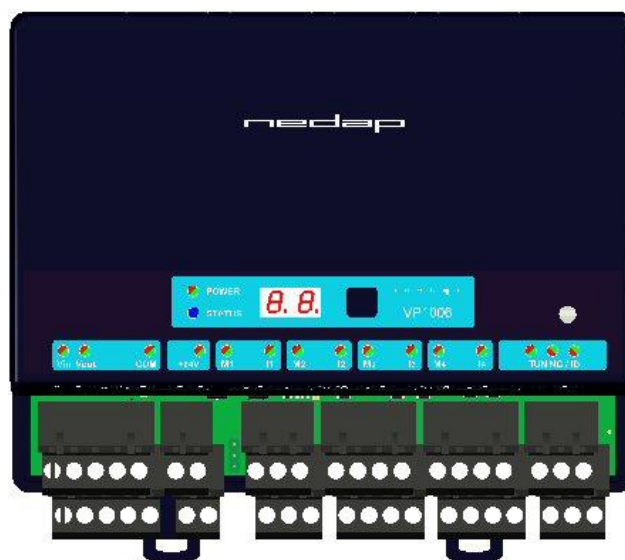




OEM ISO Reader



VP1006

06 - 2017 / Manual version 2.6



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Version overview

Manual version 2.0 / January 2008

Manual version 2.1 / September 2009

Chapter 7 : error codes 01 and 02 changed

Appendix E : shielding changed

Appendix F : shielding changed

Manual version 2.2 / 2-2012

Introduction : FCC tekst changed IC added

Appendix A : CE document added

Appendix C : Display changed to last software status

Manual version 2.3 / 4-2012

Neutrodynisation added, available since firmware 2.11.007

Chapter 6.2 : Neutrodynisation added

Appendix C : Display menu option Neutrodynisation added

Appendix I : Neutrodynisation unit between two antennas

Manual version 2.4 / 10-2013

Appendix C : Display menu option ISO protocol added

Manual version 2.5 / 06-2015

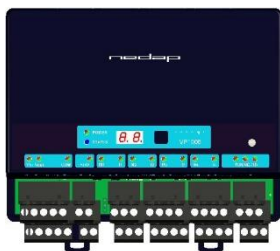
Appendix A : Updated product specifications

Manual version 2.6 / 06-2017

Updated FCC_IC Statement

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VP1006 OEM ISO Reader

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Preface

This manual is part of the service documentation for Nedap Velos. Reference is also made to other manuals that are part of the Nedap Velos documentation. For an overview of available Nedap Velos manuals see the manual “Nedap Velos General Description”, or visit the Nedap Agri website www.nedap-agri.com.

1 Introduction

The Velos VP1006 is used for identification of animals for feeding, weighing, milking, heat detection etc. The VP1006 must be connected to a computer (controller) and can communicate by a CAN, RS485 or RS232 protocol. The connected computer must give controlling commands to the VP1006 to operate inputs, outputs and identification.

The VP1006 has the following main tasks:

- Identification of tags (ISO 134.2 kHz FDX/HDX)
- Controlling outputs - 6 outputs are available to activate e.g. lights, motors, valves, relays
- Reading inputs - 6 inputs available for e.g. sensors, switches

Following antenna types can be used:

- V-sense antennas
- EWA transformer with stainless steel antenna strip
- HDPE antenna with HDPE antenna tuner

The VP1006 must be installed in a housing suitable for farm conditions, for example in a V-box.

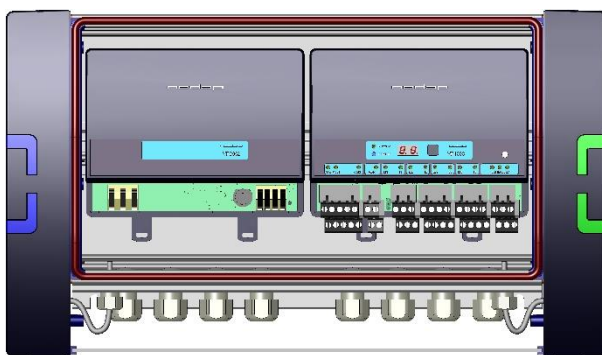


Figure : V-box2 with a VP2002 power supply and a VP1006 reader

Reference manuals :

PS0000-200PM-00 Velos general description

VP1002-200PM-00 ISO-Booster

VP6001-200PM-00 V-sense

FCC ID: CGDVELOS2 and IC: 1444A-VELOS2

FCC_IC Statement

This device complies with part 15 of the FCC Rules and with Industry Canada's licence-exempt RSSs.

Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Warning (15.21)

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 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.

FCC and ISED Radiation Exposure Statement

This equipment complies with FCC (OET Bulletin 65) and Canadian radiation exposure limits set forth in RSS-102 for a uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet équipement est conforme a RSS-102 limites énoncées pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec une distance minimale de 20 cm entre le radiateur et votre corps.

ISED EMC Declaration

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de Classe B est conforme à la norme Canadienne ICES-003.

FCC Information to the user (15.105(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.
- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- To ensure compliance with FCC regulations, use only the shielded interface cables provided with the product, or additional specified components or accessories that can be used with the installation of the product

NOTE:

Antenna VP6041 has the same dimensions as the VP6042.

VP6041 and VP6042 regarding hardware are the same. The VP6041 is adjusted for environments with lots of steel for short distances (pigs). The VP6042 is adjusted for longer distances (1 m) recognition (Cows).

2 Description and functioning

A VP1006 has 6 inputs used for reading e.g. sensors or switches.

There are also 6 outputs available to activate e.g. lights, motors, valves or relays.

The VP1006 can read tags FDX/HDX 134.2 kHz.

The VP1006 must be connected to a computer and can communicate by a CAN, RS485 or RS232 protocol. The connected computer must give controlling commands to the VP1006 to operate inputs, outputs and identification.

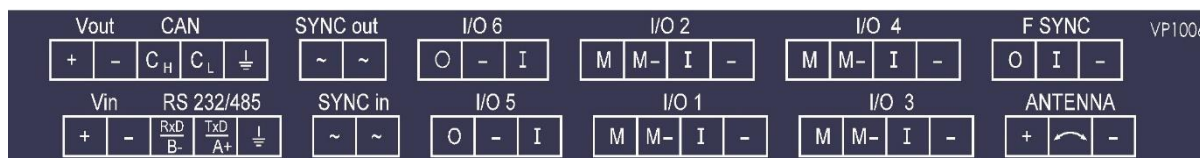


Figure : Sticker on the VP1006 with indication of the connections

Input/output 1 to 4 (I/O 1 till I/O 4) can be used to control feed motors or can be used as normal input/output. Output/input 5 and 6 (I/O 5 - I/O 6) can only be used as output/input, not for feed motors.

Operation of the VP1006

Antenna : for reading tags, normally on

Inputs : read continuously with status change sent to the controller

Outputs : switched on or off by commands from the controller

LEDs : switched on or off by the VP1006 according to the status

Error : errors are sent to the controller

All inputs and outputs can be tested by the use of the push button and display. For operation of the push button and display see appendix B.

3 Safety

Installation and service only by trained personnel.

Always turn off the main power when working on the electrical installation.

4 Installation

Installation consists of the following steps:

1. Mounting
2. Installation of all wiring (connections)
3. Power up
4. Set address (when more than one VP1006)
5. Set communication protocol
6. Antenna adjustment (green LED on)
7. Checking the connected equipment like lamps, motors, sensors etc.
8. Configuration in the PC

Follow this manual to complete the steps.

4.1 Mounting

See the relevant equipment manual relating to where the VP1006 is to be installed.

4.2 Connections

See the relevant equipment manual relating to where the VP1006 is to be installed. See also appendix E, F and G for the different connection possibilities.

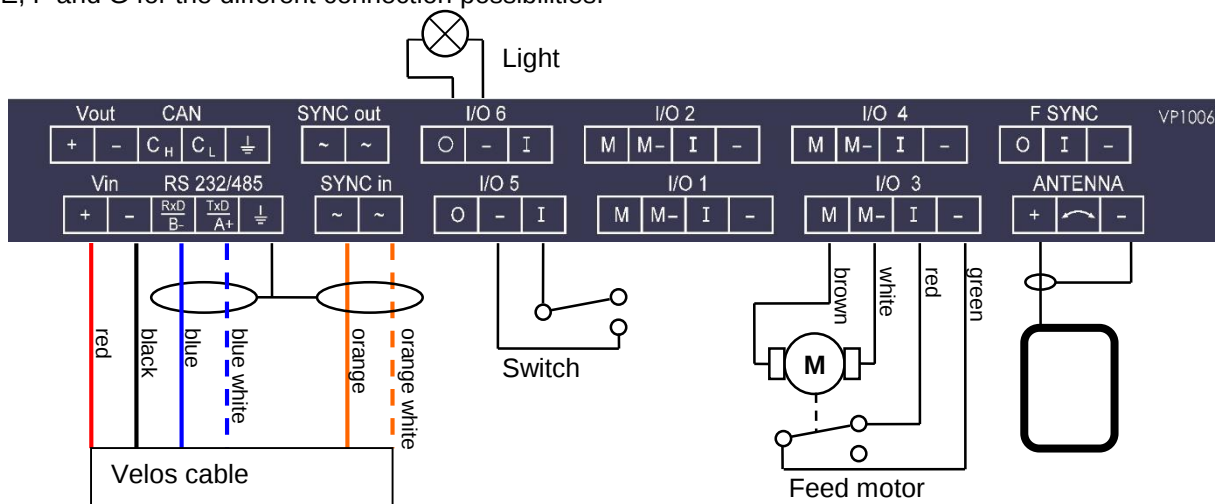


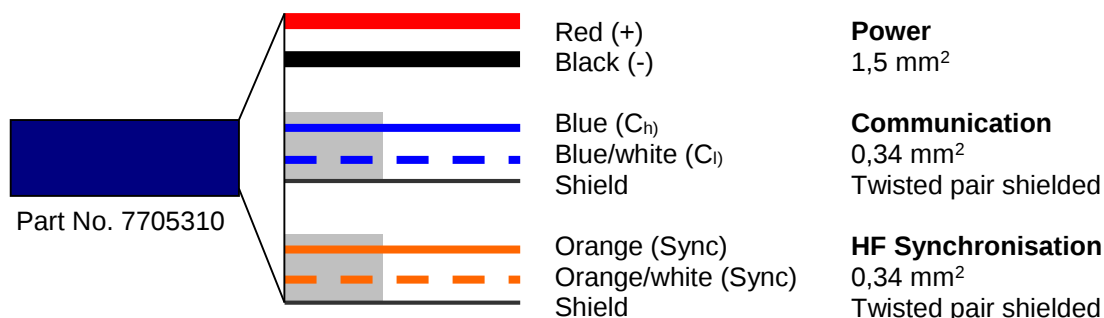
Figure : I/O of the VP1006. The feed motor, input and output connections are shown above as an example.

Details VP1006 inputs and outputs

Vin	+	Power
	-	Minus
RS232 / 485	RxD / B-	Data receive
	TxD / A+	Data send
	⏏	Shield of RS232 / 485
SYNC	~	Synchronisation for HDX, AC (no plus or minus, cable must be twisted pair)
	~	See above
I/O 1 .. 4	M	Motor output or normal output max 3A
	M-	Minus for motor output or normal output
	I	Input of motor or normal input
	-	Minus for motor input or normal input
I/O 5 .. 6	O	Output max 250mA
	-	Minus for output (O) and minus input (I)
	I	Input
ANTENNA	+	Antenna with external adjustment
	⏏	Antenna with no adjustment
	-	Antenna minus (shield of coax cable)
F SYNC		Frequency synchronisation (not used yet)

IMPORTANT : Use power supply with a fused output such as Velos VP2001, VP2002.

Details Velos cable

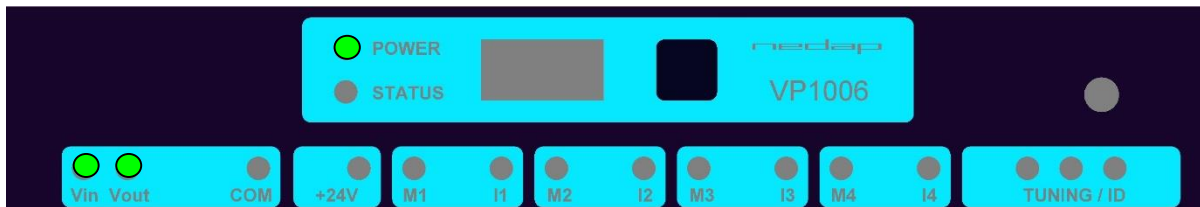


5 Adjustments

Before starting with adjustments first install all components and wiring. Follow the sequence as indicated in this chapter.

5.1 Check after power up

Check if the VP1006 has power after power up. This means 3 green LED's are on, see figure below.



For more details about the LED indicators see Appendix D.

If LED's are green, continue with address settings

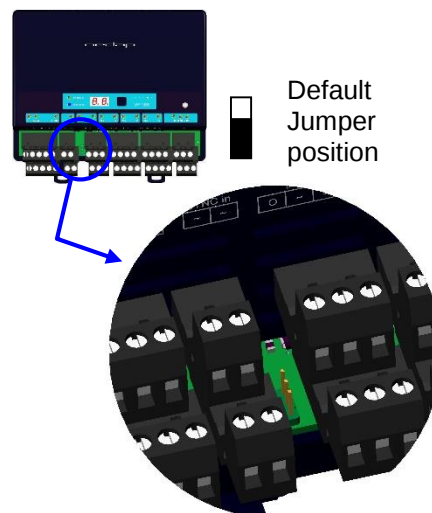
5.2 Communication bus termination jumper

Termination is only used in case of RS485 communication.

When using RS485: at the last VP1006 in the communication line (bus) the jumper must be set to the other position. Also at the beginning of the line (computer) termination is required.

For RS232 and CAN always use default jumper position

Check LED "COM" to evaluate the connection to the computer.



5.3 Address

Each VP1006 requires a unique address on the communication bus. Use the display and push button to set the address. How to use the display and push button is shown in appendix B. See appendix C for the complete overview of the display menu.

The display will indicate the actual address at startup (01 for a new unit). If an address is accepted by the communication bus the display goes blank. If there is no communication with the controller also the address is shown. If the address is not accepted, the display will show the address.

How to change an address (for example set address to 12)

1. Short press on the button. Ad will appear.
2. Now hold the button till the display starts blinking. dA will appear.
3. Short press on the button. SA will appear.
4. Now hold the button until the display starts blinking. 0- will appear.
5. Short press on the button. The 0- is now changed into 1-.
6. Hold the button until the display starts blinking. 10 will appear.
7. Short press on the button. The 10 is now changed into 11.
8. Short press on the button again. The 11 is now changed into 12.
9. Hold now the button until the display starts blinking. The 12 is now stored in the memory.
10. There will now be 12 blinking on the display now. If the address is accepted by the process unit the display goes blank.

How to check the address

1. Short press the button. Ad will appear.
2. Now hold the button until the display starts blinking. dA will appear.
3. Hold the button again until the display starts blinking. The actual address will be shown.
4. Leave the menu by pressing the button until the display goes blank.

If the display does not go blank (address remains on the display), the address is not accepted. When the address setting is ok continue with the antenna adjustment.

5.4 Antenna

In the event Velos V-sense antenna's are used.

After the first time power up the antenna tuning must be checked. Check the TUNING LED, green is OK and means the antenna is correctly tuned. When the green LED is not ON the antenna must be tuned.

Antenna tuning

1. Turn the trimmer on the antenna until the green LED is ON
See also the manual of the antenna being used for information about tuning

	Green on	Antenna tuning ok
	Red on	Antenna out of range, turn the trimmer to the right until green LED is on
	Red on	Antenna out of range, turn the trimmer to the left until green LED is on
	Red blinking	No antenna connected or low antenna signal
	All off	Antenna switch off by the software

If there is no antenna LED on, the software has set the antenna field off. For tuning set the antenna in ID test mode by using the display/push button (see also appendix C).

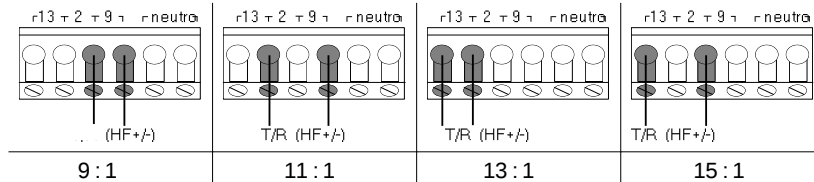
5.5 Antenna tuning with EWA antenna transformer

In case a stainless steel loop antenna is used.

Jumper position in the EWA

Measure the circumference of the antenna-loop. Set jumpers to the combination as described in the table on Antenna-Transformer PCB. Note that the highest possible number should be chosen.

EWA connection to the VP1006



Use connection 9 :1 to start

Tuning

Use a plastic screw driver to tune. Tune the coil inside the EWA until the green LED of the antenna tuning is on. When green the antenna tuning is ok. See also instructions on previous page. When it is not possible to get a green LED use another connection and try again.

5.6 Software setup

The software in the connected controller determines how the inputs and outputs on the VP1006 are controlled. See manual with the relevant settings to configure the software for this VP1006. When the software setup is done the VP1006 is ready for use.

6 Advanced

Tests and adjustments described in this chapter are not used for a standard startup and configuration of the VP1006.

6.1 Testing inputs and outputs

There are two types of output tests. An output test to switch the output on and off, and an output test especially for Nedap feed motors. There is also available an input test for checking connected equipment like switches and sensors.

Use the display and push button for testing, see appendix B how to use it.

Feed motor test

Use the motor test o1, o2, o3 or o4 to test a feed motor.

This is a combination of an input and output test. When the test is finished the test results are shown as code on the display (blinking). Test all outputs "0A" will test all outputs one by one.

Code on the display	Description motor test results
00	Motor run ok
01	Output already in use
02	No motor current measured
03	No input signal seen
04	-
05	-
06	Motor current too high for too long
07	-
08	Current still measured after test has stopped
09	Output voltage is stopped due to motor safeguard function
10	Output already in use
11	-
12	Motor current too low while running

Example of a feed motor test (connected to output 1)

1. Short press on the button until "It" appears.
2. Now hold the button until the display starts blinking. "dE" will appear.
3. Short press on the button 2 times. "o1" will appear.
4. Now hold the button until the display starts blinking. Output 1 will be switched on. When ready the test result are shown on the display.

Output test

Use the test L1, L2, .. L6 to test the connected equipment e.g. lights, valves or relays. This test will switch on the selected output. The test is stopped by a short press on the button.

Example of a light test (connected to output 6)

1. Short press on the button until "It" appears.
2. Now hold the button until the display starts blinking. "dE" will appear.
3. Short press on the button until "L6" appears.
4. Now hold the button until the display starts blinking. Output 6 will be switched on. To switch off, a short press on the button.

Input test

Use the test i1, i2, .. i6 to test the connected equipment e.g. switches and sensors. This test will read the selected input. The results are indicated with a "0" or "1". Open or closed depends on the settings from the behavior component. The test is stopped by a short press on the button.

Example of a switch test (connected to output 5)

1. Short press on the button until "It" appears.
2. Now hold the button till the display starts blinking. "dE" will appear.
3. Short press on the button until "i5" appears.
4. Now hold the button until the display starts blinking. Input 5 will be read.
5. Activate the switch on and off. If ok, the display value will show zero and one

6.2 Advanced antenna adjustment

Antenna power

The antenna power default is set to maximum (99) and needs no adjustments.
Lowering the antenna power will reduce the reading distance of the antenna.

Check the antenna power

The antenna power level is shown on the display in the service menu at HF option AP (Adjust Power)

1. Select menu option AP (Adjust Power) on the display by using the push button
2. Push the button until the display starts to blink, a value will appear on the display
3. The value on the display is the actual power setting. 99 is the default factory setting.
4. To leave the menu without modifying the settings press the button until the display goes blank (press about 4 seconds)

Modify the antenna power

1. Select the actual antenna power on the display (see above antenna power check)
2. Short press on the button and the first digit of the value will change
3. Continue to press until the desired value, then hold the button until blinking
4. The second digit can be changed in the same way
5. When the desired value is on the display, press until the display blinks
6. The next menu item AS is now indicated.
7. To leave the service menu and return to normal operation, press the button until the display goes blank (press about 4 seconds)

Antenna squelch

Antenna squelch is a possibility to set a threshold for the ID level of a tag. It means the antenna power is still the same, but the software will not transfer weak received tag numbers.

The antenna squelch default is set to minimum (-0). This means no threshold. Maximum is -9.

Check the antenna squelch level

The antenna squelch level is shown on the display in the service menu at HF, option AS (Adjust Squelch)

1. Select menu option AS (Adjust Squelch) on the display by using the push button
2. Push the button until the display starts to blink, a value will appear on the display
3. The value on the display is the actual setting. -0 is the default factory setting.
4. To leave the menu without modifying the settings press the button until the display goes blank (press about 4 seconds)

Modify the antenna squelch level

1. Select the actual antenna squelch level on the display (see above squelch level check)
2. Short press on the button and the value will change
3. Continue to press until the desired value, then hold the button until blinking
4. The next menu item "df" is now indicated.
5. Hold a tag in the antenna and determine the maximum reading distance
6. If reading distance is ok leave the menu. If not ok try another level.
7. To leave the service menu and return to normal operation, press the button until the display goes blank (press about 4 seconds)

Antenna tuning with option “AA”

With HF menu option “Adjust Antenna (AA)”, it is possible to see the antenna tuning on the display. The highest display value is the optimum adjustment.

How to tune

1. Select option “AA” on the display and press the button until the display starts to blink. A value will now appear on the display.
2. Now turn the antenna trimmer slowly (on the antenna). The display value will change. If the value is going down, turn the other way. Turn till the maximum display value is found.

Neutrodynisation between two antennas

Two large antennas can have coupling with antenna fields. Result : tag is identified in both antennas. A solution is to install a neutrodynisation unit to reduce cross talk caused by antenna coupling.

How to tune

1. Set reader A in neutro transmit mode (HF menu option nc - nt).
2. Set reader B in neutro receive mode (HF menu option nc - nr)
3. Turn the wheels apart to the highest display value at reader B

The display value and wheel distance apart can vary. Low display value means usually low coupling. Always use a sync cable between the readers. It is used during normal operation and also used for the tuning to switch of transmitter of the receive unit. If one unit is set to neutro transmit, it will switch off all other readers connected to the same sync cable.

Antenna tuning visible by a light

With HF menu option “Adjust Antenna (AA)” output 6 is also switched on. By connecting a light to output 6 the status during tuning can be monitored. When the light is blinking it is indicating the optimum adjustment point and is corresponding with the highest display value.

6.3 Identification test options

Identification test with option “id”

When a tag is in the antenna field, the green LED used for the antenna tuning will be blinking. There is also a test in the internal test menu called “id”. This test will also show the green LED blinking but also shows the last two digits of the tag number on the display.

Signal level indication option “SF” and “SH”

There is a test available to give an indication about the signal received on the reader of the VP1006. This test is separated in a FDX (SF) and HDX (SH) noise indication test. This test is mainly used for HDX because at HDX there is a greater risk of external influence on the antenna field.

How to use the signal level test

1. Select option “SH” on the display and press the button until the display starts to blink. A value will appear on the display.
2. Now move a HDX tag slowly into the antenna field. The display value will normally increase when getting closer to the antenna. If there is negligible or little increase in display value this is an indication something external is causing noise.

The possible cause of noise can be frequency controlled electric motors or a transmitter operating on or close to 134.2 kHz

7 Trouble shooting

Errors / malfunctioning is indicated by the indicator LED's or the display.

Error by indicator LED

Indicator LED's are normally green or switched off. A red or orange indicator LED means normally there is something not ok. See Appendix D for the explanation of the different colors.

Errors indicated at menu option "dE"

In menu option "dE" it is possible to see actual error codes. When entering the display menu option "dE" the errors code will be shown and the error will be cleared. If the error is not cleared it means there is still an error. There can be more than one error. Further errors are displayed one after another with a short delay between each code.

"dE" code on the display	Description
00	No errors
01	Max time for motor exceeded
02	Max motor current error
03	-
04	-
05	Outputs switched off due to high motor current
06	Software switched off due to current and time
07	Output switched off due to current, time and also output active
08	Input of motor output seen X times while motor is not active
09	Motor 1 error
10	Motor 2 error
11	Motor 3 error
12	Motor 4 error
13	Vout overload
14	Output 5 shut off due to overload
15	Output 6 shut off due to overload
16	Software switched off due to max current and time
17	CAN-bus over voltage
18	Voltage to next module switched off

Identification performance and disturbance

Identification performance can be reduced by disturbance caused by variable-frequency drives used for ventilation, milk pumps, vacuum pumps, etc. Also ballasts used for fluorescent tube lighting may interfere. If there is interference one can locate the source by switching off all the equipment on a farm and then switch them on again one by one. Most of the time when a variable-frequency drive is causing a problem it is due to bad installation or without the mandatory main filters.

8 Maintenance, cleaning and disposal

Maintenance

No regular maintenance required.

Software update

A VP1006 is equipped with software to activate inputs and outputs, display / push button and a motor safeguard. This software is called firmware. During manufacturing the firmware is programmed and ready for use. In case of an update it is possible to download new firmware thru the CAN-bus. In the Velos system the web browser interface of the VPU (VP8001) is used to handle this. For more details about downloading new firmware see also the manual of the VPU (VP8001).

Cleaning

A VP1006 must be installed in a suitable housing (V-box) so cleaning of the VP1006 is not required.

Disposal

Discard according to the regulations prevailing at the time of disposal

Appendix A: Specifications / CE

Specifications VP 1006

Dimensions	143 x 120 x 68 mm LxWxH (excluding mounting rail) Weight: $\pm$ 360 gr
CAN	CAN-bus communication 125 kBit
Power	Input voltage 25 VDC, +20% -20%
	Min power consumption 300 mA with antenna switched on
	Maximum power consumption 2,5 A
	Protected against reverse connection power supply
Software	Downloadable by the CAN network
Inputs	Reading inputs, analog (0-40V) and digital. Suitable for NPN and PNP sensors.
Outputs	Max. 2.5 Amp by current limiter, short-circuiting protected Motor safe-guard (after 25 sec)
Antennas	800 μ H. Different types possible.
Detection distance	Varies per antenna
Synchronisation	Synchronisation according to ISO 11785
Environment	Temperature: Operating: -10 – 50 °C, Storage: -25 – 70 °C
	Relative humidity: 10 – 93% non condensing
	Maximum noise level: 10 dB μ A/m quasi peak, according CISPR 16-1-1
	Conducted noise: according EN55022
IP class	IP 30. When installed in V-box IP 65 (cover and cables installed correctly !)

Always use a NEDAP power supply. The Nedap guarantee-regulations are only valid when is installed as indicated in this manual. Install data cables at a safe distance from (high) powered cables
For more detailed information contact your local Nedap supplier or check the internet site.

Declaration of Conformity

We, the undersigned,

Company	N.V. Nederlandsche Apparatenfabriek "Nedap"
Address, City, country	Parallelweg 2, 7141 DC Groenlo, The Netherlands
Phone number	+31 544 471 162
Fax number	+31 544 463 475

certify and declare under our sole responsibility that the following equipment:

Product description / Intended use	RF Animal ID System
Manufacturer	N.V. Nederlandsche Apparatenfabriek "Nedap"
Brand	Nedap
Type:	ID Module Type No.: VP1006, Power Supply Type No.: VP2001, Antenna: VP6001 (Size 120 cm by 50 cm)

is tested to and conforms with the essential requirements for protection of health and the safety of the user and any other person and Electromagnetic Compatibility, as included in following standards:

Standard	Issue date
EN 60950-1	2001
EN 50357 and EN 50364	2001
EN 301 489-1 and -3 V1.4.1	2005 and 2002
IEC 61000-6-2 and IEC 61000-6-3	2001, 2001

and is tested to and conforms with the essential radio test suites so that it effectively uses the frequency spectrum allocated to terrestrial/space radio communication and orbital resources so to as to avoid harmful interference, as included in following standards:

Standard	Issue date
EN 300 330-1 V1.3.1 and EN 300 330-2 V 1.3.1	2001 and 2006

and therefore complies with the essential requirements and provisions of the **Directive 1999/5/EC** of the European Parliament and of the council of March 9, 1999 on Radio equipment and Telecommunications Terminal Equipment and the mutual recognition of their conformity and with the provisions of Annex IV (Conformity Assessment procedure referred to in article 10). The following Notified Body has been consulted in the Conformity Assessment procedure:

Report-Declaration Numbers	Issued by
06121202.r02, 06121202.EMC.C2 06121202.ev-2, 06121202.p02 230707.02_HE, Email 23-07-2007 "UL rapp. van de PS VP2001.msg", UL Report 07CA02770	TNO EPS, <u>Smidshornerweg 18, PO Box 15, 9822 ZG Niekerk, The Netherlands</u> Nedap, Parallelweg 2, 7141 DE Groenlo, The Netherlands Nedap PS (UL CTDP test location) <u>Parallelweg 2k, 7141 DC Groenlo, The Netherlands</u>

The technical documentation as required by the Conformity Assessment procedure is kept at the following address:

Company	N.V. Nederlandsche Apparatenfabriek Nedap
Address, City + Country	Parallelweg 2, 7141 DC Groenlo, The Netherlands
Phone number	+31 544 471 162
Fax number	+31 544 463 475
E-mail	Jacques.Hulshof@nedap.com
	TF reference nr. 230707.02
	Drawn up in Groenlo, The Netherlands
	Date July 23, 2007 rev. May 2, 2012
	Name and position Jacques A.M. Hulshof, Approbation Management



Appendix B: Display and push button

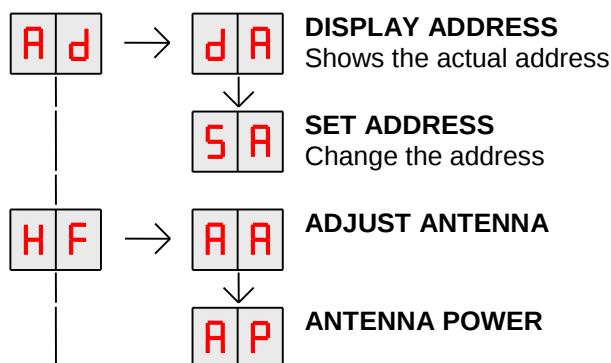
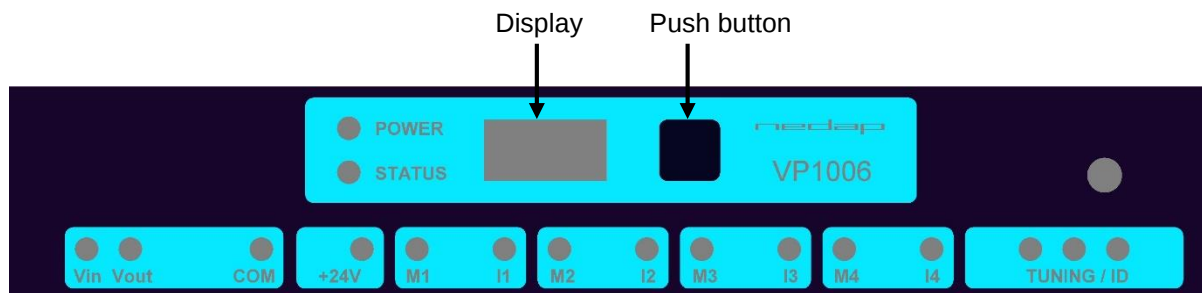


Figure: a section of a display menu

→	Press button until blinking		To leave menu:
↓	Short press on button		Press button until display goes blank

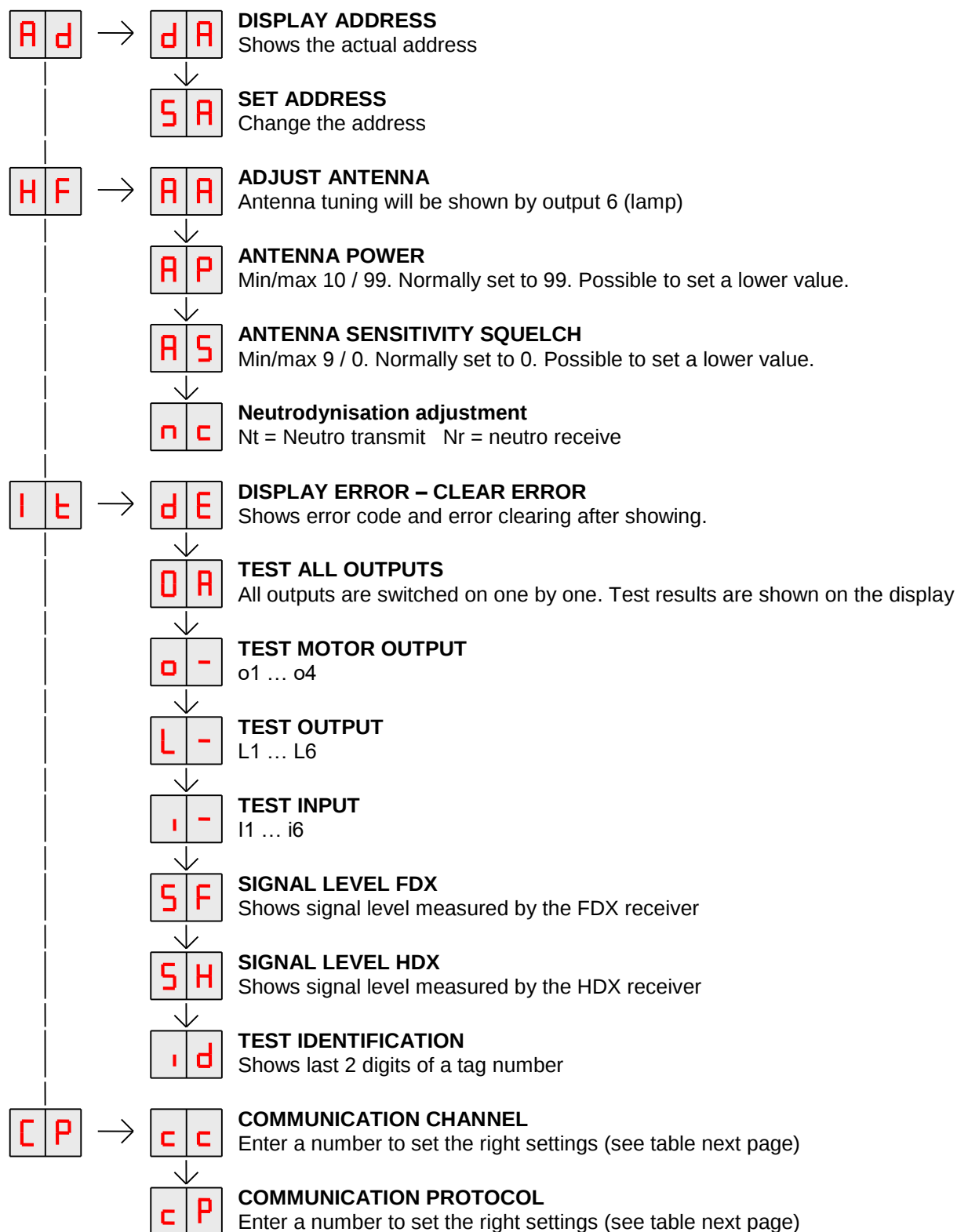
How to use the display and push button

Normally the display is off. If there is no connection to the VPU the address is shown. It is also possible some program states of a behavior component are shown during operation.

Activate the menu	short press on the button, the display menu is shown
Scroll down	short press on the button
Select	press button until blinking
Change and store	select item to change, open item by pressing button until blinking, change by short press on button, store by pressing button until blinking
Check a setting	select the item to check, press button until blinking, first value shown is actual setting

The display is normally automatically switched off after 30 minutes.

Appendix C: Overview display menu



→	Press button until blinking		To leave menu:
↓	Short press on button		Press button until display goes blank

CP-menu communication possibilities

RS232 with Nedap extended protocol

	C	C		C	P
RS232	20		Nedap extended protocol 2400 Baud	21	
			Nedap extended protocol 9600 Baud	22	
			Nedap extended protocol 19200 Baud	23	
			Nedap extended protocol 38400 Baud	24	

ISO

	C	C		C	P
RS232	20		ISO protocol 2400 Baud	31	
			ISO protocol 9600 Baud	32	
			ISO protocol 19200 Baud	33	
			ISO protocol 38400 Baud	34	

RS485 with Nedap extended protocol

	C	C		C	P
RS485	Bias off - no. of breaks 0	40	Nedap extended protocol 2400 Baud	21	
RS485	Bias on - no. of breaks 0	41	Nedap extended protocol 9600 Baud	22	
RS485	Bias off - no. of breaks 2	42	Nedap extended protocol 19200 Baud	23	
RS485	Bias on - no. of breaks 2	43	Nedap extended protocol 38400 Baud	24	
RS485	Bias off - no. of breaks 4	44			
RS485	Bias on - no. of breaks 4	45			
RS485	Bias off - no. of breaks 6	46			
RS485	Bias on - no. of breaks 6	47			
RS485	Bias off - no. of breaks 8	48			
RS485	Bias on - no. of breaks 8	49			

RS232 with Texas Instruments protocol*

	C	C		C	P
RS232	20		Texas Instruments protocol	10	

*Serie 2000 reader systems ASCII protocol, 9600 baud, 8 databits, no parity, 1 stopbit

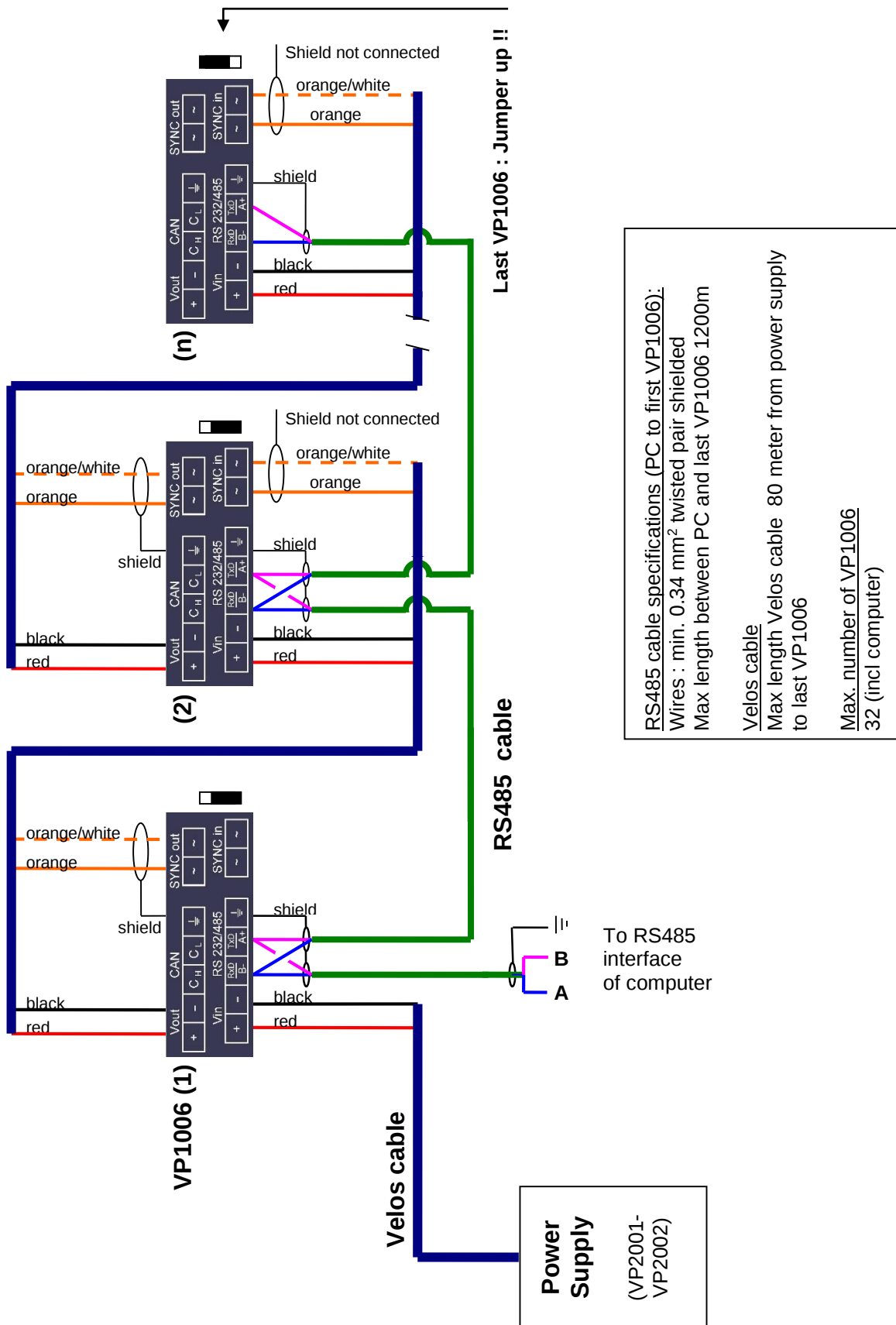
Default factory settings: RS232, nedap extended protocol 9600 baud (CC=20 and CP=22)

Appendix D: LED indicator overview

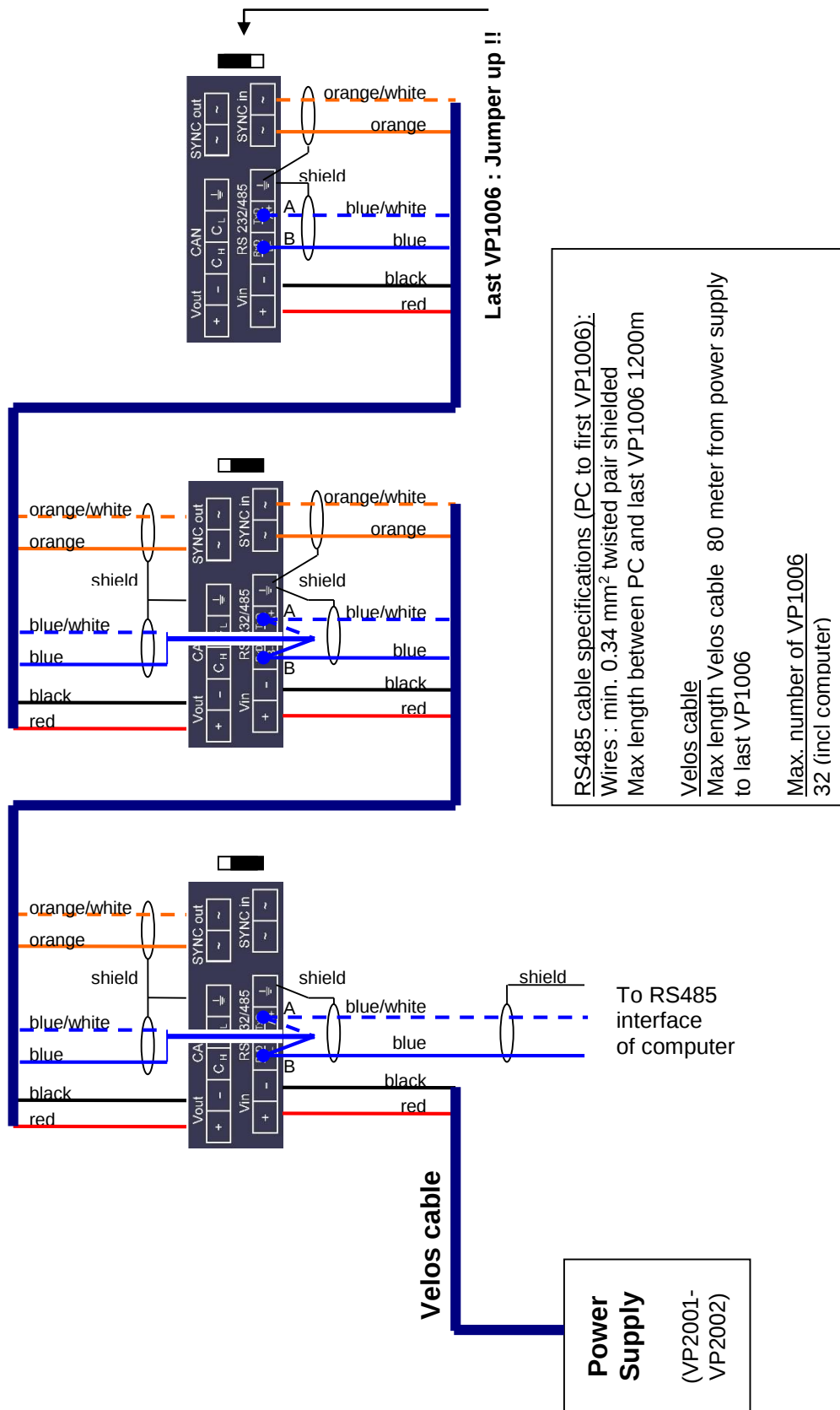


POWER	●	Green on	Power on
	○	off	No power
STATUS	●	Blue	
		Slow blinking	Operating ok
		Fast blinking	Downloading or error during download
		1 short flash	V-pack not coupled
		2 short flashes	Firmware present but not active
		3 short flashes	No firmware present
Display	on	Address indicated	No communication
	off		Communication status ok
V in	●	Green on	Input power applied
	○	off	No power
	●	Orange	Low power, less than 20V
	●	Orange blinking	Wrong CAN-bus connection, Vin and Vout swapped
V out	●	Red	Error, plus and minus swapped
	●	Green on	Output power
	○	off	No power
	●	Orange blinking	Low power
COM	●	Red blinking	Error, plus and minus swapped
	●	Green on	V-pack is last one on the bus
	○	off	V-pack is not last one on the bus
	●	Orange blinking	CAN-bus error and last V-pack on the bus
	●	Red	CAN-bus error
+24V	●	Red blinking	CAN-bus warning / connected wrong
	●	Green on	24V output switched on
	○	off	Output switched off
M1 .. M4	●	Green on	Output on
	○	off	Output off
	●	Red blinking	Output error
I1 .. I4	●	Green on	Input contact open
	○	off	Input contact closed
TUNING /ID	○ ● ○	Green on	Antenna ok
		Green blinking	Antenna ok and tag identified
	● ○ ○	Red on	Antenna not tuned correctly
	○ ○ ●	Red on	Antenna not tuned correctly
	● ○ ●	Red blinking	Antenna error / not connected

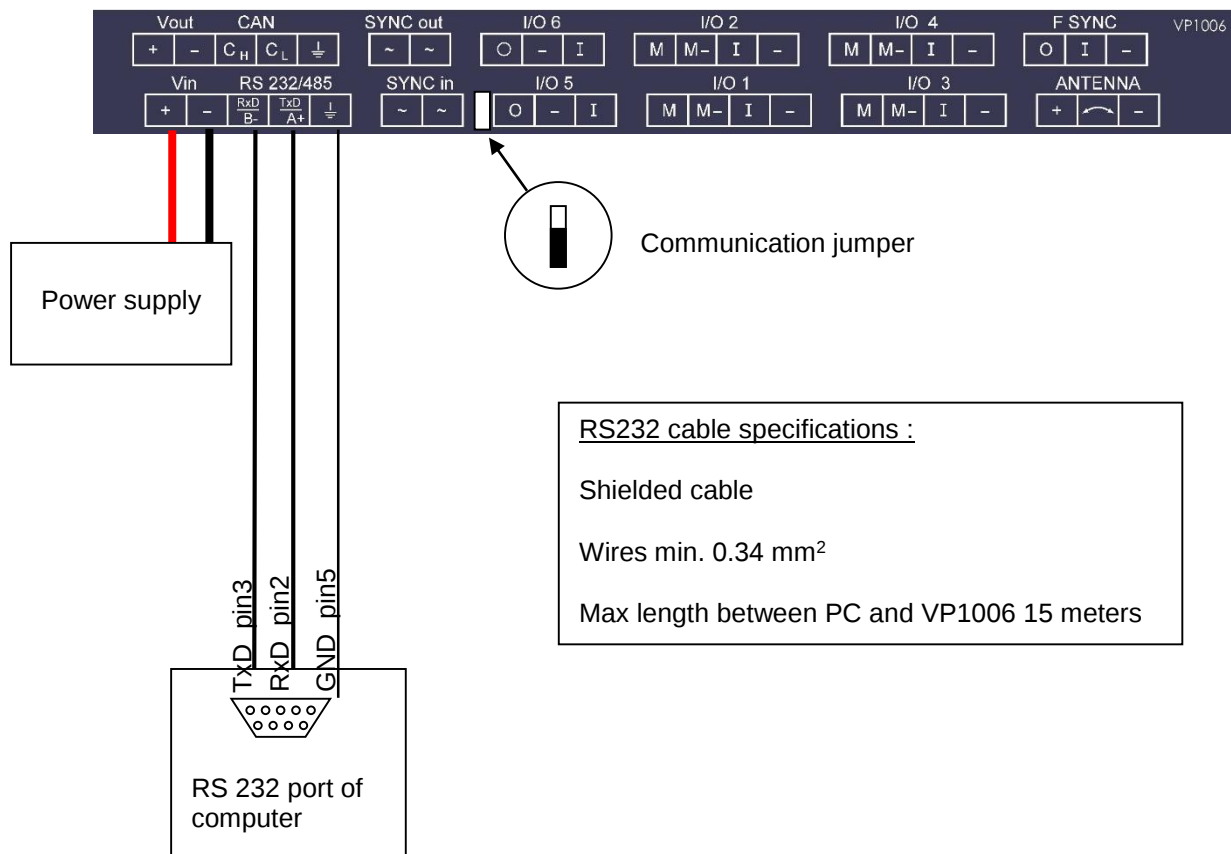
Appendix E: RS485 connections with separated wiring



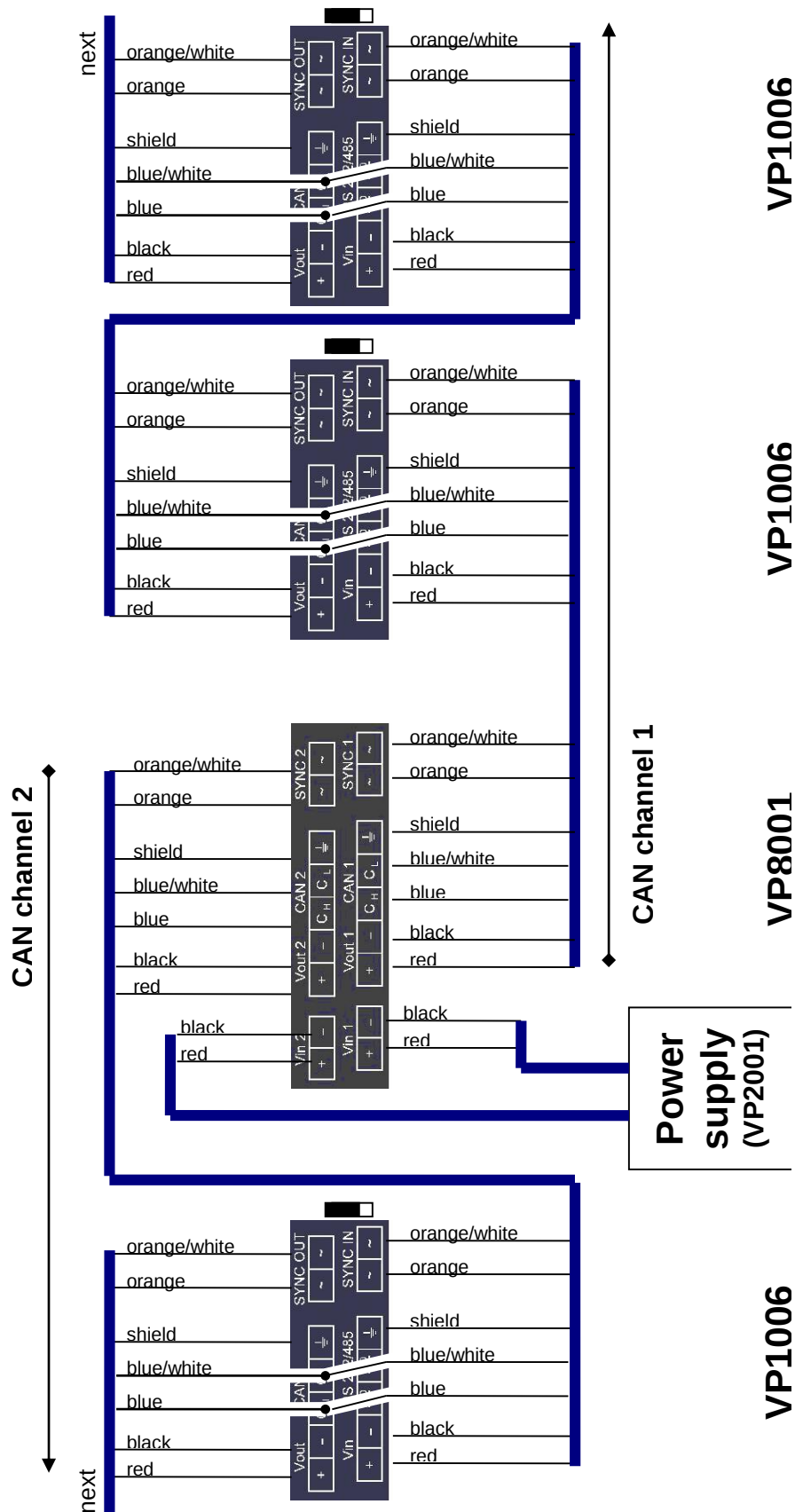
Appendix F: RS485 connections with Nedap Velos cable



Appendix G: RS232 connections



Appendix H: VP1006 connected to a Velos VP8001 (VPU)

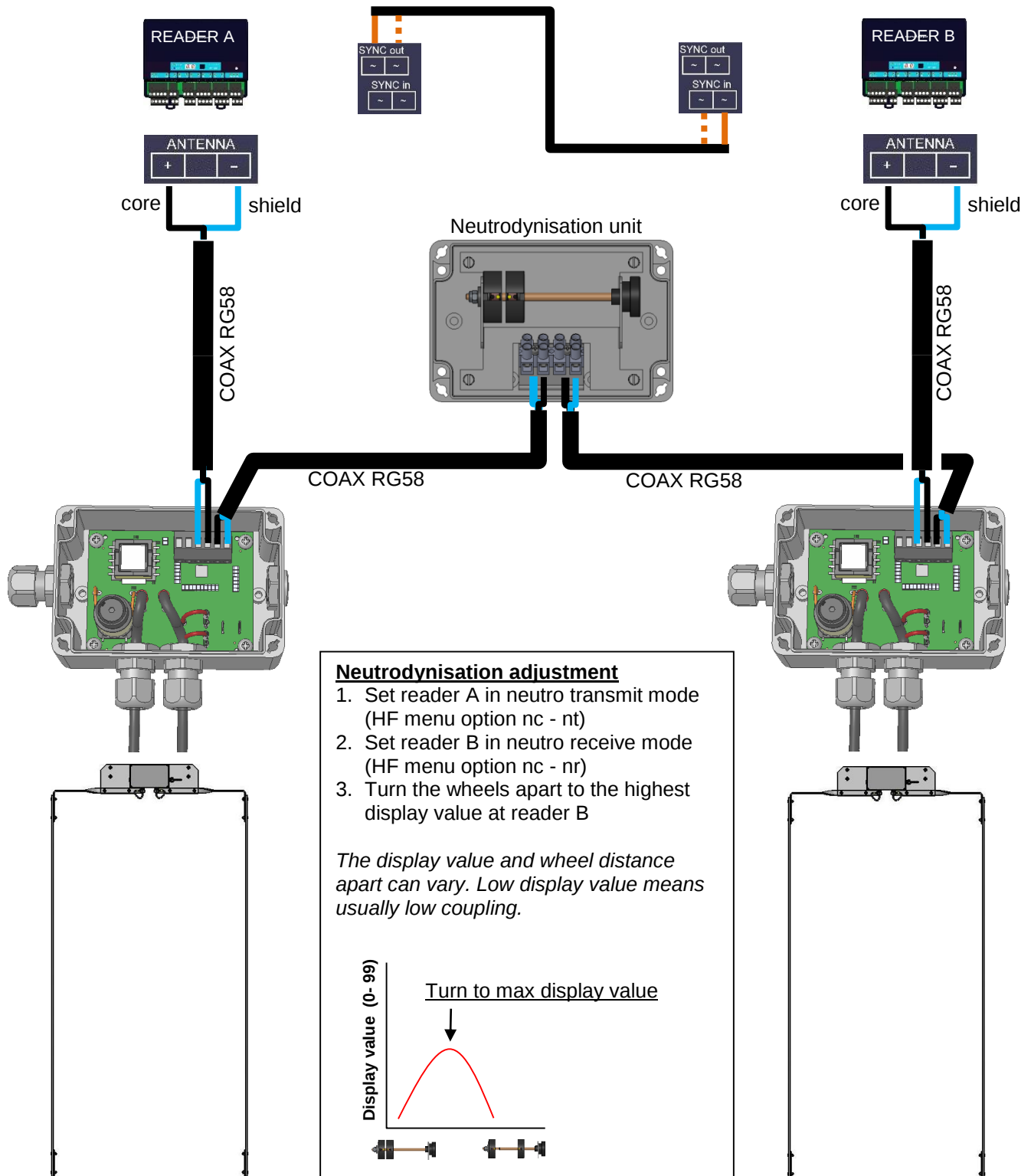


Appendix I: Neutrodynisation unit between two antennas

Two large antennas can have coupling with antenna fields. Result : tag is identified in both antennas. A solution is to install a neutrodynisation unit.

Required equipment:

- Readers with the option Neutro in the HF menu
- A neutrodynisation unit
- Coax cable, specification RG58
- Cable between the readers to connect SYNC OUT and SYNC IN





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