26 2419 – Motor Controllers

Last Update: May 12, 2017

Motor Control Equipment:

All controllers shall be equipped with solid-state type overload elements, equipped with single phase protection. The overload relay must be of the manual reset type, auto-reset features are not acceptable.

Overload elements shall be sized for actual motor amperes, but shall not exceed motor nameplate rating.

Motor controllers Reference standard is Square D or equal.

Minimum size controller shall be size 0.

General Description:

Controllers shall:

Be complete with 120 volt fused control transformer, (dual fusing in primary, single fusing in secondary and grounded secondary) where the system voltages are 208V., 240V., 480V. Exception. Controllers installed on 208V. systems need not be furnished with a control transformer when a neutral conductor is provided. Note: A separate fuse holder and fuse must still be provided for the control circuit and sized to protect the devices in the control circuit.

Have cover mounted push-to-test pilot light .

Have NEMA rating of size required, NEMA size 0 minimum.

Be complete with solid-state type overload elements per speed or step, sized for actual motor amps, but not to exceed nameplate rating.

All terminations shall be mechanical screw type suitable for 75° C. copper wire.

Single Phase Controllers:

Manual Controller/non-interlocked/without thermal protection:

HP (horsepower) rated.

1 HP maximum at 120 volts.

Toggle type.

Enclosure as required for location.

Flush or surface mounted as required for location.

With separate neon "on" pilot where required.

One or two pole as required.

Reference standard Bryant #30002, 30102.

Manual Controller/non-interlocked/with thermal protection:

HP (horsepower) rated.

1 HP maximum at 120 volts.

Toggle type.

Reference standard is Square D.

Automatic/Interlocked:

Designed for switching motor loads.

1 HP maximum at 120 volts.

Reference standard is Square D or equal.

Three Phase Controllers:

Manual Controller/non-interlocked/with thermal protection:

Designed for starting motor loads.

7-1/2 HP maximum at 230 volts (size 0 minimum).

Toggle type STOP-START and "ON" pilot in cover.

3 pole - 120 volt coil voltage.

Reference standard is Square D.

Control Stations:

Provide heavy duty or "hand-off-auto" selector switches equal to Allen Bradley Bulletin 800H on controllers for equipment. The equipment includes, but shall not be limited to the following:

EQUIPMENT	HAND-OFF-AUTO
Chilled Water Pumps	X
Heating Pumps	X
Heat Recovery System Pumps	X
Hydronic Pumps	X
A.C. Units	X
Return Air Fans	X
Exhaust Fans	X
Steam Condensate Pumps	X
Steam Vacuum Pumps	X
Air Compressors	X
Vacuum Pumps	X
Sump Pumps	X
Sewage Pumps	X
Dionizer Pumps	X

NOTE: If equipment has been determined, by the Owner/User to be automatically controlled only, do not connect the "Hand" side.

Control Center Reference Standard

Square D - Class 8998 - Model 6 or Equal equipment by Siemens or Eaton.

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Motor and Starter Data Schedules:

Table 1

3 PHASE - 3 WIRE - 208 OR 230 V MOTOR DATA SCHEDULE								
	STARTER		SWITCH SIZE	WIRE SIZE FOR DISTANCE GIVEN OR LESS				
MOTOR H.P.	SIZE	TYPE	(AMPS)	100 FT	150 FT	200 FT	250 FT	300 FT
1/6 thru 1½	0	LV	30	12	12	12	12	12
2	0	LV	30	12	12	12	12	10
3	0	LV	30	12	12	10	10	8
5	1	LV	30	12	10	8	8	6
7½	1	LV	30	10	8	6	6	4
10	2	LV	60	8	6	6	4	4
15	3*	LV	60	6	4	4	2	2
20	3	LV	100	6	4	2	2	1
25	3	LV	100	4	2	2	1	1/0
30	4	LV	200	3	2	1	1/0	2/0
40	4	LV	200	1	1/0	2/0	3/0	4/0
50	5	LV or RV as directed	200	2/0	2/0	3/0	4/0	250 MCM

EXCEPT AS OTHERWISE NOTED

* May be size 2 for 230 volt applications only.

LV = LINE VOLTAGE

RVAT = REDUCED VOLTAGE AUTO - TRANSFORMER

Y-A = STAR DELTA

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Table 2

3 PHASE - 3 WIRE - 460V MOTOR DATA SCHEDULE								
	STARTER		SWITCH SIZE	WIRE SIZE FOR DISTANCE GIVEN OR LESS				
MOTOR H.P.	SIZE	TYPE	(AMPS)	100 FT	150 FT	200 FT	250 FT	300 FT
1/6 thru 5	0	LV	30	12	12	12	12	12
7½	1	LV	30	12	12	12	12	10
10	1	LV	30	12	12	12		10
15	2	LV	30	10	10	10	10	8
20	2	LV	60	8	8	8	8	8
25	2	LV	60	8	8	8		6
30	3	LV	60	6	6	6	6	6
40	3	LV	100	4	4			4
50	3	LV	100	4	4	4	4	3
60	4	LV	200	3	3	3	3	2
75	4	LV or RV as directed	200	1	1	1	1	1
100	4	LV or RV as directed	200	2/0	2/0	2/0	2/0	2/0
125	5	RV	400	3/0	3/0	3/0	4/0	4/0
150	5	RV	400	4/0	4/0	4/0	250 MCM	250 MCM
200	5	RV	400	350 MCM	350 MCM	350 MCM	400 MCM	400 MCM

LV = LINE VOLTAGE

RV = REDUCED VOLTAGE