PROFINET Interface

1280 Fieldbus Option Card

Installation and Programming Manual

November 26, 2025

RICE LAKE WEIGHING SYSTEMS

PN 156781 Rev G

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www.ricelake.com

Revision History

This section tracks and describes manual revisions for awareness of major updates.

Revision	Date	Description
E	December 8, 2023	Established revision history; LED statuses updated
F	February 29, 2024	Added first and second generation option card details
G	November 26, 2025	Added AOP extended format

Table i. Revision Letter History

Contents

1.0 Introduction

The PROFINET Interface can be used to read and write data to the indicator using a PLC or another primary controller. This manual provides information for installation and use of this product.

The PROFINET Interface is installed inside the indicator enclosure and installation in NEMA Type 4X stainless steel enclosures permits use in washdown environments.

See the indicator technical manual for additional installation information and detailed descriptions of indicator functions.

WARNING: Some procedures described in this manual require work inside the indicator enclosure. These procedures are to be performed by qualified service personnel only.

Manuals and additional resources are available on the Rice Lake Weighing Systems website at **www.ricelake.com**

Warranty information can be found on the website at **www.ricelake.com/warranties**

1.1 Overview

The primary controller communicates by sending commands through the PROFINET Interface to the indicator. The indicator responds to the primary controller with data and status depending on the command sent. These actions are referred to as polled response.

1.2 FCC Compliance

United States

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canada

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Class A prescites dans le Règlement sur le brouillage radioélectrique edicté par le ministère des Communications du Canada.

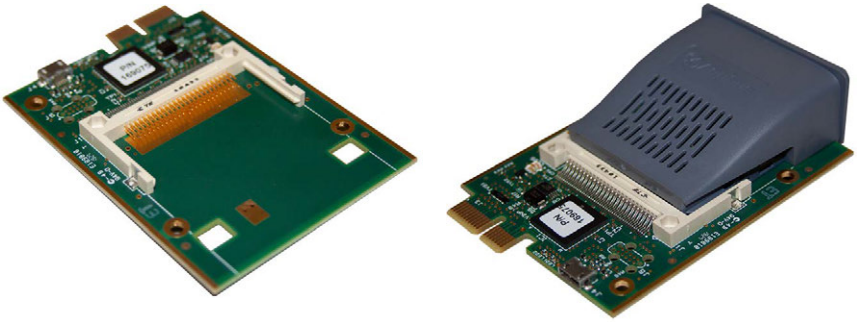
2.0 Installation

PROFINET Interface specific functions are provided by a PROFINET Interface.

The module plugs into an open option card slot on the CPU board and provides power and access from the indicator bus to the PROFINET Interface module.

IMPORTANT: See the indicator technical manual for installation instructions.

The interface option cards of the 1280 Enterprise Series indicator share the same carrier board (PN 164756). The carrier board plugs into an open slot on the CPU board and provides power and access from the indicator bus to the module. 1280 interface option card kits are shipped with the module and carrier board already assembled.



Carrier Board **Carrier Board with Module**

Figure 2-1. Interface Option Card Kit

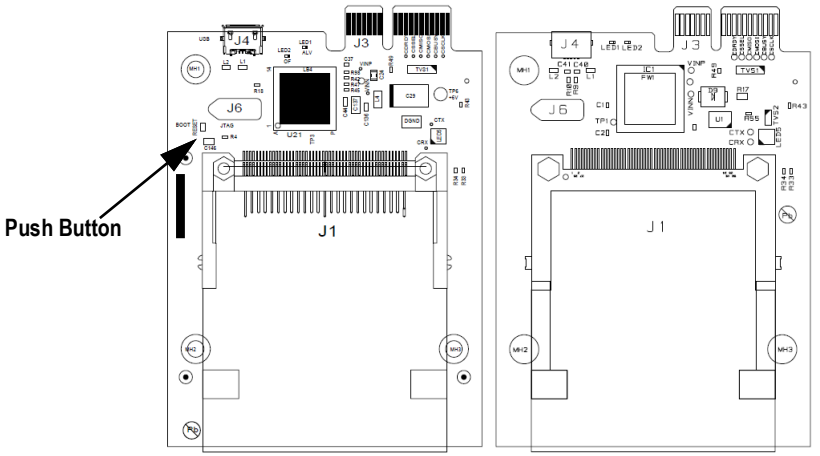


Figure 2-2. Second Generation (left) and First Generation (right) Boards

Card Generation	Identifying Characteristics
First Generation	green board
Second Generation	blue board, push button

Table 2-1. Option Card Identification Information

NOTE: Only second generation cards (blue boards) can have the firmware updated. See the 1280 Enterprise Technical Manual (PN 167659) for further instructions.

The indicator automatically recognizes all installed option cards when the unit is powered on. No hardware-specific configuration is required to identify an installed card to the system.

WARNING: Always disconnect the power before opening an enclosure.

Interface option cards are not hot swappable.

CAUTION: A grounding wrist strap must be worn to protect components from electrostatic discharge (ESD) when working inside an enclosure or controller assembly.

2.1 Installation Instructions

1. Disconnect power to the indicator.
2. See the 1280 technical manual (PN 167659) to gain access to the Controller Assembly box for the specific model.
3. Remove the screw securing the intended slot cover plate of the Controller Assembly box, set the slot cover plate aside and save the screw.
4. Mount the faceplate on module and slide module board assembly into place within the slot.
5. Secure the faceplate and module board assembly into place with the previously removed screw.

NOTE: Interface cable is routed through a cord grip in Universal and Wall mount enclosures.

Alternately, a chassis mounted connect can be installed in the enclosure.

6. See 1280 technical manual to reinstall the Controller Assembly box.

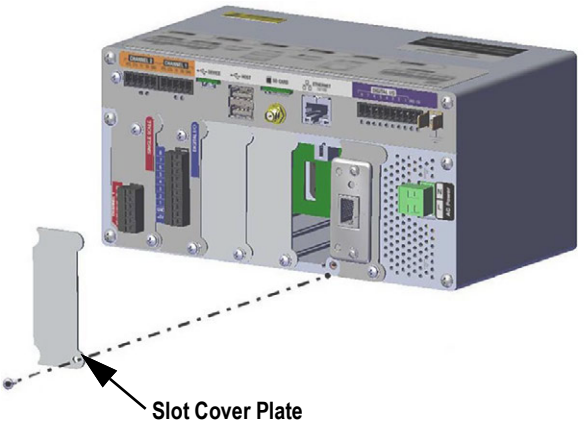


Figure 2-3. Existing Cover Plate Removal

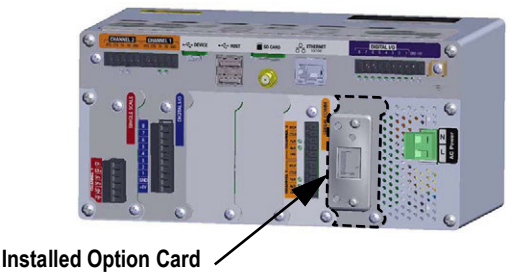


Figure 2-4. Installed Interface Option Card

2.2 LED Status Indicators

An LED array on the PROFINET Interface module provides status information for troubleshooting.

Figure 2-5. PROFINET Status LED Module

NOTE: A test sequence is performed on this (item 1 and 2) during startup.

Network Status LED (Item 1)

LED State	Description
Off	No power or no IP address
Green	Module is in Process Active or Idle state
Green, Flashing	Waiting for connections
Red	Duplicate IP address, FATAL event
Red, Flashing	Process Active Timeout

Table 2-2. Network Status LED

Module Status LED (Item 2)

LED State	Meaning	Description
Off	Not Initialized	No power Module in SETUP or NW_INIT state
Green	Normal Operation	Module has shifted from the NW_INIT state
Green, 1 flash	Diagnostic Event	Diagnostic event present
Green, 2 flashes		blink used by engineering tools to identify the node on the network
Red	Exception Error	Module in state EXCEPTION
Red, 1 flash	Configuration Error Expected	Identification differs from real identification
Red, 2 flashes	IP Address Error	IP address not set
Red, 3 flashes	Station Name Error	Station name not set
Red, 4 flashes	Internal Error	Module has encounter a major internal error

Table 2-3. Module Status LED

Link/Activity LED (Item 3)

LED State	Description
Off	No link, no activity
Green	Link established
Green, Flickering	Activity

Table 2-4. Link/Activity LED

RJ45 Port (Item 4)

The PROFINET interface supports 10/100Mbit, full or half duplex operation.

3.0 Configuration

3.1 PLC Configuration

Import GSDML files from the Rice Lake Weighing Systems website.

Device overview

...	Module	Rack	Slot	I address	Q address
	ABCC-PRT	0	0		
	Interface	0	0 X1		
	Output 1 word_1	0	1		72...73
	Output 1 word_2	0	2		74...75
	Output 1 word_3	0	3		76...77
	Output 1 word_4	0	4		78...79
	Input 1 word_1	0	5	76...77	
	Input 1 word_2	0	6	78...79	
	Input 1 word_3	0	7	80...81	
	Input 1 word_4	0	8	82...83	
		0	9		

Figure 3-1. Device Overview

3.2 Configuring the Network Settings

Configuring the network setting is done using a web browser or Anybus IP configuration utility which can be downloaded from the Rice Lake Weighing Systems website.

To set the network settings using a web browser.

1. Open a browser and type the IP address of the card.
2. Change any or all settings.
3. Click on **Store settings**.

To set the network settings using the Anybus IP Configuration program.

1. Open the configuration program.

NOTE: The configuration program can be found at the following link:
https://www.ricelake.com/products/profinet-interface-880-882d-882is-1280/?part=179160

2. Click on **Scan** button if the device does not display in the menu.
3. Double click on the device. A menu is displayed with the current network settings.
4. Change any or all settings.
5. Click on the **Set** button.
6. Change any or all settings and click on the **Set** button.

The following are examples only, actual displays will vary:

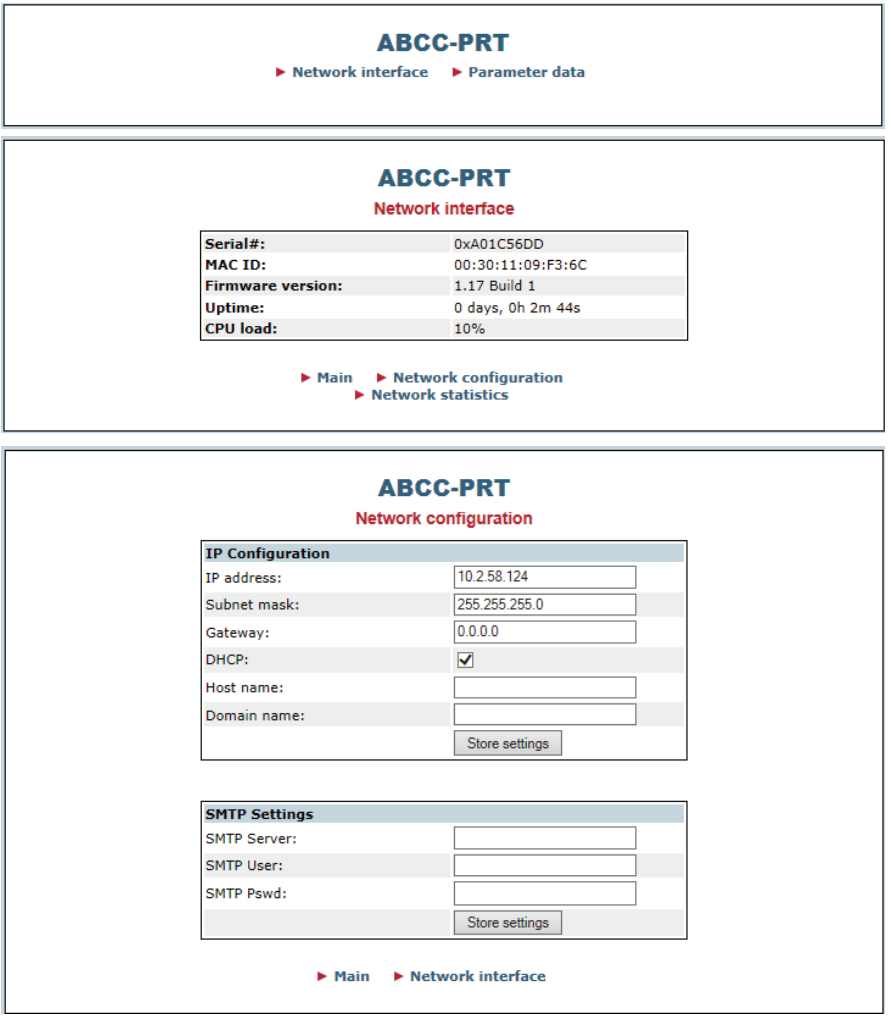


Figure 3-2. PROFINET Interface Display in a Web Browser

4.0 Fieldbus Formats

IMPORTANT: For calibration, ensure the indicator is not in configuration mode.

Format	Description
Standard (default)	Maintains compatibility with the current fieldbus smart cards with versions 1.04; formats 8 bytes input and 8 bytes output data (see Section 4.1)
iRite	Ensures fieldbus data is controlled by the iRite program ***NOTE: PROBUS is limited to 32 bytes of data. See the iRite Programmer Manual (PN 67888) for iRite application on PLC networks.***
AOP Extended	Uses the extended format that sends all scale weights and allows new functions; formats 56 bytes of outputs and 115 bytes of input data (see Section 5.0 on page 29) ***NOTE: This setting is unavailable for PROBUS as it is limited to 32 bytes of data.***

Table 4-1. Fieldbus Formats

4.1 Standard Format

Commands are used by the primary device to send and receive data from the interface as integer or floating-point data. The primary sends eight bytes in the output format to write commands to the indicator and reads eight bytes in the input format to read data from the indicator.

Decimal Point Handling

Integer commands return no decimal point information to the primary.

For example, a value of 750.1 displayed on the indicator is returned to the primary as 7501. Floating point commands support decimal point information with no special handling.

4.1.1 Output Data Format

To perform a command, the primary uses the output command format to send four 16-bit words to the interface. These four words contain the command and the necessary parameters to execute it. The output command format is shown in Table 4-2.

Byte	Description
Byte 0	Command Number
Byte 1	
Byte 2	Parameter
Byte 3	
Byte 4	Value (MSW)
Byte 5	
Byte 6	Value (LSW)
Byte 7	

Table 4-2. 1280 Output Data Format

NOTE: See Section 4.1.2 on page 17 for BYTE swapping parameters.
A lockout feature, incorporated into the indicator receive mechanism, looks for change in the output format data to prevent inundation by the same command.
See affected commands noted in Table 4-3 on page 15 with an (*).
Repeated commands must be separated by any other valid command/parameter/value combination.

Parameter Value

In communication with a multi-scale indicator, the scale number is sent in the second word of the output command format. Zero (0) represents the current scale. Certain commands require a parameter other than a scale number, such as a slot number, setpoint number, or other selection parameter. See the command descriptions in Section 4.2 on page 21 for specific command requirements.

Value

The third and fourth words of the output format are used to pass value data on certain commands. Values entered in these words are treated as unsigned long integers or floating-point values, depending on the command.

Command Number

The number representing the indicator command is sent in the first word.
Table 4-3 lists the commands that can be specified for indicators.
Some commands may not be available on all indicators.

Decimal	Hex	Command
0	0x000	Return Status and Weight (integer)
1	0x001	Display Channel
2	0x002	Display Gross Weight
3	0x003	Display Net Weight
9	0x009	Gross/Net key press (toggle)
10	0x00A	Zero*
11	0x00B	Display Tare*
12	0x00C	Enter Tare*
13	0x00D	Acquire Tare*
14	0x00E	Clear Tare*
16	0x010	Primary Units
17	0x011	Secondary Units
18	0x012	Tertiary Units
19	0x013	Units key press (toggle units)
20	0x014	Print Request
21	0x015	Display Accumulator
22	0x016	Clear Accumulator
23	0x017	Push Weight to Accumulator
32	0x020	Return Gross (integer)
33	0x021	Return Net (integer)
34	0x022	Return Tare (integer)
37	0x025	Return Current Display (integer)
38	0x026	Return Accumulator (integer)
39	0x027	Return Rate of Change (integer)
95	0x05F	Set Batching State
96	0x060	Batch Start
97	0x061	Batch Pause
98	0x062	Batch Reset
99	0x063	Batch Status
112	0x070	Lock Indicator Front Panel
113	0x071	Unlock Indicator Front Panel

Table 4-3. Remote Commands

Decimal	Hex	Command
114	0x072	Set Digital Output ON
115	0x073	Set Digital Output OFF
116	0x074	Read Digital I/O Status
128	0x80	Enable Bus Command Handler
253	0x0FD	No operation
254	0x0FE	Reset Indicator
256	0x100	Return Status and Weight (float)
268	0x10C	Enter Tare (float)
288	0x120	Read Gross (float)
289	0x121	Read Net (float)
290	0x122	Read Tare (float)
293	0x125	Read Current Display (float)
294	0x126	Read Accumulator (float)
295	0x127	Read Rate of change (float)
304	0x130	Set Setpoint Value (float)
305	0x131	Set Setpoint Hysteresis (float)
306	0x132	Set Setpoint Bandwidth (float)
307	0x133	Set Setpoint Preact (float)
320	0x140	Read Setpoint Value (float)
321	0x141	Read Setpoint Hysteresis (float)
322	0x142	Read Setpoint Bandwidth (float)
323	0x143	Read Setpoint Preact (float)

Table 4-3. Remote Commands (Continued)

4.1.2 BYTE Swapping

NOTE: See the Ports Menu in the indicator manual.

The indicator sends and receives data in integer format.

The standard format is as follows for all input and output values:

High BYTE – Low BYTE

If the indicator FLDBUS/SWAP parameter is set to YES, then the BYTE order changes to:

Low BYTE – High BYTE

Example: If the weight on the scale reads 10 lbs and a value of 2560 is displayed in the PLC, either swap the BYTES in the PLC or change the SWAP parameter to YES.

4.1.3 Input Data Format

The interface returns data and status information to the primary as four 16-bit words in response to a command. The input command format is shown in Table 4-4.

The value type can be set for commands not specifying integer or floating point data by sending the command 0x000 to specify integer data, or sending command 0x100 to specify floating-point data. The value type is returned in the status word (bit 14) of the input format.

Byte	Description
Byte 0	Command Number
Byte 1	
Byte 2	Status
Byte 3	
Byte 4	Value (MSW)
Byte 5	
Byte 6	Value (LSW)
Byte 7	

Table 4-4. 1280 Input Data Format

NOTE: See Section 4.1.2 for BYTE swapping parameters.

Command Number

The first word echoes the command number. If the command fails or is not recognized, the negative of the command number is returned to signal the error.

Status Data

Indicator status data is returned in the second word (Table 4-5). Batch commands return batch status in place of the low byte (Table 4-6 on page 19). Setpoint commands return batch status in the low byte of the status word and the setpoint number in the high byte.

Word 2 Bit	Indicator Status Data	
	Value=0	Value=1
00	Error ** (Bit-0 Errors on page 19)	No error
01	Tare not entered	Tare entered
02	Not center of zero	Center of zero
03	Weight invalid	Weight OK
04	Standstill	In motion
05	Primary units	Other units
06	Tare not acquired	Tare acquired
07	Gross weight	Net weight
08	Channel number ***NOTE: Least significant bit first.***	
09		
10		
11		
12		
13	Not used	
14	Integer data	Floating point data
15	Positive weight	Negative weight
This error condition does not necessarily mean the weight being reported is invalid. Refer to the “Weight invalid” bit.		

Table 4-5. Indicator Status Data Format

Bit-0 Errors

- PLC command failed to execute
- No configuration has taken place
- Scale parameter is out of range
- Print error has occurred
- Load error has occurred
- Memory error has occurred
- Analog to digital converter error
- Tare error
- Scale over range error
- Scale under range error
- Non-recoverable configuration store error
- Indicator in configuration mode

	Batch Function Status Data	
Word 2 Bit	**Value=0**	**Value=1**
00	Digital input 4 OFF	Digital input 4 ON
01	Digital input 3 OFF	Digital input 3 ON
02	Digital input 2 OFF	Digital input 2 ON
03	Digital input 1 OFF	Digital input 1 ON
04	Batch not paused	Batch paused
05	Batch not running	Batch running
06	Batch not stopped	Batch stopped
07	Alarm OFF	Alarm ON
08	Setpoint number	
09		
10		
11		
12		
13	Not used	
14	Integer data	Floating point data
15	Positive weight	Negative weight

Table 4-6. Batch Function Status Data Format

Value

Weight data is returned to the primary in the third and fourth words of the input command format, depending on the command and the value type. The weight data returned is the displayed weight after the command is executed, unless the command specifies otherwise.

A negative value is returned in the two's compliment format.

Setting a Float Value

Setting a float value in a setpoint requires the value to be sent in two separate integer values. Most PLCs have a mechanism to take a float value and separate it into to integer values.

Example: The following must be sent in the output words to set the value of Setpoint #1 to 10000.

Command word = 304

Parameter word = 1

MSW = 17948

LSW = 16384

Reading a Float Value

When a float value is read it will be returned in two integers representing the float value.

The PLC must combine MSW and LSW integer values back into a float value.

Example: The following is returned in the input words if the weight on the scale is 800.5.

Command Word = 288

Status word = Scale status

MSW= 17480

LSW = 8192

4.2 Command Descriptions

Return Status and Current Weight as Integer

Command: 0, 0x000

Parameter: Scale number

Command 0 returns the status and gross or net scale weight (per scale configuration) of the specified scale in integer format, without changing the display. This command also causes the format-independent commands to return a value in the integer format.

Display Channel

Command: 1, 0x001

Parameter: Scale number

Command 1 causes the weight of the specified scale to be displayed and returned in its current mode and format.

Display Gross Weight

Command: 2, 0x002

Parameter: Scale number

Command 2 causes the gross weight of the specified scale to be displayed and returned.

Display Net Weight

Command: 3, 0x003

Parameter: Scale number

Command 3 causes the net weight of the specified scale to be displayed and returned.

Gross/Net Key Press (Toggle Mode)

Command: 9, 0x009

Parameter: Scale number

Command 9 toggles between gross and net mode (and count mode, if enabled).

If a scale number other than 0 is specified, the action will not be seen until the specified scale is displayed.

Zero

Command: 10, 0x00A

Command 10 performs a ZERO operation on the current scale.

Display Tare

Command: 11, 0x00B

Parameter: Scale number

Command 11 causes the tare weight on the specified scale to be displayed.

If a scale number other than 0 is specified, the indicator first causes the specified scale to be displayed. Display returns to the prior mode after checking the indicator.

Enter Tare (Integer)

Command: 12, 0x00C

Parameter: Scale number

Value: Tare weight

Command 12 enters a tare for the scale selected. Tare data must be in integer format.

The indicator continues to return weight data in the current mode for the specified scale.

Acquire Tare (Simulate TARE Key Press)

Command: 13, 0x00D

Parameter: Scale number

Command 13 acquires a tare based on the weight currently on the specified scale.

The indicator continues to return weight data in the current mode for the specified scale.

Clear Tare

Command: 14, 0x00E

Parameter: Scale number

Command 14 clears the tare for the specified scale. The indicator continues to return weight data in the current mode for the specified scale.

Primary Units

Command: 16, 0x010

Parameter: Scale number

Command 16 switches the current format of the specified scale to the primary units configured for that scale.

Secondary Units

Command: 17, 0x011

Parameter: Scale number

Command 17 switches the current format of the specified scale to the secondary units configured for that scale.

Tertiary Units

Command: 18, 0x012

Parameter: Scale number

Command 18 switches the current format of the specified scale to the tertiary units configured for that scale, if available.

Units Key Press (Toggle Units)

Command: 19, 0x013

Parameter: Scale number

Command 19 toggles between primary and secondary units of the specified scale.

Print Request

Command: 20, 0x014

Parameter: Scale number

Command 20 causes the indicator to execute a print command for the current scale.

Display Accumulator

Command: 21, 0x015

Parameter: Scale number

Command 21 causes the value of the accumulator for the specified scale to be displayed and returned. This command is valid only when the accumulator for the specified scale is enabled.

Clear Accumulator

Command: 22, 0x016

Parameter: Scale number

Command 22 clears the value of the accumulator for the specified scale.

This command is valid only when the accumulator for the specified scale is enabled.

Push Weight to Accumulator

Command: 23, 0x017

Parameter: Scale number

Command 23 adds the net weight on the specified scale to the value of the accumulator for the specified scale. The scale must return to net zero between accumulations. The indicator returns the accumulated weight data for the specified scale. This command is valid only when the accumulator for the specified scale is enabled.

Return Gross as Integer

Command: 32, 0x020

Parameter: Scale number

Command 32 returns the gross weight value for the specified scale as an integer.

Return Net as Integer

Command: 33, 0x021

Parameter: Scale number

Command 33 returns the net weight value for the specified scale as an integer.

Return Tare as Integer

Command: 34, 0x022

Parameter: Scale number

Command 34 returns the tare weight value for the specified scale as an integer.

Return Current Display as Integer

Command: 37, 0x025

Parameter: Scale number

Command 37 returns the weight value for the specified scale as currently displayed. This may include gross, net, tare or accumulator values, as enabled.

Return Accumulator as Integer

Command: 38, 0x026

Parameter: Scale number

Command 38 returns the accumulator value for the specified scale.

This command is valid only when the accumulator for the specified scale is enabled.

Return Rate of Change as Integer

Command: 39, 0x027

Parameter: Scale number

Command 39 returns the current rate of change value for the specified scale.

This command is valid only for the 1280.

Set Batching State

Command: 95, 0x05F

Parameter: State (0 = off; 1 = auto; 2 = manual)

Command 95 sets the batching (BATCHNG) parameter.
Indicator status is returned with the current weight for the last scale specified.

Batch Start

Command: 96, 0x060

Parameter: Scale number

Command 96 starts a batch program from the current step after a stop, pause, or reset.

Batch status is returned with the current weight for the specified scale.

Batch Pause

Command: 97, 0x061

Parameter: Scale number

Command 97 pauses a batch program at the current step.

Batch status is returned with the current weight for the specified scale.

Batch Reset

Command: 98, 0x062

Parameter: Scale number

Command 98 stops a batch program and resets it to the first batch step.

Batch status is returned with the current weight for the specified scale.

Batch Status

Command: 99, 0x063

Parameter: Scale number

Command 99 returns the status of a batch. Batch status is returned with the current weight for the specified scale.

Lock Front Panel of Indicator

Command: 112, 0x070

Parameter: Scale number

Command 112 disables all the keys on the front panel of the indicator.

Indicator status is returned with the current weight for the specified scale.

Unlock Front Panel of Indicator

Command: 113, 0x071

Parameter: Scale number

Command 113 re-enables all the keys on the front panel of the indicator.

Indicator status is returned with the current weight for the specified scale.

Set Digital Output ON

Command: 114, 0x072

Parameter: Slot number

Value: Bit number

Command 114 sets the specified digital output ON (active). Use slot number 0 for onboard digital outputs. Indicator status is returned with the current weight for the last scale specified.

Set Digital Output OFF

Command: 115, 0x073

Parameter: Slot number

Value: Bit number

Command 115 sets the specified digital output OFF (inactive). Use slot number 0 for onboard digital outputs. Indicator status is returned with the current weight for the last scale specified.

Read Digital I/O

Command: 116, 0x074

Parameter: Slot number

Command 116 returns the status for all digital I/O in the specified slot in words 3 and 4.

Use slot number 0 for onboard digital I/O. Indicator status is returned in the status area for the last scale specified.

Enable Bus Command Handler

Command: 128, 0x80

Parameter: None

Command 128 enables the bus command handler in a user program.

While this handler is enabled, all other PLC commands are disabled.

No Operation

Command: 253, 0x0FD

Parameter: Scale number

Command 253 provides a command to use between operations, as necessary, without causing the indicator to perform any action. Indicator status and weight for specified scale is returned.

Reset Indicator

Command: 254, 0x0FE

Parameter: None

Command 254 provides a command to remotely reset the indicator. No data is returned.

Return Status and Current Weight as Float

Command: 256, 0x100

Parameter: Scale number

Command 256 returns the status and weight of the specified scale in floating-point format, without changing the display. This command also causes the format-independent commands to return a value in the floating-point format. Returns current weight at a floating-point format.

Enter Tare as Float

Command: 268, 0x10C

Parameter: Scale number

Value: Tare weight

Command 268 enters a tare for the scale selected in floating-point format.

The indicator returns the tare weight as taken, or 0 for no tare.

Read Gross Weight as Float

Command: 288, 0x120

Parameter: Scale number

Command 288 returns the gross weight value for the specified scale in floating-point format.

Read Net Weight as Float

Command: 289, 0x121

Parameter: Scale number

Command 289 returns the net weight value for the specified scale in floating-point format.

Read Tare as Float

Command: 290, 0x122

Parameter: Scale number

Command 290 returns the tare weight value for the specified scale in floating-point format.

Read Current Display as Float

Command: 293, 0x125

Parameter: Scale number

Command 293 returns the weight value for the specified scale as currently displayed in floating-point format. This may include gross, net, tare, or accumulator values, as enabled.

The weight value is returned in the mode used to display a scale widget.

Read Accumulator as Float

Command: 294, 0x126

Parameter: Scale number

Command 294 returns the accumulator value for the specified scale in floating-point format. Batch status is returned in place of the indicator status.

Read Rate of Change as Float

Command: 295, 0x127

Parameter: Scale number

Command 295 returns the current rate of change value for the specified scale in floating-point format. This command is valid only for the 1280.

Set Setpoint Value as Float

Command: 304, 0x130

Parameter: Setpoint number

Value: Setpoint value

Command 304 sets the setpoint value for the specified setpoint in floating-point format.

This command is valid only when the setpoint is configured and requires a setpoint value.

Batch status is returned in place of the indicator status.

Set Setpoint Hysteresis as Float

Command: 305, 0x131

Parameter: Setpoint number

Value: Hysteresis value

Command 305 sets the hysteresis value for the specified setpoint in floating-point format.

This command is valid only when the setpoint is configured and requires a hysteresis value.

Batch status is returned in place of the indicator status.

Set Setpoint Bandwidth as Float

Command: 306, 0x132
Parameter: Setpoint number
Value: Bandwidth value
Command 306 sets the bandwidth value for the specified setpoint in floating-point format. This command is valid only when the setpoint is configured and requires a bandwidth value. Batch status is returned in place of the indicator status.

Set Setpoint Preact as Float

Command: 307, 0x133
Parameter: Setpoint number
Value: Preact value
Command 307 sets the preact value for the specified setpoint in floating-point format. This command is valid only when the setpoint is configured and requires a preact value. Batch status is returned in place of the indicator status.

Read Setpoint Value as Float

Command: 320, 0x140
Parameter: Setpoint number
Command 320 returns the target value for the specified setpoint in floating-point format. This command is valid only when the setpoint is configured and requires a target value. Batch status is returned in place of the indicator status.

Read Setpoint Hysteresis as Float

Command: 321, 0x141
Parameter: Setpoint number
Command 321 returns the hysteresis value for the specified setpoint in floating-point format. This command is valid only when the setpoint is configured and requires a hysteresis value. Batch status is returned in place of the indicator status.

Read Setpoint Bandwidth as Float

Command: 322, 0x142

Parameter: Setpoint number

Command 322 returns the bandwidth value for the specified setpoint in floating-point format. This command is valid only when the setpoint is configured and requires a bandwidth value. Batch status is returned in place of the indicator status.

Read Setpoint Preact as Float

Command: 323, 0x143

Parameter: Setpoint number

Command 323 returns the preact value for the specified setpoint in floating-point format. This command is valid only when the setpoint is configured and requires a preact value. Batch status is returned in place of the indicator status.

5.0 AOP Extended Format

All Values are 32 bits in size. If the values are not correct, adjust the SWAP parameter under 1280 fieldbus configuration.

5.1 Output Data to PLC

Order No.	Output Registers	Byte #
0	Command Register	0
	Command Register	1
	Command Register	2
	Command Register	3
1	Parameter 1	4
	Parameter 1	5
	Parameter 1	6
	Parameter 1	7
2	Parameter 2	8
	Parameter 2	9
	Parameter 2	10
	Parameter 2	11
3	Parameter 3	12
	Parameter 3	13
	Parameter 3	14
	Parameter 3	15
4	Capacity	16
	Capacity	17
	Capacity	18
	Capacity	19
5	Units	20
	Units	21
	Units	22
	Units	23
6	Decimal	24
	Decimal	25
	Decimal	26
	Decimal	27

Table 5-1. Output Data

Order No.	Output Registers	Byte #
7	Display Divisions	28
	Display Divisions	29
	Display Divisions	30
	Display Divisions	31
8	Calibration Point	32
	Calibration Point	33
	Calibration Point	34
	Calibration Point	35
9	Span Calibration Weight	36
	Span Calibration Weight	37
	Span Calibration Weight	38
	Span Calibration Weight	39
10	Point #1 Calibration Weight	40
	Point #1 Calibration Weight	41
	Point #1 Calibration Weight	42
	Point #1 Calibration Weight	43
11	Point #2 Calibration Weight	44
	Point #2 Calibration Weight	45
	Point #2 Calibration Weight	46
	Point #2 Calibration Weight	47
12	Point #3 Calibration Weight	48
	Point #3 Calibration Weight	49
	Point #3 Calibration Weight	50
	Point #3 Calibration Weight	51
13	Point #4 Calibration Weight	52
	Point #4 Calibration Weight	53
	Point #4 Calibration Weight	54
	Point #4 Calibration Weight	55

Table 5-1. Output Data

5.1.1 Commands

Command	Decimal	Description
No Command	0	No action
Zero Scale	1	Zeros scale Parameter 1 = scale number
Tare Scale	2	Tares the current weight of scale number in parameter 1 if Parameter 2 = 0, otherwise tare the value that is in parameter 2.
Display Net Mode	4	Switches the scale from gross mode to net mode
Display Gross Mode	5	Switches the scale from net mode to gross mode
Read ROC	6	Parameter 1 = Scale Number Returns value in Multi Use Value 1
Write Setpoint	10	Parameter 1 = Setpoint # Parameter 2 = Value
Read Setpoint	11	Parameter 1 = Setpoint # Returns value in Multi Use Value 1
Read I/O Points	12	Parameter 1 = I/O slot number
Set Output On	24	Parameter 1 = Slot Parameter 2 = bit
Set Output Off	25	Parameter 1 = Slot Parameter 2 = bit
Write Setup	27	Writes calibration setting Parameter 1 = Scale Number
Restart Instrument	34	Restarts the indicator
Perform Zero Calibration	35	Performs a zero calibration
Perform Span Calibration	36	Performs a span calibration
Save Calibration	38	Saves the calibration and exits calibration mode
Abort Calibration	39	Aborts a calibration and clears any errors
Point Calibration	37	Point value found in Calibration Point (1-4)
Keyboard Enable/Disable	40	Disables keys (Parameter 1 = 0) Enables keys (Parameter 1 = 1)
Read Accumulator	41	Multi Value 1 = Returns accumulator value Parameter 1 = Scale number

Table 5-2. Output Commands

5.1.2 Input Data from the Indicator

Order No.	Output Registers	Byte Order	Byte #
0	Input/Output Status	3	0
		2	1
		1	2
		0	3
1	Command Status	3	4
		2	5
		1	6
		0	7
2	Calibration Status	3	8
		2	9
		1	10
		0	11
3	Multi Use Value 1	3	12
		2	13
		1	14
		0	15
4	Multi Use Value 2	3	16
		2	17
		1	18
		0	19
5	Gross Weight SC1	3	20
		2	21
		1	22
		0	23
6	Net Weight SC1	3	24
		2	25
		1	26
		0	27
7	Scale Status SC1	3	28
		2	29
		1	30
		0	31

Table 5-3. Input Data

Order No.	Output Registers	Byte Order	Byte #
8	Gross Weight SC2	3	32
		2	33
		1	34
		0	35
9	Net Weight SC2	3	36
		2	37
		1	38
		0	39
10	Scale Status SC2	3	40
		2	41
		1	42
		0	43
11	Gross Weight SC3	3	44
		2	45
		1	46
		0	47
12	Net Weight SC3	3	48
		2	49
		1	50
		0	51
13	Scale Status SC3	3	52
		2	53
		1	54
		0	55
14	Gross Weight SC4	3	56
		2	57
		1	58
		0	59
15	Net Weight SC4	3	60
		2	61
		1	62
		0	63
16	Scale Status SC4	3	64
		2	65
		1	66
		0	67

Table 5-3. Input Data

Order No.	Output Registers	Byte Order	Byte #
17	Gross Weight SC5	3	68
		2	69
		1	70
		0	71
18	Net Weight SC5	3	72
		2	73
		1	74
		0	75
19	Scale Status SC5	3	76
		2	77
		1	78
		0	79
20	Gross Weight SC6	3	80
		2	81
		1	82
		0	83
21	Net Weight SC6	3	84
		2	85
		1	86
		0	87
22	Scale Status SC6	3	88
		2	89
		1	90
		0	91
23	Gross Weight SC7	3	92
		2	93
		1	94
		0	95
24	Net Weight SC7	3	96
		2	97
		1	98
		0	99
25	Scale Status SC7	3	100
		2	101
		1	102
		0	103

Table 5-3. Input Data

Order No.	Output Registers	Byte Order	Byte #
26	Gross Weight SC8	3	104
		2	105
		1	106
		0	107
27	Net Weight SC8	3	108
		2	109
		1	110
		0	111
28	Scale Status SC8	3	112
		2	113
		1	114
		0	115

Table 5-3. Input Data

5.1.3 Onboard I/O Status

Bit	Description	Bit Status	
0 - 23	I/O Bit	0 = off	1 = on

Table 5-4. I/O Status

5.1.4 Scale Status

Bit	Description	Bit Status	
0	Net Weight Polarity	0 = Positive	1 = Negative
1	Gross Weight Polarity	0 = Positive	1 = Negative
2	Weight Stability	0 = Stable	1 = Motion
3	Underload Condition	0 = OK	1 = Under
4	Overload Condition	0 = OK	1 = Under
5	Keyed Tare Condition	0 = NO	1 = YES
6	Acquired Tare Condition	0 = NO	1 = YES
7	Gross Zero Band	0 = Out Band	1 = In Band
8	Display Mode	0 = Net	1 = Gross
9	Current Units	0 = Primary	1 = Other
10	Scale Error	0 = Error	1 = OK
11	Accumulator Weight Positive	0 = Positive	1 = Negative
12	Not used, always value of 0	0	1 = ON

Table 5-5. Scale Status

5.1.5 Calibration Status

Value	Description
0	Calibration not started
1	Calibration acquisition in process
2	Calibration acquisition OK
3	Calibration error

Table 5-6. Calibration Status

5.1.6 Command Status

Bytes	Description
0 - 3	Current command status result
16	Heart Beat - 500 ms delay between changing bit from 1 to 0; repeats delay from 0 to 1

Table 5-7. Command Status

5.1.7 Command Errors

Value	Description
0	Command successfully performed
1	Not a valid command
2	General error; Attempted Tare or Zero while scale is in motion
3	Setpoint number does not exist; Attempted to read or write a setpoint that does not exit
4	Setpoint Kind is OFF; Attempted to read or write to a setpoint that is not configured
5	Setpoint Not Enabled; Attempted to read or write to a setpoint that is not Enabled
6	Invalid I/O; Attempted to set an unconfigured output on or off
7	Not in setup mode; Attempted to use Write Setup, Zero Calibration, Span Calibration, Point Calibration, Save Calibration or Abort Calibration commands while not in setup mode
8	Wrong command; Non-calibration command used during calibration
9	Invalid units selection
10	Invalid decimal selection
11	Invalid display division selection
12	Calibration point out of range (1-4)
	Unused value
13	Calibration not allow for MRMI or serial scale
14	Calibration weight out of range

Table 5-8. Command Errors

5.1.8 Scale Error

The scale error bit is always set to 1 unless one of the following error occurs. Scale error is set to 0 until the error is cleared.

- Configuration signature error
- General configuration checksum error
- Load cell data checksum error
- Backup battery voltage low
- Battery backed memory corrupt
- Load cell A/D error
- Tare data checksum error
- Accumulator overflow error
- Unable to write to non-volatile memory

5.1.9 Reading Setpoint Value

To read a setpoint value, send Command 11 and set Parameter 1 to value 1-100. The setpoint value is returned in the Multi Use Value 1 to the PLC while Command 11 is being sent.

Example: Reading setpoint #2
Command = 11
Parameter 1 = 2
The following is returned to PLC.
Multi Use Value 1 = 1120416563 This value is an iEEE floating point value.

5.1.10 Setting Setpoint Value

To write a setpoint value, set the setpoint value in Parameter 1 and Parameter 2. Then send command 10.

Example: Setting setpoint # 2 to 100.1

Command = 10

Parameter 1 = 2

Parameter 2 = 1120416563 This value is an iEEE floating point value

5.1.11 Reading Rate of Change Value

To read the rate of change from a scale, send command 6 and set Parameter 1 to value 1-8. The Rate of Change value is returned in the Multi Use Value 1 to the PLC and is updated while command 6 is being sent.

5.1.12 Calibration Parameters

Units	Value
lb	0
kg	1
oz	2
tn	3
t	4
g	5
--	6

Table 5-9. Unit Calibration Values

Decimal Point	Value
8888888	0
888888.8	1
88888.88	2
8888.888	3
888.8888	4
88.88888	5
8.888888	6
8888880	7
8888800	8

Table 5-10. Decimal Point Calibration Values

Display Division	Value
1	0
2	1
5	2

Table 5-11. Display Division Calibration Values

5.1.13 Standard Calibration Process

Identify the values necessary for the following parameters (optional):

- Capacity
- Units
- Decimal
- Display Divisions
- Span Calibration Weight

1. Set Parameter 1 to the scale number for calibration.
2. Put the scale in setup mode.
3. Use command 27 to write parameters.
4. Put the indicator in calibration mode.
5. Perform a zero calibration by clearing the scale and sending command 35. Calibration Status message displays: In Process, Error or OK.
6. Perform a span calibration by placing a weight valued equal to the Span Calibration Weight value on scale and sending command 36. Calibration Status message displays: In Process, Error or OK.
7. Send command 38 to save and exit calibration mode.

NOTE: Send command 39 anytime to exit calibration without saving calibration settings.

8. Save and exit from setup mode.

5.1.14 Point Calibration

Identify the values necessary for the following parameters (optional):

- Capacity
- Units
- Decimal
- Display Divisions
- Calibration Weight 1
- Calibration Weight 2
- Calibration Weight 3
- Calibration Weight 4

1. Set Parameter 1 to the scale number for calibration.
2. Put the scale in setup mode.
3. Use command 27 to write parameters.
4. Put the indicator in calibration mode. CALPAR displays.
5. Perform a zero calibration by clearing the scale and sending command 35. Monitor the Calibration Status to check the calibration process.
6. To perform a point calibration:
   A. Set the Calibration Point to 1.
   B. Add the Calibration Weight 1 to the scale.
   C. Send Command 37 to capture this calibration point. CALPT1 displays.
   D. Calibration Status message displays: In Process, Error or OK.
7. Repeat step 6 with each Calibration Point.
8. Send command 38 to save and exit calibration mode.

NOTE: Send command 39 anytime to exit calibration without saving calibration settings.

9. After all points are calibrated, save and exit setup mode.

6.0 Specifications

Power:
3.3 VDC, 250 mA

Configuration:
GSDML file

Connector Type:
RJ-45 (Consult for dual-port version)

Diagnostic LEDs:
Module status and network status

IP Address Range:
Full IP address range DHCP

Dimensions:
2.00 x 1.90 x 0.75 in
(52 x 49 x 19 mm)

Temperature:
Operating:
-40° F to 158° F (-40° to 70° C)

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