



Industrial Systems
Legacy Interconnect Drawings

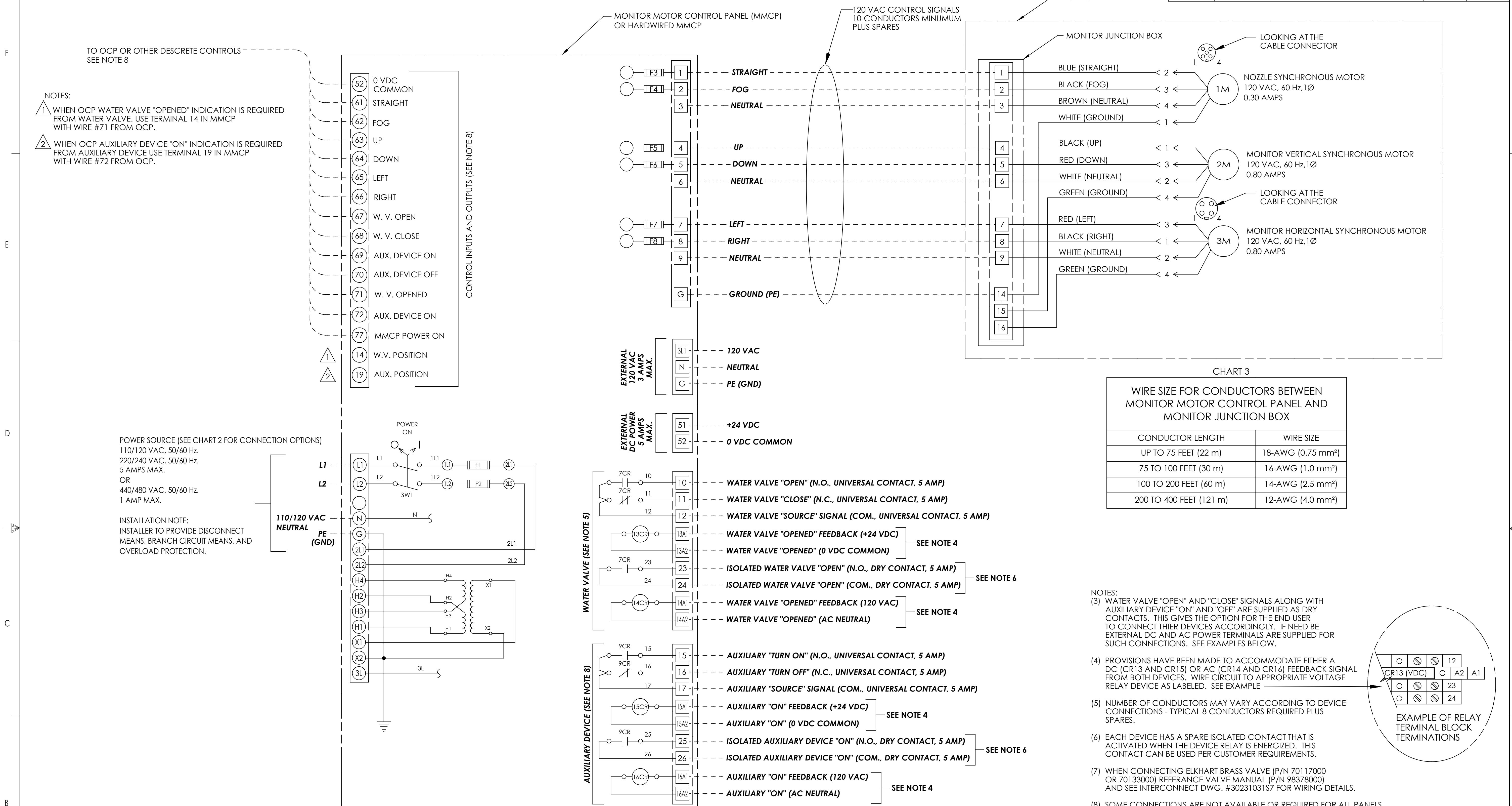
98629000 REV. REL

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*For the most up-to-date documentation and specifications, please visit our website at www.elkhartbrass.com

REV.	DESCRIPTION (NOTE: ADDITIONAL ECN BLOCKS TO BE COPIED AND FILLED OUT MANUALLY)	BY	E. C. N.
D	ADDED CHART NUMBERS/NOTES	MSF	



- NOTES:
- 1 WHEN OCP WATER VALVE "OPENED" INDICATION IS REQUIRED FROM WATER VALVE, USE TERMINAL 14 IN MMCP WITH WIRE #71 FROM OCP.
 - 2 WHEN OCP AUXILIARY DEVICE "ON" INDICATION IS REQUIRED FROM AUXILIARY DEVICE USE TERMINAL 19 IN MMCP WITH WIRE #72 FROM OCP.

POWER SOURCE (SEE CHART 2 FOR CONNECTION OPTIONS)
 110/120 VAC, 50/60 Hz,
 220/240 VAC, 50/60 Hz,
 5 AMPS MAX.
 OR
 440/480 VAC, 50/60 Hz,
 1 AMP MAX.

INSTALLATION NOTE:
 INSTALLER TO PROVIDE DISCONNECT
 MEANS, BRANCH CIRCUIT MEANS, AND
 OVERLOAD PROTECTION.

CHART 3

WIRE SIZE FOR CONDUCTORS BETWEEN MONITOR MOTOR CONTROL PANEL AND MONITOR MOTOR JUNCTION BOX

CONDUCTOR LENGTH	WIRE SIZE
UP TO 75 FEET (22 m)	18-AWG (0.75 mm ²)
75 TO 100 FEET (30 m)	16-AWG (1.0 mm ²)
100 TO 200 FEET (60 m)	14-AWG (2.5 mm ²)
200 TO 400 FEET (121 m)	12-AWG (4.0 mm ²)

- NOTES:
- (3) WATER VALVE "OPEN" AND "CLOSE" SIGNALS ALONG WITH AUXILIARY DEVICE "ON" AND "OFF" ARE SUPPLIED AS DRY CONTACTS. THIS GIVES THE OPTION FOR THE END USER TO CONNECT THEIR DEVICES ACCORDINGLY. IF NEED BE EXTERNAL DC AND AC POWER TERMINALS ARE SUPPLIED FOR SUCH CONNECTIONS. SEE EXAMPLES BELOW.
 - (4) PROVISIONS HAVE BEEN MADE TO ACCOMMODATE EITHER A DC (CR13 AND CR15) OR AC (CR14 AND CR16) FEEDBACK SIGNAL FROM BOTH DEVICES. WIRE CIRCUIT TO APPROPRIATE VOLTAGE RELAY DEVICE AS LABELED. SEE EXAMPLE
 - (5) NUMBER OF CONDUCTORS MAY VARY ACCORDING TO DEVICE CONNECTIONS - TYPICAL 8 CONDUCTORS REQUIRED PLUS SPARES.
 - (6) EACH DEVICE HAS A SPARE ISOLATED CONTACT THAT IS ACTIVATED WHEN THE DEVICE RELAY IS ENERGIZED. THIS CONTACT CAN BE USED PER CUSTOMER REQUIREMENTS.
 - (7) WHEN CONNECTING ELKHART BRASS VALVE (P/N 70117000 OR 70133000) REFERENCE VALVE MANUAL (P/N 98378000) AND SEE INTERCONNECT DWG. #30231031S7 FOR WIRING DETAILS.
 - (8) SOME CONNECTIONS ARE NOT AVAILABLE OR REQUIRED FOR ALL PANELS. INPUTS 61-70 CONTROL RELAYS 1CR - 10CR.

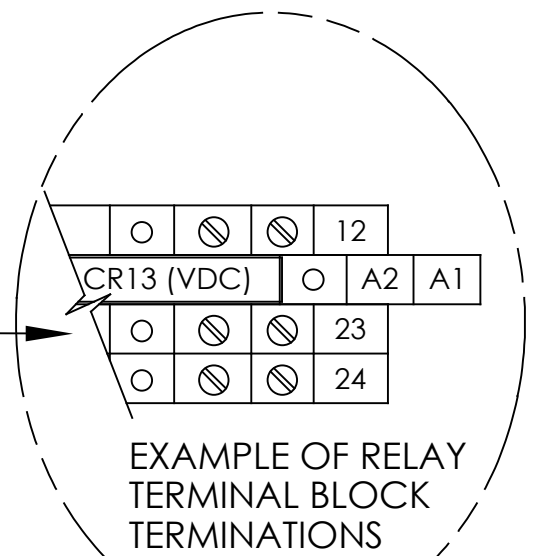


CHART 1

WIRE SIZE FOR CONDUCTORS BETWEEN MONITOR MOTOR CONTROL PANEL AND OPERATOR CONTROL PANEL

CONDUCTOR LENGTH	WIRE SIZE
UP TO 750 FEET (228 m)	18-AWG (0.75 mm ²)
750 TO 1500 FEET (457 m)	16-AWG (1.0 mm ²)
1550 TO 2500 FEET (762 m)	14-AWG (2.5 mm ²)
2500 TO 3500 FEET (1066 m)	12-AWG (4.0 mm ²)

CHART 2

MMCP MAIN POWER PANEL, FUSE, & JUMPER CONNECTION OPTIONS
 SEE DWG. #30231031S9 (OR CUSTOM CONNECTION DRAWING) FOR MAIN POWER TERMINATIONS

MAIN POWER	PANEL CONNECTIONS	JUMPER CONNECTIONS	FUSE	DESCRIPTION	PT. NO.	
110/120 VAC 50/60 Hz.	L1, N, AND G	2L1 to 3L	F1	CLASS CC.TIME DELAY 600-VAC, 5-AMP	FNQ-R-5	
			F2	CLASS CC.TIME DELAY 600-VAC, 5-AMP	FNQ-R-5	
220/240 VAC 50/60 Hz.	L1, L2, AND G	2L1 to H4	H3 to H1 X1 to 3L X2 to N	F1	CLASS CC.TIME DELAY 600-VAC, 5-AMP	FNQ-R-5
		H4 to H2 2L2 to H1		F2	CLASS CC.TIME DELAY 600-VAC, 5-AMP	FNQ-R-5
440/480 VAC 50/60 Hz.	L1, L2, AND G	2L1 to H4	X1 to 3L X2 to N	F1	CLASS CC.TIME DELAY 600-VAC, 1-AMP	FNQ-R-1
		2L2 to H1 H2 to H3		F2	CLASS CC.TIME DELAY 600-VAC, 1-AMP	FNQ-R-1

REFERENCE DWG. #81504095 (MULTI-MONITOR SPITFIRE SYSTEM LAYOUT) OR CUSTOM SYSTEM LAYOUT.

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MATERIAL N/A		CHECKED BY BS DATE 02/19/2015	DESCRIPTION MONITOR MOTOR CONTROL PANEL ELECTRICAL INTERCONNECT DRAWING AND HMMCP
TOLERANCE UNLESS OTHERWISE SPECIFIED 2 PLACE DEC. ± .060" 3 PLACE DEC. ± .030" ANGLES ± 1°		WEIGHT (LBS) N/A CAT. NO. INDUSTRIAL SYSTEMS	SIZE C PART NUMBER 30231031S1 REV. D
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES ALL FILLETS AND ROUNDS R 0.06 DO NOT SCALE PRINT INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M 1994 CAD MODEL:		THIRD ANGLE PROJECTION	CAD SCALE: SHEET 1 OF 9

TOTAL WIRE RUN FROM FURTHEST HARDWIRED CONTROL TO MMCP

STANDARD DRAWING NOT FOR APPROVAL

OPERATOR CONTROL PANEL (OCP)		
MAIN POWER	L1	L2
110/120 VAC, 50/60 Hz.	LINE	NEUTRAL
220 VAC, 50 Hz.	LINE	NEUTRAL
240 VAC, 60 Hz.	LINE	LINE

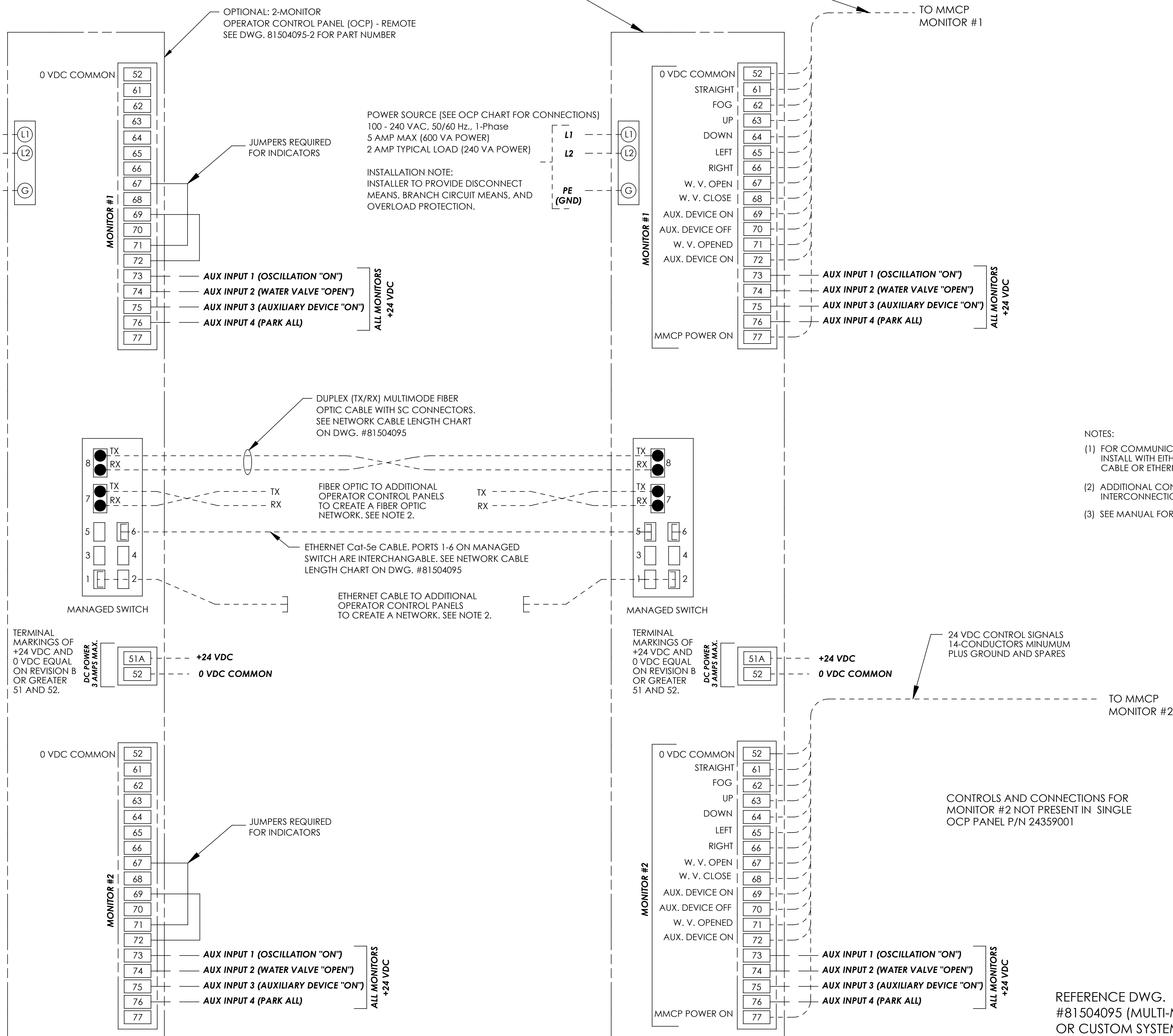
REV.	DESCRIPTION	BY	E. C. N.
REL	(NOTE: ADDITIONAL ECN BLOCKS TO BE COPIED AND FILLED OUT MANUALLY) RELEASE TO PRODUCTION	BJS	

POWER SOURCE (SEE OCP CHART FOR CONNECTIONS)
100 - 240 VAC, 50/60 Hz., 1-Phase
5 AMP MAX (600 VA POWER)
2 AMP TYPICAL LOAD (240 VA POWER)

INSTALLATION NOTE:
INSTALLER TO PROVIDE DISCONNECT MEANS, BRANCH CIRCUIT MEANS, AND OVERLOAD PROTECTION.

POWER SOURCE (SEE OCP CHART FOR CONNECTIONS)
100 - 240 VAC, 50/60 Hz., 1-Phase
5 AMP MAX (600 VA POWER)
2 AMP TYPICAL LOAD (240 VA POWER)

INSTALLATION NOTE:
INSTALLER TO PROVIDE DISCONNECT MEANS, BRANCH CIRCUIT MEANS, AND OVERLOAD PROTECTION.



- NOTES:
- (1) FOR COMMUNICATION BETWEEN OCPs INSTALL WITH EITHER DUPLEX MULTIMODE FIBER OPTIC CABLE OR ETHERNET CONNECTIONS AS SHOWN.
 - (2) ADDITIONAL CONTROLS TO BE DUPLICATE OF DISPLAYED INTERCONNECTIONS.
 - (3) SEE MANUAL FOR USE OF AUX INPUTS TERMINALS 73 - 76

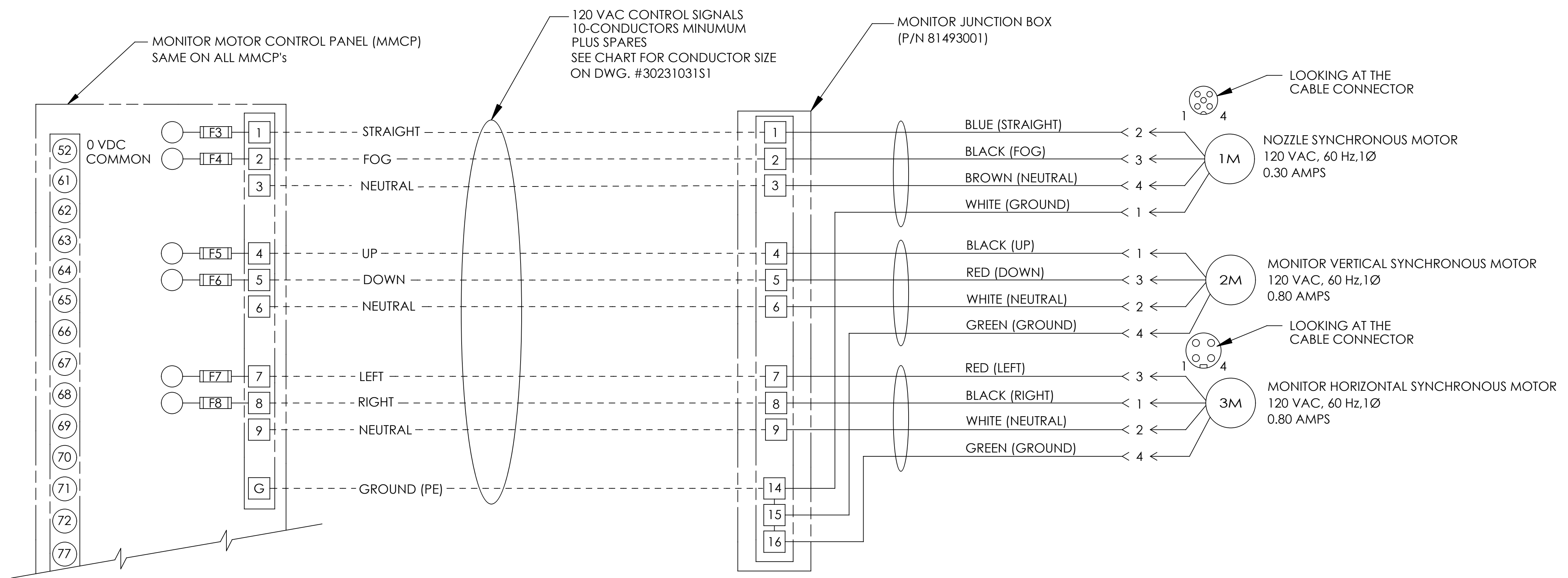
CONTROLS AND CONNECTIONS FOR MONITOR #2 NOT PRESENT IN SINGLE OCP PANEL P/N 24359001

REFERENCE DWG.
#81504095 (MULTI-MONITOR SPITFIRE SYSTEM LAYOUT)
OR CUSTOM SYSTEM LAYOUT

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES ALL FILLETS AND ROUNDS R 0.06 DO NOT SCALE PRINT INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M 1994		CAT. NO. INDUSTRIAL SYSTEMS	PART NUMBER 30231031S2
CAD MODEL:		THIRD ANGLE PROJECTION	REV. A
STANDARD DRAWING NOT FOR APPROVAL		CAD SCALE:	SHEET 2 OF 9

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REL	RELEASE TO PRODUCTION	BSJ	



REFERENCE DWG. #81504095 (MULTI-MONITOR SPITFIRE SYSTEM LAYOUT)
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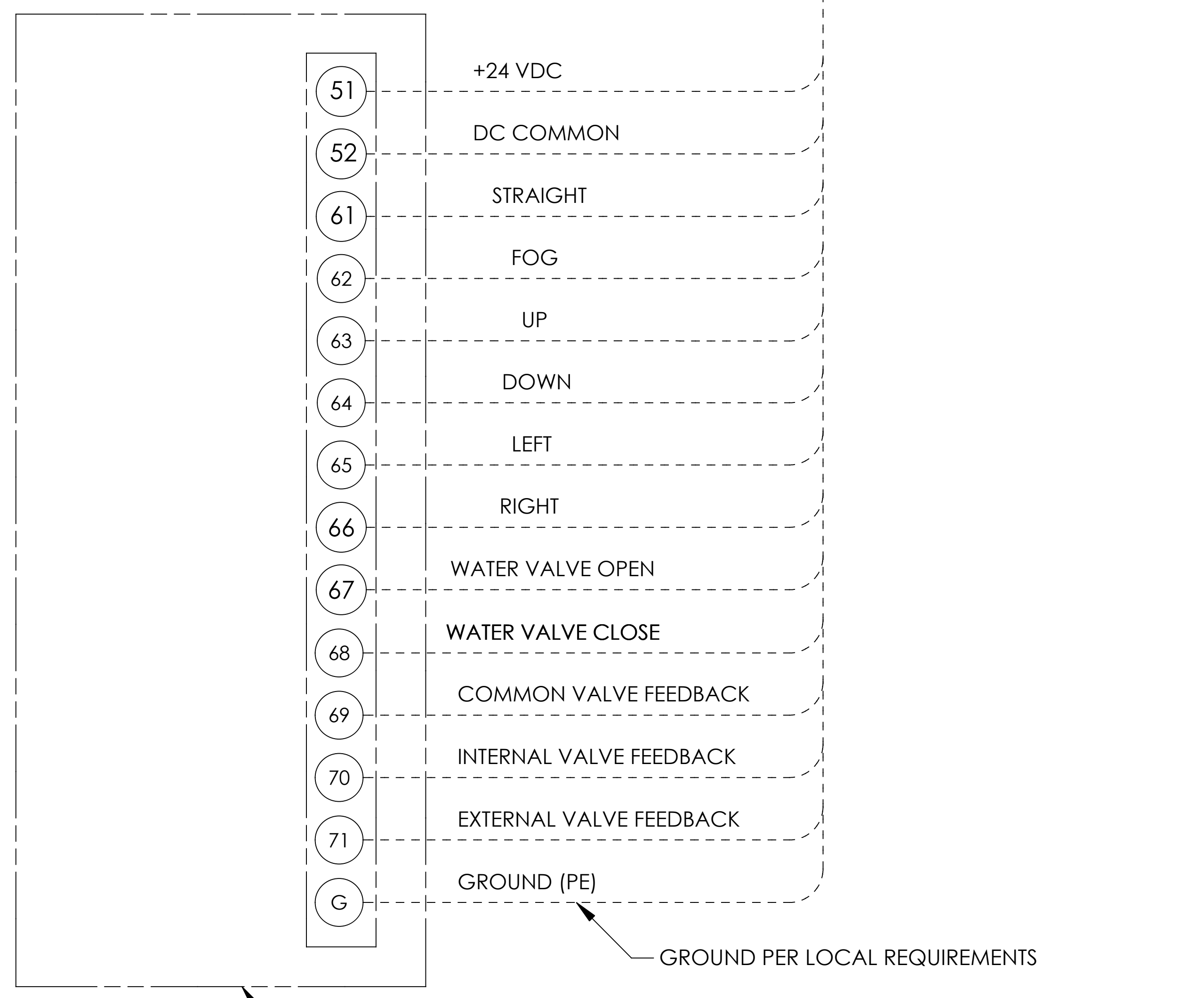
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MATERIAL N/A		CHECKED BY BS DATE 02/18/2015	
TOLERANCE UNLESS OTHERWISE SPECIFIED 2 PLACE DEC. ± .060" 3 PLACE DEC. ± .030" ANGLES ± 1°		WEIGHT (LBS) N/A CAT. NO. INDUSTRIAL SYSTEM	DESCRIPTION MONITOR & NOZZLE TO MMCP ELECTRICAL INTERCONNECT DRAWING
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES ALL FILLETS AND ROUNDS R 0.06 DO NOT SCALE PRINT INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M 1994 CAD MODEL:		SIZE C	PART NUMBER 30231031S3
		THIRD ANGLE PROJECTION	REV. A
			CAD SCALE: NONE SHEET 3 OF 9

Ver. 1.0

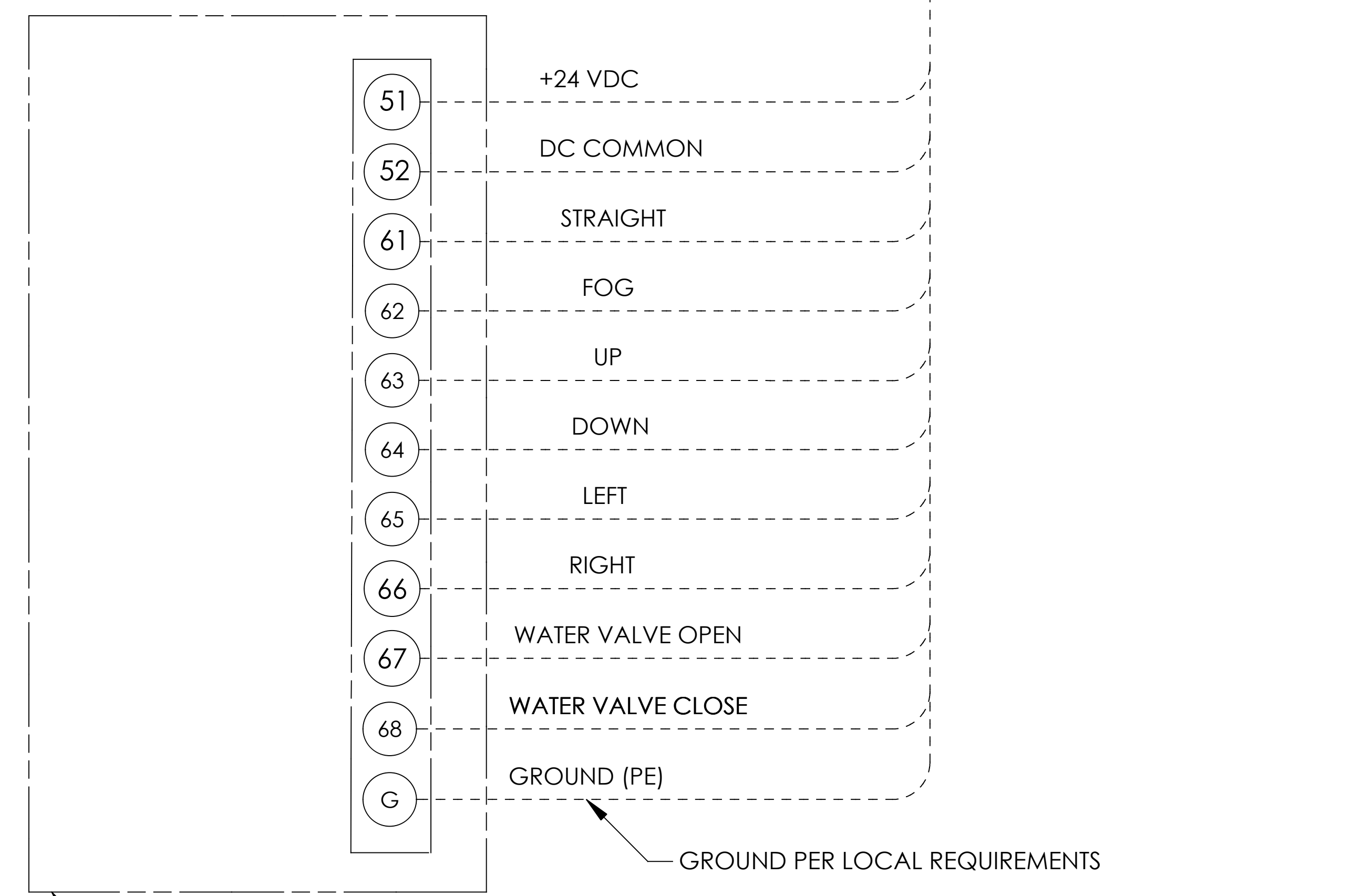
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REL	RELEASE TO PRODUCTION	BJS	

FIGURE 1



AUXILIARY CONTROL PANEL
SEE CHART FOR PART NUMBERS

FIGURE 2



- 1-MONITOR HARDWIRED RF RECEIVER (CUSTOM P/N)
- 1) TERMINALS 51 & 52 ARE ALWAYS +24VDC AND COMMON.
- 2) WHEN NON-NETWORKED, MULTI-MONITOR CONTROL IS USED.

RF RECEIVER PANEL TERMINATIONS
 MONITOR 1 = TERMINALS 161 - 168
 MONITOR 2 = TERMINALS 261 - 268
 MONITOR 3 = TERMINALS 361 - 368
 MONITOR 4 = TERMINALS 461 - 468
 MONITOR 5 = TERMINALS 561 - 568
 MONITOR 6 = TERMINALS 661 - 668
 TERMINALS 51, 52, & G ON ALL 6

- NOTES:
- AUX. CONTROL PANEL HAS MECHANICAL SWITCHES ONLY.
 - EITHER AUX. CONTROL OR RF RECEIVER CAN BE HARDWIRED TO MMCP OR OCP

REFERENCE DWG. #81504095 (MULTI-MONITOR SPITFIRE SYSTEM LAYOUT)
OR CUSTOM SYSTEM LAYOUT

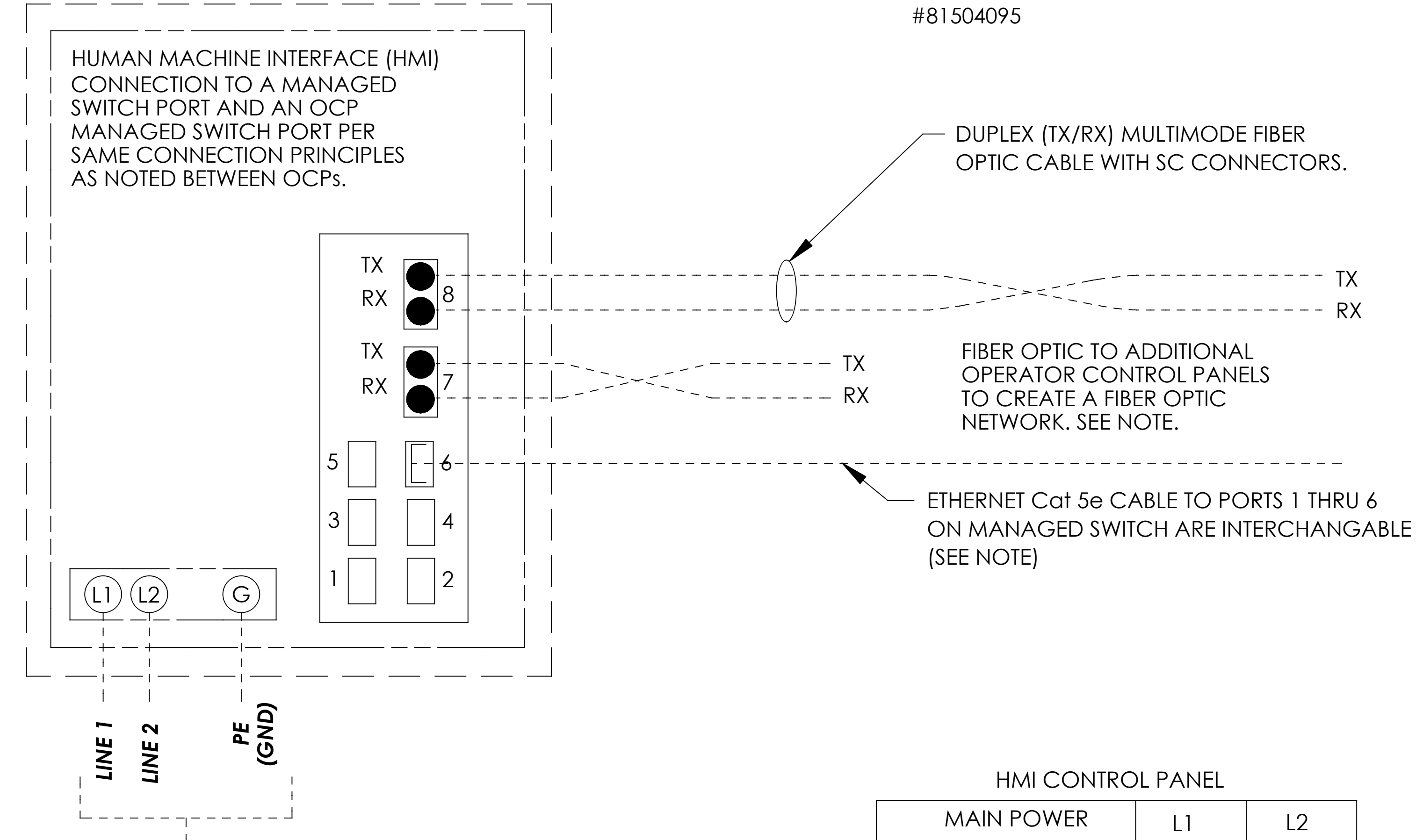
- TO CALCULATE WIRE RUN DISTANCE:
- DOUBLE THE DISTANCE FROM AUXILIARY CONTROL OR RF RECEIVER TO OCP OR MMCP TERMINATION.
 - IF AUXILIARY CONTROL OR RF RECEIVER IS TERMINATED AT OCP, ADD WIRE RUN TO MMCP FOR TOTAL DISTANCE.
 - SEE CHART FOR CONDUCTOR SIZE BETWEEN MMCP AND OCP ON DWG. #30231031S1

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MATERIAL N/A		CHECKED BY BS DATE 02/18/2015	
TOLERANCE UNLESS OTHERWISE SPECIFIED 2 PLACE DEC. ± .060" 3 PLACE DEC. ± .030" ANGLES ± 1°		WEIGHT (LBS) N/A CAT. NO. INDUSTRIAL SYSTEMS	DESCRIPTION AUXILIARY OCP & RF RECEIVER PANELS ELECTRICAL INTERCONNECT DRAWING
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES ALL FILLETS AND ROUNDS R 0.06 DO NOT SCALE PRINT INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M 1994 CAD MODEL:		SIZE C	PART NUMBER 30231031S4 REV. A
THIRD ANGLE PROJECTION		CAD SCALE: SHEET 4 OF 9	

REV.	DESCRIPTION (NOTE: ADDITIONAL ECN BLOCKS TO BE COPIED AND FILLED OUT MANUALLY)	BY	E. C. N.
REL	RELEASE TO PRODUCTION	BJJ	

NOTE:
FOR COMMUNICATION BETWEEN OCP's AND HMI ,
INSTALL WITH EITHER DUPLEX MULTIMODE FIBER
OPTIC CABLE OR ETHERNET CONNECTIONS AS
SHOWN. SEE NETWORK CABLE CHART ON DWG
#81504095



POWER SOURCE (SEE CHART FOR CONNECTIONS)
100 - 240 VAC 50/60 Hz., 1-Phase
4 AMPS MAX. (480 VA POWER)
1 AMP TYPICAL LOAD

INSTALLATION NOTE:
INSTALLER TO PROVIDE DISCONNECT
MEANS, BRANCH CIRCUIT MEANS, AND
OVERLOAD PROTECTION.

HMI CONTROL PANEL

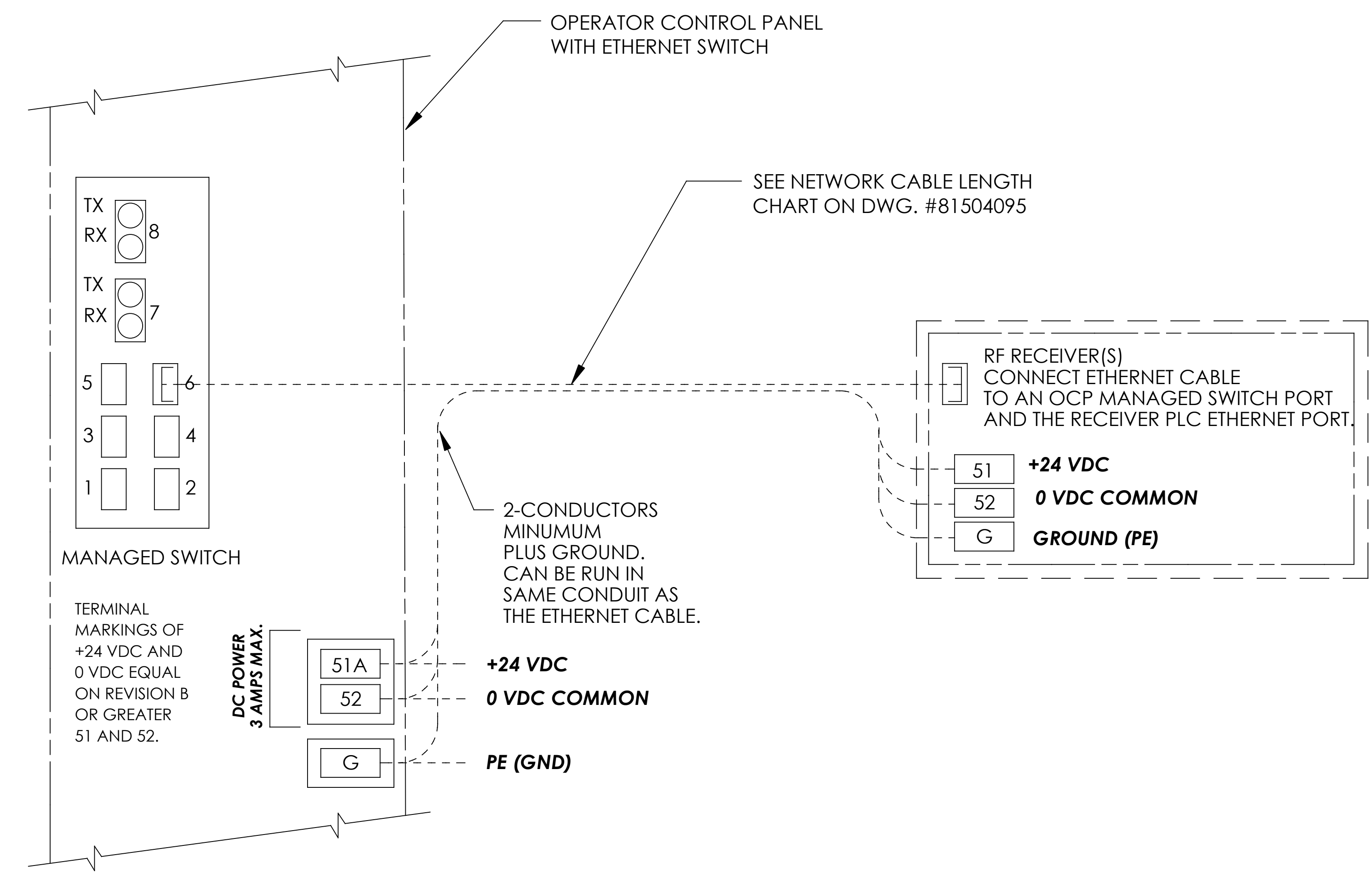
MAIN POWER	L1	L2
110/120 VAC, 50/60 Hz.	LINE	NEUTRAL
220 VAC, 50 Hz.	LINE	NEUTRAL
240 VAC, 60 Hz.	LINE	LINE

REFERENCE DWG. #81504095 (MULTI-MONITOR SPITFIRE SYSTEM LAYOUT)
OR CUSTOM SYSTEM LAYOUT

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES ALL FILLETS AND ROUNDS R 0.06 DO NOT SCALE PRINT INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M 1994 CAD MODEL:		THIRD ANGLE PROJECTION	SIZE C
			PART NUMBER 30231031S5
			REV. A
			CAD SCALE:
			SHEET 5 OF 9

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TOLERANCE UNLESS OTHERWISE SPECIFIED 2 PLACE DEC. ± .060" 3 PLACE DEC. ± .030" ANGLES ± 1°		WEIGHT (LBS) N/A CAT. NO. INDUSTRIAL SYSTEM	DESCRIPTION RF RECEIVER TO OCP ETHERNET SWITCH ELECTRICAL INTERCONNECT DRAWING
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES ALL FILLETS AND ROUNDS R 0.06 DO NOT SCALE PRINT INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M 1994 CAD MODEL:		SIZE C	PART NUMBER 30231031S6 REV. A
STANDARD DRAWING NOT FOR APPROVAL		THIRD ANGLE PROJECTION	CAD SCALE: NONE SHEET 6 OF 9

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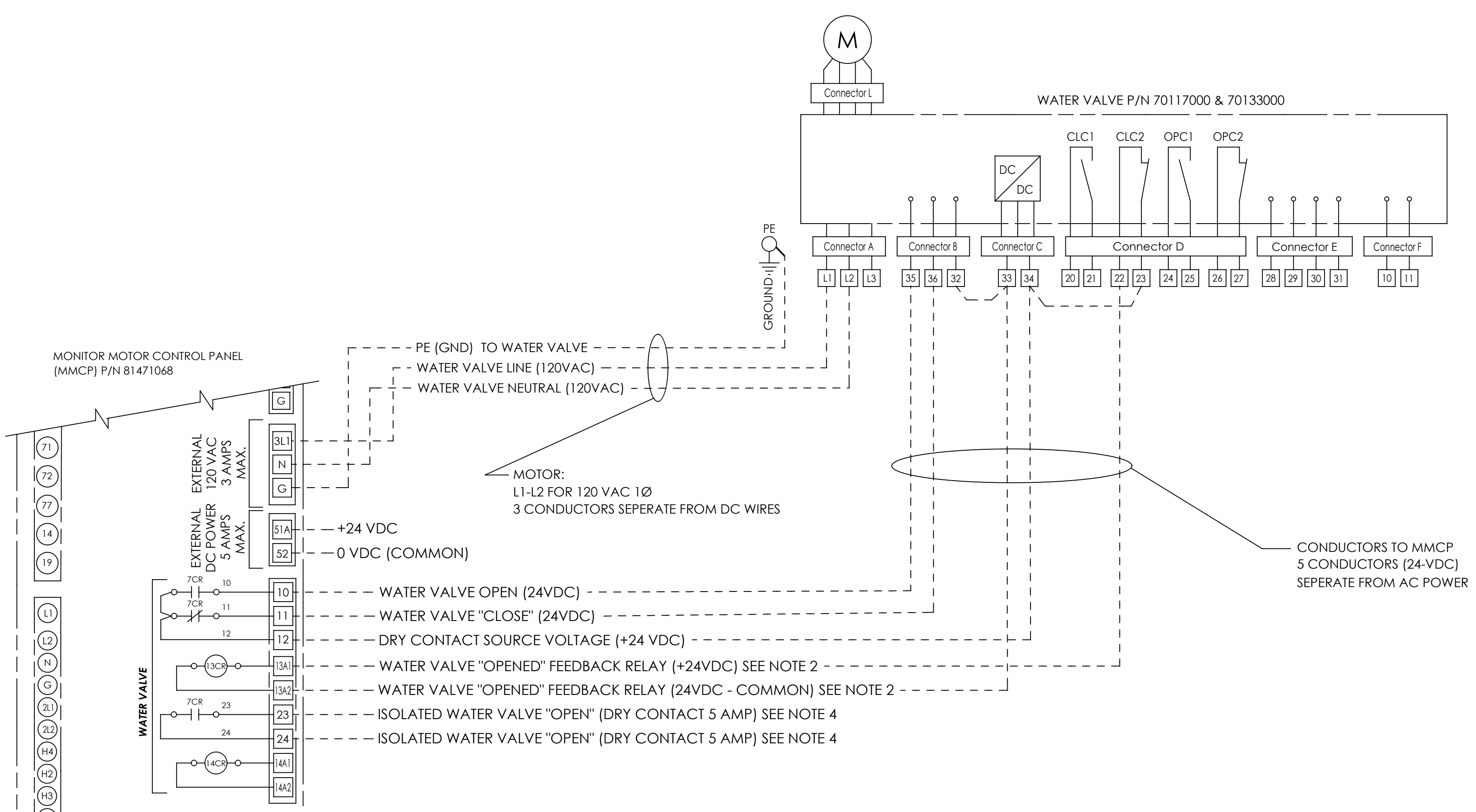


FIGURE 1
VALVE ELECTRICAL INTERCONNECTION
24 VDC CONTROL CONFIGURATION
FOR MMCP P/N 81471068

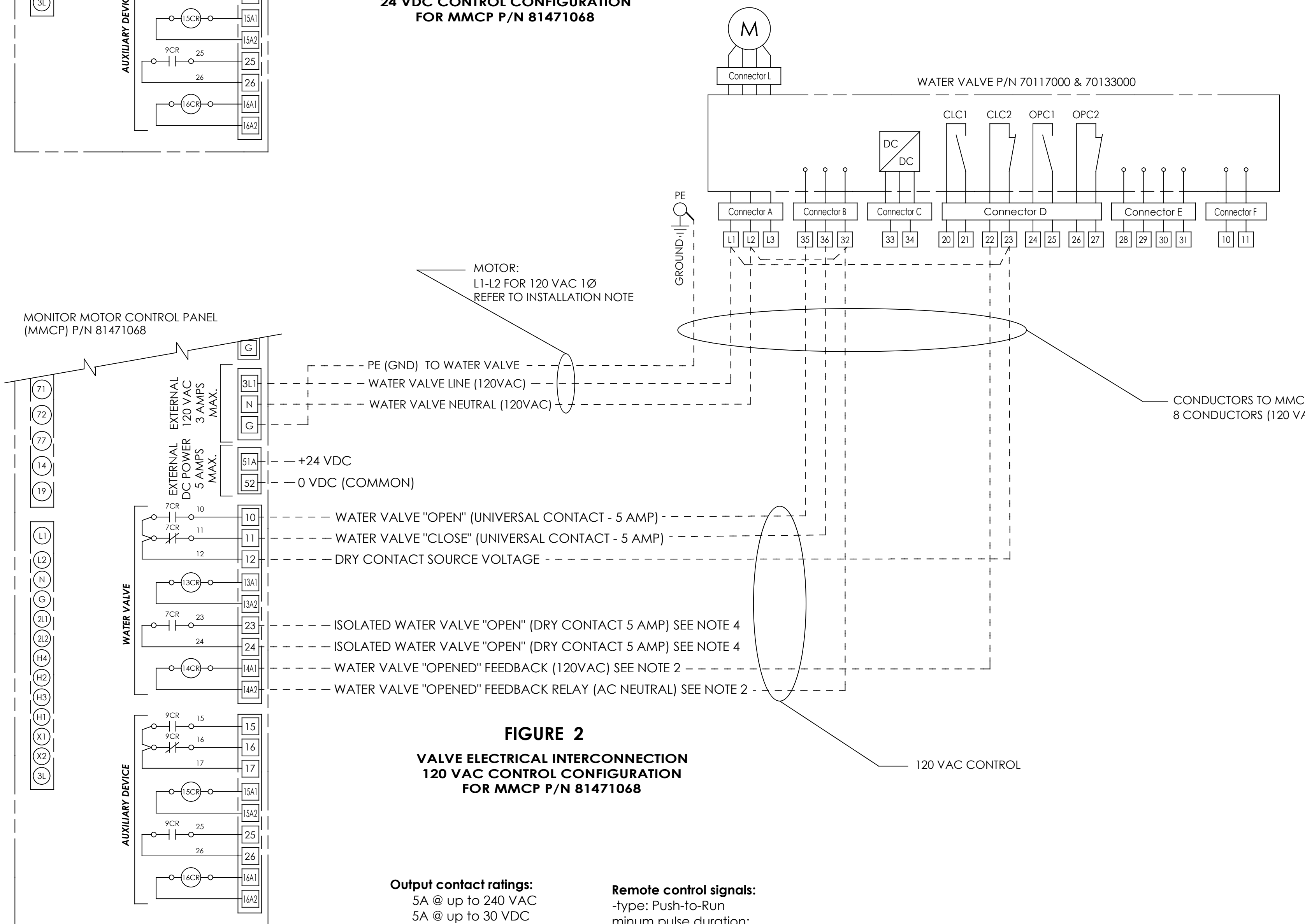
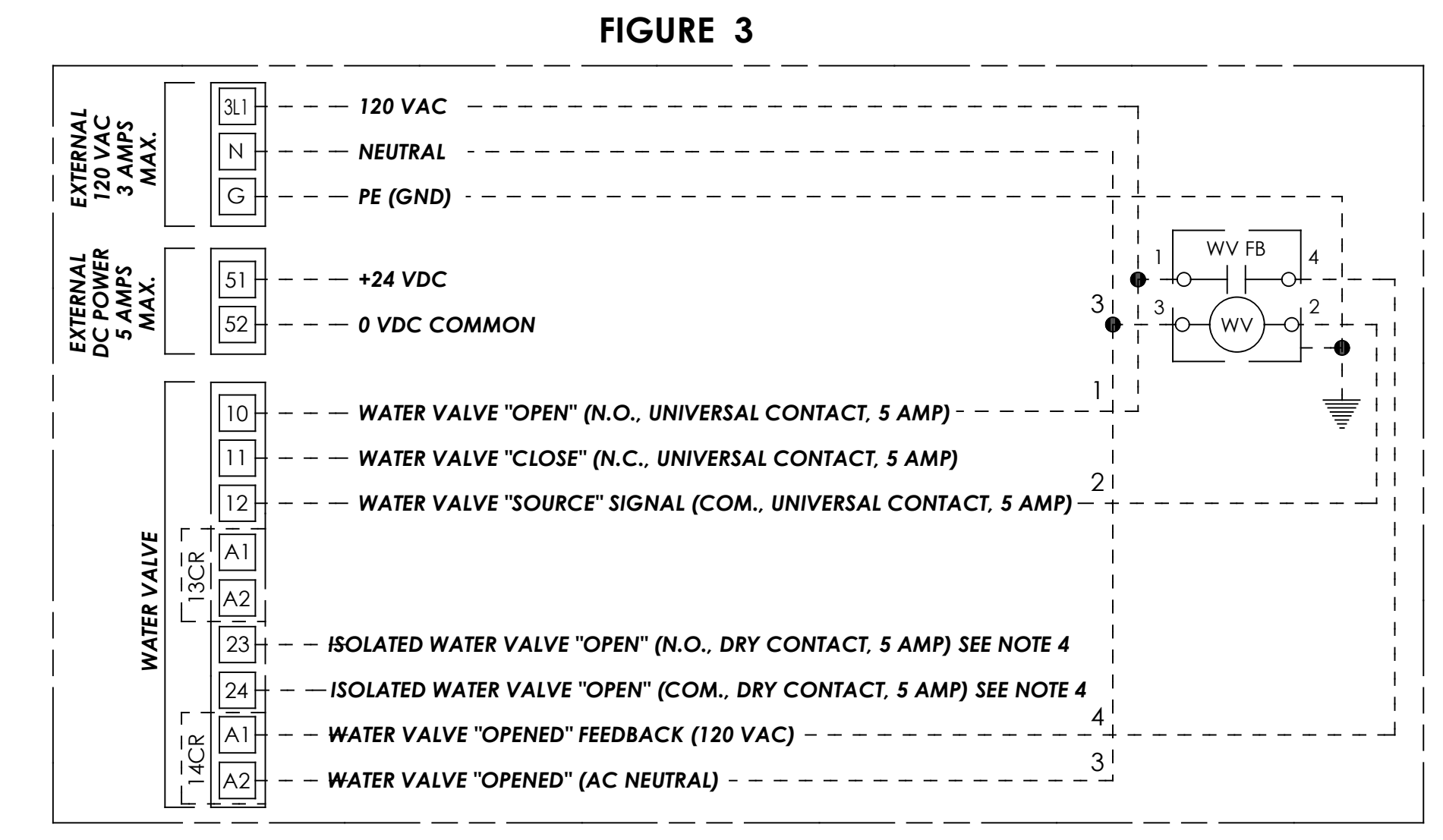


FIGURE 2
VALVE ELECTRICAL INTERCONNECTION
120 VAC CONTROL CONFIGURATION
FOR MMCP P/N 81471068

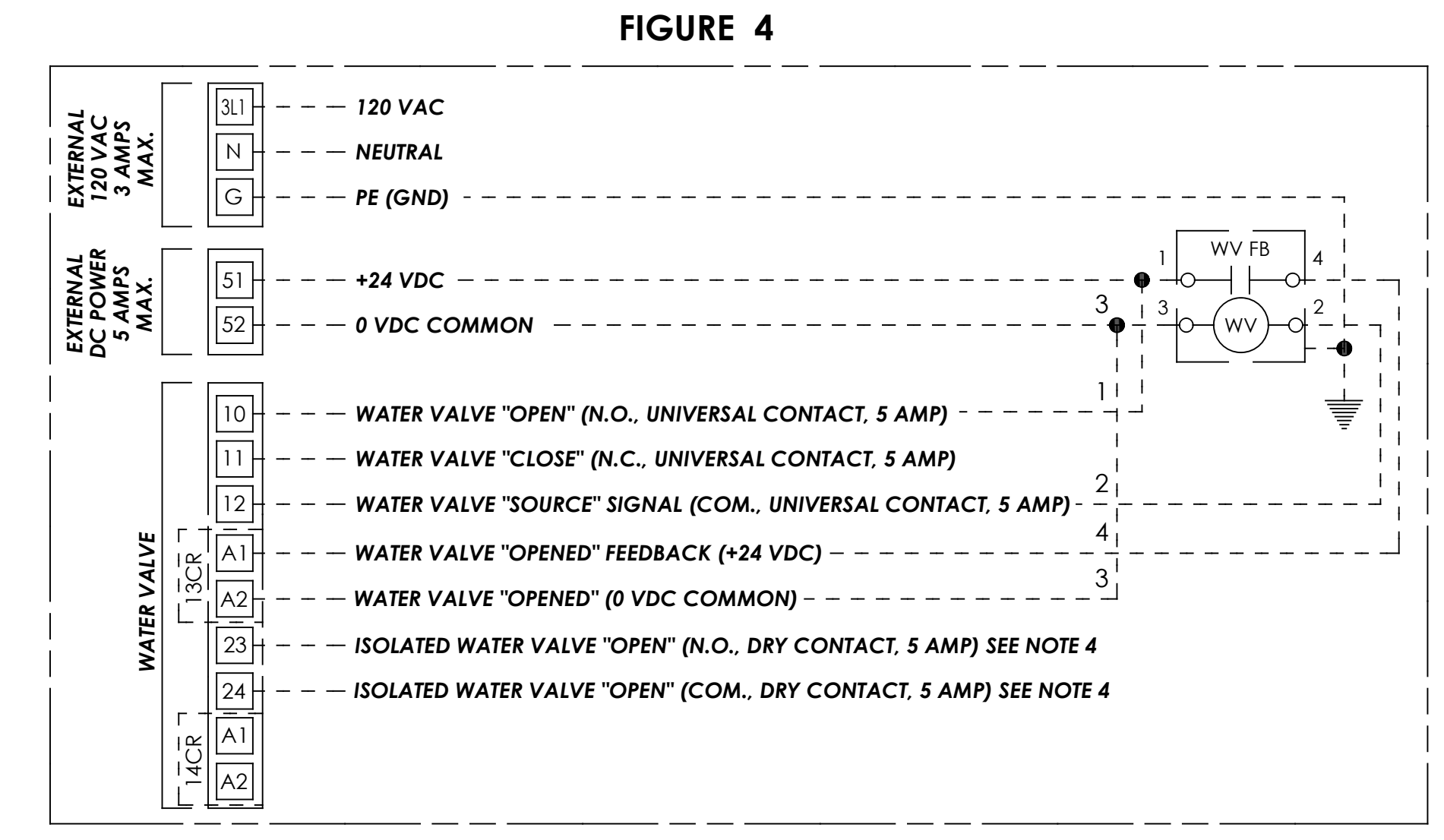
Output contact ratings:
5A @ up to 240 VAC
5A @ up to 30 VDC
0.5A @ 120VDC

Remote control signals:
-type: Push-to-Run
minim pulse duration:
≥300ms

STANDARD DRAWING NOT FOR APPROVAL



EXAMPLE OF A 120 VAC WATER VALVE (WV) SOLENOID WITH 120 VAC FEEDBACK (WV FB) (SEE NOTE 1). THE OUTPUT COIL WILL REMAIN SEALED UNTIL A REQUEST TO CLOSE THE VALVE OCCURS AT THE MMCP. THIS CONNECTION IS FOR A NON-ELKHART BRASS NORMALLY CLOSED VALVE.



EXAMPLE OF A 24 VDC WATER VALVE (WV) SOLENOID WITH 24 VDC FEEDBACK (WV FB) (SEE NOTE 1). THE OUTPUT COIL WILL REMAIN SEALED UNTIL A REQUEST TO CLOSE THE VALVE OCCURS AT THE MMCP. THIS CONNECTION IS FOR A NON-ELKHART BRASS NORMALLY CLOSED VALVE.

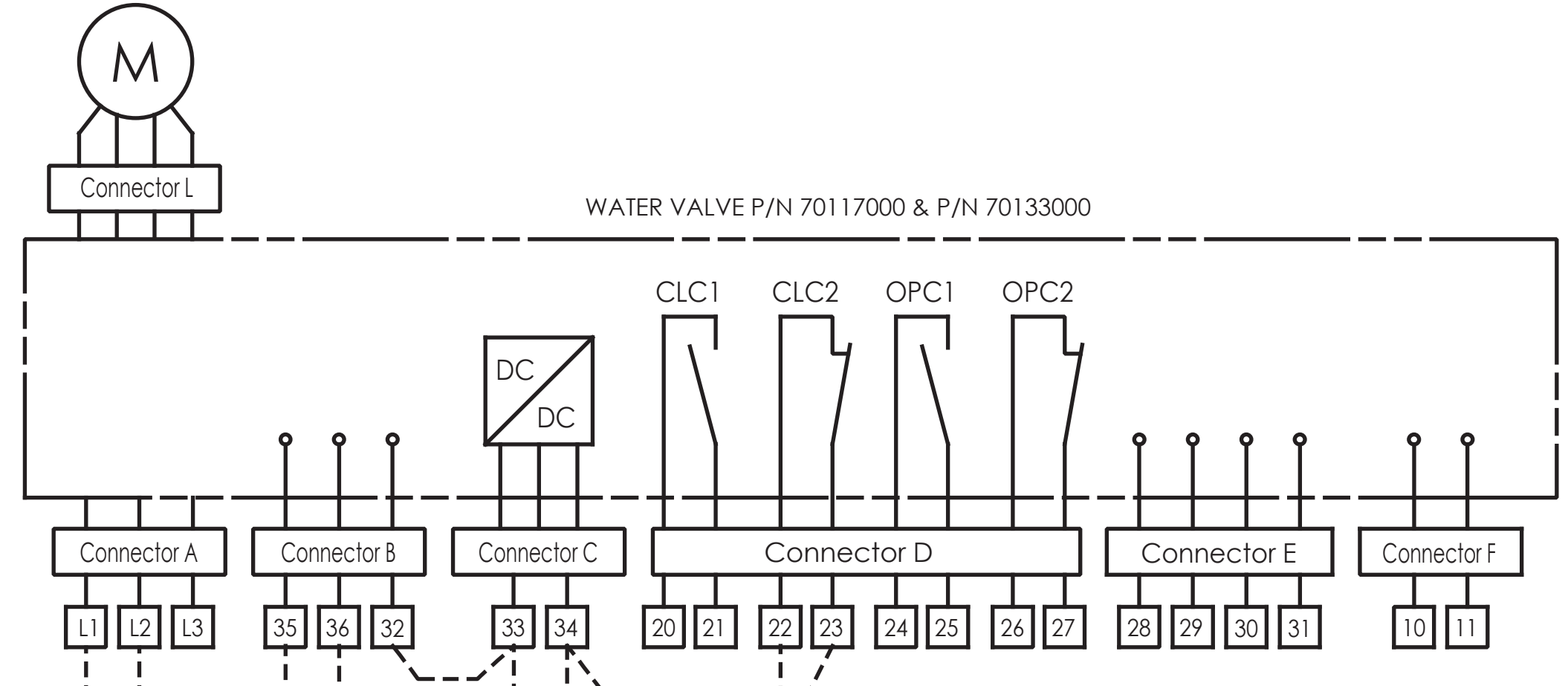
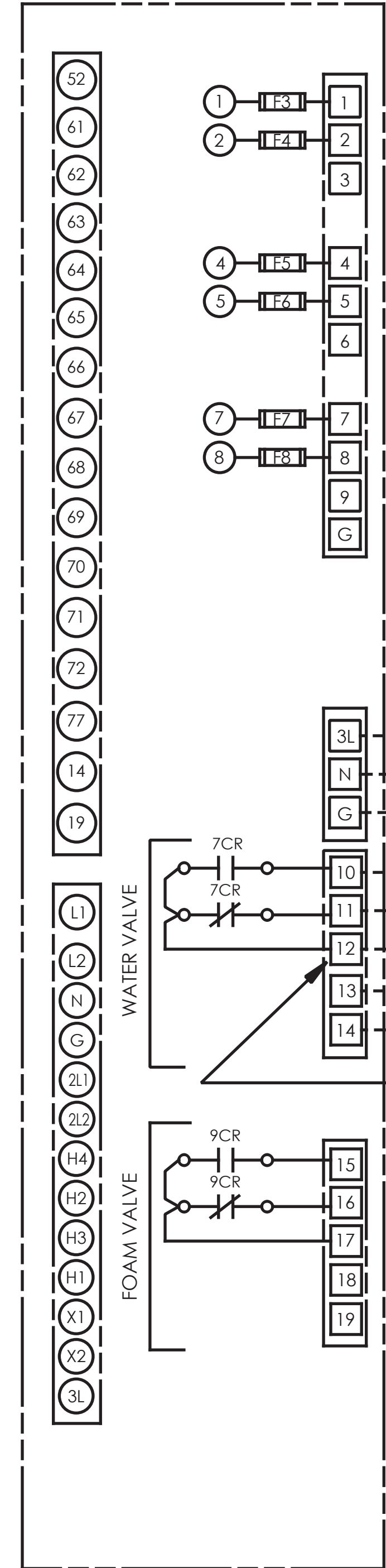
- (1) WATER VALVE "OPEN" AND "CLOSE" SIGNALS ALONG WITH AUXILIARY DEVICE "ON" AND "OFF" ARE SUPPLIED AS DRY CONTACTS. THIS GIVES THE OPTION FOR THE END USER TO CONNECT THEIR DEVICES ACCORDINGLY. IF NEEDED BE EXTERNAL DC AND AC POWER TERMINALS ARE SUPPLIED FOR SUCH CONNECTIONS.
- (2) PROVISIONS HAVE BEEN MADE TO ACCOMMODATE EITHER A 24 VDC OR 120 VAC FEEDBACK SIGNAL FROM BOTH DEVICES. WIRE CIRCUIT TO APPROPRIATE VOLTAGE RELAY DEVICE AS LABELED. SEE MMCP INTERCONNECT DWG. #30231031S1
- (3) NUMBER OF CONDUCTORS MAY VARY ACCORDING TO DEVICE CONNECTIONS - TYPICAL 8 CONDUCTORS REQUIRED PLUS SPARES.
- (4) EACH DEVICE HAS A SPARE ISOLATED CONTACT THAT IS ACTIVATED WHEN THE DEVICE RELAY IS ENERGIZED. THIS CONTACT CAN BE USED PER CUSTOMER REQUIREMENTS.
- (5) WHEN CONNECTING ELKHART BRASS VALVE (P/N 70117000 OR 7013300) REFERENCE VALVE MANUAL (P/N 98378000) FOR WIRING DETAILS.
- (6) 51A AND 52 (24 VDC) SHOWN FOR USE BY USER IF REQUIRED.
- (7) 3L1, N, & G (120 VAC) USED FOR WATER VALVE POWER.

REFERENCE DWG. #81504095 (MULTI-MONITOR SPITFIRE SYSTEM LAYOUT) OR CUSTOM SYSTEM LAYOUT

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES ALL FILLETS AND ROUNDS R.06 DO NOT SCALE PRINT INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M 1994 CAD MODEL:		SIZE C	PART NUMBER 30231031S7
		THIRD ANGLE PROJECTION	REV. A
		CAD SCALE:	SHEET 7 OF 9

REV.	DESCRIPTION	BY	E. C. N.
REL	(NOTE: ADDITIONAL ECN BLOCKS TO BE COPIED AND FILLED OUT MANUALLY) RELEASE TO PRODUCTION	BJS	
C	ADDED NOTE FOR ATEX MMCP AND CHANGED TITLE TO INCLUDE ATEX MMCP	MJM	

MONITOR MOTOR CONTROL PANEL
(MMCP) P/N 81471058



PE (GND) TO WATER VALVE
WATER VALVE LINE (120VAC)
WATER VALVE NEUTRAL (120VAC)

MOTOR:
L1-L2 FOR 120 VAC 1Ø
3 CONDUCTORS SEPERATE FROM DC WIRES
REFER TO VALVE MANUAL FOR DETAILS

WATER VALVE OPEN (24VDC)
WATER VALVE "CLOSE" (24VDC)
WATER VALVE POSITIVE (+24VDC)
WATER VALVE COMMON (24VDC - COMMON)
WATER VALVE "OPENED" FEEDBACK (+24VDC)
THIS TERMINAL IS LABELED NUMBER 51 IN MMCPs WITH PART NUMBER 81471067 (ATEX VERSION)

CONDUCTORS TO MMCP
5 CONDUCTORS (24-VDC)
SEPERATE FROM AC POWER

VALVE ELECTRICAL INTERCONNECTION
24 VDC CONTROL CONFIGURATION
FOR MMCP P/N 81471058 & 81471067

REFERENCE DWG. #81504095 (MULTI-MONITOR SPITFIRE SYSTEM LAYOUT)
OR CUSTOM SYSTEM LAYOUT

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MATERIAL: N/A		WEIGHT (LBS): N/A CAT. NO.: INDUSTRIAL SYSTEM	
TOLERANCE UNLESS OTHERWISE SPECIFIED: 2 PLACE DEC. ± .060" 3 PLACE DEC. ± .030" ANGLES ± 1°		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES ALL FILLETS AND ROUNDS R 0.06 DO NOT SCALE PRINT INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M 1994 CAD MODEL:	
STANDARD DRAWING NOT FOR APPROVAL		THIRD ANGLE PROJECTION	SIZE: C PART NUMBER: 30231031S8 REV.: D CAD SCALE: NONE SHEET 8 OF 9

STANDARD DRAWING NOT FOR APPROVAL

REV.	DESCRIPTION (NOTE: ADDITIONAL ECN BLOCKS TO BE COPIED AND FILLED OUT MANUALLY)	BY	E. C. N.
C	CHANGED 440/480 NOTE	MSF	01FEB17

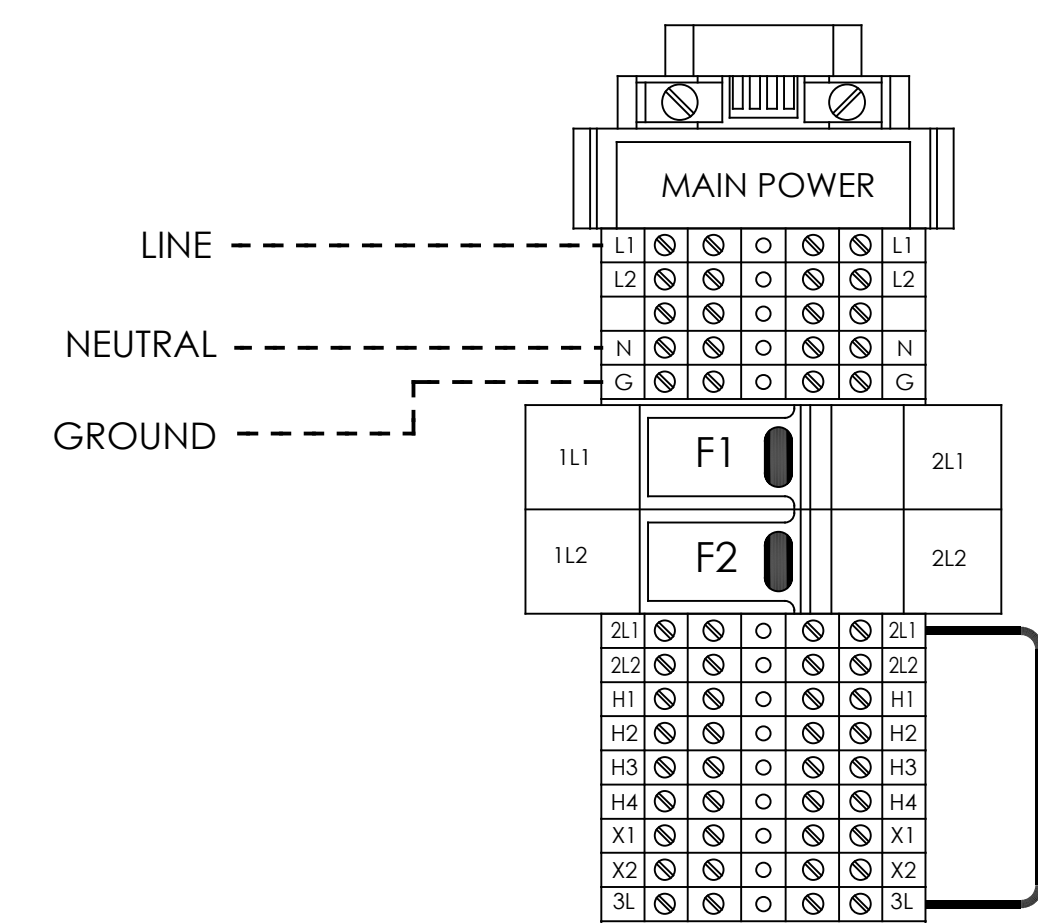


FIGURE 1
MMCP MAIN POWER
110 / 120 VAC, 50/60 Hz., SINGLE PHASE

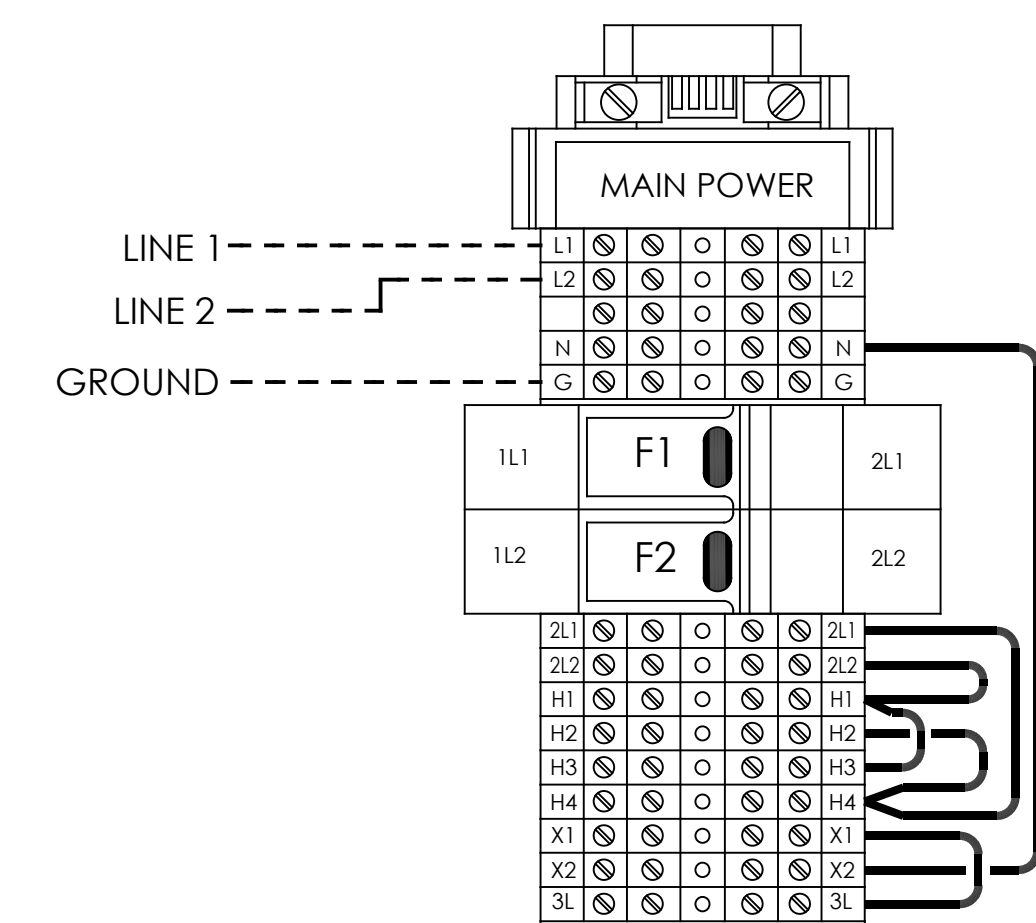


FIGURE 2
MMCP MAIN POWER
220 /240 VAC, 60 Hz., SINGLE PHASE

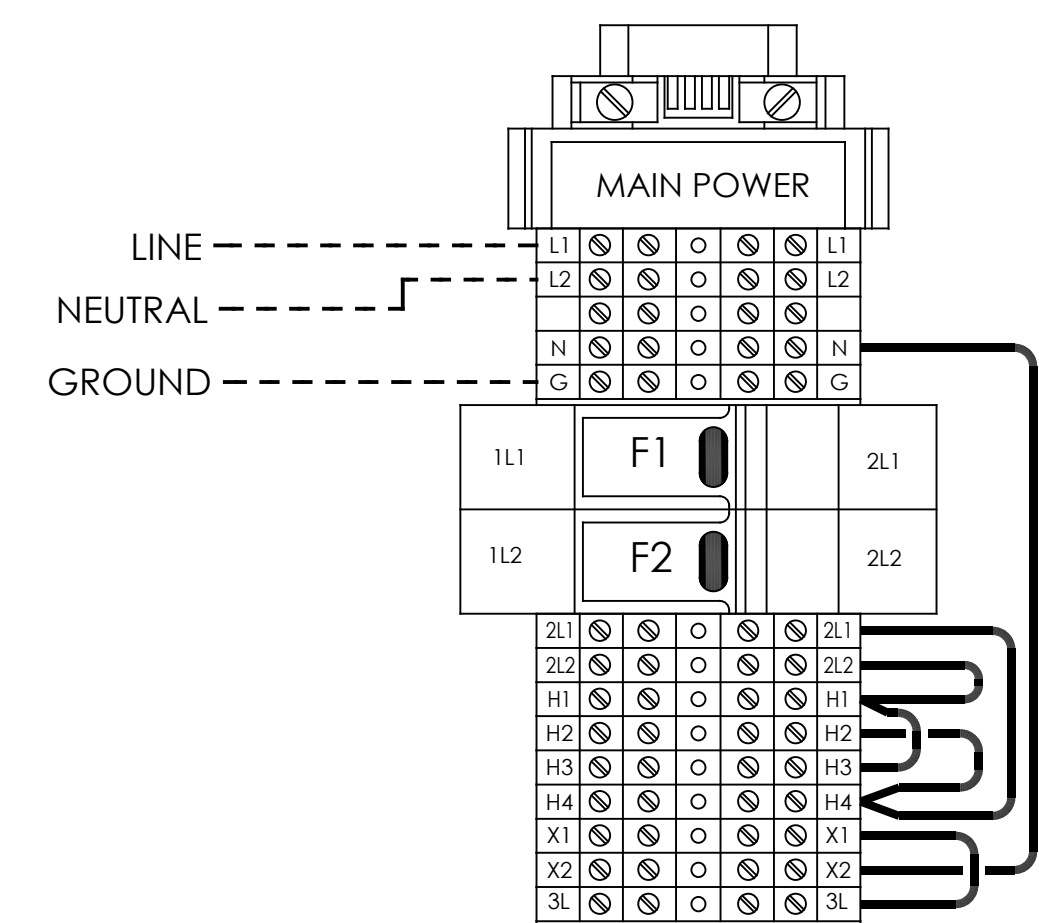


FIGURE 3
MMCP MAIN POWER
220 /240 VAC, 50 Hz., SINGLE PHASE

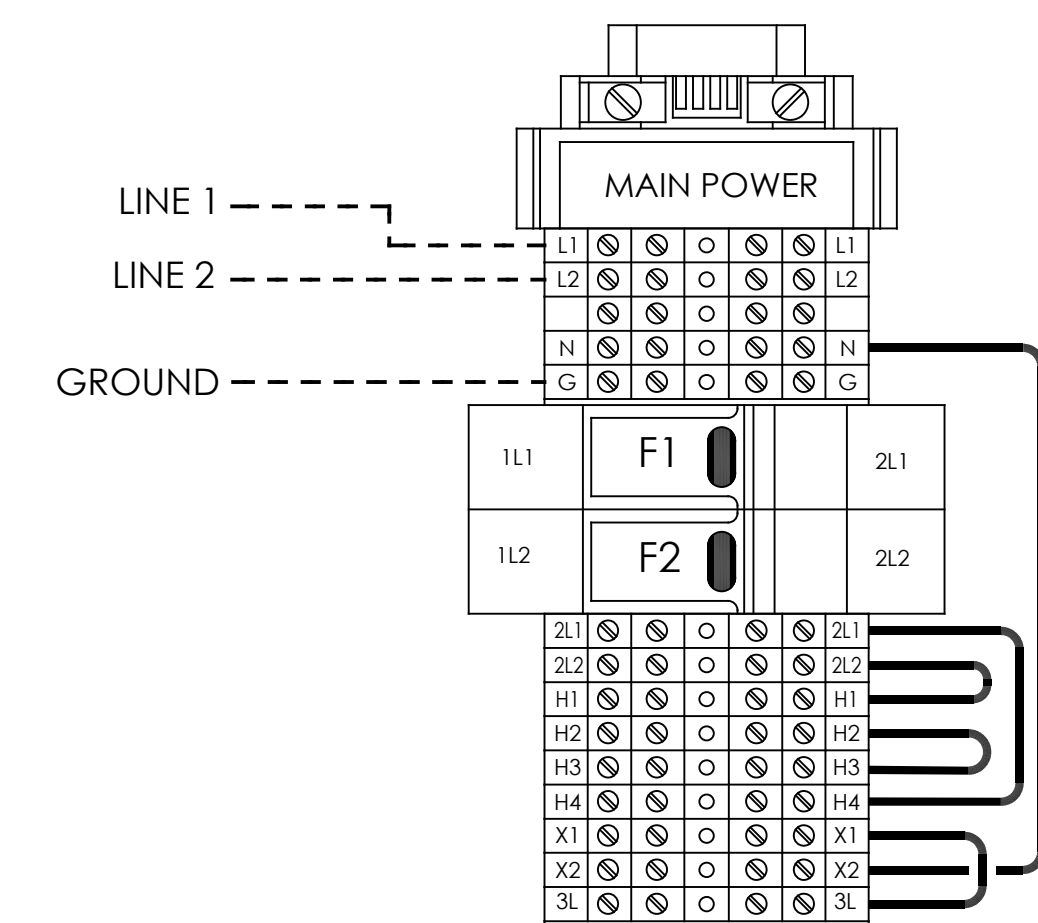


FIGURE 4
MMCP MAIN POWER
440 /480 VAC, 60 Hz., SINGLE PHASE

NOTE: FOR REFERENCE ONLY. NOT ALL CONFIGURATIONS WILL BE USED. SELECT APPROPRIATE CONFIGURATION FOR EACH APPLICATION.

————— PANEL JUMPERS
----- FIELD WIRING

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MATERIAL N/A		CHECKED BY MSF DATE 02/01/2017	
TOLERANCE UNLESS OTHERWISE SPECIFIED 2 PLACE DEC. ± .060" 3 PLACE DEC. ± .030" ANGLES ± 1°		WEIGHT (LBS) N/A CAT. NO. INDUSTRIAL SYSTEMS	DESCRIPTION MMCP POWER SOURCE CONNECTIONS ELECTRICAL INTERCONNECT DRAWING
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES ALL FILLETS AND ROUNDS R 0.06 DO NOT SCALE PRINT INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M, 1994 CAD MODEL:		SIZE C	PART NUMBER 30231031S9 SHEET 9 OF 9
		THIRD ANGLE PROJECTION	REV. C