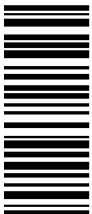




# Emotron VS10 / VS30 AC drive

0.25 ... 2.2 kW



Mounting and switch on instruction

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# 1 General information

First read, then start



# 1 General information

## 1.1 First read, then start

### **WARNING!**

Read this documentation thoroughly before carrying out the installation and commissioning.

- ▶ Please observe the safety instructions!



Information and tools with regard to the Emotron products can be found on the Internet:

<http://www.emotron.com/services-support/file-archive/>

## 1.2 Notations and conventions

### 1.2.1 Product code, examples:

VS10-23-1P7-20-CM

VS30-40-1P3-20-CM

<b>VS</b>	<b>10</b>	<b>23</b>	<b>1P7</b>	<b>20</b>	<b>CM</b>
Series	1-phase	230V	Rated current 1.7A	IP20	CANopen & Modbus
<b>VS</b>	<b>30</b>	<b>40</b>	<b>1P3</b>	<b>20</b>	<b>CM</b>
Series	3-phase	400V	Rated current 1.3A	IP20	CANopen & Modbus



---

## **2 Safety instructions**

### **2.1 Basic safety measures**

Disregarding the following basic safety measures may lead to severe personal injury and damage to material assets!

The product

- must only be used as directed.
- must never be commissioned if they display signs of damage.
- must never be technically modified.
- must never be commissioned if they are not fully mounted.
- must never be operated without required covers.

Connect/disconnect all pluggable terminals only in deenergised condition.

Only remove the product from the installation in the deenergised state.

Insulation resistance tests between 24V control potential and PE: According to EN 61800-5-1, the maximum test voltage must not exceed 110 VDC.

Observe all specifications of the corresponding documentation supplied. This is the precondition for safe and trouble-free operation and for obtaining the product features specified.

The procedural notes and circuit details described in this document are only proposals. It is up to the user to check whether they can be adapted to the particular applications. Emotron does not take any responsibility for the suitability of the procedures and circuit proposals described.

The product must only be used by qualified personnel. IEC 60364 or CENELEC HD 384 define the skills of these persons:

- They are familiar with installing, mounting, commissioning, and operating the product.
- They have the corresponding qualifications for their work.
- They know and can apply all regulations for the prevention of accidents, directives, and laws applicable at the place of use.

Observe the specific notes in the other chapters!







**2.2 Residual hazards**

The user must take the residual hazards mentioned into consideration in the risk assessment for his/her machine/system.

If the above is disregarded, this can lead to severe injuries to persons and damage to material assets!

**Product**

Observe the warning labels on the product!

Icon	Description
	<b>Electrostatic sensitive devices:</b> Before working on the inverter, the staff must ensure to be free of electrostatic charge!
	<b>Dangerous electrical voltage</b> Before working on the inverter, check whether all power connections are dead! After mains OFF, power connections X100 and X105 carry a dangerous electrical voltage for the time specified on the inverter!
	<b>High leakage current:</b> Carry out fixed installation and PE connection in compliance with EN 61800-5-1 or EN 60204-1 !
	<b>Hot surface:</b> Use personal protective equipment or wait until devices have cooled down!

**Motor**

If there is a short circuit of two power transistors, a residual movement of up to 180°/number of pole pairs can occur at the motor! (For 4-pole motor: residual movement max. 180°/2 = 90°).

This residual movement must be taken into consideration by the user for his/her risk assessment.

**2.3 Application as directed**

The product

- must only be operated under the operating conditions prescribed in this documentation.
- meets the protection requirements of 2014/35/EU: Low-Voltage Directive.
- is not a machine in terms of 2006/42/EC: Machinery Directive.
- is not a household appliance, but is only designed as component for commercial or professional use in terms of EN 61000-3-2.



**3 Product description**

Earth/ground connection (PE)

Relay output X9

Network X2xx  
CANopen/Modbus(Optional)

Shield connection  
CANopen/Modbus

Toggle switch  
CANopen/Modbus

Shield connection  
Control connection

Motor connection X105

Mains voltage connection X100

IT screw

Memory module X20

Inverter status LEDs

Interface X16  
Diagnostic Module

Control terminals X3  
Basic I/O

IT screw



## 4 Mounting

Important notes



---

## 4 Mounting

### 4.1 Important notes

#### **DANGER!**

Dangerous electrical voltage

Possible consequence: death or severe injuries

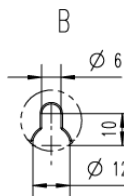
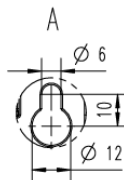
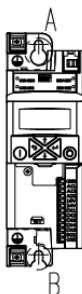
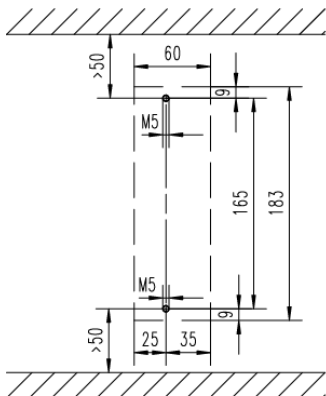
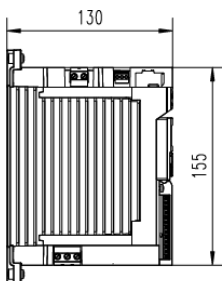
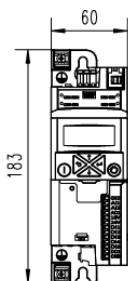
- ▶ All works on the inverter must only be carried out in the deenergised state.
  - ▶ After switching off the mains voltage, wait for at least 3 minutes before you start working.
-





#### 4.2 Mechanical installation Dimensions

VS10/VS30 - 0.25 kW ... 0.37 kW



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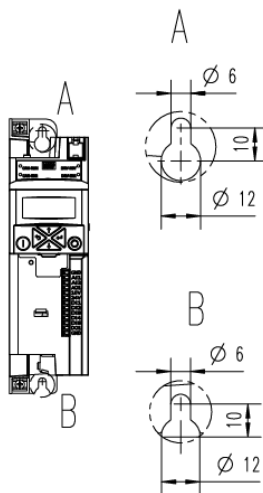
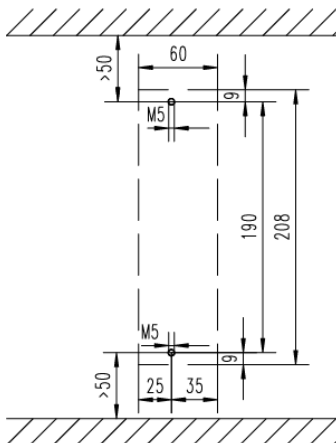
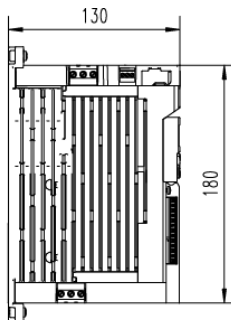
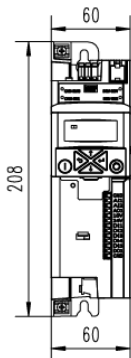
All dimensions in mm

# 4 Mounting

Mechanical installation



## Dimensions VS10/VS30 - 0.55 kW ... 0.75 kW

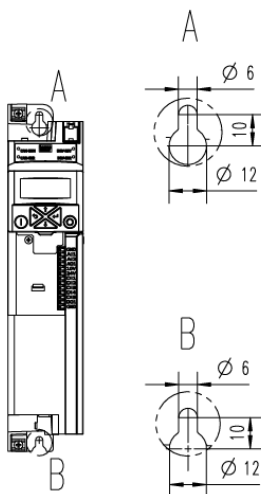
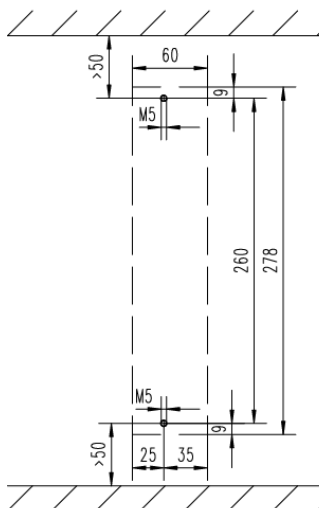
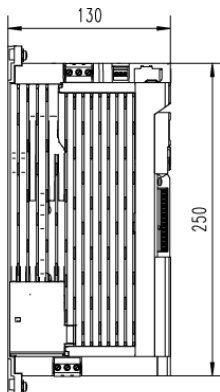
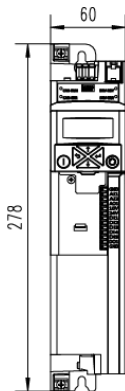


8800271

All dimensions in mm



Dimensions VS30 - 1.1 kW ... 2.2 kW



8800272

All dimensions in mm

# 4 Mounting

## 4.3 Electrical installation

### 4.3.1 1-phase mains connection 230/240V

The wiring diagram is valid for VS10 inverters.

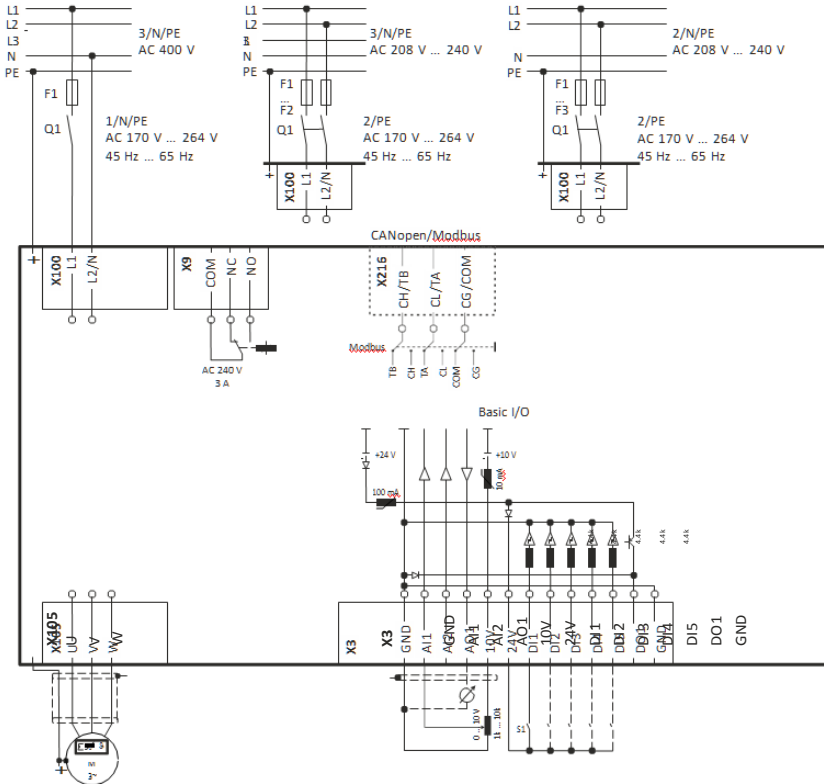


Fig. 1: Wiring example

S1 Run/Stop  
Fx Fuses

Q1 Mains contactor  
-- Dashed line =options



#### 4.3.1.1 Fusing and terminal data

Inverter		VS10231P7	VS10232P4	VS10233P2	VS10234P2	VS10236P0	VS10237P0	VS10239P6
Cable installation in compliance with		EN 60204-1						
Laying system		B2						
Operation		without mains choke						
Fuse								
Characteristic		gG/gL or gRL						
Max. rated current	A	10	10	16	16	25	25	25
Circuit breaker								
Characteristic		B						
Max. rated current	A	10	10	16	16	25	25	25
Operation		with mains choke						
Fuse								
Characteristic		gG/gL or gRL						
Max. rated current	A	10	10	16	16	25	25	25
Circuit breaker								
Characteristic		B						
Max. rated current	A	10	10	16	16	25	25	25
Earth-leakage circuit breaker		≥ 30 mA, type A or B						
Mains connection								
Connection		X100						
Connection type		Screw terminal						
Min. cable cross-section	mm <sup>2</sup>	1						
Max. cable cross-section	mm <sup>2</sup>	2.5				6		
Stripping length	mm	8						
Tightening torque	Nm	0.5				0.7		
Required tool		0.5 x 3.0				0.6 x 3.5		
Motor connection								
Connection		X105						
Connection type		Screw terminal						
Min. cable cross-section	mm <sup>2</sup>	1						
Max. cable cross-section	mm <sup>2</sup>	2.5						
Stripping length	mm	8						
Tightening torque	Nm	0.5						
Required tool		0.5 x 3.0						
PE connection								
Connection		PE						
Connection type		PE screw						
Min. cable cross-section	mm <sup>2</sup>	1						
Max. cable cross-section	mm <sup>2</sup>	6						
Stripping length	mm	10						
Tightening torque	Nm	1.2						
Required tool		0.8 x 5.5						



4.3.2- 1/3-phase mains connection 230/240V

The wiring diagram is valid for Emotron VS30 inverters.

Emotron VS30-23 inverters do not have an integrated EMC filter in the AC mains supply.



In order to comply with the EMC requirements according to EN 61800-3, an external EMC filter according to IEC EN 60939 has to be used.

The user must prove that the EN 61800-3 requirements for conformity are fulfilled.

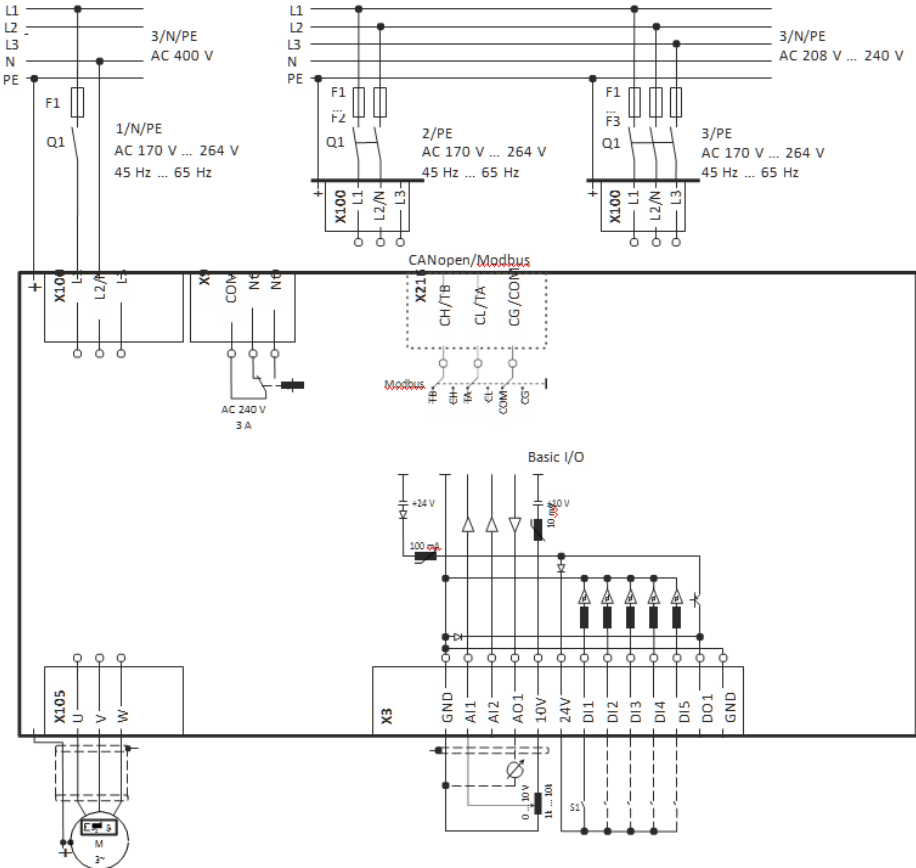


Fig. 2: Wiring example S1 Run/Stop

- Fx Fuses
- Q1 Mains contactor

--- Dashed line = Options



#### 4.3.2.1 Fusing and terminal data

Inverter		VS30231P7	VS30232P4	VS30233P2	VS30234P2	VS30236P0	VS30237P0	VS30239P6
Cable installation in compliance with		EN 60204-1						
Laying system		B2						
Operation		without mains choke						
Fuse								
Characteristic		gG/gL or gRL						
Max. rated current	A	10	10	16	16	25	25	25
Circuit breaker								
Characteristic		B						
Max. rated current	A	10	10	16	16	25	25	25
Operation		with mains choke						
Fuse								
Characteristic		gG/gL or gRL						
Max. rated current	A	10	10	16	16	25	25	25
Circuit breaker								
Characteristic		B						
Max. rated current	A	10	10	16	16	25	25	25
Earth-leakage circuit breaker		$\geq 30$ mA, type A or B $\geq 30$ mA, type B						
Mains connection								
Connection		X100						
Connection type		Screw terminal						
Min. cable cross-section	mm <sup>2</sup>	1						
Max. cable cross-section	mm <sup>2</sup>	2.5				6		
Stripping length	mm	8						
Tightening torque	Nm	0.5				0.7		
Required tool		0.5 x 3.0				0.6 x 3.5		
Motor connection								
Connection		X105						
Connection type		Screw terminal						
Min. cable cross-section	mm <sup>2</sup>	1						
Max. cable cross-section	mm <sup>2</sup>	2.5						
Stripping length	mm	8						
Tightening torque	Nm	0.5						
Required tool		0.5 x 3.0						
PE connection								
Connection		PE						
Connection type		PE screw						
Min. cable cross-section	mm <sup>2</sup>	1						
Max. cable cross-section	mm <sup>2</sup>	6						
Stripping length	mm	10						
Tightening torque	Nm	1.2						
Required tool		0.8 x 5.5						



4.3.3 3-phase mains connection 400 V

The wiring diagram is valid for VS30 inverters.

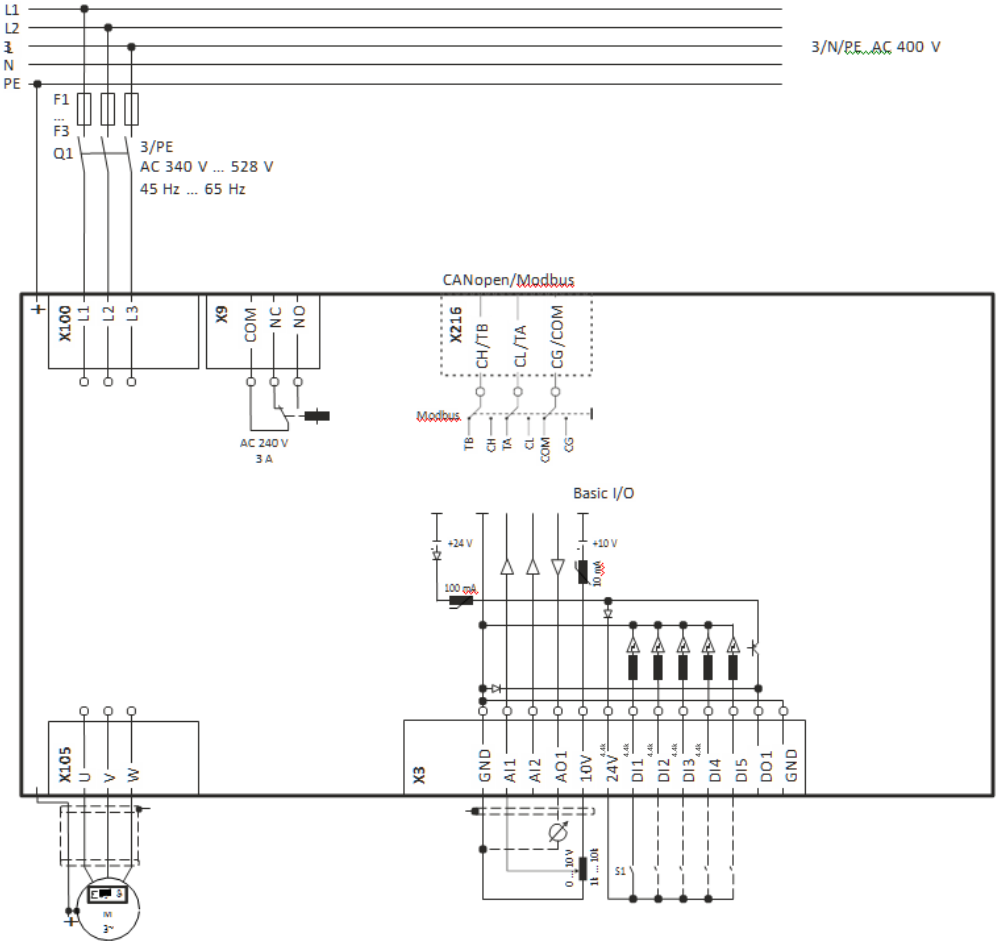


Fig. 3: Wiring example

- S1 Run/Stop
- Fx Fuses

- Q1 Mains contactor
- Dashed line = o tions





### 4.3.3.1 Fusing and terminal datas

Inverter		VS30401P3	VS30401P8	VS30402P4	VS30403P2	VS30403P9	VS30405P6
Cable installation in compliance with		EN 60204-1					
Laying system		B2					
Operation		without mains choke					
Fuse							
Characteristic		gG/gL or gRL					
Max. rated current	A	10	10	10	16	16	16
Circuit breaker							
Characteristic		B					
Max. rated current	A	10	10	10	16	16	16
Operation		with mains choke					
Fuse							
Characteristic		gG/gL or gRL					
Max. rated current	A	10	10	10	16	16	16
Circuit breaker							
Characteristic		B					
Max. rated current	A	10	10	10	16	16	16
Earth-leakage circuit breaker		≥ 30 mA, type B					
Mains connection							
Connection		X100					
Connection type		Screw terminal					
Min. cable cross-section	mm <sup>2</sup>	1					
Max. cable cross-section	mm <sup>2</sup>	2.5					
Stripping length	mm	8					
Tightening torque	Nm	0.5					
Required tool		0.5 x 3.0					
Motor connection							
Connection		X105					
Connection type		Screw terminal					
Min. cable cross-section	mm <sup>2</sup>	1					
Max. cable cross-section	mm <sup>2</sup>	2.5					
Stripping length	mm	8					
Tightening torque	Nm	0.5					
Required tool		0.5 x 3.0					
PE connection							
Connection		PE					
Connection type		PE screw					
Min. cable cross-section	mm <sup>2</sup>	1					
Max. cable cross-section	mm <sup>2</sup>	6					
Stripping length	mm	10					
Tightening torque	Nm	1.2					
Required tool		0.8 x 5.5					



4.3.4 Connection to the IT system

**i NOTICE!**

Internal components have earth/ground potential if the IT screws are not removed.  
 Consequence: the monitoring functions of the IT system respond.

- ▶ Before connection to an IT system be absolutely sure to remove the IT screws.

<p><b>VS10231P7, VS10232P4,                  VS30401P3,</b></p>	<p><b>VS10233P2, VS10234P2, VS10236P0, VS10237P0,                  VS10239P6,                  VS30401P8, VS30402P4, VS30403P2, VS30403P9,                  VS30405P6,</b></p>



### 4.3.5 CANopen/Modbus connection

#### 4.3.5.1 Connection plan

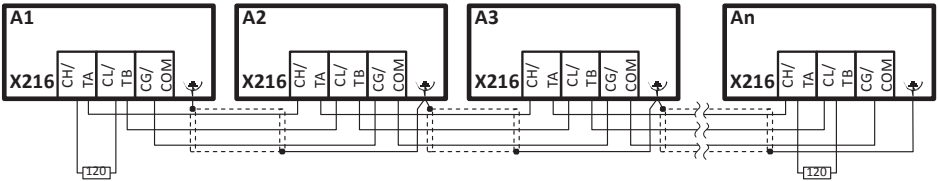


Fig. 3: Wiring example: CANopen or Modbus network

#### 4.3.5.2 Terminal data

Terminal description		CANopen/Modbus
Connection		X216
Connection type		Spring terminal
Min. cable cross-section	mm <sup>2</sup>	0.5
Max. cable cross-section	mm <sup>2</sup>	1.5
Stripping length	mm	10
Tightening torque	Nm	-
Required tool		0.4 x 2.5

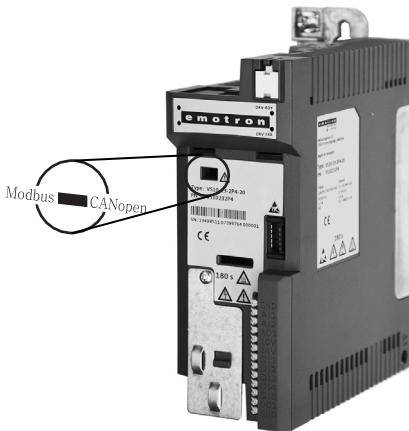
#### 4.3.5.3 Basic network settings



The network must be terminated with a 120 Ω resistor at the physically first and last node. Connect resistor to terminals CH/TA and CL/TB.

#### Configuring network basic settings

1. Use toggle switch on front of the inverter to select CANopen or Modbus network.



2. Set node address and baud rate via corresponding parameters.

## 5 Commissioning

Important notes



---

## 5 Commissioning

### 5.1 Important notes

#### **WARNING!**

Incorrect settings during commissioning may cause unexpected and dangerous motor and system movements.

Possible consequence: death, severe injuries or damage to property

- ▶ Clear hazardous area.
- ▶ Observe safety instructions and safety clearances.

---

### 5.2 Before initial switch-on

**Prevent injury to persons and damage to property. Check the following before switching on the mains voltage:**

- Is the wiring complete and correct?
- Are there no short circuits and earth faults?
- Is the motor circuit configuration (star/delta) adapted to the output voltage of the inverter?
- Is the motor connected in-phase (direction of rotation)?
- Does the "emergency stop" function of the entire plant operate correctly?



### 5.3 Initial switch-on / functional test with terminal control

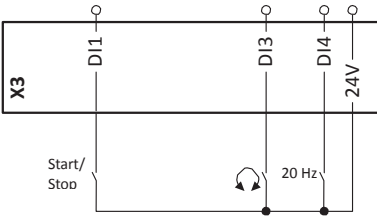
Target: achieve rotation of the motor connected to the inverter as quickly as possible.

Requirements:

- The connected motor matches the inverter in terms of power.
- The parameter settings comply with the delivery status (Emotron setting).

**1. Preparation:**

1. Wiring of power terminals. (Chapter 4.3 *Electrical installation*)
2. Wire digital inputs X3/DI1 (start/stop), X3/DI3 (reversal of rotation direction), and X3/DI4 (preset frequency setpoint 20 Hz).
3. Do not connect terminal X3/AI1 (analog setpoint selection) or connect it to GND.



**2. Switch on mains and check readiness for operation:**

1. Switch on mains voltage.
2. Observe LED status displays "RDY" and "ERR" on the front of the inverter:
  - a) If the blue "RDY" LED is blinking and the red "ERR" LED is off, the inverter is ready for operation. The controller is inhibited.  
*You can now start the drive.*
  - b) If the red "ERR" LED is lit permanently, a fault is pending.  
*Eliminate the fault before you carry on with the functional test.*

**LED status displays**

"RDY" LED (blue)	"ERR" LED (red)	Status/meaning
off	off	No supply voltage.
blinking (2 Hz)	off	Inverter inhibited.
	lit every 1.5 s for a short time	Inverter inhibited, no DC-bus voltage.
	blinking fast (4 Hz)	Inverter inhibited, warning active.
	on	Inverter inhibited, fault active.
on	off	Inverter enabled.
	blinking fast (4 Hz)	Inverter enabled, warning active.
	blinking (1 Hz)	Inverter enabled, quick stop as response to a fault active.



### Carrying out the functional test

#### 1. Start drive:

1. Start inverter: X3/DI1 = HIGH.
2. Activate preset frequency setpoint 1 (20 Hz) as speed setpoint: X3/DI4 = HIGH.

*The drive rotates with 20 Hz.*

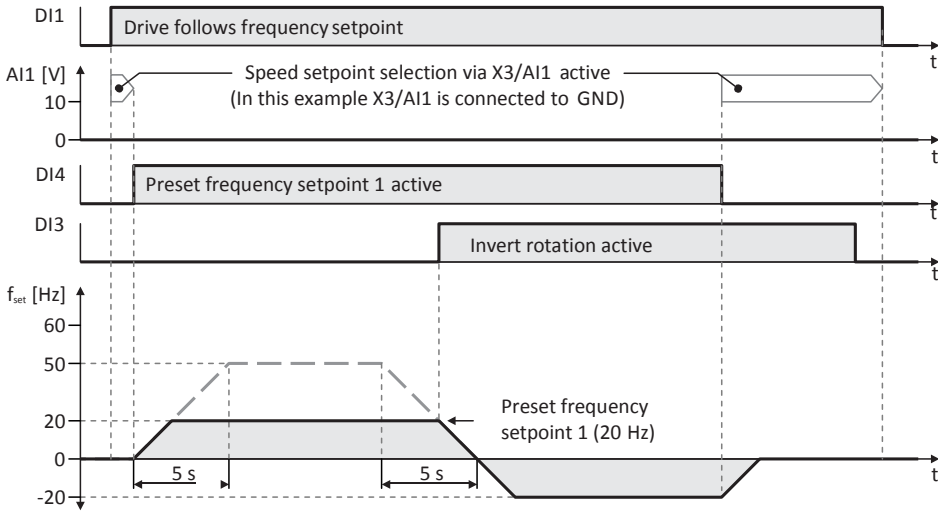
3. Optional: activate the function for the reversal of rotation direction.

a) X3/DI3 = HIGH.

*The drive rotates with 20 Hz in the opposite direction.*

b) Deactivate the function for the reversal of rotation direction again: X3/DI3 = LOW.

*Speed characteristic (example)*



#### 2. Stop drive:

1. Deactivate preset frequency setpoint 1 again: X3/DI4 = LOW.
2. Stop inverter again: X3/DI1 = LOW.

*The functional test is completed.*



The commissioning process of the drive solution is described in a separate commissioning instruction which can be found on the Internet in our download area:

<http://www.emotron.com/services-support/file-archive/>



## 6 Technical data

### 6.1 Standards and operating conditions

Conformities		
CE	2014/35/EU	Low-Voltage Directive
	2014/30/EU	EMC Directive (reference: CE-typical drive system)
EAC	TR TC 004/2011	Eurasian conformity: Safety of low voltage equipment
	TP TC 020/2011	Eurasian conformity: Electromagnetic compatibility of technical means
RoHS 2	2011/65/EU	Restrictions for the use of specific hazardous materials in electric and electronic devices
Approvals		
UL	UL 61800-5-1	for USA and Canada (requirements of CSA 22.2 No. 274)
Energy efficiency		
Class IE2	EN 50598-2	
Type of protection		
IP20	EN 60529	
Type 1	NEMA 250	Protection against contact
Open type		only for UL approved systems
Insulation resistance		
Overvoltage category III	EN 61800-5-1	0 ... 2000 m a.m.s.l.
Overvoltage category II		above 2000 m a.m.s.l.
Control circuit isolation		
Safe mains isolation by double/reinforced insulation	EN 61800-5-1	
Protective measures against		
Short circuit		
Earth fault		Earth fault strength depends on the operating status
Overvoltage		
Motor stalling		
Motor overtemperature		I <sup>2</sup> t monitoring
Leakage current		
> 3.5 mA AC, > 10 mA DC	EN 61800-5-1	Observe regulations and safety instructions!
Mains switching		
3-time mains switching in 1 min		cyclic, without restrictions
Starting current		
≤ 3 x rated mains current		
Mains systems		
TT		Voltage to earth/ground: max. 300V
TN		
IT		Apply the measures described for IT systems!
		IT systems not relevant for UL approved systems
Operation on public supply systems		
Implement measures to limit the radio interference to be expected:		The compliance with the requirements for the machine/plant is the responsibility of the manufacturer of the machine or plant!
< 0.5 kW: with mains choke	EN 61000-3-2	
0.5 ... 1 kW: With active filter		
> 1 kW at mains current ≤ 16 A: without additional measures		
Mains current > 16 A: with mains choke or mains filter, with	EN 61000-3-12	RSCE: Short-circuit power ratio at the connection point of the machine/plant to the public network.



dimensioning for rated power. $R_{sce} \geq 120$ is to be met.		
<b>Requirements to the shielded motor cable</b>		
Capacitance per unit length		
C-core-core/C-core-shield < 75/150 pF/m		$\leq 2,5 \text{ mm}^2 / \text{AWG } 14$
C-core-core/C-core-shield < 150/300 pF/m		$\geq 4 \text{ mm}^2 / \text{AWG } 12$
Electric strength		
$U_0/U = 0,6/1,0 \text{ kV}$		U = r.m.s. value external conductor/external conductor
		$U_0$ = r.m.s. value external conductor to PE
$U \geq 600 \text{ V}$	UL	U = r.m.s. value external conductor/external conductor
<b>Climate</b>		
1K3 (-25 ... +60 °C)	EN 60721-3-1	Storage
2K3 (-25 ... +70 °C)	EN 60721-3-2	Transport
3K3 (-10 ... +55 °C)	EN 60721-3-3	Operation
		Operation at a switching frequency of 8 or 16 kHz: above +40°C, reduce rated output current by 2.5%/°C
<b>Site altitude</b>		
0 ... 1000 m a.m.s.l.		
1000 ... 4000 m a.m.s.l.		Reduce rated output current by 5%/1000 m
<b>Pollution</b>		
Degree of pollution 2	EN 61800-5-1	
<b>Vibration resistance</b>		
Transport		
2M2 (sine, shock)	EN 60721-3-2	
Operation		
Amplitude 1 mm	Germanischer Lloyd	5 ... 13.2 Hz
acceleration resistant up to 0.7 g		13.2 ... 100 Hz
Amplitude 0.075 mm	EN 61800-5-1	10 ... 57 Hz
acceleration resistant up to 1 g		57 ... 150 Hz
<b>Noise emission</b>		
Category C2	EN 61800-3	type-dependent, for motor cable lengths see rated data
<b>Noise immunity</b>		
Meets requirement in compliance with	EN 61800-3	





## 6.2 1-phase mains connection 230/240 V

### 6.2.1 Rated data

The output currents apply to these operating conditions:

- At a switching frequency of 2 kHz or 4 kHz: Max. ambient temperature 45°C.
- At a switching frequency of 8 kHz or 16 kHz: Max. ambient temperature 40°C.

Inverter		VS10231P7	VS10232P4	VS10233P2	VS10234P2	VS10236P0	VS10237P0	VS10239P6
<b>Rated power</b>	<b>kW</b>	<b>0.25</b>	<b>0.37</b>	<b>0.55</b>	<b>0.75</b>	<b>1.1</b>	<b>1.5</b>	<b>2.2</b>
Mains voltage range		1/N/PE AC 170 V ... 264 V, 45 Hz ... 65 Hz						
Rated mains current								
without mains choke	A	4	5.7	7.6	10	14.3	16.7	22.5
with mains choke	A	3.6	4.8	7.1	8.8	11.9	13.9	16.9
Output current								
2 kHz	A	-	-	3.2	4.2	6	7	9.6
4 kHz	A	1.7	2.4	3.2	4.2	6	7	9.6
8 kHz	A	1.7	2.4	3.2	4.2	6	7	9.6
16 kHz	A	1.1	1.6	2.1	2.8	4	4.7	6.4
Power loss	W	15	20	25	33	42	50	70
Overcurrent cycle 180 s								
Max. output current	A	2.55	3.6	4.8	6.3	9	10.5	14.4
Overload time	s	60	60	60	60	60	60	60
Recovery time	s	120	120	120	120	120	120	120
Max. output current during the recovery time	A	1.28	1.8	2.4	3.15	4.5	5.25	7.2
Overcurrent cycle 15 s								
Max. output current	A	3.4	4.8	6.4	8.4	12	14	19.2
Overload time	s	3	3	3	3	3	3	3
Recovery time	s	12	12	12	12	12	12	12
Max. output current during the recovery time	A	1.28	1.8	2.4	3.15	4.5	5.25	7.2
Motor cable length								
shielded, without EMC	m	50						
C2 residential area / industrial premises	m	15			20			
Weight	kg	0.75		0.95		1.35		



### 6.3 1/3-phase mains connection 230/240 V

Emotron VS30 inverters do not have an integrated EMC filter in the AC mains supply.



In order to comply with the EMC requirements according to EN 61800–3, an external EMC filter according to IEC EN 60939 has to be used.

The user must prove that the EN 61800–3 requirements for conformity are fulfilled.

#### 6.3.1 Rated data

The output currents apply to these operating conditions:

- At a switching frequency of 2 kHz or 4 kHz: Max. ambient temperature 45°C.
- At a switching frequency of 8 kHz or 16 kHz: Max. ambient temperature 40 °C.

Inverter		VS30231P7	VS30232P4	VS30233P2	VS30234P2	VS30236P0	VS30237P0	VS30239P6
Rated power	kW	0.25	0.37	0.55	0.75	1.1	1.5	2.2
Mains voltage range		1/N/PE AC 170 V ... 264 V, 45 Hz ... 65 Hz						
Rated mains current								
without mains choke	A	4	5.7	7.6	10	14.3	16.7	22.5
with mains choke	A	3.6	4.8	7.1	8.8	11.9	13.9	16.9
Mains voltage range		3/PE AC 170 V ... 264 V, 45 Hz ... 65 Hz						
Rated mains current								
without mains choke	A	2.6	3.9	4.8	6.4	7.8	9.5	13.6
with mains choke	A	2	3	3.8	5.1	5.6	6.8	9.8
Output current								
2 kHz	A	-	-	3.2	4.2	6	7	9.6
4 kHz	A	1.7	2.4	3.2	4.2	6	7	9.6
8 kHz	A	1.7	2.4	3.2	4.2	6	7	9.6
16 kHz	A	1.1	1.6	2.1	2.8	4	4.7	6.4
Power loss	W	17	22	28	36	46	55	77
Overcurrent cycle 180 s								
Max. output current	A	2.55	3.6	4.8	6.3	9	10.5	14.4
Overload time	s	60	60	60	60	60	60	60
Recovery time	s	120	120	120	120	120	120	120
Max. output current during the recovery time	A	1.28	1.8	2.4	3.15	4.5	5.25	7.2
Overcurrent cycle 15 s								
Max. output current	A	3.4	4.8	6.4	8.4	12	14	19.2
Overload time	s	3	3	3	3	3	3	3
Recovery time	s	12	12	12	12	12	12	12
Max. output current during the recovery time	A	1.28	1.8	2.4	3.15	4.5	5.25	7.2
Motor cable length								
shielded, without EMC	m	50						
Weight	kg	0.75		0.95		1.35		



## 6.4 3-phase mains connection 400 V

### 6.4.1 Rated data

The output currents apply to these operating conditions:

- At a switching frequency of 2 kHz or 4 kHz: Max. ambient temperature 45 °C.
- At a switching frequency of 8 kHz or 16 kHz: Max. ambient temperature 40 °C.

Inverter		VS30401P3	VS30401P8	VS30402P4	VS30403P2	VS30403P9	VS30405P6
<b>Rated power</b>	<b>kW</b>	<b>0.37</b>	<b>0.55</b>	<b>0.75</b>	<b>1.1</b>	<b>1.5</b>	<b>2.2</b>
Mains voltage range		3/PE AC 340 V ... 528 V, 45 Hz ... 65 Hz					
Rated mains current							
without mains choke	A	1.8	2.5	3.3	4.4	5.4	7.8
with mains choke	A	1.4	2	2.6	3	3.7	5.3
Output current							
2 kHz	A	-	1.8	2.4	3.2	3.9	5.6
4 kHz	A	1.3	1.8	2.4	3.2	3.9	5.6
8 kHz	A	1.3	1.8	2.4	3.2	3.9	5.6
16 kHz	A	0.9	1.2	1.6	2.1	2.6	3.7
Power loss	W	24	31	40	51	61	85
Overcurrent cycle 180 s							
Max. output current	A	1.95	2.7	3.6	4.8	5.85	8.4
Overload time	s	60	60	60	60	60	60
Recovery time	s	120	120	120	120	120	120
Max. output current during the recovery time	A	0.975	1.35	1.8	2.4	2.93	4.2
Overcurrent cycle 15 s							
Max. output current	A	2.6	3.6	4.8	6.4	7.8	11.2
Overload time	s	3	3	3	3	3	3
Recovery time	s	12	12	12	12	12	12
Max. output current during the recovery time	A	0.975	1.35	1.8	2.4	2.93	4.2
Motor cable length							
shielded, without EMC	m	15	50				
C2 residential area / industrial premises	m	15			20		
Weight	kg	0.75	0.95		1.35		

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