

For the combined connection of the different supply, input and output circuits, the installation instructions of the manufacturer shall be observed. From the safety point of view the circuits shall be considered to be connected to earth. The following conditions of use shall be observed:

The indicator is classified as group IIB/IIC. However, classification of the indicator as group IIC is possible, only under the following conditions:

- The indicator is either supplied by
  - the internal supply (option -PC); or
  - the external supply connected to terminals 0 and 1 (option -PD); or
  - the circuit supply connected to terminals 7 and 8 (option -AP);

The maximum values for any of those circuits are those as defined for group IIB/IIC;

- no other active external intrinsically safe circuits may be connected to the indicator, with exception of circuits connected to terminals 3 and 4 and/or terminals 5 and 6; the maximum values for any of those circuits are those as defined for group IIB/IIC

|   | Electrical data   | Model F1 .. -A<br>Model F1 .. -U   | Model F1 .. -P<br>Model F1 .. -T | Model F1 .. -R |
|---|---|--|----------------------------------|----------------|
| <b>Internal supply</b> (Connector)<br>Option -PC                              | For use with the certified replaceable battery type FW-LiBAT-... or to another certified non rechargeable battery in type of protection intrinsic safety Ex ia IIB/IIC/IIC, with the following maximum values:<br>$U_i = 4 \text{ V}$<br>$I_i = 50 \text{ mA}$<br>$P_i = 200 \text{ mW}$<br>$L_i = 0 \text{ mH}$<br>$C_i = 0 \text{ }\mu\text{F}$ |  |                                  |                |
|   | In type of protection intrinsic safety Ex ia IIB/IIC or Ex ia IIC (as indicated below), only for connection to a certified intrinsically safe circuit, with following maximum values:   |  |                                  |                |
| <b>External supply input</b><br>Option -PD<br>Terminals 0 and 1               | $U_i = 30 \text{ V}$<br>$I_i = 100 \text{ mA}$<br>$P_i = 750 \text{ mW}$<br>$L_i = 0 \text{ mH}$<br>$C_i = 0 \text{ }\mu\text{F}$   | Ex ia IIB/IIC<br>If external circuits are connected to the external supply outputs, terminals 0 and 2 and where applicable terminals 9 and 11 and/or 12 and 14, the total amount of external capacitance and inductance of the circuits, connected to that terminals, is added to the effective internal capacitance $C_i$ and inductance $L_i$ of this external supply input circuit. |                                  |                |
| <b>Active inputs</b><br>(Active pulse, 0/4-20mA, 0-10V)                       | $U_i = 30 \text{ V}$<br>$I_i = 100 \text{ mA}$<br>$P_i = 750 \text{ mW}$<br>$L_i = 0 \text{ mH}$<br>$C_i = 0 \text{ }\mu\text{F}$   | Ex ia IIB/IIC<br>terminals 9 and 10,<br>terminals 12 and 13, terminals 17 and 18, terminals 17 and 19  |                                  |                |
| <b>Pulse outputs</b><br>Option -OT<br>Terminals 3 and 4,<br>terminals 5 and 6 | $U_i = 30 \text{ V}$<br>$I_i = 100 \text{ mA}$<br>$P_i = 750 \text{ mW}$<br>$L_i = 0 \text{ mH}$<br>$C_i = 0 \text{ }\mu\text{F}$   | Ex ia IIB/IIC  |                                  |                |
| <b>Analog output "open drain"</b><br>Option -AF and -AP                       | $U_i = 30 \text{ V}$<br>$I_i = 100 \text{ mA}$<br>$P_i = 750 \text{ mW}$<br>$L_i = 0 \text{ mH}$<br>$C_i = 17 \text{ nF}$   | Ex ia IIB/IIC<br><u>Option -AF:</u> terminals 7 and 8 with respect to terminals 0, 3, 5, 9, 12 and 15.<br><u>Option -AP:</u> terminals 7 and 8.  |                                  |                |
| <b>Pulse/status inputs</b><br>Terminals 15 and 16                             | $U_i = 30 \text{ V}$<br>$I_i = 100 \text{ mA}$<br>$P_i = 750 \text{ mW}$<br>$L_i = 0 \text{ mH}$<br>$C_i = 0 \text{ nF}$  | Or in type of protection intrinsic safety Ex ia IIB/IIC or Ex ia IIC, with the following maximum values:<br>$U_o = 5,4 \text{ V}$ , $I_o = 1 \text{ mA}$ , $P_o = 2 \text{ mW}$ , $L_o = 1 \text{ H}$ , $C_o = 65 \text{ }\mu\text{F}$   |                                  |                |
| <b>Data communication circuit</b><br>Terminals 26, 27, 28, 29, 30 and 31      | $U_i = 30 \text{ V}$<br>$I_i = 250 \text{ mA}$<br>$P_i = 850 \text{ mW}$<br>$L_i = 0 \text{ mH}$<br>$C_i = 0 \text{ nF}$  | Ex ia IIB/IIC  |                                  |                |

|   | Electrical data  | Model F1 .. -A<br>Model F1 .. -U  | Model F1 .. -P<br>Model F1 .. -T                  | Model F1 .. -R                           |
|---|--|---|---|--|
| In type of protection intrinsic safety Ex ia IIB/IIIC or Ex ia IIC, with following maximum values:  |  |   |   |  |
| <b>Coil, Switch, PNP, NAMUR inputs</b><br>In combination <u>with</u> external supply<br>(with option -PD)   | $U_0 = 8,7 \text{ V}$<br>$I_0 = 25 \text{ mA}$<br>$P_0 = 150 \text{ mW}$<br><br>Ex ia IIB/IIIC<br>$L_0 = 210 \text{ mH}$<br>$C_0 = 50 \text{ }\mu\text{F}$   | Terminals<br>13 and 14  | Terminals<br>10 and 11,<br>terminals<br>13 and 14 | Terminals<br>13 and 14                   |
| <b>Coil, Switch, NPN inputs</b><br>In combination <u>with</u> external supply<br>(with option -PD)  | Ex ia IIC<br>$L_0 = 52,6 \text{ mH}$<br>$C_0 = 5,9 \text{ }\mu\text{F}$  | Terminals<br>12 and 13  | Terminals<br>9 and 10,<br>terminals<br>12 and 13  | Terminals<br>12 and 13                   |
| <b>Coil, Switch, PNP inputs</b><br>In combination <u>without</u> external supply<br>(without option -PD)  | $U_0 = 5,4 \text{ V}$<br>$I_0 = 5,2 \text{ mA}$<br>$P_0 = 7 \text{ mW}$<br><br>Ex ia IIB/IIIC<br>$L_0 = 210 \text{ mH}$<br>$C_0 = 50 \text{ }\mu\text{F}$  | Terminals<br>13 and 14  | Terminals<br>10 and 11,<br>terminals<br>13 and 14 | Terminals<br>13 and 14                   |
| <b>Coil, Switch, NPN inputs</b><br>In combination <u>without</u> external supply<br>(without option -PD)  | Ex ia IIC<br>$L_0 = 1 \text{ H}$<br>$C_0 = 65 \text{ }\mu\text{F}$   | Terminals<br>12 and 13  | Terminals<br>9 and 10,<br>terminals<br>12 and 13  | Terminals<br>12 and 13                   |
| <b>Potentiometer inputs</b><br>In combination <u>with</u> external or circuit<br>supply (with option -PD, -AP)<br>Terminals 9, 10 and 11,<br>terminals 12, 13 and 14        | $U_0 = 5,4 \text{ V}$<br>$I_0 = 162 \text{ mA}$<br>$P_0 = 750 \text{ mW}$<br><br>Ex ia IIB/IIIC<br>$L_0 = 5,3 \text{ mH}$<br>$C_0 = 1000 \text{ }\mu\text{F}$  | N.A.  | N.A.  | Applicable                               |
| <b>Pt100 inputs</b><br>In combination <u>with</u> external or circuit<br>supply (with option -PD, -AP)<br>Terminals 20, 21 and 22,<br>terminals 23, 24 and 25               | Ex ia IIC<br>$L_0 = 1 \text{ mH}$<br>$C_0 = 65 \text{ }\mu\text{F}$  | Applicable  |   |  |
| <b>Potentiometer inputs</b><br>In combination <u>without</u> external or circuit<br>supply (without options -PD, -AP)<br>Terminals 9, 10 and 11,<br>terminals 12, 13 and 14 | $U_0 = 5,4 \text{ V}$<br>$I_0 = 40 \text{ mA}$<br>$P_0 = 200 \text{ mW}$<br><br>Ex ia IIB/IIIC<br>$L_0 = 5,3 \text{ mH}$<br>$C_0 = 1000 \text{ }\mu\text{F}$   | N.A.  | N.A.  | Applicable                               |
| <b>Pt100 inputs</b><br>In combination <u>without</u> external or circuit<br>supply (without options -PD, -AP)<br>Terminals 20, 21 and 22,<br>terminals 23, 24 and 25        | Ex ia IIC<br>$L_0 = 20 \text{ mH}$<br>$C_0 = 65 \text{ }\mu\text{F}$   | Applicable  |   |  |
| <b>External supply outputs</b><br>When <u>both</u> terminal 10 and terminal 13<br>are configured either as analog inputs<br>(0/4-20mA, 0-10V) or as not available           | The maximum output values,<br>including the maximum allowed<br>external capacitance and<br>inductance values are equal to<br>the parameters of the<br>intrinsically safe circuit,<br>connected to the external supply<br>input at terminals 0 and 1. | Ex ia IIB/IIIC<br><br>Terminals 0 and 2,<br>terminals 9 and 11,<br>terminals 12 and 14. | Ex ia IIB/IIIC<br><br>Terminals 0 and 2.          | Ex ia IIB/IIIC<br><br>Terminals 0 and 2. |
| <b>External supply outputs</b><br>When <u>either</u> terminal 10 or terminal 13 is<br><u>not</u> configured as analog input<br>(0/4-20mA, 0-10V) but is / are available     |  | Ex ia IIB/IIIC Only<br><br>Terminals 0 and 2  |   |  |