MAIN PANEL: 171-1081-504

COBALT TS2 TYPE 2 CONTROLLER WITH:

CONTROLLER PART # F51674

- ■ CONFIGURATION: L3604
- ■ SOFTWARE: EOS
- ■ ETHERNET MODULE

□ OVERLAPS

A =
B =
C =
D =
E =
F =
G =
H =

- □ TELEMETRY MODULE
- ■ INTERNAL RS-232 TELEMETRY

LEGEND	
BIU	BUS INTERFACE UNIT
BU()	C/C, BIU ()
CB()	CIRCUIT BREAKER ()
C/C	CONNECTING CABLE
CCA	CONTROLLER CABLE "A"
CDP	C/C, DR POWER
CMA	MMU/CMU CABLE "A"
CMB	MMU/CMU CABLE "B"
CPO	C/C PRE-EMPT OUTPUTS
CPP	C/C PRE-EMPT POWER
DR	DETECTOR RACK
DS()	DOOR SWITCH ()
FL()	FLASHER ()
FR()	FLASH XFER. RELAY
LS()	LOAD SWITCH
MC	MERCURY CONTACTOR
MP	MAIN PANEL
PAP	POWER-AUX PANEL
PSP	CAB. PWR. SUPPLY
SA	SURGE ARRESTOR
TB-()	TERM. BLOCK ()

FLASHER	
PIN	FUNCTION
7	CIRCUIT #1
8	CIRCUIT #2
9	CHASSIS GND
10	AC COMMON
11	115 VAC
12	

LOAD SWITCH	
PIN	FUNCTION
1	115 VAC
2	CHASSIS GND
3	RED/DW OUTPUT
4	
5	YEL OUTPUT
6	RED/DW INPUT
7	GRN/W OUTPUT
8	YEL INPUT
9	+24 VDC
10	GRN/W INPUT
11	AC COMMON
12	

① 2.2K 10W

3 USE ONLY COPPER CONDUCTORS FOR FIELD AND SERVICE CONNECTIONS.

2 CONNECT A.C. SERVICE TO TERMINAL BLOCK 501 (LINE), 502 (NEUTRAL) AND GB2 (EARTH) ON RIGHT SIDEWALL OF CABINET.

①INSTALL 2.2K, 10 WATT LOAD RESISTORS BETWEEN PINS 7 AND 11 ON LOAD SWITCHES 9, 10, 11 & 12.

NOTES: UNLESS SPECIFIED OTHERWISE

MAIN PANEL PLUG-IN REQUIREMENTS

■ BIU2 T&F	■ LS9 PED 2	■ LS10 PED 4	■ LS11 PED 6	■ LS12 PED 8	■ LS13 BEACONS O'LAP A	■ LS14 BEACONS O'LAP B	■ LS15 BEACONS O'LAP C	■ LS16 BEACONS O'LAP D	
■ BIU1 T&F	☒ LS1 VEH 1	■ LS2 VEH 2	☒ LS3 VEH 3	■ LS4 VEH 4	☒ LS5 VEH 5	■ LS6 VEH 6	☒ LS7 VEH 7	■ LS8 VEH 8	■ FL1 □ 1CKT ■ 2CKT
☒ FR1 L|R V1|V5	■ FR2 L|R V2|V6	☒ FR3 L|R V3|V7	■ FR4 L|R V4|V8	☒ FR5 L|R A|C	☒ FR6 L|R B|D	■ K1 LS 24V CONT.			

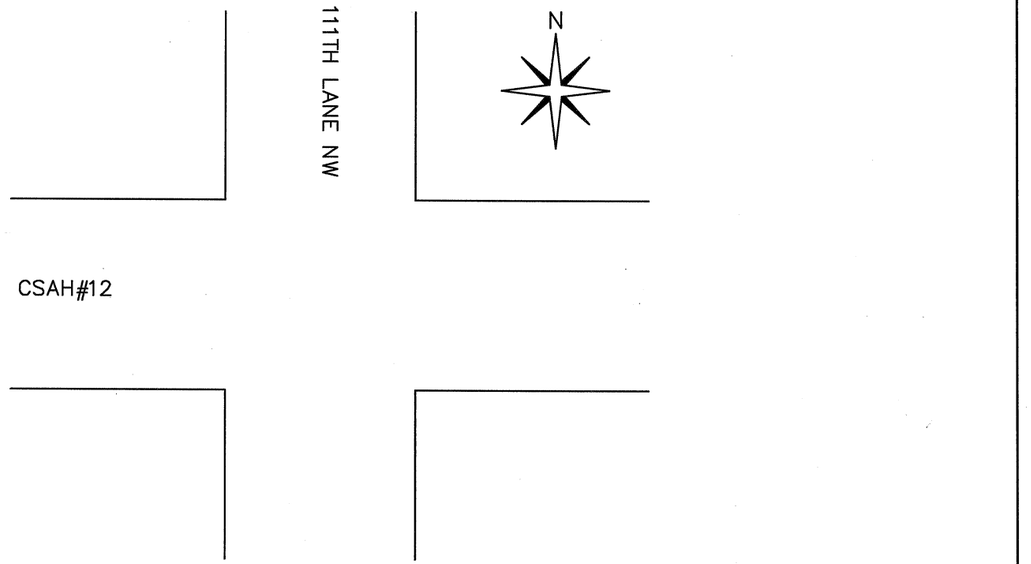
■ DENOTES TYPE OF OPERATION AND/OR WHERE PLUG-IN IS REQUIRED. L = LEFT, R = RIGHT.

☒ DENOTES WHERE "UNUSED RED" JUMPER PART NUMBER 32448G1 IS REQUIRED. INSTALL BETWEEN PINS 1 & 3 FOR LOAD SWITCH OR PINS 6 & 8 AND 5 & 7 FOR FLASH TRANSFER RELAY.

FLASH:
- □ ø2&6 YELLOW, ALL OTHERS RED.
- ■ ALL RED.
- ■ RELAYS DE-ENERGIZED FOR FLASH.
- □ RELAYS ENERGIZED FOR FLASH.

120V+	950 — TB2-12(BLK)
120V-	951 — TB2-10(WHT)
120V-	952
2W	953 — 9G-A (RED-9C)
2DW	954 — 9R-A (BLK-9C)
4W	955 — 10G-A (BLU-9C)
4DW	956 — 10R-A (BRN-9C)
6W	957 — 11G-A (ORG-9C)
6DW	958 — 11R-A (YEL-9C)
8W	959 — 12G-A (PUR-9C)
8DW	960 — 12R-A (WHT-9C)
SPARE	961
SPARE	962
GRND	963 — TB2-9 (GRN)
GRND	964
PC-2	965 — PC2-A (RED-4C)
PC-4	966 — PC4-A (BLK-4C)
PC-6	967 — PC6-A (GRN-4C)
PC-8	968 — PC8-A (WHT-4C)
SPARE	969

PEDESTRIAN PUSHBUTTON/SIGNAL INTERFACE



SHEET 1 OF 7

DRAWN CM TCC	1/10/2024
CABINET SIZE	77"
INSPECTED	
APPROVED	
CUSTOMER P.O.	0008128

ECONOLITE CONTROL PRODUCTS INC.

TRAFFIC CONTROL CORPORATION
10435 ARGONNE WOODS DR.
WOODRIDGE, IL 60517

CABINET SPECIFICATION: TS2TYPE1 ANOKA COUNTY SPEC PLUG AND GO

CUSTOMER: ANOKA COUNTY

INTERSECTION: CSAH#12 AT 111TH LANE NW

LOCATION:

SYSTEM:

CONTROLLER

FLASHER

SW.PACKS

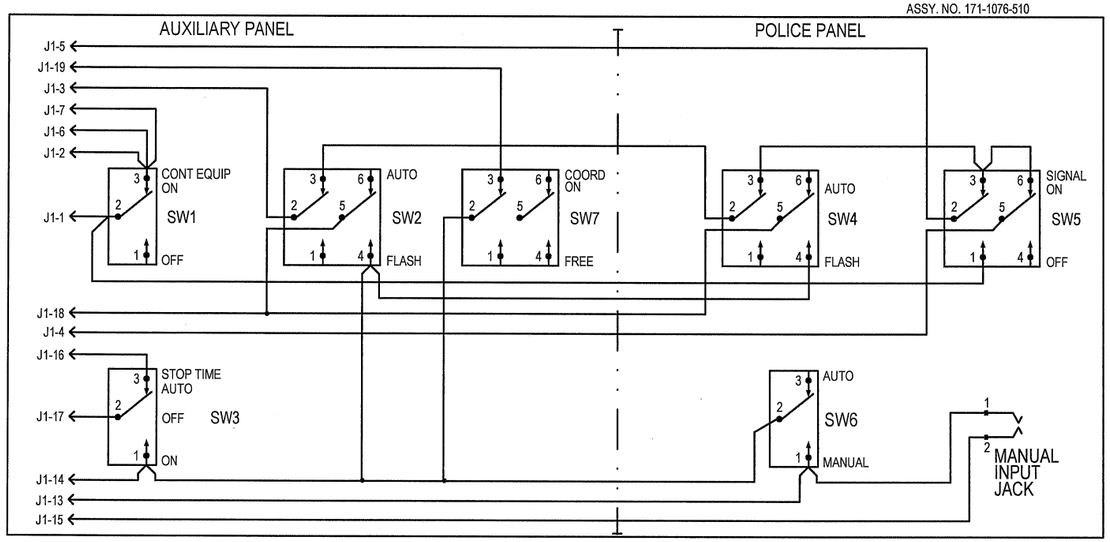
INSTALLED BY: ANOKA COUNTY HIGHWAY DEPARTMENT

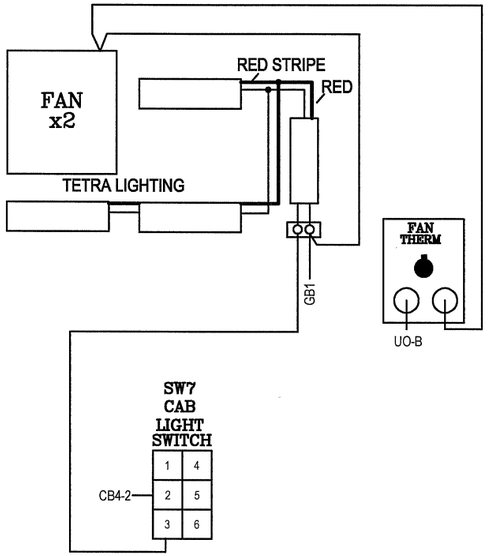
SALES ORDER NO. 737892

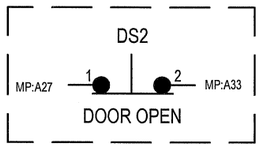
DRAWING # 655397-1

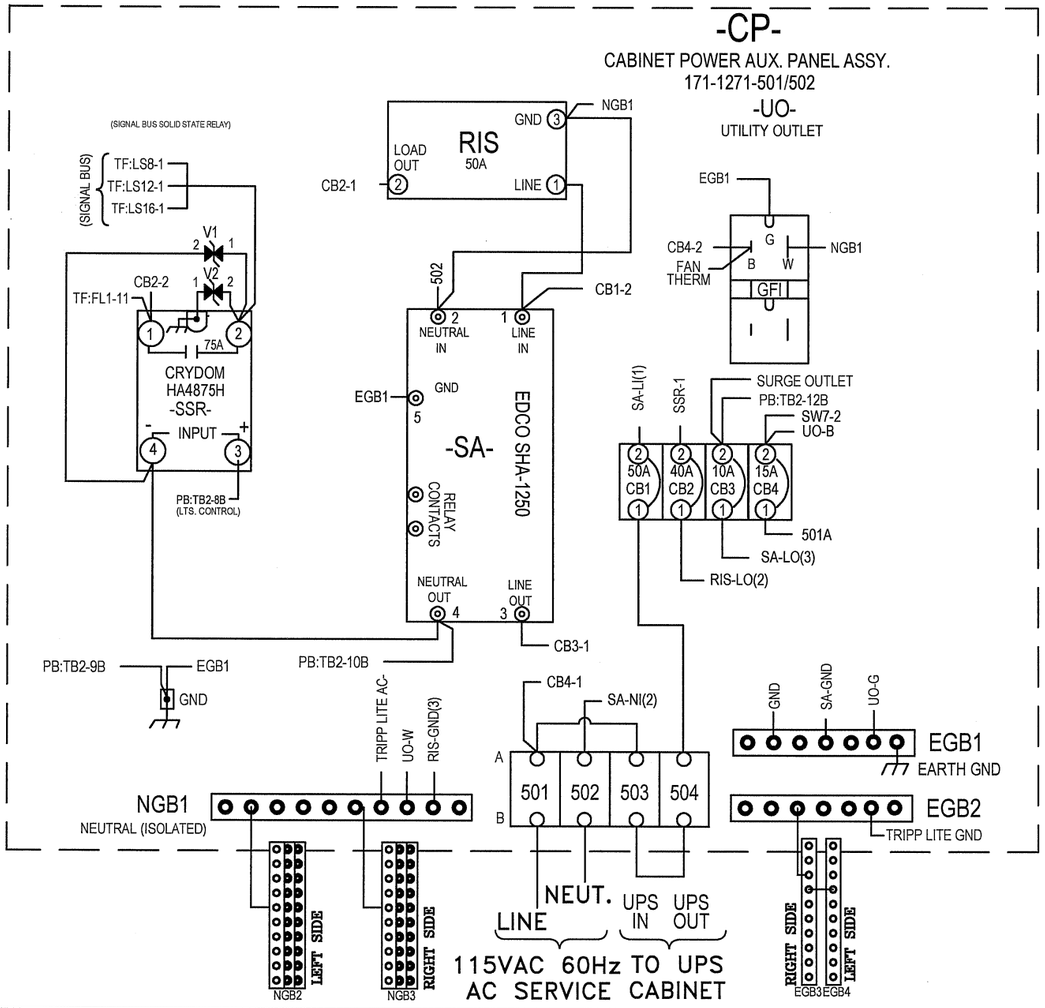
POLICE/AUX SWITCHES

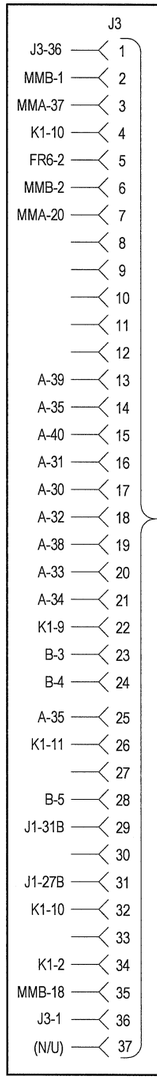
ASSY. NO. 171-1076-510











(MAIN PANEL & C/C REFERENCES ONLY)

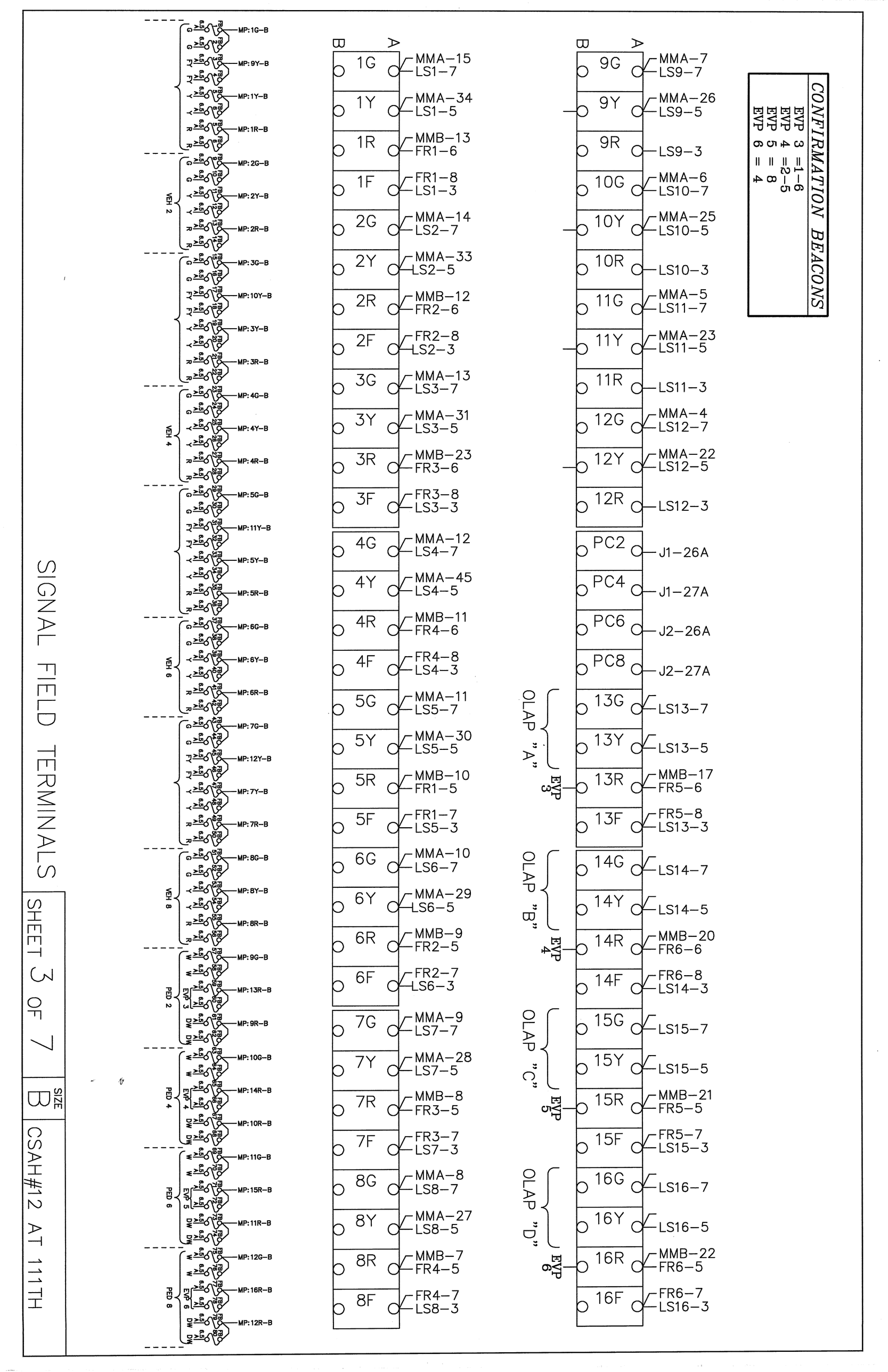
TO/FROM POLICE-AUXILLARY SWITCH PANEL	
PIN	FUNCTION
1	FILTER AC LINE (OUT)
2	SWITCHED AC LINE (IN)
3	FLASH CONTROL BUS (OUT)
4	SIGNAL BUS CONTROL (IN)
5	FLASH RELAY CONTROL (IN)
6	START DELAY AC BUS (IN)
7	MMU FLASH CONTROL BUS (IN)
8	SPARE
9	SPARE
10	SPARE
11	SPARE
12	SPARE
13	MANUAL CONT. ENABLE (IN)
14	LOGIC GROUND
15	INTERVAL ADVANCE (IN)
16	MMU STOP TIME (OUT)
17	CONTROLLER STOP TIME (IN)
18	LOCAL FLASH STATUS (IN)
19	COORD FREE (IN)
20	ALARM 1 (IN)
21	ALARM 2 (IN)
22	LOADSWITCH TEST (IN)
23	MMU 24 VOLT MON. 2 (IN)
24	+24 VDC
25	LOGIC GROUND
26	+24 VDC (IN)
27	----
28	MMU FAULT MONITOR (IN)
29	LINE FREQ. REFERENCE (IN)
30	----
31	12 VAC (IN)
32	SIGNAL BUS CONTROL (IN)
33	----
34	FILTERED AC NEUTRAL (IN)
35	CONT. EQUIP. AC LINE (OUT)
36	FILTERED AC LINE (IN)
37	----

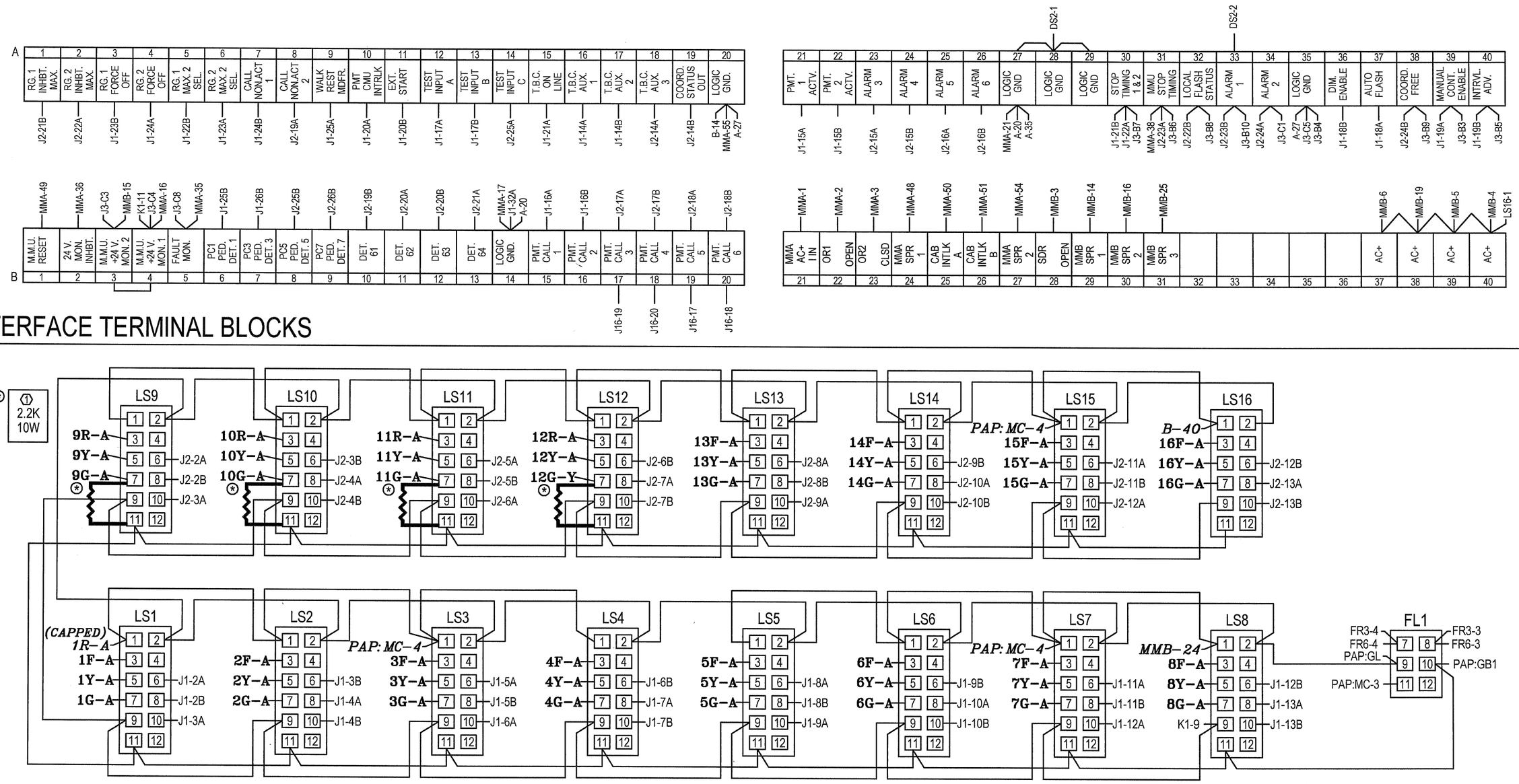
TO: POL/AUX ASSY.

TO: PBA

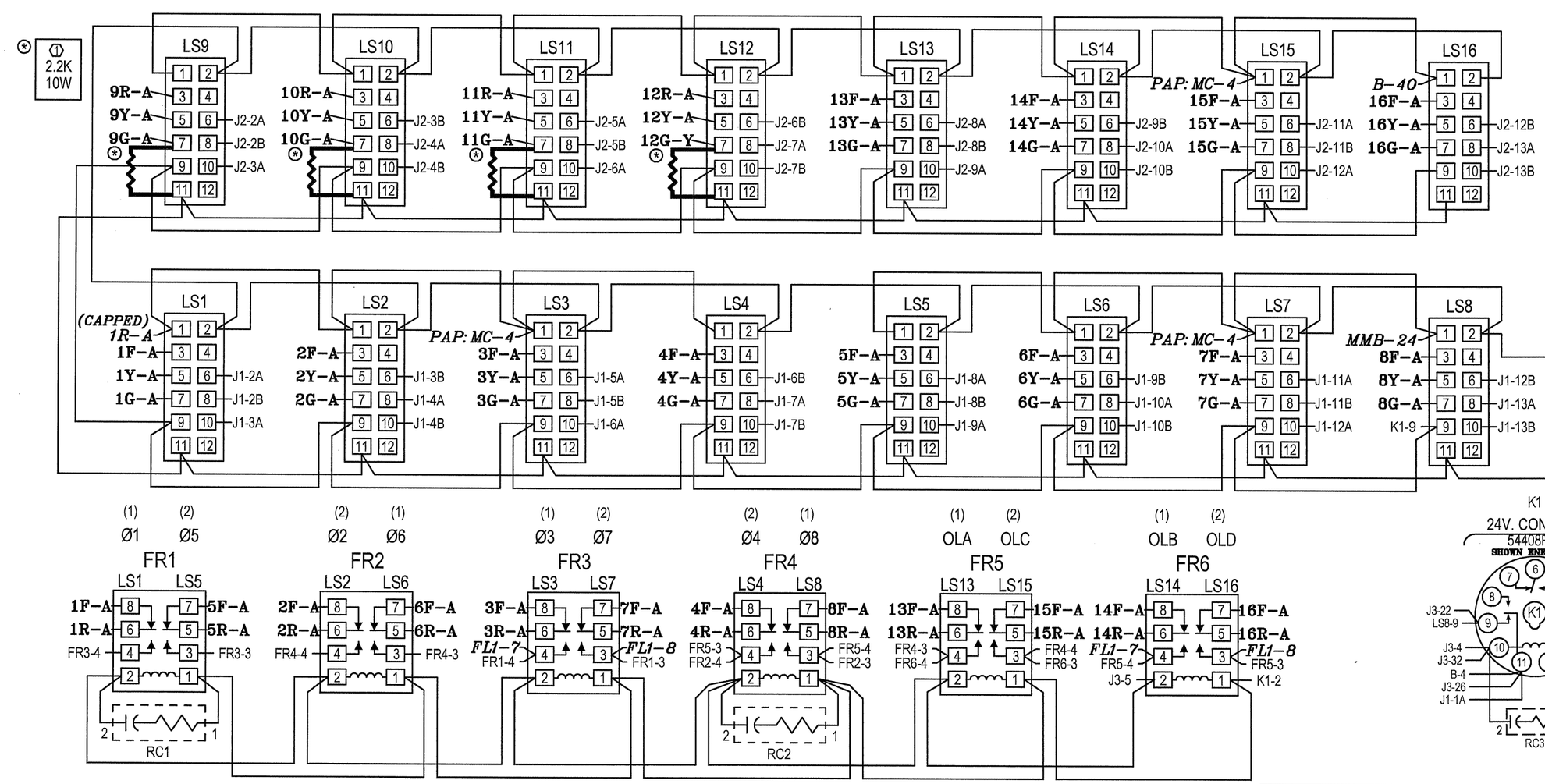
MP P3	MAIN PANEL/CONTROLLER PWR. C/C 171-1676-504	TO POL/AUX P1
PIN	FUNCTION	PIN
1	FILTER AC LINE (OUT)	1
2	SWITCHED AC LINE (IN)	2
3	FLASH CONTROL BUS (OUT)	3
4	SIGNAL BUS CONTROL (IN)	4
5	FLASH RELAY CONTROL (IN)	5
6	START DELAY AC BUS (IN)	6
7	MMU FLASH CONTROL BUS (IN)	7
8	SPARE	8
9	SPARE	9
10	SPARE	10
11	SPARE	11
12	SPARE	12
13	OPT-MANUAL CONT. ENABLE (IN)	13
14	LOGIC GROUND	14
15	OPT-INTERVAL ADVANCE (IN)	15
16	MMU STOP TIME (OUT)	16
17	CONTROLLER STOP TIME (IN)	17
18	LOCAL FLASH STATUS (IN)	18
19	OPT-COORD FREE (IN)	19
20	OPT-ALARM 1 (IN)	20
21	OPT-ALARM 2 (IN)	21
22	OPT-LOADSWITCH TEST (IN)	22
23	MMU 24 VOLT MON. 2 (IN)	23
24	+24 VDC	24
	PART OF 171-1076-504	TO PB:(JX)
25	LOGIC GROUND	1
26	+24 VDC (IN)	2
(N/U)	----	3
28	MMU FAULT MONITOR (IN)	4
29	LINE FREQ. REFERENCE (IN)	5
(N/U)	----	6
31	12 VAC (IN)	7
32	SIGNAL BUS CONTROL (IN)	8
(N/U)	----	9
34	FILTERED AC NEUTRAL (IN)	10
35	CONT. EQUIP. AC LINE (OUT)	11
36	FILTERED AC LINE (IN)	12
(N/U)	----	13
(N/U)	----	14

J1	POLICE/AUXILIARY SWITCH PANEL	
PIN	FUNCTION	TO
1	FILTER AC LINE (IN)	SW1-2
2	SWITCHED AC LINE (OUT)	SW1-3
3	FLASH CONTROL BUS (IN)	SW2-2
4	SIGNAL BUS CONTROL (OUT)	SW5-5
5	FLASH RELAY CONTROL (OUT)	SW5-2
6	START DELAY BUS (OUT)	SW1-3
7	MMU FLASH CONTROL BUS (OUT)	SW1-3
8	SPARE	---
9	SPARE	---
10	SPARE	---
11	SPARE	---
12	SPARE	---
13	MANUAL CONT. ENABLE (OUT)	SW6-1
14	LOGIC GROUND	SW3-1
15	INTERVAL ADVANCE (OUT)	MIJ-2
16	MMU STOP TIME (IN)	SW3-3
17	CONTROLLER STOP TIME (OUT)	SW3-2
18	LOCAL FLASH STATUS (OUT)	SW2-5
19	COORD FREE (OUT)	---
20	ALARM 1 (OUT)	---
21	ALARM 2 (OUT)	---
22	LOADSWITCH TEST (OUT)	---
23	MMU 24 VOLT MON. 2 (OUT)	---
24	+24 VDC (IN)	---


CONFIRMATION BEACONS
EVP 3 =1-6
EVP 4 =2-5
EVP 5 = 8
EVP 6 = 4
B A
1G MMA-15 LS1-7
1Y MMA-34 LS1-5
1R MMB-13 FR1-6
1F FR1-8 LS1-3
2G MMA-14 LS2-7
2Y MMA-33 LS2-5
2R MMB-12 FR2-6
2F FR2-8 LS2-3
3G MMA-13 LS3-7
3Y MMA-31 LS3-5
3R MMB-23 FR3-6
3F FR3-8 LS3-3
4G MMA-12 LS4-7
4Y MMA-45 LS4-5
4R MMB-11 FR4-6
4F FR4-8 LS4-3
5G MMA-11 LS5-7
5Y MMA-30 LS5-5
5R MMB-10 FR1-5
5F FR1-7 LS5-3
6G MMA-10 LS6-7
6Y MMA-29 LS6-5
6R MMB-9 FR2-5
6F FR2-7 LS6-3
7G MMA-9 LS7-7
7Y MMA-28 LS7-5
7R MMB-8 FR3-5
7F FR3-7 LS7-3
8G MMA-8 LS8-7
8Y MMA-27 LS8-5
8R MMB-7 FR4-5
8F FR4-7 LS8-3
9G MMA-7 LS9-7
9Y MMA-26 LS9-5
9R LS9-3
10G MMA-6 LS10-7
10Y MMA-25 LS10-5
10R LS10-3
11G MMA-5 LS11-7
11Y MMA-23 LS11-5
11R LS11-3
12G MMA-4 LS12-7
12Y MMA-22 LS12-5
12R LS12-3
PC2 J1-26A
PC4 J1-27A
PC6 J2-26A
PC8 J2-27A
13G LS13-7
13Y LS13-5
13R MMB-17 FR5-6
13F FR5-8 LS13-3
14G LS14-7
14Y LS14-5
14R MMB-20 FR6-6
14F FR6-8 LS14-3
15G LS15-7
15Y LS15-5
15R MMB-21 FR5-5
15F FR5-7 LS15-3
16G LS16-7
16Y LS16-5
16R MMB-22 FR6-5
16F FR6-7 LS16-3
OLAP "A" EVP 3
OLAP "B" EVP 4
OLAP "C" EVP 5
OLAP "D" EVP 6
VEH 2
VEH 4
VEH 6
VEH 8
PED 2
PED 4
PED 6
PED 8
MP:1G-B
MP:9Y-B
MP:1Y-B
MP:1R-B
MP:2G-B
MP:2Y-B
MP:2R-B
MP:3G-B
MP:10Y-B
MP:3Y-B
MP:3R-B
MP:4G-B
MP:4Y-B
MP:4R-B
MP:5G-B
MP:11Y-B
MP:5Y-B
MP:5R-B
MP:6G-B
MP:6Y-B
MP:6R-B
MP:7G-B
MP:12Y-B
MP:7Y-B
MP:7R-B
MP:8G-B
MP:8Y-B
MP:8R-B
MP:9G-B
MP:13R-B
MP:9R-B
MP:10G-B
MP:14R-B
MP:10R-B
MP:11G-B
MP:15R-B
MP:11R-B
MP:12G-B
MP:16R-B
MP:12R-B
SIGNAL FIELD TERMINALS
SHEET 3 OF 7
SIZE B
CSAH#12 AT 111TH



INTERFACE TERMINAL BLOCKS



LOADBAY AND FLASH RELAYS

SHEET 4 OF 7	SIZE B	CSAH#12 AT 111TH LANE NW

J1	BIU #1	
PIN	FUNCTION	TO
1A	+24 VDC	K1-11
1B	+24 VDC	J2-1B
2A	LS1 RED	LS1-6
2B	LS1 YELLOW	LS1-8
3A	LS1 GREEN	LS1-10
3B	LS2 RED	LS2-6
4A	LS2 YELLOW	LS2-8
4B	LS2 GREEN	LS2-10
5A	LS3 RED	LS3-6
5B	LS3 YELLOW	LS3-8
6A	LS3 GREEN	LS3-10
6B	LS4 RED	LS4-6
7A	LS4 YELLOW	LS4-8
7B	LS4 GREEN	LS4-10
8A	LS5 RED	LS5-6
8B	LS5 YELLOW	LS5-8
9A	LS5 GREEN	LS5-10
9B	LS6 RED	LS6-6
10A	LS6 YELLOW	LS6-8
10B	LS6 GREEN	LS6-10
11A	LS7 RED	LS7-6
11B	LS7 YELLOW	LS7-8
12A	LS7 GREEN	LS7-10
12B	LS8 RED	LS8-6
13A	LS8 YELLOW	LS8-8
13B	LS8 GREEN	LS8-10
14A	TBC AUX 1	A-16
14B	TBC AUX 2	A-17
15A	PMT ACT 1	A-21
15B	PMT ACT 2	A-22
16A	PMT CALL 1	B-15
16B	PMT CALL 2	B-16
17A	TEST A	A-12
17B	TEST B	A-13
18A	AUTO FLASH	A-37
18B	DIM. ENABLE	A-36
19A	MANUAL CONT.	A-39
19B	INT. ADVANCE	A-40
20A	EXT. MIN. RECALL	A-10
20B	EXT. START	A-11
21A	TBC ONLINE	A-15
21B	STOP TIME (1)	A-30
22A	STOP TIME (2)	A-30
22B	MAX. 2 (1)	A-5
23A	MAX. 2 (2)	A-6
23B	FORCE OFF (1)	A-3
24A	FORCE OFF (2)	A-4
24B	CNA 1	A-7
25A	WALK REST MOD.	A-9
25B	PED. ISO. 1	B-6
26A	PED. ISO. 2	PC2-A
26B	PED. ISO. 3	B-7
27A	PED. ISO. 4	PC4-A
27B	PED. ISO. COMN.	J3-D1
28A	ADDR. SEL. 0	-----
28B	ADDR. SEL. 1	-----
29A	ADDR. SEL. 2	-----
29B	ADDR. SEL. 3	-----
30A	RESERVED	-----
30B	RESERVED	-----
31A	EARTH GND.	LS12-2
31B	LINE FREQ. REF.	J3-C9
32A	LOGIC GND.	B-14
32B	LOGIC GND.	J2-32A

J2	BIU #2	
PIN	FUNCTION	TO
1A	+24 VDC	J2-1B
1B	+24 VDC	J1-1B
2A	LS9 RED	LS9-6
2B	LS9 YELLOW	LS9-8
3A	LS9 GREEN	LS9-10
3B	LS10 RED	LS10-6
4A	LS10 YELLOW	LS10-8
4B	LS10 GREEN	LS10-10
5A	LS11 RED	LS11-6
5B	LS11 YELLOW	LS11-8
6A	LS11 GREEN	LS11-10
6B	LS12 RED	LS12-6
7A	LS12 YELLOW	LS12-8
7B	LS12 GREEN	LS12-10
8A	LS13 RED	LS13-6
8B	LS13 YELLOW	LS13-8
9A	LS13 GREEN	LS13-10
9B	LS14 RED	LS14-6
10A	LS14 YELLOW	LS14-8
10B	LS14 GREEN	LS14-10
11A	LS15 RED	LS15-6
11B	LS15 YELLOW	LS15-8
12A	LS15 GREEN	LS15-10
12B	LS16-RED	LS16-6
13A	LS16-YELLOW	LS16-8
13B	LS16-GREEN	LS16-10
14A	TBC AUX 3	A-18
14B	COORD. STATUS	A-19
15A	ALARM 3	A-23
15B	ALARM 4	A-24
16A	ALARM 5	A-25
16B	ALARM 6	A-26
17A	PMT CALL 3	B-17
17B	PMT CALL 4	B-18
18A	PMT CALL 5	B-19
18B	PMT CALL 6	B-20
19A	CNA 2	A-8
19B	SPARE 1	B-10
20A	SPARE 2	B-11
20B	SPARE 3	B-12
21A	SPARE 4	B-13
21B	INHIBIT MAX (1)	A-1
22A	INHIBIT MAX (2)	A-2
22B	LOCAL FLASH	A-32
23A	MMU FLASH	A-31
23B	ALARM 1	A-33
24A	ALARM 2	A-34
24B	COORD FREE IN	A-38
25A	TEST C	A-14
25B	PED. ISO. 5	B-8
26A	PED. ISO. 6	PC6-A
26B	PED. ISO. 7	B-9
27A	PED. ISO. 8	PC8-A
27B	PED. ISO. COMN.	J1-27B
28A	ADDR. SEL. 0	J2-32A
28B	ADDR. SEL. 1	-----
29A	ADDR. SEL. 2	-----
29B	ADDR. SEL. 3	-----
30A	RESERVED	-----
30B	RESERVED	-----
31A	EARTH GND.	J1-31A
31B	LINE FREQ. REF.	J1-31B
32A	LOGIC GND.	J1-32B
32B	LOGIC GND.	J2-32A

DETECTOR BIU	
PIN	FUNCTION
1A	**+24 VDC**
1B	**+24 VDC**
2A	----------
2B	----------
3A	----------
3B	----------
4A	----------
4B	----------
5A	----------
5B	----------
6A	----------
6B	----------
7A	----------
7B	----------
8A	----------
8B	----------
9A	----------
9B	**CH. 1 CALL**
10A	**CH. 2 CALL**
10B	**CH. 3 CALL**
11A	**CH. 4 CALL**
11B	**CH. 5 CALL**
12A	**CH. 6 CALL**
12B	**CH. 7 CALL**
13A	**CH. 8 CALL**
13B	**CH. 9 CALL**
14A	**CH. 10 CALL**
14B	**CH. 11 CALL**
15A	**CH. 12 CALL**
15B	**CH. 13 CALL**
16A	**CH. 14 CALL**
16B	**CH. 15 CALL**
17A	**CH. 16 CALL**
17B	**CH. 1 FAULT STATUS**
18A	**CH. 2 FAULT STATUS**
18B	**CH. 3 FAULT STATUS**
19A	**CH. 4 FAULT STATUS**
19B	**CH. 5 FAULT STATUS**
20A	**CH. 6 FAULT STATUS**
20B	**CH. 7 FAULT STATUS**
21A	**CH. 8 FAULT STATUS**
21B	**CH. 9 FAULT STATUS**
22A	**CH. 10 FAULT STATUS**
22B	**CH. 11 FAULT STATUS**
23A	**CH. 12 FAULT STATUS**
23B	**CH. 13 FAULT STATUS**
24A	**CH. 14 FAULT STATUS**
24B	**CH. 15 FAULT STATUS**
25A	**CH. 16 FAULT STATUS**
25B	----------
26A	----------
26B	----------
27A	----------
27B	----------
28A	**ADDR. SEL. 0**
28B	**ADDR. SEL. 1**
29A	**ADDR. SEL. 2**
29B	**ADDR. SEL. 3**
30A	----------
30B	----------
31A	**EARTH GND.**
31B	**LINE FREQ. REF.**
32A	**LOGIC GND.**
32B	**LOGIC GND.**

MAIN PANEL CONTROL POWER C/C 171-1676-504	
PIN	FUNCTION
1	LOGIC GROUND
2	+24 VDC (IN)
3	----
4	MMU FAULT MONITOR (IN)
5	LINE FREQ. REFERENCE (IN)
6	----
7	+12 VAC (IN)
8	SIGNAL BUS CONTROL (IN)
9	----
10	FILTERED AC NEUTRAL (IN)
11	CONT. EQUIP. AC LINE (OUT)
12	FILTERED AC LINE (IN)
13	----
14	----

CONTROLLER POWER (CCA2)

■ C/C 171-1676-503

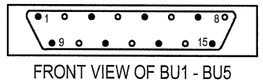
WIRE	PIN	SIGNAL	TO
1	A	FAULT MONITOR	PB-4
2	U	AC NEUTRAL	PB-10
3	V	EARTH GROUND	PB-9
4	W	LOGIC GROUND	PB-1
5	p	AC LINE	PB-11
6	SHL	EARTH GROUND	CCA2-V

TYPE 1 CONTROLLER POWER C/C 171-1676-502		
PIN	FUNCTION	TO
A	AC NEUTRAL	PB-10
B	----	
C	AC LINE	PB-11
D	----	
E	----	
F	FAULT MON.	PB-4
G	LOGIC GND.	PB-1
H	EARTH GND.	PB-9
I	----	
J	----	
SHL	EARTH GND.	PB-6

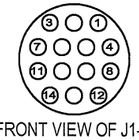
CABINET POWER SUPPLY C/C 171-1676-511		
PIN	FUNCTION	TO
A	AC NEUTRAL	PB-10
B	LINE FREQUENCY REF.	PB-5
C	AC LINE	PB-11
D	+12 VDC	PB-3
E	+24 VDC	PB-2
F	RESERVED	
G	LOGIC GND.	PB-1
H	EARTH GND.	PB-9
I	+12 VAC	PB-7
J	RESERVED	
SHL	EARTH GND.	PIN H

CONTROLLER PORT 1 CONNECTOR			
PIN	SIGNAL	TO	FUNCTION
1	TWISTED PAIR 1+	SDLC-1	CONT TXD+
2	LOGIC GND.	----	
3	TWISTED PAIR 2+	SDLC-4	CONT TXC+
4	LOGIC GND.	----	
5	TWISTED PAIR 3+	SDLC-7	CONT RXD+
6	LOGIC GND.	----	
7	TWISTED PAIR 4+	SDLC-10	CONT RXC+
8	LOGIC GND.	----	
9	TWISTED PAIR 1-	SDLC-2	CONT TXD-
10	PORT 1 DISABLE	----	
11	TWISTED PAIR 2-	SDLC-5	CONT TXC-
12	EARTH GND.	SHIELD WIRE	
13	TWISTED PAIR 3-	SDLC-8	CONT RXD-
14	RESERVED	----	
15	TWISTED PAIR 4-	SDLC-11	CONT RXC-

MMU & BIU PORT 1 CONNECTOR			
PIN	SIGNAL	TO	FUNCTION
1	TWISTED PAIR 1+	SDLC-1	BIU RXD+
2	LOGIC GND.	----	
3	TWISTED PAIR 2+	SDLC-4	BIU RXC+
4	LOGIC GND.	----	
5	TWISTED PAIR 3+	SDLC-7	BIU TXD+
6	LOGIC GND.	----	
7	TWISTED PAIR 4+	SDLC-10	BIU TXC+
8	LOGIC GND.	----	
9	TWISTED PAIR 1-	SDLC-2	BIU RXD-
10	PORT 1 DISABLE	----	
11	TWISTED PAIR 2-	SDLC-5	BIU RXC-
12	EARTH GND.	SHIELD WIRE	
13	TWISTED PAIR 3-	SDLC-8	BIU TXD-
14	RESERVED	----	
15	TWISTED PAIR 4-	SDLC-11	BIU TXC-

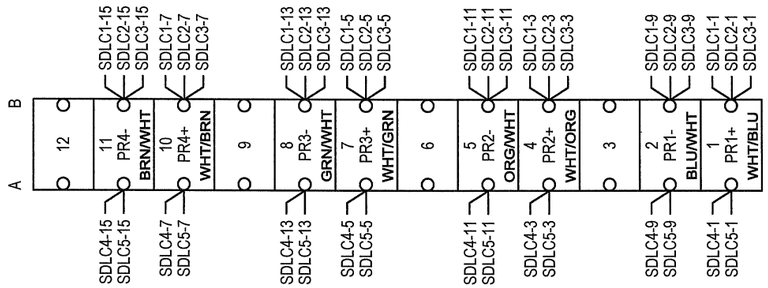


FRONT VIEW OF BU1 - BU5

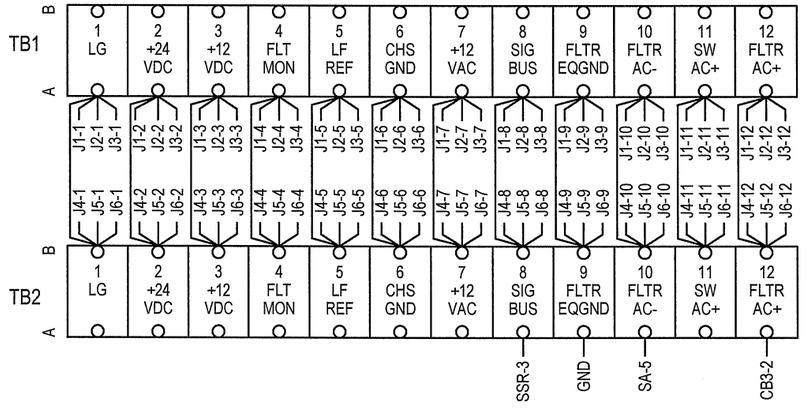


FRONT VIEW OF J1-J6

SDLC CABLE ASSY.
ASSY. NO. 34862G5



-PB- POWER BUS
ASSY. NO. 171-1674-504



BIU AND CONNECTING CABLES

SHEET 5 OF 7	SIZE B	CSAH#12 AT 111TH LANE NW

WIRE LIST FOR NEMA MALFUNCTION MANAGEMENT UNIT

CONNECTOR "A" (MMA)

PIN	WIRE	MON. FUNCTION	TO	SIG. FUNCTION
A	A-1	AC+ I INPUT	B21	
B	A-2	OUT RLY 1 OPEN	B22	
C	A-3	OUT RLY 2 CLSD	B23	
D	A-4	CH. 12 GREEN	12G-A	^8 WLK
E	A-5	CH. 11 GREEN	11G-A	^6 WLK
F	A-6	CH. 10 GREEN	10G-A	^4 WLK
G	A-7	CH. 9 GREEN	9G-A	^2 WLK
H	A-8	CH. 8 GREEN	8G-A	^8 GRN
J	A-9	CH. 7 GREEN	7G-A	^7 GRN
K	A-10	CH. 6 GREEN	6G-A	^6 GRN
L	A-11	CH. 5 GREEN	5G-A	^5 GRN
M	A-12	CH. 4 GREEN	4G-A	^4 GRN
N	A-13	CH. 3 GREEN	3G-A	^3 GRN
P	A-14	CH. 2 GREEN	2G-A	^2 GRN
R	A-15	CH. 1 GREEN	1G-A	^1 GRN
S	A-16	+24V MON. I	B-4	LS +24V MON.
T	A-17	LOGIC GND	B-14	LOGIC GND
U	A-18	CHASSIS GND	LS7-2	EARTH GND.
V	A-19	AC- (COMMON)	K1-2	AC NEUTRAL
W	A-20	OUT RLY 1 COM.	J3-A7	SIG BUS CONT
X	A-21	OUT RLY 2 COM.	A-27	LOGIC GND
Y	A-22	CH. 12 YELLOW	12Y-A	-T-
Z	A-23	CH. 11 YELLOW	11Y-A	-T-
a	A-24	CH. 10 WALK	----	
b	A-25	CH. 10 YELLOW	10Y-A	-T-
c	A-26	CH. 9 YELLOW	9Y-A	-T-
d	A-27	CH. 8 YELLOW	8Y-A	^8 YEL
e	A-28	CH. 7 YELLOW	7Y-A	^7 YEL
f	A-29	CH. 6 YELLOW	6Y-A	^6 YEL
g	A-30	CH. 5 YELLOW	5Y-A	^5 YEL
h	A-31	CH. 3 YELLOW	3Y-A	^3 YEL
i	A-32	CH. 15 GREEN	15G-A	OLC GRN
j	A-33	CH. 2 YELLOW	2Y-A	^2 YEL
k	A-34	CH. 1 YELLOW	1Y-A	^1 YEL
m	A-35	CONT. VOLT. MON.	B-5	VOLT. MON.
n	A-36	+24V MON. INH.	B-2	
p	A-37	OUT RLY 1 CLSD	J3-A3	
q	A-38	OUT RLY 2 OPEN	A-31	STOP TIME
r	A-39	CH. 12 WALK	----	
s	A-40	CH. 11 WALK	----	
t	A-41	CH. 9 WALK	----	
u	A-42	CH. 16 YELLOW	16Y-A	OLD YEL
v	A-43	CH. 15 YELLOW	15Y-A	OLC YEL
w	A-44	CH. 13 YELLOW	13Y-A	OLA YEL
x	A-45	CH. 4 YELLOW	4Y-A	^4 YEL
y	A-46	CH. 14 GREEN	14G-A	OLB GRN
z	A-47	CH. 13 GREEN	13G-A	OLA GRN
AA	A-48	(SPARE 1)	B24	
BB	A-49	RESET	B-1	
CC	A-50	CAB. INTLK A	B25	
DD	A-51	CAB. INTLK B	B26	
EE	A-52	CH. 14 YELLOW	14Y-A	OLB YEL
FF	A-53	CH. 16 GREEN	16G-A	OLD GRN
GG	A-54	(SPARE 2)	B27	
HH	A-55	TYPE SELECT	A-20	MMU/CMU SEL.
	A-56	SHELL GND	LS15-2	EARTH GND.

CONNECTOR "B" (MMB)

PIN	WIRE	MON. FUNCTION	TO	SIG. FUNCTION
A	B-1	AC+ II INPUT	J3-A2	MMU POWER
B	B-2	S. DLY RLY COMM.	J3-A6	MMU POWER
C	B-3	S. DLY RLY OPEN	B28	
D	B-4	CH. 12 RED	B40	
E	B-5	CH. 11 RED	B39	
F	B-6	CH. 9 RED	B37	
G	B-7	CH. 8 RED	8R-A	^8 RED
H	B-8	CH. 7 RED	7R-A	^7 RED
J	B-9	CH. 6 RED	6R-A	^6 RED
K	B-10	CH. 5 RED	5R-A	^5 RED
L	B-11	CH. 4 RED	4R-A	^4 RED
M	B-12	CH. 2 RED	2R-A	^2 RED
N	B-13	CH. 1 RED	1R-A	^1 RED
P	B-14	(SPARE 1)	B29	
R	B-15	+24V MONITOR II	B-3	+24V MON. II
S	B-16	(SPARE 2)	B30	
T	B-17	CH. 13 RED	13R-A	OLA RED
U	B-18	S. DLY RLY CLSD	J3-D5	CONT. POWER
V	B-19	CH. 10 RED	B38	
W	B-20	CH. 14 RED	14R-A	OLB RED
X	B-21	CH. 15 RED	15R-A	OLC RED
Y	B-22	CH. 16 RED	16R-A	OLD RED
Z	B-23	CH. 3 RED	3R-A	^3 RED
a	B-24	RED ENABLE	LS8-1	SIG BUS CON.
b	B-25	(SPARE 3)	B31	
c	B-26	LOCAL FLASH IN	A32	POL/AX FLSH
	B-27	SHELL GROUND	LS6-2	EARTH GND.

NOTES FOR 16 CHANNEL M.M.U.

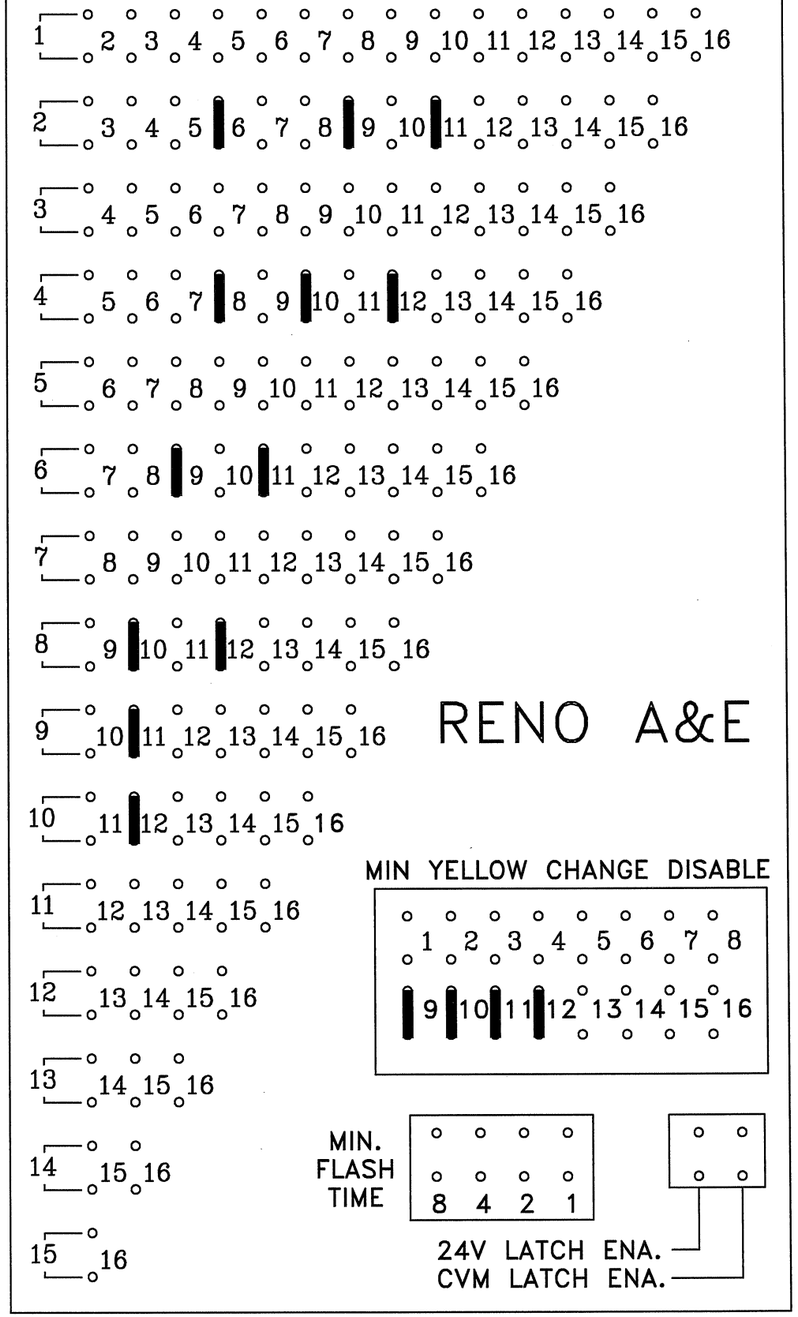
(1) RELAY CONTACT POSITIONS SPECIFIED ARE FOR NON-CONFLICT MODE.

(2) TO PROGRAM MMU, SOLDER JUMPERS IN PROGRAMMING CARD FOR ALL PERMISSABLE PHASE MOVEMENTS, MINIMUM CHANGE DISABLE FOR ALL PEDESTRIAN CHANNELS, AND MIN. FLASH, VOLTAGE MON., AND 24V. MON. LATCH OPTIONS AS DESIRED.

M.M.U. CHANNEL ASSIGNMENTS

CH. 1 =	L/S 1 =	^1 VEH.
CH. 2 =	L/S 2 =	^2 VEH.
CH. 3 =	L/S 3 =	^3 VEH.
CH. 4 =	L/S 4 =	^4 VEH.
CH. 5 =	L/S 5 =	^5 VEH.
CH. 6 =	L/S 6 =	^6 VEH.
CH. 7 =	L/S 7 =	^7 VEH.
CH. 8 =	L/S 8 =	^8 VEH.
CH. 9 =	L/S 9 =	^2 PED.
CH. 10 =	L/S 10 =	^4 PED.
CH. 11 =	L/S 11 =	^6 PED.
CH. 12 =	L/S 12 =	^8 PED.
CH. 13 =	L/S 13 =	O'LAP A VEH.
CH. 14 =	L/S 14 =	O'LAP B VEH.
CH. 15 =	L/S 15 =	O'LAP C VEH.
CH. 16 =	L/S 16 =	O'LAP D VEH.

MMU PROGRAM CARD



M.M.U. C/C'S AND PROGRAM CARD

DETECTOR RACK 34030G1 #1

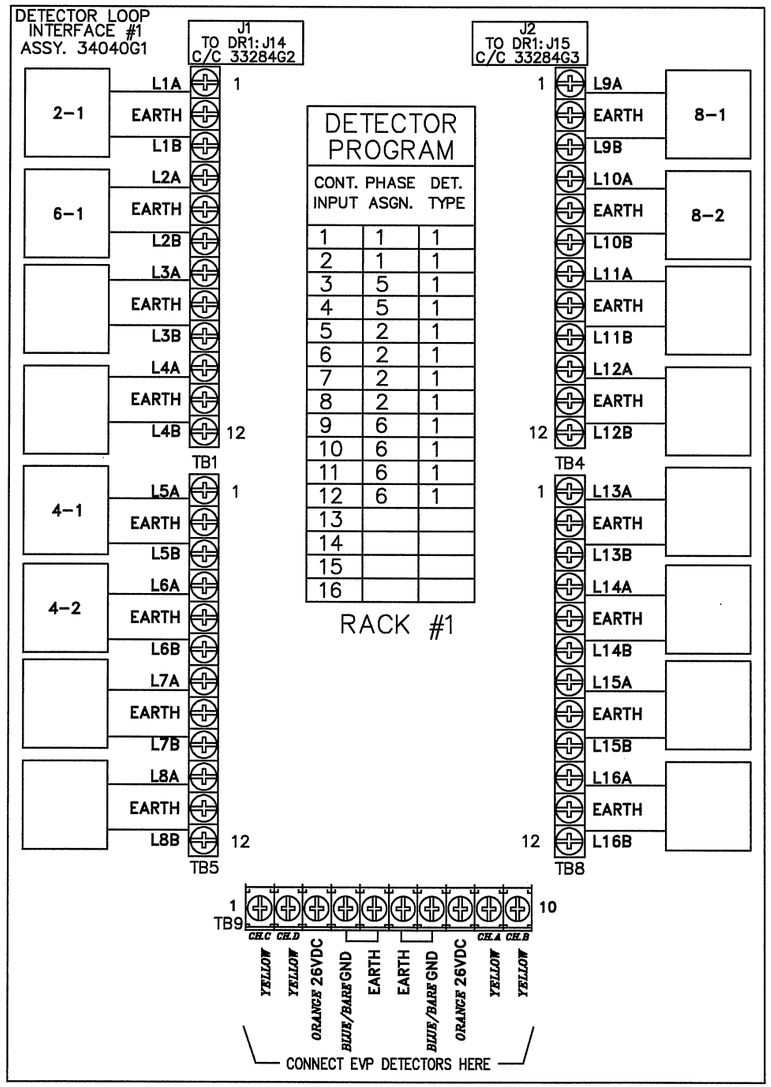
	L3	L1	L7	L5	L11	L9	L15	L13	PMT 5	PMT 3	PGM. CARD
B.I.U.		2-1		4-1		8-1			□2CH OPTICOM CH. C CH. D	□2CH OPTICOM CH. A CH. B	NOT USED
ADDRESS BIT JUMPERS JP37 JP36 JP35 (ADDRESS 1)	□ 2CH	□ 2CH	□ 2CH	□ 2CH	□ 2CH	□ 2CH	□ 2CH	□ 2CH			
	L4	L2	L8	L6	L12	L10	L16	L14	PMT 6	PMT 4	
		6-1		4-2		8-2					

J13	J16	J14	J18	J15	J17	J19
171-1083-515 DC POWER	C/C 33284G8 EXP. OUTPUTS	C/C 33284G2 LPS 1-8	C/C 33284G9 SYS. OUTPUTS	C/C 33284G3 LPS 9-16	171-1083-515 AC POWER	C/C 33284G17 PGM. CARD

DETECTOR RACK 34030G1 #2

	L3	L1	L7	L5	L11	L9	L15	L13			PGM. CARD
B.I.U.									NOT USED	NOT USED	NOT USED
ADDRESS BIT JUMPERS JP37 JP36 JP35 (ADDRESS 2)	□ 2CH	□ 2CH	□ 2CH	□ 2CH	□ 2CH	□ 2CH	□ 2CH	□ 2CH			
	L4	L2	L8	L6	L12	L10	L16	L14			

J13	J16	J14	J18	J15	J17	J19
171-1083-515 DC POWER	C/C 33284G8 EXP. OUTPUTS	C/C 33284G2 LPS 1-8	C/C 33284G9 SYS. OUTPUTS	C/C 33284G3 LPS 9-16	171-1083-515 AC POWER	C/C 33284G17 PGM. CARD



DETECTOR PROGRAM

CONT. INPUT	PHASE ASGN.	DET. TYPE
1	1	1
2	1	1
3	5	1
4	5	1
5	2	1
6	2	1
7	2	1
8	2	1
9	6	1
10	6	1
11	6	1
12	6	1
13		
14		
15		
16		

RACK #1

RACK 1 AND 2

DET. LOOPS 1-8 (J14) C/C 33284G2

PIN	SIGNAL	TO
1	LOOP 1+	LPI1: TB1-1
2	LOOP 1-	LPI1: TB1-3
3	LOOP 2+	LPI1: TB1-4
4	LOOP 2-	LPI1: TB1-6
5	LOOP 3+	LPI1: TB1-7
6	LOOP 3-	LPI1: TB1-9
7	LOOP 4+	LPI1: TB1-10
8	LOOP 4-	LPI1: TB1-12
9	LOOP 5+	LPI1: TB5-1
10	LOOP 5-	LPI1: TB5-3
11	LOOP 6+	LPI1: TB5-4
12	LOOP 6-	LPI1: TB5-6
13	LOOP 7+	LPI1: TB5-7
14	LOOP 7-	LPI1: TB5-9
15	LOOP 8+	LPI1: TB5-10
16	LOOP 8-	LPI1: TB5-12
17	PMT. DET. CH. C	LPI1: TB9-1
18	PMT. DET. CH. D	LPI1: TB9-2
19	KEY PIN	
20	PMT. CH. C/D +26VDC	LPI1: TB9-3
21	PMT. DC GROUND	LPI1: TB9-4,7
22	PMT. CH. A/B +26VDC	LPI1: TB9-8
23	PMT. DET. CH. A	LPI1: TB9-9
24	PMT. DET. CH. B	LPI1: TB9-10
25	-----	
26	-----	

RACK 1 AND 2

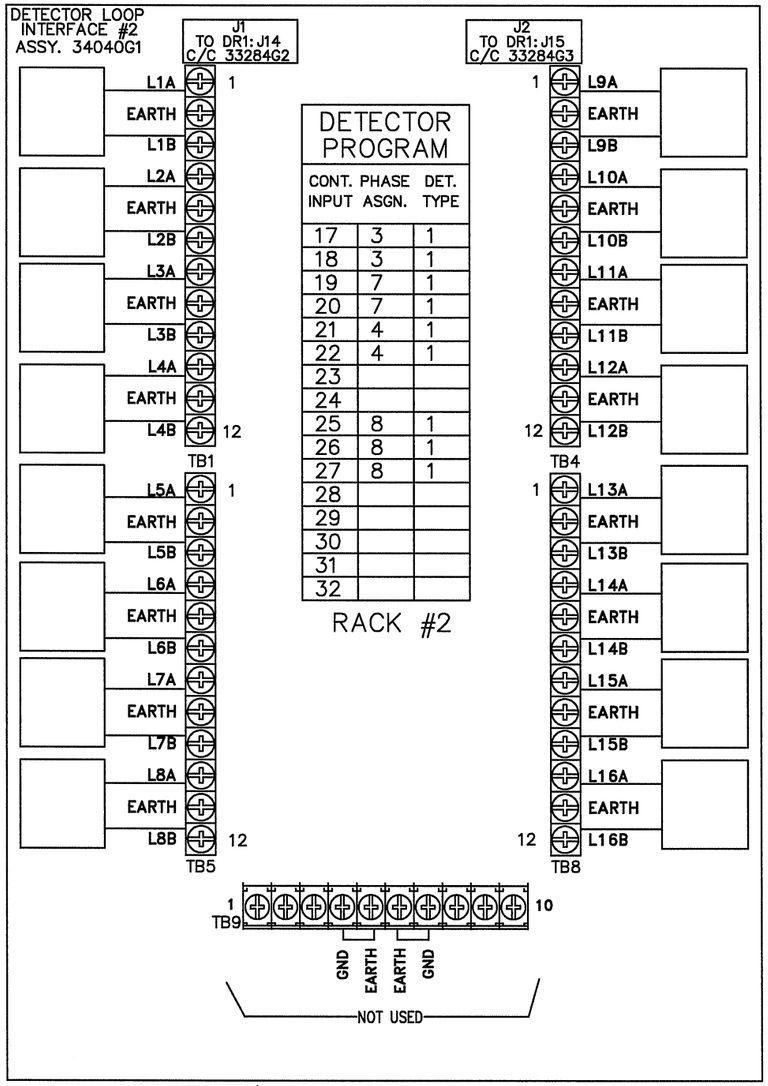
DET. LOOPS 9-16 (J15) C/C 33284G3

PIN	SIGNAL	TO
1	LOOP 9+	LPI2: TB4-1
2	LOOP 9-	LPI2: TB4-3
3	LOOP 10+	LPI2: TB4-4
4	LOOP 10-	LPI2: TB4-6
5	LOOP 11+	LPI2: TB4-7
6	LOOP 11-	LPI2: TB4-9
7	LOOP 12+	LPI2: TB4-10
8	LOOP 12-	LPI2: TB4-12
9	LOOP 13+	LPI2: TB8-1
10	LOOP 13-	LPI2: TB8-3
11	LOOP 14+	LPI2: TB8-4
12	LOOP 14-	LPI2: TB8-6
13	LOOP 15+	LPI2: TB8-7
14	LOOP 15-	LPI2: TB8-9
15	LOOP 16+	LPI2: TB8-10
16	LOOP 16-	LPI2: TB8-12
17	-----	
18	-----	
19	-----	
20	-----	

RACK 1 ONLY

EXPANSION OUTPUTS C/C 33284G84

J16	FUNCTION	TO
17	EVP 5 CALL	MP: B19
18	EVP 6 CALL	MP: B20
19	EVP 3 CALL	MP: B17
20	EVP 4 CALL	MP: B18



DETECTOR PROGRAM

CONT. INPUT	PHASE ASGN.	DET. TYPE
17	3	1
18	3	1
19	7	1
20	7	1
21	4	1
22	4	1
23		
24		
25	8	1
26	8	1
27	8	1
28		
29		
30		
31		
32		

RACK #2

RACK 1 AND 2

DET. RACK POWER 171-1083-515

P1/ DR: J13	P2/ DR: J17	FUNCTION	TO
1		+12 VDC (DET. POWER)	PB-3
2		+24 VDC (BIU POWER)	PB-2
3		LOGIC GROUND	PB-1
4		EARTH GROUND	PB-9
5		"KEY PIN"	
6		LINE FREQUENCY REF.	PB-5
	1	EARTH GROUND	----
	2	AC LINE	PB-12
	3	AC NEUTRAL	PB-10
	4	LOGIC GROUND	----

#12 AT 111TH LANE

SHEET 7 OF 7 | SIZE B

EVP SENSORS

CABLE	DISCR. CHAN.	PHASES	POLE#	TERMINAL TB9 SIGNAL	DC(+)	GND
42	1	6	1	A	26+	GND
24	2	2	3	B	26+	GND
15	3	8	4	C	26+	GND
51	4	4	2	D	26+	GND

EVP VERIFY LIGHTS

CABLE	CONTR CHAN.	PHASES	POLE#	TERM.
41	3	6	1	59
23	4	2	3	65
14	5	8	4	71
50	6	4	2	77

VEHICLE SIGNALS

CABLE	SIGNAL	TERMINAL G←	FLA	Y←	R←	G	Y	R
17,10	2-1,2-3					9	11	13
18	2-2					10	12	14
44,19	4-1,4-3					23	25	27
45	4-2					24	26	28
35,46	6-1,6-3					37	39	41
36	6-2					38	40	42
8,37	8-1,8-3					51	53	55
9	8-2					52	54	56

VEH DETECTORS

CABLE	DET	SLOT	FUNC	RACK	TERMINAL
55	2-1	1	1	1	L1
30	4-1	5	1	1	L5
31	4-2	6	1	1	L6
32	6-1	2	1	1	L2
33	8-1	9	1	1	L9
34	8-2	10	1	1	L10

PED PUSHBUTTONS

CABLE	PPB	TERMINAL	RETURN
52	2-1	1	2
29	2-2	1	2
53	4-1	1	2
54	4-2	1	2
26	6-1	1	2
25	6-2	1	2
28	8-1	1	2
27	8-2	1	2

PED SIGNALS

CABLE	SIGNAL	TERMINAL WK	DW
48	2-1	57	61
22	2-2	58	62
39	4-1	63	67
49	4-2	64	68
12	6-1	69	73
40	6-2	70	74
21	8-1	75	79
13	8-2	76	80

B.I.U

DET	PH	F	DET	DLY	EXT
CH 1	2	1	2-1		
CH 2	6	1	6-1		
CH 3					
CH 4					

DET	PH	F	DET	DLY	EXT
CH 5	4	1	4-1		
CH 6	4	1	4-2		
CH 7					
CH 8					

DET	PH	F	DET	DLY	EXT
CH 9	8	1	8-1		
CH 10	8	1	8-2		
CH 11					
CH 12					

DET	PH	F	DET	DLY	EXT
CH 13					
CH 14					
CH 15					
CH 16					

EVP	PH	POLE #	CONT CH #
CH 1	6	1	3
CH 2	2	3	4
CH 3	8	2	5
CH 4	4	4	6

B.I.U

DET	PH	F	DET	DLY	EXT
CH 17					
CH 18					
CH 19					
CH 20					

DET	PH	F	DET	DLY	EXT
CH 21					
CH 22					
CH 23					
CH 24					

DET	PH	F	DET	DLY	EXT
CH 25					
CH 26					
CH 27					
CH 28					

DET	PH	F	DET	DLY	EXT
CH 29					
CH 30					
CH 31					
CH 32					