

New

Modbus Client (Master) Features

Available in the Enhanced Modbus
Features Package for the ConsoliDator+



Presenter



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VP of Sales & Marketing

Joe brings more than 15 years of process signal experience in the design, support, manufacturing and marketing of process measurement and control devices. Joe has extensive field and support experience process signals and Modbus devices.



Agenda and Takeaways

01

Learn the basics of the ConsoliDator+ Multivariable Controller.

02

Review the Modbus capabilities the new Modbus Enhanced Features Package, including Client (Master) Features.

03

See how to program and utilize these new Client, Server, Snooper, and Spoofer Features.

04

Watch a live demonstration with the PDD9000 ConsoliDator+ demo unit.

ConsoliDator+ Multivariable Panel-Mount Controller



- Multivariable controller for process display, alarm and control applications
- Accepts 4-20 mA inputs, flow meter pulse inputs, digital inputs, and Modbus RTU
- Displays numeric and bargraph format on a large, 5.7" color display
- Multiple relays with user-definable actions, 4-20 mA outputs, digital outputs, Modbus RTU, and Ethernet Modbus TCP/IP
- 32 timers to control many processes or events
- Free ConsoliDator+ configuration software

Enhanced Modbus Features Package

Enhanced Modbus Features Package



**Client (Master)
Capabilities**



**Packet Sniffer
Functionality (Snooper)**

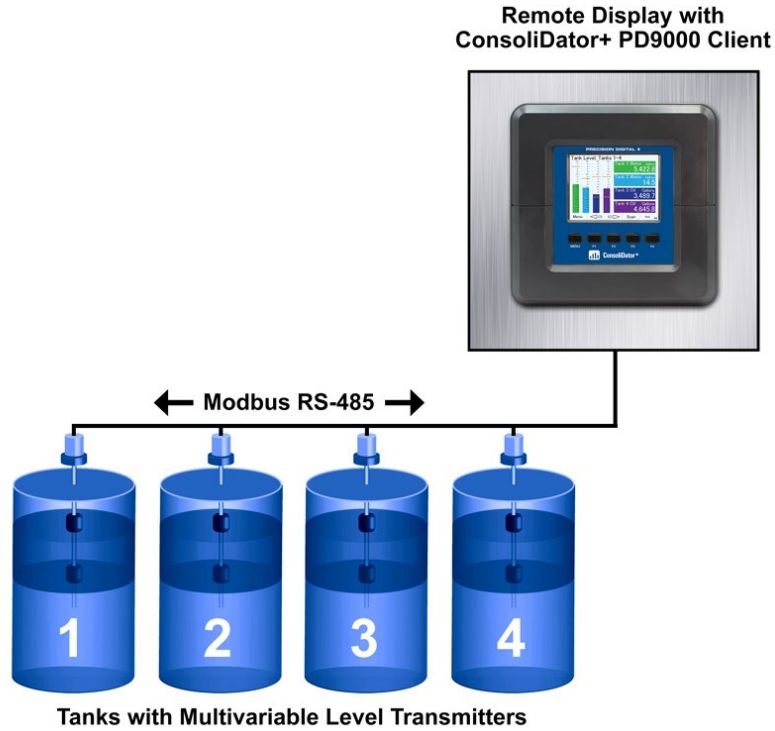


**Assign Multiple Addresses
& Customized Register
Numbers (Spoofers)**



Modbus Client (Master) Scanner

Modbus Client (Master) Scanner



- The ConsoliDator+ remote display in Client (Master) mode is requesting process variables from the Modbus enabled transmitters.
- The ConsoliDator+ is reading top level, interface level, and average temperature, from each transmitter. Much more than just a 4-20 mA signal could transmit.
- 3 wires for RS-485 now replace what would be 24 wires for 12 analog 4-20 mA signals.

Modbus Client (Master) Scanner

MB-1. MB Input 1 Client

Server ID: 247 Address: 0 Enron

Function Code: 03

Type: Float 32 Reg. No. 40001, 40002



Byte Order: ABCD

Units: Gallons/min Decimals: 2

Break: Default Default: 0.00 Gallons/min

Poll Time: 5.0 seconds Timeout: 00:00:10

Input Action: Add To T1. Total 1

Cancel   Edit Save

- The controller can request up to 199 Modbus values, as inputs from other Modbus devices
- Request process variables from server devices
- The input variables can be scaled and combined with other variables using math functions
- Write to other server devices using the Modbus output functions
- The inputs can be used as the source for channels, math functions, alarms, relay control, etc.



Modbus Packet Sniffer (Snooper)

Modbus Packet Sniffer (Snooper)



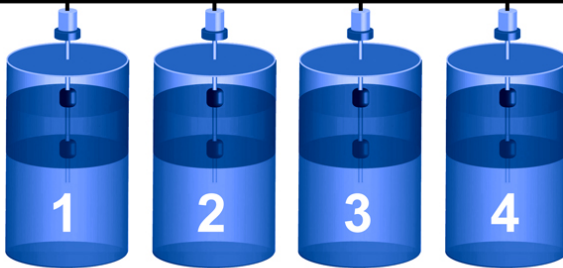
Local Display with
ConsoliDator+ PD9000 Snooper



Remote Display with
ConsoliDator+ PD9000 Client



← Modbus RS-485 →



Tanks with Multivariable Level Transmitters

- A second ConsoliDator+ has been added on the RS-485 bus.
- This ConsoliDator+ utilizes the new Snooper, or packet sniffer, mode.
- This local display reads the values being sent by the transmitters back to the ConsoliDator+ Client.
- Doing this does not disrupt the behavior of either the client (the ConsoliDator+) or the Servers (the transmitters).

Modbus Packet Sniffer (Snooper)

MB-3. MB Input 3 Snooper

Server ID: Address: Enron

Function Code:

Type: Reg. No. 40001, 40002

Byte Order:

Units: Decimals:

Break: Default: Gallons/min

Timeout:

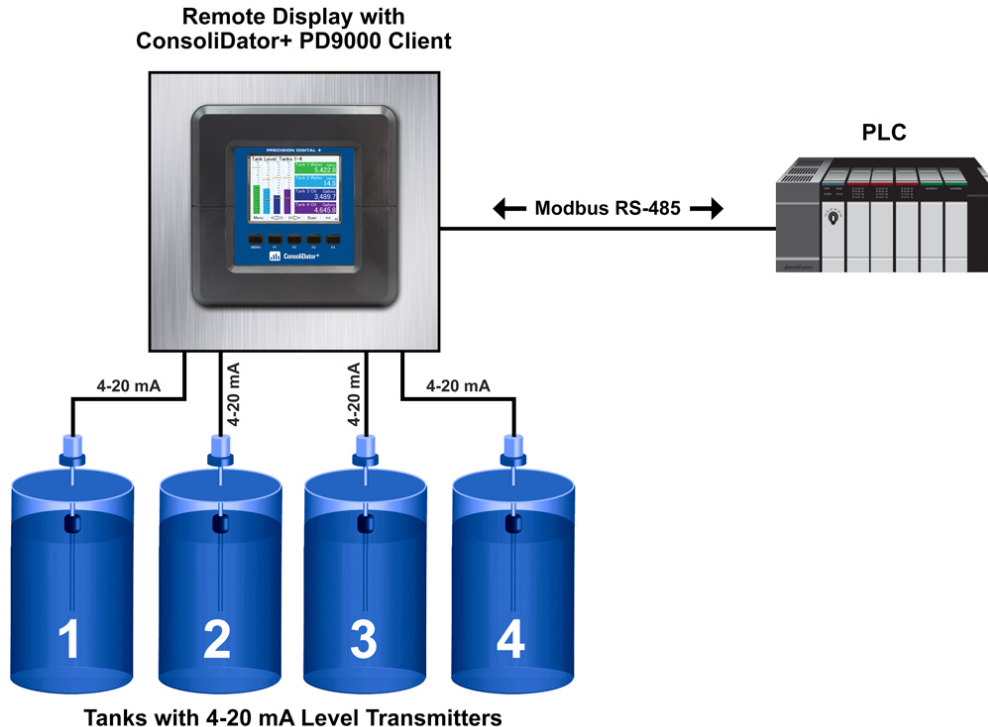
Input Action:

- Listen and read the process variables being transmitted on the RS-485 bus without causing any disruptions to the network
- The controller can read up to 199 Modbus values, as inputs from other Modbus devices being polled by a Modbus Client
- The inputs can be used as the source for channels, math functions, alarms, relay control, etc.



Assign Multiple Modbus Addresses & Customized Register Numbers (Spoofer)

Assign Multiple Modbus Addresses and Customized Register Numbers (Spoofers)



- With “Spoofers” Mode, the ConsoliDator+ can be programmed to respond to Client requests for other addresses, and have specific information applied to user programmable registers.
- This is ideal for replacing existing Modbus Server (Slave) equipment in upgrades and eliminates the need to reprogram PLCs.
- In this example, the ConsoliDator+ can replace what would have been four individual 4-20 mA displays acting as Modbus Servers, and it can be programmed to respond as if it was all four of those devices. The PLC requires no new programming to now get its information from the ConsoliDator+.

Assign Multiple Modbus Addresses and Customized Register Numbers (Spoofer)

MO-1. MB Output 1 Spoofer

Input: Total 1

Server ID: 9 Address: 0 Enron



Function Code: 03

Type: Float 64

Byte Order: ABCD

Units: Gallons Decimals: 1

Output Action: Reset Total - Total 1

Cancel   Edit Save

- Replace existing Modbus servers without requiring changes to the client configuration.
- Each process value can be assigned a specific device ID and register number to mimic the original client configurations.
- Assign multiple addresses and customized register numbers.

How To Get The New Modbus Enhanced Features Package

How To Get The New Enhanced Modbus Features Package

PRECISION DIGITAL

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VIEW EDIT

PDK9000-M1 ConsoliDator+ Modbus Client/Snooper/Spoofers

DATA SHEET PDK9000 INSTRUCTION MANUAL

CHOOSE YOUR OPTIONS

PDK9000-M1 Out of Stock ?
Price: \$500.00

Enter Quantity

1

ADD TO CART

PRICE & DELIVERY PRODUCT OVERVIEW DOCS & RESOURCES ENCLOSURES & ACCESSORIES

PDK9000-M1 ConsoliDator+ Modbus Client/Snooper/Spoofers Price and Delivery Information

SKU	Description	Stock	Lead Time	Price
PDK9000-M1	Product Type: Add-On Feature: ConsoliDator+ Modbus Client/Snooper/Spoofers Warranty: 1 year	0 ?	2 business days	\$500.00

ADD TO CART
GET A QUOTE

- Purchase the [PDK9000-M1](#) Key for \$500 at Predig.com
- Will be enabled by the factory if you order this with a ConsoliDator+
- This feature can be “unlocked” in the field on any ConsoliDator+ purchased after February 15, 2021
- Enter the Key value into the ConsoliDator+

Consolidator+ Configuration Software Overview

Free ConsoliDator+ Configuration Software



- Easiest and quickest way to program the ConsoliDator+ multivariable controller
- Simple Micro-USB connection
- Configure inputs and outputs, channels, totals, timers, alarms, etc.
- Configure bargraph and panel colors for normal operation, and colors for alarm indication
- Save controller settings file on PC for programming other controllers or to restore settings.

Free ConsoliDator+ Configuration Software

Software Screen Examples

Channel Settings

The screenshot shows the 'Channels Settings Overview' window in the ConsoliDator+ software. The window title is 'ConsoliDator+ System v2.1.1' and it is connected to a 'Multi-Channel Level Controller' (UID: 7E31-961K-96JF-CP45, FW: SFT144 - v2.101). The left sidebar lists 'Channels' and 'Alarms'. The main area displays a table of channel settings:

Channel	Function	Bargraph Enabled	Color Scheme
Ch. 1. Tank 1	Scale Linear 2-Pt	Enabled	Color 1
Ch. 2. Tank 2	Scale Multi-Point	Enabled	Color 2
Ch. 3. Tank 3	Scale Linear 2-Pt	Enabled	Color 3
Ch. 4. Tank 4	Scale Linear 2-Pt	Enabled	Color 4
Ch. 5. Flow 1	K-Factor	Enabled	Color 5
Ch. 6. Flow 2	K-Factor	Enabled	Color 6

Alarm Settings

The screenshot shows the 'Alarm Settings' dialog box in the ConsoliDator+ software. The window title is 'ConsoliDator+ System v2.1.1' and it is connected to a 'Multi-Channel Level Controller' (UID: 7E31-961K-96JF-CP45, FW: SFT144 - v2.101). The left sidebar lists 'Channels' and 'Alarms'. The main area displays the 'Alarm 1' settings:

Alarm 1
Display Tag: A1: High Alarm 1
Color Scheme: A Color 1
Name for the Alarm, 15 characters max.
Type: Single Source
Sound Horn:
Alert:

Input: Select Alarm Color

ALARM COLORS

Default: A Color 1
Name for the alarm color profile, 9 characters max.

Set Pt: A Color 1
Reset: A Color 1

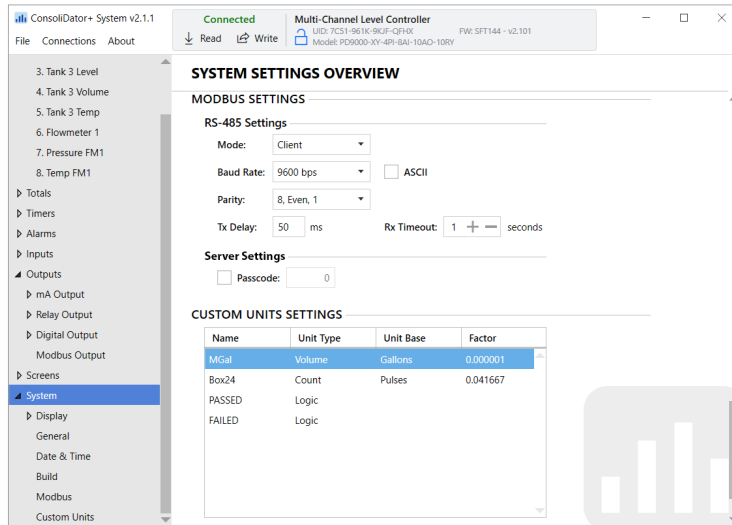
Alarm:
Text: Flash
Background: Flash
Bargraph: Flash

Buttons: New, Delete, Select, Cancel

Free ConsoliDator+ Configuration Software

Software Screen Examples

Modbus Settings



ConsoliDator+ System v2.1.1

Connected Multi-Channel Level Controller
UID: 7C31-961K-96CF-Q2946 FW: SFT144 -v2.101
Model: PD9000-XY-4PI-8AI-10AO-10RY

File Connections About

3. Tank 3 Level
4. Tank 3 Volume
5. Tank 3 Temp
6. Flowmeter 1
7. Pressure FM1
8. Temp FM1

▶ Totals
▶ Timers
▶ Alarms
▶ Inputs
▶ Outputs
▶ mA Output
▶ Relay Output
▶ Digital Output
Modbus Output

▶ Screens
▶ System
▶ Display
General
Date & Time
Build
Modbus
Custom Units

SYSTEM SETTINGS OVERVIEW

MODBUS SETTINGS

RS-485 Settings

Mode: Client

Baud Rate: 9600 bps ASCII

Parity: 8, Even, 1

Tx Delay: 50 ms Rx Timeout: 1 seconds

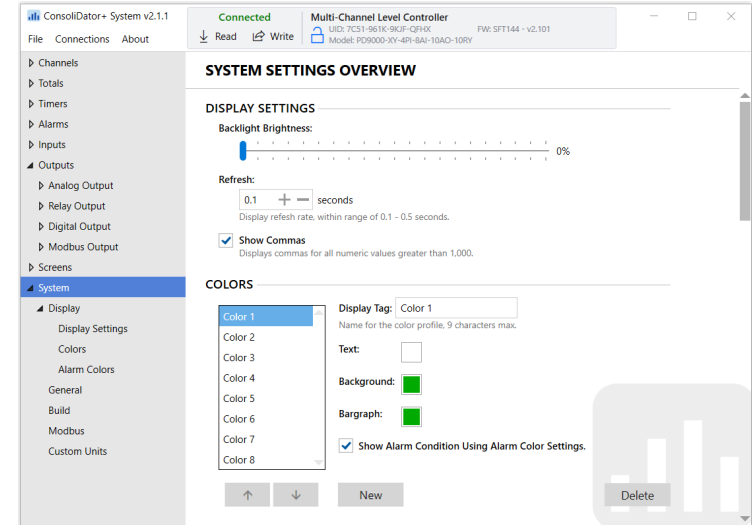
Server Settings

Passcode: 0

CUSTOM UNITS SETTINGS

Name	Unit Type	Unit Base	Factor
MGal	Volume	Gallons	0.000001
Box24	Count	Pulses	0.041667
PASSED	Logic		
FAILED	Logic		

Display Settings



ConsoliDator+ System v2.1.1

Connected Multi-Channel Level Controller
UID: 7C31-961K-96CF-Q2946 FW: SFT144 -v2.101
Model: PD9000-XY-4PI-8AI-10AO-10RY

File Connections About

▶ Channels
▶ Totals
▶ Timers
▶ Alarms
▶ Inputs
▶ Outputs
▶ Analog Output
▶ Relay Output
▶ Digital Output
▶ Modbus Output
▶ Screens
▶ System
▶ Display
Display Settings
Colors
Alarm Colors
General
Build
Modbus
Custom Units

SYSTEM SETTINGS OVERVIEW

DISPLAY SETTINGS

Backlight Brightness: 0%

Refresh: 0.1 seconds
Display refresh rate, within range of 0.1 - 0.5 seconds.

Show Commas
Displays commas for all numeric values greater than 1,000.

COLORS

Color 1: Color 1
Name for the color profile, 9 characters max.

Text:

Background:

Bargraph:

Show Alarm Condition Using Alarm Color Settings.

↑ ↓ New Delete

PDD9000 ConsoliDator+ Demo Unit

PDD9000 ConsoliDator+ Demo Unit



- Easy-to-setup & easy-to-use demonstrator
- Comes with signal generator for simulating almost any application
- Equipped with light/horn to indicate alarm conditions
- Built-in feet to stabilize unit while showing it
- Comes with protective carrying case for easy transporting around

What's Included in the ConsoliDator+ Demo Unit



PD9000 ConsoliDator+
Multi-Channel Controller



PD9502
Signal Generator



PDA-LH
Light / Horn



USB and Ethernet
Cables



Easy-to-Carry
Protective Storage Case



Thank You For Attending

Questions?

If you have any questions or would like to discuss an application, then feel free to reach out to me.



Joe Ryan
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