

H3 Series

Temperature & Process Display & Control



PROCESS & TEMP

- 4-20 mA, ± 10 V, TC & RTD Inputs
- 4-Digit Display, 0.56" (14.2 mm) or 1.20" (30.5 mm)
- Linear or Square Root with Low-Flow Cutoff
- Operating temperature range of between -40°C and 65°C
- Max/Min Display
- Type 4X, NEMA 4X, IP65 Front
- Universal Power Supply 85-265 VAC
- 12-36 VDC/12-24 VAC Power Option
- 2 Relays + 4-20 mA Output Option
- 24 VDC @ 200 mA Transmitter Power Supply Options
- USB, RS-232, & RS-485 Serial Communication Options
- Shallow Depth Case 3.6" Behind Panel
- Free Modbus® RTU & LabVIEW™ Driver
- Copy Meter Settings to Other Meters
- Free MeterView® Software - Configuration & Data Acquisition
- Sunlight Readable Display

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H3 Series Standard Display and Large Display



UV Resistant
Sunlight Readable Models



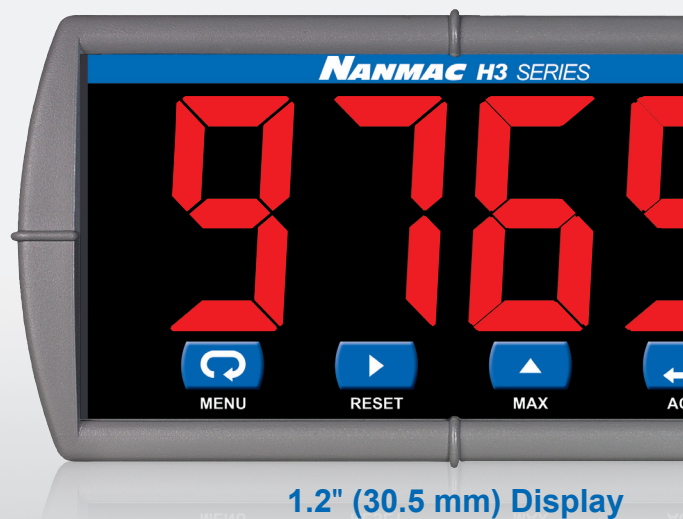
Front Panel
NEMA 4X Rated



(Actual Size Digits)



0.56" (14.2 mm) Display



1.2" (30.5 mm) Display

FEATURE RICH & SIMPLE TO USE

The H3 Series digital panel meter is one of the most versatile digital panel meters on the market and will satisfy a wide variety of process applications. The H3 can be field programmed to accept process voltage (0-5V, 1-5V, etc) and current (4-20 mA) inputs, 100 Ohm RTDs, and the four most common thermocouples. It is housed in a shallow-depth, 1/8 DIN enclosure that features a NEMA 4X front panel and convenient mounting hardware. There are two power options for the H3: 85 to 265 VAC or 12-36 VDC and it can provide 24 VDC to power the transmitter if needed. Programming and setup can be performed with the four front panel pushbuttons, free MeterView software, or using the Copy function.

TWO DISPLAY SIZES

The display height on the standard H3 meter is 0.56" (14.2 mm) and on the H3 large display meter the display height is an astounding 1.2" (30.5 mm). The H3 large display can be read easily from distances of up to 30 feet! Both meters are available with all H3 features.

The intensity of the display on both versions of the H3 can be adjusted to compensate for various lighting conditions, including direct sunlight.

VERSATILE OPERATION

Look to the H3 meter for the key features and options you want and don't worry about getting bogged down in a confusing array of things you don't need. The H3's Max/Min function, 2 relays + 4-20 mA output, serial communication, and Modbus RTU options provide all the utility you need to handle all the common applications.

Maximum/Minimum

To display the maximum and minimum readings since the last reset/power-up, use the Up arrow/Max button

Powerful Relay Functionality

All relay functions are set up from the front panel or from a PC running MeterView® or LabView™ software.

- Automatic reset only
- Automatic or manual reset
- Latching or non-latching relays
- Pump alternation control
- On and off time delays from 0 to 199 seconds
- Fail-safe operation is user selectable

Isolated 4-20 mA Transmitter Output

The H3's Isolated 4-20 mA output option converts the H3 meter into a transmitter with a digital display; perfect for temperature applications!

Serial Communication Adapters & Converters

A wide variety of serial communication adapters and converters are available for the H3 meter. A serial adapter and Precision Digital's free MeterView software allows the H3 meter to be programmed from a computer and to connect to a PC for data acquisition. Adapters are available for USB, RS-232, and RS-485 communications. Converters are available for isolated and non-isolated RS-232 to RS-422/485 and USB to RS-422/485.



H3-PDA8006

H3-PDA7232

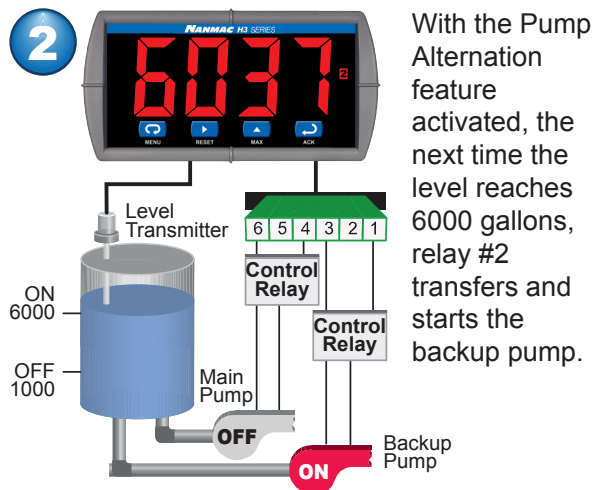
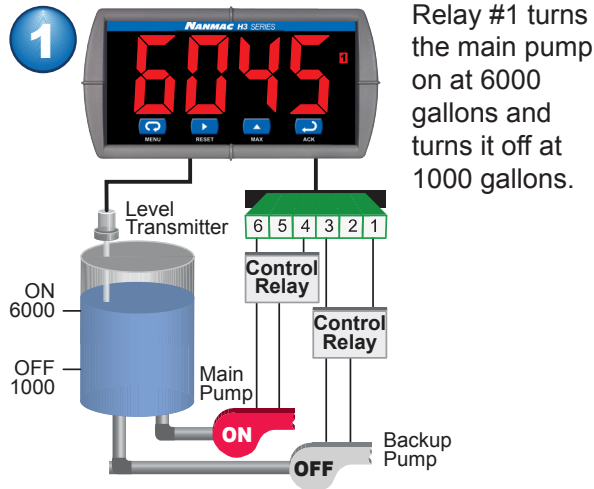
H3-PDA7422

Modbus RTU

Use the H3 meter's Modbus RTU communications to connect the H3 meter to a PLC, SCADA system or other digital device. It is a standard feature on all H3 models.

Pump Alternation

The H3 Series meter, in pump alternation mode, will automatically alternate two pumps:



EASY SETUP AND PROGRAMMING

The H3 meter is easily setup and programmed using the simple four-button programming method. The meter can also be programmed using a PC and Precision Digital's free MeterView software or "cloned" with the Copy function. There is only one switch on the entire meter, no jumpers, and no need to ever open the case.

Programming with Four Front Panel Buttons

The H3 meter's four front panel buttons keep the user in control of the programming process. To see how simple it is to program the H3 meter, check out the Virtual Meter at www.predig.com.

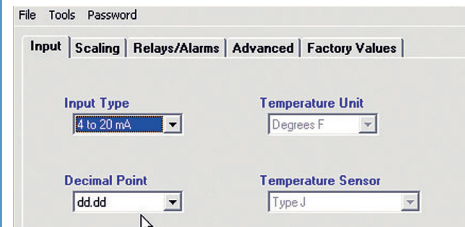
Meter Copy

The Copy function is used to copy (or clone) all the settings from one H3 meter to other H3 meter in less than 10 seconds. The Copy function is a standard feature on all meters. The Copy feature does not require a serial communication adapter, it only requires the optional cable assembly (PDA7420). See back page for ordering information.



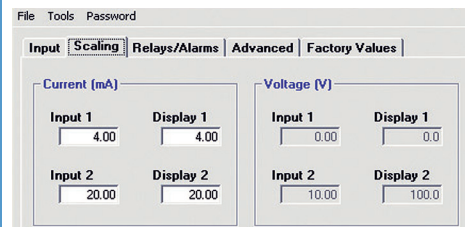
Programming From a PC with MeterView®

Free MeterView® software allows the H3 meter setup parameters to be programmed from a PC and to save the configuration settings to a file for reporting or programming other meters. And since the serial adapter is an external device, one serial adapter can program an infinite number of meters!



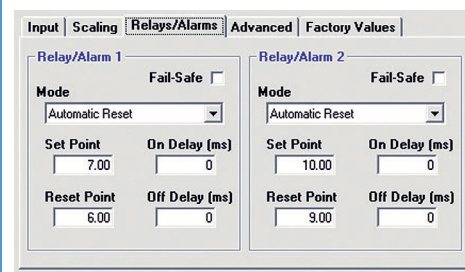
Configure Input

- Input type
- Decimal point
- Temp units
- Sensor type



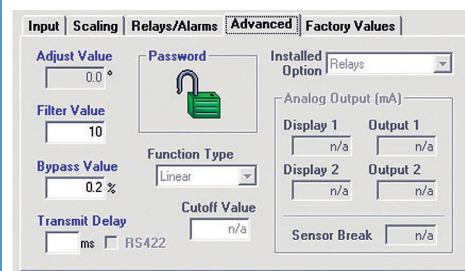
Meter Scaling

- Scale input
- No cryptic codes
- Simple to use



Set Relays/Alarms

- Select mode
- Set/reset points
- Fail-safe operation
- On & off delays



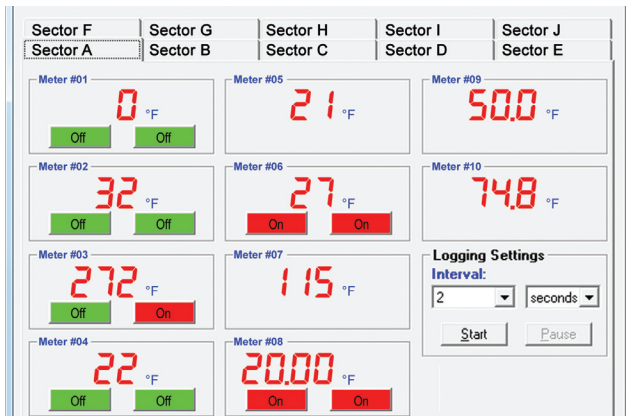
Advanced Settings

- Password
- Filter & bypass
- Transmit delay
- Function type
- Cutoff value

DATA ACQUISITION

Digital panel meters make a great front end to a PC-based data acquisition system. They are easy to set up, can be used for a wide range of inputs, will power the transmitter, and best of all provide a local display of the process. Nanmac Corporation has the perfect package with its H3 Digital Panel Meters, a wide selection of serial adapters and converters and free MeterView software. Data is displayed on the PC and written to a file that could then be imported into a spreadsheet or other application.

Data Logging up to 100 H3 Meters



Sample File Generated by MeterView®

H3 Log File

Name: C:\MV3logfile.htm

Created: 1/7/2011 5:34:12 PM

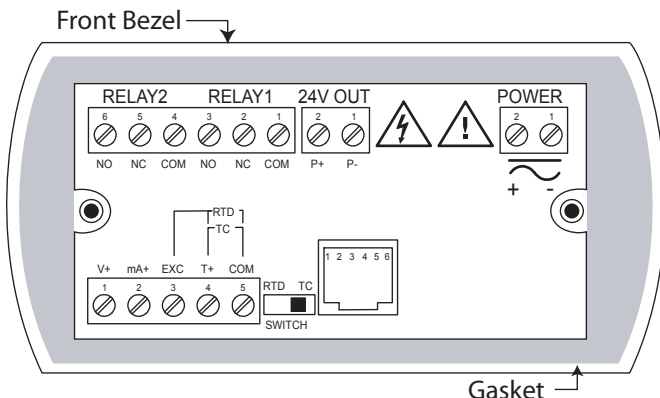
Serial Port: COM 1

Connection speed: 2400 Baud

Logging rate: 1 update every 10 seconds

Date & Time	Tag Number	Address	Display	Units	Relay 1	Relay 2
1/7/2011 5:34:12 PM	Tank 1 Level	06	17.70	Feet	P1 On	P2 Off
1/7/2011 5:34:12 PM	Tank 2 Level	07	18.18	Feet	P3 Off	P4 Off
1/7/2011 5:34:12 PM	Tank 3 Level	08	20.54	Feet	P5 On	P6 Off
1/7/2011 5:34:12 PM	Tank 1 Temp	09	74	°F	Off	Off
1/7/2011 5:34:12 PM	Tank 2 Temp	10	72	°F	Off	Off
1/7/2011 5:34:12 PM	Tank 3 Temp	11	72	°F	Off	Off
1/7/2011 5:34:22 PM	Tank 1 Level	06	17.58	Feet	P1 On	P2 Off
1/7/2011 5:34:22 PM	Tank 2 Level	07	18.04	Feet	P3 Off	P4 Off
1/7/2011 5:34:22 PM	Tank 3 Level	08	19.79	Feet	P5 Off	P6 Off
1/7/2011 5:34:22 PM	Tank 1 Temp	09	74	°F	Off	Off
1/7/2011 5:34:22 PM	Tank 2 Temp	10	72	°F	Off	Off

CONNECTIONS

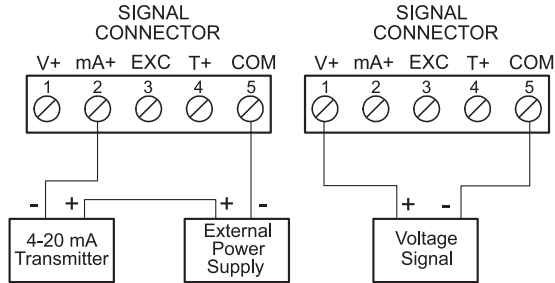


PROCESS & TEMPERATURE INPUTS

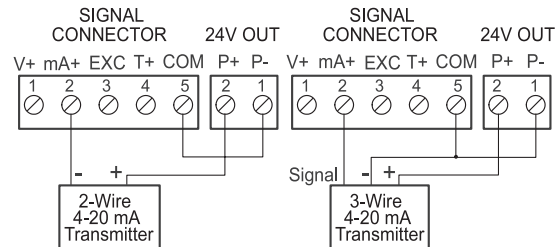
The H3 meter is factory calibrated to accept 4-20 mA, ± 10 VDC, type J, K, T, or E thermocouples and 100 Ω platinum RTDs. Process inputs can be scaled with or without applying an input for virtually any engineering units. Temperature inputs can be programmed to display in degrees Fahrenheit or Celsius and the type K thermocouple can display up to 2300 °F.

Current & Voltage Inputs

Setting up the meter to accept a current or voltage input could not be easier. All setup is performed with the front panel buttons and there are no switches or jumpers to deal with.



Transmitter Powered by External Supply



Transmitter Powered by Internal Supply (optional)

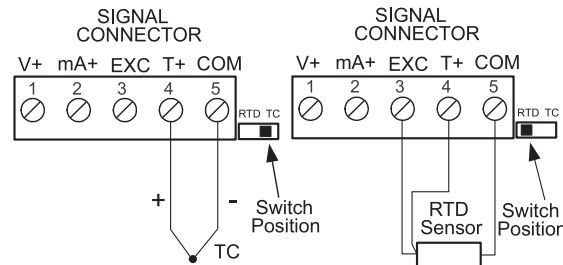
Current Overload Protection

To protect the instrument from unexpected current overload, the current input circuit contains 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.

Thermocouple & RTD inputs

Setting up the H3 meter to accept a thermocouple or RTD input is simply a matter of setting a switch at the rear of the case and selecting the input type from the menu.

The meter accepts J, K, T, or E type thermocouples as well as two, three, or four-wire 100 Ω platinum RTDs.



NEMA 4 & 4X ENCLOSURES

The NEMA 4 and NEMA 4X enclosures are available in stainless steel, steel, and plastic. They come with pre-punched 1/8 DIN cutouts for up to ten meters. The meters are mounted in the enclosure door so they can be programmed without opening the enclosure.



Plastic, Steel, or Stainless Steel

These NEMA 4 & 4X enclosures house from one to ten meters and feature a hinged door.

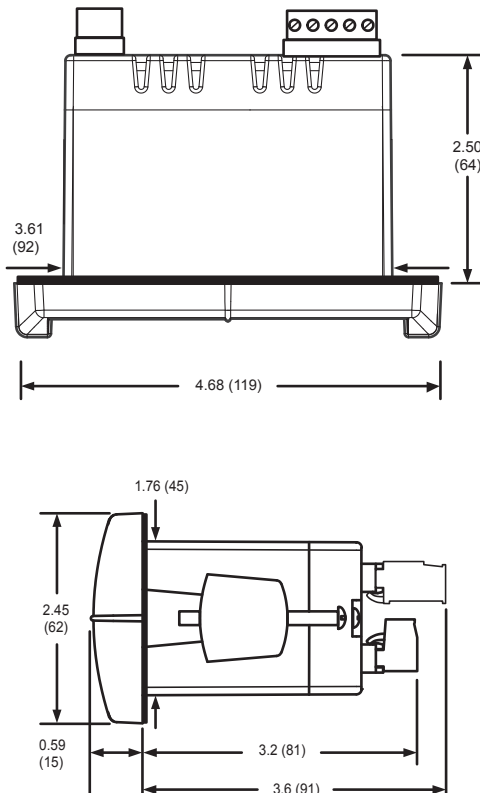
Enclosures and meters are ordered and packaged separately.

Call or email info@nanmac.com for complete details and specifications of the NEMA 4 & NEMA 4X Enclosures.

QUICK INSTALLATION

The H3 meter is housed in a shallow-depth case that is designed for easy installation and servicing. The extra large front bezel is rated Type 4X, IP65. The mounting brackets are locked in place to make it easy to mount the meter in the panel. Removable screw terminal connectors make for easy and convenient wiring.

Mounting Dimensions



Notes:

1. Panel cutout required: 1.772 x 3.622 (45 x 92)
2. Panel thickness: 0.040 – 0.250 (1.0 – 6.4)
3. Mounting brackets lock in place for easy mounting

SPECIFICATIONS

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

General

Display: H3: 0.56" (14.2 mm);

H3 Large Display: 1.20" (30.5 mm) red LED, 4 digits (-1999 to 9999)

Display Intensity: Eight user selectable levels

Front Panel: NEMA 4X, IP65; panel gasket provided

Programming Methods: Four front panel buttons, cloning with Copy feature, PC with MeterView or LabVIEW software, and Modbus registers. Certified LabVIEW driver available.

Noise Filter: Programmable 2 to 199 (0 will disable filter)

Display Update Rate: Process/RTD: 3.7-5/sec; TC: 1.8-2.5/sec

Overrange: Display flashes 9999

Underrange: Display flashes -1999

Recalibration: All inputs are calibrated at the factory; recalibration is recommended at least every 12 months.

Max/Min Display: Stored until reset by user or meter is turned off.

Password: Restricts modification of programmed settings.

Non-Volatile Memory: Settings stored for a minimum of 10 years.

Power Options: 85-265 VAC, 50/60 Hz; 90-265 VDC, 20 W max or 12-36 VDC; 12-24 VAC, 6 W max.

Required Fuse: UL Recognized, 5 A max, slow-blow; up to 6 meters may share one fuse.

Normal Mode Rejection: 64 dB at 50/60 Hz

Isolation: 4 kV input/output-to-power line; 500 V input-to-output or output-to-24 VDC supplies. -6R5 & -6X5 models only: 100 V output-to-24 VDC supply

Operating Temperature: -40 to 65°C

Storage Temperature: -40 to 85°C

Relative Humidity: 0 to 90% non-condensing

Connections: Power & Signal: removable screw terminal blocks accept 12 to 22 AWG. Serial: RJ11 header, standard on all meters.

Enclosure: 1/8 DIN, high impact plastic, 94V-0, color; gray

Weight: 9.5 oz (269 g) (including options)

UL File Number: E160849; 508 Industrial Control Equipment

Warranty: 3 years parts & labor

Process Inputs

Inputs: 0-20 mA, 4-20 mA, 1-5 V, ± 10 V

Accuracy: $\pm 0.05\%$ FS ± 1 count; square root: $\pm 0.1\%$ FS ± 2 counts

Function: Linear or square root

Low-Flow Cutoff: 0 to 9999 (0 disables cutoff function)

Decimal Point: Up to 3 decimals.

Calibration: Scale without signal or calibrate with signal source

Calibration Range: User programmable over entire range of meter

Input Impedance: Voltage range: greater than 1 M Ω , Current range: 50-100 Ω , varies with resettable fuse impedance

Input Overload: Protected by automatically resettable fuse

Temperature Drift:

	0 to 65° C ambient	-40 to 0° C ambient
Current	$\pm 0.20\%$ FS (50 PPM/°C)	$\pm 0.80\%$ FS
Voltage	$\pm 0.02\%$ FS (1.7 PPM/°C)	$\pm 0.06\%$ FS

Transmitter Supply: Isolated, one or two transmitter supplies

P1: 24 VDC $\pm 10\%$ @ 200 mA max (-10 option)

P1 & P2: 24 VDC $\pm 10\%$ @ 200 mA & 40 mA max (-20 option)

Temperature Inputs

Inputs: Factory calibrated, field selectable: type J, K, T, or E thermocouples and 100 Ω platinum RTD (0.00385 or 0.00392 curve)

Resolution: 1°; type T: 1° or 0.1°

Cold Junction Reference: Automatic

Temperature Drift: $\pm 2^\circ$ C maximum

Offset Adjustment: Programmable to $\pm 19.9^\circ$. This parameter allows the user to apply an offset value to the temperature being displayed.

Input Impedance: Greater than 100 k Ω

Sensor Break: All relays and alarm status LEDs go to alarm state.

Type	Range	Acc. (0-65°C)	Acc. (-40-0°C)
J	-58° to 1382°F -50° to 750°C	±2°F ±1°C	±5°F ±3°C
K	-58° to 2300°F -50° to 1260°C	±2°F ±1°C	±4°F ±2°C
T	-292° to 700°F -180° to 371°C	±2°F ±1°C	±13°F ±7°C
E	-58° to 1700°F -50° to 927°C	±2°F ±1°C	±11°F ±6°C
RTD	-328° to 1382°F -200° to 750°C	±1°F ±1°C	±5°F ±3°C

Relays

Rating: 2 Form C (SPDT); rated 3 A @ 30 VDC or 3 A @ 250 VAC resistive load; 1/14 HP

(≈ 50 watts) @ 125/250 VAC for inductive loads such as contactors, solenoids, etc.

Deadband: 0-100% FS, user selectable

High or Low Alarm: User may program any alarm for high or low Relay Operation:

1. Automatic (non-latching) 2. Latching 3. Pump alternation control

Relay Reset: User selectable via front panel buttons or PC

1. Automatic reset only (non-latching)

2. Automatic plus 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)

Automatic Reset: Relays reset when input passes the reset point

Manual Reset: Front panel button, MeterView, Modbus registers

Time Delay: 0 to 199 seconds, on and off delays; programmable

Fail-Safe Operation: Programmable, independent for each relay. Relay coils are energized in non-alarm condition. In case of power failure, relays will go to alarm state.

Auto Initialization: When power is applied to the meter, relays will reflect the state of the input to the meter.

Isolated 4-20 mA Transmitter Output

Scaling Range: 1.00 to 23.00 mA; reverse scaling allowed.

Calibration: Factory calibrated 4.00 to 20.00 mA

Accuracy: ±0.1% FS ±0.004 mA

Temperature Drift: 50 PPM/°C

Note: Analog output drift is separate from input drift

Isolation: 500 V input-to-output or output-to-24 VDC supplies; 4 kV output-to-power line

External Power: 35 VDC maximum

Output Loop Resistance: Loop Resistance

Power Supply Minimum Maximum

24 VDC 10 Ω 700 Ω

35 VDC (external) 100 Ω 1200 Ω

Serial Communications

Compatibility: EIA-232, and EIA-485 with H3-PDA7232 and H3-PDA7422 H3 adapters.

Protocol: PDC and Modbus RTU

Meter Address: PDC protocol: 0 to 99, Modbus protocol: 1 to 247

Baud Rate: 300 to 19,200 bps

Transmit Time Delay: Programmable 0 to 199 ms

Data: 8 bit (1 start bit, 1 stop bit)

Parity: None (2 stop bits), even, or odd

(Modbus only; PDC protocol does not use parity)

Byte-to-Byte Timeout: 0.01 to 2.54 seconds (Modbus only)

Turn Around Delay: Less than 2 ms (fixed)

Refer to PDC and Modbus Serial Communications Protocol manuals for details.

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ORDERING INFORMATION

H3 Series Meter • Large Display Models		
85-265 VAC Model	12-36 VDC Model	Options Installed
H3-PD765-6X0-00	H3-PD765-7X0-00	None
H3-PD765-6X0-10		24 VDC Supply
H3-PD765-6X2-00	H3-PD765-7X2-00	2 Relays
H3-PD765-6X2-10		2 Relays + 24 VDC Supply
H3-PD765-6X3-00	H3-PD765-7X3-00	4-20 mA Output
H3-PD765-6X3-10		4-20 mA Out + 24 VDC Supply
H3-PD765-6X3-20		4-20 mA Out + Dual 24 VDC Supplies
	H3-PD765-7X5-00	2 Relays + 4-20 mA Output
H3-PD765-6X5-10		2 Relays + 4-20 mA Output + 24 VDC Supply

H3 Series Meter • Standard Display Models		
85-265 VAC* Model	12-36 VDC* Model	Options Installed
H3-PD765-6R0-00	H3-PD765-7R0-00	None
H3-PD765-6R0-10		24 VDC Transmitter Supply
H3-PD765-6R2-00	H3-PD765-7R2-00	2 Relays
H3-PD765-6R2-10		2 Relays & 24 VDC Transmitter Supply
H3-PD765-6R3-00	H3-PD765-7R3-00	4-20 mA Output
H3-PD765-6R3-10		4-20 mA Output & 24 VDC Supply

Accessories	
Model	Description
H3-PDA7420	Meter Copy Cable, 7' (2.1 m)
H3-PDA7232	RS-232 Serial Adapter, H3-PDA7420 Included
H3-PDA7422	RS-422/485 Serial Adapter, H3-PDA7420 Included
H3-PDA7485-I	RS-232 to RS-422/485 Isolated Converter
H3-PDA7485-N	RS-232 to RS-422/485 Non-Isolated Converter
H3-PDA7488	RS-232 & RS-485 Isolated Multi-Input Adapter Board
H3-PDA8485-I	USB to RS-422/485 Isolated Converter
H3-PDA8485-N	USB to RS-422/485 Non-Isolated Converter
H3-PDA7503-1	MeterView® Software for 1 Meter
H3-PDA7503-2	MeterView® Software for 1-10 Meters
H3-PDA7503-3	MeterView® Software for 1-100 Meters
H3-PDN-MODBUS	Modbus Option Enable
H3-PDX6901	Suppressor (snubber): 0.01 µF/470 Ω, 250 VAC

Your Local Distributor is:

LDS765NM_B 07/16