

ECODRIVE03
The economical drive solution



Electric Drives and Controls

ECODRIVE03

The economical drive solution for automation

ECODRIVE03 is a particularly cost-effective and universal automation system. It is very suitable for virtually all areas of automation engineering in which linear or rotary movements up to 24 kW have to be controlled.

Use the advantages of ECODRIVE03 and safeguard your future by automating more economically, saving on system components and simplifying installation and commissioning.

Typical applications are:

- handling and assembly systems
- packaging and food processing machines
- printing and paper processing machines
- machine tools

The drive electronics – open for every type of control

The compact DKC control units contain the complete power supply, control and regulation electronics. They can be directly connected to the AC supply and are available in two power ratings. The usual standard interfaces allow connection to various controllers and facilitate different types of control.

- Analogue interface
- Parallel interface
- SERCOS interface
- PROFIBUS interface
- INTERBUS interface
- CANopen interface
- DeviceNet interface

The motors – Suitable for any mechanical system

This system is completed by the wide range of synchronous and asynchronous motors for rotary and linear feed movements, as well as for main spindle applications:

- For standard applications up to 72 Nm with synchronous motors
- For demanding requirements up to 240 Nm with synchronous motors
- For main spindle applications with asynchronous motors up to 24 kW
- Asynchronous frameless motors up to 24 kW
- Linear synchronous and asynchronous motors up to 22.000 N.



ECODRIVE03

All features are standard

Absolute or incremental position measurement

Different motor encoder systems permit absolute or incremental position measurement. All conventional encoder types can be used as separate position encoders via the second encoder input as required.

Compact drive electronics

The high level of integration of the drive electronics enables you to use 300 mm standard control cabinets for compact machine designs.

Comprehensive diagnostics

Two-digit diagnostics display on the unit and comprehensive plain language displays of all operating states at the control terminal or PC terminal support rapid location and elimination of system malfunctions.

Unit is rapidly replaced for servicing

All specific drive data are immediately available during servicing simply by plugging the programming module onto the spare unit, and your production can continue.

Error response built into drive

During commissioning you can set the response of the ECODRIVE03 drive in the emergency stop mode.

Built-in holding brake control

The holding brake is controlled directly via the control unit. This reduces the amount of wiring for higher-level control systems.

Position limit monitor

Mechanical travel limit switches can be dispensed with when the position limit monitor is activated.

EMC design

ECODRIVE03 is made insensitive to electromagnetic interference by completely screening the drive electronics by means of a metal housing and transmitting the data via fibre-optic cables and SERCOS interface.

Combination with DIAX04 drive system

The scope of the ECODRIVE03 can be extended by combining it with our DIAX04 digital, intelligent drives.

The link circuit supply then completely replaces the AC input. We recommend this for additional axes on existing DIAX04 drives or if several ECODRIVE03 drives are to be supplied in common.

Cost-saving AC mains input for international use

The control units can be directly connected to all established international 3 x 200 V to 3 x 480 V AC supply systems without the need for a transformer. A single-phase AC input is also possible for reduced power ratings. Depending on the drive's task, you can choose between individual and group infeed.

Individual infeed

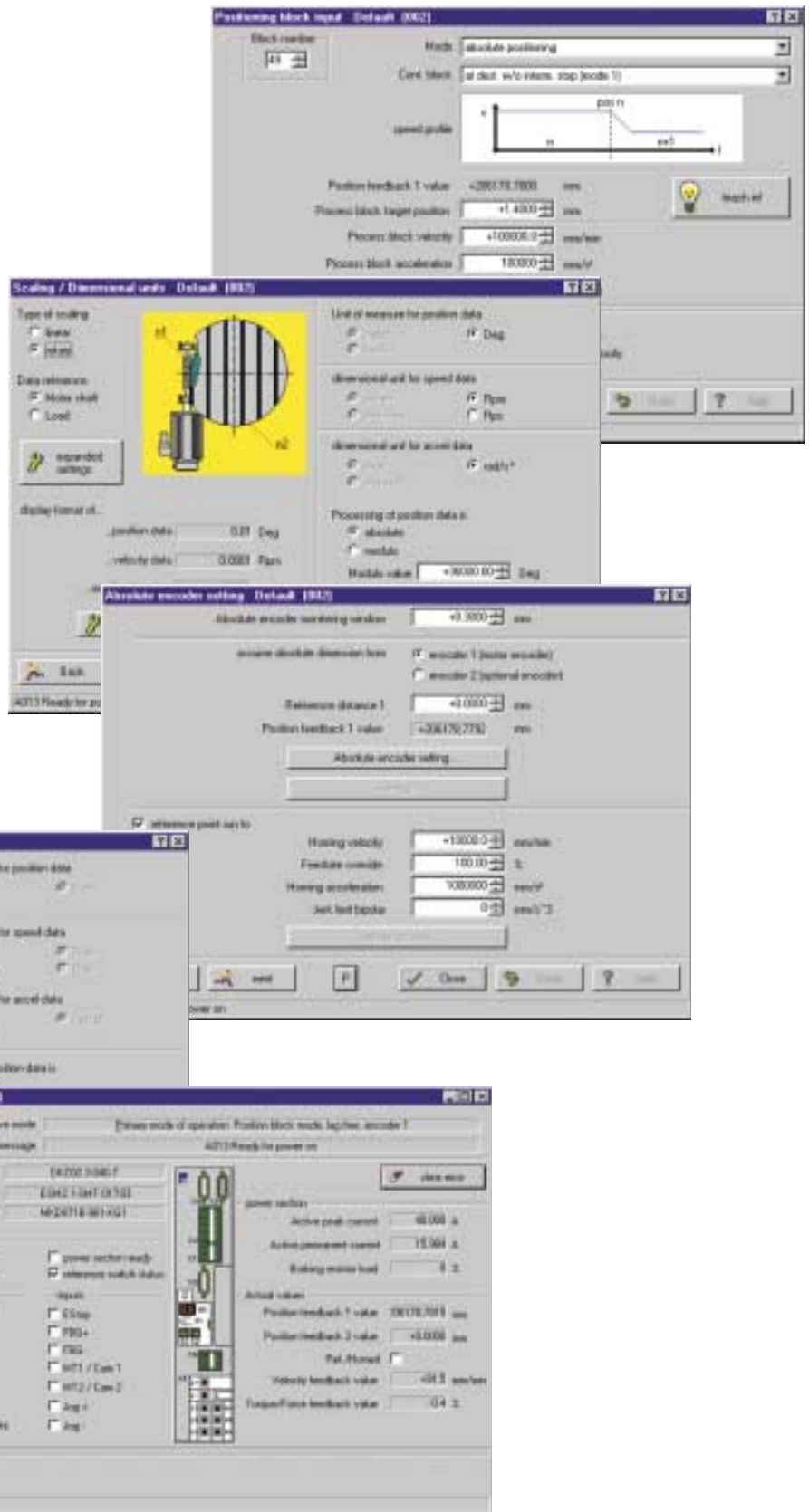
Where single control units are operated, each unit has its own AC supply. The mains voltage can therefore be fed to each unit separately.

Group infeed

If you are operating several control units together, you can also connect and disconnect groups of drives via a common mains contactor. Each control unit of the group is thus supplied with mains voltage simultaneously and directly. As a result, the link circuit voltage of the connected units is built up as quickly as possible and the drive are immediately ready for use.

Convenient and time-saving commissioning

During commissioning the control units automatically read all relevant motor parameters via the motor encoder. The DRIVETOP graphics program guides you quickly and purposefully through all the individual commissioning steps via the control terminal or PC terminal. Here all the drive's current internal state variables are clearly displayed. You are supported at each step by extensive help texts.



ECODRIVE03 with DKC11

Cost-effective automation with analogue interface

With the analogue interface you can operate ECODRIVE03 with a conventional controller in a particularly cost-effective way. Speed or torque settings are then input via the +/- 10 volt analogue interface.

Position measurement without additional complexity

The control unit provides the controller with the current rotor positions as position actual values. For indirect position measurement you therefore eliminate separate position encoders and encoder cables.

Absolute or incremental position output

The position values can be output in an absolute or incremental form.

Resolution for high accuracy can be set by parameters

The resolution of the position actual values can be set by parameters as a number of encoder lines from 1 to 65 536.

Drift-free drive shutdown

The motor can be stopped and held without drift via a switching input when the control is active, irrespective of the set point.

Operating modes

- Speed control
- Torque or force control



ECODRIVE03 with DKC01

Simple positioning with parallel interface

You can store up to 64 positioning blocks, each with its own speed, acceleration and rate-of-change limits, in the control unit. The positioning blocks are selected via parallel inputs. Feedrate override is possible.

Rotary and linear feed motion

Depending on the axis kinematics, all position, speed and acceleration data can be given rotary or linear weightings.

Built-in stepping motor interface

With the stepping motor interface you can use the ECODRIVE03 as a stepping motor drive. The drive system then operates in the position control mode and basically simulates a stepping motor. The position setpoints are transmitted incrementally by pulses from the controller to the control unit. The increment can be set by parameters in a range from 1 to 65 536 steps per motor revolution.

Operating modes

- Positioning block mode (up to 64 positioning blocks)
- Speed control
- Torque or force control
- Stepping motor mode



ECODRIVE03 with DKC02

All the advantages of digital technology with the SERCOS interface

The SERCOS interface is an internationally standardized real-time communications system which allows you to utilize all the facilities and advantages of digital drive technology. The serial data transmission between the controller and the drives takes place over fibre-optic cables and is free of interference.

Reduced installation outlay

The use of fibre-optic cables and the elimination of position encoders and their cables reduce your wiring outlay to a minimum.

Secure data transmission

The data transmission between controller and ECODRIVE03 takes place via fibre-optic cables arranged in a ring. This provides you with maximum possible interference immunity as well as high data rates.

Flexible in combination

All data, parameters and commands to be exchanged are standardized. This ensures trouble-free interaction between digital drives and controllers from different manufacturers. You therefore utilize all the advantages of the respective products.

Comprehensive diagnostics

The SERCOS interface offers extensive diagnostic facilities and enables the parameters of the ECODRIVE03 to be input via controller terminals or PC terminals. This reduces your down times and considerably shortens your commissioning time.

Operating modes

- Position control
- Speed control
- Torque and force control
- Positioning block mode (up to 64 position blocks)



ECODRIVE03 with DKC03

Economical positioning with PROFIBUS interface

PROFIBUS is a standardized, serial field bus system for the fast transmission of I/O signals. The PROFIBUS interface enables ECODRIVE03 to operate in four operating modes.

Operating modes

- Position control
- Speed control
- Torque and force control
- Positioning block mode (up to 64 positioning blocks)

Reduced wiring outlay

The ring structure reduces your wiring outlay to a minimum.

Flexible production changes and comprehensive diagnostics

Parameters and diagnostic data can be exchanged via the PROFIBUS interface, thereby enabling position data to be rapidly and easily adapted to changes in production processes.

Absolute or relative positioning data

A PLC controller can specify absolute or relative target positions via the PROFIBUS interface.

Cost-effective and simple positioning axes

Thanks to the built-in point-to-point positioning control system with internal position control, positioning tasks are implemented very cost effectively and positioning control cards are not required in the PLC.



ECODRIVE03 with DKC04

Economical positioning with INTERBUS interface

INTERBUS is a standardized, serial field bus system for the fast transmission of I/O signals. The INTERBUS interface enables ECODRIVE03 to operate in four operating modes.

Operating modes

- Position control
- Speed control
- Torque and force control
- Positioning block mode (up to 64 positioning blocks)

Reduced wiring outlay

The ring structure reduces your wiring outlay to a minimum.

Flexible production changes and comprehensive diagnostics

Parameters and diagnostic data can be exchanged via the INTERBUS interface, thereby enabling position data to be rapidly and easily adapted to changes in production processes.

Absolute or relative positioning data

A PLC controller can specify absolute or relative target positions via the INTERBUS interface.

Cost-effective and simple positioning axes

Thanks to the built-in point-to-point positioning control system with internal position control, positioning tasks are implemented very cost effectively and positioning control cards are not required in the PLC.



ECODRIVE03 with DKC05

Economical positioning with CANopen interface

CANopen is a standardized, serial field bus system for the fast transmission of I/O signals. The CANopen interface enables ECODRIVE03 to operate in four operating modes.

Reduced wiring outlay

The ring structure reduces your wiring outlay to a minimum.

Flexible production changes and comprehensive diagnostics

Parameters and diagnostic data can be exchanged via the CANopen interface, thereby enabling position data to be rapidly and easily adapted to changes in production processes.

Absolute or relative positioning data

A PLC controller can specify absolute or relative target positions via the CANopen interface.

Cost-effective and simple positioning axes

Thanks to the built-in point-to-point positioning control system with internal position control, positioning tasks are implemented very cost effectively and positioning control cards are not required in the PLC.

Operating modes

- Position control
- Speed control
- Torque and force control
- Positioning block mode (up to 64 positioning blocks)



ECODRIVE03

The motors – with fast dynamic response and optimized to the application

With ECODRIVE03 we offer you a complete range of synchronous and asynchronous motors for linear and rotary feed movements, as well as for main spindle applications.

MHD

Synchronous motors for stringent requirements

MHD motors are designed for all applications in automated production up to 240 Nm demanding maximum position accuracy, machining quality and machining speed. Air-cooled and liquid-cooled variants are available for extreme load conditions. The motors have protection type IP65 as standard and are fitted with a single-turn encoder for relative position detection. The motors can also be supplied with multiturn absolute encoders, holding brake or keyway as required.



MKD

Synchronous motors for standard applications

MKD motors are a particularly cost-effective solution for all general automation engineering applications up to 72 Nm. Air-cooled versions are available for extreme loading conditions. The motors have protection type IP65 as standard and are fitted with a single-turn encoder for relative position detection. The motors can also be supplied with multiturn absolute encoders, holding brake or keyway as required.



MKE

Synchronous motors for areas subject to explosion hazard

We offer explosion-proof MKE motors with EExd protection for the T4 temperature range for use in paint plants or in the chemical industry. Various motor sizes are available with a torque range up to 48 Nm. The motors are fitted with a single-turn encoder as standard for relative position detection. They can also be supplied with multiturn absolute encoders, holding brake or key-way as required.





2AD and ADF

Asynchronous motors for main spindles

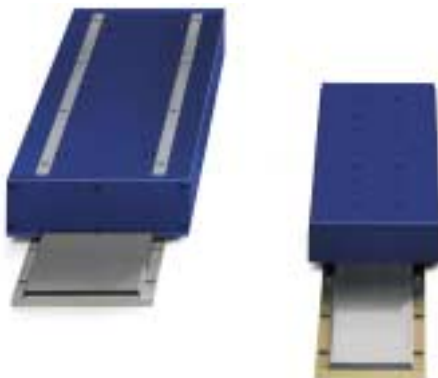
The particular applications for these air or liquid cooled motors are main spindles and servo axes in machine tools, as well as drive tasks in many other applications, for which various sizes up to 24 kW are available. These motors feature particularly fast dynamic response, wide speed control range and excellent smooth running. The motors can be supplied with electrically locking or electrically releasing holding brakes.



MBS and 1MB

Synchronous and asynchronous frameless motors for new machine concepts

The primary applications for these motors are main spindles of modern turning, milling and grinding machines, as well as machining centres, including high-speed machining. Liquid cooling and the large spindle opening allow frameless motors to be fitted directly into the headstock and thus result in new, compact machine designs with distinct competitive advantages. These include the excellent smooth running and perfect servo characteristic for C-axis machining. The power spectrum of the application-specific motor variants extends to 24 kW.



LSF

Synchronous linear motors for movements with fast dynamic response

Linear drives require no mechanical transmission elements and their use in high-speed cutting, grinding, sheet metal working and laser machining is therefore particularly advantageous. This series of drives also facilitates innovative machine designs which have distinct advantages. The outstanding features of this drive technology include very high speeds with enhanced accuracy and peak forces up to 22.000 N. The encapsulated construction of the primary simplifies motor installation and protects the motor from environmental influences.

ECODRIVE03

Versatile and universal

PAINTING PLANT (Picture, top left)

The modular and compact construction of the control units minimizes the size of control cabinets in painting plants in the automotive industry. The use of the SERCOS interface and fibre-optic cables also considerably reduces the amount of cabling. (Dürr Systems GmbH)

PACKAGING MACHINE (Picture, top centre)

Thermoforming, filling and packaging machine line for the foodstuffs industry. Synchronized single drives replace mechanical transmission elements and maximize the number of cycles. (GEA FINNAH)

HANDLING (Picture, right)

Gantry loader with ECODRIVE for handling letter containers in a German Post Office sorting centre. The MKD motors are fitted with integral worm drive. (DEMAG)

GLASS PROCESSING (Picture, bottom left)

5-axis gantry-type glass processing plant for removing coatings and cutting glass panes. ECODRIVE03 with SERCOS interface permit tool path feedrates of 180 m/min with an accuracy of 0.02 mm. (HEGLA)

WOODWORKING (Picture, bottom centre)

Woodworking machine with 56 main and auxiliary axes for flexible and accurate complete machining of furniture parts. The compact design of the control units enables the drive electronics to be arranged in compact control cabinets - thus saving space. (WEEKE)



