SEW
EURODRIVE

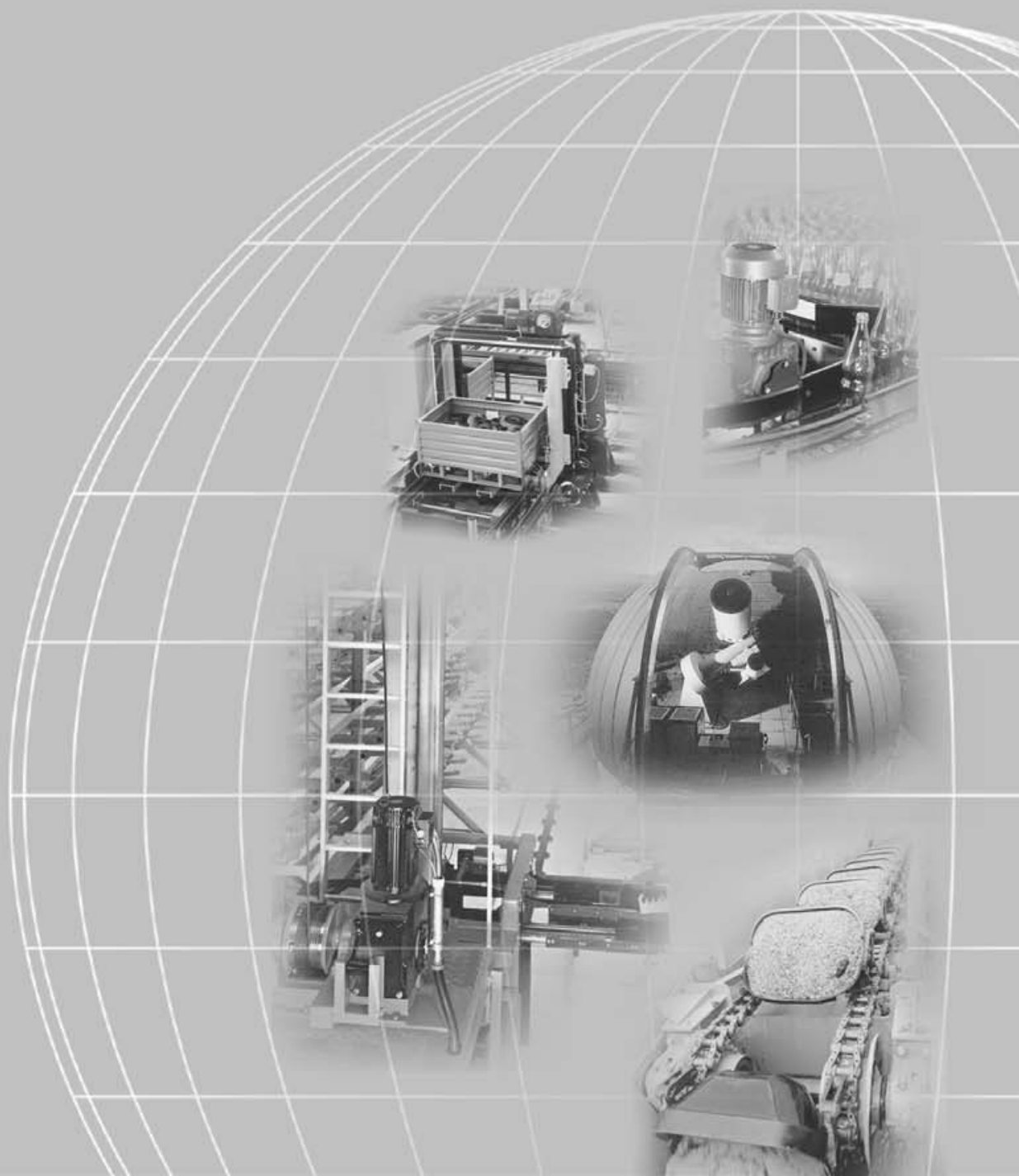# MOVITRAC® 07

System Manual

SEW-EURODRIVE

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1 Important Notes

Safety and warn-ing instructions

Always follow the safety and warning instructions contained in this publication!

Electrical hazard
Possible consequences: Severe or fatal injuries.

Hazard
Possible consequences: Severe or fatal injuries.

Hazardous situation
Possible consequences: Slight or minor injuries.

Harmful situation
Possible consequences: Damage to the unit and the environment.

Tips and useful information.

Unless the information in the operating instructions is adhered to, it will be impossible to ensure:

• Trouble-free operation

• Fulfillment of any rights to claim under guarantee

Consequently, read the operating instructions before you start working with the unit!

The operating instructions contain important information about servicing. Therefore, keep the operating instructions close to the unit.

Designated use   MOVITRAC® 07 frequency inverters operate AC asynchronous motors. These motors must be suitable for operation with frequency inverters. Do not connect any other loads to the frequency inverters.

MOVITRAC® 07 frequency inverters are units intended for stationary installation in switch cabinets. All instructions referring to the technical data and the permissible conditions where the unit is operated must be followed.

Do not start up the unit (take it into operation in the designated fashion) until:

• The machine complies with the EMC Directive 89/336/EEC

• The conformity of the end product has been determined in accordance with the Machinery Directive 89/392/EEC (with reference to EN 60204)

Application environment

The following applications are forbidden unless measures are expressly taken to make them possible:

• Use in explosion-proof areas

• Use in environments with harmful substances:
  – Oils
  – Acids
  – Gases
  – Vapors
  – Dust
  – Radiated interference
  – Other harmful environments

• Use subject to mechanical vibration and shock loads in excess of the requirements in EN 50178

• If the inverter performs safety functions which have to guarantee the protection of machinery and people

Waste disposal

Please follow the current instructions: Dispose in accordance with the regulations in force:

• Electronics scrap (printed-circuit boards)

• Plastic (housing)

• Sheet metal

• Copper

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2 System Description

2.1 Overview of the system
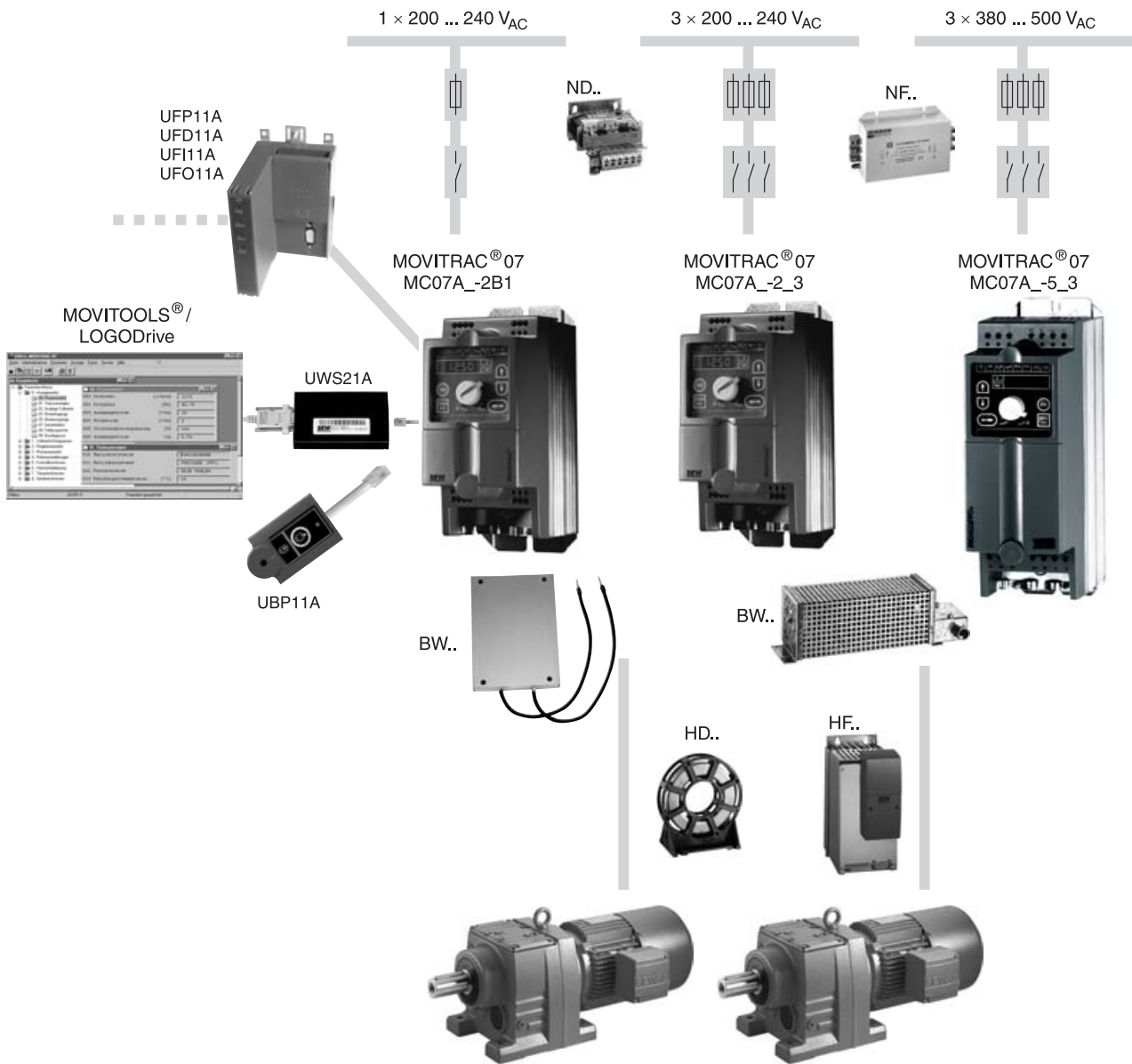
Figure 1: MOVITRAC® 07 system overview

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MOVITOOLS® software	ND line choke
LOGODrive programming interface	NF line filter
UWS21A interface adapter	BW braking resistor
Gateways for	HD output choke
• PROFIBUS UFP11A	HF output filter
• DeviceNet UFD11A	
• INTERBUS UFI11A	UBP11A parameter module
• CANopen UFO11A	

Overview of properties

Compact

The unit has a very compact structure

- Integrated brake chopper
- Integrated EMC line filter:
    - Class **B**: 1-phase connection
    - Class **A**: 3-phase connection
        - 230 V: 0.37 ... 7.5 kW
        - 400/500 V: 0.55 ... 11 kW
- Braking resistor can be integrated (optional for sizes 0S, 0M, 0L)
- Book-shaped design with IP20 enclosure / NEMA1 (size 4: IP00, with touch guard IP10)

Straightforward

Startup and operation are very straightforward

- Automatic motor adaptation
- Integrated operating panel with menu structure
- Startup based on the "plug and play" principle
- Integrated setpoint potentiometer
- Easy parameter setting and diagnosis using MOVITOOLS® PC software

Right for the job

The unit has the right function for every application

- Standard V/f control process or field-oriented VFC control mode as an option
- High overload capacity
    - 125 % I_N continuous duty (fan/pump operation)
    - 150 % I_N for maximum 60 seconds
    - Maximum 180 % breakaway torque
- Integrated PI-controller
- Extended temperature range
    - −10 °C ... +50 °C
        - 230 V: 0.37 ... 2.2 kW
        - 400/500 V: 0.55 ... 4.0 kW
    - 0 °C ... +50 °C
        - 230 V: 3.7 ... 30 kW
        - 400/500 V: 5.5 ... 30 kW
- Integrated protection and monitoring functions
    - Short circuit
    - Ground fault
    - Motor temperature sensor

System bus

With the **system bus (SBus)** fitted as standard, you can network up to 64 MOVITRAC® 07 frequency inverters as slaves. A PC, a PLC or a MOVIDRIVE® can be the SBus master.

The MOVITRAC® 07 Communication manual describes the functions of the system bus.

2

Extended func-
tions:
230 V units from 3.7 kW onwards and 500 V units from 5.5 kW onwards offer an extend-
ed range of functions including:

• Flying restart circuit

• Hoisting function

• Setpoint stop function

• Master frequency

• Standstill current function

• SCOPE oscilloscope program for MOVITOOLS®

LOGODrive units
There is the LOGODrive series of units as well as the standard series. These differ from
the standard series in the following respects:

• The optional LOGODrive graphical programming interface is integrated in the
MOVITOOLS® software from version 2.6 onwards. You can add and link function
blocks into a sequential function chart graphically using LOGODrive.

• LOGODrive units also have the **extended functions**.

There is a separate manual for the LOGODrive graphical programming interface.

2.2 The units at a glance

Mains connection	Motor power	Continuous output current 100 % / 125 %	Integrated line filter class	MOVITRAC® 07 type	Size
230 V 1-phase	0.37 kW / 0.5 HP	2.5 / 3.1 A$_{AC}$	B	MC07A**004**-2B1-4-00	0S
	0.55 kW / 0.75 HP	3.3 / 4.1 A$_{AC}$		MC07A**005**-2B1-4-00	
	0.75 kW / 1.0 HP	4.2 / 5.3 A$_{AC}$		MC07A**008**-2B1-4-00	
	1.1 kW / 1.5 HP	5.7 / 7.1 A$_{AC}$		MC07A**011**-2B1-4-00	0L
	1.5 kW / 2.0 HP	7.3 / 9.1 A$_{AC}$		MC07A**015**-2B1-4-00	
	2.2 kW / 3.0 HP	8.6 / 10.8 A$_{AC}$		MC07A**022**-2B1-4-00	
230 V 3-phase	0.37 kW / 0.5 HP	2.5 / 3.1 A$_{AC}$	A	MC07A**004**-2A3-4-00	0S
	0.55 kW / 0.75 HP	3.3 / 4.1 A$_{AC}$		MC07A**005**-2A3-4-00	
	0.75 kW / 1.0 HP	4.2 / 5.3 A$_{AC}$		MC07A**008**-2A3-4-00	
	1.1 kW / 1.5 HP	5.7 / 7.1 A$_{AC}$		MC07A**011**-2A3-4-00	0L
	1.5 kW / 2.0 HP	7.3 / 9.1 A$_{AC}$		MC07A**015**-2A3-4-00	
	2.2 kW / 3.0 HP	8.6 / 10.8 A$_{AC}$		MC07A**022**-2A3-4-00	
	3.7 kW / 5 HP	14.5 / 18.1 A$_{AC}$		MC07A**037**-2A3-4-00	1
	5.5 kW / 7.5 HP	22.0 / 27.5 A$_{AC}$		MC07A**055**-2A3-4-00	2
	7.5 kW / 10 HP	29.0 / 36.3 A$_{AC}$		MC07A**075**-2A3-4-00	
	11 kW / 15 HP	42.0 / 52.5 A$_{AC}$	–	MC07A**110**-203-4-00	3
	15 kW / 20 HP	54.0 / 67.5 A$_{AC}$		MC07A**150**-203-4-00	
	22 kW / 30 HP	80.0 / 100.0 A$_{AC}$		MC07A**220**-203-4-00	4
	30 kW / 40 HP	95.0 / 118.8 A$_{AC}$		MC07A**300**-203-4-00	
400 V 3-phase	0.55 kW / 0.75 HP	2.0 / 1.25 A$_{AC}$	A	MC07A**005**-5A3-4-00	0M
	0.75 kW / 1.0 HP	2.4 / 3.0 A$_{AC}$		MC07A**008**-5A3-4-00	
	1.1 kW / 1.5 HP	3.1 / 3.9 A$_{AC}$		MC07A**011**-5A3-4-00	
	1.5 kW / 2.0 HP	4.0 / 5.0 A$_{AC}$		MC07A**015**-5A3-4-00	0L
	2.2 kW / 3.0 HP	5.5 / 6.9 A$_{AC}$		MC07A**022**-5A3-4-00	
	3.0 kW / 4.0 HP	7.0 / 8.8 A$_{AC}$		MC07A**030**-5A3-4-00	
	4.0 kW / 5.0 HP	9.5 / 11.9 A$_{AC}$		MC07A**040**-5A3-4-00	
	5.5 kW / 7.5 HP	12.5 / 15.6 A$_{AC}$		MC07A**055**-5A3-4-00	2S
	7.5 kW / 10 HP	16.0 / 20.0 A$_{AC}$		MC07A**075**-5A3-4-00	
	11 kW / 15 HP	24.0 / 30.0 A$_{AC}$		MC07A**110**-5A3-4-00	2
	15 kW / 20 HP	32.0 / 40.0 A$_{AC}$	–	MC07A**150**-503-4-00	3
	22 kW / 30 HP	46.0 / 57.5 A$_{AC}$		MC07A**220**-503-4-00	
	30 kW / 40 HP	60.0 / 75.0 A$_{AC}$		MC07A**300**-503-4-00	

Unit designation for LOGODrive   MOVITRAC® 07 frequency inverters with LOGODrive have the unit designation MC07A...-...-4-**10**.

2.3   Functions / features

MOVITRAC$^®$ 07 frequency inverters are characterized by the following attributes:

Unit properties
- Wide voltage range:
    - 230 V units 1-phase and 3-phase for the voltage range 200 ... 240 V_{AC}, 50/60 Hz
    - 400/500 V units for the voltage range 3 x 380 ... 500 V_{AC}, 50/60 Hz
- Overload capacity: 150 % I_N for maximum 60 s

    125 % I_N continuous power (fan/pump operation)

    Maximum 180 % breakaway torque
- Rated operation (I_N = 100 %) up to ambient temperature ϑ = 50 °C.
- 4-quadrant capability due to the integrated brake chopper.
- Compact unit mounting position for minimum switch cabinet space requirement and optimum utilization of switch cabinet volume.
- Integrated EMC line filter to EN 55011 for compliance with limit value class:
    - Class **B**: 1-phase connection
    - Class **A**: 3-phase connection
        - 230 V: 0.37 ... 7.5 kW
        - 400/500 V: 0,55 ... 11 kW
- Inputs and outputs programmable
    - 1 analog input
    - 5 binary inputs
    - 2 binary outputs, 1 of which is a relay output
- Integrated voltage supply and evaluation for TF (PTC temperature sensor) for temperature monitoring of the motor.
- Integrated operating panel for displaying setpoints and setting parameters
    - 10 LEDs for displaying the selected symbols
    - 5 operation buttons
    - 1 setpoint potentiometer for specifying the speed
- Braking resistor can be integrated as an option in sizes 0S, 0M and 0L.

Control functions
- VFC control mode or V/f control.
- Automatic brake control by the inverter.
- DC braking to decelerate the motor even in 1-quadrant mode.
- Slip compensation for high static speed accuracy.
- Motor pull-out protection by sliding current limitation in the field weakening range.
- Factory settings can be reactivated.
- Parameter lock to protect against parameter changes.

- Protective features to protect against
  - Overcurrent
  - Ground fault
  - Overload
  - Overtemperature of the inverter
  - Overtemperature of the motor

- Speed monitoring and monitoring of the motor and regenerative limit power.

- Fault memory with all relevant operating data at the moment of the fault.

- Standardized operation, parameter setting and identical unit connection technology across all units in the MOVITRAC® 07 range.

Setpoint technology

- Motor potentiometer.

- External setpoint selections:
  - 0 ... +10 V
  - 0 ... 20 mA
  - 4 ... 20 mA

- 6 fixed setpoints.

- Frequency input (in preparation).

Communication / operation

- System bus for networking max. 64 MOVITRAC® 07 units.

- RS-485 interface for service purposes.

- Straightforward parameter setting and startup using integrated operating panel or MOVITOOLS® PC software.

- LOGODrive graphical programming interface for writing programs.

- Parameter module for saving and transferring inverter data including the LOGODrive program.

- Fieldbus interfaces for
  - PROFIBUS
  - DeviceNet
  - INTERBUS
  - CANopen

Extended functions:

230 V units from 3.7 kW onwards, 500 V units from 5.5 kW onwards and LOGODrive units offer an expanded range of functions including:

- Standstill current function for:
  - Rapid start
  - Heating current for avoiding condensation at low temperatures

- Flying restart circuit for flying restart of the inverter.

- Hoisting capability with all approved motor options.

Technical Data
CE-marking, UL approval and C-Tick

kVA n
f
i
P Hz

3

3 Technical Data

3.1 CE-marking, UL approval and C-Tick

CE-marking

Low Voltage Directive

MOVITRAC® 07 frequency inverters comply with the regulations of the Low Voltage Directive 73/23/EEC.

Electromagnetic compatibility EMC

MOVITRAC® 07 frequency inverters are components of machines and systems. They comply with the EMC product standard EN 61800-3 *Variable-speed electrical drives*. If you want to apply the CE mark to the machine/system equipped with frequency inverters in accordance with the EMC Directive 89/336/EEC: Observe the instructions regarding EMC compliant installation.

MOVITRAC® 07 frequency inverters are equipped with a line filter as standard. They comply with the following limit value class to EN 55011 on the line side without further measures:

- **B**: 1-phase connection

- **A**: 3-phase connection
  - 230 V: 0.37 ... 7.5 kW
  - 400/500 V: 0.55 ... 11 kW

The CE mark on the nameplate stands for conformity:

- With the Low Voltage Directive 73/23/EEC

- With the EMC Directive 89/336/EEC

SEW-EURODRIVE can issue a declaration of conformity to this effect on request.

UL approval

UL and cUL approval has been granted for the entire MOVITRAC® 07 range of units. cUL is equivalent to CSA approval.

C-Tick

C-Tick approval has been granted for the entire MOVITRAC® 07 range of units. C-Tick certifies conformity with the requirements of the ACA (Australian Communications Authority).

3.2 General technical data

The following technical data applies to all MOVITRAC® 07 frequency inverters, regardless of size.

MOVITRAC® 07	All sizes
Interference immunity	To EN 61800-3

Interference emission with EMC-compliant installation	To limit value class
	• **B**: 1-phase connection
	• **A**: 3-phase connection
	  – 230 V: 0.37 ... 7.5 kW
	  – 400/500 V: 0.55 ... 11 kW
	
	To EN 55011 and EN 55014; complies with EN 61800-3

Discharge current	> 3.5 mA
Ambient temperature ϑ_{amb} at f_{PWM} = 4 kHz	230 V, 0.37 ... 2.2 kW 400/500 V, 0.55 ... 4.0 kW • −10 °C ... +50 °C at 100 % I_N • −10 °C ... +40 °C at 125 % I_N 230 V, 3.7 ... 30 kW 400/500 V, 5.5 ... 30 kW • 0 °C – +50 °C at 100 % I_N • 0 °C ... +40 °C at 125 % I_N
Power reduction	3.0 % I_N per K to max. 60 °C
Climate class	EN 60721-3-3, class 3K3
Storage temperature[1] Transport temperature	−25 °C ... +75 °C −25 °C ... +75 °C
Enclosure	IP20 Size 4 power connections: IP00, IP10 with Plexiglas cover mounted (supplied as standard)
Operating mode	Continuous duty (EN 60149-1-1 and 1-3)

Altitude	h ≤ 1000 m (3300 ft)
	• I_N reduction
	  – 1 % per 100 m (330 ft)
	  – From 1000 m to max. 4000 m (3300 ft to max. 13,200 ft)
	• V_N reduction
	  – 3 V per 100 m (330 ft)
	  – From 2000 m to max. 4000 m (6600 ft to max. 13,200 ft)
	
	Over 200 m (6600 ft) only overvoltage class 2, external measures are required for overvoltage class 3. Overvoltage classes to DIN VDE 0110-1.

Vibration-resistance	To EN 50 178 / VDE 0160

1 If the unit is being stored for a long time, connect it to the mains voltage for at least 5 minutes every 2 years. Otherwise, the service life of the unit will be reduced.

3.3   Technical data of MOVITRAC® 07

230 V

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Figure 2: MOVITRAC® 07 230 V units

Size	0S	0L	1	2	3	4
Power [kW / HP]	0.37 / 0.5 0.55 / 0.75 0.75 / 1.0	1.1 / 1.5 1.5 / 2.0 2.2 / 3.0	3.7 / 5	5.5 / 7.5 7.5 / 10	11 / 15 15 / 20	22 / 30 30 / 40
Mains connection	230 V / 1-phase 230 V / 3-phase	230 V / 3-phase				
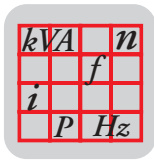
400/500 V

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Figure 3: MOVITRAC® 07 400/500 V units

Size	0M	0L	2S	2	3
Power [kW / HP]	0.55 / 0.75 0.75 / 1.0 1.1 / 1.5	1.5 / 1.0 2.2 / 3.0 3.0 / 4.0 4.0 / 5.0	5.5 / 7.5 7.5 / 10	11 / 15	15 / 20 22 / 30 30 / 40
Mains connection	400/500 V / 3-phase				

3

kVA n
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P Hz

Technical Data
Technical data of MOVITRAC® 07

230 V_{AC} / 1-phase / size 0S / 0.37 ... 0.75 kW / 0.5 ... 1.0 HP

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Figure 4: MOVITRAC® 07 / size 0S / 1-phase 230 V_{AC}

MOVITRAC® MC07A (1-phase supply system)		004-2B1-4-..	005-2B1-4-..	008-2B1-4-..
Part number		826 951 3	826 952 1	826 953 X
Part number with LOGODrive		827 185 2	827 186 0	827 187 9
INPUT				
Connection voltage Permitted range	V_{mains}	1 x 230 V_{AC} V_{mains} = 200 V_{AC} -10 % ... 240 V_{AC} +10 %		
Supply frequency	f_{mains}	50/60 Hz +/-5 %		
Rated system current, 1-phase at V_{mains} = 230 V_{AC}	100% I_{mains} 125% I_{mains}	6.1 A_{AC} 7.5 A_{AC}	8.5 A_{AC} 10.2 A_{AC}	9.9 A_{AC} 11.8 A_{AC}
OUTPUT				
Output voltage	V_N	3 x 0 ... V_{mains}		
Recommended motor power under constant load (with V_{mains} = 230 V_{AC})	P_{mot}	0.37 kW 0.5 HP	0.55 kW 0.75 HP	0.75 kW 1.0 HP
Recommended motor power under variable torque load or constant load without overload (with V_{mains} = 230 V_{AC})	P_{mot}	0.55 kW 0.75 HP	0.75 kW 1.0 HP	1.1 kW 1.5 HP
Rated output current at V_{mains} = 230 V_{AC}	I_N	2.5 A_{AC}	3.3 A_{AC}	4.2 A_{AC}
Minimum permitted braking resistor value (4-Q operation)	R_{BWmin}	72 Ω		

MOVITRAC® MC07A (1-phase supply system)		004-2B1-4-..	005-2B1-4-..	008-2B1-4-..
GENERAL				
Power loss at I_N	P_V	45 W	55 W	65 W
Current limitation		125 % I_N continuous duty (fan/pump operation) 150 % I_N for maximum 60 seconds		
PWM frequency	f_{PWM}	4 / 8 / 12 / 16 kHz		
Speed range Resolution	n_A Δn_A	0 ... 5500 rpm 1 rpm		
Connections		Terminals 2.5 mm^2		
Dimensions	W x H x D	90 x 185 x 150 mm 3.5 x 7.2 x 5.9 in		
Weight	m	1.5 kg 3.3 lb		

Figure 5: Dimensions, MOVITRAC® 07 size 0S

Provide 100 mm (4 in) clearance above and below the unit to ensure adequate cooling! There is no need for clearance at the sides. You can line up the units directly next to one another. Make sure that the circulation of air is not disrupted by cables or other installation materials. Prevent the heated exhaust air from other units from blowing onto this unit.

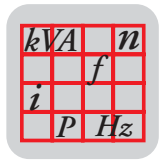### 230 V$_{AC}$ / 1-phase / size 0L / 1.1 ... 2.2 kW / 1.5 ... 3.0 HP

Figure 6: MOVITRAC® 07 / size 0L / 1-phase 230 V$_{AC}$

MOVITRAC® MC07A (1-phase supply system)		011-2B1-4-..	015-2B1-4-..	022-2B1-4-..
Part number		826 954 8	826 955 6	826 956 4
Part number with LOGODrive		827 188 7	827 189 5	827 190 9
INPUT				
Connection voltage Permitted range	V$_{mains}$	1 x 230 V$_{AC}$ V$_{mains}$ = 200 V$_{AC}$ -10 % ... 240 V$_{AC}$ +10 %	
Supply frequency	f$_{mains}$	50/60 Hz +/-5 %	
Rated system current, 1-phase at V$_{mains}$ = 230 V$_{AC}$	100% I$_{mains}$ 125% I$_{mains}$	13.4 A$_{AC}$ 16.8 A$_{AC}$	16.7 A$_{AC}$ 20.7 A$_{AC}$	19.7 A$_{AC}$ 24.3 A$_{AC}$
OUTPUT				
Output voltage	V$_N$	3 x 0 ... V$_{mains}$	
Recommended motor power under constant load (with V$_{mains}$ = 230 V$_{AC}$)	P$_{mot}$	1.1 kW 1.5 HP	1.5 kW 2.0 HP	2.2 kW 3.0 HP
Recommended motor power under variable torque load or constant load without overload (with V$_{mains}$ = 230 V$_{AC}$)	P$_{mot}$	1.5 kW 2.0 HP	2.2 kW 3.0 HP	3.0 kW 4.0 HP
Rated output current at V$_{mains}$ = 230 V$_{AC}$	I$_N$	5.7 A$_{AC}$	7.3 A$_{AC}$	8.6 A$_{AC}$
Minimum permitted braking resistor value (4-Q operation)	R$_{BWmin}$	27 Ω	

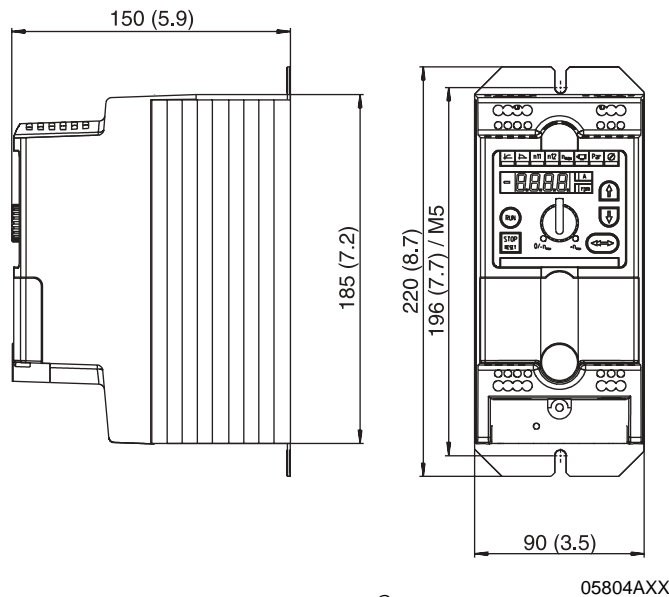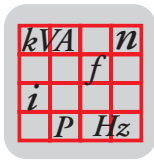| MOVITRAC® MC07A (1-phase supply system)		011-2B1-4-..	015-2B1-4-..	022-2B1-4-..
GENERAL				
Power loss at I_N	P_V	75 W	100 W	125 W
Current limitation		125 % I_N continuous duty (fan/pump operation) 150 % I_N for maximum 60 seconds		
PWM frequency	f_{PWM}	4 / 8 / 12 / 16 kHz		
Speed range Resolution	n_A Δn_A	0 ... 5500 rpm 1 rpm		
Connections		Terminals 4 mm^2		
Dimensions	W x H x D	90 x 295 x 150 mm 3.5 x 9.5 x 5.9 in		
Weight	m	2.5 kg 5.5 lb		

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Figure 7: Dimensions, MOVITRAC® 07 size 0L

Provide 100 mm (4 in) clearance above and below the unit to ensure adequate cooling! There is no need for clearance at the sides. You can line up the units directly next to one another. Make sure that the circulation of air is not disrupted by cables or other installation materials. Prevent the heated exhaust air from other units from blowing onto this unit.
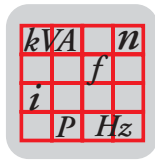
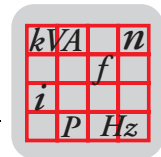### 230 V_{AC} / 3-phase / size 0S / 0.37 ... 0.75 kW / 0.5 ... 1.0 HP

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Figure 8: MOVITRAC® 07 / size 0S / 3-phase 230 V_{AC}

MOVITRAC® 07A (3-phase supply system)		004-2A3-4-..	005-2A3-4-..	008-2A3-4-..
Part number		826 957 2	826 958 0	826 959 9
Part number with LOGODrive		827 191 7	827 192 5	827 193 3
INPUT				
Connection voltage Permitted range	V_{mains}			
Supply frequency	f_{supply}			
Rated system current, 3-phase at V_{mains} = 230 V_{AC}	100% I_{mains} 125% I_{mains}	2.0 A_{AC} 2.4 A_{AC}	2.8 A_{AC} 3.4 A_{AC}	3.3 A_{AC} 4.1 A_{AC}
OUTPUT				
Output voltage	V_N	3 x 0 ... V_{mains}		
Recommended motor power under constant load (with V_{mains} = 230 V_{AC})	P_{mot}	0.37 kW 0.5 HP	0.55 kW 0.75 HP	0.75 kW 1.0 HP
Recommended motor power under variable torque load or constant load without overload (with V_{mains} = 230 V_{AC})	P_{mot}	0.55 kW 0.75 HP	0.75 kW 1.0 HP	1.1 kW 1.5 HP
Rated output current at V_{mains} = 230 V_{AC}	I_N	2.5 A_{AC}	3.3 A_{AC}	4.2 A_{AC}
Minimum permitted braking resistor value (4-Q operation)	R_{BWmin}	72 Ω		

Connection voltage / Permitted range: $3 \times 230\ V_{AC}$, V_{mains} = 200 V_{AC} -10 % ... 240 V_{AC} +10 %

Supply frequency: 50/60 Hz +/-5 %

MOVITRAC® 07A (3-phase supply system)		004-2A3-4-..	005-2A3-4-..	008-2A3-4-..
GENERAL				
Power loss at I_N	P_V	45 W	55 W	65 W
Current limitation		125 % I_N continuous duty (fan/pump operation) 150 % I_N for maximum 60 seconds		
PWM frequency	f_{PWM}	4 / 8 / 12 / 16 kHz		
Speed range Resolution	n_A Δn_A	0 ... 5500 rpm 1 rpm		
Connections		Terminals 2.5 mm^2		
Dimensions	W x H x D	90 x 185 x 150 mm 3.5 x 7.2 x 5.9 in		
Weight	m	1.5 kg 3.3 lb		

05804AXX

Figure 9: Dimensions, MOVITRAC® 07 size 0S

Provide 100 mm (4 in) clearance above and below the unit to ensure adequate cooling! There is no need for clearance at the sides. You can line up the units directly next to one another. Make sure that the circulation of air is not disrupted by cables or other installation materials. Prevent the heated exhaust air from other units from blowing onto this unit.
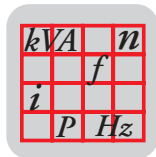
230 V_{AC} / 3-phase / size 0L / 1.1 ... 2.2 kW / 1.5 ... 3.0 HP

Figure 10: MOVITRAC® 07 / size 0L / 3-phase 230 V_{AC}

MOVITRAC® 07A (3-phase supply system)		011-2A3-4-..	015-2A3-4-..	022-2A3-4-..
Part number		826 960 2	826 961 0	826 962 9
Part number with LOGODrive		827 194 1	827 195 X	827 196 8
INPUT				
Connection voltage Permitted range	V_{mains}	3 x 230 V_{AC} V_{mains} = 200 V_{AC} -10 % ... 240 V_{AC} +10 %	
Supply frequency	f_{mains}	50/60 Hz +/-5 %	
Rated system current, 3-phase at V_{mains} = 230 V_{AC}	100% I_{mains} 125% I_{mains}	5.1 A_{AC} 6.3 A_{AC}	6.4 A_{AC} 7.9 A_{AC}	7.6 A_{AC} 9.5 A_{AC}
OUTPUT				
Output voltage	V_N	3 x 0 ... V_{mains}	
Recommended motor power under constant load (with V_{mains} = 230 V_{AC})	P_{mot}	1.1 kW 1.5 HP	1.5 kW 2.0 HP	2.2 kW 3.0 HP
Recommended motor power under variable torque load or constant load without overload (with V_{mains} = 230 V_{AC})	P_{mot}	1.5 kW 2.0 HP	2.2 kW 3.0 HP	3.0 kW 4.0 HP
Rated output current at V_{mains} = 230 V_{AC}	I_N	5.7 A_{AC}	7.3 A_{AC}	8.6 A_{AC}
Minimum permitted braking resistor value (4-Q operation)	R_{BWmin}	27 Ω	

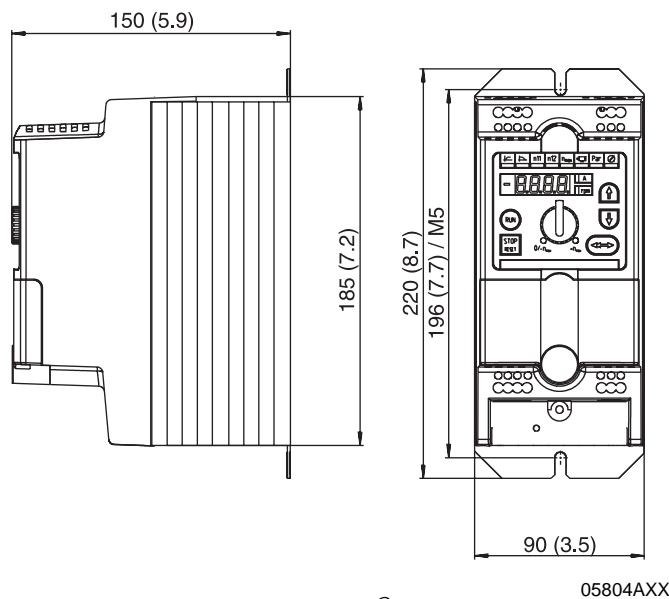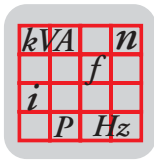| MOVITRAC® 07A (3-phase supply system)		011-2A3-4-..	015-2A3-4-..	022-2A3-4-..
GENERAL				
Power loss at I_N	P_V	75 W	100 W	125 W
Current limitation		125 % I_N continuous duty (fan/pump operation) 150 % I_N for maximum 60 seconds		
PWM frequency	f_{PWM}	4 / 8 / 12 / 16 kHz		
Speed range Resolution	n_A Δn_A	0 ... 5500 rpm 1 rpm		
Connections		Terminals 4 mm^2		
Dimensions	W x H x D	90 x 295 x 150 mm 3.5 x 9.5 x 5.9 in		
Weight	m	2.5 kg 5.5 lb		

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Figure 11: Dimensions, MOVITRAC® 07 size 0L

Provide 100 mm (4 in) clearance above and below the unit to ensure adequate cooling! There is no need for clearance at the sides. You can line up the units directly next to one another. Make sure that the circulation of air is not disrupted by cables or other installation materials. Prevent the heated exhaust air from other units from blowing onto this unit.
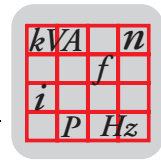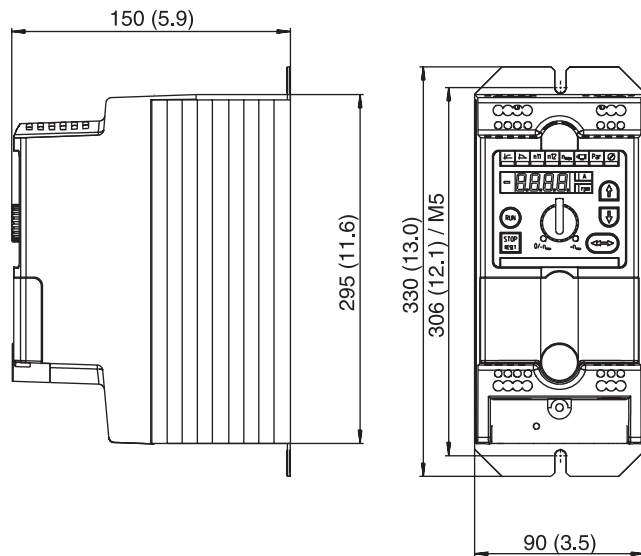
230 V$_{AC}$ / 3-phase / size 1 / 3.7 kW / 5.0 HP

Figure 12: MOVITRAC® 07 / size 1 / 3-phase 230 V$_{AC}$

MOVITRAC® 07A (3-phase supply system)		037-2A3-4-..
Part number		827 278 6
Part number with LOGODrive		827 285 9
INPUT		
Connection voltage Permitted range	V$_{mains}$	3 x 230 V$_{AC}$ V$_{mains}$ = 200 V$_{AC}$ -10 % ... 240 V$_{AC}$ +10 %
Supply frequency	f$_{supply}$	50/60 Hz +/-5 %
Rated system current, 3-phase at V$_{mains}$ = 230 V$_{AC}$	100% I$_{mains}$ 125% I$_{mains}$	12.9 A$_{AC}$ 16.1 A$_{AC}$
OUTPUT		
Output voltage	V$_N$	3 x 0 ... V$_{mains}$
Recommended motor power under constant load (with V$_{mains}$ = 230 V$_{AC}$)	P$_{mot}$	3.7 kW 5 HP
Recommended motor power under variable torque load or constant load without overload (with V$_{mains}$ = 230 V$_{AC}$)	P$_{mot}$	5.5 kW 7.5 HP
Minimum permitted braking resistor value (4-Q operation)	R$_{BWmin}$	27 Ω
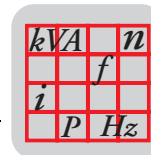
MOVITRAC® 07A (3-phase supply system)		037-2A3-4-..
GENERAL		
Power loss at I_N	P_V	210 W
Current limitation		125 % I_N continuous duty (fan/pump operation) 150 % I_N for maximum 60 seconds
PWM frequency	f_{PWM}	4 / 8 / 12 / 16 kHz
Speed range Resolution	n_A Δn_A	0 ... 5500 rpm 1 rpm
Connections	Terminals	4 mm^2
Dimensions	W x H x D	105 x 315 x 144 mm 4.1 x 12.4 x 5.7 in
Weight	m	3.5 kg 7.7 lb
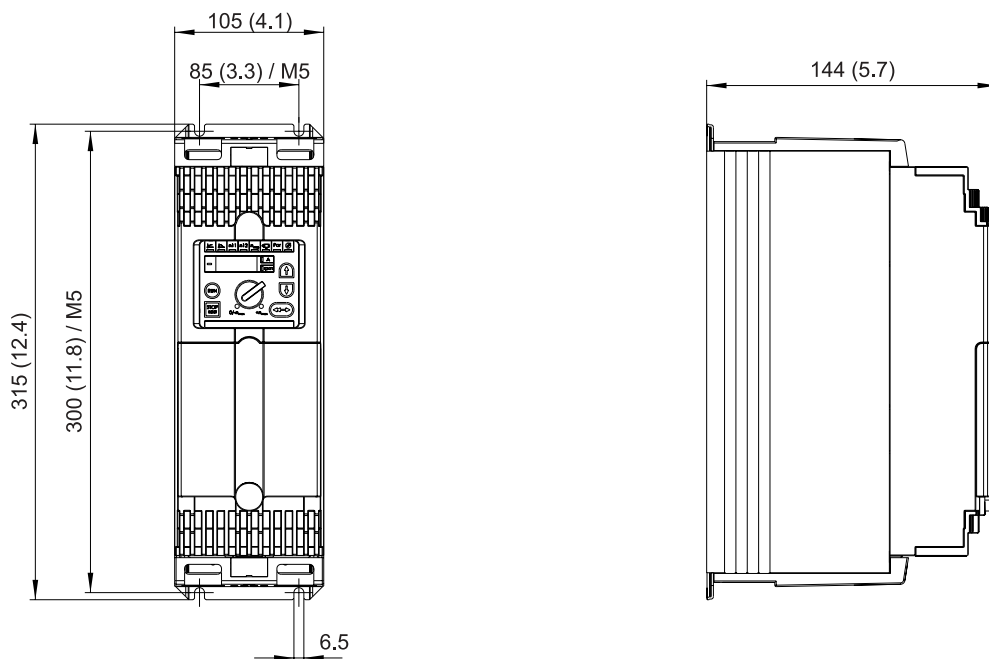
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Figure 13: Dimensions, MOVITRAC® 07 size 1

Provide 100 mm (4 in) clearance above and below the unit to ensure adequate cooling! There is no need for clearance at the sides. You can line up the units directly next to one another. Make sure that the circulation of air is not disrupted by cables or other installation materials. Prevent the heated exhaust air from other units from blowing onto this unit.

### 230 V_{AC} / 3-phase / size 2 / 5.5 ... 7.5 kW / 7.5 ... 10 HP

Figure 14: MOVITRAC® 07 / size 2 / 3-phase 230 V_{AC}

MOVITRAC® 07A (3-phase supply system)		055-2A3-4-..	075-2A3-4-..
Part number		827 279 4	827 280 8
Part number with LOGODrive		827 286 7	827 287 5
INPUT			
Connection voltage Permitted range	V_{mains}	3 x 230 V_{AC} V_{mains} = 200 V_{AC} -10 % ... 240 V_{AC} +10 %	
Supply frequency	f_{mains}	50/60 Hz +/-5 %	
Rated system current, 3-phase at V_{mains} = 230 V_{AC}	100% I_{mains} 125% I_{mains}	19.5 A_{AC} 24.4 A_{AC}	27.4 A_{AC} 34.3 A_{AC}
OUTPUT			
Output voltage	V_N	3 x 0 ... V_{mains}	
Recommended motor power under constant load (with V_{mains} = 230 V_{AC})	P_{mot}	5.5 kW 7.5 HP	7.5 kW 10 HP
Recommended motor power under variable torque load or constant load without overload (with V_{mains} = 230 V_{AC})	P_{mot}	7.5 kW 10 HP	11 kW 15 HP
Rated output current at V_{mains} = 230 V_{AC}	I_N	22 A_{AC}	29 A_{AC}
Minimum permitted braking resistor value (4-Q operation)	R_{BWmin}	12 Ω	

MOVITRAC® 07A (3-phase supply system)		055-2A3-4-..	075-2A3-4-..
GENERAL			
Power loss at I_N	P_V	300 W	380 W
Current limitation		125 % I_N continuous duty (fan/pump operation) 150 % I_N for maximum 60 seconds	
PWM frequency	f_{PWM}	4 / 8 / 12 / 16 kHz	
Speed range Resolution	n_A Δn_A	0 ... 5500 rpm 1 rpm	
Connections	Terminals	4 mm²	6 mm²
Dimensions	W x H x D	130 x 335 x 196 mm 5.1 x 13.2 x 7.7 in	
Weight	m	6.6 kg 14.6 lb	
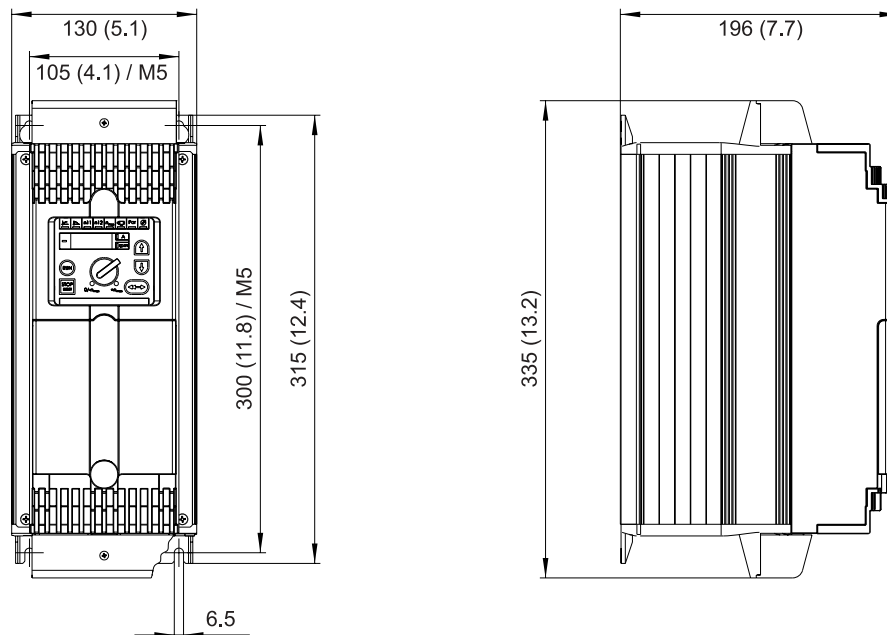
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Figure 15: Dimensions, MOVITRAC® 07 size 2

Provide 100 mm (4 in) clearance above and below the unit to ensure adequate cooling! There is no need for clearance at the sides. You can line up the units directly next to one another. Make sure that the circulation of air is not disrupted by cables or other installation materials. Prevent the heated exhaust air from other units from blowing onto this unit.

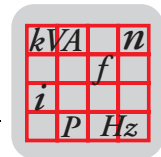### 230 V$_{AC}$ / 3-phase / size 3 / 11 ... 15 kW / 15 ... 20 HP

Figure 16: MOVITRAC® 07 / size 3 / 3-phase 230 V$_{AC}$

MOVITRAC® 07A (3-phase supply system)		110-203-4-..	150-203-4-..
Part number		827 281 6	827 282 4
Part number with LOGODrive		827 288 3	827 289 1
INPUT			
Connection voltage Permitted range	V$_{mains}$	3 x 230 V$_{AC}$ V$_{mains}$ = 200 V$_{AC}$ -10 % ... 240 V$_{AC}$ +10 %	
Supply frequency	f$_{supply}$	50/60 Hz +/-5 %	
Rated system current, 3-phase at V$_{mains}$ = 230 V$_{AC}$	100% I$_{mains}$ 125% I$_{mains}$	40.0 A$_{AC}$ 50.0 A$_{AC}$	48.6 A$_{AC}$ 60.8 A$_{AC}$
OUTPUT			
Output voltage	V$_N$	3 x 0 ... V$_{mains}$	
Recommended motor power under constant load (with V$_{mains}$ = 230 V$_{AC}$)	P$_{mot}$	11 kW 15 HP	15 kW 20 HP
Recommended motor power under variable torque load or constant load without overload (with V$_{mains}$ = 230 V$_{AC}$)	P$_{mot}$	15 kW 20 HP	22 kW 30 HP
Rated output rated current at V$_{mains}$ = 230 V$_{AC}$	I$_N$	7.5 A$_{AC}$	5.6 A$_{AC}$
Minimum permitted braking resistor value (4-Q operation)	R$_{BWmin}$	15 Ω	

MOVITRAC® 07A (3-phase supply system)		110-203-4-..	150-203-4-..
GENERAL			
Power loss at I_N	P_V	580 W	720 W
Current limitation		125 % I_N continuous duty (fan/pump operation) 150 % I_N for maximum 60 seconds	
PWM frequency	f_{PWM}	4 / 8 / 12 / 16 kHz	
Speed range Resolution	n_A Δn_A	0 ... 5500 rpm 1 rpm	
Connections	Terminals	10 mm^2	16 mm^2
Dimensions	W x H x D	200 x 465 x 218 mm 7.9 x 18.3 x 8.6 in	
Weight	m	15 kg 33.1 lb	

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Figure 17: Dimensions, MOVITRAC® 07 size 3

Provide 100 mm (4 in) clearance above and below the unit to ensure adequate cooling! There is no need for clearance at the sides. You can line up the units directly next to one another. Make sure that the circulation of air is not disrupted by cables or other installation materials. Prevent the heated exhaust air from other units from blowing onto this unit.

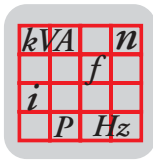### 230 V_{AC} / 3-phase / size 4 / 22 ... 30 kW / 30 ... 40 HP

Figure 18: MOVITRAC® 07 / size 4 / 3-phase 230 V_{AC}

MOVITRAC® 07A (3-phase supply system)		220-203-4-..	300-203-4-..
Part number		827 283 2	827 284 0
Part number with LOGODrive		827 290 5	827 291 3
INPUT			
Connection voltage Permitted range	V_{mains}	3 x 230 V_{AC} V_{mains} = 200 V_{AC} -10 % ... 240 V_{AC} +10 %	
Supply frequency	f_{mains}	50/60 Hz +/-5 %	
Rated system current, 3-phase at V_{mains} = 230 V_{AC}	100% I_{mains} 125% I_{mains}	72 A_{AC} 90 A_{AC}	86 A_{AC} 107 A_{AC}
OUTPUT			
Output voltage	V_N	3 x 0 ... V_{mains}	
Recommended motor power under constant load (with V_{mains} = 230 V_{AC})	P_{mot}	22 kW 30 HP	30 kW 40 HP
Recommended motor power under variable torque load or constant load without overload (with V_{mains} = 230 V_{AC})	P_{mot}	30 kW 40 HP	37 kW 50 HP
Rated output current at V_{mains} = 230 V_{AC}	I_N	80 A_{AC}	95 A_{AC}
Minimum permitted braking resistor value (4-Q operation)	R_{BWmin}	3 Ω	

MOVITRAC® 07A (3-phase supply system)		220-203-4-..	300-203-4-..
GENERAL			
Power loss at I_N	P_V	1100 W	1300 W
Current limitation		125 % I_N continuous duty (fan/pump operation) 150 % I_N for maximum 60 seconds	
PWM frequency	f_{PWM}	4 / 8 / 12 / 16 kHz	
Speed range Resolution	n_A Δn_A	0 ... 5500 rpm 1 rpm	
Connections	Terminals	25 mm^2	35 mm^2
Dimensions	W x H x D	280 x 522 x 222 mm 11.0 x 20.6 x 8.7 in	
Weight	m	27 kg 59.5 lb	
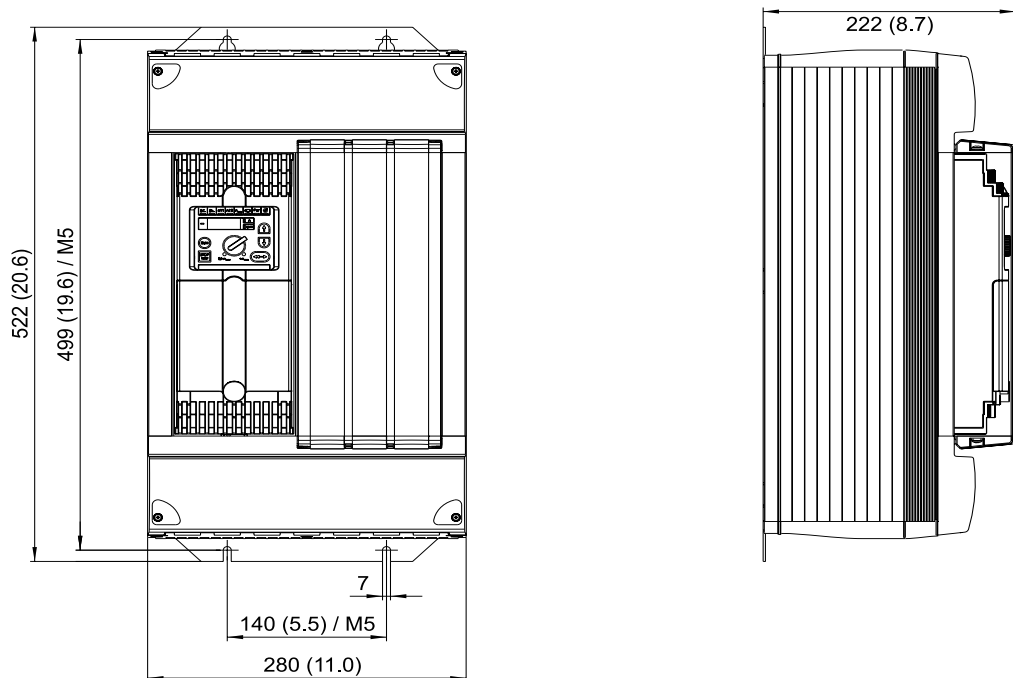
05809AXX

Figure 19: Dimensions, MOVITRAC® 07 size 4

Provide 100 mm (4 in) clearance above and below the unit to ensure adequate cooling! There is no need for clearance at the sides. You can line up the units directly next to one another. Make sure that the circulation of air is not disrupted by cables or other installation materials. Prevent the heated exhaust air from other units from blowing onto this unit.

400/500 V$_{AC}$ / 3-phase / size 0M / 0.55 ... 1.1 kW / 0.75 ... 1.5 HP

Figure 20: MOVITRAC® 07 / size 0M / 3-phase 400/500 V$_{AC}$

MOVITRAC® 07A (3-phase supply system)		005-5A3-4-..	008-5A3-4-..	011-5A3-4-..
Part number		827 247 6	827 248 4	827 249 2
Part number with LOGODrive		827 292 1	827 293 x	827 294 8
INPUT				
Connection voltage Permitted range	V$_{mains}$	3 x 400 V$_{AC}$ V$_{mains}$ = 380 V$_{AC}$ -10 % ... 500 V$_{AC}$ +10 %		
Supply frequency	f$_{mains}$	50/60 Hz +/-5 %		
Rated system current, 3-phase at V$_{mains}$ = 400 V$_{AC}$	100% I$_{mains}$ 125% I$_{mains}$	1.8 A$_{AC}$ 2.3 A$_{AC}$	2.2 A$_{AC}$ 2.6 A$_{AC}$	2.8 A$_{AC}$ 3.5 A$_{AC}$
OUTPUT				
Output voltage	V$_N$	3 x 0 ... V$_{mains}$		
Recommended motor power under constant load (with V$_{mains}$ = 400 V$_{AC}$)	P$_{mot}$	0.55 kW 0.75 HP	0.75 kW 1.0 HP	1.1 kW 1.5 HP
Recommended motor power under variable torque load or constant load without overload (with V$_{mains}$ = 400 V$_{AC}$)	P$_{mot}$	0.75 kW 1.0 HP	1.1 kW 1.5 HP	1.5 kW 2.0 HP
Rated output current at V$_{mains}$= 400 V$_{AC}$	I$_N$	2.0 A$_{AC}$	2.4 A$_{AC}$	3.1 A$_{AC}$
Minimum permitted braking resistor value (4-Q operation)	R$_{BWmin}$	68 Ω		
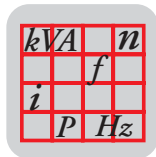
MOVITRAC® 07A (3-phase supply system)		005-5A3-4-..	008-5A3-4-..	011-5A3-4-..
GENERAL				
Power loss at I_N	P_V	42 W	48 W	58 W
Current limitation		125 % I_N continuous duty (fan/pump operation) 150 % I_N for maximum 60 seconds		
PWM frequency	f_{PWM}	4 / 8 / 12 / 16 kHz		
Speed range Resolution	n_A Δn_A	0 ... 5500 rpm 1 rpm		
Connections		Terminals 4 mm^2		
Dimensions	W x H x D	90 x 245 x 150 mm 3.5 x 9.6 x 5.9 in		
Weight	m	2.0 kg 4.4 lb		

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Figure 21: Dimensions, MOVITRAC® 07 size 0M

Provide 100 mm (4 in) clearance above and below the unit to ensure adequate cooling! There is no need for clearance at the sides. You can line up the units directly next to one another. Make sure that the circulation of air is not disrupted by cables or other installation materials. Prevent the heated exhaust air from other units from blowing onto this unit.
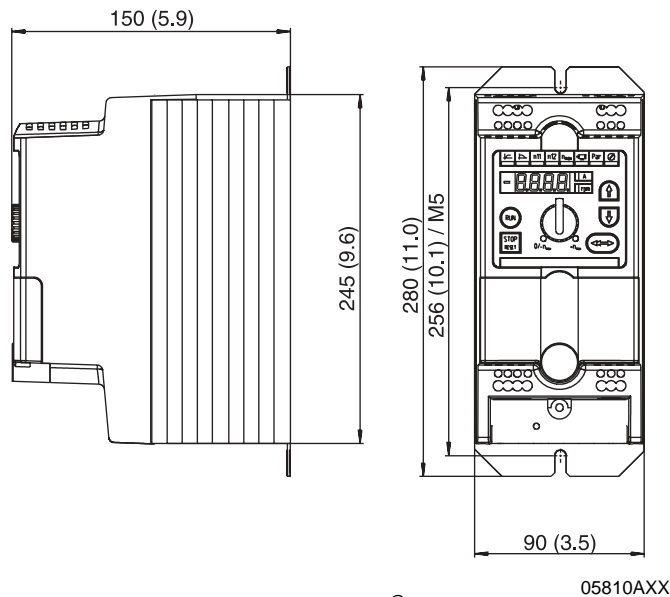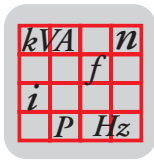
400/500 V_AC / 3-phase / size 0L / 1.5 ... 4.0 kW / 2.0 ... 5.0 HP

Figure 22: MOVITRAC® 07 / size 0L / 3-phase 400/500 V_AC

MOVITRAC® 07A (3-phase supply system)		015-5A3-4-..	022-5A3-4-..	030-5A3-4-..	040-5A3-4-..
Part number		827 250 6	827 251 4	827 252 2	827 253 0
Part number with LOGODrive		827 295 6	827 296 4	827 297 2	827 298 0
INPUT					
Connection voltage Permitted range	V_{mains}	3 x 400 V_AC V_{mains} = 380 V_AC -10 % ... 500 V_AC +10 %			
Supply frequency	f_{mains}	50/60 Hz +/-5 %			
Rated system current, 3-phase at V_{mains} = 400 V_AC	100% I_{mains} 125% I_{mains}	3.6 A_AC 4.5 A_AC	5.0 A_AC 6.2 A_AC	6.3 A_AC 7.9 A_AC	8.6 A_AC 10.7 A_AC
OUTPUT					
Output voltage	V_N	3 x 0 ... V_{mains}			
Recommended motor power under constant load (with V_{mains} = 400 V_AC)	P_{mot}	1.5 kW 2.0 HP	2.2 kW 3.0 HP	3.0 kW 4.0 HP	4.0 kW 5.0 HP
Recommended motor power under variable torque load or constant load without overload (with V_{mains} = 400 V_AC)	P_{mot}	2.2 kW 3.0 HP	3.0 kW 4.0 HP	4.0 kW 5.0 HP	5.5 kW 7.5 HP
Rated output current at V_{mains} = 400 V_AC	I_N	4.0 A_AC	5.5 A_AC	7.0 A_AC	9.5 A_AC
Minimum permitted braking resistor value (4-Q operation)	R_{BWmin}	68 Ω			

MOVITRAC® 07A (3-phase supply system)		015-5A3-4-..	022-5A3-4-..	030-5A3-4-..	040-5A3-4-..
GENERAL					
Power loss at I_N	P_V	74 W	97 W	123 W	155 W
Current limitation		125 % I_N continuous duty (fan/pump operation) 150 % I_N for maximum 60 seconds			
PWM frequency	f_{PWM}	4 / 8 / 12 / 16 kHz			
Speed range Resolution	n_A Δn_A	0 ... 5500 rpm 1 rpm			
Connections		Terminals 4 mm^2			
Dimensions	W x H x D	90 x 295 x 150 mm 3.5 x 11.6 x 5.9 in			
Weight	m	2.5 kg 5.5 lb			
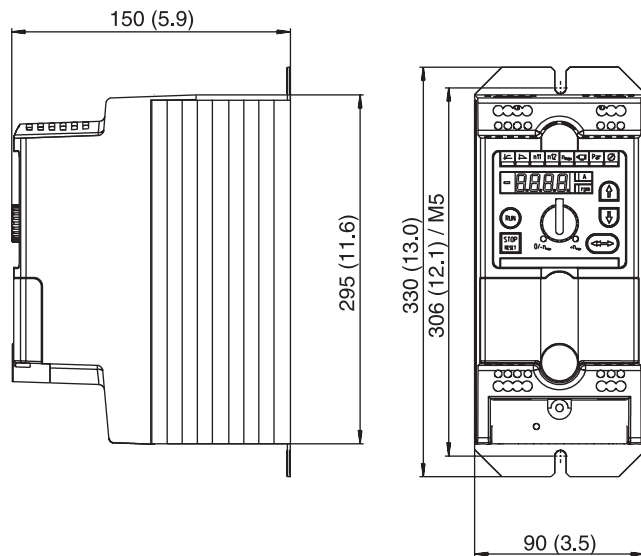
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Figure 23: Dimensions, MOVITRAC® 07 size 0L

Provide 100 mm (4 in) clearance above and below the unit to ensure adequate cooling! There is no need for clearance at the sides. You can line up the units directly next to one another. Make sure that the circulation of air is not disrupted by cables or other installation materials. Prevent the heated exhaust air from other units from blowing onto this unit.
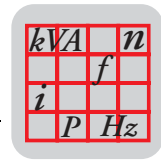
400/500 V_{AC} / 3-phase / size 2S / 5.5 ... 7.5 kW / 7.5 ... 10 HP

Figure 24: MOVITRAC® 07 / size 2S / 3-phase 400/500 V_{AC}

MOVITRAC® 07A (3-phase supply system)		055-5A3-4-..	075-5A3-4-..
Part number		827 254 9	827 255 7
Part number with LOGODrive		827 299 9	827 300 6
INPUT			
Connection voltage Permitted range	V_{mains}	3 x 400 V_{AC} V_{mains} = 380 V_{AC} -10 % ... 500 V_{AC} +10 %	
Supply frequency	f_{mains}	50/60 Hz +/-5 %	
Rated system current, 3-phase at V_{mains} = 400 V_{AC}	100% I_{mains} 125% I_{mains}	11.3 A_{AC} 14.1 A_{AC}	14.4 A_{AC} 18.0 A_{AC}
OUTPUT			
Output voltage	V_N	3 x 0 ... V_{mains}	
Recommended motor power under constant load (with V_{mains} = 400 V_{AC})	P_{mot}	5.5 kW 7.5 HP	7.5 kW 10 HP
Recommended motor power under variable torque load or constant load without overload (with V_{mains} = 400 V_{AC})	P_{mot}	7.5 kW 10 HP	11 kW 15 HP
Rated output current at V_{mains} = 400 V_{AC}	I_N	12.5 A_{AC}	16 A_{AC}
Minimum permitted braking resistor value (4-Q operation)	R_{BWmin}	47 Ω	
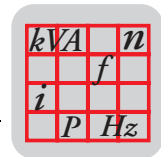
MOVITRAC® 07A (3-phase supply system)		055-5A3-4-..	075-5A3-4-..
GENERAL			
Power loss at I_N	P_V	220 W	290 W
Current limitation		125 % I_N continuous duty (fan/pump operation) 150 % I_N for maximum 60 seconds	
PWM frequency	f_{PWM}	4 / 8 / 12 / 16 kHz	
Speed range Resolution	n_A Δn_A	0 ... 5500 rpm 1 rpm	
Connections	Terminals	4 mm^2	
Dimensions	W x H x D	105 x 335 x 205 mm 4.1 x 13.2 x 8.1 in	
Weight	m	5.0 kg 11.0 lb	
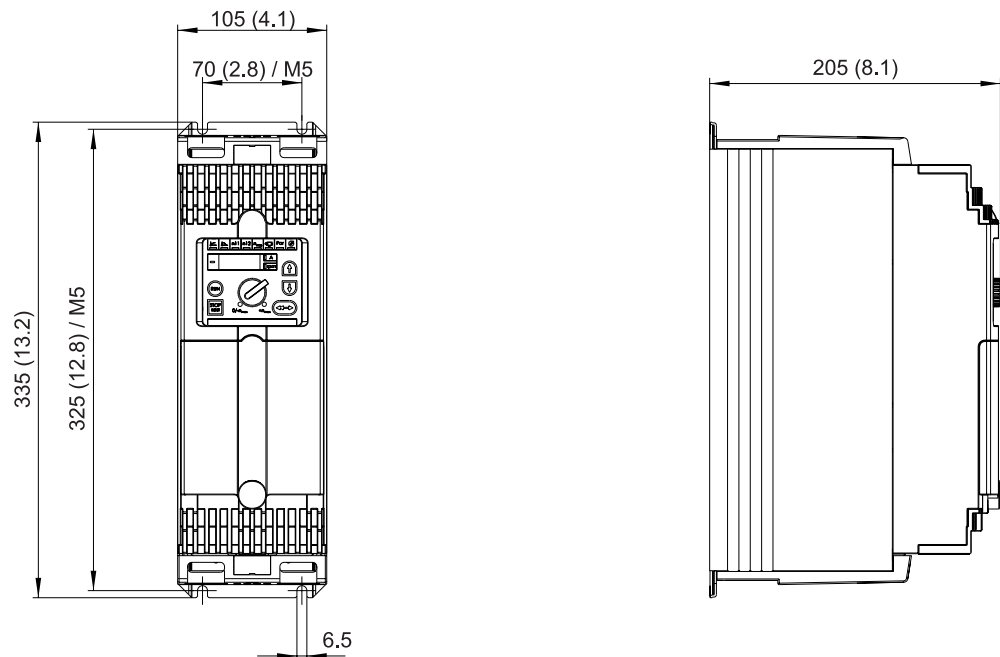
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Figure 25: Dimensions, MOVITRAC® 07 size 2S

Provide 100 mm (4 in) clearance above and below the unit to ensure adequate cooling! There is no need for clearance at the sides. You can line up the units directly next to one another. Make sure that the circulation of air is not disrupted by cables or other installation materials. Prevent the heated exhaust air from other units from blowing onto this unit.

### 400/500 V$_{AC}$ / 3-phase / size 2 / 11 kW / 15 HP

Figure 26: MOVITRAC® 07 / size 2 / 3-phase 400/500 V$_{AC}$

MOVITRAC® 07A (3-phase supply system)		110-5A3-4-..
Part number		827 256 5
Part number with LOGODrive		827 301 4
INPUT		
Connection voltage Permitted range	V_{mains}	3 x 400 V$_{AC}$ V_{mains} = 380 V$_{AC}$ -10 % ... 500 V$_{AC}$ +10 %
Supply frequency	f_{mains}	50/60 Hz +/-5 %
Rated system current, 3-phase at V_{mains} = 400 V$_{AC}$	100% I_{mains} 125% I_{mains}	21.6 A$_{AC}$ 27.0 A$_{AC}$
OUTPUT		
Output voltage	V_N	3 x 0 ... V_{mains}
Recommended motor power under constant load (with V_{mains} = 400 V$_{AC}$)	P_{mot}	11 kW 15 HP
Recommended motor power under variable torque load or constant load without overload (with V_{mains} = 400 V$_{AC}$)	P_{mot}	15 kW 20 HP
Rated output current at V_{mains} = 400 V$_{AC}$	I_N	24 A$_{AC}$
Minimum permitted braking resistor value (4-Q operation)	R_{BWmin}	47 Ω

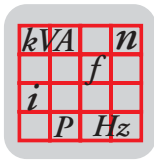| MOVITRAC® 07A (3-phase supply system)		110-5A3-4-..
GENERAL		
Power loss at I_N	P_V	400 W
Current limitation		125 % I_N continuous duty (fan/pump operation) 150 % I_N for maximum 60 seconds
PWM frequency	f_{PWM}	4 / 8 / 12 / 16 kHz
Speed range Resolution	n_A Δn_A	0 ... 5500 rpm 1 rpm
Connections	Terminals	4 mm^2
Dimensions	W x H x D	130 x 335 x 196 mm 5.1 x 13.2 x 7.7 in
Weight	m	6.6 kg 14.6 lb

05807AXX

Figure 27: Dimensions, MOVITRAC® 07 size 2

Provide 100 mm (4 in) clearance above and below the unit to ensure adequate cooling! There is no need for clearance at the sides. You can line up the units directly next to one another. Make sure that the circulation of air is not disrupted by cables or other installation materials. Prevent the heated exhaust air from other units from blowing onto this unit.
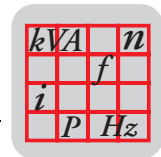
400/500 V_{AC} / 3-phase / size 3 / 15 ... 30 kW / 20 ... 40 HP

Figure 28: MOVITRAC® 07 / size 3 / 3-phase 400/500 V_{AC}

MOVITRAC® 07 (3-phase supply system)		150-503-4-..	220-503-4-..	300-503-4-..
Part number		827 257 3	827 258 1	827 259 x
Part number with LOGODrive		827 302 2	827 303 0	827 304 9
INPUT				
Connection voltage Permitted range	V_{mains}	3 x 400 V_{AC} V_{mains} = 380 V_{AC} -10 % ... 500 V_{AC} +10 %		
Supply frequency	f_{mains}	50/60 Hz +/-5 %		
Rated system current, 3-phase at V_{mains} = 400 V_{AC}	100% I_{mains} 125% I_{mains}	28.8 A_{AC} 36.0 A_{AC}	41.4 A_{AC} 51.7 A_{AC}	54.0 A_{AC} 67.5 A_{AC}
OUTPUT				
Output voltage	V_N	3 x 0 ... V_{mains}		
Recommended motor power under constant load (with V_{mains} = 400 V_{AC})	P_{mot}	15 kW 20 HP	22 kW 30 HP	30 kW 40 HP
Recommended motor power under variable torque load or constant load without overload (with V_{mains} = 400 V_{AC})	P_{mot}	22 kW 30 HP	30 kW 40 HP	37 kW 50 HP
Rated output current at V_{mains} = 400 V_{AC}	I_N	32 A_{AC}	46 A_{AC}	60 A_{AC}
Minimum permitted braking resistor value (4-Q operation)	R_{BWmin}	15 Ω		12 Ω
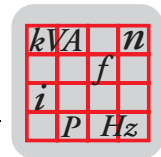
MOVITRAC® 07 (3-phase supply system)		150-503-4-..	220-503-4-..	300-503-4-..
GENERAL				
Power loss at I_N	P_V	550 W	750 W	950 W
Current limitation		125 % I_N continuous duty (fan/pump operation) 150 % I_N for maximum 60 seconds		
PWM frequency	f_{PWM}	4 / 8 / 12 / 16 kHz		
Speed range Resolution	n_A Δn_A	0 ... 5500 rpm 1 rpm		
Connections	Terminals	6 mm^2	10 mm^2	16 mm^2
Dimensions	W x H x D	200 x 465 x 218 mm 7.9 x 18.3 x 8.6 in		
Weight	m	15 kg 33.1 lb		
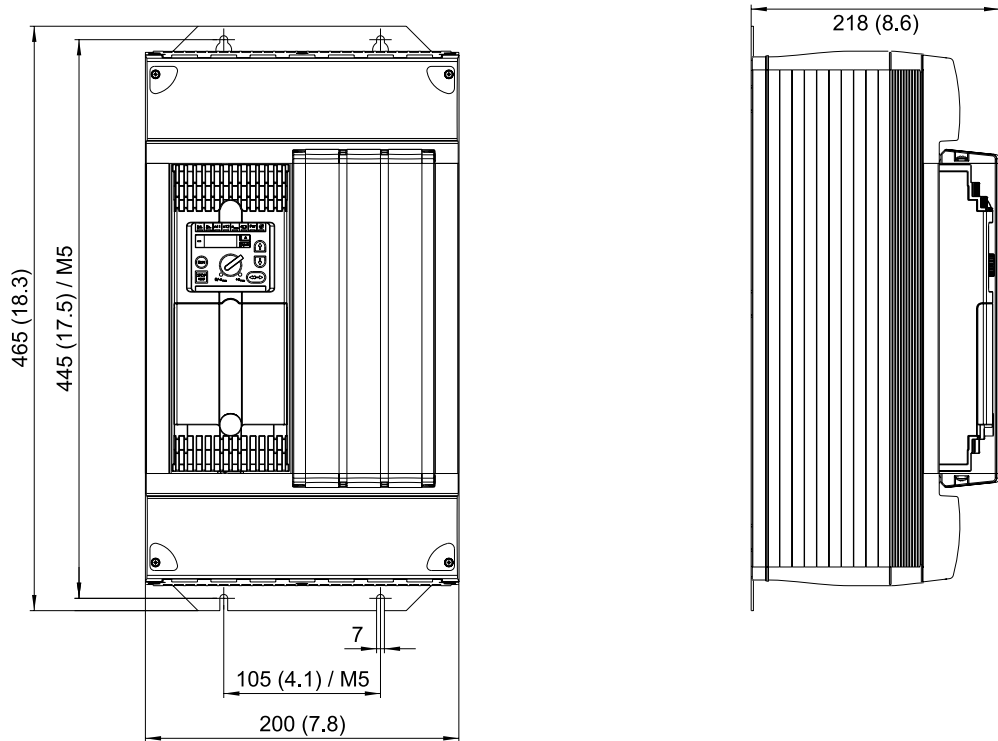
05808AXX

Figure 29: Dimensions, MOVITRAC® 07 size 3

Provide 100 mm (4 in) clearance above and below the unit to ensure adequate cooling! There is no need for clearance at the sides. You can line up the units directly next to one another. Make sure that the circulation of air is not disrupted by cables or other installation materials. Prevent the heated exhaust air from other units from blowing onto this unit.

*MOVITRAC® 07 sizes 0S, 0M, 0L for DIN rail mounting (optional accessory)*
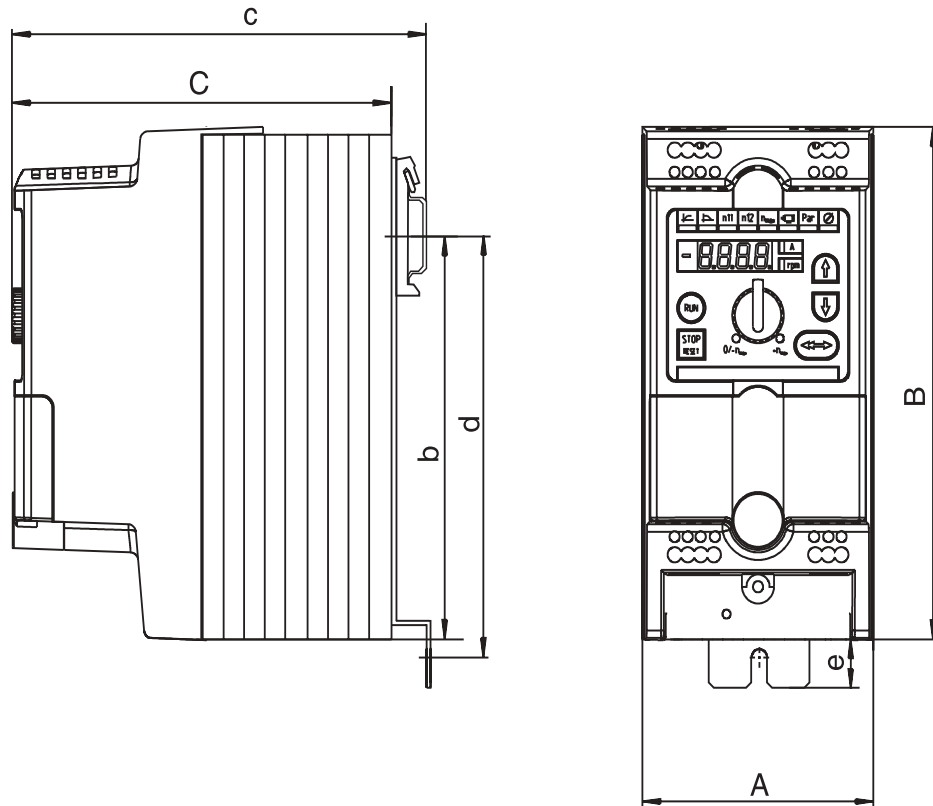
04329AXX

Figure 30: MOVITRAC® 07 dimensions for DIN rail mounting (optional accessory)

MOVITRAC® 07	230 V$_{AC}$	004	005	008	011	015	022
Dimensions	A x B x C	90 x 185 x 150 mm 3.5 x 7.2 x 5.9 in			90 x 295 x 150 mm 3.5 x 9.5 x 5.9 in		
Mounting	b / c / d / e	141 mm / 162 mm / 152 mm (M4) / 14.75 mm 5.6 in / 6.4 in / 6.0 in (M4) / 0.6 in			250 mm / 162 mm / 261 mm (M4) / 14.75 mm 9.8 in / 6.4 in / 10.3 in (M4) / 0.6 in		
Size		0S			0L		

MOVITRAC® 07	400/500 V$_{AC}$	005	008	011	015	022	030	040
Dimensions	A x B x C	90 x 245 x 150 mm 3.5 x 9.7 x 5.9 in			90 x 295 x 150 mm 3.5 x 9.5 x 5.9 in			
Mounting	b / c / d / e	200 mm / 162 mm / 211 mm (M4) / 14.75 mm 7.9 in / 8.7 in / 8.3 in (M4) / 0.6 in			250 mm / 162 mm / 261 mm (M4) / 14.75 mm 9.8 in / 6.4 in / 10.3 in (M4) / 0.6 in			
Size		0M			0L			
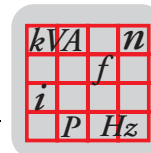
3.4 MOVITRAC® 07 electronics data

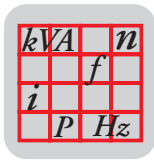| Function	Terminal	Name	Data
Setpoint input (differential input)	X10:13 X10:14	AI11 (+) AI12 (0)	0 ... +10 V (R_i > 200 kΩ) 0 ... 20 mA / 4 ... 20 mA (R_i = 250 Ω) Resolution 10 bit, sampling interval 1 ms
Internal setpoints			n11/n12/n13 and n21/n22/n23 = 0 ... +5000 rpm
Auxiliary supply output	X10:1	VO24	V = 24 V_{DC}, current carrying capacity I_{max} = 50 mA
Binary inputs	X10:2 ... X10.6	DI01 ... DI05	R_i = 3 kΩ, I_E = 10 mA, sampling interval 5 ms, PLC compatible Signal level to EN 61131-2 type 1: • +13 ... +30 V → 1 / contact made • −3 ... +5 V → 0 / contact not made Terminal assignment: • X10:2 / DI01 with fixed assignment CW/STOP • X10:5 / DI04 can be used as frequency input • X10:6 / DI05 can be used for TF (not at same time as frequency input)
Supply voltage for TF	X10:7	VOTF	
Relay output	X10:8 X10:9 X10:10	DO01-C DO01-NO DO01-NC	Shared relay contact NO contact NC contact Load capacity: V_{max} = 30 V, I_{max} = 800 mA
Binary output	X10:11	DO02	PLC compatible, response time 5 ms, I_{max} = 150 mA
Terminal response times	Binary input and output terminals are updated every 5 ms		
System bus[1]	X10:16 X10:17 X10:19 X10:20	SC11 SC12 SC21 SC22	Incoming, high Incoming, low Outgoing, high Outgoing, low CAN bus to CAN specification 2.0, parts A and B • Transmission system to ISO 11898 • Shielded 2-core twisted cable • max. 64 stations • Terminating resistor (120Ω) can be activated via DIP switch S12
Reference terminals	X10:12 X10:15 X10:18 X10:21	GND	Reference potential for binary and analog signals
Maximum line cross section			1.5 mm^2 (AWG15) without conductor end sleeves 1.0 mm^2 (AWG17) with conductor end sleeves
RS-485 interface (only for service purposes)	X11		Only for service purposes, exclusively for point-to-point connection Max. cable length 3 m (10 ft)

1 SC21 and SC22 are deactivated when S12 = ON. This is necessary in units at the end of the bus.
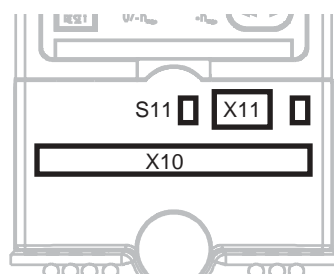
S11 = Switch mode analog input I-signal / V-signal
S12 = System bus terminating resistor

3.5   Interface converter UWS21A

UWS21A   Part number: 823 077 3

The UWS21A option converts RS-232 signals (e.g. from a PC) into RS-485 signals. The signals are then sent to the RS-485 interface of MOVITRAC® 07.

RS-232   Establish the connection between the UWS21A and the PC using a commercially available shielded serial interface cable.
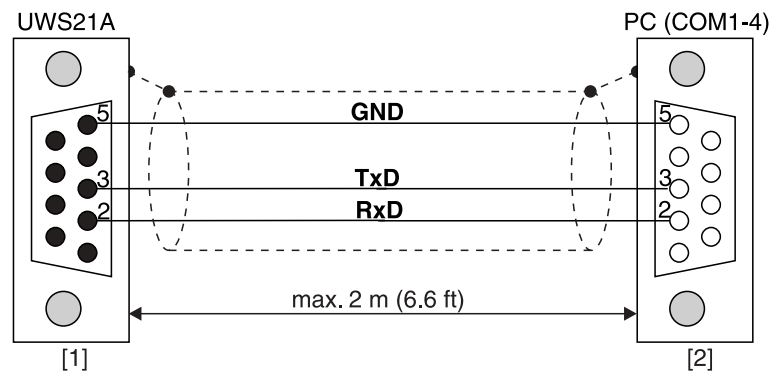
03066CXX

Figure 31: Connection of 9-pin sub D plug [1] on UWS21A to 9-pin sub D socket [2] on PC (seen from the back of the plug)

The scope of delivery includes:

- Connection lead PC – UWS21A
- Connection lead MOVITRAC® 07 – UWS21A

MOVITOOLS® software is required for communication with the inverter.

3.6 MOVITOOLS

Part number: 918 505 4

The MOVITOOLS program package includes:

- SHELL
- SCOPE
- IPOS$^{plus®}$ Compiler
- LOGODrive

With MOVITOOLS, you can address the following three series of units:

- MOVIDRIVE$^®$ MD_60A
- MOVIDRIVE$^®$ *compact*
- MOVITRAC$^®$ 07

You can use the following components with MOVITRAC$^®$ 07:

- SHELL can be used for starting up the drive and setting its parameters in a convenient fashion.
- SCOPE provides extensive oscilloscope functions for diagnosis of the drive.
- IPOS$^{plus®}$ Compiler provides a convenient way of writing programs for applications in a high-level language.
- The Assembler makes for simple programming of the frequency inverter.
- LOGODrive allows you to write applications with graphics support.
- Device status shows you the status of the connected unit.

SEW-EURODRIVE supplies MOVITOOLS on a CD-ROM. It can also be downloaded from the SEW homepage (http://www.sew-eurodrive.com). You can use MOVITOOLS with the following operating systems:

- Windows$^®$ 95
- Windows$^®$ 98
- Windows NT$^®$ 4.0
- Windows$^®$ 2000 (from version 2.60)
- Windows$^®$ Me (from version 2.60)
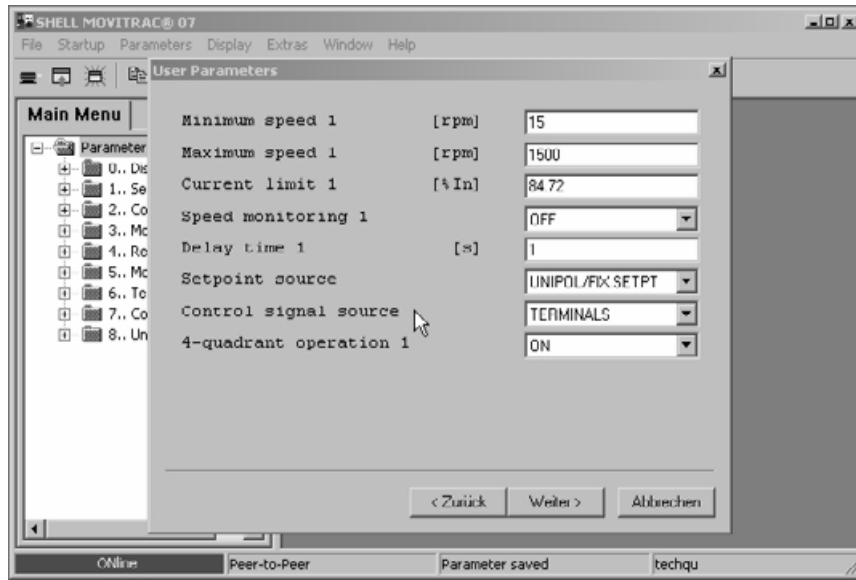
***LOGODrive
series of units***

The LOGODrive graphical programming interface is integrated in the MOVITOOLS software from version 2.6 onwards. You can add and link function blocks into a sequential function chart using LOGODrive.

Technical Data
MOVITOOLS

kVA n
f
i
P Hz

3

3
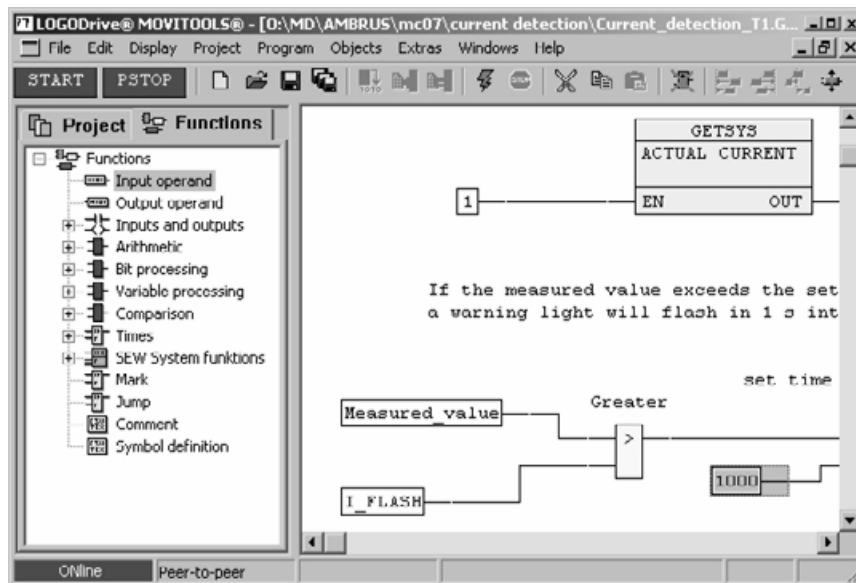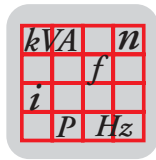
SCOPE

SCOPE for MOVITOOLS® is an oscilloscope program for SEW inverters. You can optimize drives independently using SCOPE. The inverter records data such as its response functions to setpoint step changes in real time. You can transfer this information to the PC and display it there in graphical format. SCOPE displays up to four analog and digital measured quantities in the form of differently colored graph traces. You can stretch and squash both the vertical and the horizontal axes to meet your requirements.

SCOPE also offers you the opportunity of recording digital input and output signals of the inverter. In this way, you can record complete program sequences of the machine control and then analyze them afterwards.

SCOPE supports straightforward documentation of the set parameters and the recorded measurement data with:

- Saving
- Meta data
- Printing

The online help functions make it easy for you to familiarize yourself with how SCOPE works.

SCOPE is a multi-document interface (MDI) application). Consequently, you can view and analyze several data records at the same time. SCOPE displays every new data record in a new window. All settings for viewing and editing the data record are only effective in the active window.
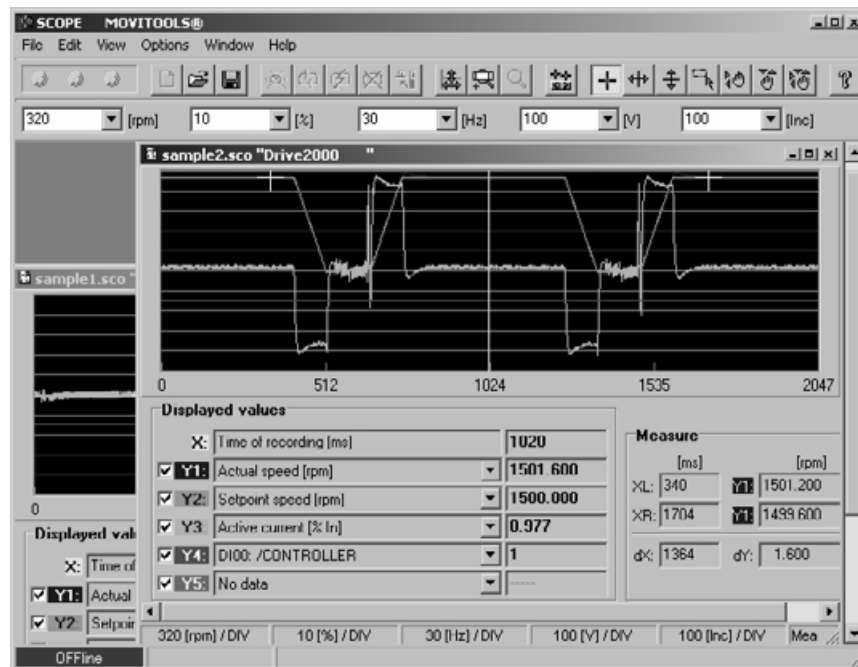
3.7 MOVITRAC® 07 for DIN rail mounting

Hardware kits for DIN rail mounting of MOVITRAC® 07 are available with the following part numbers:

Type	Part number	Size
FHS01	823 604 6	0S
FHS03	824 037 X	0M
FHS02	823 605 4	0L

3.8 Parameter module UBP11A

Part number: 823 933 9

05245AXX
Figure 32: Parameter module UBP11A

- Functionality:
    - Storing data from the inverter in the parameter module
    - Loading data back from the parameter module into the inverter
    - Displaying the operating status
- Supported unit types:
    - MOVITRAC® 07 LOGODrive from firmware .10
    - MOVITRAC® 07 standard version from firmware .13

3.9 Fieldbus interfaces

Gateways are available for the following bus systems for connecting fieldbuses:

- PROFIBUS UFP11A (part number: 823 896 0)
- DeviceNet UFD11A (part number: 823 897 9)
- INTERBUS UFI11A (part number: 823 898 7)
- CANopen UFO11A (part number: 824 096 5)

You can control 1 to 8 MOVITRAC® 07 units with the fieldbus gateways. The controller (PLC or PC) and the MOVITRAC® 07 frequency inverter exchange process data via the fieldbus. Process data include setpoints, for example.

Functional principle

The fieldbus gateways have standardized interfaces. Connect MOVITRAC® 07 units to the fieldbus gateway via the SBus unit system bus.

05326AXX
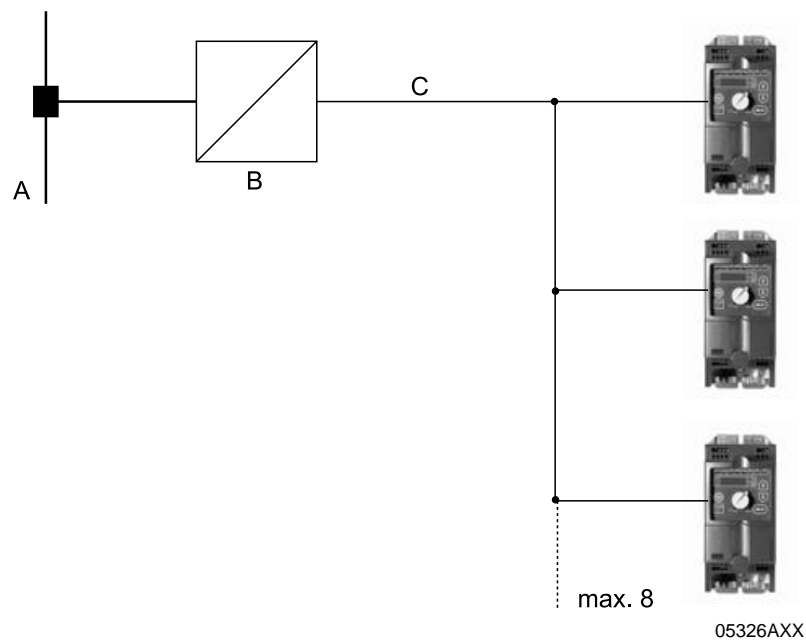
Figure 33: Functional principle

A = Fieldbus
B = Gateway
C = SBus

In principle, other SEW units (e.g. MOVIDRIVE® *compact*) can be connected to and operated with the fieldbus via the SBus.
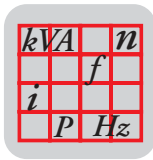
3.10 BW series braking resistors

General information

BW series braking resistors are adapted to the MOVITRAC® 07 series of inverters. The braking resistors are convection-cooled. The permitted ambient temperature range is -20 °C ... +45 °C.

Flat type

The flat-type resistors have IP54 enclosure and are equipped with internal thermal overload protection. Once an overload has occurred, the resistor must be replaced. You can install the resistors as follows, depending on their type:

- Push into the heat sink of the inverter and screw tight (only size 0S / 0M / 0L). Resistors mounted in the heat sink do not achieve the specified cdf power.

- Attach to a DIN rail using a touch guard BS.

230 V

| Braking resistor type		BW072-003	BW027-003	BW072-005	BW027-005
Part number		826 058 3	826 949 1	826 060 5	826 950 5
100 % cdf 50 % cdf 25 % cdf 12 % cdf 6 % cdf		230 W 310 W 420 W 580 W 1000 W	230 W 310 W 410 W 550 W 980 W	450 W 600 W 830 W 1110 W 2000 W	450 W 610 W 840 W 1200 W 2360 W
Resistance value R_{BW}		72 Ω ±10 %	27 Ω ±10 %	72 Ω ±10 %	27 Ω ±10 %
Trip current	230 V	0.7 A	1.0 A	1.2 A	1.4 A
Ambient temperature ϑ_{amb}		−20 °C ... +45 °C			
For MOVITRAC® 07 230 V		004 ... 008	011 ... 022	004 ... 008	011 ... 037
Braking resistor can be integrated into the heat sink		Yes		No	
Associated optional touch guard		BS-003		BS-005	
Touch guard part number		813 151 1		813 152 X	
DIN rail mounting		Order accessory S001 from SEW if you want to mount the touch guard on a DIN rail. Accessory S001 has part number 822 194 4 and is for a 35 mm C-section.			

400/500 V

Braking resistor type		BW072-003	BW072-005
Part number		826 058 3	826 060 5
100 % cdf 50 % cdf 25 % cdf 12 % cdf 6 % cdf		230 W 310 W 420 W 580 W 1000 W	450 W 600 W 830 W 1110 W 2000 W
Resistance value R_{BW}		72 Ω ±10 %	72 Ω ±10 %
Trip current	400/500 V	0.6 A	1.0 A
Ambient temperature ϑ_{amb}		−20 °C ... +45 °C	
For MOVITRAC® 07 400/500 V		005 ... 040	005 ... 040
Braking resistor can be integrated into the heat sink		Yes	No
Associated optional touch guard		BS-003	BS-005
Touch guard part number		813 151 1	813 152 X
DIN rail mounting		Order accessory S001 from SEW if you want to mount the touch guard on a DIN rail. Accessory S001 has part number 822 194 4 and is for a 35 mm C-section.	

Wire and grid resistors

- Perforated sheet cover (IP20) open towards the mounting surface.

- You can apply a higher load to wire and grid resistors for a short time than you can to flat-type braking resistors.

Install additional overload protection for the wire and grid resistors by means of a bimetallic relay in the –R line (X3). Set the trip current to the value I_F in the following tables. Do not use any electronic or electromagnetic fuses since the brief excess currents which are still permitted may cause them to trip.

If you operate the resistors at rated power, the surfaces of the resistors will get hot. Bear this aspect in mind when selecting the installation location. For example, a possible location is the switch cabinet roof.

The performance data listed in the following tables specify the **load capacity of the braking resistors**. The load capacity is dependent on the cyclic duration factor cdf [%] in relation to a cycle duration of ≤ 120 s.

Parallel connection   Two braking resistors must be connected in parallel in the case of some inverter/resistor combinations. Then set the trip current on the bimetallic relay to twice the I_F given in the table.

230 V

Type	BW027-006	BW027-012	BW018-015	BW018-035	BW018-075	BW012-025	BW012-050	BW012-100
Part number	822 422 6	822 423 4	821 684 3	821 685 1	821 686 X	821 680 0	821 681 9	821 682 7
100 % cdf	0.6 kW	1.2 kW	1.5 kW	3.5 kW	7.5 kW	2.5 kW	5.0 kW	10 kW
50 % cdf	1.2 kW	2.3 kW	2.5 kW	5.9 kW	12.7 kW	4.2 kW	8.5 kW	17 kW
25 % cdf	2.0 kW	5.0 kW	4.5 kW	10.5 kW	22.5 kW	7.5 kW	15.0 kW	19.2 kW[1]
12 % cdf	3.5 kW	7.5 kW	6.7 kW	15.7 kW	25.6 kW[1]	11.2 kW	19.2 kW[1]	19.2 kW[1]
6 % cdf	6.0 kW	8.5 kW[1]	11.4 kW	25.6 kW[1]	25.6 kW[1]	19.0 kW	19.2 kW[1]	19.2 kW[1]
Resistance	27 Ω ±10 %		18 Ω ±10 %			12 Ω ±10 %		
Trip current I_F	2.5 A_{RMS}	4.4 A_{RMS}	4.0 A_{RMS}	8.1 A_{RMS}	14 A_{RMS}	10 A_{RMS}	19 A_{RMS}	27 A_{RMS}
Connections	Ceramic terminals 2.5 mm² (AWG12)							
Type	Wire resistor		Grid resistor					
For MOVITRAC® 07	015 ... 037		2 x parallel with 110			055 / 075		

1 Physical power limit due to the DC link voltage and the resistance value.

Type	BW039-003	BW039-006	BW039-012	BW039-026	BW915	BW106	BW206
Part number	821 687 8	821 688 6	821 689 4	821 690 8	821 260 0	821 050 0	821 051 9
100 % cdf	0.3 kW	0.6 kW	1.2 kW	2.6 kW	16.0 kW	13 kW	18 kW
50 % cdf	0.5 kW	1.1 kW	2.1 kW	4.6 kW	27.0 kW	24 kW	32 kW
25 % cdf	1.0 kW	1.9 kW	3.8 kW	5.9 kW[1]	30.7 kW[1]	38.4 kW[1]	38.4 kW[1]
12 % cdf	1.7 kW	3.5 kW	5.9 kW[1]	5.9 kW[1]	30.7 kW[1]	38.4 kW[1]	38.4 kW[1]
6 % cdf	2.8 kW	5.7 kW	5.9 kW[1]	5.9 kW[1]	30.7 kW[1]	38.4 kW[1]	38.4 kW[1]
Resistance	39 Ω ±10 %				15 Ω ±10 %	6 Ω ±10 %	
Trip current I_F	2.0 A_{RMS}	3.2 A_{RMS}	4.2 A_{RMS}	7.8 A_{RMS}	28 A_{RMS}	38 A_{RMS}	42 A_{RMS}
Connections	Ceramic terminals 2.5 mm² (AWG12)				M8 stud		
Type	Wire resistor				Grid resistor		
For MOVITRAC® 07	015 ... 022				2 x parallel with 110	150 / 2 x parallel with 220/300	

1 Physical power limit due to the DC link voltage and the resistance value.

400 V

Type	BW100-006	BW168	BW268	BW147	BW247	BW347	BW039-012	BW039-026
Part number	821 701 7	820 604 X	820 715 1	820 713 5	820 714 3	820 798 4	821 689 4	821 690 8
100 % cdf	0.6 kW	0.8 kW	1.2 kW	1.2 kW	2.0 kW	4.0 kW	1.2 kW	2.6 kW
50 % cdf	1.1 kW	1.4 kW	2.2 kW	2.2 kW	3.8 kW	7.6 kW	2.1 kW	4.6 kW
25 % cdf	1.9 kW	2.6 kW	3.8 kW	3.8 kW	6.4 kW	12.8 kW	3.8 kW	8.3 kW
12 % cdf	3.5 kW	4.7 kW	6.7 kW	7.2 kW	12 kW	14.4 kW[1]	7.0 kW	15.3 kW
6 % cdf	5.7 kW	7.6 kW	10 kW[1]	11 kW	14.4 kW[1]	14.4 kW[1]	11.4 kW	17.3 kW[1]
Resistance	100 Ω ±10 %	68 Ω ±10 %		47 Ω ±10 %			39 Ω ±10 %	
Trip current I_F	1.8 A_{RMS}	2.5 A_{RMS}	3.4 A_{RMS}	3.5 A_{RMS}	4.9 A_{RMS}	7.8 A_{RMS}	4.2 A_{RMS}	7.8 A_{RMS}
Connections	Ceramic terminals 2.5 mm² (AWG12)							
Type	Wire resistor							
For MOVITRAC® 07	015 ... 040			055 / 075			110	

1 Physical power limit due to the DC link voltage and the resistance value.

Type	BW039-050	BW018-015	BW018-035	BW018-075	BW915	BW012-025	BW012-050	BW012-100
Part number	821 691 6	821 684 3	821 685 1	821 686 X	821 260 0	821 680 0	821 681 9	821 682 7
100 % cdf	5.0 kW	1.5 kW	3.5 kW	7.5 kW	16 kW	2.5 kW	5.0 kW	10 kW
50 % cdf	8.5 kW	2.5 kW	5.9 kW	12.7 kW	27 kW	4.2 kW	8.5 kW	17 kW
25 % cdf	15.0 kW	4.5 kW	10.5 kW	22.5 kW	45 kW[1]	7.5 kW	15.0 kW	30 kW
12 % cdf	17.3 kW[1]	6.7 kW	15.7 kW	33.7 kW	45 kW[1]	11.2 kW	22.5 kW	45 kW
6 % cdf	17.3 kW[1]	11.4 kW	26.6 kW	37.5 kW[1]	45 kW[1]	19.0 kW	38.0 kW	56 kW[1]
Resistance	39 Ω ±10 %	18 Ω ±10 %			15 Ω ±10 %	12 Ω ±10 %		
Trip current I_F	11 A_{RMS}	4.0 A_{RMS}	8.1 A_{RMS}	14 A_{RMS}	28 A_{RMS}	6.1 A_{RMS}	12 A_{RMS}	22 A_{RMS}
Connections	Ceramic terminals 2.5 mm² (AWG12)				M8 stud	Ceramic terminals 2.5 mm² (AWG12)		
Type	Grid resistor							
For MOVITRAC® 07	110	150 / 220			220	300		

1 Physical power limit due to the DC link voltage and the resistance value.

SEW EURODRIVE

3
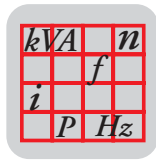
Dimensions of BW braking resistors
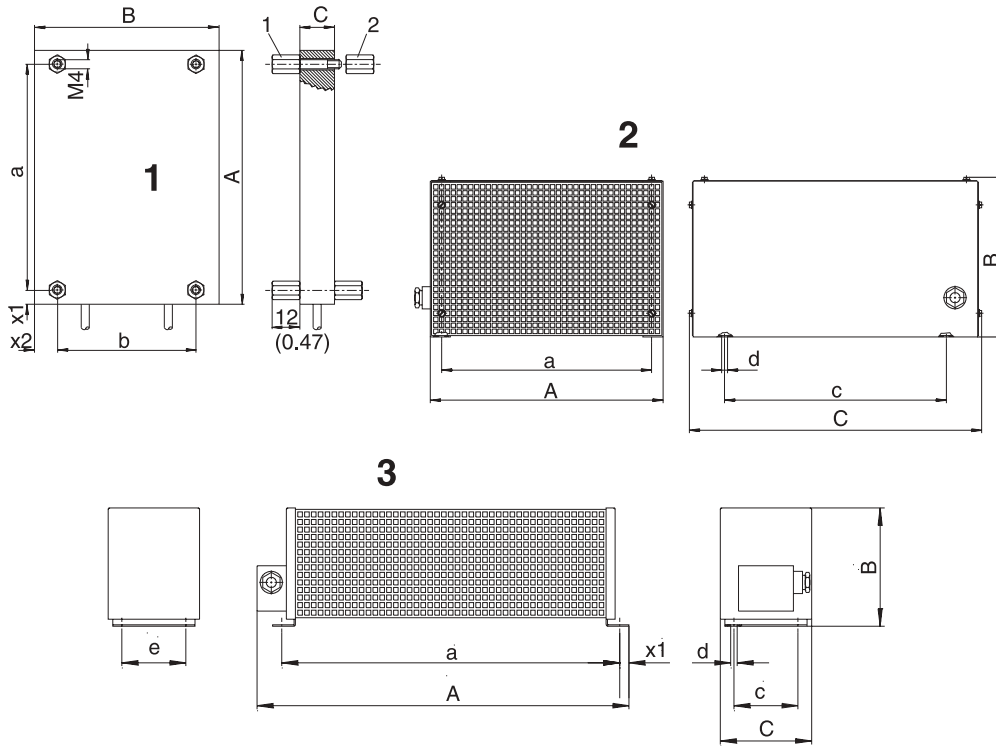
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*Figure 34: Dimensions of BW braking resistors, **1** flat-type / **2** grid resistor / **3**wire resistor*

Flat-type resistors: The connecting lead is 500 mm (19.69 in) long. The scope of delivery includes four M4 threaded bushes, types 1 and 2.

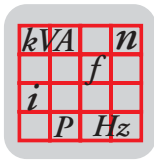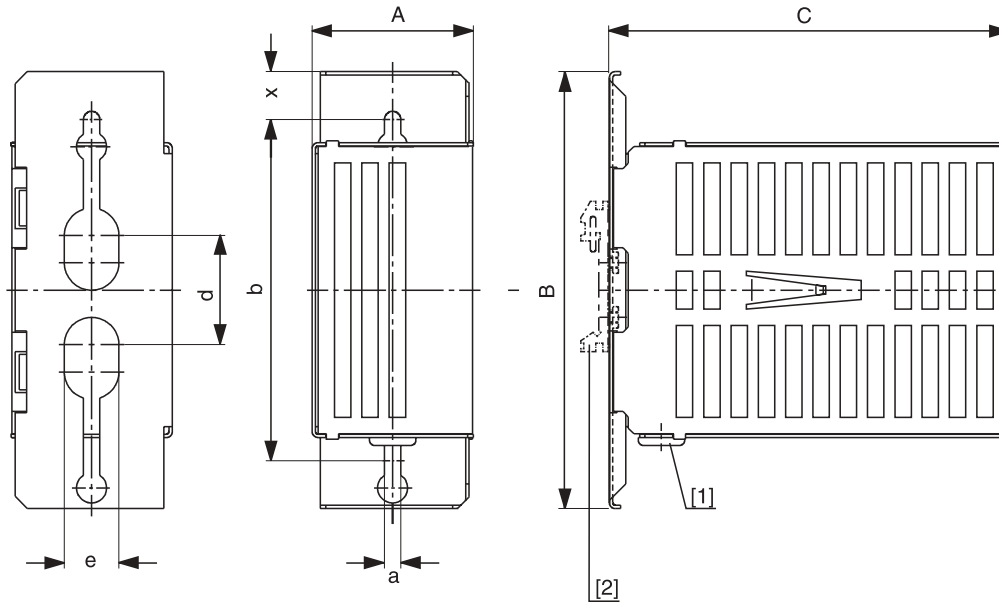| Type	Mount-ing posi-tion	Main dimensions [mm (in)]			Fixing parts [mm (in)]					Weight [kg (lb)]
		A	**B**	**C**	**a**	**b/c/e**	**x1**	**x2**	**d**	
BW072-003 BW027-003	1	110 (4.3)	80 (3.2)	15 (0.6)	98 (3.9)	60 (2.4)	6 (0.2)	10 (0.4)	–	0.3 (0.7)
BW072-005 BW027-005		216 (8.5)	80 (3.2)	15 (0.6)	204 (8.0)	60 (2.4)	6 (0.2)	10 (0.4)	–	0.6 (1.3)
BW027-006	3	486 (19.1)	120 (4.7)	92 (3.6)	426 (16.8)	64 (2.5)	10 (0.4)	–	5.8 (0.2)	2.2 (4.9)
BW027-012		486 (19.1)	120 (4.7)	185 (7.3)	426 (16.8)	150 (5.9)	10 (0.4)	–	5.8 (0.2)	4.3 (9.5)
BW012-025	2	295 (11.6)	260 (10.2)	490 (19.3)	270 (10.6)	380 (15.0)	–	–	10.5 (0.4)	9.0 (19.8)
BW012-050		395 (15.6)	260 (10.2)	490 (19.3)	370 (14.6)	380 (15.0)	–	–	10.5 (0.4)	12 (26.5)
BW012-100		595 (23.4)	260 (10.2)	490 (19.3)	570 (22.4)	380 (15.0)	–	–	10.5 (0.4)	21 (46.3)
BW018-015		600 (23.6)	120 (4.7)	92 (3.6)	540 (21.3)	64 (2.5)	10 (0.4)	–	5.8 (0.2)	4.0 (8.8)
BW018-035		295 (11.6)	260 (10.2)	490 (19.3)	270 (10.6)	380 (15.0)	–	–	10.5 (0.4)	9.0 (19.8)
BW018-075		595 (23.4)	260 (10.2)	490 (19.3)	570 (22.4)	380 (15.0)	–	–	10.5 (0.4)	21 (46.3)
BW100-006	3	486 (19.1)	120 (4.7)	92 (3.6)	426 (16.8)	64 (2.5)	10 (0.4)	–	5.8 (0.2)	2.2 (4.9)
BW168		365 (14.4)	120 (4.7)	185 (7.3)	326 (12.8)	150 (5.9)	10 (0.4)	–	5.8 (0.2)	3.6 (8.0)
BW268		465 (18.3)	120 (4.7)	185 (7.3)	426 (16.8)	150 (5.9)	10 (0.4)	–	5.8 (0.2)	4.3 (9.5)
BW147		465 (18.3)	120 (4.7)	185 (7.3)	426 (16.8)	150 (5.9)	10 (0.4)	–	5.8 (0.2)	4.3 (9.5)
BW247		665 (16.2)	120 (4.7)	185 (7.3)	626 (24.7)	150 (5.9)	10 (0.4)	–	5.8 (0.2)	6.1 (13.5)
BW347		670 (26.4)	145 (5.7)	340 (13.4)	630 (24.8)	300 (11.8)	10 (0.4)	–	5.8 (0.2)	13.2 (29.1)
BW039-003		286 (11.3)	120 (4.7)	92 (3.6)	226 (8.9)	64 (2.5)	10 (0.4)	–	5.8 (0.2)	1.5 (3.3)
BW039-006		486 (23.1)	120 (4.7)	92 (3.6)	426 (16.8)	150 (5.9)	10 (0.4)	–	5.8 (0.2)	2.2 (4.9)
BW039-012		486 (19.1)	120 (4.7)	185 (7.3)	426 (16.8)	150 (5.9)	10 (0.4)	–	5.8 (0.2)	4.3 (9.5)
BW039-026		586 (23.1)	120 (4.7)	275 (10.8)	530 (20.9)	240 (9.5)	10 (0.4)	–	5.8 (0.2)	7.5 (16.6)
BW039-050	2	395 (15.6)	260 (10.2)	490 (19.3)	370 (14.6)	380 (15.0)	10 (0.4)	–	10.5 (0.4)	12 (26.5)
BW915		795 (31.3)	260 (10.2)	490 (19.3)	770 (30.3)	380 (15.0)	–	–	10.5 (0.4)	26 (57.3)

Dimensions of touch guard BS

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Figure 35: Dimensions, touch guard BS with grommet [1] and DIN rail mounting [2]

Type	Main dimensions [mm (in)]			Fixing dimensions [mm (in)]					Weight [kg (lb)]
	A	B	C	b	d	e	a	x	
BS-003	60 (2.4)	160 (6.3)	146 (5.8)	125 (4.9)	40 (1.6)	20 (0.8)	6 (0.2)	17.5 (0.7)	0.35 (0.8)
BS-005	60 (2.4)	160 (6.3)	252 (9.9)	125 (4.9)	40 (1.6)	20 (0.8)	6 (0.2)	17.5 (0.7)	0.5 (1.1)

3.11 Series HD output chokes

You can reduce the radiated interference of the unshielded motor cable by using an output choke.

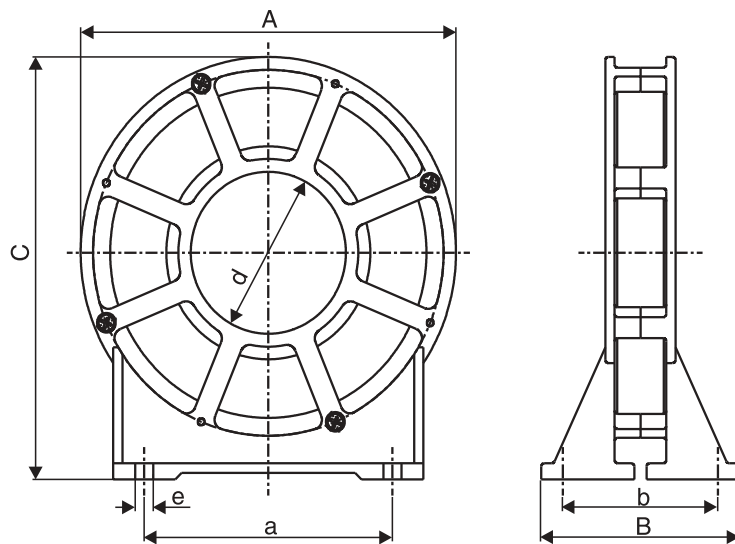| Output choke type	HD001	HD002	HD003
Part number	813 325 5	813 557 6	813 558 4
Max. power loss P_{Vmax}	15 W	8 W	30 W
Weight	0.5 kg 1.1 lb	0.2 kg 0.44 lb	1.1 kg 2.4 lb
For cable cross sections	1.5 ... 16 mm^2 AWG16 ... 6	≤ 1.5 mm^2 ≤ AWG16	≥ 16 mm^2 ≥ AWG6

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Figure 36: Dimensions, HD

Output choke type	Main dimensions			Fixing dimensions		Inside diameter	Hole dimension
	A	**B**	**C**	**a**	**b**	**d**	**e**
HD001	121 (4.8)	64 (2.5)	131 (5.2)	80 (3.2)	50 (2.0)	50 (2.0)	5.8 (0.2)
HD002	66 (2.6)	49 (1.9)	73 (2.9)	44 (1.7)	38 (1.5)	23 (0.9)	5.8 (0.2)
HD003	170 (6.7)	64 (2.5)	185 (7.3)	120 (4.7)	50 (2.0)	88 (3.5)	7.0 (0.3)

3.12   ND line chokes

The line choke assists in overvoltage protection. The line choke restricts the charging current when several inverters are connected in parallel on the input side. Application: see Sec. "Project Planning". The ambient temperature range is -25 °C ... +45 °C. The enclosure is IP 00 (EN60529).

Line choke type	ND 010-301	ND 020-151	ND 020-013	ND 027-123	ND 035-073	ND045-013	ND085-013	ND1503
Part number	826 972 6	826 973 4	826 012 5	825 771 X	825 772 8	826 013 3	826 014 1	825 548 2
Rated voltage V_N	1 x 230 V_{AC} ±10 %		3 x 230 V_{AC} ±10 % 3 x 380 ... 500 V_{AC} ±10 %	3 x 380 ... 500 V_{AC} ±10 %				
Rated current I_N	10 A_{AC}	20 A_{AC}	20 A_{AC}	27 A_{AC}	35 A_{AC}	45 A_{AC}	85 A_{AC}	150 A_{AC}
Power loss at I_N P_V	6 W	10 W	10 W	35 W	35 W	15 W	25 W	65 W
Inductance L_N	3 mH	1.5 mH	0.1 mH	1.2 mH	0.7 mH	0.1 mH		
Modular terminal block	4 mm^2 (AWG10)	10 mm^2 (AWG8)	4 mm^2 (AWG10)	10 mm^2 (AWG8)		10 mm^2 (AWG8)	35 mm^2 (AWG2)	M10 stud / PE: M8
Suitable for MOVITRAC® 07								
1-phase 230 V	004 ... 008	011 ... 022		004 ... 022[1]				
100 % I_N 3-phase 230 V			004 ... 055			075 ... 110	150 ... 220	300
125 % I_N 3-phase 230 V			004 ... 037			055 ... 075	110 ... 150	220 ... 300
100 % I_N 380 ... 500 V			005 ... 075			110 ... 220	300	–
125 % I_N 380 ... 500 V			005 ... 075			110 ... 150	220 ... 300	–

1   For connecting several single-phase inverters to one three-phase line choke.
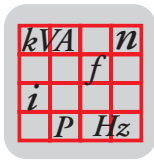
Dimensions ND 010-301 / ND 020-151
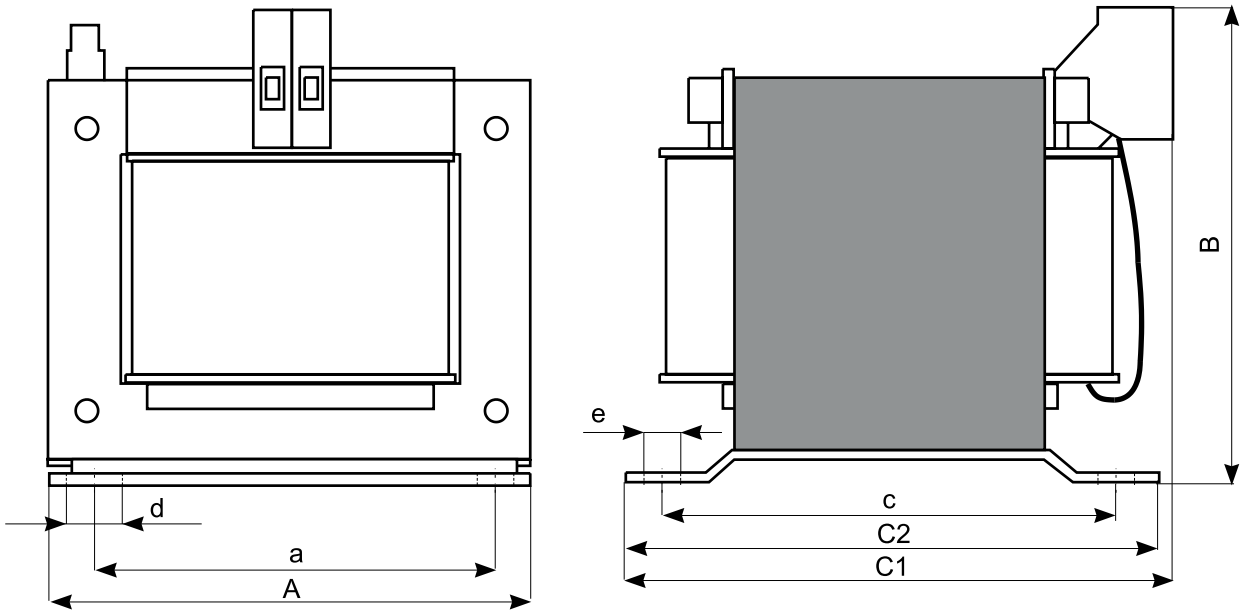
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Figure 37: Dimensions ND 010-301 / ND 020-151

Type	Main dimensions [mm (in)]				Fixing dimensions [mm (in)]				Weight [kg (lb)]
	A	**B**	**C1**	**C2**	**a**	**c**	**d**	**e**	
ND 010-301	90 (3.5)	100 (3.9)	80 (3.2)	70 (2.8)	64 (2.5)	52 (2.1)	4.4 (0.2)	7.4 (0.3)	1.4 (3.1)
ND 020-151	90 (3.5)	100 (3.9)	90 (3.6)	70 (2.8)	64 (2.5)	52 (2.1)	4.4 (0.2)	7.4 (0.3)	1.4 (3.1)

Dimensions ND 020-013 / ND 027-123 / ND 035-073 / ND 085-013 / ND 1503
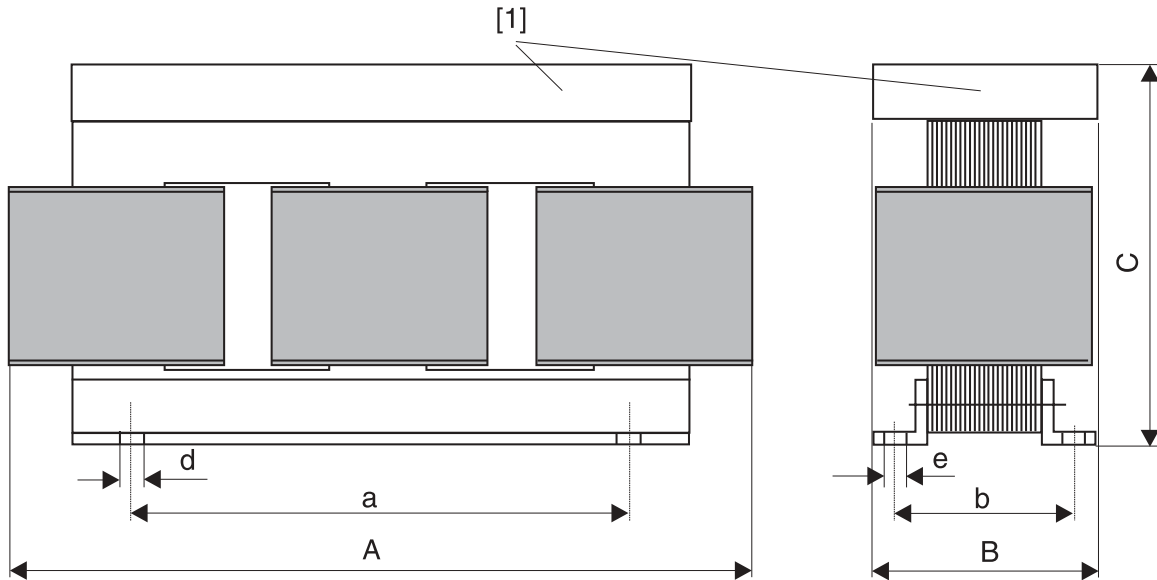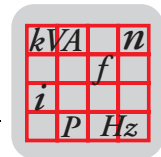

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Figure 38: Dimensions ND 020-013 / ND 027-123 / ND 035-073 / ND 085-013 / ND 1503 with [1] space for modular terminal blocks with touch guard

Type	Main dimensions [mm (in)]			Fixing dimensions [mm (in)]			Weight [kg (lb)]
	A	**B**	**C**	**a**	**b**	**d/e**	
ND 020-013	85 (3.4)	60 (2.4)	120 (4.7)	50 (2.0)	31 (1.2)	5 - 10 (0.2 - 0.4)	0.5 (1.1)
ND 027-123	185 (7.3)	175 (6.9)	120 (4.7)	136 (5.4)	87 (3.4)	5 - 10 (0.2 - 0.4)	6.0 (13.2)
ND 035-073	185 (7.3)	200 (7.9)	120 (4.7)	136 (5.4)	87 (3.4)	5 - 10 (0.2 - 0.4)	11 (24.2)
ND 045-013	125 (4.9)	95 (3.7)	170 (6.7)	84 (3.3)	55 ... 75 (2.2 ... 3.0)	6 (0.2)	2.5 (5.5)
ND 085-013	185 (7.3)	115 (4.5)	235 (9.3)	136 (5.4)	56 (2.2)	7 (0.3)	8 (17.6)
ND 1503	255 (10.0)	140 (5.5)	230 (9.1)	170 (6.7)	77 (3.0)	8 (0.3)	17 (37.5)

Several inverters on one line choke

- The supply system contactor must be designed for the total current.
- The fuse must correspond to the rated current value of the line choke.
- Connect MOVITRAC® 07 frequency inverters with identical configurations to the line chokes.
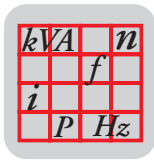
3.13 NF line filters

The line filter suppresses interference emissions on the line side of inverters. The ambient temperature range is -25 °C ... +45 °C. The enclosure is IP20 (EN 60529).

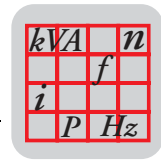| Type	NF009	NF014	NF018	NF035	NF048	NF063	NF085	NF115
Part number	827 412 6	827 116 X	827 413 4	827 128 3	827 117 8	827 414 2	827 415 0	827 416 9
Rated current	9 A_{AC}	14 A_{AC}	18 A_{AC}	35 A_{AC}	48 A_{AC}	63 A_{AC}	85 A_{AC}	115 A_{AC}
Power loss	6 W	9 W	12 W	15 W	22 W	30 W	35 W	60 W
Discharge current	≤ 25 mA	≤ 25 mA	≤ 25 mA	≤ 25 mA	≤ 40 mA	≤ 30 mA	≤ 30 mA	≤ 30 mA
Connections PE screw	4 mm² (AWG10) M6			10 mm² (AWG8) M6		16 mm² (AWG6) M6	35 mm² (AWG2) M8	50 mm² (AWG1/0) M10
Suitable for MOVITRAC® 07								
100 % I_N 3-phase 230 V	004 ... 022	037	–	055 ... 075	110	150	220	300
125 % I_N 3-phase 230 V	004 ... 015	022	037	055 ... 075	–	110 ... 150	–	220 ... 300
100 % I_N 380 ... 500 V	005 ... 040	055 ... 075	–	110 ... 150	220	300	–	–
125 % I_N 380 ... 500 V	005 ... 030	040 ... 055	075	110	150	220	300	–

MOVITRAC® 07 230 V 1-phase units have an line filter with class B limit installed.
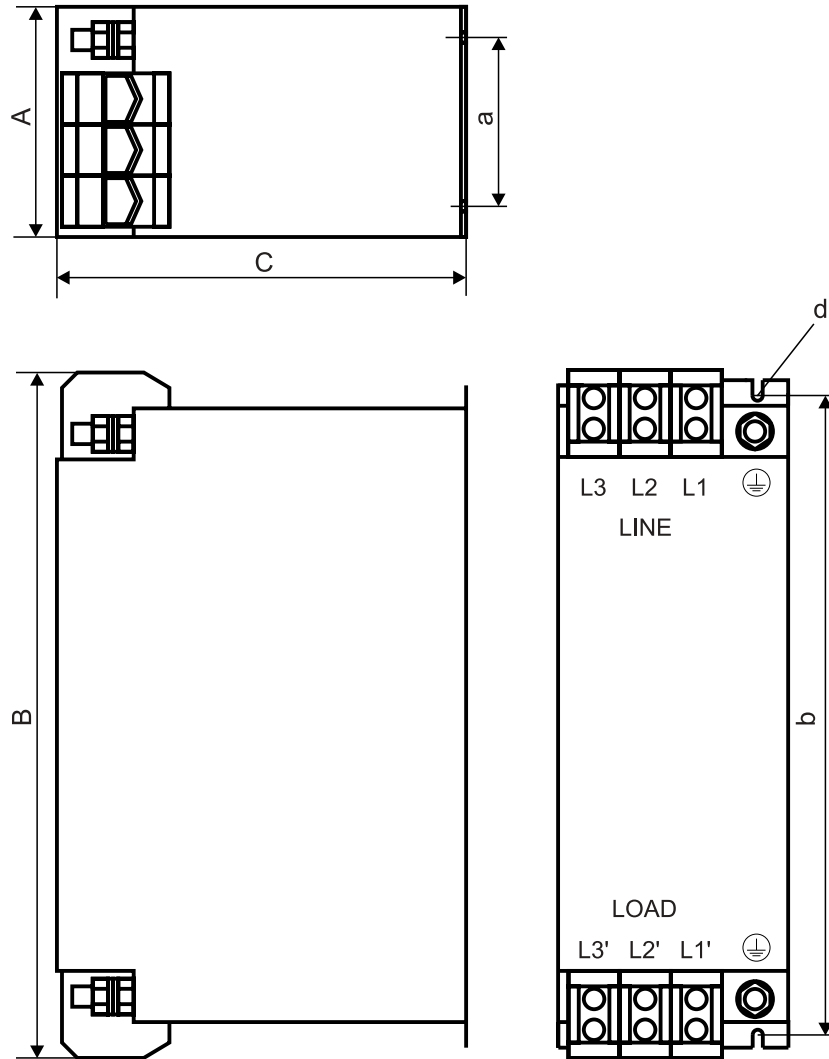
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Figure 39: Dimensions, line filter

Line filter type	Main dimensions			Fixing dimensions		Hole dimension	PE connection	Weight kg (lb)
	A	**B**	**C**	**a**	**b**	**d**		
NF009	55 (2.2)	195 (7.7)	80 (3.2)	20 (0.8)	180 (7.1)	5.5 (0.2)	M5	0.8 (1.8)
NF014		225 (8.9)			210 (8.3)			0.9 (2.0)
NF018	50 (2.0)	255 (10.0)			240 (9.4)			1.1 (2.4)
NF035	60 (2.4)	275 (10.8)	100 (3.9)	30 (1.2)	255 (10.0)			1.7 (3.7)
NF048		315 (12.4)			295 (11.6)		M6	2.1 (4.6)
NF063	90 (3.5)	260 (10.2)		60 (2.4)	235 (9.3)	6.5 (0.3)		2.4 (5.3)
NF085		320 (12.6)	140 (5.5)		255 (10.0)		M8	3.5 (7.7)
NF115	100 (3.9)	330 (13.0)	155 (6.1)	65 (2.6)			M10	4.8 (10.6)

3.14   HF output filter

SEW HF output filters are sine filters. Sine filters smooth the output voltage of inverters. Use output filters in the following circumstances:

- In group drives (several motor feeders in parallel); the discharge currents in the motor cables are suppressed
- For protecting the motor winding insulation of non-SEW motors which are not suitable for PWM inverters
- For protection against voltage spikes in long motor cables (> 100 m)

Only use output filters with 400/500 V units, **not with 230 V units**!

Do not use any output filters in hoists due to the voltage drop in the filter!

Output filters attenuate the interference emissions from an unshielded motor cable:

- According to class B limit to EN 55011 and EN 55014
- They comply with EN 50081, parts 1 and 2

The ambient temperature is 0 ... +45 °C (reduction: 3 % per K up to max. 60 °C). The enclosure is IP20.

The voltage drop is:

- With 400 V / 50 Hz: < 6.5 %
- With 500 V / 50 Hz: < 4 %
- With 400 V / 60 Hz: < 7.5 %
- With 500 V / 60 Hz: < 5 %

Type		HF008-503	HF015-503	HF022-503	HF030-503	HF040-503
Part number		826 029 X	826 030 3	826 031 1	826 032 X	826 311 6
Rated throughput current	400 V	2.5 A_{AC}	4 A_{AC}	6 A_{AC}	8 A_{AC}	10 A_{AC}
	500 V	2 A_{AC}	3 A_{AC}	5 A_{AC}	6 A_{AC}	8 A_{AC}
Power loss		25 W	35 W	55 W	65 W	90 W
Connections		M4 connection studs: 0.5 ... 6 mm^2 (AWG20 ... 10)				
Weight		3.1 kg (6.8 lb)	4.4 kg (9.7 lb)			10.8 kg (23.8 lb)
Suitable for MOVITRAC® 07						
100 % I_N		005/008	011/015	022	030	040
125 % I_N		005	008/011	015	022	030

| Type		HF055-503	HF075-503	HF023-403	HF033-403	HF047-403
Part number		826 312 4	826 313 2	825 784 1	825 785 X	825 786 8
Rated throughput current	400 V	12 A_{AC}	16 A_{AC}	23 A_{AC}	33 A_{AC}	47 A_{AC}
	500 V	10 A_{AC}	13 A_{AC}	19 A_{AC}	26 A_{AC}	38 A_{AC}
Power loss		115 W	135 W	90 W	120 W	200 W
Connections		10 mm^2 (AWG8)	25 mm^2 (AWG4)			
Weight		10.8 kg (23.8 lb)		15.9 kg (35.0 lb)	16.5 kg (36.3 lb)	23.0 kg (50.6 lb)
Suitable for MOVITRAC® 07						
100 % I_N		055	075	110	150 / 300[1]	220
125 % I_N		040	055	075	110 / 220[1]	150

1   Connect **two HF output filters together in parallel** for operation with these units!
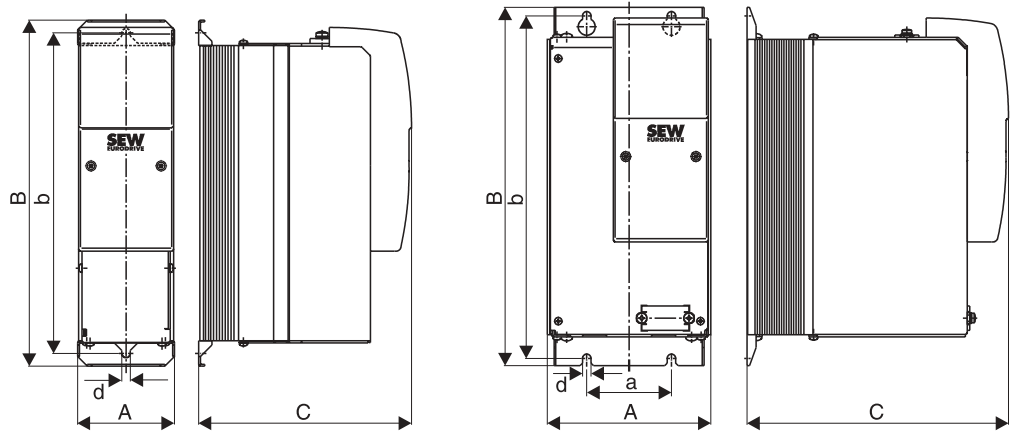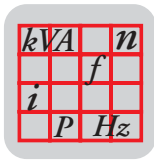
Figure 40: Dimensions HF...-503

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Type	Main dimensions			Fixing dimensions		Hole dimension	Ventilation clearance	
	A	**B**	**C**	**a**	**b**	**d**	**Top**	**Bottom**
HF008/015/022/030-503	80 (3.2)	286 (11.3)	176 (6.9)	–	265 (10.4)	7 (0.28)	100 (3.9)	100 (3.9)
HF040/055/075-503	135 (5.3)	296 (11.7)	216 (8.5)	70 (2.8)	283 (11.1)	7 (0.28)	100 (3.9)	100 (3.9)
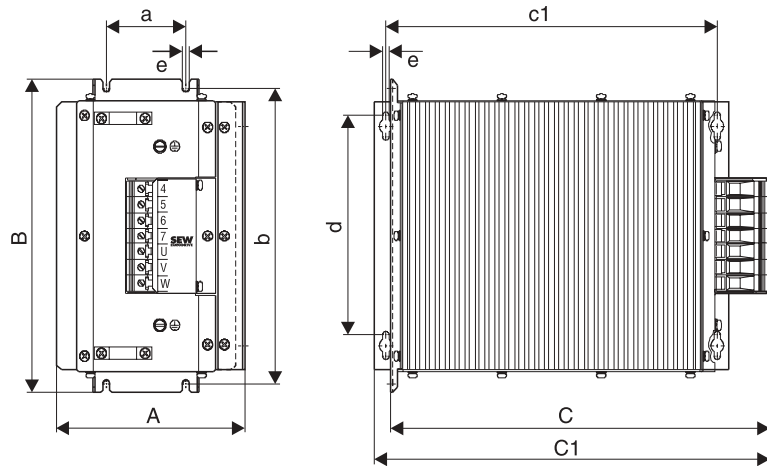
Figure 41: Dimensions HF...-403

05252AXX

Type	Main dimensions			Standard installation		Crossways mounting position		Hole dimension	Ventilation clearance		
	A	**B**	**C/C1**	**b**	**a**	**d**	**c1**	**e**	**At side**	**Top**	**Bottom**
HF023-403	145 (5.7)	284 (11.2)	365/390 (14.4/15.4)	268 (10.6)	60 (2.4)	210 (8.3)	334 (13.2)	6.5 (0.3)	30 (1.2)	150 (5.9)	150 (5.9)
HF033-403											
HF047-403	190 (7.5)	300 (11.8)	385/400 (15.2/15.6)	284 (11.2)	80 (3.2)						

With HF...-403 output filters, a crossways mounting position is also possible in addition to the standard mounting position (lower installation height). Reposition the mounting rails at the back for this. Then mounting dimensions c1/d and the main dimension C1 apply.

4 Parameters

As a rule, you only set the parameters during startup and if servicing is required. You can set the MOVITRAC® 07 parameters in various ways:
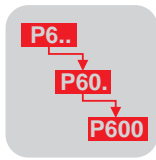
- Using the integrated operating panel
- Using the MOVITOOLS PC program on a PC connected via the RS-485 interface
- Copying the parameters using the UBP11A parameter module

If you make any changes to the factory settings of the parameters: Enter the changes in the Parameter list in the Startup section.

4.1 Explanation of the parameters

All parameters which can also be displayed and edited using the [Par] symbol on the operating panel have a • in the "OP" (operating panel) column. If more than one value can be selected, the factory setting is highlighted in **bold**.
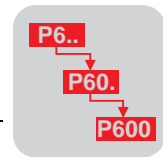
No.	OP	Name	Description
P		**Motor startup parameters**	
If you are **not** connecting the motor indicated in the motor selection table: **Enter parameters P-01 to P-05 correctly according to the nameplate** (access via [⌨]):			
P-01	•	Operating mode	0 / VFC (field-oriented voltage flux control mode) or VFC & HOIST (field-oriented control mode for hoist applications, can only be set in MOVITOOLS) 3 / VFC & DC BRAK. (field-oriented control mode with DC braking) 4 / VFC &FLY.START (field-oriented control mode with flying restart circuit) **21 / V/f character.** (voltage/frequency controlled mode) 22 / V/f & DC BRAKING (voltage/frequency controlled mode with DC braking)
P-02	•	Rated motor power	0.25, 0.37, 0.55 ... [kW] Factory setting: Rated motor power in kW corresponding to the rated inverter power If a smaller or a larger motor is connected (maximum difference one frame size), then a value must be selected which is as close as possible to the rated motor power.
P-03	•	Rated motor speed	10 ... **rated motor speed** ... 5500 [rpm]
P-04	•	Rated motor frequency	**50 [Hz]** / 60 [Hz]
P-05	•	Rated motor voltage	50 ... 700 [V]

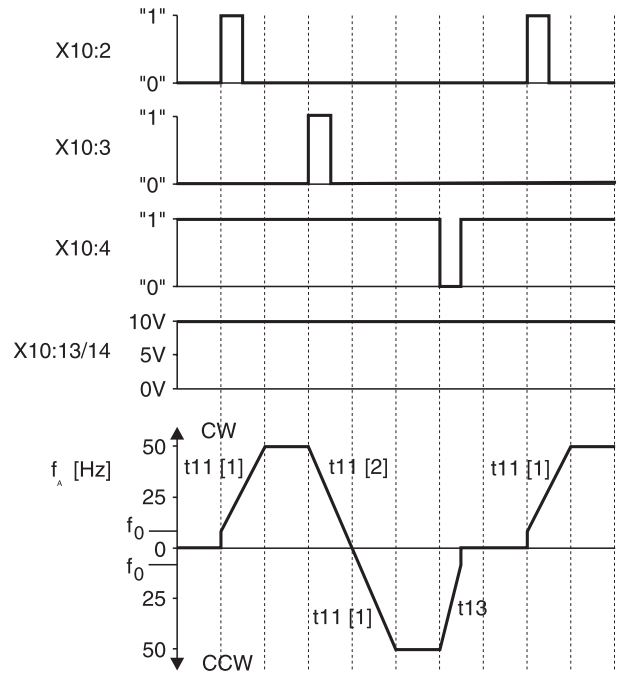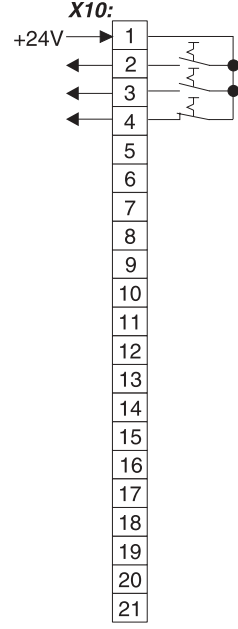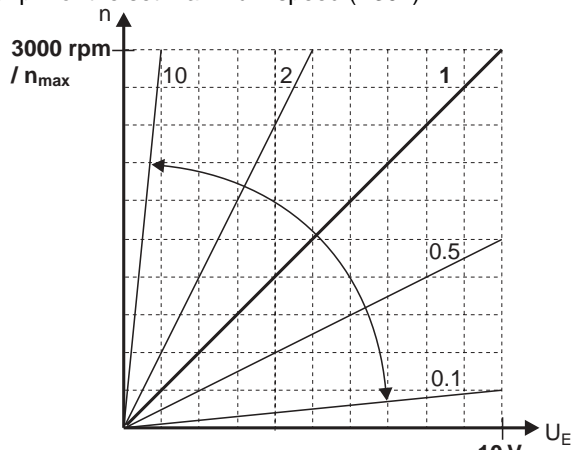| No.	OP	Name	Description
0__		**Display values**	
This group of parameters contains information about • Process values • Statuses • Fault memory the unit			
00_		**Process values**	
000		Speed (signed) [rpm]	Resolution 1 rpm. The displayed speed is the calculated actual speed.
002		Frequency (signed) [Hz]	Output frequency of the inverter.
004		Output current (value) [% I_N]	Apparent current in the range 0 ... 200 % of the rated unit current.
005		Active current (signed) [% I_N]	Active current in the range 0 ... 200 % of the rated unit current. The displayed value is positive when the torque is in the positive sense of rotation; it is negative when the torque is in the negative sense of rotation.
008		DC link voltage [V]	DC link voltage.
009		Output current [A]	Apparent current at the inverter output, displayed in A_{AC}.
01_		**Status displays**	
010		Inverter status	Status of the unit output stage • INHIBITED • ENABLED
011		Operational status	The following operational states are possible: • CONTROL.INHIBIT • NO ENABLE • ENABLE • FACTORY SETTING • FAULT • CURRENT AT STANDSTILL
012		Fault status	Fault number and fault in plain text.
014		Heat sink temperature [°C]	Heat sink temperature of the inverter.
02_		**Analog setpoints**	
020		Analog input AI1 [V]	Voltage 0 ... +10 V at analog input AI1. When S11 = ON and *P112 AI1 operation mode*: • = *NMAX, 0 ... 20 mA*: Display 0 ... 5 V = 0 ... 20 mA • = *NMAX, 4 ... 20 mA*: Display 1 ... 5 V = 4 ... 20 mA
03_		**Binary inputs**	
031		Binary input DI01	Status of binary input DI01 (CW/STOP = fixed assignment)
032		Binary input DI02	Status of binary input DI02 (CCW/STOP = fixed assignment)
033		Binary input DI03	Status of binary input DI03 (ENABLE/RAP.STOP = factory setting)
034		Binary input DI04	Status of binary input DI04 (n11/n21 = factory setting)
035		Binary input DI05	Status of binary input DI05 (n12/n22 = factory setting)
036		Binary inputs DI01..DI05	Collective display of the binary inputs.
05_		**Binary outputs**	
051		Binary output DO01	Status of binary output DO01 (/FAULT = factory setting)
052		Binary output DO02	Status of binary output DO02 (BRAKE RELEASED = factory setting)
053		Binary outputs DO01, DO02	Collective display of the binary outputs.

No.	OP	Name	Description
07_		**Unit data**	
070		Unit type	Displays the unit type, e.g. MC07A008-2B1
071		Output rated current [A]	Displays the rated unit current in [A]
076		Firmware basic unit	Part number and version of the firmware
08_		**Fault memory**	
080	•	Fault t-0	The unit saves the following information when a fault occurs. MOVITOOLS can display this information if required: • P036/P053 Status of the binary inputs / binary outputs • P011 Operational status of the inverter • P010 Inverter status • P014 Heat sink temperature • P000 Speed • P004 Output current • P005 Active current
09_		**Bus diagnosis** (refer to the MOVITRAC® 07 Communication manual for more information)	
090		PD configuration	• 1 PD + PARAMETER • 1 PD • 2 PD + PARAMETER • 2 PD • 3 PD + PARAMETER • 3 PD
094	•	PO 1 setpoint [hex]	Process data output word 1, setpoint
095	•	PO 2 setpoint [hex]	Process data output word 2, setpoint
096	•	PO 3 setpoint [hex]	Process data output word 3, setpoint
097		PI 1 actual value [hex]	Process data input word 1, actual value
098		PI 2 actual value [hex]	Process data input word 2, actual value
099		PI 3 actual value [hex]	Process data input word 3, actual value
1__		**Setpoints/ramp generators**	
10_		**Setpoint selection**	
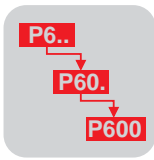
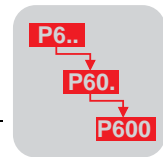| No.	OP	Name	Description
100	•	Setpoint source	**1 / UNIPOL/FIX.SETPT** The setpoint is provided by the analog inputs or the fixed setpoints. The unit processes the fixed setpoints **according to their value**. The binary inputs specify the direction of rotation. 2 / RS485 Only for service purposes! The setpoint comes from the RS-485 interface. The +/- character of the setpoint determines the direction of rotation. 4 / MOTOR POT Set the setpoint using appropriately programmed terminals *Motor pot. up* and *Motor pot. down*. This motor potentiometer is a virtual potentiometer and does not correspond to the setpoint potentiometer on the unit. 6 / FIX SETP+AI1 The setpoint is calculated by adding together the selected fixed setpoint and analog input AI1. The binary inputs specify the direction of rotation. Furthermore, *P112 AI1 operation mode* applies. 7 / FIX SETP*AI1 The value at analog input AI1 serves as the evaluation factor for the selected fixed setpoint (0 ... 10 V = 0 ... 100 %). n_{min} is in effect if no fixed setpoint is selected. The binary inputs specify the direction of rotation. 10 / SBus The system bus specifies the setpoint. The +/- character of the setpoint determines the direction of rotation. 11 / FREQUENCY INPUT (in preparation, only in units with expanded functions or LOGODrive units) The frequency at binary input DI01 specifies the setpoint. The value is set using parameter *P102 Frequency scaling*. You can influence the value with *P110 AI1 scaling*. The following parameters are included in the scaling if the PI-controller is activated: • *P254 PI actual value scaling* • *P255 PI sensor offset*
101	•	Control signal source	**0 / TERMINALS** The binary inputs determine the control. 1 / RS485 Only for service purposes! The RS-485 interface and the binary inputs determine the control. 3 / SBus The system bus and the binary inputs determine the control. 4 / 3-WIRE-CONTROL The 3-wire control principle determines the control. In this case, the enable and direction of rotation signals of the inverter react using edge control. • Connect the CW start button to the NO contact on the "CW/STOP" binary input. • Connect the CCW start button to the NO contact on the "CCW/STOP" binary input. • Connect the stop button to the "Enable/rapid stop" NC input. If you connect CW and CCW at the same time, the drive decelerates with downwards ramp P131. If the *3-WIRE-CONTROL* control signal source is active and the drive is started by a start edge: You can stop the drive using the STOP button when the RUN/STOP buttons are enabled. Then you can restart the drive with the RUN button without another start edge being required. The unit stores a start edge if you stop the drive with the stop button. The unit enables the drive immediately if you then press the RUN button.

No.	OP	Name	Description
		Control signal source 3-WIRE-CONTROL	X10:2 = CW/STOP X10:3 = CCW/STOP X10:4 = Enable/Rapid stop X10:13/14 = Set-point input AI f_A = Output frequency f_0 = Start/stop frequency CW = Turning to the right CCW = Turning to the left t11 [1] = t11 UP t11 [2] = t11 DOWN t13 = Rapid stop ramp
102	•	Frequency scaling (in preparation)	Setting range 0.1 ... **10** ... 65.00 [kHz]
11_		**Analog input 1 (+10 V)**	
110	•	AI1 scaling	Setting range: 0.1 ... **1** ... +10. This defines the slope of the setpoint characteristic curve. If you set the scaling to the value "1", then the input voltage $V_I = 10$ V at the analog input corresponds to the operating mode of the analog input (P112). This is the speed 3000 rpm or the set maximum speed (P302). *Slope of the setpoint characteristic curve* You can only use the 1st quadrant with a unipolar setpoint source. Negative setpoint entries then create the setpoint zero. **P110 AI1 scaling has no effect if you set the current input operating mode. You set the current input operating mode by setting P112 AI1 operation mode to NMAX, 0-20 mA or NMAX, 4-20 mA.**

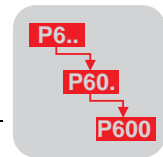| No.	OP	Name	Description
112	•	AI1 operation mode	**0 / 3000 rpm (0 – 10 V)** Voltage input with reference 3000 rpm (0 ... 10 V = 0 ... 3000 rpm). You can adapt the characteristic curve with *AI1 scaling*. Switch S11 = V **1 / N-MAX (0 – 10 V)** Voltage input with reference n_{max} (0 ... 10 V = 0 ... n_{max}). You can adapt the characteristic curve with *AI1 scaling*. Switch S11 = V. **5 / N-MAX (0 – 20 mA)** Current input 0 ... 20 mA = 0 ... n_{max}. P110 AI1 scaling is ineffective. Switch S11 = mA. **6 / N-MAX (4 – 20 mA)** Current input 4 ... 20 mA = 0 ... n_{max}. *P110 AI1 scaling* is ineffective. Switch S11 = mA.
12_		**Analog input 2 (setpoint potentiometer of the integrated operating panel)**	
121	•	Addition Setpoint Potentiom. of the operating panel	**0 / OFF** The unit does not take into account the value of the setpoint potentiometer of the integrated operating panel. **1 / ON** The value of the setpoint potentiometer of the integrated operating panel is added to any set setpoint source UNIPOL./FIX.SETPT, RS485, SBus or analog input AI1 or fixed setpoints. **2 / ON EXCEPT FSP** The value of the setpoint potentiometer of the integrated operating panel is added to any set setpoint source UNIPOL./FIX.SETPT, RS485, SBus or analog input AI1. The addition does **not** act on **fixed setpoints**.
122	•	Local Potentiometer Mode (only in manual mode)	**0 / UNIPOL. CW** Setting the setpoint with the setpoint potentiometer of the integrated operating panel in "manual speed control module" mode. Speed setting range: 0 ... + n_{max}. **1 / UNIPOL. CCW** Setting the setpoint with the setpoint potentiometer of the integrated operating panel in "manual speed control module" mode. Speed setting range: 0 ... - n_{max}. **2 / BIPOL.CW+CCW** Setting the setpoint with the setpoint potentiometer of the integrated operating panel in "manual speed control module" mode. Speed setting range: - n_{max} ... + n_{max}.
13_		**Speed ramps**	
The ramp times refer to a setpoint change of Δn = 3000 rpm. Ramps t11 UP and t11 DOWN are effective when the setpoint is changed. The stop ramp t13 is in effect when the enable is withdrawn with the STOP/RESET key or via the terminals.			
130	•	Ramp t11 UP	Setting range 0.1 ... **2** ... 2000 [s]; acceleration ramp
131	•	Ramp t11 DOWN	Setting range 0.1 ... **2** ... 2000 [s]; deceleration ramp
136	•	Stop ramp t13	Setting range 0.1 ... **2** ... 20 [s]; stop ramp when switching to the NO ENABLE operating status
138		Ramp limit	0 / NO **1 / YES** This parameter can be used for deactivating the software current limitation and therefore also the pull-out protection. The inverter switches off with fault message F-01 (overcurrent) if the apparent current is above the limit value 160 % for t > 100 ms. SEW recommends not switching off the ramp limit.

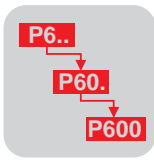| No.	OP	Name	Description
15_		**Motor potentiometer function** (see *P100 Setpoint source*)	
150	•	Ramp t3 (motor potentiometer)	Setting range 0.2 ... **20** ... 50 [s] The ramp takes effect when the *Motor pot. up* and *Motor pot. down* terminal functions are used.
152	•	Save last setpoint	**off / OFF** The inverter starts with n_{min}: • After supply system off/on • After the enable has been revoked You must set *P152 Save last setpoint = OFF* if you are using the motor potentiometer for continuous speed control. Otherwise, fault message F25 EEPROM will appear after about 100,000 storage operations. Store only after setpoint change. on / ON The inverter starts with the last motor potentiometer setpoint to have been set: • After supply system off/on • After the enable has been revoked
16_		**Fixed setpoints (set 1)**	
The fixed setpoints can be activated via binary inputs DI02 ... DI05 by setting arguments n11/n21 / n12/n22 and FIX SETPT SW.OV (parameter 60_). Fixed setpoints n13/n23 are activated when two binary inputs are occupied with the n11/n21 and n12/n22 functions and both have 1 signals.			
160	•	Internal setpoint n11	Setting range 0 ... **150** ... 5000 [rpm]
161	•	Internal setpoint n12	Setting range 0 ... **750** ... 5000 [rpm]
162	•	Internal setpoint n13	Setting range 0 ... **1500** ... 5000 [rpm]
163	•	Internal setpoint n11 PI-controller	Setting range 0 ... **3** ... 100 [%] (see Sec. Project Planning / PI-controller)
164	•	Internal setpoint n12 PI-controller	Setting range 0 ... **15** ... 100 [%] (see Sec. Project Planning / PI-controller)
165	•	Internal setpoint n13 PI-controller	Setting range 0 ... **30** ... 100 [%] (see Sec. Project Planning / PI-controller)
17_		**Fixed setpoints (set 2)**	
170	•	Internal setpoint n21	Setting range 0 ... **150** ... 5000 [rpm]
171	•	Internal setpoint n22	Setting range 0 ... **750** ... 5000 [rpm]
172	•	Internal setpoint n23	Setting range 0 ... **1500** ... 5000 [rpm]
173	•	Internal setpoint n21 PI-controller	0 ... **3** ... 100 [%] (see Sec. Project Planning / PI-controller)
174	•	Internal setpoint n22 PI-controller	0 ... **15** ... 100 [%] (see Sec. Project Planning / PI-controller)
175	•	Internal setpoint n23 PI-controller	0 ... **30** ... 100 [%] (see Sec. Project Planning / PI-controller)

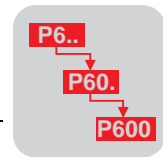| No.	OP	Name	Description
2__		**Controller parameters**	
25_		**PI-controller** (see Sec. Project Planning / PI-controller for explanations of the parameters)	

250	•	PI-controller	**0 / OFF**
			    PI-controller switched off.
			1 / NORMAL
			    PI-controller switched on normally.
			2 / INVERTED
			    PI-controller switched on inverted.

251	•	P-gain	Setting range 0 ... **1** ... 64
252	•	Time constant n-control.	Setting range 0 ... **1** ... 2000 [s]
253	•	PI actual value mode	**1 / 0 ... 10 V** 5 / 0 ... 20 mA 6 / 4 ... 20 mA
254	•	PI actual value scaling	0.1 ... **1.0** ... 10.0
255	•	PI sensor offset	**0.0** ... 100.0 [%]
3__		**Motor parameters**	
		Use this parameter group to adapt the inverter to the motor.	
30_		**Limits**	
301	•	Minimum speed	Setting range 0 ... **15** ... 5500 [rpm] The drive does not operate slower than this speed, even when the setpoint zero is entered.

302	•	Maximum speed	Setting range 0 ... **1500** ... 5500 [rpm]
			    No setpoint greater than the value set here can be entered. The value set in n_{max} applies to the minimum speed and the maximum speed if you set $n_{min} > n_{max}$.
			    The following values are allowed to be entered as maximum speeds, depending on the number of poles, in VFC and VFC & DC BRAK. operating modes:
			    • 2-pole: maximum 5500 rpm
			    • 4-pole: maximum 4000 rpm
			    • 6-pole: maximum 2600 rpm
			    • 8-pole: maximum 2000 rpm
			    Fault 08 *Speed monitoring* may appear if you enter higher values.
			    The unit automatically sets the maximum speed to the transition speed if you perform startup.

303	•	Current limit	Setting range 0 ... **150** [% I_N]
			    The internal current limit refers to the apparent current, i.e. the output current of the inverter. The inverter automatically reduces the current limit internally in the field weakening range. This means the inverter provides pull-out protection for the motor.
			    When a hoisting function is activated, a current limit less than the rated motor current is ignored.

No.	OP	Name	Description
32_		**Motor adjustment**	
The *P320 Automatic adjustment* function is only of significance for single motor operation. You can use this function for all motors and control modes. The inverter automatically sets *P322 IxR compensation* and *P321 Boost* with each enable operation and saves the values. The inverter thereby determines a basic setting which is suitable for many different drive tasks. The factory settings of parameters 321 ... 324 depend on the motor.			

320	•	Automatic adjustment	off / OFF
			    No automatic calibration: The inverter does not calibrate the motor.
			on / ON
			    Automatic calibration: The inverter calibrates the motor every time there is a change to ENABLE operating status.

321	•	Boost	Setting range 0 ... 100 [%] Manual setting is normally not necessary. In exceptional cases, manual setting may be necessary to increase the breakaway torque. In this case set to **max. 10 %**.
322	•	IxR compensation	Setting range 0 ... 100 [%] The inverter sets the value automatically when *P320 Automatic adjustment = ON*. Manual alterations to this parameter are reserved for optimization by specialists.
323	•	Premagnetizing time	Setting range 0 ... 2 [s] Premagnetization ensures a magnetic field is established in the motor when you enable the inverter.
324	•	Slip compensation	Setting range 0 ... 500 [rpm] Slip compensation increases the speed accuracy of the motor. Enter the rated slip of the connected motor as a manual entry. Do not enter a value more than 20 % different from the rated slip in order to compensate for fluctuations between various motors. Slip compensation is configured for a ratio between the moment of inertia of the load and the moment of inertia of the motor of less than 10. If the ratio is greater and vibration results, then reduce the slip compensation even down as far as 0 if necessary.
325	•	No-load-damping	on / ON **off / OFF** No-load damping can lead to an improvement if the no-load characteristic of the motor is tending towards instability.

No.	OP	Name	Description
4__		**Reference signals**	
The following reference values are used for recording and signaling certain operational states. All signals in parameter group 4__ can be output via binary outputs. The signals are valid if the inverter has signaled *ready* after switch-on and there is no fault display.			
40_		**Speed reference signal**	
The inverter outputs the "1" signal at P403 if the speed is less than or greater than the set reference speed.			

Speed reference signal

No.	OP	Name	Description
400	•	Speed reference value	Setting range 0 ... **750** ... 5000 [rpm]
401	•	Hysteresis	Setting range 0 ... **100** ... 500 [rpm]
402	•	Delay time	Setting range 0 ... **1** ... 9 [s]
403	•	Signal = "1" if:	**0 / n < n$_{ref}$** 1 / n > n$_{ref}$
45_		**PI controller ref signal** (see Sec. Project Planning / PI-controller / Reference signal)	
These parameters determine whether and how the PI reference signal is triggered			
450	•	PI actual value reference	**0.0** ... 100.0 [%]
451	•	Signal = "1" if:	0 / PI-Act. < PI-Ref **1 / PI-Act. > PI-Ref**

No.	OP	Name	Description
5__		**Monitoring functions**	
50_		**Speed monitoring**	
			The drive only attains the speed required by the setpoint if it has sufficient torque. If the inverter reaches *P303 Current limit*, this is because it did not attain the required speed. Speed monitoring is triggered if the inverter exceeds the current limit for longer than set in *P501 Delay time*.
500	•	Speed monitoring	**0 / OFF** 3 / MOT Function of speed monitoring in motor and regenerative operation of the motor
501	•	Delay time	Setting range 0 ... **1** ... 10 [s] The set current limit may be reached briefly during acceleration and deceleration procedures or when load peaks occur. You can set the delay time to prevent an over-sensitive response from the speed monitoring function. The current limit must be attained uninterruptedly for the duration of the delay time before the monitoring function responds.
6__		**Terminal assignment**	
60_		**Binary inputs**	

Effect of	**0 signal**	**1 signal**
NO FUNCTION:	-	-
ENABLE/RAP.STOP:	Rapid stop with *P136 Stop ramp*	Enable
CW/STOP:	Stop with *P131 Ramp DOWN*	CW enable
CCW/STOP:	Stop with *P131 Ramp DOWN*	CCW enable
FIX SETPT SW.OV:	Fixed setpoints n11/n12/n13	Fixed setpoints n21/n22/n23
MOTOR POT UP:	-	Increase setpoint
MOTOR POT DOWN:	-	Reduce setpoint
/EXT. FAULT:	External fault	-
FAULT RESET:	Reset on positive edge 0 to 1	
SETPOINT HOLD:	Do not take over	Take over setpoint
TF RESPONSE (DI05 only):	Overtemperature in motor	No signal
/CONTROL.INHIBIT:	Inhibit	Enable
IPOS INPUT:	Depends on LOGODrive program	
Fixed setpoints		
n11/n21 = 0 and n12/n22 = 0:	External setpoints only	
n11/n21 = 1 and n12/n22 = 0:	n11/n21	
n11/n21 = 0 and n12/n22 = 1:	n12/n22	
n11/n21 = 1 and n12/n22 = 1:	n13/n23	

No.	OP	Name				
60-	•	Binary inputs Binary input DI01 has a fixed setting of CW/STOP.	DI02	DI03	DI04	DI05
			0 CCW/STOP	FIX SETP SW.OVn11/n21		n12/n22
			1 CCW/STOP	**ENABLE**	**n11/n21**	**n12/n22**
			2 CCW/STOP	ENABLE	MOT..POT UP	MOT. POT DOWN
			3 ENABLE	FIX SETP SW.OVn11/n21		n12/n22
			4 CCW/STOP	SETPT HOLD	n11/n21	n12/n22
			5 CCW/STOP	ENABLE	/EXT. FAULT	FAULT RESET
			6 CCW/STOP	ENABLE	FAULT RESET	TF RESPONSE
			7 CCW/STOP	/EXT. FAULT	n11/n21	n12/n22
			8 CCW/STOP	ENABLE	n11/n21	/CTRL.INHIBIT
			- (Deviating combination set with MOVITOOLS)			
601		Binary input DI02	Factory setting: CCW/STOP			
602		Binary input DI03	Factory setting: ENABLE			
603		Binary input DI04	Factory setting: n11/n21			
604		Binary input DI05	Factory setting: n12/n22			

No.	OP	Name	Description
62_		**Binary outputs**	

Effect of	0 signal	1 signal
NO FUNCTION: -	-	
/FAULT:	Collective fault signal	-
READY: Not ready	Ready	
OUTP. STAGE ON:	Unit inhibited	Unit enabled and motor is energized
ROT. FIELD ON:	No rotating field	Rotating field
BRAKE RELEASED:	Brake is applied	Brake is released
SPEED REFERENCE:	$n > n_{ref}$ / $n < n_{ref}$ (P403)	$n < n_{ref}$ / $n > n_{ref}$ (P403)
SP/ACT.VAL.COMP.:	$n \neq n_{set}$	$n = n_{set}$
PI ACT.VALUE REF.:	-	Actual value has exceeded the set threshold during PI control
IPOS OUTPUT:	Depends on LOGODrive program	
/IPOS FAULT:	Fault indicator in LOGODrive	

No.	OP	Name	Description	
62-	•	Binary outputs	DO01	DO02
			0 **/FAULT**	**BRAKE RELEASED**
			1 READY	BRAKE RELEASED
			2 SPEED REFERENCE	BRAKE RELEASED
			3 SP/ACT.VAL.COMP.	BRAKE RELEASED
			4 /FAULT	SPEED REFERENCE
			5 /FAULT	SP/ACT.VAL.COMP.
			6 /FAULT	READY
			7 /FAULT	ROT. FIELD ON
			8 /FAULT	PI ACT.VALUE REF
			9 PI ACT.VALUE REF	BRAKE RELEASED
			- (Deviating combination set with MOVITOOLS)	
620		Binary output DO01	Factory setting: /FAULT	
621		Binary output DO02	Factory setting: BRAKE RELEASED	
7__		**Control functions**		

All settings with regard to the fundamental control properties of the inverter are defined within parameter group 7__. The parameter group includes functions which the inverter performs automatically when activated.

70_		**Operating modes**

This parameter sets the basic operating mode of the inverter. Set on the operating panel with 🔲, P-01.

VFC / V/f character.: Default setting for asynchronous motors. Suited to general applications such as conveyor belts, trolleys and hoists with a counterweight.

VFC & HOIST (only in units with expanded functions or LOGODrive units): The hoist function automatically provides all functions required for operating a non-balanced hoist. In particular, monitoring functions are activated for safety reasons. These may prevent the drive from starting. Monitoring functions are:
• Monitoring the output current during the pre-magnetization phase
• Avoiding sag when the brake is released
• Monitoring that the pre-magnetization time is set to an adequate value

The unit detects the following incorrect configurations and displays them with the following faults:
• 2 or 3-phase motor phase interruption: F82 = Output open
• Premagnetization time too short, or incorrect motor/inverter combination: F81 = Fault start condition
• Failure of a motor phase by active speed monitoring P500/501: F08 = Fault n-monitoring

Important!
• A single-phase motor phase failure cannot always be reliably detected.
• SEW-EURODRIVE strongly recommends that you activate speed monitoring.
• Precondition for correct procedure in the hoisting function: Motor brake controlled by the inverter.
• Do not set the minimum speed P301 less than the slip compensation P324.

No.	OP	Name	Description

VFC & DC BRAK. / V/f & DC BRAKING: With DC braking, the asynchronous motor brakes by means of a current injection. In this case, the motor brakes without a braking resistor on the inverter. The following figure shows the braking torque profile when the braking current is the same as the motor rated current.
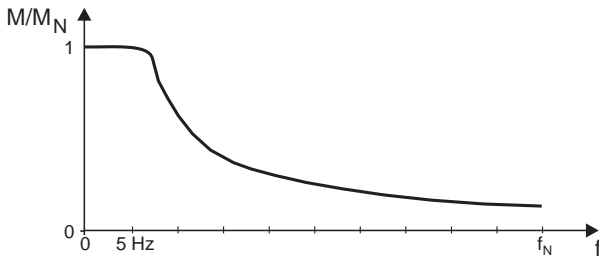
During the braking process, the inverter injects a constant current with a rotating field frequency of 5 Hz. The braking torque equals 0 at a standstill. A greater braking torque acts at a slower speed; the braking torque drops as the speed increases. The braking time, and thus the duration of the braking current, depends on the load on the motor. DC braking stops when the rotating field frequency of the motor is 5 Hz. The motor stops with the rapid stop ramp. Motor rated current is used for the current injection. In all cases, the inverter limits the current to max. 125 % I_N. See Brake function for information about the brake control system.

Important!
It is not possible to enable a directed stop or to observe a certain ramp using DC braking. The principal application is to reduce drastically the coasting of motors.
The following figure shows the braking sequence.

n_1 = Setpoint speed
[1] = Enable
t13 = Rapid stop ramp
t_B = Braking phase
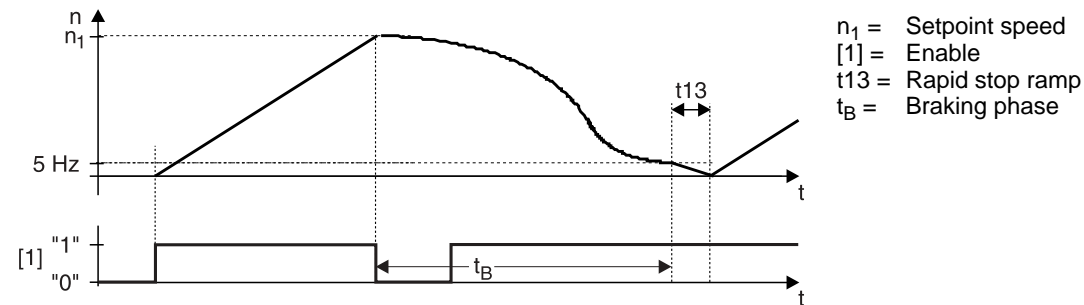
VFC &FLY.START (only in units with expanded functions or LOGODrive units): The flying restart circuit makes it possible to lock the inverter onto a rotating motor. In particular with drives which are not braked actively, which run on for a long time or which are turned by a flowing medium, e.g. pumps and fans. The maximum flying start time is approx. 200 ms.

Automatic adjustment P320 is deactivated in FLYING START operating mode.

n_1 = Setpoint speed
n_M = Motor speed
[1] = Enable
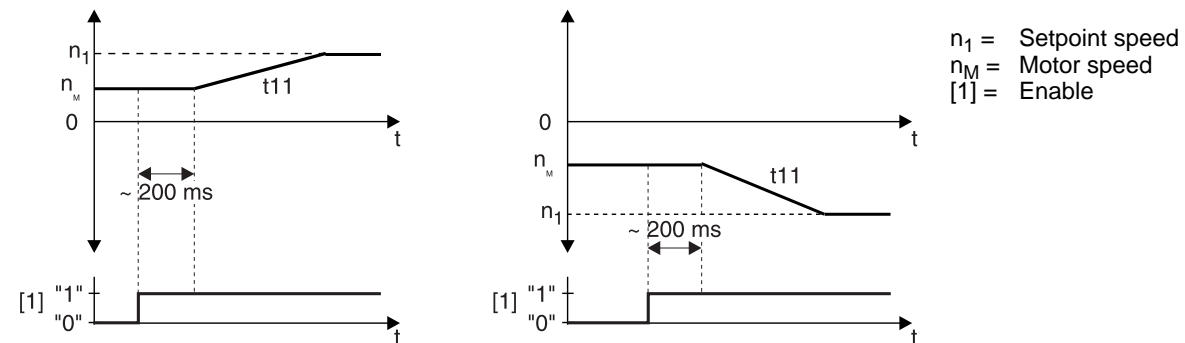
The flying restart circuit does not function if there is an output filter connected to the inverter.
Important!
Do not use the flying restart circuit in hoist applications.

No.	OP	Name	Description
700		Operating mode (setting also on the operating panel with ⌨, P-01)	0 / VFC (field-oriented voltage flux control mode) or VFC & HOIST (field-oriented control mode for hoist applications, can only be set in MOVITOOLS) 3 / VFC & DC BRAK. (field-oriented control mode with DC braking) 4 / VFC &FLY.START (field-oriented control mode with flying restart circuit) **21 / V/f character.** (voltage/frequency controlled mode) 22 / V/f & DC BRAKING (voltage/frequency controlled mode with DC braking)
71_		**Standstill current function**	

The inverter injects a current into the motor with the standstill current function while the motor is at a standstill. This allows the inverter to fulfill the following functions:
- The standstill current prevents condensation forming and freezing (in particular on the disk brake) when the ambient temperature of the motor is low. Set the current to a level which does not result in the motor overheating. **Recommendation:**The motor housing should be hand-hot.
- You can start the motor without a premagnetization time if you activate the standstill current. **Recommendation:** Set to 45 - 50 % for hoists.

You can deactivate the standstill current function by setting P710 = 0. Set the standstill current as a percentage of the motor rated current. The standstill current cannot exceed the current limit (P303).
The standstill current can be switched off by /CONTROLLER INHIBIT = 0.
When the standstill current function is activated, the output stage remains enabled even in the "No enable" status, in order to inject the motor standstill current.
The standstill current is not switched off by pressing the Stop/Reset button.
You can switch off the standstill current at any time using the controller inhibit. To do this, you must program an input terminal to controller inhibit.
You must program an input terminal to controller inhibit before activating the standstill current function. Otherwise, the output stage will be energized directly.

No.	OP	Name	Description
710	•	Standstill current function	**0** ... 50 % I_{Mot}
72_		**Setpoint stop function** (only in units with expanded functions or LOGODrive units)	

Use the *P720 Setpoint stop function* to enable the inverter automatically depending on the main setpoint. The inverter is enabled with all necessary functions such as premagnetization and brake control. In addition, always enable the drive via terminals.

No.	OP	Name	Description
720	•	Setpoint stop function	**off / OFF** on / ON
721	•	Stop setpoint	0 ... **30** ... 500 [rpm]
722	•	Start offset	0 ... **30** ... 500 [rpm]

No.	OP	Name	Description
73_		**Brake function**	
736	•	Brake application time The start and stop speeds are fixed: • n_{start} = 15 rpm • n_{stop} = 60 rpm The start and stop speeds are not in effect when the setpoint speed is slower.	Setting range 0 ... **0.1** ... 2 [s] The parameter applies both to the brake release time and the brake reaction time. [1] = Enable [2] = /Brake [3] = Out stage on [4] = Rot. field on t_M = Premagnetization time t_B = Braking time n1 = Start speed n2 = Stop speed n3 = Setp. speed
76_		**Manual operation**	
760	•	Locking RUN/STOP keys (see Startup / External setpoint selection)	**no / NO** (RUN/STOP keys are activated and can be used for starting and stopping the motor) yes / YES (RUN/STOP keys are locked and therefore do not function)
8__		**Unit functions**	
80_		**Setup**	

P802 can be used to reset the factory settings for almost all parameters; these are stored in the EPROM. In addition, you can also reset the unit to its delivery condition. The factory setting function does not affect the following:
• P30_ (Limits)
• P321 ... P324 (Motor adjustment)
• P700 (Operating mode)
• P810, P811, P813, P814, 816 (Serial communication)
• P840 (Manual reset)

Selecting DELIVERY STATE also resets the parameters listed above.
The statistical data must be reset separately using *P804 Reset statistic data*. Setting the parameter to YES performs the factory setting function. During this time, the display shows SEt. The inverter displays its previous operating status once again after the factory setting function has finished. P802 automatically reverts to NO.
Activating the factory setting function overwrites almost all parameter values. Store the set values using MOVITOOLS® before you activate the factory setting. Once the factory setting function has been used, you can adapt the parameter values and terminal assignments in accordance with the requirements.

No.	OP	Name	Description
802	•	Factory setting	yes / YES (perform factory setting) no / NO (do not perform factory setting) **- / (Delivery condition)**

Setting *P803 Parameter lock = ON* enables you to prevent any changes to parameters. This does not apply to P840 Manual reset and P803 itself. The parameter lock makes sense, for example, after the MOVITRAC® 07 settings have been optimized. You can enable parameter changes again by setting *P803 Parameter lock = OFF*.
The parameter lock also works for parameter changes via the RS-485 and SBus interfaces.

No.	OP	Name	Description
803	•	Parameter lock	**off / OFF** (all parameters can be changed) on / ON (only P803 and P840 can be changed)

P804 Reset statistic data permits the statistical data stored in the EEPROM (fault memory) to be reset. The factory setting function does not affect these data. The parameter automatically reverts to NO after the reset is finished.

No.	OP	Name	Description
804		Reset statistic data	**NO** (no reset is performed) FAULT MEMORY (the content of the fault memory is reset)
81_		**Serial communication** (refer to the MOVITRAC® 07 Communication manual for more information) You are not allowed to change these parameters while an IPOS program is running.	
810	•	RS485 address (only for service purposes)	Setting range **0** ... 99 P810 sets the address of the MOVITRAC® 07 for communication via the serial interface. On delivery, the MOVITRAC® 07 address is always 0. SEW-EURODRIVE recommends not using address 0, in order to prevent data transfer collisions when serial communication is used with several inverters.
811		RS-485 group address (only for service purposes)	Setting range **100** ... 199 The group address must be set to 100.
812		RS485 timeout delay (only for service purposes)	Setting range **0** ... 650 [s] P812 must be set to 0.
813	•	SBus address	Setting range **0** ... 63 P813 sets the system bus address of MOVITRAC® 07. The MOVITRAC® 07 can communicate with a PC, PLC or MOVIDRIVE®, for example, using the system bus with this address. On delivery, the MOVITRAC® 07 address is always 0. SEW-EURODRIVE recommends not using address 0, in order to prevent data transfer collisions when serial communication is used with several inverters.
814		SBus group address	Setting range **0** ... 63 P814 makes it possible to group together several MOVITRAC® 07 units for communication via the SBus interface. All MOVITRAC® 07 units with the same SBus group address can thus be addressed using a multicast telegram via this address. The data received via the group address are not acknowledged by MOVITRAC® 07. For example, the SBus group address makes it possible to send setpoint selections to a group of MOVITRAC® 07 inverters simultaneously. An inverter with group address 0 is not assigned to any group.

No.	OP	Name	Description
815	•	SBus timeout delay	Setting range **0** ... 650 [s] P815 sets the monitoring time for data transmission via the system bus. MOVITRAC® 07 performs the fault response RAPID STOP/FAULT if there is no data traffic via the system bus for the period set in P815. No monitoring of data transmission via the system bus takes place when P815 is set to the value 0.
P816 sets the transmission speed of the system bus.			
816	•	SBus baud rate	0 / 125 kbaud 1 / 250 kbaud **2 / 500 kbaud** 3 / 1000 kbaud
82_		**Brake operation**	
P820 switches 4Q operation off/on. 4-quadrant operation is possible if a braking resistor is connected to the MOVITRAC® 07. P820 must be set to OFF if there is no braking resistor connected to MOVITRAC® 07, which means regenerative operation is not possible. In this operating mode, MOVITRAC® 07 attempts to extend the deceleration ramp. This means the regenerative power is not excessive and the DC link voltage stays below the switch-off threshold. If the regenerative power is too great despite the extended deceleration ramps, then MOVITRAC® 07 may switch off with the *F07 DC link overvoltage* fault. In such a case, the deceleration ramps must be extended manually (P131). As a result, do not set any unrealistically short deceleration ramps! The unit reacts with fault message *F34 Ramp/timeout* if the ramp is set too short and the ramp which can actually be achieved is significantly longer than the set value.			
820	•	4-quadrant operation	off / OFF **on / ON**
83_		**Fault response**	
The EXT. FAULT fault can only be triggered when the inverter status is ENABLED. P830 programs the fault response which is triggered by an input terminal programmed to /EXT. FAULT.			
830	•	Response EXT. FAULT	2 / IMM. STOP/FAULT The inverter performs an emergency stop with a fault message. The inverter inhibits the output stage and the brake is applied. The inverter revokes the ready signal and sets the programmed fault output. A restart is only possible after a fault reset has been performed during which the inverter is reinitialized. **4 / RAPID STOP/FAULT** The inverter brakes the drive using the set stop ramp (P136). The inverter brakes with DC braking in 2-quadrant operation. Once the stop speed is reached, the inverter inhibits the output stage and the brake is applied. The fault is signaled immediately. The inverter revokes the ready signal and sets the programmed fault output. A restart is only possible after a fault reset has been performed during which the inverter is reinitialized. 7 / RAPID STOP/WARNG The fault response corresponds to RAPID STOP/FAULT, except the inverter does not revoke the ready signal and the fault output is set.

No.	OP	Name	Description
84_		**Reset response**	

840		Manual reset Parameter P840 corresponds to the STOP/RESET key.	YES
			    MOVITRAC® 07 resets the existing fault. P840 automatically reverts to NO following a reset. The motor immediately restarts to the specified setpoint if all required signals are present after the reset has been performed. Activating the manual reset does not have any effect if there is no fault present.
			NO
			    No reset.

86_		**Modulation**	
P860 sets the nominal switching frequence at the inverter output. If P862 is OFF then the switching frequency can vary autonomously depending on the unit utilization.			
860	•	PWM frequency	**0 / 4 kHz** 1 / 8 kHz 2 / 12 kHz 3 / 16 kHz
862	•	PWM fix	on / ON (no autonomous variation of the switching frequency by the inverter) **off / OFF** (autonomous variation of the switching frequency by the inverter depending on the utilization)

No.	OP	Name	Description
87_		**Fieldbus parameter settings** (refer to the MOVITRAC® 07 Communication manual for more information)	
		P870 ... P872 can be used for defining the contents of process output data words PO1 ... PO3. This definition is necessary so MOVITRAC® 07 can allocate the appropriate setpoints. The following process output assignments are available:	
		NO FUNCTION:	The content of the process output data word is ignored.
		SPEED:	Speed setpoint selection in rpm.
		MAX. SPEED:	Maximum speed (P302).
		RAMP:	Ramp time for setpoint selection (P130 / P131).
		CTRL. WORD 1:	Control signals for start/stop, etc.
		SPEED [%]:	Selection of a speed setpoint in % of 3000 rpm.
		PI CTRL [%]:	PI controller setpoint
870		Setpoint description PO1	Factory setting: CTRL. WORD 1
871		Setpoint description PO2	Factory setting: SPEED
872		Setpoint description PO3	Factory setting: NO FUNCTION
		P873 ... P875 can be used for defining the contents of process input data words PI1 ... PI3. This definition is necessary so MOVITRAC® 07 can allocate the appropriate actual values. The following process input assignments are available:	
		NO FUNCTION:	The content of the process input data word is 0000_{hex}
		SPEED:	Current actual speed in rpm.
		ACTIVE CURR.:	Momentary active current of the inverter in % of I_N.
		OUTP.CURRENT:	Momentary output current of the inverter in % of I_N.
		STATUS WORD1:	Status information of the inverter.
		SPEED [%]:	Momentary actual speed value in % of 3000 rpm.
		IPOS PI-DATA:	IPOS process input data.
		PI CTRL [%]:	Actual values of the PI-controller.
873		Actual value description PI2	Factory setting: STATUS WORD1
874		Actual value description PI2	Factory setting: SPEED
875		Actual value description PI3	Factory setting: OUTPUT CURRENT
876		PO data enable	OFF The process output data which were most recently valid remain in effect. ON The process output data sent most recently by the fieldbus controller come into effect.
9__		**IPOS/LOGODRIVE parameters**	
93_		**IPOS/LOGODRIVE special functions**	
		Parameters P931 and P932 are only relevant for LOGODrive units.	
931	•	Task 1/2	on / ON Task 1 and task 2 are running. **off / OFF** Task 1 and task 2 are stopped.
932		Task 2 (display only)	on / ON Task 2 is running. **off / OFF** Task 2 is stopped.

5 Project Planning

5.1 Schematic procedure

$\rightarrow$

Clarify
- Technical data and requirements
- Peripheral conditions
- System interfacing

↓

Calculation of the relevant application data
- Static, dynamic, regenerative power
- Speeds

↓

Gear unit selection
Definition of
- Gear unit configuration, gear unit size, gear unit reduction ratio

Check for gear unit utilization ($M_{amax} \geq M_a(t)$)

↓

$\rightarrow$

Motor selection
- Convert torque and speed for the motor shaft
- Define the motor

↓

$\leftarrow$

Check
- Max. torque which can occur $M_{max} < 1.5 \times M_N$
- Required motor speed $< n_N$
- Thermal load with regard for the setting range and cyclic duration factor

↓

Selection of the MOVITRAC 07® frequency inverter
- Motor/inverter assignment
- Continuous power, peak power
- Installation conditions
- UWS21A option for connection to PC / MOVITOOLS / LOGODrive

↓

Selection of the braking resistor
- On the basis of the calculated regenerative power and the cyclic duration factor

↓

Grouping components
- Line choke, output choke, touch guard

↓

$\leftarrow$ **Checking whether all requirements are met.**

5.2 Options for standard applications

Refer to the following table for information about the options for straightforward applications. Conditions for straightforward applications are:

- Braking time is less than 25 % of cyclic duration factor cdf
- Braking time is not longer than 30 seconds

Type MC07A		Braking resistor		Output choke	Line filter
		Horizontal movement	Vertical movement		
230 V 1-phase	004	BW072-003	BW072-003	HD002	Integrated
	005	BW072-003	BW072-003	HD002	
	008	BW072-003	BW072-003	HD002	
	011	BW027-005	BW027-005	HD002	
	015	BW027-005	BW027-005	HD002	
	022	BW027-005	BW027-012	HD002	
230 V 3-phase	004	BW072-003	BW072-003	HD002	Integrated
	005	BW072-003	BW072-003	HD002	
	008	BW072-003	BW072-003	HD002	
	011	BW027-005	BW027-005	HD002	
	015	BW027-005	BW027-005	HD002	
	022	BW027-005	BW027-012	HD002	
	037	BW027-005	BW027-012	HD001	
	055	BW027-006	BW012-025	HD001	
	075	BW018-015	BW012-025	HD001	
	110	BW012-025	BW012-050	HD003	NF048
	150	2 x BW018-015	2 x BW012-025	HD003	NF063
	220	2 x BW012-025	BW106	HD003	NF085
	300	2 x BW106	2 x BW106	HD003	NF115
400 V 3-phase	005	BW072-003	BW072-003	HD002	Integrated
	008	BW072-003	BW072-003	HD002	
	011	BW072-003	BW072-005	HD002	
	015	BW072-003	BW072-005	HD002	
	022	BW072-003	BW168	HD002	
	030	BW072-005	BW268	HD001	
	040	BW072-005	BW268	HD001	
	055	BW168	BW247	HD001	
	075	BW147	BW347	HD001	
	110	BW039-012	BW039-050	HD001	
	150	BW018-050	BW018-075	HD003	NF035
	220	BW018-035	BW018-075	HD003	NF048
	300	BW012-050	BW012-100	HD003	NF063

5.3　Description of applications

Inverter selection　For MOVITRAC® 07, there are two applications relevant for project planning.

100 % rated current　These are applications with constant load, for example:

- Conveyor drives
- Trolleys
- Hoists

125 % rated current　These are applications with variable torque load, for example:

- Fans
- Pumps

Project planning for trolleys　The motor load in the dynamic sections determines the peak motor power according to which the dimensions are to be set. The thermal load determines the required continuous power of the motor. Refer to the travel cycle for determining the thermal load. The speed characteristic is a significant factor in determining the self-cooling of the motor.

Project planning for hoists　In practice, the question of setting the size of hoists is addressed with regard to special thermal and safety-critical criteria.

Thermal considerations　In contrast to trolleys, hoists require approx. 70 ... 90 % of the motor rated torque at constant speed.

Starting torque　The motor requires the highest operating torque in the event of acceleration with maximum load and the **upwards** hoisting direction.

Always configure the 4-pole geared motor for a maximum speed of:

- 2100 rpm (70 Hz) with transition speed 1500 rpm (50 Hz)
- 2500 rpm (83 Hz) with transition speed 1800 rpm (60 Hz)

This means the gear unit input speed is increased by a factor of 1.4. Consequently, it is also necessary to choose a gear ratio which is higher by a factor of 1.4. This measure means the motor does not lose any torque at the input shaft in the field weakening range (50 ... 70 Hz or 60 ... 83 Hz). The drive compensates for the inversely proportionate fall in torque in relation to speed by means of the larger gear ratio. In addition, the motor gets a run-up torque which is 1.4 times greater. Other advantages are that the speed range is greater and the self-cooling of the motor more powerful.
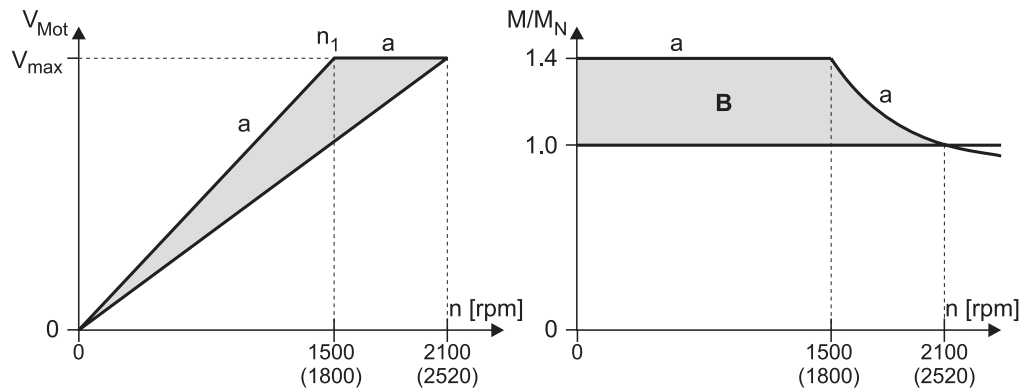
05119AXX

a = Recommended voltage/speed characteristic curve and resultant torque characteristic
B = Torque reserve range

With hoists, select the motor power in accordance with the load type:

- S1 (100 % cdf.): Select the motor power 1 level higher than the selected inverter power, e.g. for lengthy upwards travel or continuous elevators.

- S3 (40 % cdf.): Select the motor power in accordance with the selected inverter power.

Regardless of the aforementioned guidelines, activate the hoisting function by selecting operating mode P700 = VFC & HOIST.

Variable torque load *(pumps, fans)* In these applications, there is no chance of the motor suffering a thermal overload at low speeds. Maximum load occurs at maximum speed. There are no overload peaks. Consequently, select the size of MOVITRAC® 07 and the motor so the continuous motor current is less than or equal to the continuous output current of MOVITRAC® 07. This means MOVITRAC® 07 can operate a motor whose power is one level greater.

5.4 Speed-torque characteristic

n_n = 1400 rpm (50 Hz)
n_n = 1680 rpm (60 Hz)
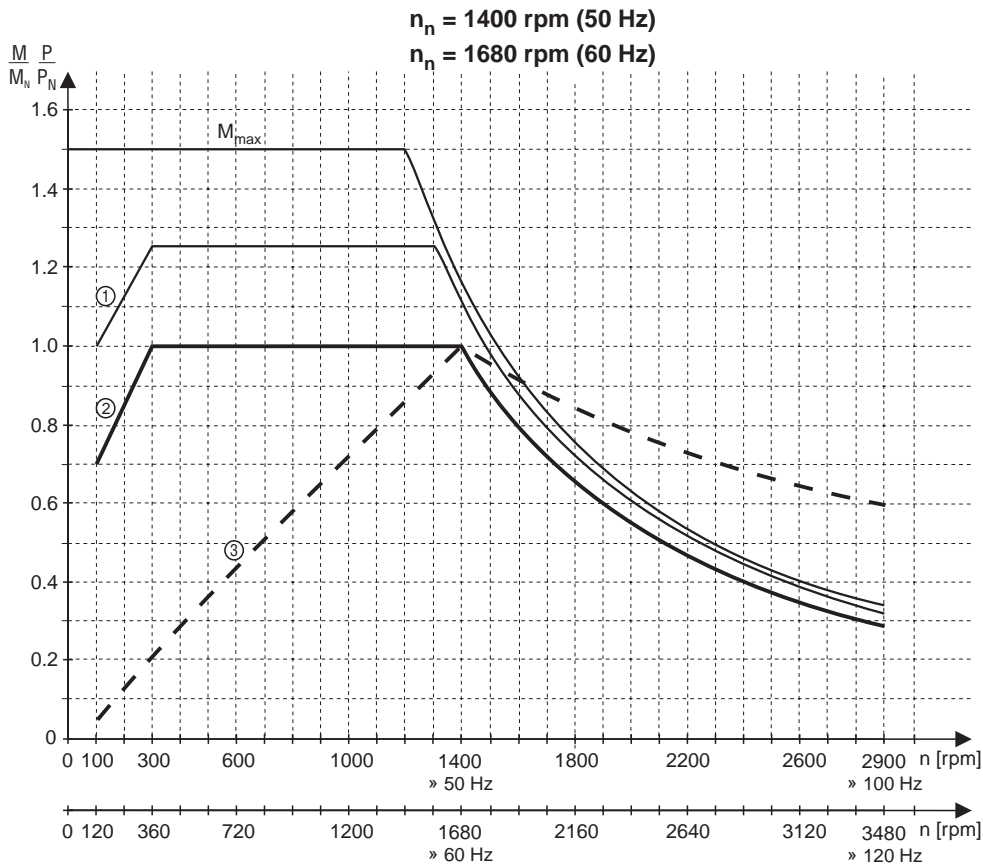
03176BXX

Figure 42: Speed-torque characteristic

1. M at S3 25 % cdf
2. M at S1 100 % cdf
3. P at S1 100 % cdf

5.5 Motor selection

Basic recommendations

- Only use motors with at least thermal classification F.
- Use TF thermistor sensors.
- Preferably use 4-pole motors. This applies particularly if you are operating geared motors with a high oil filling level as a result of their vertical mounting position. The churning losses are very great with 2-pole motors.
- For operating conditions other than S1 operation: Operate the motor at its listed power without forced cooling.

Voltage/frequency characteristic

The asynchronous motor follows a load-dependent voltage/frequency characteristic in V/f operating mode. The motor gets the full motor torque even at the slowest speeds. This is because the motor model is continuously calculated in VFC mode. Set the characteristic curve during startup with rated motor voltage and rated motor frequency. The setting determines the speed-dependent torque and power characteristics of the asynchronous motor.
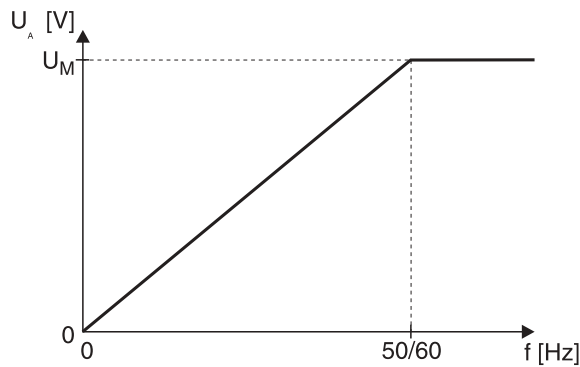
03102CXX

Figure 43: Voltage/frequency characteristic (U_M = motor voltage)

Characteristic curve of an asynchronous motor with rated voltage U_M and rated frequency 50 / 60 Hz.

The MOVITRAC$^®$ 07 output voltage is limited by the supply voltage which is connected.

Dynamic applications

For dynamic applications, it is necessary to have a drive with an inverter rated current greater than the motor rated current.

Set the following parameters so the motor can generate at most 150 % of the rated motor torque:

- *Current limit P303*
- *Slip compensation P324*

Increase these parameters manually by a factor of approx. 1.4 for dynamic applications.

Inverter/motor combinations

The following table shows the possible inverter/motor combinations. It is also possible to assign motors 1 frame size different to the inverters. The 4-pole motors (1500 rpm) are stored in the factory settings of MOVITRAC® 07. The control response may be impaired if smaller motors are used.

MOVITRAC® 07	Rated power P_N	SEW motor			
Speed [rpm] at 50 Hz		3000	1500	1000	750
Speed [rpm] at 60 Hz		3600	1800	1200	900
MC07A004-...-4-00	0.37 kW	DFR63L2	DT71D4	DT80K6	DT90S8
MC07A005-...-4-00	0.55 kW	DT71D2	DT80K4	DT80N6	DT90L8
MC07A008-...-4-00	0.75 kW	DT80K2	DT80N4	DT90S6	DV100M8
MC07A011-...-4-00	1.1 kW	DT80N2	DT90S4	DT90L6	DV100L8
MC07A015-...-4-00	1.5 kW	DT90S2	DT90L4	DV100M6	DV112M8
MC07A022-...-4-00	2.2 kW	DT90L2	DV100M4	DV112M6	DV132S8
MC07A030-...-4-00	3.0 kW	DV100M2	DV100L4	DV132S6	DV132M8
MC07A040-...-4-00	4.0 kW	DV112M2	DV112M4	DV132M6	DV132ML8
MC07A055-...-4-00	5.5 kW	DV132S2	DV132S4	DV132ML6	DV160M8
MC07A075-...-4-00	7.5 kW	DV132M2	DV132M4	DV160M6	DV160L8
MC07A110-...-4-00	11 kW	DV160M2	DV160M4	DV160L6	DV180L8
MC07A150-...-4-00	15 kW	DV160L2	DV160L4	DV180L6	DV200L8
MC07A220-...-4-00	22 kW	DV180L2	DV180L4	DV200L6	–
MC07A300-...-4-00	30 kW	–	DV200L4	–	–

5.6 Overload capacity

MOVITRAC® 07 frequency inverters permanently calculate the load on the inverter output stage (unit utilization). They can output the maximum possible power in any operating status. The permitted continuous output current depends on the ambient temperature, heat sink temperature, supply voltage and PWM frequency. The inverter reacts to a higher than permitted load by outputting the *F-44 Unit utilization* fault message and performing an immediate switch-off.

The following diagrams show the temperature/time characteristic of the units. The inverter automatically reduces its switching frequency if a certain switching frequency reaches the corresponding limit characteristic curve.
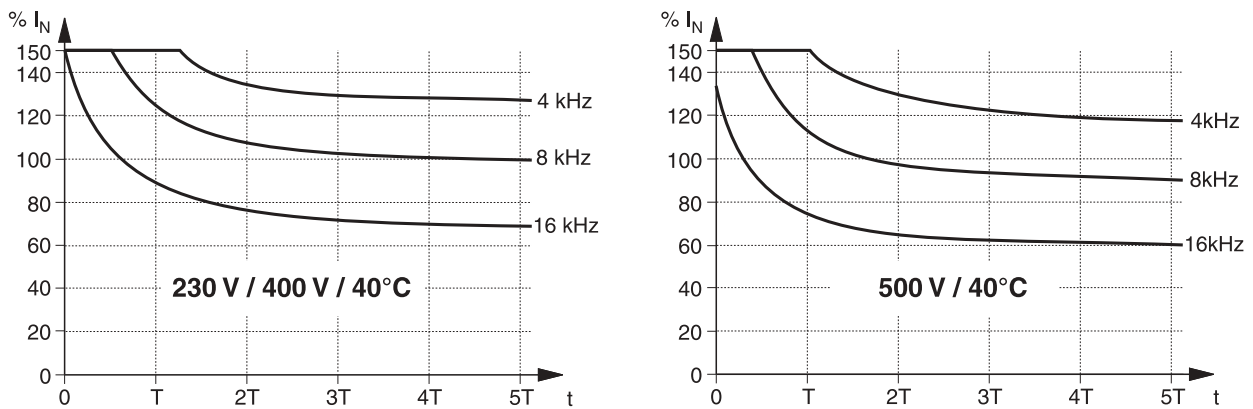
Figure 44: Overload capacity at 40 °C
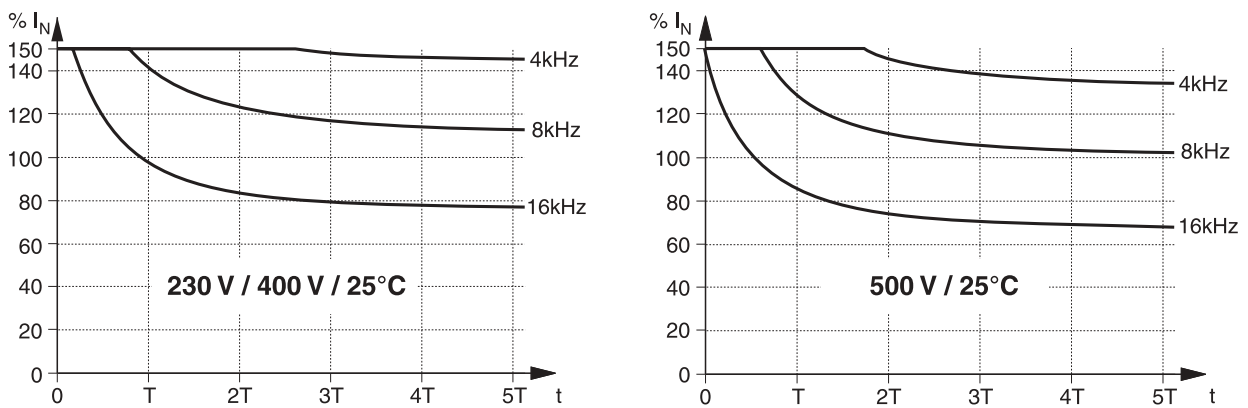
04977BXX

Figure 45: Overload capacity at 25 °C

04978BXX

Size	0S	0M	0L	1	2S	2	3	4
T (min)	10	23	3	3.5	4	5	4	9

5.7   Load capacity of the units at low output frequencies

The thermal model in MOVITRAC® 07 implements dynamic limiting of the maximum output current. Consequently, the thermal model only permits less than 100 % output current at output frequencies less than 2 Hz if the capacity utilization is high.

This can occur in the case of:

• Electrically stopping hoists

• Torque control at low speeds or when stopped

In such operating states, configure the average output current of the inverter to max. 70 % of the rated current of the inverter.

Guaranteed continuous currents depending on the output frequency
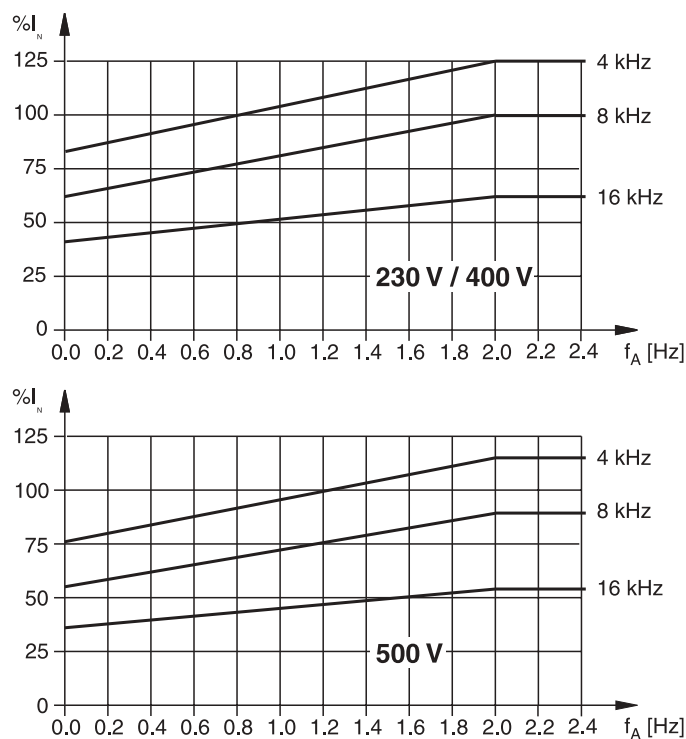
04991BXX

Figure 46: Continuous output currents at low output frequencies

5.8 Selection of the braking resistor

- **High voltage**

  The connection leads to the braking resistor carry a **high DC voltage (ca. 900 V)**. Select the braking resistor cables with regard to this high DC voltage.

- **Cable length**

  The maximum permitted line length between MOVITRAC® 07 and the braking resistor is 100 m (330 ft).

- **Parallel connection**

  Two braking resistors must be connected in parallel in the case of some inverter/resistor combinations. In this case, the trip current must be set on the bimetallic relay to twice the value of I_F entered in the table.

- **Peak braking power**

  The DC link voltage and the resistance value mean the peak braking power may be less than the load capacity of the braking resistor. The formula for calculating the peak braking power is:

  $P_{max} = V_{DC}^2/R$

  V_{DC} is the switch-in threshold of the brake chopper. Its value is

  - With 400/500 V units: 822 V_{DC}
  - With 230 V units: 480 V_{DC}

  The following table lists the peak braking power levels which are possible for the different resistance values.

Resistance [Ω]	Peak braking power [kW]	
	400/500 V units	**230 V units**
100	6.7	–
72	9.4	3.2
68	10.0	–
47	14.4	–
39	17.3	–
27	25	8.5
18	37.5	–
15	45	–
12	56	19.2
9 (2 x 18 Ω parallel)	–	25.6

Power diagrams   You can calculate the continuous resistor dissipation during braking procedures within the cycle duration T. The default value for T is 120 s. Calculate the continuous resistor dissipation with the cdf braking power and the following power diagrams. The right-hand axis displays the continuous resistor dissipation (100 % cdf power).

Flat-type 230 V
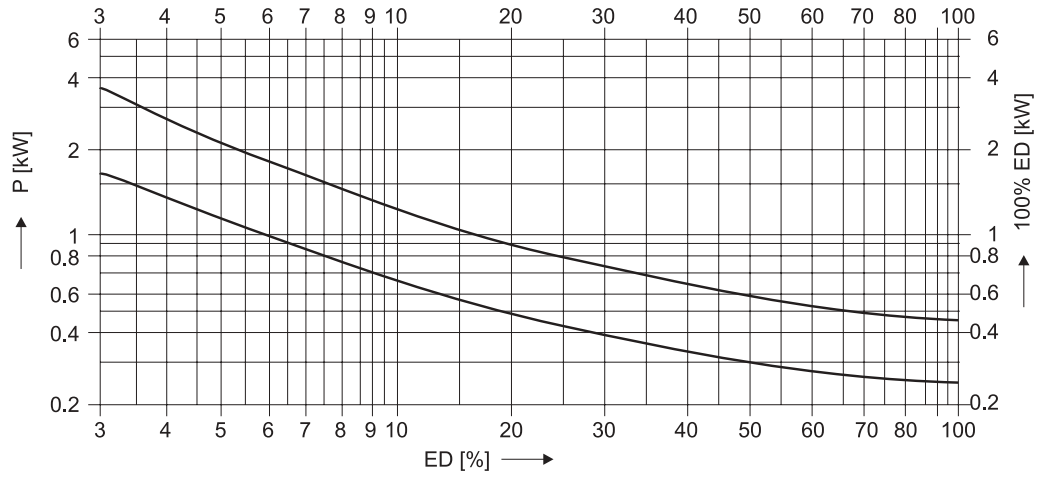
Figure 47: Flat-type 230 V

P = Intermittent power [kW]
cdf = Cyclic duration factor of the braking resistor [%]
100 % cdf = Continuous power [kW]

Wire resistor 230 V
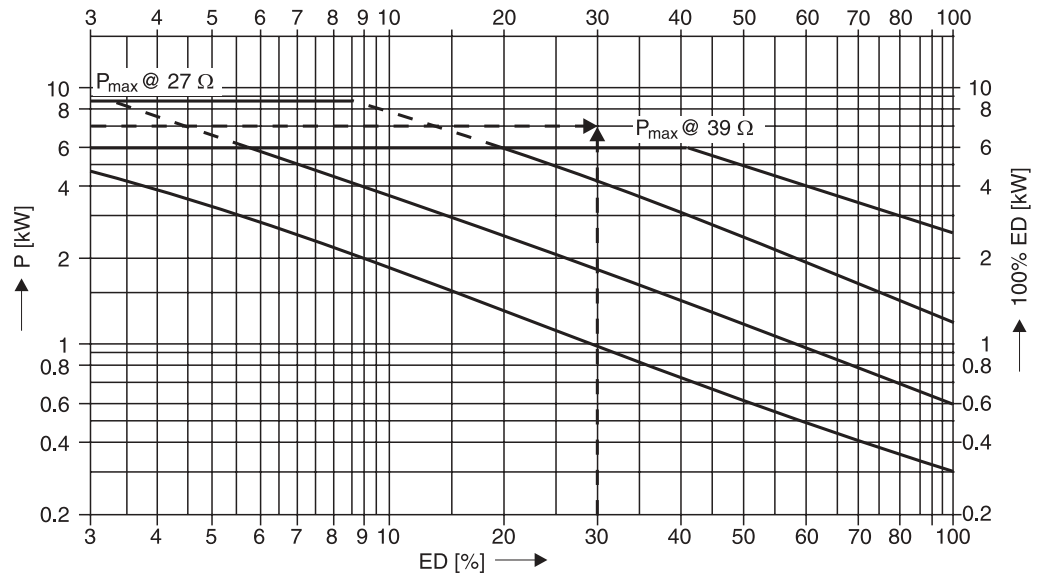
Figure 48: Wire resistor 230 V

P = Intermittent power [kW]
cdf = Cyclic duration factor of the braking resistor [%]
100 % cdf = Continuous power [kW]

Example　　　　When an intermittent braking power of 7 kW is needed with a cyclic duration factor of 30 %, this requires a braking resistor with a continuous power of 2 kW, for example BW247.

Braking resistor type		BW039-003	BW039-006	BW039-012	BW039-026	BW027-006	BW027-012
Load capacity　　**100 % cdf**		0.3 kW	0.6 kW	1.2 kW	2.6 kW	0.6 kW	1.2 kW
Resistance value　　R_{BW}		39 Ω ±10 %				27 Ω ±10 %	
Trip current of F16　　I_F		2.0 A_{RMS}	3.2 A_{RMS}	4.2 A_{RMS}	7.8 A_{RMS}	2.5 A_{RMS}	4.4 A_{RMS}
Enclosure		IP20 (when mounted)					
For MOVITRAC® 07A...-2..		015/022				015 ... 037	

Grid resistor 230 V
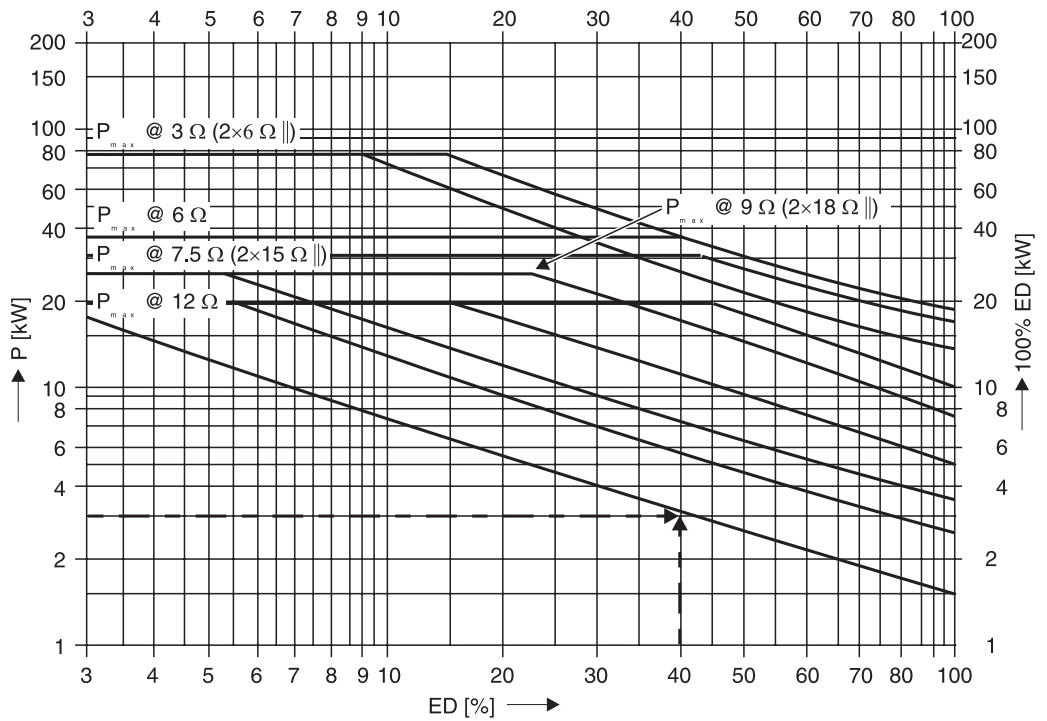
Figure 49: Grid resistor 230 V

05814AXX

P = Intermittent power [kW]
cdf = Cyclic duration factor of the braking resistor [%]
100 % cdf = Continuous power [kW]

Example   When an intermittent braking power of 3 kW is needed with a cyclic duration factor of 40 %, this requires a braking resistor with a continuous power of 1.5 kW, for example BW018-015.

Braking resistor type		BW018-015	BW018-035	BW018-075	BW915
Load capacity	**100 % cdf**	1.5 kW	3.5 kW	7.5 kW	16 kW
Resistance value	**R$_{BW}$**	18 Ω ±10 %		18 Ω ±10 %	15 Ω ±10 %
Trip current of F16	**I$_F$**	4.0 A$_{RMS}$	8.1 A$_{RMS}$	14 A$_{RMS}$	28 A$_{RMS}$
Enclosure		IP20 (when mounted)			
For MOVITRAC® 07A...-2..		2 × parallel with 110			

| Braking resistor type		BW012-025	BW012-050	BW012-100	BW106	BW206
Load capacity	**100 % cdf**	2.5 kW	5.0 kW	10 kW	13 kW	18 kW
Resistance value	**R$_{BW}$**	12 Ω ±10 %			6 Ω ±10 %	
Trip current of F16	**I$_F$**	10 A$_{RMS}$	19 A$_{RMS}$	27 A$_{RMS}$	38 A$_{RMS}$	42 A$_{RMS}$
Enclosure		IP20 (when mounted)				
For MOVITRAC® 07A...-2..		055/075			150 and 2 × parallel with 220/300	

Flat-type 400/500 V
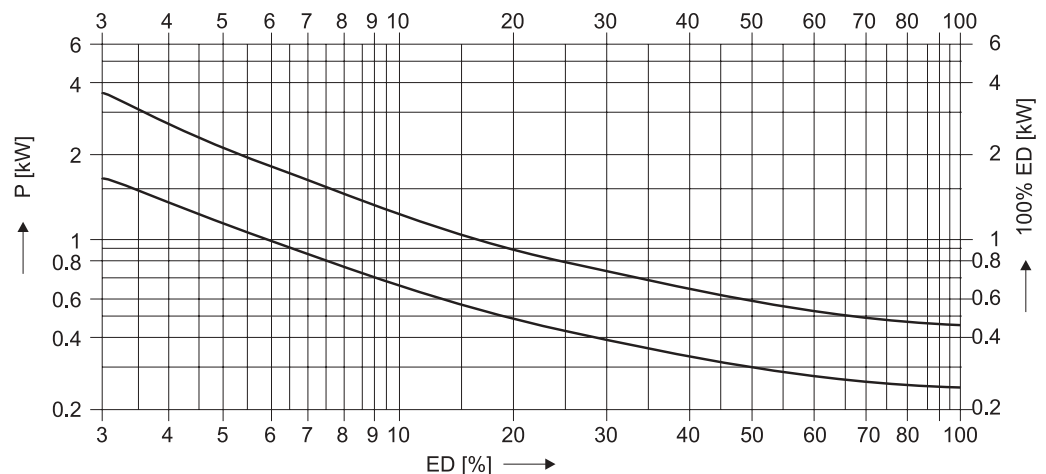
05812AXX

Figure 50: Flat-type 230 V

P = Intermittent power [kW]
cdf = Cyclic duration factor of the braking resistor [%]
100 % cdf = Continuous power [kW]

*Wire resistor
400/500 V*
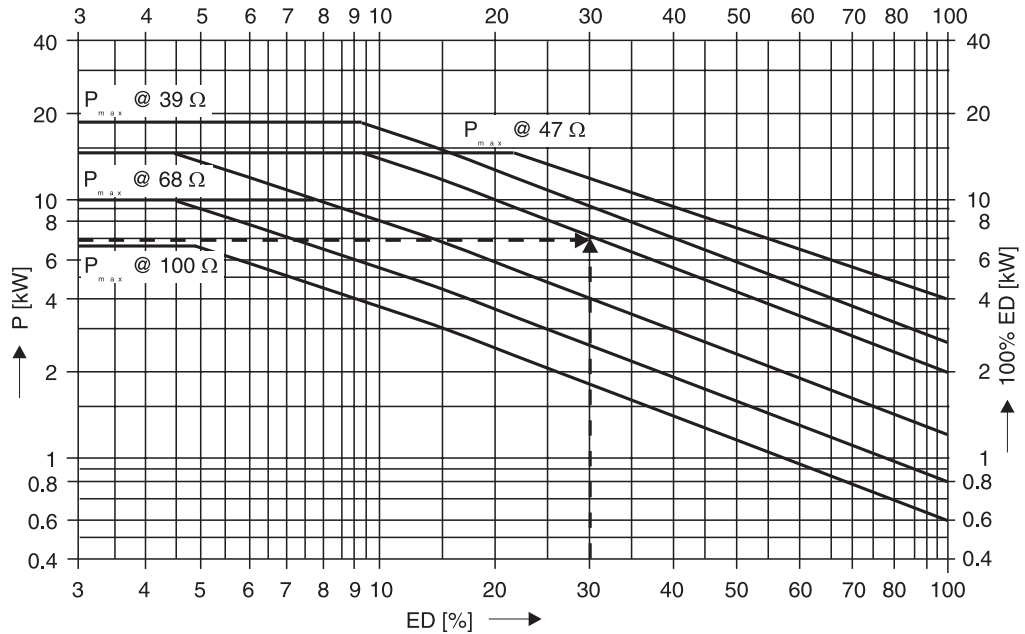
05815AXX

Figure 51: Wire resistor 400/500 V

P = Intermittent power [kW]
cdf = Cyclic duration factor of the braking resistor [%]
100 % cdf = Continuous power [kW]

Example

For an intermittent braking power of 7 kW with a cyclic duration factor of 30%, you will have to use a braking resistor with a continuous power of 2 kW, such as the BW247.

Braking resistor type		BW100-005	BW100-006	BW168	BW268	BW147	BW247	BW347
Load capacity	**100 % cdf**	0.45 kW	0.6 kW	0.8 kW	1.2 kW	1.2 kW	2.0 kW	4.0 kW
Resistance value	R_{BW}	100 Ω ±10 %		68 Ω ±10 %		47 Ω ±10 %		
Trip current of F16	I_F	0.8 A_{RMS}	1.8 A_{RMS}	2.5 A_{RMS}	3.4 A_{RMS}	3.5 A_{RMS}	4.9 A_{RMS}	7.8 A_{RMS}
Enclosure		IP54	IP20 (when mounted)					
For MOVITRAC® 07A...-5..		015/022	015 ... 040			055/075		

*Grid resistor
400/500 V*
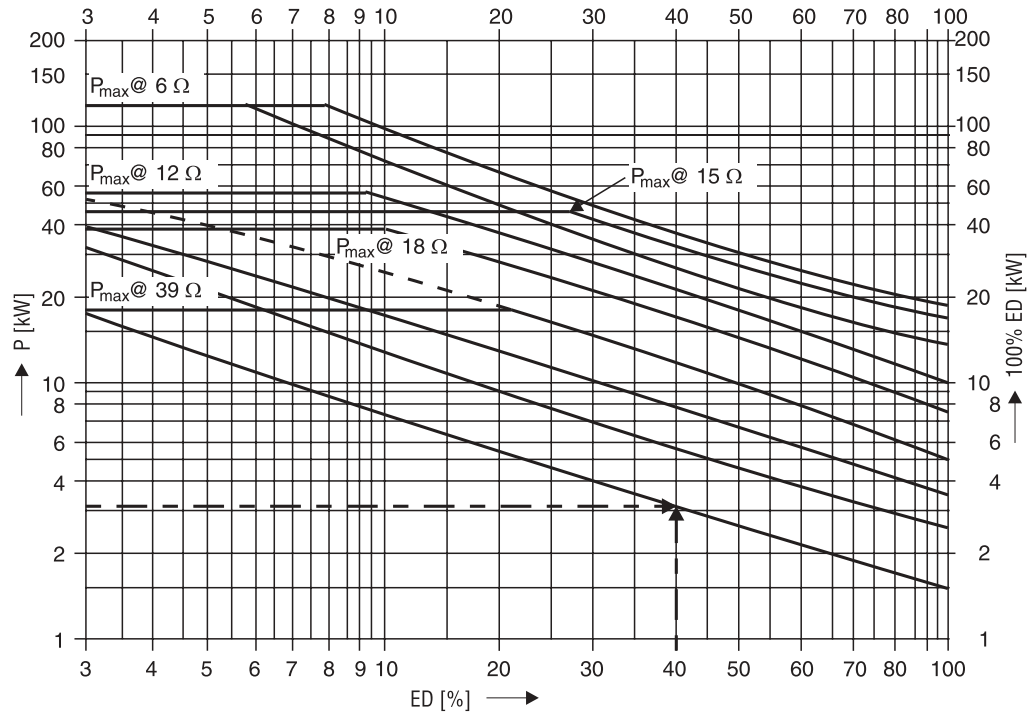
Figure 52: Grid resistor 400/500 V

05816AXX

Example

For an intermittent braking power of 3 kW with a cyclic duration factor of 40 %, you will have to use a braking resistor with a continuous power of 1.5 kW, such as BW018-015.

Braking resistor type		BW039-012	BW039-026	BW039-050	BW018-015	BW018-035	BW018-075
Load capacity	**100 % cdf**	1.2 kW	2.6 kW	5.0 kW	1.5 kW	3.5 kW	7.5 kW
Resistance value	**R$_{BW}$**		39 Ω ±10 %			18 Ω ±10 %	
Trip current of F16	**I$_F$**	4.2 A$_{RMS}$	7.8 A$_{RMS}$	11 A$_{RMS}$	4.0 A$_{RMS}$	8.1 A$_{RMS}$	14 A$_{RMS}$
Enclosure				IP20 (when mounted)			
For MOVITRAC® 07A...-5..			110		150/220 and 2 × parallel with 370/450		

Braking resistor type		BW915	BW012-025	BW012-050	BW012-100	BW106	BW206
Load capacity	**100 % cdf**	16 kW	2.5 kW	5.0 kW	10 kW	13 kW	18 kW
Resistance value	**R$_{BW}$**	15 Ω ±10 %		12 Ω ±10 %			6 Ω ±10 %
Trip current of F16	**I$_F$**	28 A$_{RMS}$	6.1 A$_{RMS}$	12 A$_{RMS}$	22 A$_{RMS}$	38 A$_{RMS}$	42 A$_{RMS}$
Enclosure				IP20 (when mounted)			
For MOVITRAC® 07A...-5..		110		300		370 ... 750	

5.9   Brake connection

For detailed information about the SEW brake system, refer to

- *Geared Motors* catalog
- *Drive Engineering – Practical Implementation, Vol. 4* manual

SEW brake systems are DC operated disc brakes which are released electromagnetically and applied by spring force. A brake rectifier supplies the brake with DC voltage.

Route a separate supply system lead for the brake rectifier when operating with an inverter. Powering it from the motor voltage is not permitted! See the wiring diagram!

The inverter switches the brake rectifier off in the AC circuit.

Always operate the brake via binary output DO02 of the inverter, not via the PLC!

Binary output DO02 is configured with a control voltage of +24 V / I_{max} = 150 mA / 3.6 W for operating a relay. This relay can directly control a power contactor. This power contactor engages and disengages the brake.

5.10   Supply system contactor and mains fuses

Supply system contactor

- Only use supply system contactors in utilization category AC-3 (IEC 158-1).
- Do not use the K11 supply system contactor for jog mode, but only for switching the inverter on and off. Use the following commands for jog mode:
  - Enable/stop
  - CW/STOP
  - CCW/STOP

Recommendation

Observe a minimum switch-off time of 10 s for the supply system contactor K11.

5.11   Supply system lead and motor cable

Permitted voltage systems

MOVITRAC® 07 is intended for operation on voltage systems with a directly grounded star point (TN and TT systems). Operation on voltage systems with a non-grounded star point (for example IT systems) is permitted. In such a case, SEW recommends using an earth-leakage monitor according to the PCM (pulse-code measurement) principle.

Fuse and core cross section

Comply with the regulations of the specific country and for the specific machine regarding fusing and selecting the line cross sections.

Select the line cross section of the motor lead so the voltage drop is as small as possible.

When several single-phase devices are used, the size of the shared neutral conductor must always be selected for the total current. Select with reference to the total current even if the unit connections are distributed over the three mains phases. This is because the 3rd supply system harmonic is always cumulative.

An excessively high voltage drop means that the motor does not achieve its full torque.

MOVITRAC® 07 230 V		004	005	008	011	015	022
1-phase	Fuses	C16 / gL16 / K16	C16 / gL16 / K16	C16 / gL16 / K16	C32 / gL25 / K25 / D20	C32 / gL25 / K25 / D20	C32 / gL25 / K25 / D20
	Supply system lead	1.5 mm^2	1.5 mm^2	1.5 mm^2	4 mm^2	4 mm^2	4 mm^2
	PE conductor	2 x 1.5 mm^2	2 x 1.5 mm^2	2 x 1.5 mm^2	2 x 4 mm^2	2 x 4 mm^2	2 x 4 mm^2
3-phase	Fuses	10 A	10 A	10 A	10 A	10 A	16 A
	Supply system lead	1.5 mm^2	1.5 mm^2	1.5 mm^2	1.5 mm^2	1.5 mm^2	1.5 mm^2
	PE conductor	2 x 1.5 mm^2	2 x 1.5 mm^2	2 x 1.5 mm^2	2 x 1.5 mm^2	2 x 1.5 mm^2	2 x 1.5 mm^2
Motor lead		1.5 mm^2	1.5 mm^2	1.5 mm^2	1.5 mm^2	1.5 mm^2	1.5 mm^2

MOVITRAC® 07 230 V		037	055	075	110	150	220	300
3-phase	Fuses	25 A	25 A	35 A	50 A	63 A	80 A	100 A
	Supply system lead	4 mm^2	4 mm^2	6 mm^2	10 mm^2	16 mm^2	25 mm^2	35 mm^2
	PE conductor	2 x 4 mm^2 1 x 10 mm^2	2 x 4 mm^2 1 x 10 mm^2	2 x 6 mm^2 1 x 10 mm^2	1 x 10 mm^2	1 x 16 mm^2	1 x 16 mm^2	1 x 16 mm^2
Motor lead		Disconnect-able terminal strip 4 mm^2 conductor end sleeve DIN 46228	Screw and washer assembly M4 with terminal clip 4 mm^2 conductor end sleeve DIN 46228 6 mm^2 crimp cable connector DIN 46234		Screw and washer assembly M6 with washer max. 25 mm^2 crimp cable connector DIN 46234		Bolt M10 with nut max. 70 mm^2 crimp cable connector DIN 46234	

MOVITRAC® 07 400/500 V		005	008	011	015	022	030	040
3-phase	Fuses	10 A	10 A	10 A	16 A	16 A	16 A	16 A
	Supply system lead	1.5 mm^2	1.5 mm^2	1.5 mm^2	1.5 mm^2	1.5 mm^2	1.5 mm^2	1.5 mm^2
	PE conductor	2 x 1.5 mm^2	2 x 1.5 mm^2	2 x 1.5 mm^2	2 x 1.5 mm^2 1 x 10 mm^2	2 x 1.5 mm^2 1 x 10 mm^2	2 x 1.5 mm^2 1 x 10 mm^2	2 x 1.5 mm^2 1 x 10 mm^2
Motor lead		1.5 mm^2	1.5 mm^2	1.5 mm^2	1.5 mm^2	1.5 mm^2	1.5 mm^2	1.5 mm^2

MOVITRAC® 07 400/500 V		055	075	110	150	220	300
3-phase	Fuses	16 A	16 A	25 A	35 A	50 A	63 A
	Supply system lead	1.5 mm^2	1.5 mm^2	4 mm^2	6 mm^2	10 mm^2	16 mm^2
	PE conductor	2 x 1.5 mm^2 1 x 10 mm^2	2 x 1.5 mm^2 1 x 10 mm^2	2 x 4 mm^2 1 x 10 mm^2	2 x 6 mm^2 1 x 10 mm^2	1 x 10 mm^2	1 x 16 mm^2
Motor lead		1.5 mm^2	1.5 mm^2	Screw and washer assembly M4 with terminal clip 4 mm^2 conductor end sleeve DIN 46228 6 mm^2 crimp cable connector DIN 46234	Screw and washer assembly M6 with washer max. 25 mm^2 Crimp cable connector DIN 46234		

Motor feeder length   The maximum motor feeder length is dependent on:

- cable type,
- voltage drop in the cable,
- set PWM frequency.
- Use of an output filter (not permitted with 230 V units)[1]

MOVITRAC® 07 Size	Permitted maximum motor feeder length in m (ft) 0S, 0M, 0L
Shielded cable	25 m (82 ft) / regardless of the PWM frequency
Unshielded cable	50 m (165 ft) / regardless of the PWM frequency

MOVITRAC® 07 type		Permitted maximum motor feeder length in m (ft)					
Voltage		230 V				400/500 V	
Size		1	2		3/4	2S	2/3
Type		037	055	075	110 ... 300	055	075 ... 300
Shielded cable	4 kHz 8 kHz 12 kHz 16 kHz	250 (825) 150 (495) 120 (396) 100 (330)	300 (990) 250 (825) 200 (660) 150 (495)	300 (990) 250 (825) 200 (660) 150 (495)	400 (1320) 300 (990) 250 (825) 200 (660)	300 (990) 250 (825) 200 (660) 150 (495)	400 (1320) 300 (990) 250 (825) 200 (660)
Unshielded cable	4 kHz 8 kHz 12 kHz 16 kHz	750 (2475) 450 (1485) 360 (1188) 300 (990)	900 (2970) 750 (2475) 600 (1980) 450 (1485)	900 (2970) 750 (2475) 600 (1980) 450 (1485)	1200 (3960) 900 (2970) 750 (2475) 600 (1980)	900 (2970) 750 (2475) 600 (1980) 450 (1485)	1200 (3960) 900 (2970) 750 (2475) 600 (1980)

You should not use an earth-leakage circuit breaker with long motor leads. The earth-leakage currents caused by cable capacitance may cause mis-tripping.

---

1   The limit values in the tables do not apply if you are using an output filter. The motor feeder length is then solely limited by the voltage drop on the motor feeder.

Voltage drop

Select the line cross section of the motor lead so the **voltage drop is as small as possible**. An excessively high voltage drop means that the motor does not achieve its full torque.

You can refer to the following tables to find the expected voltage drop. For shorter lines, you can calculate the voltage drop by converting proportional to the length.

Line cross section	Load with I [A] =															
	4	6	8	10	13	16	20	25	30	40	50	63	80	100	125	150
Copper	Voltage drop ΔU [V] with length = 100 m (330 ft) and ϑ = 70 °C															
1.5 mm²	5.3	8	10.6	13.3	17.3	21.3	1	1	1	1	1	1	1	1	1	1
2.5 mm²	3.2	4.8	6.4	8.1	10.4	12.8	16	1	1	1	1	1	1	1	1	1
4 mm²	1.9	2.8	3.8	4.7	6.5	8.0	10	12.5	1	1	1	1	1	1	1	1
6 mm²					4.4	5.3	6.4	8.3	9.9	1	1	1	1	1	1	1
10 mm²						3.2	4.0	5.0	6.0	8.2	10.2	1	1	1	1	1
16 mm²								3.3	3.9	5.2	6.5	7.9	10.0	1	1	1
25 mm²									2.5	3.3	4.1	5.1	6.4	8.0	1	1
35 mm²											2.9	3.6	4.6	5.7	7.2	8.6
50 mm²														4.0	5.0	6.0

1 Loading not permitted, in accordance with VDE 0100 part 430

Line cross section	Load with I [A] =															
	4	6	8	10	13	16	20	25	30	40	50	63	80	100	125	150
Copper	Voltage drop ΔU [V] with length = 100 m (330 ft) and ϑ = 70 °C															
AWG16	7.0	10.5	1	1	1	1	1	1	1	1	1	1	1	1	1	1
AWG14	4.2	6.3	8.4	10.5	13.6	1	1	1	1	1	1	1	1	1	1	1
AWG12	2.6	3.9	5.2	6.4	8.4	10.3	12.9	1	1	1	1	1	1	1	1	1
AWG10					5.6	6.9	8.7	10.8	13.0	1	1	1	1	1	1	1
AWG8						4.5	5.6	7.0	8.4	11.2	1	1	1	1	1	1
AWG6								4.3	5.1	6.9	8.6	10.8	13.7	1	1	1
AWG4									3.2	4.3	5.4	6.8	8.7	10.8	13.5	1
AWG3									2.6	3.4	4.3	5.1	6.9	8.6	10.7	12.8
AWG2											3.4	4.2	5.4	6.8	8.5	10.2
AWG1												3.4	4.3	5.4	6.8	8.1
AWG1/0												2.6	3.4	4.3	5.4	6.8
AWG2/0													2.7	3.4	4.3	5.1

1 More than 3 % voltage drop in relation to V_{in} = 460 V_{AC}.

5.12   Group drive

In V/f character. operating mode, a group of asynchronous motors can be operated on one inverter. Please note:

- Select V/f operating mode
- Set the power of the largest motor
- Switch off automatic adjustment P320
- Set IxR compensation P322 to zero
- Set slip compensation P324 to zero
- Set the current limitation to 1.5 times the total current of the motors

In this operating mode, the inverter operates without slip compensation and with a constant V/f ratio.

STOP   **The parameter settings apply to all connected motors.**

Motor currents   The total of the motor currents must not exceed the output rated current of the inverter.

Motor lead   You can calculate the permitted length of all motor leads connected in parallel as follows:

$$l_T \leq \frac{l_{max}}{n}$$

l_T = Total length of the motor leads connected in parallel

l_{max} = Recommended maximum motor lead length

n   = Number of motors connected in parallel

Only use unshielded motor leads.

Motor size   The motors in a group must not be more than three levels apart.

Output filter

Usually, there is no need for an output filter with small groups of two to three motors. An output filter HF... is required if the maximum motor lead length (l_{max}) given in the table is not adequate. This may be the case in large groups (n) or when there are long motor lead lengths connected in parallel (l_{tot}). In this case, it is the voltage drop on the motor lead which restricts the maximum motor lead length, not the limit value in the table. The total value of the rated motor currents must not exceed the rated throughput current of the output filter.

Connection to the frequency inverter output is only permitted in size 0S, 0M and 0L when the output stage is inhibited.

5.13 Line chokes

1-phase

Use is optional under the following circumstances:

- Reduction in the supply system current harmonics
- Support for overvoltage protection

Use is required under the following circumstances:

- Supply system inductance values less than 100 µH per branch
- For limiting the inrush current when operating more than one unit on a shared supply system contactor

3-phase

Use is optional under the following circumstances:

- Support for overvoltage protection

Use is required under the following circumstances:

- For limiting the inrush current when operating more than four units on a supply system contactor

For connecting several single-phase inverters to one three-phase line choke

Prerequisites for connecting several single-phase inverters to one three-phase line choke are:

- The supply system contactor must be designed for the total current.
- The fuse must correspond to the rated current value of the line choke.
- Connect MOVITRAC® 07 frequency inverters to the line chokes symmetrically.

Example: Two single-phase inverters on one single-phase line choke

Two MOVITRAC® 07MC07A008-2B1 units (0.75 kW) are connected to one line choke ND 020-151. The rated current of the inverters is 9.9 A.

Make sure the line cross section corresponds to the selected fuse. In addition, you must configure the neutral conductor in accordance with the total current.
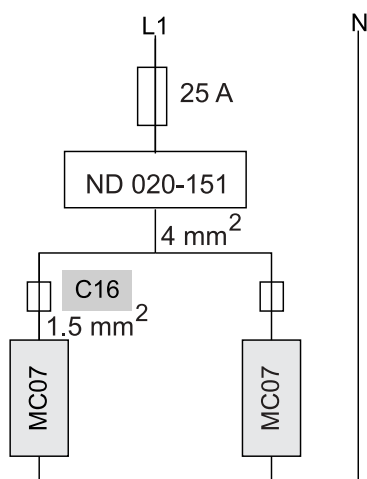
04363BXX
Figure 53: Connecting two single-phase inverters to one single-phase line choke

Example: Nine single-phase inverters on one three-phase line choke

Nine MOVITRAC® 07 MC07A-008-2B1-00 units (0.75 kW) are to be connected to one three-phase line choke. The rated current of the inverters is 9.9 A.

Make sure the line cross section corresponds to the selected fuse. In addition, you must configure the neutral conductor in accordance with the total current.
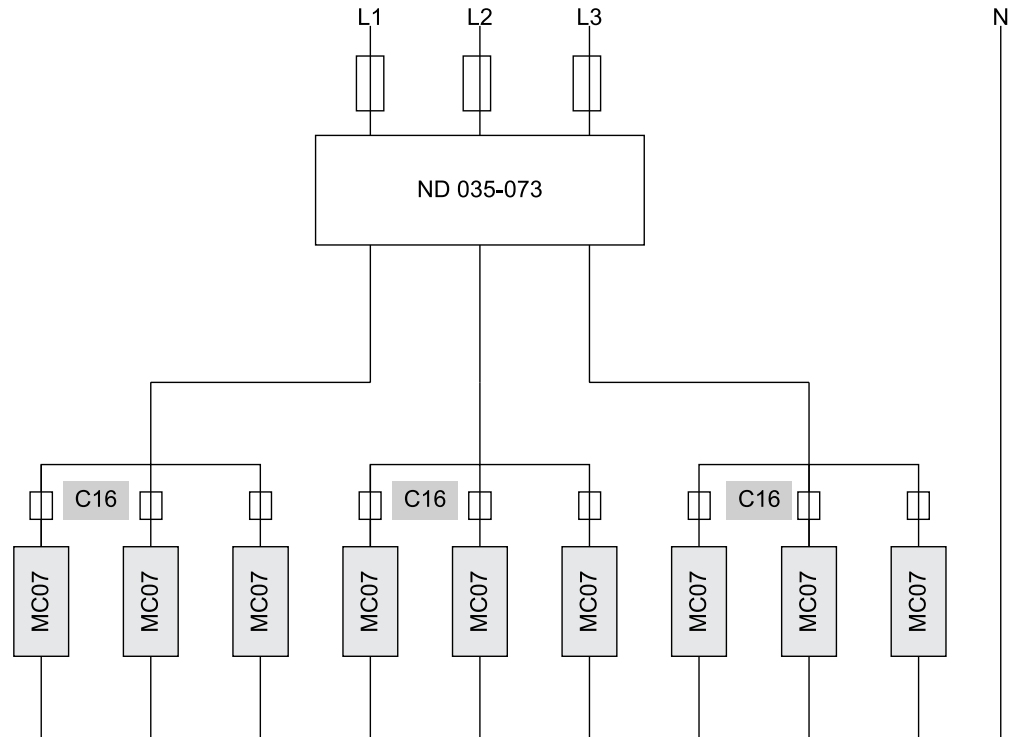
04331BXX

Figure 54: Connecting several inverters to one three-phase line choke

5.14 Installation notes

MOVITRAC® 07 frequency inverters are components of machines and systems. They comply with the EMC product standard EN 61800-3 **Variable-speed electrical drives**. If you want to provide the machine/system with frequency inverters in accordance with the EMC Directive 89/336/EEC: Observe the instructions regarding EMC compliant installation.

MOVITRAC® 07 frequency inverters are fitted with an line filter as standard. They comply with the following limit value class to EN 55011 on the line side without further measures:

- **B**: 1-phase connection
- **A**: 3-phase connection
  - 230 V: up to 7.5 kW
  - 400/500 V: up to 11 kW

Interference immu-nity	With regard to interference immunity, MOVITRAC® 07 meets all the requirements stipulated in EN 50082-2 and EN 61800-3.
Interference emission	Higher levels of interference are permitted in industries. In industrial environments, it may be possible to dispense with the measures listed below depending on the situation of the supply system and the machine configuration.
Limit value class	The following possible solutions exist for EMC-compliant installation, depending on the machine configuration. Perform EMC-compliant installation according to EN 55011.

Limit value class	Input side		Output side
	Size 0 ... 2	**Size 3 ... 4**	**Size 0 ... 4**
A	No action needed	NF line filters	HD output chokes or shielded motor cable

Limit value class	Input side		Output side
	Size 0 1-phase	**Size 0 ... 4 3-phase**	**Size 0 ... 4**
B	No action needed	NF line filters	HD output chokes or shielded motor cable

Units with class A limit attain the class B limit with an additional NF line filter.

IT systems

No EMC limits are specified for interference emission in voltage supply systems without an earthed star point (IT systems). The effectiveness of line filters is severely limited.

Connection	You will achieve EMC-compliant connection of the MOVITRAC® 07 frequency inverter by following the instructions in the Installation section.
	Connect the output choke according to the Installation section.
Conductor end sleeves	Terminals for installation without conductor end sleeves are provided for size 0.

Block diagram for installation according to the class B limit

[1]: Alternative 1 with HD output chokes

[2]: Alternative 2 with shielded motor lead
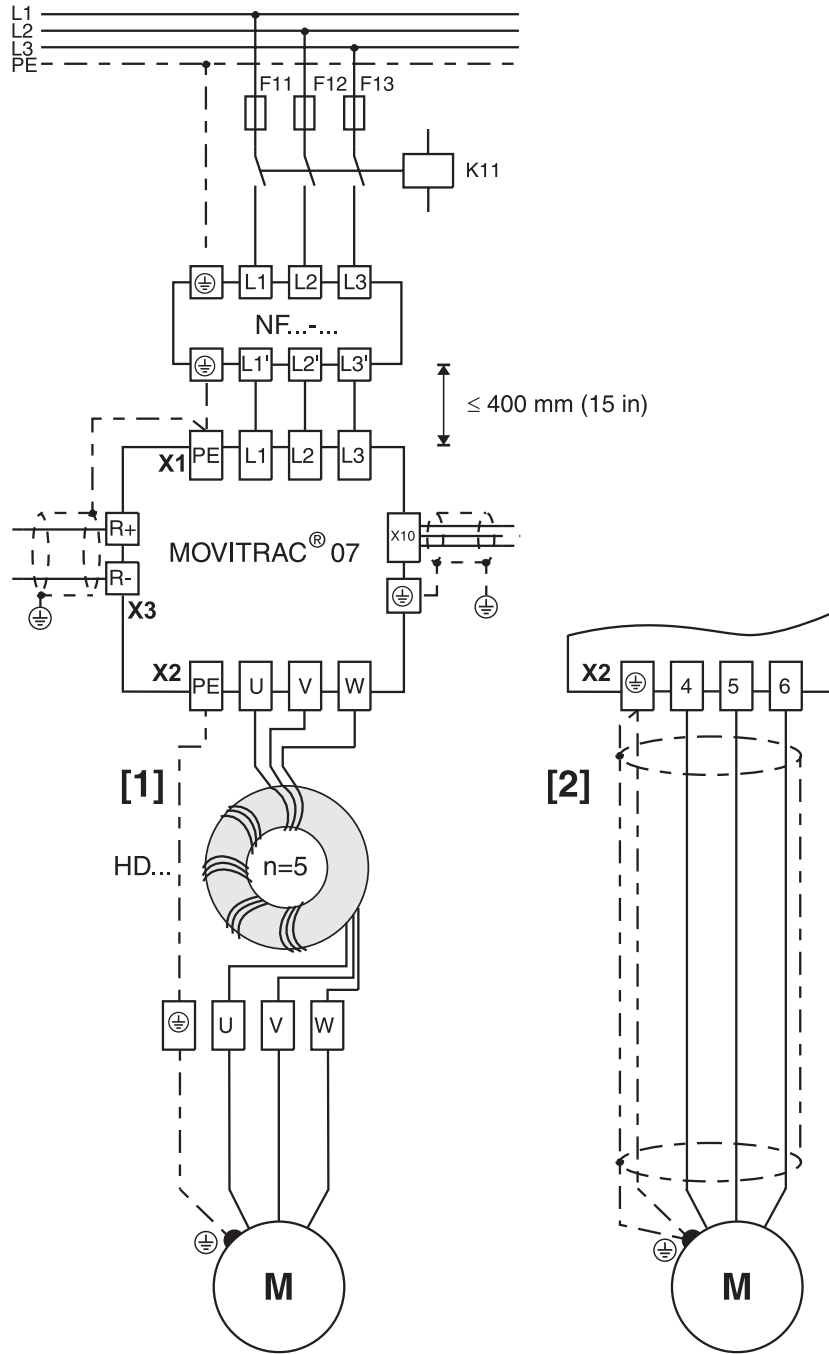
Figure 55: Installation according to class B limit

05129BXX

Please refer to the publication "Drive Engineering – Practical Implementation, Electromagnetic Compatibility (EMC) in Drive Engineering" for detailed information about the topic of "electromagnetic compatibility".
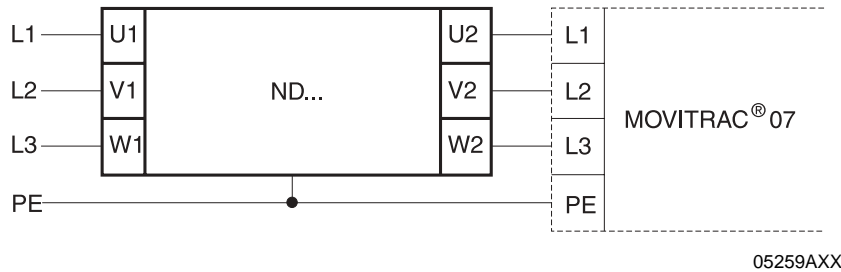
5.15   Connecting the optional power components

Series ND... line chokes

L1 — U1
L2 — V1   ND...   U2 — L1
L3 — W1   V2 — L2
PE   W2 — L3   MOVITRAC® 07
                         PE

05259AXX

Figure 56: Connecting ND... line chokes

Series NF...-... line filters

L1 — L1
L2 — L2   NF...-...   L1' — L1
L3 — L3   L2' — L2
PE   L3' — L3   MOVITRAC® 07
                         PE

05260AXX
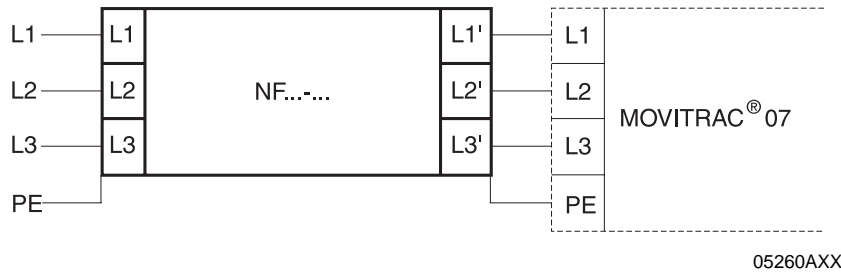
Figure 57: Connecting NF...-... line filters

Series HD... output chokes

Output choke type	HD001	HD002	HD003
For cable cross sections	1.5...16 mm^2 (AWG16...6)	≤ 1.5 mm^2 (≤ AWG16)	≥ 16 mm^2 (≥ AWG6)

Series HF... output filters

STOP

- Install output filters next to the corresponding inverter. Leave a ventilation space of at least 100 mm (4 in) below and above the output filter. No clearance is required to either side.

- Restrict the length of the cable between the inverter and the output filter to the absolute minimum needed. Maximum 1 m / 3.3 ft with an unshielded cable and 10 m / 33 ft for a shielded cable.

STOP

- You are only allowed to connect unshielded motor leads if using an output filter. A shielded motor lead leads to impermissibly high heating of the output filter.

- Several motors can be connected jointly to one output filter when multiple motors are operated on one inverter. The total value of the rated motor currents must not exceed the rated throughput current of the output filter.

- It is acceptable for two identical output filters to be connected in parallel to one inverter output in order to double the rated through current. To do this, connect all connections with the same name to the output filters in parallel.

- Output filter connection V5 (with HF...-503) or 7 (with HF...-403) must not be connected when the inverter is operated with f_{PWM} = 4 or 8 kHz.
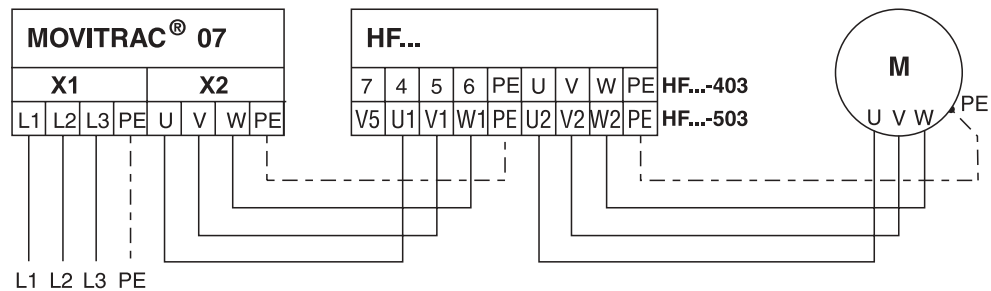
05262AXX

Figure 58: Connecting HF...-... output filters

5.16 Electronics cables and signal generation

Cable type

The electronics terminals are suitable for cross sections up to 1.5 mm^2 (AWG16) without conductor end sleeves and up to 1.0 mm^2 (AWG17) with conductor end sleeves.

Use shielded cables as standard. Ground the shield at both ends. Route electronics cables separately from power cables and contactor control cables or braking resistor cables.

0 V cables

Never connect 0 V cables GND for generating signals. The 0 V cables of several electrical units which are connected together should not be looped from unit to unit, but rather wired up in a star configuration. This means:

- Install the units in adjacent switch cabinet compartments rather than distributing them widely.

- Lay the 0 V cables with 1 mm^2 (AWG17) cross section from a central point to each individual unit by the shortest possible route.

Coupling relays

If you use coupling relays, then only use relays with encapsulated, dust-protected electronic contacts. The relays must be suitable for switching low voltages and currents (5 ... 30 V, 0.1 ... 20 mA).

Binary inputs / binary outputs

Binary input commands can also be issued directly as 0/1 commands from a PLC instead of using a coupling relay. Signal levelsee Sec. Technical Data.

The binary outputs are short-circuit proof and interference-voltage-proof up to 35 V against GND. Applying a higher external voltage may destroy them!

5.17 PI-controller

You can use the implemented PI-controller for temperature control, pressure control or other applications. The PI-controller can be switched on and off.
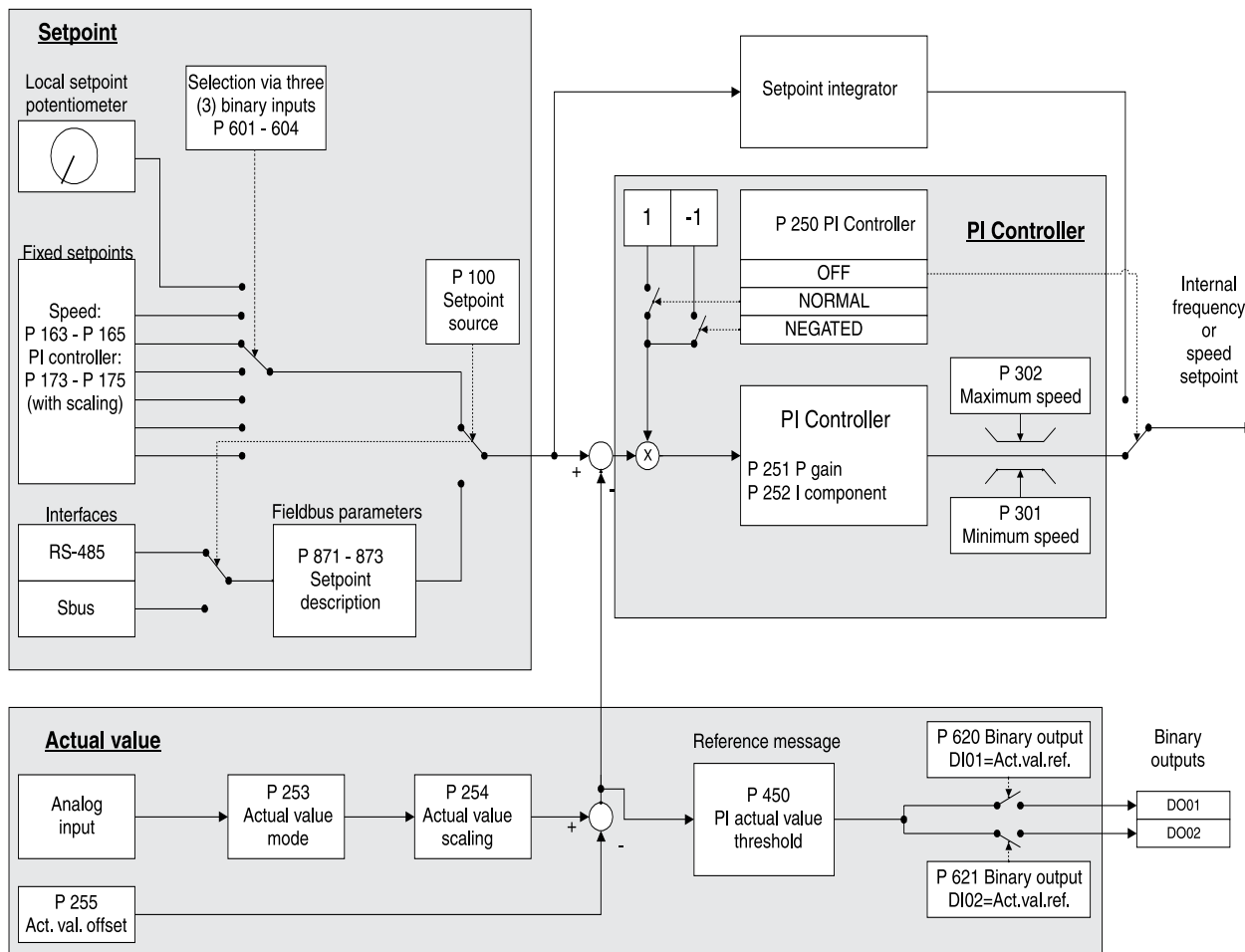
03178BEN

Figure 59: Structural diagram showing the implementation of the PI-controller

Connect the actual value from the sensor (temperature, pressure, etc.) to analog input AI1. You can scale the actual value up or down and assign an offset value, thereby adapting it to the working range of the PI-controller.

You can set the PI-controller setpoint using one of the six programmed fixed setpoints or specify the setpoint using the RS-485 or fieldbus (SBus) interface (*P100 = Setpoint source*). Furthermore, it is possible to select the setpoint using the local setpoint potentiometer.

The correcting variable of the PI-controller is a speed setpoint limited to the minimum and maximum speed (*P301 = Minimum speed 1* and *P302 = Maximum speed 1*). The speed ramp time setting has no effect if the PI-controller is active.

Default parameter settings are shown in **bold** below.

Setting parameters

Activating the PI-controller

Switch the PI-controller off and on using parameter P250. The setpoint and actual value settings mentioned initially are active when you switch on the PI-controller.

The *NORMAL* setting increases the correcting variable if there is a positive system deviation; the correcting variable is reduced if there is a negative system deviation.

The *INVERTED* setting increases the correcting variable if there is a negative system deviation; the correcting variable is reduced if there is a positive system deviation.

P 250	PI-controller	**Off**
		Normal
		Inverted

Controller parameters

You can adapt the controller to the application using the following settings:

P 251	P-gain	0 ... **1** ... 64	Step width:	0.01
P 252	Time constant n-control.	0 ... **1** ... 2000 [s]	Range: 0 0.01 ... 0.99 1.0 ... 9.9 10 ... 99 100 ... 2000	Step width: Time constant n-control. OFF 0.01 0.1 1 10

Setpoint selection

The following settings are possible as the setpoint source. You can select the setpoint source with parameter P100.

- **UNIPOL/FIX.SETPT**: The setpoint set using the local setpoint potentiometer applies until one of the following fixed setpoints is selected:

  P163/164/165 Setpoint n11/12/13 scales PI-controller [0 ... 100 %] step width: 0.1 %

  P173/174/175 Setpoint n21/22/23 scales PI-controller [0 ... 100 %] step width: 0.1 %

- **RS-485** (only for service purposes)

- **SBus**: Specify the setpoint and set it using the following bus parameters:

  P870/871/872 Setpoint description PO1/PO2/PO3 [PI-controller setpoint [%]]

  PO1/PO2/PO3 = 0 ... 2^{14} = 0 ... 100 % PI-controller setpoint

The following settings do not have any effect: **MOTOR POT**, **FIX SETP+AI1** and **FIX SETP*AI1**. If you set these, the inverter always specifies the setpoint zero.

Setpoint selection is **always unipolar**. The inverter restricts negative setpoints (e.g. via RS-485 or SBus) to zero.

Actual value acquisition

Unipolar input AI1 is the actual value input.

You can acquire the actual value as follows using *P253 PI actual value mode*:

- **0 ... 10 V**: The following applies to operation as a voltage input:

  0 ... 10 V = 0 ... 100 % PI-controller actual value

- 0 ... 20 mA: The following applies to operation as a current input:

  0 ... 20 mA = 0 ... 100 % PI-controller actual value

- 4 ... 20 mA: The following applies to operation as a current input:

  4 ... 20 mA = 0 ... 100 % PI-controller actual value

You can scale the actual value acquired using P253 PI actual value mode with a factor between 0 and 10.

P254	PI actual value scaling	0.1 ... **1** ... 10	Step width:	0.01

This parameter allows you to assign an offset subsequently to the scaled actual value.

P255	PI sensor offset	**0** ... 100 [%]	Step width:	0.1 %

The scaled value with its offset is the actual value for the PI-controller.

You can read the actual value via RS-485 or SBus using the following bus parameters:

P873 Actual value description PI1 [PI-controller [%]]
P874 Actual value description PI2 [PI-controller [%]]
P875 Actual value description PI3 [PI-controller [%]]

PI1 = 0 ... 2^{14} = 0 ... 100 % PI-controller setpoint
PI2 = 0 ... 2^{14} = 0 ... 100 % PI-controller setpoint
PI3 = 0 ... 2^{14} = 0 ... 100 % PI-controller setpoint

Reference signal

With this parameter, you can program a reference signal with regard to the actual value of the PI-controller. By doing this, you can monitor the actual value for violation of a limit value, for example.

P450	PI actual value reference	**0** ... 100 [%]	Step width:	0.1 %
P451	Signal = "1" if:	PI actual value < PI reference PI actual value > PI reference		

A binary output terminal must be programmed to "PI ACTUAL VALUE REFERENCE" in order to output the reference signal. The reference signal operates with a hysteresis of 5 %. The reference signal does not have a delay time and signals '1' depending on P451.

Either binary output DO01 [list box] P620 or binary output DO02 [list box] P621 must be programmed to PI ACT.VALUE REF.

Inverter control You can determine the direction of rotation using direction of rotation terminals "CW/STOP" and "CCW/STOP".

After the enable, the inverter increases the speed using speed ramp P130 until minimum speed P301 is reached. PI control takes effect once the minimum speed has been reached. The PI-controller correcting variable directly determines the speed setpoint.

If you revoke the CW/CCW terminal, the inverter deactivates PI control and stores the I component of the PI-controller. Speed is reduced with the speed ramp (P131). The PI-controller is reactivated with the current setpoint if an enable is issued before the drive has reached its stop speed.

If you stop the inverter with the "Enable/Stop" terminal, the drive decelerates with the rapid stop ramp. The inverter stores the I component of the controller.

With setpoint source RS485 or SBus, the inverter specifies the direction of rotation as follows: The terminal determines the setpoint direction of rotation if one of the two terminals CW or CCW is active. The value of the PO data item "PI CTRL %" acts as a setpoint for the PI-controller. If both terminals are active, the +/- sign of the PO data item "PI CTRL %" determines the setpoint direction of rotation. The value of the PO data item "PI CTRL %" acts as a setpoint for the PI-controller.

5.18 Application examples

All the following application examples assume that the unit has been started up correctly in accordance with Sec. "Startup".

External setpoint potentiometer The external setpoint potentiometer is not in effect when manual mode is activated.

Parameter 121 *Addition Setpoint Potentiom.* on the operating panel must be set to ON.

Connect an external setpoint potentiometer as follows:

With dropping resistor The resistance value of the external setpoint potentiometer R1 must be 10 kΩ. The dropping resistor R2 must have a resistance value of 12 kΩ.
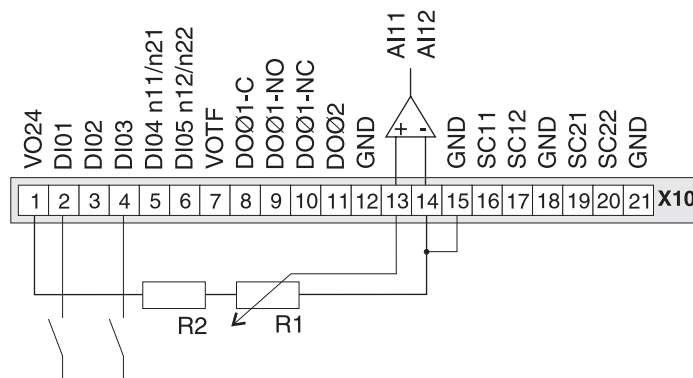
03416CXX

Figure 60: External setpoint potentiometer with DI01 = CW/STOP / DI02 = CCW/STOP / DI03 = Enable / DO02 = Brake

Without dropping resistor

The resistance value of the external setpoint potentiometer R1 must be approx. 47 kΩ. You are not allowed to connect a TF if the external setpoint potentiometer does not have a dropping resistor.
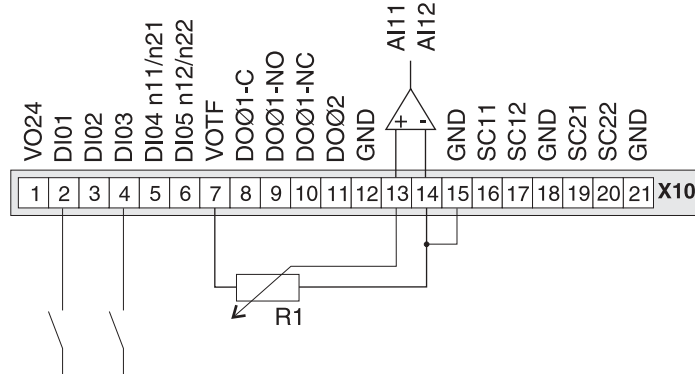
05324AXX
Figure 61: External setpoint potentiometer with DI01 = CW/STOP /
DI02 = CCW/STOP / DI03 = Enable / DO02 = Brake

Speed-controlled agitator

In this application, you can control the speed with the potentiometer of the integrated operating panel.

Control the reset, start, stop and speed using the integrated operating panel. Select the ⊘ icon to operate the agitator (activation of the manual speed control module).
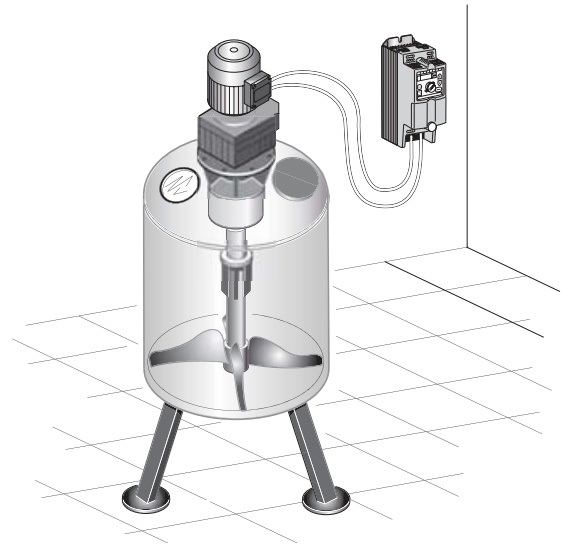
Parameters

Adapt the following parameters for the agitator:

- Local Potentiometer Mode P122: Direction of rotation
- Ramp t11 UP (adjustment using the ⤺ icon or parameter P130)
- Ramp t11 DOWN (adjustment using the ⤼ icon or parameter P131)
- Minimum speed P301
- Maximum speed P302
- PWM frequency P860

Positioning of a trolley

Principle Positioning of a trolley with rapid traverse and crawl speed, position detection using proximity sensors.

You must guarantee the emergency off function using a separate safety circuit.

Install a braking resistor.

Perform startup for VFC mode.
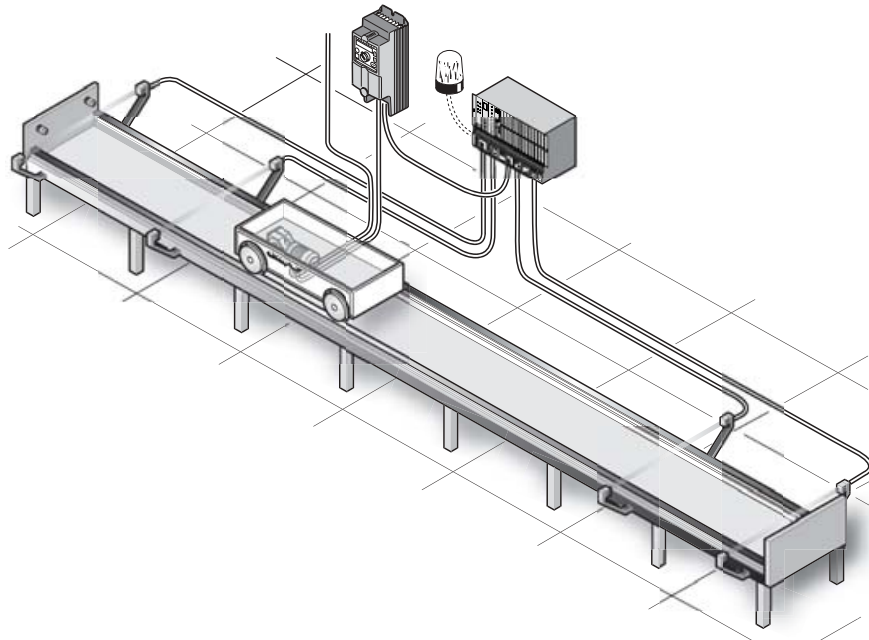
Terminals   Rapid traverse: DI04 = 1 and DI05 = 1

Crawl speed: DI04 = 1 and DI05 = 0
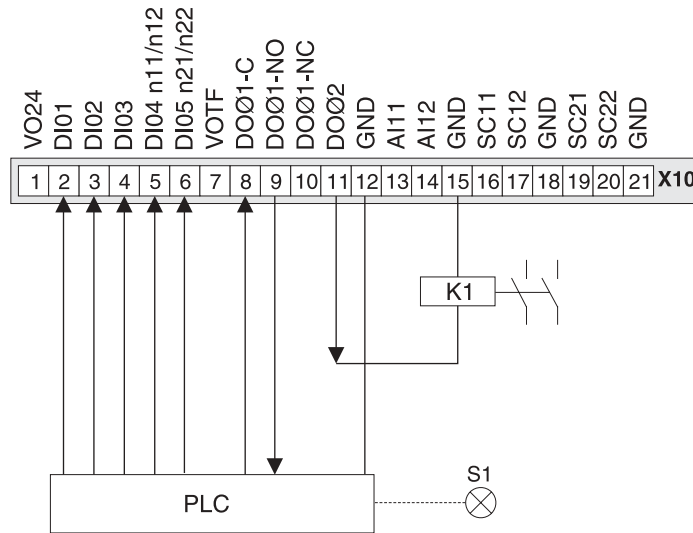
03411CXX

Figure 62: Wiring of electronics terminal strip with DI01 = CW/STOP/ DI02 = CCW/STOP / DI03 = Enable / DO01-C and DO01-NO = "Fault" / DO02 = Brake

K1 is the brake contactor, S1 the fault indicator lamp.

The following signals between the machine controller PLC and MOVITRAC® 07 are relevant:

X10:2: CW direction of rotation	X10:6: Crawl speed/rapid traverse
X10:3: CCW direction of rotation	X10:8: 24 V
X10:4: Start/stop	X10:9: No fault
X10:5: Rapid traverse	X10:11: Brake released

Parameters   The following parameters are relevant for this application. Check whether you can adopt the factory setting values without changes.

P130 Ramp t11 UP	P601 Binary input DI02: CCW/STOP
P131 Ramp t11 DOWN	P602 Binary input DI03: Enable
P136 Stop ramp t13	P603 Binary input DI04: n11/n21
P160 n11	P604 Binary input DI05: n12/n22
P162 n13	P620 Binary output DO01: Fault
P301 n_{min}	P621 Binary output DO02: Brake released
P302 n_{max}	P736 Brake application time
P303 Current limit	P820 4-quadrant operation: ON
P320 Automatic adjustment: ON	P830 Response EXT. FAULT: RAPID STOP/FAULT
P323 Premagnetizing time	P860 PWM frequency

Pressure control

Principle   In this application, the inverter controls the water pressure in a piping system. The PI-controller implemented in MOVITRAC® 07 is used for this. P163 "n11 PI-controller internal setpoint" specifies the pressure setpoint.
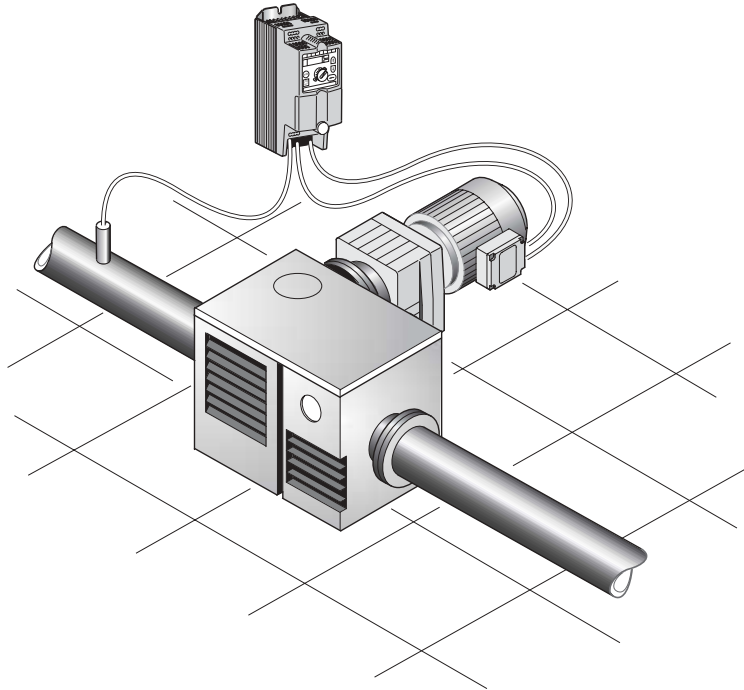
Connection   Two indicator lamps, "Fault" and "Pressure reached"

Motor temperature monitored by TF
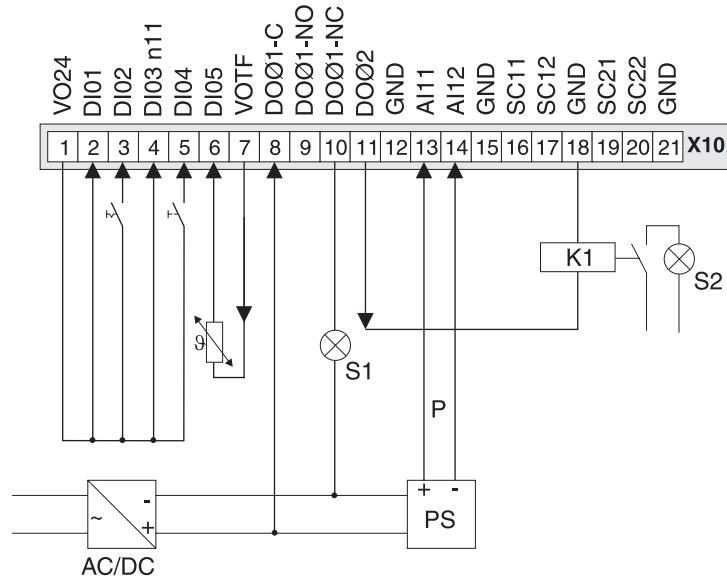
03420CXX

Figure 63: Pressure control connection with DI01 = CCW/STOP / DI02 = Enable / DI04 = Fault reset / DI05 = TF fault / DO01-C and DO01-NO = "Fault" / DO02 = "Pressure reached"

Use the following signals and components for pressure control:

X10:2: Clockwise	S1: Fault
X10:3: Start/stop switch	S2: Pressure reached
X10:4: Set pressure	P: Actual pressure
X10:5: Reset button	PS: Pressure sensor
AC/DC: External power supply	

The pressure setpoint is set in the range 0 to 100 % using the $\boxed{n11}$ icon.

Use Reset and Enable for controlling the machine.

The controller must detect excess pressure in the piping system by means of an additional monitoring function and must respond by taking safety precautions.

Parameters

The following parameters are relevant for the aforementioned application. Check whether you can adopt the factory setting values without changes.

P163 n11 PI-controller internal setpoint	P450 PI actual value reference
P250 PI controller	P451 Signal = "1" if: PI actual value / PI reference
P251 P-gain speed controller	P601 Binary input DI02: Enable
P252 Time constant n-control.	P602 Binary input DI03: n11
P253 PI actual value mode	P603 Binary input DI04: Fault reset
P254 PI actual value scaling	P604 Binary input DI05: TF RESPONSE
P255 PI sensor offset	P620 Binary output DO01: Fault
P301 Minimum speed	P621 Binary output DO02: PI ACT.VALUE REF.
P302 Maximum speed	P830 Response EXT. FAULT: IMM. STOP/FAULT
P303 Current limit	P860 PWM frequency

PI-controller

This represents the basic structure of the control system with a PI-controller, taking the example of a pressure control system.
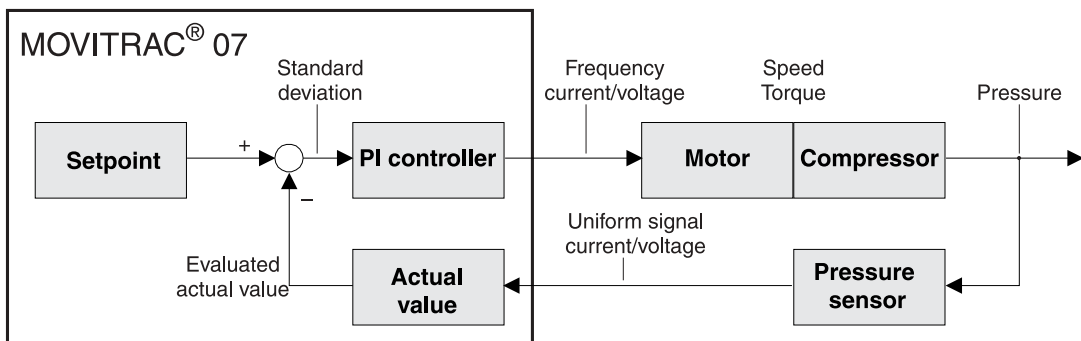
Figure 64: Use of the PI-controller

03421AEN

6 Safety Notes

Installation and startup

- **Never install damaged products or take them into operation.** Please submit a complaint to the transport company immediately in the event of damage.

- **Installation, startup and service work** on the unit only by **trained personnel**. The personnel must be trained in the relevant aspects of accident prevention and must comply with the regulations in force (e.g. EN 60204, VBG 4, DIN-VDE 0100/0113/0160).

- Follow the **specific instructions** during **installation** and **startup** of the motor and the brake!

- Make sure that **preventive measures** and **protection devices** correspond to the **applicable regulations** (e.g. EN 60204 or EN 50178).

  Grounding the unit is a necessary protective measure.

  Overcurrent protection devices are a necessary protective measure.

- **The unit meets all requirements for reliable isolation** of power and electronics connections in accordance with EN 50178. **All connected circuits** must also **satisfy the requirements for reliable isolation** so as to guarantee reliable isolation.

- Take **suitable measures** to ensure that the connected **motor does not start up automatically when the** inverter **is switched on**. To do this, you can connect binary inputs DI01 through DI03 to GND.

- Connection to the frequency inverter output is only permitted in size 0S, 0M and 0L when the output stage is inhibited.

Operation and servicing

- **Disconnect the unit from the supply system** prior to **removing the protective cover**. **Dangerous voltages** may still be present for up to **10 minutes after mains disconnection**.

- The unit has **IP 00** enclosure with the **protective cover removed**. **Dangerous voltages** are present at all subassemblies except for the control electronics. Keep the unit closed during operation.

- **Dangerous voltages** are present at the **output terminals** and the **cables and motor terminals connected to them when the unit is switched on**. Dangerous voltages may also be present when the unit is inhibited and the motor at a standstill.

- The unit is **not** necessarily **deenergized** when the **LEDs and the 7-segment display are off**.

- **Safety functions inside the unit** or a **mechanical blockage** may cause the **motor to stop**. The **removal of the source of the malfunction** or a **reset** can result in an **automatic restart of the drive**. If, for safety reasons, this is **not permissible** for the driven machine, **disconnect the unit from the supply system** before correcting the fault.
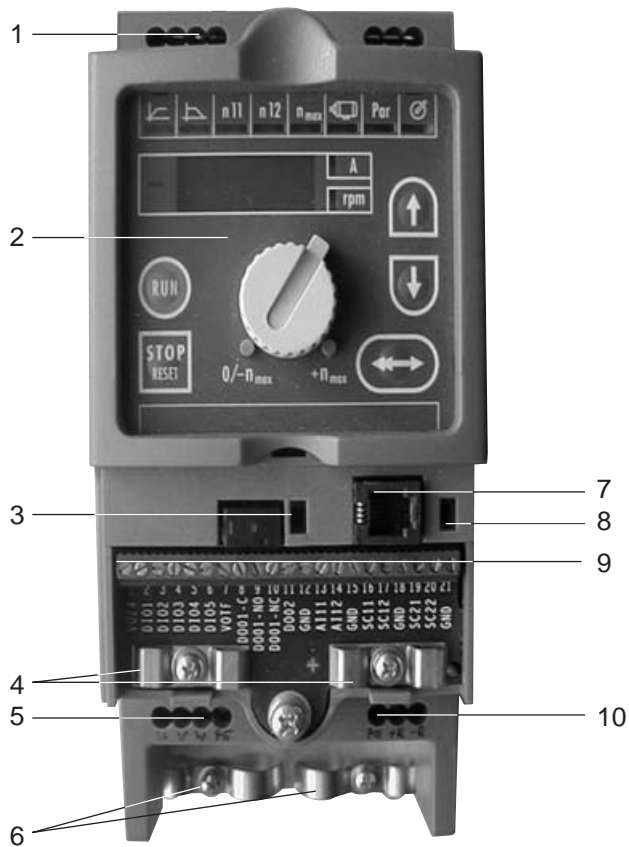
7 Unit Structure

7.1 Unit design

Size 0S, 0M, 0L

02978BXX

Figure 65: MOVITRAC® 07 unit structure, sizes 0S, 0M, 0L

1. X1: Mains connection 3-phase: L1 / L2 / L3 / PE or 1-phase: L/N/PE
2. Operating panel
3. DIP switch S11 changeover U-signal / I-signal
4. Electronics shield clamp
5. X2: Motor connection U / V / W / PE
6. Power shield clamp
7. X11: RS-485 connection (only for service purposes)
8. DIP switch S12 for system bus terminating resistor
9. X10: Electronics terminal strip
10. X3: Braking resistor connection PE / R+ / R-

Size 1, 2S, 2
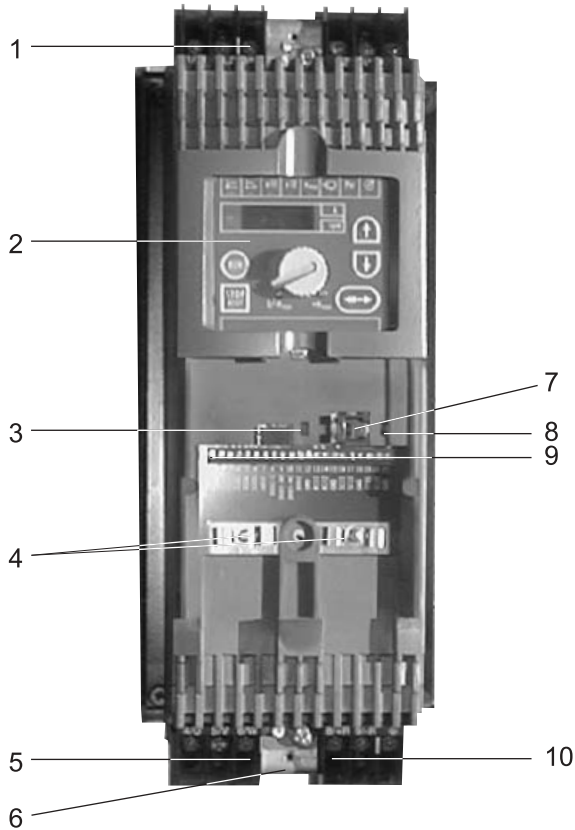
05132AXX

Figure 66: MOVITRAC® 07 unit structure, sizes 1, 2S, 2

1. X1: Mains connection 3-phase: L1 / L2 / L3 / PE screw
2. Operating panel
3. DIP switch S11 changeover U-signal / I-signal
4. Electronics shield clamp
5. X2: Motor connection U / V / W / PE screw
6. Space for power shield clamp
7. X11: RS-485 connection (only for service purposes)
8. DIP switch S12 for system bus terminating resistor
9. X10: Electronics terminal strip
10. X3: Braking resistor connection R+ / R– / PE

Size 3
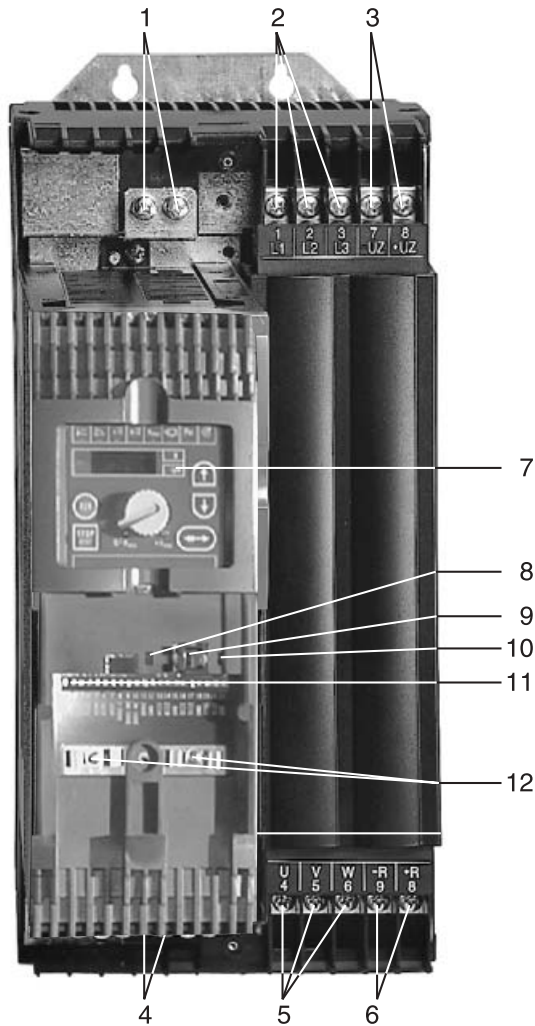
05295AXX

Figure 67: MOVITRAC® 07 unit structure, size 3

1. PE connections
2. X1: Mains connection 3-phase: L1 (1) / L2 (2) / L3 (3)
3. X4: DC link circuit connection (not used)
4. PE connections (not visible)
5. X2: Motor connection U (4) / V (5) / W (6)
6. X3: Braking resistor connection R+ (8) / R– (9)
7. Operating panel
8. DIP switch S12 for system bus terminating resistor
9. X11: RS-485 connection (only for service purposes)
10. DIP switch S11 changeover U-signal / I-signal
11. X10: Electronics terminal strip
12. Electronics shield clamp

Size 4
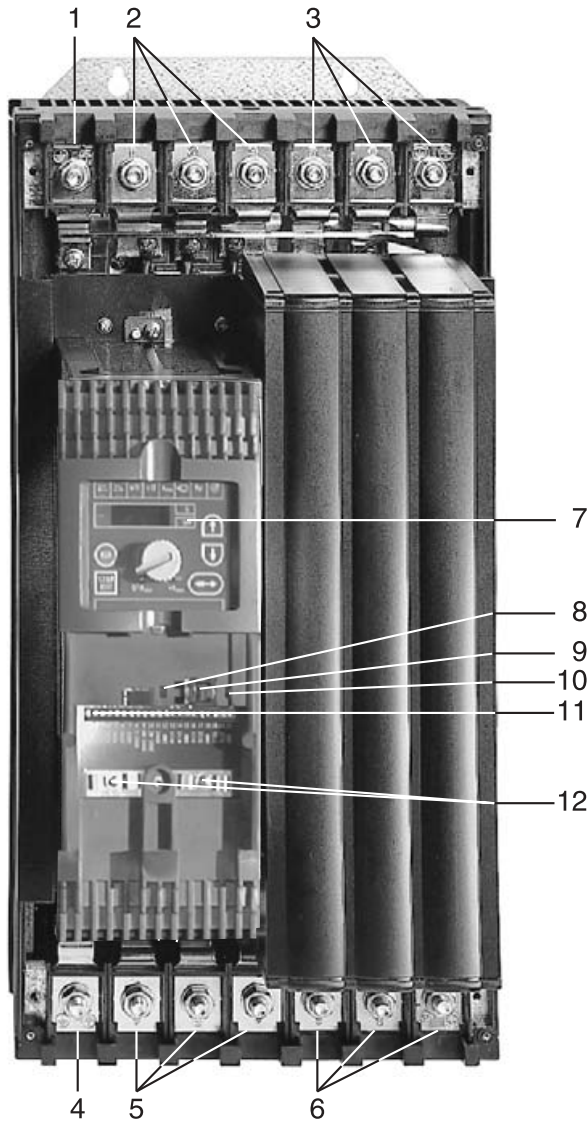
05296AXX

Figure 68: MOVITRAC® 07 unit structure, size 4

1. X2: PE connection
2. X1: Mains connection 3-phase: L1 (1) / L2 (2) / L3 (3)
3. X4: DC link circuit connection (not used)
4. X2: PE connection
5. X2: Motor connection U (4) / V (5) / W (6)
6. X3: Braking resistor connection R+ (8) / R– (9) and PE connection
7. Operating panel
8. DIP switch S12 for system bus terminating resistor
9. X11: RS-485 connection (only for service purposes)
10. DIP switch S11 changeover U-signal / I-signal
11. X10: Electronics terminal strip
12. Electronics shield clamp

7.2 Unit designation and scope of delivery

Sample unit designation

Type MC	
Series and generation	
Version A	
Recommended motor power	022 = 2.2 kW
Connection voltage	2 = 200 ... 240 V_{AC} 5 = 380 ... 500 V_{AC}
Radio interference suppression	B = Radio interference suppression B A = Radio interference suppression A 0 = No radio interference suppression
Connection type	3 = 3-phase / 1 = 1-phase
Quadrants	4 = 4Q (with brake chopper)
Type	00 = Standard 10 = LOGODrive

MC 07 A 004- 2 B 1- 4- 00

Sample nameplate

SEW EURODRIVE D-76646 Bruchsal
Made in Germany
Typ:MC07A004-2B1-4-00
Ser.-No.: xxxxxxx
Id.-No.: 8269513
IN:1 x 200...240V;50...60Hz;6,1A
OUT:3 x 0...U$_{IN}$;2,5A;0,37kW / 0,5HP
IP20;-10...50°C

10 10 -- 10 --

Do not touch
until 10 min
after
disconnection

C€

N2936 c(UL)us
LISTED IND.

02940FXX

Figure 69: Sample nameplate

Scope of delivery loose items
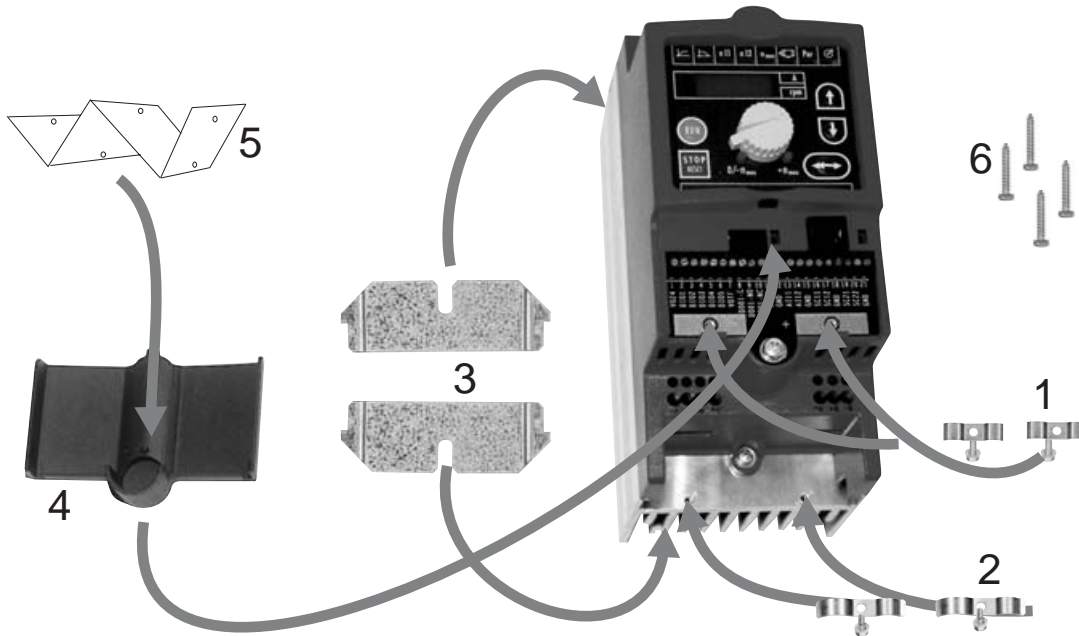
03000AXX

Figure 70: Scope of delivery, included loose size 0

Scope of delivery, included loose for size				
0	**1**	**2**	**3**	**4**
• Shield clamps for electronics cables (2 clamps with one screw each) [1] • Terminal cover [4] • Information label installed on terminal cover [5]				
• Shield clamps for motor and brake resistor cables [2] • Mounting feet [3] • Retaining screws for optional braking resistor [6]	• Power shield clamp with retaining screws	–		• Touch guard with retaining screws

8 Installation

8.1 Installation instructions

It is essential to comply with the safety notes during installation!

Tightening torques

• Only use **genuine connection elements**. Note the **permitted tightening torques** of MOVITRAC® 07 power terminals.

  – Size 0S/M/L   →   0.5 Nm (4.4 lb.in)
  – Size 1   →   0.6 Nm (5.3 lb.in)
  – Size 2S/2   →   1.5 Nm (13.3 lb.in)
  – Size 3   →   3.5 Nm (31 lb.in)
  – Size 4   →   14 Nm (124 lb.in)

Nm (lb.in)!

02475AXX
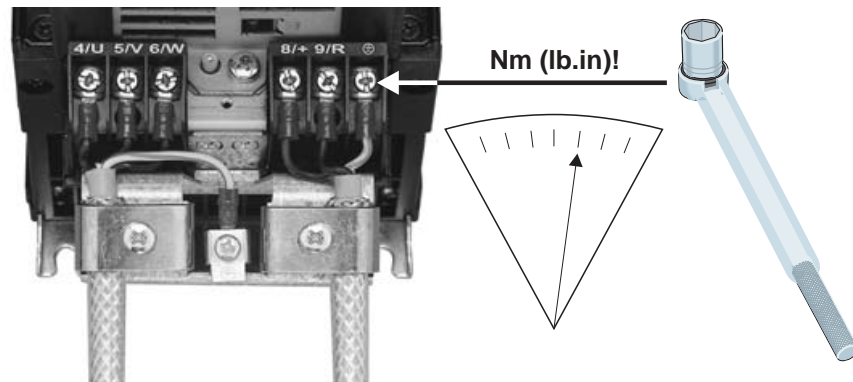
Figure 71: Note the tightening torques

Recommended tools

• Use a screwdriver with a 2.5 mm wide blade for connecting the electronics terminal strip X10.

Conductor end sleeves

• The terminals are provided for installation without conductor end sleeves.

Minimum clearance and mounting position

• Leave **100 mm (4 in) clearance at the top and bottom** for optimum cooling. No lateral clearance required; the units can be lined up side-by-side. Make sure that the circulation of air is not disrupted by cables or other installation materials. Prevent the heated exhaust air from other units from blowing onto this unit. With sizes 4 and 5, do not install any components which are sensitive to high temperatures within 300 mm (11.81 in) of the top of the unit. Only install the units **vertically**. You must not install them horizontally, tilted or upside down.

Line choke	• When **more than four 3-phase units** or **more than one 1-phase unit** are connected to a **supply system contactor** designed for the total current: **Insert a** line choke in the circuit to limit the inrush current.
Separate cable ducts	• Route power cables and electronics cables in separate cable ducts.
Input fuses and earth-leakage circuit breakers	• Install **input fuses at the start of the supply system lead** after the supply bus junction. Use type D, DO, NH fuses or power circuit breakers.
	Using an **earth-leakage circuit breaker as the sole protection device is not permitted**. **Earth-leakage currents > 3.5 mA** can arise during normal operation of the inverter.
PE input connection	• Connect the PE conductor according to the regulations of the country in question.
	Earth-leakage currents > 3.5 mA can arise during normal operation of the inverter.
IT systems	• SEW recommends using **earth-leakage monitors with a pulse code measuring process in voltage supply systems with a non-earthed star point (IT systems)**. This avoids mis-tripping of the earth-leakage monitor due to the earth capacitance of the inverter.
Contactor	• Only use contactors in utilization category AC-3 (IEC 158-1).
Cross sections	• Supply system lead: **Cross section according to nominal input current** I_{system} at rated load
	Motor lead: **Cross section according to output rated current** I_N
	Electronics cables: Maximum 1.5 mm^2 (AWG16) without conductor end sleeves
	Maximum 1.0 mm^2 (AWG17) with conductor end sleeves
Line lengths for single drives	The line lengths for size 0 are independent of the PWM frequency. The motor leads for sizes 1 through 4 depend on the frequency. The permitted motor cable lengths are listed in Sec. "Project Planning" of the MOVITRAC® 07 System Manual.
Unit output	• Only connect an **ohmic/inductive load (motor)**; do not connect a capacitive load!
Braking resistor connection	• Shorten the cables to the required length.
Binary inputs / binary outputs	• **Binary outputs** are **short-circuit proof** and **interference-voltage-proof** up to 35 V. They can suffer irreparable damage from higher external voltages!
Interference emission	• Use shielded motor cables or HD output chokes for EMC-compliant installation. This EMC-compliant installation will then comply with EN 55011, class B limit.
Shielding and earthing	• Shield the control cables.
	• Connect the shield by the shortest possible route and make sure it is earthed over a wide area.
	• Provide high frequency compatible earthing for MOVITRAC® 07 and all additional units (wide area metal-on-metal contact between the heat sink and ground, e.g. unpainted switch cabinet mounting panel).

Line filter

MOVITRAC® 07 frequency inverters are equipped with an line filter as standard. They comply with the following limit value class to EN 55011 on the line side without further measures:

- **B**: 1-phase connection
- **A**: 3-phase connection
    - 230 V: up to 7.5 kW
    - 400/500 V: up to 11 kW

STOP

No EMC limits are specified for interference emission in voltage supply systems without an earthed star point (IT systems). The effectiveness of line filters is severely limited.

Flat-type braking resistor BW for size 0

Push the braking resistor in the back of the heat sink. Install the braking resistor in the heat sink with the four screws provided.
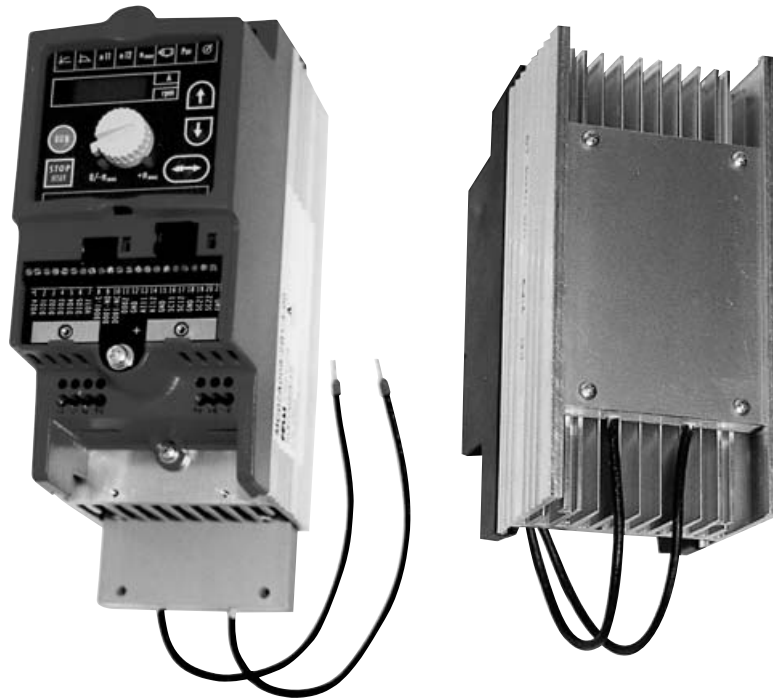
03164AXX

Figure 72: Installing the braking resistor BW

HD output choke
- Install the output choke close to MOVITRAC® 07 **beyond the minimum clearance**.
- Always route all three phases (**not the PE!**) together through the output choke.
- If the cable is shielded, the shield is **not** allowed to be routed through the output choke.
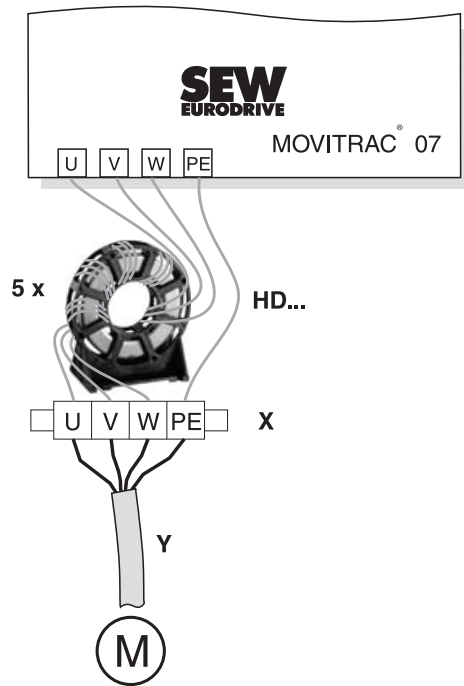
02979BXX

Figure 73: Connecting HD output chokes

In the case of the **HD** output choke, the cable must be wrapped around the choke **5 times**.

8.2 UL compliant installation

Please note the following points for UL compliant installation:

- Only use copper cables with the following temperature ranges as connection leads:
  - For MOVITRAC® 07 ... Temperature range 60/75 °C.
- Necessary tightening torques of MOVITRAC® 07 power terminals: See installation notes.
- The inverters are only allowed to be operated on supply systems with a maximum phase-to-earth voltage of 300 V_{AC}.
- The inverter is only allowed to be operated on IT systems if: The phase-to-earth voltage of 300 V_{AC} cannot be exceeded either during operation or in case of a fault.
- The MOVITRAC® 07 frequency inverter is only allowed to be operated on supply systems which can supply maximum values in accordance with the following table. The performance data of the fuses must not exceed the values in the following table.

Maximum values / fuses

230 V units

MOVITRAC® 07	Max. supply current	Max. supply voltage	Fuses
004/005/008/011/015/022	5000 A_{AC}	240 V_{AC}	35 A / 250 V
037	5000 A_{AC}	240 V_{AC}	30 A / 250 V
055/075	5000 A_{AC}	240 V_{AC}	30 A / 250 V
110	5000 A_{AC}	240 V_{AC}	175 A / 250 V
150	5000 A_{AC}	240 V_{AC}	225 A / 250 V
220/300	10000 A_{AC}	240 V_{AC}	350 A / 250 V

400/500 V units

MOVITRAC® 07	Max. supply current	Max. supply voltage	Fuses
005/008/011	5000 A_{AC}	500 V_{AC}	15 A / 600 V
015/022/030/040	5000 A_{AC}	500 V_{AC}	30 A / 600 V
055/075	10000 A_{AC}	500 V_{AC}	30 A / 600 V
110	10000 A_{AC}	500 V_{AC}	30 A / 600 V
150/220	5000 A_{AC}	500 V_{AC}	175 A / 600 V
300	5000 A_{AC}	500 V_{AC}	225 A / 600 V

8.3 Power shield clamp

For sizes 1 / 2S   SEW-EURODRIVE supplies a power shield clamp as standard with MOVITRAC® 07 size 1 / 2S. Install this power shield clamp together with the retaining screws of the unit.
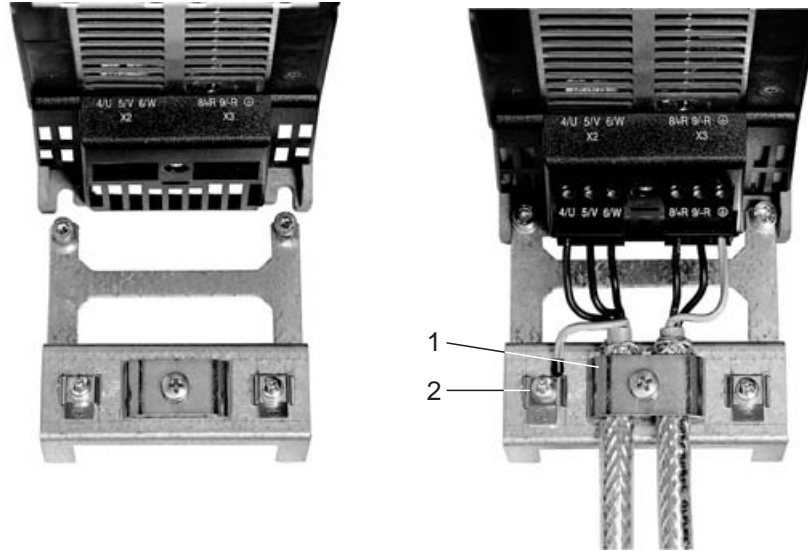
02012BXX

Figure 74: Power shield clamp for MOVITRAC® 07 size 1

1. Shield clamp
2. PE connection (y)

For size 2

SEW-EURODRIVE supplies a power shield clamp with two retaining screws as standard with MOVITRAC® 07 size 2. Install this power shield clamp together with the two retaining screws on X6.
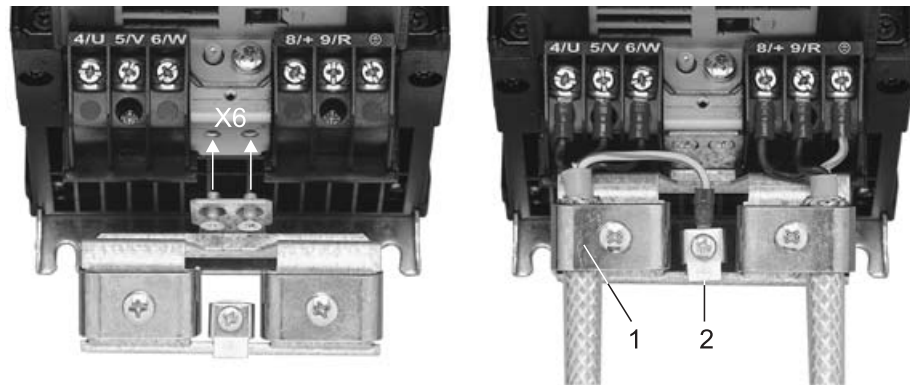
01469BXX

Figure 75: Power shield clamp for MOVITRAC® 07 size 2

1. Shield clamp
2. PE connection (y)

Power shield clamps provide you with a very convenient way of installing the shield for the motor and brake leads. Install the shield and PE conductor as shown in the figures.

8.4 Touch guard

SEW-EURODRIVE supplies two touch guards with eight retaining screws as standard with MOVITRAC® 07 size 4. Install the touch guard on the two hood covers for the power section terminals.
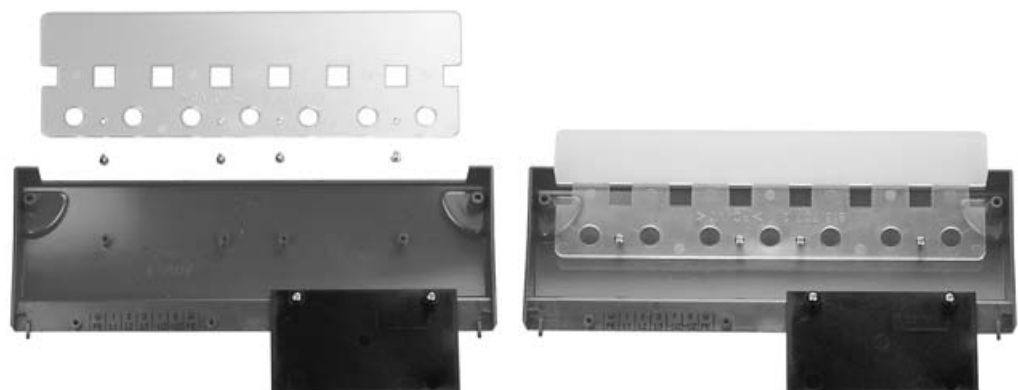
01470BXX

Figure 76: Touch guard for MOVITRAC® 07 size 4

When the touch guard is installed, MOVITRAC® 07 size 4 has enclosure IP10. The units have IP00 without touch guard.

8.5 Wiring diagram 230 V 0.37 ... 2.2 kW / 400 V 0.55 ... 4.0 kW
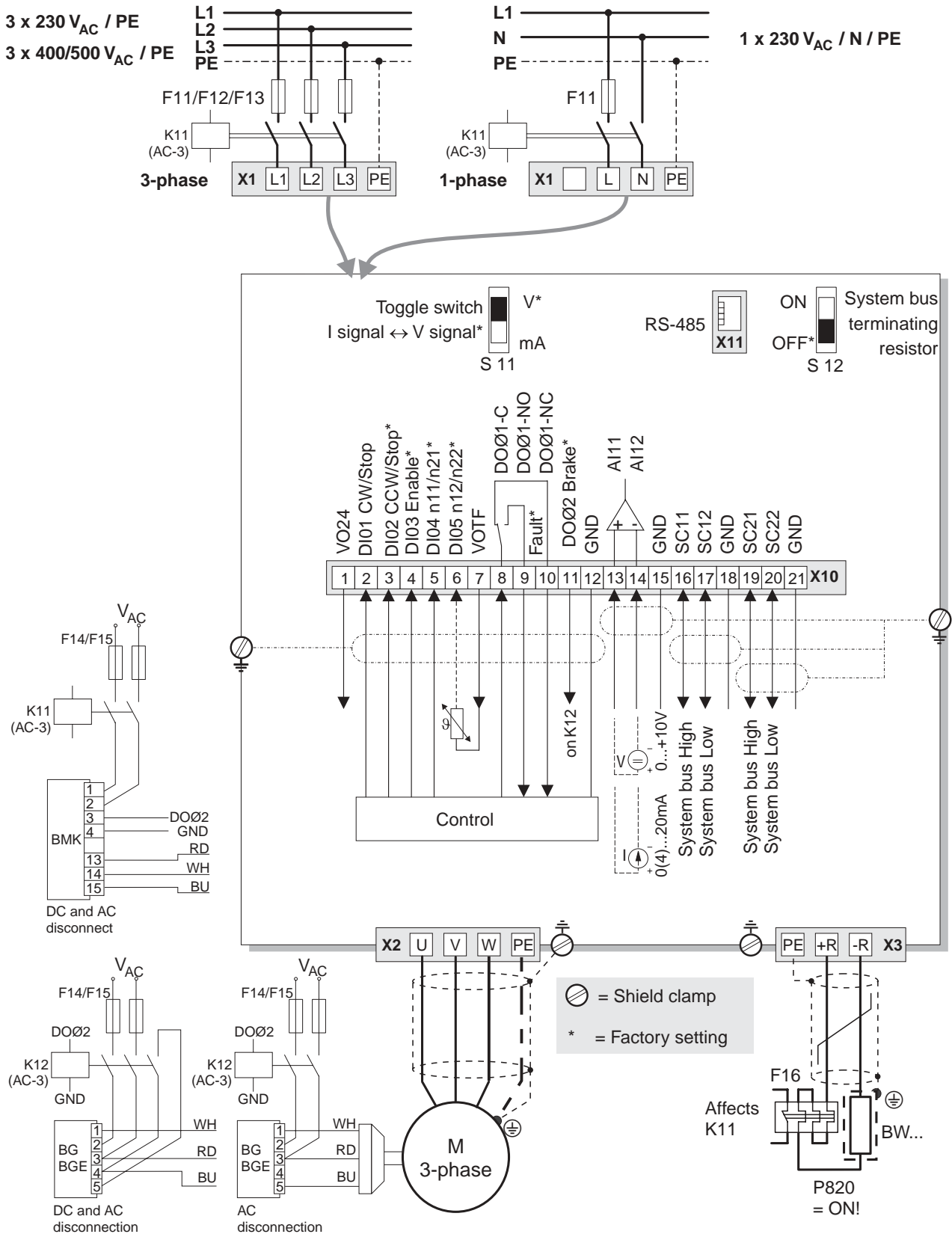
Figure 77: Wiring diagram for size 0

02943LEN

8.6 Wiring diagram 230 V 3.7 ... 30 kW / 400 V 5.5 ... 30 kW
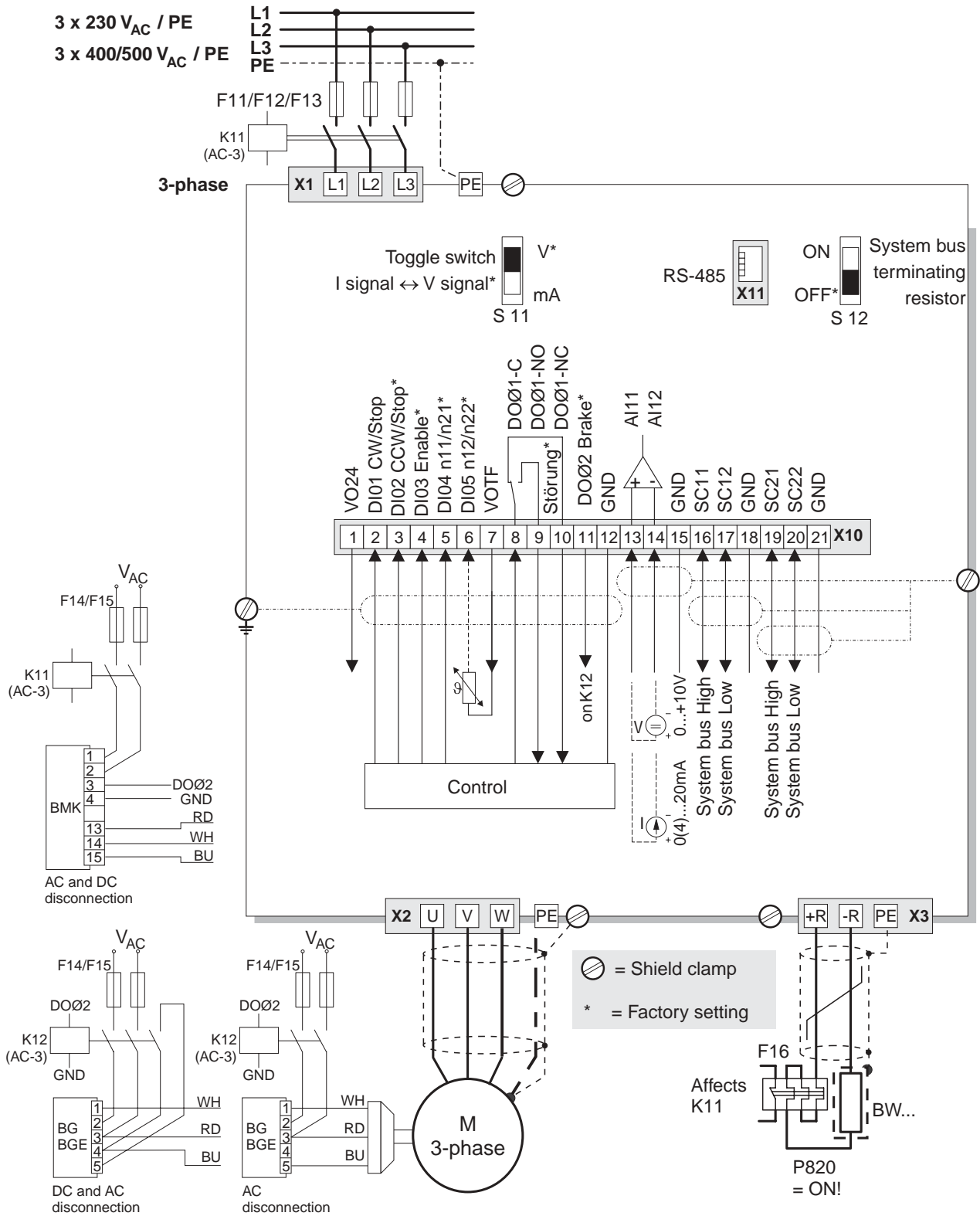
Figure 78: Wiring diagram for sizes 1 ... 4

05134CEN

Connection of the brake rectifier

STOP

A separate supply system lead is required for connecting the brake rectifier; supply from the motor voltage is not permitted!

Only use contactors in utilization category AC-3 (IEC 158-1) for K11 and K12.

Always switch off the brake on the DC and AC sides under the following conditions:

• All hoist applications

• Drives which require a rapid brake reaction time.

When the brake rectifier is installed in the switch cabinet: Route the connecting leads between the brake rectifier and the brake separately from other power cables. Routing together with other cables is only permitted if the other cables are shielded.

Note the corresponding connection regulations for brakes without BG/BGE or BME. Please refer to the publication "Drive Engineering - Practical Implementation, Vol. 4" for detailed information about SEW brakes.

Functional description of the terminals

Terminal		Function
X1	L1/L2/L3/PE L/N/PE	Mains connection
X2	U/V/W/PE	Motor connection
X3	PE/+R/-R	Braking resistor connection
X10: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	VO24 DI01 DI02 DI03 DI04 DI05 VOTF DO01-C DO01-NO DO01-NC DO02 GND AI11 AI12 GND SC11 SC12 GND SC21 SC22 GND	Auxiliary supply output +24 V (max. 50 mA) Binary input 1, with fixed assignment CW/STOP Binary input 2, with factory setting CCW/STOP Binary input 3, with factory setting Enable Binary input 4, with factory setting n11/n21 Binary input 5, with factory setting n12/n22 (**TF** can **only be connected to DI05**) Voltage supply for TF (PTC thermistor) Binary output 1, factory setting "/Fault" Binary output 1, NO contact Binary output 1, NC contact Binary output 2, factory setting "Brake released" (I_{max} = 150 mA) Reference potential Analog input 0 ... 10 V / 0(4) ... 20 mA Reference potential System bus high, incoming System bus low, incoming Reference potential System bus high, outgoing SC21 and SC22 are deactivated when S12 = ON. This System bus low, outgoing is necessary in units at the end of the bus. Reference potential
X11	RS-485	Service interface for UWS21A on PC or parameter module UBP11A

8.7 System bus (SBus) installation
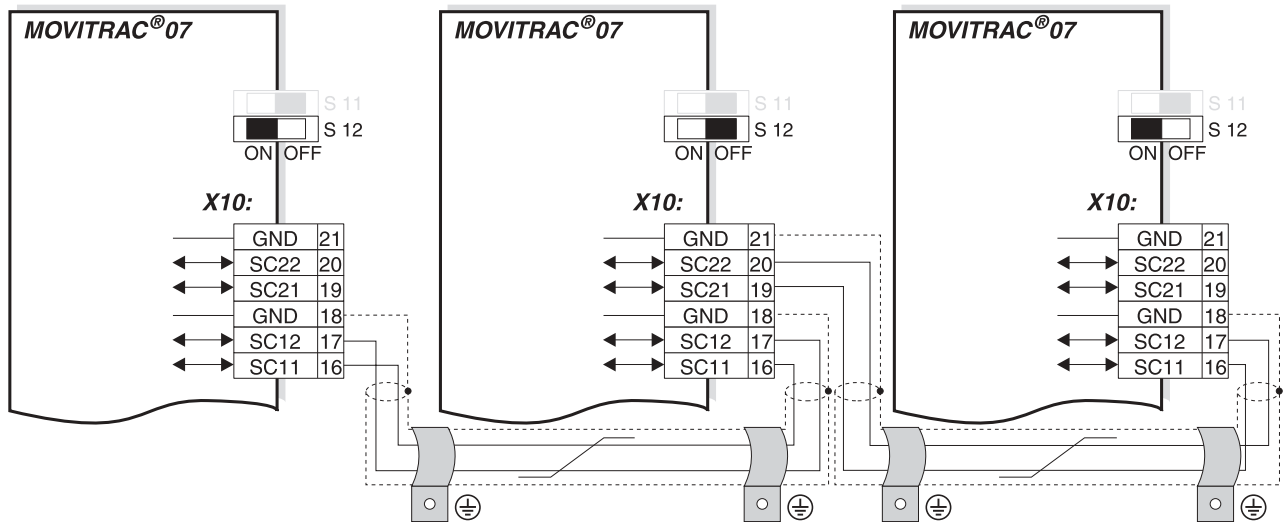
Figure 79: MOVITRAC® 07 system bus connection

05817AXX

GND = System bus reference
SC22 = System bus low
SC21 = System bus high
SC12 = System bus low
SC11 = System bus high
S12 = System bus terminating resistor

SBus MOVITRAC 07: Connect the terminating equipment to SC11/SC12. SC21/SC22 are only active when S12 = OFF.

9 Startup

Using the IN/OUT key ⬌: Press the key once to go further down into the menu structure (selecting functions). Press twice or use one long key press to change to higher levels in the menu structure.

9.1 General startup instructions

It is essential to adhere to the safety notes during startup!

Prerequisite   Correct project planning of the drive is the prerequisite for successful startup.

> MOVITRAC® 07 frequency inverters are factory set to be taken into operation with the SEW motor which is adapted to the correct power level (4-pole, 50/60 Hz).

You can connect the motor and start the drive immediately.

The startup functions described in this section are used for setting the inverter so it is optimally adapted to the motor which is actually connected and to the given boundary conditions.

9.2 Preliminary work and resources

- Check the installation (Installation chapter)).
- Connect the supply system and the motor. **Do not connect any signal terminals!**
- Switch on the supply system.
- Display shows Stop.
- Program the signal terminals.
- Set the parameters correctly (e.g. factory setting).
- Check the terminal assignment which has been set ($\rightarrow$ P60_ (MOVITOOLS) / P60- (display)).
- Switch off the supply system.
- Connect the signal terminals.
- Switch on the supply system.

The inverter automatically changes parameter values when you perform a startup.
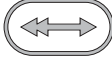
9.3   Integrated operating panel

Operation

The following basic principle applies: Press the ⟺ key once to start editing. Double-click the ⟺ key to exit edit mode.

Functions of the operating panel

The UP, DOWN and IN/OUT buttons are used for navigating through the menus. The RUN and STOP/RESET buttons are used for controlling the drive. The setpoint potentiometer is used for selecting setpoints.

⬆	"UP" for scrolling through the symbols and editing parameters.
⟺	"IN/OUT" for activating and deactivating the symbols or parameter menus
⬇	"DOWN" for scrolling through the symbols and editing parameters.
RUN	You can start the drive with "RUN".
STOP RESET	"STOP/RESET" is used for resetting faults and for stopping the drive.

Stopping the drive with the STOP/RESET key is not a safety function. Switching the power off unlocks the inverter again and you can enable the inverter.

9.4 Principles of operation with the integrated operating panel
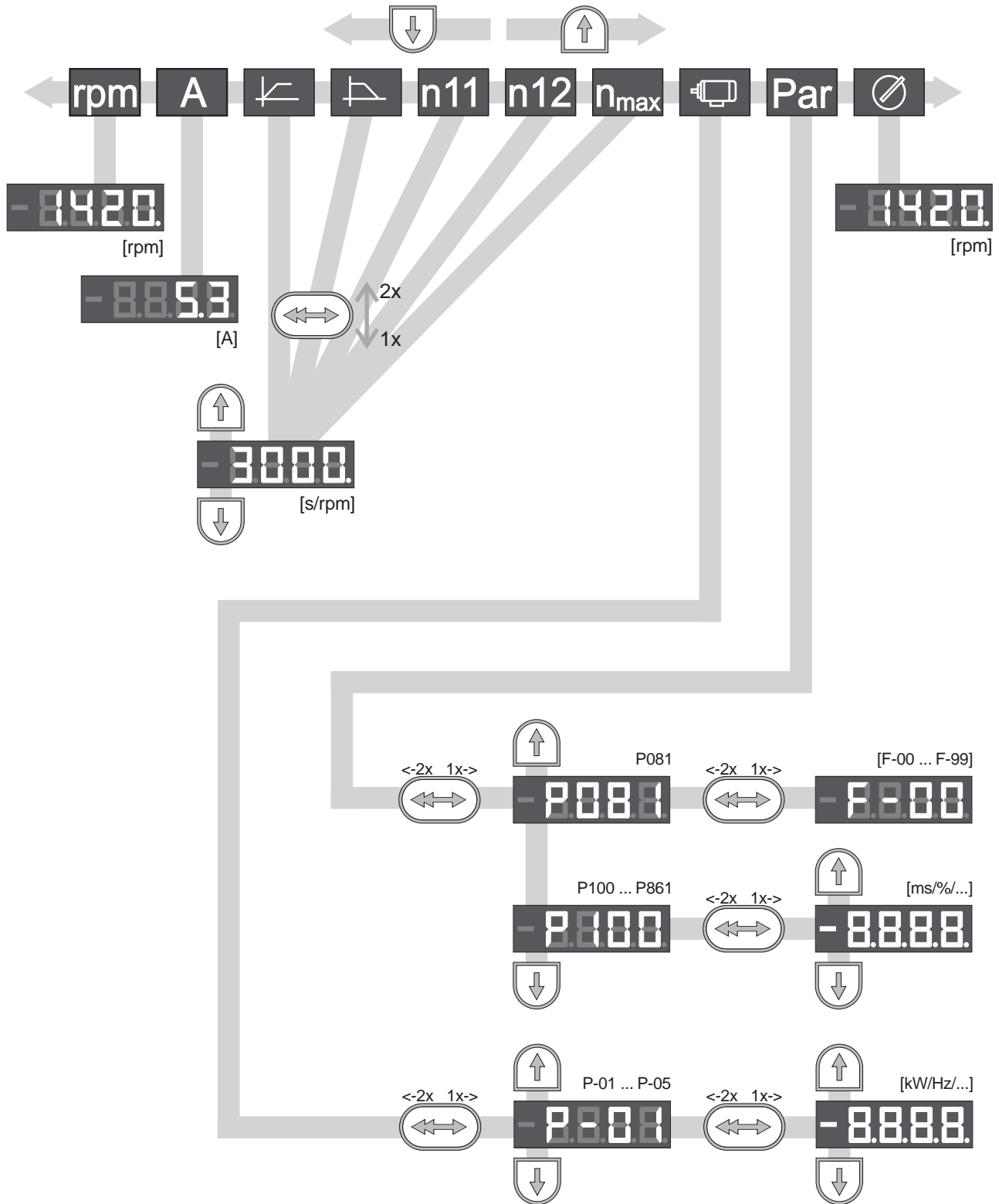
02968DXX

Figure 80: Principles of operation with the integrated operating panel (2x = double-click)

Available symbols

You can select the following symbols using keys 🔼 and 🔽:

Symbol	Function
rpm	Displays the inverter status or (in "drive enabled" status) the calculated actual speed in [rpm]
A	Displays the apparent output current in [A]
⟋‾	Sets the accelerating ramp in [s]
‾⟍	Sets the deceleration ramp in [s]
n_{max}	Sets the maximum speed in [rpm]
n11	Sets fixed setpoint n11 in [rpm]
n12	Sets fixed setpoint n12 in [rpm]
⊑▢	Motor startup P-01 ... P-05
Par	Sets the inverter parameters
⊘	Activates the manual speed control module of the operating panel

Menu system

The LED integrated in the symbol lights up when you select a symbol. In the case of symbols which only represent display values, the current display value appears immediately on the 7-segment display.

Editing parameters

After selecting the Par symbol (display: P---), it is possible to select the required parameter by selecting ⟺ using 🔼 and 🔽.

Pressing the ⟺ key once causes the display to show the number of the required parameter. Press the ⟺ key again to edit the parameter value. If the LED in the corresponding symbol flashes, this indicates the value can now be altered. The value takes effect when you exit edit mode by pressing the ⟺ key twice or about 1 s following the last key press.
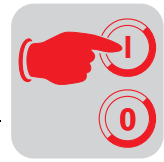
Display

It is possible to select finished combinations for terminal assignment parameters (601 ... 604, 620, 621) on the operating panel using parameters 60- and 62-. If you set a different combination with MOVITOOLS, the display shows ----.

Status displays

The display shows the status if you select the rpm symbol. The display shows the calculated actual speed if the status is "Drive enabled".

- Drive "Controller inhibit": dIS (disable)
- Drive "No enable": StoP (Stop)
- Drive "Enabled": 8888 (actual speed)
- Factory settings being reactivated: SEt (Set)

Fault indication   If a fault occurs, the display changes to the `rpm` symbol and it shows the flashing fault code, e.g. `F-11` (fault list in Sec. Operation and servicing).

Warnings   Some parameters are not allowed to be altered in all operating states. If you try to do so, the following display appears: `r-19` ... `r-32`. The display shows a code corresponding to the particular action, e.g. `r-28` (controller inhibit necessary). See Sec. Operation and servicing for a list of warnings.

9.5   *Manual speed control module and external setpoint selection*

Manual speed control module of the operating panel (local manual operation): **LED flashes** ⌀

External setpoint selection

Control via:

– Terminals
– Serial interface
– Setpoint potentiometer on AI11/AI12

9

Manual speed control module
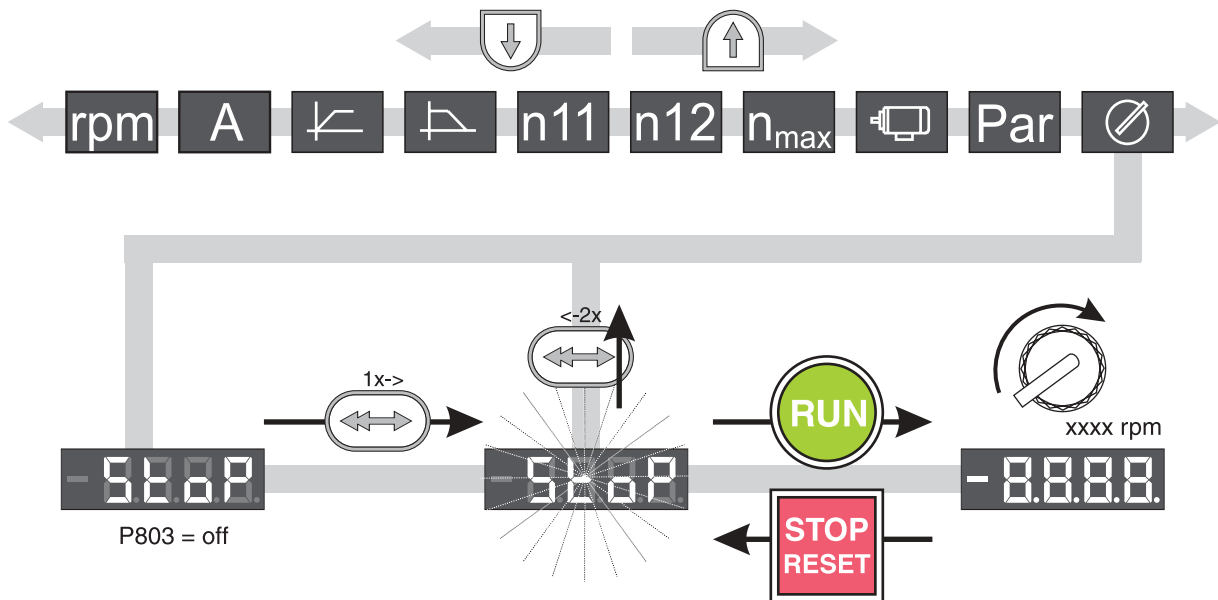
03158BXX

Figure 81: Manual setpoint adjustment (2x = double-click)

The only relevant parameters in "manual speed control module" operating mode are:

• *P122 Local Potentiometer Mode*
• "RUN" and "STOP/RESET" buttons
• Setpoint potentiometer

LEDs `rpm` and ⌀ flash when the manual speed control module is activated.

You can limit the speed by *P301 Minimum speed* and *P302 Maximum speed*.

After a fault, a reset can be performed using the "STOP/RESET" button, the terminal or the interface. "Manual speed control module" operating mode is once again active after the reset. The drive remains stopped.

The Stop display flashes to indicate that you have to re-enable the drive with the "RUN" key.

The *P760 Locking run/stop keys* parameter does not have any effect in "manual speed control module" operating mode.

External setpoint selection

You can enable the inverter with the "RUN" button and stop it again with the "STOP/RE-SET" button. You can switch off the function of both buttons using *P760 Locking RUN/STOP keys*.

Setpoint direction of rotation

You can specify the setpoint direction of rotation:

- "CW/STOP" and "CCW/STOP" in *P101 Control signal source = TERMINALS* or *P101 Control signal source = 3-WIRE-CONTROL*

- The polarity of the setpoint in the process data word in *P101 Control signal source = RS485 or SBus* **and** *P100 Setpoint source = RS485 or SBus*

Setpoint speed

You can assign the setpoint speed:

- The setpoint potentiometer (if *P121 Addition Setpoint Potentiom.* is set to ON)

- *P100 Setpoint source*
  - Fixed setpoints
  - Fixed setpoints with analog input
  - Process data word from SBus or RS-485 (RS-485 only for service purposes)
  - Motor potentiometer

Enable direction of rotation with RS-485 or SBus

The direction of rotation is determined by the setpoint if you set *P101 Control signal source* **and** *P100 Setpoint source* to RS485 or SBus (RS485 only for service purposes). You must enable the setpoint via SBus or RS-485 using the "CW/STOP" or "CCW/STOP" terminal. **SEW-EURODRIVE recommends giving the enable using the "CW/STOP"** terminal which has a fixed program setting, rather than with the programmable "CCW/STOP" terminal.

"CW/STOP" terminal	"CCW/STOP" terminal	Direction of rotation enable
0	0	Drive inhibited
1	0	CCW and CW (direction of rotation is dependent on the setpoint)
0	1	CCW and CW (direction of rotation is dependent on the setpoint)
1	1	Drive inhibited

The "CW/STOP" and "CCW/STOP" terminals determine the direction of rotation if:

- *P101 Control signal source* is set to RS485 or SBus

  and

- *P100 Setpoint source* is set to
  - UNIPOL/FIX.SETPT
  - MOTOR POT
  - FIX SETP+AI1
  - FIX SETP*AI1
  - FREQUENCY INPUT

STOP/RESET key

The STOP/RESET button has priority over a terminal enable or an enable via the interface. If you stop a drive using the STOP/RESET key, then you must re-enable it using the RUN key.

Switching the supply system off and on re-enables the inverter!

The STOP/RESET key can be used for performing a reset after a fault has occurred with a programmed fault response. The drive is then inhibited and must be enabled using the RUN key.

RUN key

If you stop the drive with the STOP/RESET key, the Stop display flashes. This indicates you have to enable the drive using the "RUN" key.

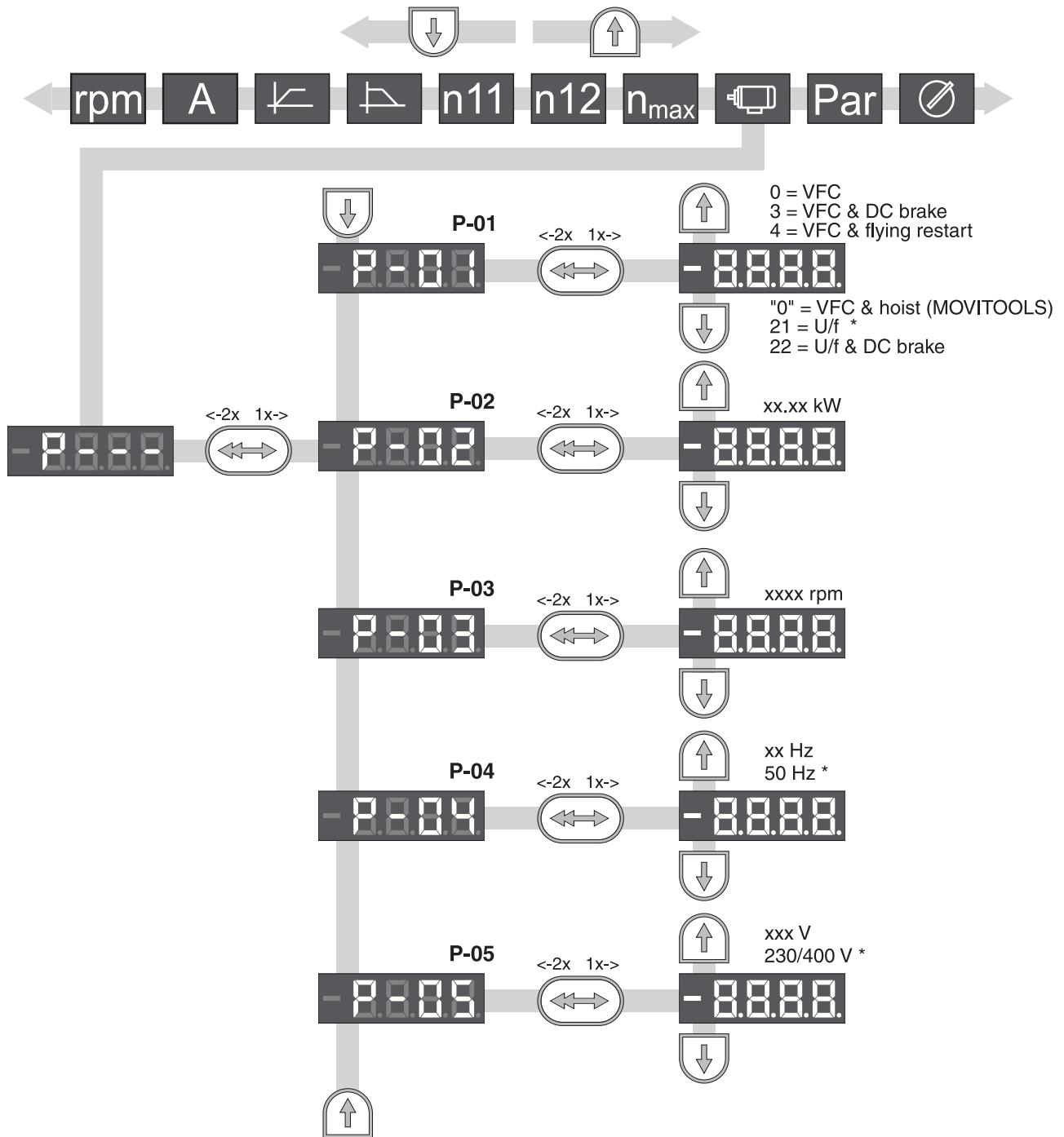## 9.6 Startup with the integrated operating panel

rpm | A | ⟋ | ⟋ | n11 | n12 | n_max | | Par | ⊘

P-01
0 = VFC
3 = VFC & DC brake
4 = VFC & flying restart

"0" = VFC & hoist (MOVITOOLS)
21 = U/f *
22 = U/f & DC brake

P-02
xx.xx kW

P-03
xxxx rpm

P-04
xx Hz
50 Hz *

P-05
xxx V
230/400 V *

<-2x 1x->

02975GXX

*Figure 82: Startup with the integrated operating panel (2x = double-click / * = factory setting)*

P-01 = Operating mode	P-03 = Rated motor speed	P-05 = Rated motor voltage
P-02 = Rated motor power	P-04 = Rated motor frequency	

General information

If you are **not** connecting the motor indicated in the motor selection table: **Enter parameters P-01 to P-05 correctly according to the nameplate** (access via ⌨):

No.	Name	Range / factory setting	
P-01	Operating mode	0	VFC or VFC & HOIST (can only be set in MOVI-TOOLS)
		3	VFC & DC BRAK.
		4	VFC & FLYING START
		21	**V/f character.**
		22	V/f & DC BRAKING
P-02	Rated motor power	0.25	[kW]
		0.37	Factory setting: Rated motor power in kW corresponding to the rated inverter power
		0.55	
		...	If a smaller or a larger motor is connected (maximum difference one frame size), then a value must be selected which is as close as possible to the rated motor power.
P-03	Rated motor speed	10 ... **Rated motor speed** ... 5500 [rpm]	
P-04	Rated motor frequency	**50**	[Hz]
		60	
P-05	Rated motor voltage	50 ... 700 [V]	

Startup automatically sets the maximum speed P302 to the transition speed.

Activating startup

Prerequisites:

- Drive "No enable": Stop (Stop)

The complete startup procedure is not complete until you have returned to the main menu level by pressing the ⇔ key.

VFC

The default operating mode setting is V/f. You must start up the inverter in VFC or VFC & DC BRAK. operating mode for:

- High torque
- Continuous duty at low frequencies
- Accurate slip compensation
- More dynamic properties

To do this, during startup you must select the ⌨ symbol in item P-01 to choose VFC or VFC & DC BRAK. operating mode. Then you must perform a motor adjustment using *parameter 320 Automatic adjustment*.

9.7 Starting the motor

Analog setpoints

The following table shows which signals must be present on terminals X10:2 ... X10:4 (DIØ1 ... DIØ5) when the "UNIPOL/FIX.SETPT" setpoint is selected (P100), in order to operate the drive with analog setpoints.

Terminal Function	X10:13/14 Analog input	X10:2 CW/STOP	X10:3 CCW/STOP	X10:4 Enable
/No enable	X	X	X	0
Enable and stop	X	0	0	1
Clockwise at 50 % n_{max}	5 V	1	0	1
Clockwise n_{max}	10 V	1	0	1
Counterclockwise at 50 % n_{max}	5 V	0	1	1
Counterclockwise n_{max}	10 V	0	1	1

X = Any / 0 = Low / 1 = High

The following travel cycle shows by way of example how you start the drive with the wiring of terminals X10:2 ... X10:6 and the internal fixed setpoints.
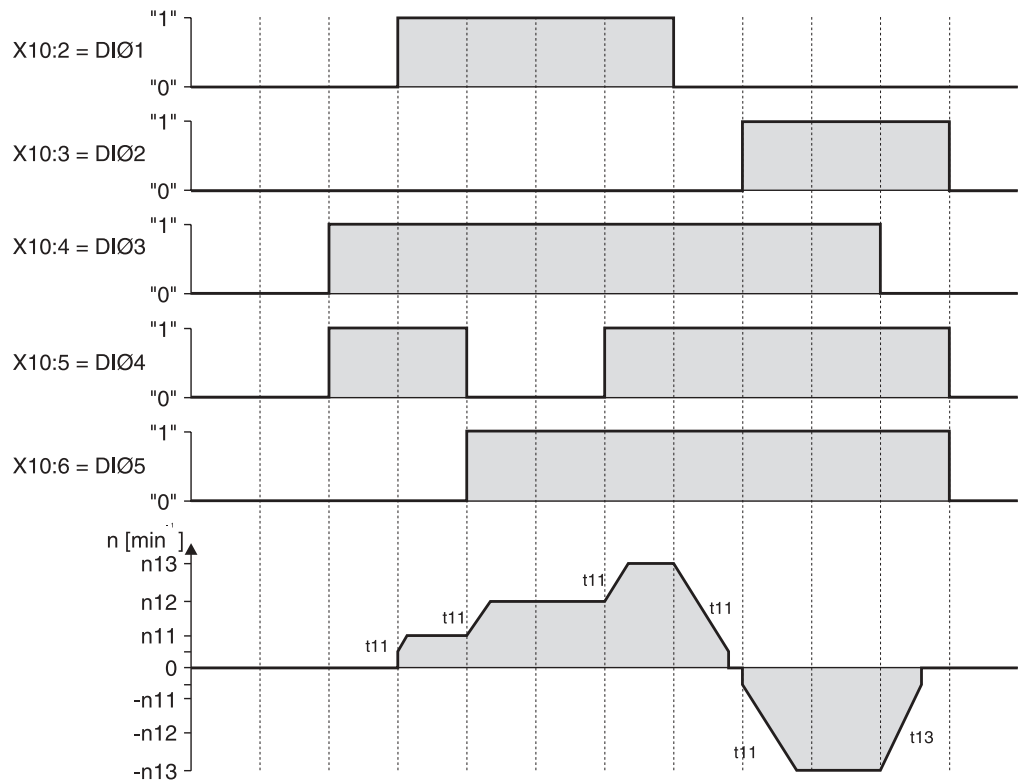
Figure 83: Travel cycle with internal fixed setpoints

02981ADE

X10:2 = CW/STOP   X10:4 = Enable/Rapid stop   X10:6 = n12/n22

X10:3 = CCW/STOP   X10:5 = n11/n21

9.8 Loading a LOGODrive program

- Start MOVITOOLS Manager.
- Connect the MOVITRAC$^®$ 07 to a vacant serial port on your PC using the UWS21A interface converter. Select this interface in the PC Interface group.
- Connect the MOVITRAC$^®$ 07 to the supply system.
- Click the Update button. The PC then looks for all connected units and displays them in the Connected Inverters list.
- Click the LOGODrive button.
- Load the program you want using File / Open.
- Compile the program with Program / Translate.
- Load the program into the MOVITRAC$^®$ 07 using Program / Load.
- Start the program with Program / Start.
- If a program is currently being processed in the inverter, this is indicated on the display by a decimal point after the 4 digits of the display.

9.9 Parameter list

All parameters which can also be displayed and edited using the `Par` symbol on the operating panel have a • in the "OP" (operating panel) column. If more than one value can be selected, the factory setting is highlighted in **bold**.

No.	OP	Index dec.	Name	Range / factory setting		Value after startup
				Display	MOVITOOLS	
0__			**Display values** (read only)			
00_			**Process values**			
000			Speed (signed)	rpm	[rpm]	
002			Frequency (signed)		[Hz]	
004			Output current (value)		[% I_N]	
005			Active current (signed)		[% I_N]	
008			DC link voltage		[V]	
009			Output current	A	[A]	
01_			**Status displays**			
010			Inverter status	rpm	[Text]	
011			Operational status	rpm	[Text]	
012			Fault status	rpm	[Text]	
014			Heat sink temperature		[°C]	
02_			**Analog setpoint**			
020			Analog input AI1		[V]	
03_			**Binary inputs**			
031			Binary input DI01		CW/STOP (fixed assignment)	
032			Binary input DI02		CCW/STOP (factory setting)	
033			Binary input DI03		ENABLE/RAP.STOP (factory setting)	
034			Binary input DI04		n11/n21 (factory setting)	
035			Binary input DI05		n12/n22 (factory setting)	
036			Binary inputs DI01.. DI05		Binary display	

No.	OP	Index dec.	Name	Range / factory setting		Value after startup
				Display	MOVITOOLS	
05_			**Binary outputs**			
051			Binary output DO01		/FAULT (factory setting)	
052			Binary output DO02		BRAKE RELEASED (factory setting)	
053			Binary outputs DO01, DO02		Binary display	
07_			**Unit data**			
070			Unit type		[Text]	
071			Output rated current		[A]	
076			Firmware basic unit		[Part number and version]	
08_			**Fault memory**			
080	•	8366	Fault t-0	Fault code	Background information for faults which occurred previously.	
09_			**Bus diagnosis**			
090			PD configuration		• 1 PD + PARAMETER • 1 PD • 2 PD + PARAMETER • 2 PD • 3 PD + PARAMETER • 3 PD	
094	•	8455	PO1 setpoint		[hex]	
095	•	8456	PO2 setpoint		[hex]	
096	•	8457	PO3 setpoint		[hex]	
097			PI1 actual value		[hex]	
098			PI2 actual value		[hex]	
099			PI3 actual value		[hex]	
1__			**Setpoints/ramp generators**			
10_			**Setpoint selection**			
100	•	8461	Setpoint source	1 2 4 6 7 10 11	**UNIPOL/FIX.SETPT** RS485 MOTOR POT FIX SETP+AI1 FIX SETP*AI1 SBus Frequency input (in preparation)	
101	•	8462	Control signal source	0 1 3 4	**TERMINALS** RS485 SBus 3-WIRE-CONTROL	
102	•	8840	Frequency scaling	Setting range 0.1 ... **10** ... 65.00 [kHz]		

No.	OP	Index dec.	Name	Range / factory setting		Value after startup
				Display	**MOVITOOLS**	
11_			**Analog input 1 (+10 V)**			
110	•	8463	AI1 scaling	0.1 ... **1** ... 10		
112	•	8465	AI1 operation mode	0 **1** 5 6	3000 rpm (0 – 10 V) **N-MAX (0 – 10 V)** N-MAX (0 – 20 mA) N-MAX (4 – 20 mA)	
12_			**Analog input 2 (setpoint potentiometer of the integrated operating panel)**			
121	•	8811	Addition Setpoint Potentiom.	**0** 1 2	**OFF** ON ON EXCEPT FSP	
122	•	8799	Local Potentiometer Mode	**0** 1 2	**UNIPOL. CW** UNIPOL. CCW BIPOL.CW+CCW	
13_			**Speed ramps**			
130	•	8807	Ramp t11 UP	0.1 ... **2** ... 2000 [s]		
131	•	8808	Ramp t11 DOWN	0.1 ... **2** ... 2000 [s]		
136	•	8476	Stop ramp t13	0.1 ... **2** ... 20 [s]		
138		8794	Ramp limit	0 **1**	NO **YES**	
15_			**Motorized potentiometer**			
150	•	8809	Ramp t3 UP	0.2 ... **20** ... 50 [s]		
152	•	8488	Save last setpoint	**off** on	**OFF** ON	
16_			**Fixed setpoints (set 1)**			
160	•	8489	Internal setpoint n11	0 ... **150** ... 5000 [rpm]		
161	•	8490	Internal setpoint n12	0 ... **750** ... 5000 [rpm]		
162	•	8491	Internal setpoint n13	0 ... **1500** ... 5000 [rpm]		
163	•	8814	Internal setpoint n11 PI-controller	0 ... **3** ... 100 [% I_N]		
164	•	8815	Internal setpoint n12 PI-controller	0 ... **15** ... 100 [% I_N]		
165	•	8816	Internal setpoint n13 PI-controller	0 ... **30** ... 100 [% I_N]		

No.	OP	Index dec.	Name	Range / factory setting		Value after startup
				Display	**MOVITOOLS**	
17_			**Fixed setpoints (set 2)**			
170	•	8492	Internal setpoint n21	0 ... **150** ... 5000 [rpm]		
171	•	8493	Internal setpoint n22	0 ... **750** ... 5000 [rpm]		
172	•	8494	Internal setpoint n23	0 ... **1500** ... 5000 [rpm]		
173	•	8817	Internal setpoint n21 PI-controller	0 ... **3** ... 100 [% I_N]		
174	•	8818	Internal setpoint n22 PI-controller	0 ... **15** ... 100 [% I_N]		
175	•	8819	Internal setpoint n23 PI-controller	0 ... **30** ... 100 [% I_N]		
2__			**Controller parameters**			
25_			**PI-controller**			
250	•	8800	PI-controller	**0** 1 2	**OFF** ON NORMAL ON INVERTED	
251	•	8801	P-gain	0 ... **1** ... 64		
252	•	8802	Time constant n-control.	0 ... **1** ... 2000 [s]		
253	•	8465	PI actual value mode	**1** 5 6	**0 ... 10 V** 0 ... 20 mA 4 ... 20 mA	
254	•	8463	PI actual value scaling	0.1 ... **1.0** ... 10.0		
255	•	8812	PI sensor offset	**0.0** ... 100.0 [%]		
3__			**Motor parameters**			
30_			**Limits**			
301	•	8516	Minimum speed	0 ... **15** ... 5500 [rpm]		
302	•	8517	Maximum speed	$\boxed{n_{max}}$ 0 ... **1500** ... 5500 [rpm]		
303	•	8518	Current limit	0 ... **150** [% I_N]		
32_			**Motor adjustment**			
320	•	8523	Automatic adjustment	off **on**	OFF **ON**	
321	•	8524	Boost	0 ... 100 [%]		
322	•	8525	IxR compensation	0 ... 100 [%]		
323	•	8526	Premagnetizing time	0 ... 2000 [ms]		
324	•	8527	Slip compensation	0 ... 500 [rpm]		
325	•	8834	No-load-damping	**off** on	**OFF** ON	

No.	OP	Index dec.	Name	Range / factory setting		Value after startup
				Display	MOVITOOLS	
4__			**Reference signals**			
40_			**Speed reference signal**			
400	•	8539	Speed reference value	0 ... **750** ... 5000 [rpm]		
401	•	8540	Hysteresis	0 ... **100** ... +500 [rpm]		
402	•	8541	Delay time	0 ... **1** ... 9 [s]		
403	•	8542	Signal = "1" if:	**0** 1	$n < n_{ref}$ $n > n_{ref}$	
45_			**PI controller ref signal**			
450	•	8813	PI actual value reference	**0.0** ... 100.0 [%]		
451	•	8796	Signal = "1" if:	0 **1**	PI actual value < PI reference **PI actual value > PI reference**	
5__			**Monitoring functions**			
50_			**Speed monitoring**			
500	•	8557	Speed monitoring	**0** 3	**OFF** MOT. & REGEN.MODE	
501	•	8558	Delay time	0 ... **1** ... 10 [s]		
6__			**Terminal assignment**			
60_			**Binary inputs**			
60-	•	8803	Binary inputs DI01 has a fixed setting of CW/STOP.	0 **1** 2 3 4 5 6 7 8 -	DI02 DI03 DI04 DI05 CCW/STOP FIX SETPT SW.OV n11/n21 n12/n22 **CCW/STOP ENABLE n11/n21 n12/n22** CCW/STOP ENABLE MOT. POT UP MOT. POT DN ENABLE FIX SETPT SW.OV n11/n21 n12/n22 CCW/STOP SETPOINT HOLD n11/n21 n12/n22 CCW/STOP ENABLE EXT. FAULT ERR. RESET CCW/STOP ENABLE FAULT RESET TF RESP. CCW/STOP EXT. FAULT n11/n21 n12/n22 CCW/STOP ENABLE n11/n21 CTRL.INHIBIT (Deviating combination set with MOVITOOLS)	
601		8336	Binary input DI02		NO FUNCTION ENABLE /STOP CW/STOP CCW/STOP n11/n21 n12/n22 FIXED SETP. SELECT MOTOR POT UP MOTOR POT DOWN /EXT. FAULT FAULT RESET SETPOINT HOLD TF RESPONSE (only with DI05) CONTROL.INHIBIT	
602		8337	Binary input DI03			
603		8338	Binary input DI04			
604		8339	Binary input DI05			

No.	OP	Index dec.	Name	Range / factory setting		Value after startup
				Display	**MOVITOOLS**	
62_			**Binary outputs**			
62-	•	8804	Binary outputs		DO01 DO02	
				0	**/FAULT** **BRAKE RELEASED**	
				1	READY BRAKE RELEASED	
				2	SPEED REFERENCE BRAKE RELEASED	
				3	SP/ACT.VAL.COMP. BRAKE RELEASED	
				4	/FAULT SPEED REFERENCE	
				5	/FAULT SP/ACT.VAL.COMP.	
				6	/FAULT READY	
				7	/FAULT ROT. FIELD ON	
				8	/FAULT PI ACT.VALUE REF	
				9	PI ACT.VALUE REF BRAKE RELEASED	
				-	(Deviating combination set with MOVITOOLS)	
620		8350	Binary output DO01		NO FUNCTION	
					/FAULT	
621		8351	Binary output DO02		READY	
					OUTP. STAGE ON	
					ROT. FIELD ON	
					BRAKE RELEASED	
					SPEED REFERENCE	
					SP/ACT.VAL.COMP.	
					PI ACT.VALUE REF.	
7__			**Control functions**			
70_			**Operating modes**			
700		8574	Operating mode (setting on the operating panel with 🖳 , P-01).	0	VFC 1	
				3	VFC 1 & DC BRAK.	
				4	VFC 1 &FLY.START	
				"0"	VFC 1 & HOIST (only with MOVITOOLS)	
				21	**V/f character.**	
				22	V/f & DC BRAKING	
71_			**Standstill current function**			
710	•	8576	Standstill current function	**0** ... 50 % I_{Mot}		
72_			**Setpoint stop function**			
720	•	8578	Setpoint stop function	**off**	**OFF**	
				on	ON	
721	•	8579	Stop setpoint	0 ... **30** ... 500 [rpm]		
722	•	8580	Start offset	0 ... **30** ... 500 [rpm]		
73_			Brake function			
736	•	8828	Braking time	0.0 ... **0.1** ... 2 [s]		
76_			**Manual operation**			
760	•	8798	Locking RUN/STOP keys	**no**	**NO**	
				yes	YES	

No.	OP	Index dec.	Name	Range / factory setting		Value after startup
				Display	MOVITOOLS	
8__			**Unit functions**			
80_			**Setup**			
802	•	8594	Factory setting	yes **no**	FACTORY SETTING **NO** DELIVERY CONDITION	
803	•	8595	Parameter lock	**off** on	**OFF** ON	
804		8596	Reset statistic data		**NO** FAULT MEMORY	
81_			**Serial communication**			
810	•	8597	RS485 address	**0** ... 99		
811		8598	RS-485 group address		**100** ... 199	
812		8599	RS485 timeout delay		**0** ... 650 [s]	
813	•	8600	SBus address	**0** ... 63		
814		8601	SBus group address		**0** ... 63	
815		8602	SBus timeout delay		**0** ... 650 [s]	
816	•	8603	SBus baud rate	0 1 **2** 3	125 kbaud 250 kbaud **500 kbaud** 1000 kbaud	
82_			**Brake operation**			
820	•	8607	4-quadrant operation	off **on**	OFF **ON**	
83_			**Fault responses**			
830	•	8609	Response EXT. FAULT	2 **4**	IMM. STOP/FAULT **RAPID STOP/FAULT**	
84_			**Reset response**			
840		8617	Manual reset		YES **NO**	
86_			**Modulation**			
860	•	8620	PWM frequency	**0** 1 2 3	**4 kHz** 8 kHz 12 kHz 16 kHz	
862	•	8751	PWM fix	yes **no**	YES **NO**	

No.	OP	Index dec.	Name	Range / factory setting		Value after startup
				Display	**MOVITOOLS**	
87_			**Fieldbus parameterization**			
870		8304	Setpoint description PO1		**NO FUNCTION** (factory setting P872) **SPEED** (factory setting P871)	
871		8305	Setpoint description PO		MAX. SPEED RAMP **CTRL. WORD 1** (factory setting P870)	
872		8306	Setpoint description PO3		SPEED [%] PI-CONTROLLER SETPOINT	
873		8307	Actual value description PI2		NO FUNCTION **SPEED** (factory setting P874)	
874		8308	Actual value description PI2		**OUTP.CURRENT** (factory setting P875) ACTIVE CURRENT **STATUS WORD1** (factory setting P873)	
875		8309	Actual value description PI3		SPEED [%] IPOS PI-DATA PI CTRL [%]	
876		8622	PO data enable		OFF **ON**	
9__			IPOS/LOGODRIVE parameters			
93_			IPOS/LOGODRIVE special functions			
931	•		Task 1/2	**off** on		
932			Task 2	**off** on		

10 Operation and Service

10.1 Fault information

Fault memory

The inverter stores the fault message in fault memory P080. The inverter does not save a new fault until the fault message has been acknowledged. The local operating panel shows the fault which occurred most recently. Whenever double faults occur, the value stored in P080 does not correspond to the value displayed on the operating panel. This is an example of what happens with F-07 DC link overvoltage followed by F34 Ramp timout.

The inverter saves the following information when the malfunction occurs:

- Fault which has occurred
- Status of the binary inputs / binary outputs
- Operating status of the inverter
- Inverter status
- Heat sink temperature
- Speed
- Output current
- Active current
- Unit utilization
- DC link voltage

Switch-off responses

There are three switch-off responses depending on the fault.

Inhibit means: Output stage inhibited, reset required.

Immediate switch-off

The unit can no longer brake the drive. In the event of a fault, the output stage goes to high-resistance and the brake is applied immediately.

Rapid stop with inhibit

The inverter brakes the drive using stop ramp t13. The brake is applied when the *minimum speed P301* is reached. **The output stage goes to high-resistance.** If *P820 4-quadrant operation = OFF*, deceleration is not with a ramp but instead by means of direct current braking.

Rapid stop without inhibit

The inverter brakes the drive using stop ramp t13. The brake is applied when the *minimum speed P301* is reached. If P820 *4-quadrant operation = OFF*, deceleration is not with a ramp but instead by means of direct current braking.

Reset   A fault message can be acknowledged by:

- Switching the supply system off and on again. Recommendation: Observe a minimum switch-off time of 10 s for the supply system contactor.

- Reset via input terminals, i.e. via an appropriately assigned binary input (DIØ2...DIØ5).

- Manual reset in MOVITOOLS (*P840 Manual reset = YES* or the Reset button in the Status window).

- Manual reset on the operating panel (STOP/RESET button).

The STOP/RESET button has priority over a terminal enable or an enable via the interface.

The STOP/RESET key can be used for performing a reset after a fault has occurred with a programmed fault response. The drive is inhibited after a reset. You must enable the drive with the RUN key.

Current limit The speed display starts to flash when the current limit is reached.

10.2 List of errors (F-00 ... F-97)

No.	Name	Response	Possible cause	Action
00	No error			
01	Over-current	Immediate switch-off	• Short circuit on output • Output switching • Motor too large • Defective output stage • Ramp limit (P138) switched off	• Rectify the short circuit • Only switch when output stage inhibited • Connect a smaller motor • Call SEW Service for advice if the fault still cannot be reset • Ramp limit (P138 = YES)
03	Ground fault	Immediate switch-off	• Ground fault on motor • Ground fault on inverter • Ground fault in the motor lead • Over-current (see F-01)	• Replace the motor • Replace the MOVITRAC® 07 • Rectify the ground fault • See F-01
04	Brake chopper	Immediate switch-off	• Regenerative power excessive • Braking resistor circuit interrupted • Short circuit in braking resistor circuit • Excessively high braking resistance • Brake chopper defective • Ground fault	• Extend deceleration ramps • Check connecting harness for braking resistor • Rectify the short circuit • Check technical data of braking resistor • Replace the MOVITRAC® 07 • Rectify the ground fault
06	Supply system phase failure (only with three-phase inverter)	Immediate switch-off	Phase fault	Check supply system lead
07	DC-link over-voltage	Immediate switch-off	• DC link voltage too high • Ground fault	• Extend deceleration ramps • Check connecting harness for braking resistor • Check technical data of braking resistor • Rectify the ground fault
08	Speed monitoring	Immediate switch-off	Current controller is operating at the setting limit due to: • mechanical overload • phase failure in supply system • phase failure in motor Maximum speed for VFC operating mode exceeded	• Reduce load • Increase delay time setting P501 • Check current limitation • Extend deceleration ramps • Check supply system phases • Check motor feeder and motor • Reduce maximum speed
10	ILLOP	Emergency stop	• Incorrect command during running of program • Incorrect conditions during running of program • Function not in inverter / not implemented	• Check program • Check program structure • Use another function

No.	Name	Response	Possible cause	Action
11	Overtempera-ture	Rapid stop with inhibit	Thermal overload of inverter	• Reduce load and/or ensure adequate cooling • If the braking resistor is integrated in the heat sink: Mount the braking resistor externally
17-24	System fault	Immediate switch-off	Inverter electronics disrupted, possibly due to effect of EMC	Check ground connections and shields; improve them if necessary. Contact SEW Service for advice if this reoccurs.
25	EEPROM	Rapid stop with inhibit	Fault when accessing EEPROM	Call up default setting, perform reset and set parameters again. Contact SEW Service for advice if this reoccurs.
26	External termi-nal	Programma-ble	Read in external fault signal via programmable input	Eliminate specific cause of fault; reprogram terminal if appropriate.
31	TF sensor	Rapid stop with inhibit	• Motor too hot, TF sensor has tripped • TF sensor of motor not connected or not connected properly • Connection of MOVITRAC® 07 and TF interrupted on motor	• Let motor cool down and reset fault • Check connections/links between MOVITRAC® 07 and TF
32	Index overrun	Emergency stop	Basic programming rules violated causing internal stack overflow	Check and correct user program
34	Ramp timeout	Immediate switch-off	The inverter signals F34 if you revoke the enable and the drive exceeds the rapid stop ramp time t13 by a certain time.	Extend the rapid stop ramp time
37	Watchdog timer	Immediate switch-off	Fault in system software sequence	Check ground connections and shields; improve them if necessary. Contact SEW Service for advice if this reoccurs.
38	System soft-ware	Immediate switch-off	System fault	Check ground connections and shields; improve them if necessary. Contact SEW Service for advice if this reoccurs.
43	RS-485 timeout	Rapid stop without inhibit[1]	Communication between inverter and PC interrupted	Check connection between inverter and PC.
44	Unit utilization	Immediate switch-off	Unit utilization (Ixt value) excessive	• Reduce power output • Extend ramps • If these points are not possible: Use a larger inverter

No.	Name	Response	Possible cause	Action
45	Initialization	Immediate switch-off with inhibit	Error during initialization	Contact SEW Service for advice.
47	System bus timeout	Rapid stop without inhibit[1]	Fault during communication via system bus	Check system bus connection.
77	Control word	None	An external control has attempted to set an invalid automatic mode	• Check serial connection to external control • Check write values of external control
81	Start condition	Immediate switch-off	**Only in "VFC hoist" operating mode:** The inverter could not inject the required amount of current into the motor during the pre-magnetization time: • Motor rated power too small in relation to inverter rated power • Motor cable cross section too small	• Check connection between inverter and motor • Check startup data and repeat startup if necessary
82	Output open	Immediate switch-off	**Only in "VFC hoist" operating mode:** • Two or all output phases interrupted • Motor rated power too small in relation to inverter rated power	Check connection between inverter and PC.
94	EEPROM checksum	Immediate switch-off	EEPROM defective	Contact SEW Service for advice.
97	Copy fault	Immediate switch-off	• Parameter module disconnected during copying process • Switching off/on during copying process	Prior to acknowledging the fault: • Load the factory setting or the complete data record from the parameter module

1   No reset required, fault message disappears after communication is reestablished

10.3   List of warnings (r-17 ... r-32)

No.	Name	Meaning
17	Function not implemented	Function not in inverter
19	Parameter lock activated	Parameters cannot be altered
32	Enable	You cannot run the function in ENABLE status

10.4   SEW electronics service

Send in for repair   Please contact the **SEW electronics service if a fault cannot be rectified** (→ "Customer and spare parts service").

Please always specify the service code number when you contact the SEW electronics service. This will enable SEW-EURODRIVE service to help you more effectively.

Please provide the following information if you are sending the unit in for repair:
Serial number (→ nameplate)
Unit designation
Brief description of the application (application, control via terminals or serial)
Motor which is connected (motor voltage, star or delta connection)
Nature of the fault
Peripheral circumstances
Your own presumption of what has happened
Unusual events which preceded the fault

11   Change Index

The text has been completely revised and the layout adapted. You will find the following changes in the individual sections.

Technical Data
- Information on long-term storage.
- Overview of the different series.
- Assignment dimension sheets to data tables.
- Information on the minimum permitted braking resistance.
- Information on air circulation.
- MWS21A has been deleted.
- MOVITOOLS SCOPE has been added.
- Data for braking resistors in flat design are listed after the voltages and the ED values have been added.
- Dimensions for BW039-003 and BW039-006 have been added.
- Additional data for ND1503 have been added.
- Additional data for HF008-503 have been added.

Parameters
- "Motor startup parameter" has been added.
- Parameter 71_ "Standstill current function" has been added.

Project Planning
- Motor cable length: Information on residual current protective device.
- Group drive: Expanded prerequisites.
- PI-controller actual value detection: Indication of bus parameters.

Safety Notes
- Information on switching at the output.

Installation
- UL-conforming installation: Additonal information on power supply system.
- Installation system bus has been added.

Startup
- Operating panel: Additional safety information.
- Information on direction of rotation enable with RS-485 and SBus has been revised.
- STOP/RESET: Note on enable has been added.
- P451 added.
- P71_ added.
- F04 / F07 / F10 revised.

12 Index

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