Process Sensing HF5A Series Humidity Transmitter Instruction Manual

Contents

Process Sensing HF5A Series Humidity Transmitter

Specifications

- **Product:** HygroFlexAdvanced 5-Series
- **Type:** Analog & Digital Transmitter for Humidity and Temperature
- **Version:** Wall Version
- **Compatible with:** HC2A probes

Product Usage Instructions

The HygroFlexAdvanced 5-Series devices are universal transmitters for transmitting humidity and temperature measurements. The main functions and installation are described in these short instructions. For detailed instructions, visit ProcessSensing.com or scan the QR code.

- Dimensions: 134mm x 29mm x 45mm
- Connections: Refer to the provided diagram for detailed connection information.
- Relative humidity is temperature-dependent. Follow these guidelines for optimum performance:
- Select a representative installation site.
- Ensure sufficient air movement around the probe.
- Avoid placing the probe too close to certain elements or in unstable pressure conditions.
- Insert the probe as far as possible into the environment to be measured.
- Avoid accumulation of condensation at the sensor wires.
- Mount the transmitter so that the probe points down. Follow the provided mounting instructions.
- Use an extension cable and mounting flange if needed to install the standard probe correctly.

- Use a mounting flange to install the industrial probe accurately into the environment to be measured.
- The HygroFlexAdvanced 5-Series HF5A-3 and HF5A-D can be used as a 3-wire or galvanically isolated 4-wire setup. Use Jumper J1 to select between the two options.

FAQ

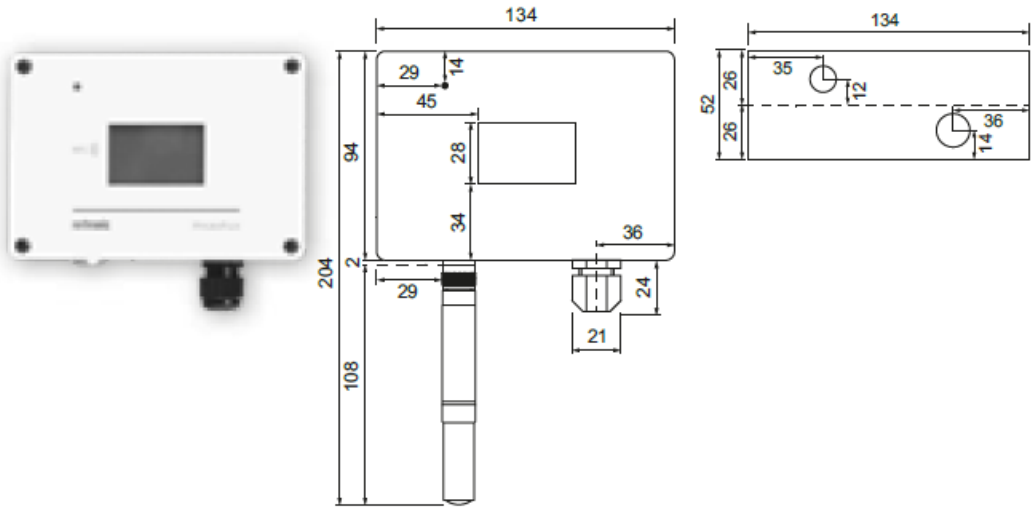
- **Q:** Where can I find the detailed instruction manual?
- **A:** You can find the detailed instruction manual on **ProcessSensing.com** or by scanning the QR code provided.
- **Q:** What should I do if the probe accumulates condensation at the contact wires?
- **A:** Install the probe so that the tip points down to avoid accumulation of condensation at the contact wires. If that is not possible, install it in a horizontal position.
- **Q:** Can I mount the transmitter in any orientation?
- **A:** Mount the transmitter so that the probe points down for accurate measurements.

Analog & Digital transmitter for humidity and temperature Wall Version
Congratulations on your purchase of the new state-of-the-art HygroFlexAdvanced 5-Series transmitter. Please read these short instructions carefully before installing the device.

GENERAL DESCRIPTION

- The HygroFlexAdvanced 5-Series devices are universal transmitters for the transmission of humidity and temperature measurements.
- Compatible with all interchangeable HC2A probes. These short instructions are limited to a description of the main functions and installation of the device. The detailed instruction manual can be found on **ProcessSensing.com** or by scanning the QR code.

DIMENSIONS / CONNECTIONS



MECHANICAL INSTALLATION

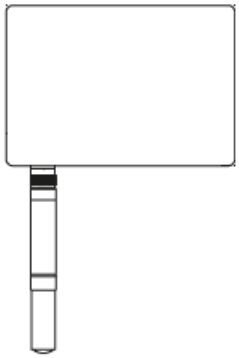
GENERAL RECOMMENDATIONS

Relative humidity is extremely temperature-dependent. To measure it precisely, the probe and sensors must be set exactly to the temperature level of the environment to be measured. The installation site can therefore have a significant influence on the performance of the device. Follow the guidelines below to ensure optimum performance:

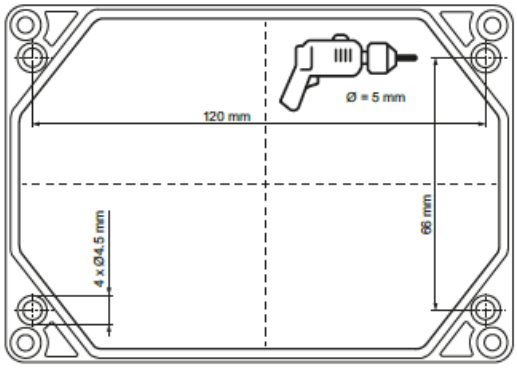
- Select a representative installation site: Install the probe at a point where the humidity, temperature and pressure conditions are representative for the environment to be measured.
- Ensure sufficient air movement around the probe: An airflow of at least 1 meter/second accelerates and facilitates adjustment of the probe to changing temperatures.
- Avoid:
  - Probe too close to heating elements, cooling coils, cold or hot walls, direct sunlight, etc.
  - Probe too close to steam, injectors, humidifiers or direct precipitation.
  - Unstable pressure conditions with high air turbulence.
- Insert the probes as far as possible into the environment to be measured.
- Avoid accumulation of condensation at the contact wires of the sensor. Install the probe so that the tip points down. If that is not possible, install it in a horizontal position.

MOUNTING THE WALL VERSION

Alignment
Mount the transmitter so that the probe points down.



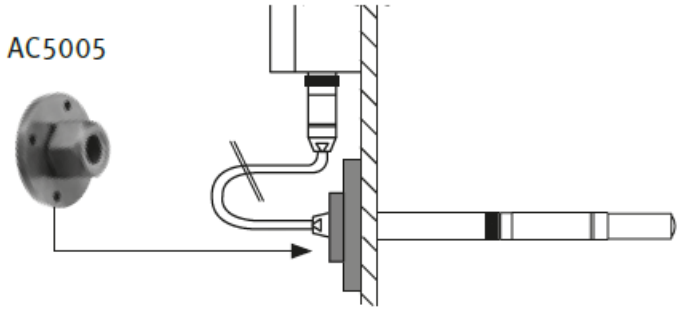
Mounting variant 1 (Drilling Plate)
Drill the necessary holes using the additional drill template printed on the packaging. Then insert the plugs delivered with the device and mount the transmitter with the screws.



MOUNTING THE WALL VERSION WITH A STANDARD PROBE

- To avoid measurement errors, the probe should be inserted into the environment to be measured.
- If necessary, use the respective extension cable and mounting flange to install the standard probe:

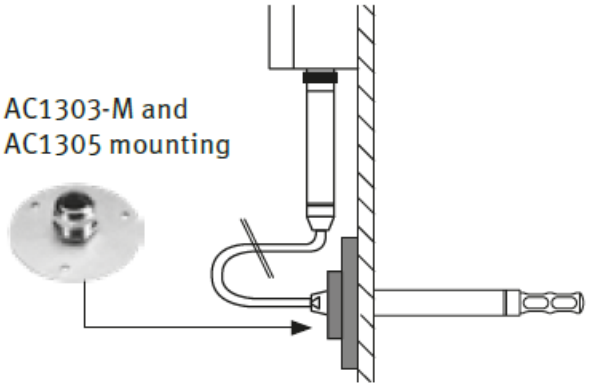
Mounting flange	Probe diameter	Temperature range
AC5005	15 mm	100 °C



MOUNTING THE WALL VERSION WITH AN INDUSTRIAL PROBE

To avoid measurement errors, the probe should be inserted into the environment to be measured. If necessary, use the mounting flange to install the industrial probe:

Mounting flange	Probe diameter	Temperature range
AC1305 (AC1303-M)	15 mm	200 °C



ELECTRICAL INSTALLATIONS

3-OR 4-WIRE SETUP

- The new HygroFlexAdvanced 5-Series HF5A-3 and HF5A-D can be used as a 3-wire and galvanically isolated 4-wire. The additional Jumper J1, located on the PCB and indicated in section 4.4, can be chosen over 3-wire or 4-wire.
- Default: 3-wire – J1 mounted, to change to 4-wire simply open up the transmitter and remove Jumper J1.
- Recommendation Rotronic: 4-wire galvanically separated with unmounted Jumper J1 – with the benefit that the power supply and the outputs are galvanically isolated.

SUPPLY VOLTAGE / TECHNOLOGY			
Type	**Supply voltage**	**Load**	**Output**
2- or 2×2-wire			
HF5A-2	18…36 VDC *	Max. 500 Ω	4…20 mA
3- or 4-wire: 3 wire – J1 mounted (Default) / 4 wire – Galvanically separated – J1 unmounted			
HF5A-3	18…36 VDC	Max. 500 Ω	4…20 mA **
		Max. 500 Ω	0…20 mA
		Min. 10 kΩ	0…5 V
		Min. 10 kΩ	0…10 V
HF5A-D		Max. 500 Ω	4…20 mA **
		Max. 500 Ω	0…20 mA
		Min. 10 kΩ	0…5 V
		Min. 10 kΩ	0…10 V
		–	Digital RS485

V min = 0.024 mA * Rload = 0.024 * 500Ω = 12 V ** ¾-wire Current Outputs: Output current monitoring from 100 Ω load guaranteed
Caution: Wrong supply voltages and excessively high loading of the outputs can damage the transmitter

CURRENT CONSUMPTION OUTPUT

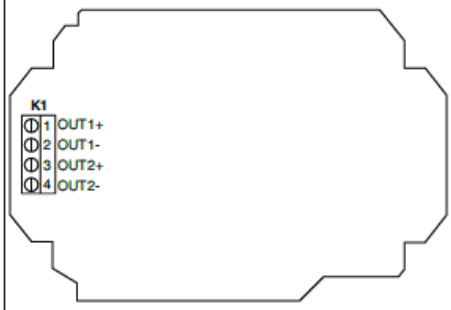
HF5A-2
When both outputs are connected, the maximum current consumption is 50 mA
HF5A-3/HF5A-D
When both outputs are connected, the maximum current is under 100 mA.

TERMINAL CONFIGURATION / CONNECTION DIAGRAMS

The type is defined using the table Supply Voltage / Technology to then use the following connection diagrams:

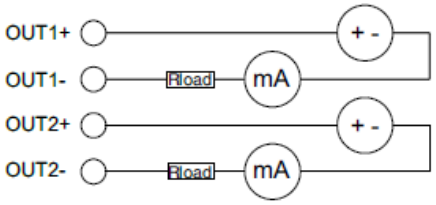
2- or 2x2-wire / HF5A-2

Terminal overview

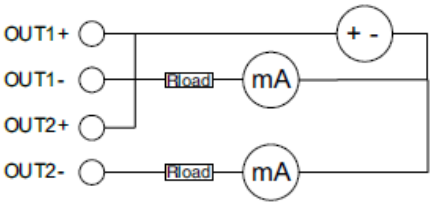


Connection diagram

Two separated power supply



One power supply

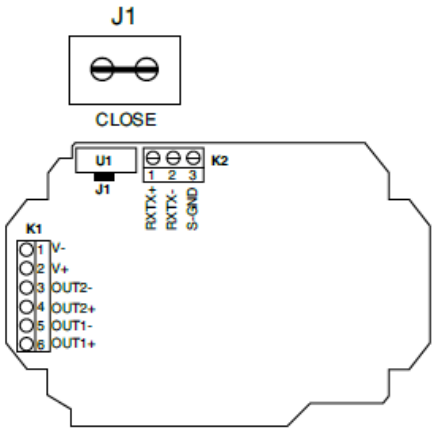


Recommendation: Two isolated power supplies – because the two output channels of the HF5A-2 are seperated galvanically isolated. Thus, the device (HF5A-2) and the accociated evaluation electronics for each output channel can be accomodated in separate rooms of a building.

Terminal	Description
K1-1-OUT1+	Power Supply +
K1-2-OUT1-	Analog Output1-
K1-3-OUT2+	Power Supply +
K1-4-OUT2-	Analog Output2-

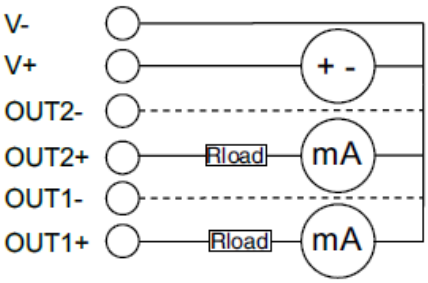
3 wire / HF5A-3 & HF5A-D (Default – J1 mounted)

Terminal overview

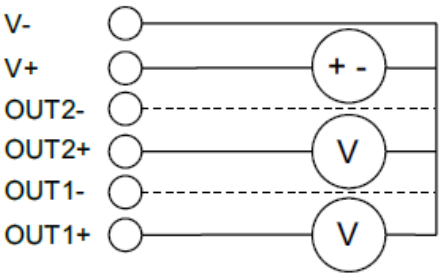


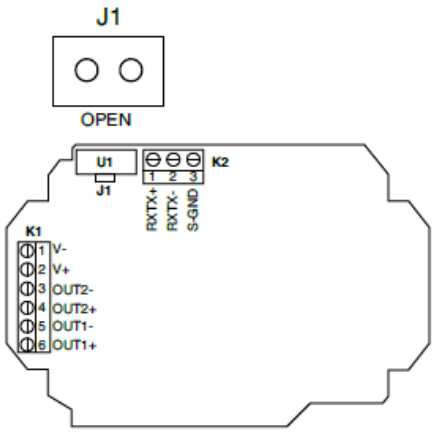
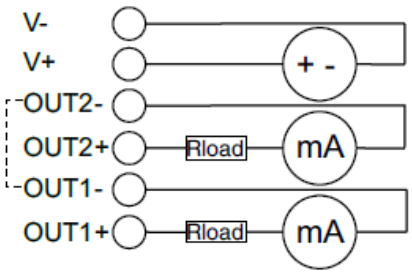
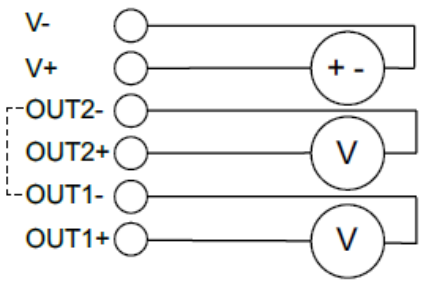
Connection diagram

Current



Voltage



4 wire / HF5A-3 & HF5A-D (J1 unmounted)		
Terminal overview	**Connection diagram**	
	Current	**Voltage**
		

Recommendation: 4 wire Galvanically seperated with unmounted Jumper J1 – with the benefit that the power supply and the outputs are separate galvanically isolated. Per default the Jumper J1 is mounted.

Terminal (HF5A-3 / HF5A-D)	Description
K1-1-V-	Power Supply -
K1-2-V+	Power Supply +
K1-3-OUT2-	Analog Output2-
K1-4-OUT2+	Analog Output2+
K1-5-OUT1-	Analog Output1-
K1-5-OUT1+	Analog Output1+
Terminal (HF5A-D) Digital	**Description**
K2-1-RXTX+	RS485+ (B)
K2-2-RXTX-	RS485- (A)
K2-3-S-GND	Signal Ground (-)

PROGRAMMING

- The basic settings of the devices are made in the factory. Customer-specific settings can be made via the HygroSoft software together with an NFC to USB interface.
- The HygroSoft software can be downloaded on the internet at: **ProcessSensing.com**.
- The NFC interface is not password protected and can be used with the necessary NFC-USB-READER and the HygroSoft software. Manipulations can be prevented using activation of the write protection function, which can be set in the HygroSoft software.

SCALING / FIRMWARE UPDATE / ADJUSTMENT

The following settings can be made with the help of the HygroSoft software and an NFC to USB interface:

- New scaling of the outputs
- Firmware update

- Adjustment of a mounted Probe

LED STATUS MODE
The HF5A has a mounted LED on the front of the transmitter to indicate the actual status of the transmitter. Per default the simple LED status mode is activated:

- Green = Normal operation
- Orange = Simulation mode activated
- Red = Alarm (Error)

Further information about the simple and detailed LED Status Mode can be found in the detailed HF5A manual (or by scanning the QR-Code).

PERIODIC CALIBRATION OF THE PROBE

- Both the probe and the corresponding electronics are very stable and do not normally need to be changed or calibrated after factory calibration. The long-term stability of the Rotronic Hygromer humidity probes is typically better than 1 %rh per year. For maximum accuracy, we recommend calibration of the probe about every 6 to 12 months.
- More frequent calibration can be necessary in applications where the sensor is exposed to pollutants. The calibration can be performed by the user himself on-site or in the laboratory/workshop. For routine calibrations, the probe should be checked at one or two points.

Technical data (Electronics operating range)	
Temperature	Models with display: -10…60 °C / without display: -40…70 °C
Humidity	0…100 %rh, non-condensing
Technical data (Mechanics)	
Housing	Bottom: ABS Top: PC
Technical data probe	
Depending on probe	

DELIVERY PACKAGE

- Transmitter HF5A
- Screws and dowels together with drill template
- Functional certificate
- Additional type plates and QR plates

ProcessSensing.com. Rotronic.com.

Documents / Resources

	**Process Sensing HF5A Series Humidity Transmitter** [pdf] Instruction Manual HF5A SERIES, HF5A Series Humidity Transmitter, HF5A Series, Humidity Transmitter, Transmitter

References

- One moment, please...
- User Manual