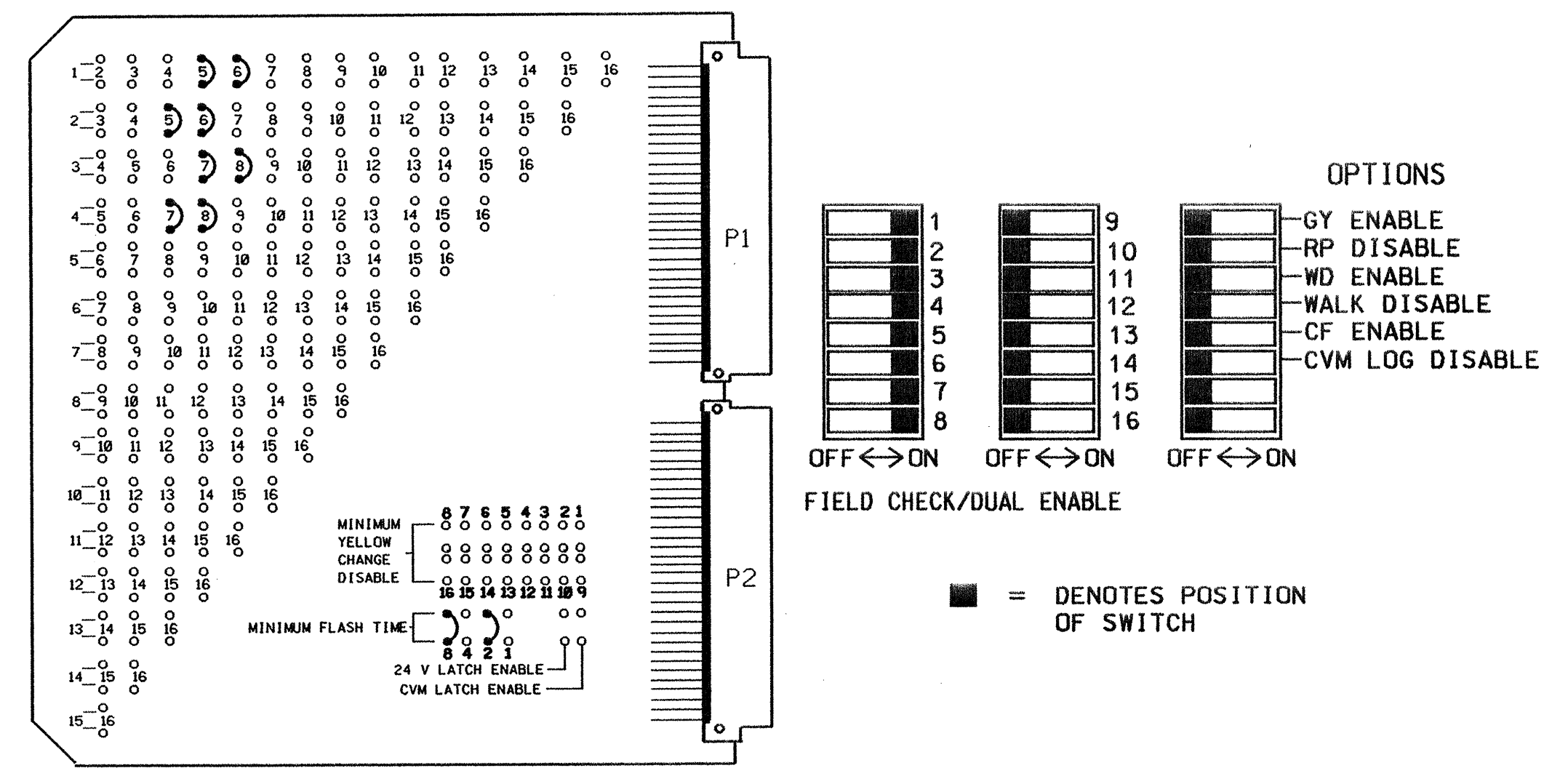


**EDI MODEL MMU-16E  
MALFUNCTION MANAGEMENT UNIT  
PROGRAMMING DETAIL**  
*(program card and set switches as shown below)*



- NOTES**
1. TO PREVENT "FLASH-CONFLICT" PROBLEMS, WIRE ALL UNUSED LOAD SWITCHES TO FLASH RED. VERIFY THAT SIGNAL HEADS FLASH IN ACCORDANCE WITH THE SIGNAL PLANS.
  2. TO PREVENT RED FAILURES ON UNUSED MONITOR CHANNELS, TIE UNUSED LOAD SWITCH RED OUTPUTS 9,10,11, & 12 TO LOAD SWITCH AC+ BY INSERTING A JUMPER PLUG IN THE UNUSED LOAD SWITCH SOCKET FROM PIN 1 (LS AC+) TO PIN 3 (RED OUT). MAKE SURE ALL FLASH TRANSFER RELAYS ARE IN PLACE.
  3. PROGRAM CONTROLLER TO START UP IN PHASES 2 AND 6 GREEN.
  4. SET POWER-UP FLASH TIME TO 10 SECONDS AND IMPLEMENT ON THE MALFUNCTION MANAGEMENT UNIT. SET CONTROLLER POWER-UP FLASH TIME TO 0 SECONDS.
  5. ENABLE SIMULTANEOUS GAP-OUT FEATURE, ON CONTROLLER UNIT, FOR ALL PHASES.
  6. PROGRAM DETECTORS IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS TO ACCOMPLISH THE DETECTION SCHEMES SHOWN ON THE SIGNAL DESIGN PLANS.
  7. PROGRAM DETECTOR CALL DELAY AND EXTENSION TIMING ON THE CONTROLLER, UNLESS OTHERWISE SPECIFIED.
  8. SET ALL DETECTOR CARD UNIT CHANNELS TO "PRESENCE" MODE.
  9. PROGRAM PHASES 4 AND 8, ON CONTROLLER UNIT, FOR DUAL ENTRY.
  10. THE CABINET AND CONTROLLER ARE A PART OF THE GREENVILLE CITY SYSTEM.

**FIELD CONNECTION HOOK-UP CHART**

PHASE	1	2	3	4	5	6	7	8	2 PED	4 PED	6 PED	8 PED
SIGNAL HEAD NO.	61	21,22	61	41,42	21,42	61,62	41	81,82	NU	NU	NU	NU
GREEN		2G		4G		6G		8G				
YELLOW		2Y		4Y		6Y		8Y				
RED	*	2R	*	4R	*	6R	*	8R				
RED ARROW												
YELLOW ARROW	1Y		3Y		5Y		7Y					
GREEN ARROW	1G		3G		5G		7G					

NU = NOT USED  
\* DENOTES INSTALL LOAD RESISTOR. SEE LOAD RESISTOR INSTALLATION DETAIL THIS PAGE.

MMU PROGRAMMING CARD

**DETECTOR RACK SET-UP DETAIL**

INSERT DETECTOR CARDS IN RACK ACCORDING TO THE DETAIL SHOWN BELOW. PARTICULAR DETECTOR CHANNELS WILL CALL PHASES INDICATED.

BIU	CH1	CH1	CH1	CH1	CH1	CH1	CH1	CH1	SLOT	SLOT	SLOT
	L3	L1	L7	L5	L11	L9	L15	L13			
	∅ 3	∅ 1	∅ 4	∅ 2	∅ 7	∅ 5	∅ 8	∅ 6	EMPTY	EMPTY	EMPTY
	CH2	CH2	CH2	CH2	CH2	CH2	CH2	CH2	SLOT	SLOT	SLOT
	L4	L2	L8	L6	L12	L10	L16	L14			
	∅ 8	∅ 6	∅ 2	∅ 4	∅ 4	∅ 2	∅ 6	∅ 8	EMPTY	EMPTY	EMPTY

WIRE LOOPS TO TERMINALS ON LOOP PANEL AS SHOWN IN THE CHART BELOW

ADD JUMPERS FROM:	LOOP NO.	LOOP PANEL TERMINALS
L1A TO L2A, AND L1B TO L2B	1A	L1A, L1B L2A, L2B
L3A TO L4A, AND L3B TO L4B	3A	L3A, L3B L4A, L4B
	2A	L5A, L5B
	4A	L6A, L6B
	4B	L7A, L7B
	2B	L8A, L8B
L9A TO L10A, AND L9B TO L10B	5A	L9A, L9B L10A, L10B
L11A TO L12A, AND L11B TO L12B	7A	L11A, L11B L12A, L12B
	6A	L13A, L13B
	8A	L14A, L14B
	8B	L15A, L15B
	6B	L16A, L16B

**NOTE**  
BE SURE TO PROGRAM DETECTOR TYPES AND TIMERS (EXTEND AND DELAY) AS SHOWN ON THE SIGNAL PLANS.

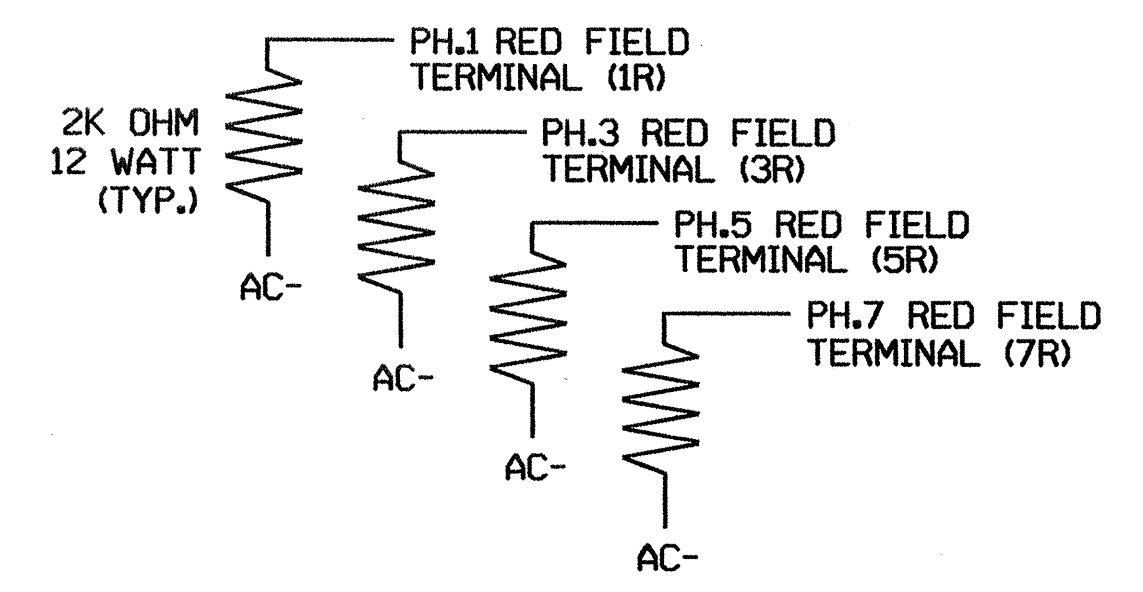
PROGRAM CONTROLLER DETECTORS ACCORDING TO THE SCHEDULE SHOWN IN THE CHART BELOW

CONTROLLER DETECTOR NO.	FUNCTION	TIMING	
		FEATURE	TIME (SEC)
1	∅ 1	DELAY	15
2	∅ 6		
3	∅ 3	DELAY	15
4	∅ 8	DELAY	3
5	∅ 2		
6	∅ 4		
7	∅ 4	DELAY	15
8	∅ 2		
9	∅ 5	DELAY	15
10	∅ 2		
11	∅ 7	DELAY	15
12	∅ 4	DELAY	3
13	∅ 6		
14	∅ 8		
15	∅ 8	DELAY	10
16	∅ 6		

**EQUIPMENT INFORMATION**

CONTROLLER.....ECONOLITE ASC/2S-2100  
 CABINET .....CONTRACTOR SUPPLIED [TS-2]  
 CABINET MOUNT.....BASE  
 LOADBAY POSITIONS.....12  
 LOAD SWITCHES USED.....1,2,3,4,5,6,7,8  
 PHASES USED.....1,2,3,4,5,6,7,8  
 OLA.....NOT USED  
 OLB.....NOT USED  
 OLC.....NOT USED  
 OLD.....NOT USED

**LOAD RESISTOR INSTALLATION DETAIL**



NOTE: THE PURPOSE OF THESE RESISTORS IS TO LOAD THE CHANNEL RED MONITOR INPUT IN ORDER FOR THE MALFUNCTION MANAGEMENT UNIT TO USE THE FULL SIGNAL SEQUENCE MONITORING CAPABILITY ON PHASES THAT DO NOT USE THE RED DISPLAY IN THE FIELD.

**LOAD SWITCH ASSIGNMENT DETAIL**

*(program controller according to schedule in chart below)*

LOAD SWITCH NUMBER	FUNCTION
1	∅ 1
2	∅ 2
3	∅ 3
4	∅ 4
5	∅ 5
6	∅ 6
7	∅ 7
8	∅ 8
9	∅ 2 PED
10	∅ 4 PED
11	∅ 6 PED
12	∅ 8 PED

THIS ELECTRICAL DETAIL IS FOR THE SIGNAL DESIGN: 02-0019  
 DESIGNED: AUGUST 2004  
 SEALED: 8/26/04  
 REVISED:

**SPECIAL BACK-UP PROTECTION NOTES**

1. PROGRAM CONTROLLER TO OMIT PHASE 1 DURING PHASE 2 ON, AND TO OMIT PHASE 3 DURING PHASE 4 ON, AND TO OMIT PHASE 5 DURING PHASE 6 ON, AND TO OMIT PHASE 7 DURING PHASE 8 ON.
2. TO ACCOMPLISH BACK-UP FEATURE DESCRIBED IN NOTE 1, ENABLE 'BACK-UP PROTECTION GROUP 1' AND 'BACK-UP PROTECTION GROUP 2' UNDER CONTROLLER SUBMENU 9: 'OPTION DATA'.
3. IT IS REQUIRED FOR THE CONTROLLER TO BE PROGRAMMED SUCH THAT IF IT IS IN PHASE 2+6, THEN PHASE 1 AND/OR 5 CANNOT BE SERVED NEXT WITHOUT FIRST PROGRESSING THROUGH PHASE 4+8. THIS ADDITIONAL BACK-UP PROTECTION FEATURE SHALL BE IMPLEMENTED IN THE WRITE-PROTECT AREA OF THE CONTROLLER SOFTWARE. FOR DIRECTIONS ON HAVING THIS FEATURE INSTALLED, CONTACT THE NCDOT TRAFFIC ELECTRONICS REPAIR CENTER AT: (919) 233-0884.

SIGNAL UPGRADE - SHEET 1 OF 2

ELECTRICAL AND PROGRAMMING DETAILS FOR:

SR 1707 (CHARLES BLVD.)  
 AT  
 SR 1703 (14TH STREET)

DIVISION 02 PITT COUNTY GREENVILLE

PLAN DATE: AUGUST 2004 REVIEWED BY: R. Hairston

PREPARED BY: WILLIAM HAIRSTON REVIEWED BY:

REVISIONS INIT. DATE

122 N. McDowell St., Raleigh, NC 27603

Seal: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022013 GEORGE C. BROWN

Signature: George C. Brown 9/3/04

SIG. INVENTORY NO. 02-0019