

Series 16 – Open Circuit Board Controls

- ▶ Solid State Reliability
- ▶ Spade Terminals
- ▶ Time Delays Available
- ▶ U.L. “Motor Control”
- ▶ Optional Dirty Electrode Detection*
- ▶ AC Current Minimizes Electrolysis
- ▶ Compact Size
- ▶ Low-Voltage Sensor
- ▶ LED Monitoring

Series 16 – General Purpose Control

- New Microprocessor Design

Engineered for general purpose single-level or differential applications, these economy priced controls have spade terminals for easy wiring and provide sensitivities up to 1 million ohm/cm.

Series 16D – DPDT Load Contacts

Same features and specifications as Series 16, but these controls also have DPDT load contacts to eliminate the need for slave relays.

Specifications

Contact Design	
Series 16	1 N.O. & 1 N.C. (1 form C)*
Series 16D	2 N.O. & 2 N.C. (2 form C)
Contact Rating (120, 240 VAC)	
Series 16	10 amp Resistive 1/3 hp*
Series 16D	5 amp Resistive 1/10 hp
Mode of Operation	
Direct/Inverse, factory set	
Sensitivity	
0-1M ohm, factory set	
Primary Voltage	
120 VAC, 240 VAC, 24 VAC, 208 VAC (+10%/-15%) 50/60 Hz	
208/240: 187 V min. to 255 V max. VAC 50/60 Hz	
Secondary Voltage	
12 VAC, 1.5 mA	
Temperature	
-40°F to +150°F (-40°C to +65°C)	
Approvals	
U.L. 508 File # E44426	
Terminal Style	
Spade connection	
Options	
Time Delays, Retrofit Plate, Time Out.	
See page E-11 for descriptions.	

How to Order

Use the **Bold** characters from the chart below to construct a product code.

1. Series 2. Mode of Operation 3. Supply Voltage 4. Standoff Style 5. Enclosure 6. Retrofit Plate Option 7. Time Delay (increasing level) Option 8. Time Delay (decreasing level) Option 9. Time Out Option*	<table border="0"> <tr> <td style="text-align: center;">16</td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> <td style="text-align: center;">X</td> <td style="text-align: center;">XX</td> <td style="text-align: center;">XX</td> <td style="text-align: center;">X</td> </tr> <tr> <td colspan="9"> 16 General Purpose;* 16D DPDT Load Contacts Direct Inverse A – 4.7K E – 100K K – 4.7K P – 100K B – 10K F – 470K L – 10K R – 470K C – 26K G – 1M M – 26K S – 1M D – 50K N – 50K 1 120 VAC; 2 240 VAC; 3 24 VAC; 8 208/240 VAC A 1/16" Panel C Screw Mount B 1/8" Panel D Retrofit 0 None; 1 NEMA 1; 4 NEMA 4 R Yes; Blank No 01-20 seconds (Series 16D only) 00-90 seconds; Blank 0 seconds (Series 16 only) 01-20 seconds (Series 16M only) 00-90 seconds; Blank 0 seconds (Series 16 only) See page E-11, Chart A </td> </tr> </table>	16	X	X	X	X	X	XX	XX	X	16 General Purpose;* 16D DPDT Load Contacts Direct Inverse A – 4.7K E – 100K K – 4.7K P – 100K B – 10K F – 470K L – 10K R – 470K C – 26K G – 1M M – 26K S – 1M D – 50K N – 50K 1 120 VAC; 2 240 VAC; 3 24 VAC; 8 208/240 VAC A 1/16" Panel C Screw Mount B 1/8" Panel D Retrofit 0 None; 1 NEMA 1; 4 NEMA 4 R Yes; Blank No 01-20 seconds (Series 16D only) 00-90 seconds; Blank 0 seconds (Series 16 only) 01-20 seconds (Series 16M only) 00-90 seconds; Blank 0 seconds (Series 16 only) See page E-11, Chart A								
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* New Series 16 Microprocessor Design only.

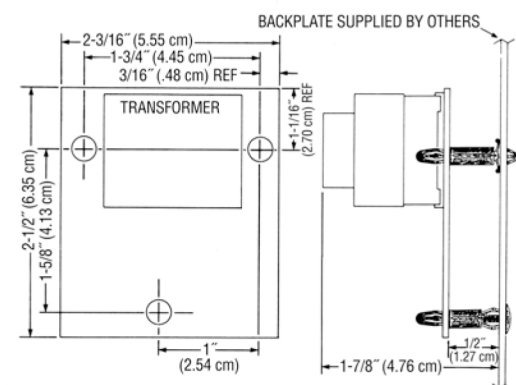


Series 16

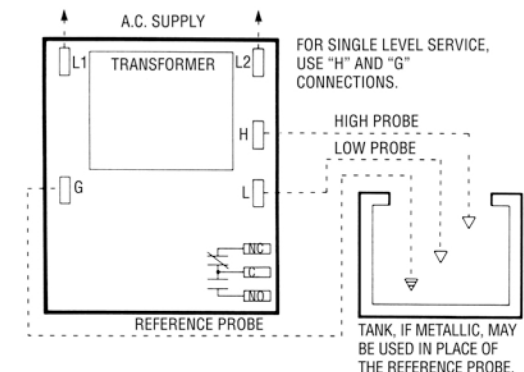
Applications

- Single-Level Service
- Point Level
- Valve Control
- Low-Water Cutoff
- Differential Service
- Alarms
- Pump Control

Dimensions



Wiring



Note: Series 16D similar to Series 16, but with DPDT load contacts.

Optional Character Reference – 16, 26 and DF Series Only

Manual Reset

Available on Series 26, 26M and DF controls

(Normally closed pushbutton across reset terminals. Pushbutton ordered separately): Manual reset only applies to the function associated with terminal LLCO. When the liquid rises to the electrode on terminal LLCO, the control will remain de-energized (load contacts in original state) until the pushbutton is depressed. The control will then energize, (LED will be lit) changing the state of the contacts. The control remains energized until the liquid level recedes below electrode on terminal LLCO. The control then de-energizes, (LED will go off) returning load contacts to their original state. Unless otherwise specified, there is a three second time delay on decreasing level. Liquid must be below probe on terminal LLCO for full three seconds before control de-energizes.

Manual Reset with Power Outage Feature

Available on Series 26, 26M, and DF controls

Reset (Normally closed pushbutton across reset terminals. Pushbutton ordered separately) Control will ignore power loss to control. With liquid in contact with electrode on terminal LLCO, a power outage will cause the control to de-energize, but will automatically energize upon return of power. However, loss of liquid will cause control to de-energize and remain so until liquid again rises to electrode and pushbutton is depressed.

Time Delays Associated with Terminals H and L

Available on Series 16, 16M, and DF controls

With time delay on increasing level, the liquid must be in contact with the high electrode for the full duration of the time delay before control will operate. With delay on decreasing level, the liquid must be below the low electrode for the full duration of the time delay before control will operate. In single level service, terminals 3 and 4 must be jumpered together to achieve time delays on both increasing and decreasing levels or just decreasing level.

Time Delays Associated with Terminal LLCO

Available on Series 26, 26M, and DF controls

3 Second time delay on decreasing level is standard. Delay up to 90 seconds, can be specified and would act in the same manner as listed above.

Time Out Option

Available on Series 16, 16M, and DF controls

The latching circuit for the high and low electrode has an optional timer. In some applications the High or Low electrode may become short circuited or disconnected. Such an occurrence may potentially over fill in fill applications, or cause the pump to run dry in pump down applications. The time option is custom programmed up to 3 minutes. When a fault condition occurs, the FILL LED will have a blink sequence of .5 seconds on 2 seconds off. See Chart A for time delay options.

Test Feature

Available on Series 26, 26M, and DF controls

Allows LLCO circuit to be tested. Holding down the reset button for 3 seconds will allow the LLCO circuit to trip which simulates the loss of water, without the need of draining the water level in the boiler. The control will return to normal operation once the reset button is pressed a second time. (Test feature option only available with the manual reset function.)

Chart A – Time Out Option

Optional Character	Time Out (in seconds)					
	30	60	90	120	150	180
K	•					
L		•				
M			•			
N				•		
P					•	
Q						•

Chart B – Optional Character Information

Option Components					Control Series	Optional Character
Reset Function	Normally Closed Pushbutton*	Power Outage	Retrofit Plate	Test Feature		
•					DF "LLCO"	D
•	•				26, 26M, 26NM	C
•		•			26, 26M, 26NM	E
•			•		16, 16D, 26, DF	R
•	•				DF "LLCO"	S
•		•			DF "LLCO"	K
•			•		DF	W
•				•	26, 26M, 26NM, DF"LLCO"	B
•	•	•			26, 26M, 26NM	F
•		•	•		26	N
•	•	•			DF "LLCO"	G
•	•		•		DF	T
•	•			•	26, 26M, 26NM, DF"LLCO"	Y
•		•	•		DF	L
•		•		•	26, 26M, 26NM, DF"LLCO"	Z
•	•	•	•		26	P
•	•	•	•		DF	J
•	•	•		•	26, 26M, 26NM, DF"LLCO"	A
No options						X

* N.C. pushbutton when purchased in conjunction with open control must be remotely mounted by customer