

 **temaline RTUA10**
Installation Manual



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PRELIMINARY OPERATIONS

Mounting and Cabling Instructions

The cables come from a box in the wall or laterally, from tubes. The box is fitted with pop-out openings (20mm diameter).

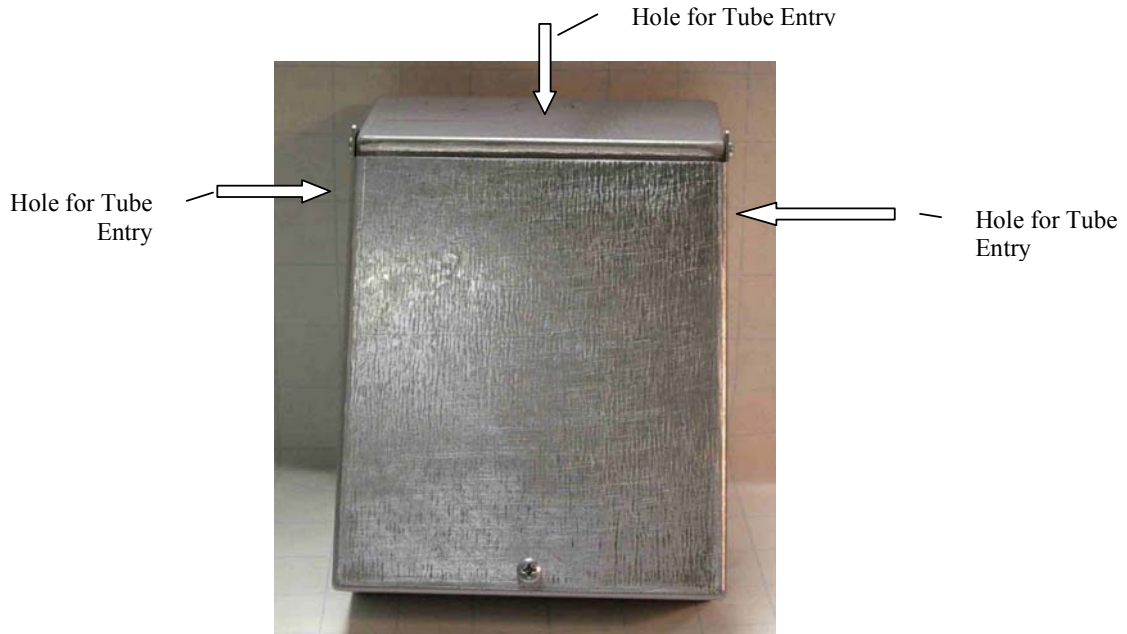


Figure 1 Box – Cable Entry from Tubes

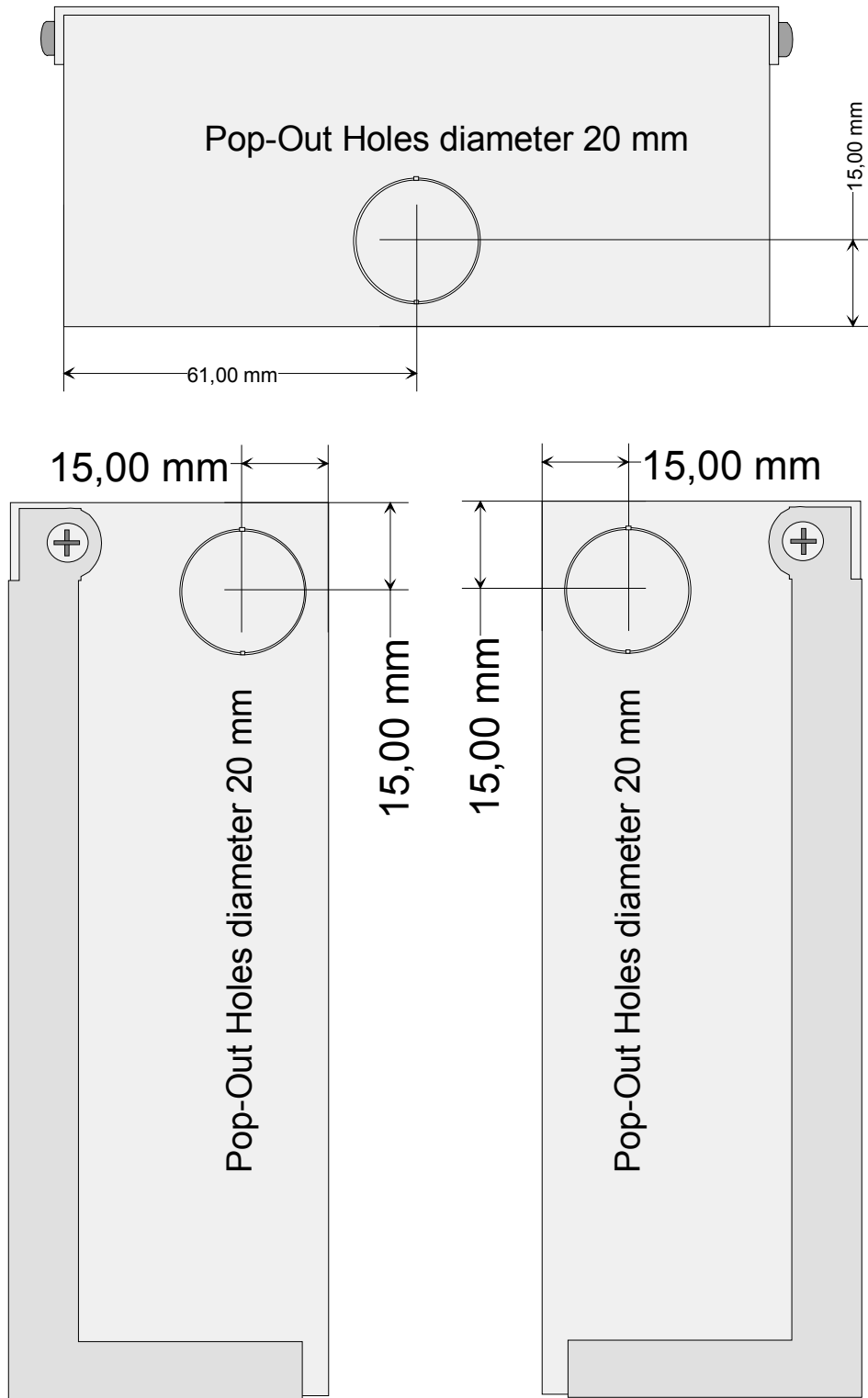
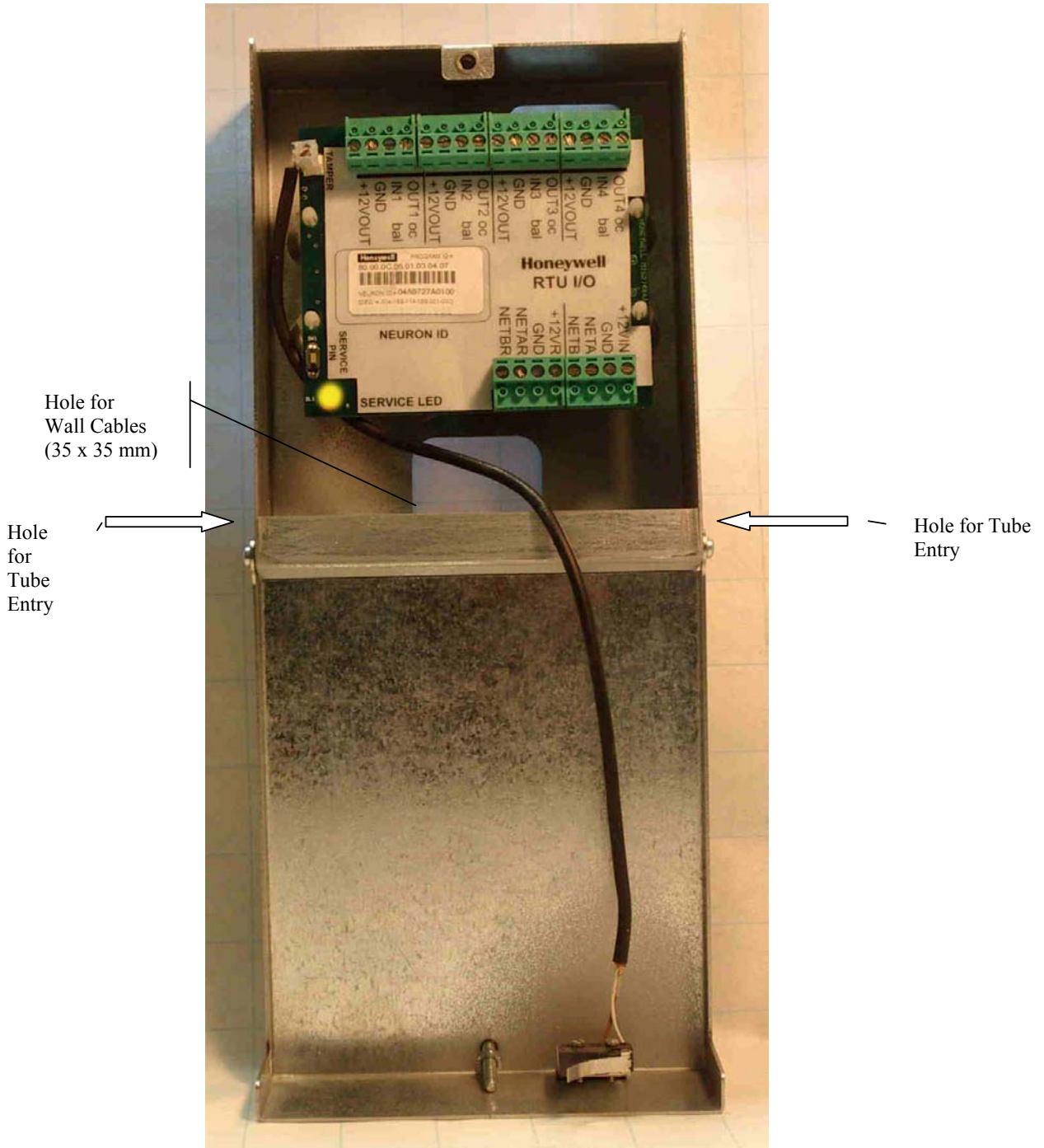


Figure 2: Positions of Pop-Out Holes



Suggestion: Install the box so that the cover opens downward.

Figure 3: Box – Cable Entry from the Wall

Hole for Wall Cables
(38 x 35 mm)

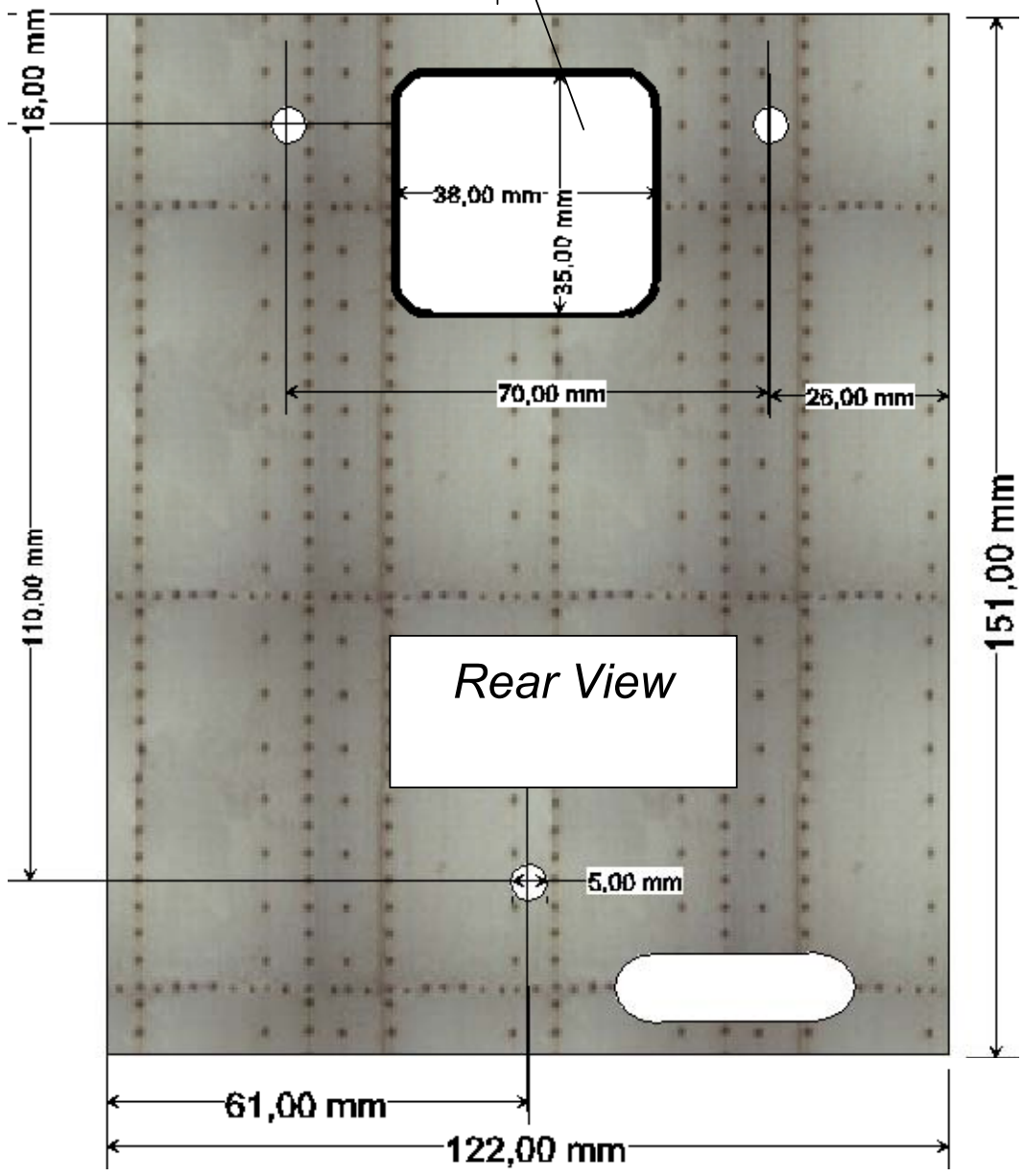


Figure 4: Entry Hole for Wall Cables

Mounting the Module

The module is to be mounted using screws, which go in through three specially made holes (5mm diameter) as can be seen in the figure below.

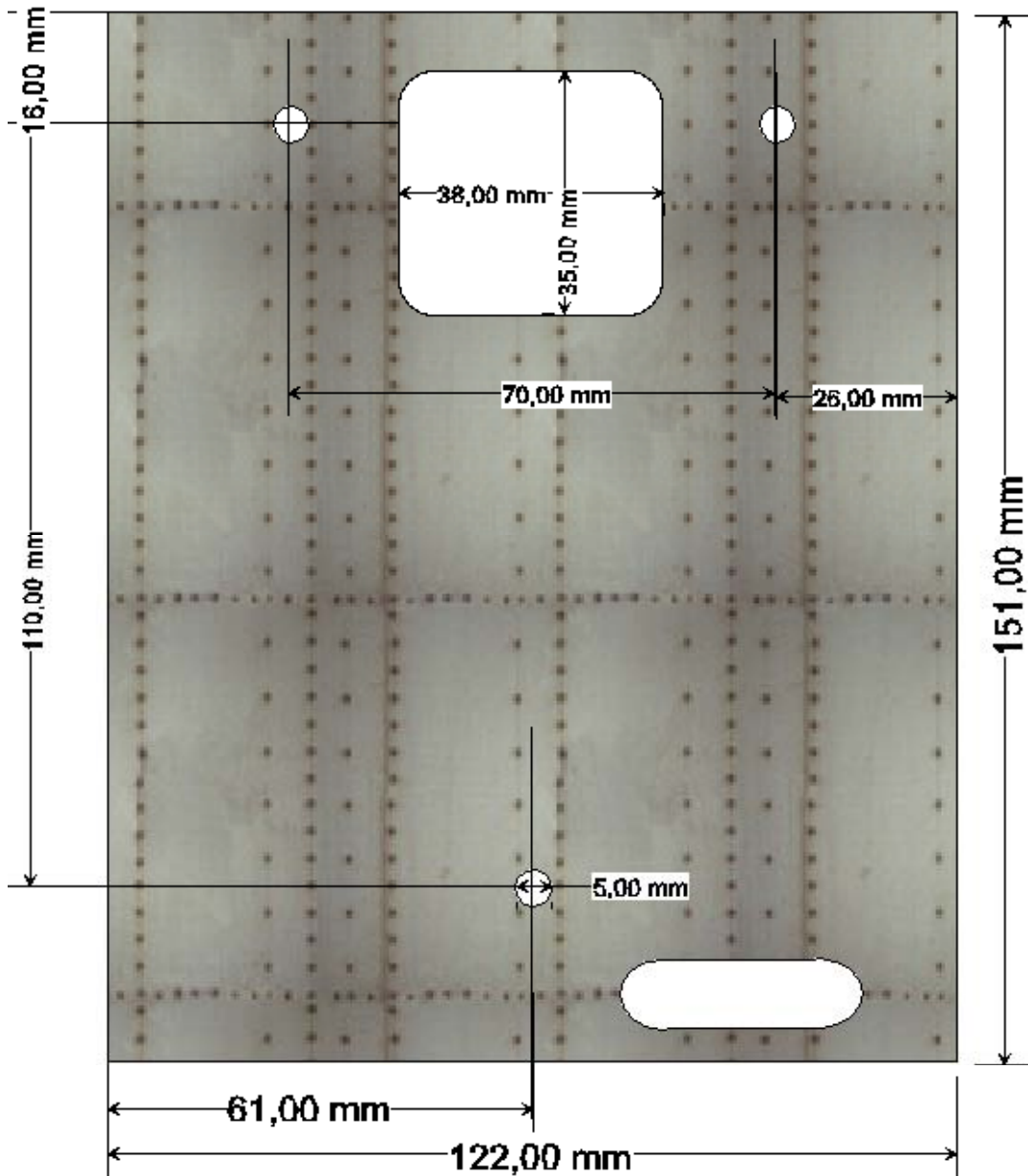


Figure 5: Mounting – Back View

Jumpers

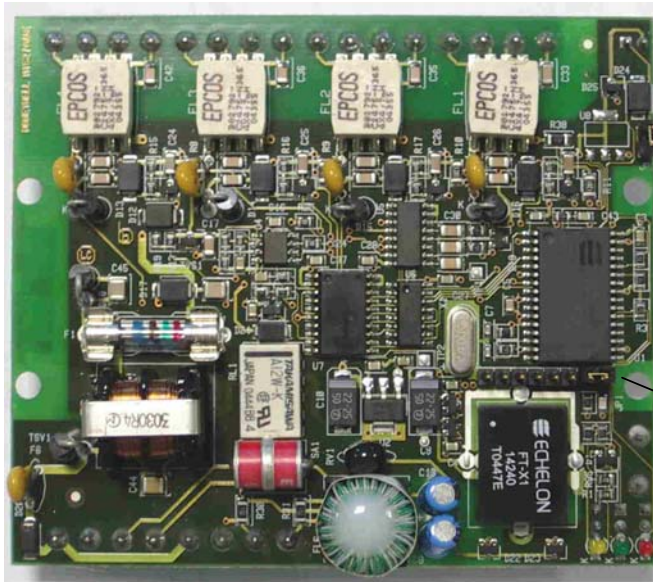
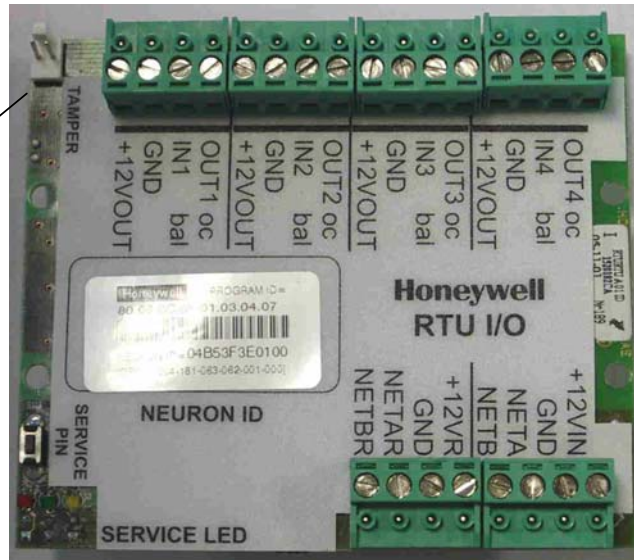
RTUA10 jumpers:

JP1: RX signal for communication velocity – always **CLOSE**

JP2: Tamper connection

JP3: second tamper connection – always **CLOSE**

JP2: Tamper contact



LEDs and Fuse

The RTUA10 has 3 LEDs and a fuse as current limiter for the sensors power supply

Red LED: Fuse F1 status

ON: Fuse OK

OFF: fuse fault

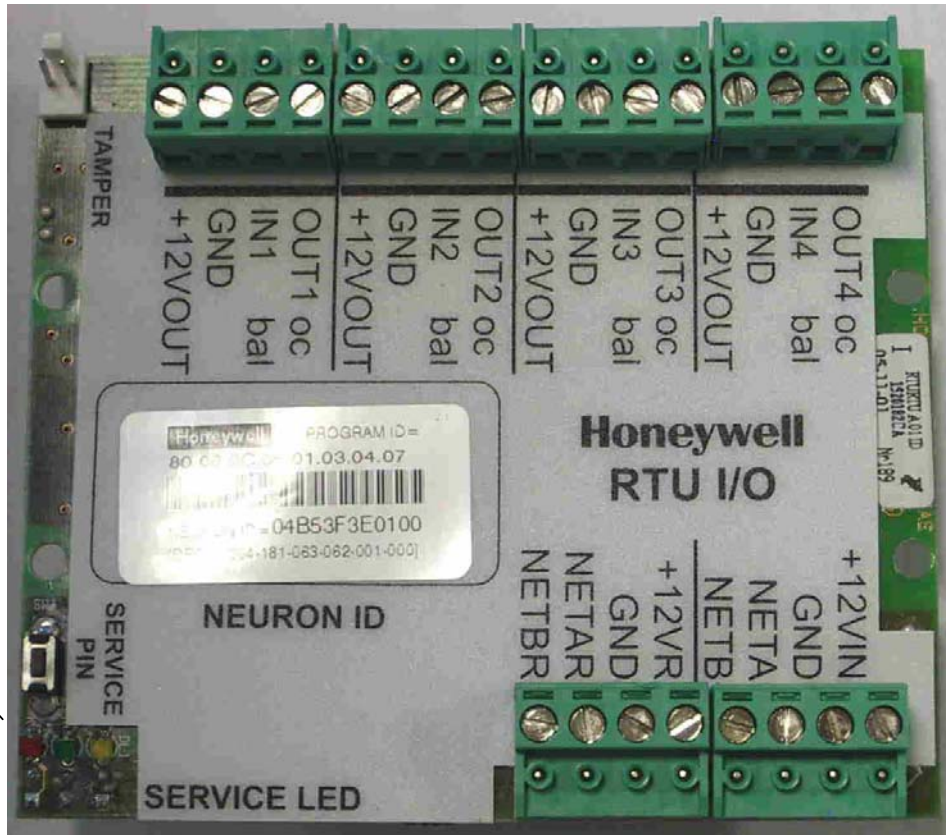
Green LED: CTU Connection status

Blinking: RTU not connected

Acceso : RTU connected

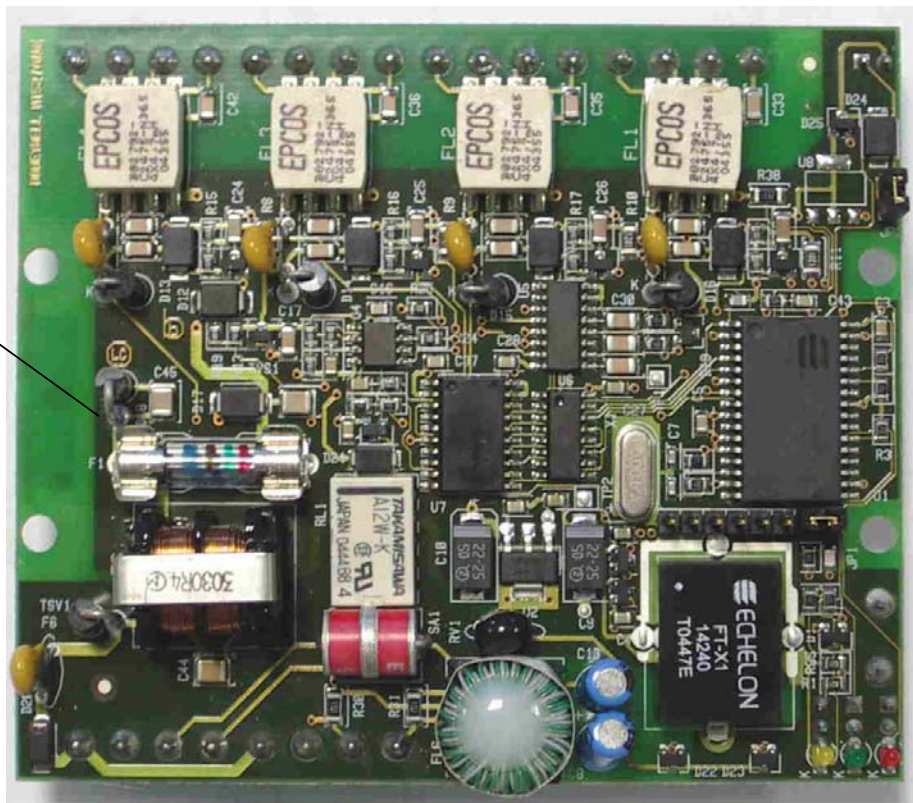
Spento: RTU fault

Yellow LED: LONWORKS – Service LED – see next cap.



LEDs

Fuse F1:
250mA T



Identification via the Service Pin

To identify the node, you can activate the service pin using the button located inside the module. To do this, follow these steps:

1. Push the «service» button
2. Make sure that the yellow service LED is off at the end of the operation.

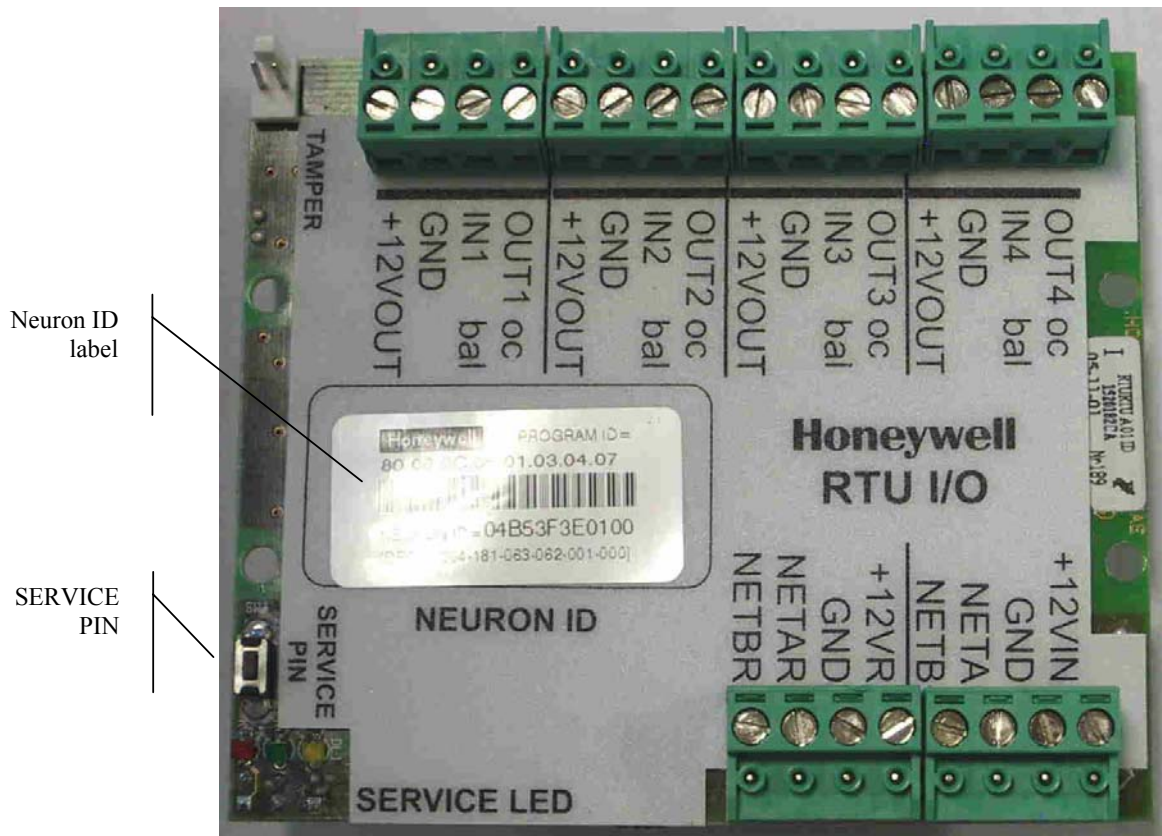


Figure 6: service pin

Identification via label

The NEURON ID label is glued on the RTUA10 board (see Figure 6) and also the components enclosed in the packaging include the Neuron ID label. The person responsible for installing the terminal must apply this label to the corresponding identification form, and indicate the location of the terminal in the appropriate box (see example in table).




Description of TemaServer <i>Panel 2 entrance area, first floor - staircase E</i>	
Description of location <i>Office entrance area, first floor - staircase E</i>	
RTU <i>A10</i>	
Description of location <i>Office entrance area, first floor - staircase F</i>	
RTU <i>A10</i>	
Description of location <i>Office entrance area, Access Point</i>	
RTU <i>B19</i>	

Table 1. Example of Completed Identification Form

Anti-Removal / Anti-Open Tamper Protection

The RTUA10 is equipped with anti-removal and anti-open tamper.

There is a toggle switch on the box that under normal conditions is pressed upon by a screw (Fischer-plugged into the wall) that protrudes into the box.

The screw's head must enter into the box; this guarantees complete security from intentional removal of the apparatus.

The screw must be positioned as seen in the figure below.

For best results, use a Fischer S6 plug.

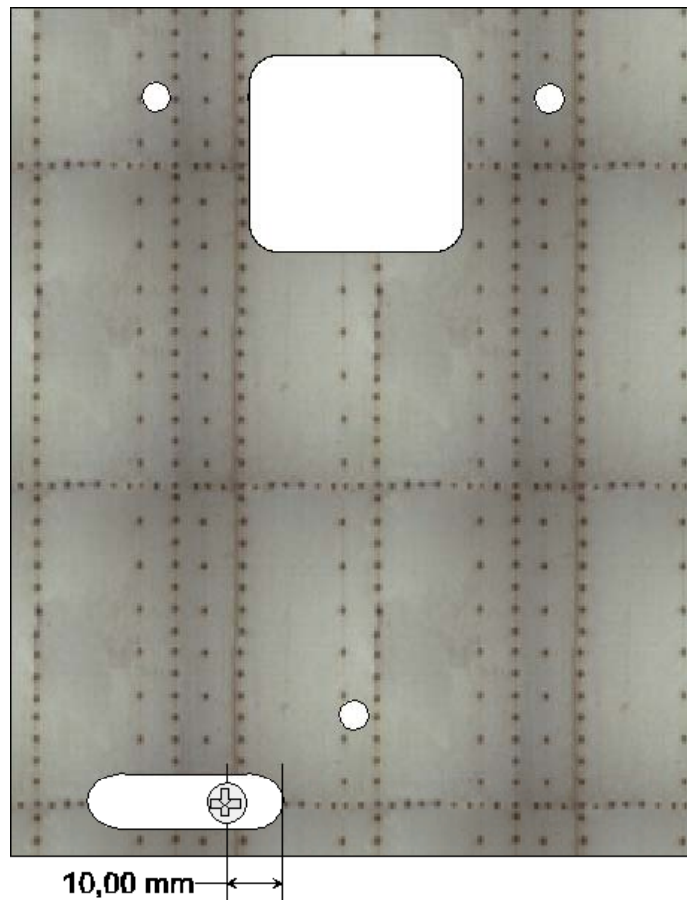


Figure 7 : Screw Position for Tamper Protection – inside view

Electrical Connections

You must connect the following cables to the RTUA10 unit:

- 12V power cable.
- LONWORKS^{®1} twisted-pair cable.
- I/O cables from the contacts/detectors.

12V Cable:

Make sure that the 12V cable corresponds in size to the norms indicated in the table below; the size of the 12V cable can be calculated using the following table (maximum voltage drop on the cable = 0.4V):

Cable length(m) = $0.4V / (I[A] \text{ load} \times 2 \times (\text{res [Ohm/km]} / 1000))$

Type of cable			Length (m) in relation to base load						
AWG	mm2	Ohm/Km	100 [mA]	200 [mA]	500 [mA]	1 [A]	2 [A]	5 [A]	
10	5,25	3,41	587	293	117	59	29	12	
12	3,3	5,7	351	175	70	35	18	7	
14	2	8,8	227	114	45	23	11	5	
16	1,3	14	143	71	29	14	7	3	
18	0,9	21	95	48	19	10	5	2	
20	0,6	34	59	29	12	6	3	1	
22	0,35	52	38	19	8	4	2	1	

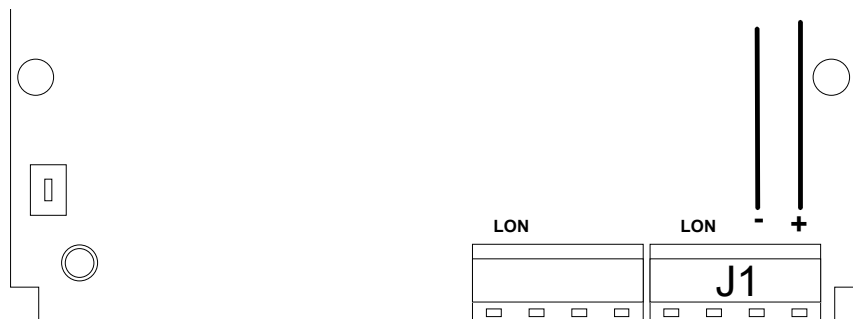


Figure 8: +12VDC Connection

¹ LONWORKS[®] is a trademark of the Echelon Corporation

LONWORKS Twisted-Pair Cable:

- The LONWORKS^{®1} data cable must be twisted-pair.
- In a free-topology configuration, the sum total of the sections must not exceed 500m.
- In a bus configuration, the sum total of the sections must not exceed 2700m.
- In a free-topology configuration, a 50 ohm terminator must be inserted.
- In a bus configuration, place two terminators (with resistance values of 100ohm 1% ½W) at the two ends of the bus.
- In a ring configuration, the sum total of the sections must not exceed 900m, and the node-to-node distance must not exceed 750m. The shunt from the bus must not exceed 3m.
- Check that the length of the LONWORKS^{®1} data cable corresponds to the norms indicated in Table 1.

Type of cable			Length [m] in relation to cable capacity				
AWG	mm2	ohm/Km	50nF/Km	100nF/Km	200nF/Km	500nF/Km	1uF/Km
12	3.3	5,7	2676	1892	1338	846	598
14	2	8,8	2153	1523	1077	681	482
16	1.3	14	1707	1207	854	540	382
18	0.9	21	1394	986	697	441	312
20	0.6	34	1096	775	548	346	245
22	0.35	52	886	626	443	280	198
24	0.2	85	693	490	346	219	155

Table 1. Length/Capacity of LONWORKS[®] Cables

- The FTT10A Echelon[®] v1.2 User Guide recommends the cables indicated in Table 2

Producer and Model	AWG	Connection to bus -maximum total length [m]	Connection in free topology – maximum node-node length max. [m]
Belden 85102	16	2700	500
Belden 8471	16	2700	400
Level IV (twisted-pair, typically solid and unshielded)	22	1400	400
JY (St) 2x2x0.8 (4-wire helical twist, solid shielded)	20	900	320

Table 2. Recommended LONWORKS[®] Cables

Free-Topology Configuration

Connect the LONWORKS[®] twisted-pair data cable and the two power wires to jumper J1, as indicated in Figure 9.

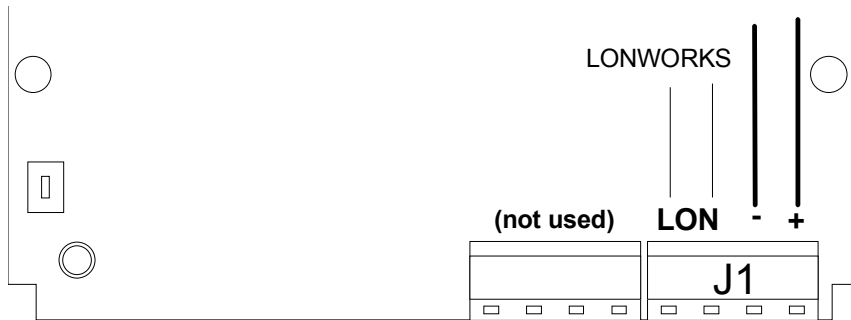
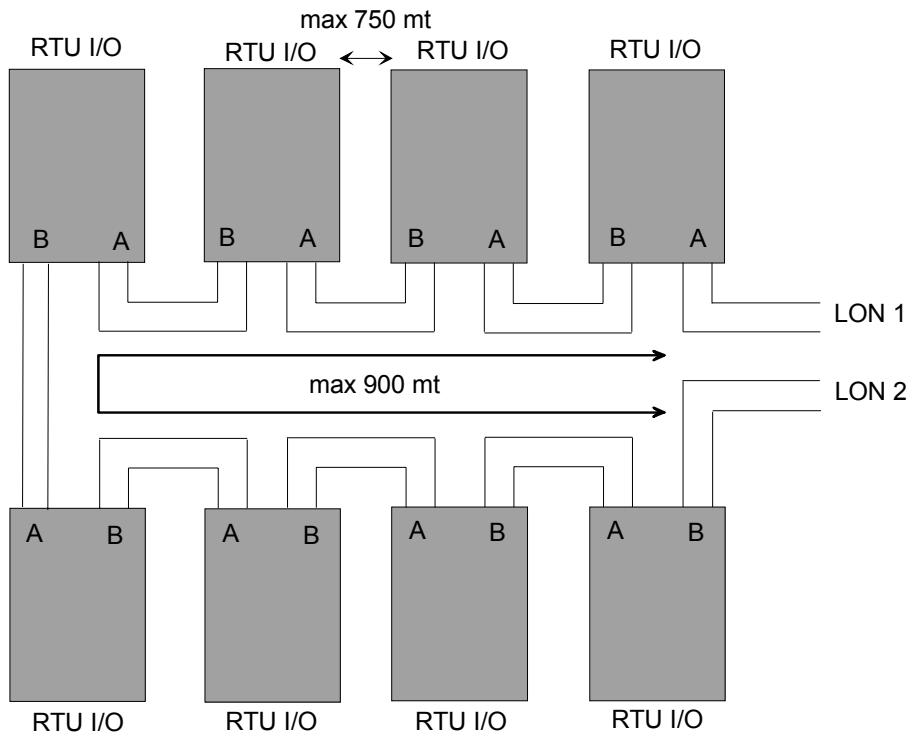


Figure 9: Cable Connection – Free Topology Configuration

Ring Configuration



Note: The sequence A-B-A-B ... must be respected to ensure correct operation of the ring.

Note: The power is not ring-configuration.

Connect the LONWORKS[®] twisted-pair data cable and the two power wires as indicated in Figure 10.

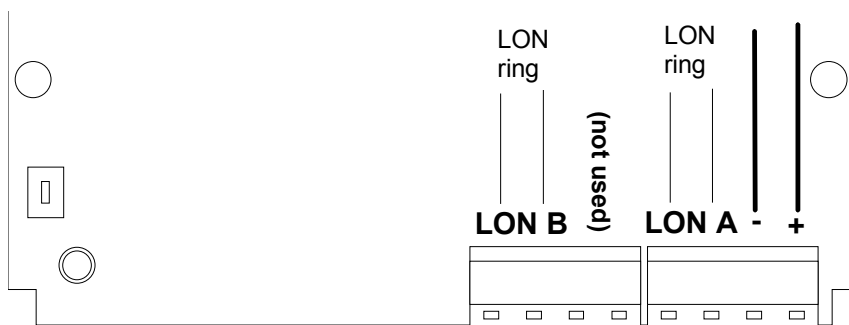


Figure 10: Cable Connection – Ring Configuration

Inputs

Balanced Contacts

The contact cables must be twisted-pair, and the section must be chosen so that it will provide a maximum resistance of 25 ohms. Cable section should be determined in accordance with the following table:

Type of Cable			Length
AWG	mm ²	ohm/Km	[m]
16	1.3	14	893
18	0.9	21	595
20	0.6	34	368
22	0.35	52	240
24	0.2	85	147

deltaR 25 ohm

Table 3: Contact Cable Length

Connect the leads from the contacts to the 4 available inputs. Each contact must be fitted with the special balancing resistances provided with the kit; these are to be mounted very close to the contacts themselves, in accordance with the diagram in Figure 11.

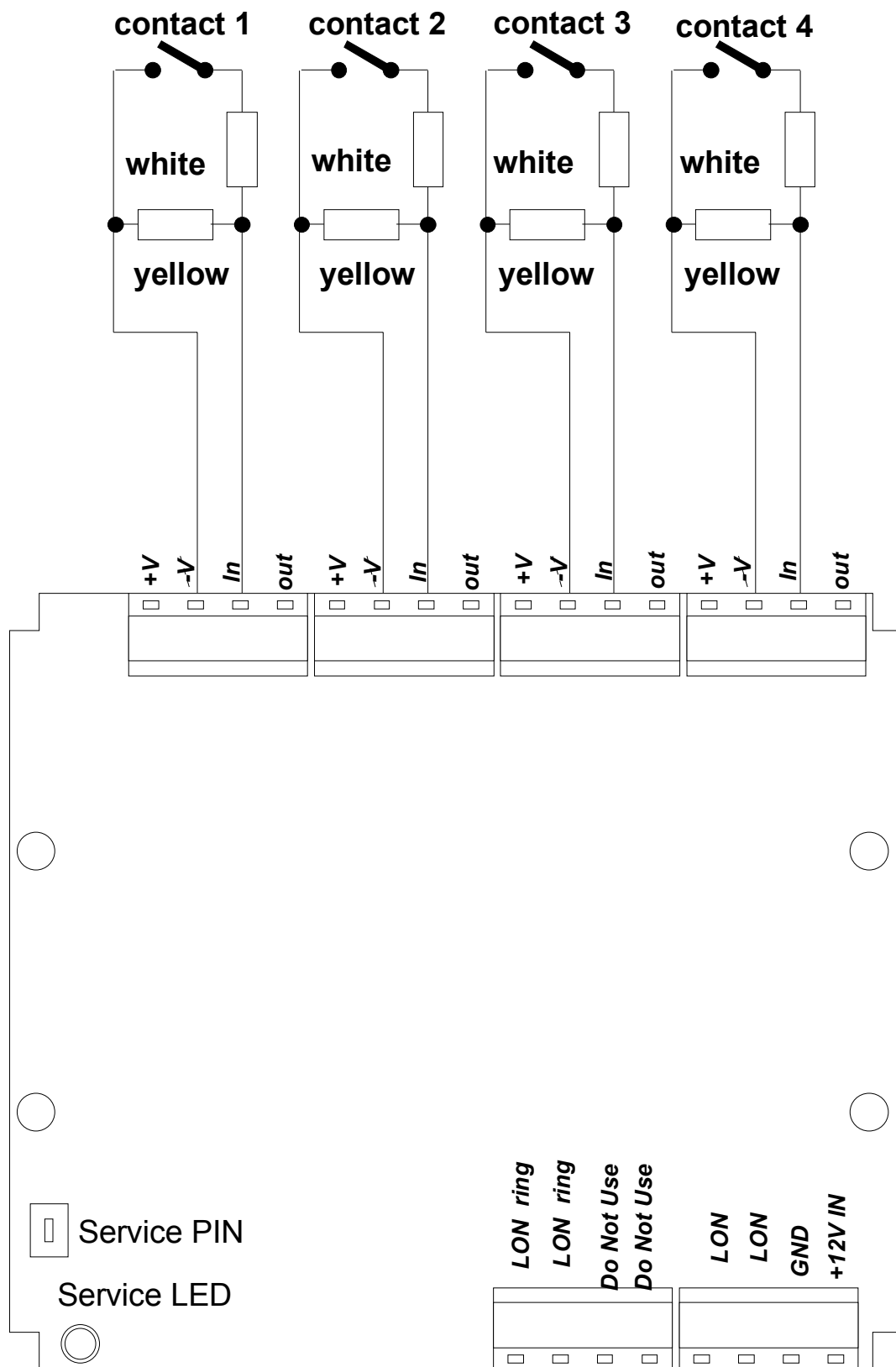


Figure 11: Cable Connection - Balanced Contacts

Detectors with Contacts

Use shielded 4-wire (or 5-wire, if the detector is provided with input disable) cables for the connections to the detectors. Make sure that the cables correspond in size to the norms indicated in the following table (maximum power voltage drop on the cable = 0.05V DC).

Type of Cable			Length [m]				
			in relation to current absorbed by sensor				
AWG	mm ²	ohm/Km	20 [mA]	50 [mA]	100 [mA]	200 [mA]	500 [mA]
12	3,3	5,7	219	88	44	22	9
14	2	8,8	142	57	28	14	6
16	1,3	14	89	36	18	9	4
18	0,9	21	60	24	12	6	2
20	0,6	34	37	15	7	4	1
22	0,35	52	24	10	5	2	1
24	0,2	85	15	6	3	1	1

Table 4: Detector Cable Length

Connect each detector in accordance with the diagram in Figure 12, inserting the special balancing resistances provided with the kit.

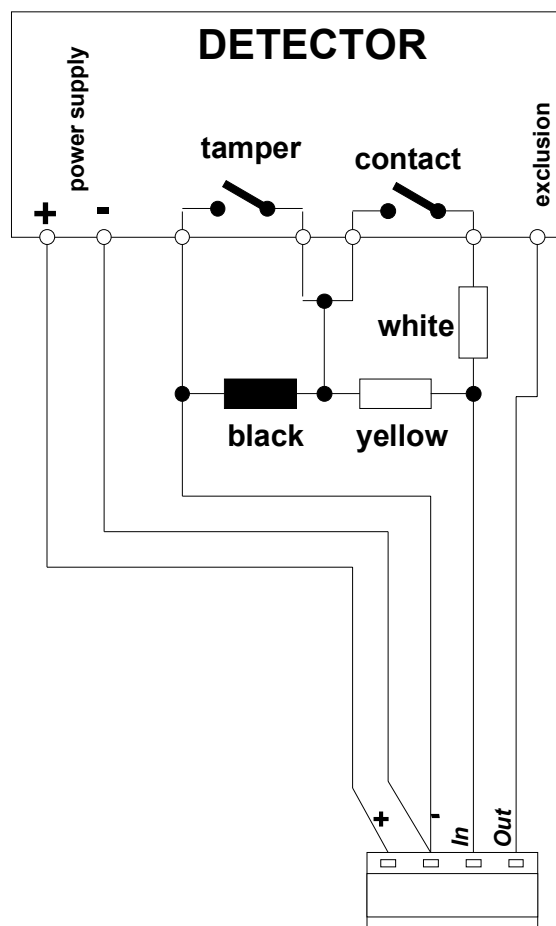


Figure 12: Detector Connection

Outputs

Connecting to the Relays (Internal Power)

Connect the leads coming from the relays to each of the 4 available outputs. Internally, all the outputs are equipped with freewheeling diodes.

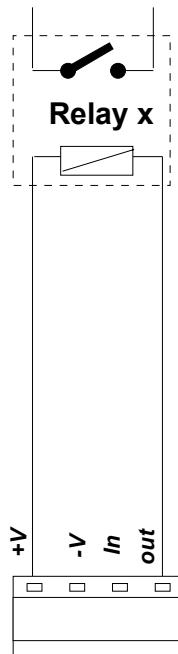


Figure 13: Relay Connection – Internal Power

Note: Maximum control current for each relay = 100mA
 Maximum control current total = 200mA

Connecting to Relays (external power)

In the event you need to control 4-relay with total current greater than 200mA, you must use an external voltage and equip the connection with a freewheeling diode.

Connect the leads from the relays to the 4 available outputs.

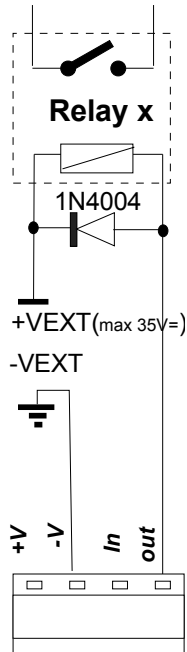


Figure 14: Relay Connection — External Power

Connecting LED Lamps

Connect the leads from the LED lamps to 4 available outputs. Each LED must be provided with a current-limiting resistor, to be mounted according to the diagram in Figure 11. The resistances in Figure 11 are dimensioned to 560 ohms in order to be able to limit the current on each individual LED to ~25mA. When several LEDs are connected in series, the resistor value must be decreased (2LEDs = 470ohm 1/2W; 3 LEDs = 390ohm 1/4W; 4 LEDs = 330ohm 1/4W). In no case must the current exceed 100mA. It is highly recommended to avoid using incandescent lamps with high onset current.

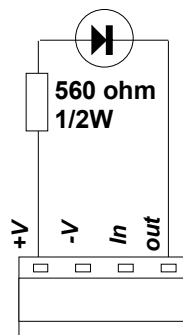



Figure 15: Cable Connection — LED Lamps

TECHNICAL SPECIFICATIONS

RTUA10 code 1500132xx

Parameter	Value
Power Supply	10.8 VDC to 14VDC (18V internal protection) 50mA [nominal], 250mA [including loads]
Weight	0.3 Kg
Dimensions	55(height) x 155(length) x 125 (width) mm
Mounting Support	Wall
Degree of Protection	IP31
Environmental temperature for correct operation	0 to 50 °C
Storage temperature	-20 to 70 °C
Relative humidity in storage	0 to 90 %, no condensation
LONWORKS^{®2} Connection	Unshielded twisted-pair cable in free topology/BUS/Ring (Transceiver FTT10A, 78Kbps)
Outputs	Type Open Collector Voltage +35V max 0V min. Current 0.1A max (internally limited) Include internal freewheeling diodes for inductive loads
Inputs	Type Balanced 5-state Current 0 to 5.7mA for each input (internal reference) Voltage +10V max / 0V min
Power Output	200mA Max. (overall)
Tamper protection	Anti-Open / Anti-Removal Tamper
Compliance with Regulations	 Directives EMC 89/336/EEC, 92/31/EEC, Low Voltage Directive 72/23/EEC, 93/68/EEC: EN60950, EN50130-4, EN55022-B

² LONWORKS[®] is a trademark of the Echelon Corporation

Spare Parts

Fuses	F1 : 250mA 250V delayed
Yellow resistor	Code 1651067
Black resistor	Code 1651068
White resistor	Code 1651069
Resistor kit	Code 1584927