LIOU

4 Way Input/ Output Unit

User Manual

Man-1113 Issue 03 June 2013

Safety

Suppliers of articles for use at work are required under section 6 of the Health and Safety at Work act 1974 to ensure as reasonably as is practical that the article will be safe and without risk to health when properly used.

An article is not regarded as properly used if it is used 'without regard to any relevant information or advice' relating to its use made available by the supplier.

This product should be installed, commissioned and maintained by trained service personnel in accordance with the following:

(i) IEE regulations for electrical equipment in buildings

(ii) Codes of practice

(iii) Statutory requirements

(iv) Any instructions specifically advised by the manufacturer

According to the provisions of the Act you are therefore requested to take such steps as are necessary to ensure that you make any appropriate information about this product available to anyone concerned with its use.

This HL67750M2 is designed to operate from 230V 50Hz mains supplies and is of class 1 construction. As such it **must** be connected to a protective earthing conductor in the fixed wiring of the installation and a readily accessible double pole disconnect device meeting the requirements of EN60950/IEC950 which disconnects live and neutral simultaneously shall be incorporated in the fixed wiring.

Switch disconnect devices such as MK Sentry 63A or similar are suitable for this.

Failure to ensure that all conductive accessible parts of this equipment are adequately bonded to the protective earth will render the equipment unsafe.

HL66000M2 and HL67750M2 units are environmental class A and designed for indoor use only at temperatures between -5^0C (+/- 3) and $+40^0$C (+/- 2) and with a maximum relative humidity of 95%.

The IP rating for the enclosure is IP30.

Operation outside of these limits may render the equipment unsafe.

General Description

The LIOU offers a convenient, compact and cost effective method of transmitting and receiving signals via a Hochiki analogue addressable ESP communications loop.

Occupying much less space than required by equivalent, Hochiki I/O units, the LIOU replaces the large and expensive enclosures normally required for these applications.

With 4 opto-isolated inputs and 4 volt free changeover relay outputs and a built in short circuit isolator; the LIOU will find a multitude of uses in concentrated I/O applications.

LIOU is currently compatible with Hochiki protocol Syncro AS and Syncro control panels and occupies only one loop address (9 sub-addresses).

Installation

The K507 LIOU comprises a circuit board with four 4mm mounting holes. This does not offer the required environmental protection required for this type of equipment therefore it must be fitted inside an enclosure.

The location of the unit should be clean and dry and within a temperature range of -5 to +40 degrees C.

The LIOU should be secured in all four fixing positions on suitable screws and spacers or PCB supports.

Installation of the module should be carried out by qualified personnel only.

The electronic components within the module are vulnerable to physical damage and damage by electrostatic discharges.

It is advisable to wear a wrist strap designed to prevent the build-up of static charges within the body, before handling any electronic circuit boards.

Never insert or remove boards or components with the power on.

Power

The LIOU requires a DC power supply between 21V and 30V. The quiescent current requirement at 10 milliamps imposes minimum drain on standby batteries and equates to around 0.3 Ah per 24 hour standby period.
Each operated input requires an additional 3 milliamps and each volt free contact output requires an additional 18 milliamps when operated.
Consideration of the power supply requirements should be calculated at the design stage using the above information. The total power requirement will not exceed 100 milliamps.

Compatibility

The LIOU has the same identification code as the MIOU unit and when the panel is “autolearned” LIOU units will be detected as MIOU units and will occupy 17 sub-addresses. This can be changed via the Loop Explorer programme by selecting the device shown as an MIOU and changing it to an LIOU.

Control panels must be able to recognise these codes for the unit to be able to work with them so unlike other devices in the Hochiki range, the LIOU can not be fitted to panels which do not have these codes embedded.

Only Syncro AS and Syncro control panels currently support this device therefore it must not be connected to any other type of control panel.

Address setting

The LIOU must be addressed using the Hochiki hand held programmer (part number TCH-B100).

With 24V power applied to the LIOU, connect the programmer using the optional crocodile clip leads to the loop terminals and set the address according to the instructions with the programmer.

Note: It is not possible to address the LIOU unit with the detection loop connected to the unit or if the 24V supply is not present.

Sub-addresses

Some ESP compatible devices have in addition to their main address, sub-addresses. An example of this is the CHQ-S/CHQ-DIM two input switch monitor. This unit has a main address, for example 123.0, and two sub-addresses 123.1 and 123.2. The main address is in fact counted as a sub-address on Syncro AS and Syncro control panels so this device will actually have a sub-address count of three.

On the Syncro AS and Syncro control panels the sub-address limitation is 800 but this is not 200 per loop. It could be 799 on one loop and 1 on another if required.
The LIOU has a sub-address count of 9. Therefore the maximum number that can be fitted to a Syncro control panel without any other devices is 88 (800 divided by 9).

The sub-address limitations of these systems must be considered at the design stage, as it is all too easy to fall foul of these limits in I/O intensive applications.

Configuration

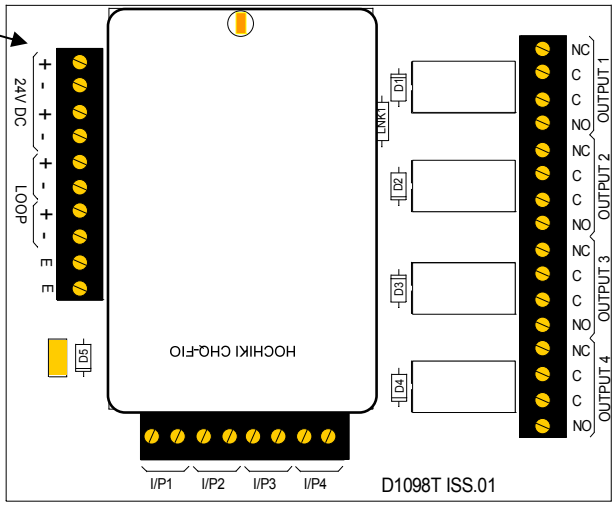
The default configurations of the inputs on the LIOU are FIRE for the odd numbered inputs and FAULT for the even numbered inputs. These can be changed using the Loop Explorer PC configuration utility to any of the available input types i.e. pre-alarm, transparent, disablement etc.

The default configurations for the outputs are default ring mode. I.e. the outputs will operate upon any fire condition and remain operated until the panel is reset. To have the outputs controlled by cause and effect, the default ring mode attribute must be removed. The outputs can be set to any of the available types i.e. evacuatable, silenceable etc.

For precise details of the input and output configuration options refer to the Loop Explorer configuration programme.

Connections to the LIOU

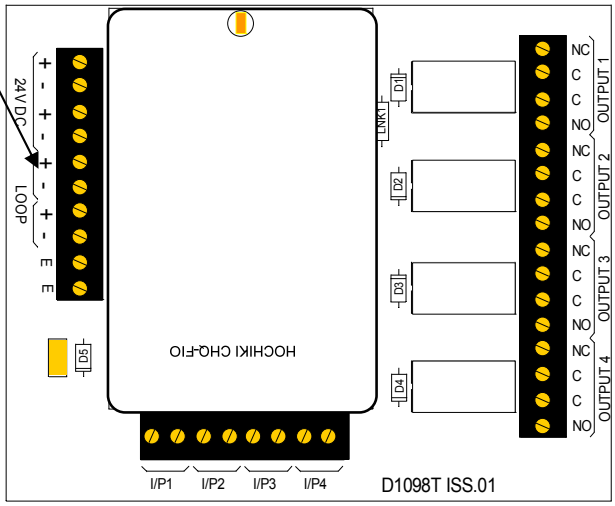
24V DC



The LIOU module requires a DC voltage between 21V and 30V.
This can be provided by a normal, battery backed, fire alarm power supply and should be connected to the 24V DC + AND – terminals shown here.
These connections are polarity sensitive and extra care should be taken to ensure that polarity is correct.
Two sets of terminals are provided to allow the 24V DC supply to be taken into and out of the board, then on to other equipment.
The LIOU is fitted with an electronic fuse (rated at 500 milliamps) which will protect the 24V power supply should a fault develop on the LIOU unit.

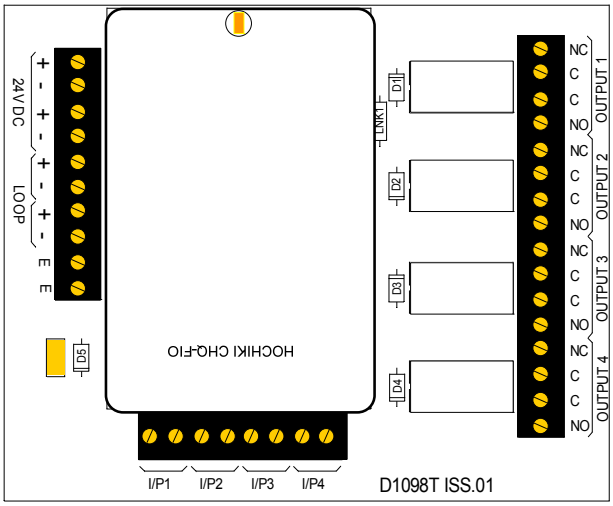
LOOP

Terminals are provided for incoming and outgoing cabling of the Hochiki ESP addressable loop wiring. These connections are polarity sensitive and extra care should be taken to ensure that polarity is correct.
Two terminals marked “E” are provided to terminate and maintain continuity of the screen of the loop cable.
The loop terminals are also used for connection of the Hochiki hand held device programmer for setting an address on the LIOU unit.



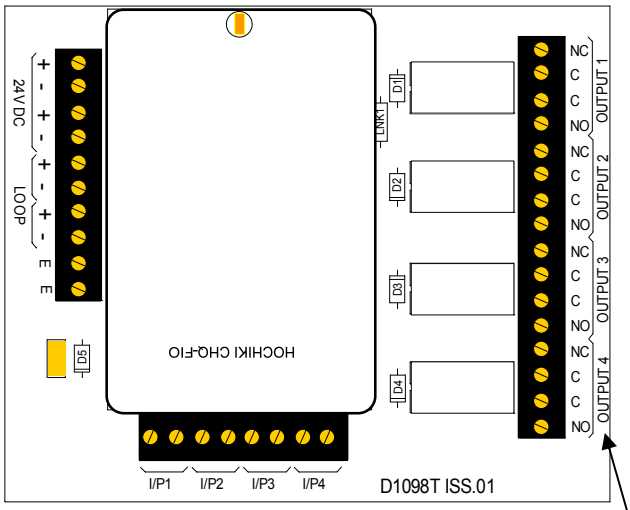
INPUTS

The LIOU unit has four inputs which can be activated by volt free relay contacts or switches.
The left hand terminal of each input is connected to the power supply negative.
Although designed to be operated by a volt free contact the input will be triggered by a resistance of up to 1KΩ
Under no circumstances should power from other systems be connected to the inputs.



Inputs

OUTPUTS



Outputs

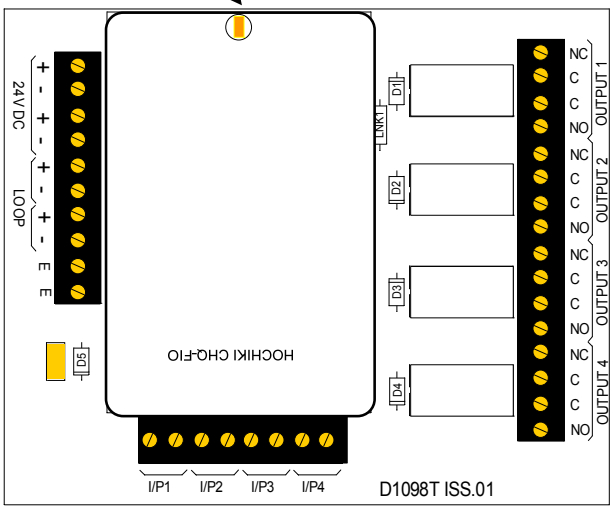
The LIOU has four outputs in the form of voltage free, changeover relay contacts. This provides the means to have a normally closed circuit, opening upon activation or a normally closed circuit, closing upon activation.

Each of the voltage free relay contacts is rated at up to 220V/60W DC and 250V/125VA AC.

Extra care must be taken when connecting voltages other than safety extra low voltages to these contacts to ensure that users or service personnel are not put at risk of danger by electric shock.

SHORT CIRCUIT ISOLATOR OPERATED INDICATOR

The LIOU unit has an inbuilt short circuit isolator and indication that this has operated is via the yellow LED that is visible through the plastic moulding of the Hochiki CHQ-FIO unit.



Boxed LIOU units

Part numbers HL66000M2 and HL67750M2 are an LIOU units mounted in conveniently sized enclosures.

This HL66000M2 will require a nominal 24V DC power source from another part of the fire system and the HL67750M2 will require a 230V AC mains supply and 2.6Ah sealed lead acid standby batteries. The HL67750M2 has a 20mm 2A ceramic fuse fitted to the power supply which must be replaced only with a fuse of the same type.

MOUNTING

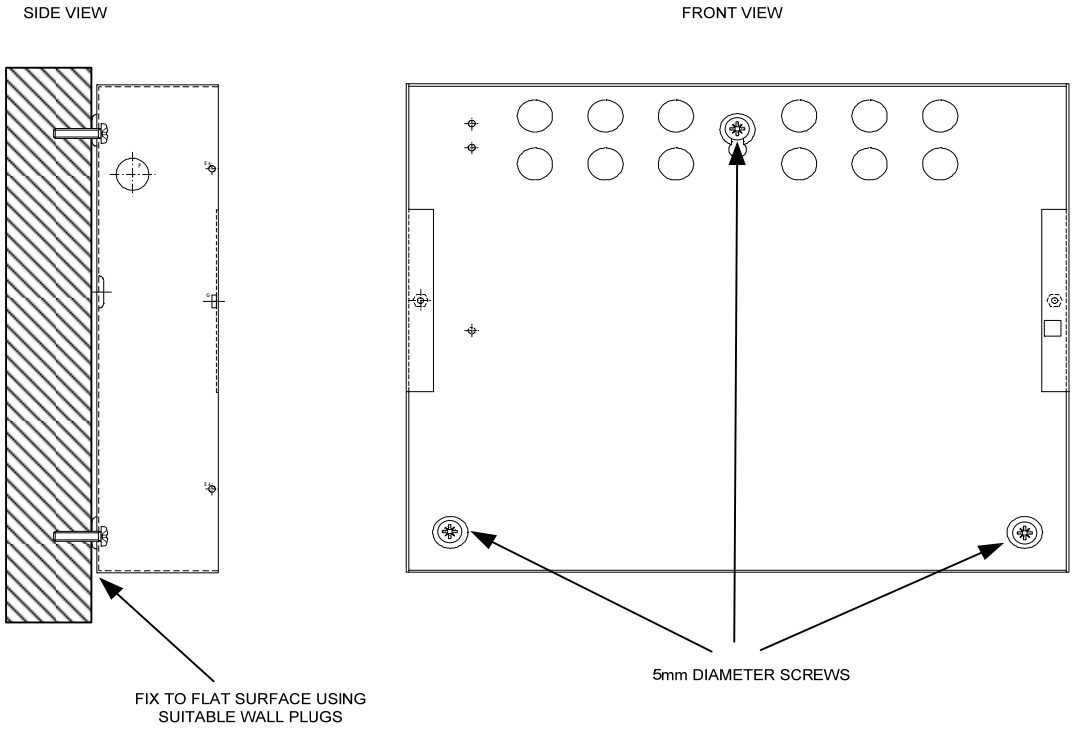
These units should be mounted on a dry, flat surface and in a level position such that the enclosure is not distorted.

Screws or bolts of a minimum of 5mm diameter must be used to mount the enclosures in all three mounting positions.

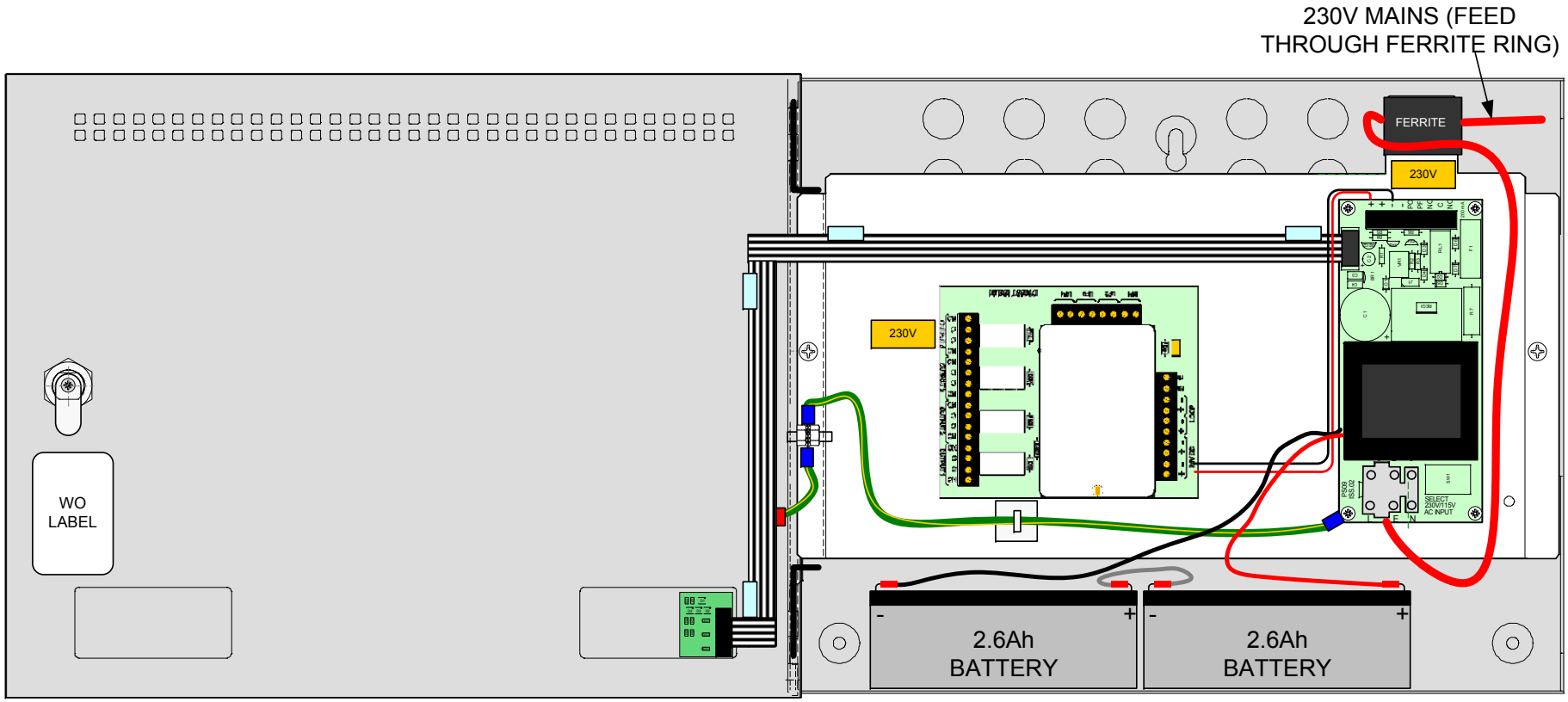
Suitable fixings should be used at all fixing points such that the units are securely mounted and not liable to move once fixed.

These units should not be mounted in another enclosure or near sources of excessive heat.

Cables should be connected using suitable cable glands fitted to the knockouts provided. If additional cable entry points are required, all swarf and debris caused by drilling of additional cable entries must be cleared before power is applied.



INTERNAL ARRANGEMENT



TECHNICAL SPECIFICATIONS

Part number – K507 (Module only)
Part number – HL66000M2 (Boxed unit without power supply)
Part number – HL67750M2 (Boxed unit with power supply)

Module size - 119 long x 98 wide x 35 high

Boxed unit size - 310 high x 385 wide x 90 deep

Boxed unit battery capacity - 2.6Ah

Boxed unit finish - grey epoxy powder coated

Boxed unit IP rating - IP40

Module mounting – Four 4mm holes in PCB

Communication protocol - Hochiki ESP

Inbuilt short circuit isolation

Supply voltage - (K507 and HL6600M2) 21 to 30V DC

Supply voltage - HL67750M2 – 230V AC

Mains fuse for HL67750M2 – 20mm ceramic 2A/250V fast acting

Quiescent supply current - 10 milliamps

Input operated current - 3 milliamps

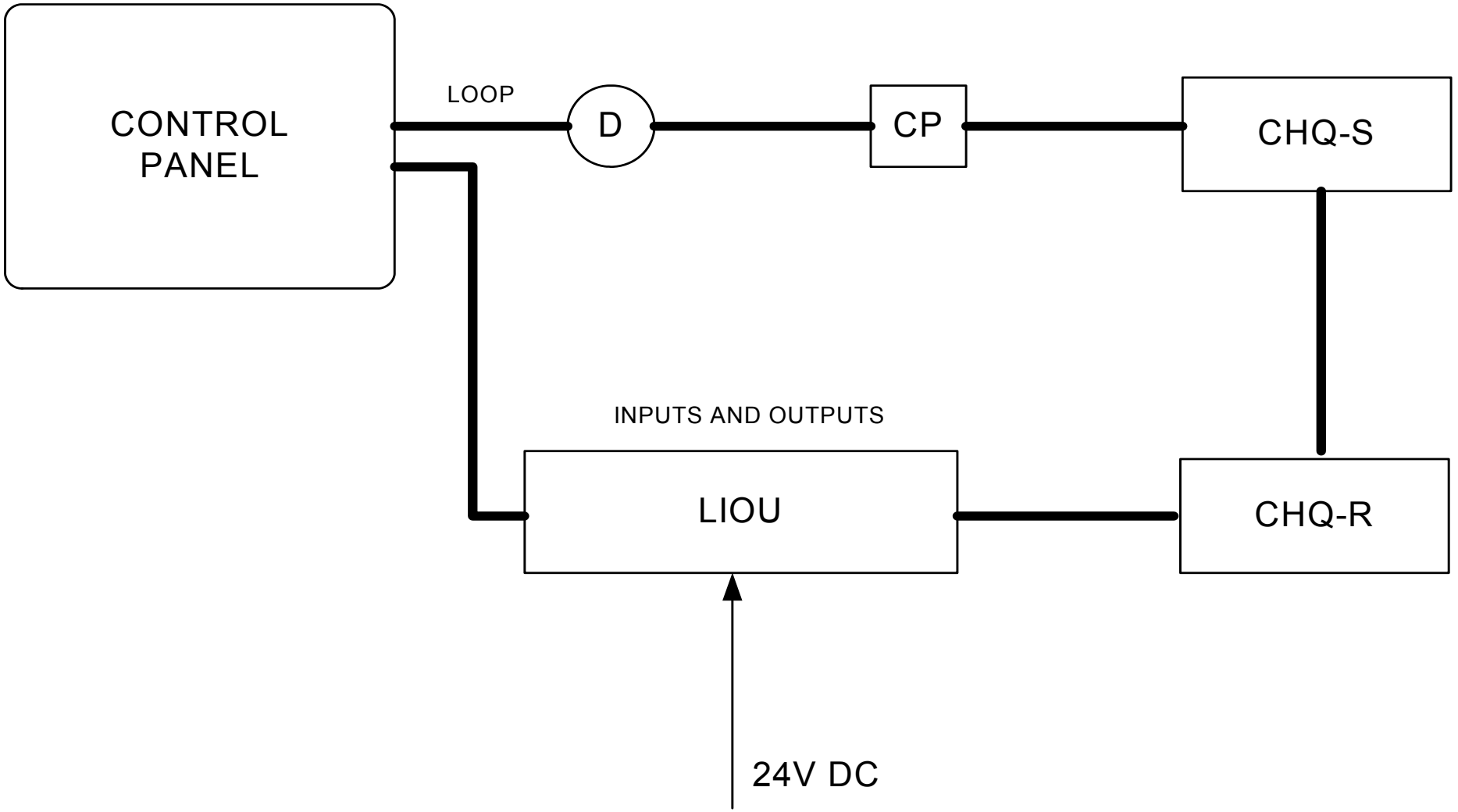
Output operated current - 18 milliamps

Inputs trigger resistance – 1K max

Output contact rating – 30V DC/2A - 230VAC/0.5A

Minimum recommended power supply - 750 milliamps at 24V DC

Operating temperature range - -5 to +40 degrees C

Device sub-address count – 9

The LIOU connects to the ESP loop as per all other ESP devices. Consider the maximum number of sub-addresses when using LIOU.