Gas Analysis

Moisture detector FF3, FF-3-N and controller XR-411

Installation and Operation Instructions

Original instructions

BE410018
12/2024

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Read this instruction carefully prior to installation and/or use. Pay attention particularly to all advises and safety instructions to prevent injuries. Bühler Technologies can not be held responsible for misusing the product or unreliable function due to unauthorised modifications.

Document information
Document No.....BE410018
Version.....12/2024

Contents

1 Introduction

1.1 Intended use

In accordance with EN 60079-11, model FF-3 to FF-3-N moisture detectors are **simple electrical apparatuses without separate voltage source** which may be used to signal moisture in the gas flow of a sample gas conditioning system. With intrinsically safe connection the moisture detectors may be installed in explosive areas **Zone 1** (Group IIC, Category 2G). According to the conditions described in this manual, the apparatuses are classified as Temperature class T5.

The protective elements Type XR-411 are used to analyse moisture detector FF-3 or FF-3-N in explosive areas (Zone 1). This device allows moisture ingress in the sample gas detected by the moisture detector to be analysed and an alarm to be signaled. **WARNING! The protective element itself may not be installed in explosive areas.**

The equipment must be professionally installed, according to the corresponding safety regulations (e.g. EN 60079-14) and the operating instructions.

Before installing the moisture detector and protective elements, please check the technical data and application parameters specified in chapter Technical data as well as the attached data sheet. Also observe the applicable requirements of EN 60079-14.

Further check if all contents are complete.

Observe the specific equipment values when establishing the connection.

Please note: Proper functionality can only be guaranteed when using the specified moisture detector with protective element XR-411.

1.2 Scope of delivery

Moisture detector FF-3/FF-3-N	Controller XR-411
– Hose (blue), connecting line (optional)	– Product documentation
– Flat seal PTFE	
– Product documentation	

1.3 Product description

These operating- and installation instructions apply to moisture detector Type FF-3 or FF-3-N, and controllers XR-411. The moisture detectors signal moisture in the gas flow of a sample gas conditioning system. Here the electrodes separated by a gap are located inside the gas flow.

In accordance with EN 60079-11, moisture detector FF-3 or FF-3-N is a simple electrical apparatus without a separate voltage source. When **used in explosive areas, the moisture detector** may only be operated in **intrinsically safe electric circuits** (observe requirements of these instructions and EN 60079-14, as well as technical specifications). With an intrinsically safe connection (U_i = 15 V, I_i = 6 mA, P_i = 90 mW, C_i and L_i negligible), the humidity sensors can be installed in the hazardous area of zone 1, group IIC, category 2G. The operator is responsible for assessing the intrinsically safe electrical current (e.g. according to EN 60079-14).

Controller type XR-411 analyses moisture detector FF-3 FF-3-N in explosive areas (Zone 1). This device allows moisture ingress in the sample gas detected by the moisture detector to be analysed and an alarm to be signaled. The controller must be installed outside the explosive area.

2 Safety instructions

2.1 Important advice

This unit may only be used if:

- The product is being used under the conditions described in the operating- and installation instructions, used according to the nameplate and for applications for which it is intended. Any unauthorized modifications of the device will void the warranty provided by Bühler Technologies GmbH,
- Complying with the threshold values specified in the data sheet and the instructions,
- Equipment is operated in intrinsically safe electric circuits.
- The controller itself is installed outside the explosive area,
- Monitoring equipment / protection devices must be connected correctly,
- Service and repair work not described in these instructions are performed by Bühler Technologies GmbH,
- Using genuine replacement parts.
- Erecting electrical systems in explosive areas requires compliance with regulation EN 60079-14.
- Additional national regulations pertaining to initial operation, operation, maintenance, repairs and disposal must be observed.
- These operating instructions are a part of the equipment. The manufacturer reserves the right to change performance-, specification- or technical data without prior notice. Please keep these instructions for future reference.

Signal words for warnings

DANGER	Signal word for an imminent danger with high risk, resulting in severe injuries or death if not avoided.
WARNING	Signal word for a hazardous situation with medium risk, possibly resulting in severe injuries or death if not avoided.
CAUTION	Signal word for a hazardous situation with low risk, resulting in damaged to the device or the property or minor or medium injuries if not avoided.
NOTICE	Signal word for important information to the product.

Warning signs

These instructions include the following warnings:

	General warning sign		General mandatory sign
	Voltage warning		Unplug from mains
	Warning not to inhale toxic gases		Wear respiratory equipment
	Warning of corrosive substances		Wear a safety mask
	Warning of explosion hazard		Wear gloves

2.2 General hazard warnings

The equipment must be installed by a professional familiar with the safety requirements and risks.

Be sure to observe the safety regulations and generally applicable rules of technology relevant for the installation site. Prevent malfunctions and avoid personal injuries and property damage.

The operator of the system must ensure:

- Safety notices and operating instructions are available and observed,
- The respective national accident prevention regulations are observed,
- The permissible data and operational conditions are maintained,
- Safety guards are used and mandatory maintenance is performed,
- Legal regulations are observed during disposal,
- compliance with national installation regulations.

Maintenance, Repair

Please note during maintenance and repairs:

- Repairs to the unit must be performed by Bühler authorised personnel.
- Only perform conversion-, maintenance or installation work described in these operating and installation instructions.
- Always use genuine spare parts.
- Do not install damaged or defective spare part. If necessary, visually inspect prior to installation to determine any obvious damage to the spare parts.

Always observe the applicable safety and operating regulations in the respective country of use when performing any type of maintenance.

DANGER

Explosion hazard if used in hazardous areas

Moisture detector for potentially explosive atmospheres (hazardous areas) shall be used in **intrinsically safe electric circuits only**.
The requirements of EN 60079-14 and technical specifications in this instruction manual must be obeyed.
Install the controller shall be installed **outside** the hazardous area.

DANGER

Electrical voltage

Electrocution hazard.

a) Disconnect the device from power supply.
b) Make sure that the equipment cannot be reconnected to mains unintentionally.
c) The device must be opened by trained staff only.
d) Regard correct mains voltage.

DANGER

Toxic, corrosive gases

The measuring gas led through the equipment can be hazardous when breathing or touching it.

a) Check tightness of the measuring system before putting it into operation.
b) Take care that harmful gases are exhausted to a save place.
c) Before maintenance turn off the gas supply and make sure that it cannot be turned on unintentionally.
d) Protect yourself during maintenance against toxic / corrosive gases. Use suitable protective equipment.

3 Transport and storage

Only transport the product inside the original packaging or a suitable alternative.

The equipment must be protected from moisture and heat when not in use. It must be stored in a covered, dry and dust-free room at a temperature between -30 °C and +80 °C (-22 °F to 176 °F).

Outdoor storage is **prohibited**. In principle, the operator must meet all applicable standards with respect to preventing damage due to lightning, which could result in damage to the sample gas pump. In addition, direct sunlight must be prevented.

Storage areas must not contain any equipment generating ozone, e.g. fluorescent lighting, mercury vapour lamps, high-voltage electrical equipment.

4 Installation and connection

Check the equipment for damage before installation. Among other things, this could be a damaged housing, supply cables, etc.. Never use equipment with obvious damage.

CAUTION

Use appropriate tools

According to DIN EN 1127-1, the operator is responsible to select and use appropriate tools.

4.1 Installation site requirements

CAUTION

Damage to the device

Protect the equipment against dust, falling objects and external impacts.

Stroke of lightning

Outdoor installation is **forbidden**. As a matter of principle, the operator must regard all applicable standards according prevention of damage due to lightning, which may otherwise damage the device.

The controller is an integrated unit which may only be operated inside housing that adequately protects against contact with live or moving parts. Ingress of water and contaminants must be prevented.

The maximum ambient temperature (see Technical data [> page 14]) of the electrode relay must not be exceeded at the installation location.

4.2 Mounting

4.2.1 Mounting of moisture detector and adapter

The flow adapter has a female thread G1/4 or NPT1/4 (flow adapter marked NPT) for the gas connections and G1/4 for the moisture detector. Please refer to the attached data sheet for the assembly drawing. The fittings as well as the moisture detector must be screwed in gas tight, sealed with Teflon tape or sealant/flat gasket! Check for gas leaks after assembly. Please be sure to run the connection cable safely and without tension.

To ensure proper function of the moisture detector, do not touch the electrodes of the FF-3 or FF-3-N with bare hands.

If the sample gas flow may contain particles or aerosols, an appropriate filter must be installed before the moisture detector. Particles or aerosols could otherwise deposit on the moisture detector and impact or completely cancel its functionality.

The cable must NOT be run inside conduit along with switch cables, as these may interfere. Intrinsically safe electric circuits must be adequately separated from non-intrinsically safe electric circuits (e.g. according to EN 60079-11).

Place the blue tubing over the cable to mark the intrinsically safe equipment/electric circuits.

When extending the cable it must also be marked blue. Only extend with shielded cable which does not exceed the following data: Total resistivity 50 Ω; Interconnect capacitance 110 nF/km; max. length 70 m.

4.2.2 Mounting of controller

DANGER

Installation in potentially explosive atmospheres

The controller shall be installed **outside** the hazardous area. It is not allowed to operate the controller inside the hazardous area.

The controller XR-411 for the moisture detector FF-3 or FF-3-N is installed on a 35 mm standard rail per EN 60715. It must be installed inside an electric cabinet or housing so that the controller is not operated in an explosive atmosphere. The protection rating depends on the installation method.

4.3 Electrical connecting (intrinsically safe)

WARNING

Hazardous electrical voltage

The device must be installed by trained staff only.

CAUTION

Wrong mains voltage

Wrong mains voltage may damage the device.
Regard the correct mains voltage as given on the type plate.

4.3.1 Connecting the moisture detector

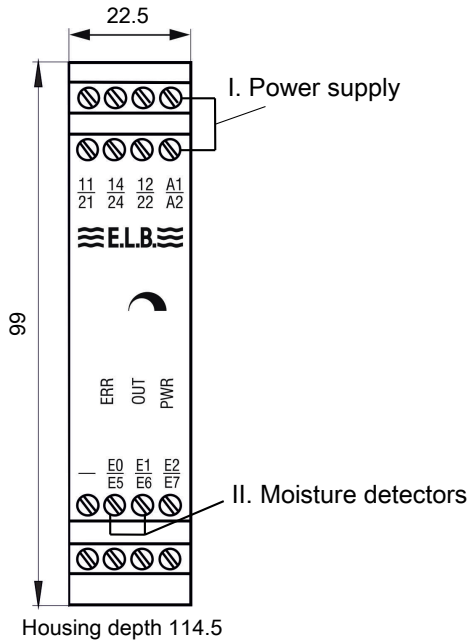
DANGER

Use in explosive areas

Only operate the humidity sensors in potentially explosive areas **in intrinsically safe circuits**.
Please observe the applicable regulatory requirements (e.g. EN 60079-14) and the specifications in these instructions.
U_i = 15 V; I_i = 6 mA; P_i = 90 mW; C_i, L_i = negligible

The moisture detector (Fig.1, item II) (cable conductor white, brown) must be connected to the terminals marked E0 and E1 intrinsically safe.

Also observe the maximum permissible values of the line resistance of R=50 Ω (including forward and return line), the capacity C_0 and the inductance L_0 of the controller. C_i and L_i of the moisture detector are negligible in this case. The values are specified in the technical data (see chapter Technical data [> page 14]) and on the rating plate on the right-hand side of the controller.



4.3.2 Connecting the electrodes

The intrinsically safe field circuits of the probes are connected to terminals E0 to E2.

The electrodes for channel 1 must be connected to terminals E0 (reference electrode), E1 (max) and E2 (min).

NOTICE! When installing the sensor cable, ensure that it is laid at a sufficient distance from power cables. If this is not possible, the use of a shielded cable can reduce interference due to coupling.

4.3.3 Connection of the supply voltage

DANGER

Explosion hazard
Installing the controller in explosive areas

The controller XR-411 must be installed outside the explosive area.
Please observe the applicable regulatory requirements (e.g. EN 60079-14) and the specifications in these instructions.

DANGER

Electrical voltage

Electrocution hazard.

a) Disconnect the device from power supply.

b) Make sure that the equipment cannot be reconnected to mains unintentionally.

c) The device must be opened by trained staff only.

d) Regard correct mains voltage.

The electrical connection must be de-energised. If line monitoring is activated, probes with built-in line break resistance (100 kOhm) must be used.

Make the electrical connection to the terminals labelled A1 (+) and A2 (-) as indicated on the housing cover; for voltage, see rating plate.

In accordance with EN 61010-1, an all-pole disconnection must be provided in the building installation, which must be accessible near the electrode relays, marked as a disconnecting device for these. Overcurrent protection of the devices is provided by a fuse matched to the supply voltage.

Provide a switch or circuit breaker for the controller. It must be easy for the operator to reach. The switch must be marked as a cut-off for the device. It must not be integrated into a supply cable or interrupt the earth conductor. It must further separate all poles of the controller from live parts.

4.3.4 Connection of the relay outputs

Two potential-free changeover contacts per channel are available as outputs on the XR-411.

Device	Configuration		Terminal	Relay not actuated/ dropped out *
XR-411	Breaker	NC	12	
	common contact	COM	11	
	Normally open contact	NO	14	
	Breaker	NC	22	
	common contact	COM	21	
	Normally open contact	NO	24	

Tab. 1: Position of the changeover contacts

* illustrated with unit not energised.

5 Operation and control

NOTICE

The device must not be operated beyond its specifications.

DANGER

Use in explosive areas

Only operate the humidity sensors in potentially explosive areas **in intrinsically safe circuits**.
Please observe the applicable regulatory requirements (e.g. EN 60079-14) and the specifications in these instructions.
U_i = 15 V; I_i = 6 mA; P_i = 90 mW; C_i, L_i = negligible

DANGER

Explosion hazard due to spark formation, electrostatic charging

Severe injury due to explosion
Use equipment only in areas where ignitable electrostatic discharges can not occur frequently during normal operation.
Clean plastic parts and labels with damp cloth only. Metallic filter-housing must be connected to ground (PE).
Impact sparks
Protect the equipment from being hit. Replace damaged equipment immediately.

5.1 Before startup

Before startup, check

- the cables and plugs are correctly installed and not damaged,
- the moisture detector is connected intrinsically safe,
- the controller was installed outside the explosive area,
- the ambient temperature and technical specifications of the moisture detector and controller (e.g.: I_i, U_i) are met,
- the moisture detector is installed gas-proof,
- the requirements of EN 60079-14 are met.

Also be sure to observe the warnings in chapter Operation and control.

In the event of condensation on the moisture detector, measuring current dependent on the condensation will flow in the detector electric circuit. If this measuring current exceeds a limit adjustable with a potentiometer, the controller will switch the output contacts to contact position “OUT”. At the same time, an internal retaining function will be activated which “saves” the alarm message. The controller will only return to standby once the value is below the lower measuring current value and the “Reset button” on the device has been pressed.

The controller will run in “Error protection mode” in standby (relay energised, see *Table 1 - Position of the changeover contacts*). If an error occurs (device currentless, adjustable measuring current exceeded, etc.) a relay will switch to alarm position (relay de-energised).

If the cable to the moisture detector is interrupted, a cable break alarm will be indicated.

5.2 Display elements/operating elements

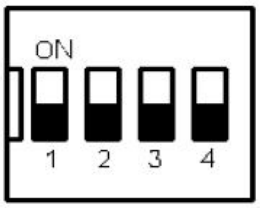
LED GREEN “PWR”	ILLUMINATED	Ready for operation
	DARK	Power failure
LED RED “ERR”	ILLUMINATED	Line fault (only active if DIP switch 3 in ON position)
	DARK	No line fault, or DIP switch 3 in OFF position
LED YELLOW “OUT”	ILLUMINATED	Max electrode immersed
	ILLUMINATED	Min electrode still immersed (with Min-Max control)
	DARK	No electrode immersed

5.2.1 Function key

The XR-411 relay is equipped with an alarm memory, i.e. the alarm remains stored until the cause of the fault has been eliminated and the alarm has been acknowledged using the button on the front of the relay.

5.2.2 Options

The desired device function can be set on the 4-pole DIP switch after opening the **de-energised** device. To avoid damage to circuit parts due to electrostatic discharge, the adjustment may only be carried out using antistatic tools.

DIP switch for channel 1		Switch 1
Switch 1: OFF and switch 2 OFF	Switching delay approx. 0.2 sec.	
Switch 1: ON and switch 2: OFF	Switching delay approx. 2 sec.	
Switch 1: OFF and switch 2 ON	Switching delay approx. 4 sec.	
Switch 1: ON and switch 2: ON	Switching delay approx. 10 sec.	
Switch 3: ON = line monitoring **ON**	OFF = line monitoring **OFF**	
Switch 4: ON = **standby current**	OFF = **load current**	

5.3 Commissioning/adjustment

On delivery, all **DIP switches** are set to **OFF** and the potentiometer is set to minimum sensitivity.

Set the desired device function on the DIP switches and then close the housing again correctly.

After setting the device, connecting the electrodes and the supply voltage, the electrode relay must be set to the medium to be detected. To do this, first set the response sensitivity to the minimum value (turn the potentiometer to the left stop with a screwdriver - max. 25 turns)

With the electrodes (“Max” and “Ground”) immersed in the medium, the potentiometer is now turned to the right until the yellow LED lights up. Once this setting has been found, the potentiometer is turned approx. 1 turn further to the right in order to be in the safe switching range in the event of fluctuating conductivity.

5.4 Function check

DANGER	**Explosion hazard**
	Obey all safety rules for installing electrical devices in hazardous areas during function test. Avoid electrostatic discharge onto the terminals and/or to the sensor wire of the moisture detector. Otherwise this discharge may have enough energy to cause ignition of an explosive atmosphere!

To check the function, immerse the electrodes connected to the relay in the medium. The switching function must be checked on the status LEDs (yellow) on the relay and on the downstream devices or warning devices for each channel.

6 Maintenance

During maintenance, remember:

- The equipment must be maintained by a professional familiar with the safety requirements and risks.
- Only perform maintenance work described in these operating and installation instructions.
- Observe the respective safety regulations and operating specifications when performing any type of maintenance.
- Always use genuine spare parts.

DANGER

Toxic, corrosive gases

The measuring gas led through the equipment can be hazardous when breathing or touching it.

a) Check tightness of the measuring system before putting it into operation.

b) Take care that harmful gases are exhausted to a save place.

c) Before maintenance turn off the gas supply and make sure that it cannot be turned on unintentionally.

d) Protect yourself during maintenance against toxic / corrosive gases. Use suitable protective equipment.

DANGER

Explosion hazard
when moisture detector is not installed intrinsically safe or if the controller is installed inside the hazardous area

Moisture detector for potentially explosive atmospheres (hazardous areas) shall be used in intrinsically safe electric circuits only.
Regard requirements of EN 60079-14 and technical specifications in this instruction manual.
Install the **controller** shall be installed outside the hazardous area.

DANGER

Explosion hazard due to spark formation, electrostatic charging

Severe injury due to explosion
Use equipment only in areas where ignitable electrostatic discharges can not occur frequently during normal operation.
Clean plastic parts and labels with damp cloth only. Metallic filter-housing must be connected to ground (PE).
Impact sparks
Protect the equipment from being hit. Replace damaged equipment immediately.

CAUTION

Gas leakage

The sample gas pump should not be dismantled under pressure.

Maintenance is limited to regularly checking the moisture detector for corrosion, leaks and contamination, and general inspection and function control of the electrical system to ensure the system is always tight. Especially temperature fluctuations can make it necessary to regularly tighten the moisture detector.

If a device error occurs or the mains fuse is tripped, please refrain from performing the repair yourself for safety reasons. If you do replace parts (e.g. fuse), always use 100% identical parts.

In the event of an error please follow chapter Troubleshooting.

7 Service and repair

This chapter contains information on troubleshooting and correction should an error occur during operation.

Repairs to the unit must be performed by Bühler authorised personnel.

Please contact our Service Department with any questions:

Tel.: +49-(0)2102-498955 or your agent

For further information about our services and customised maintenance visit http://www.buehler-technologies.com/service.

If the equipment is not functioning properly after correcting any malfunctions and switching on the power, it must be inspected by the manufacturer. Please send the equipment inside suitable packaging to:

Bühler Technologies GmbH

- Reparatur/Service -

Harkortstraße 29

40880 Ratingen

Germany

Please also attach the completed and signed RMA decontamination statement to the packaging. We will otherwise be unable to process your repair order.

You will find the form in the appendix of these instructions, or simply request it by e-mail:

service@buehler-technologies.com.

7.1 Spare parts

Item no.	Description
4111100	FF-3-N moisture detector (without cable)
41111000	FF-3-N moisture detector (with cable)
4111110	Controller XR-411

7.2 Troubleshooting

Problem/malfunction	Possible cause	Action
No display	– Mains voltage interrupted	– Connect to mains; check the plug is correctly inserted
	– Defective fuse	– Check the fuse and replace, if necessary *
Moisture detector not responding	– Incorrect sensitivity setting	– Adjust sensitivity
	– Moisture detector contaminated	– Remove and clean moisture detector
Alarm cannot be reset	– Incorrect sensitivity setting	– Adjust sensitivity
	– Moisture detector flooded	– Remove and dry moisture detector, or flush with air

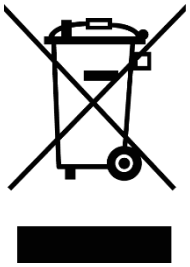
Tab. 2: Troubleshooting

*The fuse ratings for the XR-411 are 50 mA each at 230 V/115 V.

8 Disposal

The applicable national laws must be observed when disposing of the products. Disposal must not result in a danger to health and environment.

The crossed out wheelie bin symbol on Bühler Technologies GmbH electrical and electronic products indicates special disposal notices within the European Union (EU).



The crossed out wheelie bin symbol indicates the electric and electronic products bearing the symbol must be disposed of separate from household waste. They must be properly disposed of as waste electrical and electronic equipment.

Bühler Technologies GmbH will gladly dispose of your device bearing this mark. Please send your device to the address below for this purpose.

We are obligated by law to protect our employees from hazards posed by contaminated devices. Therefore please understand that we can only dispose of your waste equipment if the device is free from any aggressive, corrosive or other operating fluids dangerous to health or environment. **Please complete the "RMA Form and Decontamination Statement", available on our website, for every waste electrical and electronic equipment. The form must be applied to the packaging so it is visible from the outside.**

Please return waste electrical and electronic equipment to the following address:

Bühler Technologies GmbH
WEEE
Harkortstr. 29
40880 Ratingen
Germany

Please also observe data protection regulations and remember you are personally responsible for the returned waste equipment not bearing any personal data. Therefore please be sure to delete your personal data before returning your waste equipment.

9 Appendices

9.1 Technical data

XR-411

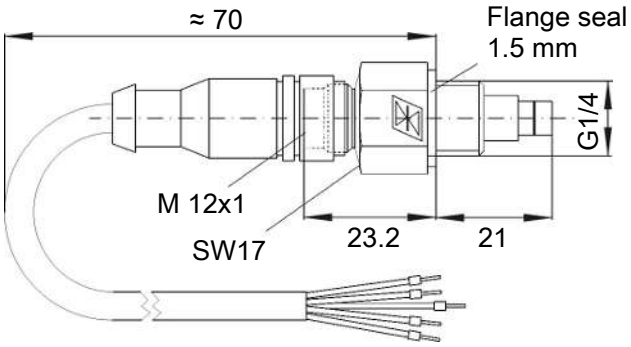
Power connection	
Nominal operating voltage:	24 V... 230 V AC/DC; Wide-range power supply unit +10%
Rated frequency:	48...62 Hz
Power input:	≤ 1 VA
Dimensions:	22.5 x 99 x 114.5 mm
Weight:	approx. 170 g
Storage temperature:	-30 ... +80 °C
Operating temperature:	-20 ... +60 °C
Output	
Output contacts:	potential-free
Switching voltage U_m:	max. 250 V AC/150 V DC
Max. switching current:	5 A AC / 8 A DC
Max. switching output:	100 VA/50 W
Standards	
Protection rating per EN 60529	
– Terminals:	IP20
– Housing:	IP40
Protection rating per EN 61010-1:	II
Overvoltage category:	III
Contamination level:	2
Output: safety-related maximum values	
linear characteristic	
Open circuit voltage U_0:	≤ 14.8 V
Short circuit I_0:	≤ 5.6 mA
Power P_0:	82 mW
Permissible external capacitance C_0:	≤ 0.61 µF
Permissible external inductance L_0:	≤ 100 mH
Sensitivity range:	2 kΩ...300 kΩ
Resistance of the line break monitoring:	100 kΩ
ATEX mark:	II (1) G [Ex ia Ga] IIC
Certificates	
EC type-examination certificate:	TÜV 10 ATEX 555760

FF-3/FF-3-N

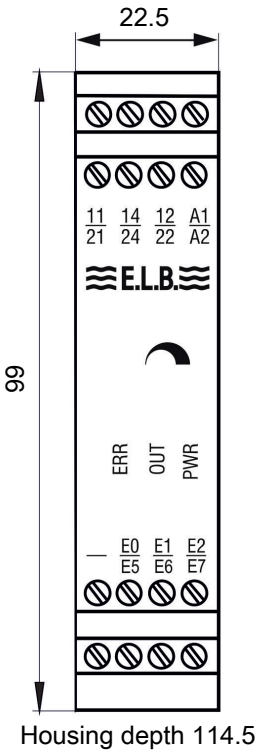
Material:	PVDF, 1.4571, epoxy resin, 1.4576, PTFE
Max. operating pressure:	2 bar
Operating temperature:	3 °C to 50 °C
U_i:	15 V DC
I_i:	6 mA
P_i:	90 mW
L_i, C_i:	negligible

9.2 Dimensions

FF-3-N



XR-411



Housing depth 114.5

10 Attached documents

- Installation instructions (package insert) BX410015
- Declaration of Conformity HX410009
- Declaration of Conformity XR
- Type Examination Certificate XR
- TÜV 00 ATEX 555760
- RMA – Decontamination Statement

Herstellererklärung
Manufacturer Declaration

der Firma Bühler Technologies GmbH nach EN 60079-11 Abschn. 5.7 „Einfache elektrische Betriebsmittel".

by Bühler Technologies GmbH pursuant to EN 60079-11 Section 5.7 "Simple electrical equipment".

Produkt / products: Feuchtefühler / *moisture detector*
Typ / type: FF-3, FF-3N

Der Feuchtefühler FF-3N ist ein einfaches elektrisches Betriebsmittel im Sinne der EN 60079-11 Abschnitt 5.7. Gemäß den Anforderungen dieser Norm wird dieses Betriebsmittel keiner Typprüfung und keiner Kennzeichnung nach Richtlinie **2014/34/EU (Atex)** unterworfen. Der Hersteller erklärt, dass alle zutreffenden Anforderungen der EN 60079-11 erfüllt werden.

The moisture detector FF-3N is a simple electrical equipment as defined by EN 60079-11 Section 5.7. In accordance with the requirements of this standard, this equipment is not subject to type approval or marking pursuant to directive **2014/34/EU (Atex)**. *The manufacturer declares compliance with the applicable requirements of EN 60079-11.*

Der Feuchtefühler **FF-3-N** kann in einem einfachen eigensicheren Stromkreis, bei Versorgung durch das baumustergeprüfte Beschaltungsgerät **XR-411** der Firma E.L.B. Füllstandsgeräte, errichtet werden in explosionsgefährden Bereichen der Zone 1 und Zone 2, Temperaturklasse T5, Explosionsgruppe IIC.
In dem eigensicheren, einfachen Stromkreis dürfen neben Feuchtefühler **FF-3-N** und Beschaltungsgerät **XR-411** keine weiteren Betriebsmittel vorhanden sein.
Zu allen Teilen des Feuchtefühlers **FF-3-N** müssen Luft- und Kriechstrecken nach EN 60079-11 eingehalten werden. Diese sind abhängig von den spezifischen Einbau- und Umgebungsbedingungen, einschließlich des Verschmutzungsgrads des Mediums.
Die Betriebsparameter für Beschaltungswerte und zulässigem Temperaturbereich des Feuchtefühlers **FF-3-N** im eigensicheren Stromkreis müssen eingehalten werden.
U_i = 15 V; I_i = 6 mA; P_i = 90 mW; C_i, L_i = vernachlässigbar

The ***FF-3-N*** *moisture detector can be installed in a simple inherently safe circuit when supplied by the type-tested* ***XR-411*** *control unit from E.L.B. Füllstandsgeräte in hazardous areas of Zone 1 and Zone 2, temperature class T5, explosion group IIC.*
No other equipment may be present in the simple inherently safe circuit in addition to the ***FF-3-N*** *humidity sensor and the* ***XR-411*** *control unit.*
Clearance and creepage distances in accordance with EN 60079-11 must be maintained to all parts of the ***FF-3-N*** *humidity sensor. These depend on the specific installation and ambient conditions, including the degree of contamination of the medium.*
The operating parameters for wiring values and permissible temperature range of the ***FF-3-N*** *humidity sensor in the intrinsically safe circuit must be observed.*
U_i = 15 V; I_i = 6 mA; P_i = 90 mW; C_i, L_i = negligible

Die alleinige Verantwortung für die Ausstellung dieser Herstellererklärung trägt der Hersteller.
This declaration of manufacture is issued under the sole responsibility of the manufacturer.
Dokumentationsverantwortlicher für diese Herstellererklärung ist Herr Stefan Eschweiler mit Anschrift am Firmensitz.
The person authorised to compile the technical file is Mr. Stefan Eschweiler located at the company's address.

Ratingen, den 19.09.2024

Stefan Eschweiler
Geschäftsführer – *Managing Director*

Frank Pospiech
Geschäftsführer – *Managing Director*

Bühler Technologies GmbH, Harkortstr. 29, D-40880 Ratingen,
Tel. +49 (0) 21 02 / 49 89-0, Fax. +49 (0) 21 02 / 49 89-20
Internet: www.buehler-technologies.com

Manufacturer Declaration

Herewith Bühler Technologies GmbH declares that the following products are not „equipment" for the purpose of legislation **Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016** respectively, and therefore are not labelled with the UKCA mark.

Product: Moisture detector
Types: FF-3
FF-3N

This declaration is valid for all devices manufactured in accordance with the manufacturing documents deposited with the manufacturer – which form an integral part of this declaration.

The moisture detector FF-3N is a simple apparatus as defined by EN 60079-11 Section 5.7. In accordance with the requirements of this standard, this equipment is not subject to type approval or marking pursuant to legislation **Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016**.

The **FF-3-N** moisture detector can be installed in a simple inherently safe circuit when supplied by the type-tested **XR-411** control unit from E.L.B. Füllstandsgeräte in hazardous areas of Zone 1 and Zone 2, temperature class T5, explosion group IIC.
No other equipment may be present in the simple inherently safe circuit in addition to the **FF-3-N** humidity sensor and the **XR-411** control unit.
Clearance and creepage distances in accordance with EN 60079-11 must be maintained to all parts of the **FF-3-N** humidity sensor. These depend on the specific installation and ambient conditions, including the degree of contamination of the medium.
The operating parameters for wiring values and permissible temperature range of the **FF-3-N** humidity sensor in the intrinsically safe circuit must be observed.
U_i = 15 V; I_i = 6 mA; P_i = 90 mW; C_i, L_i = negligible

The object of the declaration described above is in conformity with the relevant designated standards:

EN 60079-11:2012

This declaration of manufacture is issued under the sole responsibility of the manufacturer.

Ratingen in Germany, 19.09.2024

Stefan Eschweiler
Managing Director

Frank Pospiech
Managing Director

Bühler Technologies GmbH, Harkortstr. 29, D-40880 Ratingen,
Tel. +49 (0) 21 02 / 49 89-0, Fax. +49 (0) 21 02 / 49 89-20
Internet: www.buehler-technologies.com

CE

Konformitätserklärung

Declaration of conformity
Déclaration de conformité

Sensor + Control GmbH & Co. KG
An der Hartbrücke 6
D-64625 Bensheim

- erklärt in alleiniger Verantwortung, dass das Produkt : Messumformer
- declare under our sole responsibility that our product : Transducer
- déclare sous sa seule responsabilité que le produit : Transducteur

XR-...

- auf das sich diese Erklärung bezieht, mit den folgenden Normen übereinstimmt
- to which this declaration relates is in conformity with the following standards
- auquel se référe cette déclaration est conforme aux normes

EN IEC 60079-0:2018
EN 60079-11:2012
EN 61010-1: 2010 + A1:2019 + A1:2019/AC:2019
EN 61326-1: 2013

- gemäß den Bestimmungen der Richtlinien
- following the provision of Directives
- conformément aux dispositions des Directives

2014/34/EU
2014/35/EU
2014/30/EU
2011/65/EU

EG-Baumusterprüfung gemäß Anhang III der Richtlinie durch
TÜV NORD CERT GmbH
Am TÜV 1
D-30519 Hannover
EG-Baumusterprüfbescheinigungs Nr.: **TÜV 10 ATEX 555760**

Bensheim, 03.01.2023

Frank Wiedmann
Geschäftsführer

RelaisXREx

ZERTIFIKAT
CERTIFICATE

Hiermit wird bescheinigt, dass das unten beschriebene Produkt der Firma
This certifies that the product mentioned below from company

E.L.B.-Füllstandsgeräte Bundschuh GmbH & Co. KG.
An der Hartbrücke 6
64625 Bensheim
Deutschland

die Anforderungen der folgenden Prüfunterlage(n) erfüllt.
fulfills the requirements of the following test regulations.

Geprüft nach: *Tested in accordance with:*	**EN 61508-1:2010 Abschnitt** / *Chapter* **7.6.2.9** **EN 61508-2:2010** **EN 61508-3:2010**
Beschreibung des Produktes: (Details s. Anlage 1) *Description of product:* *(Details see Annex 1)*	**Ex Kontaktschutzrelais /** *Ex Contact Protection Relay*
Typenbezeichnung: *Type designation:*	**XR-4..., XR-6...**
Bemerkungen: *Remarks:*	**Bitte beachten Sie auch Anlage 1.** *Please also pay attention to annex 1.*

Dieses Zertifikat bescheinigt das Ergebnis der Prüfung an dem vorgestellten Prüfgegenstand. Eine allgemein gültige Aussage über die Qualität der Produkte aus der laufenden Fertigung kann hieraus nicht abgeleitet werden.
This certifies the result of the examination of the product sample submitted by the manufacturer. A general statement concerning the quality of the products from the series manufacture cannot be derived there from.

Registrier-Nr. / *Registration No.* 44 799 13108418
Prüfbericht Nr. / *Test Report No.* 3521 2591
Aktenzeichen / *File reference* 8000479102

Gültigkeit / *Validity*
von / *from* 2017-11-29
bis / *until* 2023-05-17

Zertifizierungsstelle der
TÜV NORD CERT GmbH

Essen, 2017-11-29

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuev-nord-cert.de technology@tuev-nord.de

Bitte beachten Sie auch die umseitigen Hinweise
Please also pay attention to the information stated overleaf

ANLAGE
ANNEX

zum Zertifikat Registrier-Nr. / ***to Certificate Registration No.*** **44 799 13108418**

Produktbeschreibung: *Product description:*	**Ex Kontaktschutzrelais /** *Ex Contact Protection Relay*
Typenbezeichnung: *Type designation:*	**XR-4..., XR-6...**
Technische Daten: *Technical data:*	**Nennspannung /** *Rated voltage*: **24; 42; 48; 127; 230; 240V_{AC}/ 24V_{DC}** **Weitbereich Spannungsversorgung /** *Far range power supply*: **20V_{DC}... 230V_{AC}** **Leistungsaufnahme /** *Power consumption*: **max. 1VA / W** **Schutzart /** *Protection degree*: **IP20 (Klemmen), IP40 (Gehäuse)** **Betriebstemperatur /** *Operation temperature*: **-20°C ... +60°C** **Ausgang /** *Output* **Max. Schaltleistung AC /** *Max. switching power AC*: **250V, 25VA** **Max. Schaltleistung DC /** *Max. switching power DC*: **250V, 25W** **Sicherheitsparameter (mit Sicherheitsrelais und Kontaktstellungsüberwachung) /** *Safety parameters (with safety relay and contact position monitoring):* **$PFD_{Complete}$ = 6,73·10^{-5} mit /** *with* **n_{op} = 2; B_{10D} = 400.000, SIL2** **Sicherheitsparameter /** *Safety parameter:* **$PFD_{Complete}$ = 1,17·10^{-4} mit /** *with* **n_{op} = 2; B_{10D} = 400.000, SIL1**

Zertifizierungsstelle der
TÜV NORD CERT GmbH

Essen, 2017-11-29

(1) EG-Baumusterprüfbescheinigung

(2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen, **Richtlinie 94/9/EG**

(3) **Bescheinigungsnummer:** **TÜV 10 ATEX 555760**

(4) für das Gerät: Messumformer XR-_ _ _/_ _ _

(5) des Herstellers: E.L.B.-Füllstandsgeräte Bundschuh GmbH + Co.

(6) Anschrift: An der Hartbrücke 6
64625 Bensheim
Deutschland

Auftragsnummer: 8000555760

Ausstellungsdatum: 15.10.2010

(7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser EG-Baumusterprüfbescheinigung festgelegt.

(8) Die TÜV NORD CERT GmbH bescheinigt als benannte Stelle Nr. 0044 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie. Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht Nr. 10 203 555760 festgelegt.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit:

60079-0:2006 **60079-11:2007** **60079-26:2007**

(10) Falls das Zeichen "X" hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.

(11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf Konzeption und Prüfung des festgelegten Gerätes gemäß Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes. Diese Anforderungen werden nicht durch diese Bescheinigung abgedeckt.

(12) Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:

Ex II (1) G [Ex ia] IIC

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, akkreditiert durch die Zentralstelle der Länder für Sicherheitstechnik (ZLS), Ident. Nr. 0044, Rechtsnachfolger der TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

Der Leiter der Zertifizierungsstelle

Schwedt

Geschäftsstelle Hannover, Am TÜV 1, 30519 Hannover, Fon +49 (0)511 986 1455, Fax +49 (0)511 986 1590

(13) **A N L A G E**

(14) **EG-Baumusterprüfbescheinigung Nr. TÜV 10 ATEX 555760**

(15) Beschreibung des Gerätes

Bei dem Gerät handelt es sich um einen Messumformer mit mehreren Varianten der Energieversorgung. Der Messumformer ist als zugehöriges Betriebsmittel konzipiert.

Technische Daten

Zulässiger Bereich der Umgebungstemperatur: - 20 °C bis +60 °C

Für Geräte mit Gleichspannungsversorgung (Typ XR-_ _ _/_ _0_ mit einer Nominalspannung von 24 V DC)

Spannungsversorgung.....U_m = 26,4 V DC
(Kontakte A1, A2 bzw. B1, B2)

Sammelstörungsausgang.....U_m = 26,4 V DC
(Kontakte B4, B5)

Für Geräte mit Netzversorgung (Typ XR-_ _ _/_ _6_ mit einer Nominalspannung von 230 V AC)

Spannungsversorgung.....U_m = 253 V AC
(Kontakte A1, A2)

Für Geräte mit Universalnetzteil (Typ XR-_ _ _/_ _ mit einer Nominalspannung von 24 bis 230 V AC oder DC)

Spannungsversorgung.....U_m = 253 V AC oder DC
(Kontakte A1, A2)

Für alle Geräte

Sensoranschluss.....In der Zündschutzart Ex ia IIC, nur zum Anschluss an
(Kontakte E0, E1, E2 bzw. E3, E4, E5) bescheinigte eigensichere Stromkreise.

Höchstwerte:

U_o = 14,8 V
I_o = 5,6 mA
P_o = 82 mW

Maximal zulässige Werte für externe Induktivitäten (L_o) und Kapazitäten (C_o). Die Werte für die äußeren Reaktanzen gelten nur, wenn das gleichzeitige Auftreten von Induktivitäten und Kapazitäten nicht berücksichtigt werden muss:

L_o = 100 mH
C_o = 0,61 µF

Schaltausgänge (Relais)..... Höchstwerte:
(Kontakte 11, 12, 14 bzw. 21, 22, 24)

Wechselspannung			Gleichspannung		
U	=	250 V	U	=	150 V
I	=	5 A	I	=	8 A
P	=	100 VA	P	=	50 W

(16) Prüfungsunterlagen sind im Prüfbericht Nr. 10 203 555760 aufgelistet.

(17) Besondere Bedingung

keine

(18) Grundlegende Sicherheits- und Gesundheitsanforderungen

keine zusätzlichen

1. E R G Ä N Z U N G

zur Bescheinigungsnummer:	**TÜV 10 ATEX 555760**
Gerät:	Messumformer XR-_ _ _/_ _ _
Hersteller:	E.L.B.-Füllstandsgeräte Bundschuh GmbH + Co.
Anschrift:	An der Hartbrücke 6 64625 Bensheim Deutschland
Auftragsnummer:	8000393903
Ausstellungsdatum:	29.03.2011

Änderungen:

Die zur Beurteilung herangezogenen Normenstände wurden aktualisiert und die Kennzeichnung wurde entsprechend angepasst.

Die Kennzeichnung lautet in Zukunft wie folgt:

II (1) G [Ex ia Ga] IIC

Die technischen Daten und alle weiteren Angaben gelten unverändert für diese 1. Ergänzung.

Das Gerät incl. dieser Ergänzung erfüllt die Anforderungen der folgenden Normen:

EN 60079-0:2009 **EN 60079-11:2007** **EN 60079-26:2007**

(16) Die Prüfungsunterlagen sind im Prüfbericht Nr. 11 203 080354 aufgelistet.

(17) Besondere Bedingungen

Keine

(18) Grundlegende Sicherheits- und Gesundheitsanforderungen

Keine zusätzlichen

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, akkreditiert durch die Zentralstelle der Länder für Sicherheitstechnik (ZLS), Ident. Nr. 0044, Rechtsnachfolger der TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

Der Leiter der Zertifizierungsstelle

Schwedt

Geschäftsstelle Hannover, Am TÜV 1, 30519 Hannover, Tel.: +49 (0) 511 986-1455, Fax: +49 (0) 511 986-1590

2. ERGÄNZUNG

zur Bescheinigungsnummer:	**TÜV 10 ATEX 555760**
Gerät:	Messumformer XR-_ _ _ _ _ _
Hersteller:	E.L.B. Füllstandsgeräte Bundschuh GmbH & Co. KG
Anschrift:	An der Hartbrücke 6 64625 Bensheim Deutschland
Auftragsnummer:	8000408085
Ausstellungsdatum:	31.08.2012

Änderungen:

Die Messumformer XR-_ _ _ _ _ _ dürfen künftig auch entsprechend der im Prüfbericht aufgelisteten Unterlagen gefertigt und betrieben werden.

Die Geräte wurden nach den neusten Normenständen bewertet.

Alle weiteren Angaben gelten unverändert für diese Ergänzung.

Die Kennzeichnung lautet von nun an wie folgt:

II (1) G [Ex ia Ga] IIC

Das Gerät incl. dieser Ergänzung erfüllt die Anforderungen der folgenden Normen:

EN 60079-0:2009 **EN 60079-11:2012** **EN 60079-26:2007**

(16) Die Prüfungsunterlagen sind im Prüfbericht Nr. 12 203 101883 aufgelistet.

(17) Besondere Bedingungen

keine

(18) Grundlegende Sicherheits- und Gesundheitsanforderungen

keine zusätzlichen

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, benannt durch die Zentralstelle der Länder für Sicherheitstechnik (ZLS), Ident. Nr. 0044, Rechtsnachfolger der TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

Der Leiter der benannten Stelle

Schwedt

Schwedt

RMA-Formular und Erklärung über Dekontaminierung
RMA-Form and explanation for decontamination

RMA-Nr./ RMA-No.

Die RMA-Nr. bekommen Sie von Ihrem Ansprechpartner im Vertrieb oder Service. Bei Rücksendung eines Altgeräts zur Entsorgung tragen Sie bitte in das Feld der RMA-Nr. "WEEE" ein./ You may obtain the RMA number from your sales or service representative. When returning an old appliance for disposal, please enter "WEEE" in the RMA number box.

Zu diesem Rücksendeschein gehört eine Dekontaminierungserklärung. Die gesetzlichen Vorschriften schreiben vor, dass Sie uns diese Dekontaminierungserklärung ausgefüllt und unterschrieben zurücksenden müssen. Bitte füllen Sie auch diese im Sinne der Gesundheit unserer Mitarbeiter vollständig aus./ This return form includes a decontamination statement. The law requires you to submit this completed and signed decontamination statement to us. Please complete the entire form, also in the interest of our employee health.

Firma/ Company

Firma/ Company	
Straße/ Street	
PLZ, Ort/ Zip, City	
Land/ Country	

Ansprechpartner/ Person in charge

Name/ Name	
Abt./ Dept.	
Tel./ Phone	
E-Mail	

Gerät/ Device	
Anzahl/ Quantity	
Auftragsnr./ Order No.	

Serien-Nr./ Serial No.	
Artikel-Nr./ Item No.	

Grund der Rücksendung/ Reason for return

- ☐ Kalibrierung/ Calibration
- ☐ Modifikation/ Modification
- ☐ Reklamation/ Claim
- ☐ Reparatur/ Repair
- ☐ Elektroaltgerät/ Waste Electrical & Electronic Equipment (WEEE)
- ☐ andere/ other

bitte spezifizieren/ please specify

Ist das Gerät möglicherweise kontaminiert?/ Could the equipment be contaminated?

☐ Nein, da das Gerät nicht mit gesundheitsgefährdenden Stoffen betrieben wurde./ No, because the device was not operated with hazardous substances.

☐ Nein, da das Gerät ordnungsgemäß gereinigt und dekontaminiert wurde./ No, because the device has been properly cleaned and decontaminated.

☐ Ja, kontaminiert mit:/ Yes, contaminated with:

☐ explosiv/ explosive	☐ entzündlich/ flammable	☐ brandfördernd/ oxidizing	☐ komprimierte Gase/ compressed gases	☐ ätzend/ caustic	☐ giftig, Lebensgefahr/ poisonous, risk of death	☐ gesundheitsgefährdend/ harmful to health	☐ gesundheitsschädlich/ health hazard	☐ umweltgefährdend/ environmental hazard

Bitte Sicherheitsdatenblatt beilegen!/ Please enclose safety data sheet!

Das Gerät wurde gespült mit:/ The equipment was purged with:

Diese Erklärung wurde korrekt und vollständig ausgefüllt und von einer dazu befugten Person unterschrieben. Der Versand der (dekontaminierten) Geräte und Komponenten erfolgt gemäß den gesetzlichen Bestimmungen.

This declaration has been filled out correctly and completely, and signed by an authorized person. The dispatch of the (decontaminated) devices and components takes place according to the legal regulations.

Falls die Ware nicht gereinigt, also kontaminiert bei uns eintrifft, muss die Firma Bühler sich vorbehalten, diese durch einen externen Dienstleister reinigen zu lassen und Ihnen dies in Rechnung zu stellen.

Should the goods not arrive clean, but contaminated, Bühler reserves the right, to comission an external service provider to clean the goods and invoice it to your account.

Firmenstempel/ Company Sign

Datum/ Date

rechtsverbindliche Unterschrift/ Legally binding signature

Bühler Technologies GmbH, Harkortstr. 29, D-40880 Ratingen
Tel. +49 (0) 21 02 / 49 89-0, Fax: +49 (0) 21 02 / 49 89-20
E-Mail: service@buehler-technologies.com
Internet: www.buehler-technologies.com

Vermeiden von Veränderung und Beschädigung der einzusendenden Baugruppe

Die Analyse defekter Baugruppen ist ein wesentlicher Bestandteil der Qualitätssicherung der Firma Bühler Technologies GmbH. Um eine aussagekräftige Analyse zu gewährleisten muss die Ware möglichst unverändert untersucht werden. Es dürfen keine Veränderungen oder weitere Beschädigungen auftreten, die Ursachen verdecken oder eine Analyse unmöglich machen.

Umgang mit elektrostatisch sensiblen Baugruppen

Bei elektronischen Baugruppen kann es sich um elektrostatisch sensible Baugruppen handeln. Es ist darauf zu achten, diese Baugruppen ESD-gerecht zu behandeln. Nach Möglichkeit sollten die Baugruppen an einem ESD-gerechten Arbeitsplatz getauscht werden. Ist dies nicht möglich sollten ESD-gerechte Maßnahmen beim Austausch getroffen werden. Der Transport darf nur in ESD-gerechten Behältnissen durchgeführt werden. Die Verpackung der Baugruppen muss ESD-konform sein. Verwenden Sie nach Möglichkeit die Verpackung des Ersatzteils oder wählen Sie selber eine ESD-gerechte Verpackung.

Einbau von Ersatzteilen

Beachten Sie beim Einbau des Ersatzteils die gleichen Vorgaben wie oben beschrieben. Achten Sie auf die ordnungsgemäße Montage des Bauteils und aller Komponenten. Versetzen Sie vor der Inbetriebnahme die Verkabelung wieder in den ursprünglichen Zustand. Fragen Sie im Zweifel beim Hersteller nach weiteren Informationen.

Einsenden von Elektroaltgeräten zur Entsorgung

Wollen Sie ein von Bühler Technologies GmbH stammendes Elektroprodukt zur fachgerechten Entsorgung einsenden, dann tragen Sie bitte in das Feld der RMA-Nr. „WEEE“ ein. Legen Sie dem Altgerät die vollständig ausgefüllte Dekontaminierungserklärung für den Transport von außen sichtbar bei. Weitere Informationen zur Entsorgung von Elektroaltgeräten finden Sie auf der Webseite unseres Unternehmens.

Avoiding alterations and damage to the components to be returned

Analysing defective assemblies is an essential part of quality assurance at Bühler Technologies GmbH. To ensure conclusive analysis the goods must be inspected unaltered, if possible. Modifications or other damages which may hide the cause or render it impossible to analyse are prohibited.

Handling electrostatically conductive components

Electronic assemblies may be sensitive to static electricity. Be sure to handle these assemblies in an ESD-safe manner. Where possible, the assembles should be replaced in an ESD-safe location. If unable to do so, take ESD-safe precautions when replacing these. Must be transported in ESD-safe containers. The packaging of the assemblies must be ESD-safe. If possible, use the packaging of the spare part or use ESD-safe packaging.

Fitting of spare parts

Observe the above specifications when installing the spare part. Ensure the part and all components are properly installed. Return the cables to the original state before putting into service. When in doubt, contact the manufacturer for additional information.

Returning old electrical appliances for disposal

If you wish to return an electrical product from Bühler Technologies GmbH for proper disposal, please enter "WEEE" in the RMA number box. Please attach the fully completed decontamination declaration form for transport to the old appliance so that it is visible from the outside. You can find more information on the disposal of old electrical appliances on our company’s website.

Bühler Technologies GmbH, Harkortstr. 29, D-40880 Ratingen
Tel. +49 (0) 21 02 / 49 89-0, Fax: +49 (0) 21 02 / 49 89-20
E-Mail: service@buehler-technologies.com
Internet: www.buehler-technologies.com