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Find the *Schneider Electric / Eurotherm Dimension 8725* at our website: ***Click HERE***

CONTROL SYSTEM

# All in One.

*Dimension® Model 8725*

- Multi-loop PID control
- Sequential, digital control
- Process monitoring
- Setpoint ramping and event outputs
- Data communications
- Secondary operator station able to communicate over modem or cable
- User configurable display screen
- Memory card data storage

EUROTHERM CONTROLS

The DIMENSION®

**Model 8725 Data Bulletin**

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All in ONE DIMENSION®

*When your control application calls for just a little bit more, you can choose Dimension.*

THERE IS A WHOLE WORLD of control needs. Some applications require closed loop, PID control. Others require sequencing logic. There are applications that need setpoint ramping, remote setpoints, process variable retransmission, multiple alarming strategies and digital communications. Then there are the more difficult applications that require cascade control, ratio control, combining multiple inputs for one process variable, math functions, custom displays, memory card storage, etc.

There are a number of dedicated controllers on the market that take care of each of the above functions. But what if your application requires more than just one of the above functions? If this is the case, you can now choose Dimension.

There are two ways to handle applications that require two or more of the above functions. The system designer can purchase loop controllers, a Programmable Logic Controller (PLC), frequency converters, signal conditioning equipment, etc. and then spend significant time designing a control system that combines these functions into the desired result. This is already taken care of with Dimension. You get a customized control system with only a fraction of the work.

If your control application requires a mixture of control functions, call your Eurotherm representative to discuss how we can help. You owe it to yourself to take a look at Dimension.

## Features

- Multi-loop PID control
- Sequential, digital control
- Process monitoring
- Setpoint ramping & event outputs
- Multiple alarm strategies
- Data communications
- PID values change based upon process condition
- Math functions
- Memory card for storage
- User configurable display screens
- Programmable function keys
- Context sensitive help key
- Real time, 7 day/ week clock
- Digital inputs/ outputs
- Secondary operator station, able to communicate over modem or cable
- Process variable retransmission



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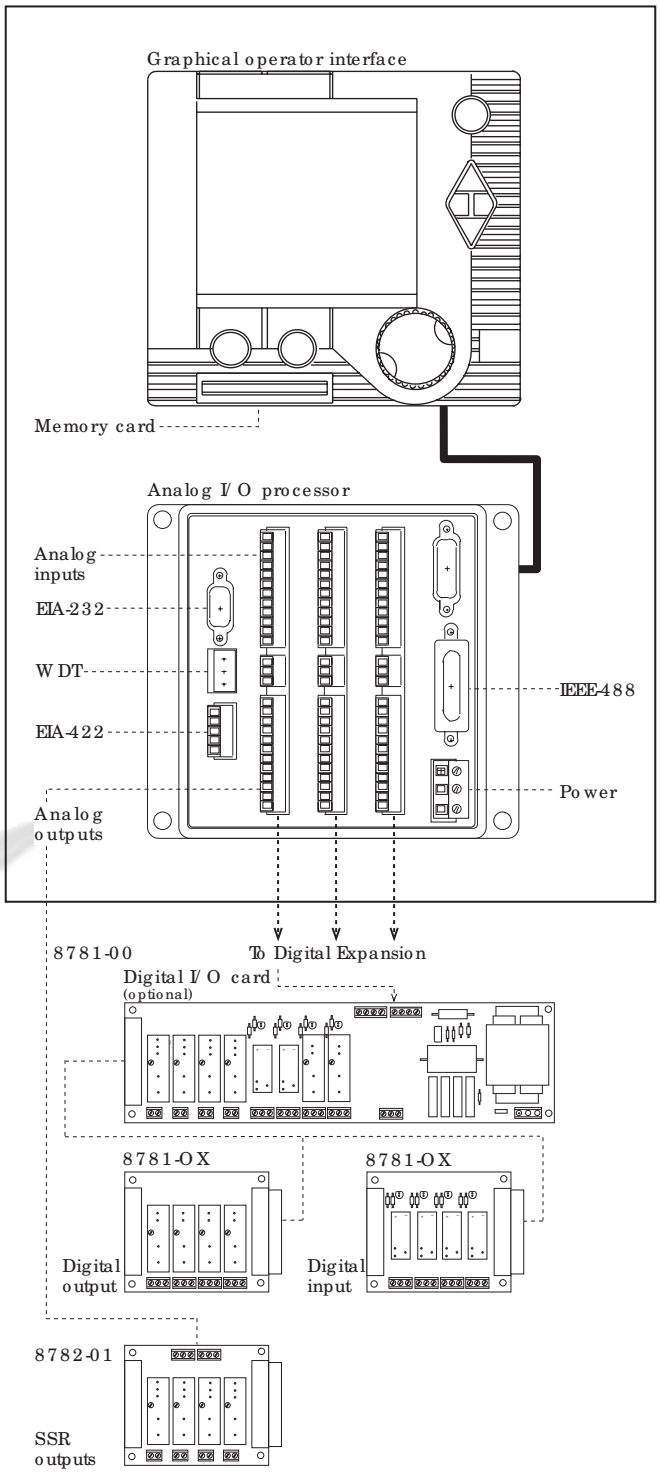
## Dimension Model 8725 Controller Specifications

8725/RGOI




### Graphical operator interface

- 1-8 control loops
- 0-8 setpoint programmers
- Displays process control information, configurations and options
- Memory card
- Graphical display of setpoint programs

### Analog input/output processor

- 18 analog inputs
- 12 analog or time proportioned outputs
- 6 digital I/O or expansion serial port to digital I/O cards (8781-00)
- EIA-232, EIA-422, and IEEE-488 available
- Watch dog timer (WDT)

### Digital input/output cards, Model 8781

- Up to 2 digital I/O cards, Model 8781-00 with 4 inputs and 4 outputs each (expandable to 32 digital I/O)
- Expansion card, 4 additional inputs
- Expansion card, 4 additional outputs
- Isolated solid state input/output modules or mechanical relays

### Time proportioning solid state relay output, 8782-01

- 4 SSR outputs per card



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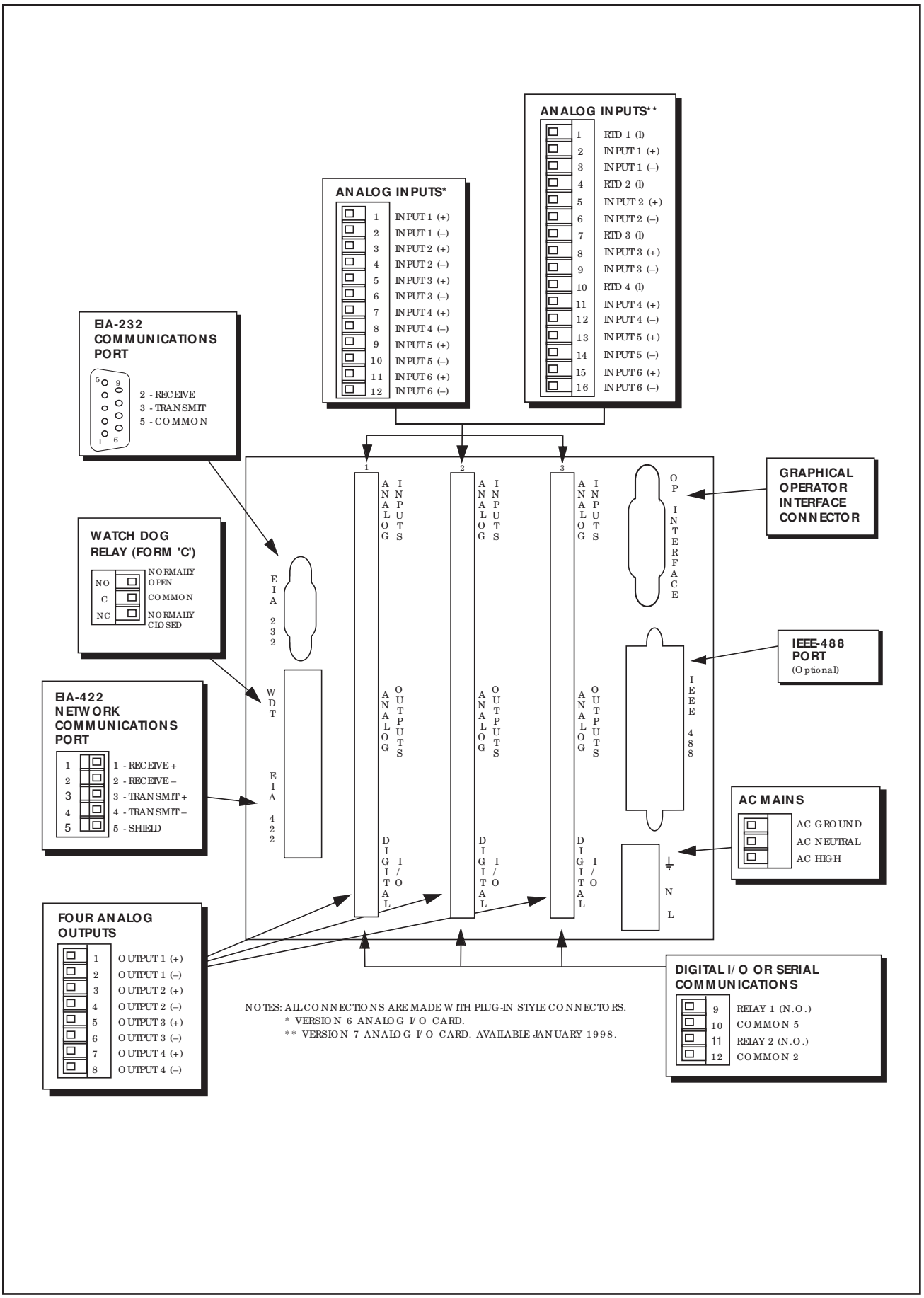




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## SPECIFICATIONS

| | Model 8725<br>Analog I/O Processor | Model 8725<br>Operator Interface |
|---|---|---|
| **Dimensions**<br>(overall W x H x D) | 6.47" x 5.43" x 11.80"<br>(150mm x 138mm x 300mm) | 6.75" x 6.06" x 2.27"<br>(173mm x 155mm x 58mm) |
| **Weight** | 6lbs (2.8kg) | 2.5lbs (1.1kg) |
| **Environmental Limits**<br>Operating temperature<br>Storage temperature<br>Relative humidity | <br>0°C to 50°C (32°F to 122°F)<br>-25°C to 85°C (-13°F to 185°F)<br>0 to 90 percent, non-condensing | <br>0°C to 50°C (32°F to 122°F)<br>-20°C to 60°C (-4°F to 140°F)<br>10 to 90 percent, non-condensing |
| **Voltage** | 102-264Vac | |
| **Frequency** | 47-63Hz | |
| **Power** | 120W (typical) | |
| **Process contol types**<br>Manual control<br>Auto control | <br>0.0 to 100.0 percent reverse output and/or 0.0 to 100.0 percent direct output<br>PID parameters (five groups for each loop of control except Manual Reset)<br>Gain: 0.0 to 200.0<br>Auto Reset: 0.0 to 75.0 repeats per minute with anti-reset windup<br>Manual reset: 0.0 to 100.0 percent, reverse and direct<br>Rate: 0.00 to 99.99 minutes | |
| **Control Loops**<br>Number | <br>One to eight control loops | |
| **Programmer Capacities**<br>Number of programmers<br>Number of segments<br>Number of events<br>Number of programs<br>Maximum segment time<br>Minimum segment time<br>Segment sequencing<br>Number of cycles<br>Programmer update rate | <br>Zero to eight (one programmer for each loop of control) or one for all loops<br>750 (shared by all programmers)<br>12 (programmed on a per segment basis)<br>15<br>99hrs<br>0.2sec.<br>Forward or backward jumps with nested recycling<br>255<br>0.2sec. | |



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| | | |
|---|---|---|
| **Analog inputs** | | |
| General | Number | Six per analog card (max of 4 RTDs and max of 3 analog cards per system) for a total of 18 (max of 12 RTDs and max of 3 analog cards) |
| | Range | ±100mV and 0 to 10Vdc (auto ranging) |
| | Sample rate | 5Hz (200ms) |
| | Calibration accuracy | 0.1% of reading, ±1 LSD or ±.5°C/F |
| | Resolution | <1µV for ± 100mV range, < 0.2mV for 10Vdc range, 18 bit |
| | Linearization accuracy | No discernable error |
| | Zero drift with ambient temperature | <0.1µV per °C for ± 100mV range, 0.1mV per °C on 10Vdc range |
| | Gain drift with ambient temperature | <0.004% of reading per °C |
| | Input filter | 1.0 to 999.9sec. |
| | Zero and span offset | User adjustable over the full display range |
| Thermocouple | Types | Refer to Sensor inputs and display ranges table |
| | Cold junction compensation | Automatic compensation typically >30 to 1 rejection of ambient temperature change |
| RTD/ PT1000 | Type | 3-wire, Pt100 DIN43760 |
| | Bulb current | 0.2mA |
| | Lead compensation | No error for 22 ohms in all 3 leads |
| Process | Range | ±100mV, 0 to 20mA or 0 to 10Vdc (All configurable between limits) |
| | Type | Linear or custom |
| | Application | Process value, remote setpoint, setpoint trim |
| **Control outputs** | | |
| Range | | 0 to 20mA (into 600Ω max) or 0 to 10Vdc<br>Time proportioning 0/10Vdc (20mA max.) |
| Number | | Twelve analog outputs (max of 3 analog cards) 4 per analog card (max of 3 analog cards) |
| Output action | | Configurable for reverse, direct or bi-modal (both reverse and direct) |
| Resolution | | Analog: 13 bit (.015%)<br>Time-proportioned: 8 bit (.4%) |
| Update time | | 200ms |
| Bi-Model band | | -10.0% [overlapping to +10% (deadband)] |
| Output limiting | | Separately adjustable high and low limits for each channel |
| Application | | Heating, cooling, direct or reverse, bimodel, time proportioned or analog |
| Input filter | | 0-100sec. |
| **Math functions** | | Mathematically combine 4 inputs to create a calculated process variable<br>The process variable will be calculated by the following equation:<br>[(Anlgln01 * Mult01) + (Anlgln02 * Mult02) + (Anlgln03 * Mult03) + (Anlgln04 * Mult04)]/scale |
| **Alarms** | | |
| Control | | Eight full-scale alarms per control loop (High, High-High, Low, Low-Low)<br>Four full-scale deviation alarms (High, High-High, Low, Low-Low)<br>Five groups of process alarm values<br>Failed sensor alarm |
| Monitor input | | Two alarms for each analog input (High and Low) |



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| | |
|---|---|
| **Logic functions** | |
| Logic boxes available: | |
| Con_Out | Contact output assignment (OutSet##) selections<br>Allows four alarm conditions and/or contact inputs to be logically "OR'd" together to energize a contact relay output |
| Logic | Internal logic (OR/NOR, AND/NAND) selections. Allows four alarm conditions and/or contact inputs to be logically combined (OR/NOR, AND/NAND) to operate an internal logic function |
| Out_Off | Control outputs off assignment (OFFSet##) selections. Allows four alarm conditions and/or contact inputs to be logically "OR'd" together to force all control outputs of the loop number specified by ## to off |
| **Digital Output 1** | |
| Number | Two per analog card without Model 8781 Digital I/O card<br>16 with Model 8781 Digital I/O card |
| Type | Low level, TTL, 20mA without 8781; 3A solid state or mechanical relay with 8781 |
| Function | User configurable for programmer event outputs and alarms |
| **Digital Inputs** | |
| Number | Two per analog card without Model 8781 Digital I/O card<br>16 with Model 8781 Digital I/O card |
| Type | Contact closure or TTL Level signal without 8781<br>12-280Vac and 5-200Vdc with 8781 |
| Function | Program run/hold, program abort, controller auto/manual, alarm knowledge, logic inputs |
| **Communications** | |
| Types | Standard EIA-232 single drop, optional EIA-422 multidrop and IEEE-488<br>All 3 types of communication are available on one unit |
| Protocol | ENQ/ACK |
| Baud Rate | 300, 1200, 2400, 9600, 19.2K |
| Maximum distance | EIA-232: 50ft (15m)<br>EIA-422: 4000ft (1200m) |
| **Operator interface** | |
| Interconnection cable | 10ft (3.3m) (used to connect the operator interface panel to the 8705 analog I/O processor) |
| Type of display | LCD with backlighting |
| Display resolution | 160 pixels wide x 128 pixels high |

| **Altitude Input Conversion accuracy** | **Range** | **Overall accuracy** | **Temperature Coefficient** | |
|---|---|---|---|---|
| Full scale | 0 to 200Kft | @72°F or 22°C | ±%FS Per °F | ±%FS Per °C |
| Range segments | 100 to 200Kft<br>80 to 100Kft | ±1.00%FS<br>±0.75%FS | .015 | .008 |
| | 50 to 80Kft<br>0 to 50Kft | ±0.25%FS<br>±0.10%FS | | |



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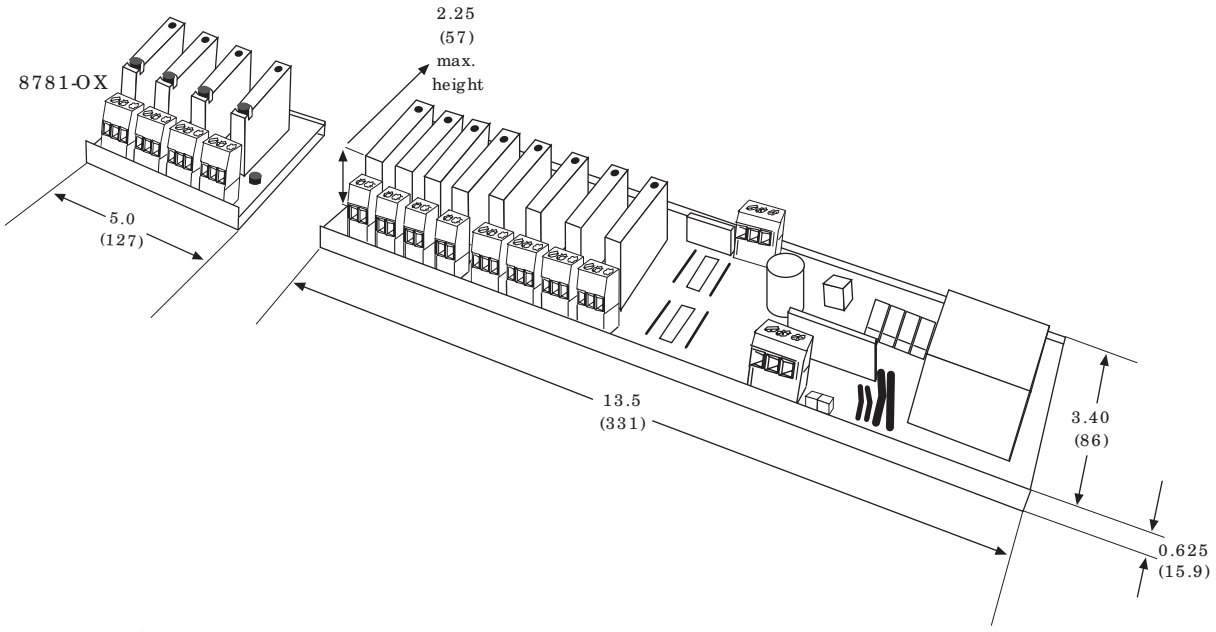
## Standard Dimension Input Types/ Ranges

| Standard Sensor Inputs | Celsius Min | Celsius Max | Fahrenheit Min | Fahrenheit Max |
|---|---|---|---|---|
| J thermocouple | -22 | 760 | -7 | 1400 |
| K thermocouple | -20 | 1372 | -5 | 2500 |
| T thermocouple | -232 | 400 | -380 | 750 |
| N thermocouple | -23 | 1300 | -11 | 2370 |
| C thermocouple - W5%Re/ W26%Re (Hoskins) | -18 | 2319 | 0 | 4200 |
| R thermocouple | -20 | 1768 | -5 | 3200 |
| S thermocouple | -20 | 1768 | -4 | 3200 |
| B thermocouple | 47 | 1820 | 117 | 3300 |
| Platinel II thermocouple | -28 | 1450 | -19 | 2640 |
| RTD/ PT100DIN 43760 European (.00385) or American (.00392) | -200 | 630 | -345 | 1130 |
| E thermocouple | -270 | 1000 | -450 | 1830 |
| Ni/ Ni 18%Mo thermocouple | 0 | 1350 | 32 | 2460 |
| D thermocouple - W3%Re/ W25%Re | 23 | 2300 | -9 | 4200 |
| G thermocouple - W/ W26%Re | -20 | 2315 | 0 | 4200 |
| **Linear Inputs** | -999 | 9999 | | |
| **Linear range**<br>Millivolt<br>Voltage<br>Current | <br>0mV to + 100mV<br>0V to + 10V<br>0mA to + 20mA | | | |

**Model 8781-00**
Digital I/ O Card




*Dimensions in inches (mm)*



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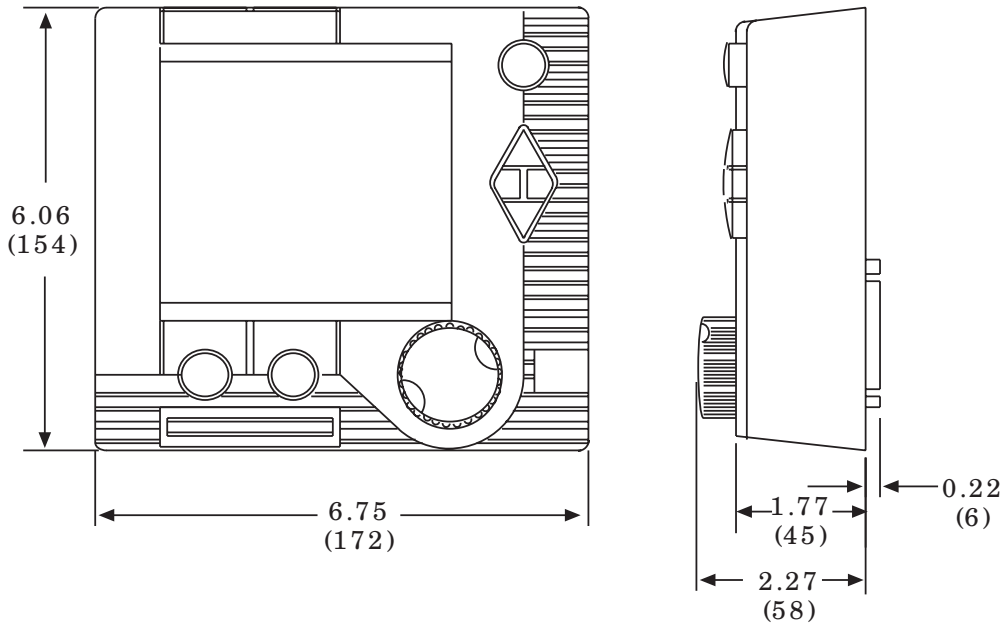
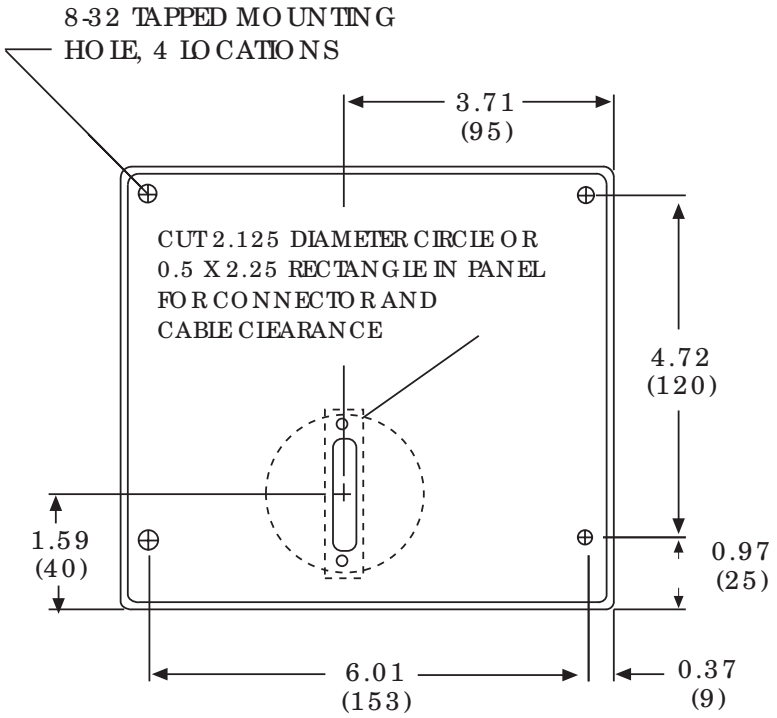
## Dimension® Graphical Operator Interface




*Dimensions in inches (mm)*



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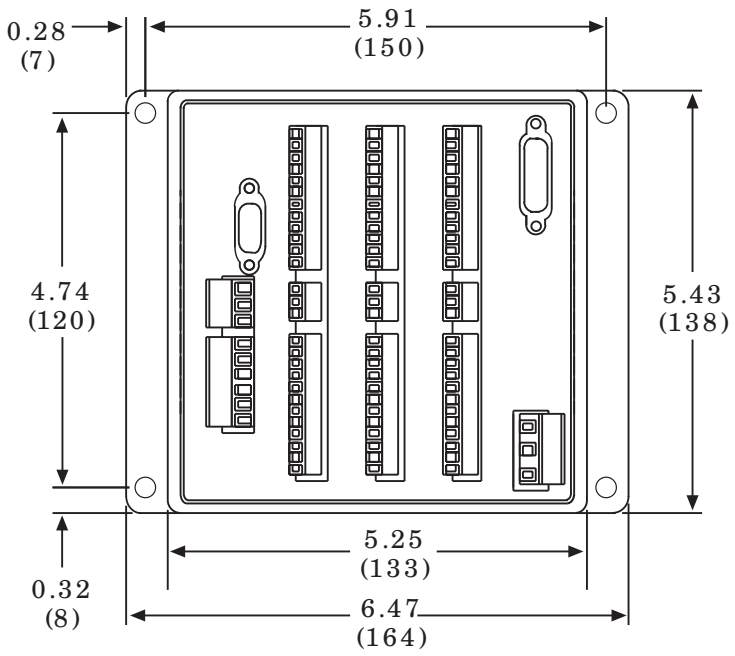
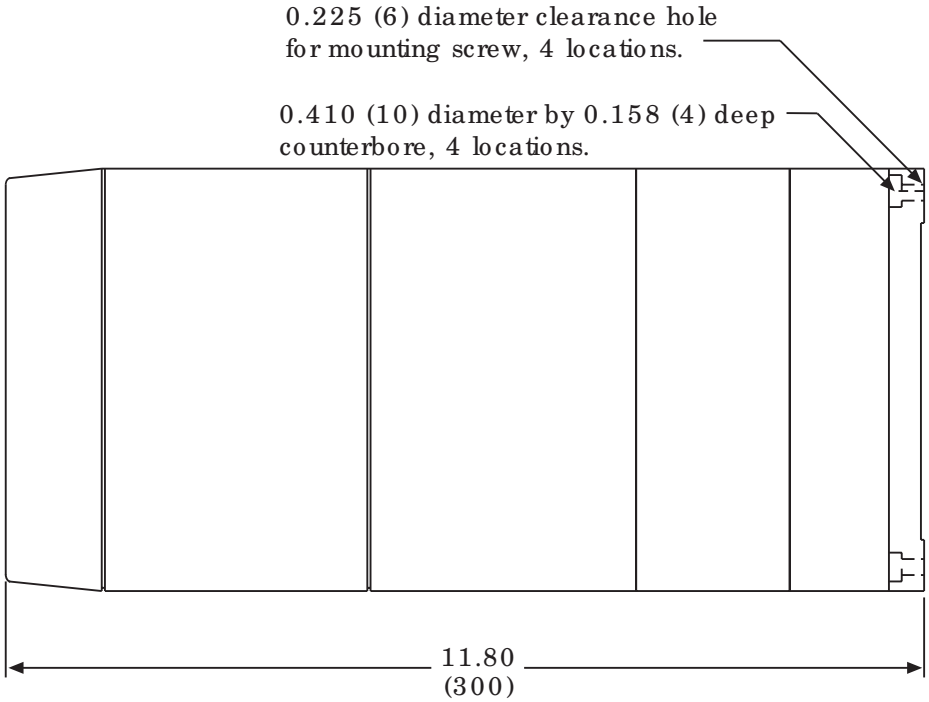
## Dimension® 8725 Input/ Output Processor




*Dimensions in inches (mm)*



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## Coding

8725/....

| | | |
|---|---|---|
| *operator interface* | | |
| **AGOI** | attached graphic operator interface | |
| **RGOI** | remote-mountable graphic operator interface | |
| **NGOI** | no graphic operator interface | |
| *outputs (4 included)* | | *[3]* |
| **X...** | output 1 | |
| **.X..** | output 2 | |
| **..X.** | output 3 | |
| **...X** | output 4 | |
| *control loops (maximum of 8)* | | |
| **0** | no control loops | |
| **CL1** | one control loop | |
| **CL2** | two control loops | |
| **CL3** | three control loops | |
| **CL4** | four control loops | |
| **CL5** | five control loop | |
| **CL6** | six control loops | |
| **CL7** | seven control loops | |
| **CL8** | eight control loops | |
| *programmer* | | |
| **0** | no programmers | |
| **PR1** | one programmer | |
| **PR2** | two programmers | |
| **PR3** | three programmers | |
| **PR4** | four programmers | |
| **PR5** | five programmer | |
| **PR6** | six programmers | |
| **PR7** | seven programmers | |
| **PR8** | eight programmers | |
| *communication option 1* | | |
| **232** | EIA-232 | |
| *communication option 2* | | |
| **0** | no comm 2 | |
| **422** | EIA-422 | |
| *communication option 3* | | |
| **0** | no comm 3 | |
| **488** | IEEE-488 | |
| *analog input/output expansion card 1* | | |
| **0** | no expansion card 1 | |
| **AEC1** | expansion card 1 | |
| *outputs for expansion card 1* | | *[3]* |
| **X...** | output 5 | |
| **.X..** | output 6 | |
| **..X.** | output 7 | |
| **...X** | output 8 | |
| *analog input/output expansion card 2* | | |
| **0** | no expansion card 2 | |
| **AEC2** | expansion card 2 | |
| *outputs for expansion card 2* | | *[3]* |
| **X...** | output 9 | |
| **.X..** | output 10 | |
| **..X.** | output 11 | |
| **...X** | output 12 | |

## Accessories

| | | |
|---|---|---|
| *External expansion packages* | | *[1]* |
| *SUBDIM base* | | |
| **8782-01** | 4 CH T/P SSR output card | |
| **8781-00** | 4 IN/4 OUT digital I/O card | |
| **8781-03** | 4 CH input expansion card | |
| **8781-04** | 4 CH solid state output expansion card | |
| **8781-05** | 4 CH mechanical output card | |
| **092218-002** | 2ft cable (connects two 8781-00 together) | |
| **090478-002** | optional 1ft cable for 8781-03, 8781-04, and 8781-05 | |
| *Communications expansion packages* | | |
| *SUBDIM base* | | |
| **MODEM** | modem comms pkg | |
| **SGOI** | secondary graphic operator interface | |
| *Personal computer support packages* | | |
| *SUBDIM base* | | |
| **85106** | DDE server and sample program | |
| **SVAUTO/XX** | SpecView Auto | |
| **SV+/SP/XX** | SpecView Plus—Supervisory software for Windows® | |
| **088541-002** | 10ft cable/EIA-232 comms | |
| **088547-002** | 10ft cable/EIA-422 comms | |
| *Digital I/O modules and accessories* | | |
| *SUBDIM base* | | |
| **8700-MC** | memory card | |
| **086304-001** | DC input 2.5-28V | |
| **086303-001** | AC input 90-140V | |
| **086303-002** | AC input 108-280V | |
| **086302-002** | output SSR 12-140Vac 3A | |
| **086302-001** | output SSR 24-280Vac 1A | |
| **086308-001** | output SSR 5-200Vdc 3A | |
| **086308-002** | output SSR 5-60Vdc 3A | |
| **085501-002** | output mechanical relay 8A | |
| **094616-001** | extra Users manual (one provided with each 8725) | |

*Notes:*

*[1] Digital I/O modules must be ordered separately.*

*[2] Consult factory for additional nonstandards.*

*[3] Specify "1" for 4-20mA or 0-20mA, "2" for 0-5Vdc, or "3" for 5V time proportioning.*

*[4] Blank space for standard unit.*

| *Example:* | Model | operator interface | outputs | control loops | prog | comms slot 1 | comms slot 2 | comms slot 3 | expan card 1 | output card 1 | expan card 2 | output card 2 | options/ nonstandards |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8725/ | RGOI/ | 1133/ | CL5/ | PR1/ | 232/ | 0/ | 488/ | AEC1/ | 1111/ | 0/ | 0/ | @AD95// |



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# Ask about...

The Model 8705 is a smaller version of the 8725. It uses the same operator interface but has a lower input/output capacity. The capacity of the 8705 is:

- 4 PID control loops
- 4 programmers
- 6 analog inputs
- 4 analog outputs
- 32 digital I/O

Note: Communication ports EIA-232/422 and IEEE-488 are not available on the same 8705 unit.

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Place only the word subscribe in the subject field.

**EUROTHERM CONTROLS INC**

**A member of the Eurotherm plc Group of Companies**
11485 Sunset Hills Road
Reston, Virginia 20190-5286
Phone: 703-471-4870
Fax: 703-787-3436
BBS: 703-787-3444
Fax-On-Demand Service: 703-787-3441
http://www.eurotherm.com

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