Honeywell

Excel 100, 500, 600 Series and Q7750A Controller Subpanel

INSTALLATION INSTRUCTIONS

Warning: This equipment (when used as part of an Excel Controller) generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference. Any unauthorized modification of this equipment may result in the revocation of the owner's authority to continue its operation.

GENERAL

The Excel 100, 500, 600 Series and Q7750A are designed to provide heating, ventilating and air-conditioning control. They can operate either standalone, or networked to Honeywell central workstations such as the XBS, or EBI. These controllers can also be used for smoke control system monitoring and control, for monitor and control of fire (UL864), and general purpose signaling (UL 2017). In UL 2017 applications, the product can be used as a type SM (Self-Monitored) system.

These controllers can be used for smoke control applications when used in conjunction with a UL listed fire alarm control panel (FACP) and UL listed fire fighters' smoke control station (FSCS).

BEFORE INSTALLATION

1. Unpack door and Excel 100, 500, 600 Series or Q7750A Controller (Controller) subpanel from carton. Check equipment and report any damage to a Honeywell representative.
2. Verify cabinet is installed correctly by obtaining and reviewing form no. 95-7438, EXCEL 5000® General Purpose Cabinet Installation Instructions or form no. 95-748, EXCEL 5000® System Styled Cabinet Rings and Subpanels Installation Instructions.
3. Securely mount the cabinet to a rigid structural surface using at least four sets of 1/4 in. (6 mm) mounting hardware (supplied locally).
4. Verify cabinet is mounted correctly by reviewing form no. 95-7438, EXCEL 5000® General Purpose Cabinet Installation Instructions.

NOTES:
- — Anchoring materials must be suitable for the mounting surface (wood, concrete, steel).
- — Mounting must comply with all local codes.

5. Obtain correct number and type of sheet metal screws for subpanel. Installation of a full-size subpanel requires six No. 10 x 1/2-inch sheet metal screws (not supplied). Installation of a smaller subpanel requires four no. 10 x 1/2-inch sheet metal screws (not supplied).
6. Obtain 14505159-001 Tamper Switch per job requirements. Installation of Tamper Switch is optional.

INSTALLATION

Mount Controller subpanel in cabinet so all labeling is visible. Secure full size subpanel in place with six no. 10 x 1/2-inch sheet metal screws (Fig. 1). Secure smaller subpanel in place with four no. 10 x 1/2-inch sheet metal screws.

NOTE: Subpanel must mount flat and should not bulge or recess anywhere.

95-7481-8

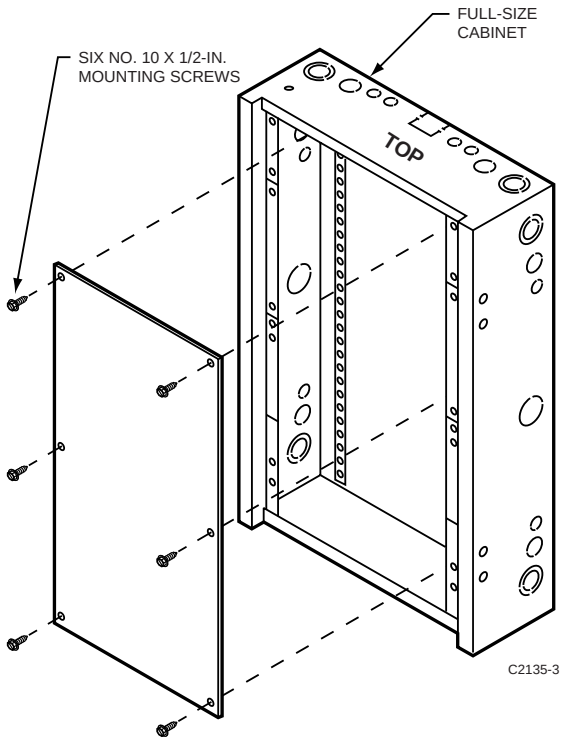


Fig. 1. Mounting controller subpanel in cabinet (full-size subpanel, cabinet shown).

WIRING

— All wiring to the Excel 100, 500, 600 Series and Q7750A controllers is unsupervised, except as noted.
— All circuits are power limited, except for AC power circuits, relay contacts and other circuits as noted.
— All field wiring terminals accept 24 AWG to 14 AWG (0.25 sq mm to 2 sq mm) conductors except as noted.
— All wiring must conform to local codes, ordinances, and regulations. Refer to job drawings for details.
— For 220/240 Vac 50/60 Hz installations, verify voltage difference between any conductor and earth ground does NOT exceed 150 Vac.

1. Connect input/output device wiring, C-Bus transmission wiring (minimum 18 gage [0.8012 sq mm]), LON Bus transmission wiring, and 14507063 Power Cable to Controller per job drawings. Fig. 2 through 9 show typical controller wiring. Fig. 10 through 14 show typical XF528* Digital Input Module (*available in Europe only) subpanel layout and wiring. Fig. 15 shows Q7750A Typical Wiring. Fig. 16 through 20 show typical Power Module wiring and Smoke Control Configuration. Seven Power Module models are available (see Table 1).

2. Connect line voltage to Terminals H and N of the 14507287 Power Module. Connect a good earth ground to Terminal G of the Power Module. Fig. 16 through 19 show typical power wiring.
3. For Power Modules -001 through -007 leave power to Power Supply and Controller OFF. Connect 14507063 Power Cable from Controller to Power Module (Fig. 13 and 14).

⚠ WARNING

Electrical Shock Hazard.
Power Supply can shock.

Subpanel and Controller power must remain OFF until Controller is checked.

4. Install optional Tamper Switch on cabinet per instructions in the cabinet installation instructions. Wire Tamper Switch per job drawings.
5. Mount cabinet door.

IMPORTANT

240/220 Vac 14507287 Power Modules are factory strapped for 240 Vac. To restrap for 220 Vac, see Figure 16. If necessary, restrap the Power Module before mounting. Fig. 16 through 19 show typical Power Module wiring.

⚠ CAUTION

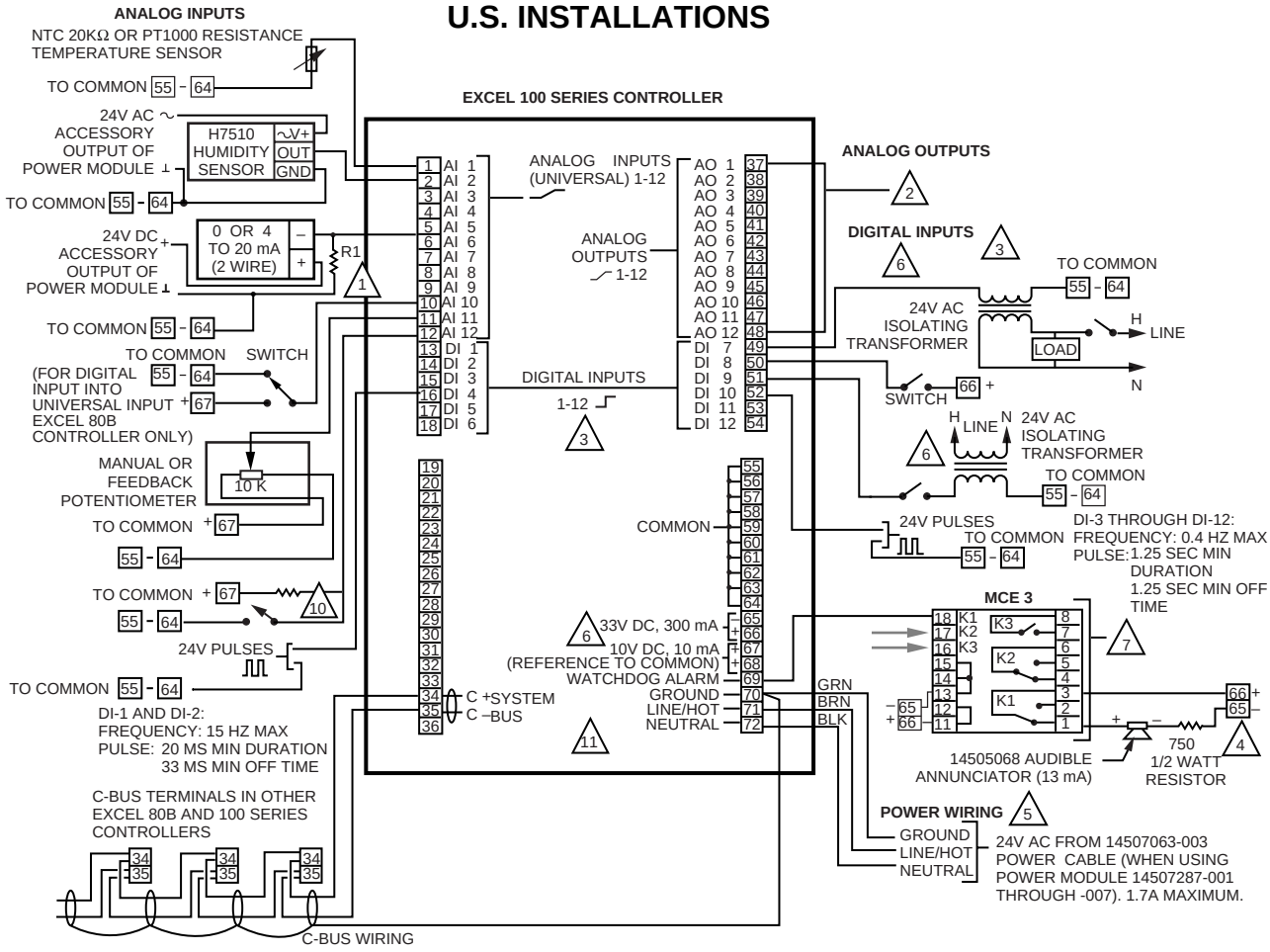
Equipment Damage Hazard
Excessive static can burn out equipment.

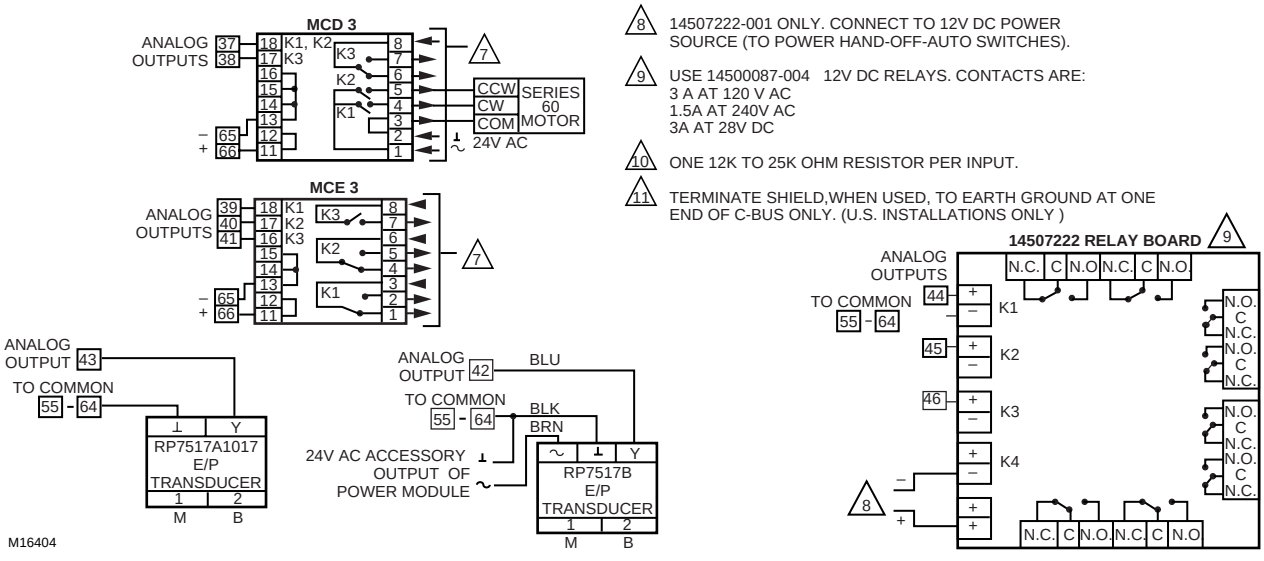
Observe proper anti-static material handling practices when installing or servicing PC parts and related components.

Observe proper equipment and body grounding practices.

Discharge static electricity from your body before handling parts.

U.S. INSTALLATIONS





M16404

1. CONVERT CURRENT SENSOR OUTPUT TO A VOLTAGE WITH A 499 , 0.1% RESISTOR (R1). MAX VOLTS/AMPS EQUALS 10V DC/1 mA.
2. MCD 3 AND MCE 3 RELAYS, RP7517 E/P TRANSDUCER, AND 14507222 RELAY BOARD AS FOLLOWS. MAX VOLTS/AMPS EQUALS 12V DC/16 mA.
3. DIGITAL INPUTS ON EXCEL 100 SERIES CONTROLLER ONLY. MAX VOLTS/AMPS EQUALS 33V DC OR 26V AC/2 mA.
4. MAY BE CONNECTED TO A 5 TO 24V BATTERY (RESISTOR DELETED) FOR LINE POWER INDEPENDENT ALARM.
5. SEE POWER MODULE WIRING DIAGRAM FOR DETAILS.
6. ALL CIRCUITS SUPERVISED EXCEPT FOR 33V DC/300 mA AND 10V DC/10 mA TERMINALS.
7. MAX 240V AC/2 AMP.
8. 14507222-001 ONLY. CONNECT TO 12V DC POWER SOURCE (TO POWER HAND-OFF-AUTO SWITCHES).
9. USE 14500087-004 12V DC RELAYS. CONTACTS ARE:
   3 A AT 120 V AC
   1.5A AT 240V AC
   3A AT 28V DC
10. ONE 12K TO 25K OHM RESISTOR PER INPUT.
11. TERMINATE SHIELD,WHEN USED, TO EARTH GROUND AT ONE END OF C-BUS ONLY. (U.S. INSTALLATIONS ONLY)

Fig. 2. Typical Excel 100 Series Controller I/O Device, C-Bus wiring.

Table 1. Connector Terminal Specifications.

Controller								
Connector Terminal	**Pin**	**Signal Type**	**Input/Output**	**Voltage Type[a]**	**Maximum Voltage[b]**	**Maximum Current**	**Maximum Frequency**	**Maximum Line Impedance**
Analog Input		AI	Input	SIG	±12V	±20 mA	9600 baud	8K ohms
Digital Input		DI	Input		±10V		—	15K ohms
Analog Output		AO	Output		±12V		9600 baud	8K ohms
Digital Output		DO		DC	±35V	±50 mA	—	10K ohms
Totalizer Input		TI	Input	SIG	±12V	±12 mA	100 Hz	
Signal Ground		GND	—	—	—	—	—	—
J1 RS-485	1	+A	Input/Output	SIG	±5V	1 mA/180 mA	9600 baud	100 ohms
	2	-A			±5V	1 mA/180 mA	9600 baud	100 ohms
	3S	Shield A	—	—	—	—	—	—

[a]SIG = Signal, DC = Direct Current.

[b]All voltages are FWR.

Table 2. Power Module Models.

14507287 Power Modules						
	Transformer Max Input					
Model	**Vac**	**Current Draw**	**Hz**	**Controller Vac Output**	**Accessory Output**	**Convenience Outlet**
-001	120	0.5A	50/60	24	—	120 Vac, 10A
-002	120	1.7A	50/60	24	24 Vac, 100 VA 24 Vac, 40 VA	120 Vac, 10A
-003	120	1.7A	50/60	24	24 Vac, 100 VA 24 Vac, 600mA	
-004	240/220	0.3A	50/60	24	—	220/240 Vac, 6A
-005	240/220	0.8A	50/60	24	24 Vac, 100 VA 24 Vac, 40 VA	
-006	240/220	0.8A	50/60	24	24 Vac, 100 VA 24 Vac, 600mA	
-007	120	0.5A	50/60	24	—	—

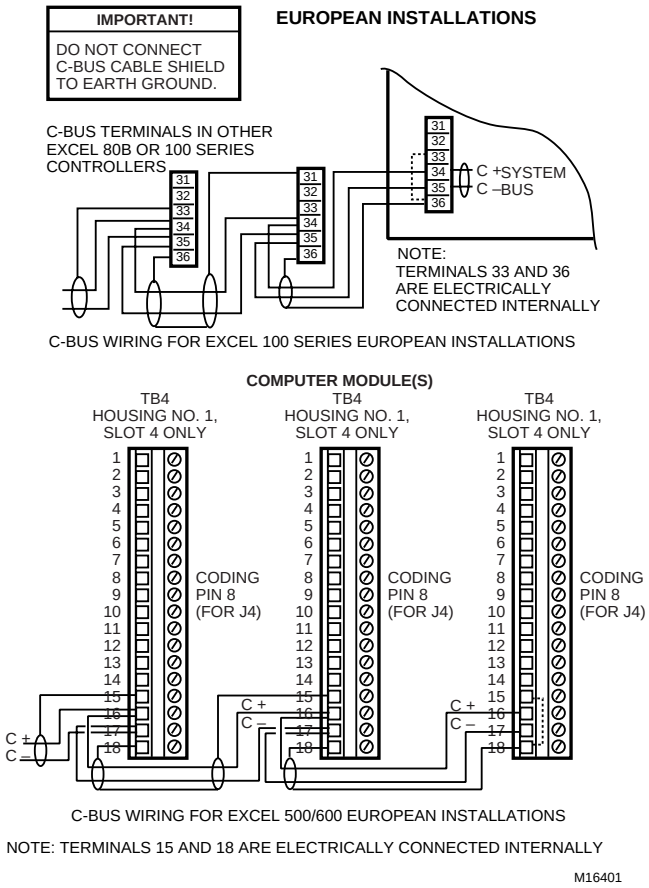


Fig. 3. C-Bus wiring for Excel 5000 Controllers.

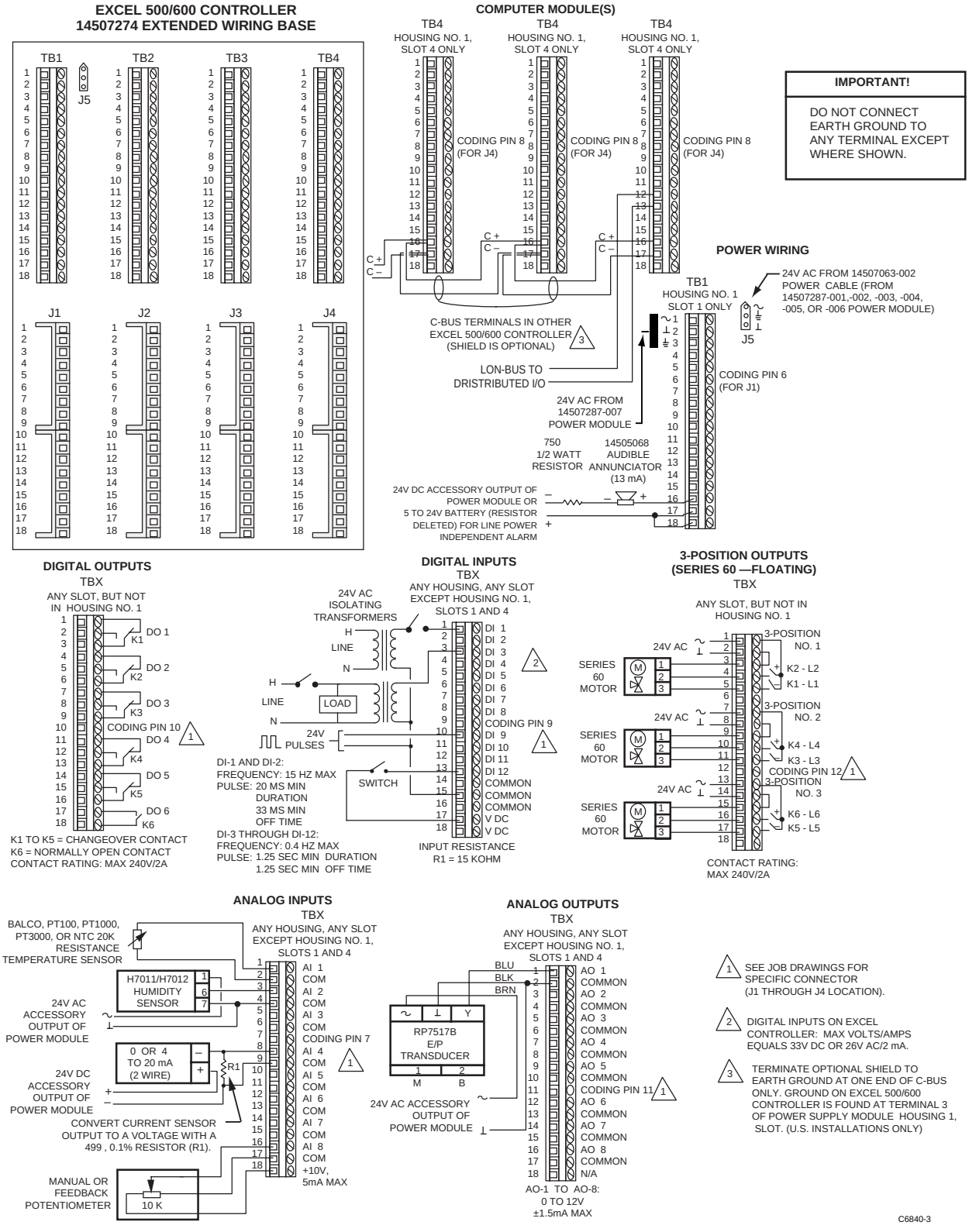


Fig. 4. Typical Excel 500/600 Controller I/O Device, C-Bus wiring.

See Fig. 5 through 9 for I/O Module wiring.

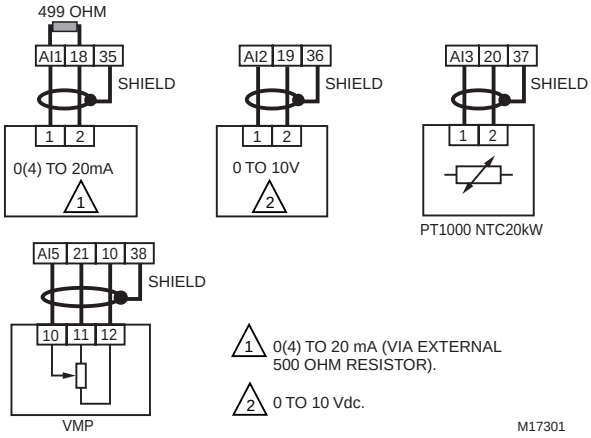


Fig. 5. XFL521 Analog Input Module.

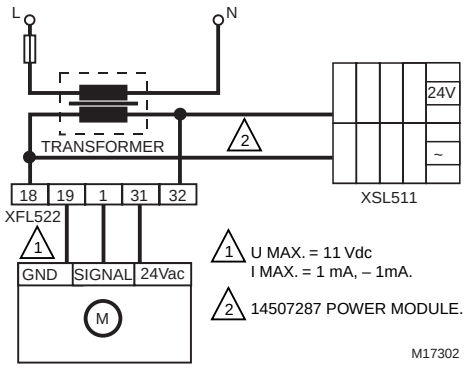


Fig. 6. XFL522 Analog Output Module.

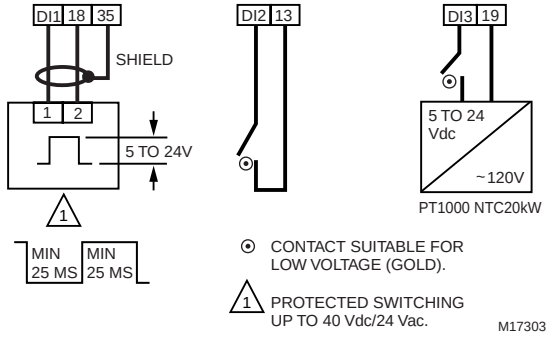


Fig. 7. XFL523 Digital Input Module.

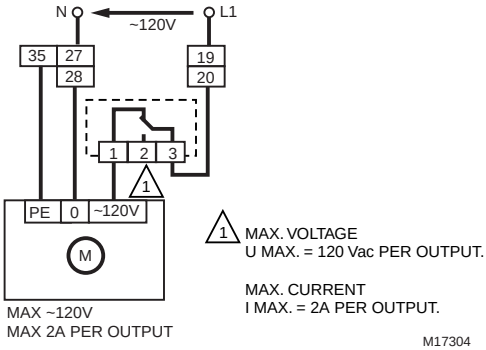
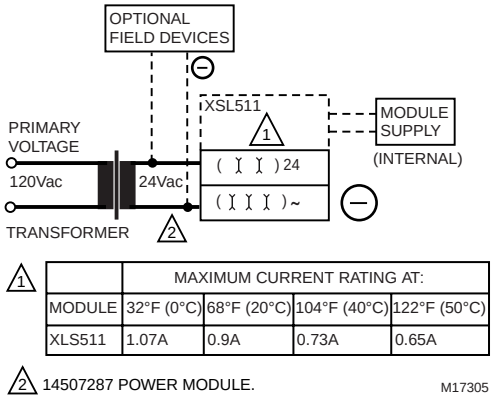


Fig. 8. XFL524 Digital Output Module.



1

	MAXIMUM CURRENT RATING AT:			
MODULE	32°F (0°C)	68°F (20°C)	104°F (40°C)	122°F (50°C)
XLS511	1.07A	0.9A	0.73A	0.65A

2 14507287 POWER MODULE.

M17305

Fig. 9. XSL511 LON Connector Module.

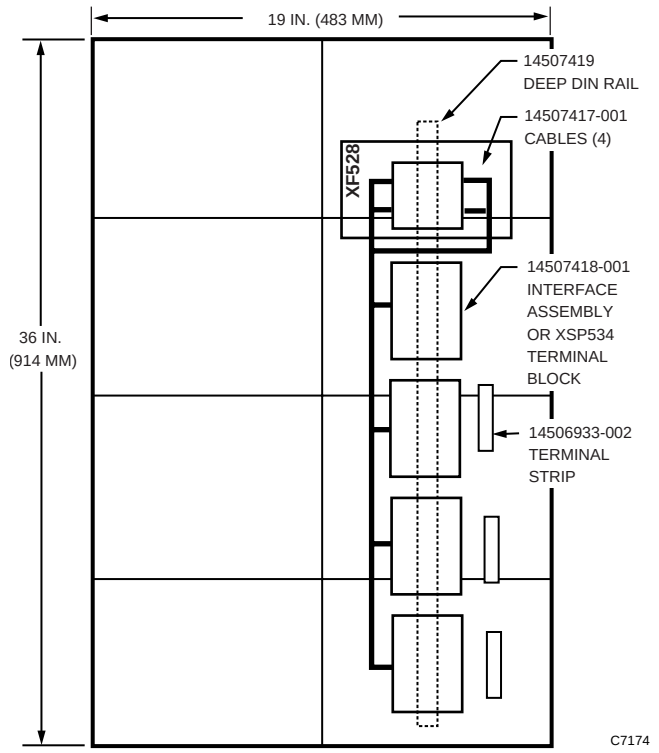


Fig. 10. Subpanel layout with XF528* Digital Input Module (*available in Europe only).

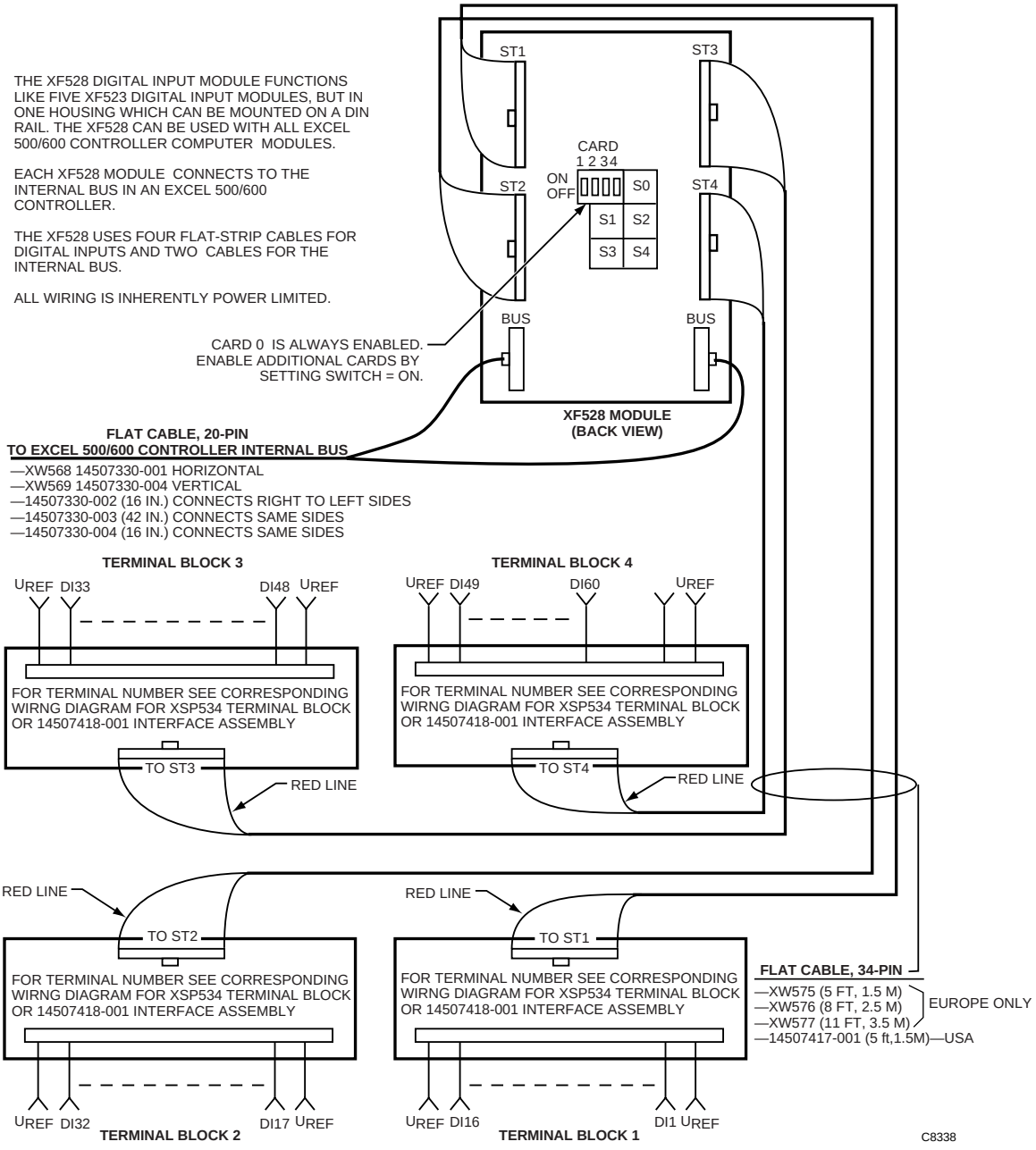
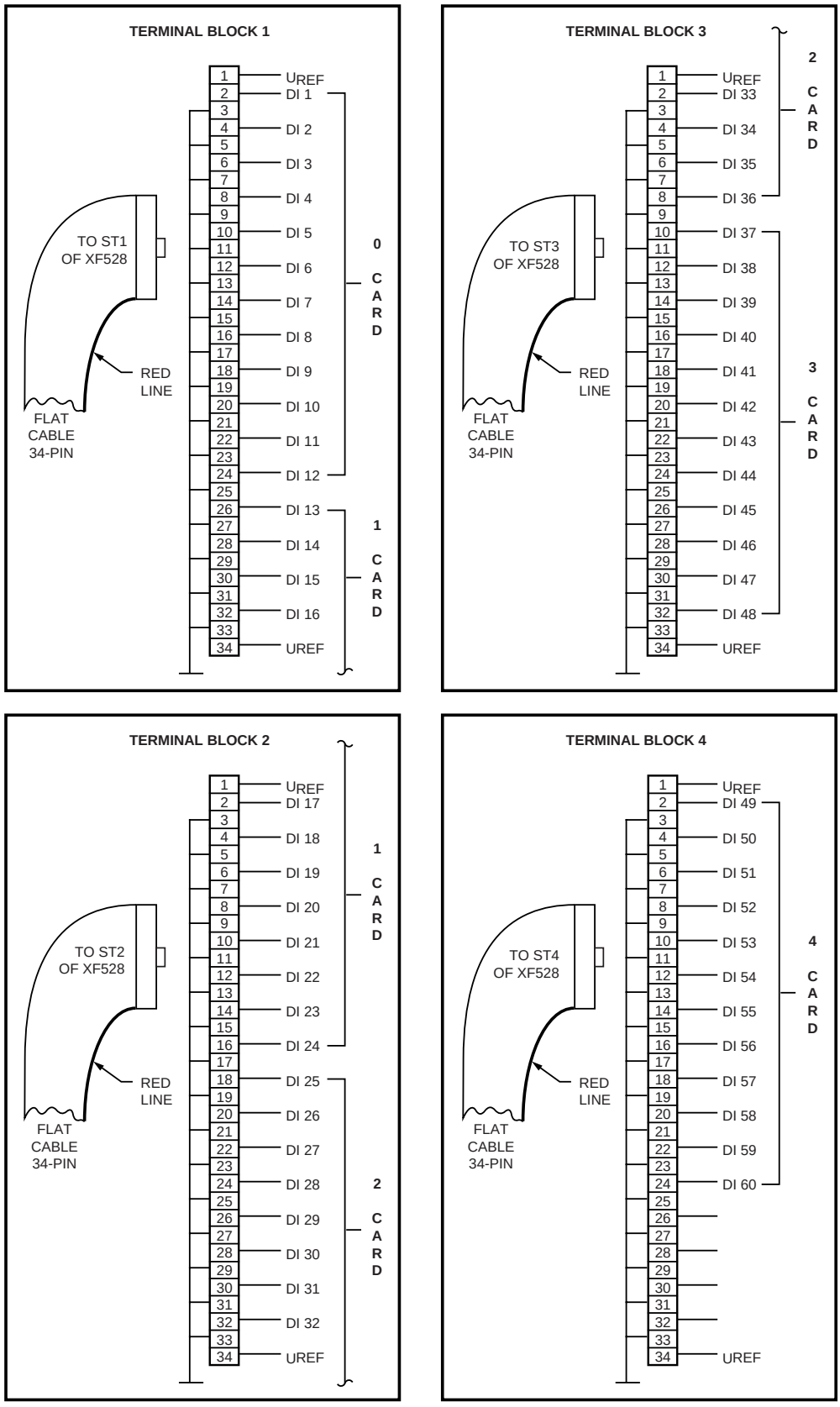


Fig. 11. Typical XF528* Digital Input Module (*available in Europe only) wiring to XSP534 Terminal Block or 14507418-001 Interface Assembly.



NOTE:
A CARD IS EQUIVALENT TO A XF523 DIGITAL INPUT MODULE FOR PURPOSES OF INTERNAL BUS ADDRESSING ON BACK OF XF528 AND IDENTIFICATION IN THE CARE DATABASE.

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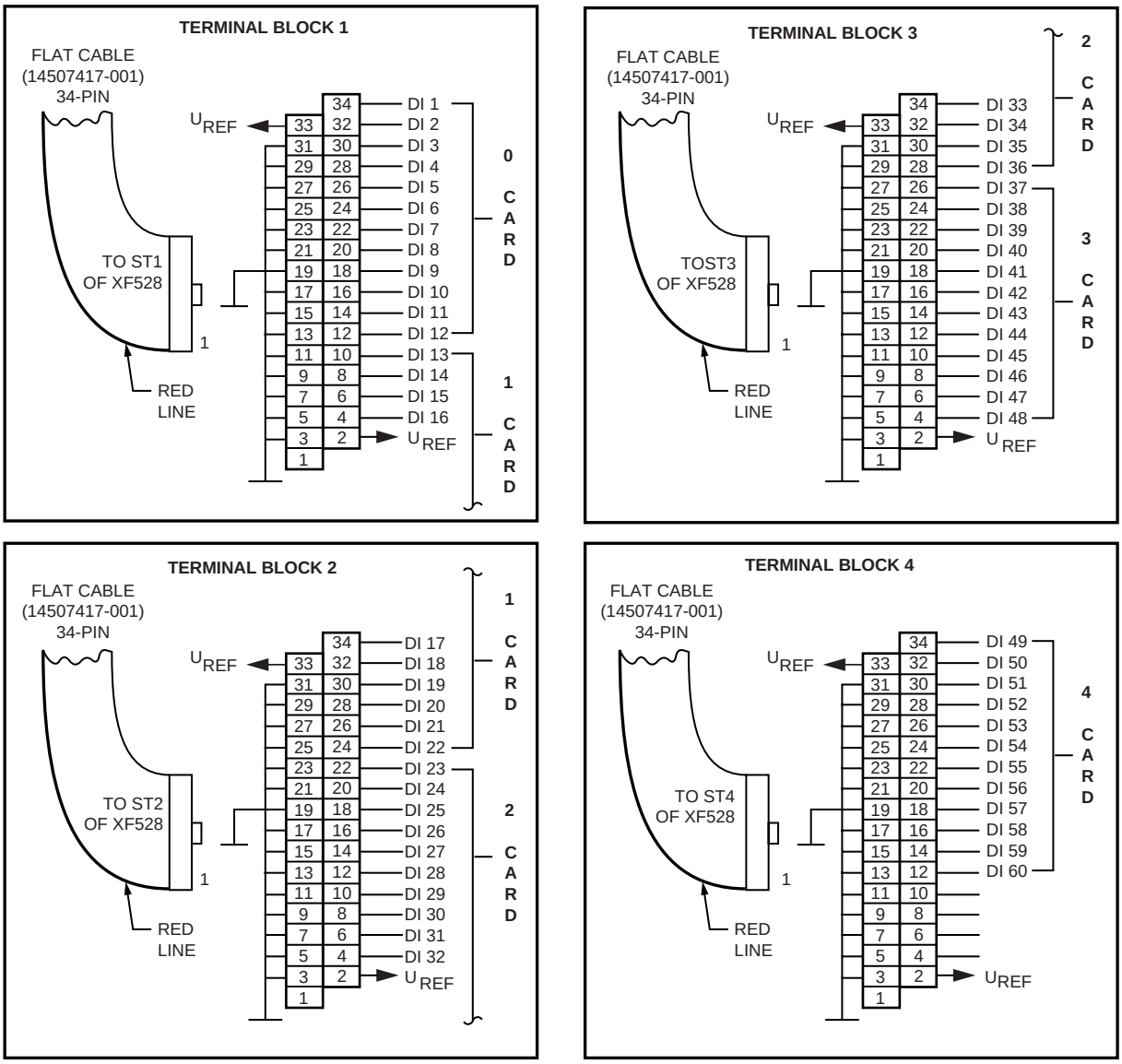
Fig. 12. Typical XF528* Digital Input Module (*available in Europe only) wiring to XSP534 Terminal Block.



NOTE:
A CARD IS EQUIVALENT TO A XF523 DIGITAL INPUT MODULE FOR PURPOSES OF INTERNAL BUS ADDRESSING ON BACK OF XF528 AND IDENTIFICATION IN THE CARE DATABASE.

C7178

Fig. 13. Typical XF528* Digital Input Module (*available in Europe only) wiring to 14507418-001 Interface Assembly.

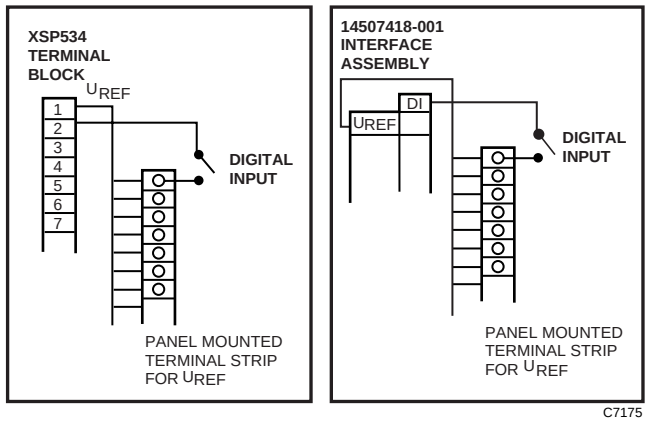


Fig. 14. Typical digital input wiring to XF528* Digital Input Module (*available in Europe only) input.

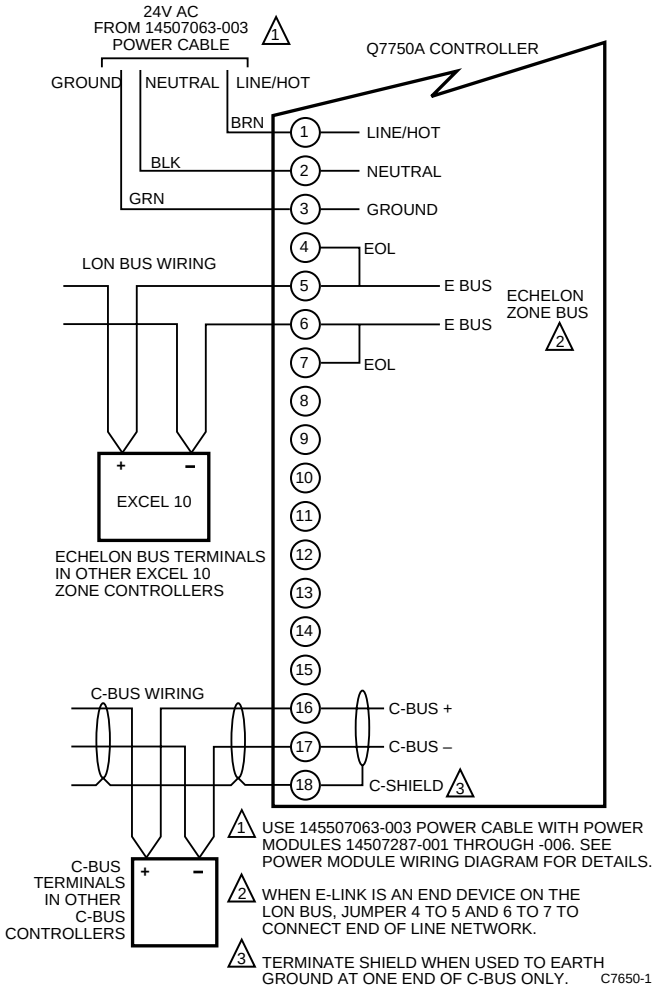


Fig. 15. Typical Q7750A Controller wiring.

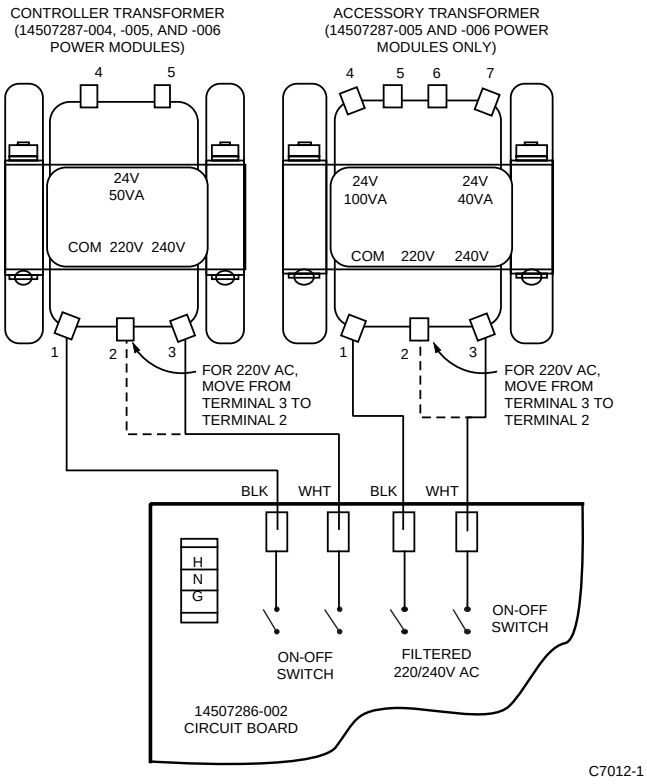
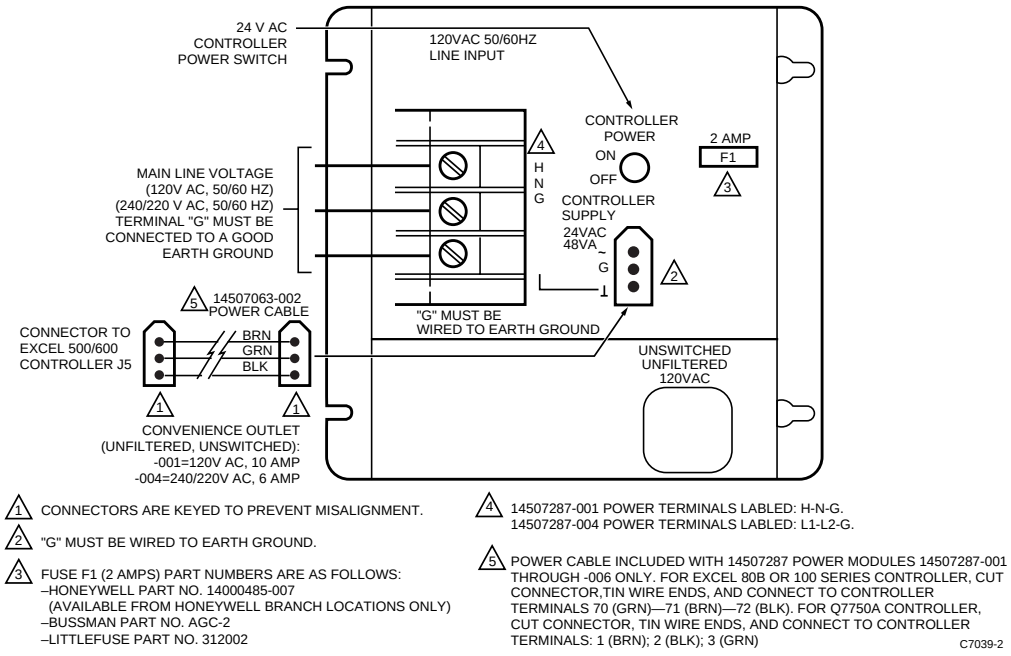


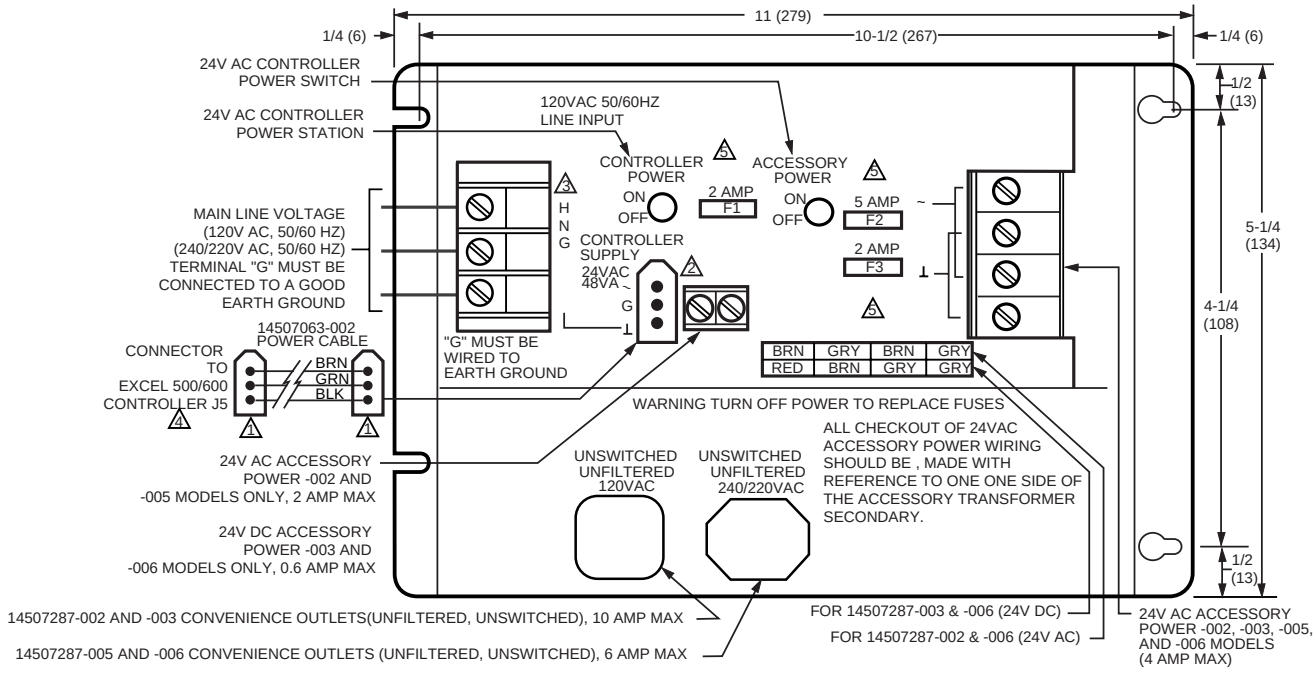
Fig. 16. Restrapping 240/220 Vac power modules (14507287-004, -005, and -006) for 220 Vac operation.



1. CONNECTORS ARE KEYED TO PREVENT MISALIGNMENT.
2. "G" MUST BE WIRED TO EARTH GROUND.
3. FUSE F1 (2 AMPS) PART NUMBERS ARE AS FOLLOWS:
   –HONEYWELL PART NO. 14000485-007
   (AVAILABLE FROM HONEYWELL BRANCH LOCATIONS ONLY)
   –BUSSMAN PART NO. AGC-2
   –LITTLEFUSE PART NO. 312002
4. 14507287-001 POWER TERMINALS LABLED: H-N-G.
   14507287-004 POWER TERMINALS LABLED: L1-L2-G.
5. POWER CABLE INCLUDED WITH 14507287 POWER MODULES 14507287-001 THROUGH -006 ONLY. FOR EXCEL 80B OR 100 SERIES CONTROLLER, CUT CONNECTOR,TIN WIRE ENDS, AND CONNECT TO CONTROLLER TERMINALS 70 (GRN)—71 (BRN)—72 (BLK). FOR Q7750A CONTROLLER, CUT CONNECTOR, TIN WIRE ENDS, AND CONNECT TO CONTROLLER TERMINALS: 1 (BRN); 2 (BLK); 3 (GRN)

C7039-2

Fig. 17. Typical 14507287-001, -004 Power Module wiring.



1. CONNECTORS ARE KEYED TO PREVENT MISALIGNMENT.
2. "G" MUST BE WIRED TO EARTH GROUND.
3. 14507287-001 POWER TERMINALS LABLED: H-N-G.
   14507287-004 POWER TERMINALS LABLED:L1-L2-G.
4. POWER CABLE INCLUDED WITH 14507287 POWER MODULES 14507287-001 THROUGH -006 ONLY. FOR EXCEL 100 SERIES CONTROLLER, CUT CONNECTOR, TIN WIRE ENDS, AND CONNECT TO CONTROLLER TERMINALS 70 (GRN)—71 (BRN)—72 (BLK). FOR Q7750A CONTROLLER, CUT CONNECTOR, TIN WIRE ENDS, AND CONNECT TO CONTROLLER TERMINALS: 1 (BRN); 2 (BLK); 3 (GRN)
5. PART NUMBERS FOR FUSES ARE AS FOLLOWS:

FUSE SPECIFICATIONS					
POWER MODULE	FUSE NO.	FUSE RATING	HONEYWELL PART NO.	BUSSMAN PART NO.	LITTLEFUSE PART NO.
14507287-001 Through -006	F1	2 Amps	14000485-007	AGC-2	312002
14507287-002, -003, -005, and -006	F2	5 Amps	14507374-001	GMA 5AMP	235005
14507287-002, -003, -005, and -006	F3	2 Amps	14000485-007	AGC-2	312002

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Fig. 18. Typical 14507287-002, -003, -005, -006 Power Module wiring.

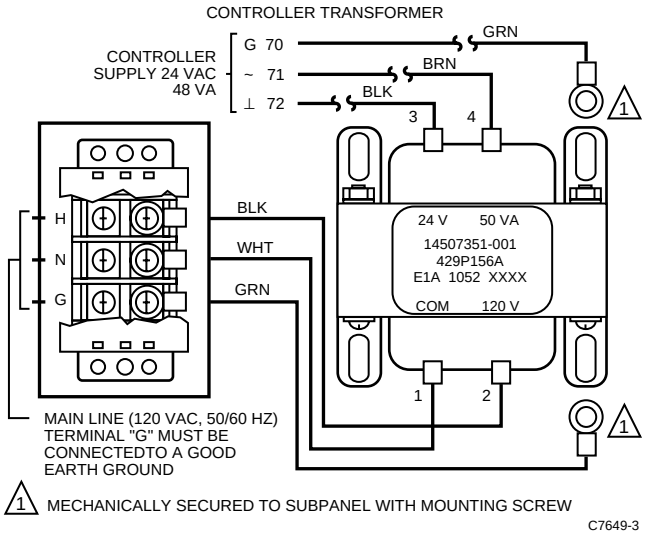
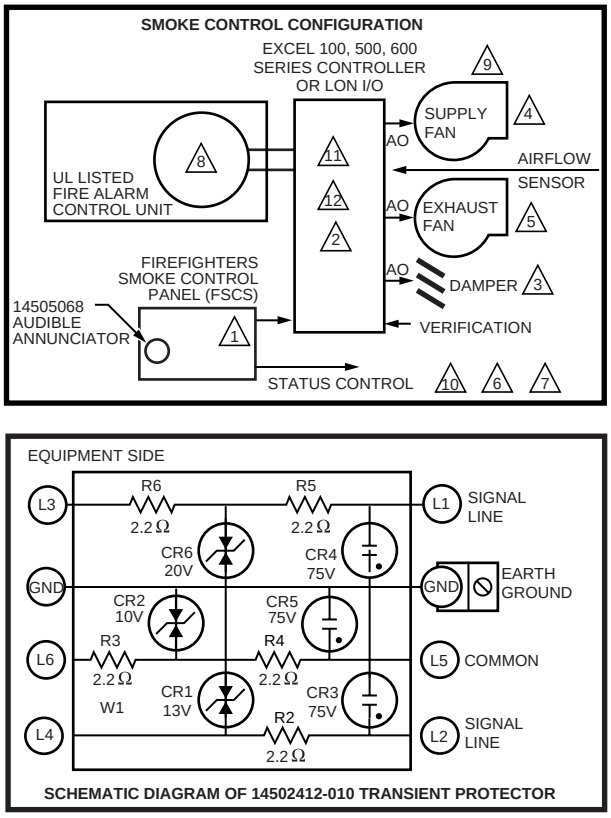


Fig. 19. Typical 14507287-007 Power Module wiring.

SMOKE CONTROL CONFIGURATION

Fig. 20 shows a typical smoke control configuration.



1. LOCATE AND CONFIGURE PER NFPA 92A,SECTION 3-4.3.4. UL LISTED ANNUNCIATOR/FSCS PANEL SWITCHES HAVE A MIN RATING OF 24V, 1/10 AMP AND LAMPS/LEDS HAVE A RATING OF 24V, LIMITED TO 50 mA.
2. LOCATE TO MINIMIZE CONTROL WIRING AND PIPING. AVOID RUNNING WIRES OR PIPING THROUGH AREAS THAT HAVE A HIGH FIRE RISK.
3. LOCATE PER UL 555S.
4. LOCATE SEPARATE FROM AND BELOW ALL BUILDING EXHAUST FANS AND UPSTREAM OF ANY PREVAILING WINDS.
5. EXHAUST TO OUTSIDE OF BUILDING..
6. LOCATE AIRFLOW DIFFERENTIAL SWITCH PER CLEAFS405 AND CLEAFS460 AIRFLOW DIFFERENTIAL SWITCHES INSTALLATION INSTRUCTIONS 95-6001.
7. LOCATE UL LISTED DAMPER PRESSURE/POSITION INDICATOR PER DAMPER INSTALLATION INSTRUCTIONS.
8. SMOKE CONTROL MUST BE INITIATED BY A LISTED FIRE ALARM CONTROL UNIT OR IN ZONE AUTOMATIC ALARM DEVICES AND NOT DEVICES LOCATED OUTSIDE OF THE SMOKE CONTROL ZONE. INTERCONNECTING WIRING MUST BE WITHIN 20 FT (6M) AND IN CONDUIT.
9. REFER TO SMOKE CONTROL FUNDAMENTALS 77-1134.
10. VERIFY AC VOLTAGE SOURCE CONNECTED TO INSIDE OF MAIN LINE VOLTAGE TERMINAL BLOCK IS FROM A UL 1481 LISTED UNINTERRUPTIBLE POWER SUPPLY. THE MAIN LINE VOLTAGE TERMINAL BLOCK MAXIMUM CURRENT DRAW IS0.5 AMPS. FOR 220/240V AC (50/60 HZ) APPLICATIONS, VERIFY NO POTENTIAL BETWEEN ANY CONDUCTOR AND EARTH GROUND EXCEEDS 150V AC.
11. ALL EXTERNAL FIELD WIRING MUST LIMITED TO 3277 FT (999 METERS) AND BE TERMINATED TO 14506944-001 TRANSIENT PROTECTOR (35 VOLTS, 290 mA MAX.) EXCEPT C-BUS FIELD WIRING COMMUNICATING AT 1MHZ WHICH USES 14502412-010 TRANSIENT PROTECTOR (19 VOLTS, 500 mA) (SEE DIAGRAM).
12. DISTRIBUTED (LON) AO WIRING MUST BE IN THE SAME ENCLOSURE OR LESS THAN 20 FEET TO ADJACENT ENCLOSURE. NO PROTECTION IS REQUIRED.

M16406

Fig. 20. Typical smoke control configuration.

DATA FILE SETUP

Generate the (Excel CARE) data file for the Excel 100, 500, or 600 Series Controllers. This data file has a mix of hardware points for the necessary inputs and outputs to control fans, dampers, and other equipment. In addition to the inputs and outputs, a custom control program is written to control the outputs per the sequence. The Excel 500/600 controllers can reset the program once the data from the operator interface indicates a normal condition for the dedicated smoke control equipment. Wire conditions must be programmed to provide annunciation of trouble conditions.

Also required for a dedicated application for the Excel 500/600, is a weekly time program to test control points, fans, and dampers by exercising the equipment and verifying feedback automatically during low building activity periods. The XL100CUUKL is for non-dedicated smoke control.

PANEL RESET

When in Smoke Control Mode, panel reset is accomplished by resetting the initiating panel contact circuit or by the separate initiating/reset switch on the FSCS panel.

⚠ CAUTION

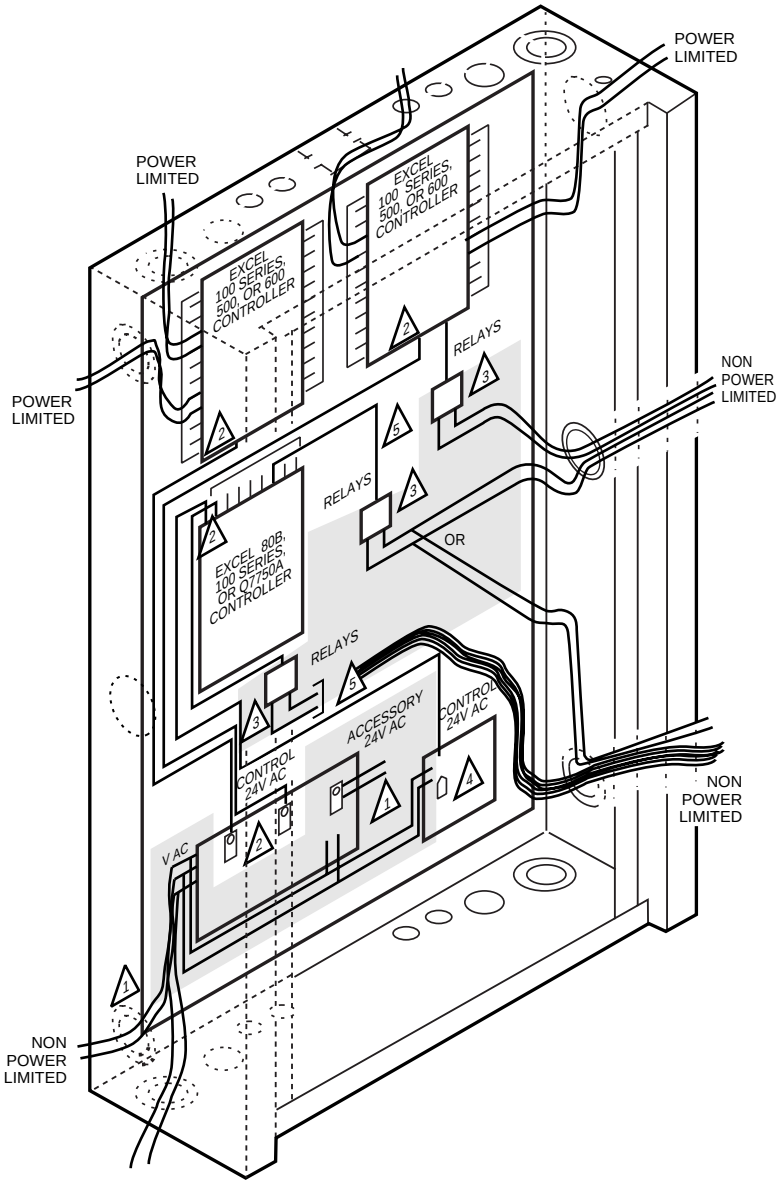
Equipment Damage Hazard.
Failure to use listed/approved replacement parts can damage product, degrade operation and result in loss of safety function.

This product must be installed and operated within its environmental, mechanical, and electrical specifications as contained in this document.

When servicing, use only listed/approved replacement parts ordered directly from the manufacturer.

NFPA WIRING REQUIREMENTS FOR POWER LIMITED CIRCUITS

Figs. 21 through 23 show typical power limited circuit configurations.



1 14507287-001 THROUGH -006 POWER MODULE ACCESSORY 24V AC OUTPUT (RATED 2A) MUST BE WIRED IN ACCORDANCE WITH NFPA 70, ARTICLE 725 WHEN ROUTED WITHIN THE CABINET OR ADJACENT CABINETS AND ALSO FOR EXTERNAL FIELD WIRING.

2 14507287-001 AND -004 CONTROL POWER MODULE 24V AC OUTPUT IS INHERENTLY POWER LIMITED. THUS, ALL SOURCED POWER FROM THE EXCEL 80B, 100 SERIES, OR Q7750A CONTROLLER IS POWER LIMITED. ALL FIELD WIRING FROM THESE CONTROLLERS MEET NFPA 70, ARTICLE 725 POWER LIMITED CLASS II REQUIREMENTS.

3 ALL EXTERNAL NON-POWER LIMITED POWER WIRING TO THE MCD 3 AND MCE 3 RELAYS OR OTHER DEVICES MUST BE SEPARATED FROM THE DRIVER SOURCE WIRING IN ACCORDANCE WITH NFPA 70, ARTICLE 725-52, PARAGRAPH (2), EXCEPTION NO. 2. NON-POWER LIMITED WIRING MUST BE RESTRICTED TO HIGHLIGHTED AREA SHOWN.

4 IF A SEPARATE AUXILIARY "POWER LIMITED" 24V AC POWER SOURCE IS REQUIRED, USE A CONTROL POWER MODULE (14507287-001 OR -004).

5 DEVICES MUST BE INSTALLED IN AREAS AS SHOWN.

ALL CABLE MUST BE ROUTED AS SHOWN.

ALL INTERNAL POWER LIMITED WIRING MUST BE SEPARATED BY 1/4 IN. (6MM) OR BARRIER FROM NON-POWER LIMITED WIRE. EXCESS WIRING MUST BE CUT, TRIMMED AND DRESSED PROPERLY TO ENSURE PROPER CLEARENCES ARE MAINTAINED.

M16399

Fig. 21. Typical power limited circuit for Excel 100, Q7750A.

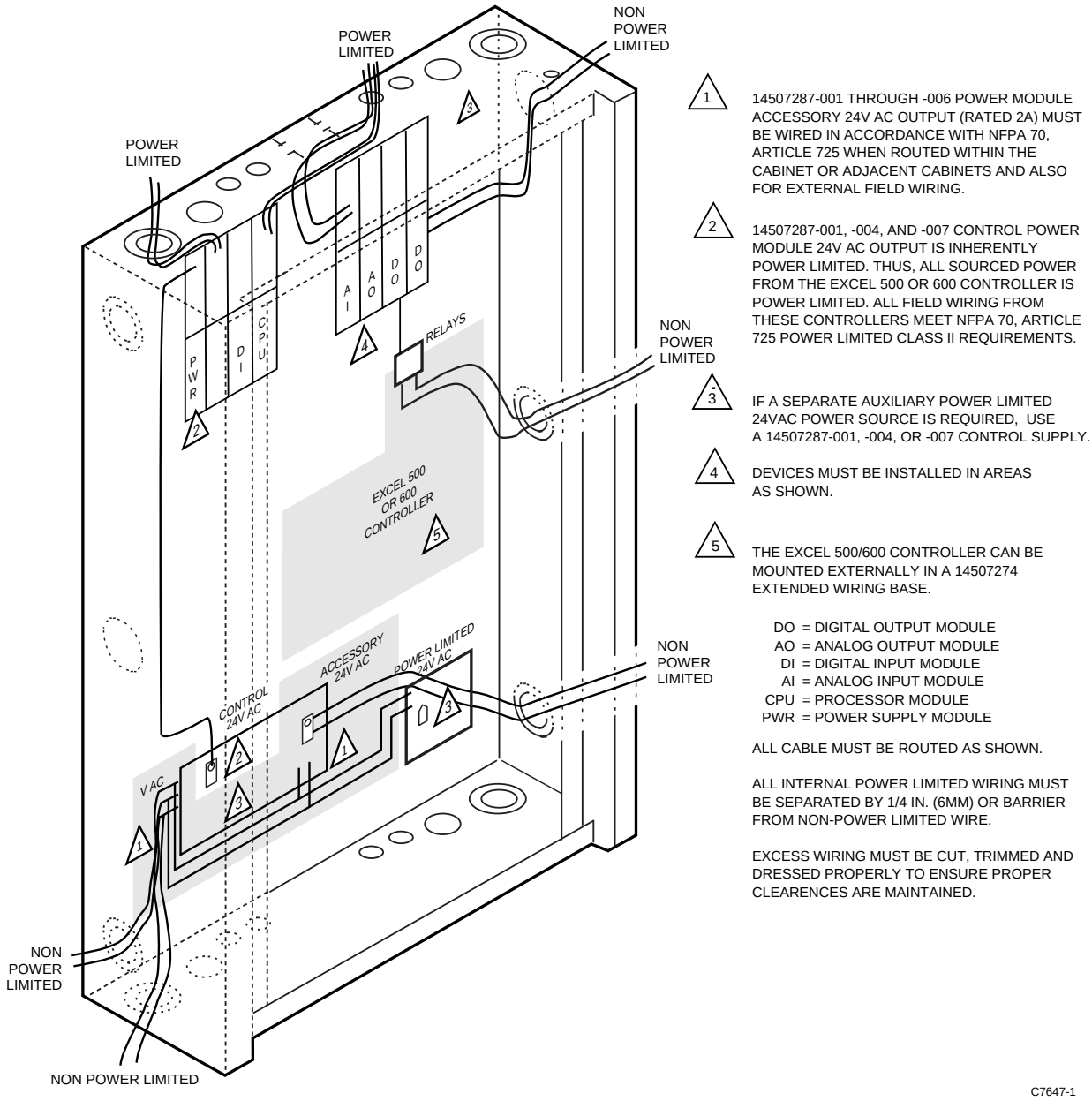


Fig. 22. Typical power limited circuit for Excel 500, 600 (two housings in ring cabinet).

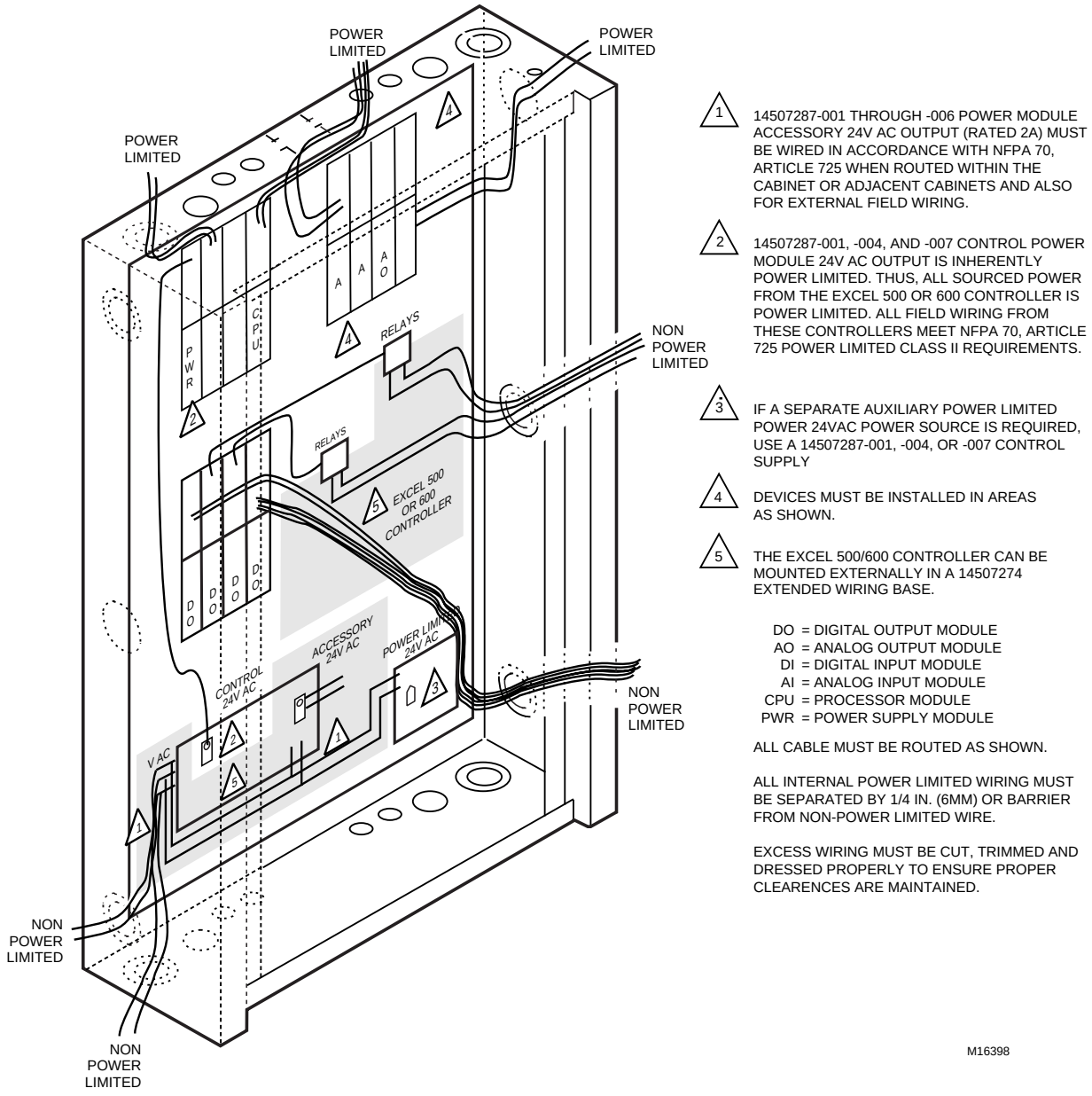


Fig. 23. Typical power limited circuit for Excel 500 (5010C) (three housings in a ring cabinet).

EXCEL 500/600 CONTROLLER MOUNTING ON DOOR

General

Fig. 24 through 26 show components for mounting an Excel 500 or 600 Controller on a half-size Cabinet.

NOTE: To accommodate the Excel 500/600 Controller mounting, the 14507396-002 and -003 doors provide the door lock on the left side and the door hinge on the right side when facing the front of the cabinet.

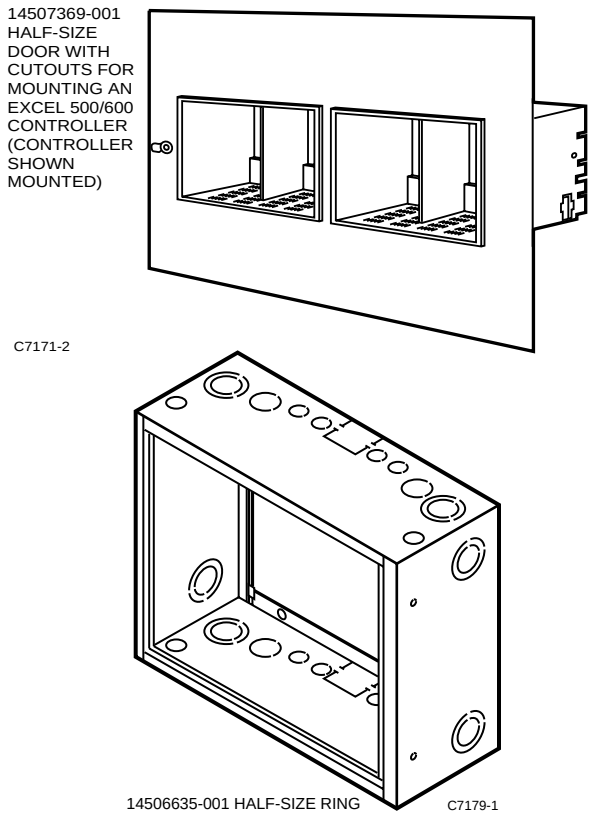


Fig. 24. Door-mounted controller assembly.

Mounting and Installation

1. Insert Excel 500/600 Controller Housing into Door from front to back. (See Fig. 26).
2. Insert Retaining Clamp (included with XS564) into Housing and secure Housing to Door (see Fig. 27).
3. Insert Coding Pins for Controller Modules into appropriate Terminal Block (see Fig. 28) locations on Wiring Base as specified in job drawings.
4. Install XS564 Wiring Base (see Fig. 28).

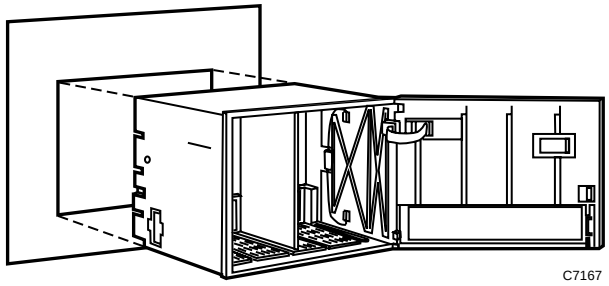


Fig. 25. Mounting Excel 500/600 Controller in door.

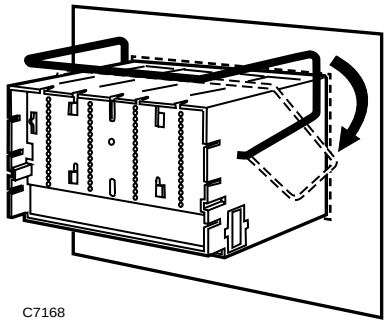


Fig. 26. Retaining clamp installation.

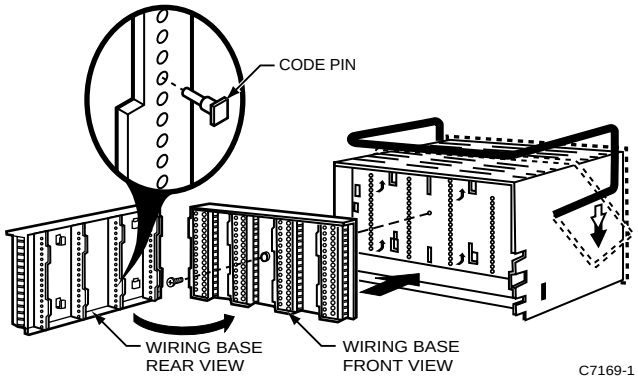


Fig. 27. Controller wiring base and coding pin installation.

Wiring

NOTES:
— All wiring must conform to applicable local codes, ordinances, and regulations.
— All external field wiring, and wiring routed within the cabinet or adjacent cabinets, must be wired in accordance with NFPA 70, Article 725.
— All internal power limited wiring must be separated by 1/4 in. (6 mm) or barrier from nonpower-limited wire.
— All cable must be routed as shown.
— Excess wiring must be cut, trimmed, and dressed properly to ensure proper clearances are maintained.

Wire Excel 500/600 Controller per job drawings. Route wiring through cable ties per Figure 28.

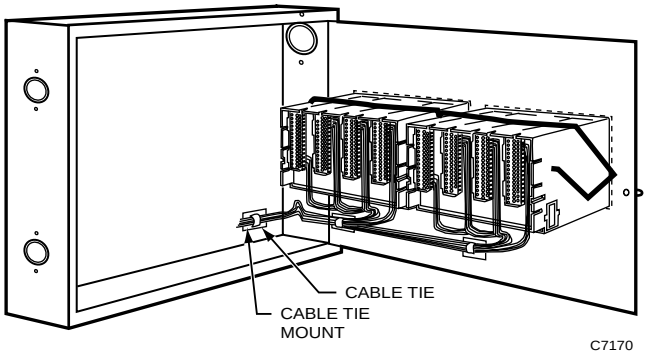


Fig. 28. Routing wiring for door-mounted controller.

OPERATION

The Excel 100, 500, 600 and Q7750A series of controllers have LED indicators that are used to show controller activity. Their function is identified on the controller nomenclature. For typical system operation, refer to the following system literature:
— Form no. 63-5099, Excel 5000 System Start Up Information Sheet.
— Form no. 74-2039, Excel Building Supervisor Operator Manual.
— Form no. 74-3563, Excel 100/500/600 System Overview.
— Form no. 74-3559,Excel 600/500/100/80 Function Drawings.
— Form no. 74-5022, Excel Building Supervisor Graphics Operator Manual.
— Form no. ZD34-003-11 EBI Operator's Guide.

Maintenance Procedures

The system must be maintained in accordance with the system documentation and procedures and practices contained in applicable NFPA and UL standards. The internal memory in this series of controllers is supported by a Varta 6127 CR 1/2 AA 3V lithium battery (not rechargeable). When the battery requires replacement, a low battery condition is indicated on the controller and sent to the MMI and central monitoring station. Replace when needed with the same battery type. For service, contact your local Honeywell Home & Building Control office as listed in the phone book, or contact a regional office as shown at the end of this document.

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