

WATCONNECT®

Watlow offers WATCONNECT® standard control panels that are quickly configured to your specific application requirements and delivered within two weeks. WATCONNECT panels integrate Watlow's high-quality heater, sensor, temperature controller and power controller products for a complete thermal solution. Normally, competitive custom panels require significantly longer lead times. The broad range of standard features allow customers to quickly configure panels that usually would be considered custom for delivery within two weeks.

Watlow's customers will be impressed with the speed and ease of specifying, selecting, pricing, ordering and delivery. WATCONNECT panels are flexible and scalable; there are thousands of configurable, pre-engineered panel solutions available.

Features and Benefits

Full documentation provided for all WATCONNECT control panels at the time of quotation

- Eliminates lengthy approval process and phone calls

Watlow's F4T® 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 (See *Communications Interface Chart* in this section)

WATCONNECT enclosure easily mounts to wall or frame

- Decreases installation time

Bottom, right and top power entries

- Provides multiple options for accessing and making connections to the inside of the panel

IP-20 finger-safe construction

- Decreases chance of electrical shock for service and maintenance personnel

Fast acting fuses

- Protects sensitive solid state components from damaging currents

Available illuminated E-Stop

- Allows quick emergency shut down

Variety of cooling options

- Suited for a wide range of environmental conditions

Carbon steel and stainless steel enclosure materials available

- Offers materials that are most economical for the 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 process signals to ensure compatibility with field equipment

WATCONNECT Standard Control Panels Include:

- UL®/cUL® listed control panels for installation in indoor/outdoor (shaded) and non-hazardous/hazardous locations
- Wall or frame mount enclosures with hinged door, sized to accommodate one to four branch circuits 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 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 outstanding reliability
- Through wall heat sink(s) reduces ambient temperatures within the enclosure
- Independent high temperature limit control(s) ensures 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
- Process controllers come pre-programmed for the configured options and operation, reducing overall set-up time



WATCONNECT

WATCONNECT Standard Control Panels Include (cont.):

- 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 control loop) 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 temperature control coupled with the DIN-A-MITE power switching controller provide superior thermal performance through tight process temperature control
- Z-type purge system with environmental window and temperature regulation on hazardous location panels
- Remote inputs/outputs based on process controller selection
- Field upgradable (most options)

Agency Approvals

- Preconfigured and certified to UL® Standard 508A for non-hazardous locations
- Non-hazardous panels certified to one or more of the following:
 - Type 4, 4X and 1
- Hazardous location panels certified for UL® Listed installation, investigated to NFPA 496: 2008 and UL® 698A and cUL® Listed, investigated to NFPA 496: 2008 and CAN/CSA 22.2

Cooling/Ambient Requirements Charts

| SERIES C2 (Small Non-Hazardous) | | | | | | |
|---------------------------------|----------------------------------|--------------------|------------------------------|------------------------------|----------------------|--------------|
| Panel Configuration | | | Ambient Temperatures | | Cooling Requirements | |
| Total Number of Branch Circuits | FLA/Branch Circuit (Total Load)* | Enclosure Material | Min. Ambient Operating Temp. | Max. Ambient Operating Temp. | Cooling Needs | Restrictions |
| 1 | 24A (load <= 24A) | Carbon steel | -18°C | 40°C | None | None |
| 1 | 24A (load <= 24A) | SS | -18°C | 35°C | None | No F4T |
| 1 | 48A (load <= 48A) | Carbon steel | -18°C | 30°C | None | No F4T |
| 1 | 48A (load <= 48A) | Carbon steel or SS | -10°C | 40°C | Fans/shrouds | None |
| 2 | 24A (load <= 48A) | Carbon steel or SS | -10°C | 40°C | Fans/shrouds | None |
| 2 | 48A (load <= 96A) | Carbon steel or SS | -10°C | 40°C | Fans/shrouds | None |

*FLA = Full Load Amps/Branch Circuit, Total Load = (# Branch Circuits) x (Full Load Amps/Branch Circuit)

| SERIES C4 (Medium Non-Hazardous) | | | | | | |
|----------------------------------|----------------------------------|--------------------|------------------------------|------------------------------|----------------------|--------------|
| Panel Configuration | | | Ambient Temperatures | | Cooling Requirements | |
| Total Number of Branch Circuits | FLA/Branch Circuit (Total Load)* | Enclosure Material | Min. Ambient Operating Temp. | Max. Ambient Operating Temp. | Cooling Needs | Restrictions |
| 1 | 24A (load <= 24A) | SS | -18°C | 35°C | None | No F4T |
| 1 | 24A (load <= 24A) | SS | -10°C | 40°C | Fans/shrouds | No F4T |
| 1 | 24A (load <= 24A) | Carbon steel | -18°C | 40°C | None | None |
| 1 | 48A (load <= 48A) | Carbon steel | -18°C | 30°C | None | No F4T |
| 1 | 48A (load <= 48A) | Carbon steel or SS | -10°C | 40°C | Fans/shrouds | None |
| 2 | 24A (load <= 48A) | Carbon steel | -18°C | 30°C | None | No F4T |
| 2 | 24A (load <= 48A) | Carbon steel or SS | -10°C | 40°C | Fans/shrouds | None |
| 2 | 48A (load <= 96A) | Carbon steel or SS | -10°C | 40°C | Fans/shrouds | None |
| 3 | 24A (load <= 72A) | Carbon steel or SS | -10°C | 40°C | Fans/shrouds | None |
| 3 | 48A (load <= 144A) | Carbon steel or SS | -10°C | 40°C | Fans/shrouds | None |
| 4 | 24A (load <= 96A) | Carbon steel or SS | -10°C | 40°C | Fans/shrouds | None |
| 4 | 48A (load <= 192A) | Carbon steel or SS | -10°C | 35°C | Fans/shrouds | None |
| 4 | 48A (load <= 192A) | Carbon steel or SS | -10°C | 40°C | Fans/shrouds | No F4T |
| 4 | 48A (load <= 168A) | Carbon steel or SS | -10°C | 40°C | Fans/shrouds | None |

*FLA = Full Load Amps/Branch Circuit, Total Load = (# Branch Circuits) x (Full Load Amps/Branch Circuit)

| SERIES C3 and C5 (Hazardous Area) Panels | | |
|--|-------------------|--------------------|
| Air Required | SERIES C3 (Small) | SERIES C5 (Medium) |
| PSIG | 80-120* | 100-120* |
| SCFM | 25-30 | 40-80 |

| SERIES C3 and C5 (Hazardous) Panels | |
|-------------------------------------|---------------|
| Ambient Temperatures | |
| -18°C to 40°C | WATLOW |

*Available air flow and pressure to the panel must be sufficient to maintain stated SCFM.



WATCONNECT

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) | 1. Shorted SCR not available 2. 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) | 1. Shorted SCR not available 2. 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 | | | | |
| | 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 | | | | |



WATCONNECT

Process Controller Chart

| Available Options/Features | Available Process Controllers | | | | | Notes/Restrictions |
|--|-------------------------------|----------------|-----|-----------------------------|-----|---|
| | Small (C2 or C3 SERIES) | | | Medium (C4 or C5 SERIES) | | |
| | EZ-ZONE PM6 | EZ-ZONE PM4 | F4T | EZ-ZONE PM4 | F4T | |
| Integrated Limit | X | X | X | X | X | |
| Single Sensor or Outlet Control | X | X | X | X | X | |
| Cascade Process Control | | | X | | X | Integrated limit not available with cascade or differential process control options |
| Differential Process Control | | | X | | X | Integrated limit not available with cascade or differential process control options |
| 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. |
| 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 |

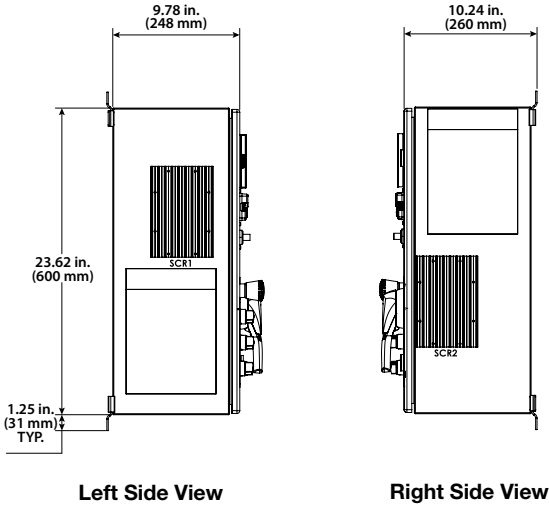
* Note: Remote SP not available with integrated limit.



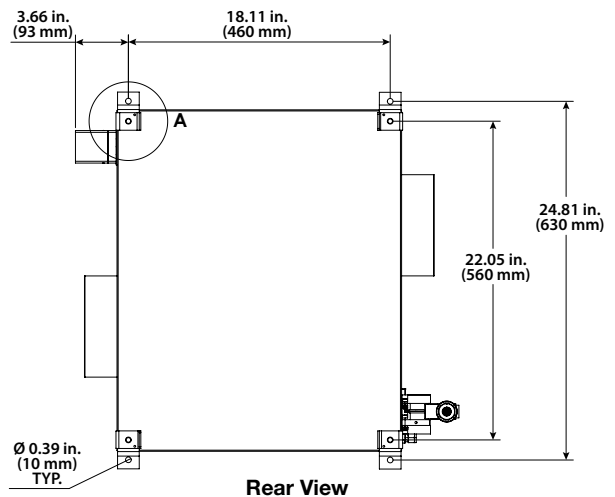
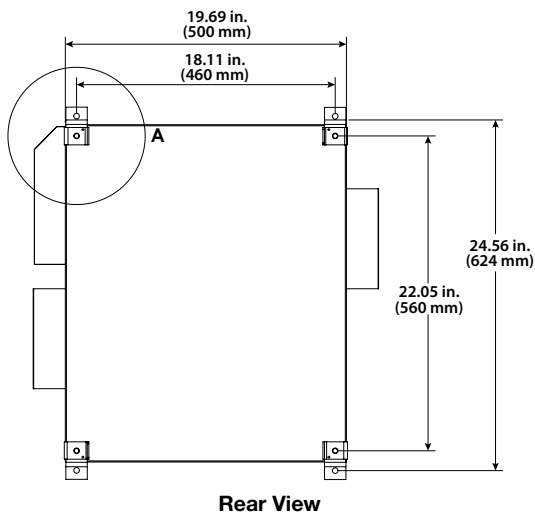
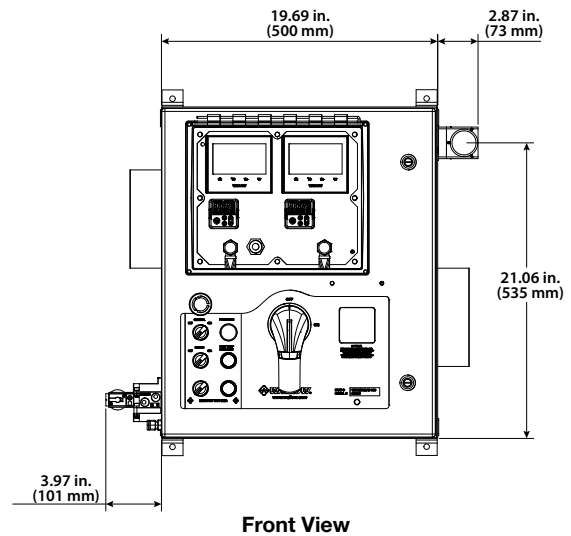
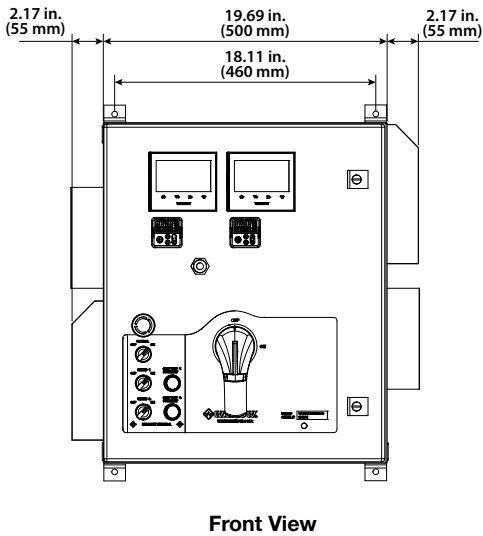
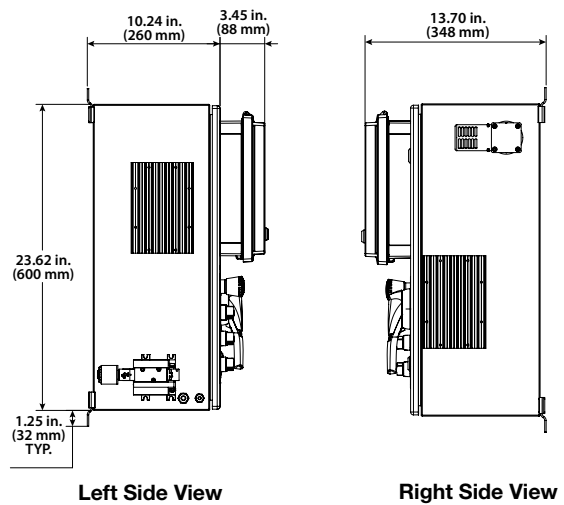
WATCONNECT

Dimensional Drawings

C2 SERIES, Small, Non-Hazardous Location



C3 SERIES, Small, Hazardous Location

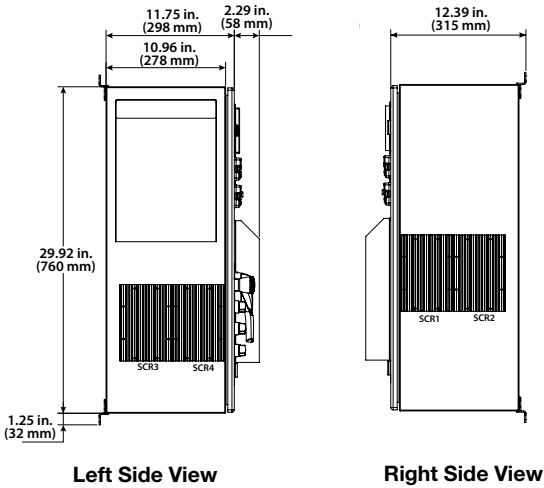




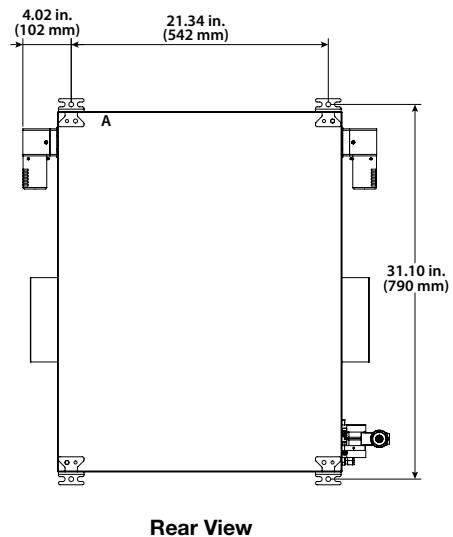
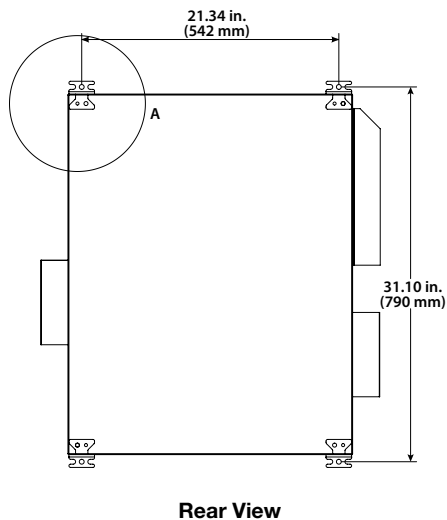
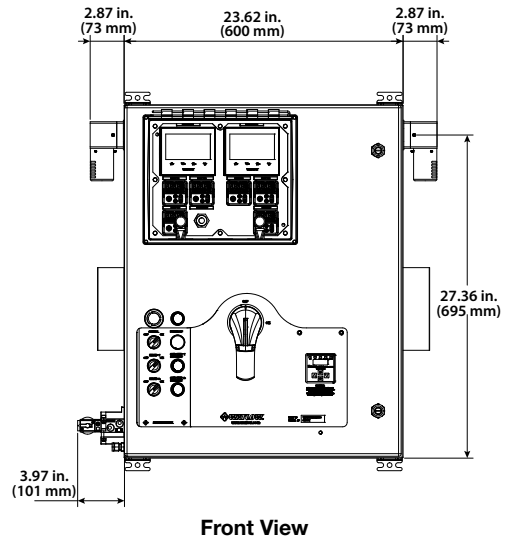
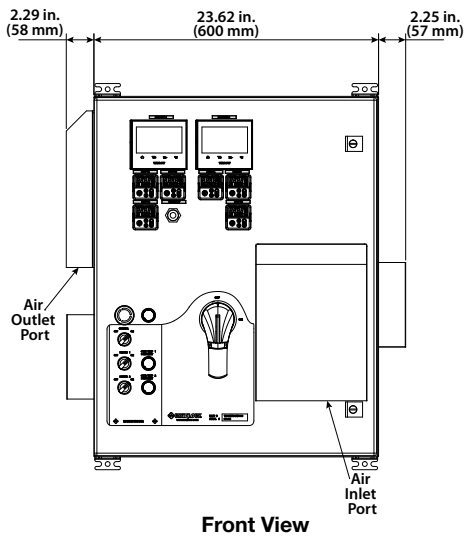
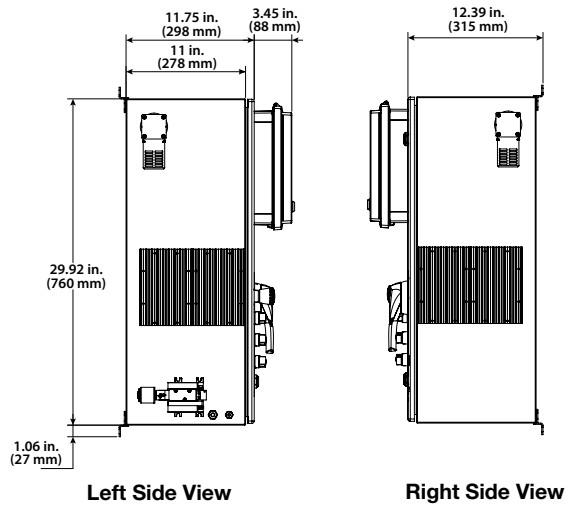
WATCONNECT

Dimensional Drawings

C4 SERIES, Medium, Non-Hazardous Location



C5 SERIES, Medium, Hazardous Location





Control Panels

WATCONNECT® C1

Watlow's WATCONNECT® SERIES C1 is a new extension to the WATCONNECT standard control panel family. It is a simple to order, simple to setup, single-phase standard control panel that is quickly configured for one or two loops and delivered within two weeks. WATCONNECT control panels integrate Watlow's high-quality temperature controller and power controller products for a complete thermal solution.

Watlow customers will be impressed with the speed and ease of specifying, selecting, pricing, ordering and delivery. WATCONNECT standard control panels are flexible and scalable pre-engineered solutions intended to be used with resistive thermal loads.

Features and Benefits

Full documentation provided for all WATCONNECT control panels at the time of quotation

- Eliminates lengthy approval process and phone calls

WATCONNECT enclosure easily mounts to wall or frame

- Decreases installation time

Terminal block located inside the panel

- Provides easy access for input entries

Bottom power entries

- Allows for easy connections inside the panel

IP-20 finger-safe construction

- Decreases chance of electrical shock for service and maintenance personnel

Fast acting fuses

- Protects sensitive solid state components from damaging currents



Carbon steel and fiberglass reinforced polyester enclosure materials available

- Offers economical solution for the 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 process signals to ensure compatibility with field equipment

Watlow process temperature controller coupled with the DIN-A-MITE® power switching device provides superior thermal performance through tight process temperature control

- Delivers full system solution for a variety of applications

WATCONNECT C1

WATCONNECT C1 SERIES Standard Control Panels Include:

- UL®/cUL® listed control panels for installation in indoor and non-hazardous locations
- Configurable for 1 or 2 thermal loops, 18 full load amps per loop
- 120/240V, single phase power
- FRP enclosure (single loop 4X option)
- Carbon steel (single or 2 loop Type 4)
- Wall or frame mount enclosures with hinged door, sized to accommodate bottom power entry
- Limited access and increased safety through the use of mechanical latches that secure the hinged door to the enclosure
- Fused branch circuit protection ensures protection of system load and panel components
- EZ-ZONE® PM6 process control with integrated high limit reduces complexity
- DIN-A-MITE family of solid state SCR power switching devices with zero cross output firing and touch-safe terminals provide outstanding reliability
- Safety mechanical contactor(s) removes power to system load in the event of a high limit and/or safety situation
- Process controllers come pre-programmed for the configured options and operation, reducing overall set-up time

- 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 enables (one for each control loop) increased visibility of heater power status (status determination at a glance)
 - Illuminated heater high temperature light
 - Main power disconnect (optional)
- Weight chart

| Weight Per Panel | |
|--------------------------|--------|
| FRP single loop | 24 lbs |
| Carbon steel single loop | 38 lbs |
| Carbon steel two loop | 42 lbs |

Environment (Indoor applications only)

- Operating temperature: 0 to 104°F (-18 to 40°C)
- Storage temperature: -40 to 185°F (-40 to 85°C)
- Relative humidity: 0 to 90%, non-condensing

Agency Approvals

- Preconfigured and certified to UL®/cUL® certified/listed for non-hazardous locations
- Non-hazardous panels certified to one or more of the following:
 - Type 4, 4X and 1 (indoor use)

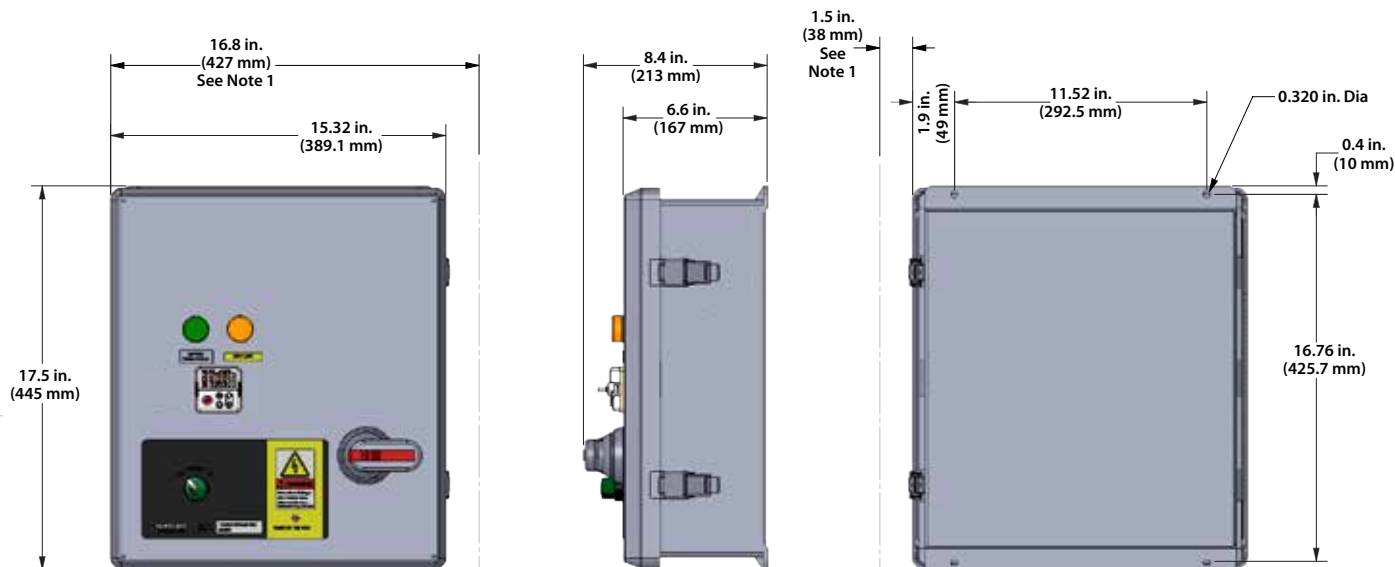


Control Panels

WATCONNECT C1

Dimensional Drawings

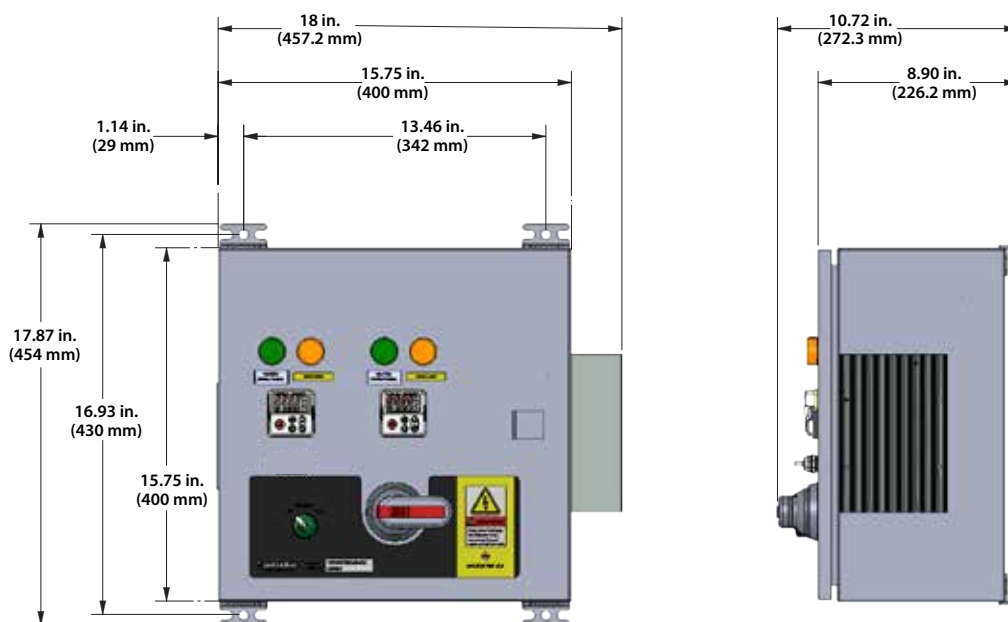
Single-Loop, FRP Enclosure (4X Option)



Note 1. Allowance for locking latch travel.

Note: Shown with optional main disconnect.

Single and Two-Loop Carbon Steel Enclosure (Two Loop Shown)



Note: Shown with optional main disconnect.

WATCONNECT C1

Ordering Information

WATCONNECT C1 Extra Small—Non-Hazardous Location (Indoor Only)

| |
|--|
| SERIES C1 |
| Extra small, non-hazardous control panel |

| Standard Features | | | | | |
|-------------------|-------------------------|--------------|---------------------------|-----------|---|
| SCCR | Process Controller Type | Control Mode | Hi Limit(s) per Loop/Zone | Operators | Communications |
| 5kAIC | EZ-ZONE PM6 | PID | 1 | Std | Remote shutdown input + Std bus connection (to TBs) |

| Configurations | | | | | | Standard Options | | | |
|----------------|-----------------------------------|-------------------------------------|--------------------------------|-------------------|--|------------------------------|--------------------------------------|----------------------|---|
| | Total # of Control Loops or Zones | Total # of Branch Circuits in Panel | Full Load Amps/ Branch Circuit | # Phases Switched | Branch Load Connection(s) | Enclosure | Hi-Limit Type | Main Disconnect | Certification |
| Base 1 | 1 | 1 | 18 | 1 | Power distribution block (7 connections/ branch) | Carbon steel (Type 4/Type 1) | Integrated (with process controller) | None (on/off switch) | UL®/cUL® listed for non-hazardous environment |
| Base 2 | 1 | 2 | 18 (36 total amps) | 1 | Power distribution block (7 connections/ branch) | Carbon steel (Type 4/Type 1) | Integrated (with process controller) | None (on/off switch) | UL®/cUL® listed for non-hazardous environment |
| Base 3 | 2 | 2 | 18 (36 total amps) | 1 | Power distribution block (7 connections/ branch) | Carbon steel (Type 4/Type 1) | Integrated (with process controller) | None (on/off switch) | UL®/cUL® listed for non-hazardous environment |

| |
|--|
| Voltage (must select one) |
| 120V single phase (power + neutral + ground) |
| 240V single phase (power + power + ground) |

| |
|---|
| Process Sensor (must select one) |
| K |
| RTD |
| J |
| T |
| 4-20mA |

| |
|---------------------------------------|
| Limit Sensor (must select one) |
| K |
| RTD |
| J |
| T |
| 4-20mA |

| |
|---------------------------------------|
| Enclosure Option |
| FRP Type 4X (one branch circuit only) |

| |
|--------------------------------|
| Hi-Limit Option |
| Discrete (separate controller) |

| |
|--|
| Disconnect Option |
| Main power disconnect switch with lock out/tag out handle (not fuse protected) |

| |
|-----------------------------|
| Certification Option |
| Future option |

| |
|---|
| Communications Accessory Option |
| USB to Std Bus cord/convertor (cord in box) |