Safety instructions

This instrument is built and tested according to the current EU-directives and packed in a technically safe condition. In order to maintain this condition and to ensure safe operation, the user must follow the hints and warnings given in this instruction.

During the installation the valid national rules have to be observed. Ignoring the warnings may lead to severe personal injury or substantial damage to property.

The product must be operated by trained staff. Correct and safe operation of this equipment is dependent on proper transport, storage, installation and operation.

All electrical wiring must conform to local standards. In order to prevent stray electrical radiation, we recommend twisted and shielded input cables, as also to keep power supply cables separated from the input cables. The connection must be made according to the connection diagrams.

Before switching on or off the power supply take care that other equipment is not affected. Ensure that the supply voltage and the conditions in the environment comply with the specification of the device.

Description

The DFON is powered by the 4…20 mA loop and need no additional power supply. When mounted on new instrument series like the CombiPress™ PFMx it is via the internal UnitCom ribbon cable supplied with power and a digital signal, instead of integrated in the 4…20 mA loop. In instruments with UnitCom both the transmitter and display can be programmed at the same time alternatively separate programming of each device can be selected.

The DFON has an unique background colour setting. Three colours are available – White / Red / Green and further the red and green colour can be set as flashing in warning mode.

The DFON has two integrated galvanic separated relays. The instrument can be delivered with or without activated relays. If supplied without activated relays, those can be activated by purchasing a license code from Baumer. By entering the code to the instrument via the FlexProgrammer the relays are enabled.

The DFON can be programmed by the touch screen on the display or by the FlexProgrammer 9701 Baumer programming unit with the Baumer FlexProgram installed on a PC.

(The free download from www.baumer.com)

The DFON can be delivered as a stand-alone display or as an integrated part of an instrument e.g. PFMx, TFRx and AFlx.

Alternatively it can be delivered as a loop-powered local display for any instrument in a SS case for wall mounting, panel mounting or tube mounting.

Display mode

There are 10 different display modes available:

- Digital
  - small
  - large
- Analogue
  - analogue
  - same w. bar graph
  - same w. value
- Bar graph
  - horizontal
  - vertical
- Tank
  - tank illustration
  - bottle illustration
Dimensions for mounting of stand-alone

Wall mounting

Panel mounting

Tube mounting

Pin 1  +  4…20 mA
Pin 2  -  4…20 mA
Pin 3  Relay 21
Pin 4  Relay 22
Pin 5  Relay 11
Pin 6  Relay 12
Com 1  FlexProgrammer ① red
Com 2  FlexProgrammer ② black

Pin 3 and 5 can be jumpered together if common supply is used for the two relays, e.g. via a M12 5-pin connector.

When instruments like PFMx are delivered with DFON display terminal 1 and 2 are not connected. In this case the DFON is powered and will have data through a special ribbon cable (UnitCom). When connected via UnitCom the DFON and transmitter can be programmed together.

When upgrading a product from the CombiSeries without display with a DFON touch screen, remember to remove the O-ring from the sealing. Otherwise the sealing won’t be tight.

Special connection types

For connection ‘type B’ all the necessary wiring is done inside the DFON housing. It is a "Plug-and-play" solution. Connect:

PF20x (3-wire)  DFON
M12 male, 4-pin  ↔  M12 female, 4-pin

For connection ‘type C’ all the necessary wiring is done inside the DFON housing. It is a "Plug-and-play" solution. Connect:

4…20 mA transmitter (2-wire)  DFON
M12 male, 4-pin  ↔  M12 female, 4-pin
Operating instructions
CombiView™, type DFON

Electrical connection

For connection ‘type D’ the following connection diagram has to be followed:

- PF20x (3-wire)
  - Pin 2 (lout flow) ↔ Pin 1 (+ 4...20 mA)
  - Pin 1 (+ Vs) ↔ Pin 1 (+ Vs)
  - Pin 3 (GND) ↔ Pin 3 (GND)

For connection ‘type E’ the following connection diagram has to be followed:

- 4...20 mA transmitter (2-wire)
  - Pin 3 (- 4...20 mA) ↔ Pin 1 (+ 4...20 mA)
  - Pin 1 (+ 4...20 mA) ↔ Pin 1 (+ 4...20 mA)

Touch screen programming the CombiView™, type DFON

Tap on the display screen and the button will appear in the bottom. Press and the display may start with one out of two possible selections.

With traditional 4...20 mA loop configuration (connected to pin 1 and 2 on the display)

- Menu
  - Display menu
    - Display setup
    - Diagnostics

With a transmitter communicating with the DFON via UnitCom ribbon cable

- Menu
  - Product menu
    - Display menu
      - Data display mode

Product menu
Enabling the user to set up the connected transmitter

Display menu
Enabling the user to program the DFON display

Data display mode
Enabling the user to program the connected transmitter. The programmed values will also be valid for the DFON display (ignoring whatever setup already set on the display).

Only programming of background colours and relays must be done under "Display menu" → "Configuration"

Data display mode will communicate with the transmitter digitally, which is more accurate than using the 4...20 mA communication.

For menu tree please see page 7.
CombiView™, type DFON - ATEX specifications and instructions

Zone 0/1 Gas:  II 1 G Ex ia IIC T5 Ga
Zone 20/21 Dust:  II 1 D Ex ia IIIC T100°C Da
Zone 2 Gas:  II 3 G Ex ec IIC T5

Please ensure the special requirements for installation in the specific environment is followed, as described below.

ATEX approval requires the CombiView™, type DFON to be installed in IP67 certified housing.

Safety instructions

This instrument is constructed and tested according to the current EU directives and packed in a technically safe condition. In order to ensure safe conditions and operation, the user must follow the instructions and warnings given in this instruction and the standard operation instruction.

During the installation the valid national rules have to be observed. Ignoring the instructions may lead to severe personal injury or substantial damage to property.

The product must be installed and operated by trained staff. Correct and safe operation of this equipment is dependent on proper installation and operation.

All electrical wiring must conform to local standards and the connection must be made according to the connection diagrams on the following pages.

Before switching on the power supply take care that other equipment is not affected. Ensure that the supply voltage and conditions in the environment comply with the specification of the device.

Before switching off the supply voltage check the possible effects on other equipment and processing system.

To obtain the specified ingress protection degree, the CombiView™, type DFON must be mounted with a compliant cable.

Warning

This product is allowed to be operated in an explosion hazardous atmosphere of zone 0 only if atmospheric conditions exists (temperature –20°C...+60°C and pressure from 0.8 ... 1.1 bar). Under other atmospheric conditions the certificate may be used as a guide.

Use of FlexProgrammer 9701 is only allowed in the safe area, not in the hazardous area.

Impact test of the display cover is performed according to EN 60079-0, with low impact energy of 2J and does not create a crack or other intrusion into the housing. However the display, which is mounted close to the front cover may be damaged, but this will not create any external sparking. The housing is impact texted also according to EN 60079-0, with low impact energy of 4J on housing, connectors and cable gland.

This product contains no replaceable parts. In case of malfunction the products must be shipped to Baumer for repair.
ATEX Gas ia and for ATEX Dust ia

For ATEX ia Gas zone 0/1/2 and ATEX ia Dust zone 20/21/22 a zener barrier must separate the hazardous and safe area, and must be installed in accordance with prevailing guidelines for the zone.

ATEX ia Gas / Dust data:

Approval:
- ATEX II 1G Ex ia IIC T5 Ga
- ATEX II 1D Ex ia IIIC T100°C Da

Voltage drop $U_{\text{Disp}}$ 4.5 or 6.5 VDC

Temperature class
- Zone 0 and 20: -20°C...60°C
- Zone 1/2 and 21/22: -40°C...65°C

Internal inductivity $L_i$ <10 µH

Internal capacity $C_i$ <15 nF

Barrier data
- $U_{i}$ <30 VDC
- $I_{i}$ <0.1 A
- $P_{i}$ <0.75 W

Suitable barrier ZEX-ALL.B28RD100

The display is supplied by the 4...20 mA loop from the transmitter and can thus be placed near the transmitter or near the power supply, as preferred. However to make the display intrinsic safe a zener barrier must be inserted before the DFON. The transmitter may be placed inside or outside the hazardous area.

If the CombiView™, type DFON is attached to a Baumer transmitter using the UnitCom ribbon cable, it is considered to be an integrated part of the instrument. Please see the ATEX instruction for the relevant instrument.

If the relays are enabled, each relay must be protected by a zener barrier. Use a barrier for each relay or a barrier with multiple channels. However the two relays must have each a barrier.

Barrier data
- $U$ <30 VDC
- $I$ <75 mA
- $P$ <0.75 W

Suitable barrier ZEX-ALL.B30RSO75

Display in the zone, transmitter outside the zone

Display and transmitter in the zone

With relay output

Display in the zone/transmitter outside the zone

Display and transmitter in the zone

www.baumer.com
ATEX Gas nA

For ATEX ec zone 2 is approved without using zener barrier and must be installed in accordance with prevailing guidelines for zone 2.

ATEX data:
Approval: Gas Zone 2  II 3 G Ex ec II T5
Voltage drop  $U_{\text{Disp}}$  4.5 or 6.5 VDC
Temperature class T1…T5  -30 < $T_{\text{amb}}$ < 65°C
Internal inductivity $L_i$  <10 µH
Internal capacity $C_i$  <15 nF
Maximum voltage $U_{\text{max}}$  <35 VDC
Maximum current $I_{\text{max}}$  <0.1 A

Display without relay output

Display with relay output

Programming the CombiView™, type DFON in ATEX area

Programming the CombiView™, type DFON in hazardous area with the FlexProgrammer is not allowed, as the FlexProgrammer (and/or the PC) is not ATEX approved.

Follow below procedure to programme the instrument:

a) Disconnect mains from the 4…20 mA loop circuit
b) Disconnect the instrument from the circuit within the hazardous area
c) Uninstall the instrument and bring it to safe area
d) Connect the FlexProgrammer and perform the configuration session.
(Please see: www.baumer.com/downloads/product documents/manuals - DFON - Programming)
e) Reinstall the instrument in the hazardous area
f) Connect the instrument to the circuit
g) Connect mains from the 4…20 mA loop circuit
Operating instructions
CombiView™, type DFON

Touch screen programming the CombiView™, type DFON

Display menu
  Configuration
    Data display mode
      Display conversion
        Transmitter value
          Display conversion

Identification
  Tag, S/N, Date, Prod. date
    Input
      Input at 0%
      Input at 100%
      Damping
      Lin. Correction

Display output
  Display at 0%
  Display at 100%
  Decimals
  Unit
  Abs. / Rel.

Error / warning
  High error
    High error limit
    High error indication
    High error backlight
  High warning
  Low error
  Low warning

Relay setup
  Relay 1 mode
    AO / AC / NO / NC
  Relay 1 set point
  Relay 1 reset point
  Relay 2 mode
  Relay 2 set point
  Relay 2 reset point

Display setup
  Screen layout
    Standard screens
      Select display design
    Product specific screens
      Select display design

  Backlight
    Colour
      White / Green / Red
    Intensity
      10%-140%

  Language
    EN / DK / DE / FR

  Password
    Password enable
      Enable / Disable
    New password
      Create new password

  Menu timeout
    Timeout value

Diagnostics
  Statistics
    Min/Max / Errors / Uptime
      Select demo mode
      Static demo value

  Demo setup
    Accept / cancel
      Internal temp, Start up, Ver.

  Factory setting
    Service info
      Service code
      Enter code

  Service menu
    Relay activation
      Enter code