

The FDC-P Series of controllers, the FDC-P41 1/4 DIN and FDC-P91 1/6 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 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.



FDC P SERIES

PROFILE CONTROLS

- 9 Programs (up to 64 segments/program)
- Up to 5 Outputs
- Event Input
- Shallow Panel Depth
- PID Selections/Segment
- Security/Password

[http://www.futuredesigncontrols.com/P\\_Series.HTM](http://www.futuredesigncontrols.com/P_Series.HTM)

## FDC-P SERIES SPECIFICATIONS

### 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@30mA and 14VDC@40mA

**Triac:** 1.0 Amp/240VAC

**Linear:** Isolated 0-20/4-20mA, maximum 500 ohm load  
 Isolated 0-5/1-5/0-10VDC, minimum 10K ohm load

**PID:** PB; 0.1-900F / I; 0-1000 sec / D; 0-360.0 sec

### INDICATION

**Dual LED 4 Digit Displays:** Process 0.56" and Setpoint 0.4".

**Status Indication:**

- Output 1, 2, 3 and 4 status (P91 only has 3 outputs)
- Units; degrees C or F
- Profile: Run, Hold and up & down arrows for Ramp up, Ramp down and Dwell (soak).

### OUTPUT OPTIONS

**First Output:**

Relay 2.0 Amp @240VAC (SPST)

SSR Drive 5VDC@30mA or 14VDC@40mA

Triac 1.0 Amp @240VAC

mA/VDC (PID)

### Second Output\*:

Relay 2.0 Amp @240VAC (SPST)

SSR Drive 5VDC@30mA or 14VDC@40mA

Triac 1.0 Amp @240VAC

mA/VDC (PID)

Transmitter Power Supply (isolated)\*\*\*

### Third Output\*\*:

Relay 2.0 Amp @240VAC (P41 SPDT; P91 SPST)

SSR Drive 5VDC@30mA or 14VDC@40mA

Triac 1.0 Amp @240VAC

Transmitter Power Supply (isolated)\*\*\*

### Fourth Output\*\* (P41 only):

Relay 2.0 Amp @240VAC (SPST)

SSR Drive 5VDC@30mA or 14VDC@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:** 20M ohms Minimum (500VDC)

**Dielectric Strength:** 2000 VAC, 50/60 Hz, @ 1 minute

**Vibration Resistance:** 10-55 Hz, 10 m/s for 2 hours

**Shock Resistance:** 200m/s (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)  
 96mm (H) x 96mm (W) x 53mm (D)

P91: 1.77" (H) x 1.77" (W) x 4.13" (D) \ 5.3 oz (150g)  
 45mm (H) x 45mm (W) x 105mm (D)

### 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, SP1 or Profile start SP

**SP value at profile end:** SP1, Profile Final SP or Off (outputs off)

**Delayed Profile Start:** set in hours/minutes

**Power Fail/Recovery:** Continue from last SP,  
 Continue from current PV, Static Mode SP1,  
 Static Mode Start SP or Off (outputs off)

**Holdback Wait time:** Maximum hold time before profile continues  
 (Holdback is enabled / disabled per segment)

**Event Input:** Profile Run, Hold, Abort, Advance Segment, PID#2,  
 Manual Mode and Off (outputs off)

**Segment Configurations:**

**Segment Type:** Ramp, Dwell, Jump or End Program

**Time Unit:** 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)

\*When Configured as Control Output - Direct acting only

\*\*Relay, SSR & Triac configurable as Alarm or Event output

\*\*\*Isolated Transmitter Power Supply options: 20VDC @25mA, 12VDC @40mA or 5VDC @80mA

# ORDERING INFORMATION

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

FDC-P41

FDC-P91

1

2

3

4

5

6

7

8

## 1> POWER INPUT

- 4: 90-250VAC, 47-63 HZ
- 5: 11-26 VAC or VDC
- 9: Special Order

## 2> SIGNAL INPUT\*

- 1: Thermocouple: J, K, T, E, B, R, S, N, L, C, P  
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, isolated, 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
- 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

## 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)

