AMK

AMKASYN

VARIABLE SPEED DRIVES

AMKASYN

Digital Inverters in Modular Construction

Product Overview
General Technical Data
EC Declaration of Conformity
TÜV Certificate AZ 05

0300.E

Part-No.: 27848

AMK

Arnold Müller, Antriebs- und Steuerungstechnik GmbH & Co. KG, D-73230 Kirchheim/Teck,
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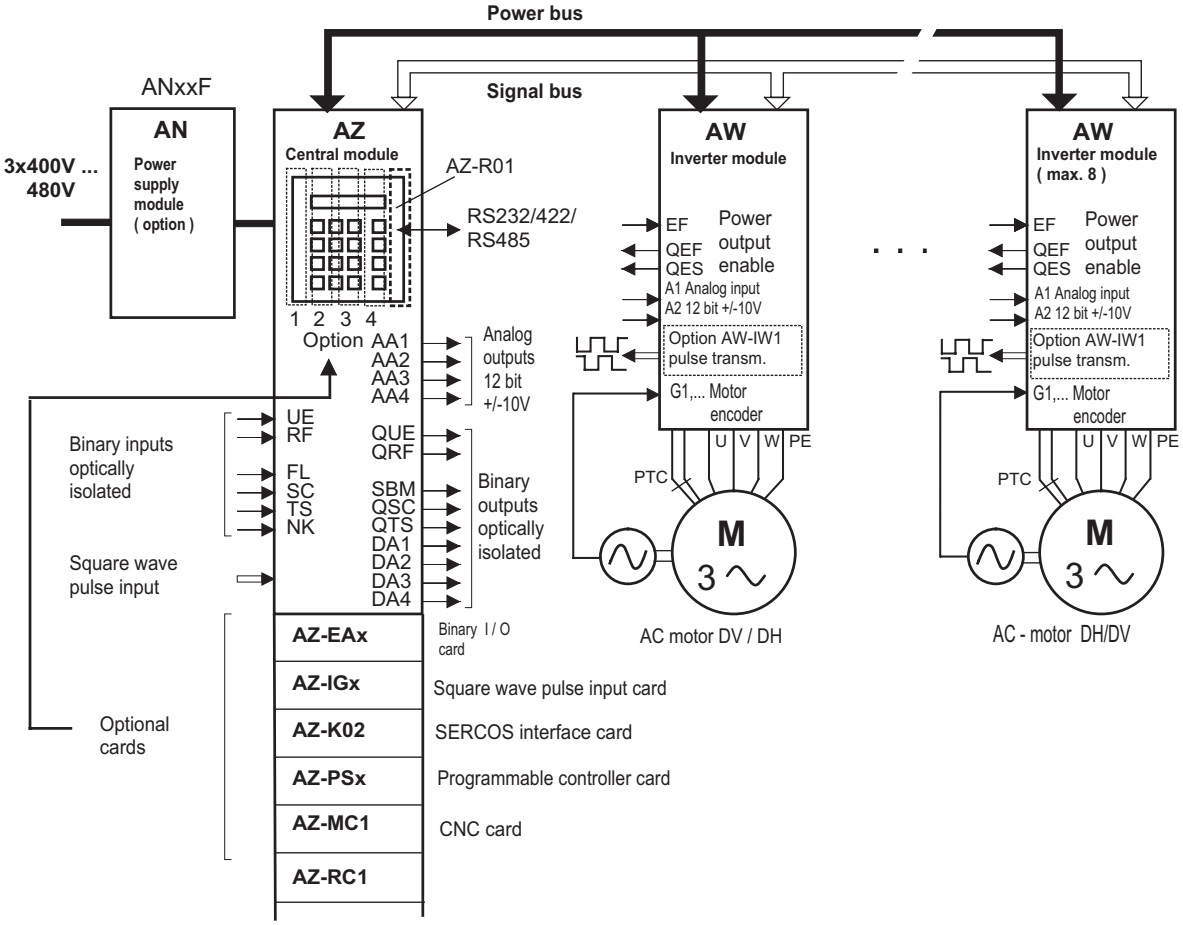
Contents

1 Product overview

1.1 System overview



1.2 System description

The AMKASYN series is a drive system of modular construction for feeding AMK AC motors. The digital inverters control the drives in 4 quadrant operation precisely and with high dynamic response. The supply is direct from a 400V three-phase power system. The inverter modules for servo and main motors are supplied from a common DC-BUS. The latest power semiconductor technology in conjunction with high-grade integration guarantee high reliability. The units are protected against overcurrent.

The software of the modules facilitates an extreme diagnostic depth and assists the user in start-up and trouble shooting by messages in plain language. The drive system is configured via parameters. Jumpers and balancing potentiometers are not present. Communication with a higher ranking control system is possible through different interfaces. The serial interface RS232C is available as standard, other interfaces such as SERCOS interface, INTERBUS-S, PROFIBUS-S, PROFIBUS-DP, CAN, ARCNET or LON are offered as options.

Thanks to the use of the latest signal processors, outstanding control properties are achieved. The AMKASYN drive system solves drive tasks in widely differing areas of application such as

Machine tools
Packaging machines
Printing presses
Woodworking machines
Textile machines
Robotics
Assembly lines
Process engineering
Manufacturing facilities

Apart from the basic function of speed control, the drive system facilitates operating modes such as torque control, linear motion/angle control, stepping motor simulation and synchronous operation in different variations.

For customer specific solutions the option card AZ-PSx (Programmable controller) with extended functions and in-depth access to drive data and parameters is used.
The AMKASYN drive system is limited to a maximum of 8 drives. Inverter modules AW with outputs of 1,3 kVA to 60 kVA can be combined to work from one DC-BUS. Power supply module AN and central module AZ must be selected according to the required power. For each drive the appropriate inverter module AW is required. Analog setpoints are fed directly to the AW module, all other setpoints come via different interfaces from the central module AZ through the internal bus system.

The power supply module AN xxF (option) contains the fuses, the main contactor as well as the line reactor and the mains suppression filter. It connects the central module AZ with the power system and provides the voltage for the fans of all modules. If the power supply module AN option is not ordered, fuses, main contactor, line reactor and mains suppression filter according to the AMK specification must be procured and installed by the customer.

The DC-BUS voltage and auxiliary voltages are generated in the AZ module and fed to all AW modules. The braking transistor with brake/discharge resistor converts surplus braking energy into heat. To increase the braking power, it is possible to connect an external brake resistor. The central modules AZ 20, AZ 40 and AZ 60 are designed for regenerative braking.

The central processor in the AZ module controls the parameter administration for the entire system and communicates with the inverter modules as well as with the higher ranking control system. Parameter setting is menu controlled by means of a PC with AMK software AIPAR, however, it is also possible through the integrated control panel AZB. Status and error messages can be called up on the AZB and speed setpoints can be sent to the individual axis modules, e.g. during start-up, for testing or trouble shooting.

4 slots are available in the AZ module. Optional cards can be plugged in for additional binary inputs/outputs, square-wave inputs for set points and external measuring systems, programmable controller, numerical control and different interfaces (e.g. SERCOS interface).

AZ 05, AW 1,3/2,6, AW 2,5/5, AW 4,5/9

No power supply module AN is required for the modular drive system with smaller output power (AZ 05, AW 1,3/2,6, AW 2,5/5, AW 4,5/9). The main contactor must be supplied and externally installed by the customer.
Regenerative braking is not available for central module AZ 05 (output power 5 kW). The inverter modules AW 1,3/2,6, AW 2,5/5 and AW 4,5/9 can also be combined with the bigger AW modules (AW 2/4, AW 4/8,...). The small AW module must be installed on an adaption bracket to achieve one wiring plane for all modules.

2 AMKASYN General technical data

Input power:	**3 x 400V ± 10%**
Extended line voltage range:	**3 x 400V...480V ± 10%** **(Symmetrical 3-phase line)**

Suitable for use on a circuit capable of delivering not more than ...*) rms symmetrical amperes, 400V AC maximum.
*) 5 kA for devices AZ 10, AZ 20 (AN 10, AN 20) / 10 kA for AZ 40, AZ 60 (AN 40, AN 60)

There is an error message in case of continous deviation of the phase voltages by more than 10% from the nominal value (including periodical voltage peaks)

Fan supply:	**230V AC ± 10%**
Frequency:	**47...63 Hz**
Reference potential:	PE (PE may deviate maximally 20V from the neutral of the symmetrical input power)
Degree of interference suppression:	**A with line filter option (AN xxF)**
Type of cooling:	Air cooling through installed fan
Storage-/transport temperature:	**-10°C to 75°C / 26°F to 167°F**
Degree of protection for modules:	**IP 20**
Number of AW modules per system:	**Max. 8 inverter modules AW**
Approval:	**AN/AZ/AW: $_{c}$CSA$_{US}$**

Site of installation requirements:

Ambient temperature:	**0°C to 45°C / 32°F to 113°F**, measured at the intake point of the fans in the modules
Cooling air:	Dry and free of electrically conductive dusts, fibres, gases and vapours
Relative air humidity:	**20%...90% without condensation,** class F acc. to DIN 40040
Installation altitude:	Up to 1000 m (3250 ft) above sea level. For altitudes above 1000 m (3250 ft) the nominal data must be reduced by 1% per 100 m (325 ft) up to max. 2000 m (6500 ft).
Shock resistance:	15 g for 11 ms acc. to EN 60068-2-27
Resistance to vibration:	1 g at 0...150 Hz acc. to EN 60068-2-6

Signal voltage for binary inputs/outputs acc. to VDI 2880

The signal voltage must be supplied externally. The power supply unit must have electrical isolation acc. to VDE 0160 (safe electrical separation) and radio interference suppression acc. to EN 55011 class A or B.

Binary input signals

Nominal value of the signal voltage:	**24V = ext., related to $0V_{ext.}$**
Lower limit 1-signal:	13V / 2 mA ... 30,2V / 15 mA
Lower limit 0-signal:	- 3V / 0 mA ... 5V / 15 mA

Basic unit binary output signals

Nominal value of the output voltage:	**24V = ext., related to $0V_{ext.}$**
Nominal output current for 1-signal	0.1 A

Insulation voltage

I/O insulation rating of 500V DC (according to VDE 0160).

EC Declaration of Conformity

for the purpose of the EC Directive: Low voltage 73/23/ECC
in the version of the amendment of 22 July 1993 (93/68/ECC)

The modules of the AMKASYN inverter series (Types: AN10...AN60, AZ10...AZ60, AW1,5/3, AW2/4, AW3/6, AW4/8, AW12/18, AW 14/24...AW50/75) and the associated options have been developed and manufactured in compliance with the above EC Directive in the responsibility of:

Arnold Müller GmbH & Co KG, Gaußstr. 37-39, 73230 Kirchheim/Teck

Kirchheim/Teck, dated 22.09.1997

ppa. Dr.-Ing. G. Vogt
Technical Manager

i.V. Dr.-Ing. K.-H. Kayser
Electronic Development Manager

This declaration contains no assurance of properties.
The safety instructions of the supplied product documentation must be observed.

The following standards were referred to for the assessment:

Standard	
DIN VDE 0160	Electronic equipment for use in power installations
EN 60529	Degrees of protection provided by enclosures (IP code)

Further standards for assessment of interference immunity (EN50082-2) and interference emission (EN50081-2) were applied.

Interference immunity (EN50082-2)

Test	Test specifications
Electrostatic discharge immunity test	
ESD	EN61000-4-2
Electrical fast transient/burst immunity test:	
Signal and Data lines Burst	EN61000-4-4
Alternating current network inputs, outputs	
Burst	EN61000-4-4

Generetic emission standard (EN50081-2)

Test	Test specifications
Mains alternating current interference emission	
Conducted	EN55011

Other

Test	Test specifications
Safety-relevant mechanical tests	
Clearances and creepage distances	VDE0160
Non-touchability	EN60529/12

3397.1E Doc No.: 26617E

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ZERTIFIKAT ◆ CERTIFICATE ◆ 证书 ◆ СВИДЕТЕЛЬСТВО ◆ CERTIFICADO ◆ CERTIFICAT

Zertifikat

Nr.: U 97 05 23303 001

TÜV PRODUCT SERVICE

AMK
Arnold Müller GmbH & Co. KG
Gaußstr. 37-39
73230 Kirchheim Teck

mit der(n) Fertigungsstätte(n)
23303

ist berechtigt, nachfolgend genanntes Produkt mit dem Prüfzeichen

N (Text für N siehe Anmerkungen bzw. Prüfbericht)

gemäß Zeichenliste zu kennzeichnen. Umseitige Hinweise sind zu beachten.

Produkt:	**Sicherheitsbauelemente Digitaler Pulsumrichter**			
Modell:	**Wechselrichtermodul:**	**AW 1,3/2,6; AW2,5/5; AW 4,5/9**		
	Zentralmodul:	**AZ05**		
Kenndaten:	Zentralmodul			
	Netzeinspeisung:	3 x 400 V, 50 Hz		
	Lüftereinspeisung:	230 VAC		
	Zwischenkreisspannung:	560 VDC		
	Eingangsstrom:	11 A		
	Ausgangsnennleistung:	5 kW		
	Schutzart:	IP 20		
	Wechselrichtermodul	AW1,3/2,6	AW2,5/5	AW4,5/9
	Ausgangsnennleistung:	1,3 KVA	2,5 kVA	4,5 kVA
	Ausgangsspitzenleistung:	2,6 kVA	5 kVA	9 kVA
	Nennausgangstrom:	2,15 A	4,15 A	7,5 A
	Spitzenausgangsstrom:	4,3 A/25s	8,3A/25s	15A/25s
	Ausgangsspannung:	bis 3 x 350 V		
	Nenneingangsspannung:	DC-Bus: 450 VDC/730 VDC		
	Ausgangsfrequenz:	0 Hz bis 800 Hz		
Anmerkung:	Als Text im Prüfzeichen ist vorgesehen: "Sicherheit in der Elektronik"			

Das Produkt entspricht unter Berücksichtigung der Maßgaben des Berichts zum Zertifikat den zutreffenden sicherheitstechnischen Anforderungen und bezeichneten Eigenschaften und wurde geprüft nach:

- 73/23/EWG Niederspannungsrichtlinie
- 89/336/EWG EMV Richtlinie
- 89 392/EWG Maschinenrichtlinie
- prEN 954-1:1996, Kategorie 4 für Antriebsverriegelung
- EN 1037:1995
- IEC 664-1:1992
- EN 60204, Teil 1:1992
- EN 50081-2:1993
- DIN EN 50082-2:1995
- prEN 50178:1996

Bericht zum Zertifikat Nr.: AK50157C, in der jeweils gültigen Revision Rieger

Freigegeben mit der obigen Zertifikats-Nr. durch die Zertifizierungsstelle von TÜV PRODUCT SERVICE GmbH.

Organisationseinheit: EMA-IQSE / Faller
Datum: 15.05.1997

Faller

TÜV PRODUCT SERVICE GMBH · Zertifizierstelle · Ridlerstrasse 31 · D-80339 München