



NORTEK QUICK GUIDE

Vessel Mounted Current Profiler



Jan 2021

Please check that all expected items are included in the shipment:

- The instrument
- External power/signal cable
- NORTEK equipment storage box/toolkit
- 18 V Interface box
- 19" Interface mounting bracket w/accessories
- PVC mounting plate
- USB 2.0 cable
- Power cable (European or American)
- USB to serial converter
- Software on USB memory stick
- Final test check list
- Packing list

Install the Nortek software

The instrument's software is located on the attached memory stick.

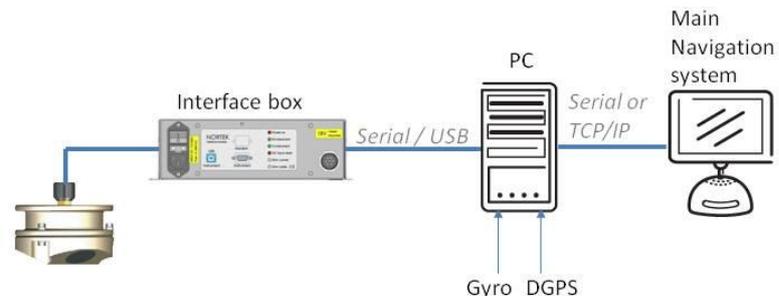
Please check the web regularly for updates on both software and firmware.

This Quick Guide provides you with the basic information you need to get the instrument up and running as quickly as possible. You will also find useful information in the SurveyVM software help file, and also in the Comprehensive Manual available at the Nortek Web: www.nortekgroup.com

Physical Installation

The following lists a few of the concerns that the user should be aware of before deciding where to mount the Vessel Mounted Current Profiler (VMCP).

- Optimally the transducer should be mounted as close as possible towards the middle of the ship, at least 1/3 of the ships length from the bow.
- Avoid mounting the transducer in an area where bubbles from propellers or thrusters will pass over the sensor.
- Make sure the sensor location is not exposed to trapped air / bubbles.
- We recommend installing the VMCP in a blister. In addition to physically protecting the instrument from objects in the sea, the blister will, if designed correctly, simplify underwater instrument maintenance or replacement at sea or during port calls. When using a blister, it must have a bleeding hole or similar arrangement for letting out trapped air.
- The transducer is marked with an arrow that should be pointing towards the bow.
- Tilt angle should be as small as possible.
- Ensure that the VM profiler sensor head is electrically isolated from the ship structure.



Software Installation

- SurveyVM™ is a software that collects data from the VMCP, heading sensors, navigation systems, and other sensors (optional). Install SurveyVM by running the program setup.exe from the memory stick. Once the installation is complete, launch the software. Note that a SurveyVM help program is available; click **Help > Help Topics**.
- To install and configure the VMCP interface, click **Communication > Interfaces...** Normally you will see Nortek VMCP in the **Interfaces** window. If not, click **Add > Nortek Profiler**. Set the VMCP interface properties by clicking **Nortek VMCP > Properties**. Select the COM port you will connect the VMCP to, and set the baud rate to 9600.
- A typical system will require serial or TCP I/O connection to external devices, such as DGPS, gyro and serial output. Install navigation device interfaces by clicking **Communications > Interfaces...** Click **Add**, and select the device type required e.g. Vessel navigation. Select **Properties** when this device is highlighted to bring up the Properties menu for that particular device.

Calibration

The purpose of the calibration run is to measure the parameters that will influence the accuracy of current measurements. The two main parameters are **Heading offset** and **Scaling** (difference between direction and speed measured by the profiler and the GPS system).

- Find an area with low currents and decide on a straight track, preferably parallel to the current, which will take at least 2-3 minutes to run. Use the default configuration settings.
- Click **Start** to begin data collection at the starting point of the track and click **stop** at the end. Data recording is enabled by default.

- Let the ship heading stabilize before the track is re-run in the opposite direction. Rerun at the same speed as during the first run. Repeat the data recording procedure.
- Click **Tools > Calibration**, load the two data sets collected and run the procedure as shown on the screen. The resulting calibration parameters will be displayed and should be used for all subsequent data collection surveys. Nortek recommends repeating the calibration routine more frequently in the beginning until the user has become confident in the stability of the results. Recalibration only is required whenever the instrument has been physically relocated or reinstalled, or when the navigation equipment has been changed, serviced or upgraded.

Standard Operation

- Select **Configuration > Profiler setup** to configure the VMCP. When specifying the current profile range, remember that *Profiling range = Blanking Distance + Cell Size * Number of Cells*.
- Select **Configuration > Mounting** and set the mounting depth and calibration parameters. The calibration parameters (heading offset and scaling) update automatically when you calculate new parameters with the calibration tool.
- Select **Configuration > Calculations** and set the appropriate time averaging interval (**minimum 20 sec**, to remove noise elements) and profile averaging, which specifies the range of depth cells to average over.
- Select **Data Recording > Data Files** and specify data recording options.
- Start data collection by pressing the **Start** button. Data recording and export to secondary formats are enabled by default.

Cables

Communication baud rate: 300-115200.

The pin out of the connector is shown in the table below.

Pin. No	Wire color, black segment	Wire color, green segment	Purpose	Pins	Connector
1	Black	Black	Power Gnd	1	
2	White	Red	PWR	2	
3	Black	Blue	RS422 Tx+	5	
4	White	Orange	RS422 Tx-	6	
5					
6					
7	Black	Green	RS422 Rx-	3	
8	Orange	White	RS422 Rx+	4	
			Screen	7	

Ref: N2100-115,118,119

Interface Box

Power: 110/220 input, 18 VDC output.

Note that RS232 is disabled when USB is connected to PC.



Troubleshooting

As most problems are caused by simple mistakes, please initially check if

- you have forgotten to power the system
- the connector has fallen out of the computer
- you are using the wrong serial port

When all obvious but frequent mistakes are ruled out, please check out the troubleshooting chapter in the Comprehensive manual. You can also fill in the **Trouble Report** on the next page, and send it to Nortek support at

support@nortekgroup.com. If possible, please include a raw data set with your support request. The following files are required:

- SurveyVM v1: *.adp, *.gps, *.gyr, *.rcf
- SurveyVM v2: *.wpr, *.ves, *.svm

The suggested tests in the **Trouble Report (next page)** are as follows:

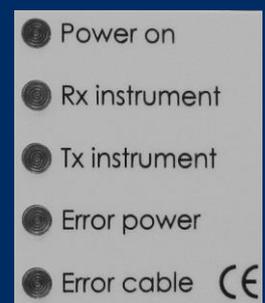
Cable test:

Equipment required: Multimeter. It is important to make sure the cable is disconnected from the interface box, PC and power source. Please check cable for electrical short circuits or discontinuities using the multimeter. Pin 1 & 2 should show similar magnitude of ohm. The same goes for pin 3 & 4, and 4 & 5 (see table below for approximate values).

Pin	Value of Ω
1, 2	1 M Ω
3, 4	130 Ω
5, 6	Open loop

Interface box inspection:

Check the LED light display (Figure below). The lights will turn red in case of error. The first light ("Power on") shows the status of the main power, and will lit green when the power is on. Rx and Tx indicators describe the status of the receive signal and the transmit signal, respectively. The Rx will blink when the instrument receive signals, the Tx will blink when it transmits. The Error power and Error cable indicators lit in case of power or cable failure



Trouble Report

Company:	
Contact Person:	

Instrument ID:		Color of Cable:	
Software Version:		Interface Box:	<input type="checkbox"/> LED <input type="checkbox"/> No LED

Has the instrument ever worked?
<input type="checkbox"/> No <input type="checkbox"/> Yes <i>Details about what was done immediately before the problem (e.g. New PC, new serial port, cable junction, etc...) or any error messages at the time can be helpful when diagnosing and fixing the problem:</i>

Describe the error by using the checklist below, and perform the suggested solution:
Note that the table below is divided into two sections. Follow the section that belongs to the type of error that applies to your problem.

Type of error	<input type="checkbox"/> Unrealistic values			<input type="checkbox"/> No or intermittent data		
Possible Cause	<input type="checkbox"/> GPS problem (missing or bad quality data)	<input type="checkbox"/> Low Amplitude	<input type="checkbox"/> Bad/No calibration	<input type="checkbox"/> Failure of the Interface box	<input type="checkbox"/> Failure of the cable or connection	<input type="checkbox"/> Failure of the instrument
Check for confirmation	<input type="checkbox"/> Check that the interface is present and installed with correct port number and baud rate. <input type="checkbox"/> Check that the incoming format is correct, e.g. by using a terminal or serial port emulator program.	<input type="checkbox"/> Observe the Signal strength under Vessel Profile Graphs display. A stable low counts value (straight vertical line) at all depths is a strong indicator that something is wrong. You may want to check that the depth cell chosen (Calculations menu) for closer review has amplitude high enough (>5 counts above noise floor) to give credible data.	<input type="checkbox"/> The directional information appears to be random or unlikely, e.g. the sticks in the stick plot tend to turn along with the vessel heading, or there is asymmetry in the velocity sticks.	<input type="checkbox"/> Perform an Inspection of the Interface Box (cf. margin on the previous page). If one of the two lower LED lights lit red, there is most likely a problem with the cable.	<input type="checkbox"/> Perform a Cable test ; check the Ohm value of the 6 pins (cf. table and description in the margin on the previous page). <input type="checkbox"/> Check that no serial mouse or other device driver is installed on any of the serial ports used by the VMCP or external sensors.	<input type="checkbox"/> If the cable, interface unit and PC appear to be ok, and the system is still failing, please contact Nortek in order to discuss further actions.
Solution		Barnacles on transducers; needs to be cleaned. It is highly recommended to avoid using strong detergents.	Recalibration, follow the Calibration procedure.	Please send the raw data files (SurveyVM v1 : *.adp, *.gps, *.gyr, *.rcf. SurveyVM v2 : *.wpr, *.ves, *.svm) together with this report to support@nortekgroup.com		

Date / Signature:	
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