1. Introduction to the manual

Safety instructions

WARNING! Obey 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-01/-02 panel bus adapters. Before you do work on the 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.

Product overview

The CDPI-01/-02 panel bus adapters can be used to connect a remote 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. The CDPI-01/-02 panel bus adapter supports following control panels:

- ACS-AP-S
- ACS-AP-I
- ACS-AP-W
- ACS-BP-S
- ACH-AP-H
- ACH-AP-W

Applicability

This manual applies to ACS580, ACH580, ACQ580, ACS480 and ACH480 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>ACS580-01</td>
<td>CDPI-01</td>
</tr>
<tr>
<td>ACH580-01</td>
<td>CDPI-01</td>
</tr>
<tr>
<td>ACH580-02</td>
<td>CDPI-02</td>
</tr>
<tr>
<td>ACS480-02</td>
<td>CDPI-02</td>
</tr>
<tr>
<td>ACH480-04</td>
<td>CDPI-02</td>
</tr>
</tbody>
</table>

3. Planning the installation

Cabling to the panel bus adapter can be routed outside the drive. In ACS580, ACH580, and ACQ580 drives, you can also route the cables inside the drive through the drive bottom plate.

Necessary tools and instructions

Cutter/knife to cut holes for cables in the panel bus adapter plastic wall.

When a third party RS-485 interface module is used for communication with the drives, bias switch needs to be set to ON if the third party module doesn't have internal biasing.

Selecting the cables

Use straight-connected CAT5e UTP/FTP cables with RJ-45 connectors.

General cabling instructions

- Arrange the cables as far away from the motor cables as possible.
- Avoid parallel runs with the power cables.

4. Installation

Unpacking and checking the delivery

1. Open the option package.
2. Make sure that the package contains:
   - CDPI-01 or CDPI-02 panel bus adapter (depending on the drive/less)
   - 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:

Note: If the drive is in local control and you do not stop the drive before you remove the control panel, the motor will stop and the drive will trip to a fault.

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

1. If you need to chain the panel bus to another drive, make a hole for the chaining cable as well.
2. Connect the panel cable to adapter connector X102.

Routing the cabling outside the drive

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

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 adapter.
3. Connect the panel cable to adapter connector X101.
Routing the cabling inside the drive (applicable for ACS580, ACS850, and ACQ580 drives only)

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

1. Stop the drive and disconnect it from the power line. Wait for 5 minutes to let the intermediate 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 rubber grommet. Slide the grommet onto the cable. Slide the cable through the hole of the bottom plate and attach the grommet to the hole.
5. Route the cable first under the cable clamp (a) and then anticlockwise round 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 device:
   - repeat steps 4...5 for the chaining cable,
   - and connect the chaining cable to adapter connector X102.
8. Adjust the switches at the back of the module.
   - Termination switch (S100):
     - 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 its end, so only the other end of the bus must be terminated.
   - Bias switch (S101): Must be OFF in all modules.

**Note:** When a third party RS-485 interface module is used for communication with the drives, bias switch needs to be set to ON if the third party module doesn't have internal biasing.

9. Attach the adapter to the drive.
10. The control panel terminates the bus at its end, so only the other end of the bus must be terminated.
11. Put the drive cover back.

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

5. Bus termination and chaining examples

Bus termination is required to prevent signal reflections from the bus cable ends.

**Example: Chaining a control panel**

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

**Example: Chaining a PC through a control panel**

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

**List of related manuals**

Drive manuals and guides  Code (English)
ACS580-01 manuals  SAKK32711AB085
ACS850-01 manuals  SAKK32015A508
ACS850-01 manual  SAKK32015A501
ACQ580-01 manuals  SAKK32712A209
ACS380-04 manuals  SAKK32015A039
ACS480-04 manuals  SAKK32933A8789
ACB480-04 manuals  SAKK32704A8601

Option manuals and guides AxxA-pv Assistant control panels user’s manual 3AJ0000008685

You can find manuals and other product documents in PDF format on the internet at abb.com/drives/documents. For manuals not available in the Document library, contact your local ABB representative.

8. Technical data

**CDPI-01/-02 panel bus adapter**

- **Degree of protection:** IP20 when installed.
- **Ambient conditions:** See the drive technical data.
- **Package:** Cardboard
- **Switches:**
  - Termination switch (S100)
  - Bias switch (S101)
- **Connectors:**
  - Unshielded female connector to the drive control unit (X100, RJ-45)
  - Shielded female connector for connecting a control panel or a PC (X101, RJ-45)
  - Shielded female connector for chaining a panel bus (X102, RJ-45)
- **Power supply:** Supplied by the drive control unit.

**9. Pin allocation of connectors X101 and X102**

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Signal</th>
<th>Direction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>In / Out / Hi-</td>
<td>Data A (1)</td>
</tr>
<tr>
<td>2</td>
<td>B</td>
<td>In / Out / Hi-</td>
<td>Data B (1)</td>
</tr>
<tr>
<td>3</td>
<td>TRANS</td>
<td>Not connected</td>
<td>Data B (2)</td>
</tr>
<tr>
<td>4</td>
<td>FAULT</td>
<td>Not connected</td>
<td>Data B (3)</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>Ground</td>
<td>Data B (4)</td>
</tr>
<tr>
<td>6</td>
<td>GND</td>
<td>Ground</td>
<td>Data B (5)</td>
</tr>
<tr>
<td>7</td>
<td>GND</td>
<td>-</td>
<td>Data B (6)</td>
</tr>
<tr>
<td>8</td>
<td>VCC</td>
<td>From drive</td>
<td>Power supply ±15...+24 V DC</td>
</tr>
</tbody>
</table>

**Panel bus**

- **Bus type:** RS-485
- **Purpose:** Used as a panel bus
- **Maximum number of nodes:** 32 nodes (control panel/PC and drives)
- **Maximum transfer rate:** 1 Mbit/s
- **Medium:** CAT5e U/FTP TP Ethernet cable, straight connector: RJ45

**6. Start-up**

**Before you start**

Make sure that you have completed the drive start-up.

**Setting the parameters**

- **For ACS580 Standard control program**

If the panel bus adapter is used to chain a control panel or a PC to several drives, set the parameters of group 49 Panel port communication for each drive before you connect the drives to the bus.

1. Power up the drive.
2. Define the node ID of the drive (49.01 Node ID parameter). All devices connected to the bus must have a unique node ID. It is advisable to reserve ID 1 for spare/replacement drives because they have ID 0 as the default factory setting. Start numbering from ID 2.
3. Set the baud rate (49.03 Baud rate) of the drive.
4. Select a suitable value for parameter 49.05 Communication loss action value.

This parameter defines the operation of the drive when the control panel communication breaks.

- **No action (0):** No action taken.
- **Fault (1):** Drive trips on a fault.
- **Last speed (2):** Drive freezes the speed to the level the drive was operating at.
- **Speed ref safe (3):** Drive sets the speed to a safe speed value.
5. Set parameter 49.06 Refresh settings to Configure, to apply the changes made to parameters 49.01...49.05.

**7. Diagnostics**

- **Faults and warning messages**

For the fault and warning messages concerning the panel bus adapter, see the drive manual.

**LEDs**

The panel bus adapter CDPI-01 has two diagnostic LEDs (POWER and FAULT) and adapter CDPI-02 has one diagnostic LED (POWER).

<table>
<thead>
<tr>
<th>Name</th>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWER</td>
<td>Green</td>
<td>Drive control units are powered.</td>
</tr>
<tr>
<td>FAULT</td>
<td>Red</td>
<td>There is an active fault in the drive control unit.</td>
</tr>
</tbody>
</table>