



TG drives

AKD

digital servoamplifiers





Production and delivery of servodrives and control systems.

The Czech company TG Drives offers servodrives since 1995 for machines and equipments in industrial automation. The range of service of our technicians and programmers includes design, optimization including custom solutions, programming, configuring and start up. Servodrives and control systems from TG Drives are used in the cutting tables, CNC machines and machining centers, automotive, rubber, food, glass and construction industries.

Easy solution of every motion

1. Servomotors

- ◆ TGN, TGH, TGS and TGT synchronous servomotors with permanent magnets
- ◆ TGQ torque (direct) motors

2. Digital servoamplifiers

- ◆ AKD digital servoamplifiers
- ◆ TGA300 digital servoamplifiers
- ◆ S400, S600 and S700 digital servoamplifiers
- ◆ TGP three-axis digital servoamplifiers
- ◆ TGA-24 and TGA-48 digital servoamplifiers
- ◆ TGZ digital servoamplifiers

3. Precision mechanical systems

- ◆ EXLAR linear actuators
- ◆ DRIVESPIN precision rotary actuators
- ◆ TWINSPIIN cycloidal reducers
- ◆ high precision planetary reducers

4. TG Motion control system

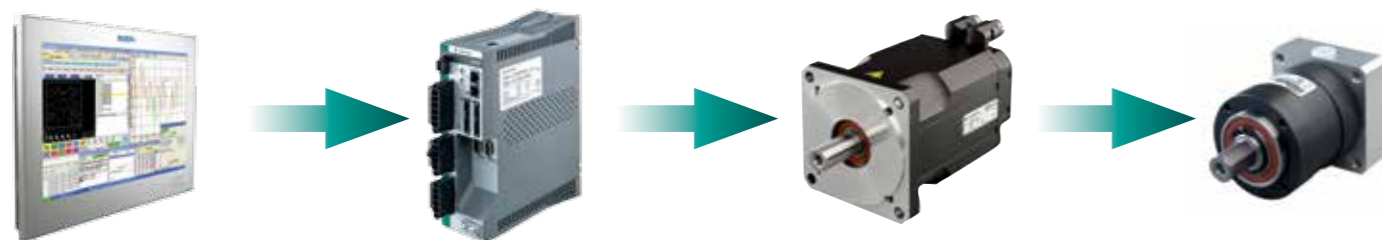
- ◆ Universal PC based control system

5. Industrial PCs and operator terminals

- ◆ ASEM panel and standard industrial PCs
- ◆ ASEM and ESA operator terminals

Our services

- ◆ Design and optimization of servodrives.
- ◆ Design of control system.
- ◆ Programming.
- ◆ Start up.
- ◆ Customer service.



AKD digital servoamplifiers

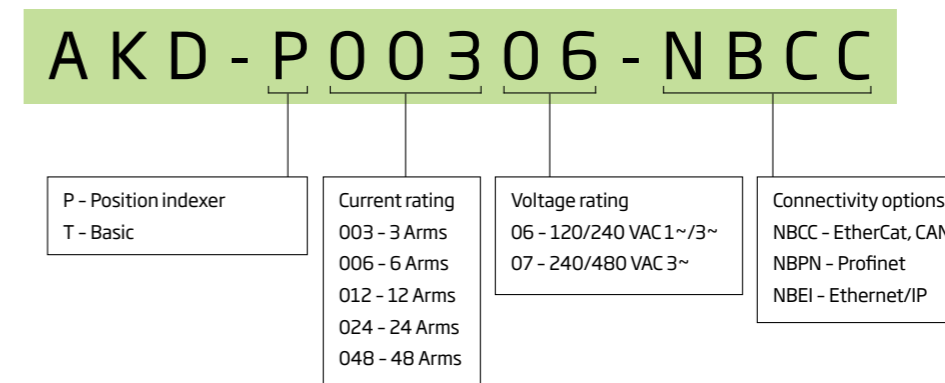
AKD digital servoamplifiers are designed for driving of rotary and linear synchronous servomotors. Servoamplifiers are equipped with multiple inputs for communication with many types of positioning sensors. This gives us the possibility to find an optimum priced solution of a used feedback sensor and of a servomotor application.

Digital servoamplifiers AKD are designed to be easily connected to different control systems, because of this the servoamplifiers can be used in many applications. In relation to the application and control system used, it is possible to utilize the integrated motion functions or to use only the basic functions of control loops.



Digital servoamplifiers AKD are designed for precise control (position, torque, speed) and performance optimization of servomotors and linear motors. These modern drives provide a solution for nearly any application from basic torque-and-velocity applications, to indexing, to multi-axis programmable motion with TG Motion control system. AKD offers industry-leading servo performance, wide range of communication options, and power levels, all in a smaller footprint standard for power density and performance.

Coding example



AKD digital servoamplifiers

Controlling of AKD servoamplifiers

- ◆ EtherCAT, CAN, Profinet or Ethernet IP communication interface
- ◆ Service channel Modbus/TCP (used for parameter setting)
- ◆ Analog input +/-10V (16 bits)
- ◆ Digital control inputs (7) and outputs (2) - activation of programmed position profiles
- ◆ Control signals for step motors „STEP“ and „DIRECTION“
- ◆ Control in the electronic gearing mode

Feedbacks

- ◆ Resolver
- ◆ HDSL (single-turn or multi-turn)
- ◆ Hiperface (single-turn or multi-turn)
- ◆ EnDat (single-turn or multi-turn)
- ◆ EnDat 2.2 (single-turn or multi-turn)
- ◆ A sensor with sinco signals
- ◆ An incremental sensor with commutation signals.
- ◆ The possibility to simultaneously connect two sensors (e.g. resolver and incremental sensor)

Performance specification

- ◆ Digital current loop (0,67 μs), speed loop (62,5 μs) and position loop (125 μs) ensure high motion dynamics and repeatability of demand motion tasks
- ◆ Servoamplifiers AKD 3 x 400 V are equipped with anti-interference network filter
- ◆ Control of the motors holding brake
- ◆ Input (STO - Safe Torque Off) to block the reverse - SIL2 by IEC 61508
- ◆ The versatility of using increases the wide spectrum of supply voltages 3 x 120 - 3 x 240 V for the 230V version and 3 x 240 - 3 x 480 V and CE, UL and cUL certification
- ◆ Simple Grafical User Interface (GUI)-WorkBench is designated to expedite and streamline the user's experience with AKD. From easy application selection and reduced math, to a sleek sixchannel scope. WorkBench gives possibility to set the drive with TG motors using integrated Bode plot function.

Communication Interface: EtherCat, CAN, Profinet, Ethernet IP, Modbus TCP/IP



General specification for AKD 230 V

Rated data	DIM	AKD-P00306	AKD-P00606	AKD-P01206	AKD-P02406
Rated supply voltage	V~	3 × 108–264 V / 50–60 Hz 1 × 108–264 V / 50–60 Hz			3 × 240 V ±10 %
Rated installed power for S1 operation	kVA	1.2	2.38	3.82	7.6
Nominal current (±3 %)					
- at rated voltage 120 V	Aef	3	6	12	-
- at rated voltage 240 V	Aef	3	6	12	24
Maximum current (max. 5s. ±3 %)	Aef	9	18	30	48
Continuous power regen circuit (RBint)	W	-	-	100	100
Continuous power regen circuit (RBext) max.	Ws	60 (120 V) 20 (240 V)	60 (120 V) 20 (240 V)	160 (120 V) 55 (240 V)	180 (120 V) 60 (240 V)
Continuous power regen circuit (RBext) max.	kW	0.77	1.5	3	6
Peak power regen circuit (RBext) max.	kW	5.4	5.4	5.4	11.8
Dimensions:					
Height	mm	168	168	195	250
Width	mm	57	57	76	100
Depth	mm	153	153	186	230
Depth with connectors and cables	mm	184	184	215	265

General specification for AKD 3 × 400 V

Rated data	DIM	AKD-P00307	AKD-P00607	AKD-P01207	AKD-P02407	AKD-P04807
Rated supply voltage	V~	3 × 216–528 V / 50–60 Hz				
Rated installed power for S1 operation	kVA	2.24	4.49	7.65	15.2	40.9
Nominal current (±3 %)	Aef	3	6	12	24	48
Maximum current (max. 5s. ±3 %)	Aef	9	18	30	48	96
Continuous power regen circuit (RBint)	W	80	100	100	200	-
Breaking energy of regen circuit capacitor	Ws	5 (240 V) 35 (400 V) 20 (480 V)	5 (240 V) 35 (400 V) 20 (480 V)	10 (240 V) 70 (400 V) 40 (480 V)	15 (240 V) 110 (400 V) 60 (480 V)	20 (240 V) 146 (400 V) 80 (480 V)
Continuous power regen circuit (RBext) max.						
at 240 V / 400 V a 480 V	kW	0.77 / 1.5	1.5 / 3	3 / 6	6 / 12	6 / 12
Peak power regen circuit (RBext) max.	kW	5.4 / 21.4	5.4 / 21.4	5.4 / 21.4	7.7 / 30.6	17.6 / 70.5
Dimensions						
Height	mm	256	256	256	310	385
Width	mm	70	70	70	105	185
Depth	mm	186	186	186	229	229
Depth with connectors	mm	221	221	221	264	264

Servoamplifier 230 V

AKD P00306



Servoamplifier 3 × 400 V

AKD P01207



AKD Basic digital servoamplifiers

Programmable servo drive may be used in many applications without an external PLC

- ◆ Customized functions implemented quickly
- ◆ Less hardware, lower installation costs
- ◆ Implementation without modifying the machine control
- ◆ Simple, easy to learn programming in Basic
- ◆ Cycle time 5-30 ms

The cycle time of the PLC program depends on the processor load, it is usually in the range 5-30 ms.



With AKD BASIC - High Flexibility for each Axis

- ◆ Fast commissioning with Auto-Tuning
- ◆ Easy to learn, intuitive programming in Basic
- ◆ User-friendly development environment, Workbench, program download and upload in one tool
- ◆ Program password protection - protects your intellectual property
- ◆ 19 digital inputs and 12 digital outputs with I/O expansion
- ◆ 2 analog inputs and outputs, I/O expansion
- ◆ Program storage and parameter sets upload to SD card, no PC required for commissioning

With AKD BASIC you can realize motion and machine control directly on each axis without an external PLC. Users can work independently of the development team to optimize the drive and fulfill customer requirements quickly, safely and without the need for higher-level control systems. This shortens the testing phase and protects you from surprises during commissioning. The Basic programming language is easy and fast to learn - in just a short time you will develop individual programs for machine interfacing and motion control functions. The TG Drives WorkBench assists you with powerful development tools including the program editor with syntax checking, program templates, extensive testing and debugging tools.

AKD BASIC I/O Interface Configurations

I/O Interfaces	AKD BASIC Standard Unit	AKD BASIC with I/O Expansion
Digital Inputs	7	19
Digital Outputs	2	12
Analog Inputs	1	2
Analog Outputs	1	2

Maximum Productivity with the TG Drives WorkBench

The powerful TG Drives WorkBench provides a complete user interface for programming, configuration and optimization, with drive management, motion and machine control interfacing functions. The TG Drives WorkBench development environment for AKD BASIC provides all the tools for software development, testing and debugging.

- ◆ TG Drives WorkBench as a programming and axis management tool
- ◆ Predefined commands with their own libraries make programming easier
- ◆ Auto-complete speeds up work and reduces the error rate with a display of each possible parameter
- ◆ Color-coding for reliable differentiation of comments, parameters, print commands, and other types of code
- ◆ Fast commissioning includes variable sharing with HMI
- ◆ Intuitive operation with user friendly menu structure
- ◆ Debugger with breakpoints and step commands to control program flow in debug mode
- ◆ Windows user interface provides complete clarity through configurable window layout

General specification for AKD Basic 230 V

Rated data	DIM	AKD-T00306	AKD-T00606	AKD-T01206	AKD-T02406
Rated supply voltage	V~	3 × 108-264 V / 50-60 Hz 1 × 108-264 V / 50-60 Hz			3 × 240 V ±10 %
Rated installed power for S1 operation	kVA	1.2	2.38	3.82	7.6
Nominal current (±3 %)					
- at rated voltage 120 V	Aef	3	6	12	-
- at rated voltage 240 V	Aef	3	6	12	24
Maximum current (max. 5s. ±3 %)	Aef	9	18	30	48
Continuous power regen circuit (RBint)	W	-	-	100	200
Continuous power regen circuit (RBext) max.	Ws	60 (120 V) 20 (240 V)	60 (120 V) 20 (240 V)	160 (120 V) 55 (240 V)	180 (120 V) 60 (240 V)
Continuous power regen circuit (RBext) max.	kW	0.77	1.5	3	6
Peak power regen circuit (RBext) max.	kW	5.4	5.4	5.4	11.8
Dimensions: Standard version					
Height	mm	168	168	195	250
Width	mm	57	57	76	100
Depth	mm	153	153	186	230
Depth with connectors and cables	mm	184	184	215	265
Dimensions: Expanded I/O version					
Height	mm	168	168	195	250
Width	mm	90	90	96	100
Depth	mm	153	153	186	230
Depth with connectors and cables	mm	184	184	215	265

General specification for AKD Basic 3 × 400 V

Rated data	DIM	AKD-T00307	AKD-T00607	AKD-T01207	AKD-T02407	AKD-T04807
Rated supply voltage	V~	3 × 216-528 V / 50-60 Hz				
Rated installed power for S1 operation	kVA	2.24	4.49	7.65	15.2	40.9
Nominal current (±3 %)	Aef	3	6	12	24	48
Maximum current (max. 5s. ±3 %)	Aef	9	18	30	48	96
Continuous power regen circuit (RBint)	W	80	100	100	200	-
Breaking energy of regen circuit capacitor	Ws	5 (240 V) 35 (400 V) 20 (480 V)	5 (240 V) 35 (400 V) 20 (480 V)	10 (240 V) 70 (400 V) 40 (480 V)	15 (240 V) 110 (400 V) 60 (480 V)	20 (240 V) 146 (400 V) 80 (480 V)
Continuous power regen circuit (RBext) max.						
at 240 V / 400 V and 480 V	kW	0.77/1.5	1.5/3	3/6	6/12	6/12
Peak power regen circuit (RBext) max.	kW	5.4/21.4	5.4/21.4	5.4/21.4	7.7/30.6	17.6/70.5
Dimensions: Standard version						
Height	mm	256	256	256	310	385
Width	mm	70	70	70	105	185
Depth	mm	186	186	186	229	229
Depth with connectors and cables	mm	221	221	221	264	264
Dimensions: Expanded I/O version						
Height	mm	256	256	256	310	385
Width	mm	100	100	100	105	185
Depth	mm	186	186	186	229	229
Depth with connectors and cables	mm	221	221	221	264	264

Servomotors ♦ Servoamplifiers ♦ Gearboxes ♦ Control systems

TG Drives, s. r. o.
Olomoucká č. ev. 84
CZ 627 00 Brno

Tel.: +420 548 141 811
Fax: +420 548 141 890
E-mail: info@tgdrives.cz

 **www.tgdrives.com**