Honeywell

YP7899C1000
7800 SERIES
Burner Management Panel

INSTALLATION INSTRUCTIONS

APPLICATION

The 7800 SERIES Burner Management Panel is a packaged, pre-wired panel that includes the RM7800L1087 burner control, a modbus® interface, two DC2500 controls for on/off and limit control and the S7999D color touchscreen interface. The S7999D allows monitoring and control of the RM and DC controls via the modbus interface, all with user-friendly menus. On board switches, buttons and alarm lights are included for customer convenience. The burner control purge card, amplifier and flame detector are purchased separately.

This document provides installation instructions and operation information. Other applicable publications are:

- — 65-0321, S7999D1048 System Display
- — 66-1152, RM7800L1087 Relay Module with Valve Proving
- — 65-0288, S7800A1142 Keyboard Display Module 7800 SERIES
- — 65-0029, 7800 Series Relay Module Checkout and Test
- — 65-0084, Q7800A 7800 SERIES 22-Terminals Universal Wiring Subbase
- — 66-2034, R78xx Amplifiers for 7800 SERIES and R7140 Relay Modules
- — 65-0089, ST7800A,C 7800 SERIES Plug-In Purge Timer
- — 65-0249, S7810M Modbus Module
- — 60-2026, C7027, C7035, C7044, C7927 Minipeeper UV Flame Detector
- — 65-0267, C7961 Dynamic Self-checking Solid State UV Flame Detector
- — 60-0292, C7915 Infrared Flame Detector
- — 65-0277, C7962 Visible Light Flame Detector
- — 60-2024, C7007, C7008, C7009 flame Rod Detector
- — 95-8269, C7076 Adjustable Sensitivity UV Flame Detector
- — 60-2398, C7012 Ultraviolet Flame Detectors
- — 51-52-25-127, UDC2500 Product Manual
- — 51-52-25-118, UDC Limit Control Model Product Manual
- — 51-52-25-66, UDC Modbus RTU Serial Communications User Manual

FEATURES

- **Pre-wired and ready to install**
- **Includes the RM7800L1087 burner control with wiring subbase, S7810M modbus module, two DC2500 controls and the S7999D touchscreen display**
- **Monitor and control through the touchscreen interface**
- **Burner on/off selector switch**
- **Alarm lights**
- **Reset buttons**
- **Unit shutdown / Emergency stop button**
- **S7999D touchscreen display is modbus ready**
- **VPS (Valve Proving System) capability via flame safeguard control**

SPECIFICATIONS

Electrical Ratings
120 Vac, 50/60 Hz, 10 Amps
For individual ratings, see component literature for details.

Environmental Ratings
Enclosure: NEMA 12.
For individual ratings, see component literature for details.

66-2061-01

Humidity
Install the panel where the relative humidity never reaches the saturation point. The relay module inside the panel is designed to operate in a maximum 85 percent relative humidity continuous, non-condensing, moisture environment.

Vibration
Do not install the panel where it could be subjected to vibration in excess of 0.5G continuous maximum vibration.

General
Overall panel size: 24in. high x 24 in. wide x 8 in. deep (excluding door and door mounted components)
Panel weight: approx. 75 pounds
Mounting holes are 0.44 in. typical diameter, 18 in. on center.

Approvals
Components are individually approved by the nationally recognized agencies. Please see component literature for details. The panel has UL 508A approval. Panel is assembled and wired to the UL Standards.

INSTALLATION

When Installing This Product…

1. Read these instructions and the appropriate product literature carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Refer to the installation manuals and wiring diagrams provided with this panel for the embedded products.
3. Read these instructions and the appropriate product literature carefully. Failure to follow them could damage the product or cause a hazardous condition.
4. Refer to the installation manuals and wiring diagrams provided with this panel for the embedded products.
5. Check the ratings given in the instructions and on the product to make sure that the product is suitable for your application.
6. Installer must be a trained, experienced combustion service technician.
7. Disconnect the power supply before beginning installation to prevent electrical shock and equipment damage. More than one disconnect may be involved.
8. All wiring must comply with the National Electric Code (NEC) and any applicable local electrical codes, ordinances and regulations.
9. After installation is complete, check out product operation as provided in the appropriate product installation instructions.

⚠ WARNING

Fire or Explosion Hazard. Can cause severe injury, death or property damage.
To prevent possible hazardous burner operation, verify safety requirements each time a controller is installed on a burner.

WIRING

⚠ WARNING

Electrical Shock Hazard. Can cause serious injury, death or equipment damage.
Disconnect the power supply before beginning wiring to prevent electrical shock, equipment and control damage. More than one disconnect may be involved.

Ground Connection

Earth ground is required for proper operation of the panel and components. The earth ground must be capable of conducting enough current to blow the fuse or breaker in the event of an internal short. Ensure the panel is bonded to a substantial earth ground. Make sure that mechanically tightened joints along the ground path are free of nonconductive coatings and protected against corrosion on mating surfaces.

Electrical Connections

1. Refer to the appropriate product data sheet for details.
2. Wire size and length will vary, depending on the component. Refer to the component literature for specific wire lengths, sizes and type recommendations.
3. Wire according to specifications, following all local ordinances and requirements.
4. Field knockouts are required for the wiring. When drilling holes, take care to protect the electronics from metal pieces and debris.

IMPORTANT

Run line voltage and low voltage wiring in separate conduit to avoid signal interference.

Carefully check field wiring and terminal designations in this document and the associated wiring diagram. They are different from those of the individual components.

Panel Inspection

After mounting and wiring, but before powering the panel, inspect all internal panel wire connections. Wires may loosen during transit. Verify that all internal wire connections are secure from the wiring subbases to the components mounted on the door and the S7999D touchscreen interface.

Final Wiring Check and Static Checkout

All wiring shall be in accordance with the National Electric Codes (NEC) and local electrical codes.

1. Check the power supply circuit. The voltage and frequency must match the specification listed.
2. Check wiring terminations and routing to ensure proper connections.
3. Follow any system checkout recommendations for individual components as found in the component literature.
4. Restore power to the panel.

⚠ CAUTION

Test each limit and interlock to ensure system operates correctly as defined in the 7800 Series "Checkout and Test" document (Form #65-0229).

⚠ WARNING

Explosion and Electrical Shock Hazard.
Can cause serious injury, death or equipment damage.

1. Close all manual fuel shutoff valves before starting these tests.
2. Use extreme care while testing the system. Line voltage is present on most terminal connections when power is on.
3. Replace all limits and interlocks that are not operating properly. Do not bypass limit and interlocks.

TROUBLESHOOTING

System Diagnostics

The S7999D touchscreen interface indicates the current fault and keeps a fault history log. The RM7800L control also has LED fault blink codes. The DC controls have various tests and status messages. Refer to the appropriate product instruction sheet for further troubleshooting information and diagnostic codes.

FIELD WIRING

Table 1. Field Wiring and Terminal Designation[1].

Terminal #	To Connecting Device	Description
1[2]	L1 Panel power	120Vac Power Supply, 10A Max. Provide disconnect means and overload protection as required.
2	L2 Panel neutral	
GND	Panel ground	
4-5[3]	Airflow Switch	Combustion airflow (pressure) switch
5-6[3]	LP Switch	Fuel low pressure/temperature switch
6-7[3]	HP Switch	Fuel high pressure/temperature switch
7-8[3]	Interlocks	Fuel customer interlocks and limits, including LWCO, high-limit, etc.
10-38	Burner Control	On/off burner operating control
11	Blower Motor	Combustion blower motor line voltage output from burner control
15[4]	Shutter Drive	Shutter drive output connection from burner control
17[4]	F	Flame detector F lead connection from burner control
GND[4]	Panel ground	Flame detector G lead connection from burner control
XF-2[5]	Ignition	Spark ignition transformer
18-4	Low Fire Switch	Low fire switch input to burner control
20-4	High Fire Switch	High fire switch input to burner control
19-2	Pilot Valve(s)	Pilot fuel valve(s) connection to burner control output – 10 second interrupted pilot
21-2[6]	Main Valve(s)	Main fuel valve(s) connection to burner control output
22-4[3]	POC Switch 1	Main fuel valve 1 proof of closure switch (pre-ignition interlock switch)
22-23[3]	POC Switch 2	Main fuel valve 2 proof of closure switch (pre-ignition interlock switch)
25-26	Limit Relay Out	High limit alarm #1 relay output, NC (DC2500 control)
26-27	Limit Relay Out	High limit alarm #1 relay output, NO (DC2500 control)
28-29	Low Fire Out	Customer convenience wire point - Low fire output to firing rate motor indication
30-31	High Fire Out	Customer convenience wire point - High fire output to firing rate motor indication
32-33	Modulate Out	Customer convenience wire point - Modulate output to firing rate motor indication
34-35	Alarm Out	Customer convenience wire point - Burner control alarm output indication
202[7]	Temp/Press Limit +	High temperature/pressure limit + input (DC2500 control)
203[7]	Temp/Press Limit -	High temperature/pressure limit - input (DC2500 control)
206[8]	Mod Motor +	Low fire / + connection to 4-20mA modulating motor (damper/valve)
207[8]	Mod Motor -	Common / - connection to 4-20mA modulating motor (damper/valve)
210[8]	Mod Motor F	High fire / F connection to 4-20mA modulating motor (damper/valve)
208[7]	Temp/Press Control +	Temperature/pressure fire rate controller + input (DC2500 control)
209[7]	Temp/Press Control -	Temperature/pressure fire rate controller - input (DC2500 control)
214[9]	COM 2 A	S7999D COM 2 modbus A / Data + terminal
215[9]	COM 2 B	S7999D COM 2 modbus B / Data - terminal
213[9]	COM 2 GND	S7999D COM 2 Modbus C / Ground terminal

[1] Carefully check field wiring and terminal designations in this document and the associated wiring diagram. They are different from those of the individual components.

[2] The circuit protection incorporated into this control panel is designed to serve as supplemental protection only. It is the responsibility of the end user to provide appropriate protection on the service to this control panel. Refer to the National Electric Code and UL standard 1077 for more information on this subject.

[3] Jumper all unused limits, interlocks and valve proof of closure switches.

[4] Refer to the appropriate flame detector product sheet for wiring size and length information. Run flame detector F and G leads in their own conduit, independent of other power carrying leadwires. Flame detector power and shutter wires (if applicable) must be run in their own conduit as well, avoiding other electrical noise carrying wiring. The scanner wires should remain separated a minimum of 2 inches from other line voltage wires in the control panel to the flame safeguard device.

[5] Refer to the appropriate ignition transformer product sheet for wiring size and length information. Separate the high voltage ignition cable from other wires to avoid interference. Ignition cable to the spark electrode must be run in separate conduit (if applicable).

[6] If VPS (Valve Proving System) usage is required with the RM7800 burner control, contact factory for advice regarding wiring.

[7] For high temperature limit, wire Type K thermocouple + input (yellow) to + terminal and - input (red) to - terminal. For pressure limit, supply appropriate transmitter and program DC2500 controller for pressure operation. Thermocouple or transmitter wires must be run in separate conduit with other low voltage wires to avoid signal interference. DC2500 controls from the factory are set-up for temperature, but can be modified in the field for pressure operation.

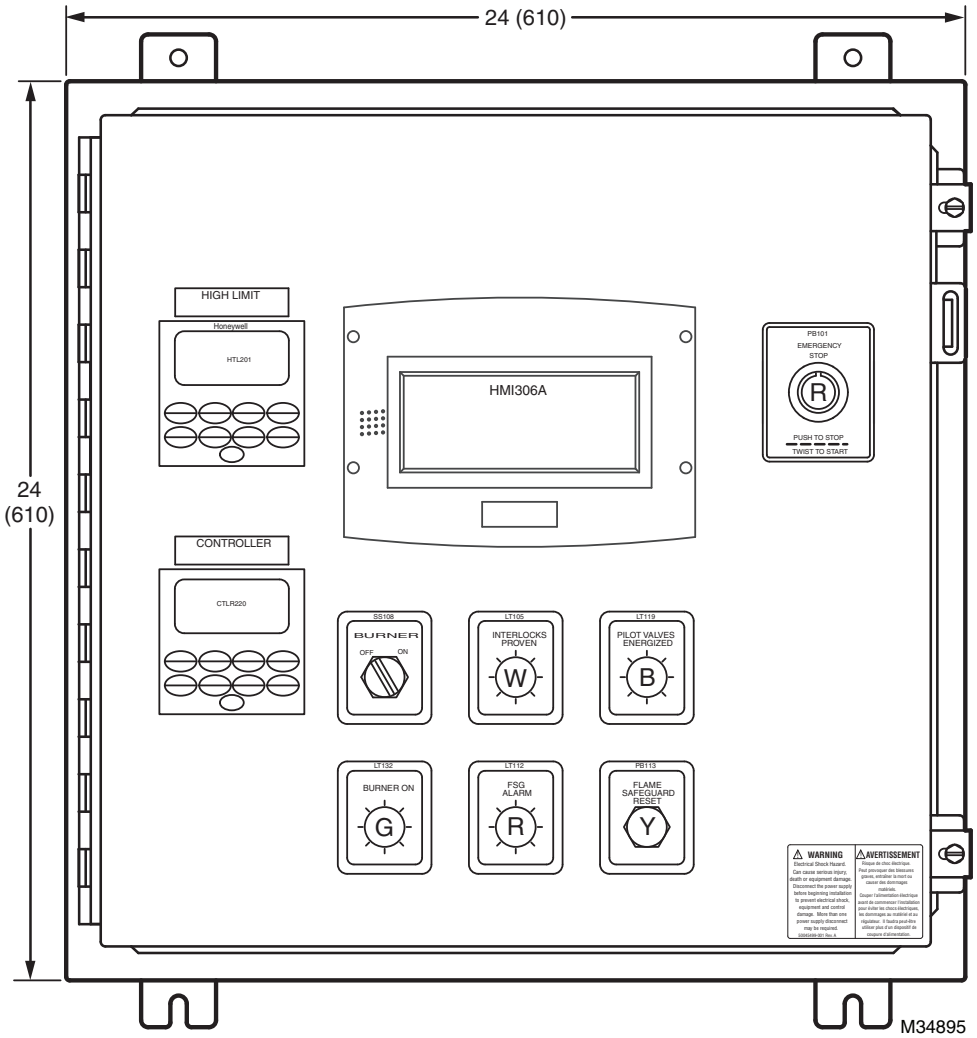
[8] Firing rate control output is 4-20mA. A 4-20mA firing rate/modulating actuator should be used with this panel. Run actuator low voltage field wire in separate conduit with other low voltage wires to avoid signal interference. Motor may be powered from panel T4 (L1) and T2 (L2) or separately.

[9] COM 2 on the S7999D is wired in a daisy-chain fashion to the S7810M Modbus module on the RM7800L burner control and the UDC2500 controls in the panel for display on the S7999D. Customer may wire other Modbus-enabled UDC2500/3200/3500 controls in a daisy-chain fashion to the customer terminals provided for display on the S7999D. Refer to the S7999D and UDC control product manuals for further information on wiring and S7999D display set-up

[10] Installation, operation and maintenance shall conform with National Fire Protection Association standards, national and local codes and authorities having jurisdiction.

[11] For detailed device wiring information, refer to the RM7800, Q7999, S7999D1048 and DC2500 product sheets.

[12] Spare/unused terminals are provided for customer field use.



NOTES:

1. THE CIRCUIT PROTECTION INCORPORATED INTO THIS CONTROL PANEL IS DESIGNED TO SERVE AS SUPPLEMENTAL PROTECTION ONLY. IT IS THE RESPONSIBILITY OF THE END USER TO PROVIDE APPROPRIATE PROTECTION ON THE SERVICE TO THIS CONTROL PANEL. REFER TO THE NATIONAL ELECTRICAL CODE AND UL STANDARD 1077 FOR MORE INFORMATION ON THIS SUBJECT.
2. JUMPER ALL UNUSED LIMITS AND INTERLOCKS.
3. FIELD WIRING SHOWN FOR BLOCK AND BLEED VALVE ARRANGEMENT.
4. POSITION SWITCH IS REQUIRED, TYPE AND MODEL MUST BE SPECIFIED. THIS ITEM IS NOT INCLUDED WITH THE CONTROL PANEL.
5. FIELD WIRE TO THE DETECTOR SHOULD BE #14 AWG. TYPE TW 600V INSULATED WIRE OR EQUAL. WIRE MUST NOT BE IN THE SAME CONDUIT WITH POWER WIRING.
6. IGNITION CABLE TO THE SPARK ELECTRODE MUST BE RUN IN SEPARATE CONDUIT. (IF APPLICABLE)
7. FIELD WIRE TO THE FIRING RATE ACTUATOR MUST BE RUN IN SEPARATE CONDUIT.
8. THERMOCOUPLE WIRES MUST BE RUN IN SEPARATE CONDUIT.
9. INSTALLATION, OPERATION AND MAINTENANCE SHALL CONFORM WITH NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS, NATIONAL AND LOCAL CODES, AND AUTHORITIES HAVING JURISDICTION.

WIRE CODE		
FUNCTION	**COLOR**	**AWG**
220 VAC (HOT)	BLACK	16 (MTW)
220 VAC (NEUTRAL)	WHITE	16 (MTW)
120 VAC (HOT)	RED	16 (MTW)
120 VAC (NEUTRAL)	WHITE	16 (MTW)
EXTERNAL POWER SOURCE	YELLOW	16 (MTW)
DRY CONTACTS	YELLOW	16 (MTW)
VDC	BLUE	16 (MTW)
24 VAC	BROWN	16 (MTW)
4-20 mA SIGNAL	BLUE	16 (MTW)
TYPE J THERMOCOUPLE	WHITE/RED	20 (POLYVINYL)
TYPE K THERMOCOUPLE	YELLOW/RED	20 (POLYVINYL)
F30 RESETS/DISPLAY/CONTROL BUS	BELDEN	22 (AWG) TWISTED PAIR
GROUND	GREEN	14 (MTW)

INDICATES TERMINALS AND WIRING IN MAXON CONTROL PANEL. (MAIN TERMINAL BLOCK).

INDICATES EXTERNAL WIRING

INDICATES TERMINALS IN MAXON VALVES

INDICATES COMPONENT TERMINALS

M34896

Fig. 1. Panel front dimensions in in. (mm) and notes.

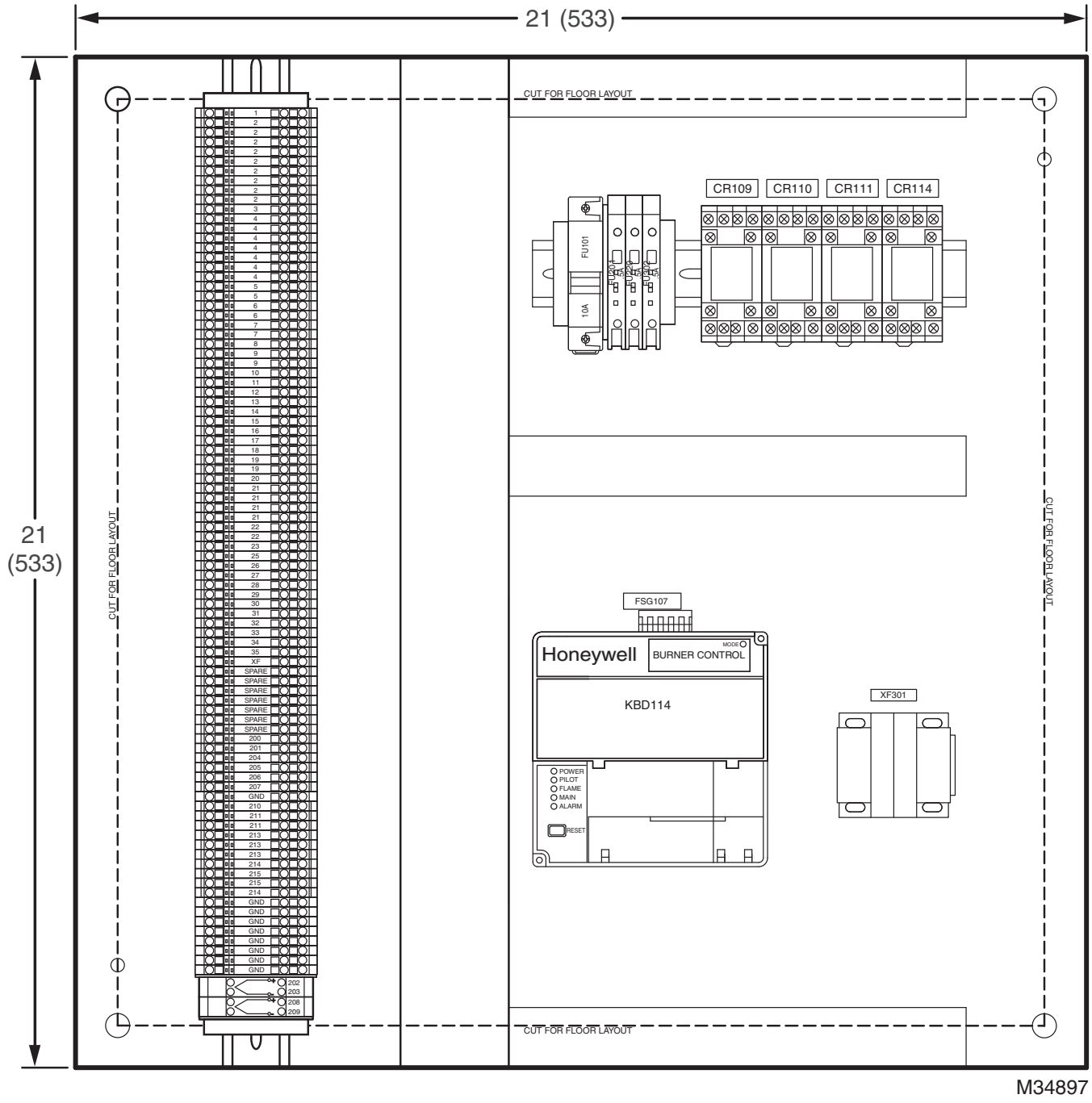


Fig. 2. Equipment mounting panel dimensions in in. (mm).

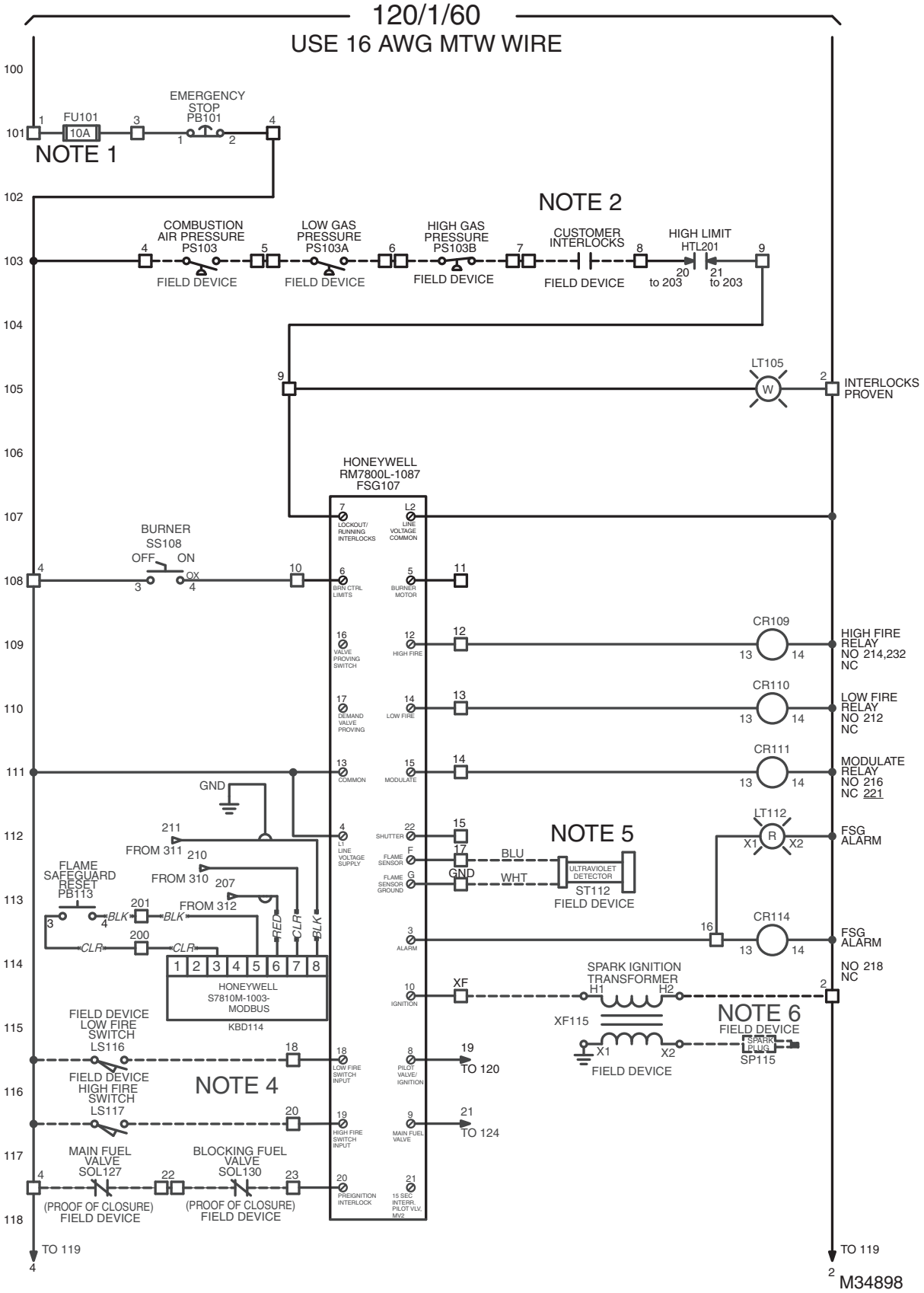


Fig. 3. Wiring diagram (part 1).

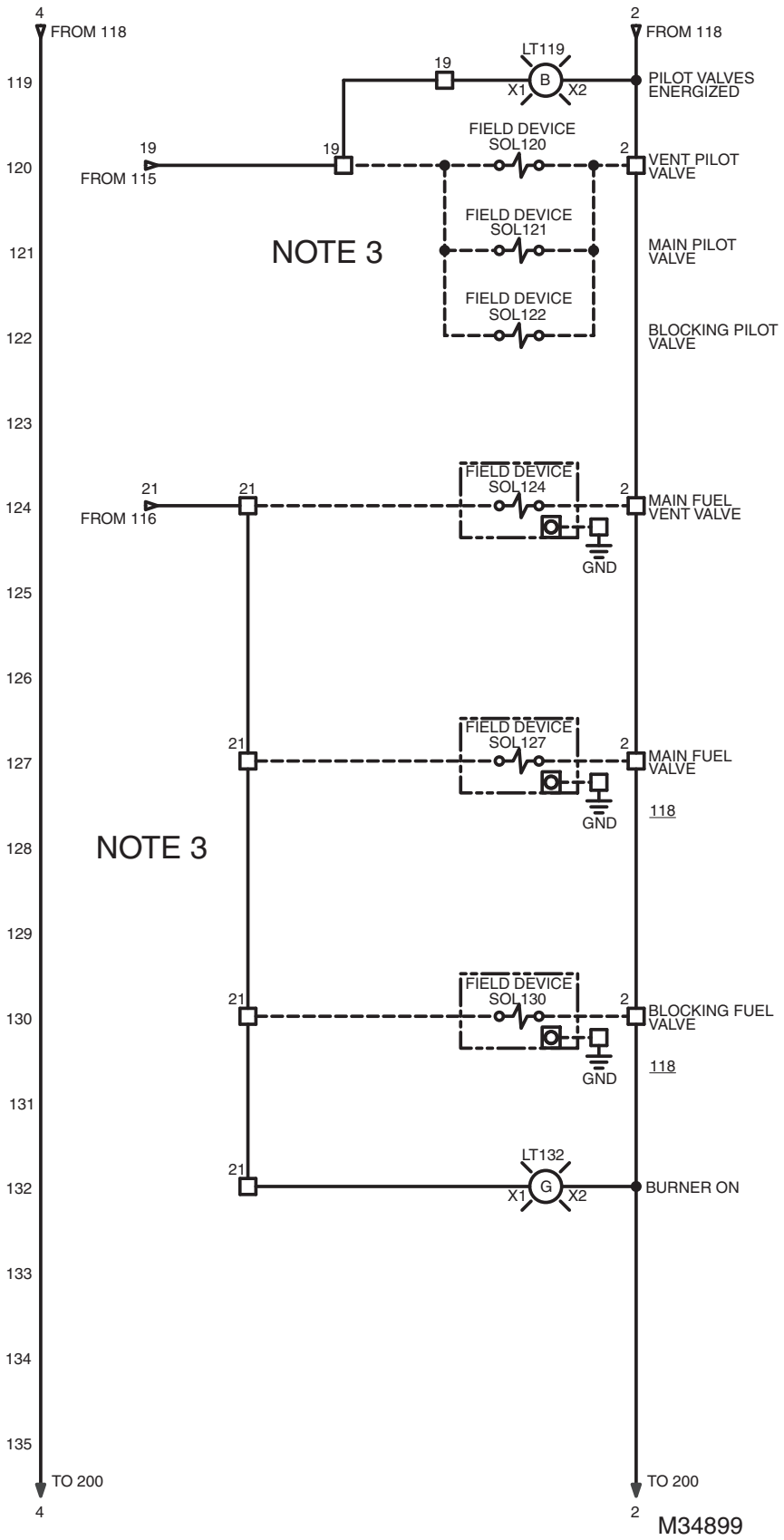


Fig. 4. Wiring diagram (part 2).

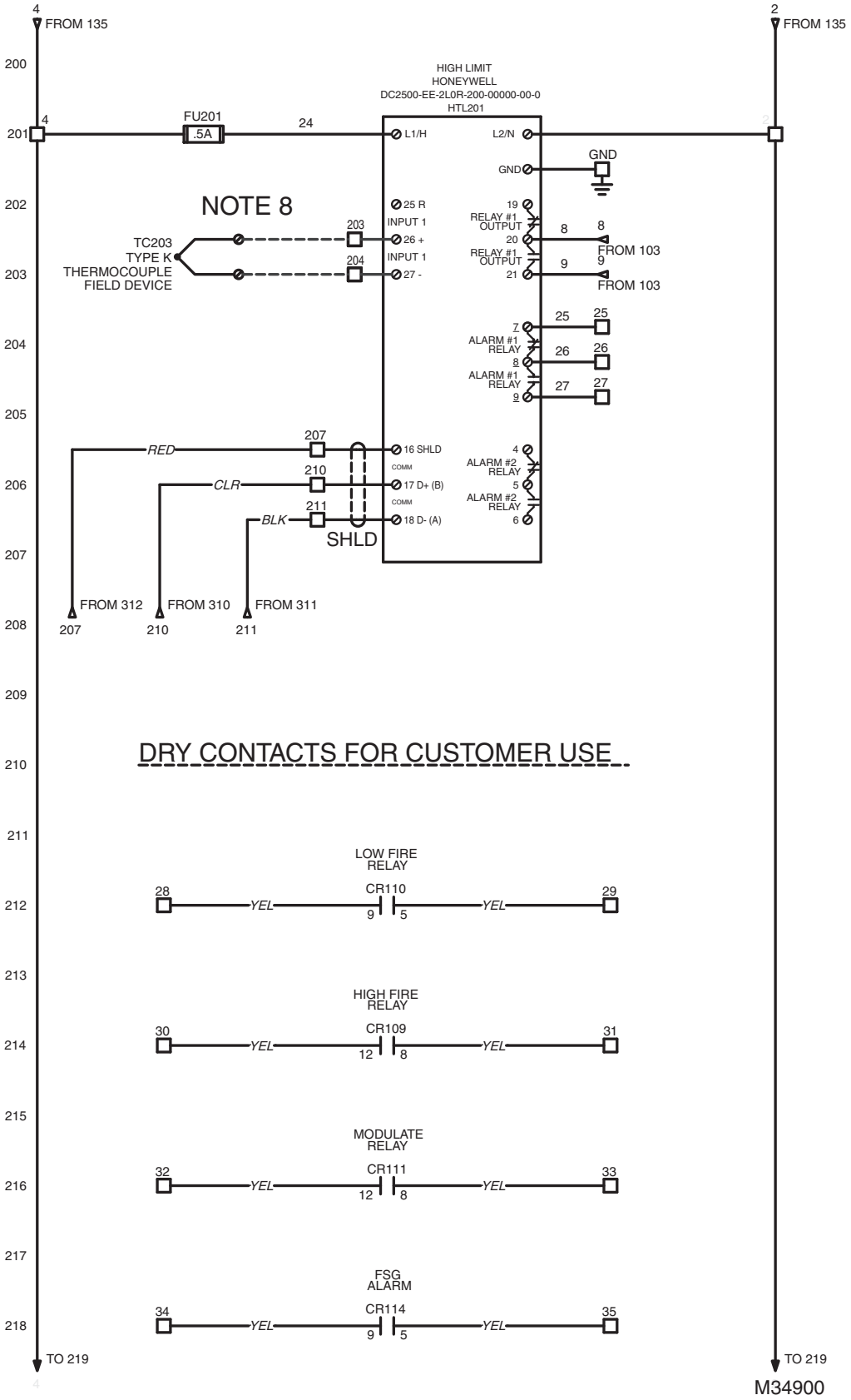


Fig. 5. Wiring diagram (part 3).

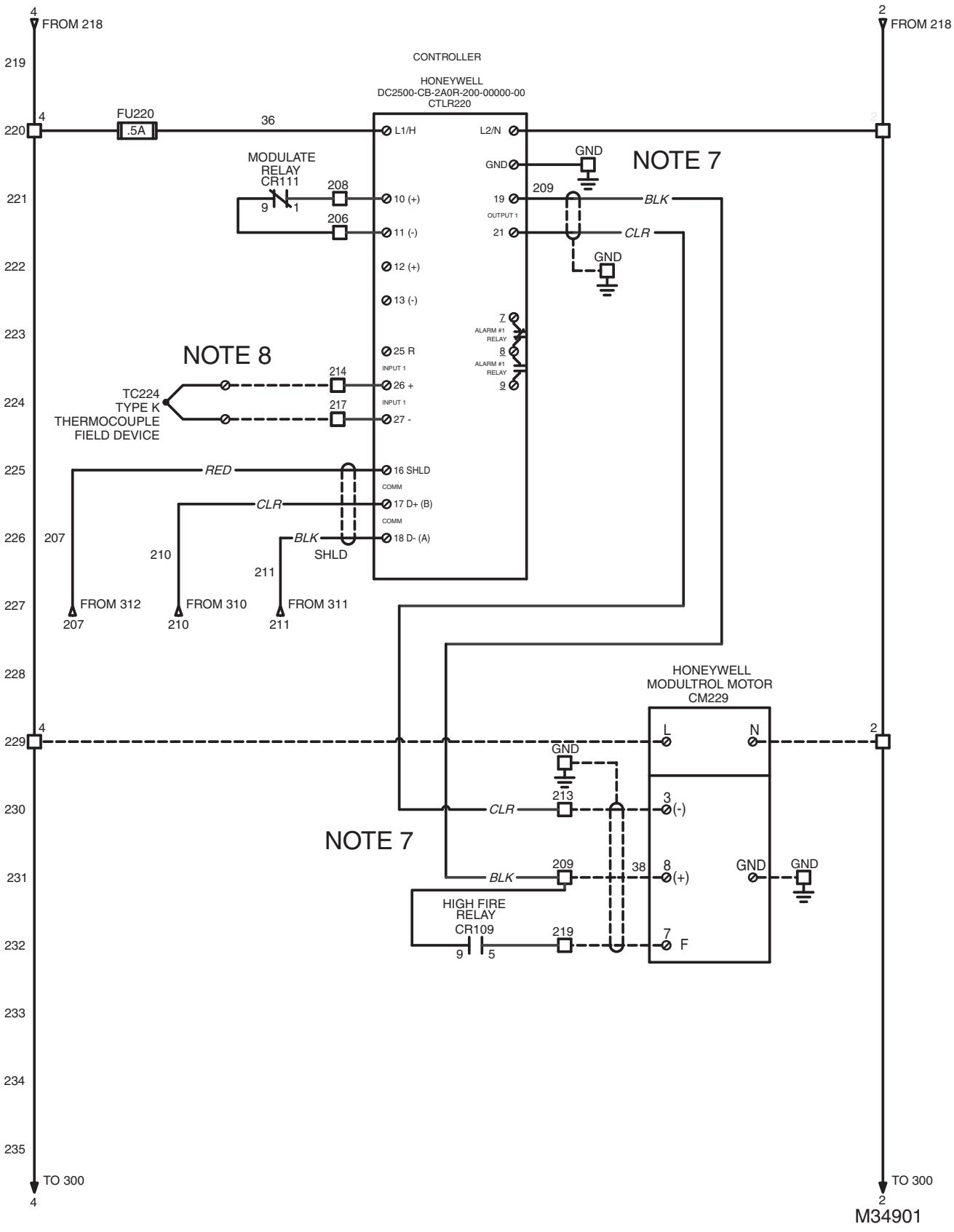


Fig. 6. Wiring diagram (part 4).

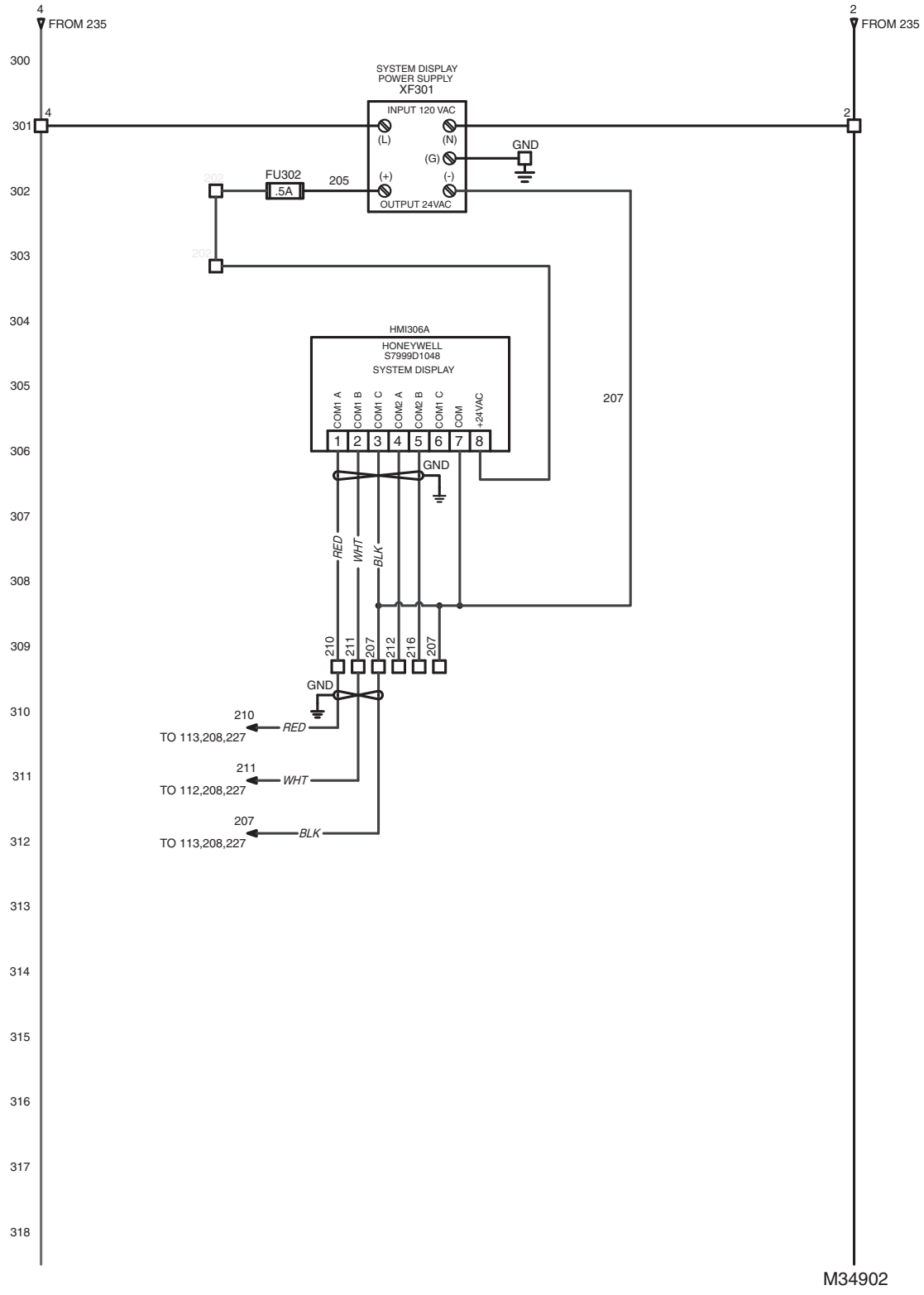


Fig. 7. Wiring diagram (part 5).

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