HAZARDOUS LOCATION
Zone 1/21
Division 1 & ZN 1/21
ATEX: II 2/1 (1) G & II 2 (1) D
II 2/1 G & II 2 D
II 2 (1) G & II 2 (1) D
IECEx: Gb/Ga (Ga) & Db (Da)
Gb/Ga & Db
Gb (Ga) & Db (Da)
US: XP-IS I / 1 / ABCD & DIP / II,III / 1 / EFG
I / 1 / AEx ia mb tb & I / 21 / AEx ia ma tb
CDN: XP-IS I / 1 / ABCD & DIP / II,III / 1 / EFG
I / 1 / Ex ia mb tb & I / 21 / Ex ia ma tb

HAZARDOUS LOCATION
Zone 2/21
Division 2 & ZN 2/21
ATEX: II 3 G & II 2 D
IECEx: Gc &Db
US: NI / I / 2 / ABCD & DIP / II,III / 1 / EFG
I / 2 / AEx ec & I / 21 AEx tb
CDN: I / 2 / ABCD & II,III / 1 / EFG
I / 2 / Ex ec & I / 21 Ex tb

ORDINARY LOCATION
GENERAL PURPOSE
POWER SUPPLY
Non IS
Terminals
max 250Vrms

SIGNAL DATA
INPUT/OUTPUT
“IS” or “ia” if installed in Zone 1 or Division 1.
In Zone 1 or Division 1 intrinsically safe supply required

SENSOR SIGNALS
Connection between sensor and associated FCT4 transmitter

Installation diagram FCx4

Installation diagram FCB
Notes: ATEX & IECEx application

1. The intrinsic safety entity concept allows the interconnection of two ATEX/IECEx approved intrinsically safe devices with entity parameters not specifically examined in combination as a system when:
   \[ U_0 \text{ or } V_0 \text{ or } V_t < V_{MAX} \]
   \[ I_0 \text{ or } I_{oc} \text{ or } I_t < I_{MAX} \]
   \[ C_a \text{ or } C_0 > C_i + C_{cable} \]
   \[ L_a \text{ or } L_0 > L_i + L_{cable} \]
   \[ P_0 < P_i \]

2. Dust-tight conduit seal must be used when installed in Zone 21/22 environments.

3. Control equipment connected to the associated apparatus must not use or generate more than 250 Vrms or Vdc with respect to earth.

4. Installation should be in accordance with the relevant international or national regulations "Installation of Intrinsically Safe for Hazardous Locations" regulations.

5. The configuration of associated apparatus must be ATEX or IECEx approved under entity concept.

6. Associated apparatus manufacturer's installation drawing must be followed when installing this equipment.

7. The associated apparatus must be installed in accordance with barrier manufacturer's installation diagram.

8. Selected associated apparatus must be third party listed as providing intrinsically safe circuits for the application. It must meet the requirements listed in table of this installation diagram.

Notes: US and Canadian application

1. The intrinsic safety entity concept allows the interconnection of two FM and/or CSA approved intrinsically safe devices with entity parameters not specifically examined in combination as a system when:
   \[ U_0 \text{ or } V_0 \text{ or } V_t < V_{MAX} \]
   \[ I_0 \text{ or } I_{oc} \text{ or } I_t < I_{MAX} \]
   \[ C_a \text{ or } C_0 > C_i + C_{cable} \]
   \[ L_a \text{ or } L_0 > L_i + L_{cable} \]
   \[ P_0 < P_i \]

2. Dust-tight conduit seal must be used when installed in Class II and III environments.

3. Control equipment connected to the associated apparatus must not use or generate more than 250 Vrms or Vdc with respect to earth.

4. Installation for U.S. and Canadian approved equipment should be in accordance with ANSI/ISA RP12.6 „Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations“, the National Electrical Code (ANSI/NFPA 70) Sections 504, 505 and the Canadian Electrical Code (C22.1-02).

5. The configuration of associated apparatus must be FM and/or CSA approved under entity concept.

6. Associated apparatus manufacturer's installation drawing must be followed when installing this equipment.

7. The associated apparatus must be installed in accordance with barrier manufacturer's installation diagram.

8. Selected associated apparatus must be third party listed as providing intrinsically safe circuits for the application. It must meet the requirements listed in table of this installation diagram.
### Model code

**FCa4cY0**

**FCa4cA2**  
**FCa4cF2**  
HART Modbus Profibus DP Ethernet Communication

<table>
<thead>
<tr>
<th>Indication</th>
<th>Abbr.</th>
<th>Status</th>
<th>Option</th>
<th>Terminal</th>
<th>Operating Value</th>
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<tbody>
<tr>
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<td></td>
<td></td>
<td></td>
<td>GP Ex nA / NI</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>U_{nom} I_{nom} U_{nom} I_{nom}</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[V] [mA] [V] [mA]</td>
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<tr>
<td><strong>On board</strong></td>
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<td></td>
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<td></td>
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<tr>
<td>Current Output 1</td>
<td>CO1</td>
<td>A</td>
<td>On board Power Supply</td>
<td>31/U_{CO}</td>
<td>30 30 30 30</td>
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<tr>
<td>Current Output 1</td>
<td>CO1</td>
<td>P</td>
<td></td>
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<td>30 30 30 30</td>
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<td>DO1</td>
<td>A</td>
<td>With OC Active Supply</td>
<td>41/42 and V1/V2</td>
<td>30 30 30 30</td>
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<td>DO1</td>
<td>P</td>
<td></td>
<td>41/42</td>
<td>30 30 30 30</td>
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<tr>
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<td>DO1</td>
<td>A</td>
<td>On board Power Supply</td>
<td>51/U_{CO}</td>
<td>30 30 30 30</td>
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<td>51/52</td>
<td>30 30 30 30</td>
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<tr>
<td>Digital Output 2</td>
<td>DO2</td>
<td>P</td>
<td></td>
<td>51/52</td>
<td>30 30 30 30</td>
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<td><strong>Option Cards (OC)</strong></td>
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<td></td>
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<tr>
<td>Current Output 2</td>
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<td>A</td>
<td>With OC Active Supply</td>
<td>V1/V2 and V3/V4</td>
<td>30 30 30 30</td>
</tr>
<tr>
<td>Current Output 2</td>
<td>CO2</td>
<td>P</td>
<td></td>
<td>V1/V2 or V3/V4</td>
<td>30 30 30 30</td>
</tr>
<tr>
<td>Current Output 3</td>
<td>CO3</td>
<td>P</td>
<td></td>
<td>V1/V2 or V3/V4</td>
<td>30 30 30 30</td>
</tr>
<tr>
<td>Digital Output 3</td>
<td>DO3</td>
<td>A</td>
<td>With OC Active Supply</td>
<td>V1/V2 and V3/V4</td>
<td>30 30 30 30</td>
</tr>
<tr>
<td>Digital Output 3</td>
<td>DO3</td>
<td>P</td>
<td></td>
<td>V1/V2 or V3/V4</td>
<td>30 30 30 30</td>
</tr>
<tr>
<td>Digital Input 1</td>
<td>DI1</td>
<td>A</td>
<td>With OC Active Supply</td>
<td>V1/V2 and V3/V4</td>
<td>30 3.45 30 3.45</td>
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<tr>
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<td>DI1</td>
<td>P</td>
<td></td>
<td>V1/V2 or V3/V4</td>
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<tr>
<td>Modbus / Profibus DP</td>
<td>- - -</td>
<td>A</td>
<td></td>
<td>V1/V2</td>
<td>30 30 30 30</td>
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<tr>
<td>Ethernet Module</td>
<td>- - -</td>
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<td>X1…X8</td>
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<td>Power over Ethernet PoE Module</td>
<td>- - -</td>
<td>A</td>
<td></td>
<td>- - -</td>
<td>57 417 57 417</td>
</tr>
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**Installation diagram FCB**

---

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### Zone 1/21 & Division 1

**Model code**

FCa4CA1  
FCa4CF1  
HART Modbus Profibus DP Ethernet Communication

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<th>Option</th>
<th>Terminal</th>
<th>Operating Value</th>
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<td></td>
<td>Active or Passive</td>
<td>Chosen Option depending on Model Number (MN)</td>
<td>If &quot;or&quot; occurs Terminal depends on MN</td>
<td>Ex e / XP</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>U₀</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[V]</td>
</tr>
<tr>
<td>Current Output 1</td>
<td>CO1</td>
<td>A</td>
<td>On board Power Supply</td>
<td>31/U₁₀₀</td>
<td>30</td>
</tr>
<tr>
<td>Current Output 1</td>
<td>CO1</td>
<td>P</td>
<td></td>
<td>31/32</td>
<td>30</td>
</tr>
<tr>
<td>Digital Output 1</td>
<td>DO1</td>
<td>A</td>
<td>With OC Active Supply</td>
<td>41/42 and V1/V2</td>
<td>30</td>
</tr>
<tr>
<td>Digital Output 1</td>
<td>DO1</td>
<td>P</td>
<td></td>
<td>41/42</td>
<td>30</td>
</tr>
<tr>
<td>Digital Output 2</td>
<td>DO2</td>
<td>A</td>
<td>With OC Active Supply</td>
<td>51/52 and V1/V2</td>
<td>30</td>
</tr>
<tr>
<td>Digital Output 2</td>
<td>DO2</td>
<td>P</td>
<td></td>
<td>51/52</td>
<td>30</td>
</tr>
</tbody>
</table>

**Option Cards (OC)**

| Current Output 2 | CO2 | A | With OC Active Supply | V1/V2 and V3/V4 | 30 | 0,1 | 27,8 | 30 | 119 | 30 | 826 | 225 | 29 | 29 | 117 | 117 | 0,4 | 0,4 |
| Current Output 2 | CO2 | P | | V1/V2 or V3/V4 | 30 | 0,1 | - | 30 | - | 68 | - | 510 | - | 45 | - | 59 | - | 0,27 |
| Current Output 3 | CO3 | P | | V1/V2 or V3/V4 | 30 | 0,1 | - | 30 | - | 68 | - | 510 | - | 45 | - | 59 | - | 0,27 |
| Digital Output 3 | DO3 | A | With OC Active Supply | V1/V2 and V3/V4 | 30 | 0,1 | 27,8 | 30 | 119 | 30 | 826 | 225 | 17 | 17 | 31 | 31 | 0,4 | 0,4 |
| Digital Output 3 | DO3 | P | | V1/V2 or V3/V4 | 30 | 0,1 | - | 30 | - | 30 | - | 225 | - | 13 | - | 16 | - | 0,27 |
| Digital Input 1 | DI1 | A | With OC Active Supply | V1/V2 and V3/V4 | 30 | 0,1 | 27,8 | 30 | 119 | 3,45 | 826 | 25,8 | 17 | 17 | 31 | 31 | 0,4 | 0,4 |
| Digital Input 1 | DI1 | P | | V1/V2 or V3/V4 | 30 | 0,1 | - | 30 | - | 3,45 | - | 25,8 | - | 13 | - | 16 | - | 0,27 |
| Modbus / Profibus DP | --- | A | | V1/V2 | 30 | 0,1 | 4,2 | 4,2 | 150 | 150 | 150 | 150 | 5300 | 5300 | 0,06 | 0,06 | 0,09 | 0,09 |
| Ethernet Module | --- | --- | not available | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Power over Ethernet | --- | --- | not available | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

**Installation diagram FCB**

ABB Automation Products GmbH  
3KXF000028G0009  
05 14.09.2020  
DS 01 23.2.2015 FBu
### Summary of model numbers, option cards and the corresponding customer connections / terminals

#### Table 1: Model numbers and option cards

<table>
<thead>
<tr>
<th>Model number</th>
<th>On Board Input/- Output</th>
<th>Slot1</th>
<th>Slot2</th>
</tr>
</thead>
<tbody>
<tr>
<td>G0</td>
<td>- -</td>
<td>CO1</td>
<td>- -</td>
</tr>
<tr>
<td>G1</td>
<td>- -</td>
<td>CO2</td>
<td>- -</td>
</tr>
<tr>
<td>G2</td>
<td>- -</td>
<td>V1/V2</td>
<td>- -</td>
</tr>
<tr>
<td>G3</td>
<td>- -</td>
<td>CO2</td>
<td>- -</td>
</tr>
<tr>
<td>G4</td>
<td>- -</td>
<td>V1/V2</td>
<td>- -</td>
</tr>
<tr>
<td>G5</td>
<td>- -</td>
<td>D11</td>
<td>- -</td>
</tr>
<tr>
<td>G6</td>
<td>- -</td>
<td>D11</td>
<td>- -</td>
</tr>
<tr>
<td>G7</td>
<td>- -</td>
<td>D11</td>
<td>- -</td>
</tr>
<tr>
<td>G8</td>
<td>- -</td>
<td>D11</td>
<td>- -</td>
</tr>
<tr>
<td>G9</td>
<td>- -</td>
<td>D11</td>
<td>- -</td>
</tr>
<tr>
<td>G10</td>
<td>- -</td>
<td>MODBUS</td>
<td>- -</td>
</tr>
<tr>
<td>G11</td>
<td>- -</td>
<td>PROFIBUS</td>
<td>V1/V2</td>
</tr>
<tr>
<td>G12</td>
<td>- -</td>
<td>Ethernet</td>
<td>1x Port</td>
</tr>
<tr>
<td>G13</td>
<td>- -</td>
<td>Ethernet</td>
<td>2x Port</td>
</tr>
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<td>G14</td>
<td>- -</td>
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<td>1x Port</td>
</tr>
<tr>
<td>G15</td>
<td>- -</td>
<td>Ethernet</td>
<td>1x Port</td>
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</table>

#### Table 2: Option cards and customer connections

<table>
<thead>
<tr>
<th>Model number</th>
<th>On Board Input/- Output</th>
<th>Slot1</th>
<th>Slot2</th>
</tr>
</thead>
<tbody>
<tr>
<td>G0 DRT</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>G0 DSN</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>G0 DSG</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>G0 DSA</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>G0 DRN</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>G0 DRA</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>G0 DRA</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
</tr>
<tr>
<td>G0 DRG</td>
<td>- -</td>
<td>- -</td>
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<tr>
<td>G0 DRG</td>
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<td>- -</td>
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</tr>
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<td>G0 DRM</td>
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<tr>
<td>G0 DR6</td>
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#### Safety Warning:
The option card AS (Active Supply) is only suitable for use with internal option cards. The use of external circuits is not allowed.

### Installation diagram FCB

![Installation diagram FCB](image-url)
Allowed I/O connections and OPTION CARD handling:

### CO1 passive
- Current OUT 1 (on Board)

### CO1 aktiv
- Current OUT 1 (on Board)

### DO1 passive
- Digital OUT 1 (on Board)

### DO2 passive
- Digital OUT 2 (on Board)

### ABB (passive)
- Uce +
- 32 -
- 31 +

### ABB (aktiv)
- Uce +
- 32 -
- 31 +

### CUSTOMER (aktiv)
- LOAD

### CUSTOMER (passive)
- LOAD

**WARNING:**
Uce should only be used for “On-board” Current Out!
Allowed I/O connections and OPTION CARD handling:

Digital OUT 1 (on Board)

Active Supply (Option Card) (SLOT 1)

Digital OUT 2 (on Board)

Active Supply (Option Card) (SLOT 1)

ABB (passive)
- 41 +
- 42/52-
- S1 +

Active Supply (Option Card) (SLOT 1)

ABB (aktiv)
- V1 +
- V2 -

max 30mA

WARNING!
V1/V2 should only be used even for 42/42 or S1/S2, but never for both together!

ABB (aktiv)
- V1 +
- V2 -

max 30mA

CUSTOMER (passive)

LOAD

WARNING!
V1/V2 should only be used even for 42/42 or S1/S2, but never for both together!

CUSTOMER (passive)

LOAD
Allowed I/O connections and OPTION CARD handling:

[Diagram showing allowed I/O connections and option card handling, including active and passive configurations.]
Allowed I/O connections and OPTION CARD handling:

- Active Supply (Option Card) (SLOT 1)
  - CO2 active

- Current OUT 2 (Option Card) (SLOT 2)
  - CO2 passive

- ABB (passive)
  - V1 +
  - V1 -
  - max 30mA

- ABB (active)
  - V2 +
  - V2 -

- CUSTOMER (passive)
  - LOAD

- CUSTOMER (active)
  - LOAD

Installation diagram FCB

ABB Automation Products GmbH

Diagram Code: 3KXF000028G0009

For Model: FCx4

Installation method 1

Date: 14.09.2020

Name: DS

ABB

General tolerances: Work piece edges: Surface

Notes:

PAGE 9 OF 12
Allowed I/O connections and OPTION CARD handling:

**DI1 aktiv**
- Digital IN 1 (Option Card) (SLOT 2)

**DI2 passiv**
- Active Supply (Option Card) (SLOT 1)

**CO3 passiv**
- Current OUT 3 (Option Card) (SLOT 2=V3/V4) or (SLOT 1=V1/V2)

**A8E (passive)**
- V3 +
- V4 -

**A8E (aktive)**
- V1 +
- V2 -

max. 30mA

**CUSTOMER (passive)**
- LOAD

**ABB (passive)**
- V... -
- V... +

**CUSTOMER (aktiv)**
- LOAD

*Abb. 05 FCB 01 23.2.2015 FBu*

*Abb. 01 14.09.2020 DS*
Allowed I/O connections and OPTION CARD handling:

- **WARNING!**
  - Uco should only be used for "On-board" Digital Out!
  - DO1 active
- **Current OUT 1 (on Board)**
  - ABB (active)
  - Digital OUT 1 (on Board)
  - ABB (passive)
- **Digital OUT 1 (on Board)**
  - ABB (active)
  - CUSTOMER (passive)
- **Modbus / Profibus DP**
  - ABB (active)
  - CUSTOMER (passive)
  - LOAD
  - Modbus / Profibus DP
Allowed I/O connections and OPTION CARD handling:

- Ethernet Modul
- Ethernet communication
- Ethernet Modul
- Ethernet communication
- Ethernet Modul
- Ethernet communication and Power over Ethernet
- PoE Module
- T4 Motherboard

**ABB (active) 1xPort**

1xPort

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<th>X2</th>
<th>X3</th>
<th>X4</th>
</tr>
</thead>
</table>

**CUSTOMER PORT 1 (active) or**

**OR**

- „Point to Point“ communication
- 1-Port System

**ABB (active) 2xPort**

Port1

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<th>X4</th>
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Port2

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<th>X7</th>
<th>X8</th>
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**CUSTOMER 2 PORTS (active)**

- „Daisy chain“ communication
- 2-Port System

**ABB (active) 1x Port**

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<th>X3</th>
<th>X4</th>
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**CUSTOMER (active)**

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<th>X8</th>
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- „PoE - Point to Point“ communication
- 1-Port System

**Installation diagram FCB**

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<th>FBu</th>
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