ELECTRONICS

Overview

Overview

electronics

Two-phase step motors

MS 135/200 HT-2

Twp-phase step motor MS 135 HT - 2

Features

- Step angle 1.8°, higher resolution through microstep mode
- Very high torque through rare earth magnets
- Optimised for use with position controllers
- Optimum torque/size ratio
- Smaller step angle errors, non-cumulative
- IP43 protection class
- Optional:
  - MD 24 drive module
  - Brake (MS 200 HT)
  - Second shaft end (MS 200 HT)

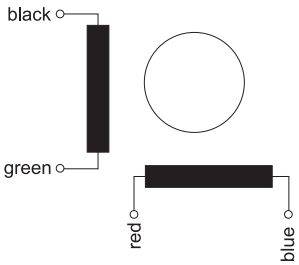
General

Two-phase step motors behave similarly to synchronous motors. They are easy to control and are characterised by very long working life and reliability, at a favourable price. This results in a wide range of applications. Two-phase step motors in the MS range are of the high torque type. A particularly high torque is achieved by the use of rare earth magnets.

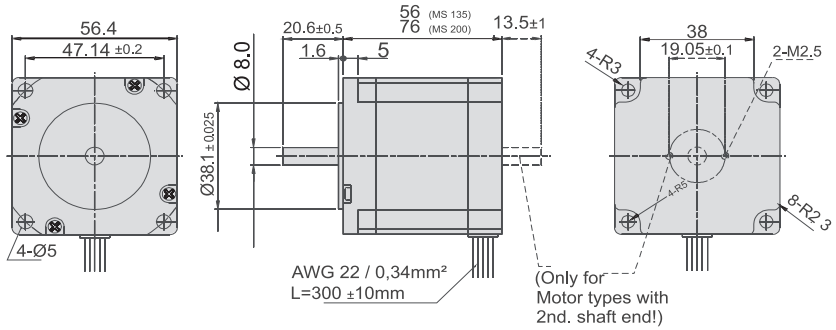
Technical specification

Description	Holding moment bipolar Nm	Winding current per phase A	Winding voltage per phase V	Winding inductance per phase mH	Weight kg	Length (without shaft) mm	Part no.
MS 135 HT-2	1.1	3.0	2.4	2.4	0.7	56	470551
MS 200 HT-2	1.8	3.0	3.0	3.5	1.0	76	470581
MS 200 HT-2 (2nd shaft end)	1.8	3.0	3.0	3.5	1.1	76	470581 0100
MS 200 HT-2 (brake)	1.8	3.0	3.0	3.5	1.8	76	470581 0200

Wiring diagram

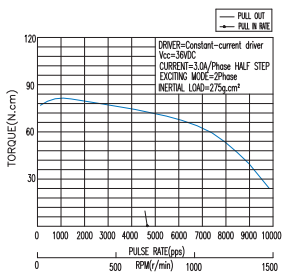


Dimensioned drawing

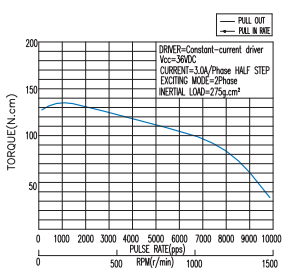


Torque curves

MS 135 HT



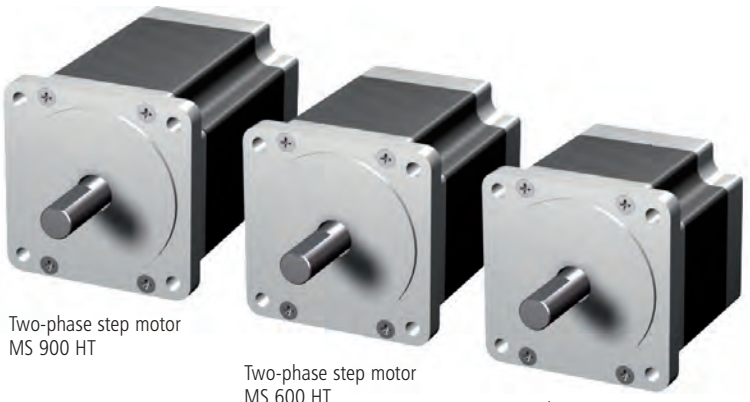
MS 200 HT



Subject to technical changes.

Two-phase step motors

MS 300/600/900 HT-2



Two-phase step motor
MS 900 HT

Two-phase step motor
MS 600 HT

Two-phase step motor
MS 300 HT

Features

- Step angle 1.8°, higher resolution through microstep mode
- Very high torque through rare earth magnets
- Optimised for use with position controllers
- Optimum torque/size ratio
- 8-lead connection
- Smaller step angle errors, non-cumulative
- IP43 protection class
- Optional: MD 28 drive module

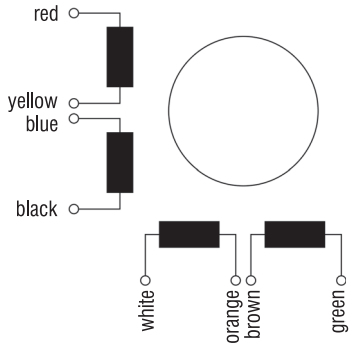
General

Two-phase step motors behave similarly to synchronous motors. They are easy to control and are characterised by very long working life and reliability, at a favourable price. This results in a wide range of applications. Two-phase step motors in the MS range are of the high torque type. A particularly high torque is achieved by the use of rare earth magnets.

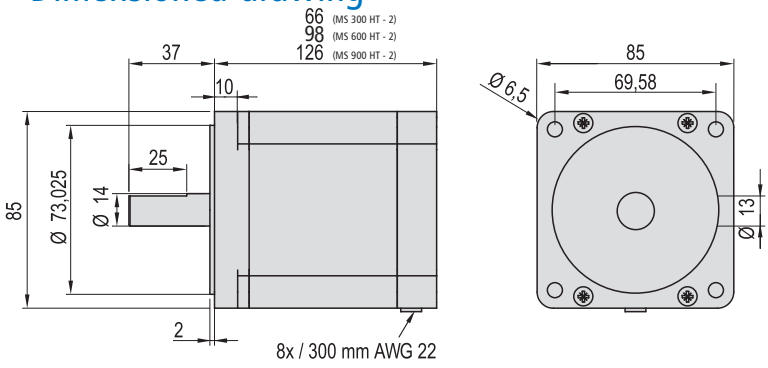
Technical specification

Description	Holding torque Bipolar Nm	Winding current per phase parallel/series A	Winding voltage per phase parallel/series V	Winding inductance per phase mH	Weight kg	Length (without shaft) mm	Part no.
MS 300 HT - 2	3.11	5.6 / 2.8	1.68 / 3.38	1.6	2.0	66	470821
MS 600 HT - 2	6.80	7.0 / 3.5	2.28 / 4.55	2.4	3.0	98	470851
MS 900 HT - 2	9.00	6.3 / 3.1	2.84 / 5.67	4.2	4.5	126	470881

Wiring diagram

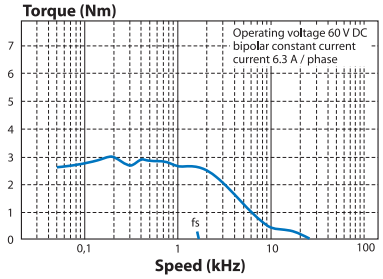


Dimensioned drawing

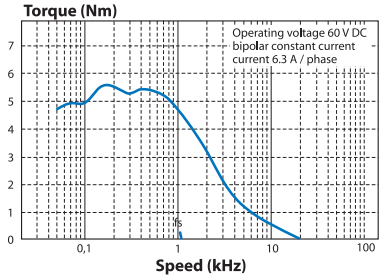


Torque curves

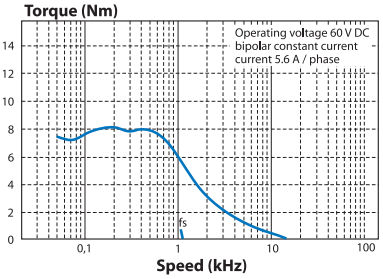
MS 300 HT



MS 600 HT



MS 900 HT

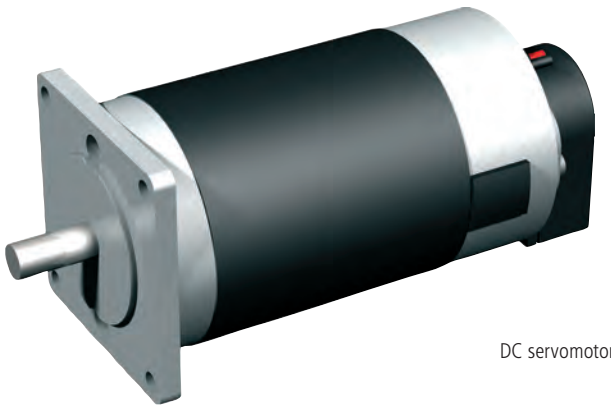


Subject to technical changes.

electronics

Servomotors
with brush drive

DC 100



DC servomotor DC 100

Features

- Servomotor with brushes
- Low-resistance winding construction
- Good dynamic response
- Two-finger brush (long working life)
- Incremental encoder with 512 pulses/turn (optional for DC 300: 1,000 pulses/turn)
- IP43 protection class/IP50 encoder

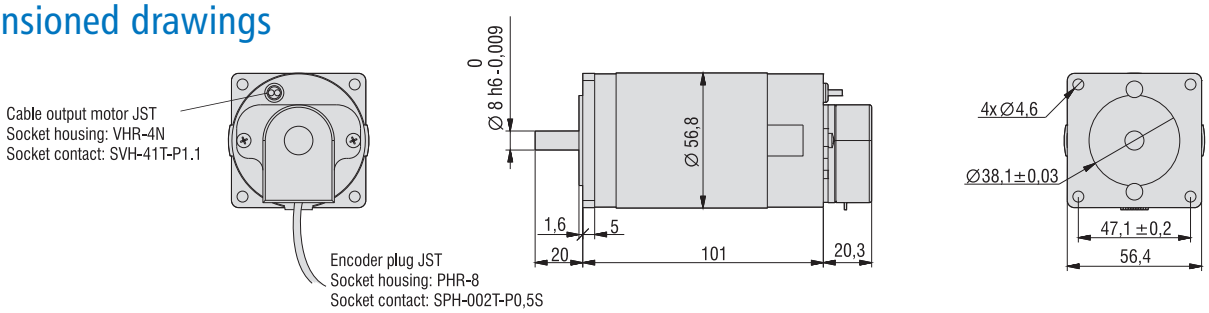
General

DC servomotors with brushes are the entry into the controlled drive technology class. They have good dynamic response and have proved themselves in drive systems. The attached encoder enables precise positioning. This predestines their use in CNC machines and in automation systems.

Technical specification

Description	Voltage V	No-load speed rpm	No-load current A	Rated speed rpm	Rated torque Ncm	Rated current A	Rated output W	Peak current A	Part no.
DC 100	48	3,400	0.25	3,000	30	2.8	95	6.5	471022 0020

Dimensioned drawings



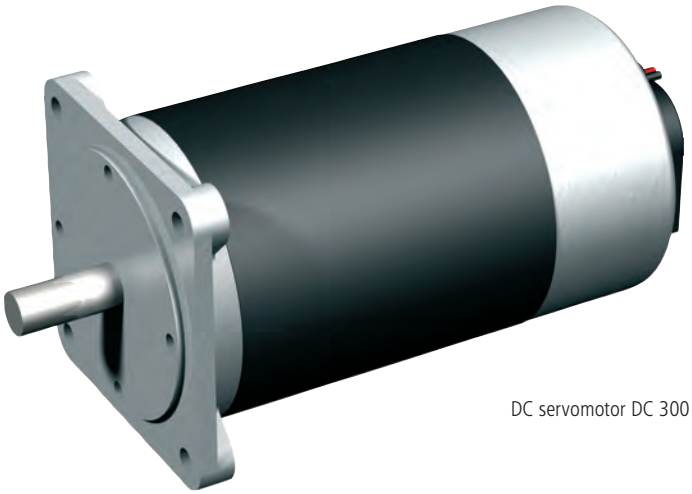
Pin assignments

Cable coding	1	2	3	4	5	6	7	8
Wire colour	Black	Red	Green	Brown	Grey	White	Yellow	Orange
Driver output	0V	Vcc	SIG A	SIG $\overline{A}$	SIG $\overline{B}$	SIG B	SIG Z	SIG $\overline{Z}$

Subject to technical changes.

Servomotors
with brush drive

DC 300



DC servomotor DC 300

Features

- Servomotor with brushes
- Low-resistance winding construction
- Good dynamic response
- Two-finger brush (long working life)
- Incremental encoder with 512 pulses/turn (optional for DC 300: 1,000 pulses/turn)
- IP43 protection class/IP50 encoder

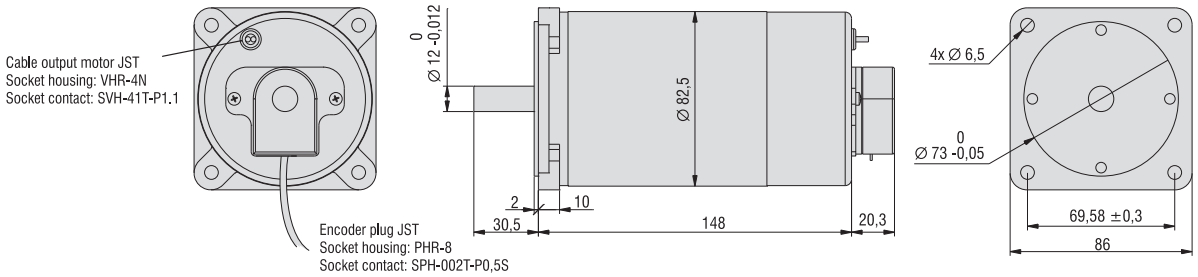
General

DC servomotors with brushes are the entry into the controlled drive technology class. They have a good dynamic response and have proved themselves in drive systems. The attached encoder enables precise positioning. This predestines their use in CNC machines and in automation systems.

Technical specification

Description	Voltage V	No-load speed rpm	No-load current A	Rated speed rpm	Rated torque Ncm	Rated current A	Rated output W	Peak current A	Part no.
DC 300	48	3,200	1	3,000	100	9	315	20	471024

Dimensioned drawings



Pin assignments

Cable coding	1	2	3	4	5	6	7	8
Wire colour	Black	Red	Green	Browm	Grey	White	Yellow	Orange
Driver output	0V	Vcc	SIG A	SIG $\overline{A}$	SIG $\overline{B}$	SIG B	SIG Z	SIG $\overline{Z}$

Subject to technical changes.

electronics

Servomotors
with brushless drive

EC 60

Features

- Electronically commutated 3-phase servomotor
- Brushless drive
- High output performance concurrently with compact build
- Incremental measuring system
- Hall sensors
- IP44 protection class
- Uses: Positioning controllers, speed control
- Connection via circular plug
- Option: Brake

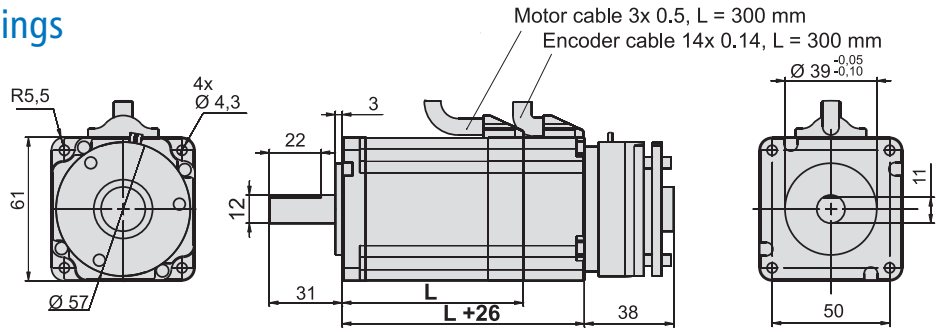
General

Brushless EC motors are designed as electronically switched 3-phase synchronous motors. Compared with brush drives, these motors have an even longer working life, because they are subjected to less wear. Moreover, in this case, high power density and dynamic response relative to size must be emphasized. These motors are used in many automation technology areas and in CNC machines.

Technical specification

Part no.	Description	Rated output W	Rated voltage V DC	Current A	Number of poles	Rated speed rpm.	Torque at rated speed Nm	Peak torque Nm	Length L (mm)	Weight kg
474156 0048	EC 60S	156	48	6.9	8	3,000	0.5	1.75	73	1.25
474156 1048	EC 60S with brake	156	48	6.9	8	3,000	0.5	1.75	73	2.0
474235 0048	EC 60L	235	48	10.5	8	3,000	0.75	2.25	94	1.6
474235 0310	EC 60L	235	310	1.6	8	3,000	0.75	2.25	94	1.6
474235 1310	EC 60L with brake	235	310	1.6	8	3,000	0.75	2.25	94	2.35

Dimensioned drawings



Pin assignments

Encoder cable

PIN	Colour	Signal	PIN	Colour	Signal
1	yellow	HALL_A_IN	9	white	HALL_B_IN
2	red	VCC_Encoder	10	black	GND_Encoder
3	orange/black	/ENC_Z	11	orange	ENC_Z
4	brown/black	/ENC_B	12	brown	ENC_B
5	grey/black	/ENC_A	13	grey	ENC_A
6	–		14	green	HALL_C_IN
7	–		15	--	
8	–				

Motor cable

Colour	Signal
yellow	Motor U
blue	Motor V
green	Motor W

Subject to technical changes.

Servomotors
with brushless drive

EC 86

Features

- Electronically commutated 3-phase servomotor
- Brushless drive
- High output performance concurrently with compact build
- Incremental measuring system
- Hall sensors
- IP44 protection class
- Uses: Positioning controllers, speed control
- Connection via circular plug
- Option: Brake

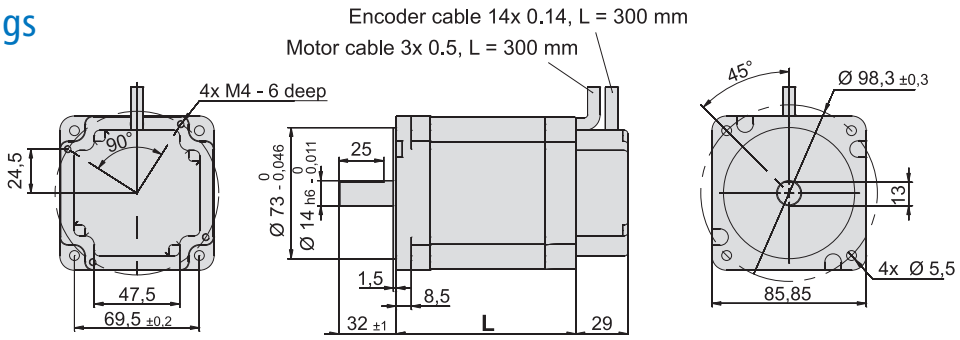
General

Brushless EC motors are constructed as electronically switched 3-phase synchronous motors. Compared with brush drives, these motors have an even longer working life, because they are subjected to less wear. Moreover, in this case, high power density and dynamic response relative to size must be emphasized. These motors are used in many automation technology areas and in CNC machines.

Technical specification

Part no.	Description	Rated output W	Rated voltage V DC	Current A	Number of poles	Rated speed rpm.	Torque at rated speed Nm	Peak torque Nm	Length L mm	Weight kg
474440 0310	EC 86S	440	310	3.4	8	3,000	1.4	5.0	100	2.6
474660 0310	EC 86L	660	310	3.6	8	3,000	2.1	7.4	125	4

Dimensioned drawings



Pin assignments

Encoder cable

PIN	Colour	Signal	PIN	Colour	Signal
1	yellow	HALL_A_IN	9	white	HALL_B_IN
2	red	VCC_Encoder	10	black	GND_Encoder
3	orange/black	/ENC_Z	11	orange	ENC_Z
4	brown/black	/ENC_B	12	brown	ENC_B
5	grey/black	/ENC_A	13	grey	ENC_A
6	–		14	green	HALL_C_IN
7	–		15	--	
8	–				

Motor cable

Colour	Signal
yellow	Motor U
blue	Motor V
green	Motor W

Subject to technical changes.

electronics

Linear motors
LS coil package with MS magnetic rail

iLM series

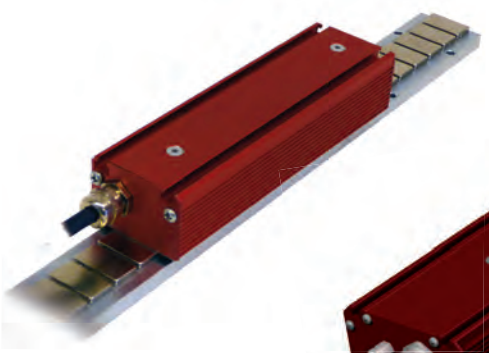


Diagram:
LS 25 winding package
with MS 25 magnetic rail

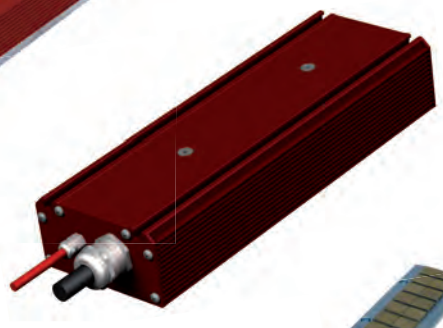


Diagram:
LS 50 winding package

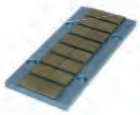


Diagram:
MS 25 magnetic rail
with 8 magnets

Features

- Ready-for-installation systems comprising primary part (LS winding package) and secondary part (MS magnetic rail)
- Compact build
- High acceleration
- High speed and dynamic response
- High efficiency
- Free from wear
- Custom motor length
- Secondary part (MS magnetic rail): Elements of any length, depending on their carrier system, can be arranged in rows
- Controllable with standard servo converters

Optional:
- iMD 40 drive controller (only in conjunction with Hall board)
- Magnetic length measurement system
- Linear guides

General

Linear motors in the iLM series are linear 3-phase servomotors of various sizes and any length at a favourable price/performance ratio. The optionally integrated Hall sensors provide the positional information for switching the motor. There is a PTC temperature sensor in the primary component to protect the motor. The electrical connections (Hall, windings and temperature sensor) are made via permanently installed cable. Owing to the direct power transfer, there is no need for any mechanical transfer elements, such as spindles and toothed belts which completely eliminates friction and play. This means that higher speeds and dynamic responses can be achieved. The resultant lower clocking times reduce production costs and increase productivity. Because there are no mechanical elements in the drive itself, noise, wear and the resultant maintenance costs are minimised. In comparison with other linear drives, drives with linear motors are more accurate, faster, free from play (without return play) and more robust.

Ordering information

Winding package

486 0XX 000X

Coil package
0 = LS 25
1 = LS 50

Hall boards
0 = without Hall board
1 = with Hall board

Number of coils
1 = 3 coils
2 = 6 coils
3 = 9 coils
4 = 12 coils

Note:
For the iMD 40 drive controller use coil packages with Hall boards only.
Any number of magnetic rails can be arranged with each other.

Magnetic rails

MS 25 magnetic rail with 8 magnets (L×W×H approx.124/45/11mm)
Part no.: **486100 01241**

MS 25 magnetic rail with 32 magnets (L×W×H approx.496/45/11 mm)
Part no.: **486100 04961**

MS 50 magnetic rail with 8 magnets (L×W×H approx. 200/80/11 mm)
Part no.: **486110 0200**

MS 50 magnetic rail with 16 magnets (L×W×H approx. 400/80/11 mm)
Part no.: **486110 0400**

MS 50 magnetic rail with 32 magnets (L×W×H approx. 800/80/11 mm)
Part no.: **486110 0800**

Ordering example

LS 25 coil package with 6 coils and Hall boards	Part no.: **486001 0002**
+ 2× MS 25 magnetic rails with 32 magnets	Part no.: **486100 0496**
+ iMD 40 drive controller	Part no.: **314040**
+ iMS-I magnetic length measuring system (5 µm resolution)	Part no.: **390255 4412**

Subject to technical changes.

Linear motors
LS coil package with MS magnetic rail

iLM series

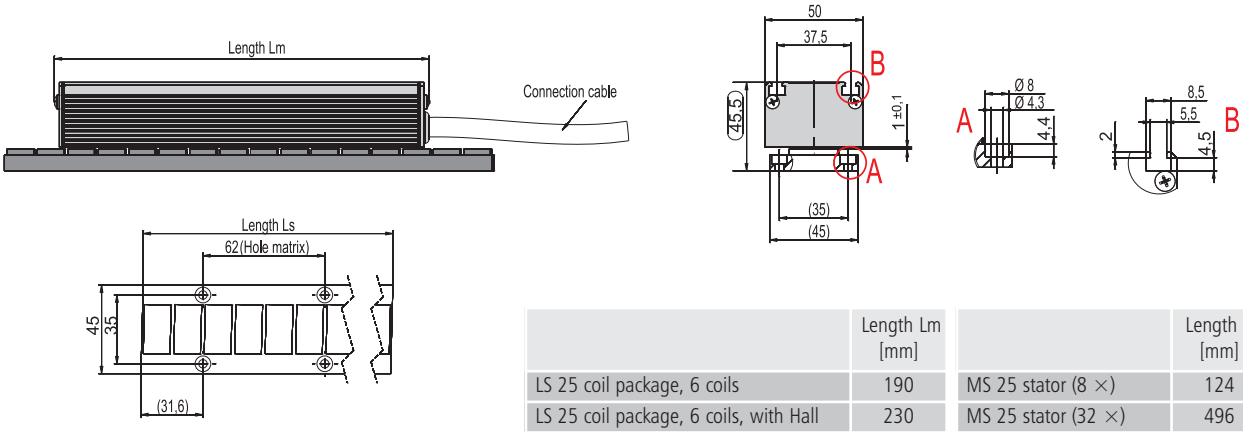
Technical specification

	Intermediate circuit voltage [V] **	Number of coils	Rated current [A]	Peak current [A]	Feed force [N]	max. feed force [N]	max. tensile force [N]*	Rated speed [m/s] at rated current
LS 25/6 coils	330	6	2.6	6.5	70	170	500	6.6
LS 25/12 coils	330	12	2.6	6.5	140	340	1,000	4.0
LS 50/6 coils	330	6	6.0	15.0	285	675	1,995	5.1
LS 50/12 coils	330	12	6.0	15.0	570	1,350	3,990	3.5

* Higher intermediate circuit voltage to order.
* * Applicable for a working air gap of 0.8 mm.

Dimensioned drawings

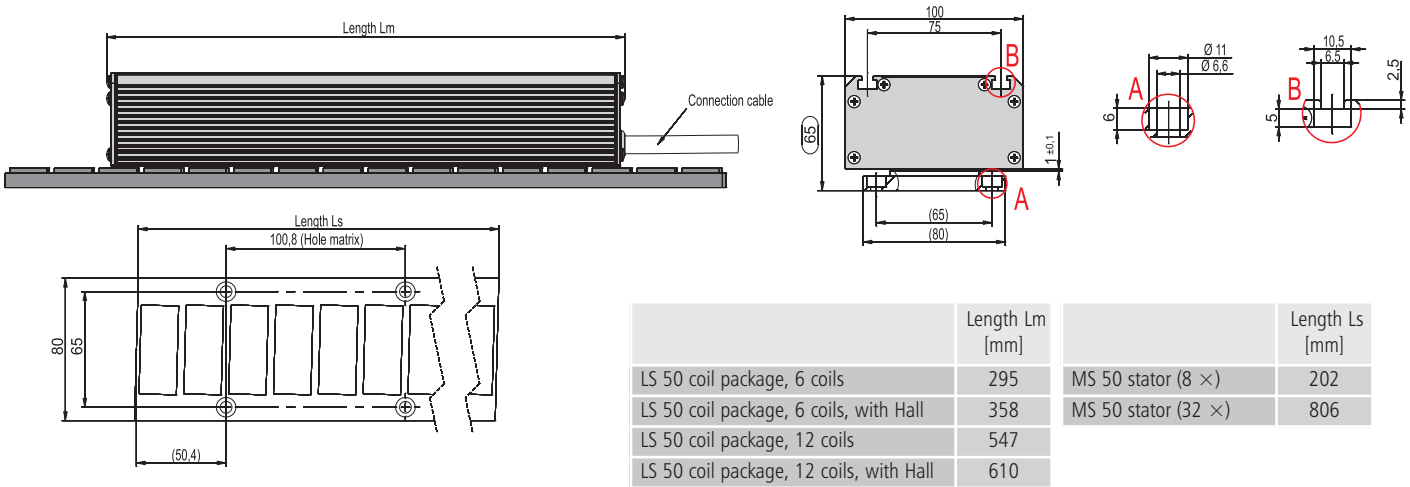
iLM 25 linear motor



	Length Lm [mm]
LS 25 coil package, 6 coils	190
LS 25 coil package, 6 coils, with Hall	230
LS 25 coil package, 12 coils	365
LS 25 coil package, 12 coils, with Hall	405

	Length Ls [mm]
MS 25 stator (8 ×)	124
MS 25 stator (32 ×)	496

iLM 50 linear motor



	Length Lm [mm]
LS 50 coil package, 6 coils	295
LS 50 coil package, 6 coils, with Hall	358
LS 50 coil package, 12 coils	547
LS 50 coil package, 12 coils, with Hall	610

	Length Ls [mm]
MS 50 stator (8 ×)	202
MS 50 stator (32 ×)	806

Subject to technical changes.

iMS magnetic length measuring system

Detailed information under www.isel-germany.de

Figure:
iMS magnetic length measuring system

Features

- Measuring head with sensor in stable casing
- Reliable, robust, good value
- 2 channels, A and B,
  Difference mode incremental RS 422 or
  Difference mode analogue 1VSS
- Incremental/digital resolution (see table)
- Repeatability = ±1 increment
- Magnetic tape on self-adhesive,
  stainless steel bearer tape

optional:
- Reference pulse

General

The iMS contactless magnetic measuring system relies on scanning a magnetically coded measuring tape by means of a magnetically sensitive sensor and is suitable for detection of both linear and radial positions. A decisive advantage compared with significantly more expensive optical systems is provided by its insensitivity to contamination caused by liquids, greases and dust. Our length measuring system is therefore a cost-effective alternative to other systems on the market.

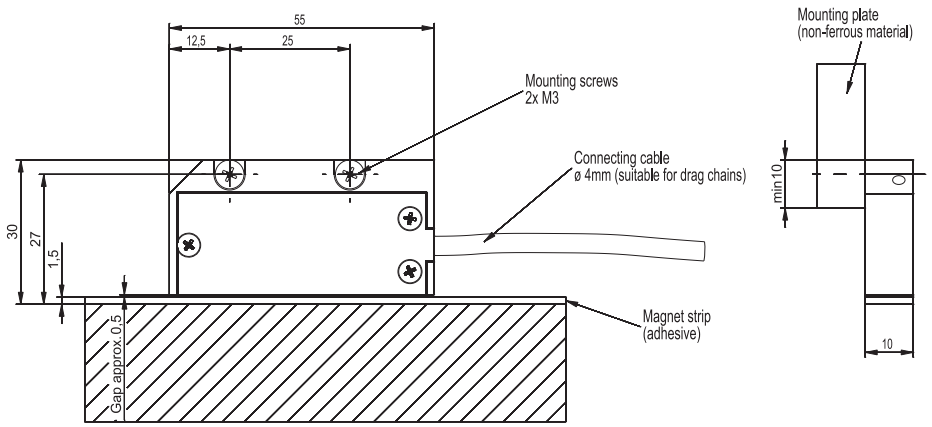
Available sensor interfaces for further processing in the peripherals are, optionally, a pulse sensor with incremental RS422 AB output (Z optional) and a SIN/COS/(Z optional) sensor with voltage amplitude 1Vss.

Ordering information

iMS-I magnetic length measuring system
in casing
Resolution 5µm, edge interval 0.55 µs,
Processing speed 5.25 m/s
Part no.: **390255 4412**

Magnetic tape on self-adhesive stainless steel bearer tape (2 mm pole pitch, 10 mm wide, 1.3 mm thick)
Part no.: **563150**

Dimensioned drawing



Subject to technical changes.

iMS magnetic length measuring system

Technical specification

Sensor

Mechanical specification	
Casing	Aluminium
Weight	appr. 70 g
Sensor cable	PUR
Cable bending radius	>10 mm, first bend > 10 mm from sensor casing
Electronic data	
Supply voltage	4.9V - 5.1V (optional: 7V - 15V)
Current drain	< 100 mA on no load
Output signals	Standard RS422 A, /A, B, /B optional reference Z, /Z Option: SIN/ COS 1Vss +20%, -40%, Z and /Z right sign
Termination	Terminating resistor = 120 Ohm between corresponding output signals, e.g. A - /A, at receiver
Sensor distance - magnetic tape	0.4 - 0.7 mm
Sensor resolution incremental	1 µm, 2.5 µm, 5 µm, 10 µm, 20 µm
Pulse interval	0.25 µs, 0.55 ns, 1 µs, 2 µs, 4 µs, 8 µs
Analogue sensor resolution	Sinusoidal period length = 2 mm
maximum speed	< 10 m/s, higher on request
Repeatability	Incremental resolution ± 1 increment, plus errors due to angular tilting in the 3 sensor axes
Accuracy	Measurement error 20 µm, plus errors due to angular tilting in the 3 sensor axes
Reference sequence	optional: NSN (special order)
Ambient conditions	
Operating temperature	-5°C to 80°C
Storage temperature	-20°C to 100°C
Air humidity (only sensor)	100%, dewing allowed

Normal measurement - magnetic strip

Operating temperature	-5°C to 80°C
Material	High quality stainless steel, coding bearer elastomer, self-adhesive
Thickness	1.3 mm ± 0.15 mm + bonding layer 0.13 mm, optional: 0.1 mm stainless steel tape + bonding view 0.2 mm
Width	10 mm
Length	up to 50 m on roll
Pole pitch/PITCH	2 mm, i.e. north pole = 2 mm, south pole = 2 mm magnetic period = 4 mm
Number of tracks	Single track, 10 mm wide Option: signal track 5 mm, reference track periodically 5 mm
Accuracy	± 0.04 mm/m up to 50 m length, at 20°C
Coefficient of expansion	17E-6 m/Kelvin
Ambient conditions	
with no or minimum effect on the measurement norm	Chemical resistance to contamination with motor oil, gearbox oil, ATF, hydraulic oil, kerosene, antifreeze, Clorox disinfectant, turpentine, water, brine. The materials listed have no or little effect on the long term stability of the measurement standard; among others,it depends on the concentration, the temperature and the time of the contamination. Please check your own case.
little/average effect on the measurement standard	Jet petrol, carburettor fuels, heptanes, alcohols
serious effect on the measurement standard	Aromatic hydrocarbons, ketones, inorganic acids

Subject to technical changes.

CNC control panels

iBP 19

Figure:
iBP 19-1 with wall bracket and silicon keyboard

Figure:
iBP 19-1 with stand and silicon keyboard

Figure:
iBP 19-2 with bench mounting and stainless steel keyboard

General

CNC control panels are robust and powerful control units for an extensive range of applications in industrial automation and much more.
A conventional external PC can be connected and operated with the standard connections provided. All CNC control panels come with an integrated touch screen monitor, a keyboard and a control panel with stainless steel keys and 2-channel emergency shutdown switch for operating
CNC machines The extensive range of installation options cater to both wall and bench mounting. Three different versions are available.

Ordering information

19" CNC control panel iBP 19-1, German silicon keyboard	Part no.: **371076 0102**
19" CNC control panel iBP 19-1, English silicon keyboard	Part no.: **371076 0112**
19" CNC control panel iBP 19-2, German steel keyboard	Part no.: **371077 0102**
19" CNC control panel iBP 19-2, English steel keyboard	Part no.: **371077 0112**
Mounting arm for wall mounting iBP 19	Part no.: **371050 0003**
Mounting arm for bench mounting	Part no.: **371050 0004**
Stand iBP 19	Part no.: **371050 0005**
Mounting arm for rack assembly iBP 19 on PS 80	Part no.: **371050 0009**
Mounting arm for rack assembly iBP 19 on PS 100	Part no.: **371050 0010**
Mounting arm for rack assembly iBP 19 on PS 140	Part no.: **371050 0008**

Features

iBP 19-1

- 19" TFT touch screen display
- 102 keys, silicon keyboard (IP65) with integrated 2-key mouse pointer or mouse carrier plate fixed to the side
- Dimensions:
  475 x D 501 x H 354 mm
- Weight: appr. 17.4 kg

iBP 19-2

- 19" TFT touch screen display
- 102 keys, stainless steel keyboard (IP65) with integrated 2-key trackball
- Dimensions:
  W 475 x T 501 x H 354 mm
- Weight: appr. 18.4 kg

Common features

- stable metal casing with aluminium front plate
- pivoted with wall and bench mounting
- simple connection of external PC systems
- Touch screen monitor
- robust and tamper-proof casing
- Control panel with stainless steel keys
- 2-channel emergency shutdown switch

Option:

- English keyboard

Subject to technical changes.

Drive modules
for 2-phase step motors

MD 24/28

Features

- High performance, low noise
- Power supply up to 50 V DC (80V DC)*
- Output current up to 4.2 A (7.8 A)*
- Automatic current reduction
- Suitable for 2-phase and 4-phase step motors
- Clocking/direction interface
- Input frequency for clocking input up to 300 KHz
- 15 (14)* selectable resolutions up to 25,600 steps/rev (51,200 steps/rev)*
- Opto-isolated, TTL-compatible inputs
- Protection against short-circuit, overvoltage and overcurrent

* MD 28

General

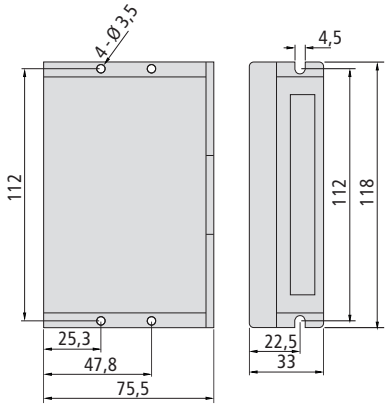
The step motor drive modules MD24/MD28 are powerful final stages for 2-phase and 4-phase step motors.
The modules are micro-step capable and thus allow very quiet running of the connected motors. Due to its particular chopper technology for the motor current, identical motors can deliver higher speeds and torques than conventional comparable drive modules. The clocking/direction interface also allows simple connection to various motion controllers or a PLC.

Technical specification

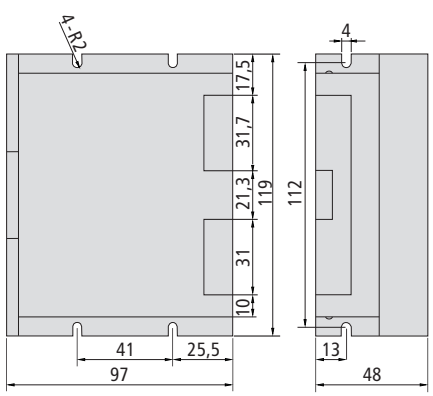
		MD 24			MD 28		
Parameter	unit	Min.	Typical	Max.	Min.	Typical	Max.
Output current	A	1.0	-	4.2 (3.0 A RMS)	2.8	-	7.8
Mains voltage	VDC	20	36	50	24	68	80
Current logic signals	mA	7	10	16	7	10	16
Clocking input frequency	kHz	0	-	300	0	-	300
Insulation resistance MΩ		500			500		
Part no.		316303			316304		

Dimensioned drawings

MD 24



MD 28



Subject to technical changes.

Subject to technical changes.

Drive controllers
for multi-phase and servomotors

iMD 10/20/30/40

iMD 10 iMD 20 iMD 30 iMD 40

General

The **iMD10/20/30** series of drive controllers are economical final stages for DC motors (iMD10) and EC servomotors (iMD20) as well as for two-phase step motors (iMD30). The fully digital **iMD40** drive controller is an economical final stage, powered directly from the mains, for EC servomotors (synchronous motors, such as linear or torque motors) up to 2 kW.

Typical applications are CNC machines and automation systems. The final stage casings are optimised for cabinet installation. The extensive configuration options allow flexible adaptation to a wide range of applications and all required settings can be made with a user-friendly commissioning software package.

There are various user interfaces available for integration with proprietary applications. Here, the CAN open interface must be emphasized. In addition to synchronous point-to-point positioning (S-PTP) and speed control, track control (CP -Continuous Path) and synchronised multiple axis applications are feasible using the implemented CANopen protocol DS402. Additional interfaces include a ±10V interface (nominal speed) and a RS232 interface. The iMD30 also has a clocking/direction interface.

Short controller cycle times (current, speed, position controller) ensure optimum performance for highly dynamic drives. The drive controllers are suitable both for rotary drives and for the corresponding linear direct drives and torque motors (iMD20 and iMD40). A redundant rest monitoring system has been integrated in the drive controller. It reduces work by the controller in external assemblies to a minimum and allows for convenient operation or use of the machine.

Subject to technical changes.

Drive controllers
for multi-phase and servomotors

iMD 10/20/30/40

Technical specification

Features	iMD 10	iMD 20	iMD 30	iMD 40
Motor type	Brush servomotors (DC)	Brushless servomotors (EC, BLDC)	Two-phase step motors (ST)	Brushless servomotors (DC, BLDC)
Power supply	40-95 V DC			230V AC, mains, single phase
Motor current	Constant current 12 A, peak current 25 A		Constant current 12 A	Constant current 6.5 A Peak current 8 A
CAN bus interface	CANopen DS301 V4.0 and DS402 V1.0 der CiA (CAN in automation)			CANopen DS301 V4.0 and DS402 V1.0 of CiA (CAN in automation)
RS-232 interface (asynchronous, 19.2 or 57.6 kbits/s).	For commissioning (DcSetup.exe) or e.g. PLC connection; effective data transfer protocol	For commissioning (AcSetup.exe) or e.g. PLC connection; effective data transfer protocol	For commissioning (StepSetup.exe) or e.g. PLC connection; effective data transfer protocol	For commissioning (AcSetup.exe) or, e.g. PLC connection; effective data transfer protocol
Measuring system	Incremental encoder (RS422); max. input frequency: 1.25 MHz		--	Incremental encoder (RS422); max. input frequency: 1.25 MHz
Commutation	--	Hall sensor signals	--	Hall sensor signals
Analogue input (±10V)	11 bit resolution			11 bit resolution
PWM switching frequency	max. 12.5 kHz	max. 16.4 kHz	max. 10.0 kHz	max. 16.4 kHz
Inputs for limit and reference switches	✓	✓	✓	✓
Digital current, speed and position control	Scanning times: min. 80 µs/244 µs/ 488 µs for current/speed/position controllers	Scanning times: min. 61 µs/244 µs/ 488 µs for current/speed/position controllers	Scanning times: min. 100 µs for current controllers	Scanning times: min. 61µs/ 244 µs/488 µs for current/ speed/position controllers
Brake controller	✓	✓	✓	✓
Gantry mode or synchronous control	of 2 modules, Master-Slave via CAN bus			
Monitoring of the motor current	Short circuit, I^2t	Short circuit, I^2t, Pulse-by-pulse	Short circuit	Short circuit, I^2t, Pulse-by-pulse
Monitoring of the encoder signals	✓	✓	--	✓
Monitoring of the software by internal Watchdog timer	✓	✓	✓	✓
Simple update of the firmware over RS-232	Possible locally by customer or service engineer			
Rest state monitoring	Redundancy to ISO standard			
Dimensions	180 x 35 x 110 mm	180 x 35 x 120 mm	180 x 35 x 110 mm	180 x 50 x 150 mm
Part no. Drive controllers	314 020	314 030	314 070	314 040

Subject to technical changes.

Motion Kits

iMK

iMK 20 S/L

iMK 40 S/L

General

Motion kits comprise brushless servomotors including matching drive controller. Motion kits are suitable for use in the range of small to medium outputs up to 2 kW.

These servomotors are electronically switched 3-phase motors with incremental sensor and Hall sensors. They are available in 4 sizes (for details, see catalogue pages for EC 60S/L and EC 80S/L).

Both iMD20/40 controllers are designed for power supplies of 40-90V DC (iMD20) or 230V AC (iMD40).

As the interface for higher-level controllers, both the CANopen interface and an analogue ±10V interface can be used (for details, see catalogue pages for iMD20 and iMD40).

Technical specification

	iMK 20S	iMK 20L	iMK 40S	iMK 40L
Motor type	EC 60 S	EC 60 L	EC 86 S	EC 86 L
Motor output [W]	157	235	440	660
Rated torque [Nm]	0.5	0.75	1.4	2.1
Peak torque [Nm]	1.75	2.25	5.0	7.5
Rated speed [rpm]	3,000			
Encoder resolution [incr]	1,000			
Power supply	40-95 V DC		230 V AC	
CAN bus interface	CANopen DS301, DS402 of CiA (CAN in automation)			
Analogue input (±10V)	11 bit resolution			
PWM switching frequency	8.2 kHz or 16.4 kHz			
Current/speed/position controllers	Scanning times min 61 µs, 344µs, 488 µs			
Inputs for reference & limit switches	✓			
Brake controller	✓			
Gantry or synchronous operation	✓			
Motor current monitoring	✓			
Monitoring of encoder signals	✓			
Watchdog	✓			
Galvanic isolation	Processor Power section, I/Os			
Rest state monitoring	✓			
Drive controller dimensions	180 x 35 x 120 mm		180 x 50 x 150 mm	
Part no. Drive controller and motor	317000 0002	317000 0003	317000 0004	317000 0005
Part no. Motor cable	392760 xxxx *		392305 xxxx *	
Part no. Encoder cable	392740 xxxx *			

* Cable length in mm
available in different lengths.
e.g.: 0150 = 1.50 m 0200 = 2.00 m 0300 = 3.00 m 0500 = 5.00 m ... 1000 = 10.00 m

Subject to technical changes.

PC controller

iPC 15

Figure:
iPC 15 PC controller with blind panel and with possible connection alternatives

General

The iPC15 universal PC controller is a Windows- or Linux-compatible controller at a favourable price/performance ratio. Its versatile applications may be found throughout the entire industry sector and in various consumer sectors.

All connections are made on the front. A multifunctional panel provides many potential variations in the connection area.

Inter alia, a CAN interface with optionally 1 or 2 channels is available.

A remote interface is available for covered installation (e.g. in a cabinet or in the interior of a motor vehicle).

Installation is possible both in the "standing" and "lying" positions.

Technical specification

	iPC15 PC controller
CPU	Intel® Atom N270
Form factor mainboard	Mini-ITX (half height)
RAM	DDR2 SO DIMM 1GB (up to 2GB)
Hard disks (S-ATA)	2,5" ≥ 160 GB
Graphics	Intel GMA 950
Monitor	VGA/DVI-D
Audio	Realtek® ALC662 Audio Codec
LAN	10/100/1,000 Mbit LAN
Power supply	12 V DC
External connections (Basic version - with blind panel)	3 × USB 2.0, LAN VGA, DVI-D Audio multifunction connection 12V DC power supply
Internal interfaces	1 × PCI (without CAN interface) 1 × mini PCI Express, 1 x IDE 2 × SATA (1 x with HDD) 4 × USB 2.0 (3 × with SSD), 1 × parallel interface, 2 × serial interface, 1 × PS/2, 1 × SPDIF
Humidity	Max. 90% (not condensing)
Ambient temperature	0°C to 35°C
Protection class	IP 20
Weight	1.1 kg
Dimensions (W×H×D)	200 x 50 x 190 mm

Features

- Universal PC controller
- Robust, impact-proof aluminium casing
- Compact configuration
- Various installation options
- Energy-efficient and low noise
- Supply voltage 12V DC
- Front multifunctional panel for versatile connection options
- Design with hard disk or solid state disk (optional)
- Windows- and Linux-compatible

Ordering information

iPC15 PC controller,
CAN-PCI-1-channel, PCI riser board,
serial, remote, including Windows,
power supply unit and lead
Part no.: **371064 0005**

iPC15 PC controller,
CAN-PCI-2-channel, PCI riser board,
serial, remote, including Windows,
power supply unit and lead
Part no.: **371064 0006**

Subject to technical changes.

electronics

CAN PCI board

iCC 10/20

Figure:
Single channel

Figure:
2 channels

General

CAN-PCI boards offer a simple solution for connecting a CAN bus to the PCI bus system of a PC. (e.g. iPC 15)

A driver software package is supplied with the board, which controls the entire CANopen communication with the application interface (e.g. ProNC) and also provides a programming interface for your own software.

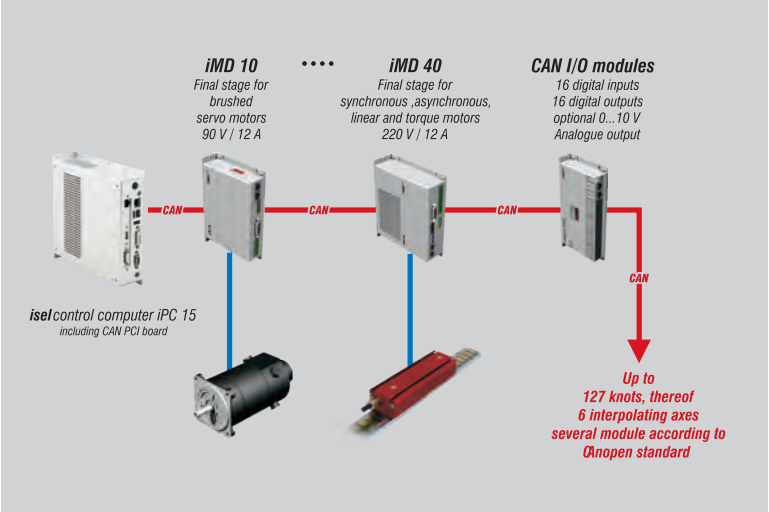
The board can also be used in conjunction with CoDeSys V2.3.

The software package also includes configuration software which can be used to install the default settings for the CAN parameters (CANset).

Technical specification

	iCC 10/20
Interface	PCI V2.2 / 32 bit
CAN channels	1/2
galvanic isolation	✓
Data transfer rate	up to 1 Mbits/s
Plug	RJ45

Block diagram CAN bus with iPC 15



Features

- Mechanical dimensions: 119.5 × 47.3 mm
- PCI-V2.2-compliant
- 32-bit, 33 MHz target interface chip
- 1 or 2 CAN channel RJ45 connector, screened
- CAN bus galvanically isolated
- Data transfer rate up to 1 Mbits/s
- Drivers for NT/2000/XP/Vista
- Driver for isel-CAN-CNC controller
- Driver for CoDeSys available
- PDO and SDO communication via supplied DLL
- can be used as CANopen master for a wide range of applications

Ordering information

CAN PCI board iCC 10
Part no.: **320310** (Single channel)

CAN PCI board iCC 20
Part no.: **320311** (2 channels)

Subject to technical changes.

CAN controller components

CAN I/0 module 16/16

CAN I/0 module 8/12 - 4/1

General

Both isel CANopen I/O modules provide an entry level into the world of modern industrial automation. They enable installation on site or in a cabinet.

A 24V DC power supply, galvanic isolation of the inputs and outputs and the terminals available directly on the module provide a great range of operating possibilities.

Connection via plug-in terminals and the status display assigned directly to the connection make for very user-friendly installation and servicing.

Technical specification

	CAN I/0 module 16/16	CAN I/0 module 8/12 -4/1
Digital inputs	16 via optical coupler (Input current approx. 8 mA)	8 via optical coupler (Input current approx. 8 mA)
Digital outputs	16 8 × relays, Imax < 5A 8 × electronically, Imax < 350 mA	12 4 × relays, Imax < 5A 8 × electronically, Imax < 350 mA
Analogue output	1 0V - 10V via 8-bit D/A converter (when using the analogue output , the electronic outputs are no longer available for use)	1 0V - 10V via 8-bit D/A converter
Analogue input	--	4 0V - 10V, 10-bit resolution
Protection class	IP20	
Supply voltage	24V DC (logic voltage), 24V DC (process voltage),	
Power consumption	160 mA (logic and relays) I_{Load} is dependent on the external wiring	
Ambient temperature	-5°C to +40 °C	
Storage temperature	-25°C to +70 °C	
Relative humidity	max 95 %	
Protection class	IP20	
Weight	260 g	
Casing size	85 × 180 × 28 mm (W × H × D)	
Part no.	**321002**	**321004**

Features

CAN I/0 module 16/16

- 16 digital inputs via optical couplers (input current approx. 8 m A)
- 16 digital outputs, 8 × relays, Imax < 5A, 8 × electronically, Imax < 350 mA (thermal protection, short circuit protection)
- One analogue output, 0V - 10V via 8-bit D/A converter (users of an analogue output can no longer use the electronic outputs)

CAN I/0 module 8/12 - 4/1

- 8 digital inputs via optical couplers (Input current approx. 8 m A)
- 12 digital outputs, 4 × relays, Imax < 5A, 8 × electronically, Imax < 350 mA (thermal protection, short circuit protection)
- One analogue output, 0V - 10V via 8-bit D/A converter
- 4 analogue outputs, 0V - 10V 10-bit resolution

Subject to technical changes.

CAN controller components

Universal CAN positioning module
CPC 12, with ± 10V output

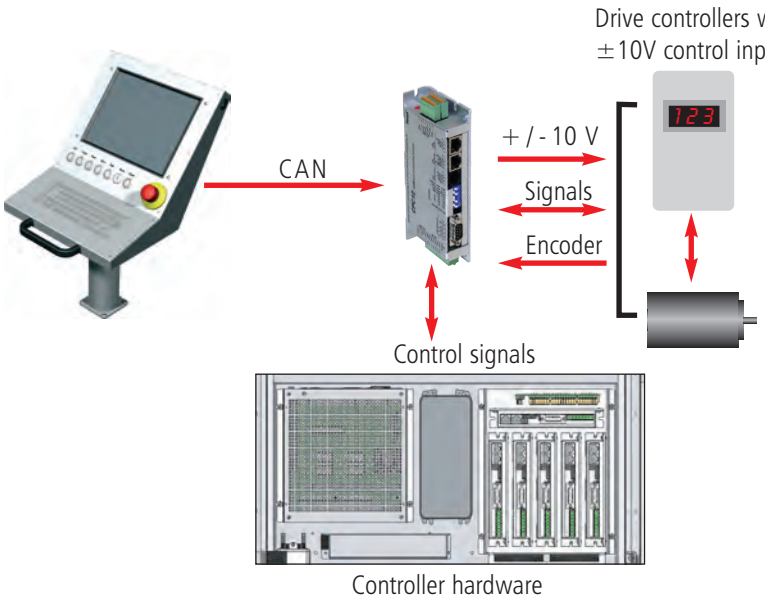
General

The CAN CPC12 positioning module serves adaptation of drive controllers from various other manufacturers with ±10V interface to the CAN CNC controller.

This enables - in addition to CAN drive controllers offered by isel - operation of not CAN-enabled modules or modules that are not directly compatible with this controller.

The necessary control inputs and outputs for this purpose are provided by the CPC12 module.

Application diagram



Features

CAN CPC 12 positioning module

- Controlling any number of drive controllers and frequency converters with ± 10V input
- Digital position control with cycle time 488 µs
- Power supply +24V DC
- CANopen DS 301, DS 402, data transfer rate up to 1 Mbd
- RS232 for commissioning or PLC coupling
- Outputs for releasing external servo controllers and brake controllers
- Inputs for reference & limit switches
- Incremental encoder (RS422)
- Monitoring of limit switches for the positioning axes with emergency shutdown message
- Optionally as multi-axis solution in control cabinet
- Gantry mode or synchronous control of 2 modules, Master-Slave via CAN bus

Part no.: **320 210**

Subject to technical changes.

Step controller
Single axis controller

IT116 Flash

Figure:
IT 116 Flash front

Figure:
IT 116 Flash back side

General

The **IT 116 Flash step controller** is a freely programmable compact controller for a linear or circular axis with 2-phase step motor. The step controller comprises an intelligent step motor stage, a processor core with Flash memory for downloading/storing the PAL-PC user program and the clocking/direction signal generation for the final stage of the motor, the necessary power supply units, a safety circuit (Stop category 0 to EN 60204) and a casing with mains input filter and control elements.

The integrated operating system in the Flash memory of the processor core supports both

- the DNC mode of the controller: PC/laptop connected permanently with the step controller via the serial interface

and

- the CNC mode of the controller: The step controller works independently, without PC coupling of the stored user program (stand alone).

Features

- Final output stage
  48V DC/4.2A peak
  for 2-phase step motors
- max. 25,600 microsteps/turn
- Mains voltage:
  115V AC/230V AC, 50…60 Hz
- Automatic current sink at
  50% phase current at
  motor speed < 1 rpm
- Motor current/microstep resolution
  variable with DIP switch
- Integrated 32-bit RISC processor
  (Embedded controller) with Flash
  memory for firmware and PAL PC
  user program
- RS-232 interface (frontal) for
  coupling with PC/notebook
  (program download)
- optional: USB interface (frontal)
  for loading user programs from an
  USB memory stick (USB on the go)
- Control signals Program
  start/stop, reset to controller
  back side
- 4 optically isolated signal inputs
  (Signal voltage : 24V DC)
- 4 relay outputs (24V DC, 300 mA)
- Motor brake controller (24V DC)
- Remote plug on rear of controller
  for external EMERGENCY
  SHUTDOWN (2-channel),
  external power on
- Euro cooling rib casing
- Programming with PAL-PC 2.1
  for Win2000, XP, Vista, 7
- Dimensions
  W 105 × H 111 × D 320 mm

Ordering information

IT 116 Flash step controller (115V AC, 60 Hz) Part no.: **381016 0115 ***
IT 116 Flash step controller (230V AC, 50 Hz) Part no.: **381016 ***

*** including PAL-PC**

Accessories

Motor lead
M23 12-pin socket - SubD 9-pin Pin
Part no.: **392755 0200** (2m)
Part no.: **392755 0300** (3m)
Part no.: **392755 0500** (5m)

Motor lead
SubD 9-pin socket - plug 1:1
Part no.: **392780 0081** (0.8m)
Part no.: **392780 0151** (1.5m)
Part no.: **392780 0201** (2.0m)
Part no.: **392780 0301** (3.0m)

Scope of supply

- Controller in cassette casing
- Mating plug (I/O, pulse, remote)
- serial interface lead
  (SubD9 - RJ 45)
- 230V AC mains lead
- PAL-PC software CD
- Operating instructions
- Programming instructions

Subject to technical changes.

electronics

Step controllers
Multiple axis controller

iMC-P

Figure:
Front and rear
iMC-P step controller

General

iMC-P step controllers **iMC-P** are freely programmable compact controllers with max. 4 final stages for 2-phase step motors.
The controllers integrate all necessary components (interfaces, motion controllers, power supply, final stages, safety circuit incl. door controller, control elements), which are needed to control a machine, in a compact bench housing. The iMC-P1 controller with core module with at least one integrated final stage enables the control of up to 3 additional final stages with clocking/direction module. The signals needed for this are provided through the appropriate external interfaces.

- **iMC-P1n:** with intelligent core module for control via RS232
  The controller also works either in DNC mode (permanently connected with the computer) or in CNC mode (after transfer of the user program as a standalone controller), e. g. via the accompanying PAL-PC software

Features

- 8 signal inputs (24V DC)
- 8 relay outputs (24V DC, 300 mA)
  max. 2A total current
- 1 relay output (230V AC/6A)
- 1 analogue output (0 - 10V)
- RS232 programming interface (rear)
- 32-bit RISC processor and memory for user program
- Programming with PAL-PC (DNC and CNC modes), @-format (DNC and CNC modes), ProNC, Remote, Galaad, Labview (DNC mode), various high level languages
- max. 4 final stages (48V/4.2A) for 2-phase step motors (power supply unit 500 W)
- from a step angle of 1.8° up to 25,600 microsteps/turn (1/128 microstep)
- automatic current sink
- motor current adjustable via DIP switch
- additional control signals (start, stop, reset) adaptable
- Safety circuits (emergency shutdown, door circuit controller) via external plugs in higher level safety circuits integrable
- Broadband mains supply:
  110 - 250V AC, 50..60 Hz
- Clocking/direction module to order
- Bench casing
  W 379 × H 137 × D260

Deliverables

- Controller
- Mating plug (I/O, pulse, remote)
- serial interface lead (null modem)
- 230V AC mains lead
- PAL-PC software CD
- Operating and programming instructions

Ordering information

2-axis controller	iMC-P1-2	Part no.: **381403 0002***
3-axis controller	iMC-P1-3	Part no.: **381403 0003***
4-axis controller	iMC-P1-4	Part no.: **381403 0004***

USB - RS232 converter Part no.: **372000 0001**

* including PAL-PC

Accessories

Motor lead SubD9 plug - SubD9 socket
Part no.: **392780 0151** (1.50 m)
Part no.: **392780 0201** (2.00 m)
Part no.: **392780 0301** (3.00 m)

Motor lead SubD9 plug - M23 socket
Part no.: **392755 0200** (2.00 m)
Part no.: **392755 0300** (3.00 m)
Part no.: **392755 0400** (4.00 m)
Part no.: **392755 0500** (5.00 m)
Part no.: **392755 0600** (6.00 m)
Part no.: **392755 0800** (8.00 m)
…other lengths to order.

Subject to technical changes.

Step controllers
Multiple axis controller

iMC-S8

Figure:
iMC-S8 step controller as
bench version and with 19" housing

General

The **iMC-S8** step controller is a freely programmable compact controller for linear or circular axes with 2-phase step motors.
The controller integrates all the necessary components (power supply, safety circuit, power electrochnics, core processor, interfaces, operating elements) that are needed to control individual spindles all the way to entire machines. It has an intelligent core module that is controlled and programmed via a RS232 interface. The core module also converts the commands programmed in the user program into clocking/direction signals for the connected final stages. Depending on the purpose, the **iMC-S8** controller can be used either in CNC or in DNC mode.

In CNC mode, the processor processes the CNC program which was previously produced with PAL-PC and stored in the controller's Flash memory.

In DNC mode, the **iMC-S8** controller is connected permanently with a control computer (PC, laptop) via a serial interface (RS232). Processing is carried out via the isel control software Remote.

Ordering information

2-axis iMC-S8 step controller, bench housing	Part no.: **383320 2002** *
2-axis iMC-S8 step controller, 19" housing	Part no.: **383320 1002** *
3-axis iMC-S8 step controller, bench housing	Part no.: **383320 2003** *
3-axis iMC-S8 step controller, 19" housing	Part no.: **383320 1003** *
4-axis iMC-S8 step controller, bench housing	Part no.: **383320 2004** *
4-axis iMC-S8 step controller, 19" housing	Part no.: **383320 1004** *

* including PAL-PC

Deliverables

Controller, mating plug (I/O, pulse, Remote), serial interface lead (null modem), 230V AC mains lead, PAL-PC software CD, operating instructions, programming instructions

Subject to technical changes.

Features

- 32-bit RISC processor with Flash memory for user program
- Final output stages
  - Step resolution and motor current adjustable via variable DIP switch
  - automatic current sink
- Acceleration, start-stop frequency and step output frequency variable
- both hardware limit switches configurable
- Door controller/hood controller
- Control elements in the front of the casing
- external EMERGENCY SHUTDOWN and POWER connection for integration in higher level safety circuits
- Connection for external control signals, such as START, STOP, RESET (only CNC mode)
- 230V connection for milling spindle (100-230V AC)
- 0 .. 10V analogue output for external frequency converter for speed-controlled main spindle
- Programming/Operation
  - PAL-PC in CNC mode (in the deliverables)
  - Remote (optional: ProNC) in DNC mode
  - isel @ - format in CNC/DNC modes

Technical specification

- Broadband mains supply 100 - 250V AC, 50..60Hz
- Processor
  - Flash memory 128 kB, Capacity to store 350 commands
  - max. step output frequency 40 kHz
- Final stages
  - Power supply 48V DC
  - Peak current: 2.8 - 7.8A
  - Step resolution: 400-51200 steps
- Inputs/outputs
  - 8 inputs (24V DC)
  - 8 outputs (24V DC/300mA, Itot 2A)
  - 1 relay output (230V AC, max. 6A)
  - 1 analogue output (0 - 10V)
- RS232 operating/programming interface
- Stop category 1, safety category 2
- Versions:
  - Bench casing
    W 475 × H 410 × D 187.5 mm
  - 19" housing
    W 482.5 × H 410 × D 175.5 mm

Accessories

Motor lead M23 plug - M23 socket
Part no.: **392750 0300** (3m)
Part no.: **392750 0500** (5m)

Motor lead M23 plug - SubD9 socket
Part no.: **392752 0300** (3m)
Part no.: **392752 0500** (5m)

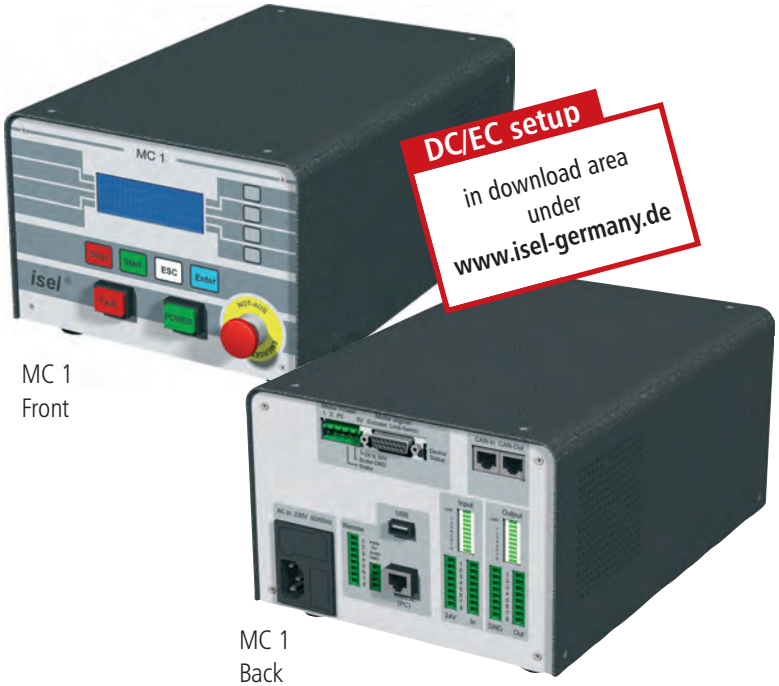
Controller software - Remote
Part no.: **Z12-334500**

Controller and programming software ProNC
Part no.: **Z11-333500**

electronics

Servo controller
Single axis controller

MC 1-10/1-20



MC 1
Front

MC 1
Back

General

Servo controllers in the MC1 series are freely programmable compact controllers for a linear or rotary unit with servomotor.

The single axis controllers integrate all necessary components (interfaces, motion controller, power supply, drive controller, safety circuit, control elements), which are needed to control a machine, in a compact bench housing.
The supplied PAL-PC software can be used for programming.

Two versions are available:

- MC-10: For controlling brush DC servomotors

- MC-20: For controlling brushless EC servomotors

Ordering information

MC1-10 (including PAL-PC)	Part no.: **381518 0010**
MC1-20 (including PAL-PC)	Part no.: **381518 0020**

Motor lead	Part no.: **392760 xxxx ***
Encoder lead	Part no.: **392740 xxxx ***

* Lead length [mm] available in different lengths.
e.g.: 0100 = 1.00 m/0150 = 1.50 m/0200 = 2.00 m ... 1000 = 10.00 m

Features

MC-10
- for controlling brush servomotors
- Commissioning program "DcSetup"
- For technical specification for the drive controller see "iMD10 drive controller"

MC-20
- for controlling brushless servomotors
- Analysis of Hall signals
- Commissioning program "AcSetup"
- For technical specification for the drive controller see "iMD20 drive controller"

Common features

- Max. output power 500 W
- 32-bit high performance RISC processor with 256 kB Flash memory
- User program in CNC mode for up to 650 commands
- Processing of the program in CNC or DNC mode
- Programming with PAL-PC CNC mode), @-format (CNC mode), ProNC, Remote (DNC mode)
- LC display with 4 lines, each with 20 characters (freely programmable)
- additional control signals (Start, Stop) adaptable
- Connection for incremental encoder
- 6(8) signal inputs (24V DC)
- 8 relay outputs (24V DC/700 mA)
- Stop category 0 to EN60204
- Emergency shutdown circuit via plug in higher level safety circuit can be integrated
- Broadband mains supply: 110 - 250V AC, 50..60 Hz
- Bench casing W 204 × H 149 × D286

Deliverables

- Controller
- mating plug (I/O, pulse, Remote)
- serial interface lead (SubD9 - RJ 45)
- 230V AC mains lead
- PAL-PC software CD
- Operating instructions
- Programming instructions

Subject to technical changes.

Servo controller
Multiple axis controller

iMC-DC/iMC-EC

Figure:
Front and rear
iMC-DC servo controller

General

CAN controllers in the iMC-DC and iMC-EC series are compact, powerful drive controllers for 2 to 6 DC servomotors at an ideal price/performance ratio.

The attractive bench housing integrates all control components which are needed to solve a wide variety of automation tasks. They range from the final stage via the I/O assembly to the safety controller. In addition, a 26 cm (10.2") touch screen TFT display and a keyboard are incorporated, which makes for convenient operation.

A CANopen PCI board is integrated in the control computer as an interface. This acts as the CAN master for the drive controller and the I/O module. In addition, external expansions up to 128 CAN nodes are possible with ease.

The NC controller core allows interpolation of up to 6 axes (linear, circular and helical) and online and lock ahead track processing. When using the ProNC software, individual axes can be controlled as handling axes (in addition to the interpolating axes).

All final stages have automatic jerk limitation and rest state monitoring (up to safety category 3).

Ordering information

3 5 4 0 0 0 X 0 X 0

Number of axes
2 = 2 axes
3 = 3 axes
4 = 4 axes
5 = 5 axes
6 = 6 axes

Versions
1 = iMC-DC* (brush DC servomotors)
2 = iMC-EC* (brushless EC servomotors)

* including PAL-PC

Accessories

Motor lead M23 pin - M23 socket
Part no.: **392759 0300** (3m)
Part no.: **392759 0500** (5m)

Encoder lead SubD 15 plug - SubD15 socket
Part no.: **392740 0300** (3m)
Part no.: **392740 0500** (5m)

Subject to technical changes.

Features

- Drive controller for up to 6 brush or brushless DC servomotors
- NC control via CANopen field bus
- iMD10/iMD20 final output stages
  - 4-quadrant drive controller
  - Analysis for incremental encoder
  - Rest state monitoring
  - Over- and undervoltage protection, Overtemperature protection, short-circuit proof
- Door controller/hood controller
- external EMERGENCY SHUTDOWN and POWER connection for integration in higher level safety circuits
- Connection for external control signals, such as START, STOP, RESET via signal inputs
- Connection for milling spindle (100 -230V AC)
- 0 .. 10V output for external frequency converter for speed-controlled main spindle
- Control elements in the front of the casing
- Industrial control computer running under Windows® with
  - CANopen PCI board
  - Driver software for CNC controller
- Programming/Operation
  - Remote (optional: ProNC)

Technical specification

- Broadband mains supply
  - 115V AC/230V AC, 50..60 Hz
- Switching power supply 1000W/48V
- iMD10/iMD20 final output stages
  - Power supply 24 - 80V DC
  - Peak current/rated current: 25A/12 A
- Inputs/outputs
  - 16 digital inputs
  - 8 digital outputs
  - 1 analogue output
- Safety controller
  - up to safety category 3
  - Door circuit controller
  - Spindle controller
- Bench casing
  W 630 × H 230 × D 400 mm

Option: without TFT display and keyboard

Scope of supply

- Controller
- mating plug (I/O, pulse, Remote)
- 230V AC mains lead
- PAL-PC software CD
- Operating and programming instructions

electronics

Power unit
Multiple axis controller

iPU-DC / iPU-EC

Figure:
Power unit iPU as
bench version and with 19" housing

General

The **iPU power units** are powerful drive controllers for up to four linear or circular axes with brush or brushless motors. The compact controller integrates all necessary controller components, which are needed to solve a wide range of automation tasks. These range from iMD10 or iMD20 final output stages through the I/O module to safety control and power electronics.

As its interface for NC control, the **iPU power unit** has a CANopen interface at the back of the housing, which works according to the DS301 bus protocol and DS402. By using the optional CAN PCI board iCC 10 or a iPC series control computer, the controller can control interpolation (linear, circular, helical) of all four axes as well as track processing.

The final output stages (iMD10 or iMD20) also have automatic jerk limitations and rest state monitoring.
The control elements integrated in the front of the housing, such as EMERGENCY SHUTDOWN, START or STOP enable convenient operation.

Ordering information

3 5 3 0 0 0 X 0 X X

Number of axes
2 = 2 axes
3 = 3 axes
4 = 4 axes

Versions
1 = 19" housing
2 = Bench housing

Drive controllers
1 = iMD 10 (brush DC servomotors)
2 = iMD 20 (brushless EC servomotors)

* in preparation, available to order

Accessories

Motor lead M23 plug - M23 socket	Part no.: **392759 0300** (3 m)
	Part no.: **392759 0500** (5 m)
Encoder lead SubD15 plug - SubD15 socket	Part no.: **392740 0300** (3 m)
	Part no.: **392740 0500** (5 m)
CAN PCI board iCC 10 (single channel)	Part no.: **320310**
CAN PCI board iCC 20 (2 channels)	Part no.: **320311**
Controller software - Remote	Part no.: **Z12-334500**
ProNC control software	Part no.: **Z11-333500**

Features

- Drive controller for up to four brush or brushless DC servomotors
- NC control via CANopen field bus
- iMD10/iMD20 final output stages
  - 4-quadrant drive controller
  - Analysis for incremental encoder
  - Rest state monitoring
  - Over- and undervoltage protection, Overtemperature protection, short-circuit proof
- Door controller/hood controller
- Connection for external control signals, such as EMERGENCY SHUTDOWN, START, STOP FOR Integration in higher level safety circuits
- Connection for milling spindle (100 -230V AC)
- 0 .. 10V output for external frequency converter for governed main spindle
- Control elements in the front of the casing (optionally, installed in the rear)
- two alternative casings
- Programming/Operation
  - Remote (optional: ProNC)

Technical specification

- Broadband mains supply
  - 115V AC/230V AC, 50..60 Hz
- Switching power supply unit 1000 W/48 V
- iMD10/iMD20 final output stages
  - Power supply 24 - 80V DC
  - Peak current/rated current: 25A/12 A
- Inputs/outputs
  - 4 digital inputs (24V DC/8mA)
  - 8 digital outputs (24V DC/350mA)
  - 1 relay output (230V AC, max. 6A)
  - 1 analogue output (0 - 10V)
- Safety controller
  - up to safety category 3
  - Door circuit controller
  - Spindle controller
- RJ 45 CANopen interface
- Versions:
- Bench housing
  W 475 × H 410 × D 187.5 mm
- 19" housing
  W 482.5 × H 410 × D 175.5 mm

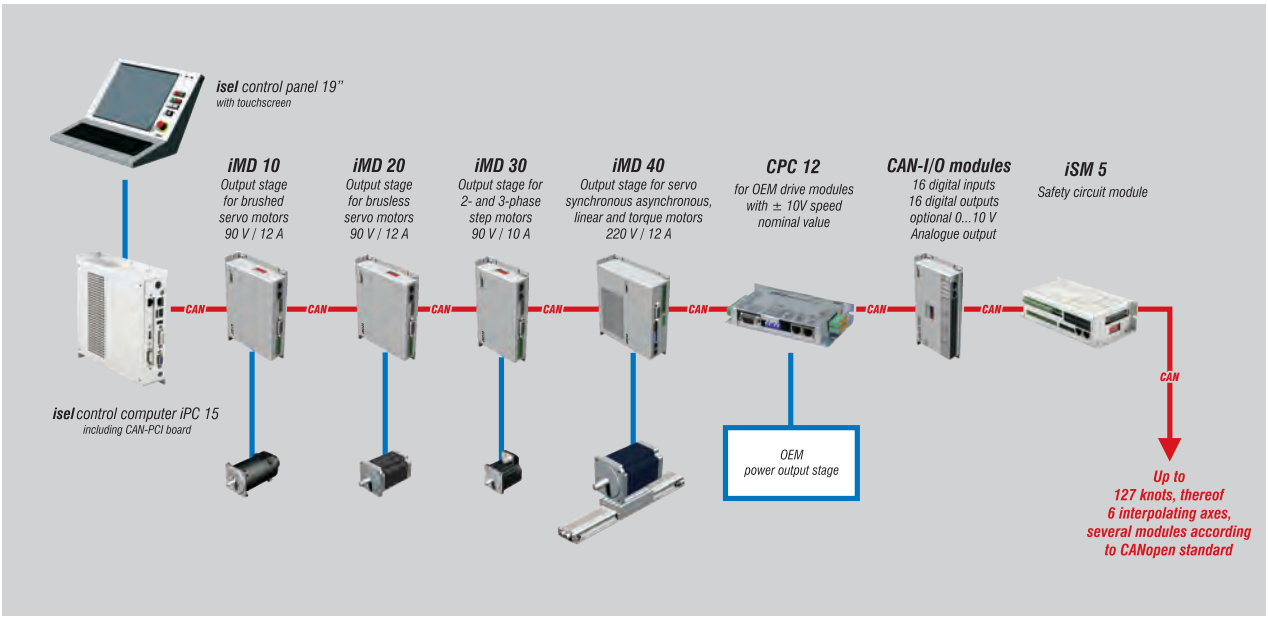
Scope of supply

- Controller
- mating plug (I/O, pulse, Remote)
- CAN bus lead (RJ45, patch lead)
- 230V AC mains lead
- Operating instructions

Subject to technical changes.

CAN-CNC controller

Example of a topology with the isel-CAN-CNC controller



With consequent use of the CiA's (CAN in automation) CANopen standards, isel Germany delivers a high quality PC-based **CAN-CNC controller** for intelligent positioning/drive units and I/O modules.

The CAN-CNC controller supports interpolation operation (linear, circular and helical) of up to six positioning drives per machine and up to 127 handling axes and CAN modules.

The high time demands of a CNC controller are guaranteed by a WDM driver developed by isel. An additional real time operating system for Windows will be unnecessary. This guarantees compatibility with future Windows versions (Win7 in preparation)

The CAN controller is a pure software solution for PCs with Windows 2000/XP/VISTA. The CANopen PCI boards iCC 10/20 also act as an interface.

Owing to the features provided, the CAN-CNC controller is equally suited for all machining tasks, such as milling, engraving, drilling, turning, water jet and laser cutting, as well as for applications in automation systems.

For this purpose, ProNC provides a universal programming environment.

Features

- Machine control to the CANopen standard as a pure software solution for PCs with Windows 2000/XP/VISTA
- CiA-Standard, DS 301, DSP 401, DSP 402
- Supports up to six positioning axes and 127 handling axes and CAN modules.
- Look ahead track processing with a freely definable number of movement elements, which the controller processes to a forecast.
- Jerk limitation for elimination of mechanical vibrations
- Upstream speed control for highly dynamic and lag error-free machining
- Software tools for setting and optimising motor final stages/positioning modules
- Interfaces for PC:
  - CANopen PCI board iCC 10 (single channel) CAN bus 1
  - CANopen PCI board iCC 20 (two channels CAN buses 1 and 2

Subject to technical changes.