uPASS REACH☆

installation guide

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☆ nedap | identification systems

www.nedapidentification.com

CONTENT

1   INTRODUCTION

The uPASS Reach reader offers long range vehicle identification up to 4 meters using the latest UHF technology. Based on battery free passive UHF the uPASS Reach reader offers a cost effective and enduring solution for parking access.

The system is based on an uPASS Reach reader and an UHF tag. The readers are installed next to the gate on a maximum height of 2 meters. The reader is the perfect cure to the problems characteristic of prox and it's ideally suited for upgrading those installations as the reader can easily be installed on a gooseneck with no need for additional mounting or rewiring.

The reader output allows the access control or parking system to open the gate when authorized without the need to present a badge.

Note:
The TRANSIT compatible mode only works in combination with NEDAP UHF XS formatted tags!!!

1.1   OVERVIEW

Below a simplified overview of the components in the reader are shown:
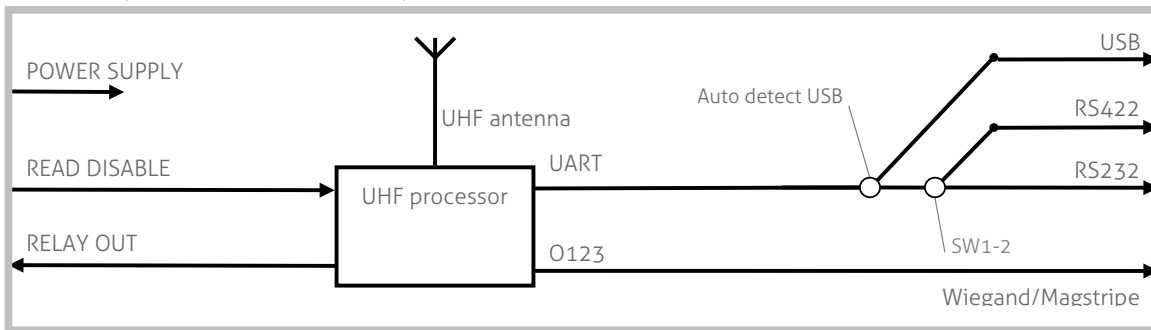
Figure 1: uPASS Reach reader overview

1.2   TRANSIT COMPATIBILITY

The uPASS Reach reader features a TRANSIT compatible mode. In this mode the reader communicates fully compatible with the NEDAP TRANSIT, supporting any firmware version developed for the TRANSIT reader, including P61, P81 and Q70. See chapter 4.1 for details how to enable the TRANSIT compatible mode.
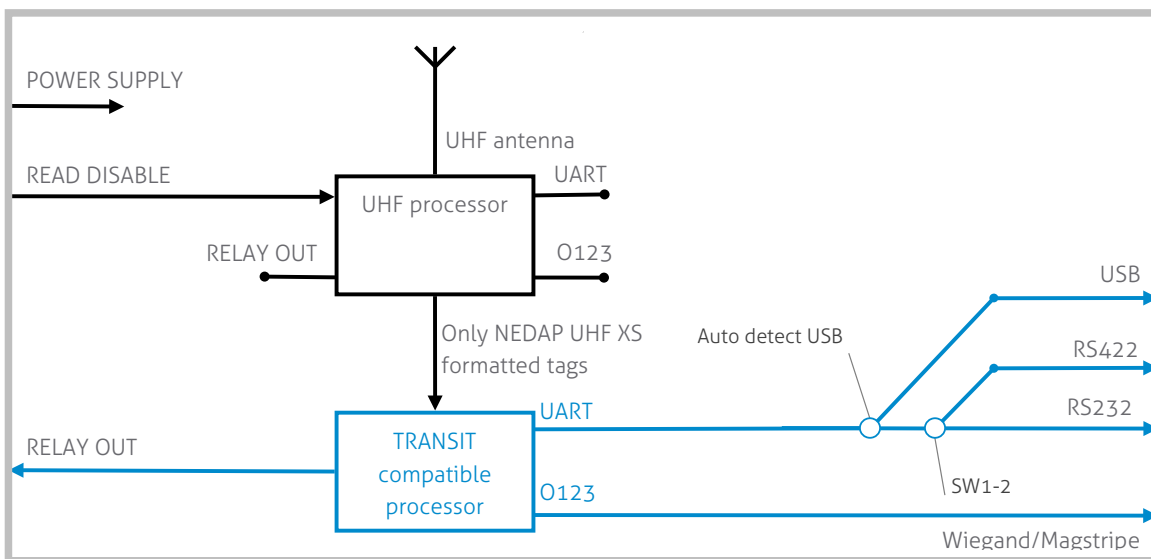

Figure 2: uPASS Reach reader overview in TRANSIT compatible mode

1.3 SUPPORTED TAGS

Any EPC Class 1 Gen 2 tag is supported by the uPASS Reach. NEDAP formatted UHF tags can have the following formats:

- NEDAP UHF Wiegand tags
  These tags will contain all Wiegand information including facility code and parity bits. All Wiegand formats can be supported. The reader transparently sends this information via the Wiegand outputs. There is no need to change any DIP-switches or configuration settings. See chapter 3.4.1 for wiring details.

- NEDAP UHF Magstripe tags
  These tags will contain all magstripe information. The reader transparently sends this information onto the magstripe interface. There is no need to change any DIP-switches or configuration settings. See chapter 3.4.1 for wiring details.

- NEDAP UHF XS tag
  These tags are especially programmed in the same format as our 2.45GHz AVI tags (Compact-Tag, Window-Button and Heavy-Duty-Tag). The tags will also have a customer-code and id-number. The reader will automatically transmit the tag-info to the TRANSIT compatible processor.

Note
The Wiegand output format is determined by the tag and not by the reader.

Note
The magstripe output format is determined by the tag and not by the reader.

Note
When using the TRANSIT compatible processor make sure the compatibility mode DIP-switch is set correctly (see chapter 4.1 on page 19).

1.4 TAG SECURITY

EPC (Electronic Product Code) tags were introduced as a possible successor to the barcode with added functionalities. The tag emits its EPC in plain text. This makes the tags vulnerable to cloning and counterfeiting attacks. Unlike many 13MHz smartcards, EPC tags do not support any DES, 3DES or AES encryption.

EPC tags contain a data field known as the Tag Identifier (TID). At the discretion of the EPC manufacturer, the value may be factory programmed and locked, ensuring that tags have a unique identity and (theoretically) cannot be cross-copied. This TID based anti-cloning mechanism is not considered to be a strong protection.

NEDAP UHF tags support a locked serialized TID and the uPASS Reach reader can be configured to read the TID data field.

In addition NEDAP has also implemented an advanced anti-cloning and anti-counterfeiting method based upon a two way authentication. This feature is supported in combination with all NEDAP UHF tags. See also chapter 7.

By default the uPASS Reach reader is configured to read any EPC tag.

We encourage customers to enable the TID-check or the two way authentication. But also advise not to completely rely on these methods in high-security applications.

Tag security is not evaluated by UL

2 INSTALLATION

2.1 SAFETY INSTRUCTION

The following safety precautions should be observed during normal use, service and repair.

- All shields of the mandatory shielded cable shall be connected with safety ground.
- The uPASS Reach may only be installed and serviced by qualified service personnel.
- Disconnect the power supply before removing or installing any parts.
- To be sure of safety, do not modify or add anything to the uPASS Reach other than mentioned in this installation guide or indicated by NEDAP N.V.

2.2 MOUNTING INSTRUCTIONS

The uPASS Reach can be mounted to any surface, including directly to metal. Locate an appropriate position. Use the upper two keyholes (K) to mount the reader. Open the service cover to secure the reader using the two lower mounting positions (L).

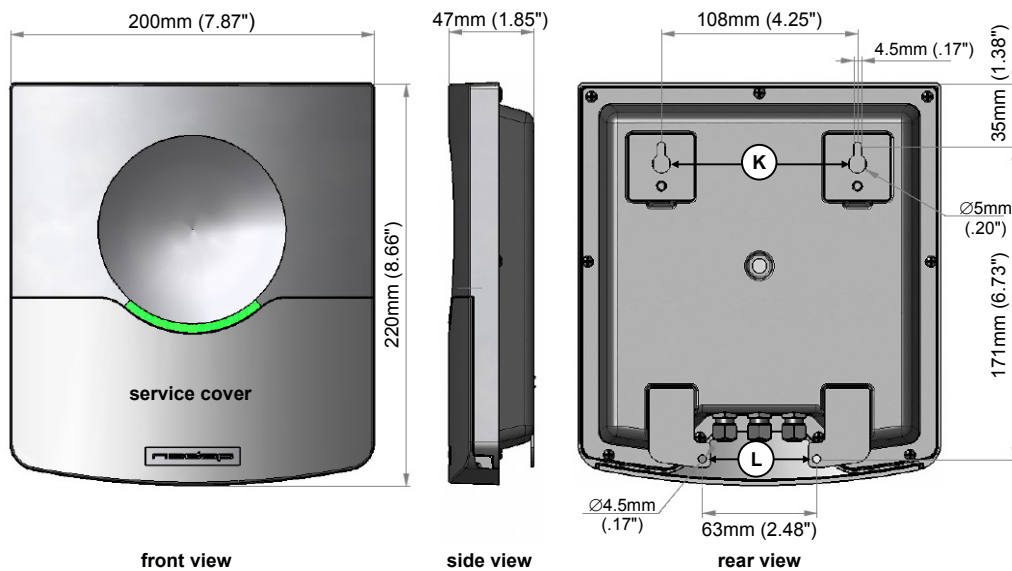See the picture below for details about the dimensions and the locations of the mounting positions.

Figure 3: uPASS Reach reader dimensions

2.3 ADJUSTABLE MOUNTING BRACKET

With the adjustable mounting bracket, the uPASS Reach can be 'aimed' at the desired detection area. It can also be used for mounting the reader to round or square masts (see appendix 7.3.5B for part numbers).
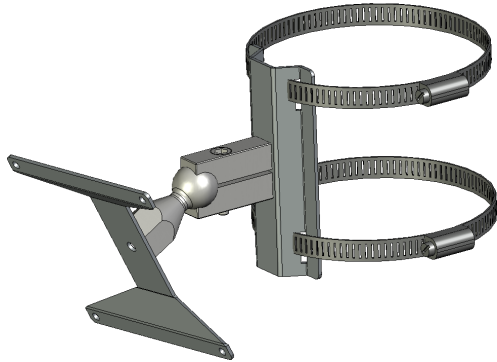

Figure 4: Adjustable mounting bracket

Once the adjustable mounting bracket is assembled, attach the bracket to the wall or mast. After that the uPASS Reach can be mounted onto the bracket. The ball and socket joint can be used to adjust the reader's orientation. Tighten the hex screw on top of the joint to fix the correct orientation.

Note

Maximum diameter for round masts 125mm (4.9 inch)

Maximum diameter for square masts 100mm (3.9 inch)

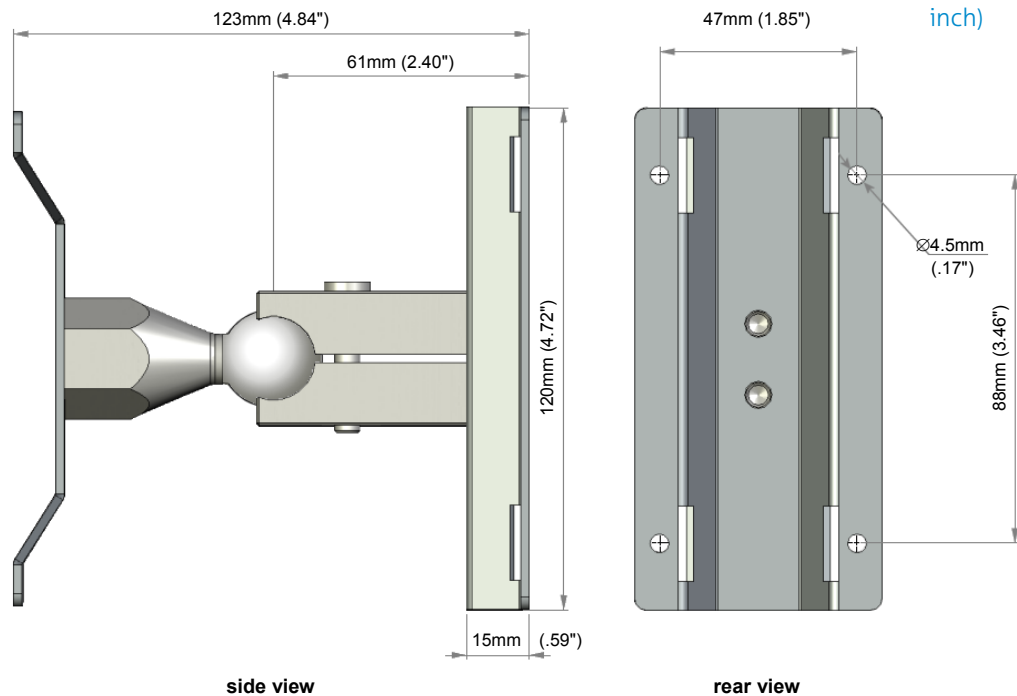side view   rear view

Figure 5: Adjustable mounting bracket dimensions (in mm)

2.4   OPENING THE SERVICE COVER

The service cover can be opened to access the connections (including the USB connector), setup the operating frequency and view the LED indicators.

Open the screws on the bottom of the device to unlock the service cover. Once the service cover is unlocked, lift it off.

Note
Make sure the screws are completely opened (and closed when placing the cover back on). Don't worry about losing the screws, they cannot fall out.
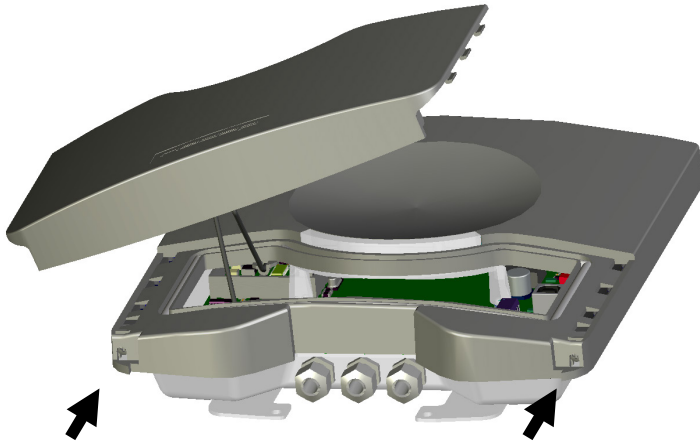

Figure 6: Opening the service cover

3 CONNECTIONS

3.1 CABLE CONNECTIONS

Cable connections to the uPASS Reach are made using the EMC cable glands.

Shielded cable shall be used for all connections including the DC-supply connection.

Assembly instructions:

1   Push the cap nut (1), seal insert (2) and gland contact socket (3) onto the cable.

2   Cut back the outer sheath to desired length.

Figure 7: Cable shield

3   Bend over the screen braiding (4) over the gland contact socket and cut back the screen braiding as shown in Figure 7.

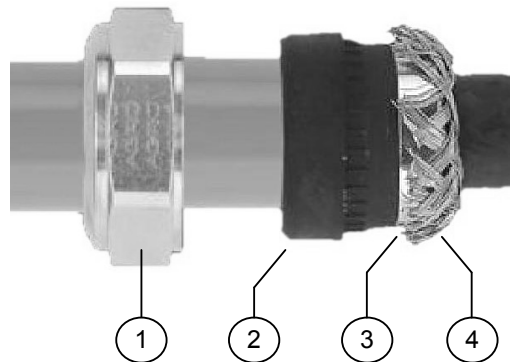4   Screw the cap nut onto reader part until the seal insert is pushed out of the gland. See Figure 8.
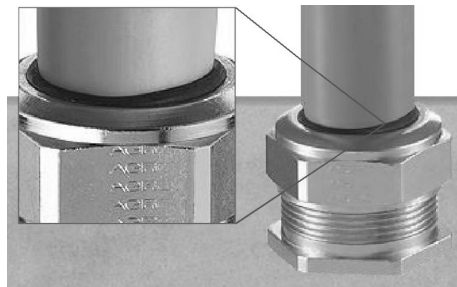

Figure 8: Gland tightening

Correct mounting and tightening the EMC cable glands is essential for water protection.

See appendix A for detailed information on the cable glands.

3.2   WIRE CONNECTIONS

Wire connections to the uPASS Reach are user friendly spring cage terminal connectors.

Connection procedure with spring cage terminal connectors.

1   Strip wire lead for about 9 mm (0.35 inch).
2   Push the screwdriver straight down to release the spring cage. Use a slotted, narrow-head screwdriver.
3   Insert the wire lead into the wire terminal.
4   Remove the screwdriver, this clamps the wire.
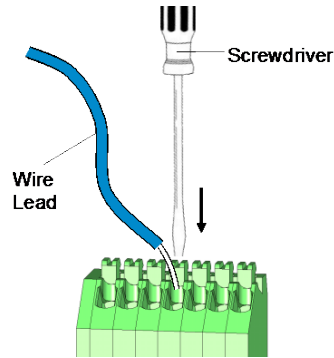5   Gently pull on the installed wire to make sure the connection is reliable.

Note
Each connector terminal can accommodate only 1 solid or stranded wire.

Wiring is normally done without ferrules. However, it is possible to use ferrules, provided that they are properly crimped.

Figure 9: Wiring detail

See appendix A for recommended maximum and minimum conductor cross sections and for the recommended wire stripping length.

3.3   POWER SUPPLY

The UF reader requires DC power supply in the range from 12 – 24V. Maximum current consumption is 1A @ 12VDC, 0.5A @ 24VDC.

Connections:

DC−	Power supply 0V.
DC+	Power supply 12 - 24VDC.

Note
The power supply connection has an auto resetting fuse protection
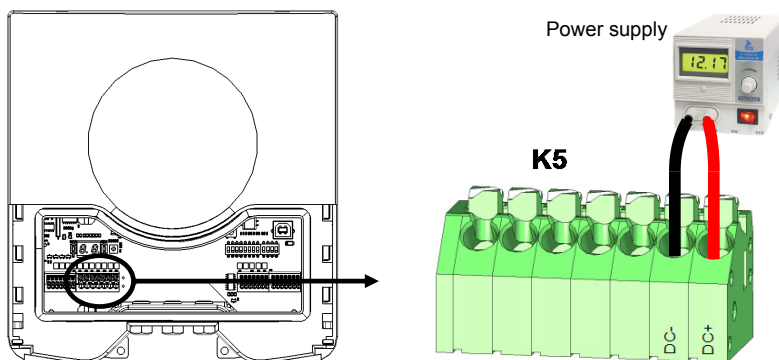
.

Figure 10: Power supply wiring

3.4   COMMUNICATION
3.4.1   WIEGAND / MAGSTRIPE CONNECTION

Figure 11 indicates the wiring for the Wiegand interface. The same connections also support magstripe.

NEDAP UHF Wiegand tags will generate a Wiegand message on the interface.
NEDAP UHF Magstripe tags will generate a magstripe message on the interface.
Other UHF tags will not generate a message on this interface, unless the 'Extra output' settings are used!

The Wiegand/magstripe output format is determined by the programmed format of the tag.
Make sure to order the correct tag formatting if you want to use the Wiegand or magstripe interface. See also the UHF tags order guide for more information.

In case the TRANSIT compatible processor is selected, these same connections are used. Remember that in this case the tags must be programmed in the NEDAP UHF XS format. Refer to the corresponding firmware manual for protocol details.

Interface connections:

	Wiegand connections	Magstripe connections
OUT1	-	CLS: Card loaded
OUT2	Data-0 (green)	RCP: Clock
OUT3	Data-1 (white)	RDP: Data
GND	Ground (black)	GND: Ground

Note
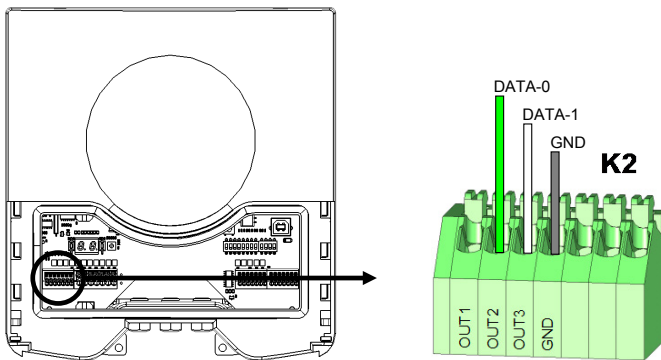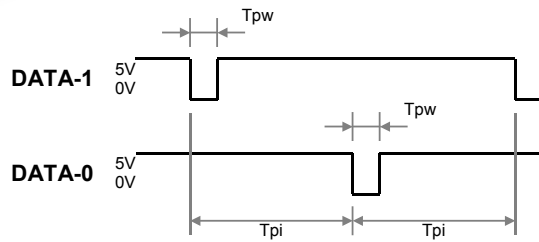Maximum cable length 150 meters (500 feet)

Figure 11: Wiegand wiring

3.4.2   WIEGAND TIMING

In the figure below the Wiegand protocol timing is specified.

Timing constants:

Tpi   Pulse interval time   1msec
Tpw   Pulse width time   50µsec

Figure 12: Wiegand protocol timing

3.4.3   MAGSTRIPE TIMING

In the figure below the timing for one magstripe character is specified. Each bit consists out of one period low (220µsec) and two periods high (440µsec). The bit times have an accuracy of 10 percent. The data-signal RDP is valid and stable on the falling edge of the clock-signal RCP.
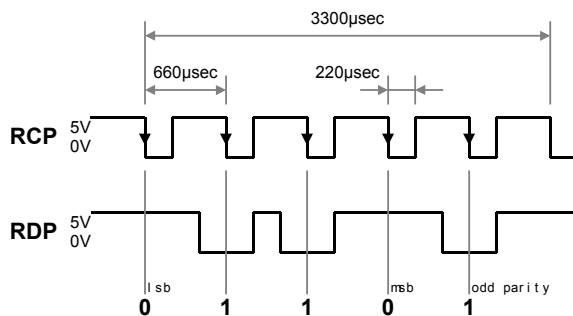
Timing constants:

Clock period   660µsec
Clock high   440µsec
Clock low   220µsec
Data preamble   11msec
Data postamble   11msec

Figure 13: Magstripe protocol timing one character

The CLS card loaded signal will be active (=low) during the complete transmission.
Before and after the data 16 clock pulses are generated (postamble and preamble).
The number of data characters is determined by the tag.
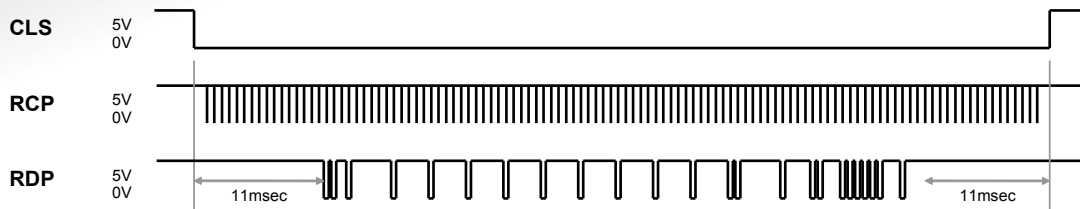Below is an example of a complete magstripe event.

Figure 14: Example magstripe event

3.4.4 RS232 CONNECTION

The uPASS Reach reader has an on-board RS232 interface for communication with a host system or for configuring reader settings.

By default the RS232 interface is connected to the UHF processor. This is required when using the UHFTOOL software. It is advised to use this tool to configure the reader. Software developers can find the RS232 communication protocol description in the firmware manual.

The RS232 interface can also be connected to the TRANSIT compatible processor. The communication protocol, baud rate, data format and flow control depend upon the firmware in the TRANSIT compatible processor (e.g. P61, P81 or Q70). See separate documentation.

Connections:

RXD	Receive data (input)
GND	Ground
TXD	Transmit data (output)

Note

The RS232 interface is disabled while the USB interface is in use !!!

Enable the on-board RS232 interface by setting DIP-switch SW1-2 to ON. See chapter 4.1 for details.

Optionally select the TRANSIT compatible processor with DIP-switch SW1-1.

Maximum cable length of 15 meters (50 feet) or the cable length equal to a capacitance of 2500pF.

The RS232 interface does not support any hardware handshake signals.

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Figure 15: RS232 wiring

3.4.5 RS422 CONNECTION

The uPASS Reach reader has an on-board RS422 interface. The RS422 interface is similar to the RS232 interface. It shares the same communication protocol. The RS422 interface is commonly used when longer cable lengths are required.

Connections:

RX+	Receive line (positive)
RX−	Receive line (negative)
GND	Ground
TX+	Transmission line (positive)
TX−	Transmission line (negative)

RX+ and RX- inputs are terminated with a 120Ω resistor.
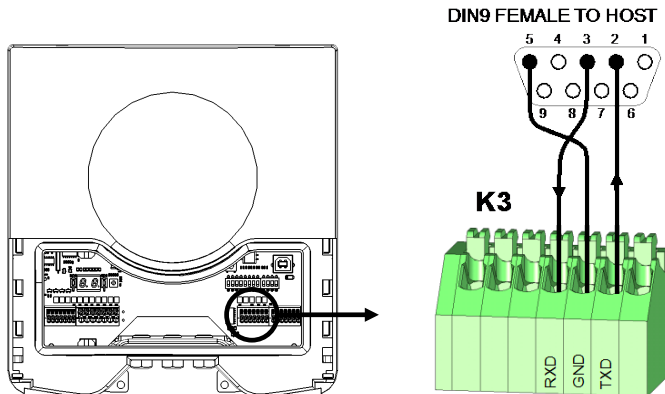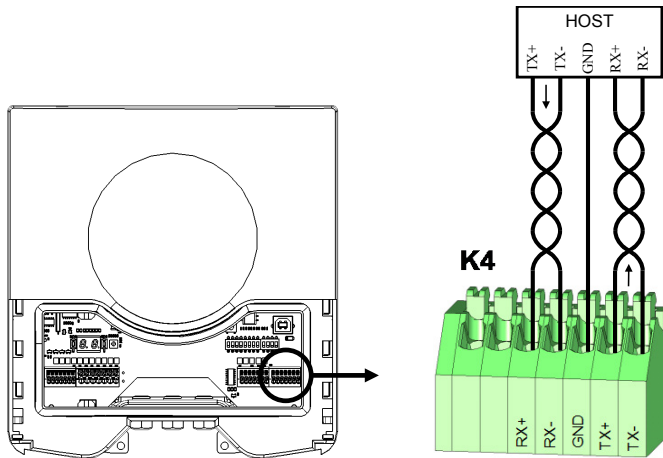TX+ and TX- must be terminated at the host side.

Figure 16: RS422 wiring

Note

The RS422 interface is disabled while the USB interface is in use !!!

Enable the on-board RS422 interface by setting DIP-switch SW1-2 to OFF. See chapter 4.1 for details.

Optionally select the TRANSIT compatible processor with DIP-switch SW1-1.

Maximum cable length 1200 meters (4000 feet).

3.4.6 USB CONNECTION

The uPASS Reach reader features an USB interface for service and installation purposes. The USB connector (Type B) is accessible behind the service cover. The reader will automatically detect when the USB cable is connected.

The USB interface can be used to configure the reader using the UHFTOOL software (as described in chapter 7).

The USB interface can also be used to communicate with the TRANSIT compatible processor. For example upgrade the firmware in the TRANSIT compatible processor using the PICLoad software. Ensure that DIP-switch SW1-1 is in the correct position.

Note
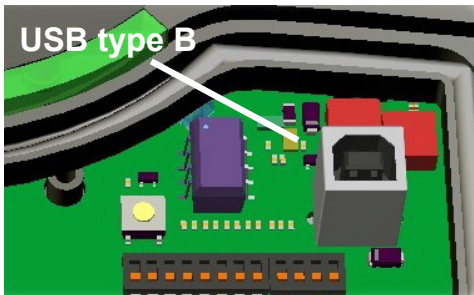While the USB interface is in use, the on-board RS232 and RS422 interfaces are disabled !!!
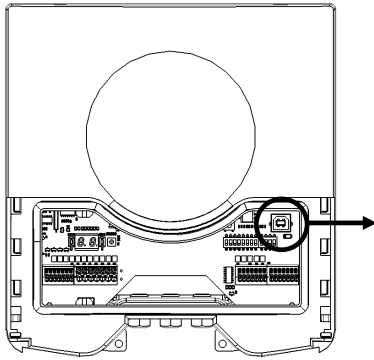
Figure 17: USB interface

USB Driver installation
Make sure your computer is connected to the internet. The driver should install automatically via Windows update when the uPASS Reach reader is connected to your PC via the USB cable. Follow the driver installation wizard. If you do not see the Windows update pop-up, you can manually install the driver. To manually install, you need to go to FTDI's website at www.ftdichip.com/Drivers/VCP.htm and download the VCP (Virtual Com Port) drivers for your operating system. Drivers for MacOS and Linux are available as well.

3.5 DIGITAL I/O
3.5.1 RELAY OUTPUT

By default the relay output is automatically activated upon identification of a tag.

When the TRANSIT compatible processor is selected, the relay output is controlled by this processor. Please refer to the corresponding firmware manual for details.

The 'smile' on the front cover lights-up simultaneously with the relay output.

Connections:

NC	Relay contact normally closed
COM	Relay contact common
NO	Relay contact normally open

Contact ratings:

Max. switching current: 2A
Max. switching voltage: 24VDC
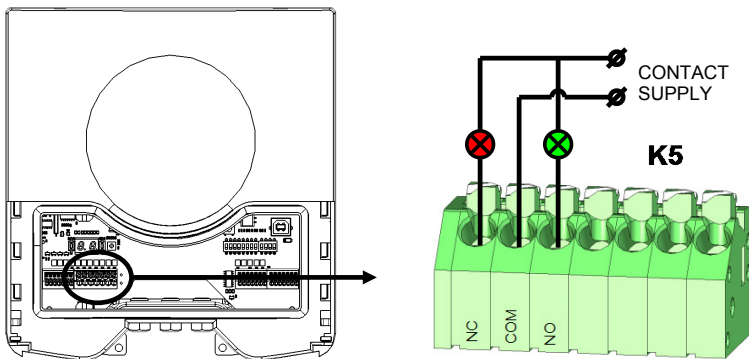Max. switching power: 50W

Figure 18: *Relay output*

3.5.2 READ DISABLE INPUT

The reading of the uPASS Reach can be completely disabled with the RDIS input. This input is commonly used in combination with a sensor (e.g. inductive loop) that detects the presence of a person or vehicle. Use always a relay contact to connect the internal 5V to the RDIS input. When the RDIS input is unused the reader is enabled.

Connections:

| RDIS | Read disable input |
| 5V | Internal 5V source for read disable input |

Warning: **Using an external 5V supply can damage the unit.**

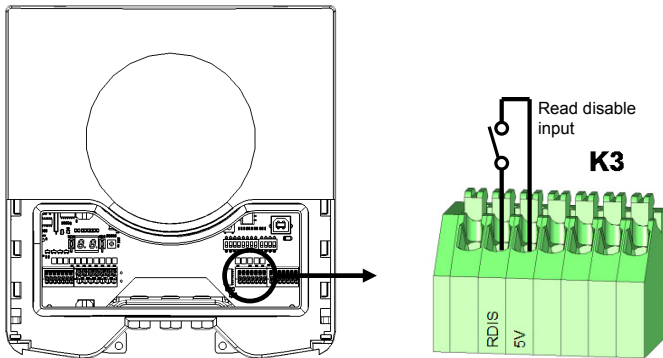*Figure* 19: Read disable input

3.5.3 GENERAL PURPOSE INPUTS

Three general purpose inputs are available on the uPASS Reach reader. They have the function as described in the firmware manual.

Connections:

IN1	General purpose input 1 (active low)
IN2	General purpose input 2 (active low)
IN3	General purpose input 3 (active low)
GND	Ground
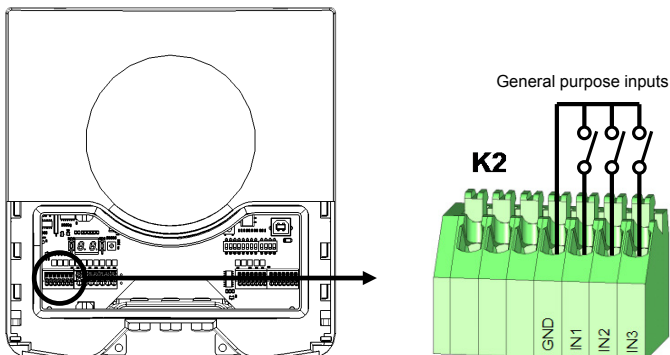
Figure 20: GPIO inputs

3.5.4 TAMPER SWITCH

An internal magnet provides tamper indication when the service cover is opened.
This contact may be connected to an external alarm system. The contacts are
normally closed when the cover is in place.
Tamper switches of multiple readers can be connected in series.

Connections:

| NC | Tamper switch (normally closed) |
| COM | Tamper switch (common) |

Contact ratings:
Max. current   50 mA (0.5 Volt voltage drop)
Max. switching voltage   +24 VDC

Figure 21: Tamper switch

4   DIP SWITCH SETTINGS

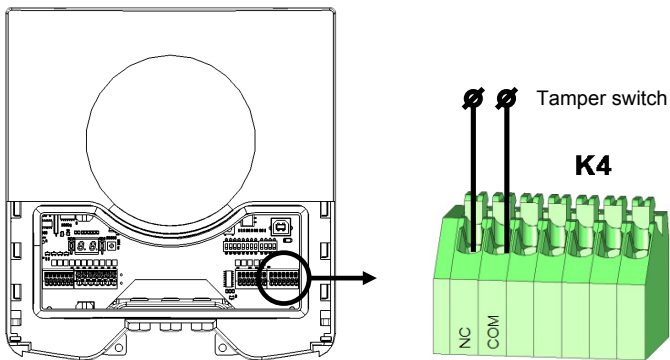The DIP-switches are located behind the service cover. Switches SW1-1 through SW1-4 are described below.

The switches SW2-1 through SW2-8 are reserved for the TRANSIT compatible processor (e.g. P61, P81 or Q70). Please refer to the corresponding firmware manual for details.
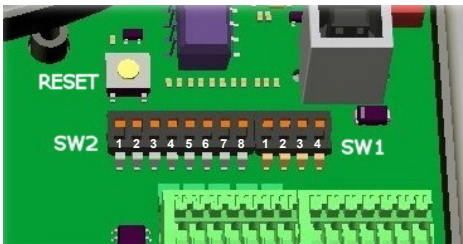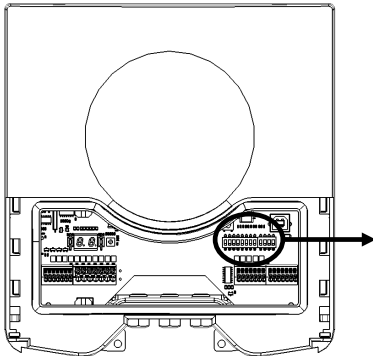

Figure 22: DIP-switches

4.1   COMPATIBILITY MODE (SW1-1)

Compatibility mode selection. Enable UHF processor or TRANSIT compatible processor (e.g. P61, P81 or Q70).
This selection determines the enabled communication protocol and the relay output control. Remember that the TRANSIT compatible processor only operates in combination with NEDAP UHF XS formatted tags.

 SW1-1

UHF processor

 SW1-1
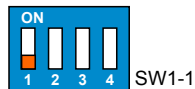
TRANSIT compatible processor (e.g. P61, P81 or Q70)

4.2   RS232 / RS422 SELECTION (SW1-2)

On-board RS232 or RS422 interface selection.
RS232 connection details are described in chapter 3.4.4 (page 13).
RS422 connection details are described in chapter 3.4.5 (page 14).

 SW1-2

On-board RS232 interface enabled

 SW1-2

On-board RS422 interface enabled

4.3   ENABLE TESTMODE (SW1-3)

While the 'testmode' is enabled, the outputs O-1, O-2 and O-3 continuously output a special test pattern. This is useful to test the Wiegand and Magstripe connections.
Leave this switch in ON position when using the TRANSIT compatible processor.

Connect O-1, O-2 and O-3 successively to input 1 (IN1) and watch the input 1 status LED.
O-1 is activated once,
O-2 is activated twice and
O-3 is activated three times per period.
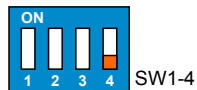
SW1-3

Normal mode

SW1-3

Testmode enabled.

The 'testmode' feature is introduced in firmware version 2.14.

4.4   ENABLE / DISABLE BUZZER (SW1-4)

If the buzzer is enabled, the uPASS will beep upon every identification.

SW1-4

Buzzer enabled

SW1-4

Buzzer disabled.

5   LED INDICATIONS

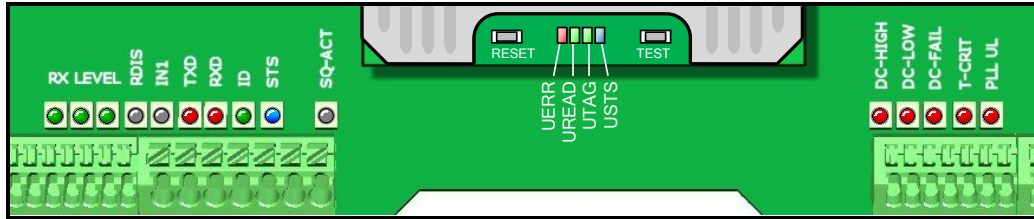A number of LED's indicate the current status of the uPASS Reach reader.

Figure 23: LED locations

Table 1 below describes the function of each LED.

Led	Description
🟢🟢🟢 RX LEVEL	LED bar indicating the received tag signal strength. This LED bar may also indicate the presence of radio interference. In case of interference, try switching to a different frequency. See chapter 6.
🟡 RDIS	Read Disable LED. On while reading disabled. See chapter 3.5.2.
🟡 IN1	Input 1 status. On when input 1 contact is closed. See chapter 3.5.3.
🔴 TXD	Transmit serial data.
🔴 RXD	Receive serial data.
🟢 ID	TRANSIT compatible processor ID LED. Blinks when a NEDAP UHF XS tag is identified.
🔵 STS	TRANSIT compatible processor status LED.
🟡 SQ-ACT	Squelch active. When squelch is enabled and the transponder return signal below threshold level.
🔴 DC-HI	Power supply voltage too high. See chapter 3.3.
🔴 DC-LO	Power supply voltage too low. See chapter 3.3.
🔴 DC-FAIL	Internal supply voltage failure. See chapter 3.3.
🔴 T-CRIT	Temperature critically high.
🔴 PLL UL	PLL unlocked. Error indication only. No direct hardware action implemented.
▮USTS	UHF processor status LED. Should be slowly blinking. On when bootloader invoked.
▮UTAG	Tag found. RN16 received.
▮UREAD	Tag data read complete. On when bootloader invoked.
▮UERR	Error during tag identification.

Table 1: LED indicators

6 UHF FREQUENCIES

6.1 RADIO REGULATIONS

The uPASS Reach 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 uPASS Reach automatically selects and uses the available channels.

6.2 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 the UP or DOWN switch once and the display will show a value indicating the currently selected frequency. Lookup the display value in the table below to find out what the actual operating frequency is.

When the display is on, press the UP switch to select a higher frequency. Similarly, press the DOWN switch to select a lower frequency.

Alternatively the UHFTOOL software can be used to setup the frequency channel selection. See also chapter 7.
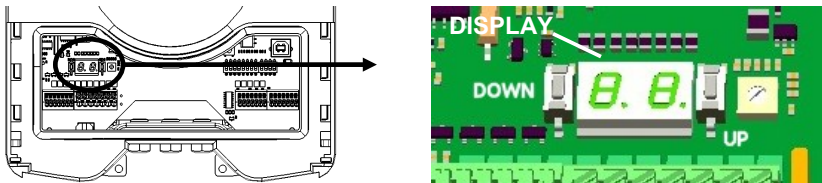

Figure 24: frequency channel setting

Display value	ETSI
1	865.7 MHz
2	866.3 MHz
3	866.9 MHz
4	867.5 MHz
5	-
6	-
7	-

Table 2: Frequency display values

7   READER CONFIGURATION

The uPASS reader settings can be configured easily using the UHFTOOL software. Software developers can find the communication protocol description in the firmware manual.
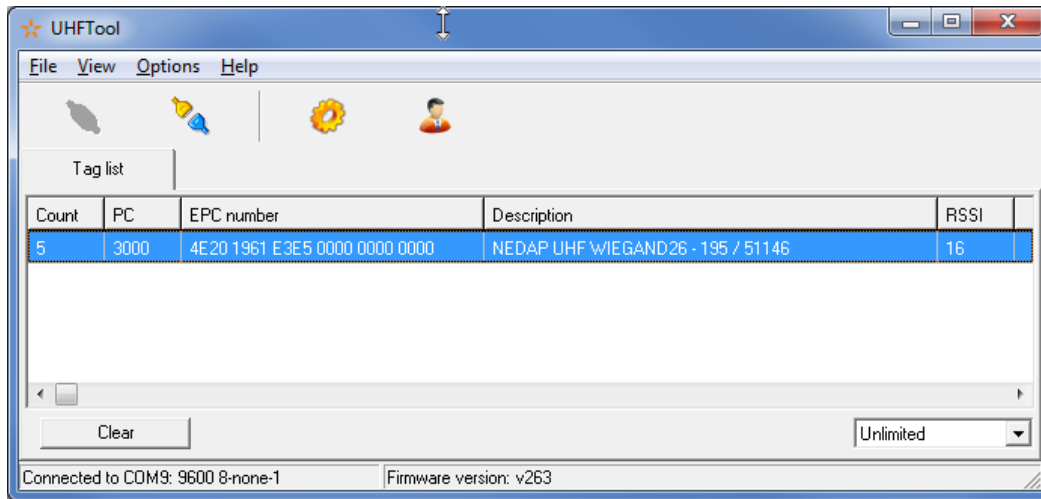
7.1   UHFTOOL SOFTWARE

Figure 25: UHFTOOL software

7.2   SETTINGS

Click 'View', 'Show config sidebar' or press F11 to show the configuration sidebar. In the sidebar the configuration categories are shown. Expand or collapse the setting panels by clicking on it.

7.2.1   READ DATA

Configure here which tags should be selected, how to access these tags, what data should be read from these tags and if a security check should be performed.
By default the reader is configured to select ANY TAG and read its EPC number.
Select NEDAP to read only Nedap tags.
NEDAP DUAL-ID (introduced in firmware version 2.29) enables the uPASS to search for Nedap vehicle-id tags. When a vehicle-id tag is found, the uPASS searches for driver-id tags.

Example 1: Read only NEDAP UHF tags and use two way authentication:
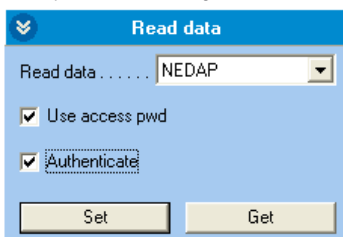

Figure 26: Read data example 1

Example 2: Read only NXP UCODE tags (TID starts with E2006) and read 4 words from user memory.

Figure 27: Read data example 2

7.2.2   DECODE NEDAP XS

Enable decode Nedap XS formatted tags. Introduced in firmware version 2.54.

Figure 28: Output settings

By default the data on NEDAP XS formatted tags will be transmitted to the TRANSIT compatible processor or the the NEDAP antenna modulation interface. In this case the UPASS will not perform any decoding.

Enable decode Nedap XS when you do not want to use the TRANSIT compatible processor or the antenna modulation interface. The UPASS will decode the NEDAP XS tag data and output its plain tag-number. You can also enable to output or verify the customer code.

Enable the option 'Allow other tag formats' when you want the reader to support also other formatted tags, such as NEDAP UHF Wiegand formatted tags and others.

The decoded NEDAP XS output number contains:

Byte 1:	4E	NEDAP UHF
Byte 2:	<FMT>	FMT=01: Nedap XS decoded hex tagno
		FMT=02: Nedap XS decoded decimal tagno.
Byte 3-4:	00	Unused
Byte 5-7:	CC	CC=Customer code (zero if not transmitted)
Byte 8-12:	TAGNO	TAGNO=Tag number

Examples:

NEDAP UHF XS:	Output:	4E10 3FFF C415 A87C BD51 8000
NEDAP UHF XS decoded:	Output:	4E01 0000 0000 0000 0000 3039
NEDAP UHF XS decoded decimal:	Output:	4E02 0000 0000 0000 0001 2345
NEDAP UHF XS decoded + custcode:	Output:	4E01 0000 0415 A000 0000 3039
NEDAP UHF XS decoded decimal + custcode:	Output:	4E02 0000 0415 A000 0001 2345

7.2.3 RELAY / TIMING

Configure relay output and timing parameters.

Figure 29: Relay / timing settings

Enable 'Automatic relay activation' to activate the relay upon identification. When disabled the relay can only be activated manually.

The 'Relay hold time' setting is the minimum time the relay is activated.

The 'Vehicle hold time' setting is the time, after a vehicle-id tags has been found, for

which the reader will search for driver-id tags. This setting is only used in the NEDAP DUAL-ID mode. Introduced in firmware version 2.29.

The (random) RF off time parameter can be used to enable time sharing between multiple readers on the same frequency.

7.2.4 LED CONTROL
Only for UPASS ACCESS: setup LED control mode.

Automatic mode:
Default the uPASS Access will automatically control the LED.
During stand-by the LED will be BLUE and upon identification it will be GREEN.
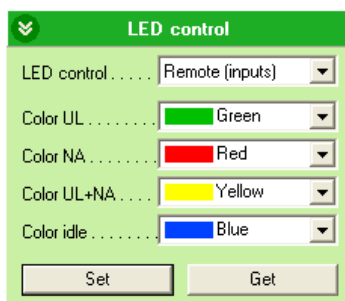These colors can be changed!

Figure 30: LED control

Remote control:
The LED can be controlled remotely by a connected access control system. Digital inputs will determine the color indicated on the LED.

7.3 EXPERT SETTINGS
Click 'Options', 'Usermode', 'Expert' to show additional configuration settings for advanced users.

7.3.1 OUTPUT
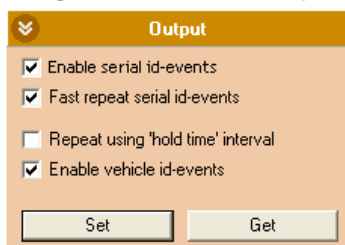Configure communication output settings.

Figure 31: Output settings

Select 'Enable serial id-events' to enable the serial output upon identification. Only disable the serial id-events to optimize the identification speed when using the Wiegand or magstripe interface or the TRANSIT compatible processor.

When 'Fast repeat serial id-events' is selected (default) the serial output is repeated upon every identification. When this option is disabled, the message is only transmitted once.
This setting has no effect when using the Wiegand or magstripe interface. On the

Wiegand or magstripe interface the identification message is always only transmitted once when the tag is within the range of the reader.

Enable 'Repeat using hold-time interval' to periodically repeat the id-events as long as the tag is within the identification range. Set the hold-time to specify the interval between the repeated messages. The repeating will be enabled for the serial and also for the Wiegand or magstripe interface.

'Enable vehicle id-events' allows enabling or disabling the id-event messages for vehicle-ids. This may be useful in combination with the NEDAP DUAL-ID mode and an access control panel that does not support the dual-id feature.

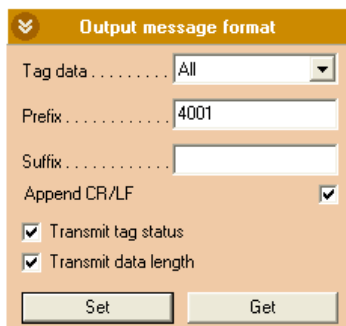### 7.3.2 OUTPUT MESSAGE FORMAT
Configure output message format.

Figure 32: Output message format

Note
When the output message format is changed, identified tags may no longer be shown in the UHFTOOL.

The output message format is configurable:
<prefix> [<tagstatus>] [<epclen>] [<epc>] [<datlen>] [<data>] <suffix> [CR/LF]

7.3.3 EXTRA OUTPUT
Optionally enable Wiegand or magstripe output for tags that are not programmed by Nedap in a Wiegand, magstripe or nedap-xs format. This feature is introduced in firmware version 2.13 or newer.

'Protocol':
Disabled	Do not use the additional output feature.
Wiegand	Enable additional Wiegand output.
Magstripe	Enable additional magstripe output.

'Data source':
EPC number	Output the EPC number using the selected protocol.
Custom read data	Output the custom data read using the selected protocol. See for more information about how to setup custom read data chapter 7.2.1.

'Alignment':
Full	Use the complete EPC number (or all custom read data).
Left	Truncate data. Keep left.
Right	Truncate data. Keep right.

'Data length': Data length in bits for Wiegand (or in digits for magstripe).

'Offset': Data offset in bits for Wiegand (or in digits for magstripe).

'Add constant':   Enable to add a constant to the output before or after the
                               data read from the tag.

Example 1:
Output a Wiegand 26-bit message with facility code 10:

Figure 33: Additional output example 1

Example 2:
Output the 13 rightmost digits from the EPC number using the magstripe interface:

Figure 34: Additional output example 2

7.3.4 FREQUENCY

Here is shown the reader's operating frequency region.

Only for systems that do not use frequency hopping (e.g. ETSI):

You can select a frequency channel within the available frequency band.
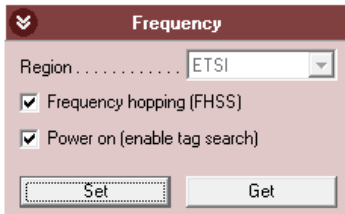
Figure 35: Frequency

7.3.5 READ RANGE

Enable the squelch to reduce the read range. This is useful to optimize lane separation.

When the squelch is enabled, you can set the squelch level. This level ensures that only tags with a returned signal strength higher than the squelch level are identified. When the squelch is enabled and the returned signal strength is lower than the squelch level, the SQ-ACT LED indicates that the tag is rejected.

Figure 36: Read range

A   TECHNICAL SPECIFICATIONS

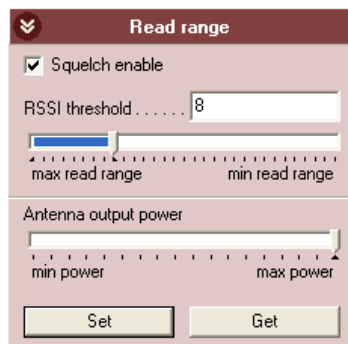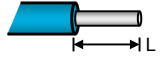| Item	Specification	Remark
Dimensions	200x220x46.5mm (7.87 x 8.66 x 1.83 inch)	
Weight	0.75 kg (1.65 lbs)	
Enclosure color	RAL7016 (light gray)	
Enclosure material	Polycarbonate	
Chassis material	Aluminum	
Cable entry fittings	AGRO Progress MS EMC IP68	4-6mm cable diameter
Recommended wire stripping length	8 ... 10mm (0.3 ... 0.4 inch)	
Connector K5	0.5mm^2 ... 1.5mm^2 (AWG20 ... 16)	Spring cage type PTSA 1.5
Connector K2,3,4	0.14mm^2 ... 0.5mm^2 (AWG24 ... 20)	Spring cage type PTSA 0.5
Protection class	IP65	
Operational temperature	-30 °C ... + 60 °C	
Relative humidity	10 .. 93 % non condensing	
Identification range	Up to 4 meters (12 feet)	With passive NEDAP UHF tags
Power supply	12 ... 24VDC ±10% linear power supply	
Current consumption	1.0A @ 12VDC, 0.5A @ 24VDC	

Item	Country	Frequency	Technique	Power
Operating frequency	ETSI	865.6 - 867.6 MHz	DRM 4ch	2W ERP
	FCC	902.7 - 927.2 MHz	FHSS 50ch	1W cond, ≤6dBi gain
	Brazil	915.5 - 927.5 MHz	FHSS 41ch	1W cond, ≤6dBi gain
	China, Singarepore, Thailand	920.6 - 924.4 MHz	FHSS 20ch	2W ERP
	Australia	920.7 - 925.2 MHz	FHSS 10ch	4W EIRP
	Israel	915.1 - 916.9 MHz	DRM 4ch	2W EIRP
	Korea	917.3 - 920.3 MHz	FHSS 6ch	4W EIRP
	New Zeeland	922.5 - 926.0 MHz	FHSS 8ch	4W EIRP
	Japan	916.8 - 920.4 MHz	DRM 4ch	1W cond, ≤6dBi gain
	Malaysia	919.8 - 922.2 MHz	FHSS 5ch	2W EIRP
	Taiwan	922.6 - 927.4 MHz	FHSS 9ch	1W cond, ≤6dBi gain
	Vietnam	866.3 - 867.5 MHz	DRM 3ch	2W ERP
	Philippines	918.5 - 919.5 MHz	DRM 3ch	2W ERP
	Russia	866.3 - 867.5 MHz	DRM 3ch	2W ERP

Item	Specification	Remark
Polarization	Horizontal	
Immunity	EN 301 489 part 1&3 v1.4.1	

Safety	EN 60950-1:2006	
Emission	EN 302 208-2 v1.3.1 FCC part 15.247 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, 6ms, 1000x3 dir
Random vibration	EN 50155	5 – 150Hz, 5 G, 20 sweeps x 3 dir

B   PART NUMBERS

Readers		
	NEDAP uPASS Reach Region 1 (EUR) NEDAP uPASS Reach Region 2 and 3 (USA)	9942319 9945466

Accessories		
	Adjustable mounting bracket	9875840
	Weather protection hood	7591152
	Pole mounting kit (includes 7591152)	9943803

Transponders		
	UHF Windshield Tag	9942327
	UHF Windshield Tag Tamperproof	9442335
	Combi card UHF + Mifare	9442343
	Combi card UHF + Nedap	9442351
	Combi card UHF + EM	9442360

C   FCC / IC STATEMENT

FCC ID: CGDUPASSREACH
IC: 1444A-UPASSRCH

This device complies with part 15 of the FCC rules and to RSS210 of Industrial Canada. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Cet appareil se conforme aux normes RSS 210 exemptés de license du Industry Canada.
L'opération est soumis aux deux conditions suivantes:
(1)   cet appareil ne doit causer aucune interférence, et
(2)   cet appareil doit accepter n'importe quelle interférence, y inclus interférence qui peut causer
        une opération non pas voulu de cet appareil.

Les changements ou modifications n'ayant pas été expressément approuvés par la partie responsable de la conformité peuvent faire perdre à l'utilisateur l'autorisation de faire fonctionner le matériel.

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.
This device shall be installed to provide a separation distance of at least 20 cm from all persons.

UL
This equipment is intended to be powered from a limited power supply that is listed as ALVY (UL294) or APHV (UL603).

UL294 Classifications:	Destructive Attack:	Level 1
	Line Security:	Level 1
	Endurance:	Level 4
	Standby Power:	Level 1

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E   DOCUMENT REVISION

Version	Date	Comment
4.2	2016-03-16	Updated frequency regions
4.1	2015-07-08	UL update
4.0	2014-02-11	Layout adjusted to new corporate style