uPASS Go

installation guide

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Contents

1 Introduction

The uPASS Go reader is a UHF RFID reader for long-range vehicle identification. Based on passive UHF technology, vehicles are identified up to 10 meter (33 feet). The uPASS Go complies with the ISO18000-6C and EPC Gen2 directive.

As the uPASS Go is used in combination with battery free UHF (EPC Gen2) tags, the solution is cost efficient. It is ideal for convenient vehicle access to car parks, gated communities and staff parking areas.

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

Key features

- Automatic vehicle identification
- Read range up to 10 meter (33 feet)
- Operates with passive UHF tags (EPC Gen 2)
- Supports variety of communication protocols
- Easy installation and maintenance
- Robust reader for outdoor use

The uPASS Go supports an Ethernet interface to support a TCPIP connection. This opens up new possibilities to perform remote configuration and updates with the user friendly online configuration web interface.

1.1 Overview

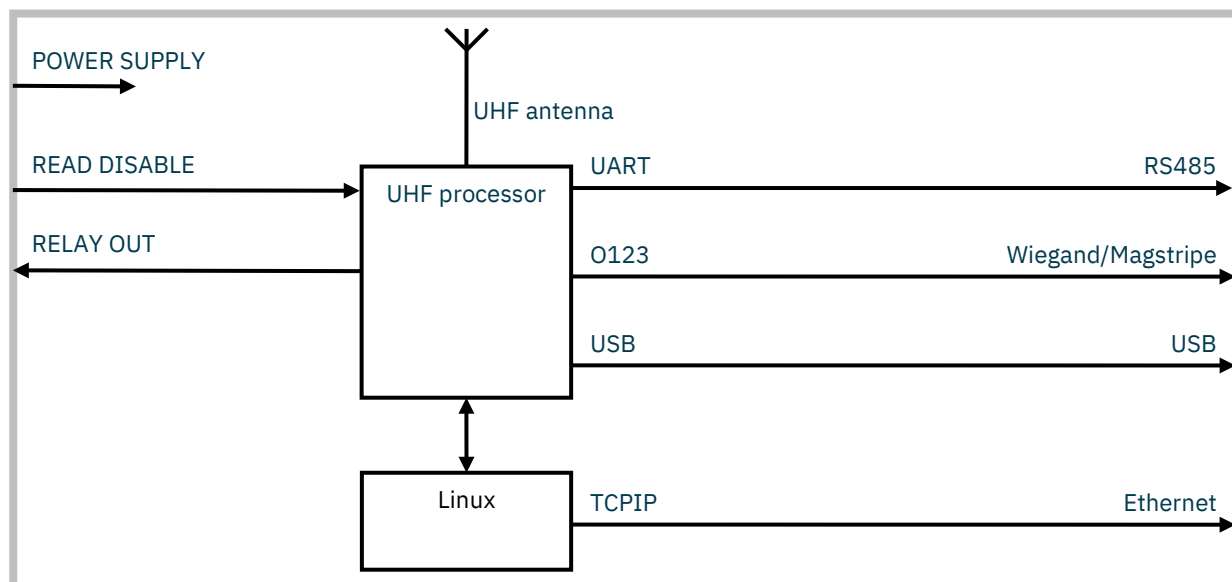Below a simplified overview of the components in the reader is shown:

Figure 1: Reader overview

1.2 Supported tags

The uPASS Go supports all UHF EPC Class 1 Gen 2 tags according to ISO18000-6C standard.

NEDAP formatted UHF tags can have the following programming 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 configuration settings. See chapter 4 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 configuration settings. See chapter 4 for wiring details.

- NEDAP UHF XS tags

  These tags are especially programmed in the same format as our TRANSIT tags (Compact-Tag, Window-Button and Heavy-Duty-Tag). The tags will have a customer-code and id-number. The reader will modulate the tag-info onto the Nedap antenna interface output.

  This can typically be used when TRANSIT compatibility is wanted in combination with the TCC270.

1.3 Tag security

UHF 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. There are a few security measures possible against tag cloning.

TID check *
EPC tags contain a data field known as the Tag Identifier (TID). At the discretion of the EPC tag/card manufacturer, the value is be factory programmed and locked, ensuring that tags have a unique identity and cannot be cross-copied. NEDAP UHF tags support a locked serialized TID and the uPASS reader can be configured to read the TID data field.

EPC passwords **
EPC tags have 2 passwords. NEDAP has implemented a two-way authentication anti-cloning method using these 2 passwords. This feature is supported in combination with all NEDAP UHF tags.

EPC Gen2 V2 secure authentication ***
The EPC Gen2 V2 tags support a secure authentication method.
This is the best possible anti-cloning measure available.
The authentication data transmitted between tag and reader are enciphered using AES128 bit encryption. The encryption keys are diversified using the programmed EPC number to ensure that the keys are different for each tag. Required is that the tags contain an EPC Gen2 V2 compliant RFID chip. Refer to NEDAP uPASS how to order guide for product numbers.

*   Possible for all UHF tags with unique and locked serialized TID.
**   Possible for all NEDAP UHF tags.
***   Possible for all EPC Gen2 V2 tags   ← Recommended for highest security.

2 Getting started

Mounting

Make sure to install the reader in a location where it has line-of-sight where the tags are to be identified.

See for details about installation chapter 3.

Wiring

Make sure to connect at least a proper power supply and a communication interface.

See for more details about connections and wiring chapter 4.

Refer to chapter 4.2 for more details about the power supply.

Refer to chapter 4.3 for more details about communication interfaces.

Setup frequency

The uPASS Go reader operates on the UHF 860 – 960 MHz band. Regulations in this band are not standardized world-wide. It is important to ensure that the reader is operated using the correct country / frequency setting.

When a reader's frequency region is not yet configured, the LED at the front will **flash pink** periodically.

See chapter 7 for details how to select and setup the correct operating frequency.

Setup RS485 communication protocol

The RS485 communication protocol can be CR/LF (default) or OSDP.

See chapter 8 for details how to setup the RS485 communication protocol.

Read tag

Test the system by presenting a UHF RFID tag.

Verify if the tag can be read in the positions and locations as wanted.

Check if the communication is working correct and the access control system receives the correct id-messages.

3 Installation

3.1 Safety instruction

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

- The uPASS Go shall only be installed and serviced by qualified service personnel.
- Disconnect the power supply before (dis)connecting any wires. The reader is NOT hot-swappable, so when making or changing connections, power must be switched OFF.
- To be sure of safety, do not modify or add anything to the reader other than mentioned in this installation guide or indicated by Nedap N.V.

3.2 Antenna coverage

The uPASS Go antenna has a detection coverage area as shown in the picture below.
The read range, which is up to 10 meters, can be adjusted by means of a software configuration setting.
Reducing the read range will shrink the complete antenna lobe.
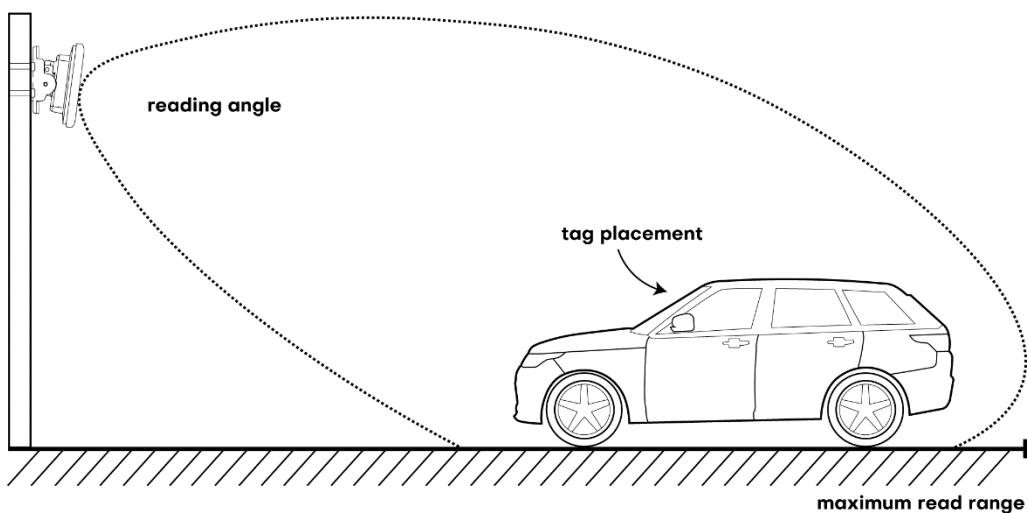

Figure 2: uPASS Go antenna coverage

Maximum read range: 10 meter (33 feet).
Antenna polarization: Circular
Horizontal reading angle: 65°
Vertical reading angle: 65°

Recommended installation height is between 2 and 3 meters.

3.3 Mounting instruction

The uPASS Go is intended for vehicle access control. It offers a read range up to 10 meter.

The directional antenna can be "aimed" at the lane where vehicles are to be identified. The antenna is circular polarized, which means that the tags may be installed in any orientation. See also previous chapter about antenna coverage.

Recommended installation height is between 2 and 3 meters.

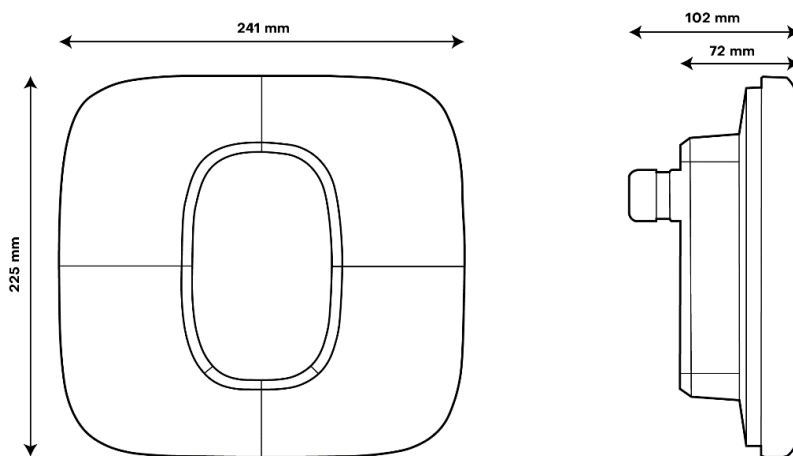The dimensions of the uPASS Go reader can be seen in figure below.

Figure 3: Dimensions

3.3.1 Wall / pole mount

The wall / pole mounting set is included with the reader.

Mounting procedure;
1. Mount the main bracket to the wall using screws (or alternative to a pole using the included tie-wraps).
2. Mount the smaller bracket to the rear side of the reader.
3. Attach the brackets together. Before tightening ensure the angle is correct.
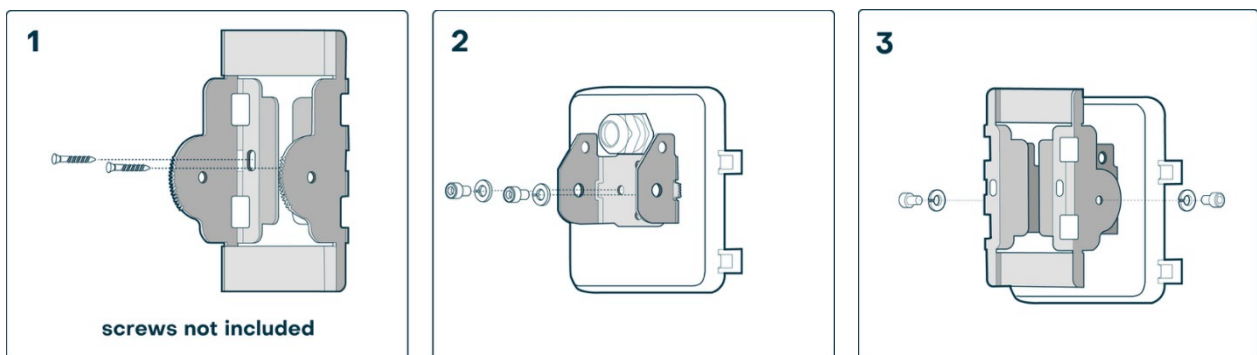

Figure 4: Wall / pole mounting

3.3.2 Mounting extension set

A mounting extension set (art. no. 9567593) is separately available for situations where the reader must be installed in a way which is not possible with the standard set. The extension set allows the reader to be installed in 0 – 90 degrees angles in 2 directions (left-right + up-down).

Mounting procedure;
1. Mount the main bracket together with the adjustment bracket to the wall using screws.
2. Mount the smaller bracket to the rear side of the reader.
3. Attach the brackets together.
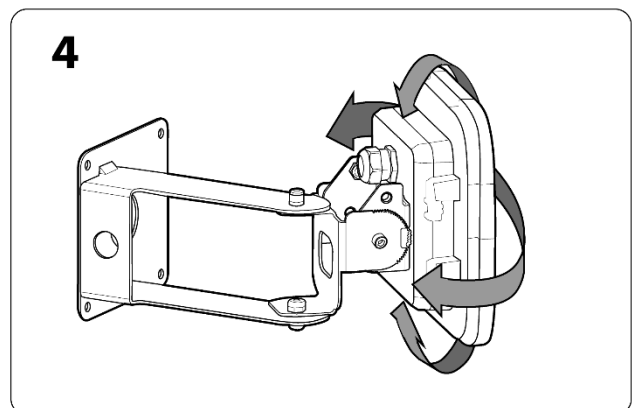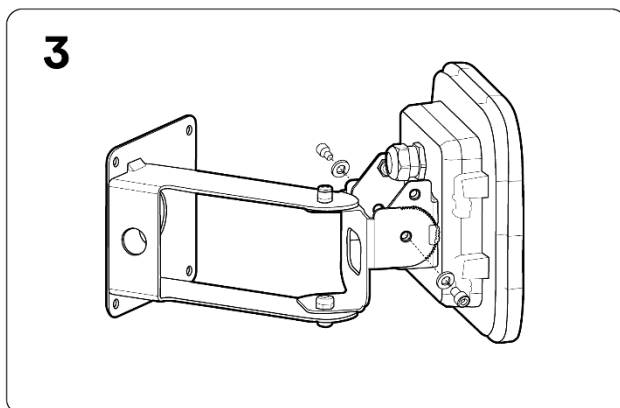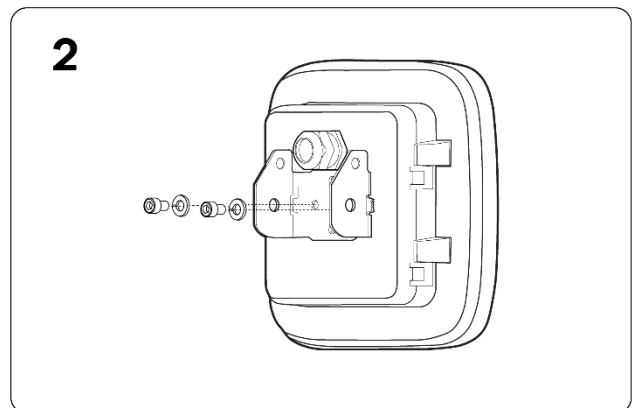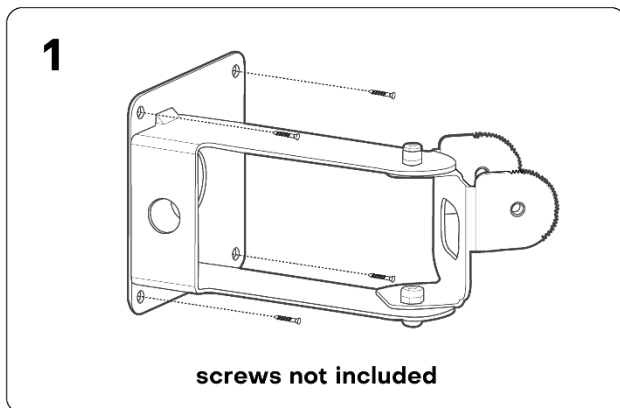4. Adjust the angles and tighten bracket connections.

Figure 5: Mounting extension set

4 Connections

The connection cables must be inserted through the cable gland. This cable gland supports up to 3 cables.

Max number of cables: 3

Max cable diameter: 6 mm

Important

If less than 3 cables are used then keep the plugs in place to ensure watertightness.
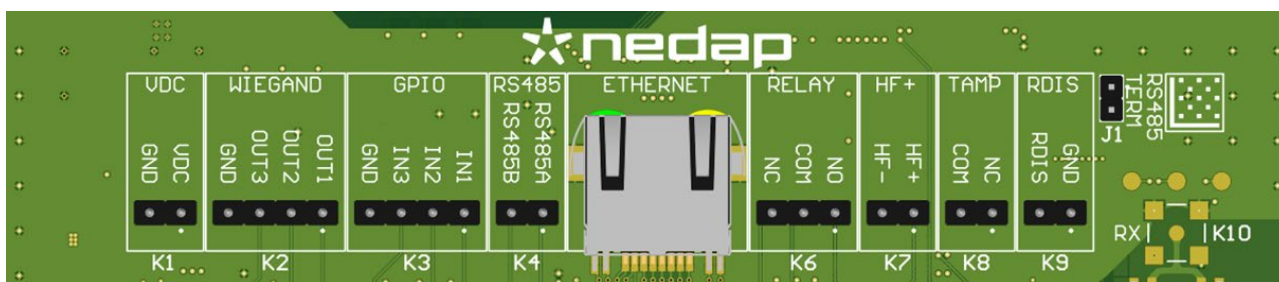
4.1 Overview

Figure 6: Connections overview

Connector			Description
K1	POWER	VDC	Power supply 12-24 VDC
		GND	Power supply 0V
K2	WIEGAND	OUT1	Magstripe card loaded
		OUT2	Wiegand data 0 / magstripe clock
		OUT3	Wiegand data 1 / magstripe data
		GND	Ground
K3	GPIO	IN1	General purpose input 1 (active low)
		IN2	General purpose input 2 (active low)
		IN3	General purpose input 3 (active low)
		GND	Ground
K4	RS485	RS485A	RS485-A (negative)
		RS485B	RS485-B (positive)
K5	ETHERNET	RJ45	Ethernet TCP/IP network connection
K6	RELAY	NO	Relay contact normally open
		COM	Relay contact common
		NC	Relay contact normally closed
K7	HF+	HF+	Nedap antenna modulation output
		HF-	Nedap antenna modulation ground
K8	TAMP	NC	Tamper switch normally closed
		COM	Tamper switch common
K9	RDIS	RDIS	Reader disable input
		GND	Reader disable

4.2 Power supply

Recommended power supply is 24VDC ± 10%. Minimum voltage 12 VDC.
Maximum current consumption is 0.5A @ 24 VDC.

Connections

Connector			Description
K1	POWER	VDC	Power supply 12-24 VDC
		GND	Power supply 0V

4.3 Communication

The uPASS Go reader has several communication interfaces, which all work simultaneously.

- USB   Service and installation (CR/LF only)
- RS485   Access control system (CR/LF or OSDP)
- Wiegand / magstripe   Access control system
- Ethernet TCP/IP   Access control system, web configuration and more.

4.3.1 USB

The USB interface is available for service and installation purposes.
You can use the UHFTOOL software to configure the reader.

Details

Connector: USB-C connector; accessible from rear cover (located near the internal status LEDs).
USB driver: Virtual com-port (baud rate independent).
Protocol: CR/LF.

Note

The USB interface can be used simultaneously with any/all other communication interfaces.

4.3.2 RS485

The uPASS Go has an RS485 interface.

The communication protocol can be CR/LF (default) or OSDP.

The RS485 interface can be used for point-to-point and multi-drop communication.

Connections

Connector			Description
K4	RS485	RS485A	RS485-A (negative)
		RS485B	RS485-B (positive)

Maximum RS485 cable length 1000 meter (3280 ft)

RS485 point–to–point communication

For point-to-point communication enable the termination resistor (J1 RS485-TERM ON).

RS485 multi–drop communication

Enable the termination resistor on the last device in a multi-drop communication system (J1 RS485-TERM ON).

Disable the termination resistor on the other devices. (J1 RS485-TERM OFF).

Multi-drop communication requires an addressable communication protocol, such as OSDP.

Termination resistor

RS485 TERM	J1 RS485-TERM ON = termination resistor enabled	Point-to-point Last multi-drop device
RS485 TERM	J1 RS485-TERM OFF = termination resistor disabled	Other multi-drop device(s)

4.3.3 Wiegand / magstripe

The Wiegand and Magstripe ISO7811/2 (clock & data) interface share the same connections.

Connections

Connector			Description
K2	WIEGAND	OUT1	Magstripe card loaded
		OUT2	Wiegand data 0 / magstripe clock
		OUT3	Wiegand data 1 / magstripe data
		OUTGND	Ground

Message format

The Wiegand output format is determined by the programming format of the credential.

Wiegand formatted credentials will automatically generate a Wiegand message.

Magstripe formatted credentials will automatically generate a Magstripe message.

If the credential is not programmed in Wiegand/magstripe format, you may configure the output format using extra-output settings.

Wiegand timing

In the figure below the Wiegand protocol timing is specified.
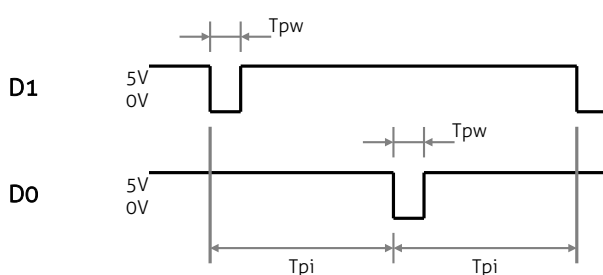
Timing constants

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

Figure 7: Wiegand protocol timing

Magstripe timing

The figure below shows the timing for one magstripe numeric character.

Each character contains 5 bits: 4 data bits (lsb first) and 1 parity bit (odd).

See for more details about encoding and character set the ISO7811/2 documentation.
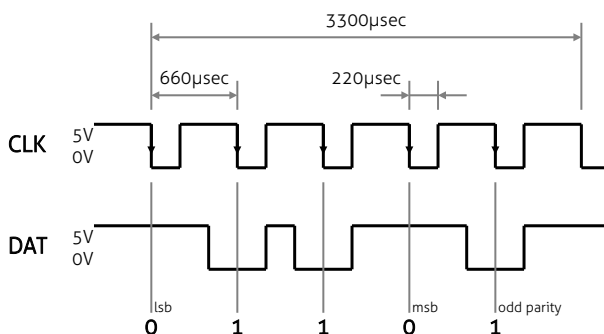
Timing constants

Clock period	660µsec
Clock high	440µsec
Clock low	220µsec
Data pre-amble	16 clock periods
Data post-amble	16 clock periods

Figure 8: Magstripe (clock and data) character timing

4.3.4 Ethernet TCP/IP

The Ethernet TCP/IP interface can be used for several purposes, such as integration with the Access control system, web configuration and more.

The Ethernet cable with RJ-45 connector can be fitted directly to the reader.

IP address

By default DHCP is enabled. This means that the reader automatically gets an IP address from the DHCP server. The hostname will be NVR2002-xx-xx-xx; where xx-xx-xx are the last 6 characters of the MAC-address.

The reader can be configured to have a static IP address. This can be done through the web interface (which requires initial network access to the reader). You can also configure the network settings through the USB interface using the UHFTOOL software.

Web server

The uPASS Go hosts a web server. You can use any web browser to connect to the embedded web server. The web server can be used to setup and configure the reader settings.

The default login credentials (username/password) can be found on a sticker on the inside of the read cover.

TCP Socket

The reader will accept incoming TCP connections on port 7000. The main purpose is for an access control system to receive tag read event messages. The communication will be according to the CR/LF protocol.

4.4 Digital I/O

4.4.1 Relay output

The relay output will operate differently depending upon the selected RS485 communication protocol.

- CR/LF
  The relay is by default operated in automatic mode. This means that the relay is activated for every tag read and stays activated for the tag hold time. If the automatic mode is switched off, the relay is operated by input 1.

- OSDP
  The relay is controlled by the OSDP access control system using the OSDP_OUT command.
  RELAY = OSDP output #0.

Connections

Connector			Description	
K6	RELAY	NO	Relay contact normally open	
		COM	Relay contact common	
		NC	Relay contact normally closed	

4.4.2 Reader disable input

The reading can be disabled (temporarily) with the RDIS input. While this input is activated, the reader will not detect any tags. This input is commonly used in combination with a sensor (e.g. inductive loop) that detects the presence of a person or vehicle. Use a potential-free (relay) contact to connect the RDIS with GND. Leave unconnected to keep the reader enabled.

Connections

Connector			Description	
K9	RDIS	RDIS	Reader disable input	(OSDP input #3)
		GND	Reader disable	

4.4.3 General purpose inputs

Three (3) general-purpose inputs (active-low) are available on the uPASS Go reader.
In standard operation the inputs can be used to control the LED and buzzer. See chapter 8.2.4.
In OSDP operation these input are reported through OSDP_ISTATR message inputs number 0, 1 and 2.

Connections

Connector			Description		
K3	GPIO	IN1	Input 1 (active low)	LED-UL-IN	(OSDP input #0)
		IN2	Input 2 (active low)	LED-NA-IN	(OSDP input #1)
		IN3	Input 3 (active low)	BEEPER-IN	(OSDP input #2)
		GND	Ground		

4.4.4 Tamper switch

An internal magnet provides tamper indication when the reader is opened.

This contact may be connected to an external alarm system. The contact is normally closed when the cover is in place.

Tamper switches of multiple readers can be connected in series.

Connections

Connector			Description
K8	TAMP	NC	Tamper switch normally closed
		COM	Tamper switch common

Contact rating

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

RS485 OSDP

The tamper switch status is reported through OSDP_LSTATR event messages.

4.4.5 Nedap antenna interface

The Nedap antenna interface is used to connect the reader to a TCC270 for TRANSIT compatibility.

The TCC270 will support any TRANSIT Ultimate firmware such as for example P61 or Q70.

Connections

Connector			Description
K7	UHF	HF+	Nedap antenna modulation output
		HF-	Nedap antenna modulation ground

Notes

- Nedap XS formatted credentials are required to use the Nedap antenna interface!
- Make sure to disable the setting 'decode nedap xs'.
- Maximum cable length shall be < 100 meters (350 feet).

5 OSDP

The RS485 communication protocol can be CR/LF (default) or OSDP.

Make sure that RS485 communication protocol OSDP is selected.

∨	Output
RS485 protocol	OSDP ▼

Default baud rate is 9600 and default device address is 0 (zero).

This may be changed using the OSDP_COMSET command.

Tag reads are sent as a poll response using the OSDP_RAW message.

```
CMD         OSDP_RAW (fixed value 0x50)
byte 0      Reader number (fixed value 0 = first reader)
byte 1      Format code (0=Raw bit array, 1=Wiegand P/data/P)
byte 2/3    Bit count data length
byte 4/N    [<tagstatus>] [<epclen>] <EPC> [<datlen>] [<data>]
```

The table below describes the OSDP protocol implementation details.

Command	Description	Remark
OSDP_ID	Device ID	Vendor code 00 0D 0A = Nedap
		Model number 04 = uPASS Go
OSDP_CAP	Device capabilities	Inputs (4x) digital inputs not supervised
		Output (1x) relay on, off and timed
		LED RGB (1x)
		Buzzer on, off and timed support
		Check CRC16 support
		Secure communication AES128 support
		Receive buffer size 256 bytes
		Largest combined message size 256 bytes
OSDP_LSTAT	Device status	Tamper indication based on magnetic switch
OSDP_ISTAT	Input status	Input #0 = GPIO IN1
		Input #1 = GPIO IN2
		Input #2 = GPIO IN3
OSDP_OUT	Output control	Output #0 = Relay output
OSDP_LED	LED control	Led #0 = SMILEY (RGB)
OSDP_BUZ	Buzzer control	Yes, supported
OSDP_COMSET	Communication configuration	OSDP device address (default 0)
		OSDP baud rate (default 9600). Max 115200.
OSDP_CHLNG OSDP_CRYPT	Secure channel communication	Yes, supported
OSDP_FILETRANSFER	File transfer	Firmware update file (*.upd)
		Config file (*.ofg)

6 LED indications

Indications

LED	Color	Description
SMILEY	● (red)	Hardware error
SMILEY	● (pink)	OSDP master offline (> 30 seconds)
SMILEY	◑ (pink flash)	No frequency set
SMILEY	● (green)	In automatic mode -> Okay. Tag identified
SMILEY	● (blue)	In automatic mode -> Okay. System standby

Automatic mode

The uPASS Go will automatically set the LED color upon identification.

During stand-by the LED will be blue and upon identification it will be green.

These colors can be changed in the configuration menu.

Remote (inputs)

The LED can be controlled remotely by an access control system by activating digital inputs (active low). Two digital inputs are used (input 1 and 2) to set the LED color. With the combination of these 2 input, 4 different colors can be selected. For each of the 4 LED input combinations you may choose one of the following colors; GREEN, RED, BLUE, YELLOW, CYAN, PINK, WHITE or OFF.

Setup the LED control mode and configure the corresponding LED colors in the configuration menu.

LED brightness

Set LED brightness in range from 0 to 100%. Default 50%.

Internal status LEDs

See the table below for the description of the internal status LEDs.

LED	Color	Description
XV5P0	● (green)	Voltage good (internal 5V)
XV3P3	● (green)	Voltage good (internal 3V3)
VCCPA	● (green)	Voltage good (power amplifier)
ERROR	● (red)	UHF read error (firmware)
CRC	● (green)	RFU
STS	● (blue)	Status LED. Blinking regular is okay.

7 UHF frequencies

7.1 Frequency regulations

The uPASS Go reader operates on the UHF 860 – 960 MHz band. Regulations in this band are not standardized world-wide. It is important to ensure that the reader is operated using the correct country / frequency setting. Normally the country of operation is already preconfigured at Nedap.

In case the UHF frequency region is not yet selected, then follow the procedure below to setup.
The reader will not emit any RF field and not read tags until this is properly configured.

No frequency region configured
When a reader's frequency region is not yet configured, the LED at the front will **flash pink** periodically.
Connect with web server or UHFTOOL to configure the frequency region. UHFTOOL will automatically detect and prompt to setup the frequency region. You only need to do this once. The setup procedure is obviously skipped when the frequency region is already configured.

Select the country of installation
The uPASS Go reader supports worldwide operation.

Figure 9: Select country / frequency region

Important
- The frequency setting must comply with local laws and regulations. You, the user, are responsible to ensure operation with the correct country / frequency setting and are solely liable for the consequences due to any incorrect or non-compliant settings.

7.2 Frequency hopping

Frequency hopping (FHSS) is by default enabled. This automatically selects and uses all available frequency channels. FHSS reduces interference, enhances security and efficiently utilizes the bandwidth.

8 Reader configuration

8.1 Introduction

The reader supports settings for read configuration and output configuration, such as adjusting the read-range, network settings and communication protocol details.

The configuration settings can be changed using different methods and through different interfaces.

8.1.1 UHFTOOL software

The UHFTOOL software can be used on the following interfaces:

- USB interface
- RS485 interface (only when configured for CR/LF protocol)
- Ethernet interface (TCP port default 7000)
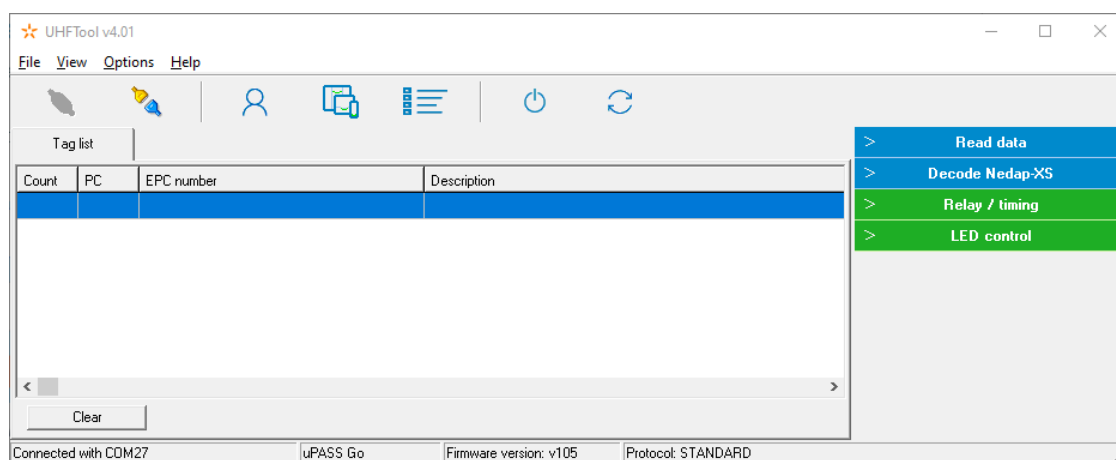
Figure 10: UHFTOOL software

8.1.2 OSDP

When using the RS485/OSDP interface, you can configure the device using the OSDP file transfer function.

With UHFTOOL you can export all configuration settings into a OSDP config file (*.ofg).

This file can be sent to the reader using the OSDP file transfer. This can be done from the access control software or from the Nedap OSDPTOOL software.

8.1.3 Web server

The uPASS Go hosts a web server. You can use any web browser to connect to the embedded web server. The web server can be used to setup and configure the reader settings.
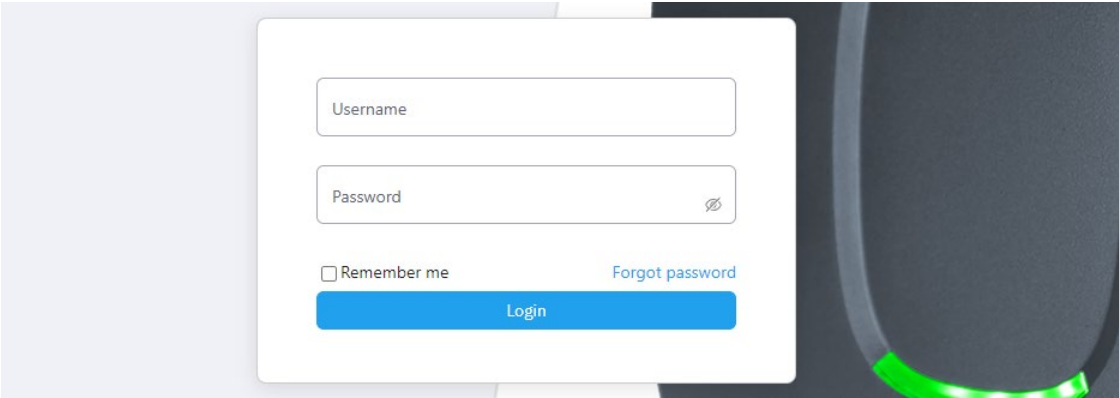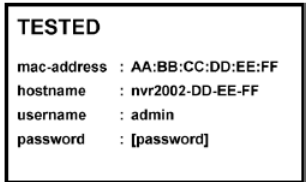

Figure 11: Web server login

The default login credentials (username/password) can be found on the TESTED sticker on the inside of the reader behind the backdoor.
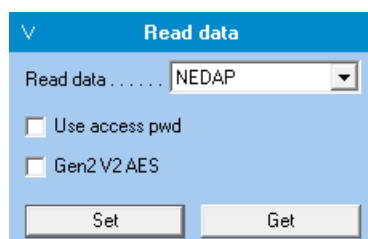
8.2 Settings

8.2.1 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.

Read data:

- ANY TAG (default)   Read any UHF tag and read its EPC number
- NEDAP   Read only Nedap tags.
- Custom   Read according to custom specifications. See example below.
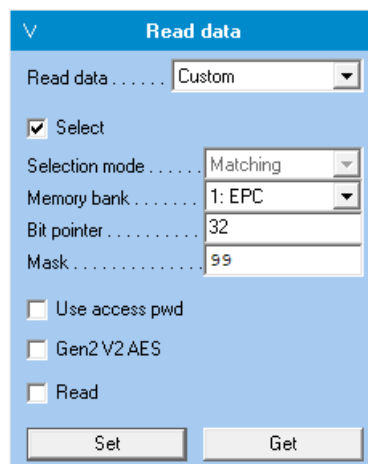
Example 1 – Nedap

Read only NEDAP UHF tags

Figure 12: Read data example 1

Example 2 – Custom select

Read only tags that have EPC number starting with 99.

Note that the bit pointer is set to 32 because the EPC memory bank starts with 16-bits CRC and 16-bits PC (protocol control). Therefore the EPC number starts at bit pointer 32.

Figure 13: Read data example 2

8.2.2 Decode Nedap XS
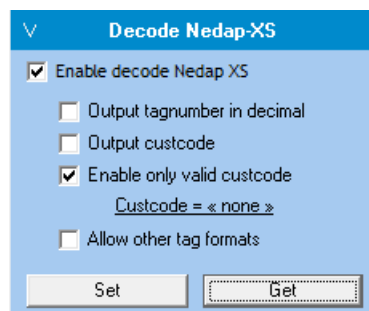
Enable/disable decode Nedap-XS formatted tags.

Figure 14: Decode Nedap XS

By default, decode Nedap-XS is disabled. The data for Nedap-XS formatted tags will be transmitted to the NEDAP antenna interface. See chapter 4.4.5.

Enable decode Nedap-XS when you do not want to use the NEDAP antenna interface. The uPASS will decode the Nedap-XS tag data and output its tag-number in readable format. 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 tag number.
		FMT=02: Nedap-XS decoded decimal tag number.
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:	4E10 3FFF C415 A87C BD51 8000
NEDAP UHF XS decoded:	4E01 0000 0000 0000 0000 3039
NEDAP UHF XS decoded decimal:	4E02 0000 0000 0000 0001 2345
NEDAP UHF XS decoded + custcode:	4E01 0000 0415 A000 0000 3039
NEDAP UHF XS decoded decimal + custcode:	4E02 0000 0415 A000 0001 2345

8.2.3 Relay / timing

Configure timing parameters.

Figure 15: Relay / timing settings

Enable 'Automatic relay activation' to activate the relay upon identification.
When disabled the relay can only be activated manually (using digital input or software command).

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

The Random off time parameter can be used to enable time sharing between multiple readers on the same frequency.
Recommended to enable this setting.

8.2.4 LED control

The built-in high intensity LED provides visual feedback that the tag has been read or authorized. The LED and buzzer can be controlled automatically by the reader itself or by the access control system.

Automatic mode

Default the uPASS Go 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!
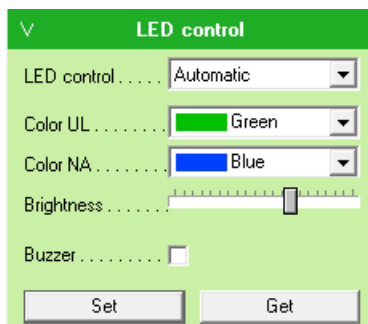

Figure 16: Automatic LED control

Remote control

The LED can be controlled remotely by a connected access control system.

Digital inputs will determine the color indicated on the LED.

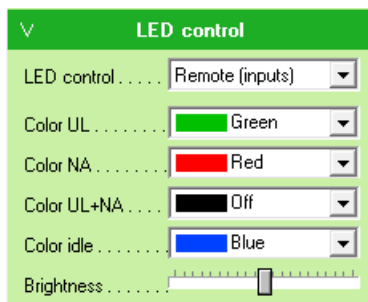See chapter 4.4.3 for digital input connection details.

Figure 17: LED control

OSDP

In OSDP operation the LED will be controlled through the OSDP command message OSDP_LED.

8.3 Expert settings

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

8.3.1 Output
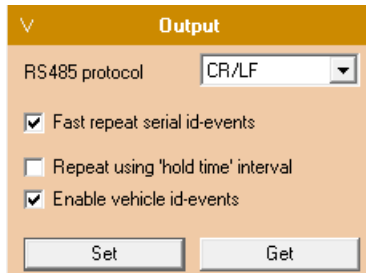
Configure communication output settings.

Figure 18: Communication output settings

'RS485 protocol'. Select the RS485 communication protocol CR/LF (default) or OSDP.
Note that the USB communication protocol is fixed to CR/LF.

'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. The setting is ignored for the RS485 communication interface.

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.

8.3.2 Output message format

The serial output message format is configurable.

Figure 19: Output message format settings

STANDARD (CR/LF) protocol message format:

```
<prefix> [<tagstatus>] [<epclen>] [<epc>] [<datlen>] [<data>] <suffix> [CR/LF]
```

Example output:

```
40010257CB21DD0E34244E103FFFC809A862A1EC1500<CR><LF>
```

Customized example

Output:
```
X012345<CR><LF>
```

Note

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

OSDP

OSDP protocol message format:

```
CMD        OSDP_RAW (fixed value 0x50)
byte 0     Reader number (fixed value 0=first reader)
byte 1     Format code (0=Raw bit array, 1=Wiegand P/data/P)
byte 2/3   Bit count data length
byte 4/N   [<tagstatus>] [<epclen>] <EPC> [<datlen>] [<data>]
```

Note that in OSDP operation the prefix, suffix and append CR/LF settings are ignored.

8.3.3 Extra output

Optionally enable Wiegand or magstripe output for tags that are not programmed by NEDAP in a Wiegand, Magstripe or NEDAP-XS format.

'Protocol':

Disabled	Do not use the extra output feature.
Wiegand	Enable Wiegand output.
Magstripe	Enable 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 8.2.1.

'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.

8.3.4 Read range

With 'Read range' the tag read distance can be configured, this can be useful to optimize lane separation. The read range settings is configured using two separate parameters;

'RSSI threshold': The reader ignores the tags until the received signal strength (RSSI) is higher than the configured threshold level. RSSI threshold value 0 gives the highest range ('unlimited').

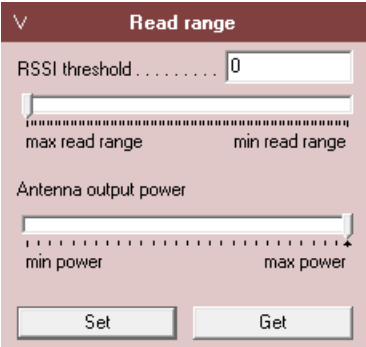'Antenna output power' The antenna output power controls the distance in which the tag is activated.

Figure 20: Read range

8.3.5 Antenna

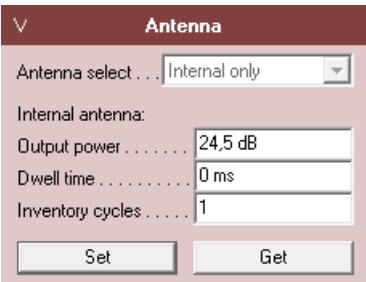Antenna settings can be changed in the Antenna panel.

Figure 21: Antenna settings

'Antenna output power' The antenna output power controls the distance in which the tag is activated. This is the same setting as the "Antenna output power" from the read range (see above).
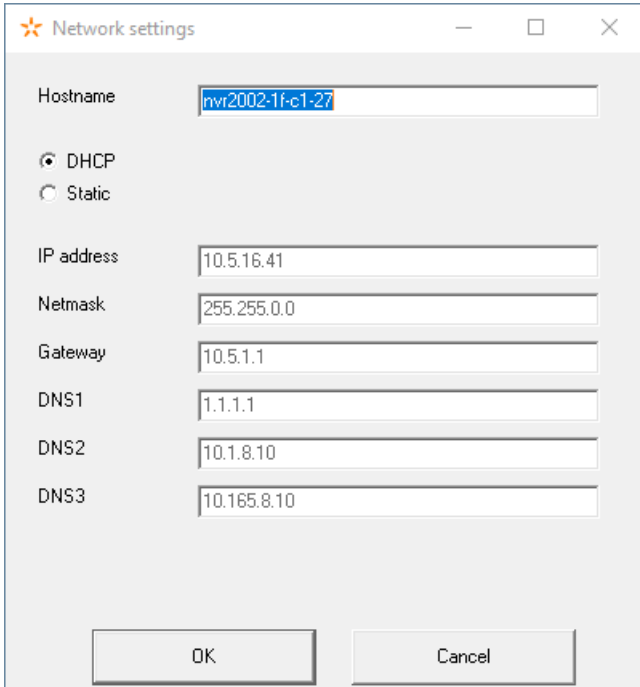
'Dwell time' Dwell-time is the tag-search time in milliseconds. This setting configures the maximum time that the antenna is activated during a tag identification round. If configured to zero then the setting is not used (the inventory-cycles will be used instead).

'Inventory cycles' The number of inventory cycles the reader performs each time when searching for tags. If configured to zero then the setting is not used (the dwell-time will be used instead).

If dwell-time and inventory-cycles are both set, the shortest will be used. It is not possible to set both to zero.

8.4 Network settings

Click Options - Network settings to setup network settings. The windows shows the current network configuration. Typically you view/edit here the hostname and IP-address settings. If DHCP is enabled, then the reader will automatically request for a IP-address from a server. You may also choose to setup a static IP-address.

Figure 22: Network settings

8.5 Firmware update

The firmware of the uPASS Go (UHF processor) can be updated using UHFTOOL.
This can be done through USB, RS485 and TCPIP port 7000.

Click Options, Update firmware.
Select the firmware file. You may choose the available standard firmware version or alternatively an external provided firmware file.
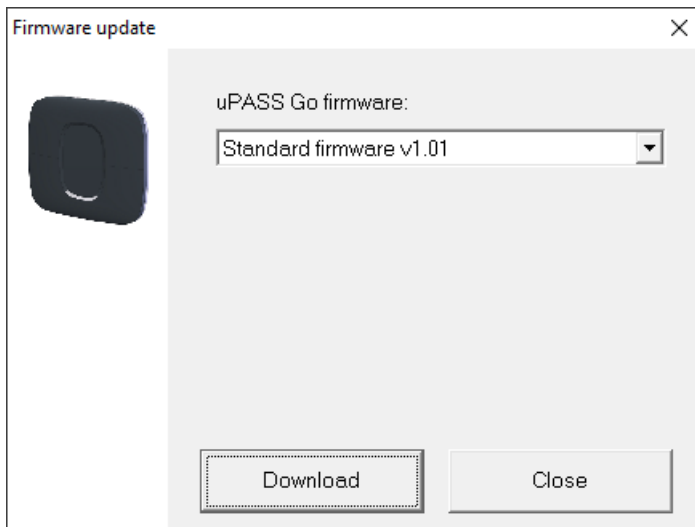
Figure 23: Firmware update

TCPIP

The Linux controller automatically performs a firmware upgrade of the UHF processor together with a Linux system update. The Linux controller will not perform a UHF processor firmware downgrade. This to prevent an update performed through USB or OSDP to be undone.

OSDP

You can perform a firmware update through the OSDP file transfer function.
The encrypted firmware file (*.upd) can be provided to you through our support channels.

A Technical specification

Technical specification	uPASS Go
Part number	9234357 – NVR2002
Dimensions	240 x 225 x 71mm (without cable gland)
Color	RAL7016 (front), RAL9006 (back)
Weight	1 kg (2.20 lbs)
Protection	IP66 (approx. NEMA4x)
Material housing	UL ASA+PC chassis and cover
Operating temperature	-30°C ... +60°C
Storage temperature	-30°C ... +60°C
Relative humidity	10% ... 93% relative humidity, non-condensing
Power supply	24 VDC recommended, for 12VDC see wiring conditions
	12-24 VDC ± 10% linear supply
Power consumption	0.5A@24VDC; 1A@12VDC
Power supply wiring	Max. 50 meter (150 ft), min. AWG23/0.25mm² @24VDC
	Max. 5 meter (15 ft), min. AWG26/0.15mm² @12VDC
Read range	Up to 10 meters (33 ft) with UHF Windshield Tag
Operating frequency	ETSI: 865.6 ... 867.6 MHz, FCC: 902 ... 928 MHz
Output power	ETSI: 2W ERP, FCC: 4W EIRP
Polarization	Circular
Air interface	ISO18000-6C
Interfaces	TCPIP, RS485, USB, Wiegand, Magstripe.
Communication protocols	CR/LF and OSDP v2.
Relay output	1 relay output (NO, common, NC), 24 VDC 2A
Inputs	Read disable input; 3 x TTL general purpose inputs
Audio	Yes, buzzer
Tamper switch	Yes, magnetic switch, normally closed
Standards	CE, FCC, UL, IC, ACMA, R-NZ
Optional accessories	9567593 Mount Set Extension
	9567658 Weather Protection Hood

B Disposal of equipment

The products will be disposed of by the end-user and discharge Nedap for any liability or responsibility thereof.

The WEEE symbol in Europe indicates that the relevant electrical product or battery should not be disposed of as general household waste in Europe. To ensure the correct waste treatment of the product and battery, please dispose them in accordance to any applicable local laws of requirement for disposal of electrical equipment or batteries. In so doing, you will help to conserve natural resources and improve standards of environmental protection in treatment and disposal of electrical waste (Waste Electrical and Electronic Equipment Directive WEEE 2012/19/EU).

C CE / UKCA declaration

Hereby NEDAP N.V. declares that the subject equipment is in compliance with:

- For CE: Directives 2014/53/EU (Radio Equipment Directive) and 2011/65/EU (Restriction of the use of certain hazardous substances).
- For UKCA: SI2017/1206 (UK Radio Equipment Regulations 2017) and SI2012/3032 (Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (RoHS)).

The full text of the declarations of conformity is available at https://portal.nedapidentification.com where, if applicable, also REACH information can be found.

D FCC / IC statement

FCC ID: CGDNVR2002
IC: 1444A-NVR2002

Compliance statements (part 15.19)
This device complies with part 15 of the FCC Rules and to RSS210 of Industry 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.

Cet appareil se conforme aux normes CNR210 exemptés de licence du Industry Canada.
L'opération est soumise 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.

Warning (part 15.21)
Changes or modifications not expressly approved by party responsible for compliance could void the user's authority to operate the equipment. This in particular is applicable for the antenna which can be delivered with the TRANSIT ULTIMATE System.

RF Exposure (OET Bulletin 65)

To comply with FCC RF exposure requirements for mobile transmitting devices, this transmitter should only be used or installed at locations where there is at least 20cm separation distance between the antenna and all persons.

Information to the User (Part 15.106(b))

Note: This equipment has been tested and found to comply with the limits for a class B digital devices, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequent energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does not cause harmful interference to radio or television reception, which can be determine by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

E Document revision

Version	Date	Comment
1.02	2024-07-05	HR: various updates
1.01	2024-05-28	HR: updated read range
1.00	2024-03-19	HR: initial version