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TECHNICAL MANUAL FOR THE ILE DDA INTERFACE SYSTEM PRODUCTS

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Issue details

- 1) Initial Launch.
- 2) Updated Information.

WE RESERVE THE RIGHT TO ALTER WITHOUT GIVING PRIOR NOTICE TECHNICAL
DATA DIMENSIONS AND WEIGHTS DESCRIBED IN THIS MANUAL.

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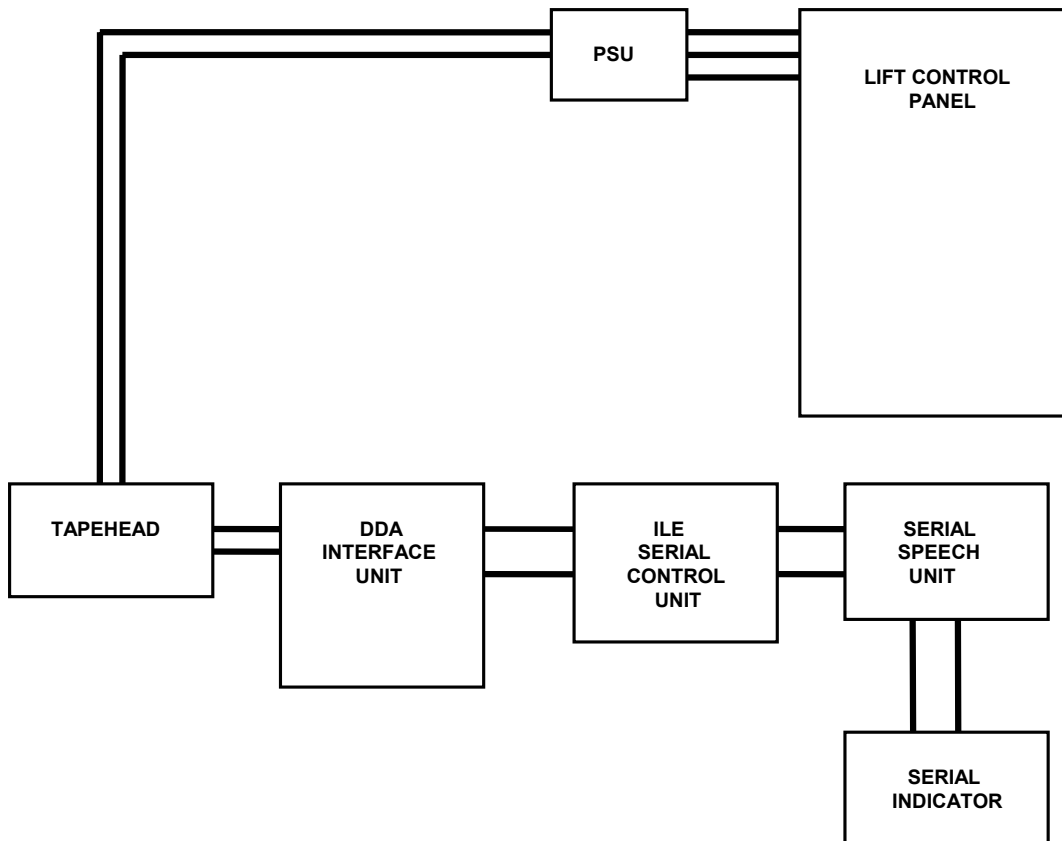
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1)

DISABILITY DISCRIMINATION ACT

As part of the Lift compliance (EN81-70) to the DDA act a lift should be fitted with Position Indication both visual and audible. We at ILE recognize that to fit new indicators and speech synthesizers to an existing lift installation would normally require modifications to the existing control system. These modifications require a high degree of technical knowledge to complete, and in some cases would not actually be possible. For example, a lot of modern package equipment utilizes serial communication (2/4 wire) for the wiring of pushes and indicators, it is therefore not possible to simply pick up supply's for new equipment.

Our solution has been to develop a package that allows the fitting of these indicators and speech synthesizer without the need to modify the existing control circuits. This is achieved primarily by the fitting of an ILE Tapehead detector connected in conjunction with a relay interface system to give the appropriate signals. The only connections that are required from the existing controller are a 110 / 240VAC supply.



2)

LIST OF EQUIPMENT

- 1) Omron PSU
- 2) ILE DDA Interface Unit (160103)
- 3) ILE Tapehead Unit (And associated material)
- 4) ILE Serial Control Unit.
- 5) Cable Terminators (Can Bus)
- 6) Digital Indicators (if fitted)
- 7) Speech Synthesiser (if fitted)
- 8) Lap top / P.C. for programming the control unit (if desired)
- 9) 1 Serial Communication Cable (RS232 (none crossed Male/Female) link between control unit & lap top).

3) **ILE DDA Interface Unit.**

The system allows the fitting of a Speech Synthesizer and Digital Indicators without the need to modify the existing control system and allow usage with any manufacturer's equipment.

The only interconnection that is required would be a supply source from the existing controller. To achieve this we have incorporated within the interface an Omron 24VDC which can operate from a 110 / 240VAC supply to power the Interface, Serial Control Unit, Serial Speech Unit, and Serial Indicators.

Note; It is not acceptable to power auxiliary equipment from a source other than the controller (i.e. Car light). When the lift is isolated at the mains all lift equipment must be isolated.

The ILE DDA Interface System operates by receiving 8 outputs from an ILE Tapehead. Four of the outputs from the Tapehead are used to give a Binary Output when the lift is at a particular floor. The Interface system interprets this Binary output to give a Transistor output, which then activates the appropriate Speech message / Indicator.

The other three outputs from the Tapehead are used as follows;

Two of the outputs allow the Interface system to interpret which direction the lift is travelling, in order to initiate Up /Down Arrows, and direction announcement.

The remaining Output which is the trigger, controls the sequence in which the Speech Unit / Indicators operate in relation to the lifts position.

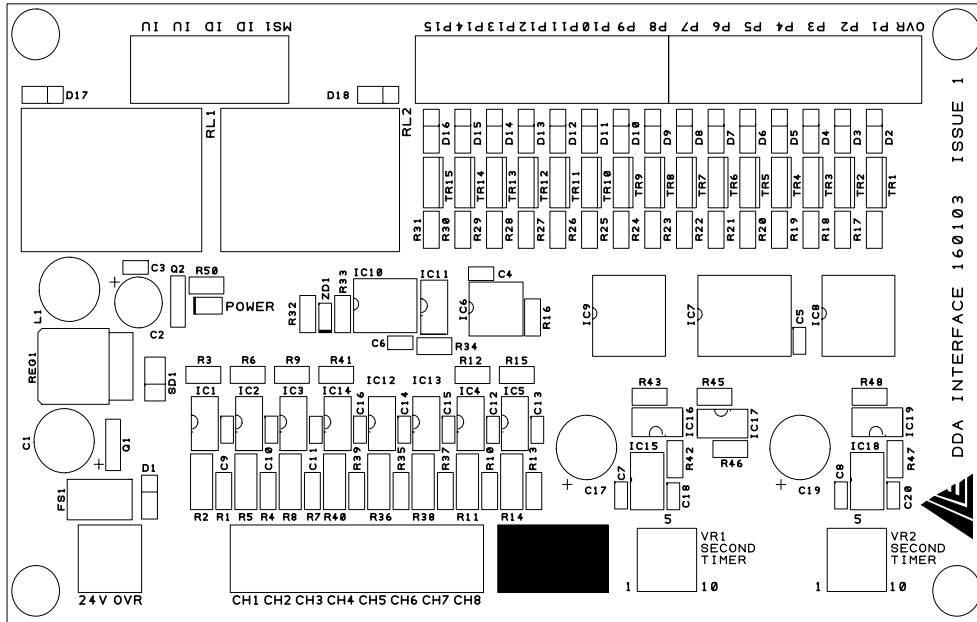
Tapehead Outputs:

CH1	BINARY INPUT 1
CH2	BINARY INPUT 2
CH3	BINARY INPUT 3
CH4	TRIGGER
CH5	GOING UP INPUT
CH6	GOING DOWN INPUT
CH7	ENABLE BINARY INPUT 4
CH8	DISABLE BINARY INPUT 4

Binary input 4 (CH7 / CH8) is only required with lifts of more than 7 floors.

3.1) DDA Interface board layout / connections

The DDA Interface inputs /outputs are as follows:



+24V	24V AC/DC SUPPLY
OVR	SUPPLY COMMON
CH1	BINARY INPUT 1
CH2	BINARY INPUT 2
CH3	BINARY INPUT 4
CH4	TRIGGER INPUT
CH5	UP DIRECTION INPUT
CH6	DOWN DIRECTION INPUT
CH7	BINARY INPUT 8 ENABLE
CH8	BINARY INPUT 8 DISABLE
OVR	COMMON FOR ALL OUTPUTS
P1 – P15	POSITION OUTPUTS 1 TO 15
ID	GOING DOWN OUTPUT (Indicator / Message)
IU	GOING UP OUTPUT (Indicator / Message)

3.2)

DDA Interface Timers

The DDA interface system uses two on board user adjustable timers, which control position and message announcements. This feature has been added to allow adjustment for different lift speeds, and door dwell times etc.

For instance a time delay can be set to allow the following:

“Floor Position” message to be announced before the “Doors opening” message at floor level.

“Floor Position” message to be announced after the “Doors opening” message at floor level.

Alternatively the timers can be set to allow message announcements while the lift is slowing / levelling into floor.

VR1 1 to 10 Second timer, controls the floor announcement

VR2 1 to 10 Second timer, controls the message announcement output.

3.3) DDA Interface Connection Diagrams

The following diagram shows the typical wiring layout of the DDA interface unit,

Including:

OMRON PSU

ILE 8 CHANNEL TAPEHEAD

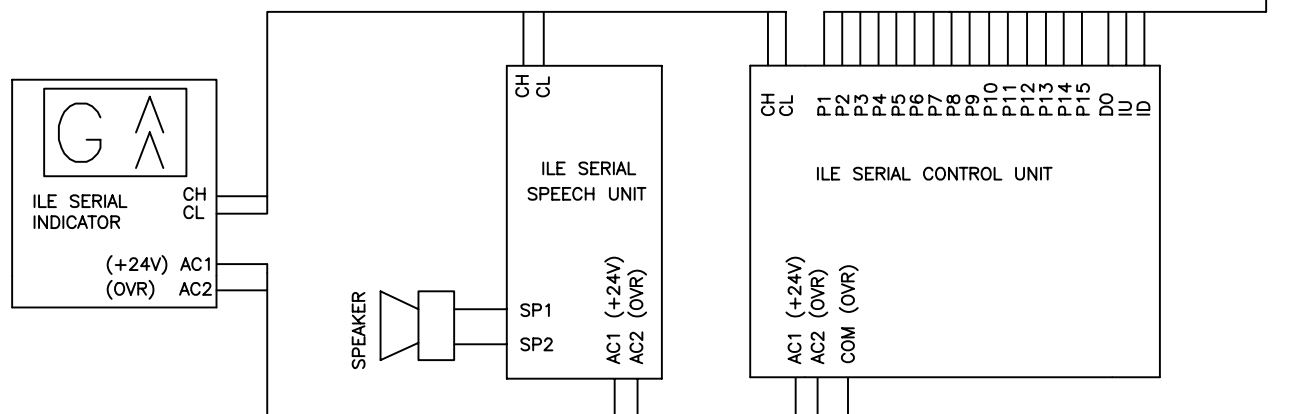
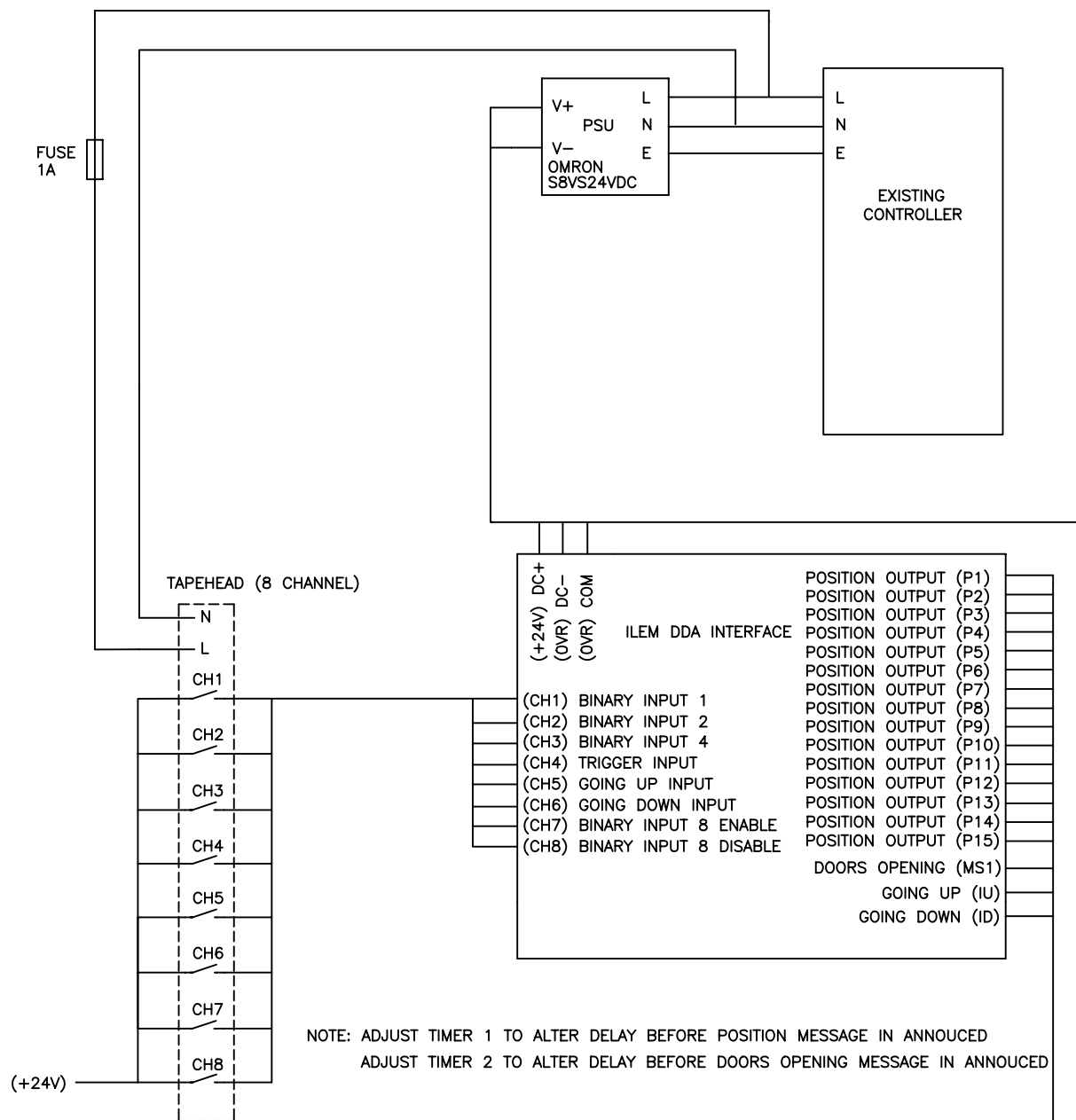
ILE DDA INTERFACE

ILE SERIAL CONTROL UNIT

ILE SERIAL SPEECH UNIT

ILE SERIAL INDICATOR

For a lift system of 15 floors.

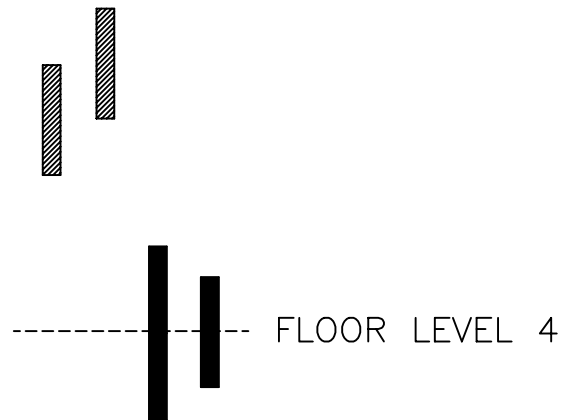
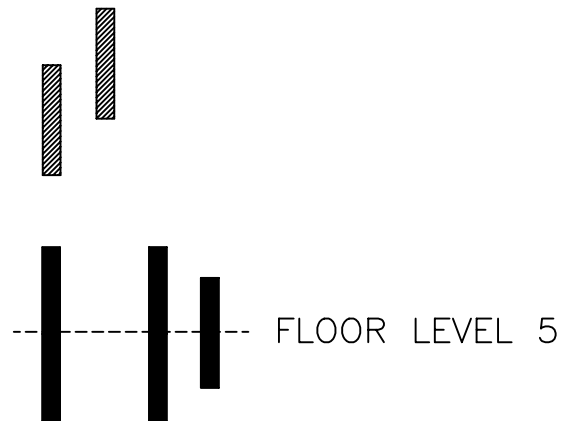
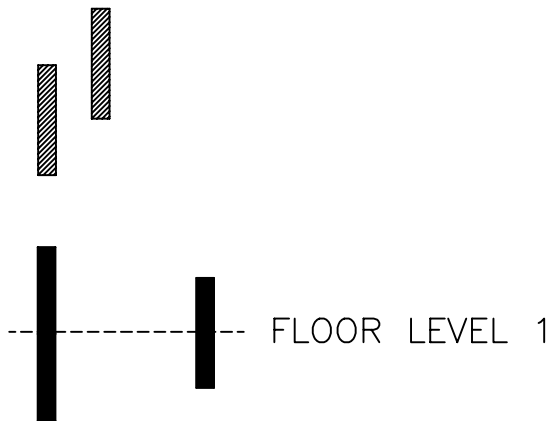
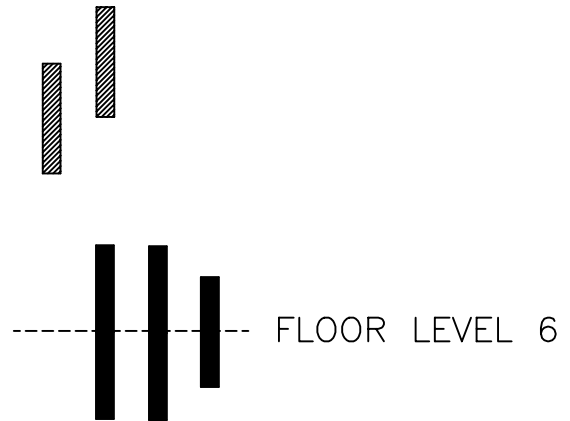
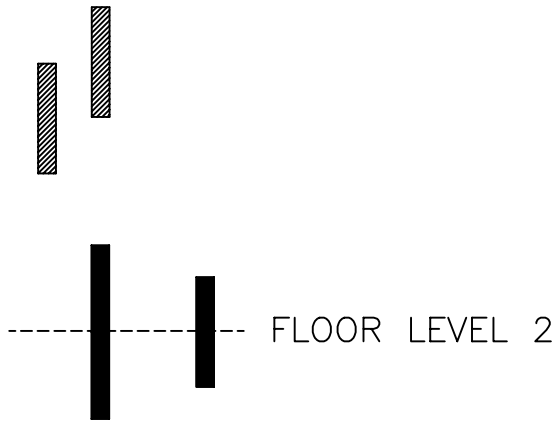
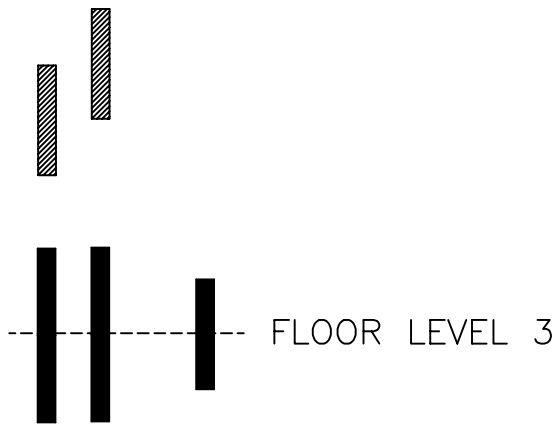


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REVISION	A	DATE	CONTRACT No		INTERNATIONAL LIFT EQUIPMENT LIMITED. ILEM DRAWING No. DDA1
	B	DATE			
	C	DATE			

3.4)

DDA Interface Magnet Layout

The following diagrams show the floor magnet layout required for the DDA interface unit to operate via the 8 Channel Tapehead unit. The maximum number of 15 floors are shown.



MAGNET INFORMATION

(CH5) 80mm (CH6) 80mm (CH7) 80mm (CH8) 80mm	NORTH(BLUE) MAGNETS
(CH1) 160mm (CH2) 160mm (CH3) 160mm (CH4) 80mm	SOUTH(RED) MAGNETS

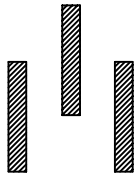
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FLOOR LEVEL 11



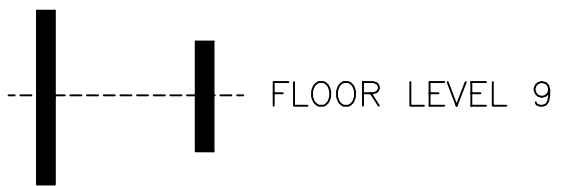
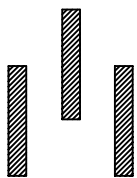
FLOOR LEVEL 15



FLOOR LEVEL 10



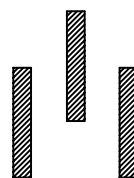
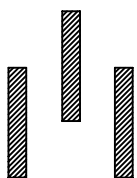
FLOOR LEVEL 14



FLOOR LEVEL 9



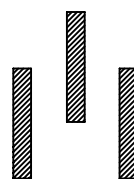
FLOOR LEVEL 13




FLOOR LEVEL 8



FLOOR LEVEL 12



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	B	DATE					
	C	DATE					

3.5)

DDA Interface Technical Data

Power supply:

24V A.C / D.C (D.C from Omron PSU)

Power supply peak current

150mA @24V D.C

Power supply standby current

75mA @24V D.C

Interface Inputs

CH1 / CH8 Opto isolated inputs 10 to 30V D.C

Interface Outputs

Solid state NPN 4A power transistors for position outputs

IU / ID direction relays 5A @30V D.C

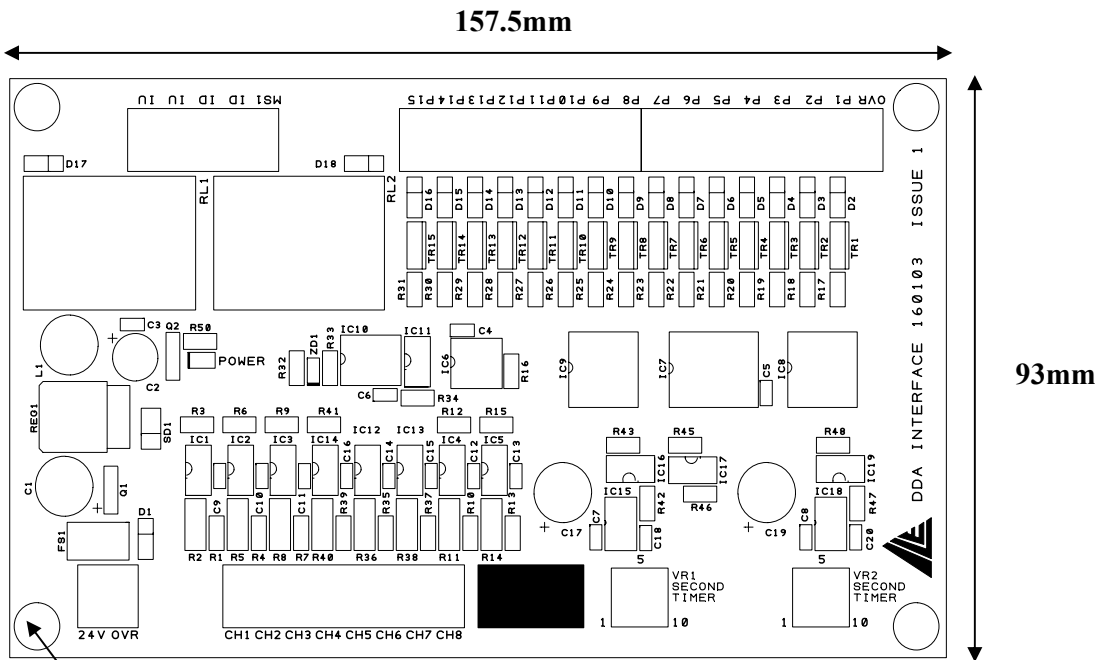
Interface timers

VR1 / VR2 1 to 10 Second timers.

3.6)

DDA Interface Dimensions

The DDA Interface unit can be mounted in two ways, either using the web housing which fixes to a din rail, or utilising the 4 through hole fixings located in each corner of the board.



Through hole fixings

4) **ILE 8 Channel Tapehead Unit**

The ILE Tapehead is designed to pick up magnetic signals from strip magnets mounted at relevant positions on a 80mm wide stainless steel tape. The tape is hung vertically and securely fixed and tensioned at the top and bottom of the lift shaft.

The Tapehead detector uses Hall Effect transistors either North or South seeking polarity which sense the relevant magnet and operate p.c.b mounted relays. The 4 North seeking sensors are horizontally displaced in a line with the 4 South seeking sensors mounted directly below with approximately a 25mm displacement between North and South.

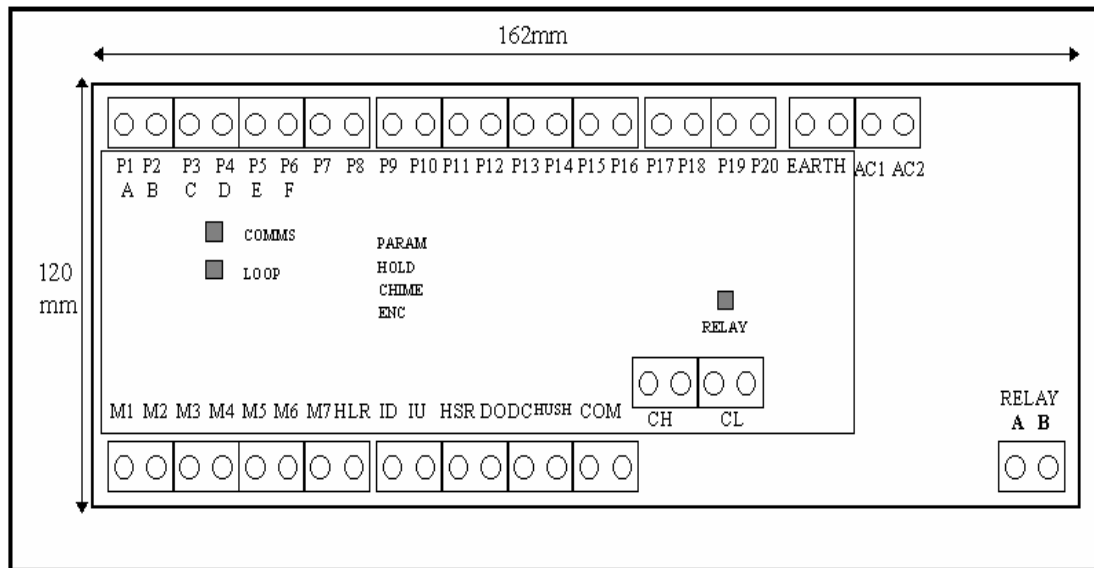
The relays have volt free normally open or normally closed contacts, which are used to transfer information to the **DDA Interface Unit**.

The magnets are arranged in a binary configuration. Therefore from 4 sensors it is possible to read 15 floors.

Channel	1	2	3	7
Level				
15	1	1	1	1
14	0	1	1	1
13	1	0	1	1
12	0	0	1	1
11	1	1	0	1
10	0	1	0	1
9	1	0	0	1
8	0	0	0	1
7	1	1	1	0
6	0	1	1	0
5	1	0	1	0
4	0	0	1	0
3	1	1	0	0
2	0	1	0	0
1	1	0	0	0
BINARY	1	2	4	8

5) ILE Serial Control Unit Installation Diagrams

Power supply & input voltage range	=	12 - 24V A.C. or D.C.
Power Supply peak current	=	250mA
Relay "N/O volt free contact" specification	=	5A@250V A.C.



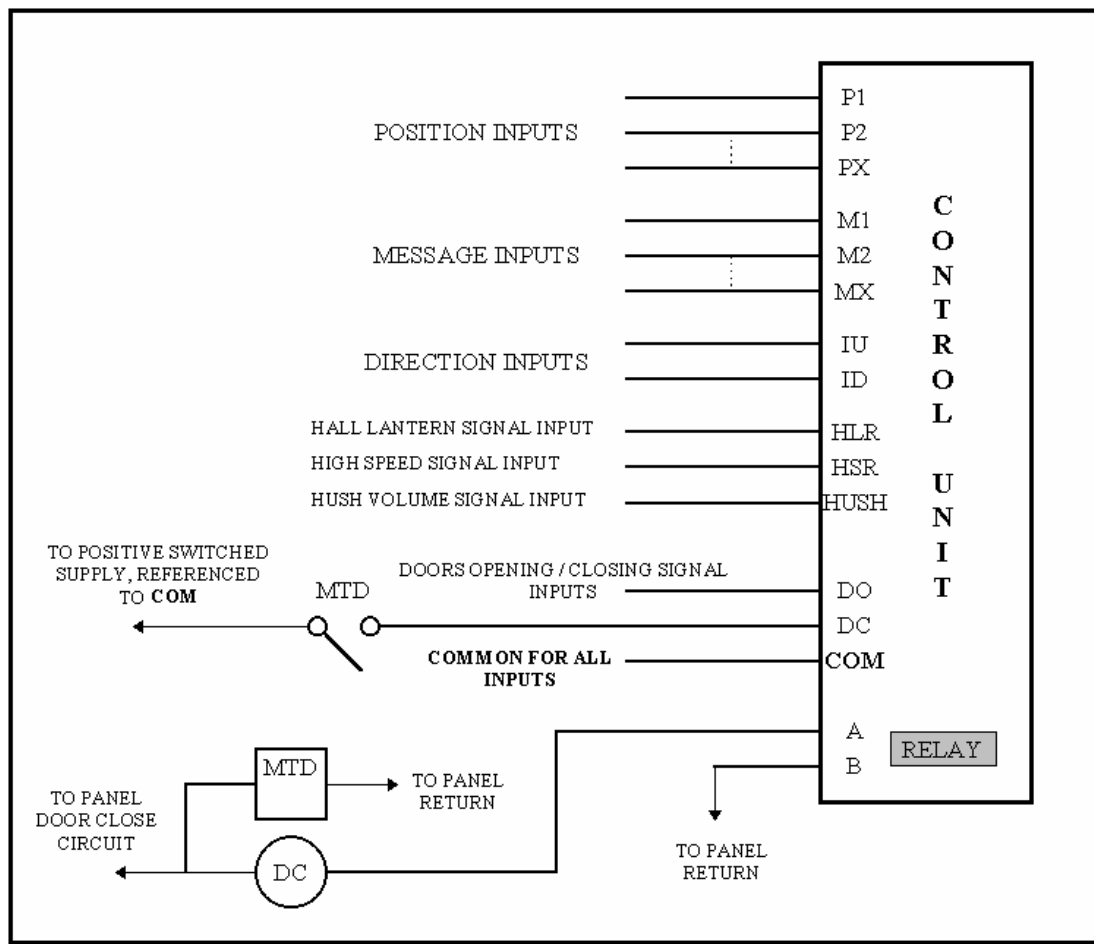
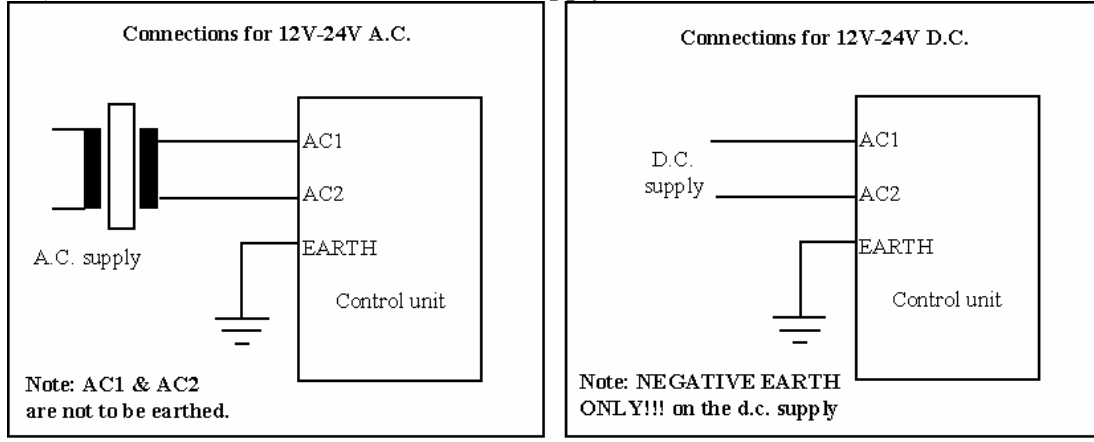
Inputs and Outputs.

AC1 & AC2	Power supply connections.	P1-P20	Non encoded positions inputs.
Earth	Earth connection.	A-F	Encoded position inputs.
CH / CL	Connections for serial communications.	M1-M7	Prioritised message inputs.
Relay A/B	Volt free contact for door control	HLR	Hall lantern signal input
PC comms	Connection for programming via a personal computer.	HSR	High speed signal input
		IU/ID	Direction inputs
		DO/DC	Doors opening / closing inputs.
		Hush	Speech unit alternate volume input.
		COM	Common terminal for all inputs.

Control unit DIL switch settings.

PARAM	When in the "ON" position, default parameters will be used, otherwise the information downloaded to the control unit via a lap top or P.C. will be used.
HOLD	When in the "ON" position, the direction arrows will only scroll when the HSR input is on as well as the direction. Otherwise the arrow will scroll all the time a direction input is on.
CHIME	When in the "ON" position, the relay on the digital indicator within the lift car will operate whenever the "HLR" input is on (i.e. passing chime). Otherwise the relay will operate when the "HLR" input is on and the "HSR" input is off (i.e. arrival gong output).
ENC	When in the "ON" position, the inputs P1 - P6 become encoded inputs A - F. These can be either "binary" encoded or "Gray code" depending upon the setting when programmed. Note the default is binary encoded.

5.1) A.C. / D.C. Power Supply Connections



Control unit relay operation.

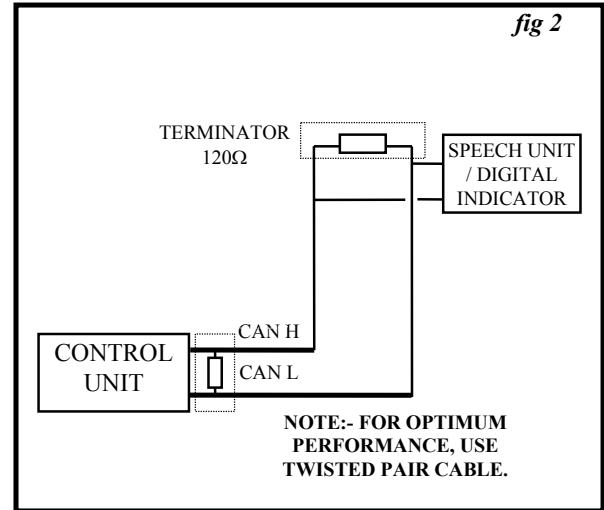
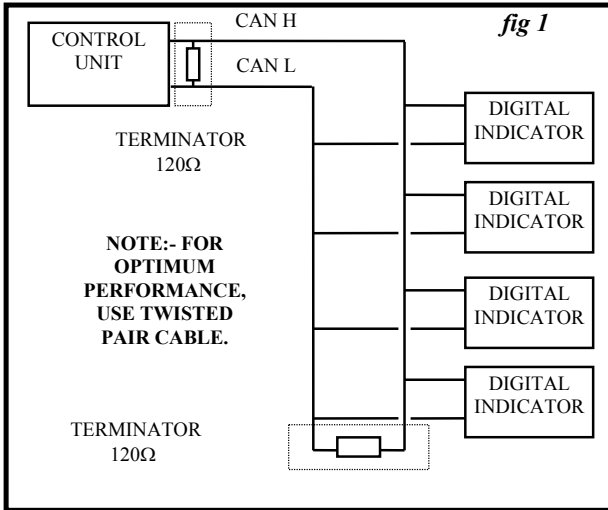
The control unit relay is used to control the door closing sequence as follows:-

- i) The DC input is applied via the contact of the MTD relay.
- ii) The MTD message is announced. (i.e. "please mind the doors").
- iii) When the MTD message has completed, the relay contact will close, allowing the doors to close. While the doors are closing the DC message will be announced.(i.e. "doors closing").
- iv) If any message input is on, or if no MTD message is selected, there will be no MTD announcement and the relay contact will close as soon as the DC input is applied.(i.e. on fire control, doors do not want to delay closing).

5.2) Terminating Resistor Connections

1) Bus incorporating Control unit & landing devices only

When there are no devices in the lift car, the control unit is positioned at the beginning of the bus, therefore one terminator must be placed at the control unit or as close as possible to it. The other terminator must be placed at the other end of the bus, or as close as possible to the last device as shown below (*fig 1*).

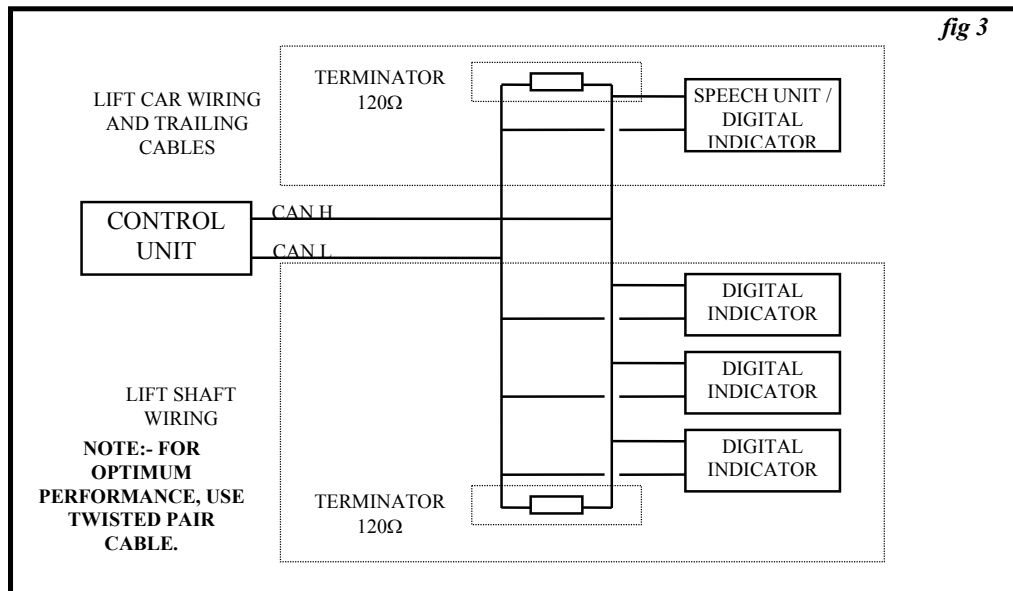


2) Bus incorporating Control unit & lift car device(s) only.

When there are no devices on the lift landing, the control unit is positioned at the beginning of the bus, therefore one terminator must be placed at the control unit or as close as possible to it. The other terminator must be placed at the other end of the bus, or as close as possible to the last device as shown above (*fig2*).

3) Bus incorporating Control unit, lift car & landing device(s).

When there are devices on the lift landings and in the lift car, the control unit is positioned in the middle of the bus, therefore the terminators must be placed as close as possible to the last devices as shown below (*fig 3*).



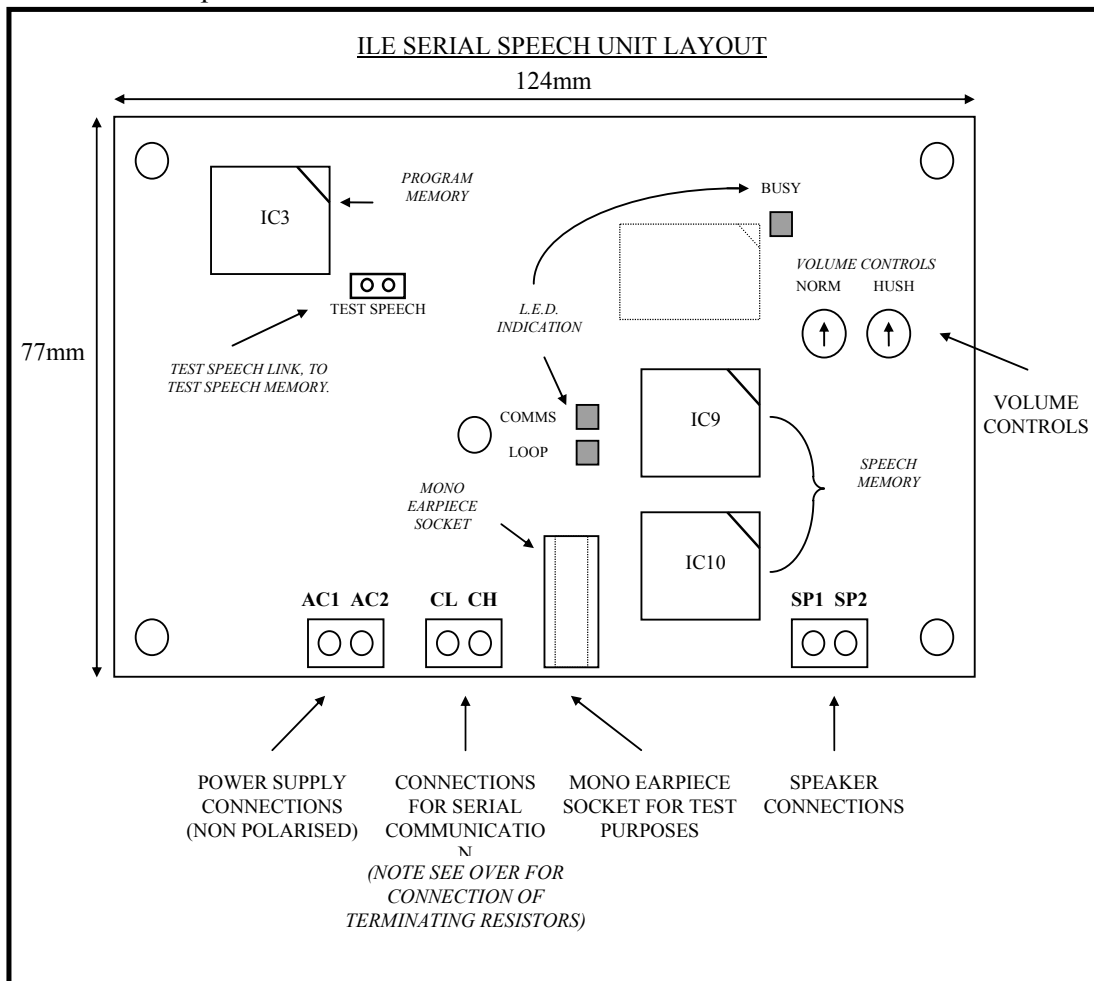
6) ILE Serial Speech Unit Installation Diagrams

Power Supply, Input & Output Specifications

Power supply & input voltage range	=	12 - 24V A.C. or D.C.
Power Supply peak current	=	500mA
Power Supply standby current max	=	100mA
Max Speaker output power (R.M.S)	=	2W
Max Playback time@16KHz sampling	=	130 seconds
Max Playback time@ 8KHz sampling	=	260 seconds

Wiring

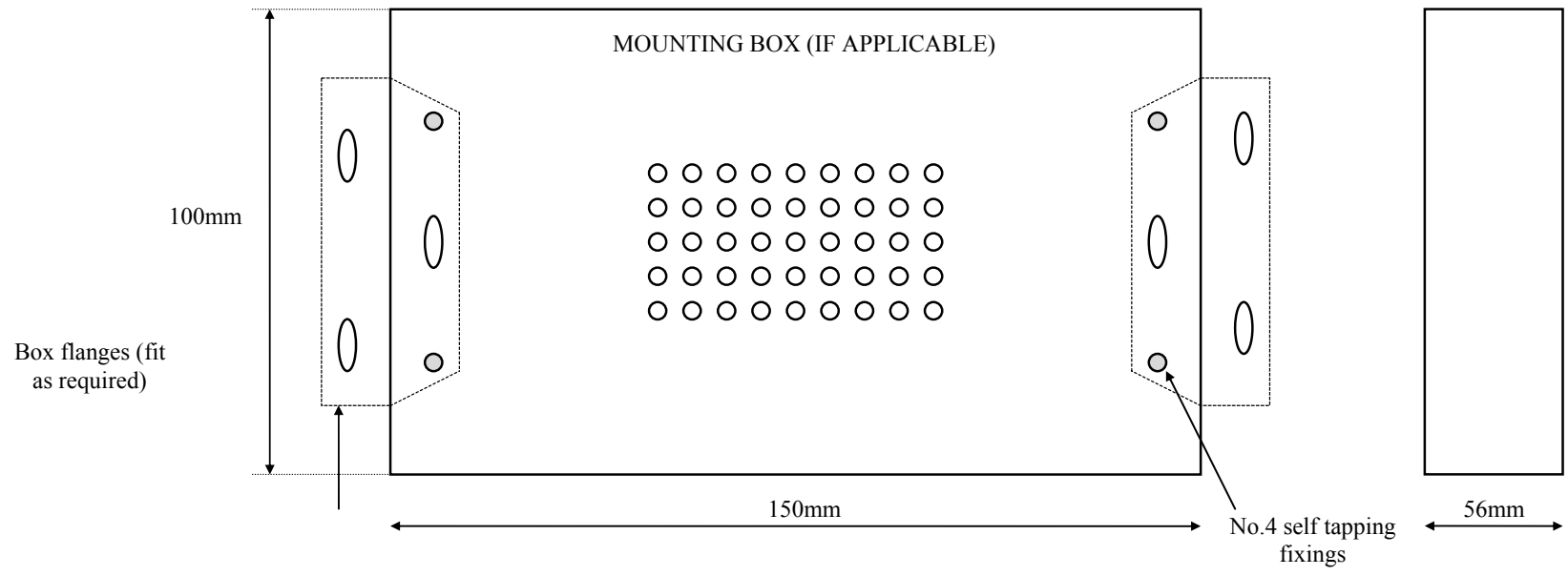
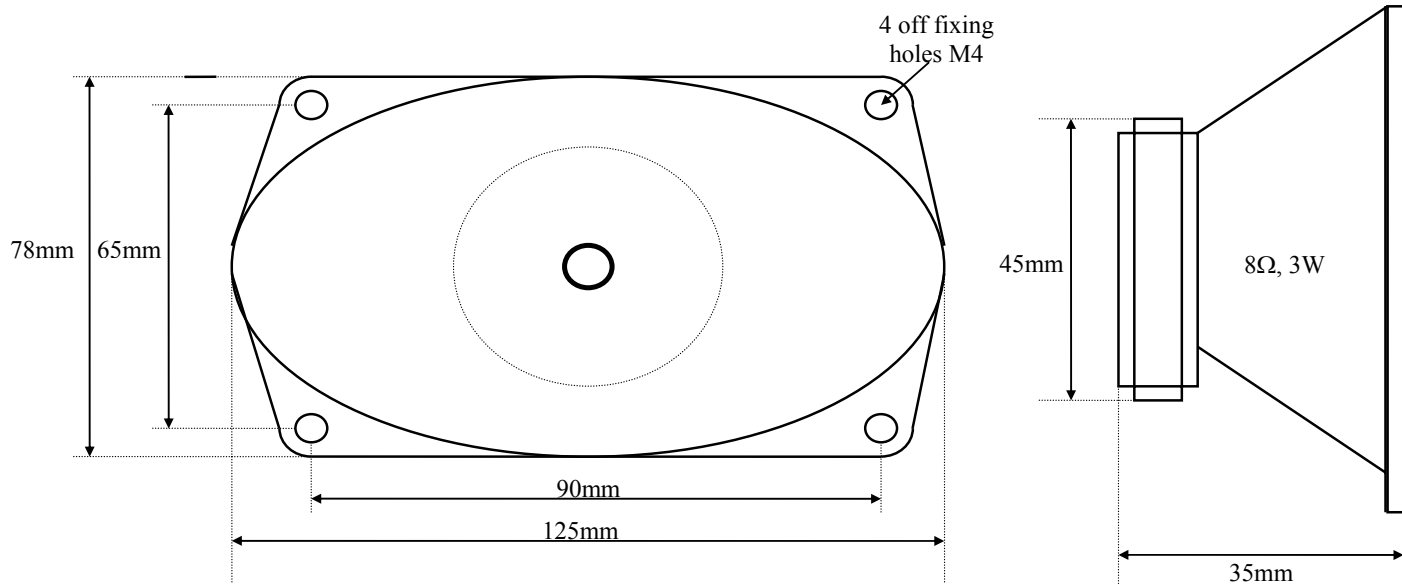
The ILE serial speech unit should be wired as follows:-



For further information regarding the speech unit, please refer to the technical manual.

6.1)

ILE Serial Speech Unit Speaker And Box Dimensions



7)

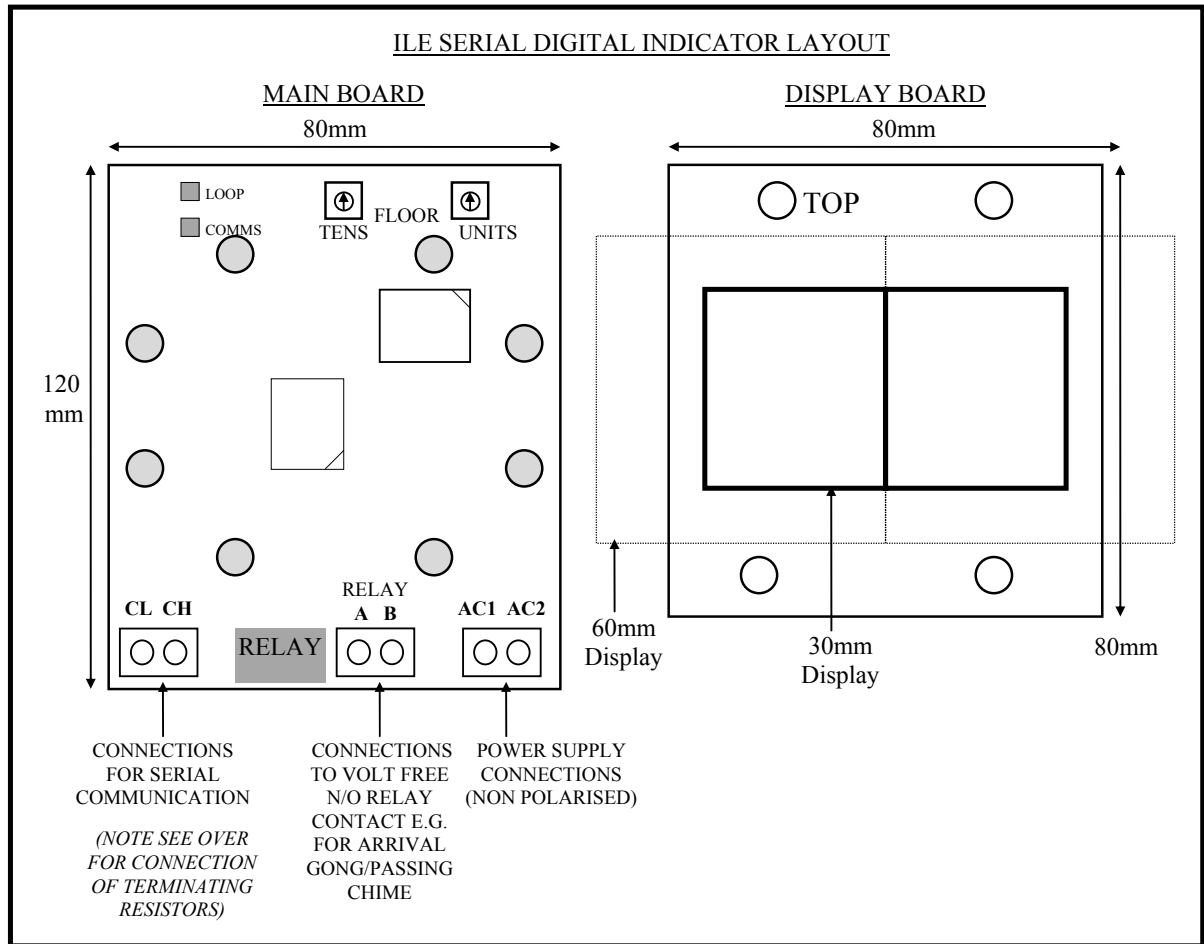
ILE Serial Indicator Installation Diagrams

Power Supply, Input & Output Specifications

Power supply & input voltage range	=	12 - 24V A.C. or D.C.
Power Supply peak current@12V	=	500mA
Power Supply peak current@24V	=	250mA
Relay "N/O volt free contact" specification	=	5A@250V A.C.

Wiring

The ILE serial digital indicator should be wired as follows:-



Notes

The display board mounts on top of the main board via the pillar fixings and 8 way connector. The main board may be turned 90° in the case where the back box is mounted vertically, and will be connected via the second 8 way connector.

When fitted in the lift car set the floor position on the main board to "00" using the rotary switches TENS / UNITS. When fitted on the lift landing set to "61" if hall lantern/arrival gong output is not required else the floor number needs to be set to operate the relay at that floor.

For further information regarding the indicator, please refer to the technical manual.