VMH 35-SUZUKI MARINE DISPLAY

USER MANUAL
rev. AA

EN

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INTRODUCTION

VMH 35 is a NMEA 2000 certified device designed for monitoring outboard engines.

Equipped with analogue inputs it is also well suited to refitting older engines allowing the direct connection of various sensors such as fuel, trim and tachometer, while the built-in NMEA 2000 gateway distributes these measurements to other digital network devices such as chartplotters, saving the need for an external converter.

Its sleek black glass design is complemented by a stainless-steel frame mounted on the mineral glass front with the sunlight-readable hybrid display.
The VMH 35 has an IP X7 protection rating from the front and back to ensure the best performance in outdoor environments.

The built-in GPS makes the VMH 35 the perfect standalone solution by integrating speed, compass, and position data with engine information.

This product variant – the VMH 35-Suzuki – was developed to easily integrate in vessels with Suzuki outboard engines. The special pinout, analog trim- and alarm inputs and also the included cable harness perfectly fit these engines and make the installation of this device even simpler.

VMH 35 VARIANTS

Name	Part Number	Description
VMH 35-Suzuki GPS	B002041	• "Plug and play" solution for Suzuki outboard engines • one resistive input and one PWM sensor input • Alarm inputs • GNSS receiver included
VMH 35-Suzuki	B002042	• "Plug and play" solution for Suzuki outboard engines • one resistive input and one PWM sensor input • Alarm inputs • no GNSS receiver included
VMH 35-S GPS	B001435	• one resistive input and one voltage sensor input • GNSS receiver included
VMH 35-S	B001436	• one resistive input and one voltage sensor input • no GNSS receiver included
VMH 35	B000855	• two resistive inputs • GNSS receiver included
VMH 35-D GPS	B001711	• RPM-scale and available data adapted for diesel engines • Two resistive inputs • GNSS receiver included
VMH 35-D	B001712	• RPM-scale and available data adapted for diesel engines • Two resistive inputs • no GNSS receiver included

SAFETY INFORMATION

⚠ WARNING

- No smoking! No open fire or heat sources!

- The product was developed, manufactured and inspected according to the basic safety requirements of EC Guidelines and state-of-the-art technology.
- The instrument is designed for use in grounded vehicles and machines as well as in pleasure boats, including non-classified commercial shipping.
- Use our product only as intended. Use of the product for reasons other than its intended use may lead to personal injury, property damage or environmental damage. Before installation, check the vehicle documentation for vehicle type and any possible special features!
- Use the assembly plan to learn the location of the fuel/hydraulic/compressed air and electrical lines!
- Note possible modifications to the vehicle, which must be considered during installation!
- To prevent personal injury, property damage or environmental damage, basic knowledge of motor vehicle/shipbuilding electronics and mechanics is required.
- Make sure that the engine cannot start unintentionally during installation!
- Modifications or manipulations to Veratron products can affect safety. Consequently, you may not modify or manipulate the product!
- When removing/installing seats, covers, etc., ensure that lines are not damaged, and plug-in connections are not loosened!
- Note all data from other installed instruments with volatile electronic memories.

SAFETY DURING INSTALLATION

- During installation, ensure that the product's components do not affect or limit vehicle functions. Avoid damaging these components!
- Only install undamaged parts in a vehicle!
- During installation, ensure that the product does not impair the field of vision and that it cannot impact the driver's or passenger's head!
- A specialized technician should install the product. If you install the product yourself, wear appropriate clothing. Do not wear loose clothing, as it may get caught in moving parts. Protect long hair with a hair net.
- When working on the on-board electronics, do not wear metallic or conductive jewelry such as necklaces, bracelets, rings, etc.
- If work on a running engine is required, exercise extreme caution. Wear only appropriate clothing as you are at risk of personal injury, resulting from being crushed or burned.
- Before beginning, disconnect the negative terminal on the battery, otherwise you risk a short circuit. If the vehicle is supplied by auxiliary batteries, you must also disconnect the negative terminals on these batteries! Short circuits can cause fires, battery explosions and damage to other electronic systems. Please note that when you disconnect the battery, all volatile electronic memories lose their input values and must be reprogrammed.
- If working on gasoline boat motors, let the motor compartment fan run before beginning work.
- Pay attention to how lines and cable harnesses are laid so that you do not drill or saw through them!
- Do not install the product in the mechanical and electrical airbag area!
- Do not drill holes or ports in load-bearing or stabilizing stays or tie bars!

- When working underneath the vehicle, secure it according to the specifications from the vehicle manufacturer.
- Note the necessary clearance behind the drill hole or port at the installation location. Required mounting depth: 65 mm.
- Drill small ports; enlarge and complete them, if necessary, using taper milling tools, saber saws, keyhole saws or files. Deburr edges. Follow the safety instructions of the tool manufacturer.
- Use only insulated tools, if work is necessary on live parts.
- Use only the multimeter or diode test lamps provided, to measure voltages and currents in the vehicle/machine or boat. Use of conventional test lamps can cause damage to control units or other electronic systems.
- The electrical indicator outputs and cables connected to them must be protected from direct contact and damage. The cables in use must have enough insulation and electric strength and the contact points must be safe from touch.
- Use appropriate measures to also protect the electrically conductive parts on the connected consumer from direct contact. Laying metallic, uninsulated cables and contacts is prohibited.

SAFETY AFTER INSTALLATION

- Connect the ground cable tightly to the negative terminal of the battery.
- Reenter/reprogram the volatile electronic memory values.
- Check all functions.
- Use only clean water to clean the components. Note the Ingress Protection (IP) ratings (IEC 60529).

ELECTRICAL CONNECTION

- Note cable cross-sectional area!
- Reducing the cable cross-sectional area leads to higher current density, which can cause the cable cross-sectional area in question to heat up!
- When installing electrical cables, use the provided cable ducts and harnesses; however, do not run cables parallel to ignition cables or to cables that lead to large electricity consumers.
- Fasten cables with cable ties or adhesive tape. Do not run cables over moving parts. Do not attach cables to the steering column!
- Ensure that cables are not subject to tensile, compressive or shearing forces.
- If cables run through drill holes, protect them using rubber sleeves or the like.
- Use only one cable stripper to strip the cable. Adjust the stripper so that stranded wires are not damaged or separated.
- Use only a soft soldering process or commercially available crimp connector to solder new cable connections!
- Make crimp connections with cable crimping pliers only. Follow the safety instructions of the tool manufacturer.
- Insulate exposed stranded wires to prevent short circuits.
- Caution: Risk of short circuit if junctions are faulty or cables are damaged.
- Short circuits in the vehicle network can cause fires, battery explosions and damage to other electronic systems. Consequently, all power supply cable connections must be provided with weldable connectors and be sufficiently insulated.
- Ensure ground connections are sound.
- Faulty connections can cause short circuits. Only connect cables according to the electrical wiring diagram.
- If operating the instrument on power supply units, note that the power supply unit must be stabilized and it must comply with the following standard: DIN EN 61000, Parts 6-1 to 6-4.

MECHANICAL INSTALLATION

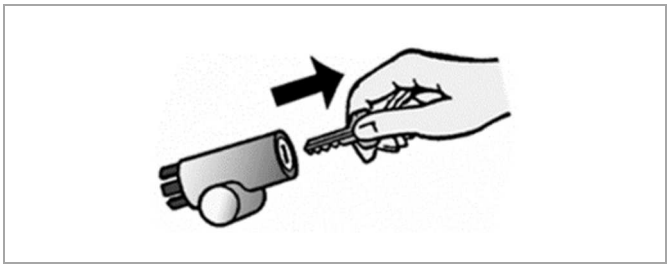
⚠ WARNING

Before starting work, disconnect the ground terminal of the battery to avoid the risk of a short circuit. If the vehicle is equipped with additional batteries, the negative terminal of all batteries must also be disconnected if necessary. Short circuits can burn cables, explode batteries and cause damage to other electronic systems. Remember that by disconnecting the battery, all data entered in the temporary electronic memory will be lost and will have to be reprogrammed.

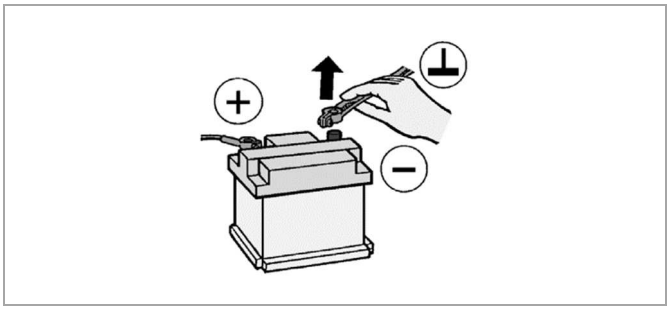
BEFORE THE ASSEMBLY

1. Before starting work, switch off the ignition and remove the ignition key.

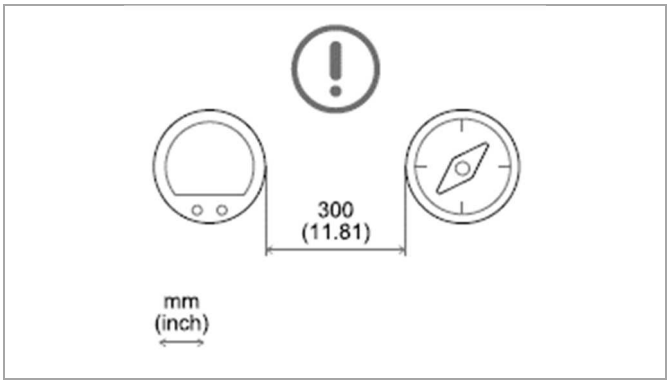
   If necessary, remove the main power switch.



2. Disconnect the negative terminal of the battery. Do not allow the battery to be reconnected by mistake.



3. When mounting the device in the vicinity of a magnetic compass, maintain a protective distance from the compass.



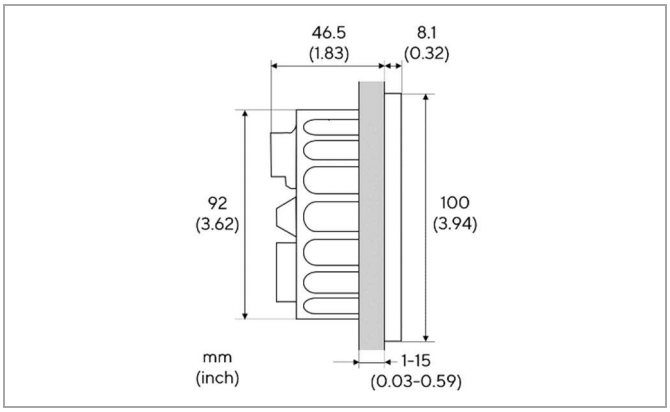
SPINLOCK MOUNTING

The panel thickness may be within a range of 2 to 15 mm.
The drill hole must have a diameter of 86 mm.

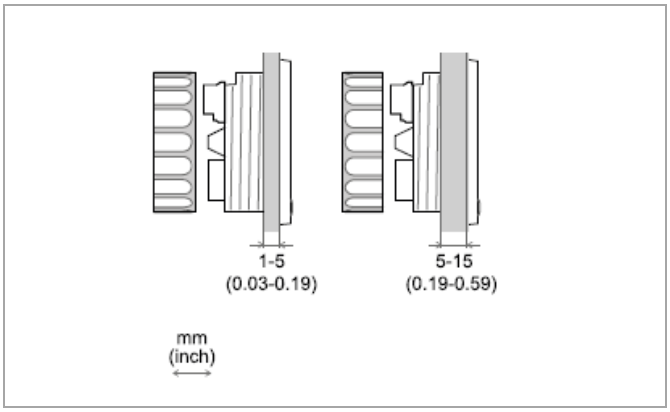
⚠ WARNING

- Do not drill holes or installation openings in supporting or stabilizing beams!
- The mounting location must have sufficient clearance behind the mounting holes or openings. The required mounting depth is 65 mm.
- Drill small holes with the drill, if necessary, enlarge them using a conical cutter, scroll saw, tail saw or file and finish them. Deburr the edges. It is essential to observe the safety instructions of the tool manufacturer.

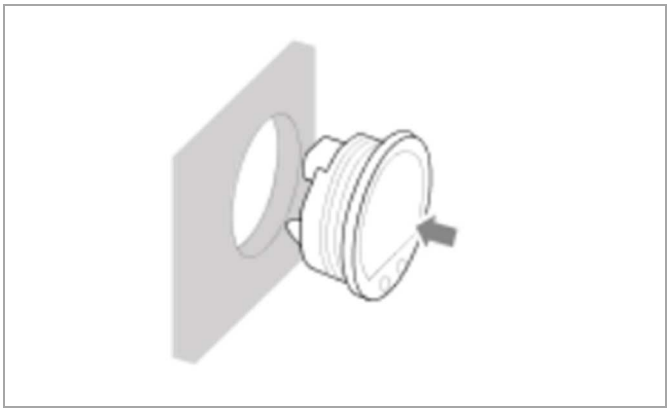
1. Create a circular hole in the panel considering the footprint of the device.



2. Remove the spinlock and insert the device from the front.
3. Orient the spinlock as shown according to the panel thickness.



4. Feed the cables through the spinlock and carefully screw it in for at least two turns.
5. Install the connector.



ELECTRICAL CONNECTIONS

⚠ WARNING

- Refer to the safety rules described in the electrical connections section of the safety information chapter of this document!

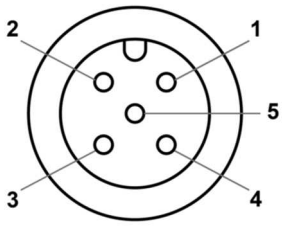
PINOUT

Pin No.	Wire color	Description
1	Red	KL. 30 – Battery power 12 V
2	Black	KL. 31 - Ground
3	White	Alarm output
4	Yellow	Frequency analog input – RPM
5	Black/Blue	Alarm Input – Engine oil pressure
6	-	N.C.
7	Grey	KL. 15 – Ignition
8	Yellow/White	Analog trim input (PWM)
9	Brown	Analog input resistive (0-400 Ohm)
10	White/Green	Alarm Input – Check engine
11	-	N.C.
12	Yellow/Green	Alarm Input – Coolant Temperature

VMH 35 rear view
Molex MX150 12-poles connector
and DeviceNet 5-poles

NMEA 2000® CONNECTOR PINOUT

Pin No.	Description
1	Shield
2	NET-S (V+)
3	NET-C (V-)
4	NET-H (CAN H)
5	NET-L (CAN L)



Micro-C M12 5 poles plug
male, cable view

CONNECTION TO THE NMEA 2000® NETWORK

Be sure to tighten the M12 connector by screwing it onto its counterpart on the back of the instrument to preserve its watertightness.

An accessory drop cable is required (not included). The VMH 35 cannot be powered from the NMEA-connection.

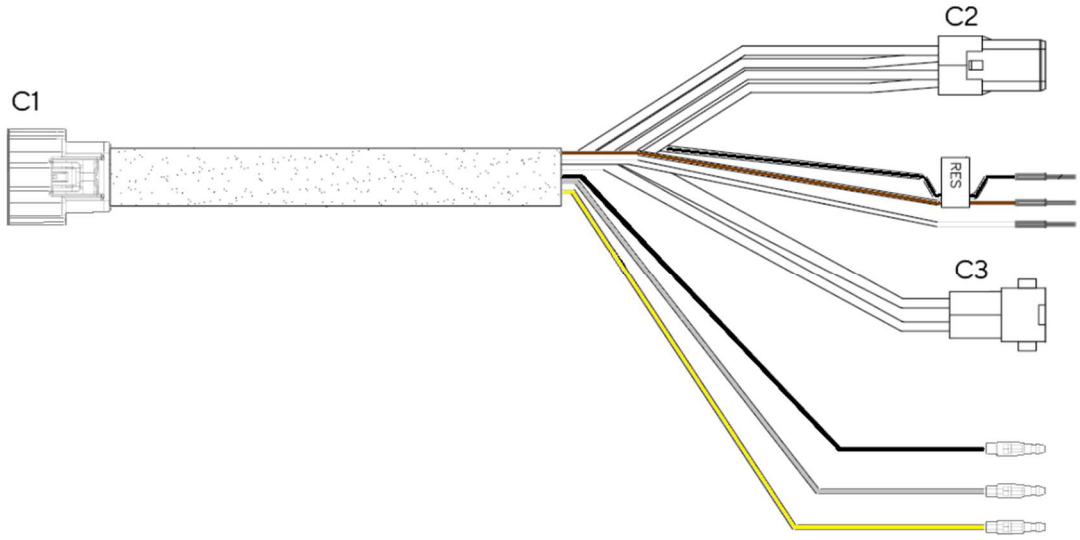
Note that NMEA 2000® does not allow drop cables longer than 6 meters.

Refer to the NMEA 2000® standard for proper network design.

WIRE HARNESS

The VMH 35-Suzuki comes with an included wire harness. This harness makes integrations into systems with Suzuki outboard engines very easy, as the standard connectors for power, ground, alarms and engine trim are already fitted.

Connectors:



C1	12 pin	VMH 35-Suzuki
C2	4 pin	Alarms connector
C3	2 pin	Trim signal connector

Ground, power/ignition and the tachometer signal are to be connected on the **black**, **gray** and **yellow** wires with the bullet terminals. The matching counterparts in the same colors should be present on the original Suzuki wire harness.

The signal for any further resistive sensors can be connected on the **brown** wire. This comes with an additional **black** wire that provides a ground reference for the measurement.

The **white** cable is for the connection to the alarm buzzer.

Refer to the respective sections of this chapter for connecting any custom signals.

SWITCHING ON AND OFF

The on/off mode depends on the ignition signal on terminal 15 (Molex-connector pin 7). High level to turn the device on, low level or open connection to turn it off.
At power up, the tachometer and warning lights come on briefly, the Veratron logo appears before displaying the data page that was active when powering off.

You can customize the loading image displayed at power up using the Veratron Configuration Tool. Contact your Veratron dealer for more information.

ANALOG SENSORS (RES, PWM, RPM)

Use the brown wire of the included wire harness to connect a resistive sensor. There is an additional black wire provided for the sensors ground reference.

The tachometer signal can be connected to the yellow wire with the bullet terminal. The number of pulses per engine revolution must be defined in the menu Sensors > RPM. Values of up to 150 pulses per engine revolution are supported.

The PWM input can read the trim signal. The input expects a signal frequency of 250 Hz.

It is advisable to use sensors with isolated ground, and it is necessary to ensure that the sensor ground is connected to the display ground to avoid incorrect readings.

ALARM INPUTS

The alarm inputs are activated by pulling the signal to ground potential.
The functions of the respective inputs can be found in the pinout and cannot be changed to other meanings.

The alarm inputs are always active and shared on the NMEA2000 network, if connected.

EXTERNAL BUZZER

The display supports the connection of an external buzzer via the dedicated alarm output.
This buzzer can be powered at different voltages (consult the buzzer manufacturer's manual) as the output steers the alarms ground connection (Open Collector Output).
It is important to note that the maximum current support is 500mA.^

DESCRIPTION

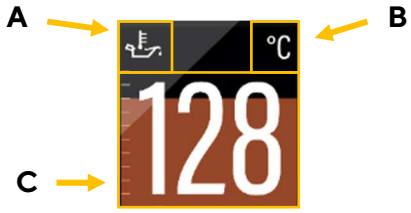
DISPLAY SEGMENTS

Part	Description
A	Area to show data pages and menu
B	Gear position
C	Current speed according to the selected unit of measurement
D	Engine speed
E	Alarm telltales
SET / MODE	Buttons to interact with the data pages and the menu

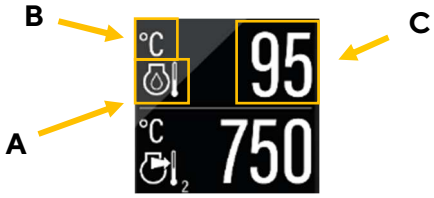
DATA PAGES

Data pages are the templates, which can be displayed on the center part of the device. There are single-layout screens, displaying only one value at a time and dual-layout screens, showing two.
Each of the pages can be hidden, as described in the section "Select the Pages to Display". By default, all pages are enabled.

Single layout



Dual layout



A: Data symbol
Indicates which data type is displayed right now.

For the data types which support this function, there is also the instance indicated here.

B: Unit of measured value
Shows the unit of the currently displayed data.
For some data types it's possible to change the unit in the settings. (See table "List of Manged Data")

C: Current value
This shows the numeric value of the dedicated measured data. If there aren't any values received for this data type or they are out of range, the display will show "- - -".

Colored Graph
The colored graphic in the background of the single layout screen is a bar diagram that puts the measured value in perspective. This function isn't supported for all data types.
The white lines on the left side show the scalation.

BASIC ACTIONS

To...	Then...
Open the menu	Keep **SET** pressed
scroll through the pages	- briefly press **SET** for getting back to the last page - briefly press **MODE** for getting back to the last page
adjust the backlight	briefly press the **SET** and **MODE** buttons simultaneously
acknowledge the alarm pop-up	press any button

MANAGED DATA

Icon	Information	Input signal				Output	Unit
		Internal	Frequency	Resistive	NMEA 2000	NMEA 2000	
	Clock	x *	-	-	x	x	hh:mm
-	GPS position	x *	-	-	x	x	
COG	Course over ground (COG)	x *	-	-	x	x	°
TRIM	Trim	-	-	x	x	x	°
RUDDER	Rudder angle	-	-	x	x	x	°
	Depth	-	-	-	x	-	m / ft
	Seawater temperature	-	-	-	x	-	°C / °F
#	Fuel level - tank no. #	-	-	x	x	x	% / L / Gal
TTL	Total fuel used	x	-	-	-	-	L / gal.
	Fuel flow	-	-	-	x	-	L per h / gph
FRESH	Fresh water	-	-	x	x	x	% / L / Gal
WASTE	Waste water	-	-	x	x	x	% / L / Gal
	Voltmeter	x	-	-	x	-	V
	Ammeter	-	-	-	x	-	A
	State of Charge	-	-	-	x	-	%
	Battery autonomy	-	-	-	x	-	d / h
SOH	Battery Status of health	-	-	-	x	-	%
	Battery temperature	-	-	-	x	-	°C / °F
	Engine coolant temperature	-	-	x	x	x	°C / °F
	Engine coolant pressure	-	-	-	x	-	bar / psi

Icon	Information	Input signal				Output	Unit
		Internal	Frequency	Resistive	NMEA 2000	NMEA 2000	
	Engine oil temperature	-	-	x	x	x	°C / °F
	Engine oil pressure	-	-	x	x	x	bar / psi
	Boost pressure	-	-	-	x	-	bar / psi
	Total engine hours	-	x	-	x	x	h
TRIP	Trip hours counter	x	-	-	-	-	h
TRIP	Trip Distance	x	-	-	-	-	Mi / km / nm
	Engine speed	-	x	-	x	x	rpm
-	Speed through water (STW)	-	-	-	x	-	km/h / mph / kn
-	GPS speed (SOG)	x*	-	-	x	x	km/h / mph / kn
-	Gear position	-	-	-	x	-	-

Note*: data received from integrated GPS module – only available on VMH 35 variants with GPS.

DISTANCE TRAVELED

The indicator internally calculates the distance travelled based on the boat speed. For this the speed value selected in the menu **Sensors > Speed** is used.

ENGINE HOURS

The source of the engine hours can be selected in the Menu **Setup > Hours Src**.

If the option **CAN** is selected, the display will show the engine hours value received from NMEA2000.

If the option **Internal** is selected, time is counted internally in the VMH 35. Only the time during which the engine speed exceeds the threshold of 300rpm will be counted as engine hours.
The internally counted value can only be reset with the physical Veratron Diagnostic Tool and the corresponding software "Configuration Tool".

PRIORITY OF DATA SOURCES

Sensors and engine

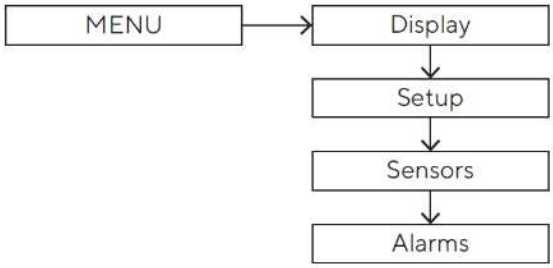
- Analogue inputs
- NMEA 2000

GPS position

- NMEA 2000
- Integrated GPS module

GENERAL SETTINGS

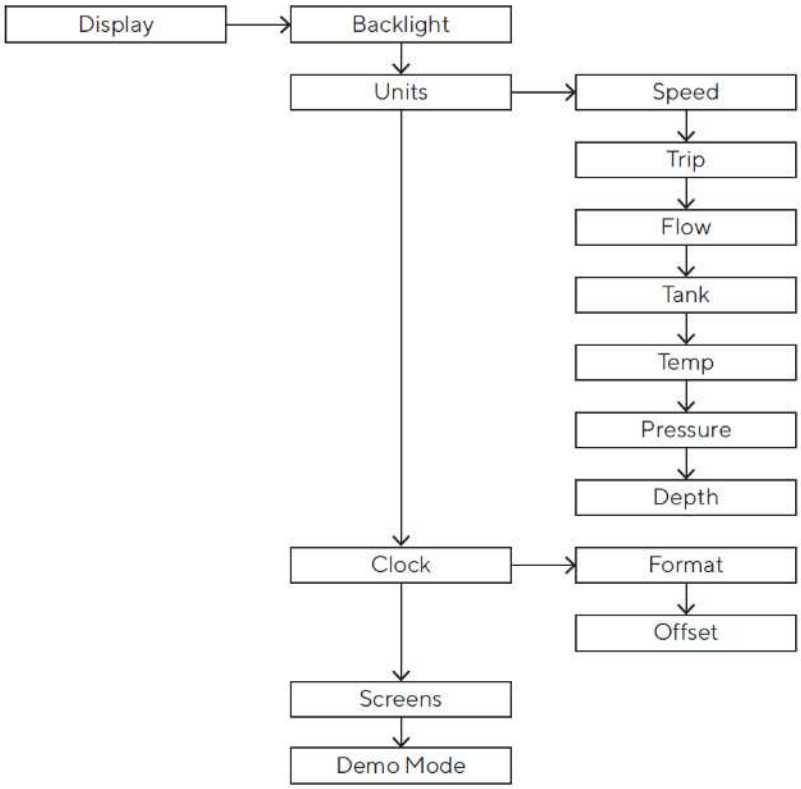
SETTINGS MENU STRUCTURE



OPERATE THE SETTINGS MENU

To...	Then...
enter the settings menu	keep the **SET** button pressed until the menu appears
scroll through the settings menu items and possible values	• To go to the previous item/value, briefly press the **MODE** button. • To go to the next item/value, briefly press the **SET** button.
confirm	press the **SET** button until the data is confirmed.
get back one step	press the **MODE** button until the last page appears
exit the settings menu	press the **SET** and **MODE** buttons until the pop-up disappears, or the previous data page appears
dismiss an alarm pop-up	press any button briefly

DISPLAY MENU STRUCTURE



CHANGE THE BRIGHTNESS OF THE DISPLAY

To change the backlight intensity of the display, follow this process:

- Briefly press the **SET** and **MODE** buttons simultaneously to open the backlight popup menu.
- Increase or decrease the brightness by repeatedly pressing **SET** or **MODE**.
- Confirm the current brightness by exiting the menu with long press on both buttons.

UNITS

Setting	Description	Options *
Speed	Speed units	km/h , mph, kts
Trip	Unit of measurement of distance travelled	km , mile , nm
Flow	Flow measurement units	L/h , gph
Tank	Unit of measurement for the liquid in the tank	L , US gal
Temperatures	Temperature units	°C , °F
Pressure	Pressure units	bar , PSI
Depth	Depth measurement units	m , ft

Note*: the underlined value/command is the default.

CLOCK

The time is only received via GNSS, it cannot be counted internally.

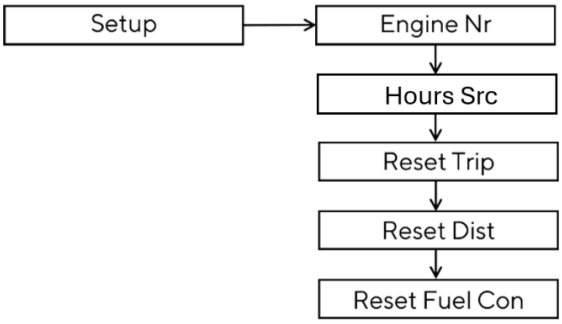
The clock settings can be found in the menu **Display > Clock** .
To adapt the time to your current time zone, choose the according deviation in the submenu **Offset**.
Switch between the 12h and 24h time format in the submenu **Format**.

SELECT THE PAGES TO DISPLAY

By default, all pages are displayed.
You can choose which pages to hide/show in the menu under **Display > Screens**.

If you are working with the Veratron Diagnostic Tool, you can make the selection of shown and hidden screens faster by making this setting in the Configuration Tool.

SETUP MENU



Setting	Description	Options
Engine Nr.	Identification number of the engine whose data should be displayed on the gauge	1 – 4
Hours Src	Defines the data source for the engine hours	Internal / CAN
Reset Trip	Trip hour counter reset.	Yes / No
Reset Distance	Trip distance counter reset.	Yes / No
Reset Fuel Consumption	Reset the fuel consumption counter	Yes / No

ENGINE IDENTIFICATION

The designation selected in the **SETUP > Engine No**. menu determines which engine data is to be displayed if more than one engine is present.
Example: In a configuration with two engines and two VMH 35 displays (one for each engine), one instrument should be set as Engine 1 and the second as Engine 2.
This setting does not affect the battery, fuel level or GPS data.
This setting also determines the designation used to transmit engine data from the VMH 35 display to the NMEA 2000 networks.

RESET A TRIP VALUE

Reset a trip value by navigating to the respective entry in the menu **SETUP** and confirm the according reset by long pressing of the button **SET**.
Before the reset is executed a further question will pop up to ask this action is done on purpose. Confirm this message with the **SET** button.

UPLOAD A CUSTOM SPLASH LOGO

A custom splash logo (114 x 114 pixel) can be uploaded to the screen. This requires a PC using the Veratron Configuration Tool software and the interface device called Veratron Diagnostic Tool.
This logo will then be displayed each time during the startup sequence of the device.

For more information, please refer to the Veratron Configuration Tool user manual or contact your Veratron reseller.

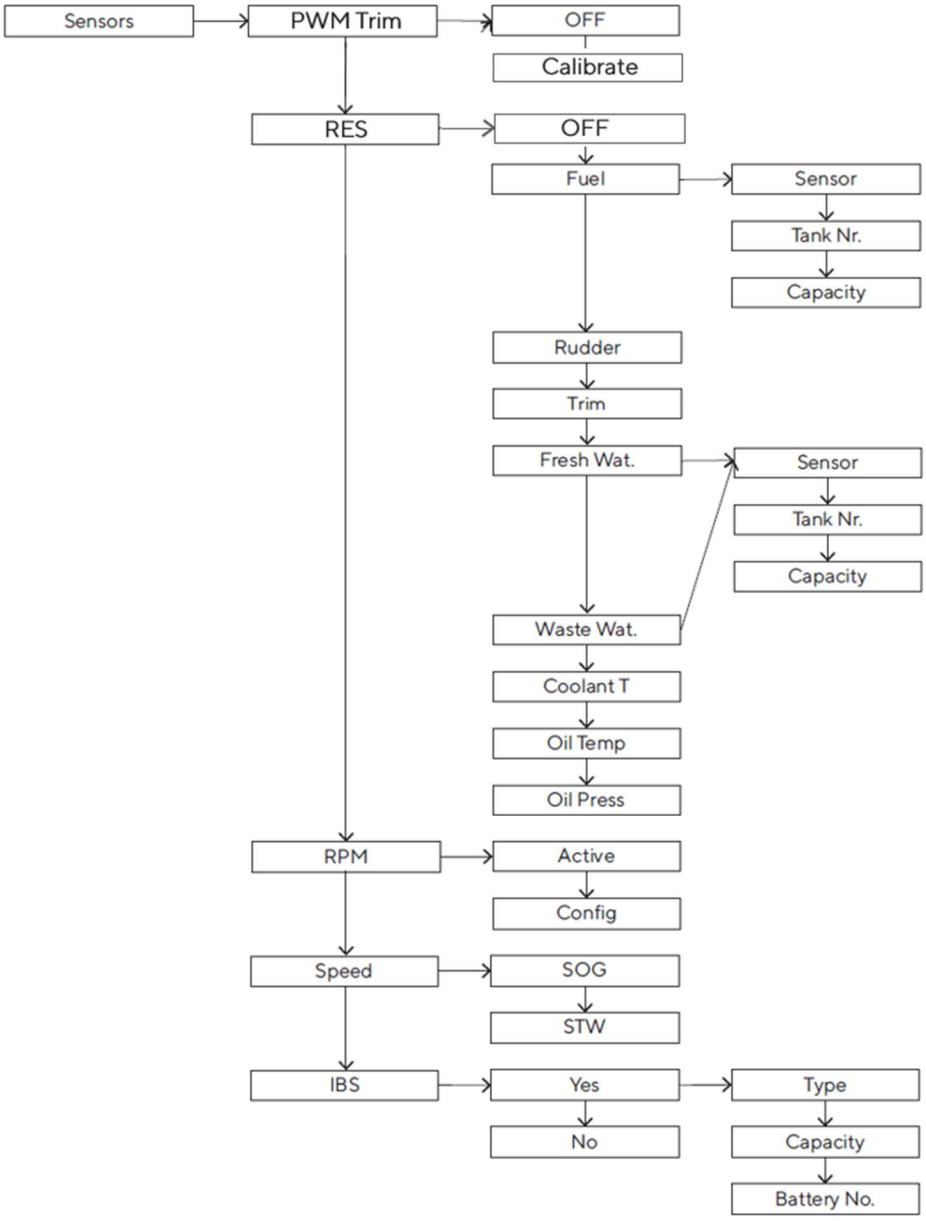
SENSOR CONFIGURATION

TYPES OF CALIBRATION

Calibration of analog sensors can be:

- Standard: only for Veratron sensors. You define the type of sensor, and the device reads with good approximation the value of the sensor without the need of calibration.
- Manual: For non-Veratron sensors or to obtain a more accurate indication from a Veratron sensor. A three- or five-point procedure instructs the system to detect the sensor value.

SENSORS MENU STRUCTURE



CALIBRATE THE SENSORS

FUEL LEVEL SENSOR

- Connect the sensor of interest. See "Connecting an analogue sensor".
- Under **Sensors** select the resistive input to which the sensor is connected.
- Under **Fuel > Sensor,** choose the desired configuration.
- If you have chosen the **CUSTOM** configuration, follow the wizard on the display to create the sensor curve. (You will have to fill your tank to a certain level and then confirm the current sensor value and repeat that for several points of the curve)
- Under **Sensors** select the resistive input of step 2.
- Under **Fuel > Tank no.,** select the ID to be assigned to the tank to which the sensor is connected.

FRESH WATER LEVEL SENSOR

- Connect the sensor of interest. See "Connecting an analogue sensor".
- Under **Sensors** select the resistive input to which the sensor is connected.
- In **Fresh water > Sensor** choose the desired configuration.
- If you have chosen the **CUSTOM** configuration, follow the wizard on the display to create the sensor curve. (You will have to fill your tank to a certain level and then confirm the current sensor value and repeat that for several points of the curve)
- Under **Sensors** select the resistive input of step 2.
- Under **Fresh water > Tank no**., select the ID to be assigned to the tank to which the sensor is connected.

WASTE WATER LEVEL SENSOR

- Connect the sensor of interest. See "Connecting an analogue sensor".
- Under **Sensors** select the resistive input to which the sensor is connected.
- In **WASTE > Sensor** choose the desired configuration.
- If you have chosen the **CUSTOM** configuration, follow the wizard on the display to create the sensor curve. (You will have to fill your tank to a certain level and then confirm the current sensor value and repeat that for several points of the curve)
- Under **Sensors** select the resistive input of step 2.
- Under **Fresh water > Tank no**., select the ID to be assigned to the tank to which the sensor is connected.

RUDDER ANGLE SENSOR

- Connect the sensor of interest. See "Connecting an analogue sensor".
- Under **Sensors** select the resistive input to which the sensor is connected.
- In **Rudder** choose the desired configuration type.
- If you have chosen the **CUSTOM** configuration, follow the wizard on the display to create the sensor curve. (You will have to bring the rudder to a certain position and then confirm the current sensor value and repeat that for several points of the curve)

TRIM SENSOR

- Connect the sensor of interest. See "Connecting an analogue sensor".
- Under **Sensors** select the analog input to which the sensor is connected.
- In **Trim** follow the wizard on the display to create the sensor curve. (You will have to bring the engine to a certain trim position and then confirm the current sensor value and repeat that for several points of the curve)

RPM SENSOR

- Connect the sensor of interest. See “Connecting an analogue sensor”.
- In **Sensors > RPM > Config** enter the value of pulses/revolution required for a correct reading of the signal.

TEMPERATURE AND PRESSURE SENSORS

- Connect the sensor of interest. See “Connecting an analogue sensor”.
- Under **Sensors** select the resistive input to which the sensor is connected.
- Choose the desired configuration for the connected sensor type.
- If you choose the **CUSTOM** configuration, create the sensor curve using the Veratron Configuration Tool.

SENSOR CURVES

FUEL LEVEL SENSORS

Here are the possible alternatives:

Selectable value	Curve
ABYC-US	240-33 Ω
EUROPE	3-180 Ω
YAMAHA	105-5 Ω
CUSTOM	Five-Step Calibration Wizard

WATER LEVEL SENSORS

Here are the possible alternatives:

Selectable value	Curve
ABYC-US	240-33 Ω
EUROPE	3-180 Ω
CUSTOM	Five-Step Calibration Wizard

RUDDER ANGLE SENSORS

Here are the possible alternatives:

Selectable value	Curve
Single	10-180 Ω
Dual	5-90 Ω
CUSTOM	Three-step calibration wizard

TRIM SENSORS

Here are the possible alternatives:

Selectable value	Curve
PWM - 250Hz	Three-step calibration wizard
CUSTOM	Three-step calibration wizard

COOLANT TEMPERATURE SENSORS

Here are the possible alternatives:

Selectable value	Curve
120°	291-22 Ω
CUSTOM	Calibration via Veratron Configuration Tool

OIL TEMPERATURE SENSORS

Here are the possible alternatives:

Selectable value	Curve
150°	197-11 Ω
CUSTOM	Calibration via Veratron Configuration Tool

OIL PRESSURE SENSORS

Here are the possible alternatives:

Selectable value	Curve
5 bar	10-184 Ω
10 bar	10-184 Ω
CUSTOM	Calibration via Veratron Configuration Tool

ALARMS

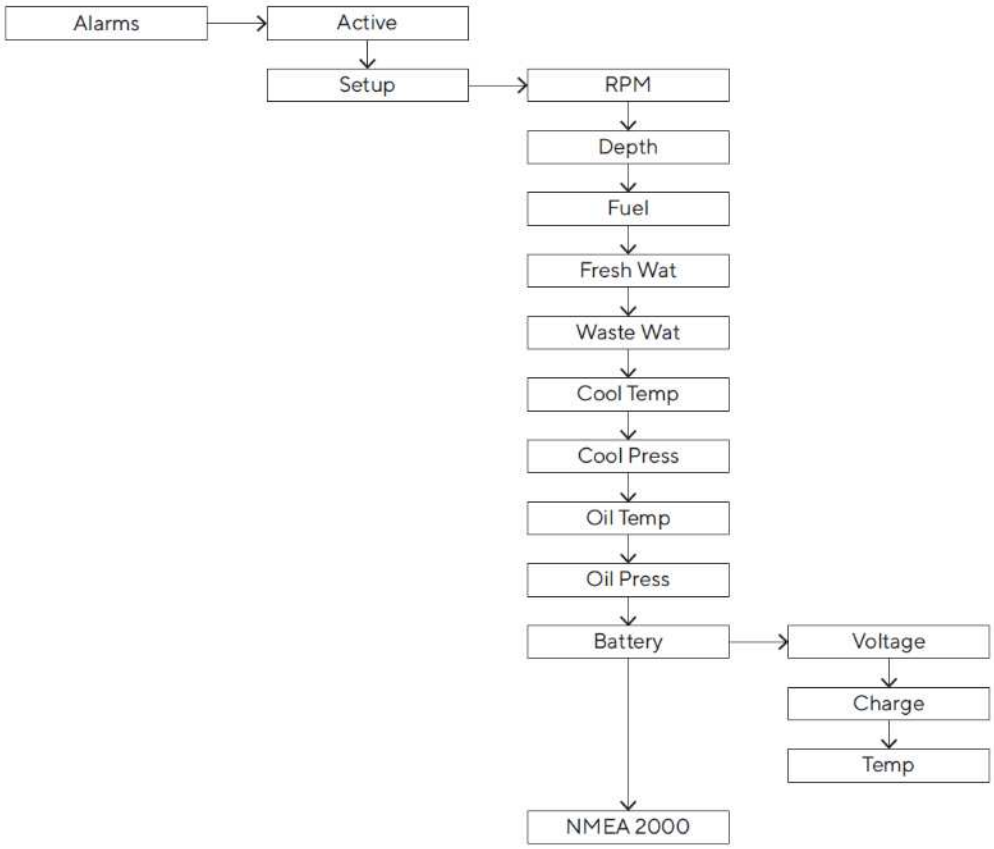
ALARMS NOTIFICATION

The VMH 35 indicator shows internal active alarms and those coming from NMEA 2000. The **ALARMS** item allows you to set the alarms that can be generated by the indicator and the relative alarm thresholds.

In the event of an alarm, the following appears on the display:

- The alarm popup appears.
- The corresponding alarm lamp will light up if present.
- The buzzer is activated, if connected and set.
- If supported, the alarm is forwarded over the NMEA 2000 network.

ALARMS MENU STRUCTURE



HARDWARE ALARM INPUTS

There are three hardware alarm inputs.

- Low oil pressure
- Engine overtemperature
- Engine shutdown

The inputs are always active and triggered when connecting the signal to ground.
When connected to NMEA2000, these alarms are shared with the other devices on the network.

SET AN ALARM

- In **ALARMS > Setup** select the according data type and active by selecting the option **Active**.
- Set the desired alarm threshold.

LIST OF MANAGED ALARMS

Local alarms

- Engine Overtemp
- Battery low
- Overvoltage
- Battery low charge
- Battery Overtemp
- Low Oil Pressure
- Low Coolant Pressure
- Low Fuel #
- Low Fresh Water
- Waste Water Full
- Shallow Water
- Engine overspeed

NMEA 2000

- Water in fuel
- Engine Overtemp
- Battery low
- Low Oil Pressure
- Check Engine
- Check Transmission
- Engine overspeed

ALARM TELLTALES

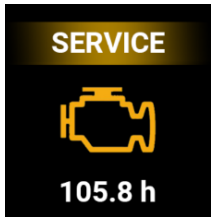
Icon	Information
	Fuel level
	Engine failure
	Engine coolant pressure
	Oil pressure
	Engine coolant temperature
	Battery voltage

SERVICE NOTIFICATION

The VMH 35-S displays will regularly start showing a service reminder. This happens in intervals of 100 engine hours. The reminder will pop up each time the instrument starts until the interval has been reset.

To reset the service interval:

1. Turn off the device by deactivating the ignition signal
2. Press and hold the button **SET**
3. Activate the ignition signal while still holding the **SET** button pressed. Once the gauge is started the service menu will be active (which looks like the service reminder itself).
4. Press and hold both the **SET** and **MODE** button for 3 seconds to reset the interval counter
5. Leave the service menu by pressing and hold the **SET** button for 3 seconds.



TROUBLESHOOTING

DATA DISPLAY

Problem	Root cause	Solution
The values displayed are not as expected.	Incorrect sensor configuration.	Check the configuration in the Sensors menu.
	Sensor connected incorrectly.	Check the connection, refer to the Installation Instructions.
	The NMEA 2000 network backbone has not been created correctly.	Check the connections and that there is a termination at both the beginning and end of the backbone.
The value is not displayed / Only dashes displayed	Not available on the network.	Check that the sensor is functioning correctly.
	Sensor not connected.	Connect the sensor, refer to the *Installation Instructions*.
	The NMEA 2000 network backbone has not been created correctly.	Check the connections and that there is a termination at both the beginning and end of the backbone.
Slow update rate on NMEA data	The value is expected to be received from the analog input.	Disable the analog inputs that are not being used.

INTERNAL GPS

Problem	Root cause	Solution
The displayed speed is "- - -"	GPS module in search state (**GPS search**)	Wait. The search operation takes about one minute, then the GPS is ready (GPS valid).
	Using the VMH 35 version without internal GPS	Check your device's part number and compare it to the options in section Variants to find out whether your device has the integrated receiver. Make sure there is a speed source in the NMEA network, if no GPS in included and check the setting in Sensors > Speed.

TECHNICAL DATA

GENERAL FEATURES

Material	Mineral glass front lens Stainless steel frame
Connectors	• Molex MX150 • NMEA 2000 Micro-C M12 5 Pin
Input data	• NMEA 2000 • 1 PWM input (250Hz) • 1 resistive input (0-400 Ohm) • 1 frequency input (0-4 kHz)
Output data	• NMEA 2000
Degree of protection (according to IEC 60529)	IP X7
Display	Hybrid with 1.44" central TFT and color IBN
GPS Antenna	Integrated, 10 Hz, 72 channels Supported constellations: GPS, GLONASS, Galileo

ENVIRONMENTAL FEATURES

Operating temperature	From -20 to +60 °C
Storage temperature	From -30 to +80 °C

ELECTRICAL FEATURES

Nominal voltage	12 V
Operating voltage	9–16 V
Current consumption	< 100 mA @ 12 V
Absorption (LEN)	2

COMPLIANCE

Compliance	CE UKCA UL94
Directives	2014/30/EU (Electromagnetic compatibility) 2011/65/EU (Hazardous substances in electrical and electronic equipment)
Reference standards	IEC 60945: 2002-08 (environmental class: exposed)

SUPPORTED NMEA 2000 MESSAGES

Description	PGN	Description	PGN
Navigation data	129284	Engine Parameters, Rapid Update	127488
GNSS dilution of precision (DOP)	129539	Engine Parameters, Dynamic	127489
GNSS satellites in view	129540	Transmission Parameters, Dynamic	127493
GNSS position data	129029	Trip Fuel Consumption, Engine	127497
Wind data	130306	Fluid level	127505
Environmental parameters	130310	DC Detailed Status	127506
Environmental parameters	130311	Battery status	127508
Actual Pressure	130314	Speed: Water referenced	128259
Temperature	130316	Water depth	128267
Engine Parameters, Static	127498	Position: Rapid update	129025
System time	126992	COG and SOG: Rapid update	129026
Rudder	127245	Local Time Offset	129033
Vessel heading	127250	Datum	129044

DISCLAIMER

This product is designed to be compatible with Suzuki engines. However, it is not manufactured, endorsed, or approved by Suzuki Motor Corporation. Veratron AG is an independent company with no affiliation or relationship with Suzuki Motor Corporation.

DISPOSAL RESPONSIBILITY

Dispose of by separate collection through government or local government designated collection facilities.
Proper disposal and recycling will help prevent potentially negative consequences for the environment and people.

SPARE PARTS AND ACCESSORIES

Product	Part Number
Pigtail cable with MX150 connector	B00208201
Spin lock	A2C13760900
Rubber gasket	A2C14624100

For all available accessories, visit http://www.veratron.com.

REVISION HISTORY

Version	Changes	Date
Rev.AA	– Initial release	03.03.2025

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