

CONTROL VALVES

TR890 Series

Electronic PID Controllers • Features PID & Auto-tuning



Multiple Sizes

± 0.3% Accuracy

Keyboard Programmable

Reverse or Direct Acting

Manual Output Override

The **TR890 Series** Electronic PID Controller is designed for use on applications where large load changes are expected, or extreme accuracy and fast response times are needed. With full auto-tune capabilities and a large selection of available inputs, the TR890 Series is ideally suited for use with a Watson McDaniel Control Valve.

Use of a Watson McDaniel No. TA987 Air Filter/Regulator is recommended for filtering and regulating the pressure of plant compressed air, and for delivering clean, dry air at the proper pressure to pneumatic control devices.

Approximate Shipping Weights:

TR891: 0.4 lbs [0.17 kg]
 TR892: 0.6 lbs [0.28 kg]
 TR893: 0.7 lbs [0.33 kg]
 TR894: 0.5 lbs [0.24 kg]

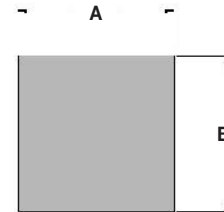
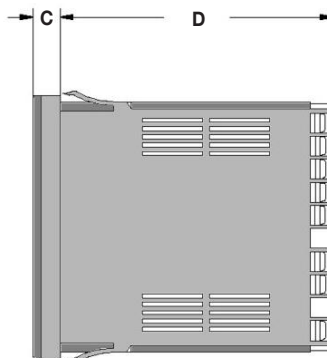
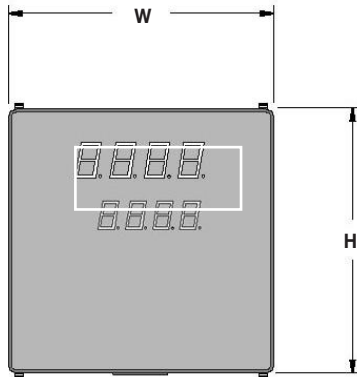
Specifications

Models	TR891: 48 x 48 mm (1/16 DIN) TR892: 72 x 72 mm TR893: 96 x 96 mm (1/4 DIN) TR894: 96 x 48 mm (1/8 DIN)
Control	Control Mode: Auto-Tuning PID Action: Reverse acting (field switchable to direct acting)
Proportional Band	Off, 0.1-999.9% Full Scale Integral Time: Off, 1-6000 sec. Derivative Time: Off, 1-3600 sec.
Accuracy	± 0.3%
Display	Process Value: 4 Digit, 20 mm red LED Set Value: 4 digit, 10.2 mm green LED Sampling Cycle: 0.25 seconds
Inputs	Multi: (switchable between) ▶ Thermocouple: B, R, S, K, E, J, T, N, PL II, WRe5-26 (U,L (DIN 43710) ▶ RTD: Platinum 100 Ω, 3-Wire ▶ mV: (scalable) -10-10, 0-10, 0-20, 0-50, 10-50, 0-100 mV DC Current: (scalable) 4-20, 0-20 mA Voltage: -1-1, 0-1, 0-2, 0-5, 1-5, 0-10 VDC
Control Output	Current: 4-20 mA (load resistance: 600 Ω maximum) Contact: Proportional cycle, 1-120 sec. (capacity: 240 VAC 2 A resistive / 1.2 A inductive) SSR Drive Voltage: Proportional cycle 1-120 sec. (output rating: 12 ± 1.5 VDC / 30 mA maximum) Voltage: 0-10 VDC Load Current 2 mA max
Power Requirements	Supply Voltage: 100-240 VAC, 50/60 Hz or 24 VAC/VDC 50/60 Hz Consumption: 100-240 VAC, 15VA 24 VDC, 8W 24 VAC, 9VA
Data Storage	Nonvolatile EEPROM memory
Case Material	Polyphenylene Oxide (PPO)
Ambient Temp.	14°F (-10°C) to 122°F (50°C)
Humidity	Maximum: 90% RH, non-condensing
Event Outputs	(Contact Capacity: 240 VAC, 1 A/resistive load) Dual Event Outputs (High and/or Low Alarms) Single Event Output + Heater Break Alarm (includes CT30A sensor) Single Event Output + Heater Break Alarm (includes CT50A sensor)
Options:	Analog Output: 0-10 mV DC (output resistance 10 Ω) Analog Output: 4-20 mA DC (load resistance 300 Ω max) Analog Output: 0-10 VDC (load current 2 mA max) Digital Input (switch) including: Setback Function setting range of -1999 - 5000, standby or DA/RA Selection Operated by either non-voltage contact or open collector

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Electronic PID Controllers



PANEL CUTOUT DIMENSIONS

HOW TO ORDER

Sample Order Number: **TR893 8 A C 90 1 00**

Model	Input	Control Output	Power Supply	Event Output	Options
TR891	8 Multi	A 4-20 mA	90 100-240 VAC, 50/60 Hz	0 None	00 None
TR892	4 mA	C On/Off Contact	08 24 VAC/VDC, 50/60 Hz	1 Dual Event (high and/or low)	30 Analog Output (0-10 mVDC)
TR893	6 VDC	D SSR Driver		2 Single Event (high or low) and heater break CT30A	40 Analog Output (4-20 mA)
TR894		E 0-10 VDC		3 Single Event (high or low) and heater break CT50A	60 Analog Output (0-10 VDC)
			Event Outputs 2 or 3 require Control Outputs C or D		08 Digital Input (switch)
					38 Digital Input (switch) with 0-10 mVDC* Analog Output
					48 Digital Input (switch) with 4-20 mA* Analog Output
					68 Digital Input (switch) with 0-10 VDC* Analog Output

CONTROL VALVES

Electronic PID Controller Dimensions – units: inches [mm].

*Not available with Model TR891

Model	A	B	C	D	H	W
TR891	1.77 [45]	1.77 [45]	0.43 [11]	3.94 [100]	1.89 [48]	1.89 [48]
TR892	2.68 [68]	2.68 [68]	0.43 [11]	3.94 [100]	2.83 [72]	2.83 [72]
TR893	3.63 [92]	3.63 [92]	0.43 [11]	3.94 [100]	3.78 [96]	3.78 [96]
TR894	1.77 [45]	3.63 [92]	0.43 [11]	3.94 [100]	3.78 [96]	3.78 [96]

Programmable Ranges

Thermocouple Inputs				RTD Inputs				Current & Voltage Inputs	
T/C Type	Range Code	Fahrenheit Range	Celsius Range	Range Code	Fahrenheit Range	Range Code	Celsius Range	Range Code	Range (User-scalable Readout)
B*	15	0° to 3300°F	0° to 1800°C	47	-300° to 1100°F	31	-200° to 600°C	71	-10-10 mV
E	21	0° to 1300°F	0° to 700°C	48	-150.0° to 200.0°F	32	-100.0° to 100.0°C	72	0-10 mV
J	22	0° to 1100°F	0° to 600°C	49	-150° to 600°F	33	-100.0° to 300.0°C	73	0-20 mV
K	18	-150° to 750°F	-100.0° to 400.0°C	50	-50.0° to 120.0°F	34	-50.0° to 50.0°C	74	0-50 mV
K	19	0° to 1500°F	0° to 800°C	51	0.0° to 120.0°F	35	0.0° to 50.0°C	75	10-50 mV
K	20	0° to 2200°F	0° to 1200°C	52	0.0° to 200.0°F	36	0.0° to 100.0°C	76	0-100 mV
L	28	0° to 1100°F	0° to 600°C	53	0.0° to 400.0°F	37	0.0° to 200.0°C	81	-1-1 V
N	24	0° to 2300°F	0° to 1300°C	54	0° to 1000°F	38	0.0° to 500.0°C	82	0-1 V
PL II	25	0° to 2300°F	0° to 1300°C					83	0-2 V
R	16	0° to 3100°F	0° to 1700°C					84	0-5 V
S	17	0° to 3100°F	0° to 1700°C					85	1-5 V
T	23	-300° to 400°F	-199.9° to 200.0°C					86	0-10 V
U	24	-300° to 400°F	-199.9° to 200°C					94	0-20 mA
WRe5-26	26	0° to 4200°F	0° to 2300°C					95	4-20 mA

Range Codes are not required for ordering, but are used for field programming.

*750°F (400°C) falls below the accuracy range