



Relay Output Module

HE200DQM302

12 NO/NC Relay Outputs
External load power connections

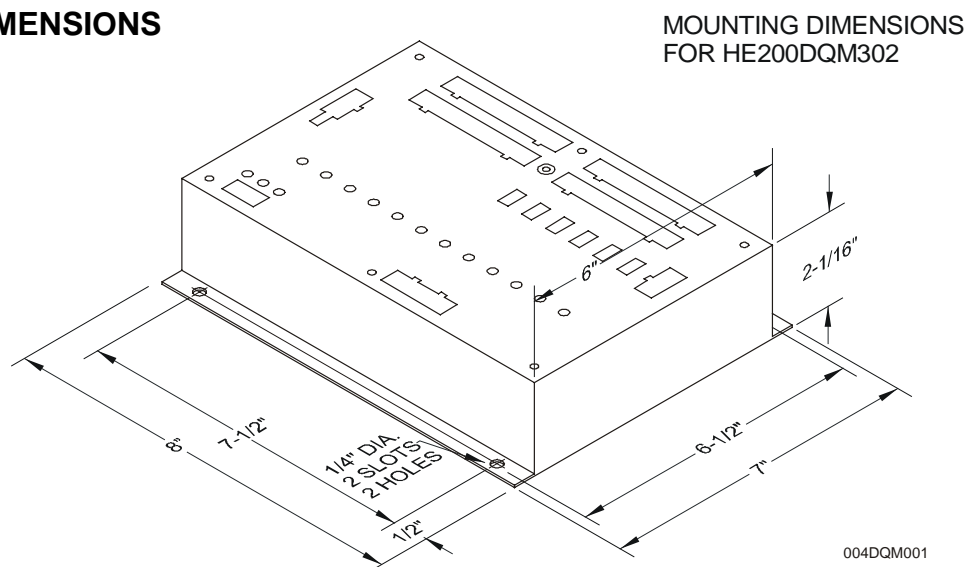
Network I/O

Other manuals related to the HE200DQM302 (DQM302) are located in the *Additional References* section in this document.

1 SPECIFICATIONS

DQM302 Relay Outputs			
Number of output points	12	Maximum Load Current (resistive)	0.6A @ 125VDC 3A @ 240VAC 7A @ 240VAC, Channel 12
Commons per Module	12 dry contact mode, channels 1 – 6 using external power are common	OFF to ON Response	15ms + I/O Scan Max.
Rated Load Voltage	125VDC/240VAC	ON to OFF Response	10ms + I/O Scan Max.
Minimum load voltage / current	5VDC / 100mA	Output Type	NO and NC
Diagnostics	External Power, External IGN Power	External load connection channels	PWR 1 – 6, individually switchable IGN 12, optional
Isolation Voltage	1500 V	External Connections	Removable connector
Isolation Method	Magnetic	Operating Indicator	LED turns on during ON state of input
General			
Input power	20 – 26 VDC	Storage Temperature	-25° to 70° C
Internal power Consumption (mA)	320 mA	Pollution degree	2 or lower
		Cooling method	Self-cooling
Operating Temperature	0° to 55° C	Atmosphere	Free from corrosive gases and excessive dust
Operating and Storage Humidity	5 to 95% Non-condensing	Weight	3.64 lb. / 1.65 kg

2 DIMENSIONS



3 WIRING

The HE200DQM302 is designed to provide Normally Open and Normally Closed dry contact outputs or to selectively provide power connections to various loads to be used with the Normally Open circuits.

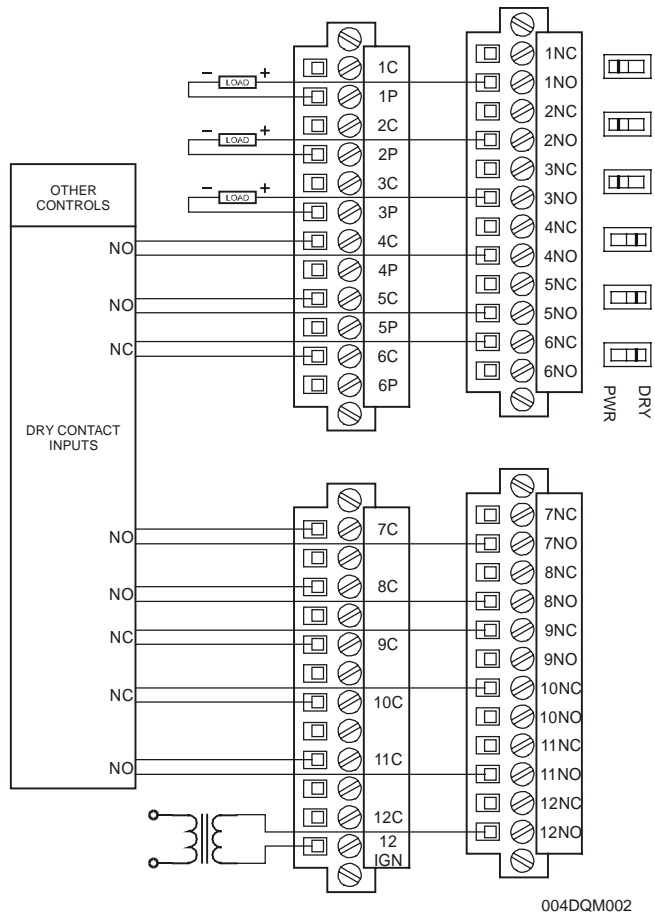
Channels 1 through 6 may be switched to dry contact (DRY) or external load power (PWR). The external loads would typically consist of DC solenoids. Load power comes from the PWR connector and may be any value from 0 to the rated voltage. While a polarity is marked on the PWR connector, the internal circuitry is not actually polarity sensitive and AC may be used in this circuit. In dry contact mode the NO/NC contacts are isolated from each other and from the controller network. Since circuits switched to PWR mode are connected to the common load input power source they are not isolated from each other. In PWR mode, the nominal +65V input power is connected to the contact common terminal and the nominal -65V input power is connected to the respective P terminal on the I/O connector. The load should be connected between the NO output and the P terminal to take advantage of the internal inductive spike protection. Since the +/-65V circuit is isolated from the control network, the +65V and -65V labels are nominal. To use a 125VDC supply, connect the 0 volt potential to -65V and the 125 volt potential to +65V. The DRY/PWR switches must not be changed while power is applied. Each load circuit should be protected with an appropriately rated external fuse.

Channels 7 through 11 are dry contact NO/NC only and are fully isolated.

Channel 12 may be used as a dry contact channel by leaving the IGN connector unconnected and placing the adjacent jumper in the DRY position. The jumper disconnects the IGN diagnostic circuit to avoid leakage current effects when using channel 12 in the dry contact mode. To use in IGN mode, apply 120VAC or 240VAC as appropriate to the IGN connector. Place the adjacent jumper in the IGN position to enable diagnostic sensing of the IGN power. Connect the primary of the IGN transformer between the 12IGN and 12NO terminals. The IGN transformer circuit should be protected with an appropriate external fuse. Channel 12 is isolated from the other channels.

Presence of external load power (PWR) is reported to the master OCS in bit 14 of the Network I/O Status Register for the HE200DQM302. Presence of IGN power, if enabled by the jumper, is reported to the master OCS in bit 13 of the Network I/O Status Register for the HE200DQM302. A bit value of 1 indicates presence of power.

To configure the HE200DQM302, add it as "SmartStix-Digital 16 out" under the Network I/O tab of the I/O Configuration window of the Controller Menu in Cscape.



DQM302 Pin	Name - Comments
1NC	Output 1 Normally Closed
1C	Output 1 Common
1NO	Output 1 Normally Open
1P	Output 1 Load Power
2NC	Output 2 Normally Closed
2C	Output 2 Common
2NO	Output 2 Normally Open
2P	Output 2 Load Power
3NC	Output 3 Normally Closed
3C	Output 3 Common
3NO	Output 3 Normally Open
3P	Output 3 Load Power
4NC	Output 4 Normally Closed
4C	Output 4 Common
4NO	Output 4 Normally Open
4P	Output 4 Load Power
5NC	Output 5 Normally Closed
5C	Output 5 Common
5NO	Output 5 Normally Open
5P	Output 5 Load Power
6NC	Output 6 Normally Closed
6C	Output 6 Common
6NO	Output 6 Normally Open
6P	Output 6 Load Power
7NC	Output 7 Normally Closed
7C	Output 7 Common
7NO	Output 7 Normally Open
8NC	Output 8 Normally Closed
8C	Output 8 Common
8NO	Output 8 Normally Open
9NC	Output 9 Normally Closed
9C	Output 9 Common
9NO	Output 9 Normally Open
10NC	Output 10 Normally Closed
10C	Output 10 Common
10NO	Output 10 Normally Open
11NC	Output 11 Normally Closed
11C	Output 11 Common
11NO	Output 11 Normally Open
12NC	Output 12 Normally Closed
12C	Output 12 Common
12NO	Output 12 Normally Open
12IGN	Output 12 IGN Power

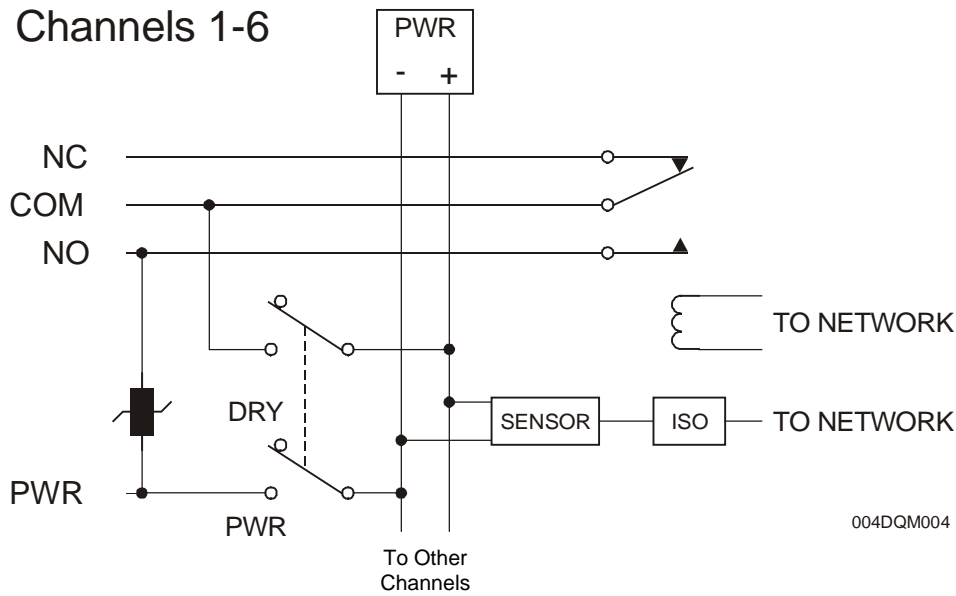
Be sure to note switch positions in wiring example above.

WARNING: Circuits switched to PWR mode are commoned internally.

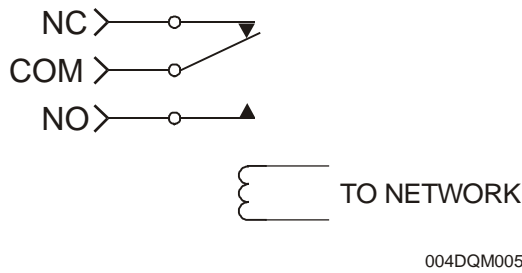
WARNING: Do not connect power to IGN connector unless circuit 12 is used for the IGN transformer. Jumper IGN/DRY to DRY unless power is applied to IGN connector.

4 INTERNAL WIRING

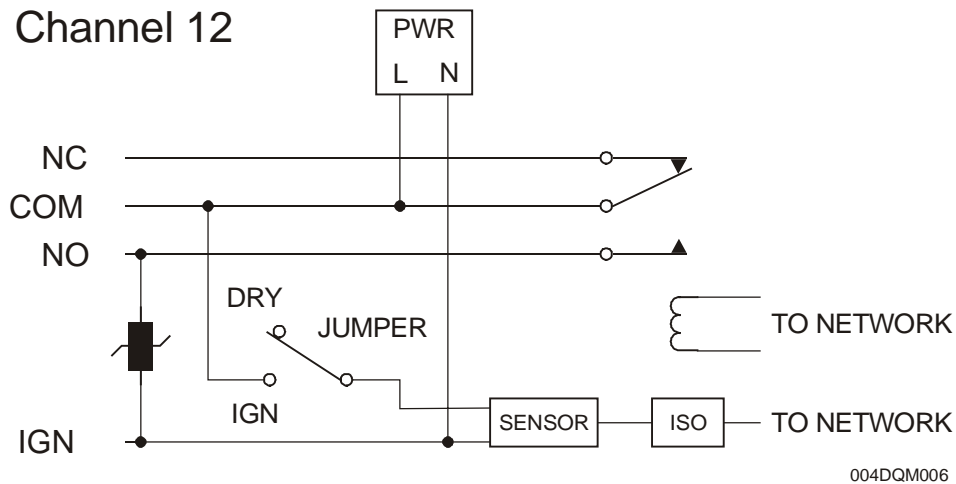
Channels 1-6



Channels 7-11



Channel 12

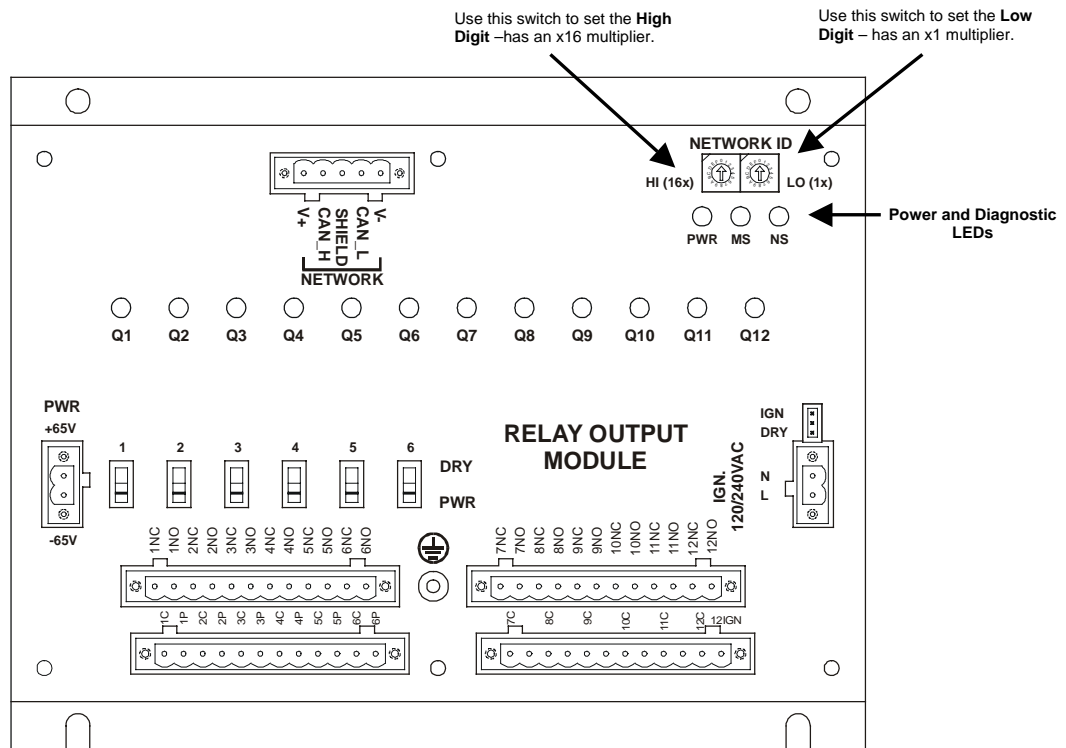


Specification for transient voltage suppressors (transzorbis) used on output circuitry is 400VDC, bi-directional 1500 watts.

5 SWITCHES

CsCAN Network IDs are set using the hexadecimal number system from 01 to FD. The decimal equivalent is 1-253. Refer to the following table, which shows the decimal equivalent of hexadecimal numbers. Set a unique Network ID by using a small flat screwdriver .

Note: The CsCAN Baud Rate for SmartStix I/O is fixed at 125KBaud



004DQM003

Decimal (Dec) to Hexadecimal (Hex) Conversion														
Dec	Hex		Dec	Hex		Dec	Hex		Dec	Hex		Dec	Hex	
	HI	LO		HI	LO		HI	LO		HI	LO		HI	LO
			54	3	6	108	6	C	162	A	2	216	D	8
1	0	1	55	3	7	109	6	D	163	A	3	217	D	9
2	0	2	56	3	8	110	6	E	164	A	4	218	D	A
3	0	3	57	3	9	111	6	F	165	A	5	219	D	B
4	0	4	58	3	A	112	7	0	166	A	6	220	D	C
5	0	5	59	3	B	113	7	1	167	A	7	221	D	D
6	0	6	60	3	C	114	7	2	168	A	8	222	D	E
7	0	7	61	3	D	115	7	3	169	A	9	223	D	F
8	0	8	62	3	E	116	7	4	170	A	A	224	E	0
9	0	9	63	3	F	117	7	5	171	A	B	225	E	1
10	0	A	64	4	0	118	7	6	172	A	C	226	E	2
11	0	B	65	4	1	119	7	7	173	A	D	227	E	3
12	0	C	66	4	2	120	7	8	174	A	E	228	E	4
13	0	D	67	4	3	121	7	9	175	A	F	229	E	5
14	0	E	68	4	4	122	7	A	176	B	0	230	E	6
15	0	F	69	4	5	123	7	B	177	B	1	231	E	7
16	1	0	70	4	6	124	7	C	178	B	2	232	E	8
17	1	1	71	4	7	125	7	D	179	B	3	233	E	9
18	1	2	72	4	8	126	7	E	180	B	4	234	E	A
19	1	3	73	4	9	127	7	F	181	B	5	235	E	B
20	1	4	74	4	A	128	8	0	182	B	6	236	E	C
21	1	5	75	4	B	129	8	1	183	B	7	237	E	D
22	1	6	76	4	C	130	8	2	184	B	8	238	E	E
23	1	7	77	4	D	131	8	3	185	B	9	239	E	F
24	1	8	78	4	E	132	8	4	186	B	A	240	F	0
25	1	9	79	4	F	133	8	5	187	B	B	241	F	1
26	1	A	80	5	0	134	8	6	188	B	C	242	F	2
27	1	B	81	5	1	135	8	7	189	B	D	243	F	3
28	1	C	82	5	2	136	8	8	190	B	E	244	F	4
29	1	D	83	5	3	137	8	9	191	B	F	245	F	5
30	1	E	84	5	4	138	8	A	192	C	0	246	F	6
31	1	F	85	5	5	139	8	B	193	C	1	247	F	7
32	2	0	86	5	6	140	8	C	194	C	2	248	F	8
33	2	1	87	5	7	141	8	D	195	C	3	249	F	9
34	2	2	88	5	8	142	8	E	196	C	4	250	F	A
35	2	3	89	5	9	143	8	F	197	C	5	251	F	B
36	2	4	90	5	A	144	9	0	198	C	6	252	F	C
37	2	5	91	5	B	145	9	1	199	C	7	253	F	D
38	2	6	92	5	C	146	9	2	200	C	8			
39	2	7	93	5	D	147	9	3	201	C	9			
40	2	8	94	5	E	148	9	4	202	C	A			
41	2	9	95	5	F	149	9	5	203	C	B			
42	2	A	96	6	0	150	9	6	204	C	C			
43	2	B	97	6	1	151	9	7	205	C	D			
44	2	C	98	6	2	152	9	8	206	C	E			
45	2	D	99	6	3	153	9	9	207	C	F			
46	2	E	100	6	4	154	9	A	208	D	0			
47	2	F	101	6	5	155	9	B	209	D	1			
48	3	0	102	6	6	156	9	C	210	D	2			
49	3	1	103	6	7	157	9	D	211	D	3			
50	3	2	104	6	8	158	9	E	212	D	4			
51	3	3	105	6	9	159	9	F	213	D	5			
52	3	4	106	6	A	160	A	0	214	D	6			
53	3	5	107	6	B	161	A	1	215	D	7			

6 LEDS

DQM302 Modules provide diagnostic and status LED indicators.

a. Diagnostic LED Indicators

Diagnostic LED	State	Meaning
MS (Module Status)	Solid Red	Initializing
	Blinking Red	I/O test failed, internal hardware fault
	Blinking Green	Module is in power-up state *
	Solid Green	Module is running normally
NS (Network Status)	Solid Red	Network Ack or Dup ID test failed **
	Blinking Red	Network ID test failed: ID not in range the of 1..253
	Blinking Green	Life Expectancy timeout, outputs are in default state ***
	Solid Green	Network is running normally

* If a blinking green Module Status LED persists for more than a few seconds the module has not received the expected configuration from the OCS. This may be due to no Network I/O configuration created in Cscape, not having downloaded the Network I/O configuration to the master OCS, an unpowered master OCS, or the wrong Network ID number set on the DQM302 rotary switches.

** **Network Ack** means that no other node is active on the network. **Dup ID test failed** means that another node with the same ID switch setting is already on the network.

*** Life Expectancy timeout means that the module has not received a periodic message from the master OCS in the time specified in either the Life Expectancy directed data message or the Comm timeout of the Network I/O Configuration window in Cscape.

b. Status LED Indicators

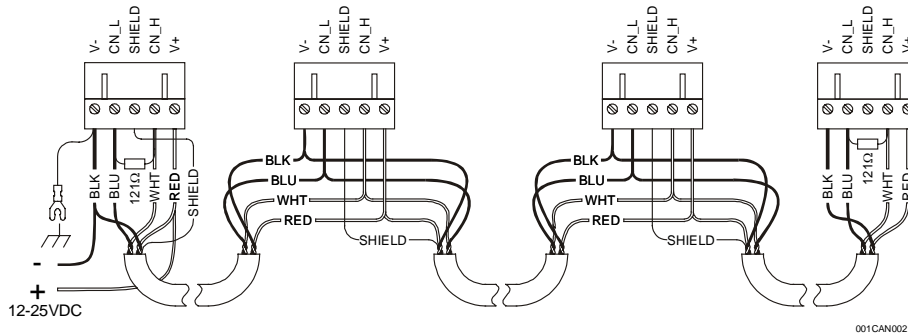
The Power Status LED illuminates Red when power is applied to the module. There are I/O Status LED indicators for each of the Digital I/O points, which illuminate Red when the associated I/O point is ON.

7 NETWORK CABLE

For detailed wiring information, refer to Chapter Two in the hardware manual of the controller you are using. A handy checklist is also provided that covers panel box layout requirements and minimum clearances. See the **Technical Support** section in this document for the web site address to download references and to obtain revised editions.

	Pin	Description
⊙	RED	1 V+
⊙	WHT	2 CAN_H
⊙	SHD	3 Shield
⊙	BLU	4 CAN_L
⊙	BLK	5 V-

Recommended Cable	
Thick: (Max Distance = 500m)	Belden 3082A
Thin: (Max Distance = 100m)	Belden 3084A



CAN Wiring

Note: 20 – 26 VDC must be supplied to the network.

8 INSTALLATION / SAFETY

All applicable codes and standards need to be followed in the installation of this product. When found on the product, the following symbols specify:



Warning: Consult user documentation.



Warning: Electrical Shock Hazard.

WARNING: To avoid the risk of electric shock or burns, always connect the safety (or earth) ground before making any other connections.

WARNING: To reduce the risk of fire, electrical shock, or physical injury it is strongly recommended to fuse the voltage measurement inputs. Be sure to locate fuses as close to the source as possible.

WARNING: Replace fuse with the same type and rating to provide protection against risk of fire and shock hazards.

WARNING: In the event of repeated failure, do not replace the fuse again as a repeated failure indicates a defective condition that will not clear by replacing the fuse.

WARNING: Only qualified electrical personnel familiar with the construction and operation of this equipment and the hazards involved should install, adjust, operate, or service this equipment. Read and understand this manual and other applicable manuals in their entirety before proceeding. Failure to observe this precaution could result in severe bodily injury or loss of life.

For detailed installation and a handy checklist that covers panel box layout requirements and minimum clearances, refer to the hardware manual of the controller you are using. (See the **Additional References** section in this document.)

Adhere to the following safety precautions whenever any type of connection is made to the module

- For I/O wiring (discrete), use the following wire type or equivalent: Belden 9918, 18 AWG or larger.
- Connect the green safety (earth) ground first before making any other connections.
- When connecting to electric circuits or pulse-initiating equipment, open their related breakers. Do not make connections to live power lines.

Safety Precautions continued...

- Make connections to the module first; then connect to the circuit to be monitored.
- Route power wires in a safe manner in accordance with good practice and local codes.
- Wear proper personal protective equipment including safety glasses and insulated gloves when making connections to power circuits.
- Ensure hands, shoes, and floor are dry before making any connection to a power line.
- Make sure the unit is turned OFF before making connection to terminals. Make sure all circuits are de-energized before making connections.
- Before each use, inspect all cables for breaks or cracks in the insulation. Replace immediately if defective.

9 ADDITIONAL REFERENCES

For detailed installation, configuration and other information, refer to the hardware manual of the controller you are using. See the **Technical Support** section in this document for the web site address to download references and to obtain revised editions.

Additional References	
Controller	Manual Number
OCS NX Series Hardware e.g. HE-NX220, HE-NX221, HE-NX250, HE-NX251	MAN0781
Operator Control Station Hardware (OCS, OCX) e.g., OCS1XX / 2XX; Graphic OCS250	MAN0227
Remote Control Station Hardware (RCS [except RCS116], RCX) e.g., RCS210, RCS250	
Color Touch OCS Hardware e.g., OCS300, OCS301, OCS350, OCS351 e.g., OCS451, OCS551, OCS651	MAN0465
OCS LX Series Hardware e.g., LX280 / LX300; RCS116	MAN0755
MiniOCS / MiniRCS / MiniOCX / MiniRCX Hardware e.g., HE500OCSxxx	MAN0305
Other Useful References	
Cscape Programming and Reference	MAN0313
DeviceNet™ Implementation	SUP0326
Wiring Accessories and Spare Parts Manual	MAN0347

10 TECHNICAL SUPPORT

For updates and assistance, contact Technical Support at the following locations.

North America:

(317) 916-4274

www.heapg.com**Europe:**

(+) 353-21-4321-266

www.horner-apg.com

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