

Watlow's New WATCONNECT™ Control Panels are Quickly Configured for Standard Two-Week Delivery



Watlow's new WATCONNECT™ standard temperature control panels are designed for applications from 1kW to 5 MW. WATCONNECT panels are ideally suited to integrate the extensive range of Watlow heater, sensor and temperature control and power control products. Normally, competitive custom panels require significantly longer lead times. The broad range of WATCONNECT standard features allow customers to quickly configure panels that would normally be considered custom for delivery within two weeks. In addition, the carefully selected layout of components have enabled the panels to be built with a significantly smaller footprint that also weighs less than competitive offers.

WATCONNECT standard control panels include:

- UL®/cUL® listed control panels for installation in indoor/outdoor and non-hazardous/hazardous locations
- Wall or frame mount enclosures with hinged door, sized to accommodate one to four branch circuits, up to 200kW of heater load, and top, side or bottom power entry
- Limited access and increased safety through the use of tool operated, ¼ turn, mechanical latches that secure the hinged door to the enclosure
- Molded case circuit breaker disconnect with through-door interlocked handle and lock out/tag out functionality (provides enhanced safety)
- Fused branch circuit protection, with blown fuse indicators, ensures protection of system load and panel components
- DIN-A-MITE® C series solid state SCR power switching controller(s) with zero cross output firing and touch-safe terminals provide unparalleled performance in a touch-safe design
- Through wall heat sink(s) reduces ambient temperatures within the enclosure
- Independent high temperature limit control(s) ensure safety and protection of the equipment being controlled
- Safety mechanical contactor(s) removes power to system load in the event of a high limit and/or safety situation
- Operator interface features:
 - Illuminated control power on/off switch (one per panel) for increased visibility of control status (status determination at a glance)
 - Illuminated heater on/off switch(s) (one for each heater) for increased visibility of heater power status (status determination at a glance)
 - Illuminated heater high temperature light with momentary push to reset (allows reset of all limit controls without the necessity of opening the enclosure door)
 - Watlow process controller coupled with the DIN-A-MITE power switching controller provides superior thermal performance with optimal life
- Process controllers come pre-programmed for the configured options and operation, reducing overall set-up time
- Z purge with environmental window on hazardous location panels
- Remote inputs/outputs based on process controller selection
- Field upgradable (most options)

Features and Benefits

Full documentation provided for all WATCONNECT control panels

- Eliminates lengthy approval process and phone calls after panel has been received

Watlow's process controllers provide data logging and Ethernet

- Provides real time and historical data management of process parameters

Range of standard input / output (I/O) options

- Provide the user with a higher level of monitoring and control, assuring an efficient and safe operation

Globally certified circuit breaker

- Allows for international installations

WATCONNECT enclosure easily mounts to wall or frame

- Decreases installation time

Bottom, right and top power entries

- Provides multiple options for accessing the inside of the panel

IP-20 finger-safe construction

- Prevents users from touching live terminals, which improves electrical safety

Semiconductor fast blow fuses with indication

- Decreases downtime

Available illuminated E-Stop

- Allows quick emergency shut down

Variety of cooling options

- Suited for a wide range of environmental conditions

Cabinet heating available for low temperature environments

- Prevents moisture from accumulating inside the panel

Carbon steel, stainless steel and FRC enclosure materials available

- Offers materials that are most economical for user's application

Supports a wide variety of sensor inputs including ASTM thermocouple types J, K and T, 3 wire 100 ohm RTD and 4 to 20mA process input

- Provides the customer a variety of sensor types to ensure compatibility with field equipment

Configuration Options

Control Panel Size	Series	Hazardous Location	Total # of Control Loops or Zones	Total # of Branch Circuits in Panel	Voltage Supply	Total # (Type) of Process Controllers	Total Process + Limit Controllers	Notes and Restrictions		
Small	C2	Non-Hazardous	1	1	240V, 480V or 600V 3-phase, 50/60Hz 4 wire (3 power, 1 ground)	Up to 2 (EZ-ZONE® PM6 or PM4, F4T)	Up to 4 (1 process w/up to 3 limits) or (2 process w/1 limit each)	<ol style="list-style-type: none"> 1. Enclosure heater not available with two branch circuit configurations 2. Shorted SCR not available 3. See process controller and communications interface charts for available features 		
			1	2						
			2	2						
	C3	Hazardous Class 1, Div. 2, Groups B/C/D or Class 1, Zone 2, Groups IIA/IIB/IIC	1	1		240V, 480V or 600V 3-phase, 50/60Hz 4 wire (3 power, 1 ground) (external 120V single phase necessary for purge operation)	Up to 2 (EZ-ZONE PM6 or PM4, F4T)		Up to 4 (1 process w/up to 3 limits) or (2 process w/1 limit each)	<ol style="list-style-type: none"> 1. Enclosure heater not available with two branch circuit configurations 2. Shorted SCR not available 3. See process controller and communications interface charts for available features
			1	2						
			2	2						
Medium	C4	Non-Hazardous	1	1	240V, 480V or 600V 3-phase, 50/60Hz 4 wire (3 power, 1 ground)		Up to 2 (EZ-ZONE PM4, F4T)	Up to 8 (up to 2 process + up to 3 limits for each control loop/zone)	See process controller and communications interface charts for available features	
			1	2						
			1	3						
			1	4						
			2	2						
			2	4						
			3	3						
	4	4								
	C5	Hazardous Class 1, Div. 2, Groups B/C/D or Class 1, Zone 2, Groups IIA/IIB/IIC	1	1	240V, 480V or 600V 3-phase, 50/60Hz 4 wire (3 power, 1 ground) (external 120V single phase necessary for purge operation)	Up to 2 (EZ-ZONE PM4, F4T)	Up to 8 (up to 2 process + up to 3 limits for each control loop/zone)	See process controller and communications interface charts for available features		
			1	2						
			1	3						
			1	4						
			2	2						
			2	4						
3			3							
4	4									

Process Controller Chart

Available Options/Features	Available Process Controllers					Notes/Restrictions
	Small (C2 or C3 Series)			Medium (C3 or C4 Series)		
	EZ-ZONE PM6	EZ-ZONE PM4	F4T	EZ-ZONE PM4	F4T	
Integrated Limit	X	X	X	X	X	Integrated limit not available with cascade or differential process control options
Single Sensor or Outlet Control	X	X	X	X	X	
Cascade Process Control			X		X	
Differential Process Control			X		X	
Shorted SCR Detection					X	
Remote I/O (See Communications Interface Chart)		X	X	X	X	On EZ-ZONE PM4 - Remote set point feature (within Remote I/O) not available with integrated limit
Local Ethernet Connectivity			X		X	RJ45 Ethernet jack on door standard on all F4Ts
Remote Copper Ethernet Connectivity			X		X	Via optional Ethernet switch mounted within enclosure
Remote Copper/Fiber Ethernet Connectivity			X		X	Via optional Ethernet switch mounted within enclosure

Total Number of Controllers Needed = Total Number of Control Loops or Zones

Communications Interface Chart - Standard Features by Controller Type Chart

Function	Per Control Loop/ Zone or System	EZ-ZONE PM6 Process Controller	EZ-ZONE PM4 Process Controller	F4T Process Controller
Remote I/O: Dig In - Remote Shutdown	Per loop/zone		Std.	Std.
Remote I/O: Dig Out - Heater Hi Limit Status	Per loop/zone		Std.	Std.
Remote I/O: Dig Out - Heater Enabled Status	Per loop/zone		Std.	Std.
Remote I/O: Analog Out - Process Temp Retransmit	Per loop/zone		Std.	Std.
Remote I/O: Analog In - Remote Set Point	Per loop/zone		Std.*	Std.
Remote I/O: Dig Out - Common Alarm	System		Std.	Std.
Remote I/O: Dig Out - Purge Loss	System	Std.	Std.	Std.
Front RJ45 Ethernet Jack	System			Std.
Data Logging	System (per controller)			Std.
Standard Copper Remote Ethernet Connection	System			Available option
Fiber Remote Ethernet Connection	System			Available option

* **Note:** Remote SP not available with integrated limit.

Ordering Information— Small Non-Hazardous

Part Number

① ②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬ ⑭ ⑮
Model	Enclosure	Configuration	Voltage	Sensor Types	Process Controller	Hi-Limit(s)	Operators	SCCR	Communication Options	Environmental Options	Custom Options
C2											AAA

① ② **SERIES C2**

C2 = Small, non-hazardous control panel

③ **Enclosure**

	Material	Certification
A =	Carbon steel	UL®/cUL® Listed (Type 4/1/12/IP65)
F =	316 stainless steel	UL®/cUL® Listed (Type 4X/1/12/IP65)

④ **Configuration**

	Total Nbr. of Control Loops or Zones	Total Nbr. of Branch Circuits in Panel	Full Load Amps/ Branch Circuit	Nbr. Phases Switched	Branch Load Connection(s)
A =	1	1	48	2	Safety contactor(s)
B =	1	2	48	2	Safety contactor(s)
E =	2	2	48	2	Safety contactor(s)
J =	1	1	24	2	Safety contactor(s)
K =	1	2	24	2	Safety contactor(s)
N =	2	2	24	2	Safety contactor(s)

⑤ **Voltage - 3-phase**

L =	240 - 4 wire supply (3 power, 1 ground)
V =	480 - 4 wire supply (3 power, 1 ground)
Y =	600 - 4 wire supply (3 power, 1 ground)

⑥ **Sensor Types**

	Process Controller	Limit
K =	K	K
R =	RTD	RTD
J =	J	J
T =	T	T
4 =	4-20mA	K
5 =	4-20mA	RTD
6 =	4-20mA	J
7 =	4-20mA	T

⑦ **Process Controller**

	Type	Control Mode
A =	Single F4T	Single sensor or outlet
B =	Single F4T	Differential
D =	Single F4T	Cascade
E =	Two F4T	Single sensor per loop/zone or outlet
F =	Two F4T	Differential
G =	Two F4T	Cascade
P =	Single PM4	Single sensor or outlet
Q =	Two PM4	Single sensor per loop/zone or outlet
T =	Single PM6	Single sensor or outlet
U =	Two PM6	Single sensor per loop/zone or outlet

Note: See process controller chart on page 4 for restrictions and options.

⑧ **Hi-Limit(s)**

	Number per Heater	Integrated/Discrete
A * =	1	Integrated
B =	1	Discrete
E ** =	2	Discrete
G ** =	3	Discrete

*Not available with cascade or differential control modes (B, D, F or G)

** Not available with any two process controller options (E, F, G, Q or U)

⑨ **Operators**

0 =	Standard
1 =	E-Stop

⑩ **SCCR**

	480V	240V	600V
V =	25KA	35KA	—
W =	35KA	50KA	22KA
Y =	50KA	—	25KA
Z =	—	—	35KA

⑪ **Communication Options**

1 =	Standard I/O
2 * =	Remote copper Ethernet plus standard I/O
3 ** =	Remote fiber/copper Ethernet plus standard I/O

* Not available with EZ-ZONE PM6 or PM4

** Not available with EZ-ZONE PM6 or PM4. Configuration must be reviewed by factory prior to quote or order.

⑫ **Environmental Options**

	Panel Heating	Panel Cooling	UV Window for Outdoors
A =	None	None	None
B =	None	None	Yes
C =	None	Fan and exhaust w/shrouds	None
D =	None	Fan and exhaust w/shrouds	Yes
G * =	Yes	None	None
H * =	Yes	None	Yes
J * =	Yes	Fan and exhaust w/shrouds	None
K * =	Yes	Fan and exhaust w/shrouds	Yes

*Not available with two branch circuit options (B, E, K or N)

⑬ ⑭ ⑮ **Custom Options**

AAA =	Standard
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Ordering Information— Small Hazardous

Part Number

① ②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬ ⑭ ⑮
Model	Enclosure	Configuration	Voltage	Sensor Types	Process Controller	Hi-Limit(s)	Operators	SCCR	Communication Options	Environmental Options	Custom Options
C3											AAA

① ②	SERIES C3
C3 =	Small, hazardous control panel with Z purge and UV window

③	Enclosure	
	Material	Certification
K =	316 stainless steel	UL®/cUL® Listed (Type 4X/IP65) Class 1, Div. 2, Groups B/C/D or Class 1, Zone 2, Groups IIA/IIB/IIC

④	Configuration				
	Total Nbr. of Control Loops or Zones	Total Nbr. of Branch Circuits in Panel	Full Load Amps/ Branch Circuit	Nbr. Phases Switched	Branch Load Connection(s)
A =	1	1	48	2	Safety contactor(s)
B =	1	2	48	2	Safety contactor(s)
E =	2	2	48	2	Safety contactor(s)
J =	1	1	24	2	Safety contactor(s)
K =	1	2	24	2	Safety contactor(s)
N =	2	2	24	2	Safety contactor(s)

⑤	Voltage - 3-phase
L =	240, 3-phase - 4 wire supply (3 power, 1 ground) + 120V, single-phase (for purge)
V =	480, 3-phase - 4 wire supply (3 power, 1 ground) + 120V, single-phase (for purge)
Y =	600, 3-phase - 4 wire supply (3 power, 1 ground) + 120V, single-phase (for purge)

⑥	Sensor Types	
	Process Controller	Limit
K =	K	K
R =	RTD	RTD
J =	J	J
T =	T	T

⑦	Process Controller	
	Type	Control Mode
A =	Single F4T	Single sensor or outlet
B =	Single F4T	Differential
D =	Single F4T	Cascade
E =	Two F4T	Single sensor per loop/zone or outlet
F =	Two F4T	Differential
G =	Two F4T	Cascade
P =	Single PM4	Single sensor or outlet
Q =	Two PM4	Single sensor per loop/zone or outlet
T =	Single PM6	Single sensor or outlet
U =	Two PM6	Single sensor per loop/zone or outlet

Note: See process controller chart on page 4 for restrictions and options.

⑧	Hi-Limit(s) (Discrete)	
	Number per Control Loop/Zone	Enclosure Limit Warning
B =	1	No
E* =	2	No
G* =	3	No
J =	1	Yes
L* =	2	Yes
N* =	3	Yes

* Not available with any two process controller option (E, F, G, Q or U)

⑨	Operators
1 =	Standard
2 =	E-Stop

⑩	SCCR		
	480V	240V	600V
V =	25KA	35KA	—
W =	35KA	50KA	22KA
Y =	50KA	—	25KA
Z =	—	—	35KA

⑪	Communication Options
1 =	Standard I/O
2* =	Remote copper Ethernet plus standard I/O
3** =	Remote fiber/copper Ethernet plus standard I/O

* Not available with EZ-ZONE PM6 or PM4
** Not available with EZ-ZONE PM6 or PM4. Configuration must be reviewed by factory prior to quote or order.

⑫	Environmental Options	
	Panel Heating	Panel Cooling
N =	None	Integrated Z purge cooling
P =	Yes	Integrated Z purge cooling

⑬ ⑭ ⑮	Custom Options
AAA =	Standard

Ordering Information— Medium Non-Hazardous

Part Number

① ②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬ ⑭ ⑮
Model	Enclosure	Configuration	Voltage	Sensor Types	Process Controller	Hi-Limit	Operators	SCCR	Communication Options	Environmental Options	Custom Options
C4											AAA

① ②	SERIES C4
C4 =	Medium, non-hazardous control panel

③	Enclosure	
	Material	Certification
A =	Carbon steel	UL®/cUL® Listed (Type 4/1/12/IP65)
F =	316 stainless steel	UL®/cUL® Listed (Type 4X/1/12/IP65)

④	Configuration				
	Total Nbr. of Control Loops or Zones	Total Nbr. of Branch Circuits in Panel	Full Load Amps/ Branch Circuit	Nbr. Phases Switched	Branch Load Connection(s)
A =	1	1	48	2	Safety contactor(s)
B =	1	2	48	2	Safety contactor(s)
C =	1	3	48	2	Safety contactor(s)
D =	1	4	48	2	Safety contactor(s)
E =	2	2	48	2	Safety contactor(s)
F =	2	4	48	2	Safety contactor(s)
G =	3	3	48	2	Safety contactor(s)
H =	4	4	48	2	Safety contactor(s)
J =	1	1	24	2	Safety contactor(s)
K =	1	2	24	2	Safety contactor(s)
L =	1	3	24	2	Safety contactor(s)
M =	1	4	24	2	Safety contactor(s)
N =	2	2	24	2	Safety contactor(s)
P =	2	4	24	2	Safety contactor(s)
Q =	3	3	24	2	Safety contactor(s)
R =	4	4	24	2	Safety contactor(s)

⑤	Voltage - 3-phase
L =	240 - 4 wire supply (3 power, 1 ground)
V =	480 - 4 wire supply (3 power, 1 ground)
Y =	600 - 4 wire supply (3 power, 1 ground)

⑥	Sensor Types	
	Process Controller	Limit
K =	K	K
R =	RTD	RTD
J =	J	J
T =	T	T
4 =	4-20mA	K
5 =	4-20mA	RTD
6 =	4-20mA	J
7 =	4-20mA	T

⑦	Process Controller	
	Type	Control Mode
A =	Single F4T	Single sensor or outlet
B =	Single F4T	Differential
D =	Single F4T	Cascade
E =	Two F4T	Single sensor per loop/zone or outlet
F =	Two F4T	Differential
G =	Two F4T	Cascade
P =	Single PM4	Single sensor or outlet
Q =	Two PM4	Single sensor per loop/zone or outlet

Note: See process controller chart on page 4 for restrictions and options.

⑧	Hi-Limit(s)	
	Number per Control Loop/ Zone	Integrated/Discrete
A* =	1	Integrated
B =	1	Discrete
E =	2	Discrete
G =	3	Discrete

*Not available with cascade or differential control modes (B, D, F or G)

⑨	Operators
0 =	Standard
1 =	E-Stop

⑩	SCCR & Shorted SCR Detection			
	480V	240V	600V	Shorted SCR Detection
D =	35KA	85KA	18KA	No
E =	35KA	85KA	18KA	Yes
F =	65KA	100KA	25KA	No
G =	65KA	100KA	25KA	Yes
H =	100KA	—	35KA	No
J =	100KA	—	35KA	Yes
K =	—	—	50KA	No
L =	—	—	50KA	Yes

⑪	Communication Options
1 =	Standard I/O
2* =	Remote copper Ethernet plus standard I/O
3** =	Remote fiber/copper Ethernet plus standard I/O
* Not available with EZ-ZONE PM6 or PM4.	
** Not available with EZ-ZONE PM6 or PM4. Configuration must be reviewed by factory prior to quote or order.	

⑫	Environmental Options		
	Panel Heating	Panel Cooling	UV Window for Outdoors
A =	None	None	None
B =	None	None	Yes
C =	None	Fan and exhaust with shrouds	None
D =	None	Fan and exhaust with shrouds	Yes
G =	Yes	None	None
H =	Yes	None	Yes
J =	Yes	Fan and exhaust with shrouds	None
K =	Yes	Fan and exhaust with shrouds	Yes

⑬ ⑭ ⑮	Custom Options
AAA =	Standard

Ordering Information— Medium Hazardous

Part Number

1 2	3	4	5	6	7	8	9	10	11	12	13 14 15
Model	Enclosure	Configuration	Voltage	Sensor Types	Process Controller	Hi-Limit	Operators	SCCR	Communication Options	Environmental Options	Custom Options
C5											AAA

1 2 SERIES C5	
C5 =	Medium, hazardous control panel with Z purge and UV Window

3 Enclosure		
	Material	Certification
K =	316 stainless steel	UL®/cUL® Listed (Type 4X/IP65) Class 1, Div. 2, Groups B/C/D or Class 1, Zone 2, Groups IIA/IIB/IIIC

4 Configuration					
	Total Nbr. of Control Loops or Zones	Total Nbr. of Branch Circuits in Panel	Full Load Amps/ Branch Circuit	Nbr. Phases Switched	Branch Load Connection(s)
A =	1	1	48	2	Safety contactor(s)
B =	1	2	48	2	Safety contactor(s)
C =	1	3	48	2	Safety contactor(s)
D =	1	4	48	2	Safety contactor(s)
E =	2	2	48	2	Safety contactor(s)
F =	2	4	48	2	Safety contactor(s)
G =	3	3	48	2	Safety contactor(s)
H =	4	4	48	2	Safety contactor(s)
J =	1	1	24	2	Safety contactor(s)
K =	1	2	24	2	Safety contactor(s)
L =	1	3	24	2	Safety contactor(s)
M =	1	4	24	2	Safety contactor(s)
N =	2	2	24	2	Safety contactor(s)
P =	2	4	24	2	Safety contactor(s)
Q =	3	3	24	2	Safety contactor(s)
R =	4	4	24	2	Safety contactor(s)

5 Voltage - 3-phase	
L =	240, 3-phase - 4 wire supply (3 power, 1 ground) + 120V, single-phase (for purge)
V =	480, 3-phase - 4 wire supply (3 power, 1 ground) + 120V, single-phase (for purge)
Y =	600, 3-phase - 4 wire supply (3 power, 1 ground) + 120V, single-phase (for purge)

6 Sensor Type		
	Process Controller	Limit
K =	K	K
R =	RTD	RTD
4 =	4-20mA	K
5 =	4-20mA	RTD

7 Process Controller		
	Type	Control Mode
A =	Single F4T	Single sensor or outlet
B =	Single F4T	Differential
D =	Single F4T	Cascade
E =	Two F4T	Single sensor per loop/zone or outlet
F =	Two F4T	Differential
G =	Two F4T	Cascade
P =	Single PM4	Single sensor or loop
Q =	Two PM4	Single sensor per loop/zone or outlet
Note: See process controller chart on page 4 for restrictions and options		

8 Hi-Limit(s) (Discrete)		
	Number per Control Loop / Zone	Enclosure Limit
0 =	1	No
7 =	1	Yes
8 =	2	Yes
9 =	3	Yes

9 Operators	
0 =	Standard
1 =	E-Stop

10 SCCR & Shorted SCR Detection				
	480V	240V	600V	Shorted SCR Detection
D =	35KA	85KA	18KA	No
E =	35KA	85KA	18KA	Yes
F =	65KA	100KA	25KA	No
G =	65KA	100KA	25KA	Yes
H =	100KA	—	35KA	No
J =	100KA	—	35KA	Yes
K =	—	—	50KA	No
L =	—	—	50KA	Yes

11 Communication Options	
1 =	Standard I/O
2* =	Remote copper Ethernet plus standard I/O
3** =	Remote fiber/copper Ethernet plus standard I/O
* Not available with EZ-ZONE PM6 or PM4	
** Not available with EZ-ZONE PM6 or PM4. Configuration must be reviewed by factory prior to quote or order.	

12 Environmental Options		
	Panel Heating	Panel Cooling
N =	None	Integrated Z purge cooling
P =	Yes	Integrated Z purge cooling

13 14 15 Custom Options	
AAA =	Standard

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