Fuji Temperature Controllers

NEW

- 7 Control Methods including Self Tuning and Fuzzy PID
- Universal Input (T/C, RTD, V, mA)
- High Speed Sampling (50ms)
- Large, Bright LCD Display
- Up to 64 Ramp/Soak Segments in 15 Patterns
- Two Control Outputs Plus Alarm Outputs
- Motorized Valve Control Versions
- Digital Input Option
- Heater Current Monitoring CT
- RS485 Modbus Option
- Setup via USB without External Power
- Compact 58mm Depth
- Multidrop Master Option

PXF5

PXF9

PXF4

Functions

- On/Off control
- PID control with auto tuning
- Fuzzy control with auto tuning
- Self tuning
- 2-degrees-of-freedom PID control with auto tuning
- Open-loop supported PID2 control
- Ramp soak function (simple program control)
- 1 Heating/cooling control with auto tuning
- Motorized SV control

SPECIFICATIONS

Process value input:	One
Input signal:	T/C: J, K, R, B, S, T, E, L, U, N, PL2. RTD: Pt100. Voltage: 0-5, 1-5, 0-10, 2-10 V DC Current: 0 to 20 mA, 4 to 20 mA DC
Indication accuracy: (at 23°C)	TC R (0 to 500°C): ±3°C ±1 digit TC B (0 to 400°C): not specified All other T/C: greater of ±0.3% ±1 digit or ±1°C ±1 digit RTD: greater of ±0.8°C ±1 digit or ±0.2% FS ±1 digit mV input, voltage input, current input: ±0.3%FS ±1 digit
Input setting:	Programmable scale
All thermocouples:	-200 to -100°C: ±2°C ±1 digit
Temperature effect:	±0.3%FS/10°C
Sampling rate:	50 ms
Input impedance:	Thermocouple, mV input: 1 MΩ or more Current input: 150Ω or less (built-in diode) Voltage input: About 1 MΩ
Wiring resistance:	RTD: 10Ω max. per wire
Allowable input:	DC voltage input: within ±35 V Current input: within ±25 mA Thermocouple, RTD, mV input: within ±5 V
Noise reduction ratio:	Normal mode: 40 dB (50/60 Hz) Common mode: 120 dB (50/60 Hz)
Remote SV input:	1 optional
Input signal:	Voltage: 0 to 5 V DC/1 to 5 V DC/0 to 10 V DC Current: 0 to 20 mA DC/4 to 20 mA DC
Input impedance:	Approx. 1MΩ
Sampling rate:	50 ms
CT input:	Optional single phase current transformer, 1 point
Range/Resolution:	1 A to 100A / 0.1A
Accuracy:	Setpoint ±5%FS
On time:	>300 ms necessary for detection
Digital input (DI):	Up to 5 (PXF4: up to 3)
Type:	Dry contact or transistor input
Contact capacity:	5 V DC, about 2 mA (per point)
Input threshold:	ON voltage: ≤2 V DC, OFF voltage: ≥3 V DC
Sampling pulse width:	50 ms min.
Function:	Remote mode selection, SV changeover, control standby, AT startup, timer startup, alarm unlatch, program selection, start/stop/reset, PID switching (normal/reverse), etc.

Valve position feedback:	Potentiometer input option (PXF5, PXF9 only)
Resistance range:	100Ω to 2.5kΩ (three-wire)
Accuracy:	±1.0%FS; Resolution 0.5%FS
Control outputs:	Up to 2 (2 points: Heating/cooling control)
Relay contact:	SPST or SPDT, 250 V AC/30 V DC, 3 A resistive
SSR/SSC drive output:	ON: 10.7-13.2 V DC, OFF: ≤0.5 V DC; 20 mA DC max.; 600Ω min.
Current output:	0 to 20 mA DC, 4 to 20 mA DC, 600Ω max. load; Accuracy: ±5%FS
Voltage output:	0 to 5 V DC, 1 to 5 V DC, 0 to 10 V DC, 2 to 10 V DC 10kΩ min. load; Accuracy: ±5%FS
Motorized valve control:	Uses 2 SPST contacts without interlock circuit
Retransmit output:	1 optional
Output level (scalable):	Voltage: 0 to 5 V DC/1 to 5 V DC/0 to 10 V DC Current: 0 to 20 mA DC/4 to 20 mA DC
Accuracy:	±0.2%FS
Load resistance:	500Ω max. (current), 10kΩ min. (voltage)
Output contents:	PV, SV, DV, MV
Alarm output (DO):	up to 5 relay contacts optional (model dependent)
Contact capacity:	250 V AC/30 V DC, 1A (resistive load)
Output cycle:	100 ms
Control parameters:	
Proportional band (P):	0.1% to 999.9%
Integration time (I):	0 to 3200 s (invalidated when I = 0)
Differential time (D):	0.0 to 999.9 s (invalidated when D = 0)
Control cycle:	100 to 900 ms (in 100 ms), 1 to 99 s (in seconds)
Anti-reset windup:	0 to 100% of measurement range
Hysteresis band:	50% of measurement range (at 2-position control only)
SV & PID patterns:	up to 8: Changed by any of parameter setting, digital input, communication, user function keying, zone change.
Control mode:	Auto/Manual/Remote
Mode changeover:	Auto ↔ Manual: Balanceless bumpless Auto/Manual → Remote: Balance bumpless
Alarm function:	Up to 5 (depends on the number of DO)
Alarm type:	Process value (upper limit/lower limit, absolute/deviation, range), main unit error, etc. (non-excitation, delay, latch, timer function option provided)
Heater current alarm:	Detectable range 1 A to 100 A, Hysteresis 0.0 to 100.0 A

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SPECIFICATIONS, CONTINUED

RS-485:	Optional, half-duplex, Modbus-RTU protocol
Baud rate:	9600 bps, 19200 bps, 38.4 kbps, 115.2 kbps
Additional functions:	Cooperative operation (master or slave)
Password protection:	3 levels
Memory protection:	Non-volatile EEPROM
Operating temperature:	-10 to 50°C, <90% RH non condensing
Power supply voltage:	100 (-15%) to 240V (+10%) AC, 50/60Hz; 24V (±10%) AC/DC
Power consumption:	100 to 240 V AC: 13 VA max. (10VA max. on PXF4), 24 V DC/AC: 8 VA max. (3VA max. on PXF4)
Case material:	UL94V-0 ABS, PPO
Environmental protection:	IP66, NEMA 4X front
Terminals:	M3 screws, terminal strip cover optional
Dimensions (HxWxD):	PXF4: 1/16 DIN (48 x 48 x 58 mm). PXF5: 1/8 DIN (96 x 48 x 58 mm). PXF9: 1/4 DIN (96 x 96 x 58 mm)

ORDERING INFORMATION

TEMPERATURE CONTROLLERS

To Order–Insert Code for Each Letter to Select Catalog Number.

Example: PX4ABA2 - 1VMA1

A	B	C	-	D	E	F	A1

A	Front Panel Size	
	PXF4A	1/16 DIN (48x48mm)
	PXF5A	1/8 DIN (48x96mm)
	PXF9A	1/4 DIN (96x96mm)
B	Control Output 1	
	B	Relay contact SPDT*
	C	SSR drive
	E	Current linear
	P	Voltage linear
C	Control Output 2	
	Y2	None
	A2	Relay contact SPST
	C2	SSR drive
	E2	Current linear
	P2	Voltage linear
	R2	Retransmit (current)
	S2	Retransmit (voltage)
D	Alarm Output	
	0	None
	1	1 point
	2	2 points
	M	3 points
	J	2 points, independent common
E	Power Supply	
	V	Standard (100-240 VAC, 50/60Hz)
	B	24V AC/DC (50/60Hz)
F	Additional Functions	
	1	None
	S	1 Digital input (DI) †
	T	2 Digital inputs (DI x 2) ‡
	M	RS485 communication (Modbus)
	G	CT input + DI §‡
	V	RS485 communications + DI 1 point
	H	Remote SV input + DI #‡
	J	RS485 communications + CT input §†
	C	RS485 communications + DI x 3 + aux alarm out x 2 ‡
	K	RS485 communications + remote SV input #†

* not available if Control Output 2 = C, E or P

§ CT input as a heater burnout alarm requires Additional Function C.

Current RSV input requires additional 250ohm resistor.

† PXF4 only.

‡ PXF5, PXF9 only.

ORDERING INFORMATION

MOTORIZED VALVE CONTROLLERS

To order–Insert Code for Each Letter to Select Catalog Number.

Example: PXF4ATY2-1VDA1

A	B	-	C	D	E	A1

A	Front Panel Size	
	PXF4A	1/16 DIN (48x48mm)
	PXF5A	1/8 DIN (48x96mm)
	PXF9A	1/4 DIN (96x96mm)
B	Control Output 1	
	TY2	Motorized valve control (PXF4 only)
	SY2	Motorized valve control (PXF5, PXF9 only)
	VY2	Motorized valve control with FEB input (PFX5, PXF9 only)
C	Alarm Output	
	0	None
	1	1 point
	2	2 points
	M	3 points
	J	2 points, independent common
D	Power Supply	
	V	Standard (100-240V AC, 50/60Hz)
	B	24V AC/DC (50/60Hz)
E	Additional Functions	
	1	None
	D	3 Digital inputs (DI x 3) (PXF4 only)
	V	RS485 communications (PXF4 only)
	U	RS485 communications + DI x 3 (PXF5, PXF9 only)

ACCESSORIES

CTL-6-S-H	Current transformer for 1-30A
CTL-12-S36-8	Current transformer for 20-100A
PXR1-A230	Terminal Cover
TQ501923C3	USB Parameter Loader Cable
PXR1-A190	250 ohm shunt resistor (±0.1%)