AMK

AMKASYN

VARIABLE SPEED DRIVES

AMKASYN

Digital inverters in modular construction

Additional card for central module AZ

Programmable controller AZ-PS4-I with INTERBUS-S interface

Important advice:

Touching of the electrical connections on the plug-in card must be avoided, otherwise electronic components could be destroyed through static discharge.

Take plug-in card directly out of packing and insert into option slot 3 in the AZ module without using force. Then secure with screws below the card grip.

2004/31E

Part No.: 26576

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Programmable controller AZ-PS4-I

The option card is plugged into slot 3 of central module AZ. Together with the INTERBUS-S interface 2 slots are occupied! It is secured in the front panel by 2 captive screws below the card grip against inadverted loosening.

The option card AZ-PS4-I must be assigned to slot 3 and 4 in ID 32882 „Slot assignment“ in the basic system:

ID 32882: xx xx 81 00 hex.
00 instead of xx if slot 1 and 2 are free.
If additional option cards are used in slot 1/2 the corresponding card codes must be entered instead of xx.

The AZ-PS4-I card is used as a programmable drive interface to solve tasks closely related to the drive. Data communication with the drive system takes place through the internal bus.

Binary and analog inputs/outputs, the INTERBUS-S interface and the AMK panel AB 202L can be used for process and user level communication.

The AZ-PS4 is programmed in statement list (STL, similar STEP 5). Programming unit is a standard PC with the AMK programming software APROS. The instruction set contains statements for logic operations, counters and timers. Drive setpoint values (torque, speed, position) and parameter changes are commanded via AMK specific function blocks.

Among other things coordinated axis movements can be generated through Fast Functions with table interpolation.

The user PS program (max. 48 kB) and non volatile data blocks (max. 15 kB) are stored in the battery-backed RAM memory. The capacity of the Lithium battery is able to maintain the data for at least 5 years.

The storage life of a AZ-PS4 card with stored PS program is limited up to a maximum of 5 years!
If the battery is removed, all stored data are lost!

Description of the display and operator elements at the AZ-PS4-I front panel:

LEDs:

ER: Error LED (red)
During a malfunction (PS state „ERROR“) this LED is blinking with a flashing rate of 1 second.

SP: Stop LED (red)
In PS state STOP this LED is on.

RN: Run LED (green)
In normal operation (PS state „RUN“) this LED is reset after the process image „INPUTS“ is formed and set again before the process image „OUTPUTS“ is transmitted, i.e. the LED brightness is decreasing with increasing PS cycle time.

L1 (green)**, L2** (red)**:**
Not used, without meaning (for AZ-PS4 software versions < 02.12/1999)

LO (green)**:** Extended function see below.

Switch positions:

SP: Stop (notched position)
The cyclic program execution is interrupted.

RN: Run (notched position), **switch position for normal operation**.
Normal cyclic PS program execution.

RS: Reset (momentary contact)
PS RESET is initiated. Automatic PS START (state RUN) if switch changes back to RN position, (for software versions < 02.12/1999)

From AZ-PS4 software version 02.12/1999:

Extended PS RESET (RS) function 1: Erase of all data blocks in the in battery backed RAM.

Extended PS RESET (RS) function 2: Erase of the actual PS project (and loading of the user PS project stored on the system EPROM, if existing).

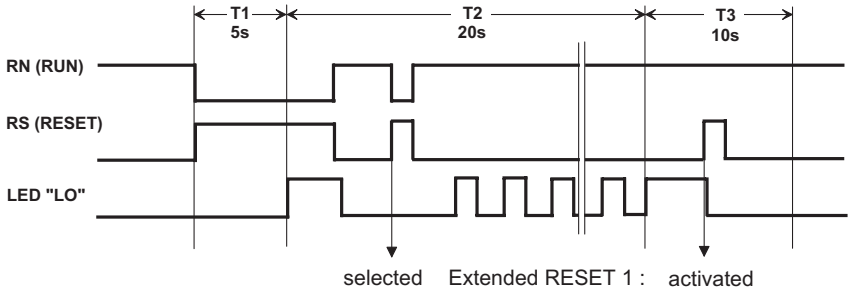
The RESET (RS) switch position must be pressed for more than 5s (T1) to initiate these extended functions. After this time the green LED „LO“ is turned on. Now the RESET switch must be released (back to RN position)

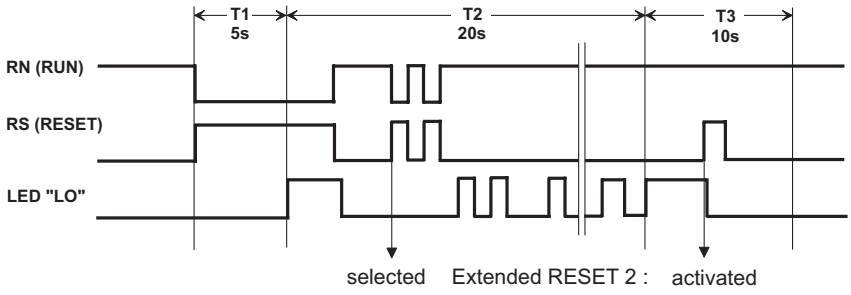
By a single operation of the RESET function 1 is selected, by a double operation extended PS RESET function 2 is selected.

LED “LO“ is reset, than extended function 1 is handshaked by a single flash of LED “LO“, extended function 2 by a double flash.

After T2 (20s) is elapsed LED “LO“ is constantly turned on for 10s (T3). The selected extended RESET function is activated by pressing RESET (RS) once more within this time.

A normal PS RESET and restart is initiated if RESET (RS) switch position is pressed for less than 5s or if the times T2/T3 are elapsed without selecting and activating one of the extended RESET functions via RESET (RS) switch.





Backup battery

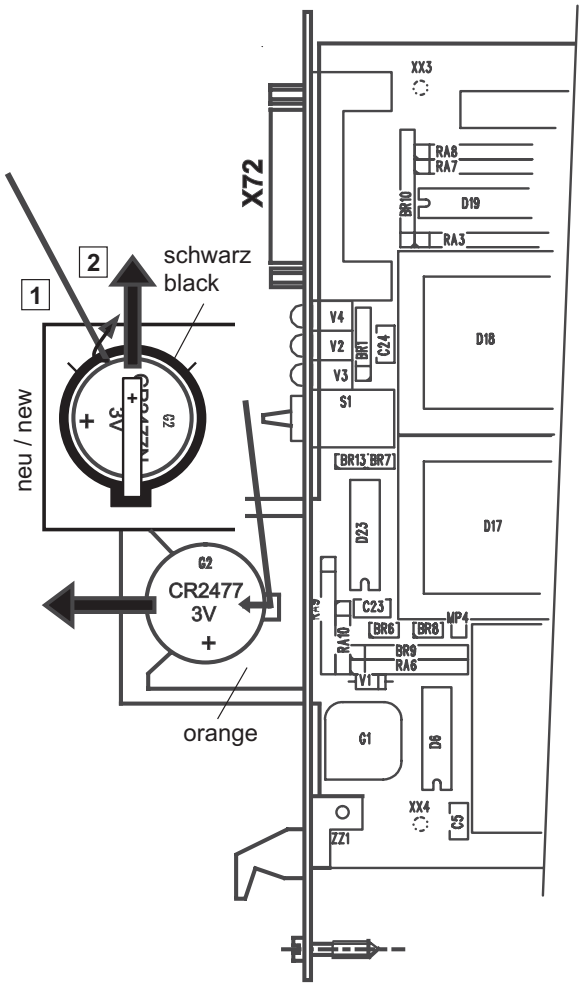
The AZ-PS4 memory is battery-backed by a 3V Lithium battery Type CR2477 (RENATA). With power on the battery voltage is monitored. If the battery voltage is too low a PS error message is output (Error module: 120, Error-No: 1). From this time the battery capacity is still sufficient to maintain the memory for 1 week! To avoid loss of data the battery must be exchanged immediately!

Battery change

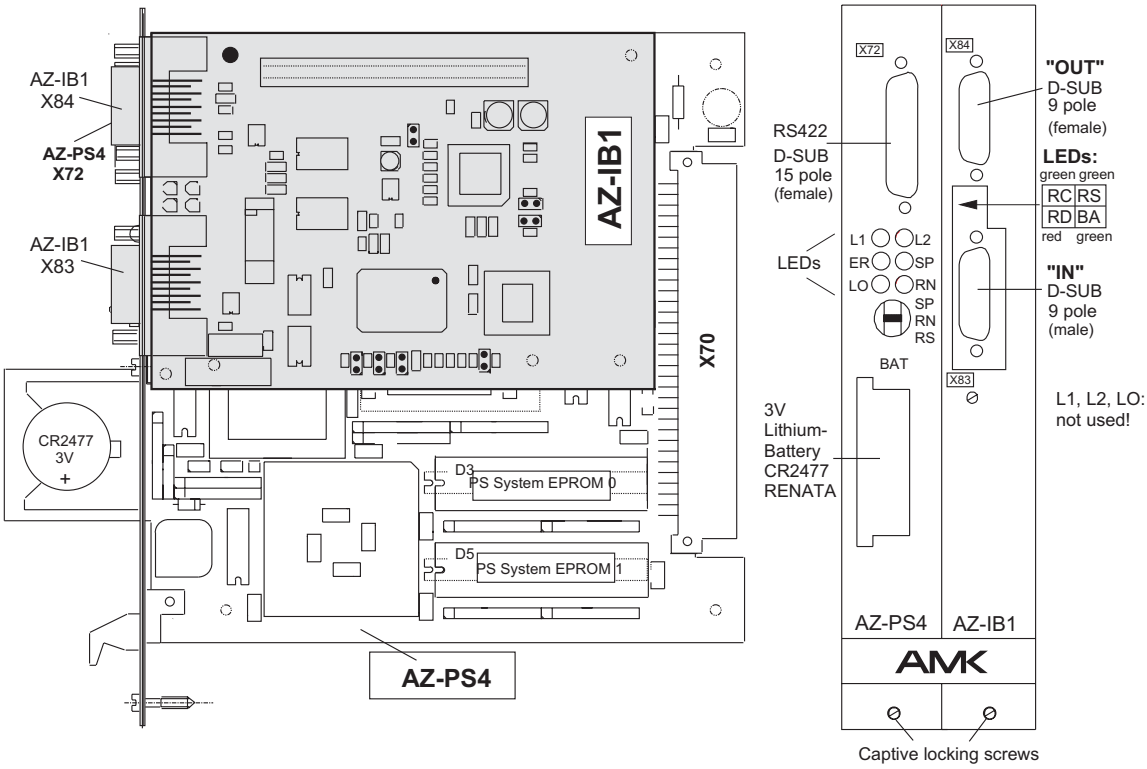
Battery change is only permissible with system POWER ON!

Battery Type: 3V Lithium
CR2477 RENATA
New: CR2477N RENATA

1. During battery change the power supply must be ON!
2. Carefully press out the battery towards you by applying a suitable screw driver at the notch.
   For new battery holder (black):
   By a suitable screw driver carefully lift battery above the holder edge, then push it out from under the positive connection clip.
3. Carefully insert the new battery:
   Pay attention to battery polarity: The side with the battery designation (CR2477 / N +) must be visible from top. Keep the battery circumference absolutely clean, don't touch it!
   Press battery from the front into the holder.
   New battery holder (black):
   Insert battery skewed from top over the holder edge under the positive connection clip, then push it completely into the holder.
4. Now Power OFF and ON again.



AZ-PS4-I component mounting diagram and front panel



Connector pin assignment:

AZ-PS4: X72 (RS422)

Pin	Signal
1	PE
2	TXD-
3	RXD-
4	RTS
5	CTS
6	TXD-
7	GND
8	TXD
9	GND
10	+5V
11	+5V
12	TXD
13	RXD
14	RTS-
15	CTS-

AZ-IB1: X84 (IB OUT)

Pin	Signal
1	DO2
2	DI2
3	Ground 2
4	-
5	-
6	DO2 -
7	DI2 -
8	-
9	RBST

X83 (IB IN)

Pin	Signal
1	DO1
2	DI1
3	Ground 1
4	-
5	-
6	DO1 -
7	DI1 -
8	-
9	-

LEDs (AZ-IB1):

IBS Reset inactive

RC	RS
RD	BA

RC RS – SUPI Reset inactive
RD BA – IBS active

Follower IB station not active

INTERBUS-S interface

From AZ-PS4 software version V02.09 / 1197 communication between option card AZ-PS4-I (AZ-PS4 with communication adapter AZ-IB1) and the higher ranking controller (e.g. PLC) is also possible via INTERBUS-S. For data exchange a maximum of 8 byte input and 8 byte output information is available.

From AZ-PS4 software version V02.10 / 4397 additionally the “Peripherals Communication Protocol“ (PCP) is supported.

Associated with option card AZ-PS4 the INTERBUS-S interface is a long-distance bus slave connection: INTERBUS-S ID code (bit 0...7) = 03: without PCP
INTERBUS-S ID code (bit 0...7) = F3: with PCP

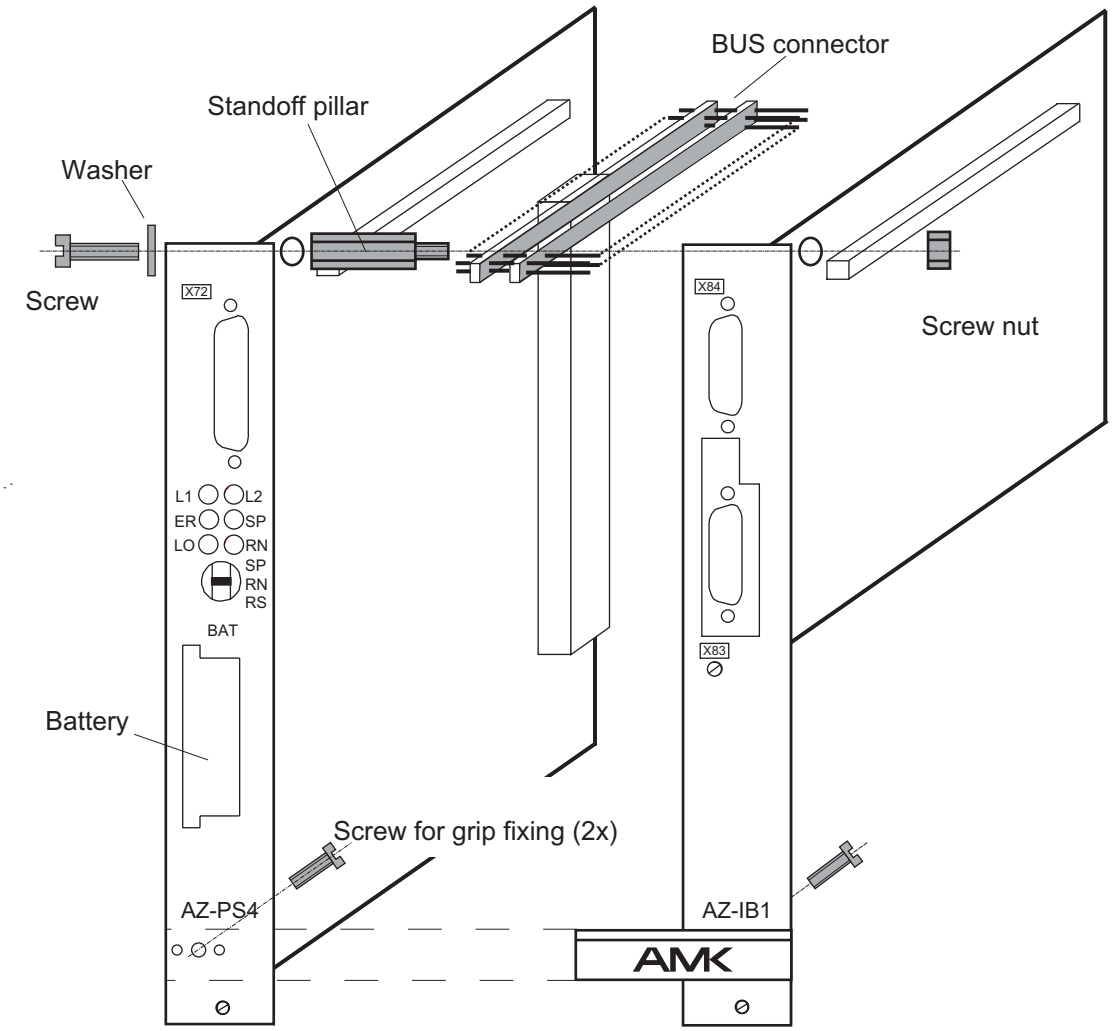
In operating mode Miroprocessor Access the INTERBUS protocol chip SUPI-3 is used in interrupt mode with 8 byte data width.
The following interrupt sources are activated: INTERBUS active
INTERBUS RESET
Data cycle valid

Via direct mapping of the INTERBUS-S data into the I/O address space of the AZ-PS4 the STL programmer gets access to the INTERBUS-S. In PCP mode data blocks can be written and read.

8 byte IN and 8 byte OUT information are provided in the process image of the AZ-PS4 for INTERBUS-S data. As a default setting the I/O addresses assigned to option slot 4 are used. The default setting for the INTERBUS-S interface can be modified through system data block DB 0 to adapt to the application demands (e.g. different INTERBUS-S data width, PCP selection, variable length of the PCP object “Data block [index 2001 hex]“).

All information and data concerning the INTERBUS-S configuration are described in the PS documentation “AMKASYN PS Instruction set“.

Assembly of AZ-PS4 and AZ-IB1 to AZ-PS4-I module (principle)



AZ-PS4-I ESD-PROTECTION / INSTALLATION:

Please do not touch the electrical connections or the exposed contacts on the front or backside of the plug-in circuit boards. Static-electricity due to handling of the boards can destroy the boardlevel components. Please make sure the person handling the boards has proper PE-ground connection to reduce static-electricity.

Please insert the plug-in board directly from the packaging into slot 3 in the AZ-module without using force and secure the board with the captive screws underneath the card-holder.

Inappropriate handling of the board can lead to a short-circuit in the battery power supply, which could cause a loss of stored data in the user program.

- Never lay the board on a conductive surface (metal table top).
- Avoid touching the front or back side of the board.
- During the insertion of the plug-in board into the slot of the AZ-module it is imperative that the solder side of the board does not make contact with the frontcover of already inserted boards. If necessary remove the other board first before installing the AZ-PS4-I card.

Sequence for exchange procedure of the AZ-PS4-I card:

1. Make sure the AMKASYN-system is without power.
2. Remove front cover on AZ-module.
3. Remove external connections to the to be exchanged AZ-PS4-I card (slot 3 and 4).
4. If existing: Remove external connections to the plug-in board in slot 2.
5. Unscrew the captive screws which hold the boards in place (slot 2, 3 and 4).
6. Remove the plug-in board from slot 2 by the card holder and lay it on a nonconductive surface (bubble wrap etc.).
7. Remove the AZ-PS4-I card by the card holder and lay on a nonconductive surface (bubble wrap etc.).
8. Take the new AZ-PS4-I card out of the packaging. Only handle it by the front card holder or by the front cover.
9. Insert this new AZ-PS4-I card into slot 3 in the AZ-module and secure it with the captive screws.
10. Replace the other option card again, if removed under 6.
11. Connect all external connections removed under 3. and 4. again and secure the wiring.
12. Download user PS program to AZ-PS4-I via programming software APROS (only if new card was inserted without PS program).