

DIS-2

Decentralised servo positioning controller

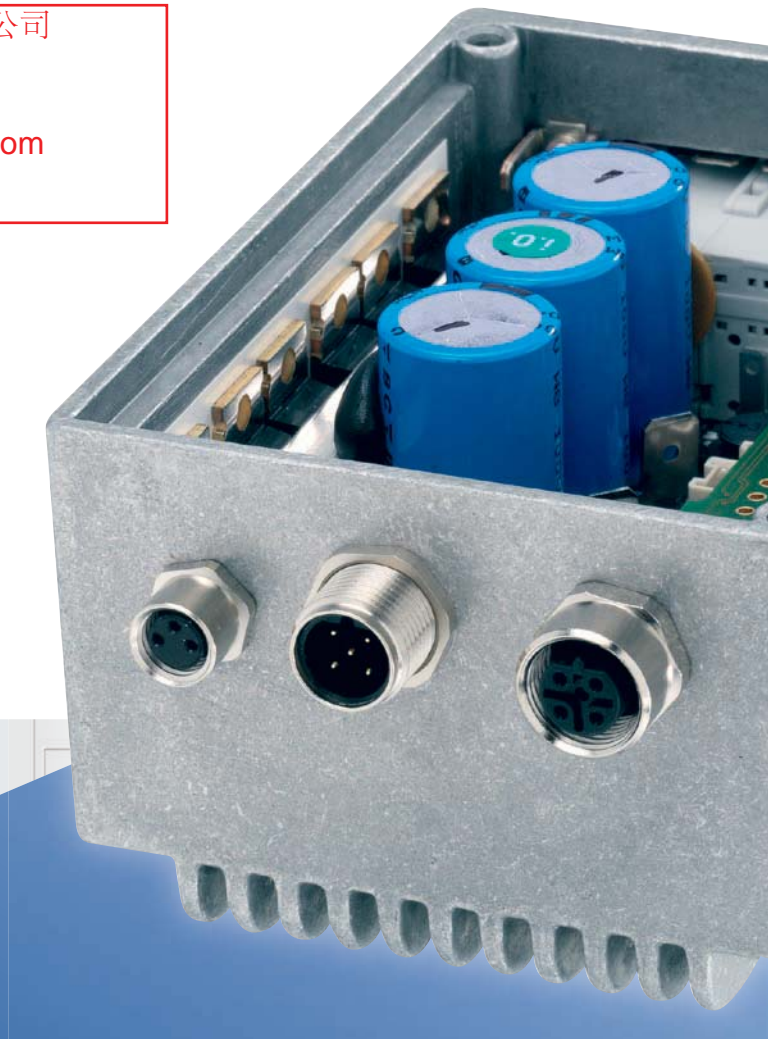


Connection types



Software tools

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→ Universal in applications

→ Rugged in use

→ Flexible in the connection of motors and fieldbuses



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- ▶ has developed, produced, and distributed innovative drive technology for industrial machines and automotive applications for more than 30 years with the focus placed on intelligent servo drives.
- ▶ with its highly-qualified staff, metronix finds an optimal solution for your application.
- ▶ is part of the Apex Tool Group, LLC, which is headquartered in Sparks, Maryland, USA. The Apex Tool Group has more than 7,600 employees in over 30 countries worldwide.
- ▶ stands for universal products with open standards. They are flexible and can be easily adapted to a number of different applications.

metronix - Competence in Motion Control

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metronix – openconcepts

openconcepts

- ▶ Stands for universal interfaces, open standards, and modular extension options for our products that enable maximum flexibility in machinery concepts.
- ▶ Intelligent drive solutions require optimised concepts. Together with you, our experts develop the perfect drive solution for your application. We can use our series products or something unique to create the solution that precisely meets your requirements.
- ▶ For our engineers, this means more than just supporting our products. It means being open to your questions. Our experts help you to analyse an application and advise and help with its adjustment and the selection of the required components.
- ▶ We develop long-lasting business relationships through close and confident co-operation with our customers.

Universal motor control

- ▶ Synchronous motors

Universal encoder interface

- ▶ Resolver, high control quality due to extremely good sensor technology
- ▶ Analogue and digital incremental encoder with commutation signals
- ▶ High resolution Stegmann incremental encoders, absolute encoders with HIPERFACE

Universal connectivity to different fieldbuses via a universal configuration tool:

Fast drive parameterisation with the comfortable configuration tool DIS-2 ServoCommander™.

CANopen

PROFI
NET

EtherCAT

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Advantages

The number of applications with decentralised servo drive technology is growing constantly and there is good reason for it. The decentralised servo positioning controllers DIS-2 provide a set of advantages that range from machine/automation system planning, machine/automation system assembly and commissioning to the use in the particular application.



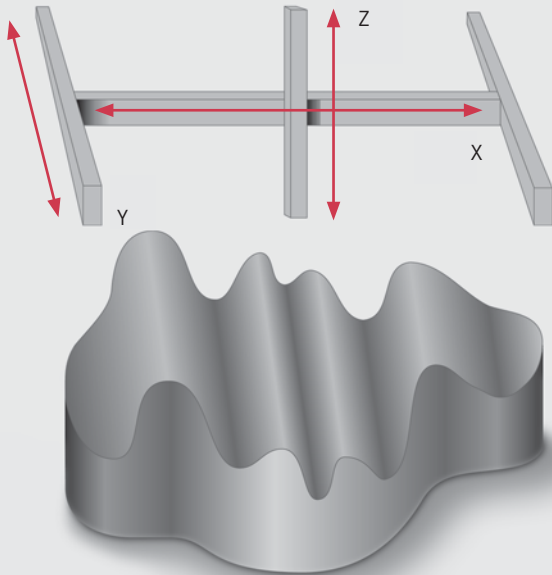
Advantages of the decentralised servo drive technology

- ▶ Technologically speaking, the DIS-2 is in spite of its small size a **fully fledged servo positioning** controller. It can be used for simple applications such as speed, torque, and positioning control and likewise in drive and controlled applications. The DIS-2 can **synchronise with the master cycle of a control** and supports applications where a multi-axis coordinated and interpolated position mode is required.
- ▶ The major advantage of the decentralised servo drive technology is the motor-controller-configuration. Since the electronic system is **directly mounted on the motor**, expensive shielded motor and encoder cables are not required.
- ▶ Further advantages result from the **decentralised configuration of the drive**. The servo positioning controller DIS-2, including the motor, is located outside of the control cabinet and **saves thereby on expensive control cabinet space**. Furthermore, the power loss of the drive unit is emitted outside of the control cabinet. This leads to **lower investment and operating costs** for the cooling of the control cabinet.
- ▶ In spite of the rugged design of the DIS-2 (up to IP67 is possible), you do not have to do without the familiar comfort during the installation, commissioning, and service of the device. The DIS-2 is equipped with **commercial plug-in connectors for a fieldbus connection** as well as a separate **service interface**. **This ensures the fast and economical installation of the device.**
- ▶ **From an economic point of view, the late assembly of the decentralised servo drive equipment also has a positive effect on the capital tie-up.** In contrast to control cabinet servo controllers, which are tied-up capital from the beginning of the control cabinet manufacturing, the decentralised servo drive systems are **not installed until shortly before the completion of a machine**. As a result, the capital tie-up is extremely short.
- ▶ **By means of a synchronised drive unit**, consisting of the motor and servo controllers, the frequently time-consuming motor commissioning process is not necessary. The drive unit is purchased completely installed and parameterised, ready for the integration into the automation system.

Advantages at a glance:

- ▶ Saving of control cabinet space
- ▶ Reduced control cabinet cooling
- ▶ Saving of 70% of the cables compared to conventional cabling
- ▶ Low capital tie-up
- ▶ Synchronised motor-servo controller-drive unit
- ▶ Fully fledged servo positioning controller in a compact and rugged design

Features



Interpolated position mode



DIS-2 with an integrated brake resistor

Flexible

Can be mounted to various motor types

- ▶ Synchronous motors
- ▶ Brushless DC motors
- ▶ DC motors with brushes

Evaluation with several feedback encoders

- ▶ Hall sensors (analog and digital)
- ▶ Resolvers
- ▶ Single, multi-turn absolute-value encoders with HIPERFACE
- ▶ Incremental encoders (with Hall sensors)

Versatile fieldbus options

- ▶ CANopen
- ▶ PROFIBUS
- ▶ EtherCAT

Intelligent

- ▶ Speed, torque and positioning control
- ▶ Point-to-point positioning and interpolated position
- ▶ Integrated sequence control

Rugged

- ▶ High protection (up to IP67)
- ▶ EMC improved metal plug connectors
- ▶ Plug-in connectors for RS232 and fieldbus cascading

The fully digital DIS-2 servo positioning controller can be easily integrated into decentralised drive concepts at a favourable price. Its compact design allows direct mounting to the motor, which reduces the wiring to a minimum. Neither a control cabinet nor additional RFI suppression is required. They are controlled via I/O, RS232, or fieldbus. CANopen is available as a standard for all DIS-2 variants. Alternatively, the DIS-2 FB can be provided with PROFIBUS or EtherCAT. Because of the shortest connection between the motor and servo controller, the wiring is minimised and a cabinet or additional EMC interference elimination are not necessary. Several DIS-2 FB can be economically networked by using two plugs for bus IN/bus OUT. The fieldbus is simply and directly cascaded from one DIS-2 FB to the next, which means that the connection neither needs long separate bus cables for every drive nor expensive T-switchpoints.

Overview of the DIS-2 product family

Decentralised intelligent servo positioning controller DIS-2



48 VDC

Extra-low voltage
48 VDC

DIS-2 48/10
with CANopen



with a 16-pin
crimp connector

DIS-2 48/10 IC
with CANopen



with a 18-pin
terminal connector

DIS-2 48/10 FB
with CANopen, PROFIBUS,
EtherCAT



with a 18-pin
terminal connector and an
additional plug-in connector for
bus IN/bus OUT and RS232

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DIS-2
connection variants



230 VAC

Low voltage
230 VAC

DIS-2 310/2 FB
with CANopen, PROFIBUS,
EtherCAT



← DIS-2 mounted to servo motor →

with a 22-pin
terminal connector and an
additional plug-in connector for
bus IN / bus OUT and RS232

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Technical data DIS-2 48/10

Range	Values
Permissible temperature ranges	Storage temperature: -25 °C to +70 °C Operating temperature: 0 °C to +70 °C with power derating 2% / K, as of 50 °C temperature switch-off at approx. 80 °C
Permissible installation height	Up to 1000 m a.m.s.l., 1000 to 4000 m a.m.s.l. with power derating
Humidity	Rel. humidity up to 90%, non-condensing
Type of protection	IP54, depending on the type of installation up to IP67
Pollution class	1
CE conformity Low voltage directive EMC directive	Not applicable EN 61 800-3
Further certifications	UL in preparation
Inputs	maximum: 10 DIN (24 V) 2 AIN (± 10 V, 12 Bit, differential)
Outputs	maximum: 3 DOUT (24 V) 1 DOUT for holding brakes 1 AOUT (0...10 V, 8 Bit)
Voltage supply	0...60 VDC (48 VDC _{rated} , 15 A _{rated})
Control voltage	24 VDC [± 20%]
Clock frequency	10 kHz / 20 kHz
Output power	500 VA
Max. output power for 2 s	1500 VA
Rated output current	15 A _{rms}
Max. output current for 2 s	40 A _{rms}
Brake resistor (optional)	Type: PLR by Metallux, e.g. screwed on mounting plate
Continuous / pulse output brake resistor	100 W / 750 W
Holding brake	24 VDC, max. 700 mA
Dimensions of the basic unit (W × H × D in mm) (without a mating connector)	56 × 80 × 112 mm
Weight	0.5 kg

Order numbers and accessories	DIS-2 48/10	DIS-2 48/10 IC	DIS-2 48/10 FB
CANopen	9019-0248-00	9019-0248-02	9019-0248-03
PROFIBUS	–	–	9019-0248-04
EtherCAT	–	–	9019-0248-05
Accessories:			
Brake resistor	–	–	9519-0001-00
Set of mating connectors	9019-0210-01	9019-3120-01	9019-3120-01
RS232 connecting cable	–	–	9019-0221-00
Operating unit including a cable	9019-0300-00	9019-0320-00	9019-0320-00
Parameter setting program DIS-2 ServoCommander™	9019-0900-00	9019-0900-00	9019-0900-00
Single phase supply unit 24 V, 15 A, IP54	9505-0002-00	9505-0002-00	9505-0002-00

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Technical data DIS-2 310/2 FB

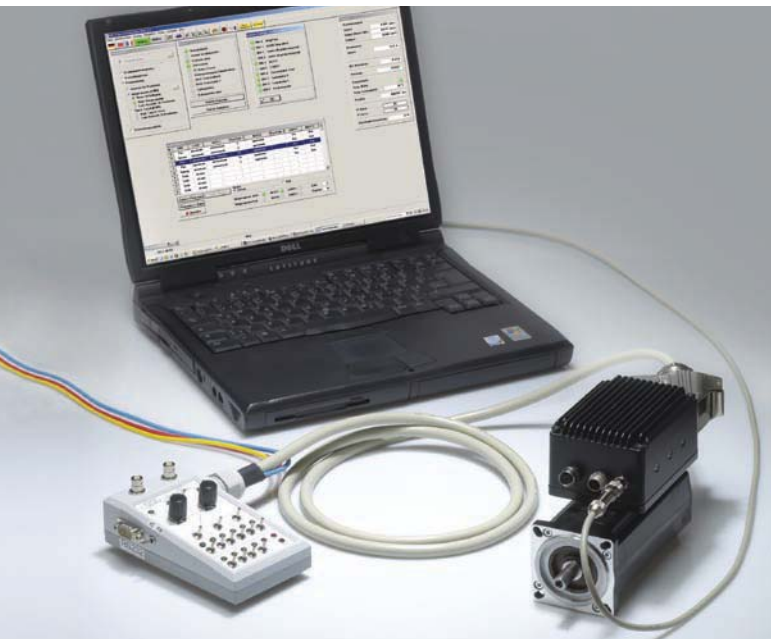
Range	Values
Permissible temperature ranges	Storage temperature: -25 °C to +70 °C Housing temperature during operation: 0 °C to 80 °C, temperature switch-off approx. at 85 °C Ambient temperature at nominal power: 0 °C to 30 °C, a higher ambient temperature is possible with power derating or current derating: 3%/K as of 30 °C
Permissible installation height	Up to 1000 m a.m.s.l., 1000 to 4000 m a.m.s.l. with power derating
Humidity	Rel. humidity up to 90%, non-condensing
Type of protection	IP54, depending on the type of installation up to IP67
Pollution class	1
CE conformity Low voltage directive EMC directive	EN 61800-5-1 EN 61800-3-3 only with an external line filter END 230-4
Further certifications	
Inputs	maximum: 10 DIN (24 V) 2 AIN (± 10 V, 12 Bit, differential)
Outputs	maximum: 3 DOUT (24 V) 1 DOUT for holding brake 1 AOUT (0...10 V, 8 Bit)
Voltage supply	1 × 230 V _{rms} [± 10%], approx. 2.0 A
Control voltage	24 VDC [± 20%], 0,20 A ¹⁾ , internally protected by a poly-switch, triggers at approx. 1 A
PWM frequency	10 kHz
Output nominal power	300 W
Rated output current	2 A _{rms}
Max. output current 1 s	6 A _{rms}
Brake chopper (integrated)	U _{chop} approx. 380 VAC
Brake resistor (optional)	Type: PLR by Metallux, e.g. screwed on mounting plate
Continuous / pulse output brake resistor	30 W / 600 W
Holding brake	24 VDC, max. 700 mA
Dimensions of the basic unit (W × H × D in mm) (without a mating connector)	56 × 80 × 112 mm
Weight	0.55 kg

¹⁾ Plus the supply current of the optional holding brake of 0.7 A

Order numbers and accessories	DIS-2 310/2 FB
CANopen Profibus EtherCAT	9019-3103-00 9019-3103-04 9019-3103-05
Accessories: Brake resistor PLR Input line filter END 230-4 Set of mating connectors (X1) Set of mating connectors (X2, X3, X6) RS232 connecting cable Operating unit including a cable Parameter setting program DIS-2 ServoCommander™	9519-0002-00 9504-0005 9019-3120-01 9019-3120-02 9019-0221-00 9019-0330-00 9019-0900-00

Parameter setting program

DIS-2 ServoCommander™



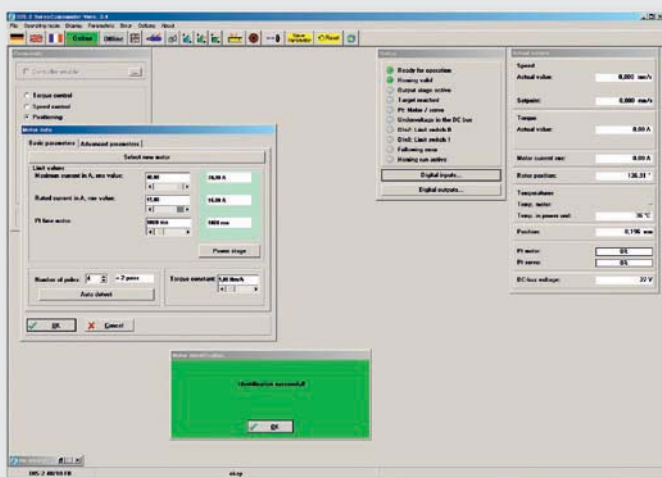
Easy commissioning

- ▶ Parameter setting with DIS-2 ServoCommander™
- ▶ Configuration of all the parameters
- ▶ Integrated oscilloscope functionality
- ▶ Automatic motor identification

Further accessories

- ▶ User-friendly operating unit for commissioning and diagnostics including pre-cut connection cable
- ▶ RS232 cable to connect the PC to the DIS-2 FB
- ▶ Single-phase supply unit for DIS-2 48/10
- ▶ Internal brake resistor for DIS-2 FB

Run the drive within the shortest time.



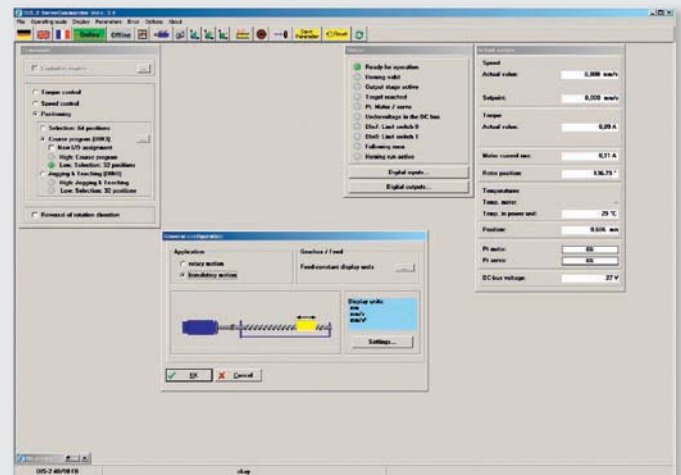
Automatic motor identification

The commissioning of the servo drive can be carried out within a very short time without reading the manual.

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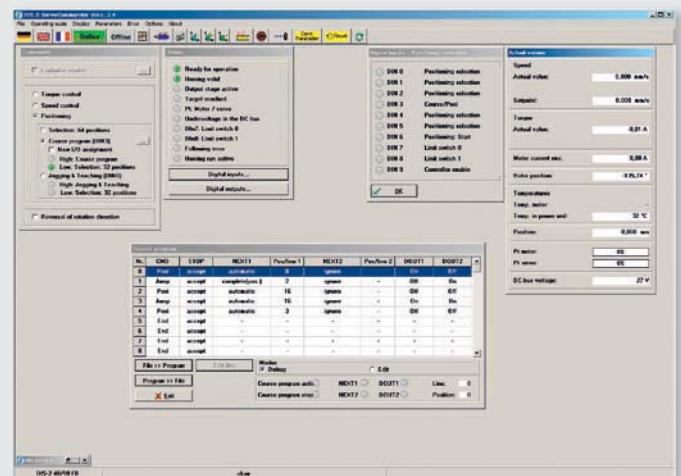
Graphic visualisation

Pictures and overview graphics help the user to quickly and easily understand the program. All drive-specific settings can be changed by clicking the menu bar.



Multilingual plain text

All windows and parameters are described in plain text. Difficult code lists are no longer required.



Modern fieldbus configurators

The use of modern fieldbus configurators guarantees an easy and fast fieldbus connection.

