

 **temaline**

TKL19 (RTUL19)



Installation Manual

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PREPARATIONS

1.1 Wall Set Up for the Cable Trays

The cables must:

- 1) Protrude from the wall.
- 2) Come out at 120cm from ground (see Figure 1) (advised).

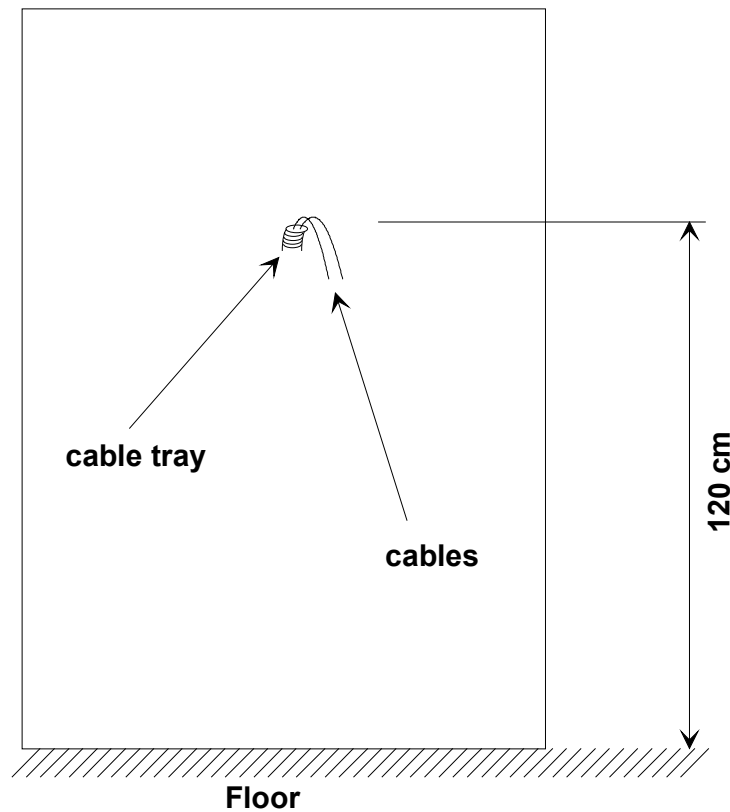


Figure 1: Wall Set Up for the Cable Trays

1.2 Electrical Connections

The RTU is powered at low voltage (12VDC 160mA), preferably using a power supply module with battery backup (RTU-Qxx), or using an ordinary power supply having the same characteristics. The power cables must be dimensioned as indicated in the table below. The maximum allowable voltage drop on the power cable is 1V.

- Cable length(m) = $1V / (I[A] \text{ load} \times 2 \times (\text{res [Ohm/km]} / 1000))$

Cable Type			Extension [m] based on load		
AWG	mm ²	ohm/ Km	160 [mA]	320 [mA]	
12	3.3	5.7	548	274	
14	2	8.8	355	178	
16	1.3	14	223	112	
18	0.9	21	149	74	
20	0.6	34	92	46	
22	0.35	52	60	30	
24	0.2	85	37	18	

The device is equipped with 2 non-removable cables of 2m length:

- Two-pole, twisted, unpolarized cable dedicated to the LON line connection
 - LON a 0,325 mm² white
 - LON b 0,325 mm² orange
- Ten-pole cable, providing the following signals:
 - +12VDC 0,34 mm² red
 - GND 0,34 mm² black
 - INPUT 1 + 0,22 mm² green / white
 - INPUT 2 + 0,22 mm² gray / green
 - RELAY 2 contact C 0,22 mm² brown
 - RELAY 2 contact NC 0,22 mm² white
 - RELAY 2 contact NO 0,22 mm² blue
 - RELAY 1 contact C 0,56 mm² green
 - RELAY 1 contact NC 0,56 mm² yellow
 - RELAY 1 contact NO 0,56 mm² gray

The signals must be connected using a shunt box with IP protection level in conformance with the type of environment in which it is to be used:

- IP55 for moist environments
- Recessed box or IP31 at least for inside installations

The shunt box must be positioned within the perimeter controlled by the access control system.

If necessary, the repeater relays must be inserted inside the box for electrical locking commands and the signal light.

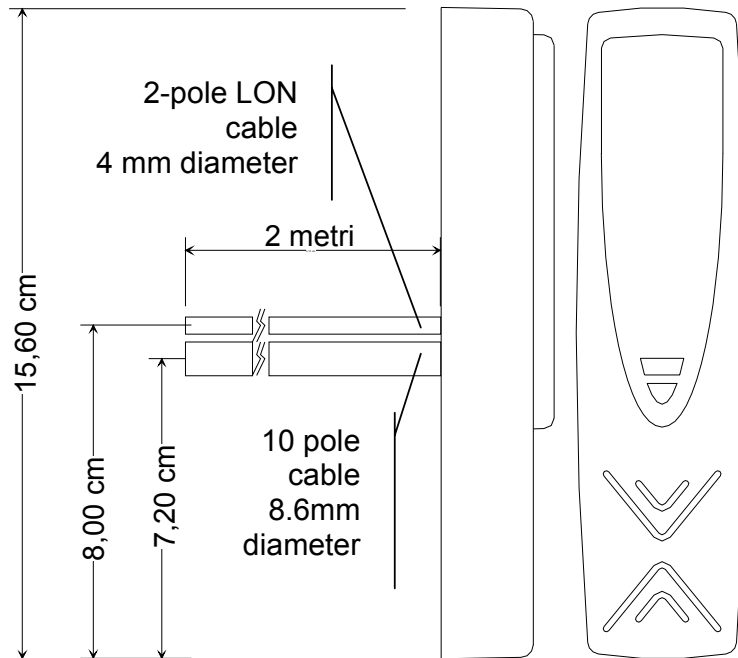


Figure 2: Position and dimensions of the non-removable cables

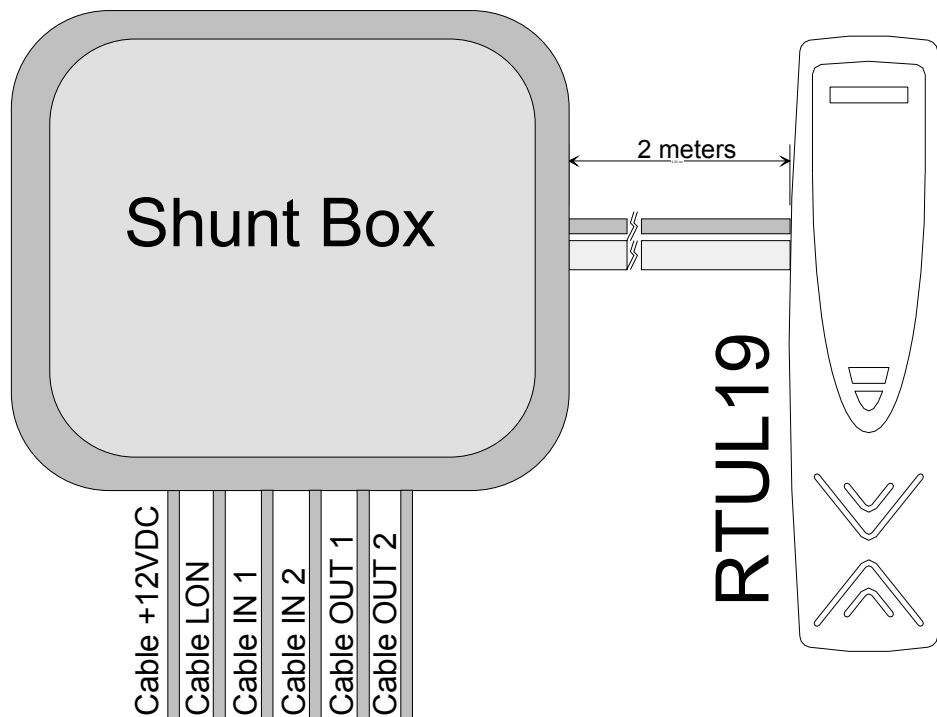


Figure 3: Shunt Box

1.3 LONWORKS® Data Cables

- The LONWORKS®¹ data cables must be double twisted-pair cables
- In a free topology configuration, the overall length of the sections must not exceed 500m
- In a bus configuration, the overall length of the sections must not exceed 2700m
- In the free topology configuration, the 50ohm terminator must be enabled by inserting the appropriate jumper into the FTT10A plug-in on the CTU-PLG06 board inside the TemaServer
- In a bus configuration, two terminators must be inserted at the two ends of the bus (resistance of 100ohm 1% ½W)
- The LONWORKS®¹ data cables must be dimensioned according to the indications in Table 1

Cable Type			Extension [m] based on cable capacitance				
AWG	mm ²	Ohm/Km	50nF/Km	100nF/K m	200nF/K m	500nF/K m	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/Capacitance of LONWORKS®¹ Cables

- The FTT10A Echelon® v1.2 User's Guide suggests using the cables as indicated in Table 2.

Make and Model	AWG	Bus Connection Max Length total [m]	Free Topology Connection Node-to-Node Max Length [m]	Free Topology - Connection Max Length total [m]
Belden 85102	16	2700	500	500
Belden 8471	16	2700	400	500
Level IV (twisted pair, solid, unshielded)	22	1400	400	500
JY (St) 2x2x0,8 (4 solid wires, spiral-twisted, shielded)	20	900	320	500
TIA Cat5	/	900	250	450

Table 2: Suggested LONWORKS® Cables

¹ LONWORKS® is a trademark of the Echelon Corporation

1.4 Mounting the Wall Bracket

Mount the bracket onto the wall as follows:

1. Placing the bracket against the wall to indicate the proper positions of the holes, make the holes for the two bolts that will go into the wall to hold the bracket (the bolts are included in the installation kit)
2. Make sure that the cable tray bathces with the hole for the passage of the cables
3. Screw in the bolts.

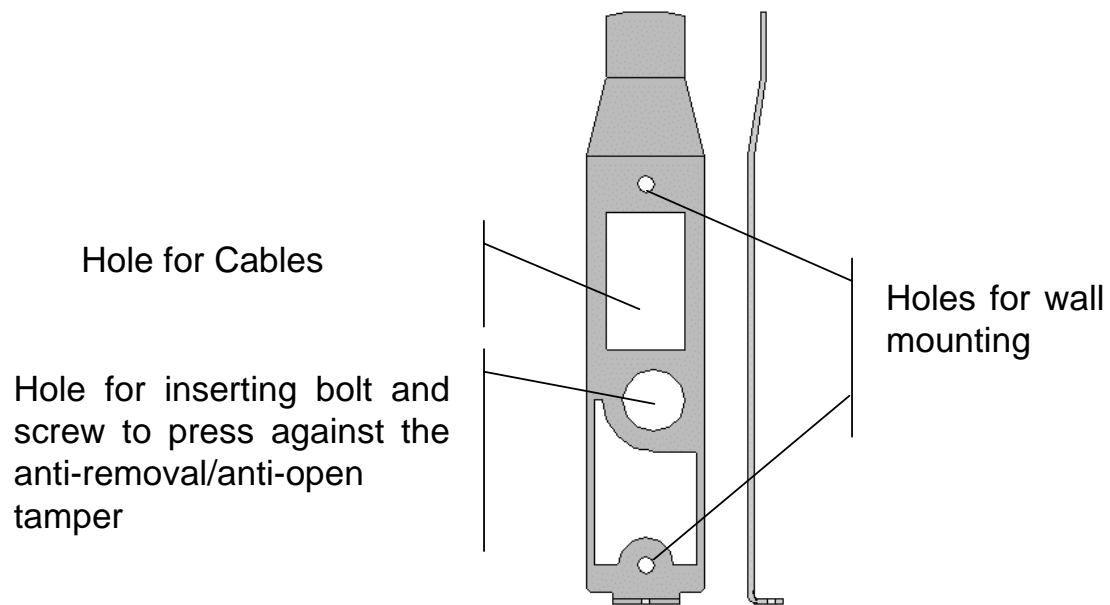


Figure 4: Wall Bracket: Front View and Side View

1.5 Cable Connections

1.5.1 LON Cable

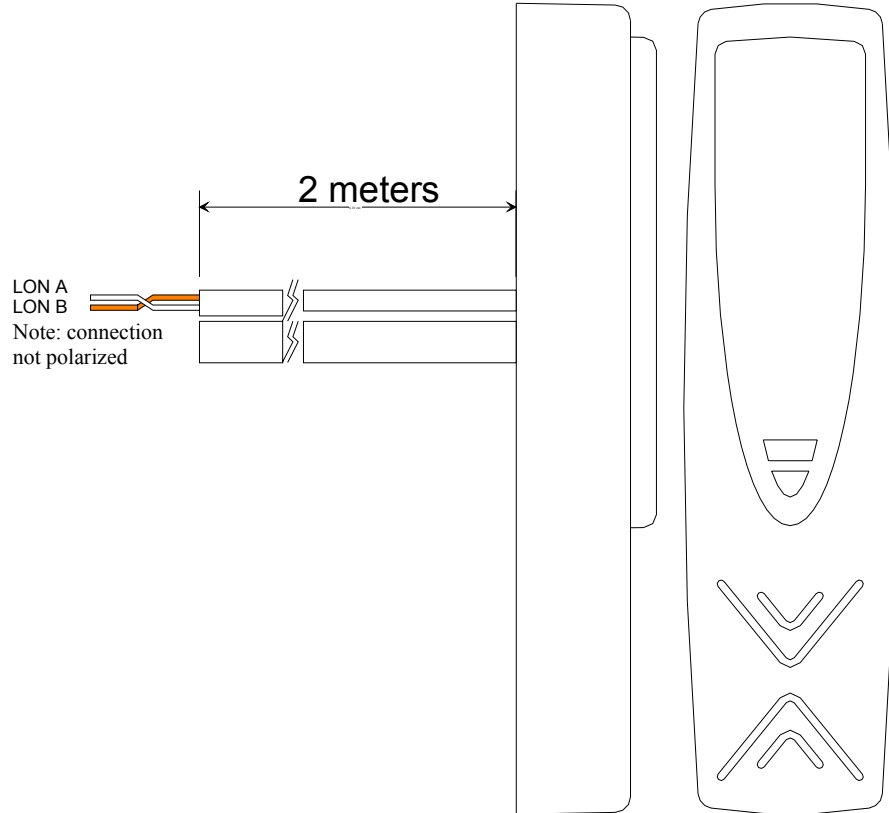


Figure 5: LON (1) Cable Connection

1.5.2 Power Supply Cable +12VDC

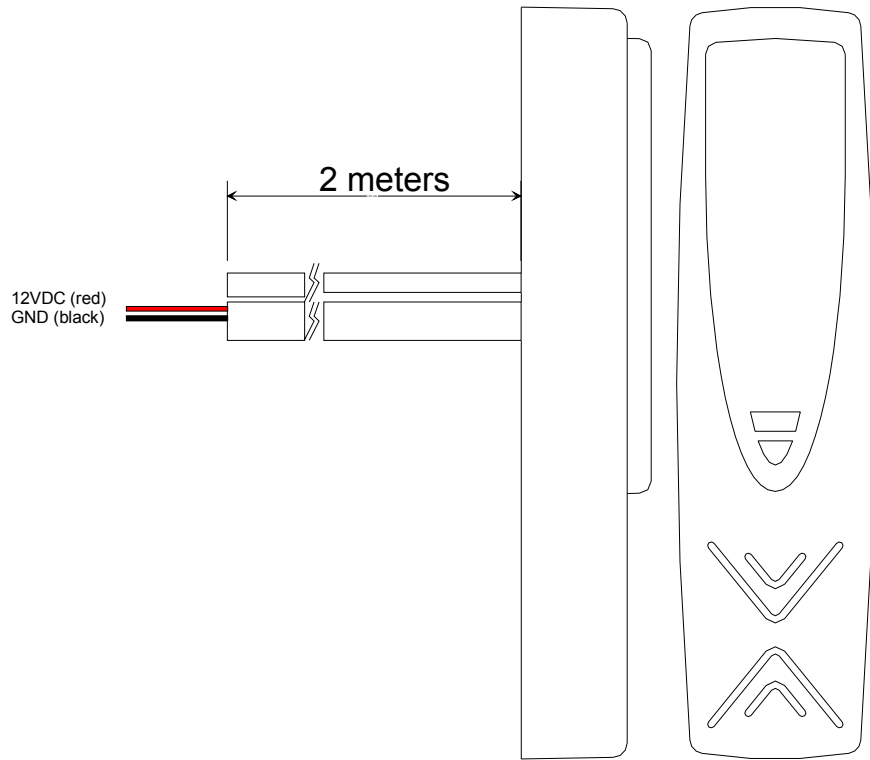


Figure 6: Power Supply Connection

1.5.3 Input Cable 1 – Door Contact

The balanced input 1 is dedicated to door status control; the balancing resistances must be positioned near the clean sensor contact.

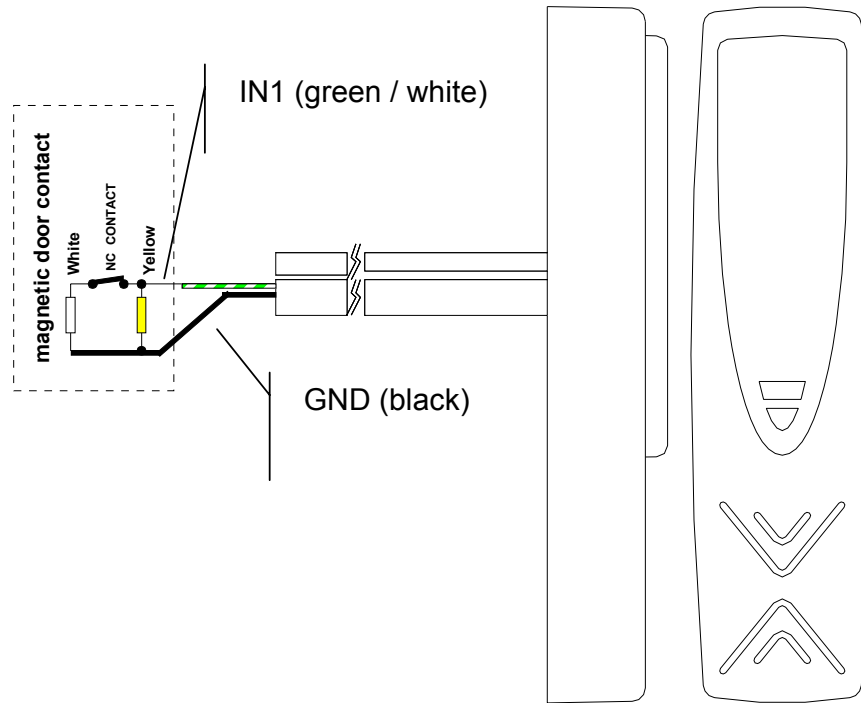


Figure 7: Connection for Balanced Input 1 – Door Contact

1.5.4 Input Cable 2 - Button

Balanced input 2 is dedicated to status control of the Open button; the balancing resistances must be positioned near the clean contact of the button.

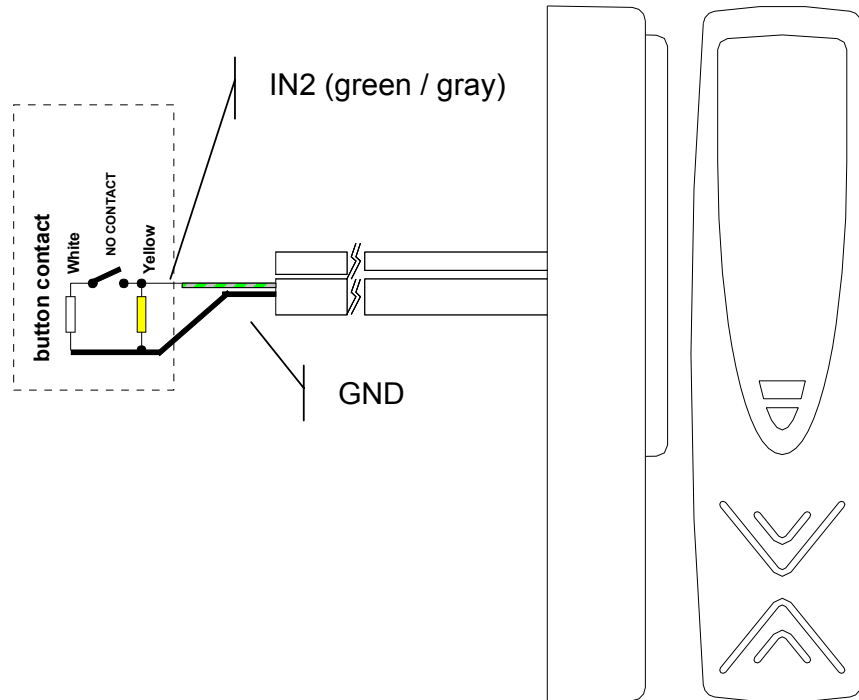


Figure 8: Connection for Balanced Input 2 - Button

1.5.5 Output Cable Relay 1- Door Open

The Relay 1 output is used for door control. It makes both NO and NC contacts available.

The external load can be powered directly by AC or DC, in accordance with the following limits:

- Minimum Load: 12VDC / 10mA

Voltage	Working Current	Peak Current max 0.5 Sec (inductive load)	Suppressor
12VDC	3A	10A	1N4004 Diode
30VDC	2A	10A	1N4004 Diode
42VDC	0.5A	7A	1N4004 Diode
42VAC	0.5A	7A	MOV 75Vrms

- Inductive load with direct current:

In this case it is mandatory to use the 1N4004 diode, which is provided, (or an equivalent) in parallel to the coil of the electrical locking device, to increase the life of the relay inside the RTU – see Figure 9.

- Inductive load with alternating current:

In this case it is mandatory to use the MOV (75VAC), which is provided, (or an equivalent) in parallel to the coil of the electrical locking device, to increase the life of the relay inside the RTU – see Figure 10.

- Life: assuming the relay is activated 200 times a day and that the voltage/current limits of the preceding table are respected, the life is guaranteed for at least 6 years; if the relay is activated less frequently, the life of the relay increases proportionally.

In case of excessive use (> 200 operations / day) it is suggested to use an external relay.

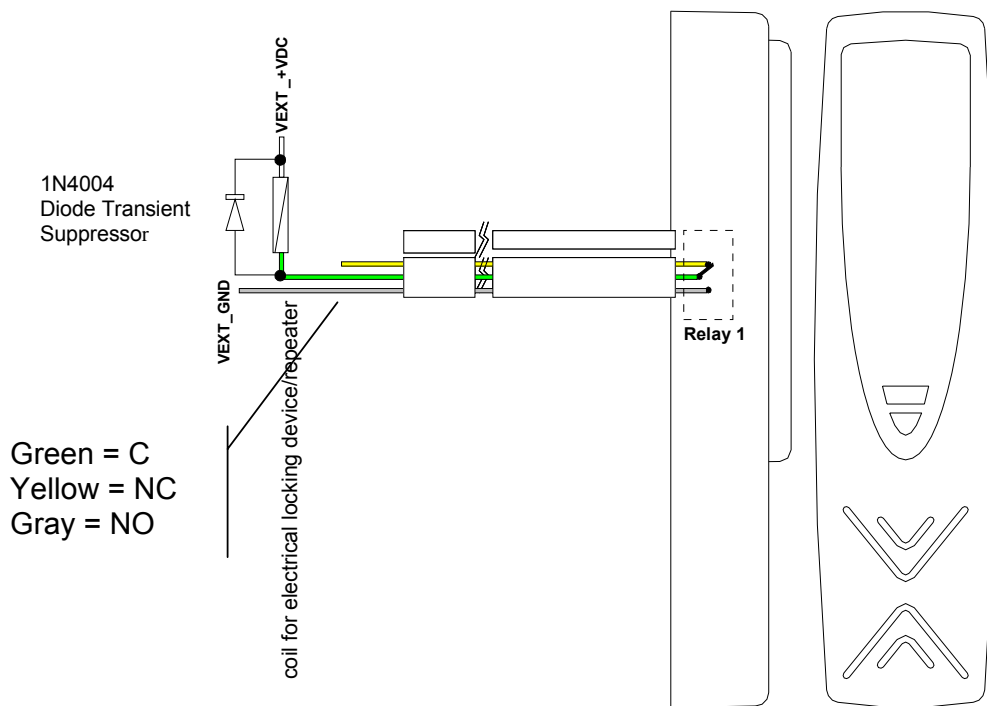


Figure 9: Connection for Output Relay 1 (NO) – Door Open – DC Voltage

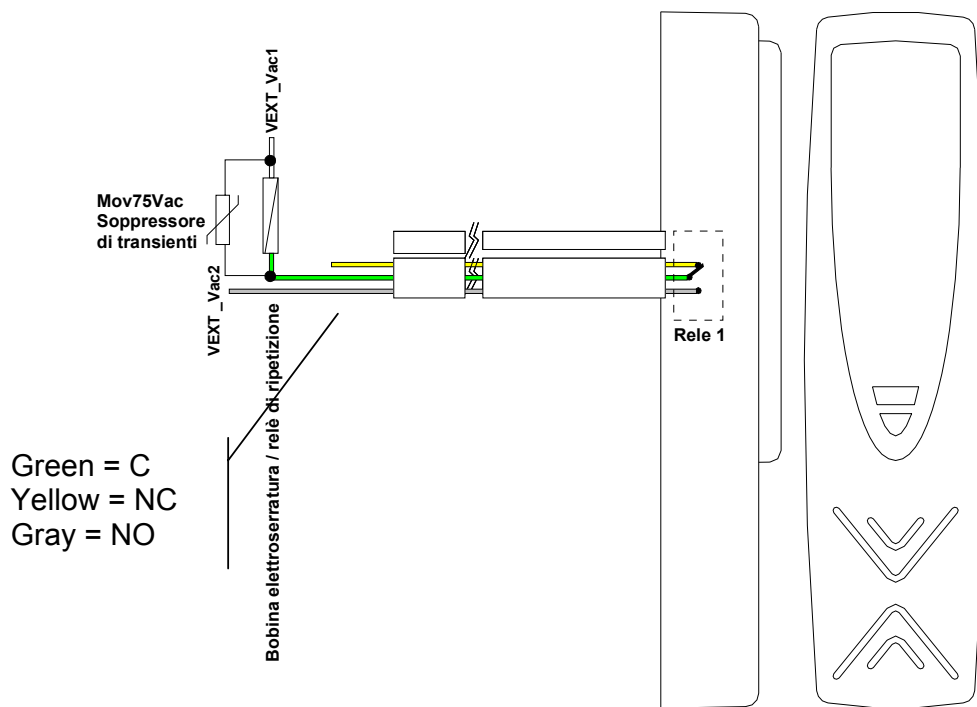


Figure 10: Connection for Output Relay 1 (NO) – Door Open – AC Voltage

1.5.5.1 Using an External Relay

In case of excessive use or use under elevated current or voltage, you must insert a relay capable of supporting the load for a higher number of operations.

The coil for the repeater relay must always be equipped with transient suppressors, as can be seen in Figures 9 and 10.

It is also suggested to use a transient suppressor on the load in order to prolong the life of the external relay.

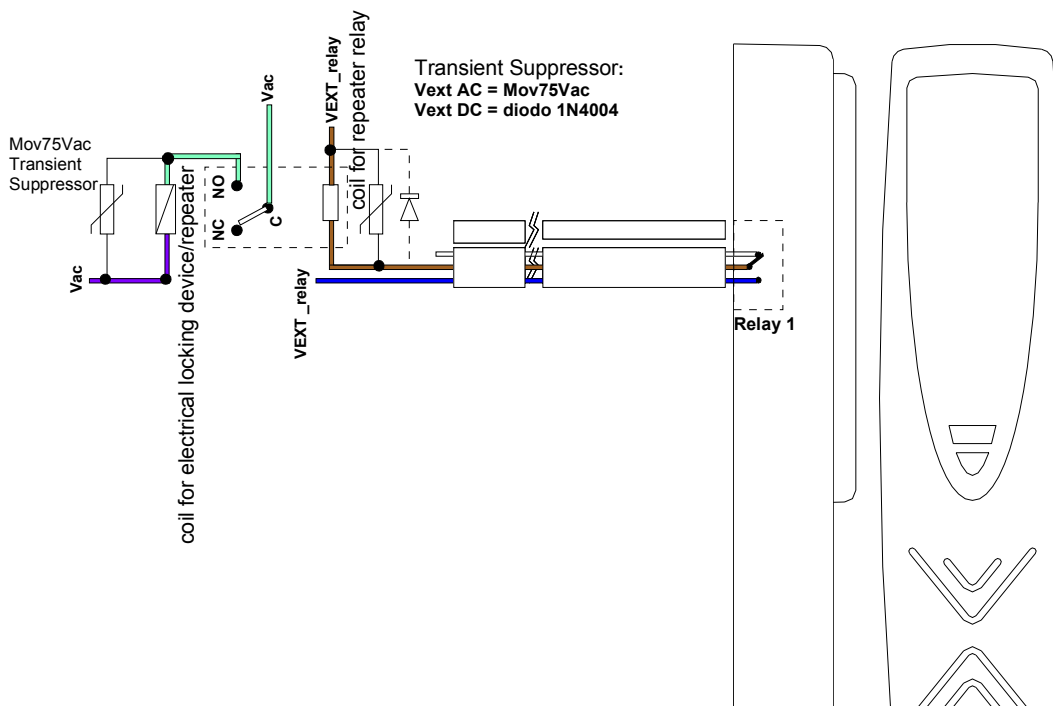


Figure 11: Connection for Output Relay 1 (NO) – External Relay

1.5.6 Output Cable Relay 2 – Signal Light

Output Relay 2 is used for signaling the status of the door (gateway occupied / free) and provides both NO and NC contacts.

The external load can be powered directly from AC or DC power, in accordance with the following limits:

Voltage	Working Current	Peak Current (max 0.5 Sec)	Suppressor
30VDC	0.5 A	2 A	1N4004 Diode
30VAC	0.5 A	2 A	MOV 75Vrms

- Inductive load with direct current:
In this case, it is mandatory to use a repeater relay and a 1N4004 diode in parallel to the coil for the electrical locking device in order to increase the life of the relay inside the RTU – see Figure 12.
- Inductive load with alternating current:
In this case, it is mandatory to use a repeater relay and the MOV (75VAC) in parallel to the coil for the electrical locking device in order to increase the life of the relay inside the RTU see Figure 13.
- Life: assuming the relay is activated 200 times a day and that the voltage/current limits of the preceding table are respected, the life is guaranteed for at least 6 years; if the relay is activated less frequently, the life of the relay increases proportionally.
- In case of excessive use (> 200 operations / day) it is suggested to use an external relay.

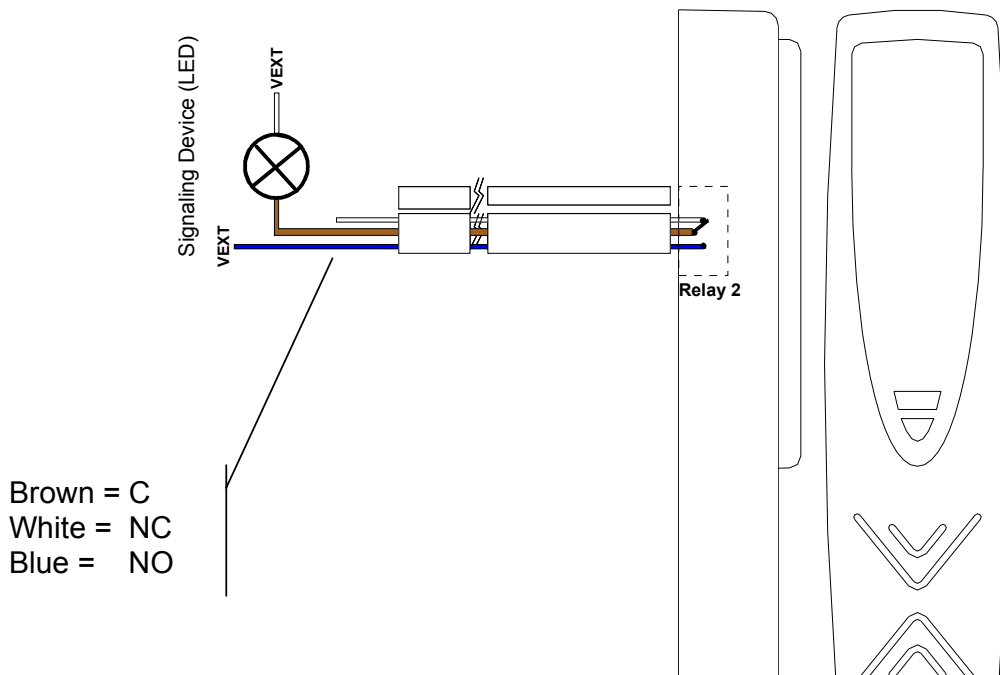


Figure 12: Connection for Output Relay 2 (NO) – Resistive Load – AC/DC Voltage

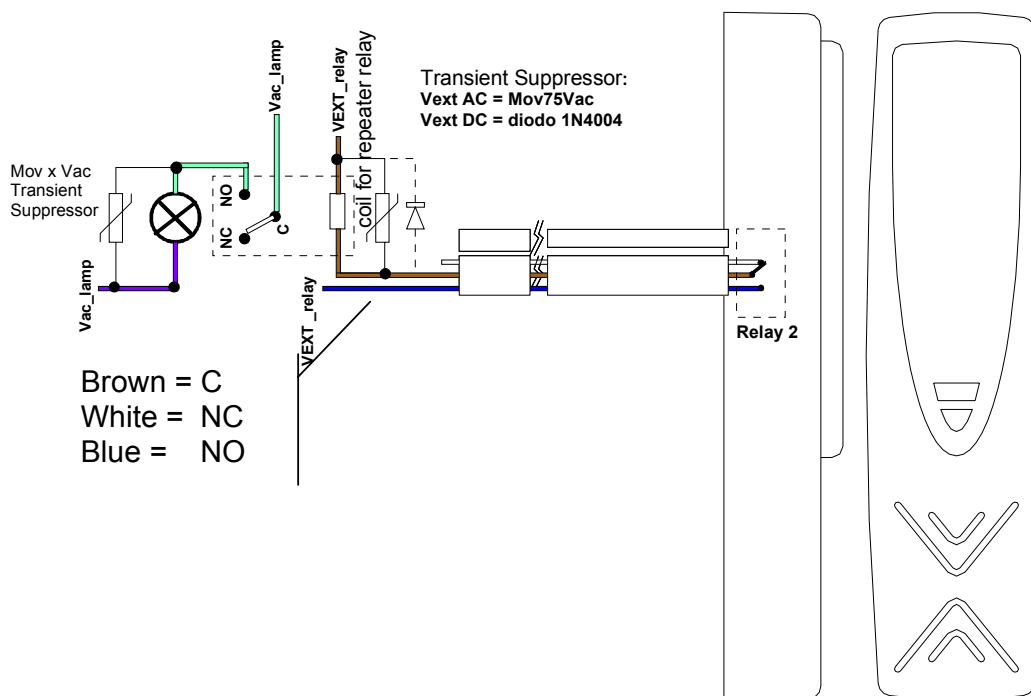


Figure 13: Connection for Output Relay 2 (NO) – Inductive Load – Repeater Relay

1.6 Mounting the Device on the Wall Bracket

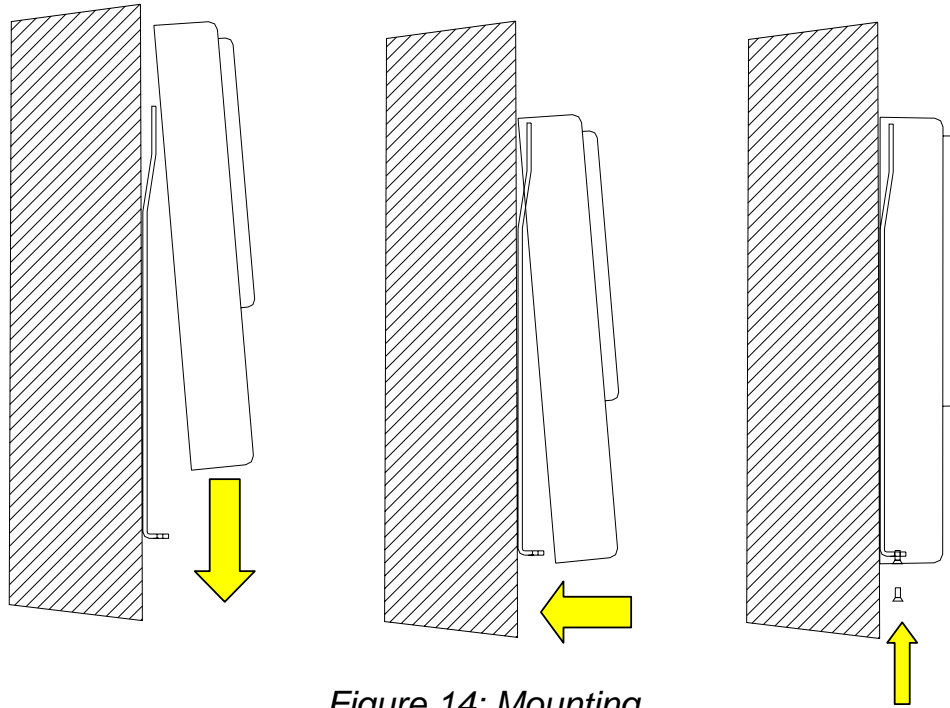


Figure 14: Mounting

- 1) The RTUL19 is positioned atop the wall bracket protrusion
- 2) The back part is aligned with the wall by rotating
- 3) The RTUL19 is mounted onto the bracket using screws

1.7 Identification Using the Service Pin

To identify the node, you can call the service pin using the relay-reed found inside the device (see Figure 15). Use the following steps for this procedure:

1. Place a small magnet as indicated in Figure 15 to call the service pin. The signal is linked to the yellow service LED (at the center), which will blink throughout the operation.
2. The TemaServer will send a *wink* command in response to the service pin, which lights the yellow LED and the buzzer three times. This allows you to verify that communications are operational to and from the TemaServer.
3. Check to see that the service LED is off at the end of the operation.

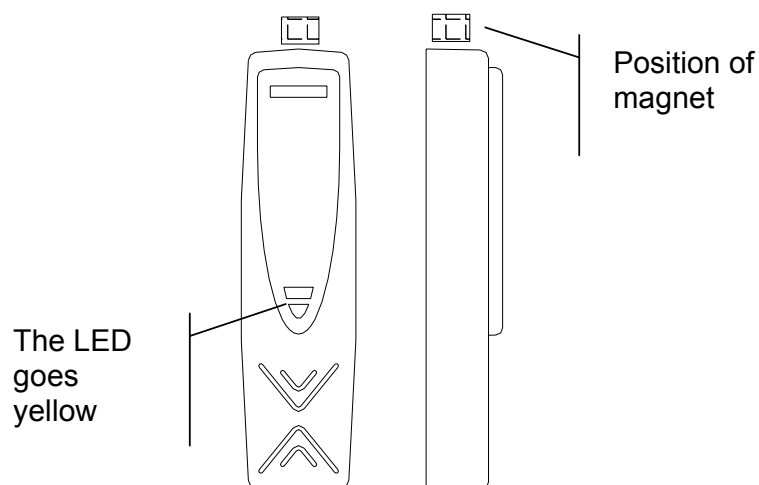


Figure 15: Calling the Service Pin Using a Magnet

1.8 Identification Using the Neuron ID


The label with the neuron ID that comes with the kit must be applied by the installer on the appropriate identification sheet. You also must indicate the location of the terminal in the appropriate box (see example in Table 3).

Description of Location <i>Entrance to Offices, First Floor, Stairway E</i>	
Description of TemaServer <i>Panel 2, Entrance, First Floor, Stairway E</i>	
RTUL19 <input type="checkbox"/>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> PROG.ID= 4896873498696586  255000255000255000 </div>

Table 3: Example of Compiled Identification Sheet

2 TECHNICAL DATA

2.1 TemaKey TKL19 (RTU-L19 code 1500154xx)

Parameter	Value
Power Supply	12V _{DC} ±15% 100mA nominal (1.4W), 160mA max (2W)
Weight	0.3 kg
Dimensions	156 Lu x 40 La x 27 sp mm
Degree of Protection	IP55
Operational Temperature	-20 to 60 °C
Storage Temperature	-20 to 70 °C
Relative Humidity of Storage	0 to 95 % without condensation
LED	1 LED tricolor Red / Green / Yellow
Buzzer	1
Inputs	2 balanced inputs with 4 statuses: normal, alarm, cut, short
Output Relay 1	Electrical Locking Device Command <ul style="list-style-type: none"> • Contacts: C / NC / NO (see page 12)
Output Relay 2	Lamp Command <ul style="list-style-type: none"> • Contacts: C / NC / NO (see page 15)
Antenna proxy	125KHz for HID cards reading distance 0 to 40 mm (MD-15W internal controller)
LONWORKS ^{®2} Connection	"Free Topology" type connected with unshielded double twisted pair cable FT3120 Smart Transceiver, 78Kbps
Conformance to Norms	 Directive EMC 89/336/EEC, 92/31/EEC, Low Voltage Directive 72/23/EEC, 93/68/EEC: EN60950 / EN55022-B / ETSI EN300-330 / EN55024

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

2.1.1 Supplied Parts

KIT of resistances for input balancing	2 White resistances 2 Yellow resistances
Fisher bolts for wall mounting	2 (S4 type) + screws
Fisher bolt for tamper	1 (S4 type) + screws
1N4004 Diode	2
MOV 75Vrms	2

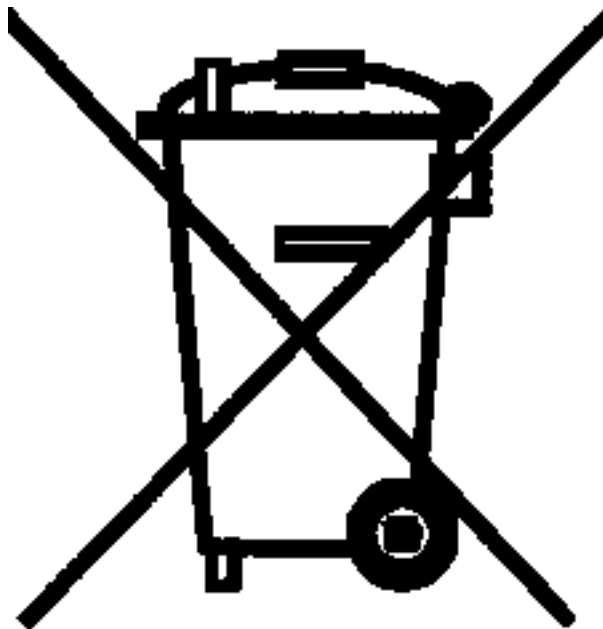
2.1.2 Optional Parts

TORX TX10 Screwdriver	Code 1500108AA
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2.2 Recycling

In application of directive 2002/96/EC regarding electrical and electronic waste devices, in vigor from 13 August 2005, Honeywell engages, when requested by the customer, to the collection, treatment, recovery, and proper disposal of all devices produced.

All users within the European Union are hereby informed of the requirement for the proper elimination of the product as regulated by laws, rules, and local procedures.



Notes:

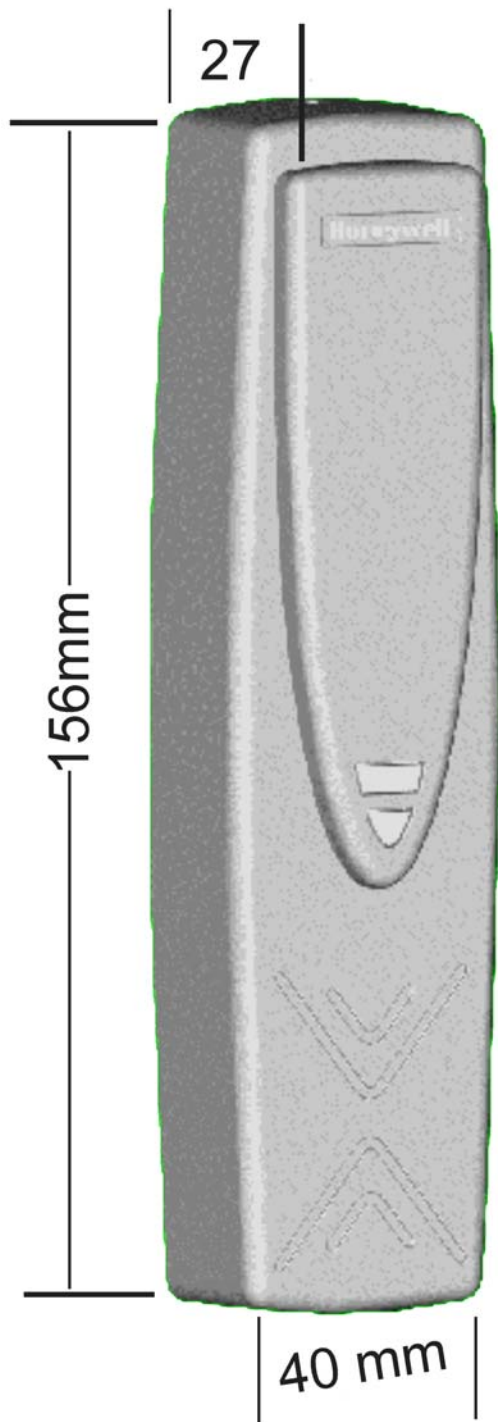


Figure 16: Temakey TKL19