AT-VLI-106DRS

Quick start Manual

ATAL B.V.
Ampèrestraat 35-37
NL-1446 TR PURMEREND

Postbus 783
NL-1440 AT PURMEREND

T (+31) 0299 630 610
F (+31) 0299 630 611

E info@atal.nl
I www.atal.nl

PRODUCT DESCRIPTION

Programmable transmitters with RS232 or RS485 serial interface are designed for measurement of temperature and relative humidity of air and for measurement of CO_2 concentration in air. Transmitters can be used in a chemical non-aggressive environment.

The CO_2 concentration is measured using the maintenance free sensor. The unique patented auto-calibration procedure compensates aging of the sensing element and guarantees outstanding high reliability and long-term stability.

Digital conception with microprocessor allows to determine the other computed humidity values, like dew point temperature, absolute humidity, specific humidity, mixing ratio and specific enthalpy. Measured and calculated values are displayed on a two-line LCD display. The visual indication of the CO_2 concentration is provided by three-color LED. Devices support Modbus RTU protocol, protocol compatible with standard Advantech-ADAM, ARION protocol and communication with HWg-Poseidon devices. For setting of all parameters including limits of CO_2 LED indication you can use *TSensor* software (see *www.atal.nl*).

Durable plastic case from ABS contains electronic and connection terminals. For easy connection/disconnection of the output cable is used AT-VLI-10XXXL version with Lumberg connector (IP67) instead of a cable glands.

type *	output	measured values	construction	mounting	galvanic isolated output
AT-VLI-101DRS232	RS232	CO_2	ambient air	wall	no
AT-VLI-101DRS	RS485	CO_2	ambient air	wall	yes
AT-VLI-104DRS232	RS232	CO_2	probe on cable	wall	no
AT-VLI-104DRS	RS485	CO_2	probe on cable	wall	yes
AT-VLI-102DRS232	RS232	T + RH + CO_2 + CV	ambient air	wall	no
AT-VLI-102DRS	RS485	T + RH + CO_2 + CV	ambient air	wall	yes
AT-VLI-106DRS232	RS232	T + RH + CO_2 + CV	probes on cable	wall	no
AT-VLI-106DRS	RS485	T + RH + CO_2 + CV	probes on cable	wall	yes

AT-VLI-10XXX**Z** are custom - specified devices

T…temperature, RH…relative humidity, CO_2…concentration CO_2 in air, CV…computed values

INSTALATION AND OPERATION

Attach the transmitter on a flat surface with two screws or bolts. Pay attention to mounting of the devices and probes, because incorrect choice of working position or measuring point could adversely affect accuracy and long-term stability of measured values.

The transmitters AT-VLI-10XDRS232 with serial interface RS232 are supplied with communication cable equipped with connector. For connection of transmitters AT-VLI-10XDRS with RS485 output there is recommended to use shielded twisted cable with maximal length 1200 m. The cable must be located at indoor rooms.

The connecting terminals are accessible after unscrewing the four screws in the corners of transmitter and removing the lid. The cables (external diameter 3 to 6.5 mm) with wire cross-section from 0.14 to 1.5 mm^2 pass through the released glands and connect wires according to diagram. Tighten glands and screw the lid. For AT-VLI-10XXXL devices connection it is recommended to use shielded cable (external diameter 3 to 6.5 mm) with wire cross-section max. 0.75 mm^2. All cables should be located as far as possible from potential interference sources.

After switching the device starts internal test. During this time (about 20 s) LCD display shows **----** instead of CO_2 concentration value.

Devices don't require special maintenance. We recommend you periodical calibration for validation of measurement accuracy.

COMMUNICATION PROTOCOLS AND ERROR STATES

Description of communication protocols you can download from *www.atal.nl* . Device setting from the manufacturer is **ModBus RTU**, address **1**, communication speed **9600 Bd** (no parity, 2 stop bits).

Device continuously checks its state during operation and if an error appears, it is displayed relevant code: **Err 1** - measured value (except the CO_2 concentration) or calculated value is over the upper limit, **Err 2** - measured or calculated value is below the lower limit or CO_2 concentration measurement error occurred, **Err 0, Err 3** and **Err 4** - it is a serious error, please contact distributor of the device.

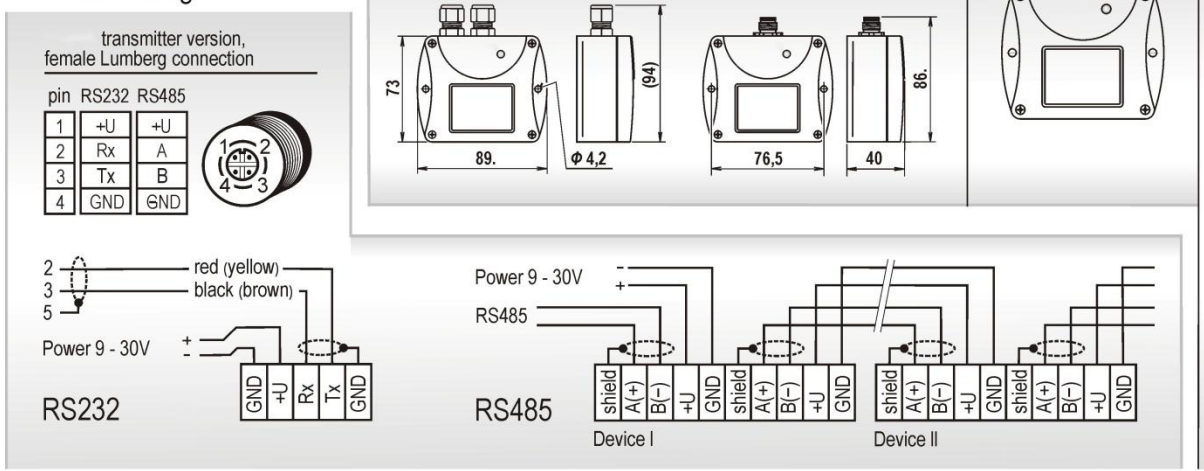
SAFETY INSTRUCTIONS

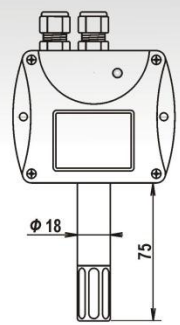
- Don't use and don't store the relative humidity probe without a sensor cover.
- Temperature and humidity sensors have not to be exposed to direct contact with water and other liquids.
- It is not recommended to use the humidity transmitters for long time under condensation conditions.
- Take care when unscrewing the filter cap as the sensor element could be damaged.
- The regulator must be turned on for at least 24 hours in order to start the automatic calibration of the CO_2 sensor
- Don't connect or disconnect transmitter while power supply voltage is on.
- Installation, electrical connection and commissioning should be performed by qualified personnel only.
- Devices contain electronic components, it needs to liquidate them according to legal requirements.

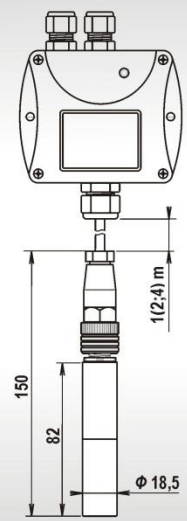
Technical specifications

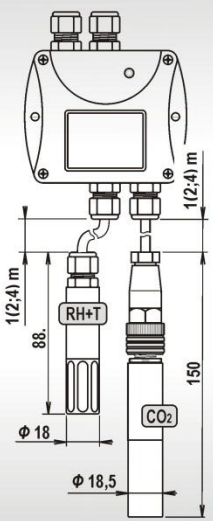
RS232	AT-VLI-101DRS232	AT-VLI-102DRS232	AT-VLI-104DRS232	AT-VLI-106DRS232
RS485	AT-VLI-101DRS	AT-VLI-102DRS	AT-VLI-104DRS	AT-VLI-106DRS
Supply voltage / power consumption	9 - 30Vdc / 1W	9 - 30Vdc / 1W	9 - 30Vdc / 1W	9 - 30Vdc / 1W
Temperature measuring range	—	-30 to +80 °C	—	-30 to +105 °C
Accuracy of temperature measurement	—	± 0.4°C	—	± 0.4°C
Relative humidity (RH) measuring range *	—	0 to 100 %RH	—	0 to 100 %RH
Accuracy of humidity measurement from 5 to 95 %RH at 23°C	—	± 2.5 %RH	—	± 2.5 %RH
CO_2 concentration measuring range **	0 to 2000 ppm	0 to 2000 ppm	0 to 10 000 ppm	0 to 10 000 ppm
Accuracy of CO_2 concentration measurement at 25°C and 1013 hPa	± (50ppm+2% of measured value)	± (50ppm+2% of measured value)	± (100ppm+5% of measured value)	± (100ppm+5% of measured value)
Temperature dependence of CO_2 concentration measurement at 0 to 50°C	typ. 2 ppm CO_2 /°C	typ. 2 ppm CO_2 /°C	typ. 2 ppm CO_2 /°C	typ. 2 ppm CO_2 /°C
Other calculated humidity variables	—	yes	—	yes
Recomended calibration interval - relative humidity / temperature / CO_2	— / — / 5 years	1 year / 2 years / 5 years	— / — / 5 years	1 year / 2 years / 5 years
Protection class - case with elektronics / measuring end of stem / CO_2 probe / RH+T probe	IP30 / — / — / —	IP30 / IP40 / — / —	IP65 / — / IP65 / —	IP65 / — / IP65 / IP40
Temperature operating range of the case with electronics ***	-30 to +60°C	-30 to +60°C	-30 to +80°C	-30 to +80°C
Temperature operating range of the measuring end of stem	—	-30 to +80°C	—	—
Temperature operating range of the CO_2 external probe	—	—	-40 to +60°C	-40 to +60°C
Temperature operating range of the RH+T external probe	—	—	—	-30 to +105°C
Humidity operating range (no condensation)	5 to 95%RH	5 to 95%RH	0 to 100%RH	0 to 100%RH
Atmospheric pressure operating range	850 to 1100 hPa	850 to 1100 hPa	850 to 1100 hPa	850 to 1100 hPa
Mounting position	cable glands upwards	sensor cover downwards	any position	any position
Storage temperature range (5 to 95%RH, no condensation, atmospheric pressure 700 to 1100 hPa)	-40 to +60°C	-40 to +60°C	-40 to +60°C	-40 to +60°C
Electromagnetic compatibility according to	EN 61326-1 EN 55011	EN 61326-1 EN 55011	EN 61326-1 EN 55011	EN 61326-1 EN 55011
Weight of the device without RS232 communication cable (weight of the cable is 70g)	150g	160g	250 (280, 340) g	330 (400, 540) g
Dimensions [mm]				

Electrical wiring









* The relative humidity measuring range is limited at temperatures above 85°C, see manuals for devices.
** LED indication (preset by manufacturer): **green** (0 to 1000 ppm), **yellow** (1000 to 1200 ppm), **red** (1200 to 2000/10000 ppm).
*** It is recomended to switch off the LCD display at ambient temperature above 70°C.