AMK

AMKASYN

VARIABLE SPEED DRIVES

AZ-MC1
Multi-Station
Multi-Channel
CNC Countouring Control System

Installation
Startup
Handling

McIn9927

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Inhalt

1 AZ-MC1 Installation

This chapter lists the prerequisites for starting up the AZ-MC1 multi-channel CNC control system.

1.1 NC configuration

The configuration of the NC has been determinded in the course of project planing of the machine. Th ecompleted configuration list with machine name (detailed description see NC Configuration Document) was the object of the order of the NC components (see Apendix).

1.2 Components

Hardware:

Apart from the **AMKASYN** basic system consisting of

AN (power supply module), **AZ** (Central module),
AW (inverter modules),
DV motors

the following components are required for a **single machine**:

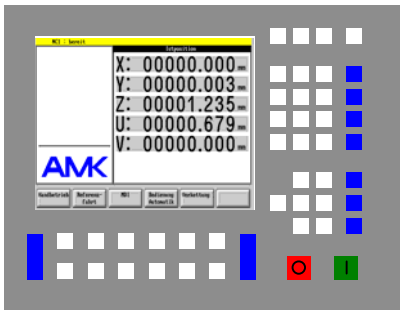
AZ-MC1	Card with CNC and PS software module
AB-110C	PC control panel with RS422 interface at least the following options:
AB-FL4	4MB-Flash-Disk
AB-PNC	Operating software installed on AB-110C
AB-K1	RS422 connection cabl, if not wired by the customer.

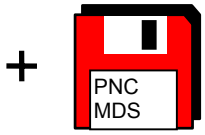
The modules for the fibre optic cable bus are still required for a **multi-station machine**:

AZ-K03	Card for fibre optic cable connection per machine
AB-K02	Card for fibre optic cable coupling to the control panel plus FOC connection.

Software:

The delivered AB110C control panel contains the complete "PNC" software for startup and operation of the NC. An installation disk is part of the scope of supply for the operating software. In addition, the data blocks for the configuration of the NC are required on floppy disk.





AB110C
+Software: AB-PNC
NC configuration data

Fig.: AB-110C with Software

1.3 Structure and wiring

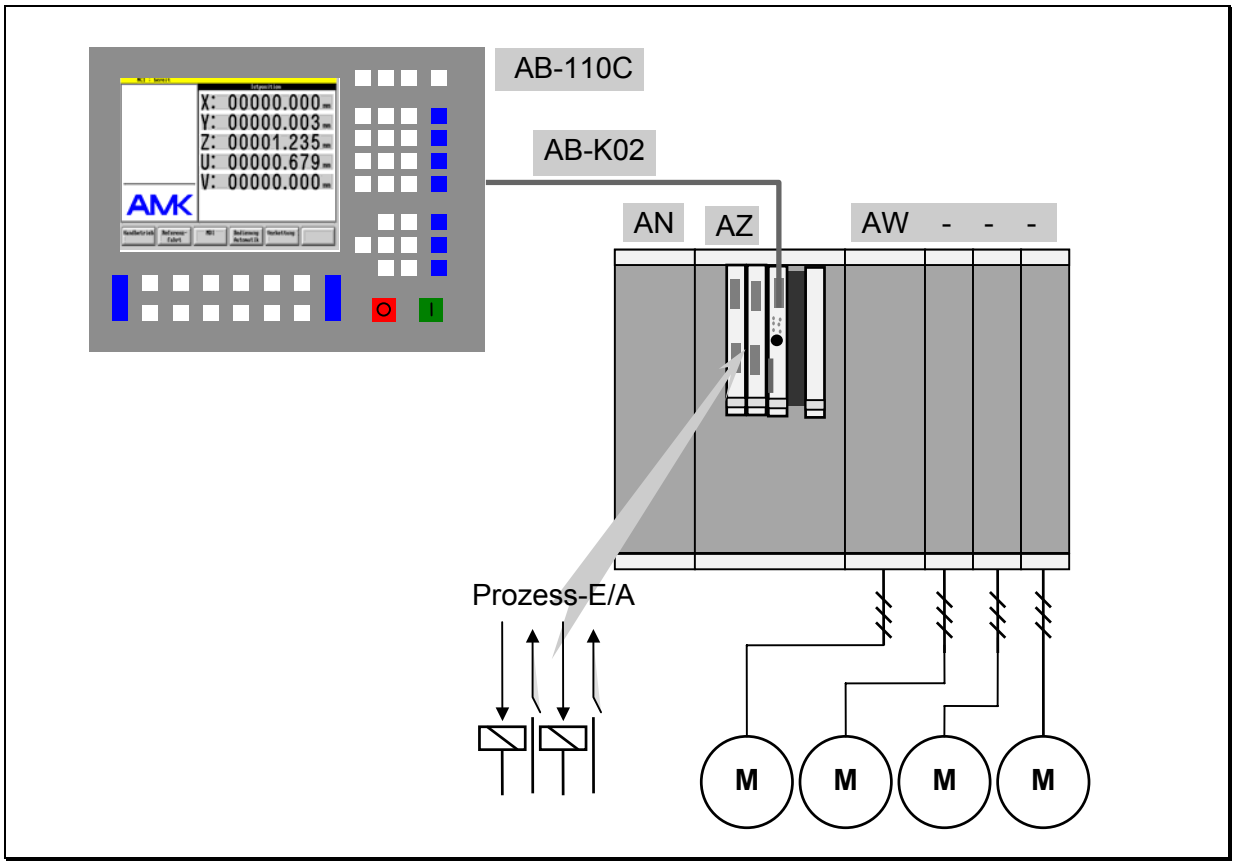


Abb.: AB-110C connection and AZ-MC1 in the AMKASYN basic system

- The AMKASYN basic system is completely structured and wired.
- The AZ-MC1 card is located in an option card slot. (In the case of multi-station machines the card pa AZ-MC1 and AZ-K03).
- The AZ parameterization is completed taking account of the parameters necessary for CNC operation (see document "NC Configuration" AZ Parameters chapter).
- The AB-110C control panel is connected through a RS422 cable with the RS422 interface of the AZ-MC1 card. (In the case of multi-station machines: fibre optic cable connection with AB-K02).

2 Switching on

Sequence:

- POWER ON
- Initialization of the control panel and of the AZ-MC1:

The message "Wait for SBUS" disappears after communication between the AZ-MC1 and the AB-110C PC control panel is established. The message "unconfigured NC" appears and the interface is in the data entry menu.

- Load the configuration data for this machine into the NC with the "Startup" and "load NC-MDS" menu item. (See document "NC Operation" First startup chapter).
- Setting of the control panel configuration (see document "NC Operation").
- Operation of the NC (see document "NC Operation").

3 Operation

3.1 Switches, light emitting diodes (LEDs)

The light emitting diodes on the front panel of the AZ-MC1 card are assigned currently to the NC and the integrated PS.

LEDs of the NC: L0, L1, L2
The following states are indicated :
-L0 and L1 flash :Normal operation
-One of the two LEDs does not flash :Card is in error state
-L2 lights up :Processor error

LEDs of the PS: ER(ERROR), RN(RUN), SP(STOP)
The ER-LED indicates an internal PS error.
The LEDs "RN" and "SP" indicate the momentary PS mode "Run" or "Stop" according to the switch ocated below.
The PS can be influenced correspondingly by the switch and can be reset in addition by the "RS" (RESET) position.

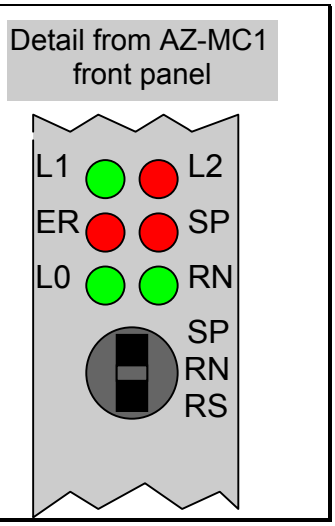


Abb.: AZ-MC1 Switch, LEDs

3.2 Battery backup system

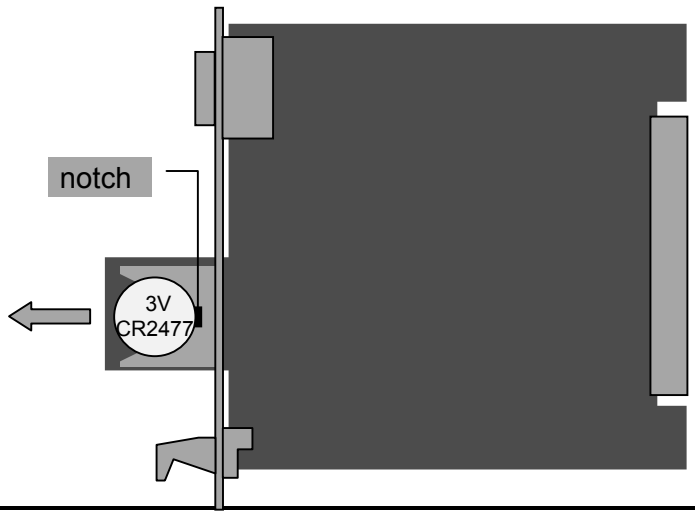
The data memory on the AZ-MC1 is battery-buffered. A battery of the type: 3V lithium CR2477 (RENATA) is used.
The used battery holds the data of the NC over a typical period of 5 years with the machine constantly switched off. If the machine is switched in there is no battery load and the time of safe data retention is lengthened correspondingly.
A battery monitoring logic circuit monitors the voltage of the battery when switching on the AZ-MC1. The monitoring logic responds at too low battery voltage and sends the error message "Battery monitoring has responded". At this time the battey still has residual cpacity of approx. 1 month's data retention. To avoid data loss on the AZ-MC1 (all data are backed up once again on the control panel) is is recommended that the battery is changed.

3.2.1 Battery change

Change the battery with the supply voltage switched on.

Battery change
Typ: 3V Lithium CR2477 RENATA

Procedure::
1. Leave the power switched off.
2. Push the old battery out with a screwdriver at the notch
3. Insert new battery from the front into the socket. Take care that side edges of the battery remain free of grease.
4. Switch power off and back on.



4 Important notes

4.1 Installation of a 2-channel NC

When operating 2 NC channels with one AZ-MC1 observe the following:

1. The integrated PS is respnsible for both NC channels.
2. The group RF (controller enable) input at the AZ applies for both channels.
3. In the basic system all drives switch off as standard on error on one drive.
4. The global status of the 2nd channel lies on the paticipant address of the SBUS participant number of the NC increased by one.
5. NC reset acts channel-specifically, drive error deletion acts globally.
6. The data management for 2 NC channels has the same scope as in the configuration of only 1 NC channel. (128 files, max. 128Kbytes).
7. The number of R parameters is limited to 80 per channel. (1 channel 300)

Re1)
The intergrated PS has 2 separate transfer interfaces to the two NC channels (see also document "NC PS Interface Description"). If the PS goes into an error state in which all PS outputs in the process output map are deleted, this means that EMERGENCY STOP is set for both NC channels.
Re 2)
If the group RF input is used as limit switch for all axes, then the dries of both channels are switched inactive if one axis has moved onto a limit switch. The same appies for an EMERGENY OFF button which acts on the group RF. If this behaviour is not wanted, then it is also possible to work with single controller enables. Another possibility is the use of two binary inputs, which are processed by the PS to group controller enables for the relevant NC channel.
Re 3)
Mutual influencing of the NC channels n drive errors can be avoided with the special function "Switching off only the faulty drive" (see also AMKASYN parameter description: ID32796). This has the consequence that only the faulty drive is switched off also in the relevant NC channel. Further drives must then be switched off by the PS if necessary.
Re 4)
In the case of linked systems with 2-channel NCs it must be observed that in a 2-channel NC with SBUS participant address has an even number and the next higher (uneven) number remains free for the 2nd channel.
Re 5)
If a drive error is present, then this can be deleted only by NC reset if all drives of the system have switched the controller enable inactive.

4.2 NC RESET

NC-internal errors, PS errors and AZ or drive errors are deleted by a NC RESET. A running process (e.g. NC program, rotating spindle) can also be aborted by means of a NC RESET. The different sequences for the NC RESET according to starting situation (no error, NC, PS, drive error) are illustrated in the following diagram:

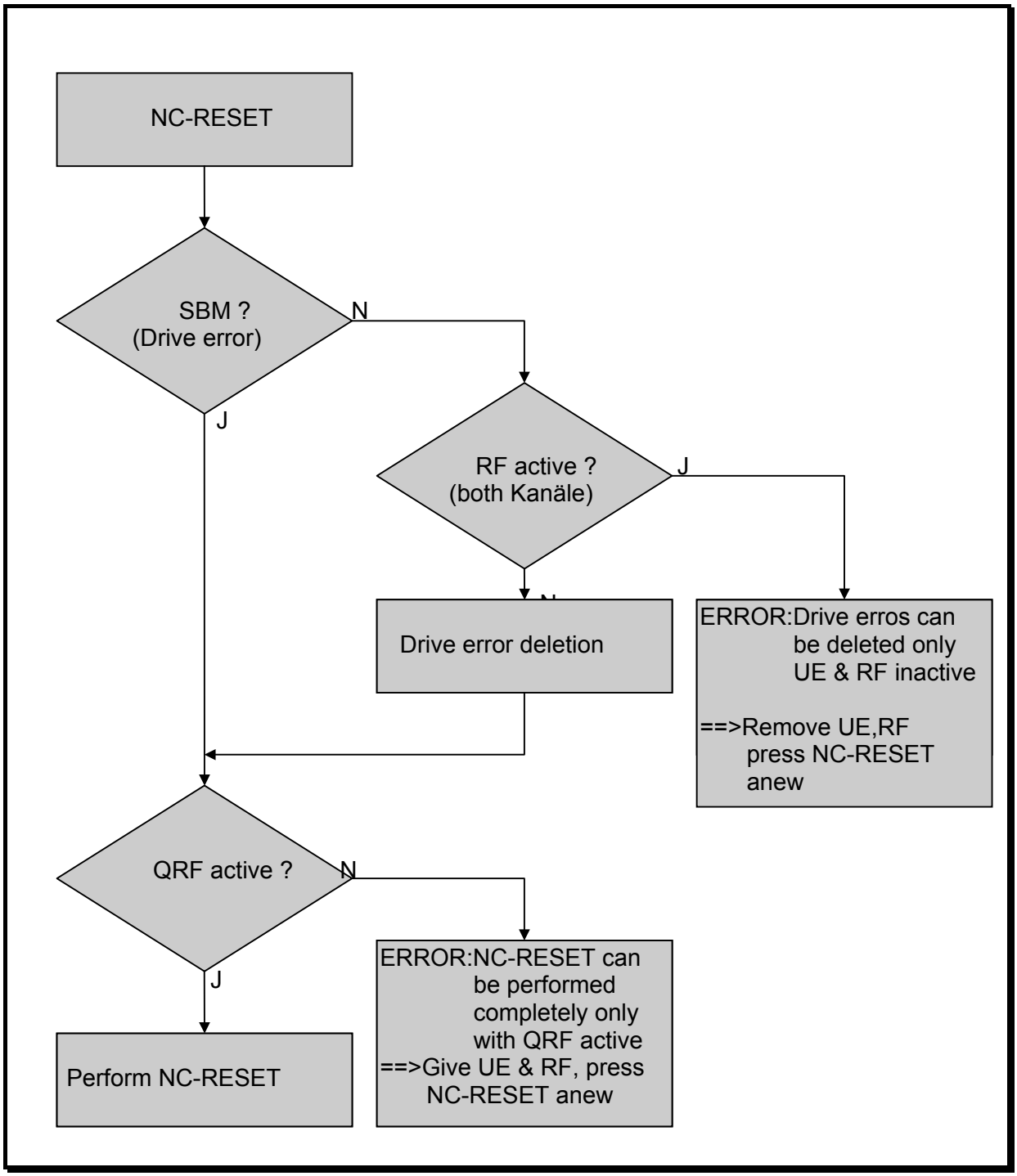


Abb.: NC-RESET diagram

5 Appendix

5.1 Configuration table

Configuration table for determining the NC extent.

Machine name:		(max. 8 characters)	Channel number	1 or 2

	Name	Atribut	AW-Nr	log.No.	Remarks
	X,Y,..	lin/rund	1..8	1..16	
Contouring axes					The first three axes are contouring axes Every further axis in the contouring association is a following axis
Following Axes					Following axes are also interpolated with the contour so that they reach the target position simultaneously. Maximum 8 contouring and following axes possible.
Line 1					Line axis moves independently of the contour
Line 2					
Spindle1					1st and 2nd speed controlled axes
Spindle2					
Synchronous					Slave, assignment to master in the drive parameters.

6 Impressum

Title **AMKASYN AZ-MC1, Installation, Start-up, Handling**

Objective **Installation of the AZ-MC1**

Part-Number **27876**

History

Date
1999/27

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To assure a fast and accurate response to solve customer problems we ask for your cooperation in providing us with the following information:

- Nameplate data
- Software version
- System configuration and application
- Description of problem and presumed cause of failure
- Diagnostic message (error code)

Publisher AMK Arnold Müller Antriebs- und Steuerungstechnik GmbH & Co. KG
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