

**FAAC**

# AT- 4/868 UHF

## Installation guide



Part number: 103162

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## 1 INTRODUCTION

### 1.1 PRODUCT DESCRIPTION

AT-4/868 UHF represents the most recent technology for “free hands” access solutions, that is whenever showing a ticket/card to access a gate would become uncomfortable.

The unit is designed to identify vehicles with passive tag sticker applied to the windshield of the car. Recognition occurs at a maximum distance of 4 meters.

The reader are installed next to the gate on maximum height of 2 meters.

## 2 INSTALLATION

### 2.1 PRECAUTIONS

The following precautions must be observed during normal use, maintenance and repair jobs.

- Make sure that the cables are connected to earth.
- AT-4/868 UHF must be installed and repaired only by qualified personnel.
- Before removing or installing the parts, always disconnect the power supply.
- Do not modify or add components to the AT-4/868 UHF, if not indicated by the manufacturer or by FAAC, in order not to jeopardize the compliance of the system with the safety requirements.

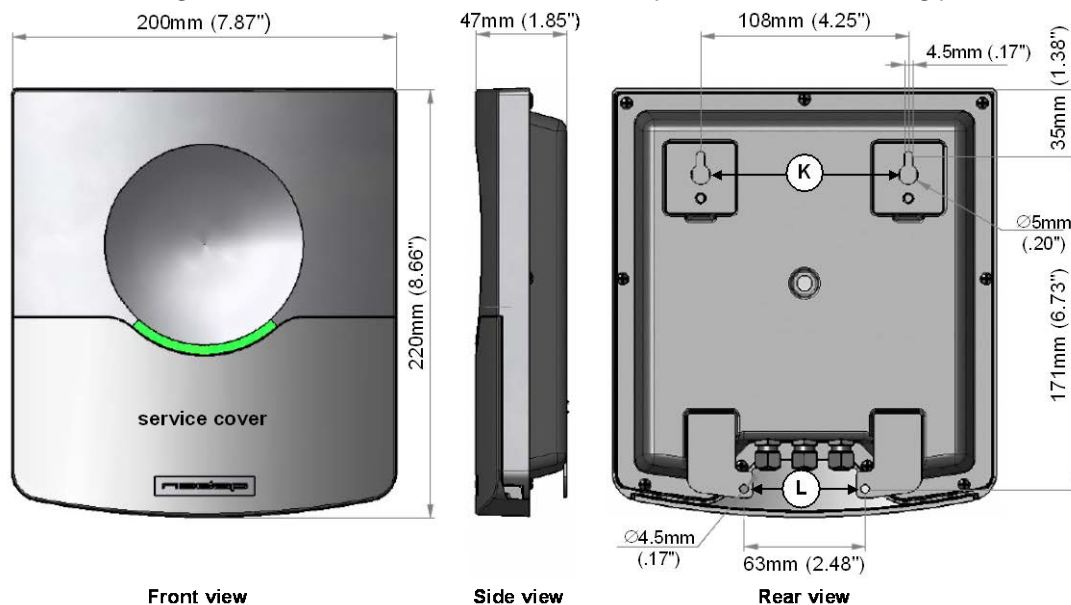
### 2.2 MOUNTING INSTRUCTIONS

AT-4/868 UHF can be mounted on every surface.

Locate a suitable position. Use both holes (K) on the upper part to mount the reader.

Open the service cover to use the supporting holes located at the bottom (L).

Refer to the image below for details about dimensions and position of the mounting positions.



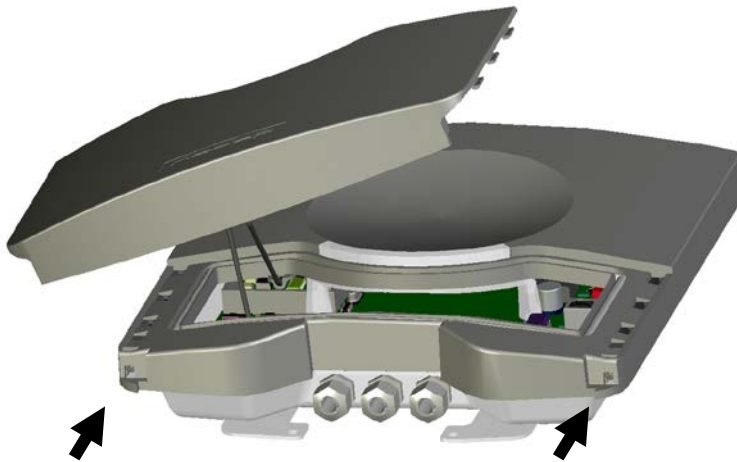
**Fig. 1: AT-4/868 UHF Reader Dimensions**



## 2.4 OPENING THE SERVICE COVER

Open the service cover to have access to the connections, check the reading range, set the operating frequency and view the LED indicators.

Use the screws at the bottom of the device to unblock the cover and make the lifting possible.



**Fig. 4: Opening of the service cover**

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*Note: Make sure that the screws are completely loose (or tightened when the cover is closed again). The screws are inserted inside the plastic structure – in this way they cannot be lost.*

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### 3 CONNECTIONS

#### 3.1 FASTENING THE CABLES

The cables of the AT-4/868 UHF are connected using EMC type cable glands.

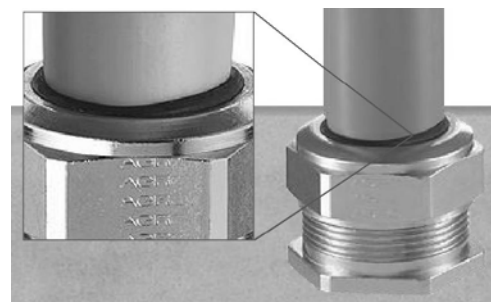
#### Use a shielded cable for the power supply.

Mounting instructions:

1. Fit the nut (1), the seal (2) and the cable gland (3) on the cable.
2. Cut the external sheath to the required length.
3. Fold the shielding screen (4) on the cable gland and reduce the shield as shown in
4. Screw the nut (1) until the seal (2) starts to come out. See Fig. 6.



**Fig. 5: Shielded cable**



**Fig. 6: Tightening**

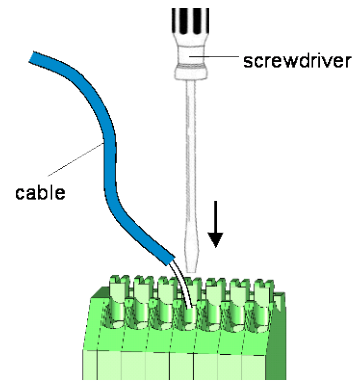
For a water-proof protection a correct mounting and tightening of the EMC connectors are of essential nature.

See Appendix A for any details on the cable glands.

### 3.2 CONNECTIONS

The cables inside the AT-4/868 UHF are connected by means of connectors with spring terminals which make for an easy and intuitive use.

1. Remove the sheath from the cable for approx. 9 mm (0.35 inch).
2. Using a screwdriver push downward to free the cable passage. Use a screwdriver with thin flat bit.
3. Fit the cable into the connector terminal.
4. When the screwdriver is removed, the cable remains blocked thanks to the spring connector.
5. Check if the cable is correctly fixed by drawing it gently.



**Fig.7**

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*Note 1: One cable only for each terminal.*

*Note 2: Usually there is no need to use pins. However, if this is necessary, you can use them provided that they are correctly crimped.*

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See Appendix A for the recommended cable section.



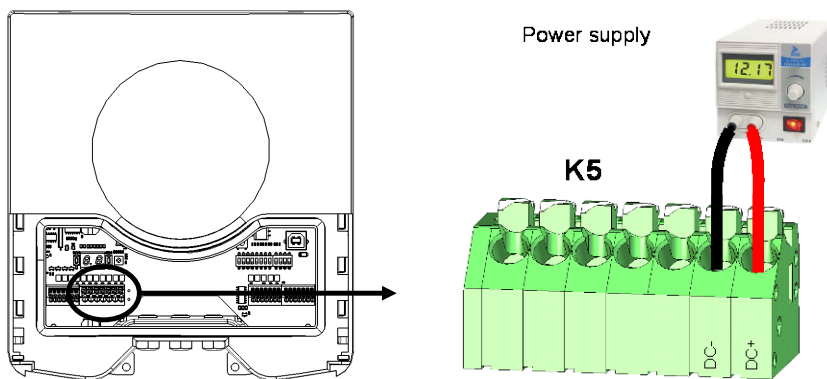
### 3.3 POWER SUPPLY

AT-4/868 UHF requires a DC 12 – 24V power supply. The max. current consumption is 1A @ 12VDC, 0.5A @ 24VDC.

Connections:

DC-	0V.
DC+	12 - 24VDC.

*Note: The electrical connection is protected by means of a self-resetting fuse.*



**Fig. 8: Power supply Wiring**

## 3.4 COMMUNICATIONS

### 3.4.1 RS232 CONNECTION

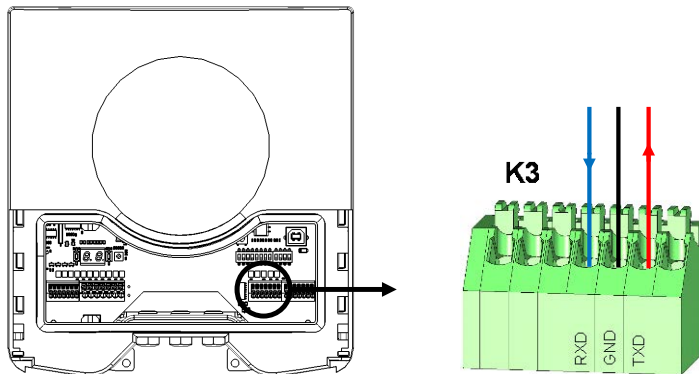
AT-4/868 UHF has an RS232 interface onboard. This interface does not support hardware handshake signals.

Connections:

RXD	Reception (input)
GND	Ground
TXD	Transmission (output)

*Note 1: Max. cable length 15 m.*

*Note 2: Activate the RS232 interface by setting the DIP-switches SW1-2 to ON. See chapter 5.2 for further details.*



**Fig. 9: RS232 wiring**

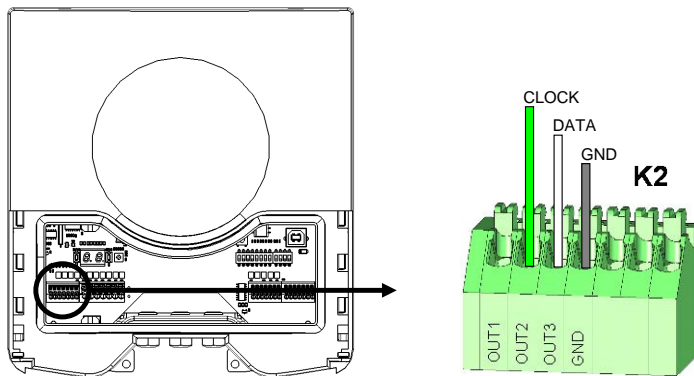
### 3.4.2 WIEGAND, MAGSTRIPE, BARCODE CONNECTION

Wiring depends on the required type of communication protocol. Fig. 10 shows the connection for the Wiegand protocol.

Connections:

	<b>WIEGAND</b>	<b>MAGSTRIPE</b>	<b>BARCODE</b>
<b>OUT1</b>	-	Card Loaded	-
<b>OUT2</b>	Data-0 (green)	Clock	-
<b>OUT3</b>	Data-1 (white)	Data	Data
<b>GND</b>	Ground (black)	Ground	Ground

*Note: Cable max. length 150 meters*



**Fig. 10: MAGSTRIPE wiring**

### 3.5 DIGITAL I/O

#### 3.5.1 RELAY OUTPUT

The relay output activates automatically when a transponder is identified.



The green light on the front element lights on together with the relay.

Connections:

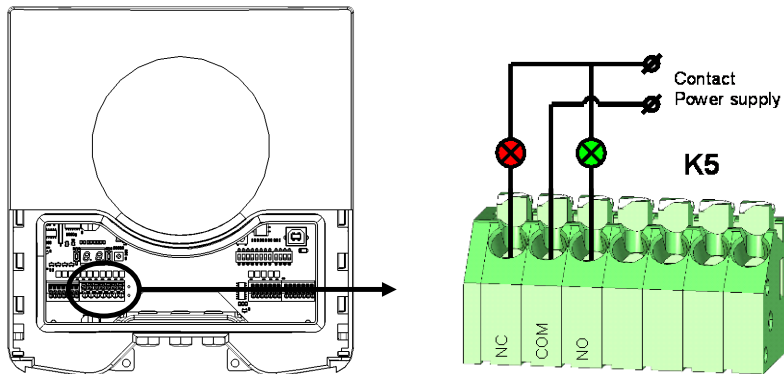
NC	Normally closed contact
COM	Common contact
NO	Normally open contact

Operation of the contacts:

Max. current: 2A

Max. voltage: 24VDC

Consumption: 50W



**Fig. 11: Relay output**

### 3.5.2 DISABLED READING

AT-4/868 UHF reading can be completely disabled by means of the RDIS input. This input is commonly used together with a sensor (e.g. with a magnetic loop) that detects the presence of a vehicle. Use a voltage-free contact to connect the 5V to the RDIS input. When the RDIS input is open, the reader is active.

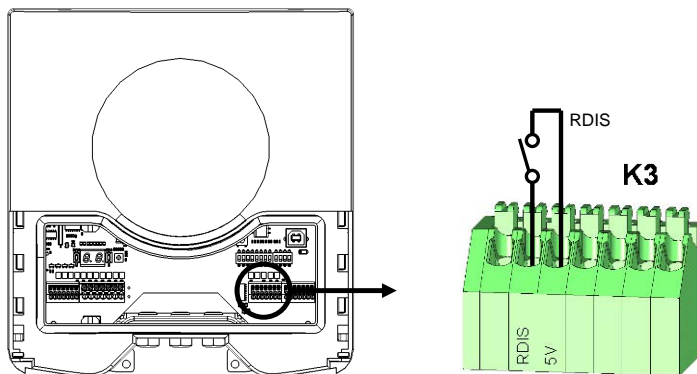
Connections:

<b>RDIS</b>	Disabled reader input
<b>5V</b>	Internal 5V

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**Important:** Using an external power pack for 5V can damage the reader.

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**Fig. 12: RDIS**

### 3.5.3 TAMPER SWITCH

The device is equipped with a TAMPER switch for signalling any unauthorized cover opening. This contact can be connected to an external alarm system. The contacts are normally closed when the cover is closed.

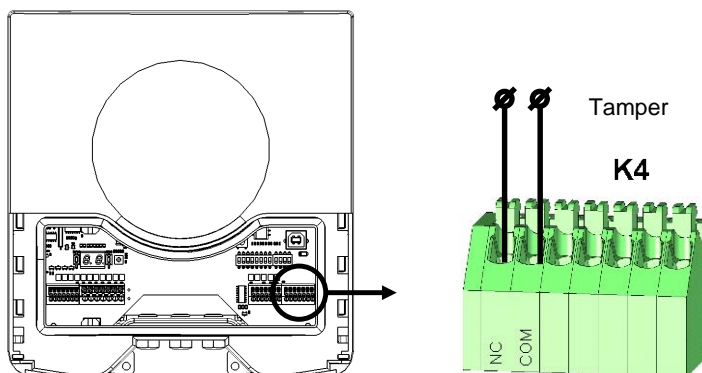
Connections:

NC	Tamper (normally closed)
COM	Tamper (common contact)

Operation of the contacts:

Max. current                      50 mA (0.5 Volt voltage drop)

Voltage                      +24 VDC



**Fig. 13: Tamper switch**

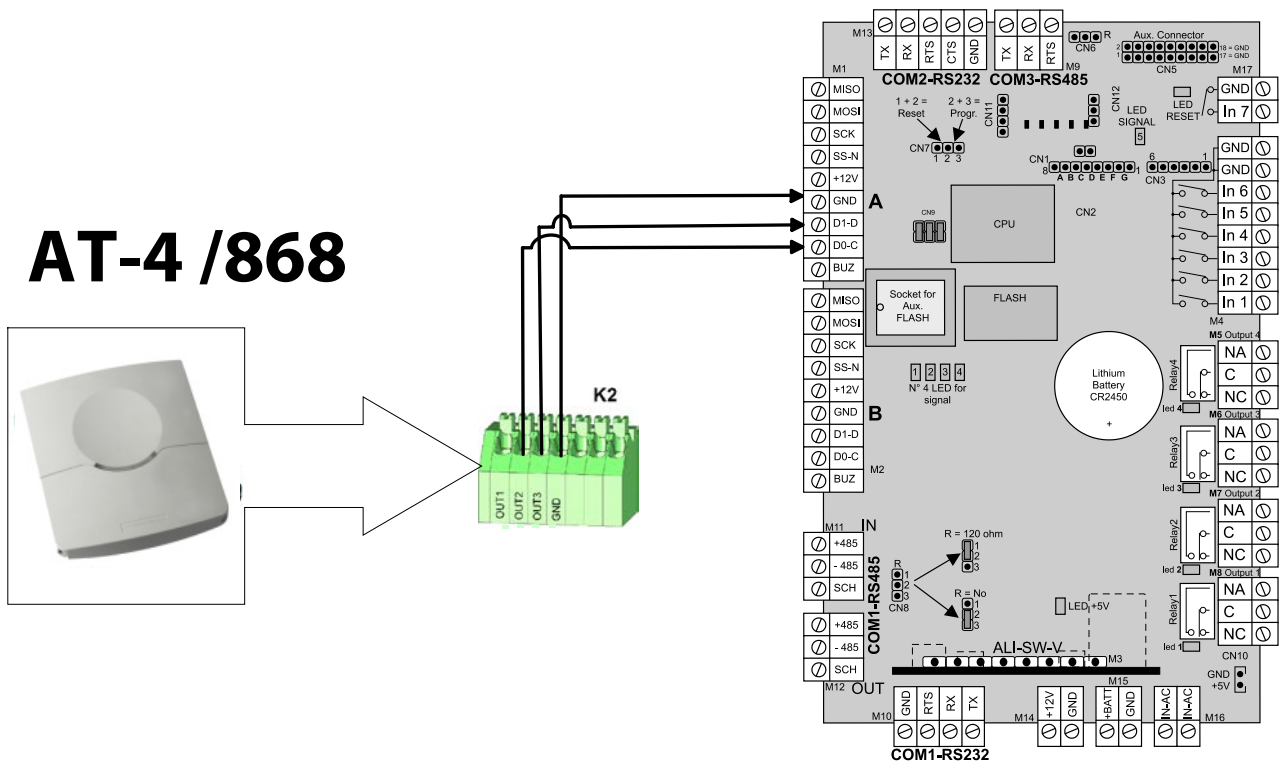
## 4 DIAGRAMS OF CONNECTIONS TO EQUIPMENT

### 4.1 CONNECTION TO ACCESS CONTROL

Perform the connection between the terminal K2 of the AT-4/868 UHF reader and the terminal M1 or M2 of the Cobra board.

K2	Cobra (M1/M2)
Out2	D0-C
Out3	D1-D
Gnd	Gnd

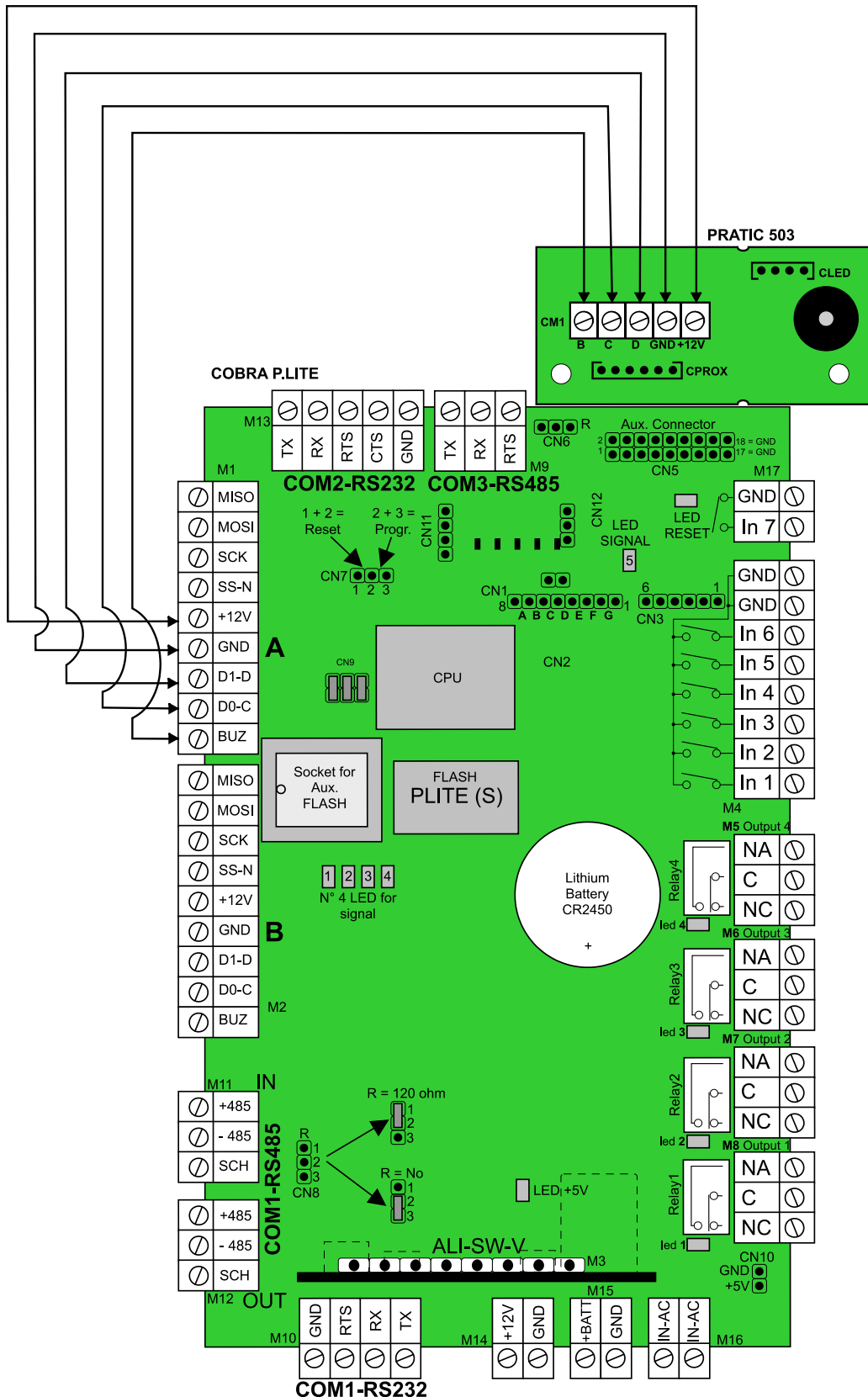
**Table 1: connection between terminals**



**Fig. 14: Connection to Access Control**

### 4.2 CONNECTION TO PARKLITE

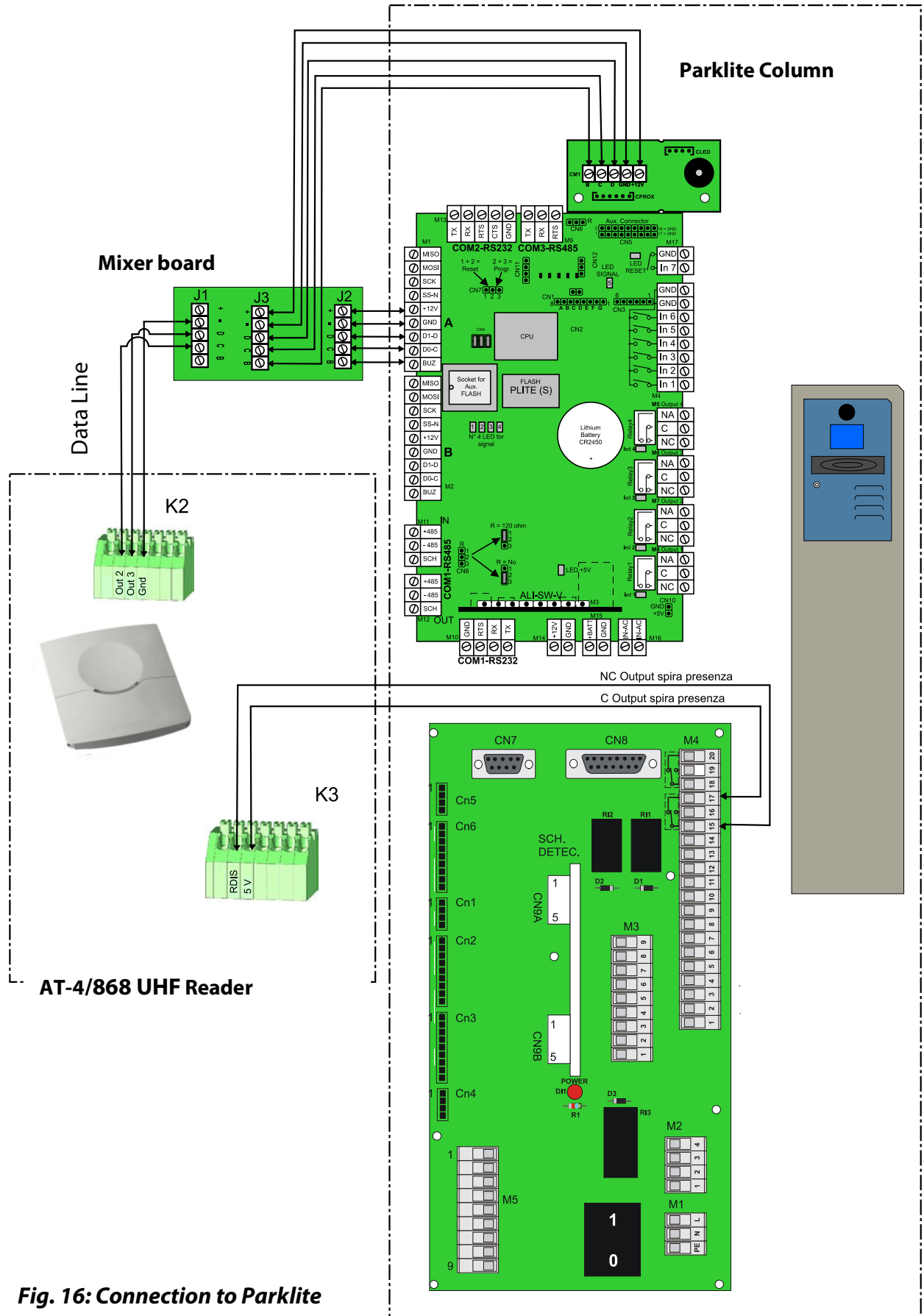
In order to connect the AT-4/868 UHF reader, you need to disconnect the wiring between the Plite Board and the Pratic 503 Board already existing inside the column.



**Fig. 15: Internal wiring between Cobra Plite and Pratic 503**



Use a Mixer board and perform the connections according to the diagram below.



**Fig. 16: Connection to Parklite**

Pratic	Mixer (J3)
+	+
-	-
D	D
C	C
B	B

Mixer (J2)	Cobra (M1)
+	+12V
-	GND
D	D1-D
C	D0-C
B	BUZ

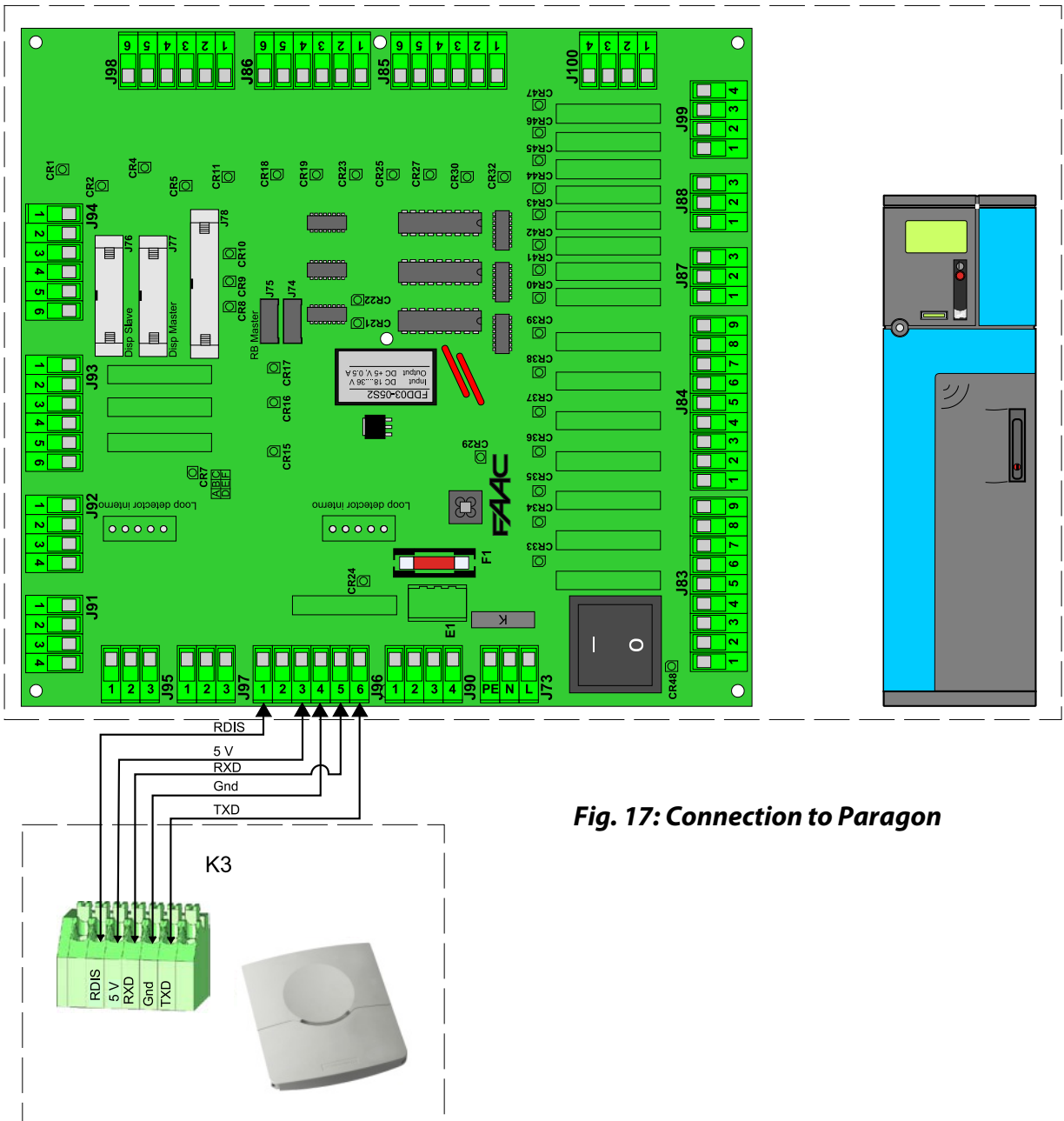
Mixer (J1)	AT4/868 (K2)
+	
-	GND
D	OUT3
C	OUT2
B	

AT-4/868 (K3)	TD/TR interface
RDIS	17
5V	15

**Table 2: connection between terminals**

### 4.3 CONNECTION TO PARAGON

Perform the connection between the terminal K3 of the AT-4/868 UHF reader and the terminal J96 of the Paragon terminal power board.



**Fig. 17: Connection to Paragon**

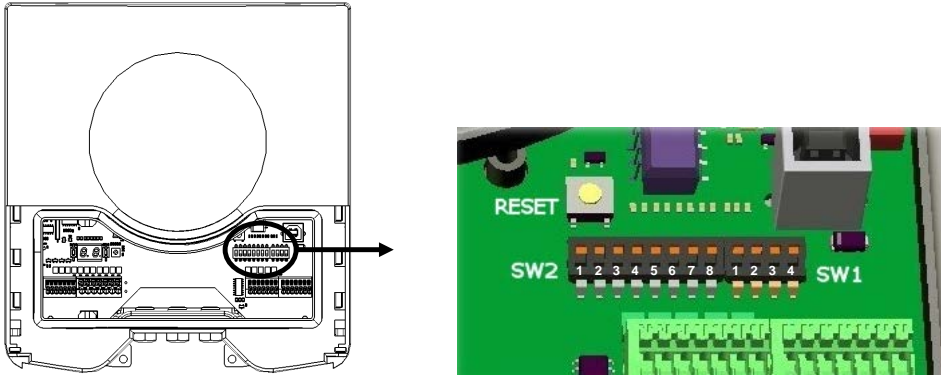
AT-4/868 UHF (K3)	Power board (J96)
RDIS	1
5V	3
RXD	5
GND	4
TXD	6

**Table 3: connection between terminals**

## 5 SETTING THE DIP-SWITCHES

The DIP-switches are located behind the cover. The function of the switches SW2 depends on the firmware.

The switches, from SW1-1 to SW1-4, are described below.



**Fig. 18: DIP-switches**

### 5.1 RS232 / RS422 SELECTION

Set the Dip Switch 1 in OFF position.



UHF processor



Backward compatible processor (P61 or Q70)

### 5.2 RS232 / RS422 SELECTION

RS232 or RS422 interface selection.



RS232 interface enabled.



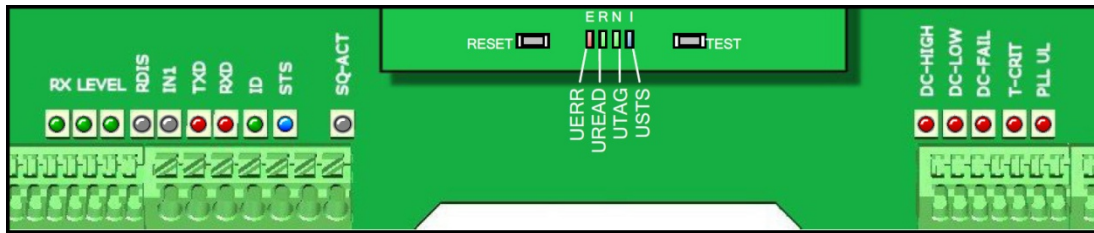
RS422 interface enabled.

### 5.3 SW1-3 SW1-4

The switches SW1-3 and SW1-4 are provided for reserved applications. Please leave them on ON.

## 6 LED DESCRIPTION

A series of LEDs indicates the current status of the AT-4/868 UHF reader.



**Fig. 19: LEDs**

Table 4: description of the LEDs operation.

LED	Description
	Indicates the Power of the signal received by the Tag. These LEDs can also indicate any radio interferences. In the event of interferences, try to switch to a different frequency.
RX LEVEL	
RDIS	LED Reading disabled. It lights on if the reading is disabled
IN1	Input status 1. It lights on when the input 1 contact is closed.
TXD	Data transmission (RS232, RS422, USB, I/F-board).
RXD	Data reception (RS232, RS422, USB, I/F-board).
ID	Identification. It flashes rapidly when a valid Transponder is identified.
STS	Status LED. Slow flashing: (0.8 sec on / 0.8 sec off). Indicates that the power supply is present and that the processor is running. Fast flashing: it appears following a system start. Double flashing: Configuration menu active. Off: Indicates a fault.
SQ-ACT	Sensitivity check active.
DC-HI	Power voltage too high.
DC-LO	Power voltage too low.
DC-FAIL	Internal power missing.
T-CRIT	Temperature too high.
PLL UL	PLL released. Try to change frequency.
USTS	UHF processor status LED. Should be slowly blinking.
UTAG	Tag Found.
UREAD	Tag data read complete.
UERR	Error during tag identification.

**Table 4: LED indications**

## 7 UHF FREQUENCIES

### 7.1 RADIO REGULATION

The AT-4/868 reader operates on the 860 – 960 MHz band. Regulations in this band are not standardized world-wide. Generally the regulations can be divided into several regions.

Per region a specific frequency band is available. This frequency band is divided into frequency channels. If local radio regulations require frequency hopping (FHSS), then the AT-4/868 reader automatically selects and uses the available channels.

Region	Technique	Frequency (Mhz)	Channels
Europe		865.6 – 867.6	4
Americas	FHSS	902.0 – 928.0	52
Brazil	FHSS	915.0 – 928.0	43
China	FHSS	920.5 – 924.5	20
Australia	FHSS	920.0 – 926.0	12
Israel		915.0 – 917.0	4
Japan	LBT	952.0 – 954.0	-
Korea	FHSS	917.0 – 920.8	-

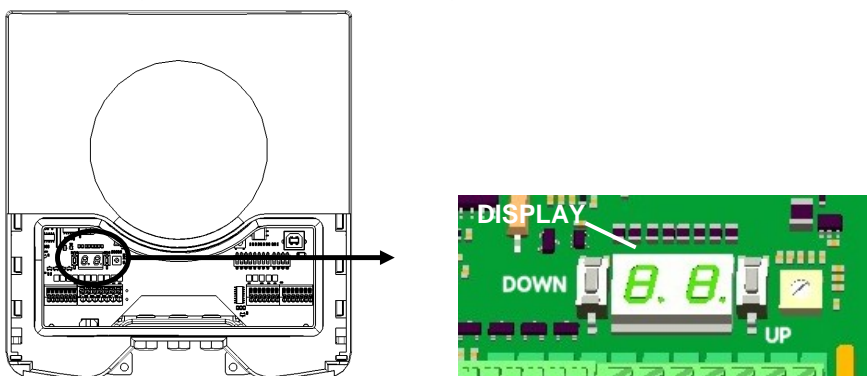
**Table 5: region specific parameters**

### 7.2 FREQUENCY CHANNEL SELECTION

If no frequency hopping is required, you should select an available frequency channel manually. This can be realized as described below. Select an available frequency channel to achieve the best performance and to avoid interference from other readers or equipment.

Press once the UP or DOWN key and the display will show the value indicating the currently selected frequency. Refer to the following table to check the real operating frequency.

When the display is active, press the UP key to select a higher frequency. In the same way, press the DOWN key to select a lower frequency. The display switches automatically off after 5 seconds.



**Fig. 20: frequency setting**

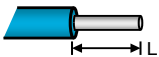
Display Value	Frequency (Mhz)
1	865.7
2	866.3
3	866.9
4	867.5

**Table 6: Frequency value for Europe**

Display Value	Frequency (Mhz)
1	915.1
2	915.7
3	916.3
4	916.9

**Table 7: Frequency value for Israel**

## TECHNICAL SPECIFICATIONS

	SPECIFICATIONS	NOTES
Dimensions	200x220x46.5mm (7.87 x 8.66 x 1.83 inch)	
Weight	0.75 kg (1.65 lbs)	
Cover colour	RAL7017 (dark grey)	
Cover material	Polycarbonate	
Frame material	Aluminium	
Input cable thickness	AGRO Progress MS EMC IP68	4-6mm diameter
Cable core length	8 ... 10mm (0.3 ... 0.4 inch)	
Connector K5	0.5mm <sup>2</sup> ... 1.5mm <sup>2</sup> (AWG20 ... 16)	Spring contact PTSA 1.5
Connector K2,3,4	0.14mm <sup>2</sup> ... 0.5mm <sup>2</sup> (AWG24 ... 20)	Spring contact PTSA 0.5
Protection class	IP65	
Operating ambient temperature	-30°C ... +60°C (-22°F ... +140°F)	
Relative humidity	10 ... 93% non-condensation	
Identification Range	4 meters (12 feet)	TAG on line
Power supply	12VDC ... 24VDC	
Consumptions	1A @ 12VDC, 0.5A @ 24VDC	
Operating frequency	Europe: 865...868 MHz Americas: 902...928 MHz (FHSS) Brazil: 915...928 MHz (FHSS) China: 920...928 MHz (FHSS) Australia: 920...926 MHz (FHSS) Japan: 952...954 MHz	
Polarisation	Horizontal	
EIRP	< 2 W (33 dBm) ERP (CE) < 4 W (36 dBm) EIRP (FCC)	
Immunità	EN 301 489-1 V1.4.1 EN 301 489-3 V1.4.1	
Safety	EN 60 950-1: 2001	
Emissions	EN 302 208-2 V1.3.1 FCC part 15.245 incl. Spread Spectrum Industry Canada RSS210	
Shock	IEC 68-2-27 Ea	50 G, 6 ms, 10x3 dir
Bump	IEC 68-2-29 Eb	25 G, 6 ms, 1000x3 dir
Random vibration	EN 50155	5 – 150Hz, 5 G, 20 sweeps x 3 dir



**A PART NUMBERS****LETTORI**

AT-4/868 Reader

part number: 103162

**TRANSPONDERS**

Windshield Tag UHF 868

part number: 786348