1. Introduction to the manual

Safety instructions

WARNING! Keep the safety instructions for the drive. If you ignore the safety instructions, injury or death can occur.

Target audience

This manual is intended for people who plan to install, start-up, use and service the CDPI-0x panel bus adapters. Before you work with those adapters, read this manual and the applicable drive manual that contains the hardware and safety instructions for the product in question. You are expected to know the fundamentals of electricity, wiring, electrical components and electrical schematic symbols. The manual is written for readers worldwide. Both SI and imperial units are shown.

2. Product overview

The CDPI-0x panel bus adapters can be used to connect a remote ACx-580 control panel to the drive, or to chain the control panel or a PC to several drives on a panel bus. The panel bus can have a maximum of 32 nodes. The control panel/PC is the master, while the drives equipped with the panel bus adapter are followers.

Applicability

The manual applies to both ACx580 and ACx480 drive variants. CDPI-01 is used on ACx580 drives and CDPI-02 is used on ACx480 drives. The table below shows types of panel bus adapter applicable for each drive type:

<table>
<thead>
<tr>
<th>Drive type</th>
<th>Panel bus adapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACH480</td>
<td>CDPI-02</td>
</tr>
<tr>
<td>ACS480</td>
<td>CDPI-02</td>
</tr>
<tr>
<td>ACH580-01</td>
<td>CDPI-01</td>
</tr>
<tr>
<td>ACS580-01</td>
<td>CDPI-01</td>
</tr>
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</table>

3. Planning the installation

The cabling to the panel bus adapter can be routed outside or inside the drive. In ACx-480-01 drives, you can also route the cables inside the drive through the drive bottom plate.

Necessary tools and instructions

- **Termination switch (S100):**
  - Must be ON in all modules.
  - If the adapter is connected to one drive only, set the switch to OFF.
  - If you have several drives on the panel bus, set the switch to ON in the last module of the bus. OFF in all other modules. The control panel terminates the bus at the end, so only the other end of the bus must be terminated.

3.1 Selecting the cables

- The control panel/PC is the master, while the drives equipped with the panel bus adapter are followers.
- The panel bus adapter is installed in the same slot as the control panel . If a control panel is attached to the drive, remove the control panel first as follows:
  - Pivot the adapter and push the upper part (c) until you hear a click.
  - Release the control panel by pressing the clip at the upper end of the control panel.

4. Installation

Unpacking and checking the delivery

1. Open the option package.
2. Make sure that the package contains:
   - CDPI-0x panel bus adapter (depending on the drive)
   - this manual
3. Make sure that there are no signs of damage.

Removing the control panel from the drive

The panel bus adapter is installed in the same slot as the control panel. If a control panel is attached to the drive, remove the control panel first as follows:

1. If the drive is running, stop the drive.
2. Release the control panel by pressing the clip at the upper end of the panel.
3. Pull the upper end of the control panel out of the slot in the drive.

Connecting the panel cabling to the drive

Routing the cabling outside the drive

If you have several drives on the panel bus, repeat these steps in all others:

1. If the drive is running, stop the drive.
2. Make a hole for the panel cable on the left side of the panel bus adapters.
3. Connect the panel cable to adapter connector X101.
4. Adjust the switches at the back of the adapter.
   - If the adapter is connected to one drive only, set the switch to OFF.
   - If you have several drives on the panel bus, set the switch to ON in the last module of the bus, OFF in all other modules. The control panel terminates the bus at the end, so only the other end of the bus must be terminated.

- **Bias switch (S101):**
  - Must be OFF in all modules.
  - If you need to chain the panel bus to another drive, also connect the chaining cable to adapter connector X102.
  - If the third party module doesn’t have internal biasing:
    - Set the switch to ON when a third party RS-485 interface module is used for communication with the drives, bias switch needs to be set to OFF.
    - When a third party module is used for communication with the drives, bias switch needs to be set to OFF.

3. Make sure that the package contains:
   - CDPI-0x panel bus adapter (depending on the drive)
   - this manual
3. Make sure that there are no signs of damage.

Removing the control panel from the drive

The panel bus adapter is installed in the same slot as the control panel. If a control panel is attached to the drive, remove the control panel first as follows:

1. If the drive is running, stop the drive.
2. Release the control panel by pressing the clip at the upper end of the control panel.
3. Pull the upper end of the control panel out of the slot in the drive.

Connecting the panel cabling to the drive

Routing the cabling outside the drive

If you have several drives on the panel bus, repeat these steps in all others:

1. If the drive is running, stop the drive.
2. Make a hole for the panel cable on the left side of the panel bus adapters.
3. Connect the panel cable to adapter connector X101.
4. Adjust the switches at the back of the adapter.
   - If the adapter is connected to one drive only, set the switch to OFF.
   - If you have several drives on the panel bus, set the switch to ON in the last module of the bus, OFF in all other modules. The control panel terminates the bus at the end, so only the other end of the bus must be terminated.

- **Bias switch (S101):**
  - Must be OFF in all modules.
  - If you need to chain the panel bus to another drive, also connect the chaining cable to adapter connector X102.
  - If the third party module doesn’t have internal biasing:
    - Set the switch to ON when a third party RS-485 interface module is used for communication with the drives, bias switch needs to be set to OFF.
    - When a third party module is used for communication with the drives, bias switch needs to be set to OFF.
Before you start

1. Stop the drive, and disconnect it from the power line. Wait for 5 minutes to let the internal circuit capacitors discharge before you continue.
2. Remove the drive cover.
3. Use a multimeter to make sure that there are no parts under voltage in reach.
4. Cut an adequate hole into the cable grommet. Slide the grommet onto the cable (this may take a while due to the hole of the bottom plate and attach the grommet to the box.
5. Route the cable first under the clamp (a) and then anchor it close to the panel housing [b].
6. Connect the panel cable to adapter connector X101. See below illustration.
7. If you need to chain the panel bus to another drive:
   - Follow steps 1-6 for the chaining cable.
   - Connect the chaining cable to adapter connector X102.
8. Adjust the switches at the back of the module.
   - Termination switch (S100):
     - Must be switched on at some point on the bus if the converter does not have an internal biasing resistor.
     - Must be OFF in all modules.
   - Bias switch (S101):
     - Must be switched on at some point on the bus if the converter does not have an internal biasing resistor.
     - Must be OFF in all modules.
9. If you have several drives on the panel bus, set the switch to ON in the last module of the bus, OFF in all other modules. The control panel terminates the bus at its end, so only the other end of the bus must be terminated.
10. Route the cabling inside the drive.

For a panel bus chaining example, see section Example: Chaining a control panel.

Note: When a control panel is used for a panel-to-PC connection, it cannot be used for operating the drive.

**Chaining a control panel**

This figure shows how to chain a control panel to several drives through a panel bus.

**Chaining a PC through a commercial converter**

This figure shows how to chain a PC to several drives through a commercial converter.

**Panel bus**

The panel bus is a daisy chain of drives, control units, and adapters (if used).

- **Purpose**: Used as a panel bus.
- **Usage**: Support panel bus with a maximum of 32 nodes (control panel/PC and drives).
- **Maximum number of nodes**: 32 nodes (control panel/PC and drives).
- **Dimensions**: Width 90 mm, height 120 mm, depth 43 mm.
- **Ambient conditions**: See the drive technical data.
- **Degree of protection**: IP21 when installed.
- **Electrical ratings**: 8 VCC. From drive Power supply +15…24 V DC.
- **Connector**: Unshielded female connector for chaining a control panel (X100, RJ-45).
- **Connectors**: Shielded female connector for connecting a control panel or a PC to the panel bus adapter (X102, RJ-45).
- **Rated current**: Panel bus: 50 mA (max. 100 mA), control panel: 100 mA.
- **Rated voltage**: Panel bus: 15…30 V DC, control panel: 15…30 V DC.
- **Minimum tolerated voltage**: Panel bus: 12…28 V DC, control panel: 12…28 V DC.
- **Data rates**: 49.01 Node ID number (ID 1), 49.02 Control unit (X100), 49.03 Baud rate (9600), 49.04 Node ID number (ID 2), 49.05 Communication baud rate (9600).
- **ID assignment**: Drive and control panel are assigned to the ID’s 1 and 2.
- **ID 1**: Drive (X100).
- **ID 2**: Control panel (X100).
- **Node ID number**: ID 1 and ID 2.
- **Bias switch (S101)**: Must be switched on at some point on the bus if the converter does not have an internal biasing resistor.
- **Termination switch (S100)**: Must be OFF in all modules.

**Technical data**

**Panel bus adapter**

- **Type**: Panel bus adapter
- **Connection**: RJ-45 male (X101) + RJ-45 male (X102)
- **Rated current**: 50 mA (max. 100 mA)
- **Rated voltage**: 15…30 V DC
- **Minimum tolerated voltage**: 12…28 V DC
- **Data rates**: 49.01 Node ID number (ID 1), 49.02 Control unit (X100), 49.03 Baud rate (9600), 49.04 Node ID number (ID 2), 49.05 Communication baud rate (9600)
- **ID assignment**: Drive (X100) to ID 1, control panel to ID 2.
- **Node ID number**: Drive (X100) to ID 1, control panel (X100) to ID 2.
- **Bias switch (S101)**: Must be switched on at some point on the bus if the converter does not have an internal biasing resistor.
- **Termination switch (S100)**: Must be OFF in all modules.

**List of related manuals**

- **Drive manuals and guides**: Code (Language)
  - ACS580-01 manuals
  - ACS380-01 manuals
  - ACS480-01 manuals
  - ACS880-01 manuals
  - ACS880-01 manuals

- **Option manuals and guides**: Code (Language)
  - ACS880-01 Standard control panel adapter user’s manual
  - ACS880-01 Standard control panel adapter user’s manual

You can find manuals and other product documents in RPM format on the Internet at drives.森村(XX)/Documents. For manuals not available in the document library, contact your local ABB representative.