

FAAC

# AT- 4

## Installation guide



Part number: 103161

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## 1 INTRODUCTION

### 1.1 PRODUCT DESCRIPTION

AT-4 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 system has been developed to read a transponder at a distance of 4 meters in a reliable manner.

## 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 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, if not indicated by the manufacturer or by FAAC, in order not to jeopardize the compliance of the system with the safety requirements.

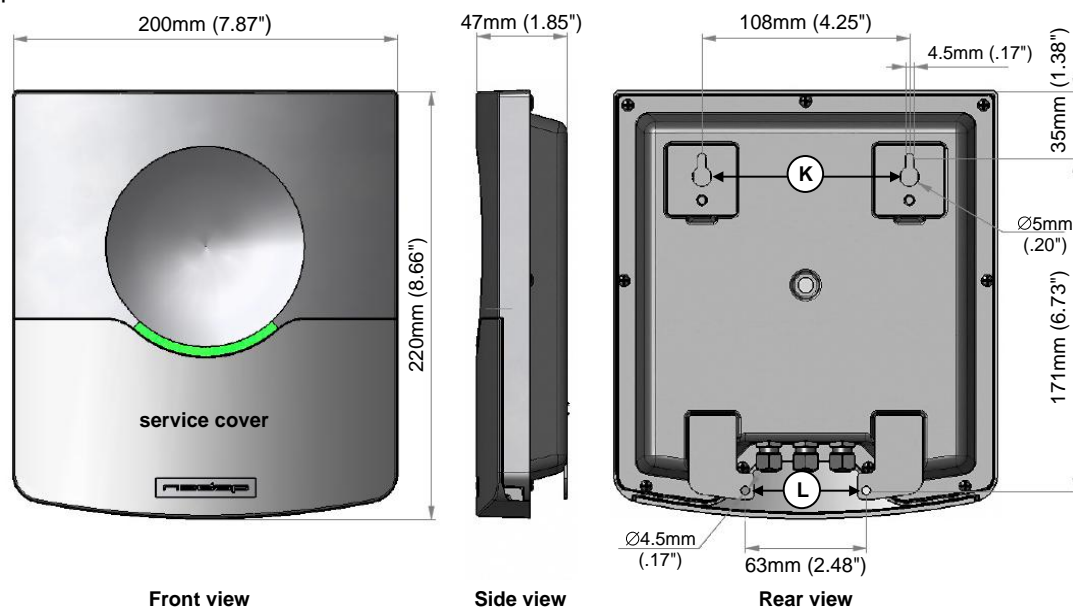
### 2.2 MOUNTING INSTRUCTIONS

AT-4 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 Reader Dimensions**

### 2.3 ADJUSTABLE MOUNTING BRACKET

The AT-4 can be oriented into the required detection area thanks to the adjustable mounting bracket. The mounting bracket can be fixed to square round posts.



**Fig. 2: Adjustable Mounting Bracket**

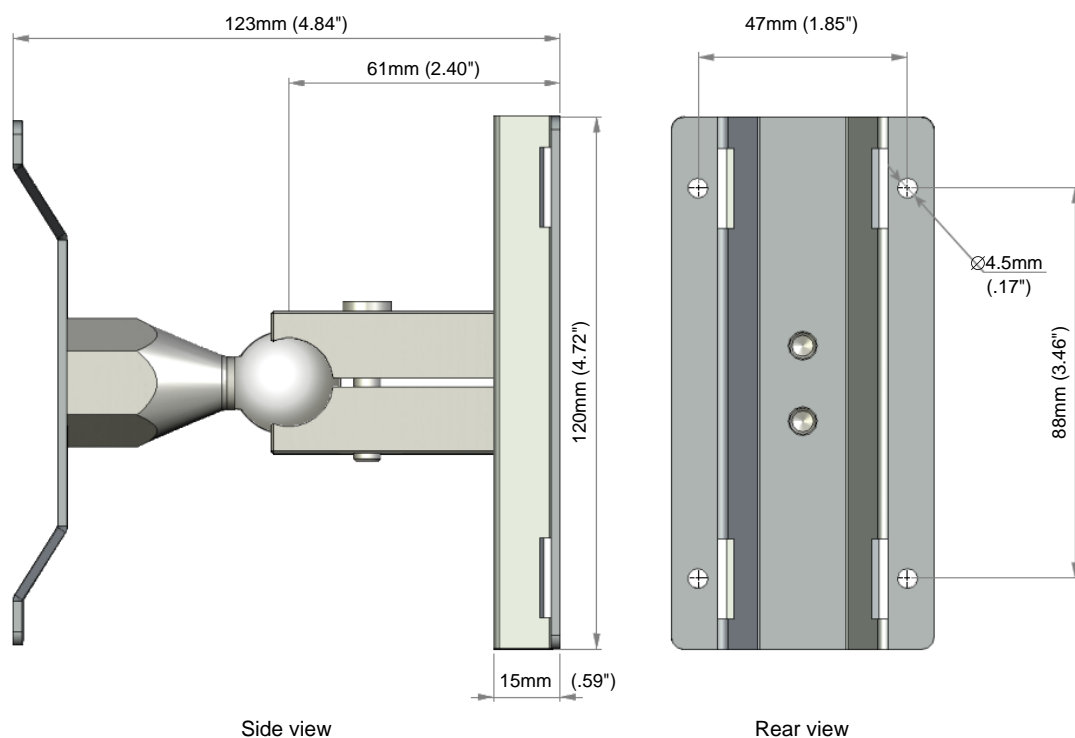
The bracket can also be wall-mounted.

After having fixed the bracket, you can connect the AT-4.

The spherical part enables you to direct the AT-4 into the required direction. After having reached the correct orientation, secure the position by means of the Allen screw on the joint.

*Notes: Max. diameter for round posts 125mm (4.9 inch)*

*Max. diameter for square posts 100mm (3.9 inch)*

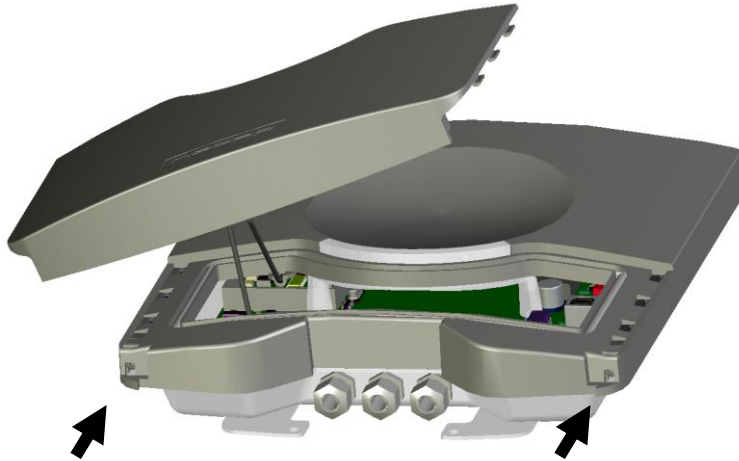


**Fig. 3: Dimensions of the adjustable mounting bracket (in mm)**

## 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 are connected using EMC type cable glands.

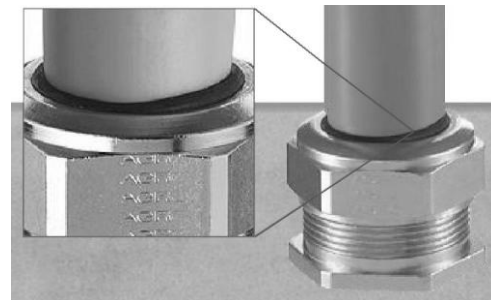
**Use a shielded cable for the power supply.**

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**

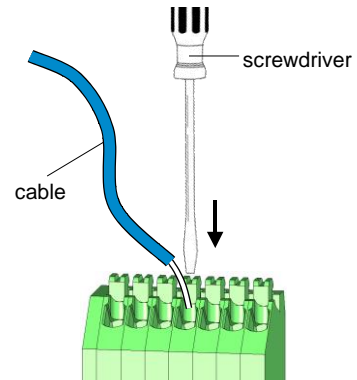
For a water-proof protection a correct mounting and tightening of the EMC connectors are of essential nature.

See Appendix A for any details on the cable glands.

## 3.2 CONNECTIONS

The cables inside the AT-4 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.



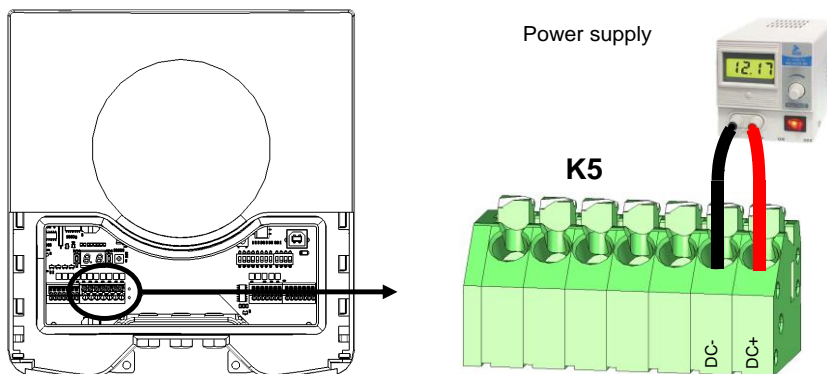
### 3.3 POWER SUPPLY

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

Connections:

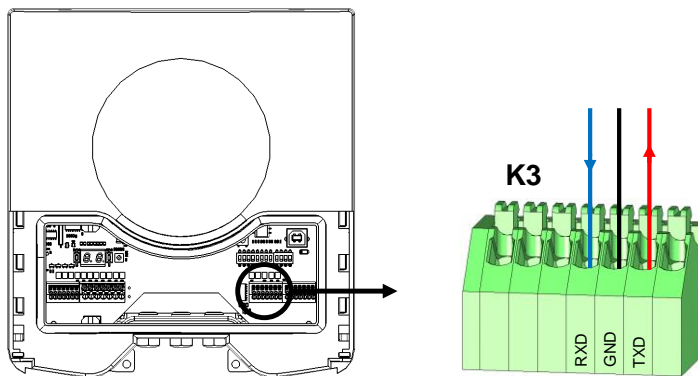
RXD	Reception (input)
GND	Ground
TXD	Transmission (output)

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*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.*

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**Fig. 9: RS232 wiring**

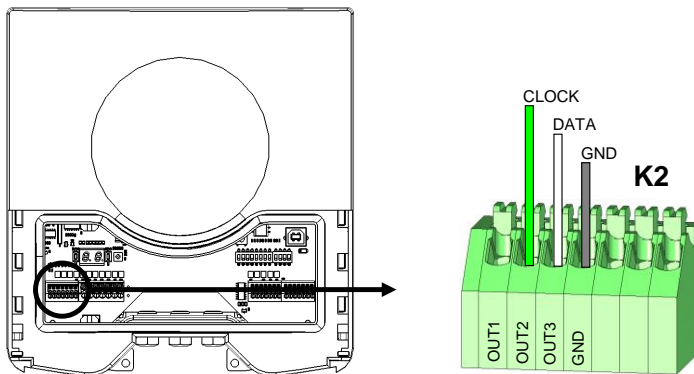
### 3.4.2 WIEGAND, MAGSTRIPE, BARCODE CONNECTION

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.



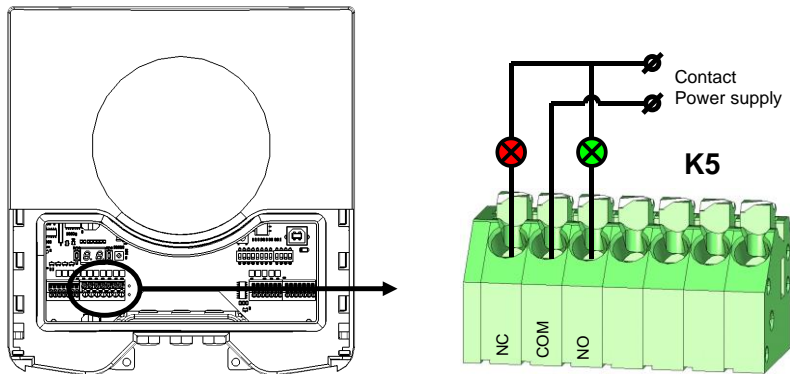
The green light on the front element lights on together with the relay.

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 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.

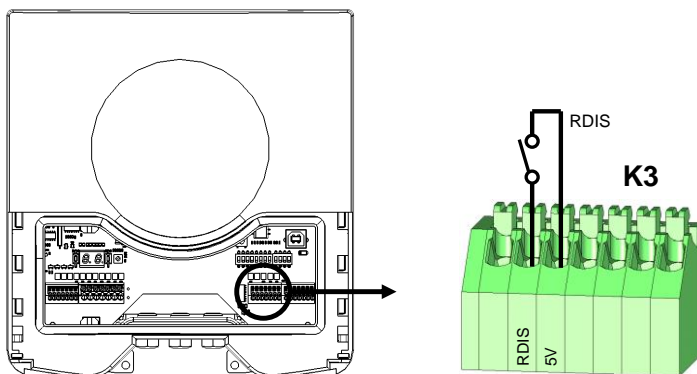
Connections:

RDIS	Disabled reader input
5V	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:

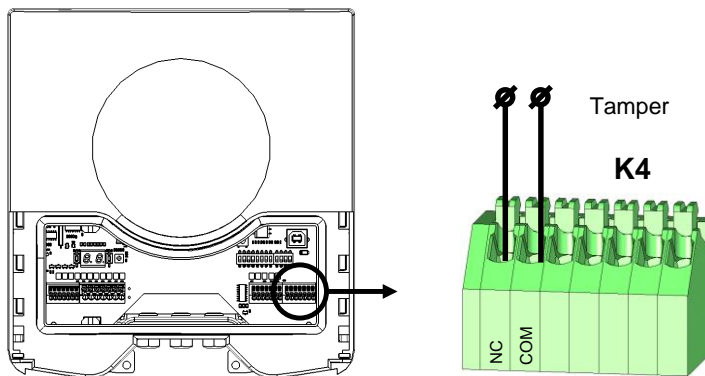
**NC** Tamper (normally closed)

**COM** Tamper (common contact)

Operation of the contacts:

Max. current 50 mA (0.5 Volt voltage drop)

Voltage +24 VDC



**Fig. 13: Tamper switch**

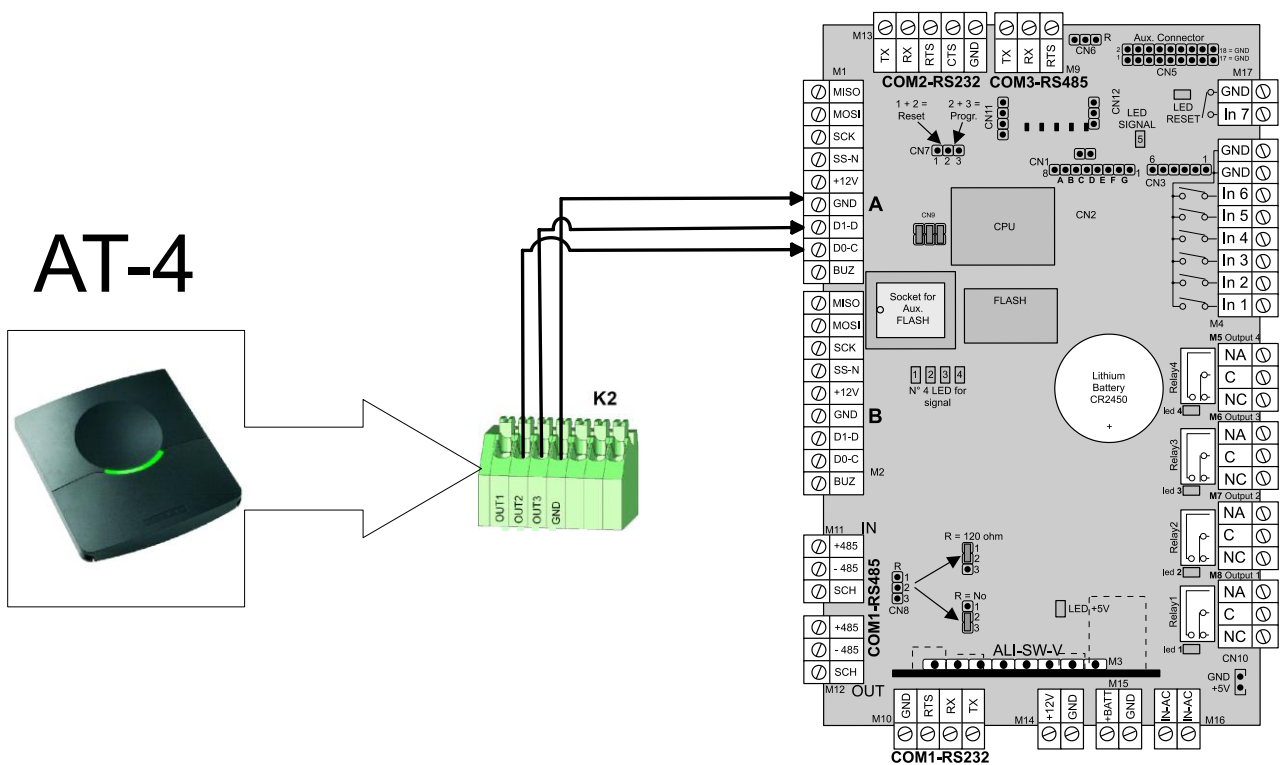
## 4 DIAGRAMS OF CONNECTIONS TO EQUIPMENT

### 4.1 CONNECTION TO ACCESS CONTROL

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

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

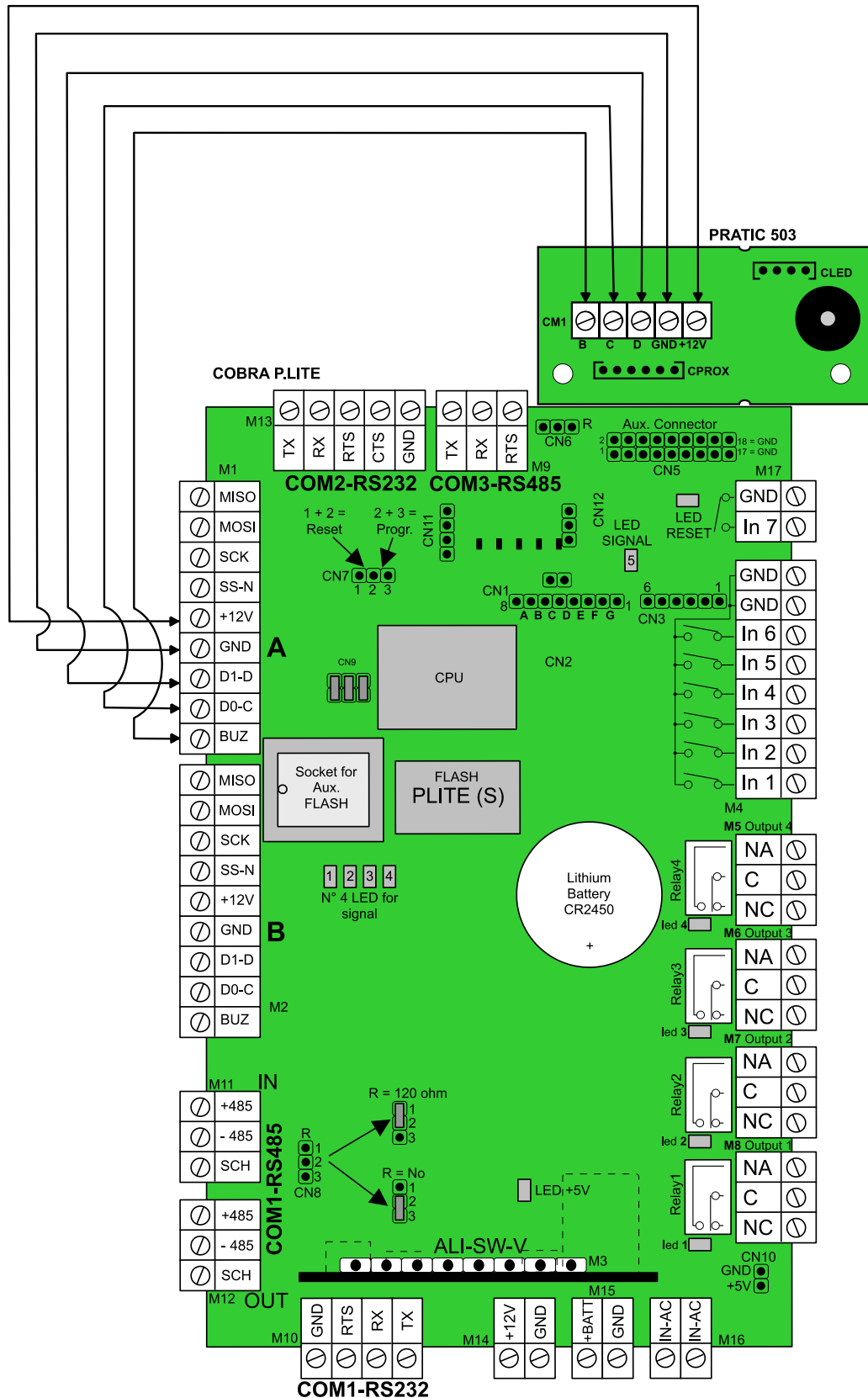
**Table 1: connection between terminals**



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

### 4.2 CONNECTION TO PARKLITE

In order to connect the AT-4 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.

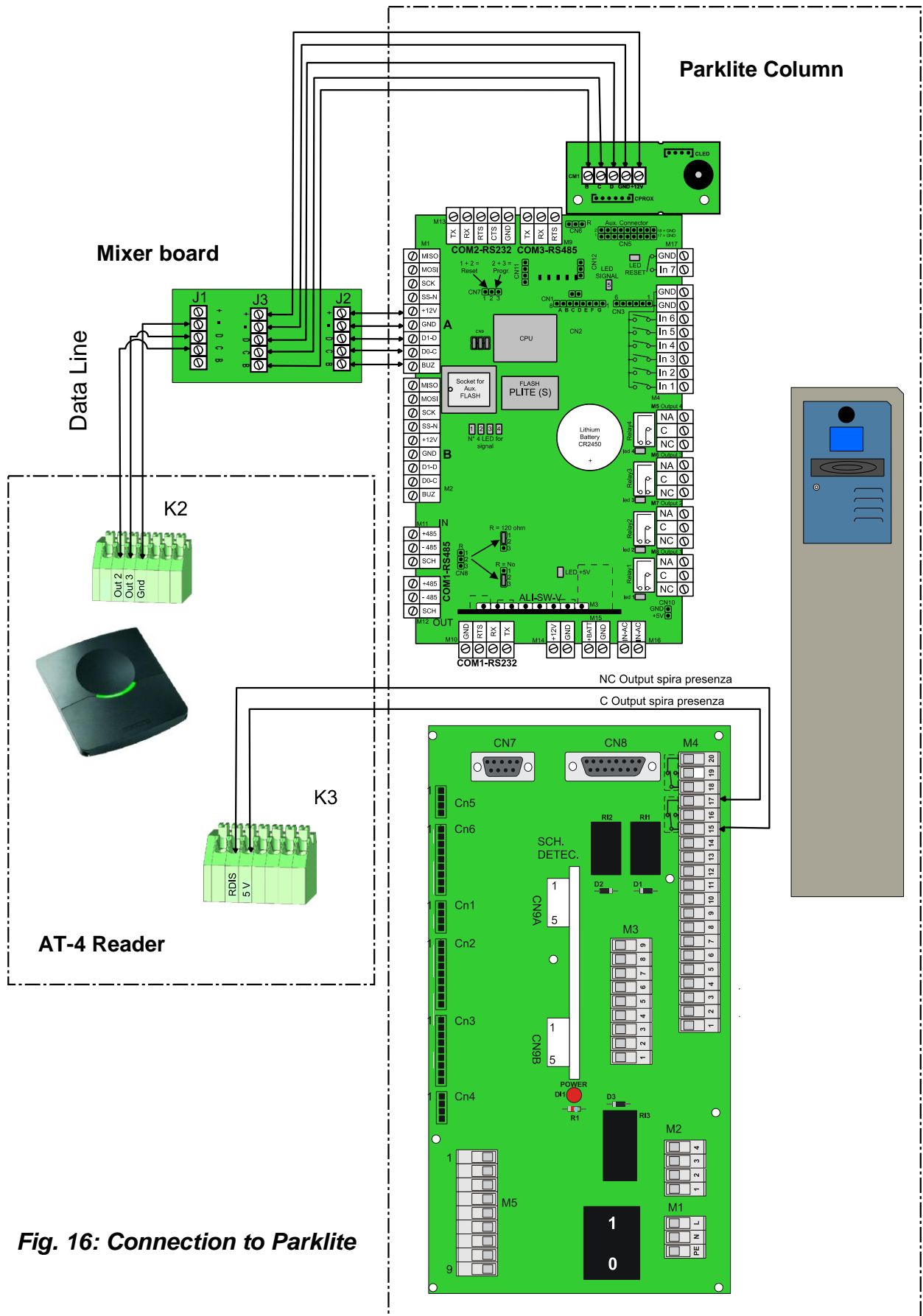


Fig. 16: Connection to Parklite

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

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

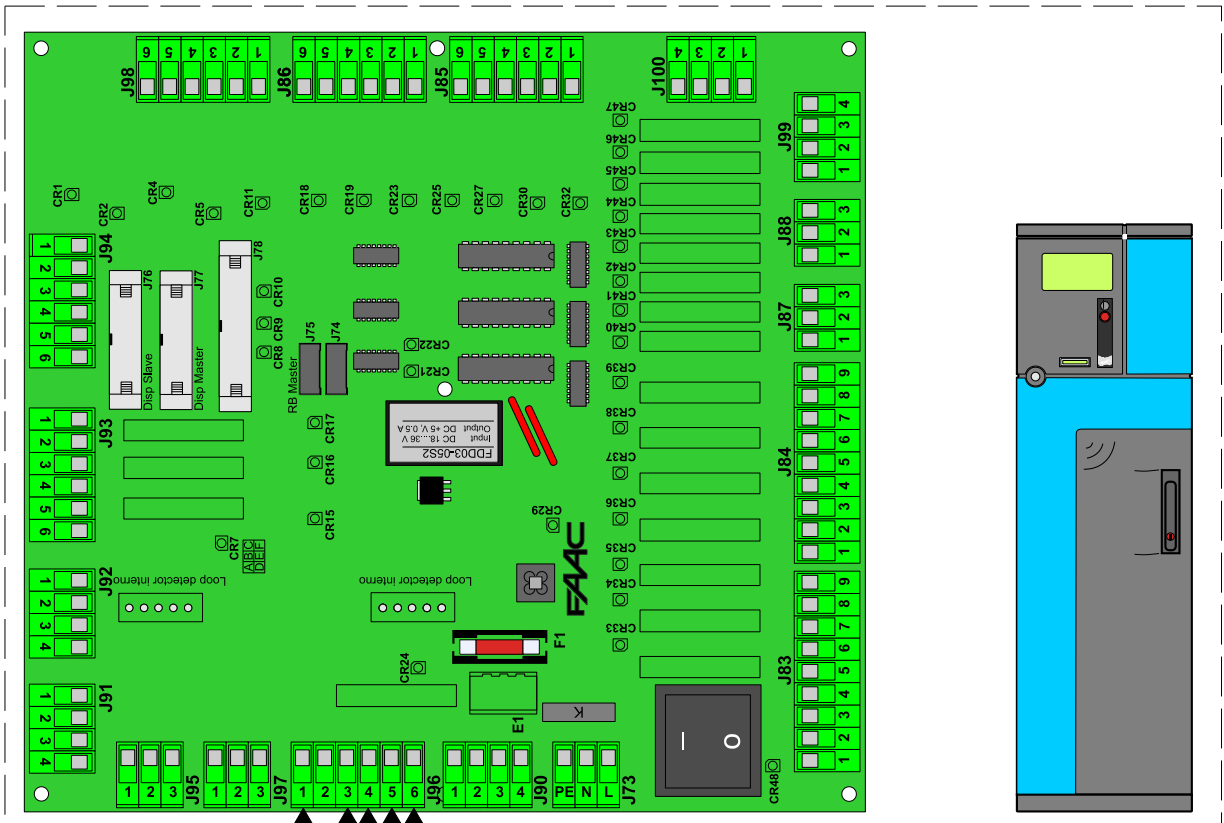
Mixer (J1)	AT4 (K2)
+	
-	GND
D	OUT3
C	OUT2
B	

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

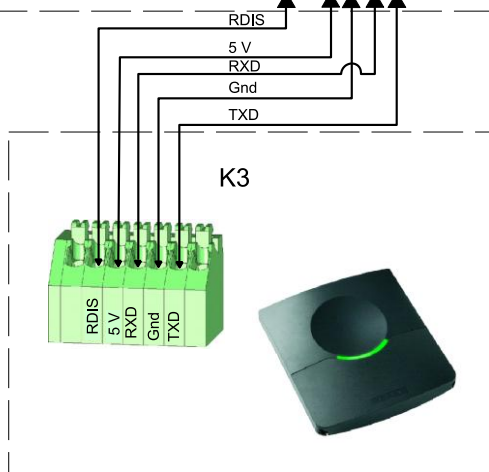
**Table 2: connection between terminals**

### 4.3 CONNECTION TO PARAGON

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



**Fig. 17: Connection to Paragon**



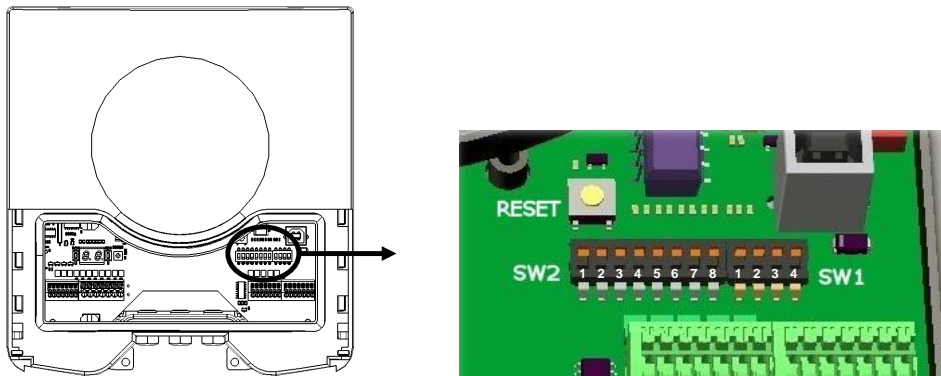
AT-4 (K3)	Power board (J96)
RDIS	1
5V	3
RXD	5
GND	4
TXD	6

**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.

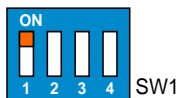
The switches, from SW1-1 to SW1-4, are described below.



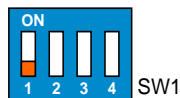
**Fig. 18: DIP-switches**

### 5.1 ON / OFF ACOUSTIC SIGNAL

Enable or disable the internal beeper. An acoustic signal indicates the identification of a transponder. The power of the identified transponder signal determines the frequency of the acoustic signal. When the transponder is close to the reader, the frequency of the acoustic signal is faster.



Beeper ON



Beeper OFF

### 5.2 RS232 / RS422 SELECTION

RS232 or RS422 interface selection.



RS232 interface enabled.



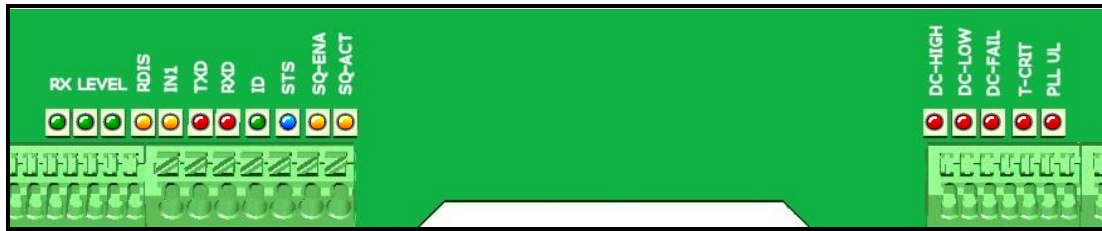
RS422 interface enabled.

### 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 reader.



**Fig. 19: LEDs**

Table 4: description of the LEDs operation.

LED	Description
RX LEVEL	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.
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-ENA	Sensitivity check enabled.
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.

**Table 4: LED indications**

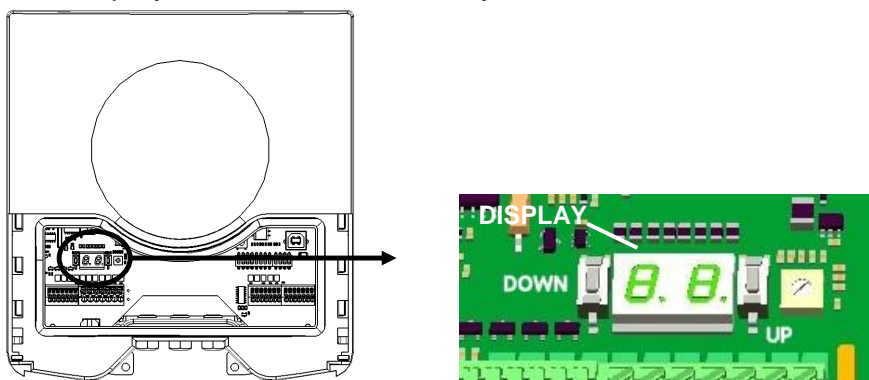
## 7 SELECTING THE FREQUENCIES

The AT-4 reader operates in the frequency band of 2.45GHz. When two or more readers are within a 15 m radius, they should be set to different operating frequencies. The selected frequency must observe the local radio regulations.

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 (GHz)	Wifi
50	2.4384	
51	2.4390	
52	2.4396	
53	2.4402	
54	2.4408	
55	2.4414	
56	2.4420	CH7
57	2.4426	
58	2.4432	
59	2.4438	
5A	2.4444	
5B	2.4450	
5C	2.4456	
5D	2.4462	
5E	2.4468	
5F	2.4474	CH8

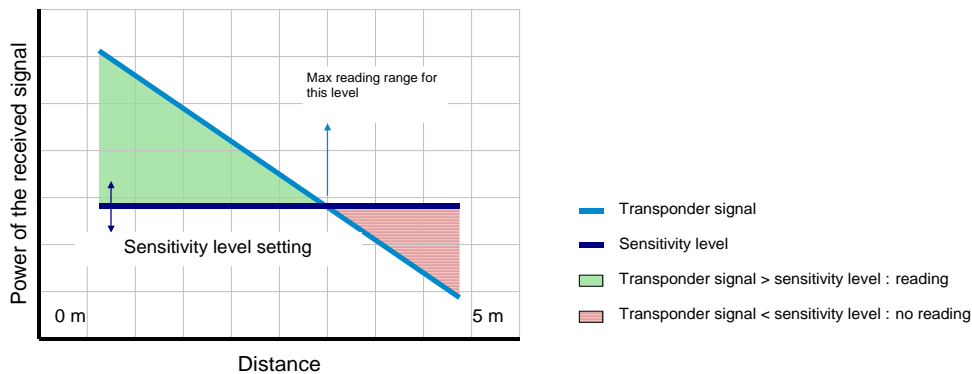
Display Value	Frequency (GHz)	Wifi
60	2.4480	
61	2.4486	
62	2.4492	
63	2.4498	
64	2.4504	
65	2.4510	
66	2.4516	
67	2.4522	CH9
68	2.4528	
69	2.4534	
6°	2.4540	
6B	2.4546	
6C	2.4652	
6D	2.4558	
6E	2.4564	
6F	2.4570	CH10

**Table 5: frequency values**

## 8 READING RANGE (SENSITIVITY)

### 8.1 PRINCIPLE

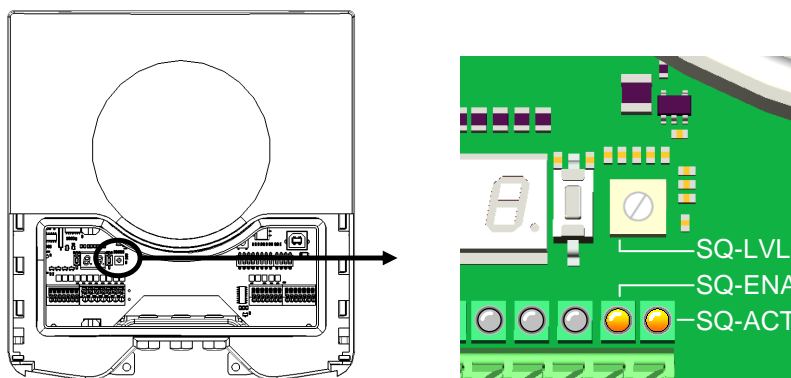
The reading range of AT-4 can be controlled by the built-in sensitivity function. When the power of the received signal is below the sensitivity level, no identification is possible. The power of the received signal becomes higher when the transponder comes close to the reader. When the power of the received signal exceeds the sensitivity level, the transponders are detected.



**Fig. 21: Sensitivity**

### 8.2 ADJUSTING THE READING RANGE

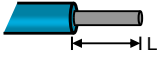
- ↻ SQ-LVL Turn the potentiometer clockwise:  
Max. reading range (sensitivity function disabled).
- ↻ SQ-LVL Turn the potentiometer anti-clockwise:  
Min. reading range.



**Fig. 22: Sensitivity level setting**


Two LEDs indicate the sensitivity status. When the sensitivity function is active, the LED SQ-ENA is ON. LED SQ-ACT is ON when the signal of the transponder is below the sensitivity level (red area in Fig. 21).





## 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	2.4384GHz ... 2.4570GHz	
Polarisation	Circular	
EIRP	18.7 dBm linear	
Immunity	EN 301 489-1 V1.6.1 EN 301 489-3 V1.4.1	ERM and EMC
	EN 501130-4: 1995	
Safety	EN 60 950-1: 2001 / UL 50	
Emissions	EN 300 440-2 (SRD > 1GHz) EN 300 330-2 V1.3.1 (SRD < 30 MHz) FCC part 15.245 (2.4 GHz) FCC part 15C (120 kHz) FCC part 15C (13.56 MHz) 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

READERS		
	TRANSIT Entry	part number: 103161

TRANSPONDERS		
	Compact Tag	part number: 403153
	Window Button	part number: 786341
	Prox Booster	part number: 786347
	Proximity Card	part number: 786334