



Using the cFP-180x as a Modbus Device

This document contains information about using the cFP-180x as a Modbus slave device.

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Using the Modbus Protocol to Communicate with the cFP-180x

There are several ways to communicate with the cFP-180x using the Modbus protocol. You can use the Modbus support for shared variables in LabVIEW 8.0 or later, the LabVIEW Modbus VIs, or another Modbus client.

[Using Modbus support for shared variables in LabVIEW 8.0 or later](#)

[Using the Modbus LabVIEW Library](#)

[Using a third-party Modbus client](#)

Using Modbus Support for Shared Variables in LabVIEW 8.0 or Later

The LabVIEW Real-Time Module and LabVIEW DSC include Modbus support for LabVIEW shared variables. You must select **Modbus Support** while installing the LabVIEW Real-Time Module or LabVIEW DSC. The installers do not install Modbus support by default.

Modbus Support for Shared Variables uses a 1-based addressing system. FieldPoint Modbus addresses are zero-based, so you must add 1 to a FieldPoint Modbus address to read or write to the correct address.

Modbus Support for Shared Variables uses six-digit addresses. You must prepend the first (most significant) digit to all FieldPoint Modbus addresses. The six-digit addresses function as described in the following list:

- **000001-065535**—Access single-bit coils. You can use addresses in this range to read or write Boolean data. *Example:* You want to write Boolean data to channel 7 of a cFP-DO-401 in slot 2 of a cFP-180x. The FieldPoint Modbus address is 02007. The address you would use in LabVIEW is 002008.
- **100001-165535**—Read single-bit discrete inputs. You can use addresses in this range to read Boolean data. *Example:* You want to read Boolean data from channel 15 of a cFP-DI-304 in slot 3 of a cFP-180x. The FieldPoint Modbus address is 03015. The address you would use in LabVIEW is 103016.
- **300001.1-365535.16**—Read individual bits out of input registers and regard them as logical TRUE/FALSE values. The least significant bit is 1; the most significant is 16.

- **300001-365535**—Read 16-bit input registers encoded as unsigned integers ranging from 0 to 65535. You can use addresses in this range to read unscaled I/O data or channel attributes. *Example:* You want to read the Resolution attribute for Pulses Remaining channel 4 on a cFP-PG-522 in slot 3 of a cFP-180x. The FieldPoint Modbus address is 13035. The address you would use in LabVIEW is 313036.
- **400001.1-465535.16**—Read individual bits out of holding registers and regard them as logical TRUE/FALSE values. The least significant bit is 1; the most significant is 16.
- **400001-465535**—Access 16-bit holding registers encoded as unsigned integers ranging from 0 to 65535. You can use addresses in this range to read and write unscaled I/O data or channel attributes and commands. *Example:* You want to send a Stop Immediately command to Pulses Remaining channel 3 on a cFP-PG-522 in slot 6 of a cFP-180x. The FieldPoint Modbus address is 26027. In LabVIEW, you would write x03FF to address 426028.

For more information, refer to the *Creating Modbus I/O Servers* topic of the *LabVIEW Help*.

Using the Modbus LabVIEW Library

If you cannot or do not want to use the Modbus support for shared variables, you can use the Modbus VIs in the Modbus LabVIEW Library, available from ni.com. Go to ni.com, select **Products & Services**, and search for **Modbus**.

The Modbus LabVIEW Library uses a zero-based addressing system, as does FieldPoint. You can use the [FieldPoint Modbus addresses](#) as they appear in this help file, along with the [function codes](#) that FieldPoint supports.

Using a Third-Party Modbus Client

If you are using another Modbus client to communicate with the cFP-180x, you may need both the [FieldPoint Modbus addresses](#) and the [function codes](#) that FieldPoint supports.

You need to determine whether your Modbus client uses zero-based or 1-based addressing. Some Modbus clients let you select the address base. If your Modbus client uses zero-based addressing, you can use the FieldPoint Modbus addresses as they appear in this help file. If the client uses 1-based addressing, you must add one to all FieldPoint addresses. For example, if the FieldPoint Modbus address is 02015, you would convert it to 02016.

FieldPoint Modbus Addresses

A FieldPoint Modbus address consists of five digits. The most significant (first) digit represents the type of FieldPoint data.

- **0**—Raw I/O data.
- **1**—Attributes.
- **2**—Commands.
- **3**—Scaled 32-bit data.

The second most significant digit of the Modbus address represents the position of the FieldPoint module. For example, Modbus address 13xxx refers to FieldPoint attribute data for a module in slot or position 3.

The meanings of the remaining three digits vary depending on which type of FieldPoint data the address represents.

FieldPoint Data Type	Module Position	Meaning of Three Least Significant Digits
0	x	Each address represents one channel. For example, 02000-02015 point to the unscaled I/O data for channels 0-15 on the module in slot or position 2.
1	x	Eight addresses are reserved for each channel. Each address points to one word, and each of the two bytes in each word can hold one attribute. For example, 14000-14007 point to eight words that represent up to 16 attributes for channel 0 on the module in slot or position 4. The most significant byte in each word represents the lower-indexed attribute. If you want to affect only one attribute of an address that contains two attributes, read the address before writing, then write the current value to the byte you do not want to change.
2	x	Eight addresses are reserved for each channel. Each address points to one word, and each of the two bytes in each word can hold one command. For example, 23008-23015 point to eight words that represent up to 16 commands for channel 1 on the module in slot or position 3. The most significant byte in each word represents the lower-indexed command. When writing words to FieldPoint command addresses, write 00 to a byte if you do <i>not</i> want to affect the command that byte represents.
3	x	Each pair of two consecutive addresses points to the 32-bit scaled I/O data for one channel. For example, 31000 and 31001 point to the 32-bit scaled I/O data for channel 0 on the module in position 1.

Modbus Function Codes that FieldPoint Supports

You can use the following Modbus function codes with the cFP-180x:

- **1**—Read Coils
- **2**—Read Discrete Inputs
- **3**—Read Holding Registers
- **4**—Read Input Registers
- **5**—Write Single Coil
- **6**—Write Single Register
- **8 : 0**—Diagnostic : Echo
- **15**—Write Multiple Coils
- **16**—Write Multiple Registers
- **22**—Mask Write Register
- **23**—Read and Write Multiple Registers

Addresses for Attributes and Commands

How to Use the Tables in This Help File

- **Channel (Type)**—The module channel. For modules with multiple channel types, numbering starts over with each set of channels and the table shows the type of each set. For example, the cFP-CTR-502 has Counters 0 to 7 (Count Input type), Gates 0 to 3 (Discrete Input type), and Outputs 0 to 3 (Discrete Output type).
- **Least Significant Digits of Address**—Add this value to the base value as shown in the formulas below to calculate the address value. Each address holds one two-byte word.
- **Name**—The name of the attribute or command represented by the higher or lower byte of the word contained in the address. This table shows the bytes in descending order, with the higher byte first.
- **Setting**—The attribute or command setting that corresponds to the adjacent value in the *Value* column.
- **Value**—Write the hexadecimal value in this column to the address to change the corresponding attribute or command to the adjacent value in the *Setting* column.

Calculating Addresses for Attributes

Use the following formula to calculate addresses for channel attributes:

$$\text{Address} = 10,000 + (s \times 1,000) + \text{LSD}$$

where s is the slot or position of the I/O module and LSD is the value from the *Least Significant Digits of Address* column of the *Attributes* table for the module.

Example: A cFP-AI-110 is in slot 3 and you want to set the input range of channel 5 to ± 21 mA:

- Channel number (n) = 5
- Slot number (s) = 3
- $\text{LSD} = 8n$
- $\text{Address} = 10,000 + 5,000 + 40 = 15,040$

The byte value for the ± 21 mA range is 02, so you write x0200 to address 15040.



Note In this example, the lower byte of the address contains no attribute information. If you are writing to an address containing two attributes and you do not want to affect the value of one attribute, read the address before writing and write the current value to the byte you do not want to affect.

Calculating Addresses for Commands

Use the following formula to calculate addresses for channel commands:

$$\text{Address} = 20,000 + (s \times 1,000) + \text{LSD}$$

where s is the slot or position of the I/O module and LSD is the value from the *Least Significant Digits of Address* column of the *Commands* table for the module.

Example: A cFP-QUAD-510 is in slot 7 and you want to set the Reset command to Position LSB channel 3:

- Channel number (n) = 3
- Slot number (s) = 7
- $\text{LSD} = 8n$
- $\text{Address} = 20,000 + 7,000 + 24 = 27,024$

The byte value for the Reset command is 01, so you write x0100 to address 27024.



Note In this example, the lower byte of the address contains no command information. If you are writing to an address containing two commands and you do not want to affect the value of one attribute, write 00 to the byte you do not want to affect.

[c]FP-AI-100

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Analog Input n	$8n$	Range	024 mA	00
			3.524 mA	01
			±24 mA	02
			±6 V	05
			06 V	06
			±1.2 V	07
			01.2 V	08
			018 V	0E
			±36 V	0F
			036 V	11
			±18 V	12
				Reserved

Commands

The [c]FP-AI-100 does not support any commands.

[c]FP-AI-102

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Analog Input n	$8n$	Range	020 V	13
			± 20 V	14
			060 V	15
			± 60 V	16
			0120 V	17
			± 120 V	18
		Reserved	00	

Commands

The [c]FP-AI-102 does not support any commands.

[c]FP-AI-110

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Analog Input n	$8n$	Range	021 mA	00
			3.521 mA	01
			±21 mA	02
			±10.4 V	03
			010.4 V	04
			±5.2 V	05
			05.2 V	06
			±1.04 V	07
			0-1.04 V	08
			±325 mV	09
			±65 mV	0A
	Reserved		00	

Commands

The [c]FP-AI-110 does not support any commands.

[c]FP-AI-111

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Analog Input n	$8n$	Range	021 mA	00
			3.521 mA	01
			± 21 mA	02
		Noise Rejection	60 Hz	00
			50 Hz	01
			500 Hz	02

Commands

The [c]FP-AI-111 does not support any commands.

cFP-AI-112

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Analog Input n	$8n$	Range	± 10.4 V	03
			010.4 V	04
			± 5.2 V	05
			05.2 V	06
			± 1.04 V	07
			0-1.04 V	08
			± 325 mV	09
			± 65 mV	0A
		Noise Rejection	60 Hz	00
			50 Hz	01
			500 Hz	02

Commands

The cFP-AI-112 does not support any commands.

cFP-AI-118

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Analog Input n	$8n$	Range	± 10.4 V	03
			010.4 V	04
			± 5.2 V	05
			05.2 V	06
			± 1.04 V	07
			0-1.04 V	08
			0-18 V	0E
			± 18 V	12
			Noise Rejection	10 Hz
			None	FE

Commands

The cFP-AI-118 does not support any commands.

[c]FP-AIO-600

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Analog Input n	$8n$	Range	024 mA	00
			3.524 mA	01
			±24 mA	02
			±12 V	03
			0-12 V	04
			±6 V	05
			06 V	06
			018 V	0E
			±36 V	0F
			036 V	11
			±18 V	12
			Reserved	
		Analog Output n	$8n + 32$	Range
3.521 mA	01			
Reserved				00

Commands

The [c]FP-AI0-600 does not support any commands.

[c]FP-AIO-610

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Analog Input n	$8n$	Range	024 mA	00
			3.524 mA	01
			±24 mA	02
			±12 V	03
			0-12 V	04
			±6 V	05
			06 V	06
			018 V	0E
			±36 V	0F
			036 V	11
			±18 V	12
			Reserved	
		Analog Output n	$8n + 32$	Range
012 V	04			
Reserved				00

Commands

The [c]FP-AI0-610 does not support any commands.

[c]FP-AO-200

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Analog Output n	$8n$	Range	021 mA	00
			3.521 mA	01
		Reserved		00

Commands

The [c]FP-AO-200 does not support any commands.

[c]FP-AO-210

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Analog Output n	$8n$	Range	010.2 V	04
		Reserved		00

Commands

The [c]FP-A0-210 does not support any commands.

[c]FP-CTR-500

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel (Type)	Least Significant Digits of Address	Name	Setting	Value	
Counter n (Count Input)	$8n$	Range	065535 Counts	40	
		Terminal Count LSB (Least Significant Byte)	065535	00-FF	
	$8n + 1$	Terminal Count MSB (Most Significant Byte)			00-FF
		Clock Source	External Count Input		00
			Previous Channel		01
			1 khz Reference		02
	32 kHz Reference			03	
	$8n + 2$	Gate Source	Gate Input 0		00
			Gate Input 1		01
			Gate Input 2		02
			Gate Input 3		03
			Always Disabled		04
			Always Enabled		05
		Read Reset Mode	Don't Reset on Read		00
			Reset on Read		01
	$8n + 3$	Noise Rejection	200 Hz		03
50 kHz				04	
Reserved				00	
Gate n (Discrete Input)	$8n + 64$	Range	Boolean	10	
		Reserved		00	
Output n (Discrete Output)	$8n + 96$	Range	Boolean	10	
		Output Source	Counter 0		00
			Counter 1		01
			Counter 2		02
			Counter 3		03
			Counter 4		04
			Counter 5		05
			Counter 6		06
			Counter 7		07
	Discrete Data		08		
	$8n + 97$	Output Mode	Toggle, Reset Off		00
			Toggle, Reset On		01
			On Pulse		02
Off Pulse				03	

Reserved

00

Commands

Channel (Type)	Least Significant Digits of Address	Name	Setting	Value
Count n (Count Input)	$8n$	Control	Reset	01
			Increment	02
		Reserved		00

[c]FP-CTR-502

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel (Type)	Least Significant Digits of Address	Name	Setting	Value	
Counter n (Count Input)	$8n$	Range	065535 Counts	40	
		Terminal Count LSB (Least Significant Byte)	065535	00-FF	
	$8n + 1$	Terminal Count MSB (Most Significant Byte)			00-FF
		Clock Source	External Count Input		00
			Previous Channel		01
			1 khz Reference		02
	32 kHz Reference			03	
	$8n + 2$	Gate Source	Gate Input 0		00
			Gate Input 1		01
			Gate Input 2		02
			Gate Input 3		03
			Always Disabled		04
			Always Enabled		05
		Read Reset Mode	Don't Reset on Read		00
			Reset on Read		01
	$8n + 3$	Noise Rejection	200 Hz		03
			50 kHz		04
Reserved				00	
Gate n (Discrete Input)	$8n + 64$	Range	Boolean	10	
		Reserved		00	
Output n (Discrete Output)	$8n + 96$	Range	Boolean	10	
		Output Source	Counter 0		00
			Counter 1		01
			Counter 2		02
			Counter 3		03
			Counter 4		04
			Counter 5		05
			Counter 6		06
			Counter 7		07
	Discrete Data		08		
	$8n + 97$	Output Mode	Toggle, Reset Off		00
			Toggle, Reset On		01
			On Pulse		02
Off Pulse				03	

Reserved

00

Commands

Channel (Type)	Least Significant Digits of Address	Name	Setting	Value
Count n (Count Input)	$8n$	Control	Reset	01
			Increment	02
		Reserved		00

[c]FP-DI-300

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Discrete Input n $8n$		Range	Boolean	10
		Reserved		00

Commands

The [c]FP-DI-300 does not support any commands.

[c]FP-DI-301

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Discrete Input n $8n$		Range	Boolean	10
		Reserved		00

Commands

The [c]FP-DI-301 does not support any commands.

cFP-DI-304

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Discrete Input n $8n$		Range	Boolean	10
		Reserved		00

Commands

The cFP-DI-304 does not support any commands.

[c]FP-DI-330

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Discrete Input n $8n$		Range	Boolean	10
		Reserved		00

Commands

The [c]FP-DI-330 does not support any commands.

[c]FP-DIO-550

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Discrete Input n	$8n$	Range	Boolean	10
		Reserved		00
Discrete Output n	$8n + 32$	Range	Boolean	10
		Reserved		00

Commands

The [c]FP-DIO-550 does not support any commands.

[c]FP-DO-400

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Discrete Output n	$8n$	Range	Boolean	10
		Reserved		00

Commands

The [c]FP-DO-400 does not support any commands.

[c]FP-DO-401

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Discrete Output n	$8n$	Range	Boolean	10
		Reserved		00

Commands

The [c]FP-DO-401 does not support any commands.

[c]FP-DO-403

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Discrete Output n	$8n$	Range	Boolean	10
		Reserved		00

Commands

The [c]FP-DO-403 does not support any commands.

[c]FP-DO-410

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Discrete Output n	$8n$	Range	Boolean	10
		Reserved		00

Commands

The [c]FP-DO-410 does not support any commands.

[c]FP-PG-522

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel (Type)	Least Significant Digits of Address	Name	Setting	Value
Pulses Remaining n (Count Input)	$8n$	Range	065535 Counts	40
		Pulse Mode	Finite	00
	Continuous		01	
	$8n + 1$	On Time LSB [Least Significant Byte]	1-65535	01-FF
		On Time MSB [Most Significant Byte]		00-FF
	$8n + 2$	Off Time LSB [Least Significant Byte]	0-65535	00-FF
		Off Time MSB [Most Significant Byte]		00-FF
	$8n + 3$	Resolution	100 μ s	00
			10 ms	01
			1 s	02
Reserved			00	
Output n (Discrete Input)	$8n + 64$	Range	Boolean	10
		Reserved		00

Commands

Channel (Type)	Least Significant Digits of Address	Name	Setting	Value
Pulses Remaining n (Count Input)	$8n$	Control	Stop Immediately	03
			Stop After Current Pulse	04
	$8n + 1$	Generate Pulses LSB	1-65535	01-FF
				00-FF
		Generate Pulses MSB	00	
		Reserved		00

[c]FP-PWM-520

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Analog Output n	$8n$	Range	0.0100.0%	38
	$8n + 1$	Period (ms) LSB	1-65535	01-FF
		Period (ms) MSB		00-FF
		Reserved		00

Commands

The [c]FP-PWM-520 does not support any commands.

[c]FP-QUAD-510

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel (Type)	Least Significant Digits of Address	Name	Setting	Value
Position LSB n (Count Input)	$8n$	Range	065535 Counts	40
		Reset Mode	Don't Reset on Index	00
			Reset on Index	01
Position MSB n (Count Input)	$8n + 32$	Range	065535 Counts	40
		Reserved		00
Velocity n (Analog Input)	$8n + 64$	Range	± 160 count/ μ s	50
			± 80 count/ μ s	51
			± 40 count/ μ s	52
			± 20 count/ μ s	53
			± 10 count/ μ s	54
			± 5 count/ μ s	55
			± 2.5 count/ μ s	56
			± 1.25 count/ μ s	57
		Reserved		00
Index n (Discrete Input)	$8n + 96$	Range	Boolean	10
		Reserved		00

Commands

Channel (Type)	Least Significant Digits of Address	Name	Setting	Value
Position LSB n $8n$ (Count Input)		Control	Reset	01
		Reserved		00

FP-RLY-420

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Discrete Output n	$8n$	Range	Boolean	10
		Reserved		00

Commands

The FP-RLY-420 does not support any commands.

cFP-RLY-421

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Discrete Output n	$8n$	Range	Boolean	10
		Reserved		00

Commands

The cFP-RLY-421 does not support any commands.

FP-RLY-422

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Discrete Output n	$8n$	Range	Boolean	10
		Reserved		00

Commands

The FP-RLY-422 does not support any commands.

cFP-RLY-423

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Discrete Output n	$8n$	Range	Boolean	10
		Reserved		00

Commands

The cFP-RLY-423 does not support any commands.

cFP-RLY-425

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value
Discrete Output n	$8n$	Range	Boolean	10
		Reserved		00

Commands

The cFP-RLY-425 does not support any commands.

[c]FP-RTD-122

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value	
Analog Input n	8n	Range	731123 K	26	
			200 to 850 °C	27	
			328 to 1562 °F	28	
			0400 Ω	30	
			04000 Ω	31	
			RTD Type (R0 and TCR)	Pt100, TCR=0.00375	00
				Pt100, TCR=0.00385	01
				Pt100, TCR=0.003911	02
				Pt100, TCR=0.003916	03
				Pt100, TCR=0.003920	04
				Pt100, TCR=0.003928	05
				Pt1000, TCR=0.00375	06
				Pt1000, TCR=0.00385	07
				Pt1000, TCR=0.003911	08
				Pt1000, TCR=0.003916	09
				Pt1000, TCR=0.003920	0A
				Pt1000, TCR=0.003928	0B

Commands

The [c]FP-RTD-122 does not support any commands.

[c]FP-RTD-124

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value	
Analog Input n	8 n	Range	731123 K	26	
			200 to 850 °C	27	
			328 to 1562 °F	28	
			0400 Ω	30	
			RTD Type (R0 and TCR)	Pt100, TCR=0.00375	00
				Pt100, TCR=0.00385	01
				Pt100, TCR=0.003911	02
				Pt100, TCR=0.003916	03
				Pt100, TCR=0.003920	04
				Pt100, TCR=0.003928	05

Commands

The [c]FP-RTD-124 does not support any commands.

[c]FP-SG-140

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel	Least Significant Digits of Address	Name	Setting	Value	
Analog Input n	$8n$	Range	± 3.90625 mV/V	64	
			± 7.8125 mV/V	65	
			± 31.25 mV/V	66	
			± 62.5 mV/V	67	
			Noise Rejection	60 Hz	00
				15 Hz	09
				30 Hz	0A
				240 Hz	0B
	$8n + 1$		Excitation Voltage	10 V	00
				5 V	01
				2.5 V	02
				Bridge Completion	Half-Bridge Completion OFF
Half-Bridge Completion ON					01

Commands

The [c]FP-SG-140 does not support any commands.

[c]FP-TC-120

All addresses are decimal. All byte values are hexadecimal.

Attributes

Channel (Type)	Least Significant Digits of Address	Name	Setting	Value
Analog Input n	$8n$	Range	± 50 mV	0A
			± 25 mV	0B
			20 to 80 mV	0C
			± 100 mV	0D
			02048 K	20
			270 to 1770 °C	21
			454 to 3218 °F	22
		Thermocouple Type	J	00
			K	01
			T	02
			E	03
			R	04
			S	05
			N	06
CJ Temperature 64 (Analog Input)		Range	223358 K	23
			-50 to 85 °C	24
			58 to 185 °F	25
		CJ Temperature	Internal	00
			0 °C	01
			25 °C	02

Commands

The [c]FP-TC-120 does not support any commands.