Ex Input Barrier
MC31-41B
4 channels

The input barrier MC31-41B has four intrinsically safe input circuits. Standard analogue signals are transmitted to the passive input circuits and digitized with a resolution of 12 bit. The input circuits are galvanically isolated from each other and from the power supply.

The parameterisation mode is determined by the master. Either the software programming mode is selected so that each channel can be programmed separately via the master, or parameters are set via two switches on the module for all channels.

The following settings are available:
- conversion of the input current range from 0...20 mA to 4...20 mA
- if the 4...20 mA input range has been selected, wire-break monitoring can be activated

Each input circuit is monitored by an error indication LED:
- red: wire-break in the input circuit.
**Fieldbus Components**

**sensoplex® MC**

The dual colour „Status“ LED indicates the module status:
- **green:** supply voltage is present, the module is operating
- **green flashing:** initialisation of link to the master; constant green flashing: connection cannot be established
- **red flashing:** wrongly inserted module, hardware error, the module is not operating
- **off:**

This device requires 8 bytes of the master’s memory.

<table>
<thead>
<tr>
<th>Type</th>
<th>MC31-41B</th>
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<tbody>
<tr>
<td>Ident-No.</td>
<td>90 301 10</td>
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<table>
<thead>
<tr>
<th>Operating voltage $U_b$</th>
<th>15 VDC (system power supply)</th>
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</thead>
<tbody>
<tr>
<td>Current consumption</td>
<td>$\leq$ 230 mA</td>
</tr>
<tr>
<td>Galvanic isolation</td>
<td>input circuits isolated from each other ($60 , V_{\text{rms}}$), from bus and from supply up to $250 , V_{\text{rms}}$, test voltage 2.5 $kV_{\text{rms}}$</td>
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</tbody>
</table>

**Input circuits**

- **intrinsically safe (DIN EN 50020)**
- **Input resistance** 100 $\Omega$
- **Operating values** 0/4...20 mA
- **Maximum value** approx. 50 mA (limited internally)
- **Wire-break threshold** approx. 2 mA

<table>
<thead>
<tr>
<th>Ex-Approvals acc. to Certificate of Conformity</th>
<th>TÜV 97 ATEX 1179 X</th>
</tr>
</thead>
</table>

**Maximum values**

- **No-load voltage $U_0$** 8.7 V
- **Short-circuit current $I_0$** 1.8 mA
- **Power $P_0$** 4.0 mW

**External inductances/capacitances**

- **[$\text{EEx ia}]$ IC** 1 H/5.75 $\mu F$
- **[$\text{EEx ib}]$ IC** 1 H/50 $\mu F$

<table>
<thead>
<tr>
<th>Transmission characteristics</th>
<th>12 bit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Signal resolution</strong></td>
<td>$\leq 0.1%$ of full scale (typically 0.03 %)</td>
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<tr>
<td><strong>Linearity error</strong></td>
<td>$\leq 0.01%$ of full scale</td>
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<tr>
<td><strong>Supply voltage coefficient</strong></td>
<td>$\leq 0.005 %/K$ of full scale</td>
</tr>
</tbody>
</table>

**LED indications**

- **Power "on"/bus error** green/red (dual colour LED)
- **Channel error** 4 red LEDs

**Eurocard module**

- **Base material** Epoxy resin, glass fibre reinforced, quality class FR4
- **Front panel** plastic, 4TE = 20.32 mm
- **Connection** sensoplex® MC rack assembly
- **Operating temperature** 0 ... 50 $^\circ C$

**Coding (No. 810)**

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<thead>
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```
Ex Input Barrier
MC31-42B
4 channels

The Ex-input barriers MC31-42B with voltage
input feature 4 channels
with intrinsically safe
input circuits. Standard
analogue signals of
0/2...10 V are trans-
mitted to the passive
input circuits and
digitized with a
resolution of 12 bit. The input circuits are
galvanically isolated from each other and
from the power supply.

The parameterisation mode is determined
by the master. Either the software pro-
gramming mode is selected so that each
channel can be programmed separately via
the master, or parameters are set via two
switches on the module for all channels.

If the software programming mode is
used, the front switch positions are
ineffective.

The following parameters can be set:
- conversion of the input voltage range
  from 0...10 V to 2...10 V
- if an input voltage range from 2 to 10 V
  is selected, wire-break monitoring can
  be activated.

Each input is assigned to an LED for status
indications:
- red: wire-break in input circuit

- Intrinsically safe input circuits
[EEex ia] IIC
- Input circuits galvanically isolated
  from each other, from the power
  supply and from the bus
- Evaluation of standard analogue
  signals from 0/2...10 V
- Signal resolution 12 bit
- One fault LED per channel
- Selectable wire-break monitoring
Fieldbus Components

The dual colour „Status“ LED indicates the module’s status:
- green: supply voltage is present, the module is operating
- green flashing: initialisation of link to the master; constant green flashing: connection cannot be established
- red flashing: wrongly inserted module, hardware error, the module is not operating

This device requires 8 bytes of the master’s memory.

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<tr>
<th>Type</th>
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**Operating voltage** $U_b$
- $U_b = 15$ VDC (system power supply)

**Current consumption**
- $I_b < 230$ mA
- input circuits isolated from each other ($60$ V$_{rms}$), from bus and from supply up to $250$ V$_{rms}$, test voltage $2.5$ kV$_{rms}$

**Input circuits**
- Input resistance
  - $50$ kΩ
- Operating values
  - $0/2$...$10$ V
- Wire-break threshold
  - approx. $1$ V

**Ex-Approvals acc. to Certificate of Conformity**
- TÜV 97 ATEX 1179 X

**Maximum values**
- No-load voltage $U_0$
  - $8.7$ V
- Short-circuit current $I_0$
  - $1.8$ mA
- Power $P_0$
  - $4.0$ mW

**External inductances/capacitances**
- $[\text{Ex ia}]$ IIC
  - $1$ H/$5.75$ µF
- $[\text{Ex ib}]$ IIC
  - $1$ H/$50$ µF

**Transmission Characteristics**
- Signal resolution
  - $12$ bits
- Linearity error
  - $< 0.1\%$ of full scale (typically $0.03\%$)
- Temperature coefficient
  - $< 0.005\%$/K of full scale

**LED indications**
- Power "on"/bus error
  - green/red (dual colour LED)
- Channel error
  - red (4 x)

**Eurocard module**
- $100 \times 160$ mm (DIN 41494)
- Base material
  - Epoxy resin, glass fibre reinforced, quality class FR4
- Front panel
  - plastic, $4$TE = $20.32$ mm
  - for individual interlocking
- Connection
  - sensoplex® MC rack assembly
- Operating temperature
  - $0$...$50$ °C

**Coding (No. 810):**

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