Installation diagram FCx4

ORDINARY LOCATION
GENERAL PURPOSE
ATEX: - 
IECEx: - 

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
CDN: I / 2 / Ex ec & I / 21 Ex tb

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
CDN: XP-IS I / 1 / ABCD & DIP / II,III / 1 / EFG
I / 1 / Ex ia mb tb & I / 21 / Ex ia ma tb

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 FCB
3KXF000028G0009
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: Uo OR Voc OR Vt < V MAX; Io OR Ioc OR It < I MAX; Ca OR Co > Ci + Ccable; La OR Lo > Li + Lcable; Po < Pi.

2. DUST-TIGHT CONDUIT SEAL MUST BE USED WHEN INSTALLED IN Zone 21/22 ENVIROMENTS.

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: Uo OR Voc OR Vt < V MAX; Io OR Ioc OR It < I MAX; Ca OR Co > Ci + Ccable; La OR Lo > Li + Lcable; Po < Pi.

2. DUST-TIGHT CONDUIT SEAL MUST BE USED WHEN INSTALLED IN CLASS II AND III ENVIROMENTS.

3. CONTROL EQUIPMENT CONNECTED TO THE ASSOCIATED APPARATUS MUST NOT USE OR GENERATE MORE THAN 250 Vrms OR Vdc WITH RESPECT TO EARTH.


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.
### Zone 2/21 & Division 2

**Model code**
- FCA4cY0
- FCA4cA2
- FCA4cF2

**HART 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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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>GP</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$U_{nom}$</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[V]</td>
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**On board**

<table>
<thead>
<tr>
<th>Current Output 1</th>
<th>CO1</th>
<th>A</th>
<th>On board Power Supply</th>
<th>31/U CO</th>
<th>30</th>
<th>30</th>
<th>30</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Output 1</td>
<td>CO1</td>
<td>P</td>
<td></td>
<td>31/32</td>
<td>30</td>
<td>30</td>
<td>30</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>
<td>30</td>
<td>30</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>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Digital Output 1</td>
<td>DO1</td>
<td>A</td>
<td>On board Power Supply</td>
<td>41/U CO</td>
<td>30</td>
<td>30</td>
<td>30</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>
<td>30</td>
<td>30</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>
<td>30</td>
<td>30</td>
<td>30</td>
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**Option Cards (OC)**

<table>
<thead>
<tr>
<th>Current Output 2</th>
<th>CO2</th>
<th>A</th>
<th>With OC Active Supply</th>
<th>V1/V2 and V3/V4</th>
<th>30</th>
<th>30</th>
<th>30</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Output 2</td>
<td>CO2</td>
<td>P</td>
<td></td>
<td>V1/V2 or V3/V4</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>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</td>
<td>30</td>
<td>30</td>
<td>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</td>
<td>30</td>
<td>30</td>
<td>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</td>
<td>30</td>
<td>30</td>
<td>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</td>
<td>3,45</td>
<td>30</td>
<td>3,45</td>
</tr>
<tr>
<td>Digital Input 1</td>
<td>DI1</td>
<td>P</td>
<td></td>
<td>V1/V2 or V3/V4</td>
<td>30</td>
<td>3,45</td>
<td>30</td>
<td>3,45</td>
</tr>
<tr>
<td>Modbus / Profibus DP</td>
<td>- - -</td>
<td>A</td>
<td></td>
<td>V1/V2</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>

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### Zone 1/21 & Division 1

**Model code**
- FCa4cA1
- FCa4cF1

**HART Communication**

<table>
<thead>
<tr>
<th>Indication</th>
<th>Option Card</th>
<th>Status</th>
<th>Description</th>
<th>Ex e / XP</th>
<th>Operating Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Active or Passive</td>
<td>Chosen Option depending on Model Number (MN)</td>
<td>U_M [V]</td>
<td>I_M [A]</td>
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<tr>
<td></td>
<td></td>
<td>If &quot;or&quot; occurs Terminal depends on MN</td>
<td>Terminal depends on MN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Outpu 1</td>
<td>CO1</td>
<td>A</td>
<td>On board Power Supply</td>
<td>31/U_CO</td>
<td>30</td>
</tr>
<tr>
<td>Current Outpu 1</td>
<td>CO1</td>
<td>P</td>
<td>31/32</td>
<td>30</td>
<td>0.2</td>
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<tr>
<td>Digital Output 1</td>
<td>D01</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>D01</td>
<td>P</td>
<td>41/42</td>
<td>30</td>
<td>0.1</td>
</tr>
<tr>
<td>Digital Output 1</td>
<td>D01</td>
<td>A</td>
<td>On board Power Supply</td>
<td>41/U_CO</td>
<td>30</td>
</tr>
<tr>
<td>Digital Output 1</td>
<td>D02</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 1</td>
<td>D02</td>
<td>P</td>
<td>51/52</td>
<td>30</td>
<td>0.1</td>
</tr>
</tbody>
</table>

**Option Cards (OC)**

| Current Outpu 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 Outpu 2 | CO2 | P | V1/V2 and V3/V4 | 30 | 0.1 | - | 30 | - | 68 | - | 510 | - | 45 | - | 59 | - | 0.27 |
| Current Outpu 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 and 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 | - | 826 | - | 13 | - | 16 | - | 0.27 |

**Digital Input**

- Modbus / Proftibus DP

<table>
<thead>
<tr>
<th>Indication</th>
<th>Option Card</th>
<th>Status</th>
<th>Description</th>
<th>Ex ia / IS</th>
<th>Operating Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>U_I [V]</td>
<td>I_I [mA]</td>
</tr>
</tbody>
</table>

**Installation diagram FCB**

ABB Automation Products GmbH

Installation diagram FCB

3KXF000028G0009

Page 4 of 11
### Summary of model numbers, option cards and the corresponding customer connections / terminals

<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>31/32 Uco</td>
<td>41/42</td>
</tr>
<tr>
<td>G1</td>
<td>---</td>
<td>31/32 Uco</td>
<td>41/42</td>
</tr>
<tr>
<td>G2</td>
<td>---</td>
<td>31/32 Uco</td>
<td>41/42</td>
</tr>
<tr>
<td>G3</td>
<td>---</td>
<td>31/32 Uco</td>
<td>41/42</td>
</tr>
<tr>
<td>G4</td>
<td>---</td>
<td>31/32 Uco</td>
<td>41/42</td>
</tr>
<tr>
<td>G5</td>
<td>---</td>
<td>31/32 Uco</td>
<td>41/42</td>
</tr>
<tr>
<td>G6</td>
<td>---</td>
<td>31/32 Uco</td>
<td>41/42</td>
</tr>
<tr>
<td>G7</td>
<td>---</td>
<td>31/32 Uco</td>
<td>41/42</td>
</tr>
<tr>
<td>G8</td>
<td>---</td>
<td>31/32 Uco</td>
<td>41/42</td>
</tr>
<tr>
<td>G9</td>
<td>---</td>
<td>31/32 Uco</td>
<td>41/42</td>
</tr>
<tr>
<td>M5</td>
<td>---</td>
<td>31/32 Uco</td>
<td>41/42</td>
</tr>
<tr>
<td>D1</td>
<td>---</td>
<td>31/32 Uco</td>
<td>41/42</td>
</tr>
</tbody>
</table>

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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.

**Sicherheitshinweis:**

Die Optionskarte AS (Active Supply) ist nur für die Verwendung mit internen Optionskarten geeignet. Der Einsatz mit externen Schaltkreisen ist nicht erlaubt.
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 3 (on Board)

DO2 passive
Digital OUT 2 (on Board)

ABB (passive)

Ui0 +
32 -
31 +

ABB (aktiv)

Ui0 +
32 -
31 +

CUSTOMER (aktiv)

LOAD

WARNING: Uio should only be used for "ON-Board" Current Out

ABB (passive)

41 +
42/52-
51 +

CUSTOMER (aktiv)

LOAD

ABB (passive)

41 +
42/52-
51 +

CUSTOMER (aktiv)

LOAD
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)

CUSTOMER (passive)

LOAD

NOTE: V1/V2 should only be used even for 41/42 or 51/52, but never for both together!
Allowed I/O connections and OPTION CARD handling:

**Digital OUT 3 (Option Card) (SLOT 1)**

**Active Supply (Option Card) (SLOT 1)**

**Digital OUT 3 (Option Card) (SLOT 2)**

**ABB (passive)**

- V5 +
- V4 -

**ABB (active)**

- V1 +
- V2 -

:max. 30mA

**Customer (passive)**

- LOAD

**Customer (active)**

- LOAD

**DO3 active**

**DO3 passive**
Allowed I/O connections and OPTION CARD handling:

- Current OUT 2 (Option Card) (SLIGHT 2)
- Active Supply (Option Card) (SLIGHT 1)
- CO2 active
- CO2 passive

Diagram:

- ABB (passive): V5 +, V5 -
- ABB (aktive): V2 +, V2 -
- Max. 30mA
- CUSTOMER (passive)
- LOAD
- CURRENT (aktive)
- LOAD
Allowed I/O connections and OPTION CARD handling:

- Digital IN 1 (Option Card) (SLOT 2)
  - DI1 active

- Active Supply (Option Card) (SLOT 1)
  - Digital IN 1 (Option Card) (SLOT 2)
    - DI1 active
  - Current OUT 5 (Option Card) (SLOT 2)
    - CO5 passive

- ABB (passive)
  - V1 +
  - V4 -

- ABB (active)
  - V1 +
  - V2 -
  - max. 30mA

- CUSTOMER (passive)
  - LOAD

- CUSTOMER (active)
  - LOAD

Installation diagram FCB

ABB Automotive Products GmbH

04 10.10.2018 FBu
01 23.2.2018 FBu
3KXF000028G0009
Allowed I/O connections and OPTION CARD handling:

**ABB (active)**
- Current OUT 1 (on Board)
- Digital OUT 1 (on Board)
- Modbus / Profibus DP
- V1 +
- V2 –

**ABB (passive)**
- Uco +
- 32 –
- 31 +
- 31 –
- 12/S2 –
- 41 +

**CUSTOMER (passive)**
- LOAD

**WARNING**!
Uco should only be used for "On-board" Digital Out!

**DO1 active**

**Installation diagram FCB**

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Installation diagram FCB

3KXF000028G0009

PAGE 11 OF 11