



Series F4P

Communications Guide



**1/4 DIN Temperature/Process
Controller
with Guided Setup**

CE 98



ISO 9001



Registered Company
Winona, Minnesota USA



WATLOW

Watlow Controls



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About Watlow Controls

Watlow Controls is a division of Watlow Electric Mfg. Co., St. Louis, Missouri, a manufacturer of industrial electric heating products since 1922. Watlow begins with a full set of specifications and completes an industrial product that is manufactured in-house, in the U.S.A. Watlow products include electric heaters, sensors, controllers and switching devices. The Winona operation has been designing solid-state electronic control devices since

1962, and has earned the reputation as an excellent supplier to original equipment manufacturers. These OEMs and end users depend upon Watlow Controls to provide compatibly engineered controls that they can incorporate into their products with confidence. Watlow Controls resides in a 100,000-square-foot marketing, engineering and manufacturing facility in Winona, Minnesota.

Your Feedback

Your comments or suggestions on this manual are welcome. Please send them to the Technical Literature Team, Watlow Controls, 1241 Bundy Blvd., P.O. Box 5580, Winona, Minnesota, 55987-

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The Series F4P uses Modbus as its communications protocol. Modbus is a standard protocol developed by A.E.G. Schneider. Modbus RTU enables a computer or PLC to read and write directly to registers containing the controller's parameters. With it you can read all of the controller's parameters with a few read commands. For more information, see <http://www.modicon.com>.

If you already have a software application that uses Modbus, the Modbus Registers Table in this chapter will provide the register number and values (sometimes called enumerated types) for each parameter.

Dependencies between parameters do exist. For best results, program the parameters in the order in which they appear in the Software Map (inside back cover).

For basic information about writing an application

using Modbus protocol, you may want to download the electronic *Watlow Controls Data Communications Guide* from the Watlow web site:

<http://www.watlow.com/prodtechinfo>

A Microsoft Excel file at that location, F4PMBE_A.xls, contains parameter and Modbus information that can be sorted, edited or exported as a text file. The spreadsheet or a printout of it can also be used to keep track of controller settings.

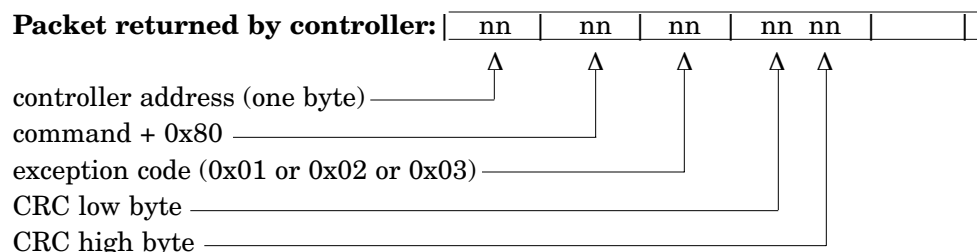
For more information about the Series F4P, such as wiring and features, consult the *Series F4P User's Manual*.

The *Series F4P User's Manual* and this manual are available in pdf format at the Watlow web site. Call or write Watlow Controls for a printed copy of this manual or the *Series F4P User's Manual*.

Exception Responses

When a controller cannot process a command it returns an exception response and sets the high bit (0x80) of the command.

- 0x01 illegal command
- 0x02 illegal data address
- 0x03 illegal data value



Steps to Setting Up the Series F4P Controller for Communications

1. Wire the controller using the Series F4P User's Manual wiring chapter.

The Series F4P can be wired to either an EIA-232 or EIA-485 serial port.

The EIA-232 port is found on a typical PC. EIA-232 allows one PC to communicate with one controller.

An EIA-485 port is not typically found in a PC, but can be found on many PLCs (Programmable Logic Controllers). PC ports are available, but the most common way for a PC to communicate using an EIA-485 port is with an EIA-232 to EIA-485 converter. The advantages of EIA-485 are that it is less susceptible to noise and it allows a PC or PLC to communicate with multiple controllers on the same port. It is important when using EIA-485, to install termination resistors along with pull-up and pull-down resistors to ensure reliable communications. See the *Series F4P User's Manual* or wiring diagrams in the last section of this manual for details on termination.

2. Configure the controller's communications parameters in the Setup Menu.

Only two communications parameters in the Setup Menu need to be configured directly on the Series F4P: Baud Rate and Address.

The Baud Rates are 9,600 bps (bits per second) and 19,200 bps. The 19,200 rate allows the fastest communication, and 9,600 baud allows the maximum communications distance. With EIA-485, all devices connected to that port must use the same baud rate.

Address is used to uniquely identify each controller on the port. Since there is only one controller on an EIA-232 port, the address setting is not important except it must be known to configure the software. Every controller on an EIA-485 port must have a unique address.

3. Determine what device will communicate with the controller.

Several types of devices can communicate with a controller, such as a computer, a PLC (Programma-

ble Logic Controller) or an OIT (Operator Interface Terminal). Whichever device is chosen, it needs to be able to use the Modbus RTU Protocol. OITs must be ordered with Modbus RTU support. PLCs either have Modbus RTU as a standard feature or it can be added with an I/O module. On a computer, the software package to be used would need to have Modbus RTU capability.

4. Select a software package for the computer.

Select the software package based on what is required from the controller. If you will just perform some basic communications, such as reading the process value, setting the set point or diagnostics, Watlow can provide Comm6 software free from the Watlow web site, at <http://www.watlow.com>.

For more advanced features, software can be purchased from a number of software companies. When purchasing third-party software, be sure to look for a package that is Modbus RTU compatible or has Modbus RTU drivers. Most third party packages require you to specify the Series F4P Modbus registers to set up the package.

Another option is to create a custom software package. Using the Modbus information in this guide and in the user's manual, a software package can be created and tailored to an application. For examples of software routines to communicate in Modbus, contact an application's engineer at 507/454-5300 or download the *Watlow Controls Data Communications Guide* on the Watlow web site at <http://www.watlow.com/prodtechinfo>

5. Configure the software communication's parameters.

The software package, (be it software for a computer, a PLC or an OIT) will need to be configured just as the controller was configured, setting the baud rate and address to match. The software package may have additional parameters to set, such as number of data bits, parity and stop bits. For the Series F4P these should always be set at 8 data bits, no parity, and 1 stop bit. This is often written as "8N1".

Some software packages may give the option to control the activity of the RTS, CTS and DTR lines, which are sometimes used by EIA-232 to EIA-485 converters. On packages where the Modbus registers for the Series F4P need to be defined, these values can be entered at this time.

6. Test the communications.

Once communications are configured, test the communication link to the controller to verify that everything is wired and configured properly. One misplaced wire or incorrect setting can disrupt communications. Re-verify the wiring and configurations if things are not working.

When using an EIA-232 to EIA-485 converter, be sure to follow the instructions provided with the converter, as some may require special jumper and switch settings, external power supply requirements or special signals from the software. Some software packages have built-in routines to test the communications. Comm6 is also a useful tool for diagnosing problems.

7. Start communications with the controller.

With communications successfully verified, the software is ready to use with the controller. The above guidelines are the general steps to establish communications with the Series F4P. Some applications may require additional steps, but would follow the same general process.

8. Program and configure the Series F4P.

To program and configure the F4P with a software program, a couple of things must be kept in mind. If the software allows changing Setup Page parameters, such as Input 1 Type, other parameters values that are dependant on that setting may be automatically changed (see “Parameter List in Download Order for the Unenhanced Series F4P Controller” in this guide). Some software packages may warn you of this possibility and others may not.

Also, any changes made by the software program to controller parameters that need to be retained in the controller memory must be saved by sending a “0” to register 25. Any settings not saved to the controller’s memory will be lost when power is removed from the controller.



CAUTION:

Sending a “0” to Modbus register 25 will overwrite the previous parameter settings with the new ones.

Parameter List in Modbus Order for the Series F4P

Modbus Number	Parameter	Menu>Pathway
0	Model	Diagnostic
1	Serial Number (first part)	Diagnostic
2	Serial Number (second part)	Diagnostic
3	Software Number	Diagnostic
4	Revision	Diagnostic
5	Manufacturing Date	Diagnostic
8	Input 1	Diagnostic
9	Input 2	Diagnostic
10	Input 3	Diagnostic
16	Output 1A	Diagnostic
17	Output 1B	Diagnostic
20	Retransmit 1	Diagnostic
21	Retransmit 2	Diagnostic
25	Save Changes to EE	Save
100	Input 1 Value	Status
101	Input 1 Error	Status
102	Alarm 1	Status
103	% Power Output 1A	Status
106	Alarm 2	Status
107	% Power Output 1B	Status
200	Auto/Manual Mode	Status
201	Digital Input 1	Status
209	System Error	Status
210	Input 1 Open Loop	Status
213	Digital Input 2	Status
225	Digital Input 3	Status
237	Digital Input 4	Status
300	Set Point 1	Main Page
302	Alarm 1 Low Deviation	Alarm Set Points
302	Alarm 1 Low Set Point	Alarm Set Points
302	Alarm 1 Max. Low Rate	Alarm Set Points
303	Alarm 1 High Deviation	Alarm Set Points
303	Alarm 1 High Set Point	Alarm Set Points
303	Alarm 1 Max. High Rate	Alarm Set Points
304	Autotune Set Point	System
305	Autotune PID	Autotune PID
305	Cascade Inner Loop	Autotune PID
307	Autotune PID Type	Autotune PID
308	Digital Set Point 1	Control Set Points
309	Boost Set Point (1B)	Control Set Points
311	Clear Error 1	Key Press Simulation
312	Clear Alarm 1	Key Press Simulation
313	Silence Alarm 1	Key Press Simulation
314	Digital Differential Set Pt. 1	Control Set Points
315	Digital Ratio Set Point 1	Control Set Points
316	Remote/Local Set Point	Local/Remote Set Point
321	Alarm 2 Low Deviation	Alarm Set Points
321	Alarm 2 Low Set Point	Alarm Set Points
321	Alarm 2 Maximum Low Rate	Alarm Set Points
322	Alarm 2 High Deviation	Alarm Set Points
322	Alarm 2 High Set Point	Alarm Set Points
322	Alarm 2 Max. High Rate	Alarm Set Points
327	Digital Set Point 2	Control Set Points
330	Clear Error 2	Key Press Simulation
331	Clear Alarm 2	Key Press Simulation
332	Silence Alarm 2	Key Press Simulation
333	Digital Differential Set Pt. 2	Control Set Points
334	Digital Ratio Set Point 2	Control Set Points
343	Cascade Outer Loop	Autotune PID
346	Digital Set Point 3	Control Set Points
349	Clear Error 3	Key Press Simulation
352	Digital Differential Set Pt. 3	Control Set Points
353	Digital Ratio Set Point 3	Control Set Points
365	Digital Set Point 4	Control Set Points
371	Digital Differential Set Pt. 4	Control Set Points
372	Digital Ratio Set Point 4	Control Set Points
452	Maximum Transfer Heat	System
453	Maximum Transfer Cool	System
454	Manual to Auto Transfer	System
500	Proportional Band 1A	Edit PID > PID Set Chl 1 > PID Set 1
501	Integral 1A	Edit PID > PID Set Chl 1 > PID Set 1

502	Reset 1A	Edit PID > PID Set Chl 1 > PID Set 1
503	Derivative 1A	Edit PID > PID Set Chl 1 > PID Set 1
504	Rate 1A	Edit PID > PID Set Chl 1 > PID Set 1
505	Dead Band 1A	Edit PID > PID Set Chl 1 > PID Set 1
506	Cycle Time Type	Control Output 1A
507	Hysteresis 1A	Edit PID > PID Set Chl 1 > PID Set 1
509	Cycle Time Value	Control Output 1A
510	Proportional Band 1A	Edit PID > PID Set Chl 1 > PID Set 2
511	Integral 1A	Edit PID > PID Set Chl 1 > PID Set 2
512	Reset 1A	Edit PID > PID Set Chl 1 > PID Set 2
513	Derivative 1A	Edit PID > PID Set Chl 1 > PID Set 2
514	Rate 1A	Edit PID > PID Set Chl 1 > PID Set 2
515	Dead Band 1A	Edit PID > PID Set Chl 1 > PID Set 2
517	Hysteresis 1A	Edit PID > PID Set Chl 1 > PID Set 2
520	Proportional Band 1A	Edit PID > PID Set Chl 1 > PID Set 3
521	Integral 1A	Edit PID > PID Set Chl 1 > PID Set 3
522	Reset 1A	Edit PID > PID Set Chl 1 > PID Set 3
523	Derivative 1A	Edit PID > PID Set Chl 1 > PID Set 3
524	Rate 1A	Edit PID > PID Set Chl 1 > PID Set 3
525	Dead Band 1A	Edit PID > PID Set Chl 1 > PID Set 3
527	Hysteresis 1A	Edit PID > PID Set Chl 1 > PID Set 3
530	Proportional Band 1A	Edit PID > PID Set Chl 1 > PID Set 4
531	Integral 1A	Edit PID > PID Set Chl 1 > PID Set 4
532	Reset 1A	Edit PID > PID Set Chl 1 > PID Set 4
533	Derivative 1A	Edit PID > PID Set Chl 1 > PID Set 4
534	Rate 1A	Edit PID > PID Set Chl 1 > PID Set 4
535	Dead Band 1A	Edit PID > PID Set Chl 1 > PID Set 4
537	Hysteresis 1A	Edit PID > PID Set Chl 1 > PID Set 4
540	Proportional Band 1A	Edit PID > PID Set Chl 1 > PID Set 5
541	Integral 1A	Edit PID > PID Set Chl 1 > PID Set 5
542	Reset 1A	Edit PID > PID Set Chl 1 > PID Set 5
543	Derivative 1A	Edit PID > PID Set Chl 1 > PID Set 5
544	Rate 1A	Edit PID > PID Set Chl 1 > PID Set 5
545	Dead Band 1A	Edit PID > PID Set Chl 1 > PID Set 5
547	Hysteresis 1A	Edit PID > PID Set Chl 1 > PID Set 5
550	Proportional Band 1B	Edit PID > PID Set Chl 1 > PID Set 1
551	Integral 1B	Edit PID > PID Set Chl 1 > PID Set 1
552	Reset 1B	Edit PID > PID Set Chl 1 > PID Set 1
553	Derivative 1B	Edit PID > PID Set Chl 1 > PID Set 1
554	Rate 1B	Edit PID > PID Set Chl 1 > PID Set 1
555	Dead Band 1B	Edit PID > PID Set Chl 1 > PID Set 1
556	Cycle Time Type	Control Output 1B
557	Hysteresis 1B	Edit PID > PID Set Chl 1 > PID Set 1
559	Cycle Time Value	Control Output 1B
560	Proportional Band 1B	Edit PID > PID Set Chl 1 > PID Set 2
561	Integral 1B	Edit PID > PID Set Chl 1 > PID Set 2
562	Reset 1B	Edit PID > PID Set Chl 1 > PID Set 2
563	Derivative 1B	Edit PID > PID Set Chl 1 > PID Set 2
564	Rate 1B	Edit PID > PID Set Chl 1 > PID Set 2
565	Dead Band 1B	Edit PID > PID Set Chl 1 > PID Set 2
567	Hysteresis 1B	Edit PID > PID Set Chl 1 > PID Set 2
570	Proportional Band 1B	Edit PID > PID Set Chl 1 > PID Set 3
571	Integral 1B	Edit PID > PID Set Chl 1 > PID Set 3
572	Reset 1B	Edit PID > PID Set Chl 1 > PID Set 3
573	Derivative 1B	Edit PID > PID Set Chl 1 > PID Set 3
574	Rate 1B	Edit PID > PID Set Chl 1 > PID Set 3
575	Dead Band 1B	Edit PID > PID Set Chl 1 > PID Set 3
577	Hysteresis 1B	Edit PID > PID Set Chl 1 > PID Set 3
580	Proportional Band 1B	Edit PID > PID Set Chl 1 > PID Set 4
581	Integral 1B	Edit PID > PID Set Chl 1 > PID Set 4
582	Reset 1B	Edit PID > PID Set Chl 1 > PID Set 4
583	Derivative 1B	Edit PID > PID Set Chl 1 > PID Set 4
584	Rate 1B	Edit PID > PID Set Chl 1 > PID Set 4
585	Dead Band 1B	Edit PID > PID Set Chl 1 > PID Set 4
587	Hysteresis 1B	Edit PID > PID Set Chl 1 > PID Set 4
590	Proportional Band 1B	Edit PID > PID Set Chl 1 > PID Set 5
591	Integral 1B	Edit PID > PID Set Chl 1 > PID Set 5
592	Reset 1B	Edit PID > PID Set Chl 1 > PID Set 5
593	Derivative 1B	Edit PID > PID Set Chl 1 > PID Set 5
594	Rate 1B	Edit PID > PID Set Chl 1 > PID Set 5
595	Dead Band 1B	Edit PID > PID Set Chl 1 > PID Set 5
597	Hysteresis 1B	Edit PID > PID Set Chl 1 > PID Set 5
600	Sensor	Analog Input 1
601	Type	Analog Input 1
603	Set Point High Limit	Analog Input 1
604	Filter Time	Analog Input 1
605	Calibration Offset Value	Analog Input 1

606	Decimal	Analog Input 1
607	Error Latch	Analog Input 1
608	Units	Analog Input 1
610	Sensor	Analog Input 2
610	Type	Analog Input 2
613	Set Point High Limit	Analog Input 2
614	Filter Time	Analog Input 2
615	Calibration Offset Value	Analog Input 2
616	Decimal	Analog Input 2
617	Error Latch	Analog Input 2
618	Units	Analog Input 2
620	Sensor	Analog Input 3
621	Type	Analog Input 3
623	Set Point High Limit	Analog Input 3
624	Filter Time	Analog Input 3
625	Calibration Offset Value	Analog Input 3
626	Decimal	Analog Input 3
627	Error Latch	Analog Input 3
628	Units	Analog Input 3
680	Scale Low	Analog Input 1
681	Scale High	Analog Input 1
681	Set Point Low Limit	Analog Input 1
682	Scale Low	Analog Input 2
683	Scale High	Analog Input 2
683	Set Point Low Limit	Analog Input 2
684	Scale Low	Analog Input 3
685	Scale High	Analog Input 3
685	Set Point Low Limit	Analog Input 3
700	Function	Control Output 1A
701	Process	Control Output 1A
702	Alarm Type	Alarm Output 1
703	Alarm Hysteresis	Alarm Output 1
704	Latching	Alarm Output 1
705	Silencing	Alarm Output 1
706	Alarm Sides	Alarm Output 1
707	Alarm Logic	Alarm Output 1
708	Alarm Messages	Alarm Output 1
709	Retransmit Source	Retransmit Output 1
710	Low Scale	Retransmit Output 1
711	High Scale	Retransmit Output 1
712	Scale Offset	Retransmit Output 1
714	High Power Limit	Control Output 1A
715	Low Power Limit	Control Output 1A
716	Alarm Source	Alarm Output 1
717	Function	Control Output 1B
718	Process	Control Output 1B
719	Alarm Type	Alarm Output 2
720	Alarm Hysteresis	Alarm Output 2
721	Latching	Alarm Output 2
722	Silencing	Alarm Output 2
723	Alarm Sides	Alarm Output 2
724	Alarm Logic	Alarm Output 2
725	Alarm Messages	Alarm Output 2
726	Retransmit Source	Retransmit Output 2
727	Low Scale	Retransmit Output 2
728	High Scale	Retransmit Output 2
729	Scale Offset	Retransmit Output 2
731	High Power Limit	Control Output 1B
732	Low Power Limit	Control Output 1B
733	Alarm Source	Alarm Output 2
836	Analog Range	Retransmit Output 1
837	Analog Range	Retransmit Output 2
844	Duplex	Control Output 1A
880	Failure Mode	System
881	Boost Power Mode	Control Output 1B
882	Boost Set Point Type	Control Output 1B
883	Boost Power (1B)	Control Set Points
884	Boost Delay Time (1B)	Control Set Points
885	Boost Type	Control Output 1B
900	PID Units	System
901	°F or °C	System
903	Input 1 Fail	System
904	Open Loop Detect	System
1060	Function	Digital Input 1
1061	Condition	Digital Input 1
1062	Function	Digital Input 2
1063	Condition	Digital Input 2

1064	Function	Digital Input 3	1608	20.000mA	Calibration > Calibrate Input 2
1065	Condition	Digital Input 3	1608	32°F Type J	Calibration > Calibrate Input 2
1066	Function	Digital Input 4	1608	380.0 Ohms	Calibration > Calibrate Input 2
1067	Condition	Digital Input 4	1608	4.000mA	Calibration > Calibrate Input 2
1100	Ramp to Set Point Mode	Ramp to Set Point	1608	50.00mV Thermocouple	Calibration > Calibrate Input 2
1101	Ramp to Set Point Rate	Ramp to Set Point	1608	Ground	Calibration > Calibrate Input 2
1102	Ramp to Set Point Scale	Ramp to Set Point	1608	Lead	Calibration > Calibrate Input 2
1140	Control Type	Analog Input 2	1609	4.000mA	Calibration > Process Output 1B
1141	Control Type	Analog Input 3	1610	20.000mA	Calibration > Process Output 1B
1300	Set Point	Set Lockout	1611	1.000V	Calibration > Process Output 1B
1302	Setup Page	Set Lockout	1612	10.000V	Calibration > Process Output 1B
1303	Factory Page	Set Lockout	1613	0.000V	Calibration > Calibrate Input 3
1306	Operations, Autotune PID	Set Lockout	1613	0.00mV Thermocouple	Calibration > Calibrate Input 3
1307	Operations, Edit PID	Set Lockout	1613	10.000V	Calibration > Calibrate Input 3
1308	Operations, Alarm Set Point	Set Lockout	1613	1000 Ohms	Calibration > Calibrate Input 3
1315	Clear Locks	Set Lockout	1613	15.0 Ohms	Calibration > Calibrate Input 3
1316	Operations, PID Crossover	Set Lockout	1613	20.000mA	Calibration > Calibrate Input 3
1317	Operations, Ramp Set Point	Set Lockout	1613	32°F Type J	Calibration > Calibrate Input 3
1318	Operations, Control Set Point	Set Lockout	1613	380.0 Ohms	Calibration > Calibrate Input 3
1319	Local/Remote Set Pt. Operatn	Set Lockout	1613	4.000mA	Calibration > Calibrate Input 3
1330	Set/Change Password (Ch 1)	Set Lockout	1613	50.00mV Thermocouple	Calibration > Calibrate Input 3
1331	Set/Change Password (Ch 2)	Set Lockout	1613	Ground	Calibration > Calibrate Input 3
1332	Set/Change Password (Ch 3)	Set Lockout	1613	Lead	Calibration > Calibrate Input 3
1333	Set/Change Password (Ch 4)	Set Lockout	1624	4.000mA	Calibration > Retransmit Output 1
1400	Parameter 01	Custom Main Page	1625	20.000mA	Calibration > Retransmit Output 1
1401	Parameter 02	Custom Main Page	1626	1.000V	Calibration > Retransmit Output 1
1402	Parameter 03	Custom Main Page	1627	10.000V	Calibration > Retransmit Output 1
1403	Parameter 04	Custom Main Page	1629	4.000mA	Calibration > Retransmit Output 2
1404	Parameter 05	Custom Main Page	1630	20.000mA	Calibration > Retransmit Output 2
1405	Parameter 06	Custom Main Page	1631	1.000V	Calibration > Retransmit Output 2
1406	Parameter 07	Custom Main Page	1632	10.000V	Calibration > Retransmit Output 2
1407	Parameter 08	Custom Main Page	1910	Process Display	Process Display
1408	Parameter 09	Custom Main Page	1911	Display Time	Process Display>Input 1
1409	Parameter 10	Custom Main Page	1912	Display Time	Process Display>Input 2
1410	Parameter 11	Custom Main Page	1913	Display Time	Process Display>Input 3
1411	Parameter 12	Custom Main Page	1914	LED Intensity	Process Display
1412	Parameter 13	Custom Main Page	1915	Auto/Manual Slidewire Cali.	Analog Input 3
1413	Parameter 14	Custom Main Page	1916	Slidewire Deadband	Analog Input 3
1414	Parameter 15	Custom Main Page	1917	Slidewire Hysteresis	Analog Input 3
1415	Parameter 16	Custom Main Page	1918	Slidewire Learn Closed	Analog Input 3
1500	CJC1 Temp	Diagnostic	1919	Slidewire Learn Open	Analog Input 3
1501	CJC1 AtoD	Diagnostic	1923	Show °F or °C	System
1504	Input 1 A to D	Diagnostic	1925	Cascade	Analog Input 3
1505	Input 2 A to D	Diagnostic	1926	Cascade Low Deviation	Analog Input 3
1506	Input 3 A to D	Diagnostic	1926	Cascade Low Range	Analog Input 3
1513	Display Test	Test	1927	Cascade High Deviation	Analog Input 3
1514	Test Outputs	Test	1927	Cascade High Range	Analog Input 3
1515	Line Frequency	Diagnostic	1951	PID Crossover	Operations Page
1531	CJC2 Temp	Diagnostic	1961	PID Cross 1 to 2	Operations Page
1531	CJC3 Temp	Diagnostic	1962	PID Cross 2 to 3	Operations Page
1532	CJC2 AtoD	Diagnostic	1963	PID Cross 3 to 4	Operations Page
1532	CJC3 AtoD	Diagnostic	1964	PID Cross 4 to 5	Operations Page
1601	Restore Input 1 Calibration	Calibration	2600	Proportional Band 1A	Edit PID > Cascade PID > PID Set 1
1601	Restore Input 2 Calibration	Calibration	2601	Integral 1A	Edit PID > Cascade PID > PID Set 1
1601	Restore Input 3 Calibration	Calibration	2602	Reset 1A	Edit PID > Cascade PID > PID Set 1
1602	Full Defaults	Test	2603	Derivative 1A	Edit PID > Cascade PID > PID Set 1
1603	0.000V	Calibration > Calibrate Input 1	2604	Rate 1A	Edit PID > Cascade PID > PID Set 1
1603	0.00mV Thermocouple	Calibration > Calibrate Input 1	2605	Dead Band 1A	Edit PID > Cascade PID > PID Set 1
1603	10.000V	Calibration > Calibrate Input 2	2607	Hysteresis 1A	Edit PID > Cascade PID > PID Set 1
1603	1000 Ohms	Calibration > Calibrate Input 1	2610	Proportional Band 1B	Edit PID > Cascade PID > PID Set 1
1603	15.0 Ohms	Calibration > Calibrate Input 1	2611	Integral 1B	Edit PID > Cascade PID > PID Set 1
1603	20.000mA	Calibration > Calibrate Input 1	2612	Reset 1B	Edit PID > Cascade PID > PID Set 1
1603	32°F Type J	Calibration > Calibrate Input 1	2613	Derivative 1B	Edit PID > Cascade PID > PID Set 1
1603	380.0 Ohms	Calibration > Calibrate Input 1	2614	Rate 1B	Edit PID > Cascade PID > PID Set 1
1603	4.000mA	Calibration > Calibrate Input 1	2615	Dead Band 1B	Edit PID > Cascade PID > PID Set 1
1603	50.00mV Thermocouple	Calibration > Calibrate Input 1	2617	Hysteresis 1B	Edit PID > Cascade PID > PID Set 1
1603	Ground	Calibration > Calibrate Input 1	2620	Proportional Band 1A	Edit PID > Cascade PID > PID Set 2
1603	Lead	Calibration > Calibrate Input 1	2621	Integral 1A	Edit PID > Cascade PID > PID Set 2
1604	4.000mA	Calibration > Process Output 1A	2622	Reset 1A	Edit PID > Cascade PID > PID Set 2
1605	20.000mA	Calibration > Process Output 1A	2623	Derivative 1A	Edit PID > Cascade PID > PID Set 2
1606	1.000V	Calibration > Process Output 1A	2624	Rate 1A	Edit PID > Cascade PID > PID Set 2
1607	10.000V	Calibration > Process Output 1A	2625	Dead Band 1A	Edit PID > Cascade PID > PID Set 2
1608	0.000V	Calibration > Calibrate Input 2	2627	Hysteresis 1A	Edit PID > Cascade PID > PID Set 2
1608	0.00mV Thermocouple	Calibration > Calibrate Input 2	2630	Proportional Band 1B	Edit PID > Cascade PID > PID Set 2
1608	10.000V	Calibration > Calibrate Input 2	2631	Integral 1B	Edit PID > Cascade PID > PID Set 2
1608	1000 Ohms	Calibration > Calibrate Input 2	2632	Reset 1B	Edit PID > Cascade PID > PID Set 2
1608	15.0 Ohms	Calibration > Calibrate Input 2	2633	Derivative 1B	Edit PID > Cascade PID > PID Set 2

2634	Rate 1B	Edit PID > Cascade PID > PID Set 2	3032	Name (Char 03)	Digital Input 4
2635	Dead Band 1B	Edit PID > Cascade PID > PID Set 2	3033	Name (Char 04)	Digital Input 4
2637	Hysteresis 1B	Edit PID > Cascade PID > PID Set 2	3034	Name (Char 05)	Digital Input 4
2640	Proportional Band 1A	Edit PID > Cascade PID > PID Set 3	3035	Name (Char 06)	Digital Input 4
2641	Integral 1A	Edit PID > Cascade PID > PID Set 3	3036	Name (Char 07)	Digital Input 4
2642	Reset 1A	Edit PID > Cascade PID > PID Set 3	3037	Name (Char 08)	Digital Input 4
2643	Derivative 1A	Edit PID > Cascade PID > PID Set 3	3038	Name (Char 09)	Digital Input 4
2644	Rate 1A	Edit PID > Cascade PID > PID Set 3	3039	Name (Char 10)	Digital Input 4
2645	Dead Band 1A	Edit PID > Cascade PID > PID Set 3	3050	Activate Message	Digital Input 1
2647	Hysteresis 1A	Edit PID > Cascade PID > PID Set 3	3051	Activate Message	Digital Input 2
2650	Proportional Band 1B	Edit PID > Cascade PID > PID Set 3	3052	Activate Message	Digital Input 3
2651	Integral 1B	Edit PID > Cascade PID > PID Set 3	3053	Activate Message	Digital Input 4
2652	Reset 1B	Edit PID > Cascade PID > PID Set 3	3060	Message Display Time	Digital Input 1
2653	Derivative 1B	Edit PID > Cascade PID > PID Set 3	3061	Message Display Time	Digital Input 2
2654	Rate 1B	Edit PID > Cascade PID > PID Set 3	3062	Message Display Time	Digital Input 3
2655	Dead Band 1B	Edit PID > Cascade PID > PID Set 3	3063	Message Display Time	Digital Input 4
2657	Hysteresis 1B	Edit PID > Cascade PID > PID Set 3	3070	Units (char 1)	Analog Input 1
2660	Proportional Band 1A	Edit PID > Cascade PID > PID Set 4	3071	Units (char 2)	Analog Input 1
2661	Integral 1A	Edit PID > Cascade PID > PID Set 4	3072	Units (char 3)	Analog Input 1
2662	Reset 1A	Edit PID > Cascade PID > PID Set 4	3073	Units (char 1)	Analog Input 2
2663	Derivative 1A	Edit PID > Cascade PID > PID Set 4	3074	Units (char 2)	Analog Input 2
2664	Rate 1A	Edit PID > Cascade PID > PID Set 4	3075	Units (char 3)	Analog Input 2
2665	Dead Band 1A	Edit PID > Cascade PID > PID Set 4	3076	Units (char 1)	Analog Input 3
2667	Hysteresis 1A	Edit PID > Cascade PID > PID Set 4	3077	Units (char 2)	Analog Input 3
2670	Proportional Band 1B	Edit PID > Cascade PID > PID Set 4	3078	Units (char 3)	Analog Input 3
2671	Integral 1B	Edit PID > Cascade PID > PID Set 4	3200	Name (Char 01)	Alarm Output 1
2672	Reset 1B	Edit PID > Cascade PID > PID Set 4	3201	Name (Char 02)	Alarm Output 1
2673	Derivative 1B	Edit PID > Cascade PID > PID Set 4	3202	Name (Char 03)	Alarm Output 1
2674	Rate 1B	Edit PID > Cascade PID > PID Set 4	3203	Name (Char 04)	Alarm Output 1
2675	Dead Band 1B	Edit PID > Cascade PID > PID Set 4	3204	Name (Char 05)	Alarm Output 1
2677	Hysteresis 1B	Edit PID > Cascade PID > PID Set 4	3205	Name (Char 06)	Alarm Output 1
2680	Proportional Band 1A	Edit PID > Cascade PID > PID Set 5	3206	Name (Char 07)	Alarm Output 1
2681	Integral 1A	Edit PID > Cascade PID > PID Set 5	3207	Name (Char 08)	Alarm Output 1
2682	Reset 1A	Edit PID > Cascade PID > PID Set 5	3208	Name (Char 09)	Alarm Output 1
2683	Derivative 1A	Edit PID > Cascade PID > PID Set 5	3209	Name (Char 10)	Alarm Output 1
2684	Rate 1A	Edit PID > Cascade PID > PID Set 5	3210	Name (Char 01)	Alarm Output 2
2685	Dead Band 1A	Edit PID > Cascade PID > PID Set 5	3211	Name (Char 02)	Alarm Output 2
2687	Hysteresis 1A	Edit PID > Cascade PID > PID Set 5	3212	Name (Char 03)	Alarm Output 2
2687	Hysteresis 1B	Edit PID > Cascade PID > PID Set 5	3213	Name (Char 04)	Alarm Output 2
2690	Proportional Band 1B	Edit PID > Cascade PID > PID Set 5	3214	Name (Char 05)	Alarm Output 2
2691	Integral 1B	Edit PID > Cascade PID > PID Set 5	3215	Name (Char 06)	Alarm Output 2
2692	Reset 1B	Edit PID > Cascade PID > PID Set 5	3216	Name (Char 07)	Alarm Output 2
2693	Derivative 1B	Edit PID > Cascade PID > PID Set 5	3217	Name (Char 08)	Alarm Output 2
2694	Rate 1B	Edit PID > Cascade PID > PID Set 5	3218	Name (Char 09)	Alarm Output 2
2695	Dead Band 1B	Edit PID > Cascade PID > PID Set 5	3219	Name (Char 10)	Alarm Output 2
3000	Name (Char 01)	Digital Input 1	4501	Message 1 (Line 01, Char 01)	Static Message
3001	Name (Char 02)	Digital Input 1	4502	Message 1 (Line 01, Char 02)	Static Message
3002	Name (Char 03)	Digital Input 1	4503	Message 1 (Line 01, Char 03)	Static Message
3003	Name (Char 04)	Digital Input 1	4504	Message 1 (Line 01, Char 04)	Static Message
3004	Name (Char 05)	Digital Input 1	4505	Message 1 (Line 01, Char 05)	Static Message
3005	Name (Char 06)	Digital Input 1	4506	Message 1 (Line 01, Char 06)	Static Message
3006	Name (Char 07)	Digital Input 1	4507	Message 1 (Line 01, Char 07)	Static Message
3007	Name (Char 08)	Digital Input 1	4508	Message 1 (Line 01, Char 08)	Static Message
3008	Name (Char 09)	Digital Input 1	4509	Message 1 (Line 01, Char 09)	Static Message
3009	Name (Char 10)	Digital Input 1	4510	Message 1 (Line 01, Char 10)	Static Message
3010	Name (Char 01)	Digital Input 2	4511	Message 1 (Line 01, Char 11)	Static Message
3011	Name (Char 02)	Digital Input 2	4512	Message 1 (Line 01, Char 12)	Static Message
3012	Name (Char 03)	Digital Input 2	4513	Message 1 (Line 01, Char 13)	Static Message
3013	Name (Char 04)	Digital Input 2	4514	Message 1 (Line 01, Char 14)	Static Message
3014	Name (Char 05)	Digital Input 2	4515	Message 1 (Line 01, Char 15)	Static Message
3015	Name (Char 06)	Digital Input 2	4516	Message 1 (Line 01, Char 16)	Static Message
3016	Name (Char 07)	Digital Input 2	4517	Message 1 (Line 01, Char 17)	Static Message
3017	Name (Char 08)	Digital Input 2	4521	Message 1 (Line 02, Char 01)	Static Message
3018	Name (Char 09)	Digital Input 2	4522	Message 1 (Line 02, Char 02)	Static Message
3019	Name (Char 10)	Digital Input 2	4523	Message 1 (Line 02, Char 03)	Static Message
3020	Name (Char 01)	Digital Input 3	4524	Message 1 (Line 02, Char 04)	Static Message
3021	Name (Char 02)	Digital Input 3	4525	Message 1 (Line 02, Char 05)	Static Message
3022	Name (Char 03)	Digital Input 3	4526	Message 1 (Line 02, Char 06)	Static Message
3023	Name (Char 04)	Digital Input 3	4527	Message 1 (Line 02, Char 07)	Static Message
3024	Name (Char 05)	Digital Input 3	4528	Message 1 (Line 02, Char 08)	Static Message
3025	Name (Char 06)	Digital Input 3	4529	Message 1 (Line 02, Char 09)	Static Message
3026	Name (Char 07)	Digital Input 3	4530	Message 1 (Line 02, Char 10)	Static Message
3027	Name (Char 08)	Digital Input 3	4531	Message 1 (Line 02, Char 11)	Static Message
3028	Name (Char 09)	Digital Input 3	4532	Message 1 (Line 02, Char 12)	Static Message
3029	Name (Char 10)	Digital Input 3	4533	Message 1 (Line 02, Char 13)	Static Message
3030	Name (Char 01)	Digital Input 4	4534	Message 1 (Line 02, Char 14)	Static Message
3031	Name (Char 02)	Digital Input 4	4535	Message 1 (Line 02, Char 15)	Static Message

Parameter List in Download Order for the Unenhanced Series F4P (F4P _ _ _ _ A _ _ _ _ _)

Modbus Number	Parameter	Menu>Pathway	
900	PID Units	System	
901	°F or °C	System	
600	Sensor	Analog Input 1	
601	Type	Analog Input 1	
608	Units	Analog Input 1	
3070	Units (char 1)	Analog Input 1	
3071	Units (char 2)	Analog Input 1	
3072	Units (char 3)	Analog Input 1	
606	Decimal	Analog Input 1	
680	Scale Low	Analog Input 1	
681	Scale High	Analog Input 1	
681	Set Point Low Limit	Analog Input 1	
603	Set Point High Limit	Analog Input 1	
5572	Offset Type	Analog Input 1	
605	Calibration Offset Value	Analog Input 1	
5566	Clear Input 1 Offsets	Analog Input 1	
5506	Offset Point 01	Analog Input 1	
5536	Offset Value 01	Analog Input 1	
5507	Offset Point 02	Analog Input 1	
5537	Offset Value 02	Analog Input 1	
5508	Offset Point 03	Analog Input 1	
5538	Offset Value 03	Analog Input 1	
5509	Offset Point 04	Analog Input 1	
5539	Offset Value 04	Analog Input 1	
5510	Offset Point 05	Analog Input 1	
5540	Offset Value 05	Analog Input 1	
5511	Offset Point 06	Analog Input 1	
5541	Offset Value 06	Analog Input 1	
5512	Offset Point 07	Analog Input 1	
5542	Offset Value 07	Analog Input 1	
5513	Offset Point 08	Analog Input 1	
5543	Offset Value 08	Analog Input 1	
5514	Offset Point 09	Analog Input 1	
5544	Offset Value 09	Analog Input 1	
5515	Offset Point 10	Analog Input 1	
5545	Offset Value 10	Analog Input 1	
604	Filter Time	Analog Input 1	
607	Error Latch	Analog Input 1	
5569	Square Root	Analog Input 1	
1923	Show °F or °C	System	
1060	Function	Digital Input 1	
3050	Activate Message	Digital Input 1	
3060	Message Display Time	Digital Input 1	
3000	Name (Char 01)	Digital Input 1	
3001	Name (Char 02)	Digital Input 1	
3002	Name (Char 03)	Digital Input 1	
3003	Name (Char 04)	Digital Input 1	
3004	Name (Char 05)	Digital Input 1	
3005	Name (Char 06)	Digital Input 1	
3006	Name (Char 07)	Digital Input 1	
3007	Name (Char 08)	Digital Input 1	
3008	Name (Char 09)	Digital Input 1	
3009	Name (Char 10)	Digital Input 1	
1061	Condition	Digital Input 1	
1062	Function	Digital Input 2	
3051	Activate Message	Digital Input 2	
3061	Message Display Time	Digital Input 2	
3010	Name (Char 01)	Digital Input 2	
3011	Name (Char 02)	Digital Input 2	
3012	Name (Char 03)	Digital Input 2	
3013	Name (Char 04)	Digital Input 2	
3014	Name (Char 05)	Digital Input 2	
3015	Name (Char 06)	Digital Input 2	
3016	Name (Char 07)	Digital Input 2	
3017	Name (Char 08)	Digital Input 2	
3018	Name (Char 09)	Digital Input 2	
3019	Name (Char 10)	Digital Input 2	
1063	Condition	Digital Input 2	
1064	Function	Digital Input 3	
3052	Activate Message	Digital Input 3	
3062	Message Display Time	Digital Input 3	
3020	Name (Char 01)	Digital Input 3	
3021	Name (Char 02)	Digital Input 3	
3022	Name (Char 03)	Digital Input 3	
3023	Name (Char 04)	Digital Input 3	
3024	Name (Char 05)	Digital Input 3	
3025	Name (Char 06)	Digital Input 3	
3026	Name (Char 07)	Digital Input 3	
3027	Name (Char 08)	Digital Input 3	
3028	Name (Char 09)	Digital Input 3	
3029	Name (Char 10)	Digital Input 3	
1065	Condition	Digital Input 3	
1066	Function	Digital Input 4	
3053	Activate Message	Digital Input 4	
3063	Message Display Time	Digital Input 4	
3030	Name (Char 01)	Digital Input 4	
3031	Name (Char 02)	Digital Input 4	
3032	Name (Char 03)	Digital Input 4	
3033	Name (Char 04)	Digital Input 4	
3034	Name (Char 05)	Digital Input 4	
3035	Name (Char 06)	Digital Input 4	
3036	Name (Char 07)	Digital Input 4	
3037	Name (Char 08)	Digital Input 4	
3038	Name (Char 09)	Digital Input 4	
3039	Name (Char 10)	Digital Input 4	
1067	Condition	Digital Input 4	
700	Function	Control Output 1A	
506	Cycle Time Type	Control Output 1A	
509	Cycle Time Value	Control Output 1A	
701	Process	Control Output 1A	
844	Duplex	Control Output 1A	
714	High Power Limit	Control Output 1A	
715	Low Power Limit	Control Output 1A	
717	Function	Control Output 1B	
556	Cycle Time Type	Control Output 1B	
559	Cycle Time Value	Control Output 1B	
885	Boost Type	Control Output 1B	
881	Boost Power Mode	Control Output 1B	
882	Boost Set Point Type	Control Output 1B	
718	Process	Control Output 1B	
731	High Power Limit	Control Output 1B	
732	Low Power Limit	Control Output 1B	
3200	Name (Char 01)	Alarm Output 1	
3201	Name (Char 02)	Alarm Output 1	
3202	Name (Char 03)	Alarm Output 1	
3203	Name (Char 04)	Alarm Output 1	
3204	Name (Char 05)	Alarm Output 1	
3205	Name (Char 06)	Alarm Output 1	
3206	Name (Char 07)	Alarm Output 1	
3207	Name (Char 08)	Alarm Output 1	
3208	Name (Char 09)	Alarm Output 1	
3209	Name (Char 10)	Alarm Output 1	
702	Alarm Type	Alarm Output 1	
716	Alarm Source	Alarm Output 1	
704	Latching	Alarm Output 1	
705	Silencing	Alarm Output 1	
703	Alarm Hysteresis	Alarm Output 1	
706	Alarm Sides	Alarm Output 1	
707	Alarm Logic	Alarm Output 1	
708	Alarm Messages	Alarm Output 1	
3210	Name (Char 01)	Alarm Output 2	
3211	Name (Char 02)	Alarm Output 2	
3212	Name (Char 03)	Alarm Output 2	
3213	Name (Char 04)	Alarm Output 2	
3214	Name (Char 05)	Alarm Output 2	
3215	Name (Char 06)	Alarm Output 2	
3216	Name (Char 07)	Alarm Output 2	

4794	Message 4 (Line 03, Char 14)	Static Message	524	Rate 1A	Edit PID > PID Set Chl 1 > PID Set 3
4795	Message 4 (Line 03, Char 15)	Static Message	525	Dead Band 1A	Edit PID > PID Set Chl 1 > PID Set 3
4796	Message 4 (Line 03, Char 16)	Static Message	527	Hysteresis 1A	Edit PID > PID Set Chl 1 > PID Set 3
4797	Message 4 (Line 03, Char 17)	Static Message	570	Proportional Band 1B	Edit PID > PID Set Chl 1 > PID Set 3
4801	Message 4 (Line 04, Char 01)	Static Message	571	Integral 1B	Edit PID > PID Set Chl 1 > PID Set 3
4802	Message 4 (Line 04, Char 02)	Static Message	572	Reset 1B	Edit PID > PID Set Chl 1 > PID Set 3
4803	Message 4 (Line 04, Char 03)	Static Message	573	Derivative 1B	Edit PID > PID Set Chl 1 > PID Set 3
4804	Message 4 (Line 04, Char 04)	Static Message	574	Rate 1B	Edit PID > PID Set Chl 1 > PID Set 3
4805	Message 4 (Line 04, Char 05)	Static Message	575	Dead Band 1B	Edit PID > PID Set Chl 1 > PID Set 3
4806	Message 4 (Line 04, Char 06)	Static Message	577	Hysteresis 1B	Edit PID > PID Set Chl 1 > PID Set 3
4807	Message 4 (Line 04, Char 07)	Static Message	530	Proportional Band 1A	Edit PID > PID Set Chl 1 > PID Set 4
4808	Message 4 (Line 04, Char 08)	Static Message	531	Integral 1A	Edit PID > PID Set Chl 1 > PID Set 4
4809	Message 4 (Line 04, Char 09)	Static Message	532	Reset 1A	Edit PID > PID Set Chl 1 > PID Set 4
4810	Message 4 (Line 04, Char 10)	Static Message	533	Derivative 1A	Edit PID > PID Set Chl 1 > PID Set 4
4811	Message 4 (Line 04, Char 11)	Static Message	534	Rate 1A	Edit PID > PID Set Chl 1 > PID Set 4
4812	Message 4 (Line 04, Char 12)	Static Message	535	Dead Band 1A	Edit PID > PID Set Chl 1 > PID Set 4
4813	Message 4 (Line 04, Char 13)	Static Message	537	Hysteresis 1A	Edit PID > PID Set Chl 1 > PID Set 4
4814	Message 4 (Line 04, Char 14)	Static Message	580	Proportional Band 1B	Edit PID > PID Set Chl 1 > PID Set 4
4815	Message 4 (Line 04, Char 15)	Static Message	581	Integral 1B	Edit PID > PID Set Chl 1 > PID Set 4
4816	Message 4 (Line 04, Char 16)	Static Message	582	Reset 1B	Edit PID > PID Set Chl 1 > PID Set 4
4817	Message 4 (Line 04, Char 17)	Static Message	583	Derivative 1B	Edit PID > PID Set Chl 1 > PID Set 4
452	Maximum Transfer Heat	System	584	Rate 1B	Edit PID > PID Set Chl 1 > PID Set 4
453	Maximum Transfer Cool	System	585	Dead Band 1B	Edit PID > PID Set Chl 1 > PID Set 4
454	Manual to Auto Transfer	System	587	Hysteresis 1B	Edit PID > PID Set Chl 1 > PID Set 4
304	Autotune Set Point	System	540	Proportional Band 1A	Edit PID > PID Set Chl 1 > PID Set 5
880	Failure Mode	System	541	Integral 1A	Edit PID > PID Set Chl 1 > PID Set 5
903	Input 1 Fail	System	542	Reset 1A	Edit PID > PID Set Chl 1 > PID Set 5
904	Open Loop Detect	System	543	Derivative 1A	Edit PID > PID Set Chl 1 > PID Set 5
302	Alarm 1 Low Deviation	Alarm Set Points	544	Rate 1A	Edit PID > PID Set Chl 1 > PID Set 5
302	Alarm 1 Low Set Point	Alarm Set Points	545	Dead Band 1A	Edit PID > PID Set Chl 1 > PID Set 5
302	Alarm 1 Maximum Low Rate	Alarm Set Points	547	Hysteresis 1A	Edit PID > PID Set Chl 1 > PID Set 5
303	Alarm 1 High Deviation	Alarm Set Points	590	Proportional Band 1B	Edit PID > PID Set Chl 1 > PID Set 5
303	Alarm 1 High Set Point	Alarm Set Points	591	Integral 1B	Edit PID > PID Set Chl 1 > PID Set 5
303	Alarm 1 Maximum High Rate	Alarm Set Points	592	Reset 1B	Edit PID > PID Set Chl 1 > PID Set 5
321	Alarm 2 Low Deviation	Alarm Set Points	593	Derivative 1B	Edit PID > PID Set Chl 1 > PID Set 5
321	Alarm 2 Low Set Point	Alarm Set Points	594	Rate 1B	Edit PID > PID Set Chl 1 > PID Set 5
321	Alarm 2 Maximum Low Rate	Alarm Set Points	595	Dead Band 1B	Edit PID > PID Set Chl 1 > PID Set 5
322	Alarm 2 High Deviation	Alarm Set Points	597	Hysteresis 1B	Edit PID > PID Set Chl 1 > PID Set 5
322	Alarm 2 High Set Point	Alarm Set Points	1951	PID Crossover	Operations Page
322	Alarm 2 Maximum High Rate	Alarm Set Points	1961	PID Cross 1 to 2	Operations Page
500	Proportional Band 1A	Edit PID > PID Set Chl 1 > PID Set 1	1962	PID Cross 2 to 3	Operations Page
501	Integral 1A	Edit PID > PID Set Chl 1 > PID Set 1	1963	PID Cross 3 to 4	Operations Page
502	Reset 1A	Edit PID > PID Set Chl 1 > PID Set 1	1964	PID Cross 4 to 5	Operations Page
503	Derivative 1A	Edit PID > PID Set Chl 1 > PID Set 1	1100	Ramp to Set Point Mode	Ramp to Set Point
504	Rate 1A	Edit PID > PID Set Chl 1 > PID Set 1	1102	Ramp to Set Point Scale	Ramp to Set Point
505	Dead Band 1A	Edit PID > PID Set Chl 1 > PID Set 1	1101	Ramp to Set Point Rate	Ramp to Set Point
507	Hysteresis 1A	Edit PID > PID Set Chl 1 > PID Set 1	883	Boost Power (1B)	Control Set Points
550	Proportional Band 1B	Edit PID > PID Set Chl 1 > PID Set 1	884	Boost Delay Time (1B)	Control Set Points
551	Integral 1B	Edit PID > PID Set Chl 1 > PID Set 1	309	Boost Set Point (1B)	Control Set Points
552	Reset 1B	Edit PID > PID Set Chl 1 > PID Set 1	308	Digital Set Point 1	Control Set Points
553	Derivative 1B	Edit PID > PID Set Chl 1 > PID Set 1	327	Digital Set Point 2	Control Set Points
554	Rate 1B	Edit PID > PID Set Chl 1 > PID Set 1	346	Digital Set Point 3	Control Set Points
555	Dead Band 1B	Edit PID > PID Set Chl 1 > PID Set 1	365	Digital Set Point 4	Control Set Points
557	Hysteresis 1B	Edit PID > PID Set Chl 1 > PID Set 1	300	Set Point 1	Main Page
510	Proportional Band 1A	Edit PID > PID Set Chl 1 > PID Set 2	307	Autotune PID Type	Autotune PID
511	Integral 1A	Edit PID > PID Set Chl 1 > PID Set 2	1330	Set/Change Password (Char 1)	Set Lockout
512	Reset 1A	Edit PID > PID Set Chl 1 > PID Set 2	1331	Set/Change Password (Char 2)	Set Lockout
513	Derivative 1A	Edit PID > PID Set Chl 1 > PID Set 2	1332	Set/Change Password (Char 3)	Set Lockout
514	Rate 1A	Edit PID > PID Set Chl 1 > PID Set 2	1333	Set/Change Password (Char 4)	Set Lockout
515	Dead Band 1A	Edit PID > PID Set Chl 1 > PID Set 2	1300	Set Point	Set Lockout
517	Hysteresis 1A	Edit PID > PID Set Chl 1 > PID Set 2	1306	Operations, Autotune PID	Set Lockout
560	Proportional Band 1B	Edit PID > PID Set Chl 1 > PID Set 2	1307	Operations, Edit PID	Set Lockout
561	Integral 1B	Edit PID > PID Set Chl 1 > PID Set 2	1308	Operations, Alarm Set Point	Set Lockout
562	Reset 1B	Edit PID > PID Set Chl 1 > PID Set 2	1302	Setup Page	Set Lockout
563	Derivative 1B	Edit PID > PID Set Chl 1 > PID Set 2	1303	Factory Page	Set Lockout
564	Rate 1B	Edit PID > PID Set Chl 1 > PID Set 2	1316	Operations, PID Crossover	Set Lockout
565	Dead Band 1B	Edit PID > PID Set Chl 1 > PID Set 2	1317	Operations, Ramp Set Point	Set Lockout
567	Hysteresis 1B	Edit PID > PID Set Chl 1 > PID Set 2	1318	Operations, Control Set Point	Set Lockout
520	Proportional Band 1A	Edit PID > PID Set Chl 1 > PID Set 3	25	Save Changes to EE	Save
521	Integral 1A	Edit PID > PID Set Chl 1 > PID Set 3			
522	Reset 1A	Edit PID > PID Set Chl 1 > PID Set 3			
523	Derivative 1A	Edit PID > PID Set Chl 1 > PID Set 3			

Operations Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
Autotune PID					
Main > Operations > Autotune PID					
Autotune PID	Select which PID parameters will be automatically tuned.	Tune Off (0) PID Set 1 (1) PID Set 2 (2) PID Set 3 (3) PID Set 4 (4) PID Set 5 (5)	Off	305 r/w	Active if controller is in auto (closed-loop) mode.
Cascade Inner Loop	Select which PID parameters will be automatically tuned.	Tune Off (0) PID Set 1 (1) PID Set 2 (2) PID Set 3 (3) PID Set 4 (4) PID Set 5 (5)	Off	305 r/w	Active if Analog Input 3 Control Type is set to Cascade.
Cascade Outer Loop	Select which PID parameters will be automatically tuned.	Tune Off (0) PID Set 1 (1) PID Set 2 (2) PID Set 3 (3) PID Set 4 (4) PID Set 5 (5)	Off	343 r/w	Active if Analog Input 3 Control Type is set to Cascade.
Autotune PID Type	Select which output to autotune.	Heat Only (0) Cool Only (1) Heat and Cool (3)	Off	307 r/w	Active if controller is in auto (closed-loop) mode.
PID Set x (1 to 5)					
Main > Operations > Edit PID > PID Set Channel 1 > PID Set x (1 to 5)*					
Proportional Band x (A or B)	Define the proportional band for PID control.	0° to 30,000°	25°F 14°C	1A 1B Set 500 550 [1] 510 560 [2] 520 570 [3] 530 580 [4] 540 590 [5] r/w	Active: Always.*
Integral x (A or B)	Set the integral time in minutes. [or]	0.00 to 99.99 minutes	0 minutes	1A 1B Set 501 551 [1] 511 561 [2] 521 571 [3] 531 581 [4] 541 591 [5] r/w	Active if PID Units (Setup Page) is set to SI and Proportional Band is not set to 0.*
Reset x (A or B)	Set the reset time in repeats per minute.	0.00 per minute to 99.99 per minute	0 per minute	1A 1B Set 502 552 [1] 512 562 [2] 522 572 [3] 532 582 [4] 542 592 [5] r/w	Active if PID Units (Setup Page) is set to U.S. and Proportional Band is not set to 0.*
Derivative x (A or B)	Set the derivative time. [or]	0.00 to 9.99 minutes	0.00 minutes	1A 1B Set 503 553 [1] 513 563 [2] 523 573 [3] 533 583 [4] 543 593 [5] r/w	Active if PID Units (Setup Page) is set to SI and Proportional Band is not set to 0.*
Rate x (A or B)	Set the rate time.	0.00 to 9.99 minutes	0.00 minutes	1A 1B Set 504 554 [1] 514 564 [2] 524 574 [3] 534 584 [4] 544 594 [5] r/w	Active if PID Units (Setup Page) is set to U.S. and Proportional Band is not set to 0.*

Operations Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
Dead Band x (A or B)	Define the effective shift in the heating and cooling set points to prevent conflict.	0 to 30,000	0	1A 1B Set 505 555 [1] 515 565 [2] 525 575 [3] 535 585 [4] 545 595 [5] r/w	Active if Proportional Band is not set to 0 and one output is set to heat and the other to cool (Setup Page).*
Hysteresis x (A or B)	Define the process variable change from the set point required to re-energize the output (in on-off mode).	1 to 30,000	3	1A 1B Set 507 557 [1] 517 567 [2] 527 577 [3] 537 587 [4] 547 597 [5] r/w	Active if Proportional Band is set to 0 and one output is set to heat and the other to cool (Setup Page).*

* None of the B parameters are active if both outputs are set to cool or heat.

PID Set x (1 to 5)

Main > Operations > Edit PID > Cascade PID > PID Set x (1 to 5)*

Proportional Band x (A or B)	Define the proportional band for PID control.	0° to 30,000°	25°F 14°C	1A 1B Set 2600 2610 [1] 2620 2630 [2] 2640 2650 [3] 2660 2670 [4] 2680 2690 [5] r/w	Active if Control Type (Analog Input 3) is set to Cascade.*
Integral x (A or B)	Set the integral time in minutes. [or]	0.00 to 99.99 minutes	0 minutes	1A 1B Set 2601 2611 [1] 2621 2631 [2] 2641 2651 [3] 2661 2671 [4] 2681 2691 [5] r/w	Active if Control Type (Analog Input 3) is set to Cascade, PID Units (Setup Page) is set to SI and Proportional Band is not set to 0.*
Reset x (A or B)	Set the reset time in repeats per minute.	0.00 per minute to 99.99 per minute	0 per minute	1A 1B Set 2602 2612 [1] 2622 2632 [2] 2642 2652 [3] 2662 2672 [4] 2682 2692 [5] r/w	Active if Control Type (Analog Input 3) is set to Cascade, PID Units (Setup Page) is set to U.S. and Proportional Band is not set to 0.*
Derivative x (A or B)	Set the derivative time. [or]	0.00 to 9.99 minutes	0.00 minutes	1A 1B Set 2603 2613 [1] 2623 2633 [2] 2643 2653 [3] 2663 2673 [4] 2683 2693 [5] r/w	Active if Control Type (Analog Input 3) is set to Cascade, PID Units (Setup Page) is set to SI and Proportional Band is not set to 0.*
Rate x (A or B)	Set the rate time.	0.00 to 9.99 minutes	0.00 minutes	1A 1B Set 2604 2614 [1] 2624 2634 [2] 2644 2654 [3] 2664 2674 [4] 2684 2694 [5] r/w	Active if Control Type (Analog Input 3) is set to Cascade, PID Units (Setup Page) is set to U.S. and Proportional Band is not set to 0.*
Dead Band x (A or B)	Define the effective shift in the heating and cooling set points to prevent conflict.	0 to 9,999	0	1A 1B Set 2605 2615 [1] 2625 2635 [2] 2645 2655 [3] 2665 2675 [4] 2685 2695 [5] r/w	Active if Control Type (Analog Input 3) is set to Cascade, Proportional Band is not set to 0 and one output is set to heat and the other to cool (Setup Page).*

Operations Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
Hysteresis x (A or B)	Define the process variable change from the set point required to re-energize the output (in on-off mode).	1 to 9,999	3	1A 1B Set 2607 2617 [1] 2627 2637 [2] 2647 2657 [3] 2667 2677 [4] 2687 2697 [5] r/w	Active if Control Type (Analog Input 3) is set to Cascade, Proportional Band is set to 0 and one output is set to heat and the other to cool (Setup Page).*
* None of the B parameters are active if both outputs are set to cool or heat.					

Alarm Set Points

Main > Operations > Alarm Set Points

Alarm x (1 or 2) Low Set Point	Set low value at which alarm is triggered.	<per sensor> to Alarm x High Set Point	<per sensor>	302 [1] 321 [2] r/w	Active if Alarm x Type (Setup Page) is set to Process.
Alarm x (1 or 2) High Set Point	Set high value at which alarm is triggered.	<per sensor> to Alarm x Low Set Point	<per sensor>	303 [1] 322 [2] r/w	Active if Alarm x Type (Setup Page) is set to Process.
Alarm x (1 or 2) Low Deviation	Set the deviation below set point 1 that will trigger an alarm.	-19,999 to -1	-999	302 [1] 321 [2] r/w	Active if Alarm x Type (Setup Page) is set to Deviation.
Alarm x (1 or 2) High Deviation	Set the deviation above set point 1 that will trigger an alarm.	1 to 20,000	999	303 [1] 322 [2] r/w	Active if Alarm x Type (Setup Page) is set to Deviation.
Alarm x (1 or 2) Maximum Low Rate	Set the maximum rate process value per second at which alarm is triggered.	-19,999 to Maximum Rate High -1	-100	302 [1] 321 [2] r/w	Active if Alarm x Type (Setup Page) is set to Maximum Rate.
Alarm x (1 or 2) Maximum High Rate	Set the maximum rate process value per second at which alarm is triggered.	Maximum Rate Low +1 to 30,000	100	303 [1] 322 [2] r/w	Active if Alarm x Type (Setup Page) is set to Maximum Rate.

Operations

Main > Operations

PID Crossover	Select what will trigger the crossover to another PID set.	Off (0) Process (1) Set Point (2)	Off	1951 r/w	Active: Always.
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Operations Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
PID Cross	Select the value that will trigger a change in PID sets.	1 to 2 2 to 3 3 to 4 4 to 5 (-19,999 to 30,000)	1 to 2	1961 [1-2] 1962 [2-3] 1963 [3-4] 1964 [4-5] r/w	Appears if PID Crossover is not set to Off.
Ramp to Set Point					
Main > Operations > Ramp to Set Point					
Ramp to Set Point Mode	Select whether the maximum rate of temperature or process value change will be limited.	Off (0) Startup (1) Startup or Change (2)	Off	1100 r/w	Active: Always.
Ramp to Set Point Scale	Select the units of measure for ramping.	Degrees/Minute (0) Degrees/Hour (1)	Degrees/ Minute	1102 r/w	Active if Ramp to Set Point Mode is not set to Off.
Ramp to Set Point Rate	Select the maximum rate of temperature or process value change.	1 to 999 degrees or units per minute or hour	100.0	1101 r/w	Active if Ramp to Set Point Mode is not set to Off.
Control Set Points					
Main > Operations > Control Set Points					
Boost Power (1B)	Select the minimum output 1A power that will activate output 1B (with 1.0% hysteresis).	0.0% to 100.0%	75%	883 r/w	Active if Boost Type (Setup Page > Control Output 1B) is set to Boost On Power.
Boost Delay Time (1B)	Set the time that the power level has to be exceeded before activating output 1B.	0 to 999 seconds	0	884 r/w	Active if Boost Type (Setup Page > Control Output 1B) is set to Boost On Power.
Boost Set Point (1B)	Set the set point that will control output 1B.	-19,999 to 30,000 [deviation] Set Point Low Limit to Set Point High Limit [process]	cool/cool Set Point High Limit (process) 999 (dev.) heat/heat Set Point Low Limit (process) -999 (dev.)	309 r/w	Active if Boost Type (Setup Page > Control Output 1B) is set to Boost On Set Point.
Digital Set Point x (1 to 4)	Select the set point value that will be activated by digital input x. The set point name can be changed in the Setup Page.	Set Point Low Limit to Set Point High Limit		308 [1] 327 [2] 346 [3] 365 [4] r/w	Active if any digital input is set to Digital Set Point.

Operations Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
Digital Differential Set Point x (1 to 4)	Select the differential value that will be activated by digital input x. The value will be added to the input 3 process value while digital input X is active. The set point name can be changed in the Setup Page.	-19,999 to 30,000	0	314 [1] 333 [2] 352 [3] 371 [4] r/w	Active if any digital input is set to Digital Differential Value.
Digital Ratio Set Point x (1 to 4)	Select the ratio value that will be activated by digital input x. The input 3 process value will be multiplied by this value while digital input x is active. The set point name can be changed in the Setup Page.	0% to 30,000%	100%	315 [1] 334 [2] 353 [3] 372 [4] r/w	Active if any digital input is set to Digital Ratio Value.

Remote/Local Set Point

Main > Operations > Remote/Local Set Point

Remote/Local Set Point	Switch between the remote and local set points.	Local Set Point (0) Remote 2 (1) Remote 3 (2)	Local Set Point	316 r/w	Available if Control Type (Setup Page > Analog Input 2) is set to Remote.
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Setup Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
System					
Main > Setup > System					
PID Units	Choose units for PID control.	US (Reset/Rate) (0) SI (Integral/Derivative) (1)	US, Reset/Rate	900 r/w	Active: Always.
°F or °C	Choose temperature scale.	°F (0) °C (1)	°F	901 r/w	Active: Always.
Show °F or °C	Choose whether to display or hide °C or °F in top display.	No, Upper Display (0) Yes, Upper Display (1)	Yes, Upper Display	1923 r/w	Active: Always.
Maximum Transfer Heat	The maximum heat output power when control is switched from auto to manual mode.	0% to 100%	100%	452 r/w	Active if one or both control outputs is set to heat [reverse].
Maximum Transfer Cool	The maximum cool output power when control is switched from auto to manual mode.	-100% to 0%	-100%	453 r/w	Active if one or both control outputs is set to cool [direct].
Manual to Auto Transfer	Select how the set point will be determined when control switches from manual to auto mode.	Restore Set Point (0) Reverse Bumpless (1)	Restore Set Point	454 r/w	Active: Always.
Autotune Set Point	Set percent of set point to auto-tune to.	50 to 150%	90%	304 r/w	Active: Always.
Failure Mode	Select how the outputs will behave if an input error switches the controller to manual mode.	Bumpless Transfer (0) Fixed (1)	Bumpless	880 r/w	Active: Always.
Input 1 Fail	Select the output power to be maintained if an input error switches control to manual mode.	0% to High Power Limit (heat only or cool only) Cool High Power Limit to Heat High Power Limit (heat/cool or cool/heat)	0%	903 r/w	Active if Failure Mode is set to Fixed.
Open Loop Detect	Select whether to turn off outputs and display an error message.	Off (0) On (1)	Off	904 r/w	Active: Always.

Setup Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
Analog Input x (1 to 3)					
Main > Setup > Analog Input x (1 to 3) Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _).					
Sensor	Select the sensor.	Thermocouple (0) RTD (1) Process (2) Slidewire (3) [Analog Input 3 only] Off (4) [Analog Inputs 2 and 3 only]	Thermocouple	Input 600 [1] 610 [2] 620 [3] r/w	Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _). Active: Always.
Type	Select the linearization table to apply to the sensor.	If Sensor is set to thermocouple: J (0) K (1) T (2) E (3) N (4) C (5) D (6) PT2 (7) R (8) S (9) B (10) If Sensor is set to RTD: JIS (11) DIN (12) If Sensor is set to Process: 4 to 20mA (13) 0 to 20mA (14) 0 to 5V (15) 1 to 5V (16) 0 to 10V (17) 0 to 50mV (18)	J DIN 4-20mA	Input 601 [1] 610 [2] 621 [3] r/w	Active if Sensor is not set to Off. Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _). The selection that appears will depend on which sensor was selected for the previous parameter.
Analog Input 2					
Main > Setup > Analog Input 2 Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _).					
Control Type	Select the control type.	Normal (0) Remote (3) Alternate (4)	Normal	1140 r/w	Appears if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _), Analog Input 2 is selected and Analog Input 3 is set to Normal Control.
Analog Input x (1 to 3) continued					
Main > Setup > Analog Input x (1 to 3) Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _).					
Units	Name the units of measure for the input.	Temperature (0) Units (1) [3 characters]	Temperature	Input 608 [1] 3070 char 1 3071 char 2 3072 char 3 618 [2] 3073 char 1 3074 char 2 3075 char 3 628 [3] 3076 char 1 3077 char 2 3078 char 3 r/w	Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _). Active if Sensor is set to Process.

Setup Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
Decimal	Set the decimal point for input.	0 (0) 0.0 (1) 0.00 (process) (2) 0.000 (process) (3)	0	Input 606 [1] 616 [2] 626 [3] r/w	Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _). Active: Always.
Scale Low	Set unit value for low end of current or voltage range.	Depends on sensor and decimal point selection.	—	Input 680 [1] 682 [2] 684 [3] r/w	Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _). Active if Sensor is set to Process.
Scale High	Set unit value for high end of current or voltage range.	Depends on sensor and decimal point selection.	—	Input 681 [1] 683 [2] 685 [3] r/w	Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _). Active if Sensor is set to Process.
Set Point Low Limit	Set limit for minimum set point.	Depends on sensor.	—	Input 681 [1] 683 [2] 685 [3] r/w	Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _). Active: Always.
Set Point High Limit	Set limit for maximum set point.	Depends on sensor.	—	Input 603 [1] 613 [2] 623 [3] r/w	Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _). Active: Always.
Offset Type	Select whether to use one or 10 input offset points.	Single Linear (0) Multiple Point (1)	Single Linear	Input 5572 [1] 5573 [2] 5574 [3] r/w	Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _). Active if Offset Type is set to Single Linear.
Calibration Offset Value	Select the input offset value.	Set Point Low Limit to Set Point High Limit	—	Input 605 [1] 615 [2] 625 [3] r/w	Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _). Active if Offset Type is set to Single Linear.
Clear Input x (1 to 3) Offsets	Reset offset values to 0.	No (0) Yes (1)	No	Input 5566 [1] 5567 [2] 5568 [3] r/w	Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _). Active if Offset Type is set to Multiple Point.
Offset Point x (1 to 10)	Set the temperature or value that will trigger the offset.	-19,999 or Input Offset (x-1) Value + 1 to Input Offset (x+1) Value - 1 or 30,000.	SP Low + ((SP High- SP Low) * (x-1) /9)	Input 1 2 3 [1] 5506 5516 5526 [2] 5507 5517 5527 [3] 5508 5518 5528 [4] 5509 5519 5529 [5] 5510 5520 5530 [6] 5511 5521 5531 [7] 5512 5522 5532 [8] 5513 5523 5533 [9] 5514 5524 5534 [10] 5515 5525 5535 r/w	Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _). Active: Always.
Offset Value x (1 to 10)	Set the size of the offset.	-1,000 to 1,000	0	Input 1 2 3 [1] 5536 5546 5556 [2] 5537 5547 5557 [3] 5538 5548 5558 [4] 5539 5549 5559 [5] 5540 5550 5560 [6] 5541 5551 5561 [7] 5542 5552 5562 [8] 5543 5553 5563 [9] 5544 5554 5564 [10] 5545 5555 5565 r/w	Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _). Active: Always.

Setup Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
Filter Time	Set the filter time for input in seconds.	-60.0 to 60.0	0 1.0 if Decimal set to 0.0 and Sensor Type set to Thermocouple or RTD.	Input 604 [1] 614 [2] 624 [3] r/w	Inputs 2 and 3 appear only if the controller is the enhanced version (F4P_ - _ _ AB - _ _ _ _). Active: Always.
Error Latch	Select whether error clear is automatic or manual.	Self Clear (0) Latch (1)	Self Clear	Input 607 [1] 617 [2] 627 [3] r/w	Inputs 2 and 3 appear only if the controller is the enhanced version (F4P_ - _ _ AB - _ _ _ _). Active: Always.
Square Root	Apply square-root extraction to input.	Off (0) On (1)	No	Input 5569 [1] 5570 [2] 5571 [3] r/w	Inputs 2 and 3 appear only if the controller is the enhanced version (F4P_ - _ _ AB - _ _ _ _). Active if Sensor is set to Process.
Analog Input 3					
Main > Setup > Analog Input 3					
Auto/Manual Slidewire Calibration	Select the slidewire calibration method.	Skip Calibration (0) Automatic (1) Manual (2)	Skip Calibration	1915 r/w	Appears if the controller is the enhanced version (F4P_ - _ _ AB- _ _ _ _), Analog Input 3 is selected and Sensor is set to Slidewire.
Slidewire Learn Closed	Calibrate the slidewire to the closed valve.	(Close the valve manually.)	—	1918 r/w	Appears if the controller is the enhanced version (F4P_ - _ _ AB- _ _ _ _), Analog Input 3 is selected, Sensor is set to Slidewire and Auto/Manual Calibration is set to Manual.
Slidewire Learn Open	Calibrate the slidewire to the open valve.	(Open the valve manually.)	—	1919 r/w	Appears if the controller is the enhanced version (F4P_ - _ _ AB- _ _ _ _), Analog Input 3 is selected, Sensor is set to Slidewire and Auto/Manual Calibration is set to Manual.
Slidewire Deadband	Select the slidewire deadband.	0.3% to 100.0%	1%	1916 r/w	Appears if the controller is the enhanced version (F4P_ - _ _ AB- _ _ _ _), Analog Input 3 is selected and Sensor is set to Slidewire.
Slidewire Hysteresis	Select the slidewire hysteresis.	0.0% to 100.0%	0.0%	1917 r/w	Appears if the controller is the enhanced version (F4P_ - _ _ AB- _ _ _ _), Analog Input 3 is selected and Sensor is set to Slidewire.
Control Type	Select the control type.	Normal (0) Ratio (1) Differential (2) Remote (3) Cascade (5)	Normal	Input 1140 [2] 1141 [3] r/w	Appears if the controller is the enhanced version (F4P_ - _ _ AB- _ _ _ _) and Analog Input 2 or 3 is selected.

Setup Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
Cascade	Select the cascade control method.	Process Cascade (0) Deviation Cascade (1)	Process Cascade	1925 r/w	Appears if the controller is the enhanced version (F4P_ - __ AB- ____), Analog Input 3 is selected and Cascade is selected as the control type.
Cascade Low Range	Select the cascade low range.	<sensor range>	<sensor range low>	1926 r/w	Appears if the controller is the enhanced version (F4P_ - __ AB- ____) and Cascade is set to Process Cascade.
Cascade High Range	Select the cascade high range.	<sensor range>	<sensor range high>	1927 r/w	Appears if the controller is the enhanced version (F4P_ - __ AB- ____) and Cascade is set to Process Cascade.
Cascade Low Deviation	Select the cascade low deviation.	-19,999 to -1	-19,999	1926 r/w	Appears if the controller is the enhanced version (F4P_ - __ AB- ____) and Cascade is set to Deviation Cascade.
Cascade High Deviation	Select the cascade high deviation.	1 to 9,999	9,999	1927 r/w	Appears if the controller is the enhanced version (F4P_ - __ AB- ____) and Cascade is set to Deviation Cascade.

Digital Input x (1 to 4)

Main > Setup > Digital Input x (1 to 4)

Function		Default	Input	Active: Always.
Select the digital input function.	Off (0) Panel Lock (1) [level] Reset Alarm 1 (2) [edge] Reset Alarm 2 (3) [edge] Reset Both Alarms (4) [edge] Control Outputs Off (5) [level] Digital Set Point (6) [level] Digital Differential Value (7) [level] Digital Ratio Value (8) [level] Remote [set point analog input] 2 (9) [level] Remote [set point analog input] 3 (10) [level] Alternate Control (11) [level] Manual Control (12) [level] Reverse Outputs (13) [level] Activate Message (14) [edge]	Off	1060 [1] 1062 [2] 1064 [3] 1066 [4] r/w	Only the currently active features will appear in the list.

Setup Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
Name	Name the digital set point, digital ratio value or digital differential value for easy reference.	<selected by user>	DGT SPX	3000-3009 3010-3019 3020-3029 3030-3039 r/w	Active: Always.
Activate Message	Select which message to display.	Message 1 (0) Message 2 (1) Message 3 (2) Message 4 (3)	Message 1	Input 3050 [1] 3051 [2] 3052 [3] 3053 [4] r/w	Active if Function is set to Activate Message.
Message Display Time	Set the length of time that the message will display.	0 to 999	10 seconds	Input 3060 [1] 3061 [2] 3062 [3] 3063 [4] r/w	Active if Function is set to Activate Message.
Condition	Select the condition to trigger digital input.	Low (0) High (1)	Low	Input 1061 [1] 1063 [2] 1065 [3] 1067 [4] r/w	Active: Always.
Control Output x (1A and 1B)					
Main > Setup > Control Output x (1A and 1B)					
Function	Select type of function for output.	Off (0) [1B only] Heat (1) [reverse] Cool (2) [direct]	Heat (1A) Off (1B)	Output 700 [1A] 717 [1B] r/w	Active: Always.
Cycle Time Type	Select the time base.	Variable Burst (0) Fixed Time (1)	Fixed Time	Output 506 [1A] 556 [1B] r/w	Active if output x is not a mechanical relay or process output.
Cycle Time Value	Select the cycle time period.	0.1 to 60 seconds	1 second	Output 509 [1A] 559 [1B]	Active if Cycle Time Type is set to Fixed Time.
Process	Set process output type.	4 to 20mA (0) 0 to 20mA (1) 0 to 5V (2) 1 to 5V (3) 0 to 10V (4) 20 to 4mA (5) [reverse value]	4 to 20mA	Output 701 [1A] 718 [1B] r/w	Active if the controller is equipped with a process output.
Duplex (1A)	Control both heat and cool from one output.	Off (0) On (1)	Off	844 r/w	Active if output 1A is a process output.
High Power Limit	Set high limit control (PID mode only) output power level.	Low Limit +1 to 100%	100%	Output 714 [1A] 731 [1B] r/w	Active: Always.
Low Power Limit	Set low limit control (PID mode only) output power level.	0% to High Limit -1	0%	Output 715 [1A] 732 [1B] r/w	Active: Always.

Setup Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
Boost Type (1B)	Select what will activate control output 1B.	Boost on Power (0) Boost on Set Point (1)	Power	885 r/w	Active if the control output functions are both set to heat or cool.
Boost Power Mode (1B)	Select whether boost power operates in Manual Mode.	Auto Only (0) Auto/Manual (1)	Boost Auto	881 r/w	Active if Boost Type is set to Power.
Boost Set Point Type (1B)	Select which type of set point will control output 1B.	Process (0) Deviation (1)	Process	882 r/w	Active if Boost Type is set to Set Point.

Alarm Output x (1 and 2)

Main > Setup > Alarm Output x (1 and 2)

Name	Name the alarm for easy reference.	<selected by user>	ALARMX	3200-3209 [1] 3210-3219 [2] r/w	Active: Always.
Alarm Type	Select the alarm type.	Off (0) Process (1) Deviation (2) Maximum Rate (3)	Off	Output 702 [1] 719 [2] r/w	Active: Always.
Alarm Source	Select the alarm source.	Input 1 (0) Input 2 (1) Input 3 (2)	Input 1	Output 716 [1] 733 [2] r/w	Active if the source is enabled.
Latching	Choose automatic or manual clearing of alarms.	Alarm Self-Clears (0) Alarm Latches (1)	Alarm Self-Clears	Output 704 [1] 721 [2] r/w	Active if Alarm Output is enabled.
Silencing	Choose whether to mask alarms on power-up.	No (0) Yes (1)	No	Output 705 [1] 722 [2] r/w	Active if Alarm Output is enabled.
Alarm Hysteresis	Set the alarm hysteresis.	1 to 9999	3	Output 703 [1] 720 [2] r/w	Active if Alarm Output is enabled.
Alarm Sides	Choose to enable Low, High or both alarm set points.	Both (0) Low (1) High (2)	Both	Output 706 [1] 723 [2] r/w	Active if Alarm Output is enabled.
Alarm Logic	Select the alarm logic option.	Open on Alarm (0) Close on Alarm (1)	Open on Alarm	Output 707 [1] 724 [2] r/w	Active if Alarm Output is enabled.
Alarm Messages	Select the alarm message option.	Yes on Main Page (0) No (1)	Yes on Main Page	Output 708 [1] 725 [2] r/w	Active if Alarm Output is enabled.

Retransmit Output x (1 and 2)

Main > Setup > Retransmit Output x (1 and 2)

Retransmit Source	Choose a source for retransmit signal.	Off (0) Input 1 (1) Set Point 1 (4) Channel 1 Power (5)	Input 1	Output 709 [1] 726 [2] r/w	Active: Always. (Values appear only if the source is enabled.)
--------------------------	--	--	---------	-------------------------------------	--

Setup Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
Analog Range	Select voltage or current range to retransmit.	4 to 20mA (0) 0 to 20mA (1) 0 to 5V (2) 1 to 5V (3) 0 to 10V (4)	4 to 20mA	Output 836 [1] 837 [2] r/w	Active if Retransmit source is not set to Off.
Low Scale	Set low end of current or voltage range to retransmit.	-9999 to 9999 (minimum sensor range)	Low end of sensor range	Output 710 [1] 727 [2] r/w	Active if Retransmit source is not set to Off.
High Scale	Set high end of current or voltage range to retransmit.	-9999 to 9999 (maximum sensor range)	High end of sensor range	Output 711 [1] 728 [2] r/w	Active if Retransmit source is not set to Off.
Scale Offset	Shift the scale up (+) or down (-) to agree with source signal.	-9999 to 9999 Range Low to Range High	0	Output 712 [1] 729 [2] r/w	Active if Retransmit source is not set to Off.

Communications

Main > Setup > Communications

Baud Rate	Select transmission speed.	19200 (0) 9600 (1)	19200	Not available	Active: Always.
Address	Select address for controller.	1 to 247	1	Not available	Active: Always.

Setup Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
Custom Main Page					
Main > Setup > Custom Main Page					
Parameter x (1 to 16)	None (0)		[Defaults	Par.	Appears: Always.
Choose parameters to appear on the Main Page.	Input 1 [value] (1)		depend on	1400 [1]	Analog Inputs 2 and 3 appear only if the controller is the enhanced version (F4P_ - _ - AB- _ _ _ _).
	Input 1 Value bar [graph] (2)		the control	1401 [2]	The range of selections for the Custom Main Page will depend on other parameter settings.
	Input 2 [value] (3)		type select-	1402 [3]	
	Input 2 Value bar [graph] (4)		ed.]	1403 [4]	
	Input 3 [value] (5)			1404 [5]	
	Input 3 Value bar [graph] (6)			1405 [6]	
	Digital Set Point (7)			1406 [7]	
	*Dgt. [digital] Diff. [differential] Value (8)			1407 [8]	
	*Diff. [differential] Set Point (9)			1408 [9]	* Appears if Input 3 is set to Differential.
	*Set Differential (10)			1409 [10]	
	**Dgt. [digital] Ratio Value (11)			1410 [11]	** Appears if Input 3 is set to Ratio.
	**Ratio Set Point (12)			1411 [12]	
	Set Ratio (13)			1412 [13]	* When a digital input is active, its number will appear in the Main Page display; when it is inactive, its position will be underlined.
	Remote Set Point 2 (14)			1413 [14]	
	Remote Set Point 3 (15)			1414 [15]	
	Target Set Point (16)			1415 [16]	
	[cascade] Inner Set Point (17)			r/w	
	Set Point 1 (18)				
	Set Point 1 bar [graph] (19)				
	% Power 1A (20)				
	% Power 1B (21)				
	% Power 1A bar [graph] (22)				
	% Power 1B bar [graph] (23)				
	Tune Status 1 (24)				
	***Digital Inputs (25)				
	Active Ch1 PID Set (26)				
Process Display					
Main > Setup > Process Display					
Process Display	Input 1 (0)	Input 1	Input 1	1910 r/w	Appears only if the controller is the enhanced version (F4P_ - _ - AB- _ _ _ _).
Select how the upper display will function.	Alternating (1)				
Display Time	0 to 999 seconds	2 seconds	Input	1911 [1]	Appears only if the controller is the enhanced version (F4P_ - _ - AB- _ _ _ _) and Process Display is set to Alternating.
Select the time, in seconds, that each input will appear in the upper display.				1912 [2]	
				1913 [3]	
				r/w	

Setup Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
LED Intensity	Set the brightness level of the upper display.	0 to 15	8	1914 r/w	Appears only if the controller is the enhanced version (F4P_ - _ _AB- _ _ _ _) and Process Display is set to Alternating.
Static Message					
Main > Setup > Static Message					
Message x (1 to 4)	Enter or change messages that can be displayed by activating a digital input.	4 lines of 17 characters each The first line serves as the message name.	Message x Name Message x Line 1 Message x Line 2 Message x Line 3	mess. 4501-4517 [1] 4521-4537 [1] 4541-4557 [1] 4561-4577 [1] 4581-4597 [2] 4601-4617 [2] 4621-4637 [2] 4641-4657 [2] 4661-4677 [3] 4681-4697 [3] 4701-4717 [3] 4721-4737 [3] 4741-4757 [4] 4761-4777 [4] 4781-4797 [4] 4801-4817 [4]	Active: Always.

Factory Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
Set Lockout					
Main Page > Factory > Set Lockout					
Set Point	Set the set point access level.	Full Access (0) Read Only (1)	Full Access	1300 r/w	Active: Always.
Operations, Autotune PID	Set access to this menu.	Full Access (0) Read Only (1) Password (2) Hidden (3)	Full Access	1306 r/w	Active: Always.
Operations, Edit PID	Set access to this menu.	Full Access (0) Read Only (1) Password (2) Hidden (3)	Full Access	1307 r/w	Active: Always.
Operations, Alarm Set Point	Set access to this menu.	Full Access (0) Read Only (1) Password (2) Hidden (3)	Full Access	1308 r/w	Active: Always.
Setup Page	Set access to this page.	Full Access (0) Read Only (1) Password (2) Hidden (3)	Full Access	1302r/w	Active: Always.
Factory Page	Set access to this page.	Full Access (0) Read Only (1) Password (2)	Full Access	1303 r/w	Active: Always.
Set/Change Password	Reset or change password. Choose Yes to change the password.	4 characters	none	1330 [1] 1331 [2] 1332 [3] 1333 [4] r/w	Active: Always.
Clear Locks	Unlock set point and all pages and menus.	Yes (0)		1315 r/w	Active: Always.
Operations, PID Crossover	Set access to PID Crossover.	Full Access (0) Read Only (1) Password (2) Hidden (3)	Full Access	1316 r/w	Active: Always.
Operations, Ramp Set Point	Set access to the Ramp Set Point.	Full Access (0) Read Only (1) Password (2) Hidden (3)	Full Access	1317 r/w	Active: Always.
Operations, Control Set Point	Set access to the Control Set Point.	Full Access (0) Read Only (1) Password (2) Hidden (3)	Full Access	1318 r/w	Active if any Digital Input is set to Digital Set Point.
Operations, Local/Remote Set Point	Set access to the Local/Remote Set Point.	Full Access (0) Read Only (1) Password (2) Hidden (3)	Full Access	1319 r/w	Active if any Digital Input is set to Remote Set Point.

Factory Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
Calibrate Input x (1 to 3)					
Main Page > Factory > Calibration > Calibrate Input x (1 to 3)					
0.00mV Thermocouple	Store 0.000mV calibration for input thermocouple.	Yes (1)		1603 [1] 1608 [2] 1613 [3] r/w	Active: Always. Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _).
50.00mV Thermocouple	Store 50.000mV calibration for input thermocouple.	Yes (2)		1603 [1] 1608 [2] 1613 [3] r/w	Active: Always. Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _).
32°F Type J	Store 32°F type J calibration.	Yes (3)		1603 [1] 1608 [2] 1613 [3] r/w	Active: Always. Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _).
Ground	Store calibration for ground at gains of 1 and 32.	Yes (4)		1603 [1] 1608 [2] 1613 [3] r/w	Active: Always. Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _).
Lead	Store calibration for lead resistance.	Yes (5)		1603 [1] 1608 [2] 1613 [3] r/w	Active: Always. Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _).
15.0 Ohms RTD	Store 15.00Ω calibration for input RTD.	Yes (6)		1603 [1] 1608 [2] 1613 [3] r/w	Active: Always. Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _).
15.0 Ohms Slidewire	Store 15.00Ω calibration for input slidewire.	Yes (12)		1613 [3] r/w	Active: Always. Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _).
380.0 Ohms	Store 380.00Ω calibration for input RTD.	Yes (7)		1603 [1] 1608 [2] 1613 [3] r/w	Active: Always. Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _).
1000 Ohms Slidewire	Store 1000.00Ω calibration for input slidewire.	Yes (13)		1613 [3] r/w	Active: Always. Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _).
0.000V	Store 0.000V calibration for input process.	Yes (8)		1603 [1] 1608 [2] 1613 [3] r/w	Active: Always. Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _).
10.000V	Store 10.000V calibration for input process.	Yes (9)		1603 [1] 1608 [2] 1613 [3] r/w	Active: Always. Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _).

Factory Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
4.000mA	Store 4mA calibration for input process.	Yes (10)		1603 [1] 1608 [2] 1613 [3] r/w	Active: Always. Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _).
20.000mA	Store 20mA calibration for input process.	Yes (11)		1603 [1] 1608 [2] 1613 [3] r/w	Active: Always. Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _).

Calibrate Output x (1A or 1B) and Retransmit x (1 and 2)

Main > Factory > Calibration > Calibrate Output x (1A or 1B) and Retransmit x (1 and 2)

4.000mA	Store 4mA calibration for output process.	0.000mA to 6.000mA	4.000mA	Output [1A] 1604 [1A] 1609 [1B] Rexmit 1624 [1] 1629 [2] r/w	Active: Always.
20.000mA	Store 20mA calibration for output process.	0.000 to 24.000mA	20.000mA	Output [1A] 1605 [1A] 1610 [1B] Rexmit 1625 [1] 1630 [2] r/w	Active: Always.
1.000V	Store 1.000V calibration for output process.	0.000 to 3.000V	1.000V	Output [1A] 1606 [1A] 1611 [1B] Rexmit 1626 [1] 1631 [2] r/w	Active: Always.
10.000V	Store 10.000V calibration for output process.	0.000 to 12.000V	10.000V	Output [1A] 1607 [1A] 1612 [1B] Rexmit 1627 [1] 1632 [2] r/w	Active: Always.

Restore Input x (1 to 3) Calibration

Main > Factory > Calibration > Restore Input x (1 to 3) Calibration

Restore Input x (1 to 3) Calibration	Restores original factory calibration values.	Input 1 (0) Input 2 (1) Input 3 (2)	—	1601 write only	Active: Always. Inputs 2 and 3 appear only if the controller is the enhanced version (F4P _ - _ _ AB - _ _ _ _).
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Factory Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
Diagnostic					
Main > Factory > Diagnostic					
Model	Identifies the 12-digit Series F4P part number.	F4Px-xxxx-xxxx	F4Px-xxxx-xxxx	0 r	Active: Always.
Manufacturing Date	Identifies the manufacture date.	xxxx	0198	5 r	Active: Always.
Serial Number	Identifies the individual controller.	000000 to 99,9999	000000	1 [1st part] 2 [2nd part] r	Active: Always.
Software Number	Identifies the software revision.	00 to 99	1	3 r	Active: Always.
Revision	Identifies the hardware revision.	0.00 to 9.99	1.00	4 r	Active: Always.
Input x (1 to 3)	Displays the input type.	Univ (7)		Input 8 [1] 9 [2] 10 [3] r	Active: Always.
Output x (1A or 1B)	Displays the output type.	None (0) [Out 1B only] Mechanical Relay (1) SSR (2) DC (3) Process (4)		Output 16 [1A] 17 [1B] r	Active: Always.
Retransmit x (1 or 2)	Displays the retransmit option.	None (0) Process (4)		Retransmit 20 [1] 21 [2] r	Active: Always.
Input x (1 to 3) A to D	Factory use only.	HHHH		Input 1504 [1] 1505 [2] 1506 [3] r	Active: Always.
CJCx (1 to 3) A to D	Factory use only.	HHHH		Input 1501 [1] 1532 [2] 1532 [3] r	Active: Always.
CJCx (1 to 3) Temp	Cold junction compensation for the analog input. Reads the ambient temperature of the controller.	xx.x		Input 1500 [1] 1531 [2] 1531 [3] r	Active: Always.

Factory Page Parameter Table

Parameter	Description	Range (Modbus Value)	Default	Modbus Register read/write [I/O, Set]	Conditions for Parameters to Appear
Line Frequency	Display the ac line frequency in hertz.	xx		1515 r	Active: Always.
Test					
Main > Factory > Test					
Test Outputs	Choose output to test.	All Off (0) Output 1A (1) Output 1B (2) Retransmit 1 (5) Retransmit 2 (6) Alarm 1 (7) Alarm 2 (8) All On (9) Communications (10)		1514 w	Active: Always.
Display Test	Checks LED display segments by turning them on and off.	(1)		1513 w	Active: Always.
Full Defaults	Causes all parameter values to revert to their factory default settings.	Yes (800)		1602 w	Active: Always.

Operations Page Parameter Record

Make a photocopy of this page and enter your settings on that copy.

Name _____ Date _____

Autotune PID Menu

Autotune PID	
Cascade Inner Loop	
Cascade Outer Loop	
Autotune PID Type	

PID Set Channel 1	PID Set 1	PID Set 2	PID Set 3	PID Set 4	PID Set 5
Proportional Band A					
IntegralA / ResetA					
DerivativeA / RateA					
Dead Band A					
Hysteresis A					
Proportional Band B					
IntegralB / ResetB					
DerivativeB / RateB					
Dead Band B					
Hysteresis B					

Cascade PID Set	PID Set 1	PID Set 2	PID Set 3	PID Set 4	PID Set 5
Proportional Band A					
IntegralA / ResetA					
DerivativeA / RateA					
Dead Band A					
Hysteresis A					
Proportional Band B					
IntegralB / ResetB					
DerivativeB / RateB					
Dead Band B					
Hysteresis B					

Alarm Set Point Menu	Alarm 1	Alarm 2
Low Set Point		
High Set Point		
Low Deviation		
High Deviation		
Rate		

PID Crossover	PID 1 to 2	PID 2 to 3	PID 3 to 4	PID 4 to 5
PID Cross				

Ramp x to Set Point	
Ramp to Set Point Mode	
Ramp to Set Point Rate	
Ramp to Set Point Scale	

Control Set Points	Dig. SP 1	Dig. SP 2	Dig. SP 3	Dig. SP 4
Boost Power				
Boost Delay Time				
Remote/Local Set Point				
Boost Set Point				
Digital Set Point x (1 to 4)				
Digital Differential Set Point x (1 to 4)				
Digital Ratio Set Point x (1 to 4)				

Setup Page Parameter Record

Make a photocopy of this page and enter your settings on that copy.

Name _____ Date _____

°F or °C											
Show °F or °C											
Maximum Transfer Heat											
Maximum Transfer Cool											
Manual to Auto Transfer											
Autotune Set Point											
Failure Mode											
Input 1 Fail											
Open Loop Detect											
Analog Input Menu	Analog In 1	Analog In 2	Analog In 3								
Sensor											
Type											
Control Type											
Units Name											
Decimal											
Scale Low											
Scale High											
Set Point Low Limit											
Set Point High Limit											
Offset Type											
Input Offsets	In Off 1	In Off 2	In Off 3	In Off 4	In Off 5	In Off 6	In Off 7	In Off 8	In Off 9	In Off 10	
Clear Input Offsets											
Offset Point											
Calibration Offset Value											
Filter Time											
Error Latch											
Square Root											
Auto/Manual Slidewire Cali.											
Slidewire Deadband											
Slidewire Hysteresis											
Control Type											
Cascade											
Cascade Low Range											
Cascade High Range											
Cascade Low Deviation											
Cascade High Deviation											
Digital Input Menu	Digital In 1	Digital In 2	Digital In 3	Digital In 4							
Function											
Name											
Activate Message											
Message Display Time											
Condition											
Control Output Menu	Output 1A	Output 1B									
Function											
Cycle Time Type											
Cycle Time Value											
Process											
Duplex											
High Power Limit											
Low Power Limit											
Boost Type (1B)											
Boost Power Mode (1B)											
Boost Set Point Type (1B)											

Alarm Output Menu	Alarm 1	Alarm 2
Name		
Alarm Type		
Alarm Source		
Latching		
Silencing		
Alarm Hysteresis		
Alarm Sides		
Alarm Logic		
Alarm Messages		
Retransmit Output Menu	Retrans 1	Retrans 2
Retransmit Source		
Analog Range		
Low Scale		
High Scale		
Scale Offset		

Communications Menu	Setting
Baud Rate	
Address	

Custom Main Page (see Custom Main Page Parameter Record)

Process Display	
Display Time	
LED Intensity	
Static Message	
Message 1, Line 1	
Message 1, Line 2	
Message 1, Line 3	
Message 1, Line 4	
Message 2, Line 1	
Message 2, Line 2	
Message 2, Line 3	
Message 2, Line 4	
Message 3, Line 1	
Message 3, Line 2	
Message 3, Line 3	
Message 3, Line 4	
Message 4, Line 1	
Message 4, Line 2	
Message 4, Line 3	
Message 4, Line 4	

Custom Main Page Parameter Record

Make a photocopy of this page and enter your settings on that copy.

Name _____ Date _____

Will always appear if active:	Main Page Input 1 Error Input 2 Error Input 3 Error	
Will appear if active and set up to appear:	Alarm 1 Condition Alarm 2 Condition Autotuning (Position on Main Page)	(Possible parameters)
Choose from the column at the far right the information you want to appear on the Main Page (in any order):	P1 _____ P2 _____ P3 _____ P4 _____ P5 _____ P6 _____ P7 _____ P8 _____ P9 _____ P10 _____ P11 _____ P12 _____ P13 _____ P14 _____ P15 _____ P16 _____	None Input 1 [value] Input 1 Value bar [graph] Input 2 [value] Input 2 Value bar [graph] Input 3 [value] Input 3 Value bar [graph] Dgt [digital] Ratio Value * Ratio Set Point * Set Ratio * Dgt [digital] Diff. [differential] Value ** Diff [differential] Set Point** Set Differential ** Digital Set Point Remote Set Point 2 Remote Set Point 3 Target Setpoint [cascade] Inner Set Point Set Point 1 Set Point 1 bar [graph] % Power 1A % Power 1B % Power 1A bar [graph] % Power 1B bar [graph] Tune Status 1 Digital Inputs Active Ch1 PID Set * appears if Input 3 is set to Ratio ** appears if Input 3 is set to Differential
Will always appear:	Go to Operations Go to Setup Go to Factory	

Communications Wiring



WARNING:

To avoid damage to property and equipment, and/or injury or loss of life, use National Electric Code (NEC) standard wiring practices to install and operate the Series F4P. Failure to do so could result in such damage, and/or injury or death.

Figure 37a — EIA/TIA 485 and EIA/TIA 232 Communications

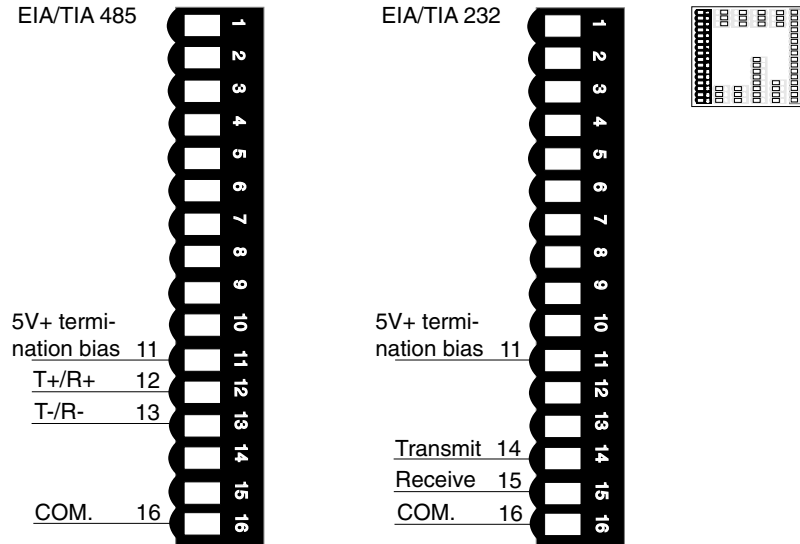
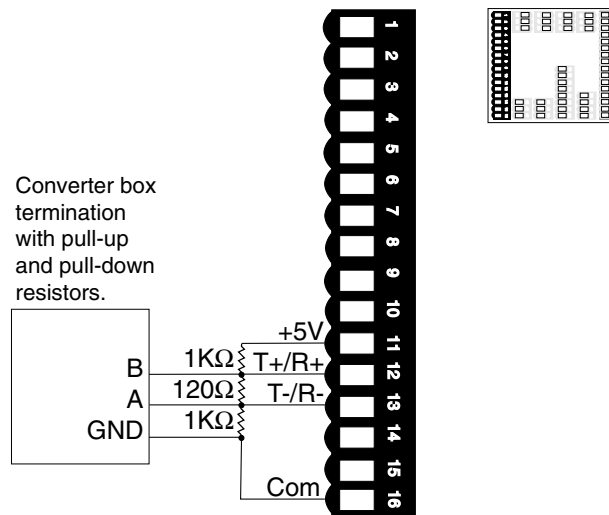


Figure 37b — Termination for EIA-232 to EIA-485 Converter



Communications Wiring (continued)



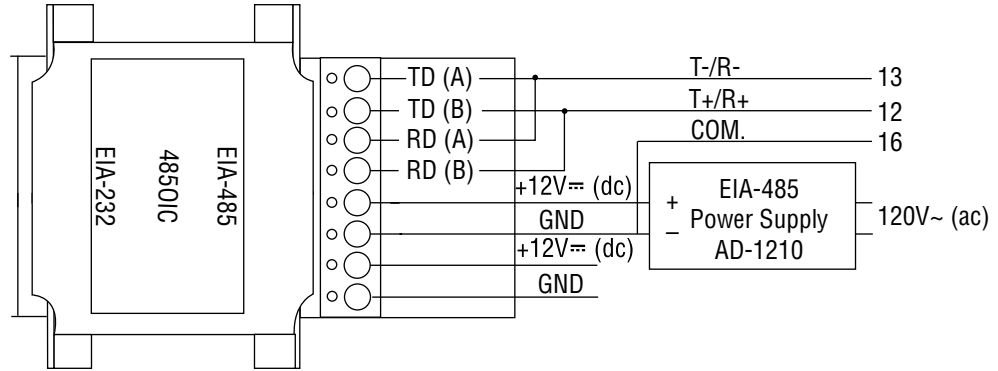
WARNING:

To avoid damage to property and equipment, and/or injury or loss of life, use National Electric Code (NEC) standard wiring practices to install and operate the Series F4P. Failure to do so could result in such damage, and/or injury or death.

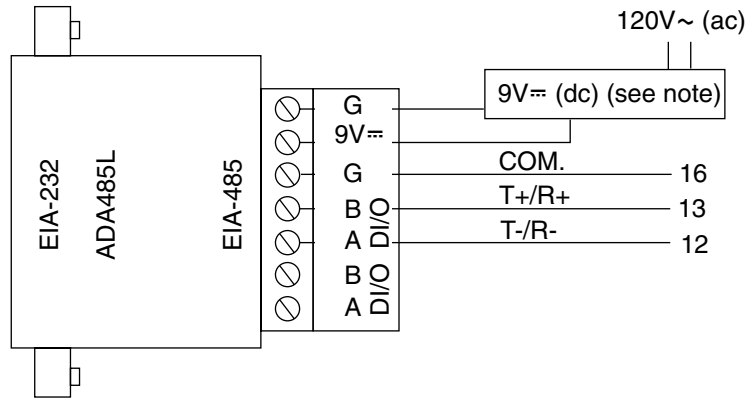
NOTE:

The CMC converter requires an external power supply when used with a laptop computer.

Figure 38 — EIA/TIA 232 to EIA/TIA 485 Conversion



B&B Converter (B&B Electronics Manufacturing Company, (815) 433-5100).



CMC Converter (CMC Connecticut Micro-Computer, Inc., 800-426-2872).

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How to Reach Us



Quality and Mission Statement:

Watlow Controls will be the world's best supplier of industrial temperature control products, services and systems by exceeding our customers', employees' and shareholders' expectations.

Contact

Your Authorized Watlow Distributor:

- Phone: 507/454-5300.
- Fax: 507/452-4507.
- For technical support, ask for an Applications Engineer (ext. 6430).
- To place an order, ask for Customer Service.
- To discuss a custom option, ask for a Series F4P Product Manager.

Warranty

The Watlow Series F4P is warranted to be free of defects in material and workmanship for 36 months after delivery to the first purchaser for use, providing that the units have not been misapplied. Since Watlow has no control over their use, and sometimes misuse, we cannot guarantee against failure. Watlow's obligations hereunder, at Watlow's option, are limited to replacement, repair or refund of purchase price, and parts which upon examination prove to be defective within the warranty period specified. This warranty does not apply to damage resulting from transportation, alteration, misuse or abuse.

Returns

- Call or fax Customer Service for a Return Material Authorization (RMA) number before returning a controller.
- Put the RMA number on the shipping label, and also on a written description of the problem.
- A restocking charge of 20% of the net price is charged for all standard units returned to stock.

Watlow Series F4P User's Manual

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