



FOCUS-1_Ex

Supplementary instruction



Contents

1. Chapter 1 – Safety instruction from the manufacturer	3
1.1. Disclaimer	3
1.2. Product liability and warranty	3
1.3. Information concerning the documentation	3
1.4. Safety Information	4
1.5. Warning and symbols used	4
2. Chapter 2 – Safety instruction for the operator	5
3. Chapter 3 – Approvals and compliance	6
4. Chapter 4 – Markings label	7
5. Chapter 5 – Temperature limits	8
6. Chapter 6 – Electrical connections	9
6.1 Installation instructions	9
6.2 Power supply circuits	11
6.3 INPUT circuits	12
6.4 OUTPUT circuit	13
7. Chapter 7 – Maintenance and service	14
7.1 Maintenance	14
7.2 Before and after opening	14
7.3 Return FOCUS-1_Ex to FOCUS-ON	14

1. Chapter 1 – Safety instruction from the manufacturer

1.1. Disclaimer

The manufacturer will not be liable for any damage of any kind by using its product, including, but not limited to direct, indirect, incidental, punitive and consequential damages.

This disclaimer does not apply in case the manufacturer has acted on purpose or with gross negligence. In the event any applicable law does not allow such limitations on implied warranties or the exclusion of limitation of certain damages, you may, if such law applies to you, not be subject to some or all of the above disclaimer, exclusions or limitations.

Any product purchased from the manufacturer is warranted in accordance with the relevant product documentation and our Terms and Conditions of Sale.

The manufacturer reserves the right to alter the content of its documents, including this disclaimer in any way, at any time, for any reason, without prior notification, and will not be liable in any way for possible consequences of such changes.

1.2. Product liability and warranty

The operator shall bear responsibility for the suitability of the device for the specific purpose. The manufacturer accepts no liability for the consequences of misuse by the operator. Improper installation and operation of the devices (systems) will cause the warranty to be void. The respective "Standard Terms and Conditions" which form the basis for the sales contract shall also apply.

1.3. Information concerning the documentation

To prevent any injury to the user or damage to the device it is essential that you read the information in this document and observe applicable national standards, safety requirements and accident prevention regulations.

If this document is not in your native language and if you have any problems understanding the text, we advise you to contact your local office for assistance. The manufacturer cannot accept responsibility for any damage or injury caused by misunderstanding of the information in this document.

This document is provided to help you establish operating conditions, which will permit safe and efficient use of this device. Special considerations and precautions are also described in the document, which appear in the form of underneath icons.







1.4. Safety Information

 CAUTION!	<p>The operator holds sole responsibility for the use of the measuring devices, including assessing their suitability, intended use, and corrosion resistance of the materials used against the fluid being measured.</p>
	<p>The end user, operator, installation personnel have to respect the a rules regarding using explosion safety equipment placed in a HAZLOC. The rules are highlighted by the presence of sign.</p>
	<p>The manufacturer holds no liability for any damage arising from improper use or usage divergent from the intended purpose of the device.</p>

1.5. Warning and symbols used








DANGER! 	<p>This warning signifies the immediate risk associated with working with electricity.</p>
DANGER! 	<p>This warning signifies the immediate risk of sustaining burns from heat or hot surfaces.</p>
DANGER! 	<p>This warning signifies the immediate risk when utilizing this device in a potentially hazardous environment.</p>
DANGER! 	<p>These warnings must be adhered to strictly. Any disregard, even partial, can result in severe health hazards, potentially fatal incidents, and may also cause significant damage to the device or components of the operator's facility.</p>
WARNING! 	<p>Ignoring this safety warning, even partially, can lead to serious health risks. Additionally, it may result in damage to the device or certain components within the operator's infrastructure.</p>
CAUTION! 	<p>Ignoring these guidelines can lead to potential harm to the device or components within the operator's facility.</p>
INFORMATION! 	<p>These guidelines provide crucial information for the proper management and operation of the device.</p>
LEGAL NOTICE! 	<p>This notation provides details pertaining to legal directives and standards.</p>
HANDLING! 	<p>This symbol identifies all operator instructions that need to be followed in the specific sequence provided.</p>

2. Chapter 2 – Safety instruction for the operator

<p>WARNING!</p> 	<ul style="list-style-type: none"> ✓ In general, it is crucial that devices are installed, commissioned, initiated, operated, and maintained only by individuals who have received proper training and have the necessary authorization. ✓ The purpose of this document is to provide guidance on establishing the operational conditions required for the safe and effective use of this device. ✓ The personnel has to have knowledge regarding HAZLOC and explosion safety equipment.
<p>WARNING!</p>  	<ul style="list-style-type: none"> ➤ The device is intended for a permanent connection to mains power. ➤ An external power supply switch or circuit-breaker must be installed to disconnect the device from the mains power, and it should be easily accessible for the operator. The switch or circuit breaker, along with the wirings, must be appropriate for the application and meet the local safety requirements of the installation (for example, IEC 609-1/-31). The cable glands and the wiring must be suitable for the application and adhere to local safety requirements of the installation. ✓ The cable glands for the entries to the increased safety connections compartment (Ex eb) are not delivered. Consult the ATEX, IECEX certificates for the detailed regarding the cable glands. ✓ If an entry of the electronic connection cabinet is not used, the entry has to be provided with an Ex certified metal blind plug (Ex eb) with the same properties as the cable glands.
<p>WARNING!</p> 	<ul style="list-style-type: none"> ✓ The FOCUS-1Ex device is designed for use in hazardous atmospheres with the same characteristics as the device's markings. ✓ Do not bring changes to the device. Unauthorized changes affect the explosion safety of the device. ✓ For device installation must be applied the requirements of EN 60079-14 "Electrical installations in hazardous locations". ✓ Installation, establishment, utilization and maintenance are only allowed to be executed by personnel with an education in explosion safety! ✓ Installation, establishment, utilization and maintenance are only allowed to be executed by personnel with an education in explosion safety!
<p>DANGER!</p> 	<p>As per regulations, the FOCUS-1 device must be grounded to ensure personnel protection against electric shocks. The protective ground (PE) of the power supply needs to be connected to the designated U-clamp terminal. This grounding connection is essential for maintaining safety standards.</p>
<p>WARNING!</p> 	<p>Potential electrostatic charging hazard from the Wi-Fi antenna, and other painted surface:</p> <ul style="list-style-type: none"> ✓ Clean the surface of the antenna and/or other non-metallic surfaces only with a damp cloth. ✓ Do not clean the surface of the antenna and the device covers with a solvent. ✓ Avoid friction – potential electrostatic charging hazard!

This supplementary instruction is an extension to the **standard User Manual TD-124_V-5.0**. The technical information as described in the User Manual is applicable, when not specifically excluded, completed or replaced by the instructions from this Ex-supplementary instructions.

3. Chapter 3 – Approvals and compliance

	<p>CE Marking: The FOCUS-1-Ex device complies with the fundamental health, safety, and environmental protection standards stipulated within the European Economic Area, as outlined in the Declaration of Conformity.</p> <p>2876 (QPS) – FOCUS-ON's QMS (QAN/QAR) following ISO 80079-34</p> <p>0496 (DNV) – FOCUS-1 device compliances with the Pressure Equipment Directive (PED) requirements.</p>
	<p>Please consult the User Manual and Quick Start Guide prior to initiating the installation and operation of the device.</p>
	<p>This symbol represents the segregated collection and recycling of electrical and electronic equipment.</p>
	<p>This symbol signifies compliance with the Restriction of Hazardous Substances (RoHS) directive.</p>
	<p>FOCUS-1 comes equipped with a Wi-Fi communication module.</p>
	<p>The valve body of FOCUS-1 may become hot, contingent upon the medium flowing through it.</p>
	<p>This symbol signifies compliance with the requirements of the ATEX directive.</p>

- Radio Equipment Directive (RED) - 2014/53/EU
- Pressure Equipment Directive (PED) - 2014/68/EU
- Equipment intended for use in explosive atmospheres (ATEX) - 2014/34/EU
- Machine Directive - 2006/42/EU
- RoHS Directive - 2011/65/EU
- WEEE - 2012/19/EU

The manufacturer certifies successful testing of the product by applying the CE marking.

FOCUS-1-Ex device is certified for using in zone 1 hazardous locations.

Check if the device has the right label.

ATEX certificate: FTZU 23 ATEX 0040X
IECEX certificate: IECEX FTZU 23.0023X

4. Chapter 4 – Markings label

Markings of the device:



- ATEX : **II 2G Ex eb ia op is [ia Ga] IIB+H2 T3/T4 Gb**
- IECEX : **Ex eb db ia op is [ia Ga] IIB+H2 T3/T4 Gb**

The device has to bear the markings label. The information on the label depends on the installation conditions.

ATEX marking label:

MULTIPURPOSE SMART FLOW CONTROL INSTRUMENT		FOCUS-ON • Kerkeplaat 12 3313 LC Dordrecht The Netherlands • www.fon-p.com	
FOCUS-1_Ex KEY <input type="text"/>		S/N <input type="text"/> TAG_No <input type="text"/>	
DN / PN	<input type="text"/>	ATEX 2014/34/EU FTZU23 ATEX0040X	
Qmin / Qmax	<input type="text"/>	II 2G Ex db eb ia op is [ia Ga] IIB+H2 T3...T4 Gb	
Body materials	1.4408 // A351CF8M	I/O intrinsically safety circuits: Ui = 26 V, Ii = 100 mA, Pi = 700 mW	
Trim / Sealings Materials	<input type="text"/>	Operation Temp. <input type="text"/>	
Kvs / Cv / Characteristics	<input type="text"/>	Ambient Temp. <input type="text"/>	
Actuator size / fail	<input type="text"/>	PED 2014/68/EU, FOCUS-1 valve	
Actuator Oper. Air Pres. / max	<input type="text"/>	Fluid <input type="text"/>	
Power supply	<input type="text"/>	PS Design Min / Max <input type="text"/>	
Protection class (acc. To EN 60529)	IP 66	TS Design Min / Max <input type="text"/>	
WARNING: Do not open the flameproof enclosure when energized and explosive atmosphere is present!		Hydro Test Pressure <input type="text"/>	
WARNING: Potential electrostatic charging hazard - avoid friction!		Hydro Test Date <input type="text"/>	
Read the user manual!		Manufacturing year <input type="text"/>	

IECEX markings label:

MULTIPURPOSE SMART FLOW CONTROL INSTRUMENT		FOCUS-ON • Kerkeplaat 12 3313 LC Dordrecht The Netherlands • www.fon-p.com	
FOCUS-1_Ex KEY <input type="text"/>		S/N <input type="text"/> TAG_No <input type="text"/>	
DN / PN	<input type="text"/>	IECEX markings FTZU IECEX 23.0023X	
Qmin / Qmax	<input type="text"/>	II 2G Ex db eb ia op is [ia Ga] IIB+H2 T3...T4 Gb	
Body materials	1.4408 // A351CF8M	I/O intrinsically safety circuits: Ui = 26 V, Ii = 100 mA, Pi = 700 mW	
Trim / Sealings Materials	<input type="text"/>	Operation Temp. <input type="text"/>	
Kvs / Cv / Characteristics	<input type="text"/>	Ambient Temp. <input type="text"/>	
Actuator size / fail	<input type="text"/>	PED 2014/68/EU, FOCUS-1 valve	
Actuator Oper. Air Pres. / max	<input type="text"/>	Fluid <input type="text"/>	
Power supply	<input type="text"/>	PS Design Min / Max <input type="text"/>	
Protection class (acc. To EN 60529)	IP 66	TS Design Min / Max <input type="text"/>	
WARNING: Do not open the flameproof enclosure when energized and explosive atmosphere is present!		Hydro Test Pressure <input type="text"/>	
WARNING: Potential electrostatic charging hazard - avoid friction!		Hydro Test Date <input type="text"/>	
Read the user manual!		Manufacturing year <input type="text"/>	

5. Chapter 5 – Temperature limits

FOCUS-1_Ex is certified for group II , category 2G equipment for gas hazardous areas zone 1 and 2, group IIB+H2, temperature class T4 and T3.

FOCUS-1_EX	Ex_Marking
FOCUS-1_ATEX	II 2G Ex eb ia op is [ia Ga] IIB+H2 T3/T4 Gb
FOCUS-1_IECEX	Ex eb db ia op is [ia Ga] IIB+H2 T3/T4 Gb

- Ambient temperature: $-20^{\circ}\text{C} \leq T_a \leq +55^{\circ}\text{C}$
- Process temperatures $-10^{\circ}\text{C} / -40^{\circ}\text{C} \leq T_{\text{process}} \leq +180^{\circ}\text{C}$

Depending on the process temperature and the ambient temperature the device marked with the corresponding temperature class.

Temperature class	T_{process}	
	$-20^{\circ}\text{C} \leq T_a \leq 50^{\circ}\text{C}$	$T_a \leq 55^{\circ}\text{C}$
T4	121 °C	121 °C
T3	180 °C	140 °C

The temperature limits apply under the following conditions:



- The device is installed and operated in accordance with the installation directions given in the Quick Start installation and User Manual.
- The device is not heated up by any additional heat radiation (direct solar radiation, heat from adjacent plant parts) so causing it to operate above the permissible ambient temperature range.

6. Chapter 6 – Electrical connections

6.1 Installation instructions

For device installation must be applied the requirements of IEC/EN 60079-14 "Electrical installations in hazardous locations".

WARNING!



- Installation, utilization and maintenance are only allowed to be executed by personnel with an education in explosion safety!
- Do not bring changes to FOCUS-1_Ex device!
Unauthorized changes affect the explosion safety of the device.
- FOCUS-1_Ex device is intended for permanent connection to mains power.

WARNING!



An external **power supply switch** or **circuit-breaker**, easily accessible for the operator, must be installed to disconnect the device from the mains power supply. The switch or circuit breaker, along with the wirings, must be appropriate for the application and meet the local safety requirements of the installation.



The FOCUS-1_Ex device is designed for use in potentially explosive atmosphere (HAZLOC) with the same characteristics as the device (see device's markings).

Cable glands:



When used in a potentially explosive atmosphere, certified cable entry elements (cable glands, blind plugs) must be used that are suitable for the application and correctly installed.

Consult ATEX, IECEX certificates for details regarding the cable glands and blind plug.

FOCUS-1_Ex device is delivered with plastic protection elements at the entries of the connection compartment; these 4platics elements have to be replaced;

The **cable glands** and **blanking elements** (blind plug) used for the connections compartment (Ex eb):

- are not delivered with the device;
- must be metallic M20 x1,5 in type of protection increased safety "Ex eb", suitable for the conditions of use and correctly installed.
- valid ATEX/IECEX approvals
- must provide a degree of protection of at least IP 54 according to IEC/EN 60 529.

Wires/cable power connection:

- AC => 3 wires cable (recommended at least 3 x 075 [mm²]) (L+, N-, PE)
- DC => 2 wires cable (recommended at least 3 x 075 [mm²]) (L+, L-)

I/O cable connections:



- INPUT-1/OUTPUT => 4 wires data cable, unshielded (1+ & 2- INPUT, 3+ & 4- OUTPUT)
- INPUT_2 (external sensor) => 2 wires data cable, unshielded (ES+, ES-)
- Consult also the Quick Start guide (TD-122)

I/O TerminalMarking	Description
IN_1(+)->(wire 1)	4-20mAinput:+terminal
IN_1(-)->(wire 2)	4-20mAinput:-terminal
OUT (+)->(wire 3)	4-20mAoutput:+terminal
OUT (-)->(wire 4)	4-20mAoutput:-terminal
ES(1+) ->(wire 1)	4-20mAinput:+terminal
ES(2-)->(wire 2)	4-20mAinput:-terminal

WARNING!

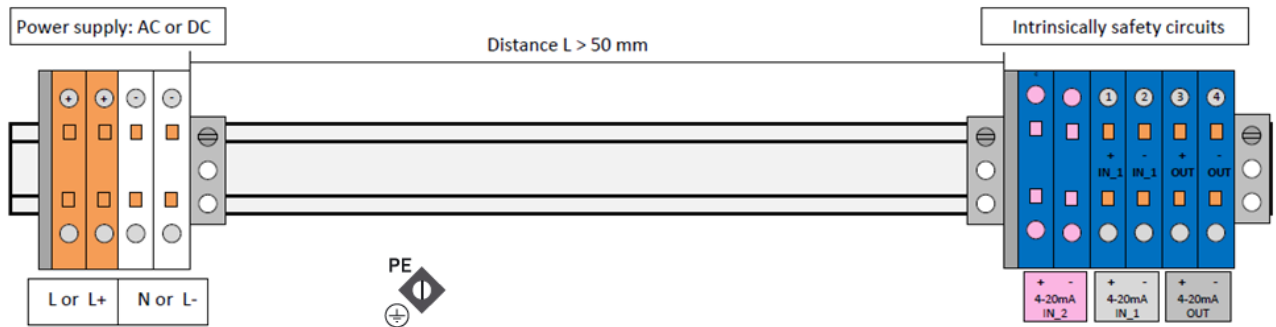


- Power supply circuits are non-Ex
- INPUT/OUTPUT circuits are intrinsically safety Ex ia
- Do not move the connectors inside the Ex eb connection compartment.

Allow the electronics to de-energize before opening the electronics compartment covers. Wait at least 10 minutes before opening.

Analog In/Out Isolation	Functional isolation between Analog IN/Analog OUT/Power Analog circuits (IN/OUT/Power) are isolated from all other circuits and chassis/PE		
	Min	Typ	Max
Withstand voltage to chassis			1500VDC 60s
Withstand voltage to other circuits			1500VDC 60s
Continuous voltage to chassis			250VAC
Continuous voltage other circuits			250VAC

6.2 Power supply circuits



FOCUS-1_Ex AC variant (L, N)

AC range power supply:
Nominal current:

85-250 VAC, 50/60Hz, 15VA,
200 mA VRMS @230 VAC

AC terminals	Description
Line (L)	Connect line to the line terminal
Neutral (N)	Connect neutral to the neutral terminal

FOCUS-1_Ex DC variant (L+, L-)

DC range power supply:
Nominal current:

18-32 VDC, 15 W
500 mA @24 VDC

DC terminals	Description
Line (L+)	+ 24 VDC power supply: + terminal
Neutral (L-)/24 VDC)	-24 VDC power supply:- terminal



The electronics enclosure has two PE-clamp Earthing facilities:

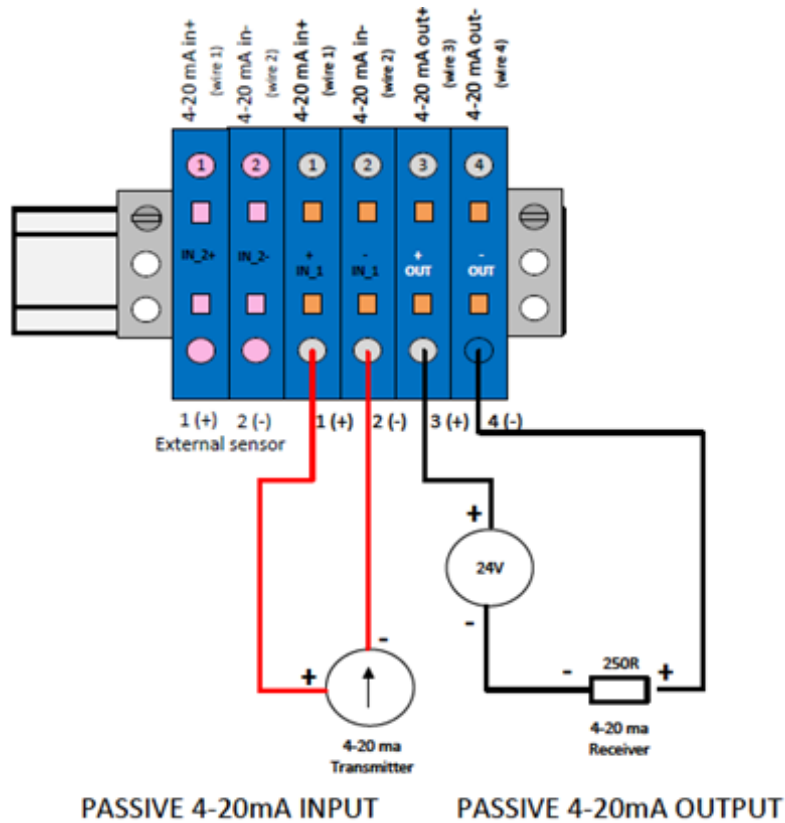
- Inside connection compartment for Earthing yellow/green cable of the AC power cable.
- Outside on the bottom left of the connection compartment, for connection to the Earthing protection of the installation. The external PE-clamp has a clamping capacity of at least 2,5 / 4 [mm²]. If necessary a SS intermediate plate is added to prevent direct contact between copper wire and ALU body.

6.3 INPUT circuits

FOCUS-1_Ex has been provided with 2 passive x analog 4...20mA inputs

- Analog IN_1,
- Analog IN_2 (for connection of an external sensor)

The "2-wire" 4...20mA current loop is connected to the two terminals marked "4-20mA IN_1".



Input 2 is reserved for external sensor.

Analog input 4-20mA	Min	Typ	Max
Input voltage[V]	10		26
Input current[mA]	0		21
Protection	INPUT is protected against polarity reversal by means of a reverse polarity protection diode. The INPUT is galvanically isolated from the rest of the system with a dielectric strength of 1000 VAC		

6.4 OUTPUT circuit

FOCUS-1 device has been provided with a passive 4-20 mA output;



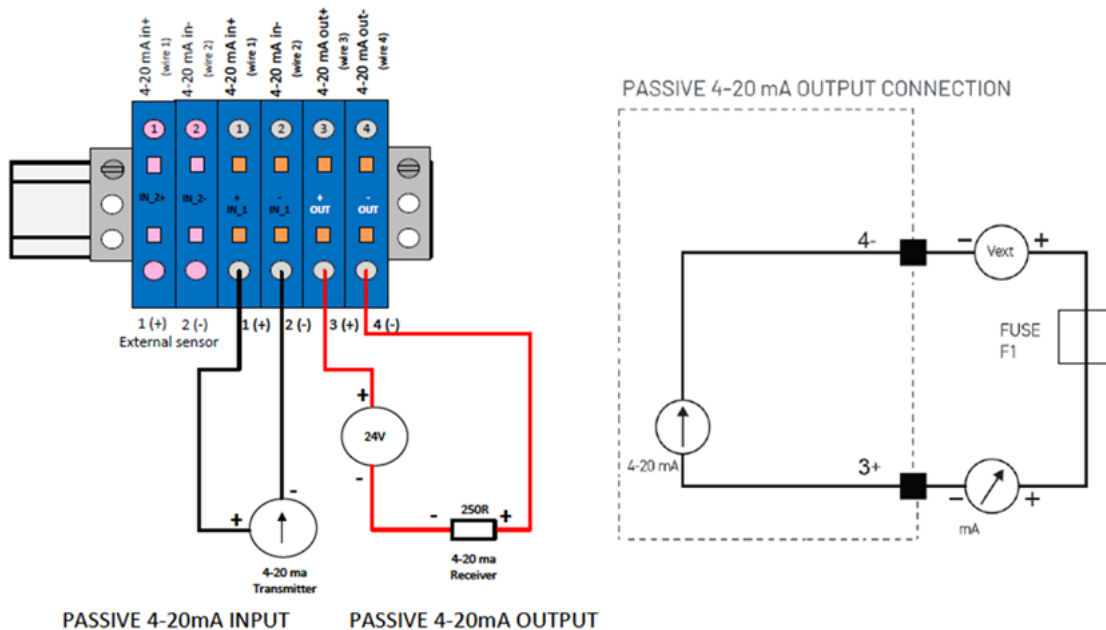
The passive 4-20 mA output requires an external 24 VDC power supply.

The analog output has HART7 functionality:

For more information on the available HART functionality, see the Field Device Description (TD-048), it is available on the FOCUS-1's Dashboard and can be downloaded from the device.

Since the device can be configured in multiple ways depending on the process conditions and the preferred automation solution, the output is also freely configurable to communicate any of the possible process values. The HART7 functionality enables communication of all other process values. At the first startup of the device, the user will be guided through the configuration of the IN- and OUTPUT settings of FOCUS-1.

If the user selects valve position as the output value, then the range is already set. Depending on the hardware configuration, Air to Open (ATO) or Air to Close (ATO), 4 mA or 20 mA is either fully open or fully closed position. The analog value communicates percentage open or closed.



Analog output (4-20mA)	Min	Typ	Max
Passive output current [mA]	3,6		22
Output voltage [V]	11	24	30
Protection	OUTPUT is protected against polarity reversal by means of a reverse polarity protection diode. The OUTPUT is galvanically isolated from the rest of the system with a dielectric strength of 1000 VAC		

7. Chapter 7 – Maintenance and service

WARNING!



- Maintenance and service activities are allowed to be performed only by authorized and trained personnel by FOCUS-ON.
- It is forbidden to bring changes to the Explosionproof enclosure (Ex db) and Intrinsically safety circuits (Ex ia)

7.1 Maintenance

Within the scope of periodic inspections required for electrical equipment installed in hazardous areas it is recommended to check the electronics housing for signs of damage or corrosion.

The electronics enclosure explosionproof compartments are protected against unauthorized opening. Each Ex db compartment (round cover) is protected by a seal. Only authorize by FOCUS-ON service engineers are allowed to open the seal during maintenance or service activities.

Allow the electronics to de-energize before opening the electronics compartment covers. Wait at least 35 minutes for T6 and 10 minutes for T5 before opening.

7.2 Before and after opening

WARNING!



The following instructions must be carefully followed if the explosionproof electronics compartments have to be opened respectively closed again.

Before opening:

- Make absolutely sure that there is no explosion hazard!
- Gas-free certificate!
- Make sure that all connecting cables are safely isolated from all external sources!
- Allow the electronics to de-energize before opening the Ex db electronics compartments. Wait at least 10 minutes before opening.

When the instructions above are strictly followed, the cover(s) of the electronics compartment may be removed. First unscrew the head screw with internal hexagon socket set (size M4) of the interlocking device by a No. 3 Allen key, until the cover can rotate freely.

After opening:

- Before the cover is screwed back onto the enclosure, the screw-thread must be clean and well-greased with an acid and resin-free grease (e.g. PTFE grease).
- Screw the cover as tight as possible into the housing by hand, until it cannot be opened by hand anymore. Fixate the screw of the interlocking device tight with the No. 3 Allen key.

7.3 Return FOCUS-1_Ex to FOCUS-ON

Consult the User Manual for detail regarding the measures prior sending the device to the manufacturing (Declaration of Contamination, RMA,).