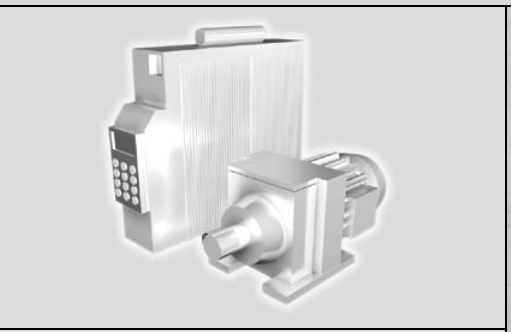
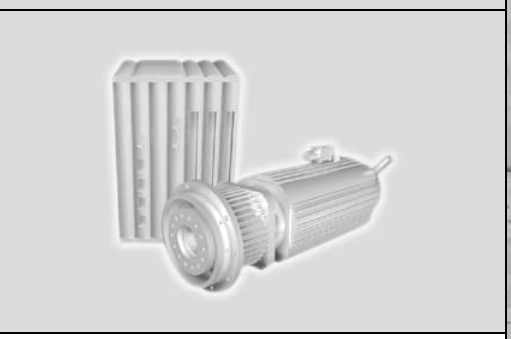
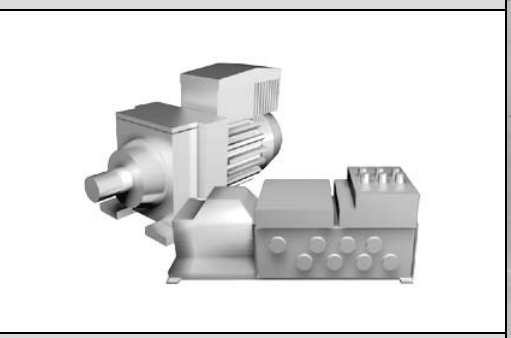
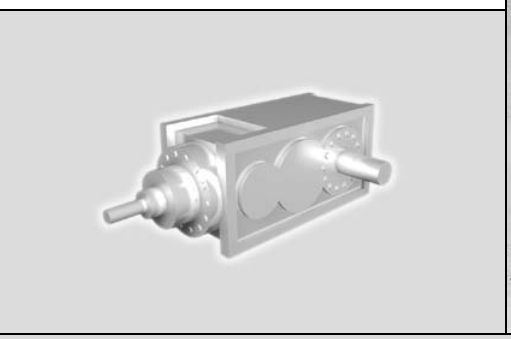
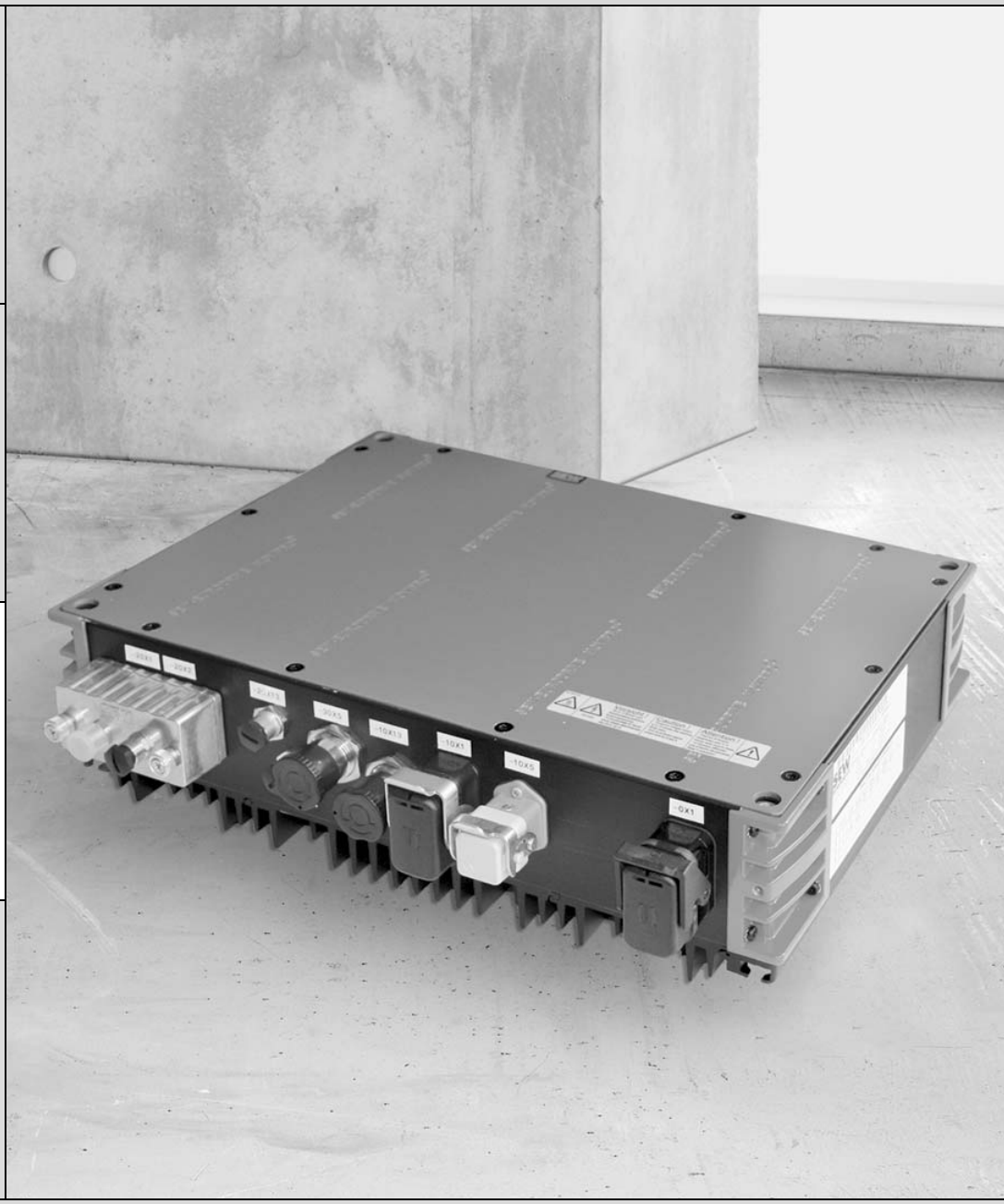
SEW EURODRIVE











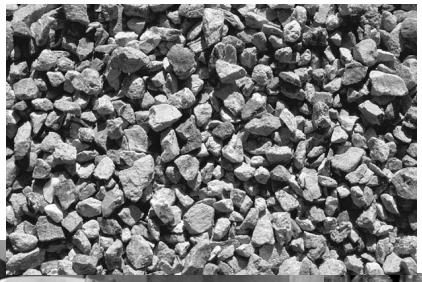
MOVIPRO® PHC11A-A040M1-P00K-01

GC710000

Edition 10/2006

11521813 / EN

Operating Instructions



SEW
EURODRIVE

1 Important Notes

Safety and warning instructions

Always comply with the safety and warning instructions in this publication.

Hazard

Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.

Warning

Indicates an imminently hazardous situation caused by the product which, if not avoided, WILL result in death or serious injury. This symbol also indicates potential for damage to property.

Caution

Indicates a potentially hazardous situation which, if not avoided, MAY result in minor injury or damage to products.

Note

Indicates a reference to useful information, e.g. on startup.

Documentation reference

Indicates a reference to a document, such as operating instructions, a catalog or a data sheet.

You must adhere to the **operating instructions** to ensure:

- **Fault-free operation**
- **Fulfillment of any rights to claim under limited warranty**

Therefore, **read the operating instructions** before you start operating the unit! The **operating instructions** contain **important information about service** and should be kept **near the unit**.

Designated use

MOVIPRO® PHC11A-A040M1-P00K-01 drive and control units are designed for stationary use in industrial and commercial systems for operating AC asynchronous motors with squirrel-cage rotors. These motors must be suitable for operation with frequency inverters. No other loads must be connected to the units.

In terms of power supply, the MOVIPRO® PHC11A-A040M1-P00K-01 drive and control units are designed for systems with direct supply that use pick-ups to draw power from a line cable. The components required for energy conversion are integrated in the unit.

Do not operate the unit until you have established that the machine complies with the EMC Directive 89/336/EEC and that the conformity of the end product has been determined in accordance with the Machinery Directive 98/37/EEC (with reference to EN 60204).

Observe all information on the technical data and the permitted conditions where the unit is operated. The rules and regulations of the Professional Association (Berufsgenossenschaft, BG), in particular BG rule B11 "Electromagnetic fields", must be observed during installation, startup and operation of systems with contactless energy transfer by induction **for use in industrial workplaces**.

Non-designated use

Customers are not permitted to remove covers or attempt to repair and set the MOVIPRO® PHC11A-A040M1-P00K-01 drive and control unit themselves. Such actions are classified as non-designated use.

Only the manufacturing company is authorized to carry out repairs and make settings. In case of malfunction, contact SEW-EURODRIVE GmbH & Co KG for information on how to proceed.

The manufacturer assumes no liability for operating the MOVIPRO® PHC11A-A040M1-P00K-01 units in conditions other than those specified in these operating instructions.

Operational environment

The following uses are prohibited unless the units are expressly designed for the purpose:

- Use in potentially explosive areas.
- Use in areas exposed to harmful oils, acids, gases, vapors, dust, radiation, etc.

Waste disposal

Please follow the current national regulations.

Dispose of materials separately in accordance with the regulations in force, for example:

- Electronics scrap (circuit boards)
- Plastic (housing)
- Sheet metal
- Copper
- etc.

2 Safety Notes

Installation and startup

- **Never install damaged products or take them into operation.** Submit a complaint to the transportation company immediately in the event of damage.
- **Installation, startup and service work** may only be performed by **trained personnel** observing applicable accident prevention regulations and operating instructions! The regulations in force (e.g. EN 60204, VBG 4, DIN-VDE 0100/0113/0160) must also be complied with. The following rules and regulations apply to the operator:
  - Generally recognized safety rules.
  - EC guidelines or other country-specific regulations
- Follow the **specific instructions** during **installation** and **startup** of the other components, such as motor and brake.
- Make sure that **preventive measures** and **protection devices** correspond to the **applicable regulations** (e.g. EN 60204 or EN 50178).

Required preventive measures:

Systems with MOVITRANS®	Systems with power supply module
• **Protective separation DIN VDE 0100-410, 1997 (IEC 60364-4-41, 2002)** • **Low-impedance equipotential bonding on the machine frame** • **ESD protection (for mobile components)**	• **Grounding of the unit**

- **The unit meets all requirements for safe disconnection** of power and electronics connections in accordance with EN 61800. **All connected circuits** must also **satisfy the requirements for safe disconnection**. If safe disconnection is required, the connected signal circuits have to meet the requirements according to SELV or PELV.

Operation and service

- **Before removing the protective cover**, **disconnect the unit from the supply system**. **Dangerous voltage levels** may still be present inside the unit and at the terminal strips up to **10 minutes after mains disconnection**.
- When the **protective cover is removed**, the unit has **enclosure IP00**. **Dangerous voltages** are present at all components except for the control electronics. The unit must be closed during operation.
- **When the unit switch is in the ON position, dangerous voltages** are present at the **output terminals** as well as any **connected cables and motor terminals**. This also applies even when the unit is inhibited and the motor is at standstill.
- Just because the **operation LED and other display elements** have gone out **does not mean** that the unit has been disconnected from the supply system and is **de-energized**.
- **Internal safety functions** or a **mechanical blockage** may cause the **motor to stop**.

  Removing the cause of the malfunction or performing a **reset** can cause the **drive to restart automatically**.

  As this is **prohibited** for the driven machine for safety reasons, **disconnect the unit** from the power supply **before correcting the fault**. In such cases, it is also forbidden for the **"Auto Reset" (P841) to be activated**.

- The inverter output may only be **switched when the output stage is inhibited**. Switching the inverter output when the output stage is enabled leads to increased wear and will finally cause irreparable damage to the switch contacts. The switching equipment must be selected in accordance with the maximum DC voltage.

Safety technology

Warning of malfunctions

- The **MOVIPRO® PHC11A-A040M1-P00K-01 drive and control units** may **not execute any safety functions without higher-level safety systems** unless expressly designed for this purpose. Malfunctions in the drive and control units of the MOVIPRO® PHC11A-A040M1-P00K-01 product series can result in injuries to persons and damage to material and equipment.
- **Use higher-level safety systems to ensure protection of equipment and personnel!**

Dangerous voltages!

- Do not connect or disconnect any plug connectors or interface connections when voltage is applied!

Mechanical protection

- The complete **energy and control electronics** is accommodated in a modular **IP64 enclosure** to provide protection against contact.
- The **energy interfaces** are designed using **touch-safe plug connectors with IP65 protection** (if locked).
- The connections for **resolver and sensor/actuator boxes via M23 plug connector** are designed in **IP67 protection** (when connected) .
- All **M12 connections** (sensors/actuators/diagnostic interfaces) are **designed in degree of protection IP67**.

Electrical protection

Interfaces

- All **outgoing interfaces for energy supply** (pick-up connections), motor connection and the 24 V voltage supply are **designed in such a way (shape or color coded) that they cannot be mixed up**.
- The connectors of the **resolver connection** are color coded so that they **cannot be mixed up**.
- **Sensor and actuator connections** are designed with standardized M23 connectors so that they **cannot be mixed up**.

ESD protection

- A **high-resistance discharge** with a resistance of 1 to 100 MΩ **is permitted** for ESD protection in the stationary system section.

Shielding

- **Only use shielded control cables.**
- **Connect the shield by the shortest possible route and make sure it is grounded over a wide area at both ends.** Ground one end of the shield via suppression capacitor (220 nF/50 V) to avoid ground loops.
- **If using double-shielded cables, ground the outer shield on the unit end and the inner shield on the other end.**

3 Unit Design

The following short name is used in this operating instruction.

Designation	Short name
MOVIPRO® PHC11A-A040M1-P00K-01 drive and control unit	PHC11A

3.1 Nameplate

Nameplate Each unit has a nameplate that provides important information.

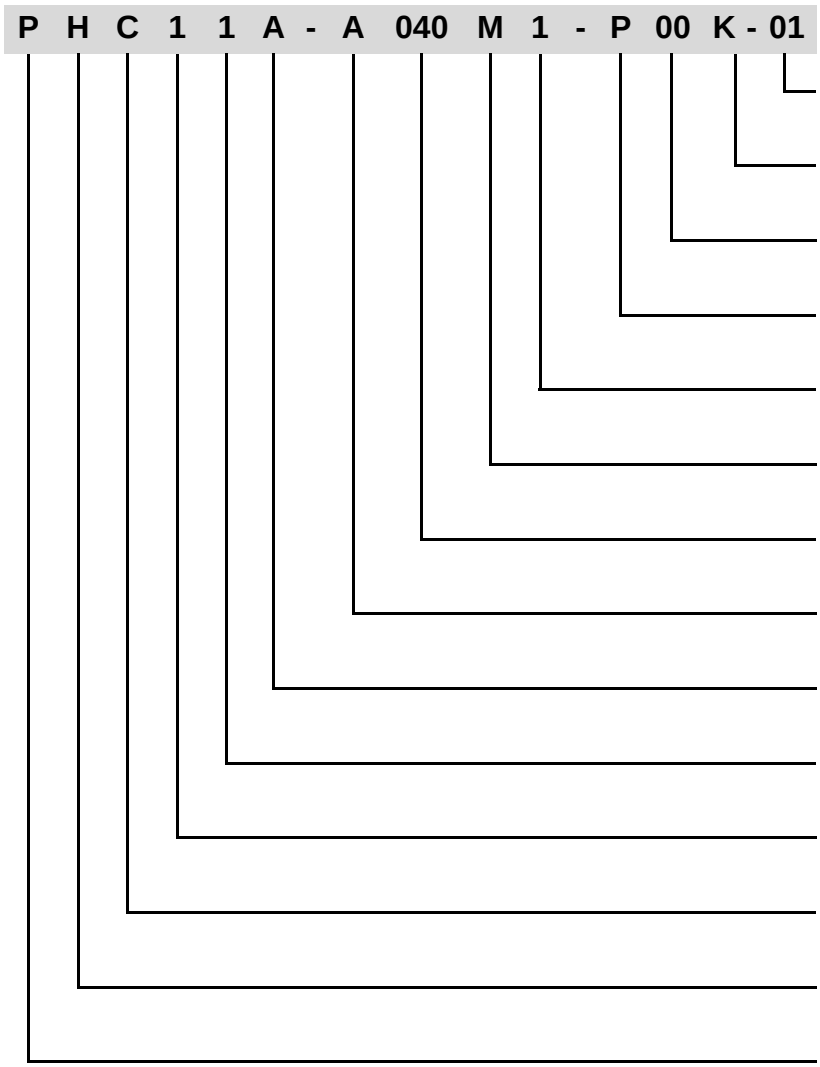
60181AXX

Figure 1: Nameplate of the PHC11A

U Voltage
f Frequency
I Current
T Temperature
P Power

3.2 Unit designation

The units of the MOVIPRO® product series have a unit designation that provides important information on the drive and control unit type:



Function level version:
01 = First function level

Function level:
K = Customer-specific

Protocol and version:
00 = No meaning

Communication medium:
P = ProfiBus

Number of motor connectors:
1 = 1 motor connector

Type of power connector:
M = Motor connector

Maximum S1 power:
040 = 4.0 kVA

Power input type:
A = AC

Version:
A = First generation

Depth of housing:
1 = 300 mm

Height of housing:
1 = 70 mm (without cooling fins)

Housing type:
C = Modular

Control type:
H = Drive control

Product family:
P = MOVIPRO®

3.3 Scope of delivery

Basic unit

The scope of delivery includes the PHC11A-A040M1-P00K-01 basic unit.

- PHC11A-A040M1-P00K-01 basic unit

Components

The PHC11A modular housing includes the following components:

- MOVIDRIVE® MCF20A0040 drive inverter
- Supply system rectifier for DC link conversion
- Brake control for 24 V brakes from SEW
- SEW field control with ProfiBus
- Connectors (without mating connectors) for
  - 2 x sensors, actuators
  - 1 x power supply connection
  - 1 x RS232 service
  - 1 x RS485 service
  - 1 x motor connector
  - 2 x braking resistor connection
  - 2 x ProfiBus

Part number

SEW-EURODRIVE identifies the units with the following part numbers:

Unit	Part number
MOVIPRO® PHC11A-A040M1-P00K-01 drive and control unit	13000438

Additional components

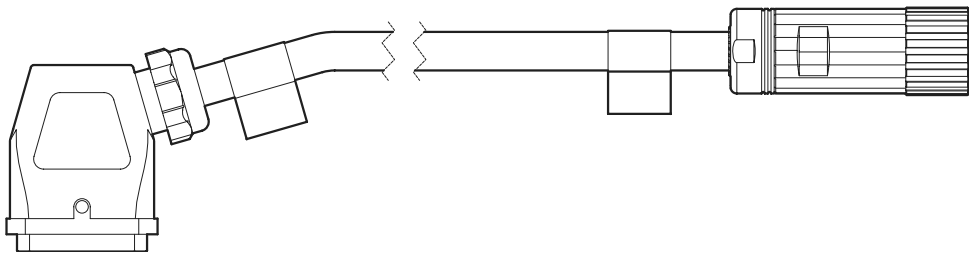
The scope of delivery does not include installation equipment, mounting accessories or connection cables.

If you have questions about which equipment/material to choose, please contact SEW-EURODRIVE GmbH & Co KG.

Motor cables

We recommend the following cables for connecting PHC11A to the motor:

- With motor round connector (M23) / part number 1 172 494 3



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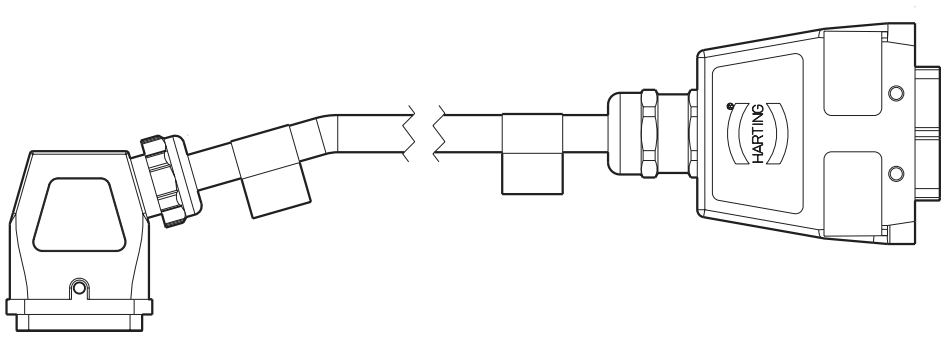
- With ASB8 connector (HAN 10E) / part number 1 172 679 2



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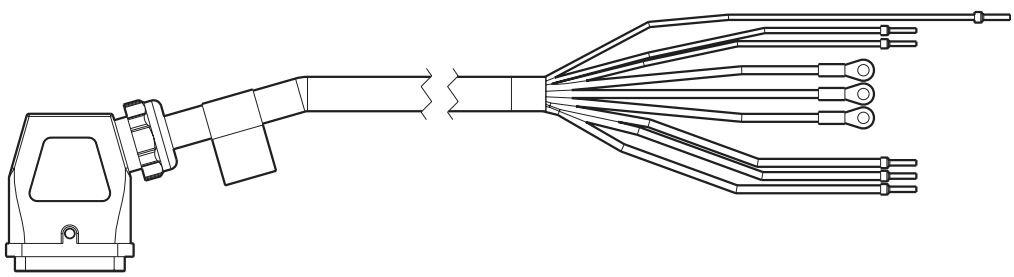
- With terminal box on motor / part number 1 172 242 8



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3.4 Unit design

The following figure shows the unit design of PHC11A:

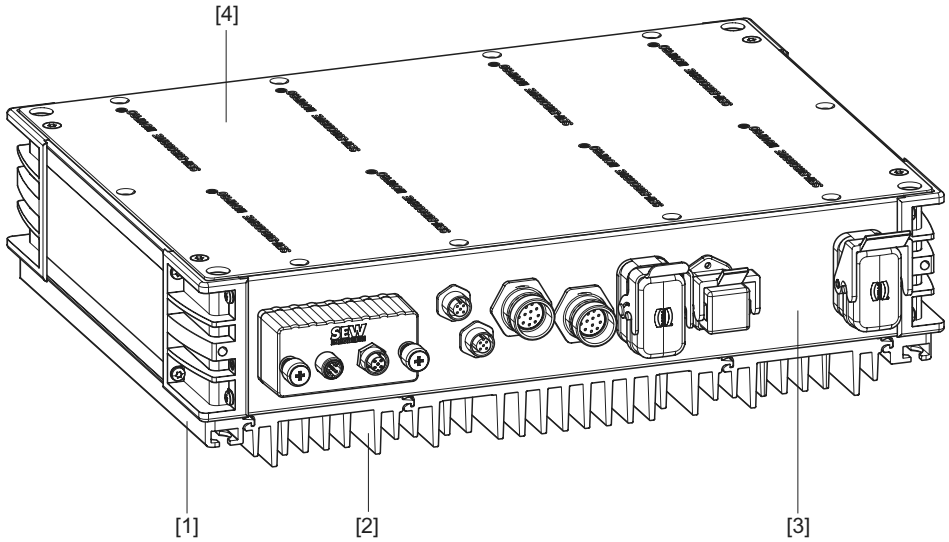

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Figure 2: PHC11A-A040M1-P00K-01 basic unit

[1]	T-slot profiles
[2]	Heat sink
[3]	Front panel connectors
[4]	Housing cover

3.5 Operating principle

Task

The PHC11A unit is designed as decentralized field control for stationary use in industrial and commercial systems. Energy is supplied on the mains end (400 V~).

Observe all information on the technical data and the permitted conditions where the unit is operated.

Structure

The following block circuit diagram shows the connections of peripherals with MOVIPRO® PHC11A:

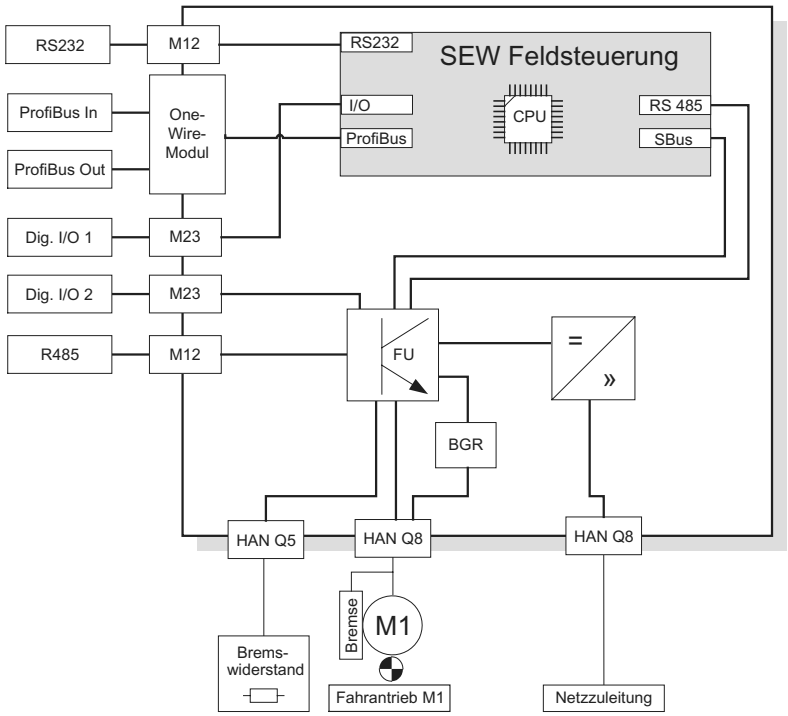

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Figure 3: Block circuit diagram

3.6 Power electronics

MOVIDRIVE® MCS20A-0040 drive inverter

The MOVIDRIVE® MCS20A-0040 drive inverter is not equipped with a fan. It is connected to the heat sink in cold-plate technology.

The supply voltage is DC 500 V. A 24 V switched-mode power supply with 4 A continuous output power is integrated, independent of the inverter electronics.

The MOVIDRIVE® drive inverter type MCS20A-0040 serves for controlling asynchronous motors.

Observe the information on the system properties and motor assignments in the MOVIDRIVE® *compact* system manual, part number 11493410/EN.

Brake control system

Brake control is responsible for the power supply and control of the 24 V disc brakes used in the motors connected to PHC11A.

In the PHC11A unit described in these operating instructions, brake control is installed internally. A brake rectifier type BMV 5 is used for the PHC11A unit.

When configuring the motors, note that if brake motors are used, an SEW brake coil must be fitted for each one. When selecting the SEW brake coil, note the permitted operating voltage for the brake coil.

The brake coil type is determined depending on the motor power.

3.7 Control technology

Processing unit

The PHC11A drive and control unit is equipped with a processing unit. This **SEW field controller** is responsible for communication between PHC11A and the higher-level controller. It functions as a gateway between the higher-level controller and the connected frequency inverters.

For a detailed descriptiion of the interfaces and the gateway functionality, see the "MOVIPRO® Interface Description" specification, part number 11471417/EN.

To connect the SEW field controller to a ProfiBus network, a suitable ProfiBus module is connected. The application software can easily be loaded to the processing unit via the ProfiBus interface or RS232 diagnostic interface.

4 Installation

4.1 Installation notes

Comply with the general safety notes during installation!

Minimum clearance

During installation, provide adequate space on the connection panel for the connection cables in accordance with the dimension drawing. page 33.

Cooling

Make sure that the heat sink segments can dissipate heat by means of **free convection**.

When attaching the unit to a mounting plate, the best dissipation properties can be achieved by:

- Using a mounting plate that is the same size as the unit itself
- Ensuring that the **highest cooling fin is at least 25 mm** away from the mounting plate

Installation

The unit is fitted with bends on the front end **for mounting**. These bends can be used to attach suitable mounting elements (e.g. T-slot nuts, screws with appropriate screw heads). The units can be installed in two ways:

- Version A: Screws are secured to the PHC housing from the back through the fastening elements.
- Version B: Screws are secured to the PHC housing from the front through the fastening element.

The following figure shows the mounting hole positions:

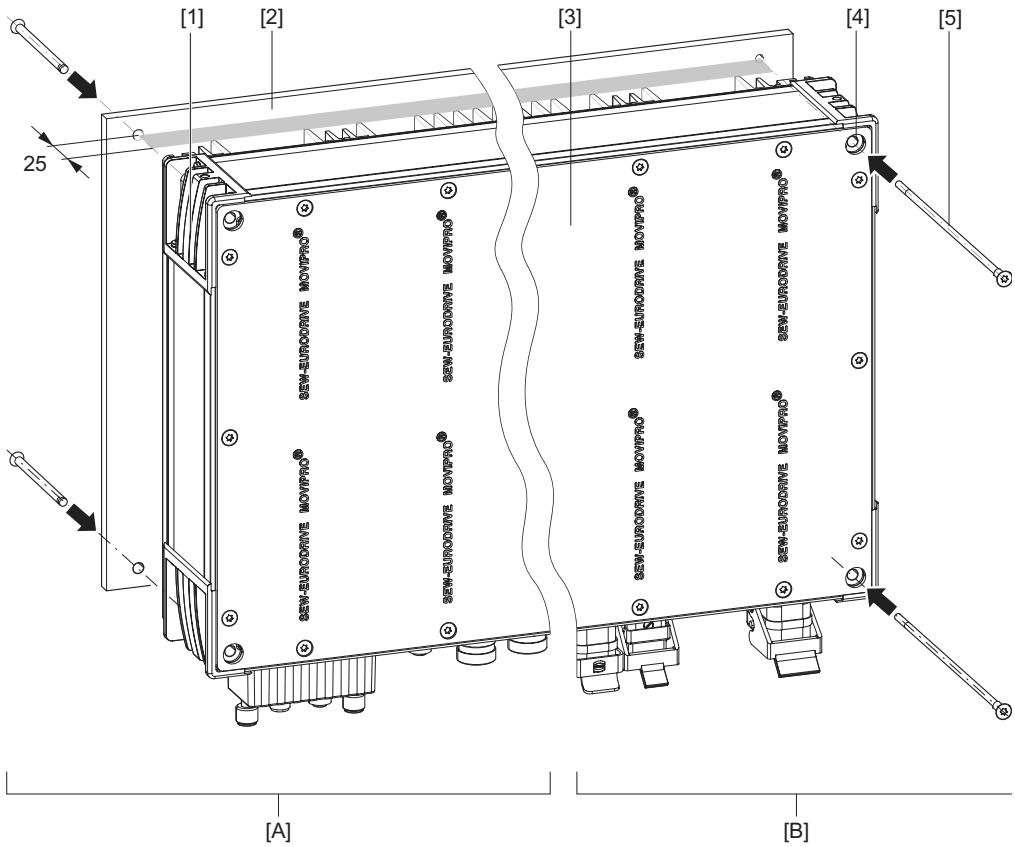

Figure 4: Installing the PHC11A

[1] Corner profile with threaded hole (M8 x 20)
[2] Fastening element
[3] Housing cover
[4] Tapped hole (M8 x 20)
[5] Screws for mechanical connection

Use suitable supports or spacers to ensure optimum heat convection.

You **must** maintain a **minimum distance of 25 mm** from the highest cooling fin to the neighboring areas.

Maximum permitted tightening torque for the retaining screws: 3.2 Nm

Mounting position

The **mounting position** for units with cooling fins is **vertical** to allow for vertical air convection between the cooling fins.

Any other position is **not permitted** due to the reduced heat convection. Operation in a different mounting position can cause the unit to overheat, leading to irreparable damage.

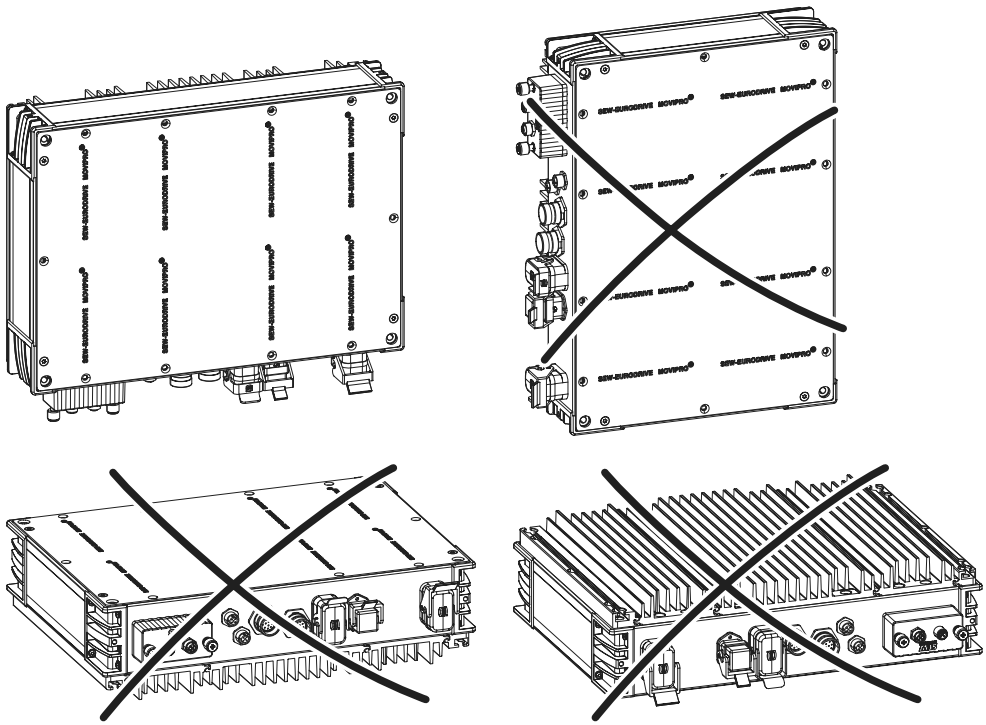

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Figure 5: Permitted mounting positions for PHC11A

Always **position the unit** so that it will **not collide** with other components or design elements **along the travel distance**.

Dimensions of the T-slot profiles

When selecting the mounting elements, observe the dimensions of the angle profiles shown in the figure below.

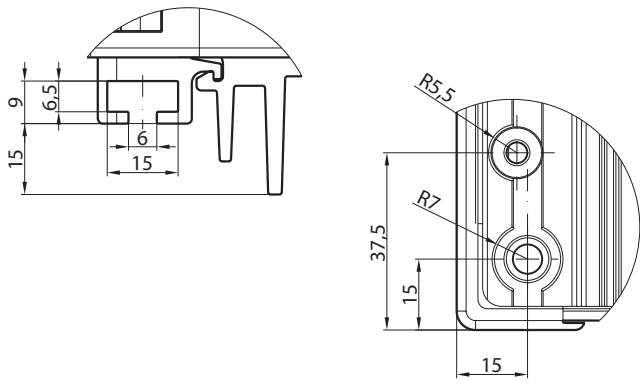

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Figure 6: Dimensions of the angle profiles

The dimensions of the PHC11A unit are shown in dimension drawing page 34.

Shielding

- **Only use shielded motor and control cables.**
- **Connect the shield by the shortest possible route and make sure it is grounded over a wide area at both ends.** Ground one end of the shield via suppression capacitor (220 nF/50 V) to avoid ground loops.
- **For cables with single shielding, apply the shielding to both ends.**
- **For cables with double shielding (e. g. hybrid cable), apply the outer shielding to the MOVIPRO® and the inner shielding to the other end (e. g. motor).**

Separate cable ducts

Route **power cables** and **electronics cables** in **separate cable ducts**.

Unit output

Connect only **ohmic/inductive loads such as, for example, motors, at motor connector -10X1**. Never connect capacitive loads!

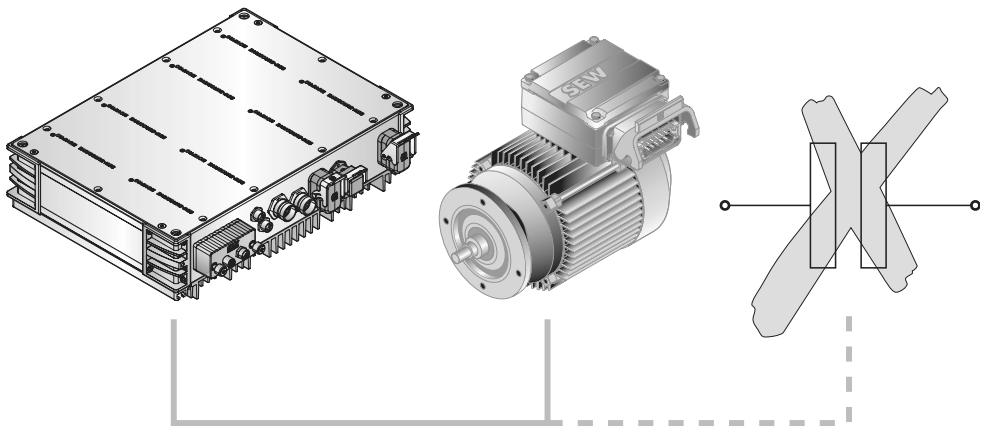

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Figure 7: Connection of inductive/ohmic loads at the motor connector

The motor supply cable must not exceed a **maximum length of 15 m**.

Digital inputs/digital outputs

The **digital inputs** are electrically **isolated** by opto-couplers.

The **digital outputs** are electrically **isolated** by opto-couplers and are **short-circuit proof**.

Grounding and equipotential bonding

Caution
Do not connect external brake rectifiers, for example in the motor terminal box.

ProfiBus ID-module

Do not install or remove the ProfiBus ID-module when voltage is applied.

Switch off the unit before plugging in the ProfiBus ID-module.

Use two knurled screws to attach the ProfiBus ID-module. Tighten the knurled screws manually.

Maximum permitted tightening torque for the retaining screws: 0.2 Nm

Position of the connection points

The connection points on the MOVIPRO® units for grounding or equipotential bonding are **marked on the housing corners by a ⏚ symbol.**

Design

The holes for grounding are prepared for M5 self-tapping bolts, e.g. M5 x 12 to DIN ISO 3506 or equivalent.

Proceed as follows to ground the unit:

1. First, place a terminal clip onto the ground bore, next the crimp cable lug for M5 and finally the tooth lock washer.
2. Tighten the elements using a self-tapping screw.

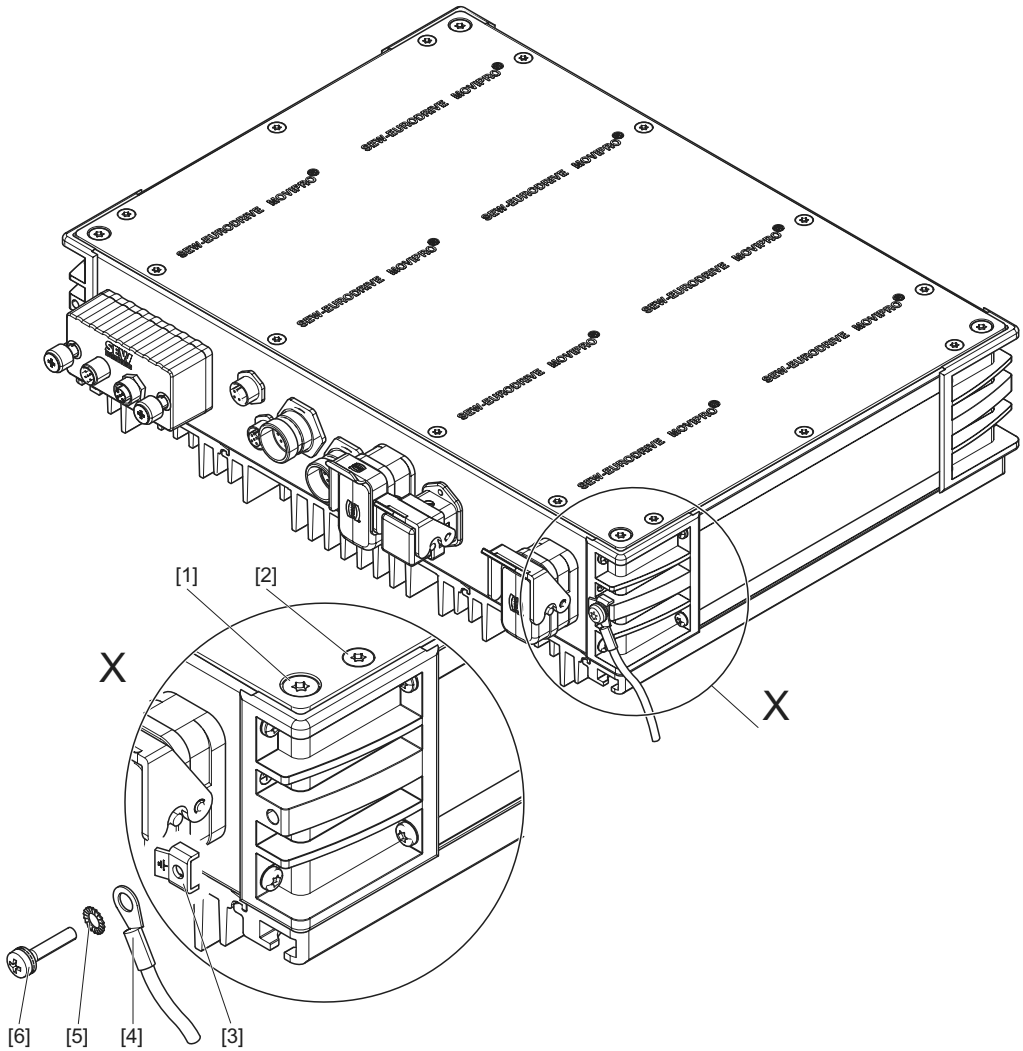

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Figure 8: Grounding installation

[1]	Corner profile with M8 threaded hole
[2]	Housing bolts
[3]	Terminal clip
[4]	Crimp cable lug for M5
[5]	Tooth lock washer
[6]	Bolt, self-tapping

Never loosen the connection screws at the housing corners.

Never secure the grounding or equipotential bonding cable using the housing connection screws. They are tightened with a predefined tightenting torque at the factory. Once a housing connection screw is loosened, the sealing property and consequently degree of protection IP65 can no longer be ensured because the profiles have become distorted.

4.2 Connections

The following sections describe the connections of PHC11A.

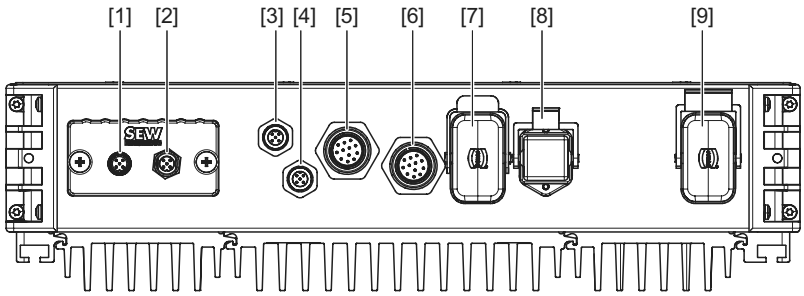

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Figure 9: Connection assignment of PHC11A

[1]	-20x1	Connection for ProfiBus out (M12 5-pole, B-coded socket)
[2]	-20X2	Connection for ProfiBus in (M12 5-pole, pins B-coded)
[3]	-20X13	Connection for RS232 service (M12 5-pole, pins A-coded)
[4]	-20x14	Connection for RS485 service (M12 5-pole, socket A-coded)
[5]	-30X5	Connection for I/O field control (M23, 12-pole, socket 0°-coded)
[6]	-10X13	Connection for I/O frequency inverter (M23 12-pole, socket 0°-coded)
[7]	-10X1	Connection for motor connector (HAN Q8)
[8]	-10X5	Connection for braking resistor (HAN Q5 socket)
[9]	-0X1	Connection for supply system lead (HAN Q8 pins)

4.3 Wiring diagrams

Assignment -20X2: ProfiBus out, M12 B-coded (socket)

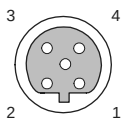

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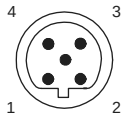
Figure 10: ProfiBus out, M12, 5-pole, B-coded (socket)

PIN	Assignment	Function
1	**+5 V**	Supply voltage
2	**A**	Data line -
3	**DGND**	Reference potential
4	**B**	Data line +
5	**N.C.**	

Assignment -20x1: ProfiBus in, M12 B-coded (pins)



60251AXX

Figure 11: ProfiBus in , M12, 5-pole, B-coded (pins)

PIN	Assignment	Function
1	**N.C.**	
2	**A**	Data line -
3	**N.C.**	
4	**B**	Data line +
5	**N.C.**	

Assignment -20X14: RS485 – connection for RS485 interface, M12 A-coded (socket)

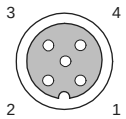


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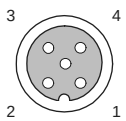
Figure 12: Connection for RS485 interface – M12, 5-pole, A-coded (socket)

PIN	Assignment	Function
1	**VO24V**	24 V supply voltage
2	**RS485-**	RS-
3	**0V24**	Reference potential 24V
4	**RS485+**	RS+
5	**N.C.**	–

Assignment -20x13: RS232 service, M12 A-coded (socket)

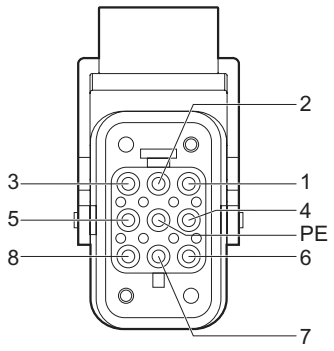


60254AXX

Figure 13: RS232 service, M12, 5-pole, A-coded (socket)

PIN	Assignment	Function
1	**VO24V**	24 V voltage supply
2	**TxD**	RS-
3	**0V24**	Reference potential
4	**RxD**	RS-
5	**N.C.**	

Assignment -10X1: Motor connection, HAN Q8 (socket)

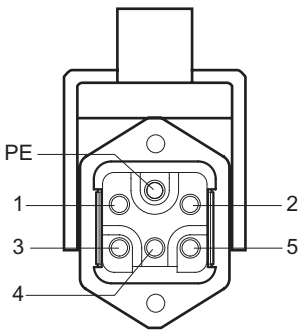


57664AXX

Figure 14: Motor connection, 5-pole, HAN Q8 (socket)

Terminal	Assignment	Function
-10X1.1	**U**	Motor connection phase U
-10X1.2	**BG 0.14**	Brake with high-speed excitation
-10X1.3	**W**	Motor connection phase W
-10X1.4	**BG 0.15**	0V24 brake
-10X1.5	**FU Ref 10V+**	TF+/TH+
-10X1.6	**BG .13**	Brake +24 V
-10X1.7	**V**	Motor connection phase V
-10X1.8	**FU AI21**	TF-/TH-
-10X1.PE	**Weight**	Equipotential bonding

Assignment -10X9: Braking resistor, HAN Q5 (socket)

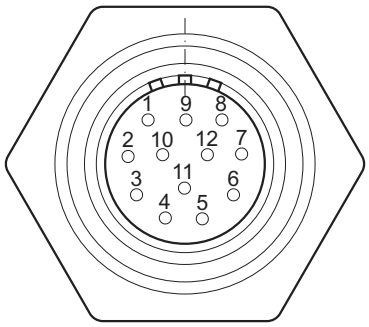


58255AXX

Figure 15: Braking resistor, 5-pole, HAN Q5 (socket)

Terminal	Assignment	Function
-10X9.1	**N.C.**	
-10X9.2	**N.C.**	
-10X9.3	**R+**	Braking resistor +
-10X9.4	**N.C.**	
-10X9.5	**R-**	Braking resistor -
-10X9.PE	**Weight**	Equipotential bonding

Assignment -10X13: Digital inputs and outputs, M23 0°-coded, (socket)

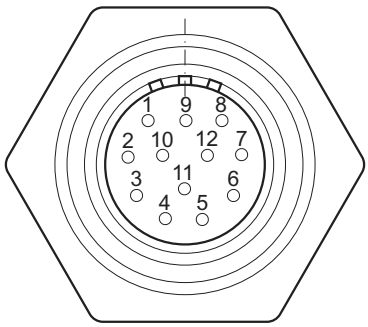


58256AXX

Figure 16: Digital inputs and outputs, M23, 12-pole, 0°-coded (socket)

Terminal	Assignment	Function
-30X5.1	**DI00**	Digital input frequency inverter
-30X5.2	**DI01**	Digital input frequency inverter
-30X5.3	**DI02**	Digital input frequency inverter
-30X5.4	**DI03**	Digital input frequency inverter
-30X5.5	**DI04**	Digital input frequency inverter
-30X5.6	**DI05**	Digital input frequency inverter
-30X5.7	**DO00**	Digital output frequency inverter
-30X5.8	**DO01**	Digital output frequency inverter
-30X5.9	**0V24**	Reference potential
-30X5.10	**0V24**	Reference potential
-30X5.11	**+24V**	24 V supply voltage
-30X5.12	**Weight**	Equipotential bonding

Assignment -30X5: Digital inputs and outputs, M23 0°-coded (socket)



58256AXX

Figure 17: Digital inputs and outputs, M23, 12-pole, 0°-coded (socket)

Terminal	Assignment	Function
-30X5.1	**DI00**	Digital input of field controller
-30X5.2	**DI01**	Digital input of field controller
-30X5.3	**DI02**	Digital input of field controller
-30X5.4	**DI03**	Digital input of field controller
-30X5.5	**DI04**	Digital input of field controller
-30X5.6	**DI05**	Digital input of field controller
-30X5.7	**DO00**	Digital output of field controller
-30X5.8	**DO01**	Digital output of field controller
-30X5.9	**0V24**	Reference potential
-30X5.10	**0V24**	Reference potential
-30X5.11	**+24V**	24 V supply voltage
-30X5.12	**Weight**	Equipotential bonding

5 Startup

5.1 General notes

It is essential to comply with the safety notes in section 2 during startup!

Prerequisites for startup

The following prerequisites must be met for these steps:

- PHC11A must be connected in accordance with the instructions in the Installation section.
- The system and connected drives must be configured correctly. You can configure the PHC11A using the MOVITOOLS® and MOVIVISION® software.
- PHC11A must be supplied with voltage.

Important

- Potentially fatal voltages may occur if the unit is connected incorrectly. Ensure that the unit is connected as specified.
- Appropriate safety measures must be taken to prevent the motor from starting unintentionally.
- Moreover, additional safety precautions must be taken to avoid injury to persons and damage to machinery.
- Comply with the safety notes during startup.
- When the status display goes out, this does not mean that the unit has been disconnected.

5.2 Motors and brakes

Motors

For U/f operation of PHC11A, only the following SEW standard motors in star and delta connection are permitted:

- DV motors

Brakes

Only brakes with a coil voltage of 24 V are permitted. All other brakes may destroy the PHC11A.

6 Operation and Service

6.1 Operating notes

Duty types

The following operating modes are determined according to ED information (information on the cyclic duration factor) EN 60034-1 on ambient temperature ϑ_U 0 °C... +40 °C at I_D = 100 % I_N and f_{PWM} = 4 kHz, cyclic duration factor 50 % cdf, T = 1 h; each additional32

degree Celsius in temperature results in a decreased cdf of 4 %.

Operating mode	Explanation
S1	**Continuous duty:** Operation at a constant load; the motor reaches thermal equilibrium.
S2	**Short-time duty:** Operation at constant load for a given time followed by a time at rest. The motor returns to ambient temperature during the rest period.
S3	**Intermittent periodic duty:** The starting current does not significantly affect the temperature rise. Characterized by a sequence of identical duty cycles, each including a time of operation at constant load and a time at rest. Described by the "cyclic duration factor (cdf)" in %.
S4...S10	**Intermittent periodic duty:** The starting current affecting the temperature rise. Characterized by a sequence of identical duty cycles, each including a time of operation at constant load and a time at rest. Described by the "cyclic duration factor (cdf)" in % and the number of cycles per hour.

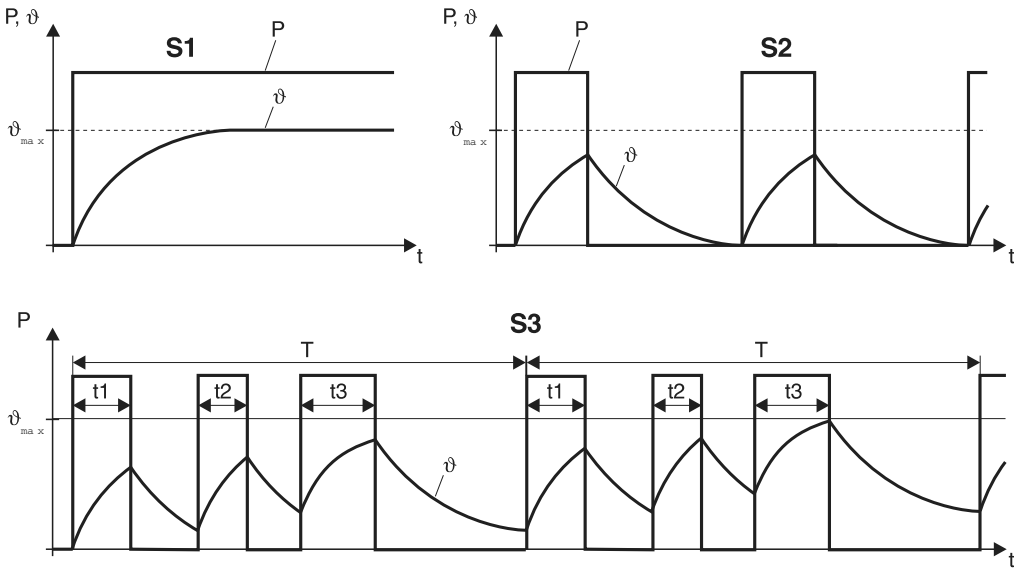


Figure 18: Duty types S1, S2 and S3

Cyclic duration factor (cdf)

The cyclic duration factor (cdf) is the ratio between the period of loading and the duration of the duty cycle. The duration of the duty cycle is the sum of times of operation and times at rest and de-energized. A typical value for the duration of the duty cycle is ten minutes.

$$\mathbf{CDF = \frac{sum\ of\ times\ of\ operation\ (t1 + t2 + t3)}{duty\ cycle\ duration\ (T)} \cdot 100\ [\%]}$$

Important:

- When the unit is switched on, dangerous voltages are present at the output terminals as well as any connected cables and motor terminals. This also applies even if the **unit is inhibited** and the motor is at **standstill**.
- Do not change the switch under load.
- Disconnect the unit from voltage supply **before** performing work on the unit.

  Dangerous voltages may still be present for up to ten minutes after disconnection from the power supply source.
- The unit output may only be switched when the **output stage of the inverter is inhibited**.

6.2 Fault information

Only the manufacturing company is authorized to carry out repairs.

In case of malfunction, contact SEW-EURODRIVE GmbH & Co KG for information on how to proceed.

Fault memory

The error memory (P080) stores the last five error messages (errors t-0 to t-4). The error message of longest standing is deleted whenever more than five error messages have occurred. The following information is stored when a malfunction occurs:

- Error which has occurred
- Status of binary inputs/outputs
- Operating status of the inverter
- Inverter status
- Heat sink temperature
- Speed
- Output current
- Active current
- Unit utilization
- DC link voltage
- Hours of operation
- Enable hours
- Parameter set
- Motor utilization

Switch-off responses

There are three switch-off responses depending on the error. The inverter remains inhibited in fault status:

Immediate stop

The unit can no longer brake the drive; the output stage goes to high resistance in the event of a fault and the brake is applied immediately (DBØØ "/Brake" = "0").

Rapid stop

The drive is braked with the stop ramp t13/t23. The brake is applied once the stop speed is reached (DBØØ "/Brake" = "0"). The output stage goes to high resistance after the brake reaction time has elapsed (P732 / P735).

Emergency stop

The drive is braked with the emergency ramp t14/t24. The brake is applied once the stop speed is reached (DBØØ "/Brake" = "0"). The output stage goes to high resistance after the brake reaction time has elapsed (P732 / P735).

Reset

An error message can be acknowledged by:

- Switching the voltage supply on and off

  Recommendation: Adhere to a minimum switch-off time of 10 s.
- Reset with parameter 840 = "YES" or [Parameter] / [Manual reset].
- Auto reset performs up to five unit resets with an adjustable restart time.

Do not use auto-reset with drives where an automatic restart could represent a danger to people or units.

Timeout active

If the inverter is controlled via a communication interface (fieldbus, RS485 or SBus) and the power was switched off and back on again or a fault reset was performed, then the enable remains ineffective until the inverter receives valid data again via the interface, which is monitored with a timeout.

6.3 Shut down

To shut down PHC11A, disconnect the unit using appropriate measures.

Important:

Dangerous voltages may still be present at the terminals and connections for up to ten minutes after switching off the PHC11A.

6.4 Transportation

Observe the following instructions when transporting the PHC11A unit:

- Cover the connections with the supplied protective caps before transportation.
- Pace the unit on the heat sink or on the side without connectors during transportation.
- Make sure that the unit is not subject to mechanical impact during transport.

6.5 Storage

Observe the following instructions when storing the PHC11A unit:

- If you shut down and store the unit for a longer period, you must cover the connections with the protective caps supplied.
- Only store the unit on the heat sink or on the side without connectors during transportation.
- Make sure that the unit is not subject to mechanical impact during storage.

6.6 Maintenance

PHC11A does not require any maintenance. The manufacturer does not stipulate any inspection work that has to be performed regularly.

7 Technical Data

7.1 MOVIPRO® PHC11A

The following tables list the technical data for PHC11A.

General data

Feature	Size	Data
Interference immunity		meets EN 61800-3 (in preparation)
Ambient temperature **Derating ambient temperature** **Climate class**	ϑ_U	-5 °C ... +40 °C (Non-condensing, no moisture condensation) P_N reduction: 3 % I_N per K to max. 60 °C When the temperature of the heat sink increases to more than 80°C, the device switches off and the fault message "Overtemperature" is generated. EN 60721-3-3 Class 3K3
Storage temperature	ϑ_L	-25 °C ... +70 °C (EN 60721-3-3, class 3K3)
Enclosure		IP65
Weight		11 kg
Dimensions W x H x D		420 x 300 x 110 mm (connector not taken into account)

General data for power section

Feature	Size	Data
Operating mode	ϑ_L	continuous duty (EN 60149-1-1 and 1-3)
Overall rated output power	P_N	6.6 kVA
Rated current	I_N	9.5 A_{AC}

Data for power section input

Feature	Size	Data
Operating voltage	U_E	380 V_{AC} - 10 % ... 500 V_{AC} + 10 %
Rated input current	$I_{pick-up}$	8.6 A_{AC}

The overall rated power depends on the connected load. The total rated power is decisive for the maximum output power of the unit. The power data of the individual axes may deviate from these values.

DDate output power section axis - 10x1

Feature	Size	Data
Operating mode	ϑ_L	continuous duty (EN 60149-1-1 and 1-3)
Rated output power	P_N	4 kW
Rated output current	I_N	9.5 A_{AC}
Current limitation	I_{max}	motor and regenerative 150 % I_N
Output voltage	U_A	0..0.500 V_{AC}
PWM frequency	f_{PWM}	Can be set: 4/8/16 kHz (P860/P861)
Speed range / resolution	n_A / $\triangle n_A$	-5000 ... 0 ... +5000 min^{-1} / 0.2 min^{-1} across the entire range
Maximum motor cable length		15 m
Constant load S1 Recommended motor power P_{Mot}	P_{Mot}	4 kW (5.3 HP)

24 V voltage supply

Feature	Data
24 V sensor power supply VO24_DIO (sensors/actuators)	Output voltage 24 V -/-5 % Total output current limited to at least 500 mA Short circuit and overload protection Not interference-voltage-proof
24 V voltage supply VO24 (communication interfaces / bus)	Output voltage 24 V -/-5 % Total output current limited to at least 500 mA Short circuit and overload protection Not interference-voltage-proof
24 V emergency stop relays	Output voltage 24 V -/-5 % Total output current limited to at least 3.5 A Short circuit and overload protection Not interference-voltage-proof

Digital inputs and outputs

Feature	Data
Digital inputs	PLC compatible according to EN 61131-2 $R_i \approx 3\ k\Omega$ $f_g \approx 2.8$ kHz 15 V...30 V input "HIGH" -3 V...5 V input" LOW"
Digital outputs	PLC compatible according to EN 61131-2 I_{OUT} = 500 mA (per output) output "HIGH" 24 V +/- 5% output "LOW" 0 V +5% Short circuit and overload protection Not interference-voltage-proof

7.2 Dimension drawing

PHC11A-A040M1-P00K-01

The dimension drawing shows the mechanical dimensions of PHC11A:

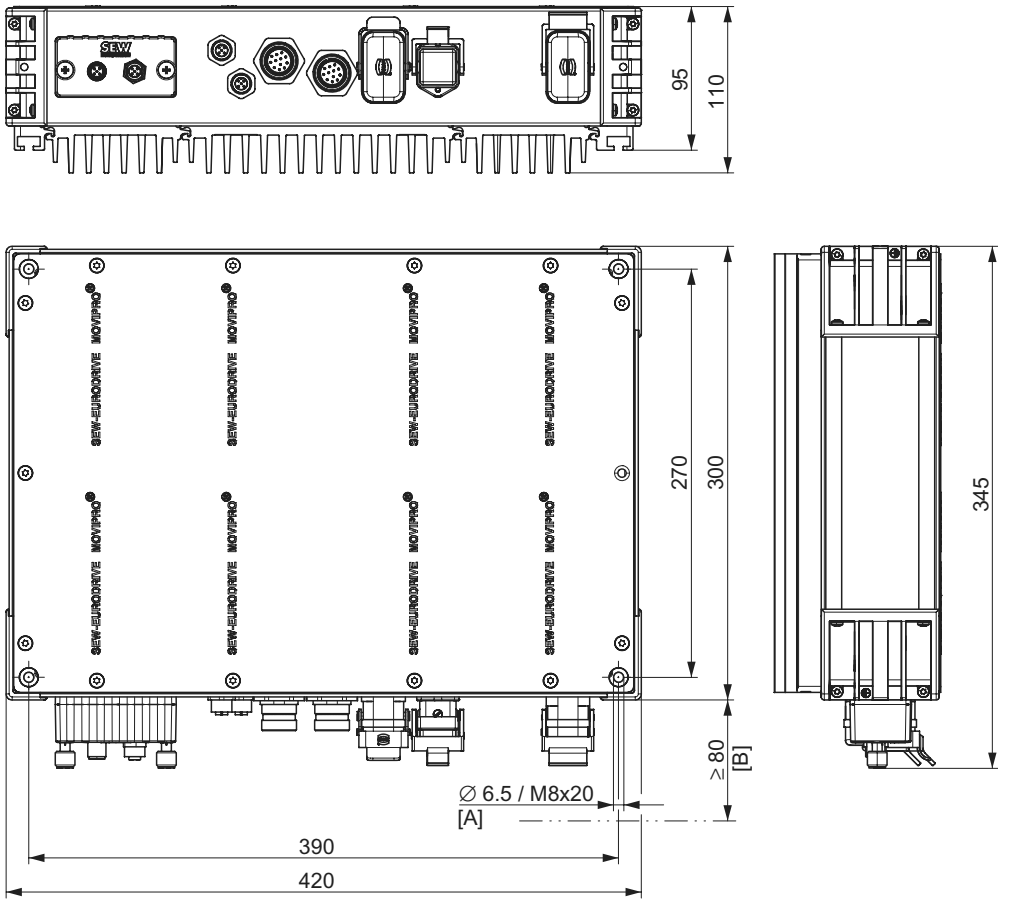


Figure 19: Dimension drawing for PHC11A, dimensions in mm

7.3 Additional information

Publications

For further information, refer to the following documentation:

Documentation	Publication number
MOVIDRIVE® MCF/MCV/MCS20A operating instructions	11282916/EN
MOVIDRIVE® *compact* MCF/MCV/MCS20A operating instructions	10556214/EN
MOVIDRIVE® compact system manual	11533811/EN

Standards and certifications

The PHC11A drive and control unit was developed and tested based on the following standards:

- VDE 0100
- EN 954
- EN 61800

8 Index

Address List

Germany			
Headquarters **Production** **Sales**	**Bruchsal**	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 D-76646 Bruchsal P.O. Box Postfach 3023 • D-76642 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 http://www.sew-eurodrive.de sew@sew-eurodrive.de
Service **Competence Center**	**Central** Gear units / Motors	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 D-76676 Graben-Neudorf	Tel. +49 7251 75-1710 Fax +49 7251 75-1711 sc-mitte-gm@sew-eurodrive.de
	Central Electronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 D-76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 sc-mitte-e@sew-eurodrive.de
	North	SEW-EURODRIVE GmbH & Co KG Alte Ricklinger Straße 40-42 D-30823 Garbsen (near Hannover)	Tel. +49 5137 8798-30 Fax +49 5137 8798-55 sc-nord@sew-eurodrive.de
	East	SEW-EURODRIVE GmbH & Co KG Dänkritzer Weg 1 D-08393 Meerane (near Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-30 sc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 D-85551 Kirchheim (near München)	Tel. +49 89 909552-10 Fax +49 89 909552-50 sc-sued@sew-eurodrive.de
	West	SEW-EURODRIVE GmbH & Co KG Siemensstraße 1 D-40764 Langenfeld (near Düsseldorf)	Tel. +49 2173 8507-30 Fax +49 2173 8507-55 sc-west@sew-eurodrive.de
	Drive Service Hotline / 24 Hour Service		+49 180 5 SEWHELP +49 180 5 7394357
	Additional addresses for service in Germany provided on request!		

France			
Production **Sales** **Service**	**Haguenau**	SEW-USOCOME 48-54, route de Soufflenheim B. P. 20185 F-67506 Haguenau Cedex	Tel. +33 3 88 73 67 00 Fax +33 3 88 73 66 00 http://www.usocome.com sew@usocome.com
Assembly **Sales** **Service**	**Bordeaux**	SEW-USOCOME Parc d'activités de Magellan 62, avenue de Magellan - B. P. 182 F-33607 Pessac Cedex	Tel. +33 5 57 26 39 00 Fax +33 5 57 26 39 09
	Lyon	SEW-USOCOME Parc d'Affaires Roosevelt Rue Jacques Tati F-69120 Vaulx en Velin	Tel. +33 4 72 15 37 00 Fax +33 4 72 15 37 15
	Paris	SEW-USOCOME Zone industrielle 2, rue Denis Papin F-77390 Verneuil l'Etang	Tel. +33 1 64 42 40 80 Fax +33 1 64 42 40 88
	Additional addresses for service in France provided on request!		

Algeria			
Sales	**Alger**	Réducom 16, rue des Frères Zaghnoun Bellevue El-Harrach 16200 Alger	Tel. +213 21 8222-84 Fax +213 21 8222-84

Argentina			
Assembly **Sales** **Service**	**Buenos Aires**	SEW EURODRIVE ARGENTINA S.A. Centro Industrial Garin, Lote 35 Ruta Panamericana Km 37,5 1619 Garin	Tel. +54 3327 4572-84 Fax +54 3327 4572-21 sewar@sew-eurodrive.com.ar

Australia			
Assembly **Sales** **Service**	**Melbourne**	SEW-EURODRIVE PTY. LTD. 27 Beverage Drive Tullamarine, Victoria 3043	Tel. +61 3 9933-1000 Fax +61 3 9933-1003 http://www.sew-eurodrive.com.au enquires@sew-eurodrive.com.au
	Sydney	SEW-EURODRIVE PTY. LTD. 9, Sleigh Place, Wetherill Park New South Wales, 2164	Tel. +61 2 9725-9900 Fax +61 2 9725-9905 enquires@sew-eurodrive.com.au
	Townsville	SEW-EURODRIVE PTY. LTD. 12 Leyland Street Garbutt, QLD 4814	Tel. +61 7 4779 4333 Fax +61 7 4779 5333 enquires@sew-eurodrive.com.au

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Belgium			
Assembly **Sales** **Service**	**Brüssel**	SEW Caron-Vector S.A. Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 http://www.caron-vector.be info@caron-vector.be

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Production **Sales** **Service**	**Sao Paulo**	SEW-EURODRIVE Brasil Ltda. Avenida Amâncio Gaiolli, 50 Caixa Postal: 201-07111-970 Guarulhos/SP - Cep.: 07251-250	Tel. +55 11 6489-9133 Fax +55 11 6480-3328 http://www.sew.com.br sew@sew.com.br
	Additional addresses for service in Brazil provided on request!		

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Sales	**Sofia**	BEVER-DRIVE GmbH Bogdanovetz Str.1 BG-1606 Sofia	Tel. +359 2 9151160 Fax +359 2 9151166 bever@fastbg.net

Cameroon			
Sales	**Douala**	Electro-Services Rue Drouot Akwa B.P. 2024 Douala	Tel. +237 4322-99 Fax +237 4277-03

Canada			
Assembly **Sales** **Service**	**Toronto**	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, Ontario L6T3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca l.reynolds@sew-eurodrive.ca
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. 7188 Honeyman Street Delta. B.C. V4G 1 E2	Tel. +1 604 946-5535 Fax +1 604 946-2513 b.wake@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger Street LaSalle, Quebec H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 a.peluso@sew-eurodrive.ca
	Additional addresses for service in Canada provided on request!		

Chile			
Assembly **Sales** **Service**	**Santiago de Chile**	SEW-EURODRIVE CHILE LTDA. Las Encinas 1295 Parque Industrial Valle Grande LAMPA RCH-Santiago de Chile P.O. Box Casilla 23 Correo Quilicura - Santiago - Chile	Tel. +56 2 75770-00 Fax +56 2 75770-01 www.sew-eurodrive.cl ventas@sew-eurodrive.cl

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Production **Assembly** **Sales** **Service**	**Tianjin**	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 46, 7th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25322611 gm-tianjin@sew-eurodrive.cn http://www.sew-eurodrive.com.cn
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Assembly **Sales** **Service**	**Bogotá**	SEW-EURODRIVE COLOMBIA LTDA. Calle 22 No. 132-60 Bodega 6, Manzana B Santafé de Bogotá	Tel. +57 1 54750-50 Fax +57 1 54750-44 http://www.sew-eurodrive.com.co sewcol@sew-eurodrive.com.co

Croatia			
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Czech Republic			
Sales	**Praha**	SEW-EURODRIVE CZ S.R.O. Business Centrum Praha Luzna 591 CZ-16000 Praha 6 - Vokovice	Tel. +420 220121234 Fax +420 220121237 http://www.sew-eurodrive.cz sew@sew-eurodrive.cz

Denmark			
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Estonia			
Sales	**Tallin**	ALAS-KUUL AS Mustamäe tee 24 EE-10620Tallin	Tel. +372 6593230 Fax +372 6593231 veiko.soots@alas-kuul.ee

Finland			
Assembly **Sales** **Service**	**Lahti**	SEW-EURODRIVE OY Vesimäentie 4 FIN-15860 Hollola 2	Tel. +358 201 589-300 Fax +358 3 780-6211 sew@sew.fi http://www.sew-eurodrive.fi

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Great Britain			
Assembly **Sales** **Service**	**Normanton**	SEW-EURODRIVE Ltd. Beckbridge Industrial Estate P.O. Box No.1 GB-Normanton, West- Yorkshire WF6 1QR	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk

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Sales **Service**	**Dublin**	Alperton Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458

Israel			
Sales	**Tel-Aviv**	Liraz Handasa Ltd. Ahofer Str 34B / 228 58858 Holon	Tel. +972 3 5599511 Fax +972 3 5599512 lirazhandasa@barak-online.net

Italy			
Assembly **Sales** **Service**	**Milano**	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Bernini,14 I-20020 Solaro (Milano)	Tel. +39 02 96 9801 Fax +39 02 96 799781 http://www.sew-eurodrive.it sewit@sew-eurodrive.it

Ivory Coast			
Sales	**Abidjan**	SICA Ste industrielle et commerciale pour l'Afrique 165, Bld de Marseille B.P. 2323, Abidjan 08	Tel. +225 2579-44 Fax +225 2584-36

Japan			
Assembly **Sales** **Service**	**Toyoda-cho**	SEW-EURODRIVE JAPAN CO., LTD 250-1, Shimoman-no, Iwata Shizuoka 438-0818	Tel. +81 538 373811 Fax +81 538 373814 sewjapan@sew-eurodrive.co.jp

Korea			
Assembly **Sales** **Service**	**Ansan-City**	SEW-EURODRIVE KOREA CO., LTD. B 601-4, Banweol Industrial Estate Unit 1048-4, Shingil-Dong Ansan 425-120	Tel. +82 31 492-8051 Fax +82 31 492-8056 http://www.sew-korea.co.kr master@sew-korea.co.kr

Latvia			
Sales	**Riga**	SIA Alas-Kuul Katlakalna 11C LV-1073 Riga	Tel. +371 7139253 Fax +371 7139386 http://www.alas-kuul.com info@alas-kuul.com

Lebanon			
Sales	**Beirut**	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 4947-86 +961 1 4982-72 +961 3 2745-39 Fax +961 1 4949-71 gacar@beirut.com

Lithuania			
Sales	**Alytus**	UAB Irseva Naujoji 19 LT-62175 Alytus	Tel. +370 315 79204 Fax +370 315 56175 info@irseva.lt http://www.sew-eurodrive.lt

Luxembourg			
Assembly **Sales** **Service**	**Brüssel**	CARON-VECTOR S.A. Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 http://www.caron-vector.be info@caron-vector.be

Malaysia			
Assembly **Sales** **Service**	**Johore**	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 sales@sew-eurodrive.com.my

Mexico			
Assembly **Sales** **Service**	**Queretaro**	SEW-EURODRIVE MEXIKO SA DE CV SEM-981118-M93 Tequisquiapan No. 102 Parque Industrail Queretaro C.P. 76220 Queretaro, Mexico	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx

Morocco			
Sales	**Casablanca**	Afit 5, rue Emir Abdelkader MA 20300 Casablanca	Tel. +212 22618372 Fax +212 22618351 richard.miekisiak@premium.net.ma

Netherlands			
Assembly **Sales** **Service**	**Rotterdam**	VECTOR Aandrijftechniek B.V. Industrieweg 175 NL-3044 AS Rotterdam Postbus 10085 NL-3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 http://www.vector.nu info@vector.nu

New Zealand			
Assembly **Sales** **Service**	**Auckland**	SEW-EURODRIVE NEW ZEALAND LTD. P.O. Box 58-428 82 Greenmount drive East Tamaki Auckland	Tel. +64 9 2745627 Fax +64 9 2740165 http://www.sew-eurodrive.co.nz sales@sew-eurodrive.co.nz
	Christchurch	SEW-EURODRIVE NEW ZEALAND LTD. 10 Settlers Crescent, Ferrymead Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz

Norway			
Assembly **Sales** **Service**	**Moss**	SEW-EURODRIVE A/S Solgaard skog 71 N-1599 Moss	Tel. +47 69 241-020 Fax +47 69 241-040 http://www.sew-eurodrive.no sew@sew-eurodrive.no

Peru			
Assembly **Sales** **Service**	**Lima**	SEW DEL PERU MOTORES REDUCTORES S.A.C. Los Calderos, 120-124 Urbanizacion Industrial Vulcano, ATE, Lima	Tel. +51 1 3495280 Fax +51 1 3493002 http://www.sew-eurodrive.com.pe sewperu@sew-eurodrive.com.pe

Poland			
Assembly **Sales** **Service**	**Lodz**	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 PL-92-518 Lodz	Tel. +48 42 67710-90 Fax +48 42 67710-99 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl

Portugal			
Assembly **Sales** **Service**	**Coimbra**	SEW-EURODRIVE, LDA. Apartado 15 P-3050-901 Mealhada	Tel. +351 231 20 9670 Fax +351 231 20 3685 http://www.sew-eurodrive.pt infosew@sew-eurodrive.pt

Romania			
Sales **Service**	**Bucuresti**	Sialco Trading SRL str. Madrid nr.4 011785 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 sialco@sialco.ro

Russia			
Assembly **Sales** **Service**	**St. Petersburg**	ZAO SEW-EURODRIVE P.O. Box 36 195220 St. Petersburg Russia	Tel. +7 812 3332522 +7 812 5357142 Fax +7 812 3332523 http://www.sew-eurodrive.ru sew@sew-eurodrive.ru

Senegal			
Sales	**Dakar**	SENEMECA Mécanique Générale Km 8, Route de Rufisque B.P. 3251, Dakar	Tel. +221 849 47-70 Fax +221 849 47-71 senemeca@sentoo.sn

Serbia and Montenegro			
Sales	**Beograd**	DIPAR d.o.o. Ustanicka 128a PC Košum, IV floor SCG-11000 Beograd	Tel. +381 11 347 3244 / +381 11 288 0393 Fax +381 11 347 1337 dipar@yubc.net

Singapore			
Assembly **Sales** **Service**	**Singapore**	SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. +65 68621701 Fax +65 68612827 http://www.sew-eurodrive.com.sg sewsingapore@sew-eurodrive.com

Slovakia			
Sales	**Bratislava**	SEW-Eurodrive SK s.r.o. Rybnicna 40 SK-83107 Bratislava	Tel. +421 2 49595201 Fax +421 2 49595200 http://www.sew.sk sew@sew-eurodrive.sk
	Zilina	SEW-Eurodrive SK s.r.o. ul. Vojtecha Spanyola 33 SK-010 01 Zilina	Tel. +421 41 700 2513 Fax +421 41 700 2514 sew@sew-eurodrive.sk
	Banská Bystrica	SEW-Eurodrive SK s.r.o. Rudlovská cesta 85 SK-97411 Banská Bystrica	Tel. +421 48 414 6564 Fax +421 48 414 6566 sew@sew-eurodrive.sk

Slovenia			
Sales **Service**	**Celje**	Pakman - Pogonska Tehnika d.o.o. UI. XIV. divizije 14 SLO - 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net

South Africa			
Assembly **Sales** **Service**	**Johannesburg**	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 494-3104 http://www.sew.co.za dross@sew.co.za

South Africa			
	Capetown	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442 Cape Town	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 dswanepoel@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 2 Monaceo Place Pinetown Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 700-3451 Fax +27 31 700-3847 dtait@sew.co.za

Spain			
Assembly **Sales** **Service**	**Bilbao**	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 E-48170 Zamudio (Vizcaya)	Tel. +34 9 4431 84-70 Fax +34 9 4431 84-71 http://www.sew-eurodrive.es sew.spain@sew-eurodrive.es

Sweden			
Assembly **Sales** **Service**	**Jönköping**	SEW-EURODRIVE AB Gnejsvägen 6-8 S-55303 Jönköping Box 3100 S-55003 Jönköping	Tel. +46 36 3442-00 Fax +46 36 3442-80 http://www.sew-eurodrive.se info@sew-eurodrive.se

Switzerland			
Assembly **Sales** **Service**	**Basel**	Alfred Imhof A.G. Jurastrasse 10 CH-4142 Münchenstein bei Basel	Tel. +41 61 417 1717 Fax +41 61 417 1700 http://www.imhof-sew.ch info@imhof-sew.ch

Thailand			
Assembly **Sales** **Service**	**Chon Buri**	SEW-EURODRIVE (Thailand) Ltd. Bangpakong Industrial Park 2 700/456, Moo.7, Tambol Donhuaroh Muang District Chon Buri 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.com

Tunisia			
Sales	**Tunis**	T. M.S. Technic Marketing Service 7, rue Ibn EI Heithem Z.I. SMMT 2014 Mégrine Erriadh	Tel. +216 1 4340-64 + 1 4320-29 Fax +216 1 4329-76 tms@tms.com.tn

Turkey			
Assembly **Sales** **Service**	**Istanbul**	SEW-EURODRIVE Hareket Sistemleri San. ve Tic. Ltd. Sti. Bagdat Cad. Koruma Cikmazi No. 3 TR-34846 Maltepe ISTANBUL	Tel. +90 216 4419163 / 164 3838014/15 Fax +90 216 3055867 sew@sew-eurodrive.com.tr

Ukraine			
Sales **Service**	**Dnepropetrovsk**	SEW-EURODRIVE Str. Rabochaja 23-B, Office 409 49008 Dnepropetrovsk	Tel. +380 56 370 3211 Fax +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua

USA			
Production **Assembly** **Sales** **Service**	**Greenville**	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Manuf. +1 864 439-9948 Fax Ass. +1 864 439-0566 Telex 805 550 http://www.seweurodrive.com cslyman@seweurodrive.com

USA			
Assembly **Sales** **Service**	**San Francisco**	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, California 94544-7101	Tel. +1 510 487-3560 Fax +1 510 487-6381 cshayward@seweurodrive.com
	Philadelphia/PA	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Dayton	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 440-3799 cstroy@seweurodrive.com
	Dallas	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Additional addresses for service in the USA provided on request!		

Venezuela			
Assembly **Sales** **Service**	**Valencia**	SEW-EURODRIVE Venezuela S.A. Av. Norte Sur No. 3, Galpon 84-319 Zona Industrial Municipal Norte Valencia, Estado Carabobo	Tel. +58 241 832-9804 Fax +58 241 838-6275 http://www.sew-eurodrive.com.ve sewventas@cantv.net sewfinanzas@cantv.net

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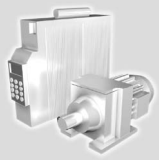

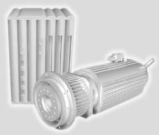

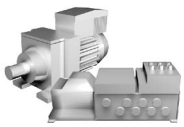

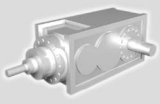

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