INSTRUCTION MANUAL

DEWCom II Transmitter

2-wire Programable 4-20mA

STORK
INSTRUMENTS

For more information contact our office.

Table of contents

Safety

The manufacturer has designed this equipment to be safe when operated using the procedures detailed in this manual. The user must not use this equipment for any other purpose than that stated. Do not apply values greater than the maximum value stated. This manual contains operating and safety instructions, which must be followed to ensure the safe operation and to maintain the equipment in a safe condition. The safety instructions are either warnings or cautions issued to protect the user and the equipment from injury or damage. Use competent personnel using good engineering practice for all procedures in this manual.

Electrical safety

The instrument is designed with the best engineering practice to be ESD safe when used with options and accessories supplied by the manufacturer for use with the instrument. Device supplied by a Limited Power Source (LPS) meeting the requirements SELV (OCV I). Power supplies fall into III protection classes. The item should be installed in indoor installations or laboratories (pollution degree 2) in dry location. Due to the environmental conditions of the device's workplace, the altitude must not exceed 2000 m above sea level.

Pressure safety

DO NOT permit pressures greater than the safe working pressure to be applied to the instrument. Refer to the Technical Specifications.

Toxic Materials

The presence of hazardous materials in the construction of this instrument has been minimized. Under normal operating conditions, users will not come into contact with any potentially hazardous substances used in its manufacture. However, caution should be exercised during disposing of specific components.

Repair and Maintenance

The maintenance of the device should be carried out exclusively by the manufacturer or its authorized representatives worldwide. Detailed contact information for STORK Instruments can be found on the website: www.storkinstruments.eu.

Calibration

The recommended calibration interval for this device is 12 months unless otherwise specified by STORK Instruments. If the sensor is used in critical applications or exposed to contaminated environments, the calibration interval should be adjusted accordingly. For recalibration, the device should be returned to STORK Instruments or its authorized representatives worldwide. Contact details can be found at: www.storkinstruments.eu.

Safety Conformity

This product complies with the essential protection requirements outlined in the applicable EU, UK, and US standards and directives.

Abbreviations

The following abbreviations are used in this manual:

barg	pressure unit
°C	degrees Celsius
m	meters
mm	millimetres
mm2	millimetres square
V	Volts
V DC	Volts direct current
T	temperature
mA	milliampere
Ω	Ohms
Nl/min	normal liters per minute
m/sec	meters per second
Nm	Newton meter
g	grams
ø	diameter

1. Introduction

The DEWCom II dewpoint transmitter has been manufactured, tested and calibrated to the highest available standards and should be in good working order, ready for installation into a gas measurement application. If there are any questions about the instrument or how to install and operate it, please contact a STORK Instruments representative.

The DEWCom II transmitter is available with the following process connections:

- 5/8" – 18 UNF

The DEWCom II is offered with a choice of electrical connection options.

- DIN 43650 Form C
- M8 4-pin

Figure 1. Options DIN 43650 Form C

Figure 2. Options M8 4-pin

1.1. Features

The DEWCom II is a continuous on line 4-20mA 2-wire dewpoint transmitter for the measurement of moisture content in air and other non-corrosive gases. The key features are:

- Bi-Ceramic Impedance Detector
- Precise 4-20mA transmitter (2-wire)
- Wide 10-28V DC power voltage range
- Durable construction
- Configurable range
- Multiple housing and filter options
- Internal diagnostics system
- Calibration certificate

2. Installation

2.1. Unpacking the DEWCom II Transmitter

On delivery, please check that all the following standard components are in the packing box:

- DEWCom II Transmitter
- Shipping guard
- Molecular Sieve capsule
- Certificate of Calibration
- Connector (for transmitter/cable)
- Viton O-ring seal
- Manual

2.2. DEWCom II Transmitter explanation

Below are located the construction elements of the transmitter, along with their respective descriptions and locations.

Please note that the sensing element of the transmitter is shown for illustration purposes only. One of the STORK Instruments approved sensor guards should, remain fitted at all times.

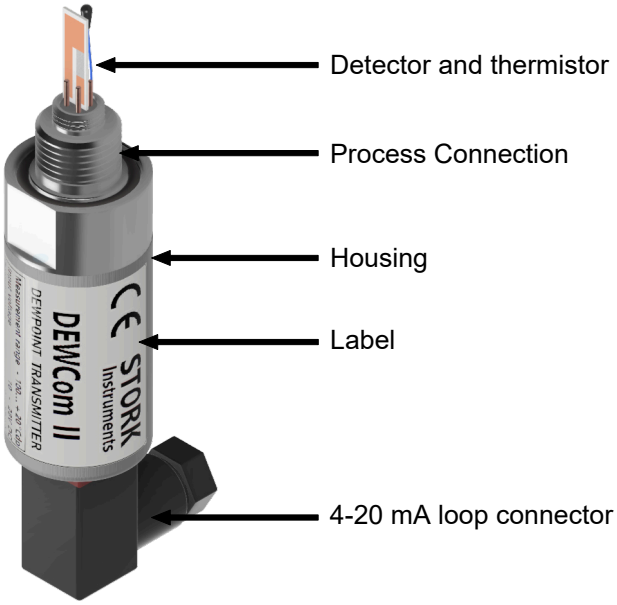


Figure 3. Elements of DEWCom

2.3. DEWCom II DIN 43650 Connector version

The following sections are applicable only to the transmitter version with a DIN 43650 connector.

Figure 5. Options DIN 43650 Form C

2.3.1. Electrical connections DIN 43650

Figure 6. Electrical connections

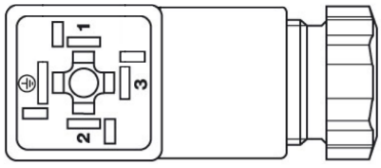


Figure 7. DIN 43650 4-pin

Connector pin	Function
1	4...20 mA Signal Return
2	Not connected
3	Power Supply
GND	Not connected

Warning: The sensor must be operated with the 4...20 mA signal return connected to an appropriate load or negative power supply connection. Failure to connect this pin may cause damage to the transmitter. Please refer to the wiring schematics provided later in this document for connection examples.

2.3.2. Sensor cable Self-Assembly

1. Remove the screw located at the rear of the DIN connector housing.
2. Using a small screwdriver, lever the terminal block from the connector housing by inserting it into the notch on the front face of the terminal block.
3. Ensure that the small sealing O-ring and washer are retained with the screw.

Figure 8. DIN 43650 4-pin

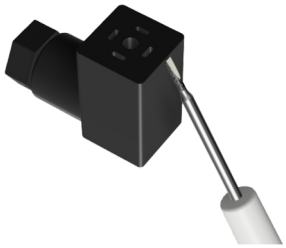


Figure 9. DIN 43650 4-pin

2.4. DEWCom II M8 Connector version

The following sections are applicable only to the transmitter version with an M8 connector.

Figure 10. Options M8 4-pin

2.4.1. Electrical connections M8

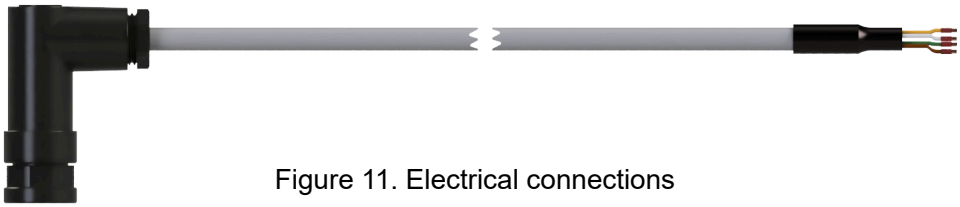


Figure 11. Electrical connections

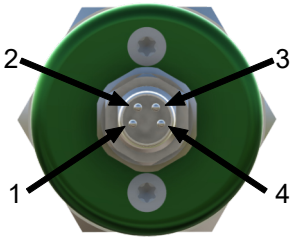


Figure 12. M8 4-pin

Connector pin	Function
1	Power Supply
2	4...20 mA Signal Return
3	Not connected
4	Not connected

Warning: The sensor must be operated with the 4...20 mA signal return connected to an appropriate load or negative power supply connection. Failure to connect this pin may cause damage to the transmitter. Please refer to the wiring schematics provided later in this document for connection examples.

2.5. Electrical schematic

NOTE: The screen/shield should be connected at the distant end of connecting cable for best performance to avoid electromagnetic and electrical interference
Example: Connecting the transmitter using an external power supply to provide the excitation voltage

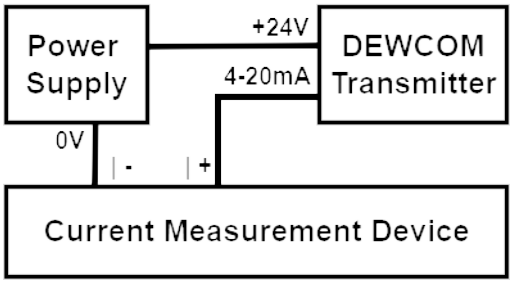


Figure 13. Electrical schematic

2.6. Cable selection for Self-Assembled Cables

The transmitter cable is NOT supplied as standard. A cable can be obtained by contacting STORK Instruments. Cable connection to the DEWCom transmitter is made via the removable connector. Removing the central screw enables the connector terminal block to be removed from the outer housing by using a small screwdriver to lift it clear. A four-conductor shielded cable is recommended. For short cable runs, a cable with individual conductors sized at 0.25 mm² is typically selected. For longer runs, however, a cable with larger conductors may be required to maintain the loop resistance within permissible limits. The table below provides the maximum allowable loop resistance as a function of the supply voltage to facilitate cable selection.

2.7. Maximum Loop Resistance vs Loop Power Supply Voltage

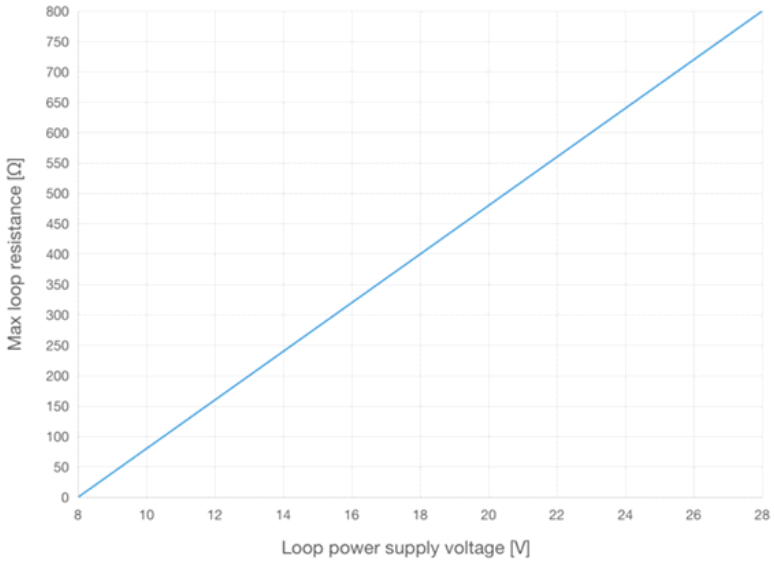


Figure 14. Maximum loop resistance vs Loop power supply voltage

Please note that when calculating loop resistance, the resistance of the entire cable loop must be taken into account.

2.8. Transmitter Mounting 5/8” 18 UNF

Prior to installation of the transmitter, unscrew and remove the black plastic shipping guard and retain for purposes of re-calibration or servicing. The transmitter detector element is protected by a filter guard. According to customer choice this may be a sinteres HDPE guard, singteres stainless guard or an perforated stainless steel guard. Avoid finger contact with the filter-guard. The DEWCom can be mounted in either a flow-through transmitter sampling block (optional) or directly inserted into a pipe or duct. The recommended gas flow rate, when mounted in the optional sampling block, is 0.2 to 5 Nl/min. However, for direct insertion applications, the permitted gas velocity is 0-10 m/sec.

NOTE: Install the transmitter by screwing into its location by the 5/8”- 18 UNF mounting thread using a spanner on the hexagonal flats only. DO NOT grip and twist the transmitter by its cylindrical body when installing. Tighten the transmitter to a torque setting of 30Nm.

1. Remove the protective cover and desiccant capsule from the transmitter and store them for future use.
2. To prevent any contamination of the sensor before installation, handle the transmitter only by its main body, avoiding contact with the sensor guard.
3. Slide the viton O-ring seal above the 5/8”-18 UNF mounting thread.
4. Manually screw the transmitter into the sampling location or sample block, using only the spanner flats.
5. Once installed, fully tighten it to a torque setting of 30Nm.

2.9. Transmitter Mounting - Sampling Block (Optional)

The following procedure must be carried out by a qualified installation technician.
To mount the transmitter into the sampling block proceed as follows:

1. Insure that the black plastic shipping guard has been removed from the probe and of the transmitter. Under no circumstances should the guard be handled with the fingers.
2. Screw the transmitter into the sampling block and tighten to a minimum torque settings of 30Nm using the flats of the haxagonal nut and not the transmitter’s cylindrical body.
3. Attach the transmitter cable/connector assembly to the plug located on the base of the transmitter and tighten the retaining screw.

The sample gas connections are made to the Gas In and Gas Out ports on the sample block. Any port on the sample block can be used as the gas input port. Connections are made using either stainless steel or thick walled PTFE tubing. Any other tubing material may cause reading errors.

Figure 15. Transmitter Mounting - Sampling Block

2.10. Transmitter Mounting - Direct to pipe or duct (Optional)

The transmitter may be directly mounted into a pipe or duct.
Do not mount the transmitter too close to the bottom of a bend where any condensate in the pipeline might collect and saturate the probe. The pipe or duct will require a thread to match the transmitter body thread. For circular pipework, to insure the integrity of a gas tight seal, a mounting flange will be required on the pipe in order to provide a flat surface to seal against. The following procedure must be carried out by competent personnel.

1. Insure that the black plastic shipping guard has been removed from the probe end of the transmitter. Under no circumstances should the filter-guard be handled with the fingers.
2. Screw the transmitter into the pipe with torque of 30Nm.
   NOTE: Do not overtighten or the thread on the pipe may be stripped.

To install the transmitter in the sensor block, follow the diagram below.

Figure 16. Remove the transportation guard

Figure 17. Transmitter Mounting - Direct to pipe

Figure 18. Transmitter Mounting - Direct to pipe

2.11. Transmitter Mounting - With Additional Adapter (Optional)

The following procedure must be carried out by a qualified installation technician.
To install the G3/4'' adapter in the transmitter, the following steps must be performed.

1. Remove the protective cover and the moisture-absorbing capsule from the shipping guard.
2. Install the viton O-ring onto the top of the threaded part of the transmitter body.
3. Screw the adapter into the transmitter's threaded part and secure it tightly - 40 Nm.
4. Securely screw the transmitter, along with its O-ring seal and adapter, into the sample block or pipeline. Fully tighten it using a spanner until the seal is completely compressed.

Figure 19. Transmitter Mounting - Direct to pipe

3. Operation

Operation is very simple assuming the aforementioned installation techniques are adhered to:

3.1. Sampling Hints

Be Sure the Sample is Representative of the Gas Under Test:
The sample point should be as close to the critical measurement point as possible. Also, never sample from the bottom of a pipe as entrained liquids may contaminate the detector element.
The determination of moisture content is a complex subject; however, it does not have to be challenging. This section seeks to outline common errors that occur in measurement processes, identify their root causes, and provide guidance on how to prevent them. Inaccurate practices and procedural mistakes can lead to deviations from expected results; therefore, implementing a precise and effective sampling technique is essential for obtaining accurate and reliable measurements.
All materials exhibit permeability to water vapor, as water molecules are exceptionally small in comparison to the structure of solids, including the crystalline structure of metals. The graph above illustrates the dew point within tubing composed of various materials when exposed to a purge of extremely dry gas, while the exterior remains in ambient environmental conditions. Many materials inherently retain moisture within their structure, particularly organic substances (both natural and synthetic), salts (or materials containing them), and those with small pores. Ensuring the suitability of materials for a given application is crucial. If the partial pressure of water vapor outside a compressed air line exceeds that inside, atmospheric water vapor will naturally diffuse through the porous medium, leading to migration into the pressurized air line - a phenomenon known as transpiration.

3.2. Minimize Dead Space in Sample Lines

Dead space causes moisture entrapment points, increased system response times and measurement errors, as a result of the trapped moisture being released into the passing sample gas and causing an increase in pmoistureartial vapor pressure.

3.3. Remove Any Particulate Matter or Oil from the Gas Sample

Particulate matter at high velocity can damage the transmitter detector element and similarly, at low velocity, may 'blind' it and reduce its response speed. If particulate, such as degraded desiccant, pipe scale or rust is present in the sample gas, use an in-line filter, as a minimum level of protection.

3.4. Use High Quality Sample Tube and Fittings

STORK Instruments recommends that, wherever possible, stainless steel tubing and fittings should be used. This is particularly important at low dew points since all materials have hygroscopic properties and adsorb moisture on the tube walls, slowing down response and, in extreme circumstances, giving false readings. Stainless steel has the lowest hygroscopic properties of any material. For temporary applications, or where stainless steel tubing is not practical, use high quality thick walled PTFE tubing. No other plastic tube material is suitable!

3.5. Position Transmitter away from Heat Source

It is recommended, as good instrumentation practice, that the transmitter be placed away from any heat source to avoid adsorption/desorption of water vapor in the sampling system.

4. Maintenance

Routine maintenance of the DEWCom II transmitter is limited to periodic recalibration. For most applications, an annual recalibration ensures the transmitter's specified accuracy is maintained. Calibration services are provided by STORK Instruments at its accredited calibration laboratories. The DEWCom II transmitter may be returned to STORK Instruments either directly or through an authorized distributor for calibration. Whenever possible, the transmitter should be packaged in its original packaging and sent to STORK Instruments directly or via an authorized distributor.

4.1. Sensor Guard Replacement

The sensor is supplied with a white HDPE guard (standard) or a stainless steel guard (if specified at time or order). The sensor guard should be replaced if the surface shows any damage or signs of discoloration. When replacing a guard, make sure to wear clean disposable gloves, and handle by the threaded base section only. Replacement HDPE or stainless steel guards can be ordered from your STORK Instruments representative.

Figure 20. Replacement of filter

4.2. Cleaning

If the filter becomes dirty, replace it with a new one.

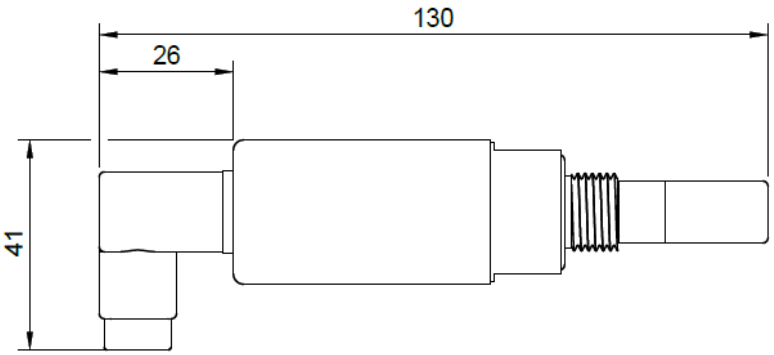
4.3. Calibration

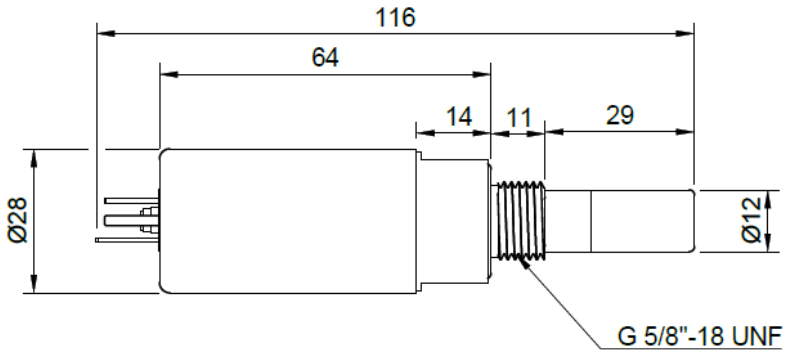
Routine maintenance of the DEWCom is confined to regular re-calibration by exposure of the DEWCom to sample gases of known moisture content to ensure that the stated accuracy of the DEWCom is maintained. Calibration services traceable to international standards are provided by STORK Instruments and by other calibration laboratories.

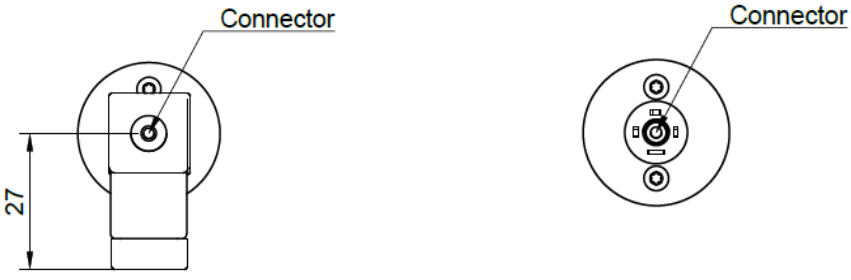
STORK Instruments offers a variety of re-calibration and exchange transmitter programs to suit specific needs. A STORK representative can provide detailed, custom advice.

5. Dimensions

5.1. Dimensions - DEWCom II DIN 43650 Connector version







5.2. Dimensions - DEWCom II M8 Connector version