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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



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.

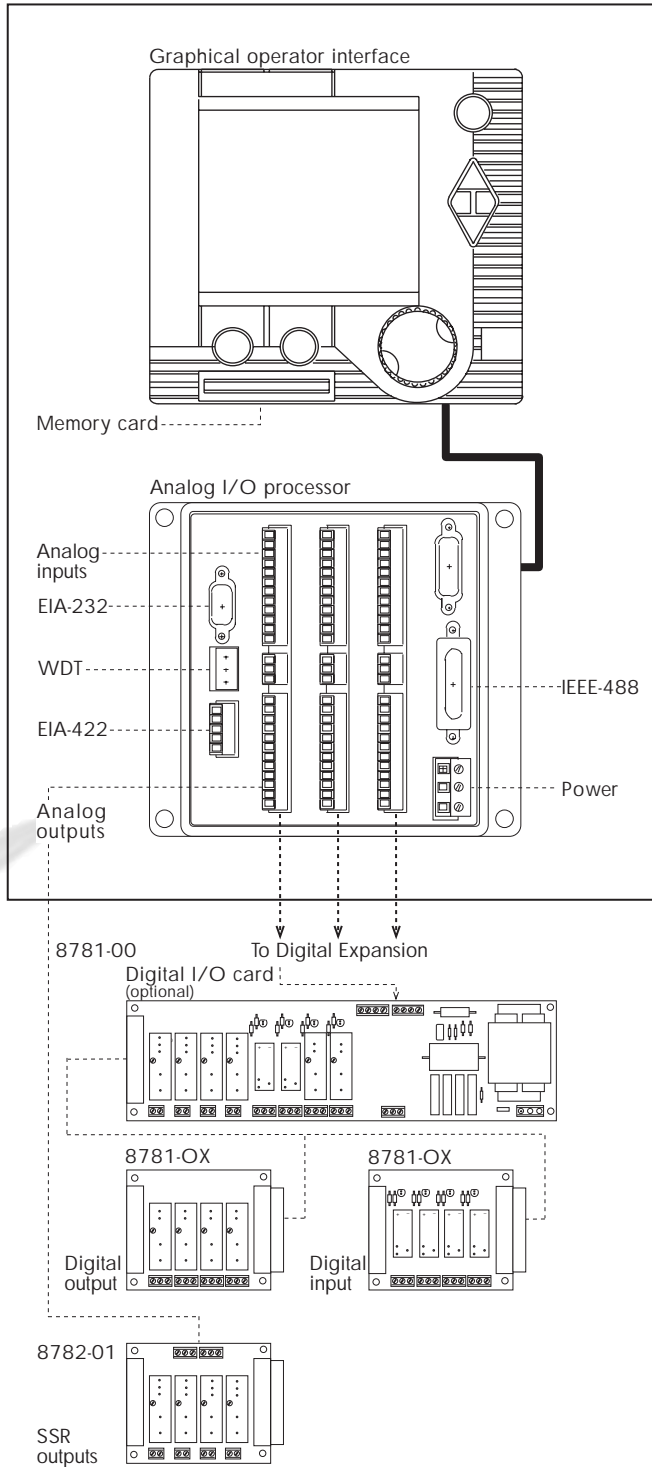
If your control application requires a mixture of control functions, call your Eurotherm representative to discuss how we can help. You owe it to yourself to take a look at Dimension.

Features

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

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

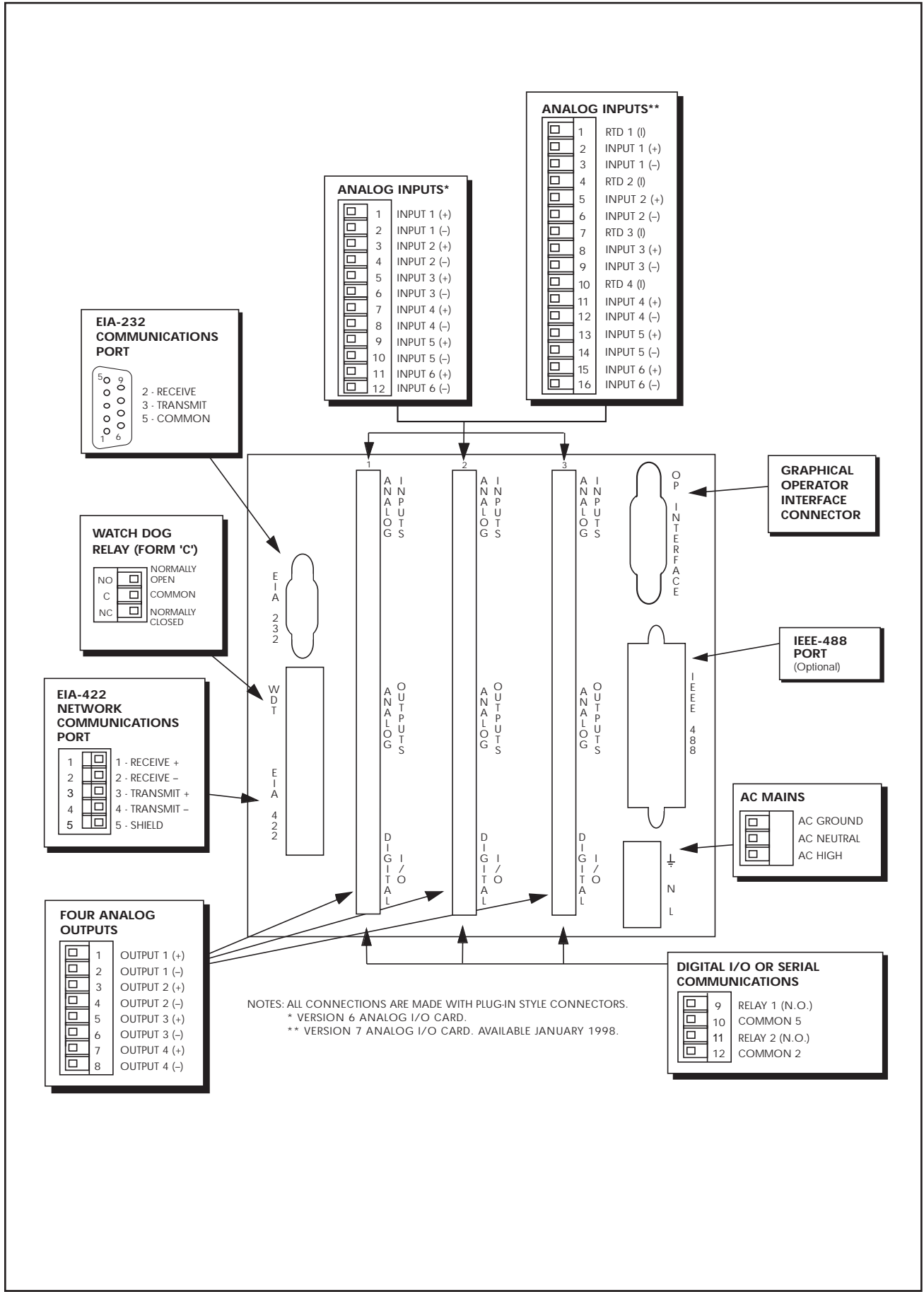
- 18 analog inputs
- 12 analog or time proportioned outputs
- 6 digital I/O or expansion serial port to digital I/O cards (8781-00)
- EIA-232, EIA-422, and IEEE-488 available
- Watch dog timer (WDT)

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



EIA-232 COMMUNICATIONS PORT

5	9
0	0
0	0
0	0
0	0
0	0
1	6

2 - RECEIVE
3 - TRANSMIT
5 - COMMON

WATCH DOG RELAY (FORM 'C')

NO	<input type="checkbox"/>	NORMALLY OPEN
C	<input type="checkbox"/>	COMMON
NC	<input type="checkbox"/>	NORMALLY CLOSED

EIA-422 NETWORK COMMUNICATIONS PORT

1	<input type="checkbox"/>	1 - RECEIVE +
2	<input type="checkbox"/>	2 - RECEIVE -
3	<input type="checkbox"/>	3 - TRANSMIT +
4	<input type="checkbox"/>	4 - TRANSMIT -
5	<input type="checkbox"/>	5 - SHIELD

FOUR ANALOG OUTPUTS

<input type="checkbox"/>	1	OUTPUT 1 (+)
<input type="checkbox"/>	2	OUTPUT 1 (-)
<input type="checkbox"/>	3	OUTPUT 2 (+)
<input type="checkbox"/>	4	OUTPUT 2 (-)
<input type="checkbox"/>	5	OUTPUT 3 (+)
<input type="checkbox"/>	6	OUTPUT 3 (-)
<input type="checkbox"/>	7	OUTPUT 4 (+)
<input type="checkbox"/>	8	OUTPUT 4 (-)

ANALOG INPUTS*

<input type="checkbox"/>	1	INPUT 1 (+)
<input type="checkbox"/>	2	INPUT 1 (-)
<input type="checkbox"/>	3	INPUT 2 (+)
<input type="checkbox"/>	4	INPUT 2 (-)
<input type="checkbox"/>	5	INPUT 3 (+)
<input type="checkbox"/>	6	INPUT 3 (-)
<input type="checkbox"/>	7	INPUT 4 (+)
<input type="checkbox"/>	8	INPUT 4 (-)
<input type="checkbox"/>	9	INPUT 5 (+)
<input type="checkbox"/>	10	INPUT 5 (-)
<input type="checkbox"/>	11	INPUT 6 (+)
<input type="checkbox"/>	12	INPUT 6 (-)

ANALOG INPUTS**

<input type="checkbox"/>	1	RTD 1 (I)
<input type="checkbox"/>	2	INPUT 1 (+)
<input type="checkbox"/>	3	INPUT 1 (-)
<input type="checkbox"/>	4	RTD 2 (I)
<input type="checkbox"/>	5	INPUT 2 (+)
<input type="checkbox"/>	6	INPUT 2 (-)
<input type="checkbox"/>	7	RTD 3 (I)
<input type="checkbox"/>	8	INPUT 3 (+)
<input type="checkbox"/>	9	INPUT 3 (-)
<input type="checkbox"/>	10	RTD 4 (I)
<input type="checkbox"/>	11	INPUT 4 (+)
<input type="checkbox"/>	12	INPUT 4 (-)
<input type="checkbox"/>	13	INPUT 5 (+)
<input type="checkbox"/>	14	INPUT 5 (-)
<input type="checkbox"/>	15	INPUT 6 (+)
<input type="checkbox"/>	16	INPUT 6 (-)

GRAPHICAL OPERATOR INTERFACE CONNECTOR

IEEE-488 PORT (Optional)

AC MAINS

<input type="checkbox"/>	AC GROUND
<input type="checkbox"/>	AC NEUTRAL
<input type="checkbox"/>	AC HIGH

DIGITAL I/O OR SERIAL COMMUNICATIONS

<input type="checkbox"/>	9	RELAY 1 (N.O.)
<input type="checkbox"/>	10	COMMON 5
<input type="checkbox"/>	11	RELAY 2 (N.O.)
<input type="checkbox"/>	12	COMMON 2

NOTES: ALL CONNECTIONS ARE MADE WITH PLUG-IN STYLE CONNECTORS.
* VERSION 6 ANALOG I/O CARD.
** VERSION 7 ANALOG I/O CARD. AVAILABLE JANUARY 1998.

SPECIFICATIONS

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

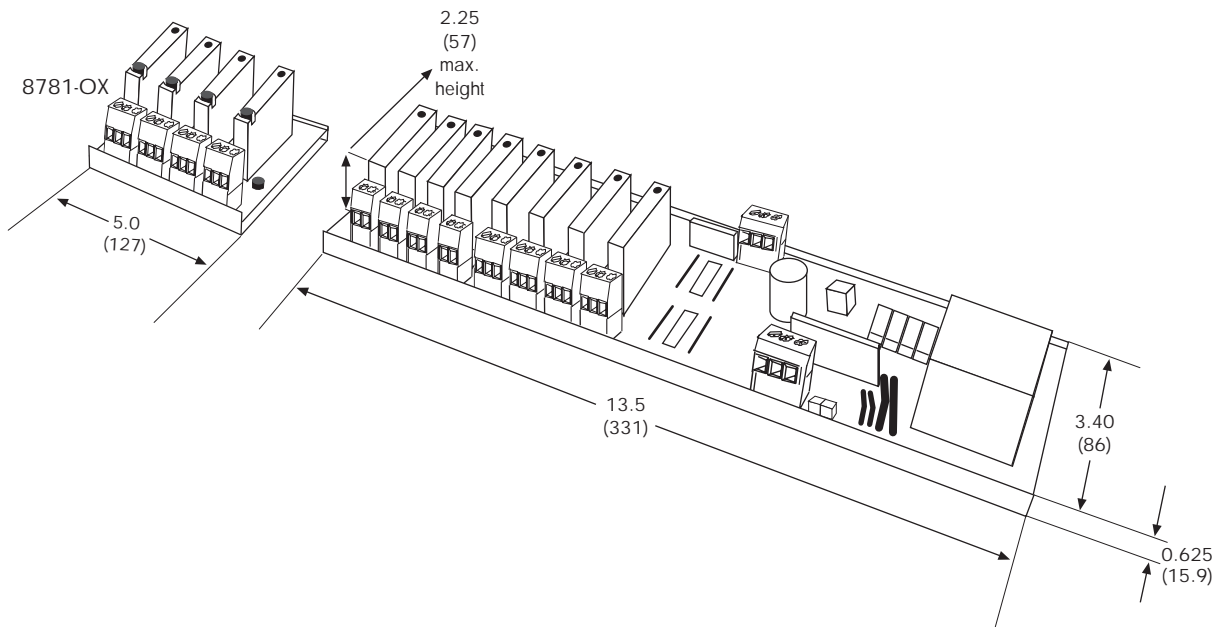
<p>Analog inputs General</p> <p>Thermocouple</p> <p>RTD/PT1000</p> <p>Process</p>	<p>Number</p> <p>Range</p> <p>Sample rate</p> <p>Calibration accuracy</p> <p>Resolution</p> <p>Linearization accuracy</p> <p>Zero drift with ambient temperature</p> <p>Gain drift with ambient temperature</p> <p>Input filter</p> <p>Zero and span offset</p> <p>Types</p> <p>Cold junction compensation</p> <p>Type</p> <p>Bulb current</p> <p>Lead compensation</p> <p>Range</p> <p>Type</p> <p>Application</p>	<p>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)</p> <p>±100mV and 0 to 10Vdc (auto ranging)</p> <p>5Hz (200ms)</p> <p>0.1% of reading, ±1 LSD or ±.5°C/F</p> <p><1µV for ± 100mV range, < 0.2mV for 10Vdc range, 18 bit</p> <p>No discernable error</p> <p><0.1µV per °C for ± 100mV range, 0.1mV per °C on 10Vdc range</p> <p><0.004% of reading per °C</p> <p>1.0 to 999.9sec.</p> <p>User adjustable over the full display range</p> <p>Refer to Sensor inputs and display ranges table</p> <p>Automatic compensation typically >30 to 1 rejection of ambient temperature change</p> <p>3-wire, Pt100 DIN43760</p> <p>0.2mA</p> <p>No error for 22 ohms in all 3 leads</p> <p>±100mV, 0 to 20mA or 0 to 10Vdc (All configurable between limits)</p> <p>Linear or custom</p> <p>Process value, remote setpoint, setpoint trim</p>
<p>Control outputs</p> <p>Range</p> <p>Number</p> <p>Output action</p> <p>Resolution</p> <p>Update time</p> <p>Bi-Model band</p> <p>Output limiting</p> <p>Application</p> <p>Input filter</p>	<p>0 to 20mA (into 600Ω max) or 0 to 10Vdc</p> <p>Time proportioning 0/10Vdc (20mA max.)</p> <p>Twelve analog outputs (max of 3 analog cards) 4 per analog card (max of 3 analog cards)</p> <p>Configurable for reverse, direct or bi-modal (both reverse and direct)</p> <p>Analog: 13 bit (.015%)</p> <p>Time-proportioned: 8 bit (.4%)</p> <p>200ms</p> <p>-10.0% [overlapping to +10% (deadband)]</p> <p>Separately adjustable high and low limits for each channel</p> <p>Heating, cooling, direct or reverse, bimodel, time proportioned or analog</p> <p>0-100sec.</p>	
<p>Math functions</p>	<p>Mathematically combine 4 inputs to create a calculated process variable</p> <p>The process variable will be calculated by the following equation:</p> $[(Anlgn01 * Mult01) + (Anlgn02 * Mult02) + (Anlgn03 * Mult03) + (Anlgn04 * Mult04)]/scale$	
<p>Alarms</p> <p>Control</p> <p>Monitor input</p>	<p>Eight full-scale alarms per control loop (High, High-High, Low, Low-Low)</p> <p>Four full-scale deviation alarms (High, High-High, Low, Low-Low)</p> <p>Five groups of process alarm values</p> <p>Failed sensor alarm</p> <p>Two alarms for each analog input (High and Low)</p>	

<p>Logic functions Logic boxes available: Con_Out</p> <p>Logic</p> <p>Out_Off</p>	<p>Contact output assignment (OutSet##) selections Allows four alarm conditions and/or contact inputs to be logically “OR’d” together to energize a contact relay output</p> <p>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</p> <p>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</p>		
<p>Digital Output 1 Number</p> <p>Type</p> <p>Function</p>	<p>Two per analog card without Model 8781 Digital I/O card 16 with Model 8781 Digital I/O card</p> <p>Low level, TTL, 20mA without 8781; 3A solid state or mechanical relay with 8781</p> <p>User configurable for programmer event outputs and alarms</p>		
<p>Digital Inputs Number</p> <p>Type</p> <p>Function</p>	<p>Two per analog card without Model 8781 Digital I/O card 16 with Model 8781 Digital I/O card</p> <p>Contact closure or TTL Level signal without 8781 12-280Vac and 5-200Vdc with 8781</p> <p>Program run/hold, program abort, controller auto/manual, alarm knowledge, logic inputs</p>		
<p>Communications Types</p> <p>Protocol</p> <p>Baud Rate</p> <p>Maximum distance</p>	<p>Standard EIA-232 single drop, optional EIA-422 multidrop and IEEE-488 All 3 types of communication are available on one unit</p> <p>ENQ/ACK</p> <p>300, 1200, 2400, 9600, 19.2K</p> <p>EIA-232: 50ft (15m) EIA-422: 4000ft (1200m)</p>		
<p>Operator interface Interconnection cable</p> <p>Type of display</p> <p>Display resolution</p>	<p>10ft (3.3m) (used to connect the operator interface panel to the 8705 analog I/O processor)</p> <p>LCD with backlighting</p> <p>160 pixels wide x 128 pixels high</p>		
<p>Altitude Input Conversion accuracy</p>	<p>Range</p>	<p>Overall accuracy</p>	<p>Temperature Coefficient</p>
<p>Full scale</p>	<p>0 to 200Kft</p>	<p>@72°F or 22°C</p>	<p>±%FS Per °F ±%FS Per °C</p>
<p>Range segments</p>	<p>100 to 200Kft 80 to 100Kft 50 to 80Kft 0 to 50Kft</p>	<p>±1.00%FS ±0.75%FS ±0.25%FS ±0.10%FS</p>	<p>.015 .008</p>

Standard Dimension Input Types/Ranges

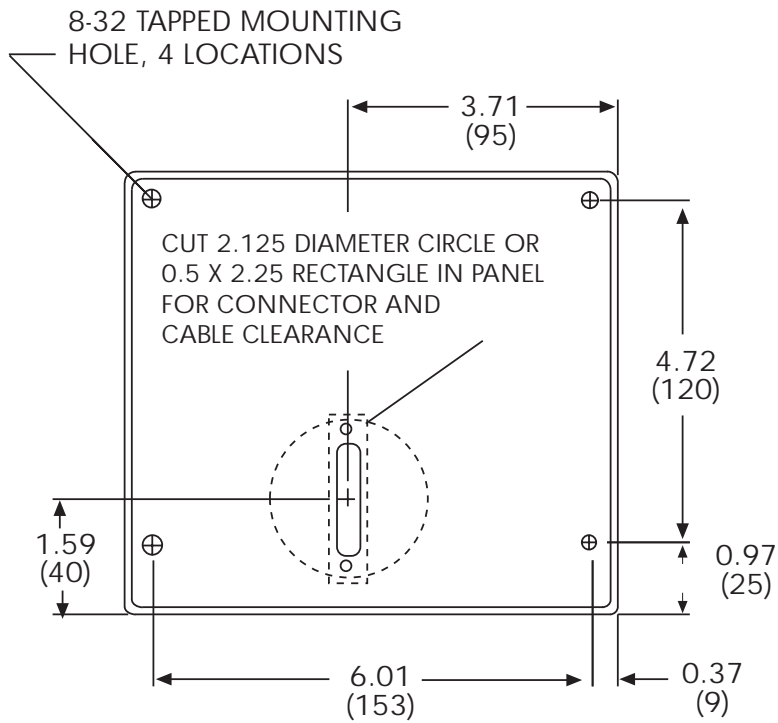
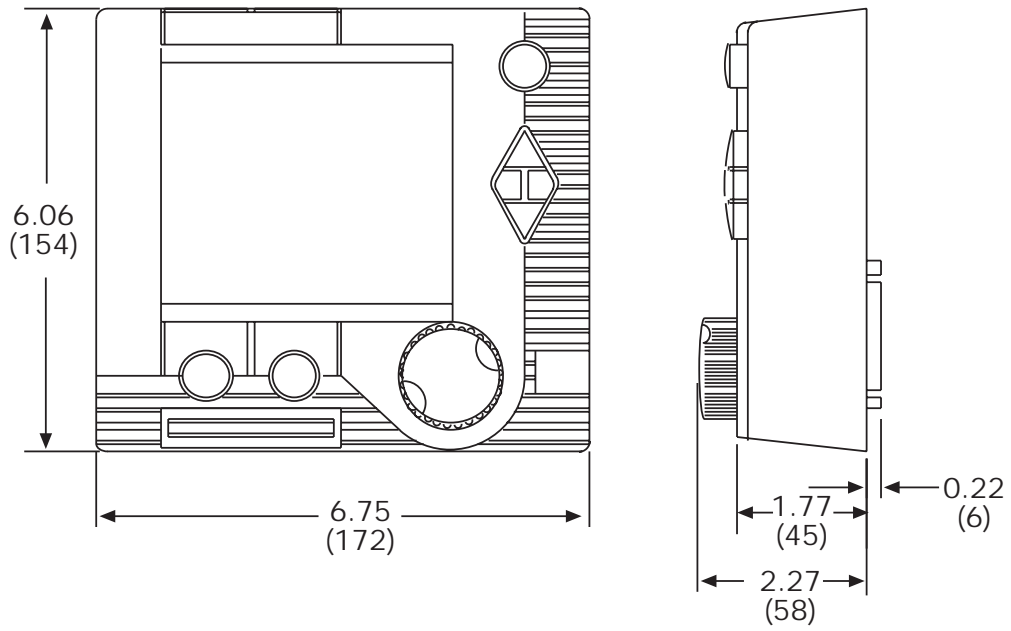
Standard Sensor Inputs	Celsius		Fahrenheit	
	Min	Max	Min	Max
J thermocouple	-22	760	-7	1400
K thermocouple	-20	1372	-5	2500
T thermocouple	-232	400	-380	750
N thermocouple	-23	1300	-11	2370
C thermocouple - W5%Re/W26%Re (Hoskins)	-18	2319	0	4200
R thermocouple	-20	1768	-5	3200
S thermocouple	-20	1768	-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 Millivolt Voltage Current	0mV to + 100mV 0V to + 10V 0mA to + 20mA			

Model 8781-00 Digital I/O Card

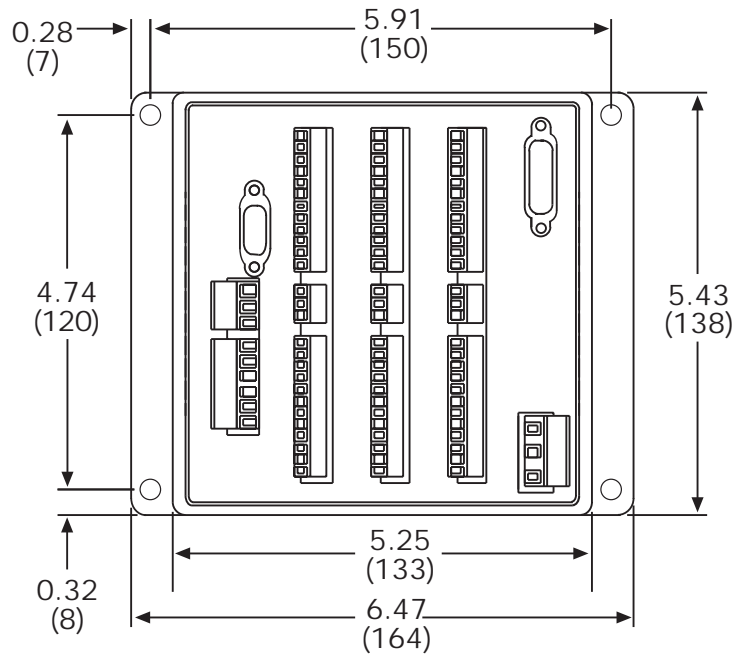


Dimensions in inches (mm)

Dimension® Graphical Operator Interface

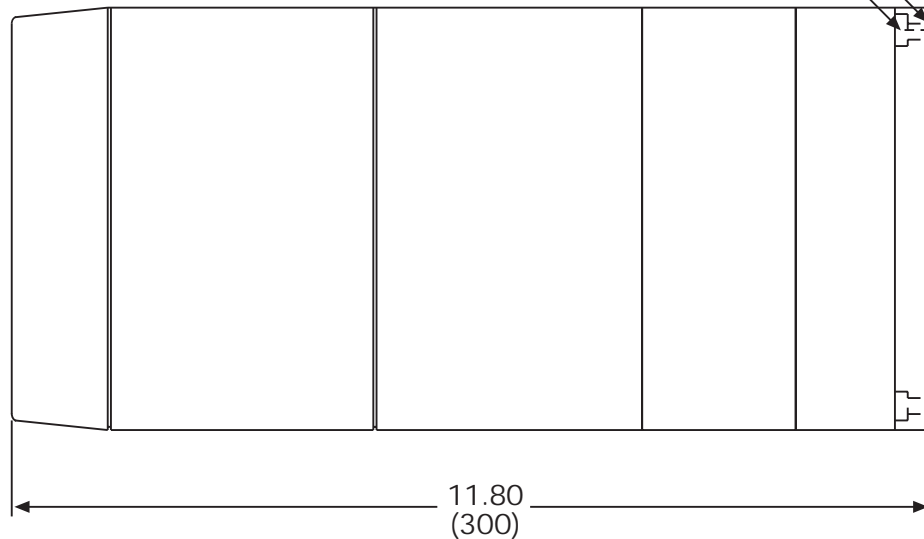


Dimensions in inches (mm)



0.225 (6) diameter clearance hole for mounting screw, 4 locations.

0.410 (10) diameter by 0.158 (4) deep counterbore, 4 locations.



Dimensions in inches (mm)

Coding

8725/...

<i>operator interface</i>	
AGOI	attached graphic operator interface
RGOI	remote-mountable graphic operator interface
NGOI	no graphic operator interface
<i>outputs (4 included) [3]</i>	
X...	output 1
.X..	output 2
..X.	output 3
...X	output 4
<i>control loops (maximum of 8)</i>	
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
<i>programmer</i>	
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
<i>communication option 1</i>	
232	EIA-232
<i>communication option 2</i>	
0	no comm 2
422	EIA-422
<i>communication option 3</i>	
0	no comm 3
488	IEEE-488
<i>analog input/output expansion card 1</i>	
0	no expansion card 1
AEC1	expansion card 1
<i>outputs for expansion card 1 [3]</i>	
X...	output 5
.X..	output 6
..X.	output 7
...X	output 8
<i>analog input/output expansion card 2</i>	
0	no expansion card 2
AEC2	expansion card 2
<i>outputs for expansion card 2 [3]</i>	
X...	output 9
.X..	output 10
..X.	output 11
...X	output 12

Accessories

<i>External expansion packages [1]</i>	
<i>SUBDIM base</i>	
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
090478-002	(connects two 8781-00 together) optional 1ft cable for 8781-03, 8781-04, and 8781-05
<i>Communications expansion packages</i>	
<i>SUBDIM base</i>	
MODEM	modem comms pkg
SGOI	secondary graphic operator interface
<i>Personal computer support packages</i>	
<i>SUBDIM base</i>	
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
<i>Digital I/O modules and accessories</i>	
<i>SUBDIM base</i>	
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.

<i>Example:</i>	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//

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.

Dimension User Group E-mail List Server:

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Place only the word subscribe in the subject field.

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