

DeviceNet™

Interface for 520, 720i®, 820i® and 920i® Indicators

Installation and Programming Manual



DeviceNet™
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69949 Rev A

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About This Manual

This manual provides information needed to install and use the Rice Lake Weighing Systems DeviceNet Interface. The DeviceNet™ Interface allows 520, 720i®, 820i®, and 920i® indicators to communicate with a master controller on a DeviceNet network.¹ See the 520, 720i, 820i, or 920i *Installation Manual* for additional installation information and detailed descriptions of indicator functions.

The DeviceNet Interface is installed inside the indicator enclosure. Installation in NEMA 4X stainless steel enclosures permits use in washdown environments.



WARNING

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



Authorized distributors and their employees can view or download this manual from the Rice Lake Weighing Systems distributor site at www.ricelake.com.

1. DeviceNet™ is a trademark of the Open DeviceNet Vendor Association.

1.0 Introduction

The DeviceNet Interface returns weight and status information from a 520, 720i, 820i, or 920i indicator to a master controller and provides limited control of indicator functions to the programmer. Indicator configuration and calibration cannot be performed through the DeviceNet Interface.

The DeviceNet Interface functions as a Communications Adapter Device (ODVA profile 12) on a DeviceNet network. It acts as a group-two-only server on the network. At this time only one polled I/O connection is supported, though DeviceNet also supports explicit, bit-strobed, and change-of-state/cyclic connections. These connections may be included at a later date.

The master controller sends commands to the indicator through the DeviceNet Interface by writing the commands in the output command format. The DeviceNet Interface returns the weight and status data in the input command format. These actions are referred to as polled I/O. See Section 3.0 for descriptions of the polled I/O commands.

2.0 Installation

The DeviceNet Interface hardware consists of a dual-board option card. DeviceNet-specific functions are provided by a DeviceNet module, which is factory-installed onto a bus adapter card. The bus adapter card plugs into an open option card slot on the 520, 820i, or 920i CPU board (or expansion board) and provides power and access from the indicator bus to the DeviceNet module.

This section describes the procedures used to install the DeviceNet Interface into the 520, 820i, and 920i indicators, connect communications cables, and set the baud rate and node address DIP switch on the DeviceNet module.

2.1 Installing the DeviceNet Interface

Use the following procedure to install the DeviceNet Interface into 520, 820i, and 920i indicators.

2.1.1 Installing DeviceNet Option in the 720i, 820i or 920i

Use the following procedure to install the DeviceNet Interface in the 720i, 820i or 920i indicator:

1. Disconnect indicator from power source.



WARNING Disconnect power before removing indicator backplate.

The 820i and 920i have no on/off switch. Before opening the unit, ensure the power cord is disconnected from the power outlet.

2. Open indicator enclosure. For indicator models with backplates, place indicator face-down on an antistatic work mat. Remove screws that hold the backplate to the enclosure body.



CAUTION Use a wrist strap to ground yourself and protect components from electrostatic discharge (ESD) when working inside the indicator enclosure.

3. Carefully align the large connector (J1) on the bus adapter card with connector J6 on the 820i, J12 on the 720i, or J5 or J6 on the 920i CPU board. Press down to seat the bus adapter card in the CPU board connector.
4. Use the screws and lockwashers provided in the option kit to secure the other end of the option card to the threaded standoffs on the CPU board (see Figures 2-1 and 2-2).
5. Wire the card to the network as described in Section 2.2 on page 4.
6. Set DIP switch as described in Section 2.3 on page 4.
7. Use cable ties to secure loose cables inside the enclosure.



Figure 2-1. Option Installed on 820i CPU Board



Figure 2-2. Option Installed on 920i CPU Board

8. For indicator models that include a backplate, position the backplate over the enclosure and reinstall the backplate screws. For the 820i or 920i desktop and universal models, use the torque pattern shown in Figure 2-3 to prevent distorting the backplate gasket. Torque screws to 15 in-lb (1.7 N-m).

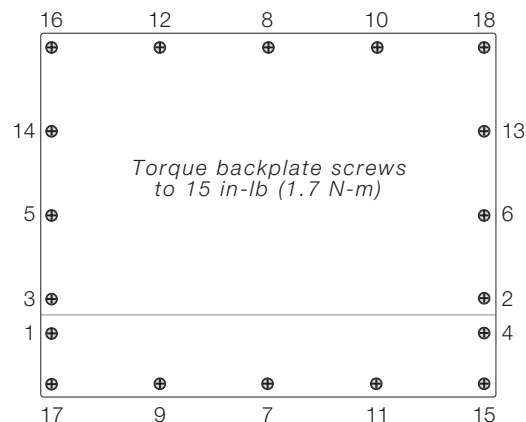


Figure 2-3. 820i/920i Enclosure Backplate

9. Ensure no excess cable is left inside the enclosure and tighten cord grips.

10. Reconnect power to the indicator. The indicator automatically recognizes all installed option cards when the unit is powered on. No hardware-specific configuration is required to identify the newly-installed DeviceNet Interface to the system.

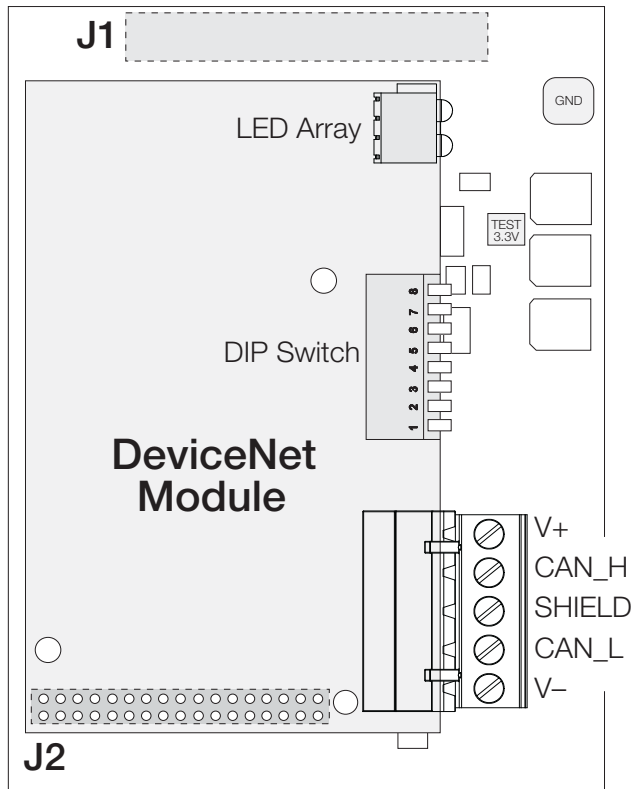


Figure 2-4. Bus Adapter Card and DeviceNet Module

2.1.2 Installing DeviceNet Option in the 520

Use the following procedure to install the DeviceNet Interface in the 520 indicator:

1. Disconnect indicator from power source.



WARNING

Disconnect power before removing indicator enclosure cover.

The 520 has no on/off switch. Before opening the unit, ensure the power cord is disconnected from the power outlet.

2. Place indicator on an antistatic work mat. Remove screws that hold the enclosure cover to the enclosure body.



CAUTION

Use a wrist strap to ground yourself and protect components from electrostatic discharge (ESD) when working inside the indicator enclosure.

3. Carefully align the large option card connector with connector J2 on the CPU board (see Figure 2-5). Press down to seat the option card in the CPU board connector.



Figure 2-5. Option Installed on 520 CPU Board

4. Use screws provided in the option kit to secure the other end of the option card to the threaded standoffs on the CPU board.
5. Install terminal block end of cable assembly to DeviceNet option card.
6. Remove existing cover plate.
7. Re-use kep nuts to secure DeviceNet cover plate to standoffs located on inside of enclosure backplate (see Figure 2-6).
8. Once cabling is complete, position the cover over the enclosure and reinstall the screws.
9. Reconnect power to the indicator.

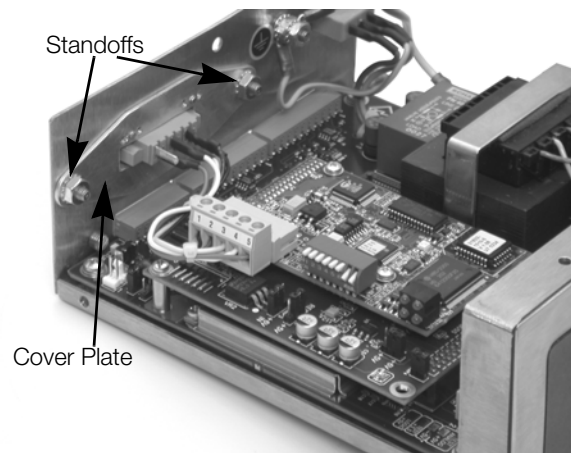


Figure 2-6. DeviceNet Cable Assembly

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

2.2 DeviceNet Network Connections

Feed DeviceNet network cable through cord grip. Allow enough cable for routing along inside of enclosure to connector on the DeviceNet module. Connect network cables to connector on the DeviceNet module (see Figure 2-4), then use cable ties to secure network cables to the cable tie mounts.

Table 2-1 shows the wiring color codes used for DeviceNet connections.



Note Verify the color-coding or wiring scheme for your network equipment before wiring to the DeviceNet Interface.

Signal	Description	Color Code
V+	Positive supply	Red
CAN_H	CAN_H bus line	White
SHIELD	Cable shield	Bare
CAN_L	CAN_L bus line	Light blue
V-	Negative supply	Black

Table 2-1. DeviceNet Color Codes

2.3 DIP Switch Configuration

A DIP switch is used to configure the DeviceNet network baud rate and node address. Figure 2-7 shows the DIP switch assignments.

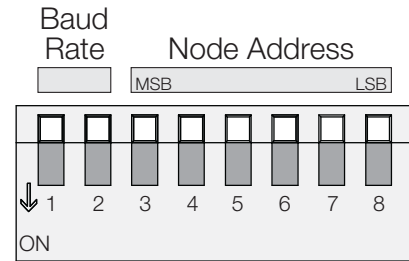


Figure 2-7. DIP Switch Assignments

Baud Rate

Switches 1 and 2 set the baud rate of the DeviceNet network. Use Table 2-2 to select the correct switch settings for the network.

DeviceNet Data Rate	Switch Settings	
	1	2
125 Kbps	OFF	OFF
250 Kbps	OFF	ON
500 Kbps	ON	OFF
Reserved	ON	ON

Table 2-2. Network Data Rate

Node Address (MAC ID)

Switches 3–8 set the node address (MAC ID) of the DeviceNet interface. Use Table 2-3 on page 5 to select the switch setting for the node address.



Note Setting a switch ON acts as a logical “1” and that SW1-3 represents the most significant bit (MSB) of the node address.

Node Address	Switch Settings (MSB→LSB)							Node Address	Switch Settings (MSB→LSB)						
Decimal	Octal	3	4	5	6	7	8	Decimal	Octal	3	4	5	6	7	8
00	00	OFF	OFF	OFF	OFF	OFF	OFF	32	40	ON	OFF	OFF	OFF	OFF	OFF
01	01	OFF	OFF	OFF	OFF	OFF	ON	33	41	ON	OFF	OFF	OFF	OFF	ON
02	02	OFF	OFF	OFF	OFF	ON	OFF	34	42	ON	OFF	OFF	OFF	ON	OFF
03	03	OFF	OFF	OFF	OFF	ON	ON	35	43	ON	OFF	OFF	OFF	ON	ON
04	04	OFF	OFF	OFF	ON	OFF	OFF	36	44	ON	OFF	OFF	ON	OFF	OFF
05	05	OFF	OFF	OFF	ON	OFF	ON	37	45	ON	OFF	OFF	ON	OFF	ON
06	06	OFF	OFF	OFF	ON	ON	OFF	38	46	ON	OFF	OFF	ON	ON	OFF
07	07	OFF	OFF	OFF	ON	ON	ON	39	47	ON	OFF	OFF	ON	ON	ON
08	10	OFF	OFF	ON	OFF	OFF	OFF	40	50	ON	OFF	ON	OFF	OFF	OFF
09	11	OFF	OFF	ON	OFF	OFF	ON	41	51	ON	OFF	ON	OFF	OFF	ON
10	12	OFF	OFF	ON	OFF	ON	OFF	42	52	ON	OFF	ON	OFF	ON	OFF
11	13	OFF	OFF	ON	OFF	ON	ON	43	53	ON	OFF	ON	OFF	ON	ON
12	14	OFF	OFF	ON	ON	OFF	OFF	44	54	ON	OFF	ON	ON	OFF	OFF
13	15	OFF	OFF	ON	ON	OFF	ON	45	55	ON	OFF	ON	ON	OFF	ON
14	16	OFF	OFF	ON	ON	ON	OFF	46	56	ON	OFF	ON	ON	ON	OFF
15	17	OFF	OFF	ON	ON	ON	ON	47	57	ON	OFF	ON	ON	ON	ON
16	20	OFF	ON	OFF	OFF	OFF	OFF	48	60	ON	ON	OFF	OFF	OFF	OFF
17	21	OFF	ON	OFF	OFF	OFF	ON	49	61	ON	ON	OFF	OFF	OFF	ON
18	22	OFF	ON	OFF	OFF	ON	OFF	50	62	ON	ON	OFF	OFF	ON	OFF
19	23	OFF	ON	OFF	OFF	ON	ON	51	63	ON	ON	OFF	OFF	ON	ON
20	24	OFF	ON	OFF	ON	OFF	OFF	52	64	ON	ON	OFF	ON	OFF	OFF
21	25	OFF	ON	OFF	ON	OFF	ON	53	65	ON	ON	OFF	ON	OFF	ON
22	26	OFF	ON	OFF	ON	ON	OFF	54	66	ON	ON	OFF	ON	ON	OFF
23	27	OFF	ON	OFF	ON	ON	ON	55	67	ON	ON	OFF	ON	ON	ON
24	30	OFF	ON	ON	OFF	OFF	OFF	56	70	ON	ON	ON	OFF	OFF	OFF
25	31	OFF	ON	ON	OFF	OFF	ON	57	71	ON	ON	ON	OFF	OFF	ON
26	32	OFF	ON	ON	OFF	ON	OFF	58	72	ON	ON	ON	OFF	ON	OFF
27	33	OFF	ON	ON	OFF	ON	ON	59	73	ON	ON	ON	OFF	ON	ON
28	34	OFF	ON	ON	ON	OFF	OFF	60	74	ON	ON	ON	ON	OFF	OFF
29	35	OFF	ON	ON	ON	OFF	ON	61	75	ON	ON	ON	ON	OFF	ON
30	36	OFF	ON	ON	ON	ON	OFF	62	76	ON	ON	ON	ON	ON	OFF
31	37	OFF	ON	ON	ON	ON	ON	63	77	ON	ON	ON	ON	ON	ON

Table 2-3. Switch Settings for DeviceNet Interface Node Address

2.4 LED Status Indicators

An LED array on the DeviceNet module provides status information for troubleshooting. LED 2 provides network status; LED 3 provides status indication for the DeviceNet module (see Figure 2-8). LEDs 1 and 4 are reserved.

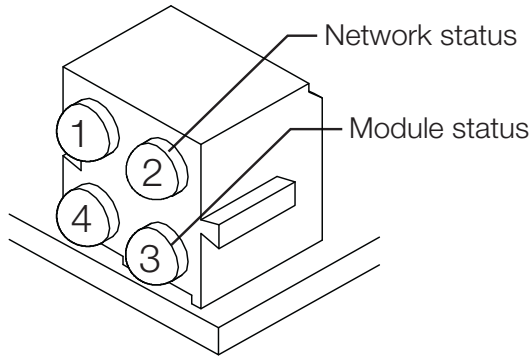


Figure 2-8. DeviceNet Status LED Module

Table 2-4 summarizes the function of the module and network status LEDs.

LED	Status	Description
LED 2 Network Status	Off	Not powered or not online
	Steady Red	Critical link failure
	Flashing Red	Connection time-out
	Flashing Green	Online, not connected
	Steady Green	Online, connected
LED 3 Module Status	Off	No power to module
	Steady Red	Unrecoverable fault
	Flashing Red	Minor fault
	Steady Green	Module operational

Table 2-4. Module and Network Status LED Indications

A single bi-color LED on the surface of the DeviceNet module provides diagnostic information for debugging the module itself. Table 2-5 lists the indications provided by the debugging LED.

Status	Description
Off	No power
Red, 4Hz	DPRAM check fault
Red, 2Hz	ASIC and FLASH ROM check fault
Red, 1Hz	RAM check fault
Green, 2Hz	Module not initialized
Green, 1Hz	Module initialized and running

Table 2-5. Debugging LED Indications

3.0 Commands

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

Decimal Point Handling

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

3.1 Output Command Format

To perform a command, the master uses the output command format to send four 16-bit words to the DeviceNet Interface. These four words contain the command and any parameters necessary to execute it. The output command format is shown in Table 3-1.

Word	Description
Word 1	Command number
Word 2	Parameter
Word 3	Value (MSW)
Word 4	Value (LSW)

Table 3-1. Output Command Format

The contents of each output command format word are described below:

Command number

The number representing the indicator command is sent in the first word. Table 3-2 lists the commands that can be specified for 520, 720i, 820i, and 920i indicators.



Note A lockout feature that looks for any change in the output format data is incorporated into the indicator receive mechanism to prevent inundation by the same command. Repeated commands must be separated by any other valid command/parameter/value combination.

Decimal	Hex	Command
0	0x000	Return Status and Weight (integer)
1	0x001	Display Channel
2	0x002	Display Gross Weight
3	0x003	Display Net Weight
4	0x004	Display Count
9	0x009	Gross/Net key press (toggle)
10	0x00A	Zero
11	0x00B	Display Tare
12	0x00C	Enter Tare

Table 3-2. 520/720i/820i/920i Remote Commands

Decimal	Hex	Command
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)
35	0x023	Return Count
37	0x025	Return Current Display (integer)
38	0x026	Return Accumulator (integer)
39	0x027	Return Rate of Change (integer)
40	0x028	Return Peak (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
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 as Weight (float)
268	0x10C	Set Tare (float)
288	0x120	Read Gross (float)
289	0x121	Read Net (float)
290	0x122	Read Tare (float)
291	0x123	Read Piece Count (float)
293	0x125	Read Current Display (float)
294	0x126	Read Accumulator (float)
295	0x127	Read Rate of Change (float)
296	0x128	Read Peak (float)
304	0x130	Set Setpoint Value (float)
305	0x131	Set Setpoint Hysteresis (float)
306	0x132	Set Setpoint Bandwidth (float)

Table 3-2. 520/720i/820i/920i Remote Commands

Decimal	Hex	Command
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)
368	0x170	Set Register
402	0x197	Get Register

Table 3-2. 520/720i/820i/920i Remote Commands

Parameter value

To allow 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 3.3 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.

3.2 Input Command Format

In response to a command, the DeviceNet Interface returns data and status information to the master as four 16-bit words. This information is returned in the input command format shown in Table 3-3.

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

Word	Description
Word 1	Command number
Word 2	Status
Word 3	Value (MSW)
Word 4	Value (LSW)

Table 3-3. Input Command Format

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 (see Table 3-4). Batch commands return batch status in place of the low byte (see Table 3-5). 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	No error
01	Tare not entered	Tare entered
02	Not 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: Value 0 represents scale #32)	
09		
10		
11		
12		
13	Not used	
14	Integer data	Floating point data
15	Positive weight	Negative weight

Table 3-4. Indicator Status Data Format

Word 2 Bit	Batch Function Status Data	
	Value=0	Value=1
00	Digital input 4 OFF (520) Error	Digital input 4 ON (520) No error
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

Table 3-5. Batch Function Status Data Format

Value

Weight data is returned to the master 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.

3.3 Command Descriptions



Note For all commands that require a scale number, a value of 0 indicates the current scale. Unless otherwise specified, the indicator returns

weight and status data for the specified scale.

Return Status and Current Weight as Integer

Command: 0, 0x000

Parameter: Scale number

Command 0 returns the status and weight 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. This command is valid for the *920i* only.

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.

Display Piece Count

Command: 4, 0x004

Parameter: Scale number

Command 4 causes the piece count on the specified scale to be displayed and returned. This command is valid only for the *520* indicator, and only if count mode is enabled.

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 may not be evident 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. The tare data continues being returned even if the display times out and returns to another mode.

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. This command is valid for the *820i* or *920i* only.

Units Key Press (toggle units)

Command: 19, 0x013

Parameter: Scale number

Command 19 toggles the current format of the specified scale to the next units configured for that scale, as available.

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 only valid if 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 only valid if 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 only valid if 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 Piece Count

Command: 35, 0x023

Parameter: Scale number

Command 35 returns the piece count value for the specified scale. This command is valid only for the 520 indicator, and only if count mode is enabled.

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, piece count, or accumulator values, as enabled. On the 820i and 920i, the weight value is returned in the mode used to display a scale widget.

Return Accumulator as Integer

Command: 38, 0x026

Parameter: Scale number

Command 38 returns the accumulator value for the specified scale. This command is only valid if 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 720i, 820i and 920i.

Return Peak as Integer

Command: 40, 0x028

Parameter: Scale number

Command 40 returns the net peak value for the specified scale. This command is valid only for the 520 indicator, and only if the peak hold function is enabled.

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 (On the 520, status is returned only for the digital inputs.) 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 in a 920i indicator only. 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 the 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.

Set 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 Piece Count as Float

Command: 291, 0x123

Parameter: Scale number

Command 291 returns the piece count value for the specified scale in floating-point format. This command is only valid for the 520, and only if count mode is enabled.

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, piece count, rate-of-change, or accumulator values, as enabled. On the 920i, 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. This command is only valid if the accumulator for the specified scale is enabled.

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 only valid for the 820i or 920i.

Read Peak Value as Float

Command: 296, 0x128

Parameter: Scale number

Command 296 returns the net peak value for the specified scale in floating-point format. This command is only valid for the 520, and only if the peak hold function is enabled.

Set Setpoint Value as Float

Command: 304, 0x130

Parameter: Setpoint number

Value: Target value

Command 304 sets the target value for the specified setpoint in floating-point format. This command is only valid if the setpoint is enabled and requires a target value.

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 only valid if the setpoint is enabled and requires a hysteresis value.

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 only valid if the setpoint is enabled and requires a bandwidth value.

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 only valid if the setpoint is enabled and requires a preact value.

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 only valid if the setpoint is enabled and requires a target value.

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 only valid if the setpoint is enabled and requires a hysteresis value.

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 only valid if the setpoint is enabled and requires a bandwidth value.

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 only valid if the setpoint is enabled and requires a preact value.

Set Register

Command: 368

Registers: 1 thru 256

Command 368 sets register value. 1 through 128 are integer and 129 through 256 are real. This command is only valid for the 720i PCE version.

Get Register

Command: 402

Registers: 1 thru 256

Command 402 returns register value. 1 through 128 are integer and 129 through 256 are real. This command is only valid for the 720i PCE version.

4.0 DeviceNet Interface Specifications

Power Requirements

Bus Adapter Card with DeviceNet Module, DC Power:

Supply voltage: 6 VDC, supplied by 520/820i/920i bus

Typical current draw: 270 mA

Power consumption: 1.62 W

Indicators, Typical AC Load:

520 Power (TRMS): 3.51 W
Current (TRMS): 33.7 mA

720i Power (TRMS): 2.18 W
Current (TRMS): 28.9mA

820i Power (TRMS): 2.18 W
Current (TRMS): 28.9mA

920i Power (TRMS): 2.18 W
Current (TRMS): 28.9 mA

Communications Specifications

DeviceNet Network Communications:

Twisted-pair cabling at 125, 250, or 500 Kbps

Update rate is dependent on the configured baud rate and the number of network nodes. Maximum update rates are:

520: up to 120 updates/sec

820i: up to 960 updates/sec

720i: up to 960 updates/sec

920i: up to 960 updates/sec

Environmental Specifications

Temperature: -10° to +40° C (14° to 104° F)

Conformance

DeviceNet
CONFORMANCE TESTED

The DeviceNet Interface has been tested by ODVA's independent test lab and found to comply with the ODVA composite conformance test, revision 17.

DeviceNet Interface Limited Warranty

Rice Lake Weighing Systems (RLWS) warrants that all RLWS equipment and systems properly installed by a Distributor or Original Equipment Manufacturer (OEM) will operate per written specifications as confirmed by the Distributor/OEM and accepted by RLWS. All systems and components are warranted against defects in materials and workmanship for one year.

RLWS warrants that the equipment sold hereunder will conform to the current written specifications authorized by RLWS. RLWS warrants the equipment against faulty workmanship and defective materials. If any equipment fails to conform to these warranties, RLWS will, at its option, repair or replace such goods returned within the warranty period subject to the following conditions:

- Upon discovery by Buyer of such nonconformity, RLWS will be given prompt written notice with a detailed explanation of the alleged deficiencies.
- Individual electronic components returned to RLWS for warranty purposes must be packaged to prevent electrostatic discharge (ESD) damage in shipment. Packaging requirements are listed in a publication, "Protecting Your Components From Static Damage in Shipment," available from RLWS Equipment Return Department.
- Examination of such equipment by RLWS confirms that the nonconformity actually exists, and was not caused by accident, misuse, neglect, alteration, improper installation, improper repair or improper testing; RLWS shall be the sole judge of all alleged non-conformities.
- Such equipment has not been modified, altered, or changed by any person other than RLWS or its duly authorized repair agents.
- RLWS will have a reasonable time to repair or replace the defective equipment. Buyer is responsible for shipping charges both ways.
- In no event will RLWS be responsible for travel time or on-location repairs, including assembly or disassembly of equipment, nor will RLWS be liable for the cost of any repairs made by others.

THESE WARRANTIES EXCLUDE ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NEITHER RLWS NOR DISTRIBUTOR WILL, IN ANY EVENT, BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

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