The FDC-P Series of controllers, the FDC-P41 ½ DIN and FDC-P91 ½ DIN, with up to 9 Profiles (up to 64 segments/profile) and 5 outputs set new standards for single loop Profile controls. Packed with performance and features for simple or complicated OEM applications, the P Series provides an unrivaled value. Exceptionally easy to use, the P Series offers up to 9 Profiles with up to 64 segments per program, maximum of 4 control outputs, configurable Event input, PV/SP retransmission (15-bit), serial Modbus RTU communication option (output #5), fast scan rate (5 times/second), user-friendly prompts and a Home Page feature that make it the right choice for a Profile control.

The P Series offers a full range of universal high resolution (18 bit) inputs; T/C, RTD and linear mA/VDC inputs. Power requirement of either 90-250 VAC or optional 11-26 VAC/VDC allows the P Series to be used virtually anywhere. Control outputs include Relay, SSR Drive, Triac, mA & VDC with manual or Auto-Tune PID. Outputs 2, 3 & 4 are configurable as Control (output #2 only), Alarm or Event outputs. Outputs 2, 3, 4 & 5 may be configured as a transmitter power supply. Outputs 4 & 5 are also configurable as Retransmission output (PV or SP) to recorders or for multizone systems where a P Series may act as a master setpoint control to client controllers. Serial communication is available on output 5.

Power
90-250 VAC, 47-63Hz, 12VA, 5W Maximum
11-26 VAC/VDC, 12VA, 5W Maximum

Input
Thermocouple: Type J, K, T, E, B, R, S, N, L, C & P
RTD: PT 100 ohm DIN and PT 100 JIS
Linear: 4-20mA, 0-20mA, 0-60mV, 0-1, 0-5, & 0-10VDC
Range: Per Table in manual
Accuracy: Typically better than +/- 0.25%; see table in manual
Sensor Break: 4 seconds for T/C & RTD inputs
0.1 second for linear mA & VDC inputs
Common Mode Rejection: 120dB
Sample Rate: 5 times per second
Event Input: Profile Run, Hold, Abort, Advance Segment, PID#2, Manual Mode and Off

Control, Alarm & Event Output Types
Relay: 2.0 Amp @240VAC
SSR Drive: 5 VDC@0mA or 14 VDC@40mA
Triac: 1.0 amp @240VAC
Linear: Isolated 0-20/4-20mA, maximum 500 ohm load
Isolated 0-5/1-5/0-10VDC, minimum 50K ohm load
PID: PB; 0.1-9900; 1/u; 0-1000 sec / D; 0-360.0 sec

Indication
Dual LED & Digit Displays: Process 0.56” and Setpoint 0.4”.
Status Indication:
• Outputs 1, 2, 3 and 4 status (P9s only has 3 outputs)
• Limits; degrees C or F
• Profile: Run, Hold and up & down arrows for Ramp up, Ramp down and Dwelling (soak).

Output Options
First Output:
Relay 2.0 Amp @240VAC (SPST)
SSR Drive 5 VDC@0mA or 14 VDC@40mA
Triac 1.0 amp @240VAC
mA/VDC (PID)

Second Output*:
Relay 2.0 Amp @240VAC (SPST)
SSR Drive 5 VDC@0mA or 14 VDC@40mA
Triac 1.0 amp @240VAC
mA/VDC (PID)
Transmitter Power Supply (isolated)***

Third Output**:
Relay 2.0 Amp @240VAC (P41 SPST)
SSR Drive 5 VDC@0mA or 14 VDC@40mA
Triac 1.0 amp @240VAC
Transmitter Power Supply (isolated)***

Fourth Output** (P41 only):
Relay 2.0 Amp @240VAC (SPST)
SSR Drive 5 VDC@0mA or 14 VDC@40mA
Triac 1.0 amp @240VAC
mA/VDC (Retransmission PV or SP) (isolated)
Transmitter Power Supply (isolated)***

Fifth Output:
mA/VDC (Retransmission PV or SP) (isolated)
Transmitter Power Supply (isolated)***
Serial Modbus RTU RS-232 or 485 (isolated)

Environmental and Physical Specifications
Operating Temperature: -10 to 50C
Storage Temperature: -40 to 60C
Humidity: 0-90% RH (non-condensing)
Insulation: 2000 VAC, 50/60 Hz, 1 minute
Dielectric Strength: 2000 VAC, 50/60 Hz, 1 minute
Vibration Resistance: 10-55 Hz, 10 m/s for 2 hours
Shock Resistance: 200mm/5 (20g)
Molding: Flame retardant polycarbonate
IP Panel Rating: IP50 (IP65 optional)
Dimension/Weight:
P41: 3.77” (H) x 3.77” (W) x 2.08” (D) / 8.84 oz (250g)
91: 3.77” (H) x 2.17” (W) x 1.75” (D) / 5.9 oz (150g)
P41: 45mm (H) x 45mm (W) x 105mm (D)
91: 45mm (H) x 45mm (W) x 53mm (D)

*When Configured as Control Output - Direct acting only
**Relay, SSR & Triac configurable as Alarm or Event output
***Isolated Transmitter Power Supply options: 20VDC @2mA, 12VDC @40mA or 5VDC @80mA

**Profile Specifications**
Number of Profiles: 9 (total of 288 segments)
Number of Segments per Profile:
Programs 1-4: up to 16 segments
Programs 5-7: up to 32 segments
Programs 8-9: up to 64 segments
Event Outputs: P41 maximum 3 / P91 maximum 2

Global Configurations:
SP value at profile start: Current PV, SPs or Profile start SP
SP value at profile end: SPs, Profile Final SP or Off (outputs off)
Delayed Profile Start: set in hours/minutes
Power Fail/Recovery: Continue from last SP

Holdback Wait Time: Maximum hold time before profile continues
Power Fail/Recovery: Continue from last SP

Segment Configurations:
Segment Type: Ramp, Dwell, Jump or End Program
Time Units: Dwell: hh:mm or mm:ss
Ramp: 0.0 - 900.0 F/minute or hour ramp rates
Ramp configurable in hh:mm or mm:ss
Time Duration: Set time duration for Dwell, Ramp or Ramp Rate
Start SP Value: (if configured Globally)
Target Ramp SP: any value in configured range
Holdback: Set Holdback band in units (degrees F, C or units (xxx.x)
Set Holdback Action: Deviation Low, High or Band alarm or Off (not enabled)

States Assignment - Event Output & PID selection:
Select event output(s) and PID#1 or PID#2
Jump & Cycle: Select segment # to jump to and # of cycles
Final SP: Final SP for the end Segment (if configured Globally)

http://www.futuredesigncontrols.com/P_Series.HTM
**Ordering Information**

Enter a number into each box which corresponds to the specifications you want when ordering either a FDC-P41 or FDC-P91.

### 1) Power Input

1: 90-250VAC, 47-63 Hz  
4: 9-26 VAC or VDC  
5: Special Order

### 2) Signal Input*

RTD: PT100 DIN & JIS  
Voltage: 0-60mV  
5: Voltage: 0-10VDC, 0-5VDC, 1-5VDC  
6: mA: 0-20/4-20mA  
9: Special: Consult Factory

### 3) Output 1

0: None  
1: Relay 2A/240VAC (SPST)  
2: SSR Drive 5VDC @30mA  
3: 4-20/0-20mA linear, max load 500 ohm load  
4: 1-5/0-5/0-10VDC linear, isolated, min 10K ohm load  
6: Triac 1A/240VAC  
C: SSR Drive 14VDC @40mA

### 4) Output 2

0: None  
1: Relay 2A/240VAC (SPST)  
2: SSR Drive 5VDC @30mA  
3: 4-20/0-20mA linear, isolated, max load 500 ohm load  
4: 1-5/0-5/0-10VDC linear, isolated, min 10K ohm load  
6: Triac 1A/240VAC  
7: Transmitter Power Supply 20VDC @25mA (Isolated)  
8: Transmitter Power Supply 12VDC @40mA (Isolated)  
A: Transmitter Power Supply 5VDC @80mA (Isolated)  
C: SSR Drive 14VDC @40mA

### 5) Output 3

0: None  
1: Relay 2A/240VAC (P41 SPDT / P91 SPST)  
2: SSR Drive 5VDC @30mA  
6: Triac 1A/240VAC

### 6) Output 4 (Fixed value for P91 order matrix = 0)

0: None  
1: Relay 2A/240VAC (SPST)  
2: SSR Drive 5VDC @30mA  
3: Retransmission 4-20/0-20mA, isolated, max 500 ohm load  
4: Retransmission 1-5/0-5/0-10VDC, isolated, min 10K ohm load  
6: Triac 1A/240VAC  
7: Transmitter Power Supply 20VDC @25mA (Isolated)  
8: Transmitter Power Supply 12VDC @40mA (Isolated)  
A: Transmitter Power Supply 5VDC @80mA (Isolated)  
C: SSR Drive 14VDC @40mA

### 7) Output 5

0: None  
3: Retransmission 4-20/0-20mA, isolated, max 500 ohm load  
4: Retransmission 1-5/0-5/0-10VDC, isolated, min 10K ohm load  
7: Transmitter Power Supply 20VDC @25mA (Isolated)  
8: Transmitter Power Supply 12VDC @40mA (Isolated)  
A: Transmitter Power Supply 5VDC @80mA (Isolated)  
D: RS-485 Modbus RTU (isolated)  
E: RS-232 Modbus RTU (isolated)

### 8) Options

0: Panel Mount IP50 standard  
1: Panel Mount IP65 (Nema 4X)  
2: DIN Rail Mount with IP50 (P91 only)  
3: DIN Rail Mount with IP65 (P91 only, Nema 4X)

*An Event input is standard; configurable for Profile Run, Profile Hold, Profile Abort, Profile Advance Segment, PID#2 or Off (all control outputs off)