Life Is On | Eurotherm by Schneider Electric

# Helping deliver an efficient and secure process

## Eurotherm EPC3000 programmable controllers

Maintain the high standards of production quality and ease your cybersecurity worries


## Product at a glance

The EPC3000 range of programmable single loop process and temperature controllers maximizes efficiency and repeatability and is certified for cybersecurity communications robustness.

The controllers combine industry leading control and measurement performance with simplicity of use while remaining highly flexible.

A simple “Quick Start” configuration code, enables fast commissioning “Out of the Box” using just the instrument HMI. For applications requiring additional processing, user function block wiring provides a full range of math, logic, totalizer and specialized functions.

A highly visible three-color display with natural language status and alarm indications is easy and clear for operators to use.

EPC3000 is highly durable, with a battery-free design and extended service life.

### Accuracy and repeatability

Process inputs are fast and accurate, with exceptional thermal stability, aiding precise and consistent control over long periods without calibration drift. Recalibration and user calibration correction functions are available to further improve accuracy.

The industry leading Eurotherm PID algorithm delivers fast reacting and repeatable control and has been enhanced for EPC3000 to further reduce overshoot. Rapid rise to operating temperature and low oscillation aids high process throughput at low scrap rates. Different PID settings may be applied in different process operating regions for optimum performance.

### Connectivity and cybersecurity

The EPC3000 Ethernet enabled controller range is Eurotherm’s first to be designed and certified to meet the stringent cybersecurity requirements of **Achilles® Communications Robustness Testing Level 1**. Ethernet communications are supported via a standard RJ45 connector, providing fast access to process and diagnostic information as well as connectivity to external PLC or plant SCADA.

Modbus RTU serial communications is also supported.

A free PC based backup and configuration tool uses a USB connection, powering the instrument from the USB interface for convenient desktop configuration.

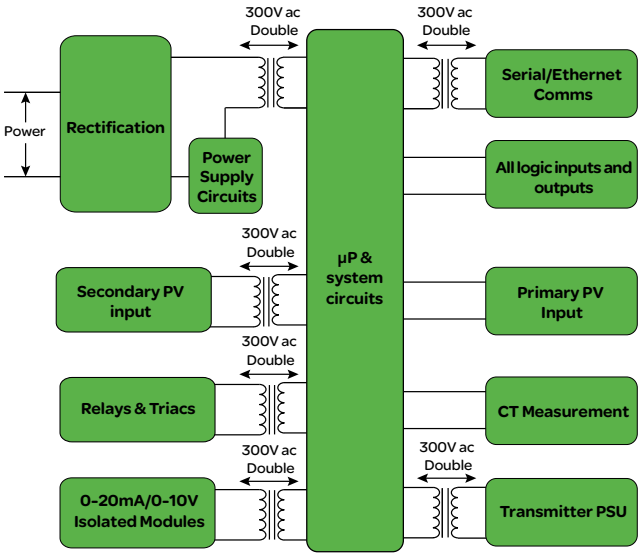
- Precision furnace control
- Atmosphere control
- Industrial ovens
- Crystal growing
- Composite materials processing
- Heat exchangers
- Automotive paint drying
- Baking ovens

- Precision single loop controller with cybersecurity function
- Precise (0.1%) universal inputs with 50ms sample rate
- Thermocouples, resistance thermometer, mA, mV, volts, zirconia
- Exceptional thermal stability
- Fast PID response with minimal overshoot and oscillation
- Multi-programmer function with up to 10 programs of 24 steps
- Direct Ethernet RJ45 Connection certified to Achilles® CRT Level 1
- High visibility customizable display
- Quick code setup with application templates
- User function block wiring including math, logic and totalizer
- Extensive range of international approvals

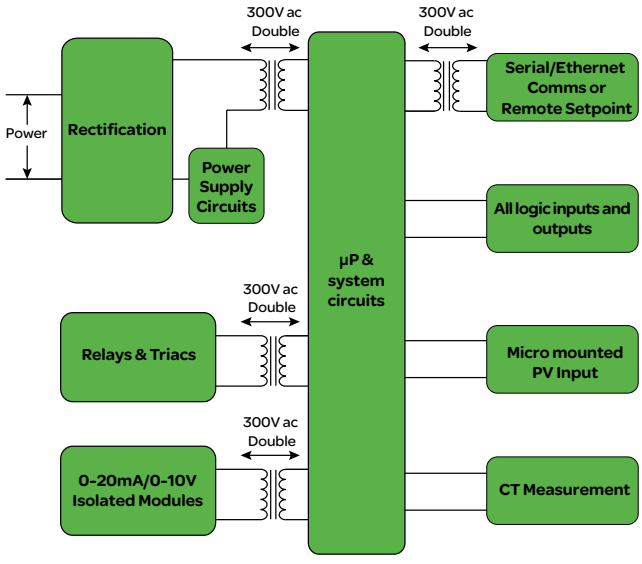
# Specification

| General | |
|---|---|
| Controller function | Single loop panel mount PID controller range with autotune, on/off, valve positioning (no slidewire required). Zirconia probe atmosphere control. Single loop profile/program up to 10 profiles of 24 segments. Mains and 24VDC options. |
| Measurement inputs | 1 or 2 inputs. Accuracy ±0.1% reading (refer to detailed specification). |
| PID control | 2 PID sets are available (Separate proportional band for heat and cool). Enhanced Autotuning control with cutback to minimize overshoot and oscillation. Fast reacting precision control to setpoint changes or after process disturbances. Enhanced valve positioning (unbounded) algorithm. Gain scheduling allows PID selection for a wide range of operating situations, including deviation from setpoint, absolute temperature, output level and others. AC supply voltage monitoring for feedforward. PV and SP feedforward functions. |
| Program/profiler | Up to 10 profiles of 24 steps. Options for 1x8, 1x24 and 10x24.<br>Holdback ("guaranteed soak"), event outputs, time to target, ramp rate, dwell, step and call segment types.<br>Communications compatible with Eurotherm 2400 programmer.<br>Additional timer functions available. |
| User function block wiring | Optional totalizer, math, logic and multiplexing, BCD conversion, counter/timer and many other special function blocks available including zirconia and switchover. |
| Additional functions | Digital and analog retransmission functions. CT Input - Monitor partial load failure, load short and open circuit; Dual input functions including switchover, redundant sensor, average, min, max, Zirconia. 6 Freely configurable alarms with manual, automatic, non-latching and event types plus alarm delay function and blocking. Alarms may be inhibited in standby. 5 Recipes with 40 freely selectable parameters switchable from front panel or digital input. Scrolling parameter help and user messages displayed on event. USB backup lead and free configuration software. |
| Backup and configuration tools | Free Eurotherm iTools software for backup and configuration. USB Backup lead available for convenient desktop configuration and back up; powers the instrument with or without a sleeve. iTools also connects using Ethernet and serial Modbus RTU. |
| Ethernet | Certified to Achilles® communications robustness testing level 1. |

## 3008/3004 Isolation

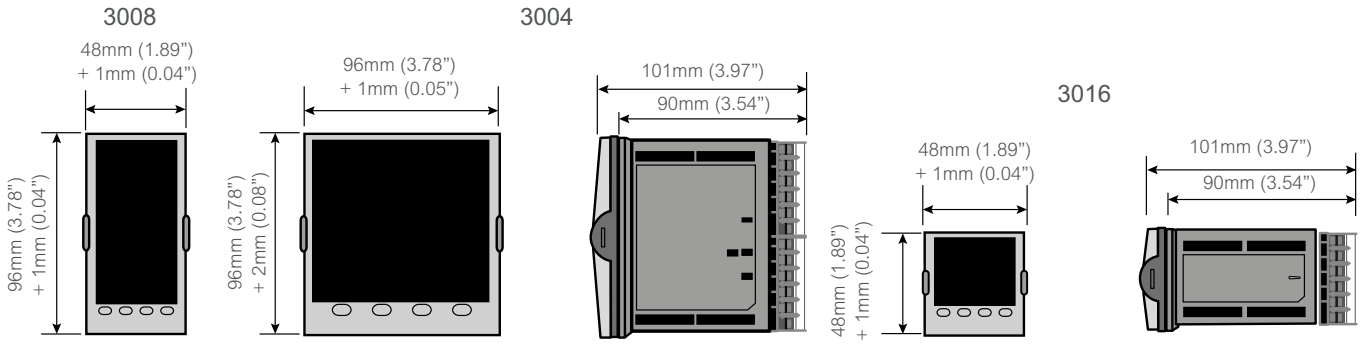



## 3016 Isolation



| Environmental specifications, standards approvals and certifications | | |
|---|---|---|
| Operating temperature | | 0 to 55°C |
| Storage temperature | | -20 to +70°C |
| Operating/storage humidity | | 5% to 90% RH non condensing |
| Atmosphere | | Non-corrosive, non-explosive |
| Altitude | | <2000 Meters |
| Vibration and Shock | | EN61131-2 (5 to 11.9Hz @ 7mm peak to peak displacement, 11.9-150Hz @ 2g, 0.5 octave min.)<br>EN60068-2-6 Test FC, Vibration. EN60068-2-27 Test Ea and guidance, Shock. |
| Front of panel sealing protection | | Standard bezel: EN60529 IP65, UL50E Type 12 (equivalent to NEMA12)<br>Washdown bezel: EN60529 IP66, UL50E Type 4X (indoor use) (equivalent to NEMA4X) |
| Rear of panel protection | | EN60529 IP10 |
| Flammability of plastic materials | | UL746C-V0 |
| Electromagnetic compatibility (EMC) | Emissions | HV PSU units to EN61326-1 Class B – Light industrial<br>LV PSU units to EN61326-1 Class A – Heavy industrial |
| | Immunity | BS EN61326-1 Industrial |
| Approvals and certification | Europe | CE (EN61326), RoHS (EN50581), REACH, WEEE, EN14597 pending |
| | USA, Canada | UL, cUL |
| | Russia | EAC (CUTR) pending |
| | China | RoHS, CCC: Exempt (Product not listed in catalogue of products subject to China Compulsory Certification) |
| | Global | When subject to the necessary field calibration, EPC3000 series controllers manufactured by Eurotherm are suitable for use in Nadcap applications in all furnace classes, as defined in AMS2750E clause 3.3.1.<br>Meets accuracy requirements of CQI-9<br>Achilles® Level 1 CRT Cyber Security Assessment<br>Schneider Electric Green Premium |
| Electrical safety | | EN61010-1 (installation category II, pollution degree 2) |

## Mechanical Details




| Panel cut out and weight | | | |
|---|---|---|---|
| | 3008 | 3004 | 3016 |
| Panel dimension | 92mm (-0.0 +0.8) x 45mm (-0.0 +0.6) | 92mm (-0.0 +0.8) x 92mm (-0.0 +0.8) | 45mm (-0.0 +0.6) x 45mm (-0.0 +0.6) |
| | 3.62" (-0.0 +0.03") x 1.77" (-0.0 +0.02) | 3.62" (-0.0 +0.03") x 3.62" (-0.0 +0.03) | 1.77" (-0.0 +0.02") x 1.77" (-0.0 +0.02) |
| Weight | 350g | 420g | 250g |
| | 12.34oz | 14.81oz | 8.81oz |

# Inputs and outputs

## I/O and communication types

| I/O and comms | 3016 | 3008/3004 |
|---|---|---|
| Analog inputs | 1 universal input 20Hz<br>1 auxilliary input 4-20mA, 0-10V 4Hz (option) | 1 or 2 (option) universal input 20Hz |
| Optional I/O modules:<br>Form A relay output<br>Logic I/O<br>DC analog output<br>TRIAC output | Up to 2, freely selectable: | Up to 3, freely selectable: |
| Form C relay output | 1 | 1 |
| Contact closure logic input | 1 (option) | 2 |
| Logic I/O (open collector) | – | 4 or 8 (option) |
| Current transformer | 1 (option) | 1 |
| 24V transmitter PSU | – | 1 |
| Communications | 1 of the following options:<br>RS485, RS422, RS232, Modbus RTU slave (EI Bisynch available with serial comms), Ethernet TCP. | 2 of the following options: RS485 Modbus (or EI Bisynch) and Ethernet Modbus TCP (option). |

## I/O specifications

| Universal process inputs | |
|---|---|
| Input types | Thermocouples, PT100/PT1000 RTD, 4-20mA, 0-20mA, 10V, 2V, 0.8V, 80mV, 40mV, zirconia (oxygen probe), pyrometers. For other input types, contact your Eurotherm supplier for advice.<br>Accuracy ±0.1% reading. When subject to the necessary field calibration, 3000 series controllers manufactured by Eurotherm are suitable for use in Nadcap applications in all furnace classes as defined in AMS2750E clause 3.3.1. |
| Sample time | Process Inputs 50ms (20Hz). Thermocouple 62.5ms (16Hz). RTD. Automatic cycle time selection 100ms (10Hz). |
| Mains rejection | Series mode rejection 48-62Hz >80dB. Common mode rejection >150dB |
| Sensor break | AC sensor break. Break detected within 3 seconds worst case. |
| Input filtering | OFF to 60 seconds filter time constant. |
| User calibration | User 2 point input adjust (offset/gradient), transducer scaling. |
| Thermocouple | K, J, N, R, S, B, L, T as standard, plus 2 downloadable custom curves<br>Linearization accuracy<br>CJ calibration accuracy: <±1.0ºC at 25ºC ambient<br>CJ ambient rejection ratio: better than 40:1 from 25ºC ambient<br>CJ automatic (internal), variable (external fixed 0, 45, 50ºC)<br>CJ external (measured) for 3004/3008 only |

# Inputs and outputs

| Input Ranges | | 40mV | 80mV | 0.8V | 2V | 10V | RTD (PT100/ PT1000) | mA |
|---|---|---|---|---|---|---|---|---|
| Range | Min | -40mV | -80mV | -800mV | -2V | -10V | 0Ω (-200ºC) | -32mA |
| | Max | +40mV | +80mV | +800mV | +2V | +10V | 400Ω /4000Ω (850ºC) | +32mA |
| Thermal stability from 25ºC ambient | | ±0.4µV/ºC ±13ppm/ºC | ±0.4µV/ºC ±13ppm/ºC | ±0.4µV/ºC ±13ppm/ºC | ±0.4µV/ºC ±13ppm/ºC | ±0.8µV/ºC ±70ppm/ºC | ±0.01ºC/ºC ±25ppm/ºC | ±0.16µA/ºC ±113ppm/ºC |
| Resolution | | 1.0µV unfiltered | 1.6µV | 16µV | 41µV | 250µV | 0.05 ºC | 0.6µA |
| Electrical noise (peak to peak with 1.6s input filter) | | 0.8µV | 3.2µV | 32µV | 82µV | 250µV | 0.05ºC | 1.3µA |
| Linearity accuracy (best fit straight line) | | 0.003% | 0.003% | 0.003% | 0.003% | 0.007% | 0.033% | 0.003% |
| Calibration accuracy @25ºC ambient | | ±4.6µV ±0.053% | ±7.5µV ±0.052% | ±75µV ±0.052% | ±420µV ±0.044% | ±1.5mV ±0.063% | ±0.31ºC ±0.023% | ±3µA ±1.052% |
| Input resistance | | 100MΩ | 100MΩ | 100MΩ | 100MΩ | 57kΩ | – | 2.49Ω (1% Shunt) |
| Bulb current | | – | – | – | – | – | 190µA/ 180µA | – |

| Remote setpoint auxilliary analog input (3016 Only) | |
|---|---|
| Range | 0 to 10V and 4 to 20mA. Max ranges -1V to 11V and 3.36mA to 20.96mA |
| Accuracy | <±0.25% of reading ± 1LSD, 14 Bits |
| Sample rate | 4Hz (250ms) |
| Functions | Remote setpoint input<br>Auxiliary analog input |
| Thermal stability | 100ppm (typical) < 150ppm (worst case) |
| Mains rejection | Common Mode 48-62Hz > 120db, Series Mode > 90db |
| Input impedance | Voltage 223kΩ. Current 2.49Ω |

| Current transformer input | |
|---|---|
| Input range | 0-50mA RMS, 48-62Hz<br>10Ω burden resistor fitted inside module |
| Measurement scaling | 10, 25, 50 or 100 Amps |
| Calibration accuracy | <1% of reading (typical) <4% of reading (worst case) |
| Input functions | Partial load failure. SSR open or short circuit. Other functions including power usage totalization available using soft wiring. |

| Contact closure logic inputs | |
|---|---|
| Thresholds | Open > 600Ω, Closed < 300Ω |
| Input functions | Auto/Manual select, SP2 select, Integral hold, Control inhibit, Program run functions, Keylock, Recipe select, PID select, BCD bit, Autotune enable, Standby, PV select plus other functions available using soft wiring. |

# Inputs and outputs

| Logic I/O modules | |
|---|---|
| Output rating | ON 12V DC 44mA max. Minimum control cycle time 50ms (auto) |
| Output functions | Time proportioned heat, time proportioned cool. SSR drive alarm and event outputs, interlock outputs, other functions available using soft wiring. |
| Contact closure (input) | Open > 500Ω, Closed < 150Ω |
| Input functions | Auto/Manual select, SP2 select, Integral hold, Control inhibit, Program run functions, Keylock, Recipe select, PID select, BCD bit, Autotune enable, Standby, PV select plus other functions available using soft wiring. |

| Logic I/O open collector type (3004/3008 only) | |
|---|---|
| External DC PSU | 15V to 35V DC |
| Output limit | Maximum current sinking 40mA |
| Output functions | Alarm and event outputs, interlock outputs, other functions available using soft wiring. Cannot be used as a control output. |
| Voltage sensing input | OFF < 1V, ON > 4V. Max 35V, Min -1V |
| Contact closure input | OFF > 28KΩ, ON < 100Ω |
| Input functions | Auto/Manual select, SP2 select, Integral hold, Control inhibit, Program run functions, Keylock, Recipe select, PID select, BCD bit, Autotune enable, Standby, PV select plus other functions available using soft wiring. |

| Relays (Form A modules and form C built in) | |
|---|---|
| Types | Form A (normally open)<br>Form C (changeover) |
| Output functions | Time proportioned heat, time proportioned cool. SSR Drive. Direct valve raise/lower. Alarm and event outputs, interlock outputs, other functions available using soft wiring. |
| Rating | Min 100mA @ 12V, Max 2A @ 264V AC resistive. External snubber recommended. |

| TRIAC module | |
|---|---|
| Rating | Min 40mA, 30V RMS, Max 0.75A @ 264V AC resistive. |
| Output functions | Time proportioned heat, Time proportioned cool. SSR drive alarm and event outputs, interlock outputs, other functions available using soft wiring. |
| Surge rating | Max current surge 30A (<10ms) Max continuous operating voltage 540V peak, 385V RMS. Max surge voltage 800V peak, 565V RMS (< 10ms). |

| Isolated DC analog output module | | |
|---|---|---|
| | Current output | Voltage output |
| Range | 0-20mA | 0-10V |
| Load resistence | <550Ω | >450Ω |
| Calibration accuracy | < ±(0.5% of reading + 100uA offset) | < ±(0.5% of reading + 50mV offset) |
| Resolution | 13.5 bits resolution | 13.5 bits resolution |
| Output functions | SCR/Power control drive. Proportional valve. Retransmission to chart recorder or other instrumentation. Other functions using soft wiring. | |

# Power, communications and operator interface

## Power and transmitter PSU

| Power supply, AC supply measurement and transmitter power supply | |
|---|---|
| Instrument supply voltage | 100-230Vac +/- 15%, 48 to 62Hz or 24Vac +10/-15%, 48 to 62Hz 24Vdc +20/-15%, max 5% ripple voltage. |
| PSU rating | EPC3016 6W<br>EPC3008/3004 9W |
| Power supply measurement | Only available in 100-230Vac powered instruments. Measures direct from power supply (no additional connections. Uncalibrated. Electrical noise 0.5V filtered, used by the PID function for power feedforward. |
| Transmitter PSU | 24Vdc. 2 to 28mA load. Isolated from system (300V AC double isolation) (3004/3008 only) |

## Communications

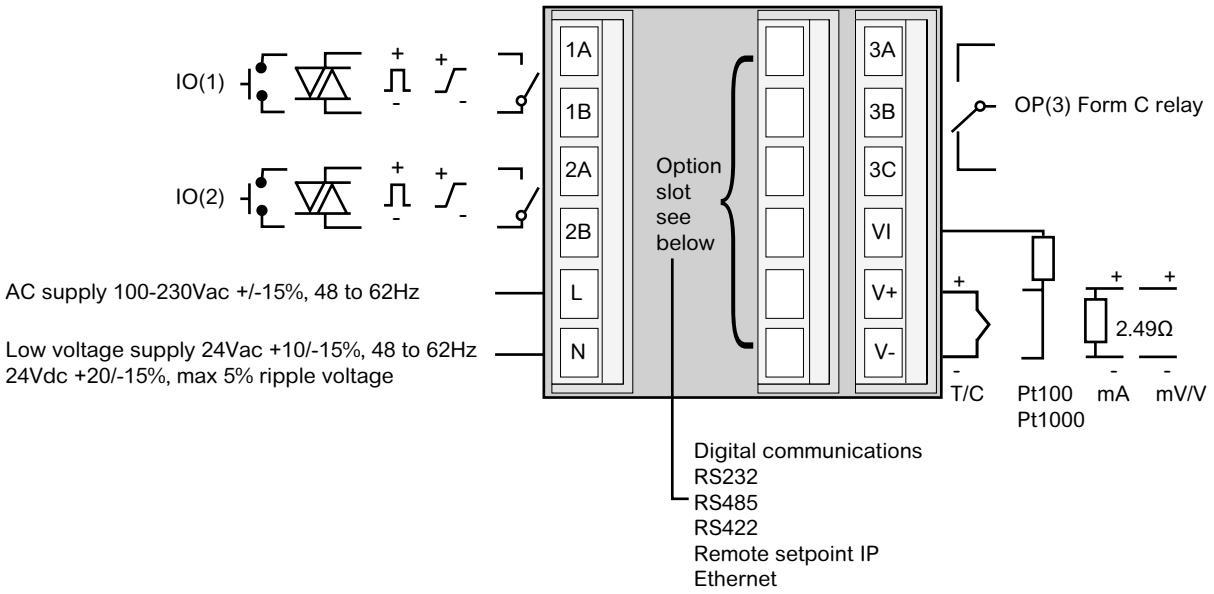
| Communications | |
|---|---|
| Ethernet | Shielded grounded RJ45 connection supporting 10/100BASE-T auto sensing. Fixed IP address or DHCP |
| Serial | RS485 Half duplex<br>RS422/RS232 Full duplex<br>Baud rates 9600, 19200<br>Modbus RTU 8 data bits, odd/even/no parity selectable<br>EI-Bisynch 7 data bits even parity fixed |

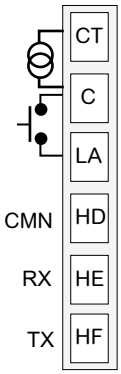
## Operator interface

| Display and operation | |
|---|---|
| Type | High visibility LCD with backlight. Flat “washdown” membrane bezel with superior panel sealing, or sculpted bezel with fully tactile keys. |
| Keyboard | 100,000 operations typical |
| Main PV | 3016 4 digits, 3DP; 3008 4.5 digits, 4DP; 3004 5 digits, 4DP; green/red bicolor (red in alarm) |
| Second line (3004/3008 only) | 5 character 16 segment text or numeric |
| Third line | 16 segment scrolling text or numeric display |
| Text character sets | Roman, simplified cyrillic |
| Additional display functions | Program status “crowsfoot” indicator. Output indicators. Alarm indication. Units. Bar graph (3004/3008 only). Communications activity indicator. |
| HMI functions | Configurable display contents. Configurable scroll lists for operator/supervisor. Configurable scrolling event messages. Passcode level protection with lockout period. 2 Programmable function keys (3004/3008 only) |

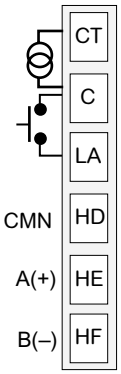
# Rear Terminals

## 3016

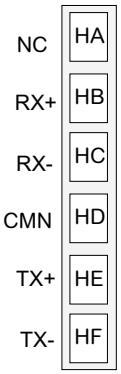


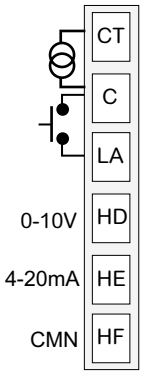

RS232
CT INPUT
DIGITAL INPUT



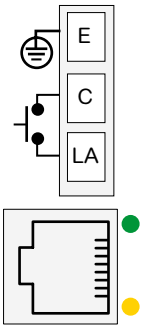

RS485
CT INPUT
DIGITAL INPUT




RS422




RSP INPUT
CT INPUT
DIGITAL INPUT

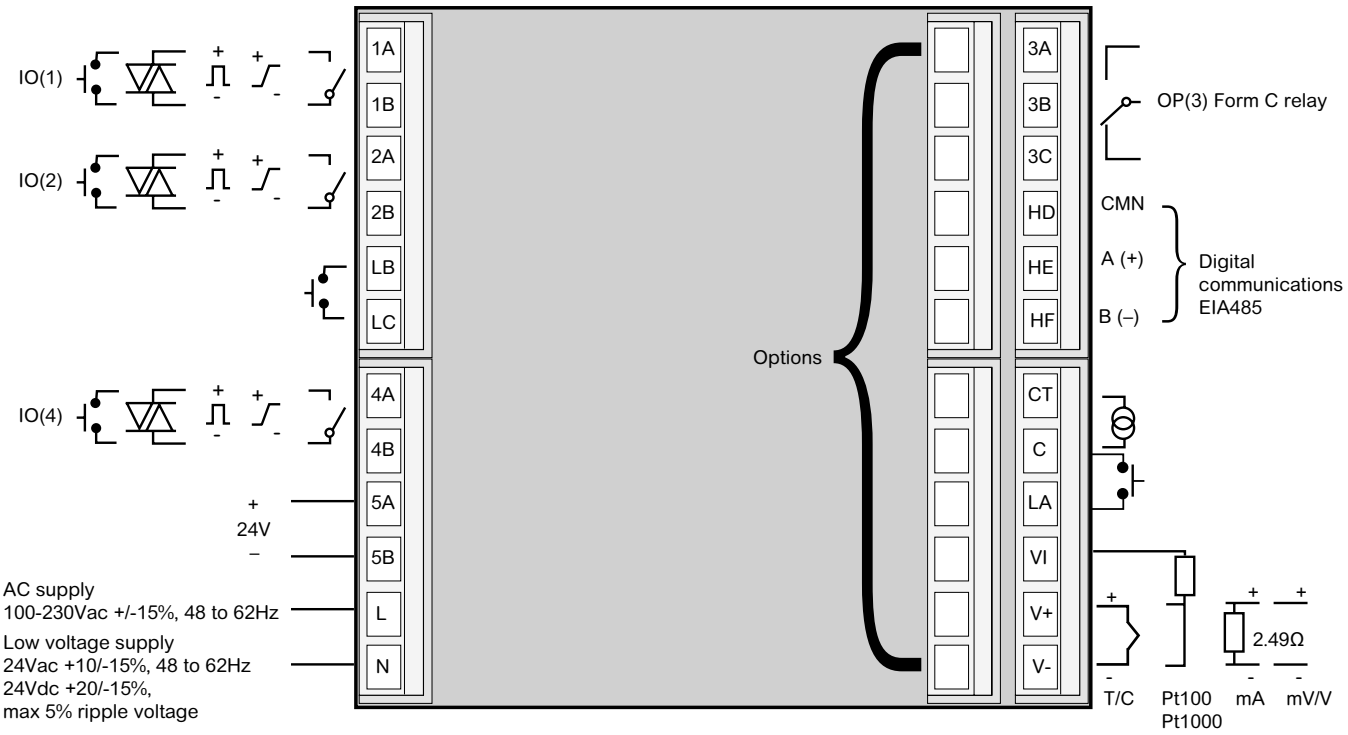


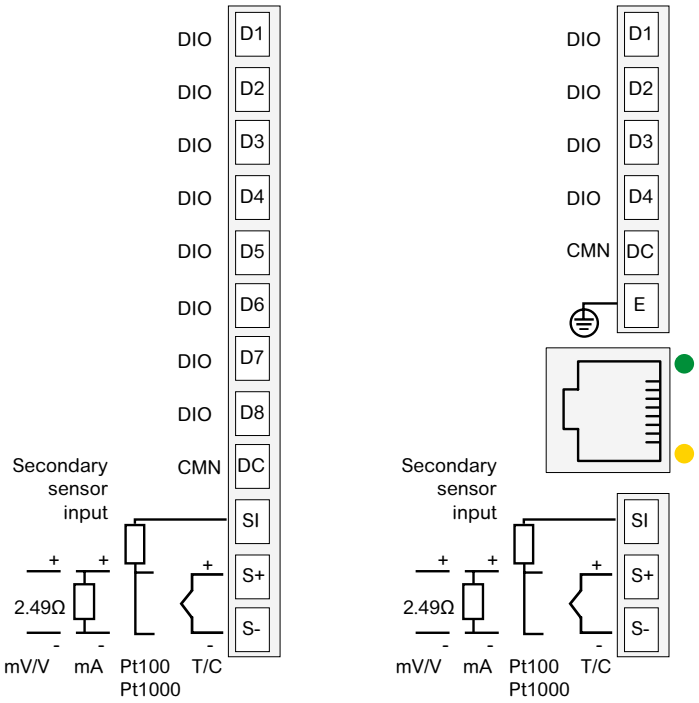

ETHERNET
DIGITAL INPUT

| Key to symbols used in wiring diagrams | | | | | |
|---|---|---|---|---|---|
| + ⎍ - | Logic output (SSR drive) | | Relay output | | Contact input |
| + ⎎ - | 0-10V/0-20mA analog output | | Triac output | | Current transformer input |

# Rear Terminals

## 3004 / 3008




PV INPUT
8 x DIGITAL IN / OUT




PV INPUT
ETHERNET
4 x DIGITAL IN / OUT

| Key to symbols used in wiring diagrams | | | | | |
|---|---|---|---|---|---|
|  | Logic output (SSR drive) |  | Relay output |  | Contact input |
|  | 0-10V/0-20mA analog output |  | Triac output |  | Current transformer input |

# Order Codes EPC3016

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

| 13 | 14 | 15 |
|---|---|---|
| | | |

Note 1. Basic EPC3016 Model includes one Form C Relay

| Model (see Note 1) | |
|---|---|
| EPC3016 | 1/16 DIN Controller |

| 1 | Type |
|---|---|
| CC | Controller only |
| CP | 1 x 8 Segment Basic Programmer |
| P1 | 1 x 24 Segment Advanced Programmer |
| P10 | 10 x 24 Segment Advanced Programmer |

| 2 | Supply Voltage |
|---|---|
| VH | 100 - 230Vac +/-15% (48 to 62Hz) |
| VL | 24Vac +10%, -15% (48 to 62 Hz); 24Vdc +20, -15%; 5% ripple |

| 3 | I/O 1 |
|---|---|
| XX | Not Fitted |
| L2 | Logic |
| R1 | Relay Output (without snubber) |
| R2 | Relay (supplied with external snubber) |
| D1 | DC Output |
| T1 | Triac (without snubber) |
| T2 | Triac (supplied with snubber) |

| 4 | I/O 2 |
|---|---|
| XX | Not Fitted |
| L2 | Logic |
| R1 | Relay Output (without snubber) |
| R2 | Relay (supplied with external snubber) |
| D1 | DC Output |
| T1 | Triac (without snubber) |
| T2 | Triac (supplied with external snubber) |

| 5 | Future |
|---|---|
| X | Not fitted |

| 6 | Future |
|---|---|
| XX | Future |

| 7 | Serial Comms Protocol |
|---|---|
| XX | MODBUS (Default) |
| EI | EI Bisynch |

| 8 | Ethernet, Comms & Remote SP |
|---|---|
| XX | None (Default) |
| C1 | CT Input, Dig In, and RS232 |
| C2 | CT Input, Dig In, and RS485 (3 wire) |
| C3 | RS422 only (5 wire) |
| CR | CT Input, Dig In, RSP Input |
| CE | Digital Input, Ethernet |

| 9 | Future |
|---|---|
| XX | Future |

| 10 | Tool Kit Blocks |
|---|---|
| XX | None (Default 50 wires) |
| TK | Enabled (includes 200 wires) |

| 11 | Future |
|---|---|
| XXX | Future |

| 12 | Bezel |
|---|---|
| ST | Standard |
| WD | Washdown |

| 13 | Labels |
|---|---|
| XXXX | None (Default) |
| Fnnnn | Custom Label |

| 14 | Specials |
|---|---|
| XXXX | None (Default) |

| 15 | Future |
|---|---|
| XX | Future |

# Quick Start Codes EPC3016

| 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

| 28 |
|---|
| |

Note 1 Requires purchase of Communications Option (Field 8) with “Dig In”

| 16 | Application |
|---|---|
| X | None (Default) |
| 1 | Heat only |
| 2 | Heat/Cool |
| V | VPU |

| 17 | Input 1 Sensor Type |
|---|---|
| X | Not required |
| M | Linear 0 to 80mVdc |
| V | Linear 0 to 10Vdc |
| 2 | Linear 0 to 20mA |
| 4 | Linear 4 to 20mA |
| B | Type B Thermocouple |
| J | Type J Thermocouple |
| K | Type K Thermocouple |
| L | Type L Thermocouple |
| N | Type N Thermocouple |
| R | Type R Thermocouple |
| S | Type S Thermocouple |
| T | Type T Thermocouple |
| P | PT100 |
| W | PT1000 |

| 18 | Input 1 Range |
|---|---|
| X | Not required |
| F | Full range |
| 1 | 0 to 100°C or 32 to 212°F or 273 to 373K |
| 2 | 0 to 200°C or 32 to 392°F or 273 to 473K |
| 3 | 0 to 400°C or 32 to 752°F or 273 to 673K |
| 4 | 0 to 600°C or 32 to 1112°F or 273 to 873K |
| 5 | 0 to 800°C or 32 to 1472°F or 273 to 1073K |
| 6 | 0 to 1000°C or 32 to 1832°F or 273 to 1273K |
| 7 | 0 to 1200°C or 32 to 2192°F or 273 to 1473K |
| 8 | 0 to 1300°C or 32 to 2552°F or 273 to 1573K |
| 9 | 0 to 1600°C or 32 to 2912°F or 273 to 1873K |
| A | 0 to 1800°C or 32 to 3272°F or 273 to 2073K |

| 19 | Future |
|---|---|
| XX | Future |

| 20 | Future |
|---|---|
| XX | Future |

| 21 | CT Input Range |
|---|---|
| X | Not Used |
| 1 | 10A |
| 2 | 25A |
| 5 | 50A |
| 6 | 100A |
| 7 | 1000A |

| 22 | Digital Input A Function (see Note 1) |
|---|---|
| X | Not Used |
| W | Alarm Acknowledge |
| M | Auto/Manual |
| R | Programmer Run/Hold |
| L | Keylock |
| K | Loop Track |
| P | Local Setpoint Select |
| T | Programmer Reset |
| U | Remote Setpoint Select |
| V | Recipe Select |

| 23 | Future |
|---|---|
| XX | Future |

| 24 | Future |
|---|---|
| XX | Future |

| 25 | Units |
|---|---|
| X | Not used (Default) |
| C | Degrees Celsius (Default) |
| F | Degrees Fahrenheit |
| K | Kelvin |

| 26 | Future |
|---|---|
| XX | Future |

| 27 | Warranty |
|---|---|
| XX | Standard warranty |

| 28 | Certificate of Conformity |
|---|---|
| XX | None required |
| CERT1 | Supplied with Certificate of Conformity |

# Order Codes EPC3008 / EPC3004

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | |

| 13 | 14 | 15 |
|---|---|---|
| | | |

Note 1. Base EPC3008/4 Model includes RS485 Modbus RTU Slave communications, 1 Form C Relay, 2x Contact Closure Digital inputs, 1 Current Transformer Input, and 24V Transducer Power Supply

Note 2. Digital I/O on I8/IE cannot be used for PID control output

| Model (see Note 1) | |
|---|---|
| EPC3008 | 1/8 DIN Controller |
| EPC3004 | 1/4 DIN Controller |

| 1 | Type |
|---|---|
| CC | Controller only |
| CP | 1 x 8 Segment Basic Programmer |
| P1 | 1 x 24 Segment Advanced Programmer |
| P10 | 10 x 24 Segment Advanced Programmer |

| 2 | Supply Voltage |
|---|---|
| VH | 100 - 230Vac +/-15% (48 to 62Hz) |
| VL | 24Vac +10%, -15% (48 to 62 Hz); 24Vdc +20, -15%; 5% ripple |

| 3 | I/O 1 |
|---|---|
| XX | Not fitted |
| L2 | Logic |
| R1 | Relay Output (without snubber) |
| R2 | Relay (supplied with external snubber) |
| D1 | DC Output |
| T1 | Triac (without snubber) |
| T2 | Triac (supplied with external snubber) |

| 4 | I/O 2 |
|---|---|
| XX | Not Fitted |
| L2 | Logic |
| R1 | Relay Output (without snubber) |
| R2 | Relay Output (supplied with external snubber) |
| D1 | DC Output |
| T1 | Triac (without snubber) |
| T2 | Triac (supplied with external snubber) |

| 5 | I/O 4 |
|---|---|
| XX | Not Fitted |
| L2 | Logic |
| R1 | Relay Output (without snubber) |
| R2 | Relay Output (supplied with external snubber) |
| D1 | DC Output |
| T1 | Triac (without snubber) |
| T2 | Triac (supplied with external snubber) |

| 6 | Future |
|---|---|
| XX | Future |

| 7 | RS485 Function |
|---|---|
| XX | MODBUS (Default) |
| EI | EI Bisynch |

| 8 | Ethernet, 2nd Input & Option I/O |
|---|---|
| XX | None (Default) |
| I8 | Second PV Input; 8 Digital Input/Outputs: |
| IE (see Note 2) | Second PV Input;Ethernet (MODBUS TCP slave) + 4 x Digital I/O |

| 9 | Future |
|---|---|
| XX | Future |

| 10 | Tool Kit Blocks |
|---|---|
| XX | None (Default 50 wires) |
| TK | Enabled (includes 200 wires) |

| 11 | Future |
|---|---|
| XXX | 50 Wires (Default) |

| 12 | Bezel |
|---|---|
| ST | Standard |
| WD | Washdown |

| 13 | Labels |
|---|---|
| XXXX | None (Default) |
| Fnnnn | Custom Label |

| 14 | Specials |
|---|---|
| XXXX | None (Default) |

| 15 | Future |
|---|---|
| XX | Future |

# Quick Start Codes EPC3008 / EPC3004

| | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | |

| 28 |
|---|
| |

Note 1. Requires purchase of 2nd Input (Field 8)

Note 2. Requires purchase of Option I/O (Field 8)

| 16 | Application |
|---|---|
| X | None (Default) |
| 1 | Heat only |
| 2 | Heat/ Cool |
| V | VPU |
| C | Carbon Potential Controller (requires PV2 and Zirconia) |
| D | Dew Point Controller (requires PV2 and Zirconia) |

| 17 | Input 1 Sensor Type |
|---|---|
| X | Not required |
| M | Linear 0 to 80mVdc |
| V | Linear 0 to 10Vdc |
| 2 | Linear 0 to 20mA |
| 4 | Linear 4 to 20mA |
| B | Type B Thermocouple |
| J | Type J Thermocouple |
| K | Type K Thermocouple |
| L | Type L Thermocouple |
| N | Type N Thermocouple |
| R | Type R Thermocouple |
| S | Type S Thermocouple |
| T | Type T Thermocouple |
| P | PT100 |
| W | PT1000 |

| 18 | Input 1 Range |
|---|---|
| X | Not required |
| F | Full range |
| 1 | 0 to 100°C or 32 to 212°F or 273 to 373K |
| 2 | 0 to 200°C or 32 to 392°F or 273 to 473K |
| 3 | 0 to 400°C or 32 to 752°F or 273 to 673K |
| 4 | 0 to 600°C or 32 to 1112°F or 273 to 873K |
| 5 | 0 to 800°C or 32 to 1472°F or 273 to 1073K |
| 6 | 0 to 1000°C or 32 to 1832°F or 273 to 1273K |
| 7 | 0 to 1200°C or 32 to 2192°F or 273 to 1473K |
| 8 | 0 to 1300°C or 32 to 2552°F or 273 to 1573K |
| 9 | 0 to 1600°C or 32 to 2912°F or 273 to 1873K |
| A | 0 to 1800°C or 32 to 3272°F or 273 to 2073K |

| 19 | Input 2 Sensor Type (see Note 1) |
|---|---|
| X | Not fitted |
| M | Linear 0 to 80mVdc |
| V | Linear 0 to 10Vdc |
| 2 | Linear 0 to 20mA |
| 4 | Linear 4 to 20mA |
| B | Type B Thermocouple |
| J | Type J Thermocouple |
| K | Type K Thermocouple |
| L | Type L Thermocouple |
| N | Type N Thermocouple |
| R | Type R Thermocouple |
| S | Type S Thermocouple |
| T | Type T Thermocouple |
| P | PT100 |
| W | PT1000 |
| Z | Zirconia (HiZ) |

| 20 | Input 2 Range (see Note 1) |
|---|---|
| X | Not required |
| F | Full range |
| 1 | 0 to 100°C or 32 to 212°F or 273 to 373K |
| 2 | 0 to 200°C or 32 to 392°F or 273 to 473K |
| 3 | 0 to 400°C or 32 to 752°F or 273 to 673K |
| 4 | 0 to 600°C or 32 to 1112°F or 273 to 873K |
| 5 | 0 to 800°C or 32 to 1472°F or 273 to 1073K |
| 6 | 0 to 1000°C or 32 to 1832°F or 273 to 1273K |
| 7 | 0 to 1200°C or 32 to 2192°F or 273 to 1473K |
| 8 | 0 to 1300°C or 32 to 2552°F or 273 to 1573K |
| 9 | 0 to 1600°C or 32 to 2912°F or 273 to 1873K |
| A | 0 to 1800°C or 32 to 3272°F or 273 to 2073K |

| 21 | CT Input Range |
|---|---|
| X | Not Used |
| 1 | 10A |
| 2 | 25A |
| 5 | 50A |
| 6 | 100A |
| 7 | 1000A |

| 22 | Digital Input A Function |
|---|---|
| X | Not Used |
| W | Alarm Acknowledge |
| M | Auto/Manual |
| R | Programmer Run/Hold |
| L | Keylock |
| K | Loop Track |
| P | Local Setpoint Select |
| T | Programmer Reset |
| U | Remote Setpoint Select |
| V | Recipe Select |

| 23 | Digital Input B Function |
|---|---|
| X | Not Used |
| W | Alarm Acknowledge |
| M | Auto/Manual |
| R | Programmer Run/Hold |
| L | Keylock |
| K | Loop Track |
| P | Local Setpoint Select |
| T | Programmer Reset |
| U | Remote Setpoint Select |
| V | Recipe Select |

| 24 | Programmer I/O Configuration (see Note 2) |
|---|---|
| X | Not Used/fitted |
| 1 | D1 to D8 Programmer Event Outputs 1 to 8 |
| 2 | D1 to D4 = Programmer Event Outputs 1 to 4, D5 to D7 = BCD Inputs 1 t o3, D8 = Programmer Run/Hold. BCD Output to Program Number |
| 3 | D1 to D4 = Programmer Event outputs 1 to 4, D5 to D8 Programmer Run, Hold, Reset, Advance respectively |
| 4 | D1 to D4 = Programmer Event inputs 1 to 4, D5 to D7 Programmer Run/ Hold, Reset, Advance respectively, D8 Not Used. BCD Output to Program Number |
| 5 | D1 to D8 = BCD Inputs 1 to 8. BCD Output to Recipe Recall |
| 6 | D1 to D4 = BCD Inputs 1 to 4, D5 - D8 = Not used. BCD Output to Recipe Recall |
| 7 | D1 to D4 Programmer Run, Hold, Reset, Advance respectively, D5 - D8 = Not used |
| 8 | D1 to D3 Programmer Run, Hold, Reset respectively, D4 - D8 = Not Used |
| 9 | D1 to D4 = Programmer Event Outputs, D5 to D8 = Not Used |

| 25 | Units |
|---|---|
| X | Not used (Default) |
| C | Degrees Celsius (Default) |
| F | Degrees Fahrenheit |
| K | Kelvin |

| 26 | Future |
|---|---|
| XX | Future |

| 27 | Warranty |
|---|---|
| XX | Standard warranty |

| 28 | Certificate of Conformity |
|---|---|
| XX | None required |
| CERT1 | Supplied with Certificate of Conformity |

## Accessory Order Codes

| | 1 |
|---|---|
| | |

| Model | |
|---|---|
| EPCACC | EPC Accessories |

| 1 | Accessories |
|---|---|
| RES2R9 | 2.49 Ohm Resistor |
| RES250 | 250 Ohm Resistor |
| RES500 | 500 Ohm Resistor |
| SNUBBER | RC SNUBBER |
| USBCONF | USB Backup lead |
| CTR10A | Current transformer 10A Primary |
| CTR25A | Current transformer 25A Primary |
| CTR50A | Current transformer 50A Primary |
| CTR100A | Current transformer 100A Primary |
| ITOOLS | Itools configuration Software |

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