is fumble around with mounting brackets that don't stay in place. The PROVU's mounting brackets can be easily secured into place and then screwed down to the panel. These brackets are rugged so they can be tightened to the panel to provide a solid NEMA 4X seal.

Easy Secured-in-Place Mounting Brackets

Forgiving Panel Cutout Requirement

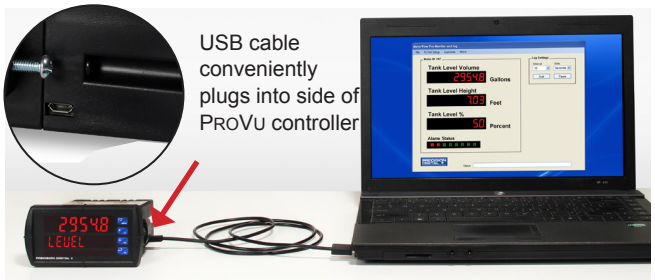
The PROVU's bezel has been oversized to allow for not perfectly executed panel cutouts where NEMA 4X seal is not required.

Over-Sized Bezel to Completely Cover Panel Cutouts

UL Listing for Electrical Safety

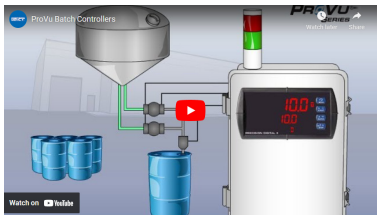
UL & C-UL Listed: USA & Canada
UL 508 Industrial Control Equipment
UL File Number: E160849
Front Panel: UL Type 4X, NEMA 4X, IP65; panel gasket provided
Low Voltage Directive: EN 61010-1:2010 Safety requirements for measurement, control, and laboratory use

USB Port for Easy Connection to MeterView Pro Free Software



USB cable conveniently plugs into side of PROVU controller

VIDEOS TO WATCH



PROVU Batch Controllers

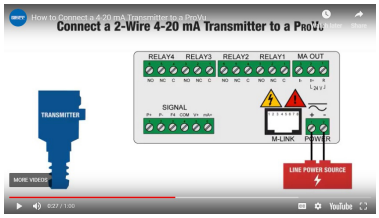
Learn How to Use the PROVU as a Batch Controller.

PROVU Function Keys

Learn How the PROVU's Function Keys Increase the Utility of the PROVU.

Connect a PROVU to a PC Using MeterView Pro

Learn How Easy it is to Use MeterView Pro Software.



Connect a 2-Wire 4-20 mA Transmitter to a PROVU

Learn How to Connect Your Transmitter to a PROVU.

Introduction to the Helios

Learn About the Large Display Version of the PROVU.

OPERATIONAL FEATURES

Function Keys, F4 Terminal, Digital Inputs

There are three ways the user can interact with the PROVU to perform a variety of useful functions:

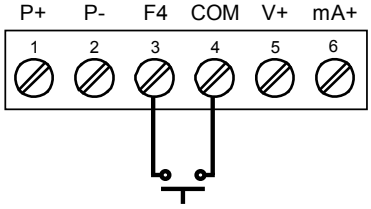
1. Three Front Panel Function Keys

The default settings for the function keys are:

F1 START	F2 BATCH	F3 STOP
Start/Resume Batch	Access Batch Preset Menu	Pause/Stop Batch

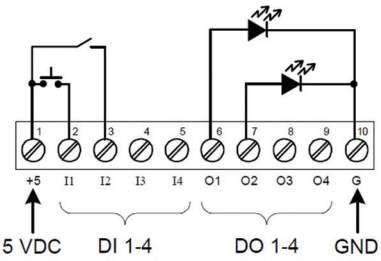
2. F4 On-Board Digital Input

The PD6210 includes a digital input as standard. This digital input can start/stop a batch, facilitate remote operation of front-panel buttons, acknowledge/reset relays, reset max/min values, and much more. This is ideal for installations where the controller is inaccessible behind a cover, or where an additional function key is needed for customized operation.



The F4 terminal is particularly useful for wiring up a remote switch to reset the relays as shown here:

3. Optional 4 Digital Input/Output Module PDA1044



With these three methods, the PROVU can be programmed to trigger certain events (i.e start/stop a batch, acknowledge/reset relays, reset max/min values), provide direct menu access points and more.

Function Key, Digital Inputs, & Digital Outputs Descriptions

The following table describes the actions that PROVU function keys and digital inputs can be programmed to perform. The table also describes how the digital outputs can be used to remotely monitor the PROVU's alarm relay states, or the states of a variety of actions and functions executed by the controller.

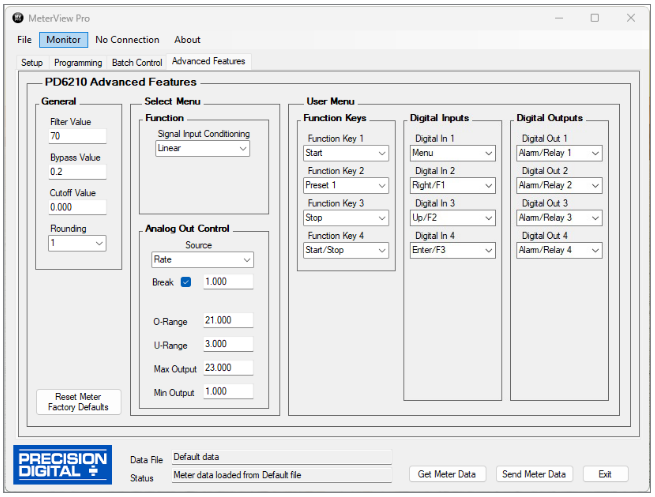
Display	Description	Item
StArt	Starts the batch process	FK, DI
StoP	Stops the batch process	FK, DI
SrtStP	Allows the same function key to both start and stop the batch process	FK, DI
rLY d	Disable all relays until a button assigned to enable relays (rLY E) is pressed	FK, DI
rLY E	Enable all relays to function as they have been programmed	FK, DI
O Hold	Hold current relay states and analog output as they are until a button assigned to enable relays (rLY E) is pressed	FK, DI
d Hold	Hold the current display value, relay states, and analog output momentarily while the function key or digital input is active. The process value will continue to be calculated in the background.	FK, DI
Ln1 Hi	Display maximum display value on line 1	FK, DI
Ln1 Lo	Display minimum display value on line 1	FK, DI
Ln1 HL	Display maximum & minimum display values on line 1	FK, DI
Ln2 Hi	Display maximum display value on line 2	FK, DI
Ln2 Lo	Display minimum display value on line 2	FK, DI
Ln2 HL	Display maximum & minimum display values on line 2	FK, DI
Ln2 Gt	Display the grand total on line 2	FK, DI
Ln2 bc	Display the batch count on line 2	FK, DI
ContrL	Directly access the control menu	FK, DI

Display	Description	Item
diSAbL	Disable the selected function key or digital I/O	FK, DI
AcK	Acknowledge all active relays that are in a manual operation mode such as auto-manual or latching	FK, DI, DO
rESEt	Directly access the reset menu	FK, DI
rSt t	Reset the total	FK, DI
rSt Gt	Reset the grand total	FK, DI
rSt bc	Reset the batch count	FK, DI
rSt Hi	Reset the stored maximum display value	FK, DI, DO
rSt Lo	Reset the stored minimum display value	FK, DI, DO
rSt HL	Reset the stored maximum & minimum display values	FK, DI, DO
rELAY	Directly access the relay menu	FK, DI
PrESEt	Change the preset value	FK, DI
SEt 2*	Directly access the set point menu for relay 2 (*through 8)	FK, DI
mEnu	Mimic the menu button functionality (digital inputs only)	DI
rIGHt	Mimic the right arrow/F1 button functionality (digital inputs only)	DI
uP	Mimic the up arrow/F2 button functionality (digital inputs only)	DI
EntEr	Mimic the enter/F3 button functionality (digital inputs only)	DI
F On 1*	Force relay 1 (*through 4) into the on state. This is used in conjunction with a digital input expansion module to achieve interlock functionality.	FK, DI
ALn1 1*	Provide indication when alarm 1 (*through 8) has been triggered (digital outputs only)	DO

FK: Function Keys DI: Digital Inputs DO: Digital Outputs

Remote Operation of Front Panel Buttons

The user can operate the front panel buttons from a remote location by using digital inputs programmed in the following manner:



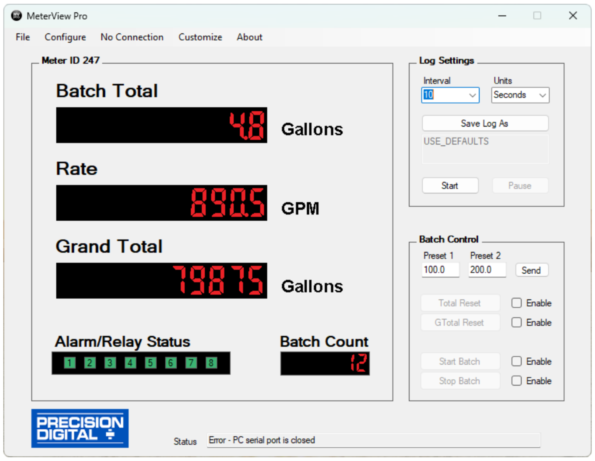
Click here to watch the Function Keys video

Max / Min Display

Max/Min (or Peak/Valley) is standard on the PROVU PD6210. Either display can be configured to show either maximum or minimum excursion since last reset. The displays can also be configured to toggle between Max and Min values. Both values can be simply reset from the front panel.

MeterView Pro Monitoring & Datalogging Software

Not only does free MeterView Pro software greatly simplify setup and programming of the PROVU, it can also be used to monitor and datalog your process.



- Batch Count, Batch Control, Batch Functions
- Custom Tags: i.e. Filling Flow Rate
- Custom Units: i.e. GPM, Gallons, Feet, Percent
- Alarm Status Indicators

Datalog Report

Collected data logger information can be sent to a CSV file for importing into a spreadsheet program. Below is an example of one such file. Of course, once within the spreadsheet, much can be done to customize the data.

w Pro\Furnace 3.csv Created 8/10/2010 3:22:37 PM

COM5Logging Rate: 1 update every 5Seconds

Date & Time	Tag1	Display	Units	Tag2	Display	Units	Tag3	Display	Units	R1	R2	R3	R4
8/10/2010 3:22	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:22	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:22	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:22	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:22	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:24	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:24	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:24	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off

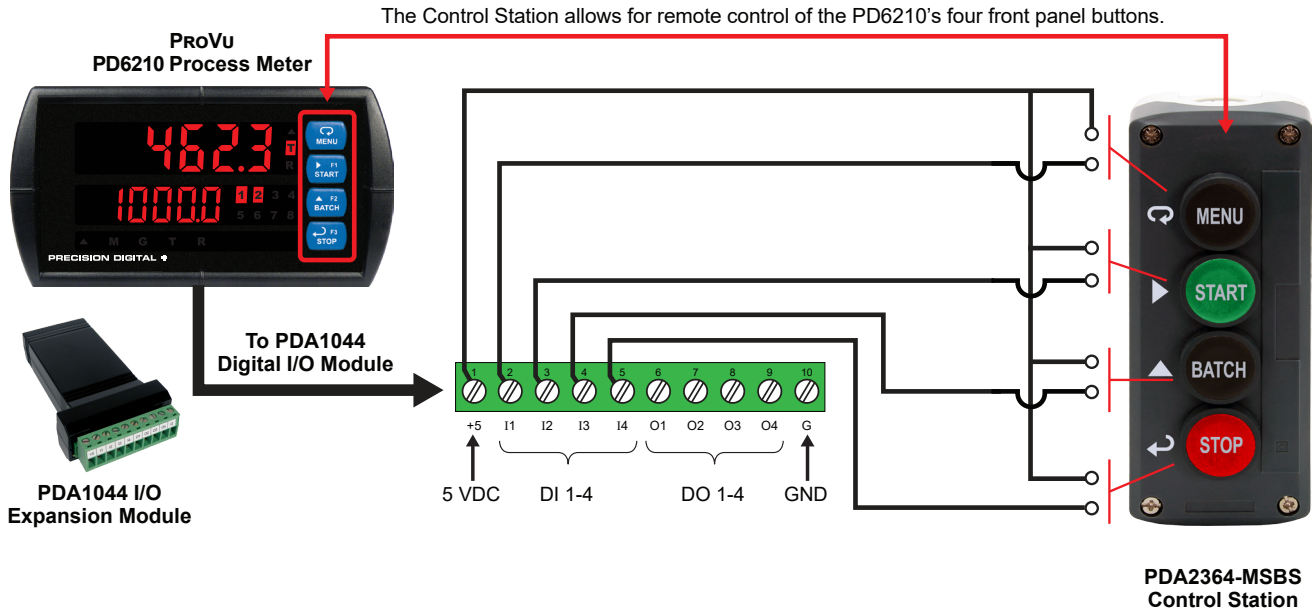
Relay Control

Relays can be controlled from MeterView Pro for testing purposes. This is commonly done to determine whether the relays are functioning properly. In the *Setup* window, under *Relay and Digital Out Test* you have the option of selecting the relays you want in an ON state or OFF state and also whether you want to leave the relays in manual control or to return them to automatic operation.

Click here to watch the Meterview Pro video

Four-Position Control Station for Remote Operation of PROVU Buttons

The PD6210's four programming and operations buttons can be remotely controlled by using the PDA2364-MSBS 4-button control station accessory as shown in the diagram below.



Plastic Control Stations For The PROVU Batch Controllers

The PDA2360 series of plastic control stations provide a convenient way to remotely control devices such as Precision Digital's PROVU Batch Controllers. The PDA2364-MSBS four-position control station mimics the PROVU's four front panel buttons: Menu, Start, Batch, and Stop. The PDA2361-R can be used to reset the total, the PDA2360-E is an emergency stop button, the PDA2361-A is used to acknowledge an alarm, and the PDA2361-Q is to silence an alarm.

PDA2364-MSBS

PDA2361-R

PDA2360-E

PDA2361-A

PDA2361-Q

- **Complete Pre-Assembled Stations**
- **Normally Open (NO) Spring Return Plastic Bezel Pushbuttons**
- **Trigger Action Turn to Release Pushbutton (PDA2360-E only)**
- **IP65 / NEMA 4, 4X and 13 Rated**
- **Four-Position Control Station for Remote Operation of PROVU Buttons**
- **Wall Mountable**

PDA2360 Series Control Stations	
Model	**Description**
PDA2361-R	1 Black Reset Button
PDA2360-E	1 Emergency Stop Button
PDA2361-A	1 Black Ack Button
PDA2361-Q	1 Black Silence Button
PDA2364-MSBS	4 Buttons: Menu, Start, Batch, and Stop

NEMA 4 & 4X FIELD ENCLOSURES

Precision Digital offers a variety of rugged enclosures that provide a high degree of protection against harsh operating environments. Thermoplastic and stainless steel NEMA 4X, and painted steel NEMA 4 enclosures for up to 10 PROVU controllers are available. In addition, Precision Digital offers a Light/Horn that can be mounted to most of these enclosures to provide visual and audible indication of alarms. Many enclosures also have sufficient space to house Precision Digital's model PDA1024-01 24 V power supply to provide power to transmitters and sensors that require more than the 200 mA that the PROVU can provide.

Need help selecting the right enclosure?
www.predig.com/esu

Download free 3-D CAD files of these instruments to simplify your drawings!
predig.com/documentation-cad

Plastic Enclosures (Externally Mounted)

PDA2300 Series (Covers with Hinge & Hasp)

This is Precision Digital's most economical line of enclosures for the PROVU. The controller mounts through a hinged cover with a SS hasp allowing for easy access to controller wiring. Enclosures are available for 1 through 10 PROVUS. The enclosure is large enough to mount the PDA1024-01 24 V transmitter supply in.

PDA2301

PDA2310

PDA2800 Series (Covers with Screws)

This is Precision Digital's smallest line of enclosures for the PROVU. The controller mounts through the cover that screws to the base of the enclosure. Available for 1 and 2 PROVUS.

PDA2811

PDA2812

Plastic Enclosures (Internally Mounted)

PDA3400 Series (Covers with screws)

This is Precision Digital's only line of enclosures for the PROVU where the controller is fully housed inside the enclosure. Enclosures are available for 1, 2 and 3 PROVUS.

PDA3407

PDA3412

Stainless Steel Enclosures (Externally Mounted)

PDA2600 Series (Covers with Hinge & Hasp)

This is Precision Digital's stainless steel line of enclosures for the PROVU. The controller mounts through a hinged cover with a SS hasp allowing for easy access to controller wiring. Enclosures are available for 1 through 6 PROVUS.

PDA2604-1

PDA2606

Steel Enclosures (Externally Mounted)

PDA2700 Series (Covers with Hinge & Hasp)

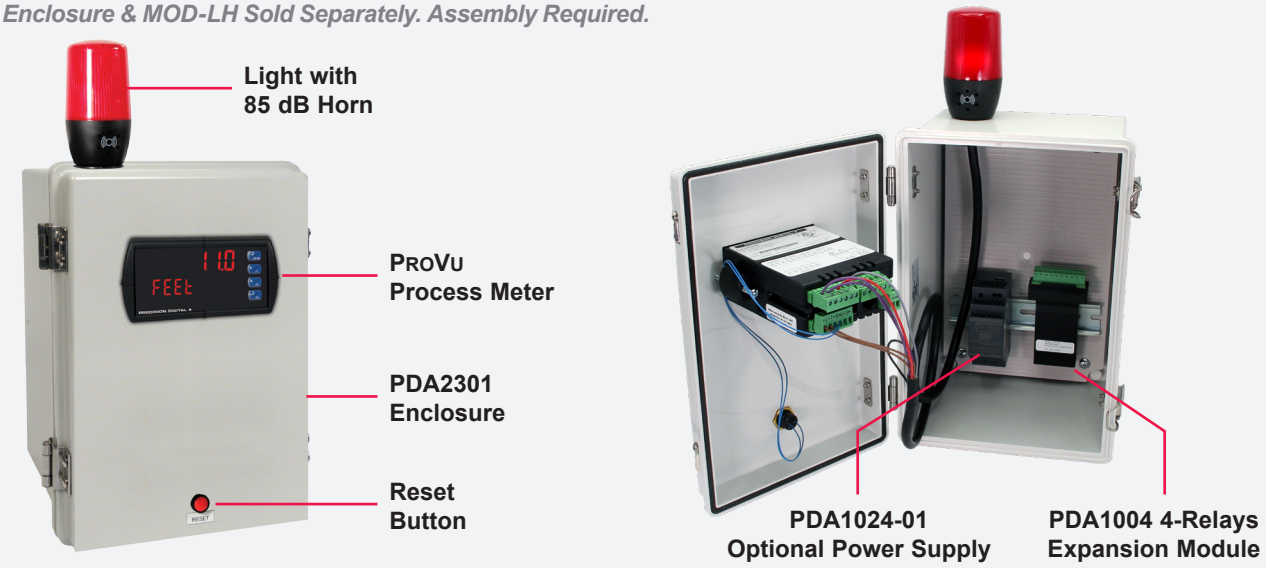
This is Precision Digital's painted steel line of enclosures for the PROVU. The controller mounts through a hinged cover with a hasp allowing for easy access to controller wiring. Enclosures are available for 1 through 6 PROVUS.

PDA2704-1

PDA2706

LIGHT/HORN & BUTTON MOUNTED TO ENCLOSURE

PROVU Meter in a PDA2301 Enclosure with MOD-LH Light/Horn and Button.
Enclosure & MOD-LH Sold Separately. Assembly Required.



Overview

Precision Digital offers a wide variety of NEMA 4 and NEMA 4X enclosures that can be equipped with MOD-LH Light/Horn and Button. When MOD-LH is ordered, the accompanying enclosure on the order comes with the holes pre-drilled for the Light/Horn and the Button and the user performs the mounting and wiring. Meter and enclosure are sold separately. The Light/Horn and the Button can also be ordered as separate items and the user performs all hole-drilling, mounting and wiring as desired. The light and horn can be controlled independently of each other via separate relays on the PROVU meter; and since the meter's relays can be reset in a variety of ways, there are several ways the Light/Horn option can operate. For instance, the horn can be programmed to silence at any time via the Button or F3 front panel button on the PROVU, and light to reset automatically when the alarm clears as the following table illustrates:

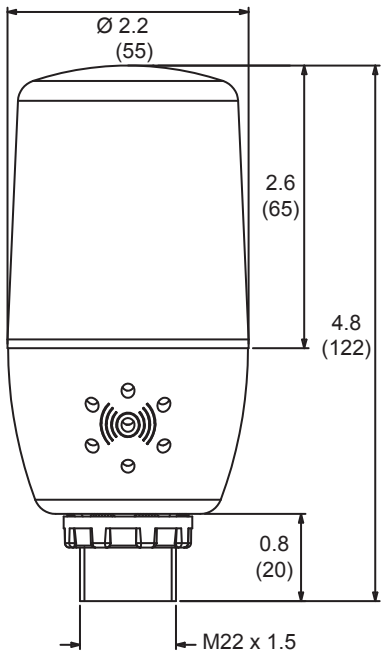
Relay #	Connected to	Default Reset Mode
1	Flashing Light(1)	Auto reset
2	Horn	Silence with Button at any time
3	User Device	As user desires
4	User Device	As user desires

1. Light can be wired to flash or stay steady on.
2. See page <?> for additional ways the relays can be programmed

Note: The Light/Horn accessory is powered from the 200 mA transmitter power supply; so when it is installed, there is less power available for the transmitter. See MOD-LH Light/Horn, Transmitter Power Supply specification on page 26 for details.

Dimensions

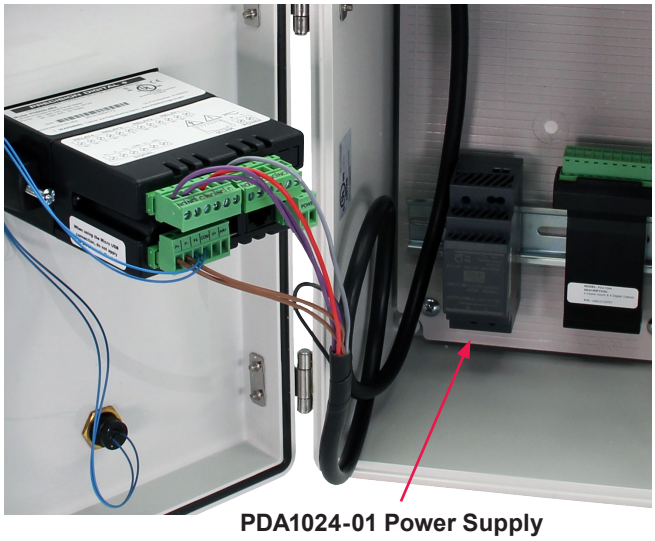
Units: Inches (mm)



Click here to watch the Light/Horn Video

PDA1024-01 24 VDC DIN Rail Power Supply

For transmitters and sensors that require more than the 200 mA power that the PROVU can provide, use Precision Digital's PDA1024-01 24 VDC power supply as shown here.



PDA1024-01 Power Supply Installed in a PDA2301 Enclosure

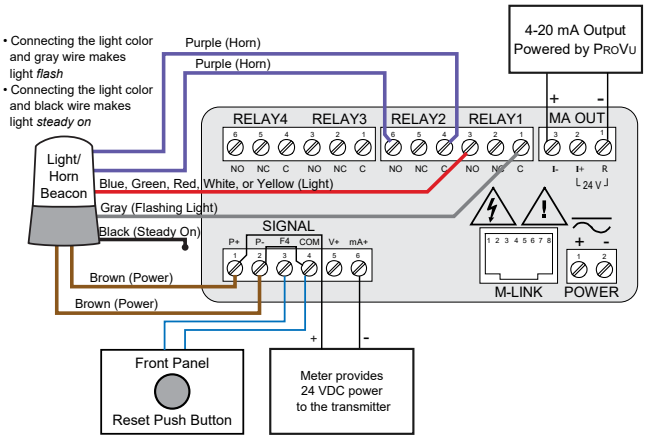
PDA1024-01
24 VDC Power Supply

Input Voltage	85 ~ 264VAC 120 ~ 370VDC
Output Voltage	24 VDC ±10% @ 1.5A rated current
Input Frequency	47 ~ 63Hz
AC Current	0.88A/115VAC 0.48A/230VAC
Connections	Two terminals provided for +V and -V to simplify wiring of multiple devices
Operating Temperature	-20° to 60°C
Safety Standards	UL60950-1, TUV EN60950-1 Approved, Design refer to EN50178
EMC	Compliance to EN55011, EN55022 (CISPR22) Class B, EN61000-3-2, -3 EN61000-4-2, 3, 4, 5, 6, 8, 11, ENV50204, EN55024, EN61000-6-1, EN61204-3 Light industry, Criteria A
Dimensions	1.40" x 3.50" x 2.10" (35 mm x 90 mm x 54.5 mm) (W x H x D)

Wiring Connections for MOD-LH Models

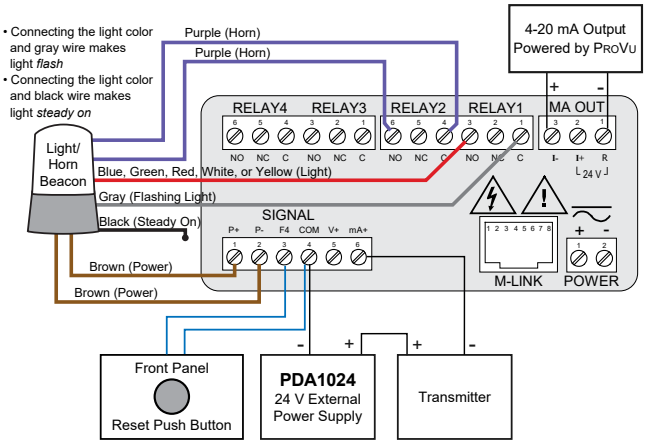
The following diagrams are for MOD-LH models with a single color light. See MOD-LH manual for wiring connections for MOD-LH5CB1 and MOD-LH3CB1-RYG models.

Using PROVU's Internal Power Supply



- Form C (SPDT) relays
- Two isolated supplies available even on 12/24 VDC input power models
- Removable terminal blocks
- 2 or 4 relays + isolated 4-20 mA output option
- Universal 85-265 VAC or 12/24 VDC input power
- Voltage or current inputs
- No jumpers needed for V/mA input selection
- M-Link for adding expansion modules
- Digital input (F4)

Using External Power Supply (PDA1024-01)



- Form C (SPDT) relays
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- 2 or 4 relays + isolated 4-20 mA output option
- Universal 85-265 VAC or 12/24 VDC input power
- Voltage or current inputs
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- M-Link for adding expansion modules
- Digital input (F4)

Complete Product Line of Displays and Controllers

IN ALL SHAPES, SIZES & LOCATIONS

Big, Bright Displays For Indoor or Outdoor in Bright Sunlight

Large Dual-Line 6-Digit Display

24 VDC Transmitter Power Supply

MeterView Pro USB Programming Software

Universal 85-265 VAC or 12-24 VDC Input Power Options

4-20 mA, 0-10 V, Thermocouple, RTD, Strain Gauge, High Voltage, & Modbus Inputs

Up To Four 3 A Form C Relays (SPDT)

IECEx

EXPLOSION-PROOF
ProtEX-MAX Series

- NEMA 4X, IP68 Rated Enclosure
- CapTouch Through-Glass Buttons
- Operating Temperature of -55 to 65°C
- Worldwide Approvals

LARGE DISPLAYS
Helios Series

- 1.8" Digits Readable From 100 Feet
- NEMA 4X, IP65 Rated Enclosure
- Operating Temperature of -40 to 65°C
- Now UL and C-UL Approved!

PANEL METERS
ProVu Series

- NEMA 4X, IP65 Rated Front
- Programmable Function Keys
- UL, C-UL, and CE Approvals
- 1/8 DIN Size

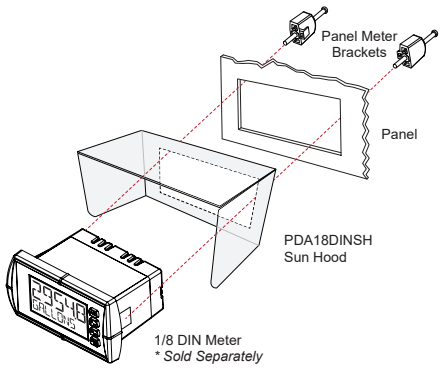
Go to PREDIG.COM for details on ProVu, ProtEX-MAX and Helios Series Meters

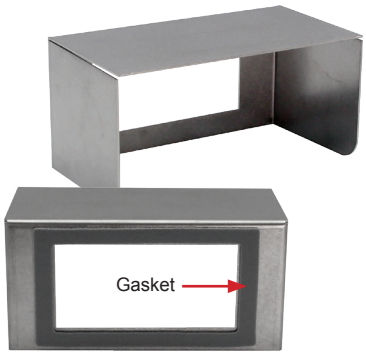
No More Sun Glare On Your Panel Meter Display!

NEW PDA18DINSH Sun Hood

The PDA18DINSH Sun Hood improves the readability of 1/8 DIN digital panel meters when they are mounted in direct sunlight by shading the instrument from the sun.

The Sun Hood is made from 18 gauge 316 stainless steel and mounts between the 1/8 DIN digital panel meter and the panel. In addition, a gasket is provided that installs between the Sun Hood and the panel to provide a NEMA 4X seal to the panel. The whole assembly is held in place by the panel meter's mounting brackets.





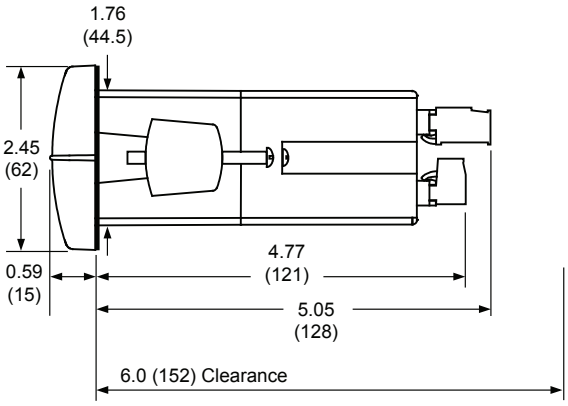
- Provides Shade for 1/8 DIN Digital Panel Meters
- Made from 18 Gauge 316 Stainless Steel
- Easy Mounting Requires no Drilled Holes in the Panel
- Includes Gasket to Maintain NEMA 4X Seal

SPECIFICATIONS

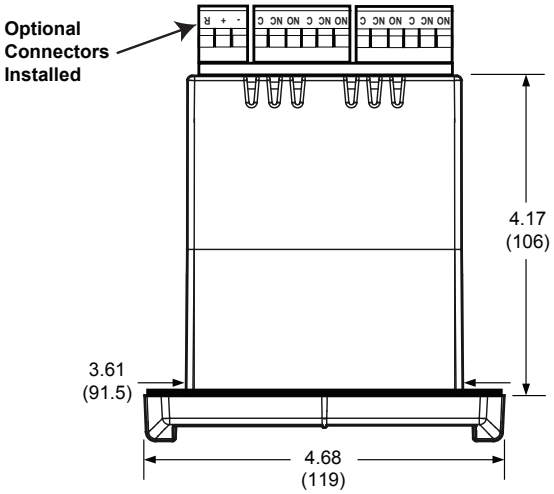
Model	PDA18DINSH
Material	18 gauge 316 stainless steel
Overall Dimensions	2.99" x 5.68" x 2.99" (H x W x D) (75 mm x 144 mm x 75 mm)
Weight	0.9 lb (0.4 kg)
Gasket Material	Silicone Foam

DIMENSIONS

Units: Inches (mm)



Side View

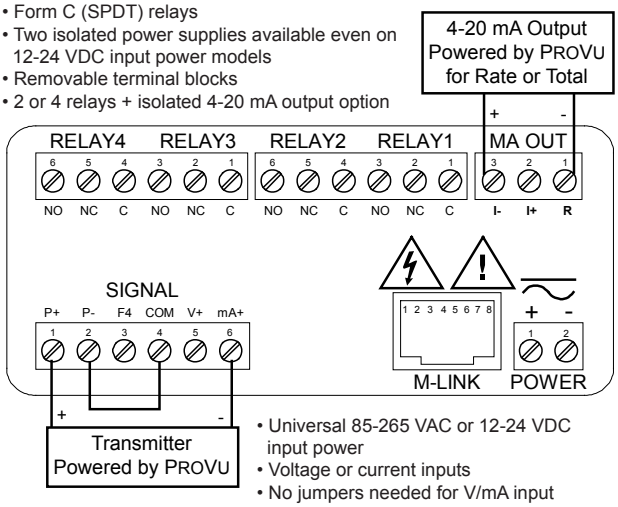


Top View

Notes:
1. Panel cutout required: 1.772" x 3.622" (45 mm x 92 mm)
2. Panel thickness: 0.040 - 0.250" (1.0 mm - 6.4 mm)
3. Mounting brackets lock in place for easy mounting
4. Clearance: Allow 6" (152 mm) behind the panel

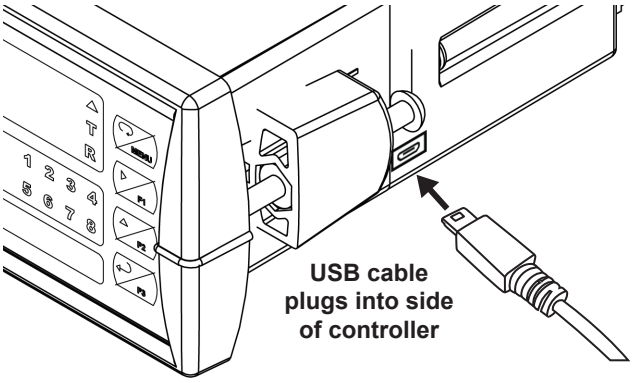
CONNECTIONS

- Form C (SPDT) relays
- Two isolated power supplies available even on 12-24 VDC input power models
- Removable terminal blocks
- 2 or 4 relays + isolated 4-20 mA output option



- Universal 85-265 VAC or 12-24 VDC input power
- Voltage or current inputs
- No jumpers needed for V/mA input selection
- M-Link for adding expansion modules
- Digital Input (F4) is standard

Click here to watch video on how to connect a 2-wire transmitter to a PROVU



SPECIFICATIONS

Except where noted all specifications apply to operation at +25°C.

General

Display	Line 1: 0.60" (15 mm) high, red LEDs Line 2: 0.46" (12 mm) high, red LEDs 6 digits each (-99999 to 999999), with lead zero blanking
Display Intensity	Eight user selectable intensity levels. Default value is six.
Display Update Rate	5/second (200 ms)
Overrange	Display flashes 999999
Underrange	Display flashes -99999
Display Assignment	Display Line 1: PV1, PV2, PCT, PV & units, gross weight, net & gross weight, max/min, max & min, set points, or Modbus input. Display Line 2: Same as Display Line 1; plus units, tag or turned off.
Programming Methods	Four front panel buttons, digital inputs, PC and MeterView Pro software, or Modbus registers.
Noise Filter	Programmable from 2 to 199 (0 will disable filter)
Filter Bypass	Programmable from 0.1 to 99.9% of calibrated span
Recalibration	All ranges are calibrated at the factory. Recalibration is recommended at least every 12 months.
Max/Min Display	Max/min readings reached by the process are stored until reset by the user or until power to the controller is turned off.
Rounding	Select 1, 2, 5, 10, 20, 50, or 100 (e.g. rounding = 10, value = 123.45, display = 123.50).
Tare	Tare function zeros out the controller to remove the for weight of a container. Tare function can be assigned to a function key, F4 terminal, or a digital input.
Password	Three programmable passwords restrict modification of programmed settings.
Non-Volatile Memory	All programmed settings are stored in non-volatile memory for a minimum of ten years if power is lost.
Power Options	85-265 VAC 50/60 Hz; 90-265 VDC, 20 W max; 12-24 VDC, 12-24 VAC, 15 W max. Powered over USB for configuration only.
Fuse	Required external fuse: UL Recognized, 5 A max, slow blow; up to 6 controllers may share one 5 A fuse
Normal Mode Rejection	Greater than 60 dB at 50/60 Hz
Isolation	4 kV input/output-to-power line 500 V input-to-output or output-to-P+ supply
Overvoltage Category	Installation Overvoltage Category II: Local level with smaller transient overvoltages than Installation Overvoltage Category III.
Environmental	Operating temperature range: -40 to 65°C (-40 to 149°F) Storage temperature range: -40 to 85°C (-40 to 185°F) Relative humidity: 0 to 90% non-condensing
Connections	Removable screw terminal blocks accept 12 to 22 AWG wire, RJ45 for external relays, digital I/O, and serial communication adapters.
Enclosure	1/8 DIN, high impact plastic, UL 94V-0, color: black
Front Panel	NEMA 4X, IP65
Mounting	1/8 DIN panel cutout required: 3.622" x 1.772" (92 mm x 45 mm) Two panel mounting bracket assemblies are provided.
Tightening Torque	Screw terminal connectors: 5 lb-in (0.56 Nm)
Overall Dimensions	4.68" x 2.45" x 5.64" (119 mm x 62 mm x 143 mm) (W x H x D)
Weight	9.5 oz (269 g)
Warranty	3 years parts & labor. See Warranty Information and Terms & Conditions on www.predig.com for complete details.

Batch Controller/Rate Totalizer Display

Rate Display Indication	-99999 to 999999, lead zero blanking. "R" LED illuminates while displaying rate.
Batch Total & Grand Total Display	0 to 999,999; automatic lead zero blanking. "**T**" LED is illuminated while displaying batch total. "**GT**" LEDs are illuminated while displaying grand total. Up to 999,999 for batch total/preset. Up to 999,999,999 with grand total-overflow feature. "oF" is displayed to the left of grand total overflow and ▲ LED is illuminated.
Batch Total Decimal Point	Up to five decimal places or none: d.dddd, dd.ddd, ddd.dd, dddd.d, dddd, ddd.ddd, or dddddd. Total decimal point is independent of rate decimal point.
Totalizer	Calculates total based on rate and field programmable multiplier to display total in engineering units. Time base must be selected according to the time units in which the rate is displayed.
Time Base	Second, minute, hour, or day
Batch Control Mode	Automatic or manual batch control
Manual Batch	The operator must press the START button every time a new batch is started.
Automatic Batch	Once the START button is pressed, the batches will run automatically until the STOP button is pressed twice. The time delay between batches is entered during the setup. Press STOP to pause the batch and either press START to resume or STOP to stop the incomplete batch.

Batch Time Delay	Programmable up to 999.9 seconds
Batch Preset	The F2 key is assigned to the preset. This is the time delay between batches for automatic batch control. Allow sufficient time to put in place an empty container. The preset value is the total volume to be batched in each cycle.
Batch Pre-Close	The pre-close value is equal to the volume amount before reaching the preset value (batch size).
Single or Multi-Stage	Single Stage: Only relay 1 is used Multi-Stage: Two or more relays are used to control the batch with more precision; this is done using multiple presets or using the pre-close feature.
Multiple Presets	Each relay de-energizes at its own preset value.
Start	The F1 key is assigned to START batch. Press START to start a new batch in manual mode or a set of batches in automatic mode.
Pause / Stop	The F3 key is assigned to PAUSE / STOP. Press F3 once to pause and press it again to stop the batch process.
Automatic Overrun Correction	Adjusts the closing of the batch control relays to compensate for inaccuracies from batch to batch. The overrun correction feature is capable of compensating for inaccuracies of up to 1% of the programmed preset value. To achieve an accurate batch, the flow rate must be slowed down, such that the total most-right digit increments at a rate of less than 10 counts/second. The use of a dual-stage batch control is recommended.
Count Up or Count Down	Batch total and grand total can set to count up or count down, independently.
Start / Stop Batch	The F4 digital input is assigned to start & stop the batch, it is located at the rear of the controller. An external push-button can be connected between terminal F4 and COM. Press the button once to start the batch and press it again to stop the batch.
High or Low Flow Alarm	The user may program any alarm for high or low trip point. The alarm detection is active only while the batch is running. Unused alarm LEDs and relays may be disabled (turned off).
Grand Totalizer Rollover	Grand totalizer rolls over when display exceeds 999,999,999. Relay status reflects display.
Grand Total Overflow	The grand total can display up to 999,999,999 using the overflow feature. After the value exceeds 999,999 a 3-digit value with the prefix "oF" toggles every 10 seconds. The overflow feature can be disabled by setting a grand total alarm that automatically resets the grand total when 999,999 is reached.
Grand Total Alarms	Up to seven, user selectable under setup menu. Any set point can be assigned to grand total and may be programmed anywhere in the range of the controller for grand total alarm indication. Relay 1 should always be assigned to batch.
Programmable Delay on Release	0.1 and 999.9 seconds; applied to the first relay assigned to total or grand total. If the controller is programmed to reset total to zero automatically when the preset is reached, then a delay will occur before the total is reset.
Grand Total Reset	Via front panel button, external contact closure on digital inputs, automatically via user selectable preset value and time delay, or through serial communications.
Grand Total Reset Password	Grand total passwords may be entered to prevent resetting the grand total from the front panel.
Non-Resettable Grand Total	The grand total can be programmed as a non-resettable total by entering the password "050873".

Process Input

Inputs	Field selectable: 0-20 mA, 4-20 mA ±10 V (0-5 V, 1-5 V, 0-10 V) Modbus PV (Slave)
Isolated Transmitter Power Supply	Terminals P+ & P-: 24 VDC ±10%. All models selectable for 24, 10, or 5 VDC supply (internal jumper J4). 85-265 VAC models rated @ 200 mA max, 12-24 VDC powered models rated @ 100 mA max. 5 & 10 VDC supply rated @ 50 mA max. When the Light/Horn is powered by the transmitter power supply, see MOD-LH Light/Horn's transmitter power supply specification on page 26 for additional details. Light/Horn power not available for 5 or 10 VDC supplies.
Accuracy	±0.03% of calibrated span ±1 count, square root & programmable exponent accuracy range: 10-100% of calibrated span
Temperature Drift	0.005% of calibrated span/°C max from 0 to 65°C ambient, 0.01% of calibrated span/°C max from -40 to 0°C ambient
Input Signal Conditioning	Linear, square root, programmable exponent, or round horizontal tank volume calculation
Multi-Point Linearization	2 to 32 points for PV or PV1
Programmable Exponent	User selectable from 1.0001 to 2.9999
Low-Flow Cutoff	0.1 to 999,999 (0 disables cutoff function). Point below at which display always shows zero.
Decimal Point	Up to five decimal places or none: d.dddddd, ddddd.d, dddd.dd, ddd.ddd, dd.dddd, or d.ddddd

Calibration Range	Input Range	Minimum Span Input 1 & 2
	4-20 mA	0.15 mA
	±10 V	0.10 V
	An error message will appear if the input 1 and input 2 signals are too close together.	
Input Impedance	Voltage ranges: greater than 500 kΩ Current ranges: 50 - 100 Ω (depending on internal resettable fuse impedance)	
Input Overload	Current input protected by an internal resettable fuse, 30 VDC max. Fuse resets automatically after fault is removed.	
HART Transparency	The controller does not interfere with existing HART communications; it displays the 4-20 mA primary variable and it allows the HART communications to pass through without interruption. The controller is not affected if a HART communicator is connected to the loop. The controller does not display secondary HART variables.	

Relays

Rating	2 or 4 SPDT (Form C) internal and/or 4 SPST (Form A) external; rated 3 A @ 30 VDC and 125/250 VAC resistive load; 1/14 HP (≈ 50 W) @ 125/250 VAC for inductive loads
Noise Suppression	Noise suppression is recommended for each relay contact switching inductive loads.
Deadband	0-100% of span, user programmable
High or Low Alarm	User may program any alarm for high or low trip point. The alarm detection is active only while the batch is running. Unused alarm LEDs and relays may be disabled (turn off).
Relay Operation	Manual or automatic batch control, automatic (non-latching)[1] and/or manual alarm reset (acknowledge), latching (requires manual acknowledge) with or without clear, pump alternation control (N/A to batch), sampling (based on set point and time), off (disable unused relays and enable Interlock feature), and manual on/off control mode.
Relay Reset (Acknowledge)	User selectable via front panel buttons or digital inputs. 1. Automatic reset only (non-latching), when input passes the reset point. 2. Automatic + manual reset at any time (non-latching). 3. Manual reset only, at any time (latching). 4. Manual reset only after alarm condition has cleared (latching). *Note: Front panel button or digital input may be assigned to acknowledge relays programmed for manual reset.*
Time Delay	0 to 999.9 seconds, on & off relay time delays. Programmable and independent for each relay.
Fail-Safe Operation	Programmable and independent for each relay. *Note: Relay coil is energized in non-alarm condition. In case of power failure, relay will go to alarm state.*
Auto Initialization	When power is applied to the controller, relays will reflect the state of the input to the controller.[1]
Additional Relays	An external module, model PDA1004, is available to add 4 SPST 3 A relays to the controller.

[1] Alarms are active only when the batch is running.

Isolated 4-20 mA Transmitter Output

Output Source	Rate/process, total, grand total, max, min, set points 1-8, Modbus register, or manual control mode		
Scaling Range	1.000 to 23.000 mA for any display range		
Calibration	Factory calibrated: 4.000 to 20.000 = 4-20 mA output		
Analog Out Programming	23.000 mA maximum for all parameters: Overrange, underrange, max, min, and break		
Accuracy	± 0.1% of span ± 0.004 mA		
Temperature Drift	0.4 µA/°C max from 0 to 65°C ambient, 0.8 µA/°C max from -40 to 0°C ambient *Note: Analog output drift is separate from input drift.*		
Isolated Transmitter Power Supply	Terminals I+ & R: 24 VDC ±10%. May be used to power the 4-20 mA output or other devices. All models rated @ 40 mA max.		
External Loop Power Supply	35 VDC maximum		
Output Loop Resistance	Power supply	Minimum	Maximum
	24 VDC	10 Ω	700 Ω
	35 VDC (external)	100 Ω	1200 Ω
Additional 4-20 mA Outputs	The PD659-1MA-2MA can split the optional 4-20 mA output into two isolated 4-20 mA outputs		
0-10 VDC Output	The PD659-1MA-1V can convert the optional 4-20 mA output to a 0-10 VDC output		

USB Connection

Function	Programming only
Compatibility	USB 2.0 Standard, Compliant
Connector Type	Micro-B receptacle
Cable	USB A Male to Micro-B Cable
Driver	Microsoft® Windows® 10/11
Power	USB port provides power to the controller. ***DO NOT*** *apply AC or DC power to the controller while the USB port is in use.*

On-Board Digital Input (F4)

Function	Start/Stop batch, remote operation of front-panel buttons, acknowledge/reset relays, reset max/min values.
Contacts	3.3 VDC on contact. Connect normally open contacts across F4 to COM.
Logic Levels	Logic High: 3 to 5 VDC Logic Low: 0 to 1.25 VDC
Additional I/O	Up to 2 external modules, model PDA1044 with 4 digital inputs and 4 digital outputs each can be added.

Modbus RTU Serial Communications

Slave Id	1 – 247 (Meter address)
Baud Rate	300 – 19,200 bps
Transmit Time Delay	Programmable between 0 and 199 ms
Data	8 bit (1 start bit, 1 or 2 stop bits)
Parity	Even, Odd, or None with 1 or 2 stop bits
Byte-To-Byte Timeout	0.01 – 2.54 second
Turn Around Delay	Less than 2 ms (fixed)

Note: Refer to the PROVU Modbus Register Tables located at www.predig.com for details.

MeterView Pro Software

Availability	Download directly from controller or from www.predig.com/download_software
System Requirements	Microsoft® Windows® 10/11
Communications	USB 2.0 (for programming only) (Standard USB A to Micro USB B) RS-232 adapter, RS-485 adapter and RS-485 to USB converter (programming, monitoring, and data logging)
Configuration	Configure controllers one at a time
Power	USB port provides power to the controller. ***DO NOT*** *apply AC or DC power to the controller while the USB port is in use.*

Digital I/O Expansion Module

Channels	4 digital inputs & 4 digital outputs per module
System	Up to 2 modules for a total of 8 inputs & 8 outputs
Digital Input Logic	**High:** 3 to 5 VDC **Low:** 0 to 1.25 VDC
Digital Output Logic	**High:** 3.1 to 3.3 VDC **Low:** 0 to 0.4 VDC
Source Current	10 mA maximum
Sink Current	1.5 mA minimum
+5 V Terminal	To be used as pull-up for digital inputs only.

4-Relay Expansion Module

Relays	Four Form A (SPST) rated 3 A @ 30 VDC and 125/250 VAC resistive load; 1/14 HP (≈ 50 watts) @ 125/250 VAC for inductive loads.

MOD-LH Light/Horn

Light Colors	MOD-LHRB1: Red MOD-LHGB1: Green MOD-LHYB1: Yellow MOD-LHBB1: Blue MOD-LHWB1: White MOD-LH5CB1: User selectable: red, green, yellow, blue, white MOD-LH3CB1-RYG: 1 layer each of red, yellow, green (consult factory for other colors available)
Light Action	Can be wired to flash (not available on MOD-LH5CB1) or stay steady on
Light/Horn & Button Installation	When MOD-LH is ordered with an enclosure, the user performs installation and wiring of Light/Horn and Button in pre-drilled holes.
Horn	85 dB
Rating	IP 65
Light/Horn Independence	Light and horn can be controlled via separate relays
Power Requirement	No additional power required when wired to a PROVU controller. When mounted remote: 24 VDC
Transmitter Power Supply	The PROVU's internal transmitter power supply is capable of supplying 200 mA to power the transmitter and other devices such as the Light/Horn. The following table illustrates how much of this power is required to drive various Light/Horns. If more power is needed, then consider the PDA1024-01.

MOD-LH and MOD-LH5CB1 Models:

Color	Power Required	Color	Power Required
Red	17 mA	Blue	15 mA
Green	15 mA	White	42 mA
Yellow	23 mA	Horn	20 mA

Example: 17 mA (Red Light) + 20 mA (Horn) = 37 mA total current needed from the 200 mA supply. Available current = 163 mA

MOD-LH3LCB1-RYG:

Power Requirement for the horn and each color that is turned on:

Color	Power Required	Color	Power Required
Red	34 mA	Yellow	33 mA
Green	29 mA	Horn	38 mA

Example: 33 mA (Yellow Light) + 38 mA (Horn) = 71 mA total current needed from the 200 mA supply. Available current = 139 mA

Reset / Silence Button	NEMA 4X; may be wired to F4 terminal on PROVU. F3 front panel button can also be used to reset relays.
Button Labels	The Light/Horn accessory comes with 9 pre-printed message labels the user can affix under the red button: RESET, BATCH, ACK, TARE, SILENCE, STOP, START, PAUSE, START/STOP
Light/Horn Mounting Connection	M22
Hole Sizes	Light/Horn: 0.875" (22 mm) Button: 0.630" (16 mm)
Cable Length:	3.28 feet (1 meter)
Operating Temperature Range	-5 to 40°C (23 to 104°F)

Compliance Information

Safety

UL & C-UL Listed	USA & Canada UL 508 Industrial Control Equipment
UL File Number	E160849
Front Panel	UL Type 4X, NEMA 4X, IP65; panel gasket provided
Low Voltage Directive	EN 61010-1 Safety requirements for measurement, control, and laboratory use

Electromagnetic Compatibility

Emissions	EN 55022 Class A ITE emissions requirements
Radiated Emissions	Class A
AC Mains Conducted Emissions	Class A
Immunity	EN 61326-1 Measurement, control, and laboratory equipment EN 61000-6-2 EMC heavy industrial generic immunity standard
RFI - Amplitude Modulated	80 -1000 MHz 10 V/m 80% AM (1 kHz) 1.4 - 2.0 GHz 3 V/m 80% AM (1 kHz) 2.0 - 2.7 GHz 1 V/m 80% AM (1 kHz)
Electrical Fast Transients	±2kV AC mains, ±1kV other
Electrostatic Discharge	±4kV contact, ±8kV air
RFI - Conducted	10V, 0.15-80 MHz, 1kHz 80% AM
AC Surge	±2kV Common, ±1kV Differential
Surge	1KV (CM)
Power-Frequency Magnetic Field	30 A/m 70%V for 0.5 period
Voltage Dips	40%V for 5 & 50 periods 70%V for 25 periods
Voltage Interruptions	<5%V for 250 periods

Note: Testing was conducted on meters installed through the covers of grounded metal enclosures with cable shields grounded at the point of entry representing installations designed to optimize EMC performance.

EU Declaration of Conformity

For shipments to the EU and UK, a Declaration of Conformity was printed and included with the product. For reference, a Declaration of Conformity is also available on our website www.predig.com/docs.

PD6210 ProVu Analog Input Batch Controller

ORDERING INFORMATION

ProVu PD6210 Analog Input • Standard Models		
85-265 VAC Model	**12-24 VDC Model**	**Options Installed**
PD6210-6R2	PD6210-7R2	2 Relays
PD6210-6R4	PD6210-7R4	4 Relays
PD6210-6R5	PD6210-7R5	2 Relays & 4-20 mA Output
PD6210-6R7	PD6210-7R7	4 Relays & 4-20 mA Output
Note: 24 V Transmitter power supply standard on all models.		

ProVu PD6210 Analog Input • SunBright Display Models		
85-265 VAC Model	**12-24 VDC Model**	**Options Installed**
PD6210-6H2	PD6210-7H2	2 Relays
PD6210-6H4	PD6210-7H4	4 Relays
PD6210-6H5	PD6210-7H5	2 Relays & 4-20 mA Output
PD6210-6H7	PD6210-7H7	4 Relays & 4-20 mA Output
Note: 24 V Transmitter power supply standard on all models.		

Your Local Distributor is:

Accessories	
Model	**Description**
MOD-LHRB1	Red(2) Light/Horn and Button with Holes Drilled for Light/Horn and Button in Enclosure(1)
PDA-BUTTON1R	Button
PDA-LHR	Red(2) Light/Horn
PDA1002	DIN Rail Mounting Kit for Two Expansion Modules
PDA1004	4-Relay Expansion Module
PDA1024-01	24 VDC Power Supply for DIN Rail
PDA1044	4 Digital Inputs & 4 Digital Outputs Module
PDA1232	RS-232 Serial Adapter
PDA1485	RS-485 Serial Adapter
PDA18DINSH	Stainless Steel Sun Hood
PDA7485-I	RS-232 to RS-422/485 Isolated Converter
PDA8232-N	USB to RS-232 Non-Isolated Converter
PDA8485-I	USB to RS-422/485 Isolated Converter
PDX6901	Suppressor (snubber): 0.01 µF/470 Ω, 250 VAC

1. The enclosure comes pre-drilled with holes for Light/Horn and Button to be installed by user. Meter / controller and enclosure are sold separately. The Light/Horn hole is located on the top in the back left corner of the enclosure and the button hole is centered on the front of the enclosure about an inch off the bottom of the door. For mounting in different locations, order items separately and drill holes and mount as desired.
2. For other light color options see the MOD-LH Series manual (LIMMODLH).

ProVu Upgrade Cards	
Model	**Description**
PD1102	2 Relays
PD1103	4-20 mA Output[1]
PD1104	4 Relays
PD1105	2 Relays + 4-20 mA Output[1]
PD1107	4 Relays + 4-20 mA Output[1]

1. Output calibration required by user.
2. These upgrade cards are intended for customers who already have a controller and want to upgrade its functionality.

PDA2360 Series Control Stations	
Model	**Description**
PDA2360-E	Emergency Stop Button
PDA2361-A	1 Black Ack Button
PDA2361-Q	1 Black Silence Button
PDA2361-R	1 Black Reset Button
PDA2364-MSBS	4 Buttons: Menu, Start, Batch, and Stop

⚠ WARNING
Cancer and Reproductive Harm - **www.P65Warnings.ca.gov**

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LDS6210_G 02/25

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