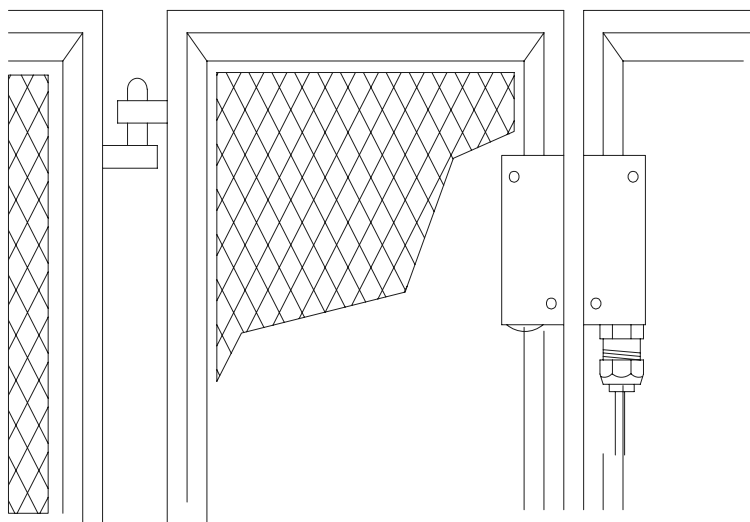


# MECHAN

## ELECTRONIC SAFETY SWITCHES



## INSTALLATION GUIDELINES

CONTROL UNITS - 128 SERIES MK4		PAGE
SINGLE CHANNEL	SSP	2 - 5
TWO TO FOUR CHANNEL	MPX4	2 - 5
FOUR TO EIGHT CHANNEL	MPX8	2 - 5
REMOTE INDICATOR BOARDS		
ONE TO EIGHT CHANNELS	RLY	5
	TFR	5
	LED	5
HEADS		
'F' SERIES HEADS		6 - 7
'B' SERIES HEADS		6 - 7

JANUARY 1995

# MECHAN SAFETY SYSTEM OVERVIEW

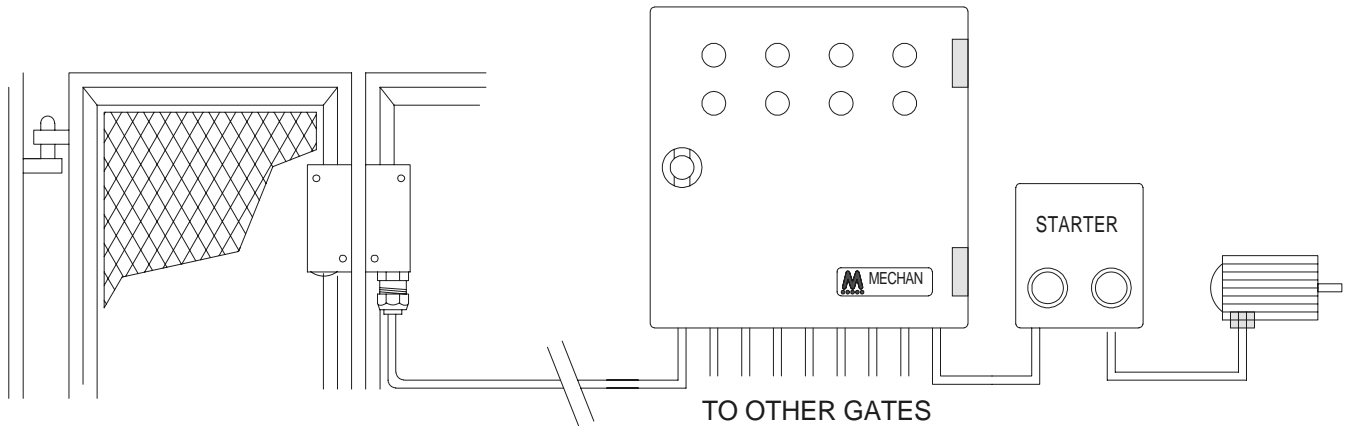


FIG. 1

SEE PAGE 4 FOR DETAILED CIRCUITS

## SPECIFICATION - MPX8 / MK4

SWITCH CHANNEL SELECTION :	4 to 8 CHANNEL OPERATION
SUPPLY VOLTAGES AVAILABLE :	24, 48, 110, 240V AC. 24V DC TOLERANCE +20% -10% MAX.
POWER CONSUMPTION :	6VA
MAXIMUM SWITCHING CAPACITY :	2A 240VAC / 2A 30VDC. RES.
DIMENSIONS	
BOARD ONLY :	136MM X 155MM X 40MM(H)
ON CHASSIS PLATE :	223MM X 148MM X 60MM(H)
OPERATING TEMP. :	0C TO 45C
STORAGE TEMP. :	-20C TO +60C
ON BOARD INDICATION :	POWER ON LED GUARDS CLOSED LED PROVING / RESET LED
OPTIONAL REMOTE INDICATOR BOARDS :	L8/RLY - 8 X VOLT FREE CONTACTS N/O (125V 0.5A RES.) PLUS 8 X LEDS L8/TFR - DRIVERS FOR 8 X 24V / 0.05A LAMPS OR 24V LEDS L8/LED - 8 X ON BOARD LEDS

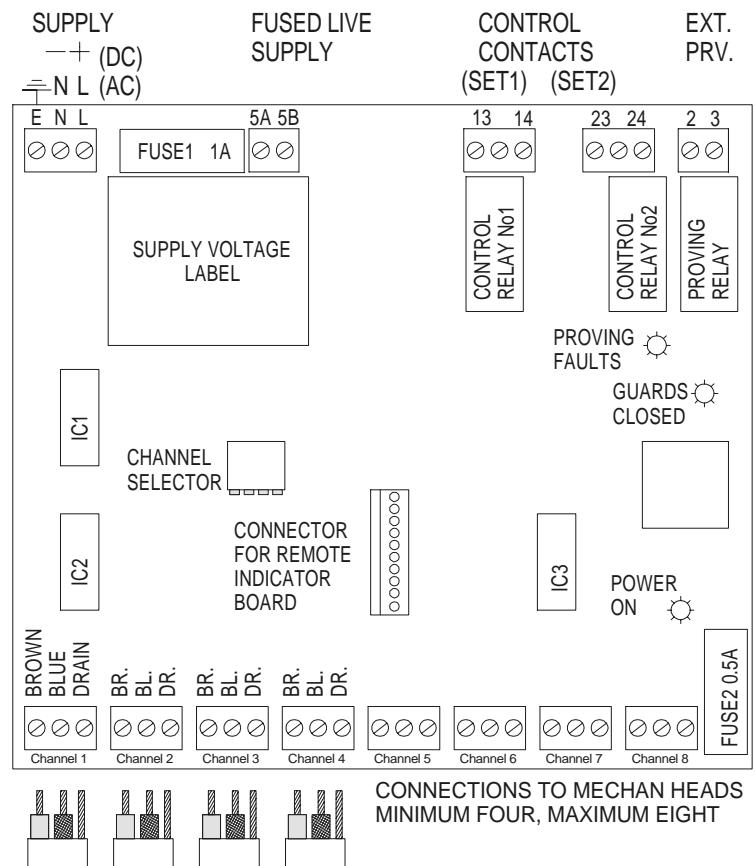


FIG. 2

CHANNEL SELECTION CHART	
ACTIVE CHANNELS REQUIRED	SWITCH SETTING
1 THROUGH 4	
1 THROUGH 5	
1 THROUGH 6	
1 THROUGH 7	
1 THROUGH 8	

IMPORTANT THE ABOVE SWITCH SETTINGS SHOULD BE STRICTLY ADHERED TO.

# SPECIFICATIONS - MPX4 / MK4

SWITCH CHANNEL SELECTION :	2, 3 OR 4 CHANNEL OPERATION
SUPPLY VOLTAGES :	24, 48, 110, 240VAC 24VDC TOLERANCE -20% +10%
POWER CONSUMPTION :	6VA
MAX. SWITCHING CAPACITY :	2A 240VAC / 2A 30VDC RES.
OPERATING TEMP. :	0C TO 45 C
STORAGE TEMP. :	-20C TO +60 C
DIMENSIONS :	
BOARD ONLY :	136MM X 115MM X 40MM(H)
ON CHASSIS PLATE :	148MM X 148MM X 60MM(H)
ON BOARD INDICATION :	POWER ON LED GUARDS CLOSED LED PROVING / RESET LED
OPTIONAL REMOTE INDICATOR BOARDS :	L4/RLY - 4 X VOLT FREE CONTACTS N/O (125V 0.5A RES.) PLUS 4 X LEDS L4/TFR - DRIVERS FOR 4 X 24V / 0.05A LAMPS OR 24V LEDS L4/LED - 4 X ON BOARD LEDS

CHANNEL SELECTION CHART	
ACTIVE CHANNELS	SWITCH SETTING
1 THROUGH 2	
1 THROUGH 3	
1 THROUGH 4	

IMPORTANT  
THE ABOVE SWITCH SETTINGS  
SHOULD BE STRICTLY ADHERED TO .

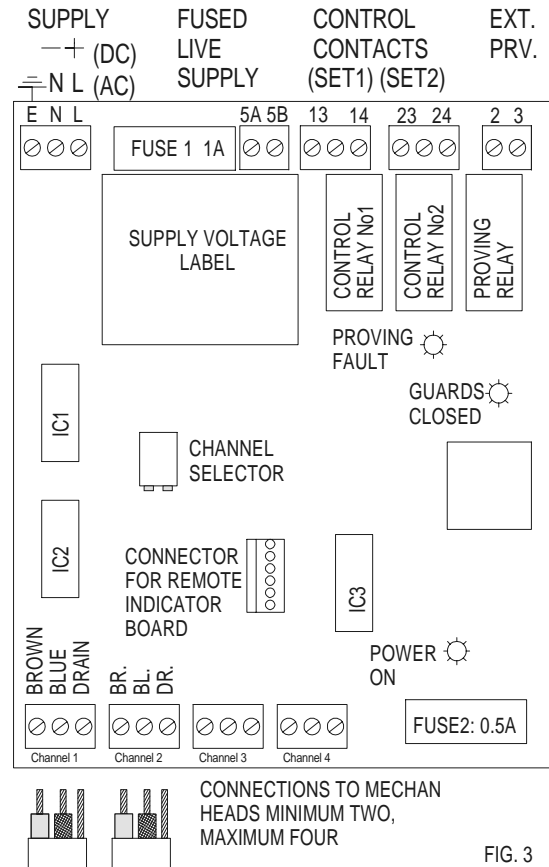


FIG. 3

# SPECIFICATIONS - SSP / MK4

FUSED LIVE SUPPLY	CONTROL CONTACTS (SET1) (SET2)	EXT. PRV.
CHANNEL SELECTION :	SINGLE CHANNEL OPERATION ONLY	
SUPPLY VOLTAGES AVAILABLE :	24, 48, 110, 240VAC 24VDC TOLERANCE + 20% -10% MAX.	
POWER CONSUMPTION :	6VA	
MAX. SWITCHING CAPACITY :	2A 240VAC / 2A 30VDC RES.	
OPERATING TEMP. :	0C TO 45C	
STORAGE TEMP. :	-20C TO + 60C	
DIMENSIONS :		
BOARD ONLY :	137MM X 71MM X 40MM(H)	
ON CHASSIS PLATE :	148MM X 98MM X 50MM(H)	
ON BOARD INDICATION :	POWER ON LED GUARDS CLOSED LED PROVING / RESET LED	
OPTIONAL REMOTE INDICATOR BOARDS :	L1/RLY - VOLT FREE CONTACT N/O (125V 0.5A RES.) PLUS ON BOARD LED	
(SEE PAGE 5 FOR DETAILS)	L1/TFR - DRIVER FOR 24V / 0.05A LAMP OR 24V LED	
	L1/LED - ON BOARD LED	

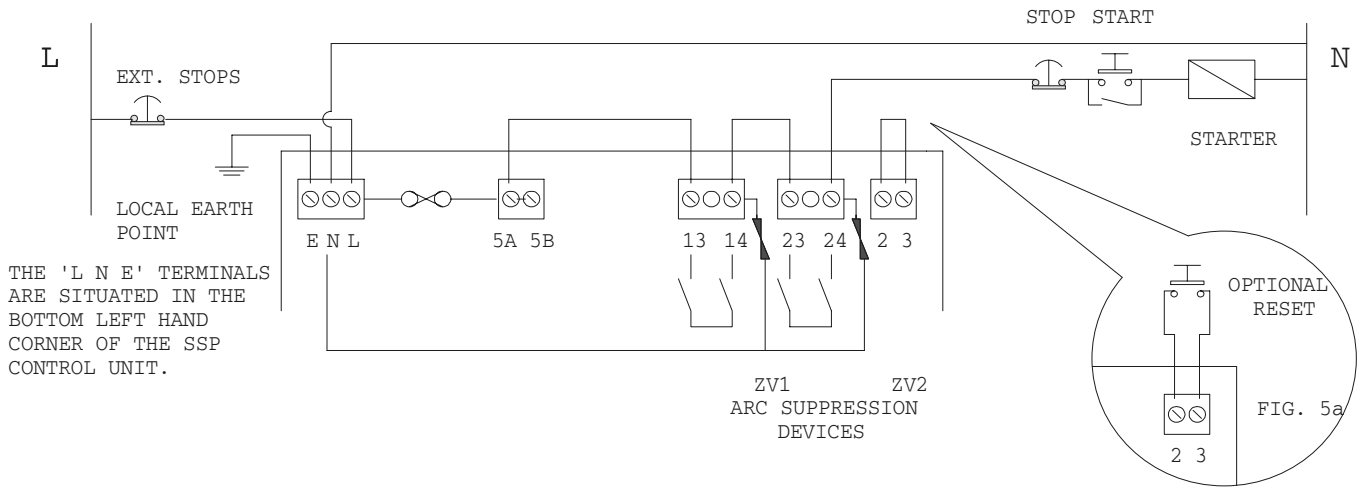
FIG. 4

# INSTALLATION GUIDELINES FOR 'MK4' CONTROL UNITS

## TYPES :- SSP / MPX4 / MPX8

### STANDARD INSTALLATION CONFIGURATION

FIG. 5



THE MECHAN RELAY CONTACTS ARE MONITORED EVERY TIME A GUARD IS CLOSED OR AN EMERGENCY STOP BUTTON IS RESET. IN THE EVENT OF A FAULTY (WELDED) CONTACT, OR EVEN A TOTAL RELAY FAILURE, FULL SYSTEM SAFETY IS MAINTAINED AND A RESTART IS PREVENTED. THE PROVING LED INDICATES A FAULT CONDITION .

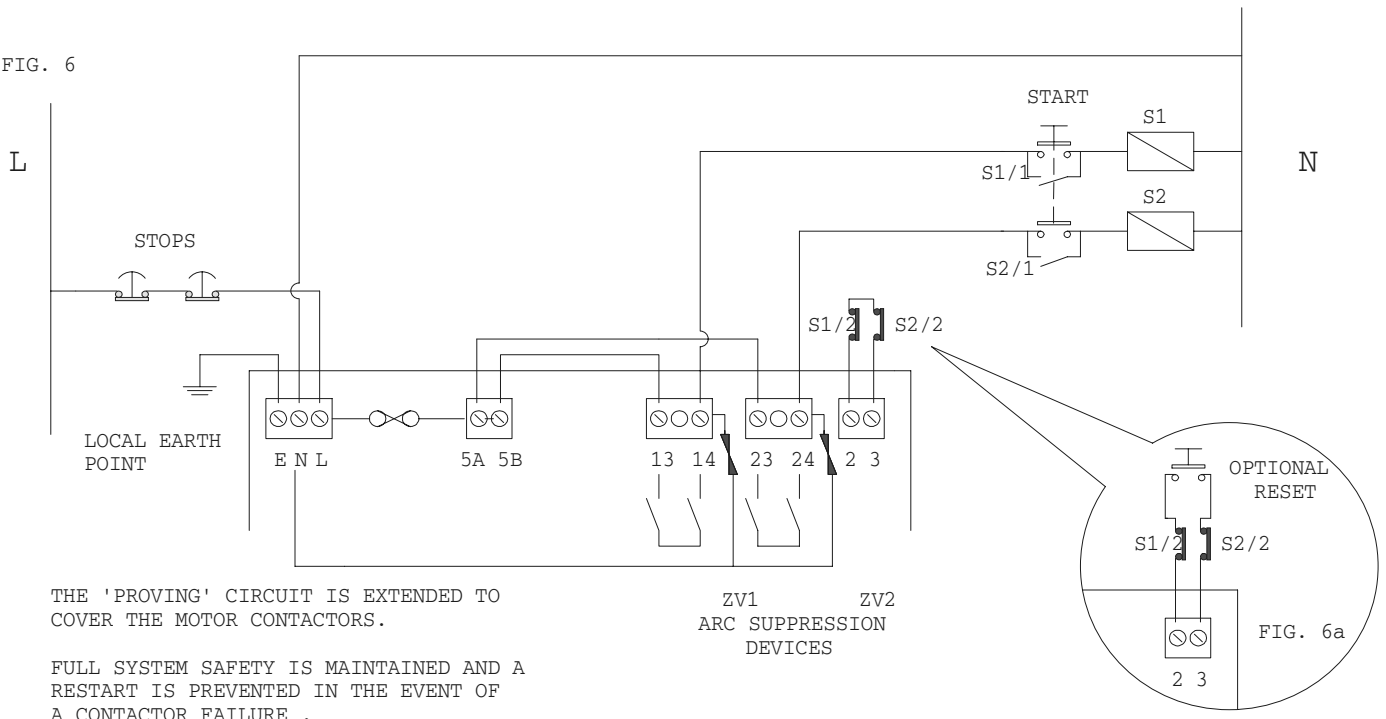
#### NOTES -

THE EARTH CONNECTION SHOULD BE 'CLEAN' AND LOCAL TO THE CONTROL BOARD

THE ON BOARD ARC SUPPRESSION DEVICES ARE ONLY EFFECTIVE WHEN THE RECOMMENDED CIRCUITS ARE USED. OTHER CONFIGURATIONS MAY REQUIRE EXTERNAL SUPPRESSION DEVICES.

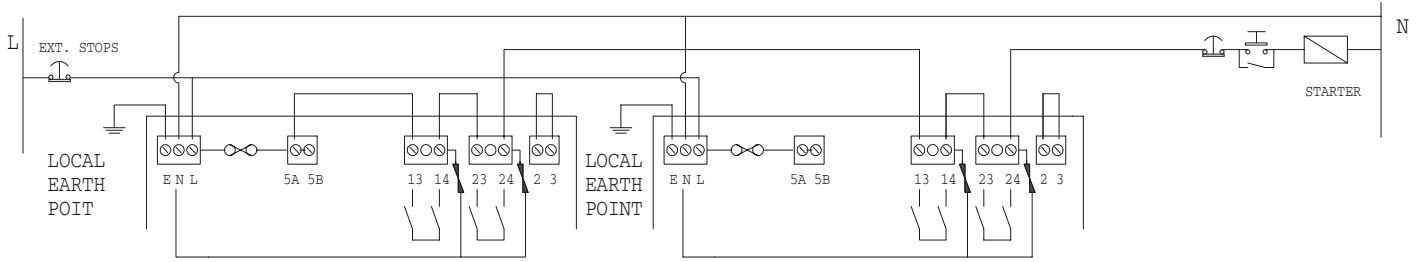
### DUAL AND CROSS MONITORED SYSTEM

FIG. 6



## MULTIPLE SYSTEMS

FIG. 7



ANY COMBINATION OF MPX8, MPX4 OR SSP CAN BE USED TO MAKE UP THE NUMBER OF CHANNELS REQUIRED .  
ONLY ONE LINK, BETWEEN 5 AND 13, IS REQUIRED ON THE FIRST CONTROL UNIT.

MECHAN SAFETY EQUIPMENT SHOULD BE INSTALLED BY QUALIFIED PERSONNEL .  
ALL FUNCTIONS SHOULD BE TESTED AFTER INSTALLATION TO ENSURE CORRECT OPERATION .

## INDICATOR BOARDS

### RELAY DRIVER BOARD

(FOUR CHANNEL L4/RLY SHOWN)

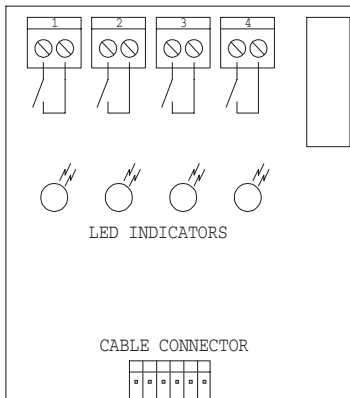


FIG. 8

FUNCTION : 1 X 'VOLT FREE' CONTACT  
AND 1 X LED FOR EACH  
CHANNEL

MAXIMUM 0.5A / 125VAC  
CONTACT 1A / 30VDC  
RATING :

DIMENSIONS : L1 = 56 (H) X 28MM  
L4 = 70 (H) X 65MM  
L8 = 70 (H) X 115MM

PART No. : L1 / RLY (FOR SSP)  
L4 / RLY (FOR MPX4)  
L8 / RLY (FOR MPX8)

### LAMP / LED DRIVER BOARD

(FOUR CHANNEL L4/TFR SHOWN)

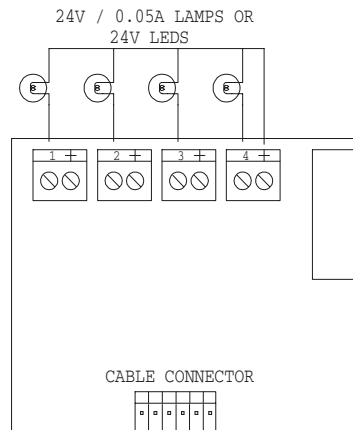


FIG. 9

FUNCTION : 1 X 24V OUTPUT FOR  
EACH CHANNEL

DIMENSIONS : L1 = 54 (H) X 28MM  
L4 = 54 (H) X 65MM  
L8 = 54 (H) X 115MM

PART No. : L1 / TFR (FOR SSP)  
L4 / TFR (FOR MPX4)  
L8 / TFR (FOR MPX8)

### LED DRIVER BOARD

(FOUR CHANNEL L4/LED SHOWN)

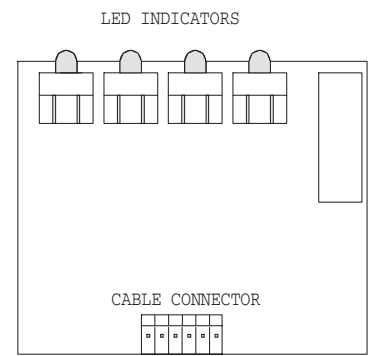


FIG. 10

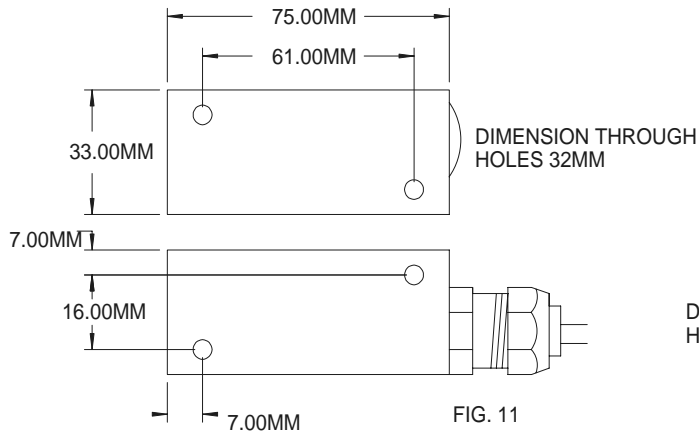
FUNCTION : 1 X LED FOR EACH  
CHANNEL

DIMENSIONS : L1 = 54 (H) X 28MM  
L4 = 54 (H) X 65MM  
L8 = 54 (H) X 115MM

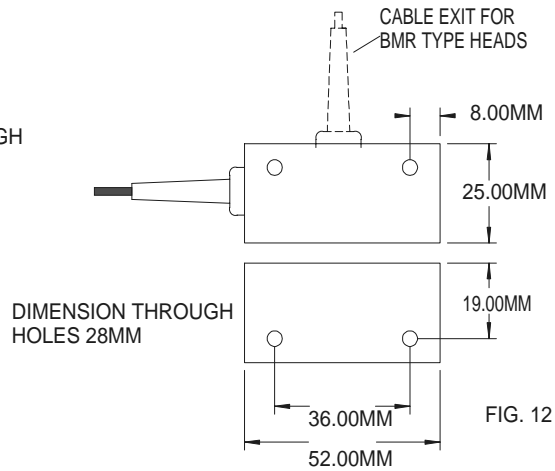
PART No. : L1 / LED (FOR SSP)  
L4 / LED (FOR MPX4)  
L8 / LED (FOR MPX8)

# SAFETY SWITCH HEADS SPECIFICATIONS

## F - TYPE



## B - TYPE



MATERIAL : ABS CASE (BLUE) RESIN FILLED  
 DIMENSIONS : 75 X 33 X 32MM  
 FIXING : 4 X 6MM DIAMETER HOLES  
 CABLE TYPE : TWISTED PAIR, FOIL SHIELD WITH DRAIN  
 CABLE LENGTH : 5M, 10M, 15M, LONGER TO ORDER  
 CABLE GLANDS : FMA - NICKEL PLATED BRASS ADAPTOR FOR 16MM FLEXIBLE CONDUIT  
 FMG - NYLON CORD GRIP 4 - 11MM  
 FMT - 20MM BRASS MALE THREAD

MATERIAL : ABS CASE (GREY) RESIN FILLED  
 DIMENSIONS : 52 X 25 X 28MM  
 FIXING : 4 X 4MM DIAMETER HOLES  
 CABLE TYPE : TWISTED PAIR, FOIL SHIELD WITH DRAIN  
 CABLE LENGTH : 5M, 10M, 15M, LONGER TO ORDER  
 CABLE GLANDS : BMG - CRITCHLEY 16MM GLAND  
 BMS - TAPERED RUBBER SLEEVE SIDE EXIT  
 BMR - TAPERED RUBBER SLEEVE REAR EXIT

NOTE : WITH THE 'B' SERIES HEADS USE FIXING SCREWS SUPPLIED

## OPERATING SPECIFICATIONS

SWITCHING DISTANCE : 8 to 10MM  
 OPTIMUM GAP : 2MM  
 LATERAL TOLERANCE :  $\pm 8$ MM  
 OPERATING TEMPERATURE :  $-20^{\circ}\text{C}$  to  $50^{\circ}\text{C}$  (SHORT TERM  $120^{\circ}\text{C}$ , ie HOT HOISING IS ACCEPTABLE)  
 MAXIMUM CABLE LENGTH : 100M WITH SLIGHT REDUCTION IN SWITCHING DISTANCE  
 RATING : IP67 IMMERSIBLE

## HEAD INSTALLATION GUIDELINES

### HEAD MOUNTING

MOUNT THE HEADS WITH A GAP OF 2-3MM BETWEEN THE SENSITIVE FACES WHEN THE GUARD IS CLOSED (see FIG.13).

DO NOT ENLARGE FIXING HOLES OR OVER-TIGHTEN THE FIXING SCREWS.

THE HEADS MAY APPROACH EACH OTHER FROM ANY DIRECTION AND CAN THEREFORE BE USED ON HINGED, SLIDING OR REMOVABLE GUARDS.

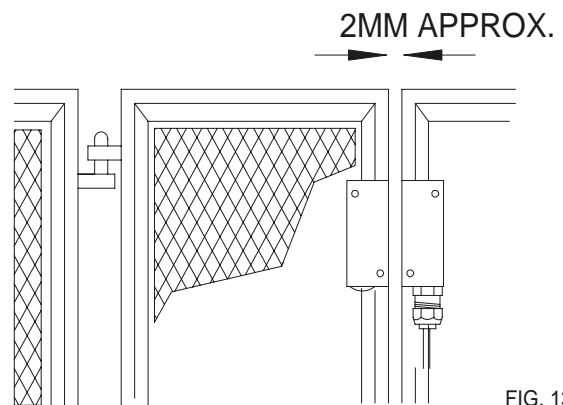


FIG. 13

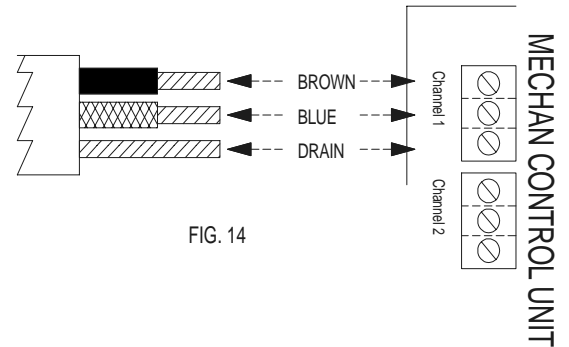
## CONNECTIONS TO CONTROL UNIT

RUN THE CABLE BACK TO THE CONTROL UNIT AND TERMINATE INTO THE APPROPRIATE INPUT BLOCK, FOLLOWING THE COLOUR CODING OF THE WIRES TO THE BLOCK (see FIG. 14) .

THE HEAD CABLE MAY BE EXTENDED IF REQUIRED USING A SIMILAR TYPE CABLE (BELDEN REF. 8761 OR EQUIVALENT). RUNS OF UP TO 100 MTRS WILL NOT SIGNIFICANTLY AFFECT PERFORMANCE . MULTI WAY VERSIONS OF INDIVIDUALLY SCREENED TWISTED PAIR CABLE MAY BE USED TO RUN A NUMBER OF HEADS BACK TO THE CONTROL UNIT.

WHERE HEAD CABLES ARE EXTENDED, JOINTS SHOULD BE MOISTURE PROOF AND NOT EARTHED.

TREAT THE HEAD CABLES AS INSTRUMENT CABLES AND KEEP SEPARATE FROM POWER CABLES.  
150MM IS NORMALLY ADEQUATE SPACING.

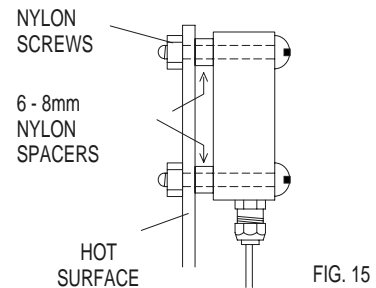


## TEMPERATURE

MECHAN HEADS WILL WORK IN THE TEMPERATURE RANGE -20 TO +50C  
HIGHER TEMPERATURES THAN THIS MAY RESULT IN REDUCED LIFE .

THE HEADS MAY BE MOUNTED ON A HOT SURFACE (UP TO 100C)  
USING NYLON SPACERS AND NYLON FIXING SCREWS TO ACT AS  
A HEAT BUFFER (see FIG. 15) .

MAXIMUM CABLE TEMPERATURE 60C .



## NOTES :

## ORDERING INFORMATION

CONTROL UNITS No. of CHANNELS	PARTNO.
SINGLE CHANNEL	SSP
TWO to FOUR CHANNELS	MPX4
FOUR to EIGHT CHANNELS	MPX8
OPTIONS	
LARGER SYSTEMS AVAILABLE E.G. FOR A 15 CHANNEL SAFETY SWITCH ORDER : MPX15, SUPPLY VOLTAGE, ENCLOSURE (IF REQUIRED), INDICATION AND TYPE OF HEADS	
SUPPLY VOLTAGES: 24VDC / 24, 48, 110, 240VAC	
ENCLOSURES STEEL OR STAINLESS STEEL TO IP65 SPEC.	
INDICATION 24V LAMPS OR 10MM LEDS MOUNTED IN ENCLOSURE LID	

INDICATOR BOARDS FUNCTION	PARTNO.		
	SSP	MPX4	MPX8
RELAY - VOLT FREE N/O CONTACTS (125V 0.5A) ON EACH CHANNEL PLUS ON BOARD LEDS	L1/RLY	L4/RLY	L8/RLY
LAMPS - OUTPUT FOR 24V TFR LAMPS OR LEDS	L1/TFR	L4/TFR	L8/TFR
LED'S - ON BOARD 5MM LEDS	L1/LED	L4/LED	L8/LED

SAFETY SWITCH HEADS	PARTNO.
F - SERIES (BLUE)	
16MM FLEXIBLE CONDUIT GLAND	FMA *
NYLON CORD GRIP (4 - 11MM)	FMG *
BRASS MALE 20MM THREAD	FMT *
B - SERIES (GREY)	
CRITCHLEY 16MM GLAND	BMC *
TAPERED RUBBER SLEEVE SIDE EXIT	BMS *
TAPERED RUBBER SLEEVE REAR EXIT	BMR *
* = ADD CABLE LENGTH REQUIRED TO PART NUMBER (e.g. FMA10 , BMS5M) STANDARD CABLE LENGTHS ARE 5, 10 AND 15 METRES. LONGER CAN BE MADE TO ORDER	

OTHER MECHAN SAFETY PRODUCTS	PARTNO.
ONE TO FOUR CHANNEL CONTROL UNIT IN DIN RAIL MOUNTING ENCLOSURE (SUPPLY VOLTAGES AS MPX)	MPX4 DIN
SINGLE CHANNEL ADDITION TO ABOVE	DS1
LIMITED INCH UNIT - DIN MOUNTING	DL1
MPX BUFFER RELAY - DIN MOUNTING	DBR3
ELECTRONIC LOCKING SYSTEM	MLU1



MECHAN CONTROLS LIMITED