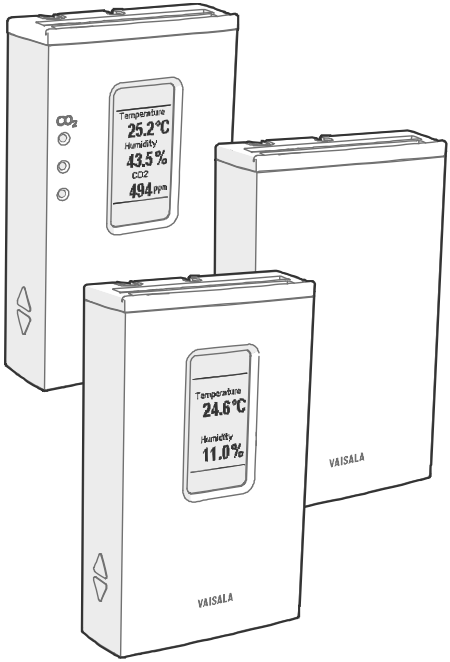
Quick Guide

Vaisala HMW90 and GMW90 Series Transmitters with Analog Output



English

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ENGLISH

HMW90 and GMW90 Series Analog Models

Measurement type	
HMW models	Humidity, temperature
TMW models	Temperature
GMW93, GMW94, GMW90*	Carbon dioxide, temperature
GMW94R, GMW93R, GMW90R*	Carbon dioxide, humidity, and temperature
Output	1 ... 3 analog output channels See type label on transmitter
Supply voltage	
HMW92/TMW92	10 ... 28 VDC, loop powered
Other models	18 ... 35 VDC 24 VAC ±20 % 50/60 Hz
Power consumption	
HMW models	< 1.2 W
TMW models	< 0.6 W
GMW models	< 2 W
Dimensions (h × w × d)	132.7 × 81 × 30 mm
Setpoints for CO_2 LEDs	Green 0 ... 800 ppm Yellow 800 ... 1200 ppm Red 1200 ... 5000 ppm Red (blinking) > 5000 ppm

* Configurable model, see Order Form for options.

Datasheets and user's guides (in English) are available on product pages at www.vaisala.com/hmw90 www.vaisala.com/gmw90.

EN

Product Safety Information

When installing the transmitter, do not touch exposed contacts on the component board.

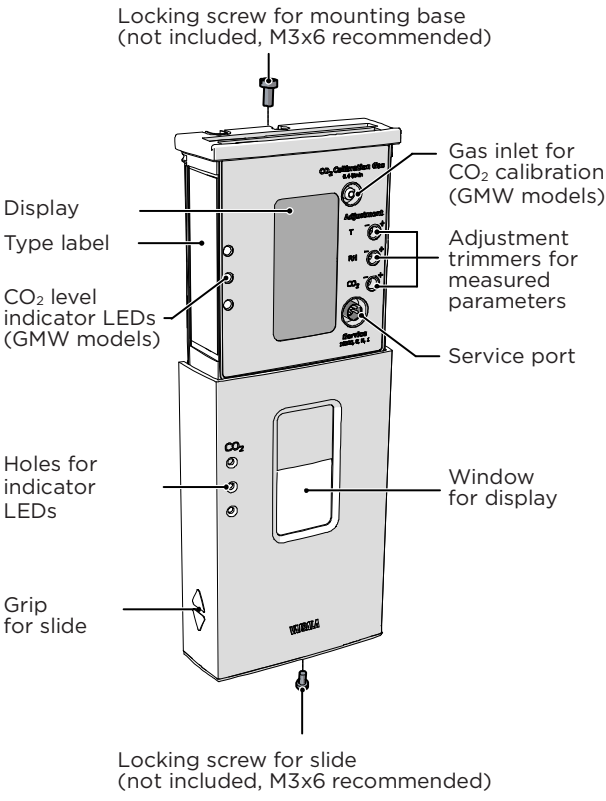
When opening or closing the transmitter, avoid damaging the transmitter electronics with the two plastic supports on the bottom of the mounting base.

Wire the transmitter according to the terminal label on the mounting base. Terminal layout depends on transmitter model, so do not mix mounting bases from different transmitter models.

If you connect more than one transmitter to a single 24 VAC transformer, always connect the phase (~) to the +Vs connector in each transmitter.

The trimmers only turn 135 degrees each way, less than half a rotation. Do not force the trimmer past the stopping point.

Transmitter Parts - Outside



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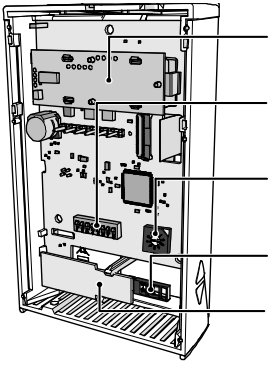
Transmitter Body



GM10 module (CO_2 measurement)

DIP switches for common configuration options

Rotary switch for setting the relay setpoint (HMW93 and TMW93 only)

HUMICAP® 180R sensor (humidity measurement)

TM10 module (temperature measurement) or HTM10 module (temperature and humidity measurement)

Mounting Base

Opening for cable

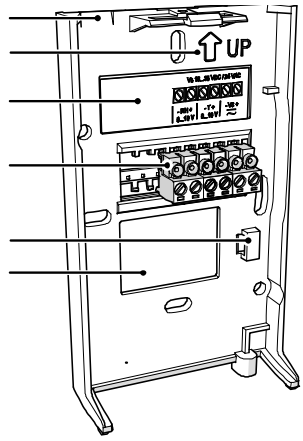
Orientation arrow

Terminal label

Screw terminals

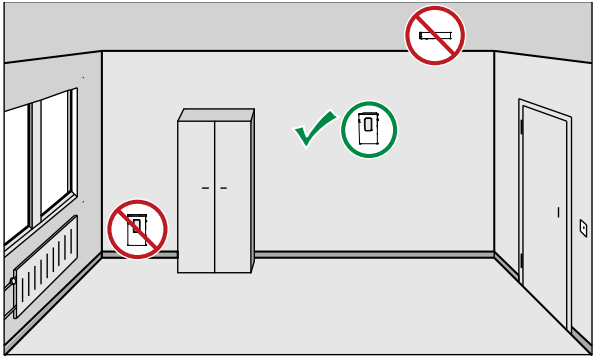
Place for zip tie

Opening for cable



Selecting the Location

The conditions at the location should represent well the area of interest. Do not install the transmitter on the ceiling. Avoid placing the transmitter near heat and moisture sources, close to the discharge of the supply air ducts, and in direct sunlight.



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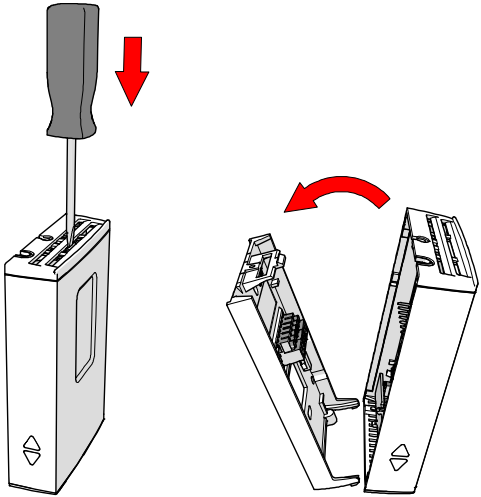
Plan the routing of the cable when selecting the location. You can bring the cable to the transmitter from above, or from the center opening of the mounting base.

When bringing a cable through the wall, note that the hole may also supply air from outside the room into the transmitter. This may affect the measurement readings. For example, fresh concrete binds CO_2 and may cause low readings, especially in new buildings. Seal the cable opening if necessary.

Opening and Closing

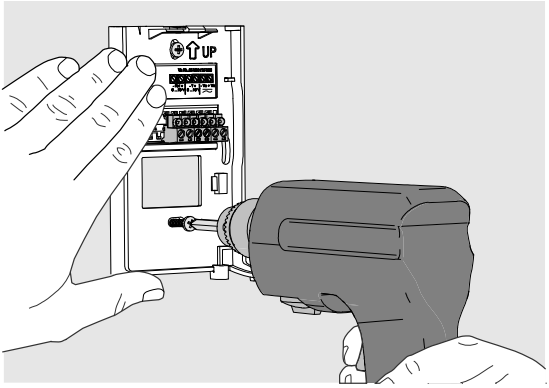
To open, use a screwdriver to push down the tab that holds the transmitter cover and mounting base together. Pull the mounting base away from the cover, starting from the top.



To close, connect the bottom of the transmitter first, and tilt the top forward to close the tab. Do not push on the screen. Closing the transmitter starts it up if power is supplied to the screw terminals.

Installing the Mounting Base

Use the mounting holes to attach the mounting base securely. Use at least two screws (not included). The arrow on the mounting base must point straight up after installation. **Proper orientation is important**: air must flow through the vents on the bottom and top.



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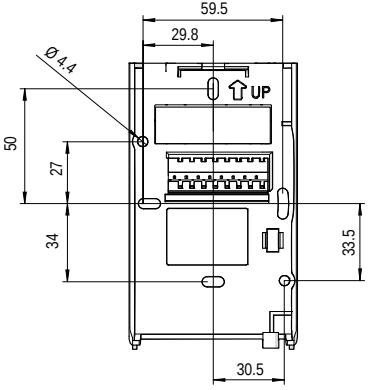
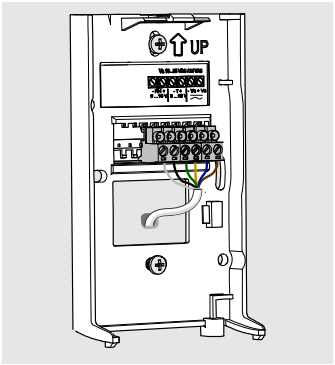


General Wiring Instructions

When wiring, observe the terminal label on the mounting base. Maximum wire size is 2 mm^2 (AWG14).

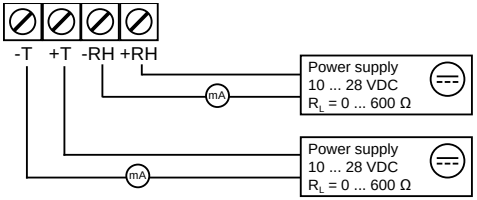


You can bring the cable to the housing from above or from behind (recommended).

If you are wiring a GMW90 series transmitter from above, use a < Ø 5 mm cable, and route it from the left side of the mounting base.

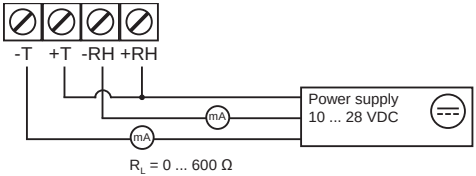
Wiring HMW92

HMW92 is loop powered. You must connect the RH channel of the HMW92, even if you only want to measure temperature. Connecting the T channel is optional.



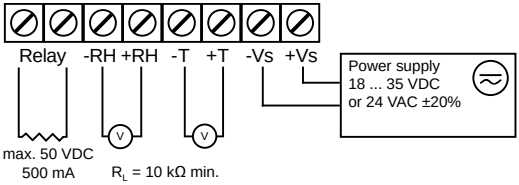
Minimum supply voltage depends on loop resistance: 10 ... 28 VDC at 0 Ω load, 20 ... 28 VDC at 500 Ω load.

To use a single power supply for the HMW92, connect the positive terminals (+T and +RH) together.



Wiring HMW93

Recommended wiring for long cables:



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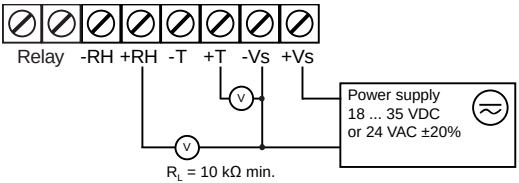
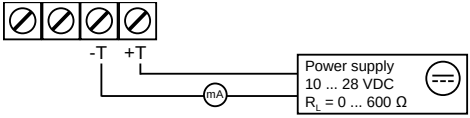
3-wire connection with -Vs as common ground. Maximum cable resistance is 2.5 Ω (24V supply, 0 ... 10 V output, relay not used).



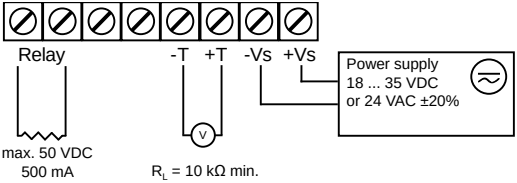
Wiring TMW92

TMW92 is loop powered. Minimum supply voltage depends on loop resistance: 10 ... 28 VDC at 0 Ω load, 20 ... 28 VDC at 500 Ω load.

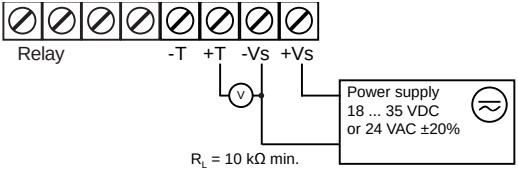


Wiring TMW93

Recommended wiring for long cables:

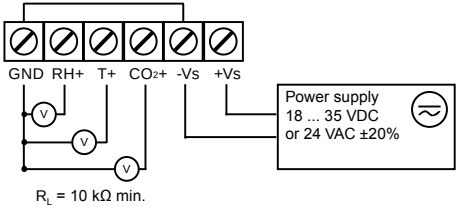


3-wire connection with -Vs as common ground. Maximum cable resistance is 2.5 Ω (24V supply, 0 ... 10 V output, relay not used).

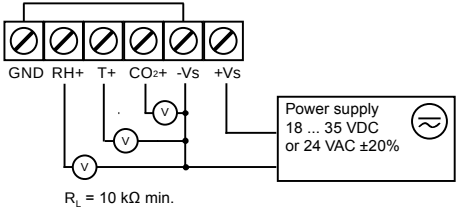


Wiring GMW93

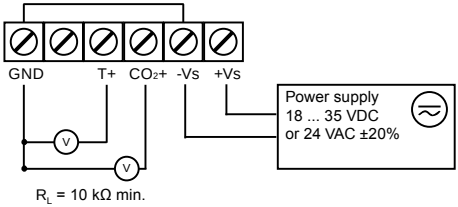
Recommended wiring for long cables (GMW93R/RA):



-Vs terminal is internally connected to GND terminal, so you can also use the -Vs terminal as common ground. Maximum cable resistance is 2.5 Ω (24V supply, 0 ... 10 V output):



GMW93 is wired in the same way as GMW93R/RA, except for the humidity output that is not present:



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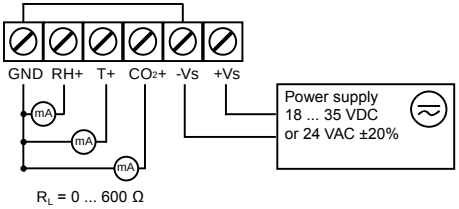
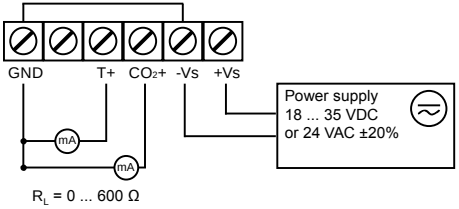
Wiring GMW94

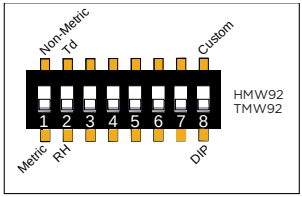
-Vs terminal is internally connected to GND terminal.
Wiring for GMW94R:

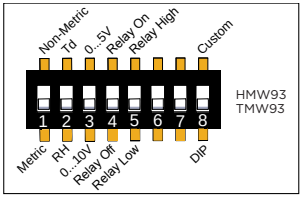


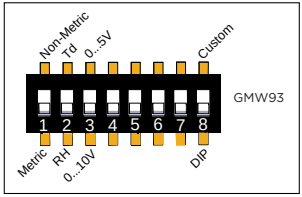
GMW94 is wired in the same way as GMW94R, except for the humidity output that is not present:

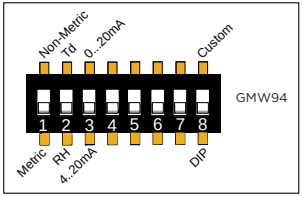


DIP Switch Settings









DIP	Position	Setting
1	**Non-metric**	Non-metric units (°F).
	Metric	Metric units (°C).
2	**Td**	Td (dewpoint) as humidity parameter. Sets analog output scaling to -20 ... +55 °C. Note: DIP 2 does nothing on TMW models.
	RH	RH (relative humidity) as humidity parameter.
3	**0...5V or 0...20 mA**	Set analog output channels to 0 ... 5 V (voltage output) or 0 ... 20 mA (current output)
	0...10V or 4...20 mA	Set analog output channels to 0 ... 10 V (voltage output) or 4 ... 20 mA (current output)
4	**Relay On**	Relay enabled.
	Relay Off	Relay disabled.
5	**Relay High**	Relay closed when above setpoint.
	Relay Low	Relay closed when below setpoint.
6	Not used	
7	Not used	
8	**Custom**	Configuration through service port only. Ignores all other DIP switch settings.
	DIP	Configuration by DIP switches only.

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Relay Setpoint

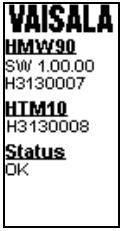
HMW93 and TMW93 have a rotary switch that sets the relay setpoint if the transmitter is in the DIP mode. The relay on the HMW93 is controlled by humidity (%RH), on the TMW93 it is controlled by temperature.

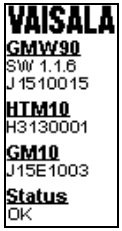
Rotary Switch Position	HMW93	TMW93
0	5 %RH	0 °C (32 °F)
1	10 %RH	5 °C (41 °F)
2	20 %RH	10 °C (50 °F)
3	30 %RH	15 °C (59 °F)
4	40 %RH	20 °C (68 °F)
5	50 %RH	25 °C (77 °F)
6	60 %RH	30 °C (86 °F)
7	70 %RH	35 °C (95 °F)
8	80 %RH	40 °C (104 °F)
9	90 %RH	45 °C (113 °F)

The rotary switch only has 10 positions.
Do not turn the switch so that it is between two positions.

Other settings are possible using service port commands. For a detailed description, see the HMW90 series User's Guide.

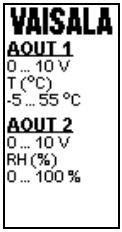
Transmitter Startup

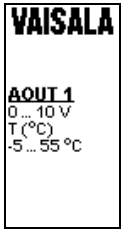




When the transmitter is powered on, it displays a sequence of information screens. The screens are shown for a few seconds each.

The first screen identifies the transmitter and the connected measurement modules, and shows if the transmitter is operating normally (status OK) or if there is an error (status ERROR).





The following screen(s) show the configuration of the analog output channels and pressure compensation setting for CO_2 measurement (GMW models).

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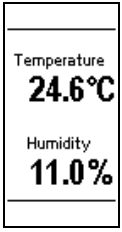
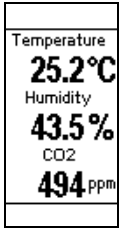


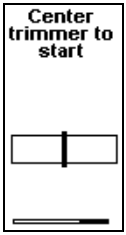


After the startup screens the transmitter shows the measurement screen. It shows the measured parameters and currently active indicators.

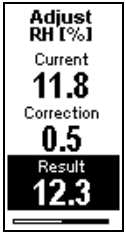
It is normal for CO_2 measurement to read 0 ppm for a few seconds after the startup.

Trimmer Adjustment (RH and T)

Before starting the adjustment, compare the reading of the transmitter to a calibrated reference instrument so you know how much adjustment is needed. You can use, for example, the HM70 hand-held humidity and temperature meter.



To enter the adjustment screen, select the parameter to adjust, and rotate the RH or T trimmer slightly during normal measurement. If the trimmer is not centered, you see the trimmer centering screen first. Simply turn the trimmer to the center and wait for the progress bar to complete.



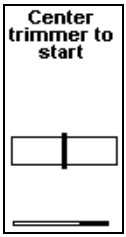
In the adjustment screen, turn the trimmer to set the desired correction. To commit the change, stop turning the trimmer and wait.

If you wish to apply a greater correction than allowed by the trimmer in a single adjustment, re-enter the adjustment screen and apply a new correction. Corrections applied using the trimmers are cumulative.

Trimmer Adjustment (CO_2)

Transmitter models with CO_2 measurement have an inlet for calibration gas. Supply the calibration gas with a known concentration (for example, 1000 ppm) to this inlet using a 3 mm inner diameter silicone tube and a 0.4 l/min flow.

Turn on the gas flow and wait for three minutes for measurement to stabilize.
If you are adjusting without calibration gas, avoid breathing on the transmitter.
You should only adjust the transmitter when the CO_2 reading is stable.



Rotate the CO_2 trimmer slightly during normal measurement. If the trimmer is not centered, you see the trimmer centering screen first. Simply turn the trimmer to the center and wait for the progress bar to complete.

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In the adjustment screen, turn the trimmer to set the desired correction. To commit the change, stop turning the trimmer and wait. The transmitter will show with a text screen if the adjustment was successful, or failed due to an unstable CO_2 reading.

As with the RH and T adjustment, repeated trimmer adjustments are cumulative. Wait for a few minutes between adjustments to allow the CO_2 reading to stabilize.

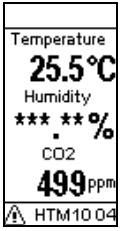
Indicators

MI70 connection indicator

Shown on top left of the screen if an MI70 Indicator is connected to the service port.

Alert indicator and error text

Shown on bottom of screen if there is an error active. Followed by an error text. If more than one error is active, the error text will cycle through the errors.



When the alert indicator and error text are shown, typically one or more measurement readings are replaced with stars. This means these measurements are affected by the error.

Errors

Error Type	Cause and Possible Solution
HTM10 error	Problem with HTM10 module. - Check that the module sits firmly in place. Remove and reconnect. - Check for missing or damaged HUMICAP® sensor. - Check for condensation on the HUMICAP® sensor. Wait for the sensor to dry out. - Replace the module if unable to remove the problem.
GM10 error	Problem with GM10 module. - Check that the module sits firmly in place. Remove and reconnect. - Check that supply voltage is in range. - Replace the module if unable to remove the problem.
Internal error	Internal problem with the transmitter. - Restart the transmitter. - Restore the factory settings using service port if reset does not help. - Contact helpdesk@vaisala.com if unable to remove the problem.

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