



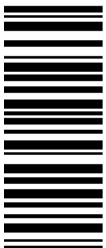
# Emotron CDN Compact Drive

Power range 0.75 to 7.5 kW / 400 V



Quick Start Guide  
for the  
Emotron EASY Starter

English



13522615



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# 1. Introduction

Setting up the **Emotron CDU AC drive** requires a PC and the PC program "**Emotron EASY Starter**". "Emotron EASY Starter" provides access to all parameters of the CDU AC drive, allowing for complete flexibility during set-up.

## 2. Safety Instructions for Set-Up

### 2.1 General Safety Instructions

To avoid personal injury and damage to property,

- check the following before switching on the mains voltage supply:
  - the integrity of the current as well as the ground and short-circuit systems
  - the "EMERGENCY OFF" function for the entire installation
  - the motor circuit type (i.e. Star/Delta configuration) – this must be adjusted for the AC drive output voltage
  - the motor's in-phase connection
  - the direction of rotation of the encoder (where available)
- before enabling the controller, check the critical settings for the drive parameters:
  - the rated U/f frequency must be configured to the circuit type.
  - the relevant drive parameters for the application must be correctly adjusted.
  - the I/O terminals must be configured in accordance with the voltage.
- when enabling the controller, please ensure that no motor speed control value is set.



#### Warning!

At +24 V, the RFR control input is connected to the factory via a bridge, meaning that the AC drive is enabled.

- This input can also be used for turning the driver on and off. To do so, replace the bridge with cables.

### 2.2 Safety Instructions for Operating the Motor



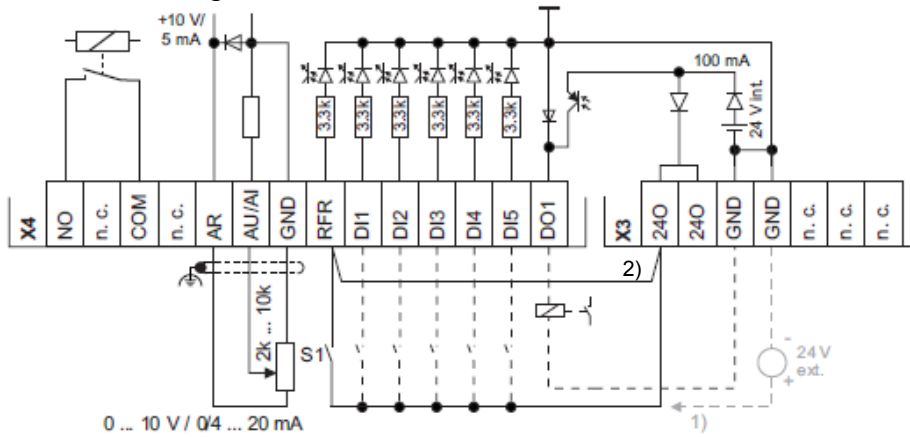
#### Warning!

- The continuous operation of self-ventilated motors with a small rotational field frequency and rated motor current is not permissible for thermal reasons.
  - In this default factory setting, motor temperature monitoring (PTC) is enabled.
  - In this default factory setting, brake resistance (I2xt) is activated. A trigger in the monitoring system leads to the braking operation being switched off.
- Please pay attention to the following with regard to [\(C00015\)](#) U/f cut-off frequencies:  
For the CDU, the reference voltage for the U/f cut-off frequency is the motor rated voltage [\(C00090\)](#) according to the motor type name plate (independent of the mains supply voltage).

### 3. Preparing the AC drive

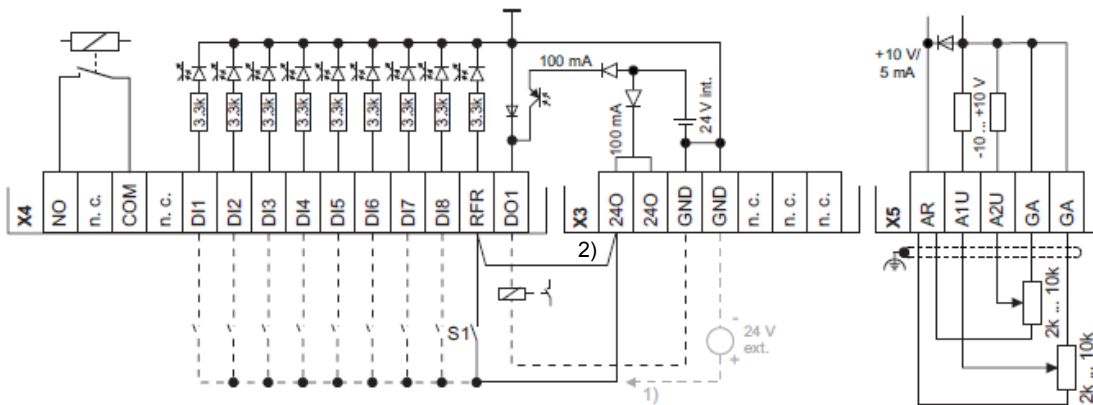
#### 3.1 Power and control wire connections

*I/O standard connection diagrams*



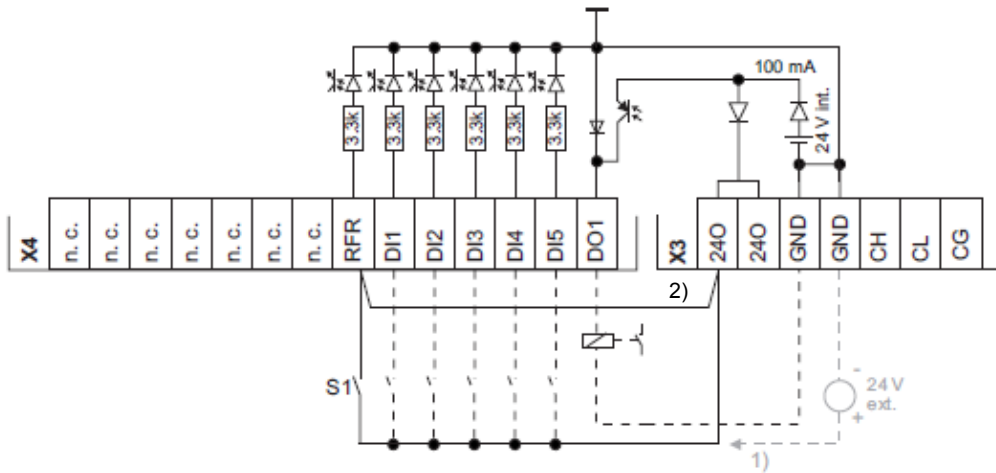
1. Alternative external power supply
2. Wire bridge for permanent controller enable (factory settings)

*Extended connection diagrams I/O*



1. Alternative external power supply
2. Wire bridge for permanent controller enable (factory settings)

## CANopen connection diagrams



1. Alternative external power supply
2. Wire bridge for permanent controller enable (factory settings)

- For more information, use the assembly instructions supplied with the AC drive to make the correct power and control connections.
- Try to assign the digital inputs so that your application can be mapped by one of the preconfigured control modes ([C00007](#)) for terminal control:

Control mode C00007	Assigning digital terminals				
	DI1	DI2	DI3	DI4	DI5
Terminals 0	JOG 1/3	JOG 2/3	DCB	Cw/Ccw	BrkRelease
Terminals 2	JOG 1/3	JOG 2/3	QSP	Cw/Ccw	BrkRelease
Terminals 11	Cw/Ccw	DCB	MPotUp	MPotDown	BrkRelease
Terminals 16	JOG 1/3	JOG 2/3	Cw/QSP	Ccw/QSP	BrkRelease
<b>Abbreviations used:</b>					
JOG	Selection <a href="#">C00039/1...3</a> within configured set points 1...3				
DCB	Manual DC braking				
Cw/Ccw	Clockwise rotation / anti-clockwise rotation				
QSP	Quick stop				
MPotUp	Motor potentiometer: Increase rotation speed				
MPotDown	Motor potentiometer: Reduce rotation speed				
Cw/QSP	Wire break-proof specification for the direction of rotation in connection with quick stop				
Ccw/QSP					
BrkRelease	Manually ventilate holding brake <ul style="list-style-type: none"> <li>• Under this default factory setting, brake control is turned off (deactivated).</li> <li>Set operating mode in <a href="#">C02580</a>.</li> </ul>				



### Tip!

- You can change the preconfigured I/O connection in the selected control mode via configuration parameters.



### Note!

A user-defined terminal assignment is available for changing the preconfigured assignment of digital and analogue input/output terminals.

In C00007, the control mode is "0: Modified wiring displayed.

If you select another control mode in C00007, all configuration parameters (C00620/x, C00621/x, C00700/x and C00701/x) are reset to the factory settings for the selected control mode.

- Place the **drive unit** carefully onto the **communication unit** and fix with the four screws.
- **Locking the controller:** Set terminal RFR to LOW gauge – in other words, open the contact.

- Turn on the control supply voltage's AC drive.  
For information about various operating states, you can quickly consult the two-colour LED display on the device's front panel.



Green "DRIVE"	Red "DRIVE"	Description	Device status (Information in
OFF	OFF	OFF or initialisation active	Init
	OFF	Safe torque off active	SafeTorqueOff
	OFF	Device is ready to be turned on	ReadyToSwitchOn
	OFF	Device is turned on	SwitchedOn
	OFF	Motor data identification / operation	OperationEnabled
		The AC drive is ready to be switched on. In other words, operation is enabled and a warning is given.	
OFF		Fault active	Trouble
OFF		Error active	Fault

#### Legend

The symbols used to display the LED modes have the following meanings:

	LED flashes briefly every 3 seconds ( <i>slow flash</i> )
	LED flashes briefly approx. every 1.25 seconds ( <i>flash</i> )
	LED flashes twice briefly approx. every 1.25 seconds ( <i>double flash</i> )
	LED flashes in a one-second cycle
	LED is permanently on

#### Tip!

- Reduce the brightness of the green LED via bit 0 and bit 1 in [C00143](#), if the green light is too light or distracting for your application.



- Remove the cover cap from the diagnostic interface on top of the device and connect the USB diagnostic adapter to the diagnostic interface.



- Connect the diagnostic adapter to the PC via a free USB port.

## 4. "Emotron EASY Starter"

### 4.1 Requirements for the "Emotron EASY Starter"

For the installation you will need

- a PC with the following system requirements:
  - A 1.4 GHz or higher processor
  - at least 512 MB RAM and 650 MB of free disk space
  - A Microsoft® Windows® 2000 (service pack 2 or later), Windows® XP or Windows® 7 operating system.
- "Emotron EASY Starter" PC software
- the latest device description file for the AC drive to be used, which can be downloaded from the server using the "Emotron Package Manager"
- A connection to the AC drive (via the diagnostic interface – with the Emotron diagnostic adapter or via the CANopen Bus)



#### Tip!

Acquire and update the "Emotron EASY Starter" software as follows:

- **Download from the internet:** "Emotron EASY Starter" is available for free on the internet:

<http://easystarter.emotron.com> → Download

### 4.2 Connect "Emotron EASY Starter" to the CDU

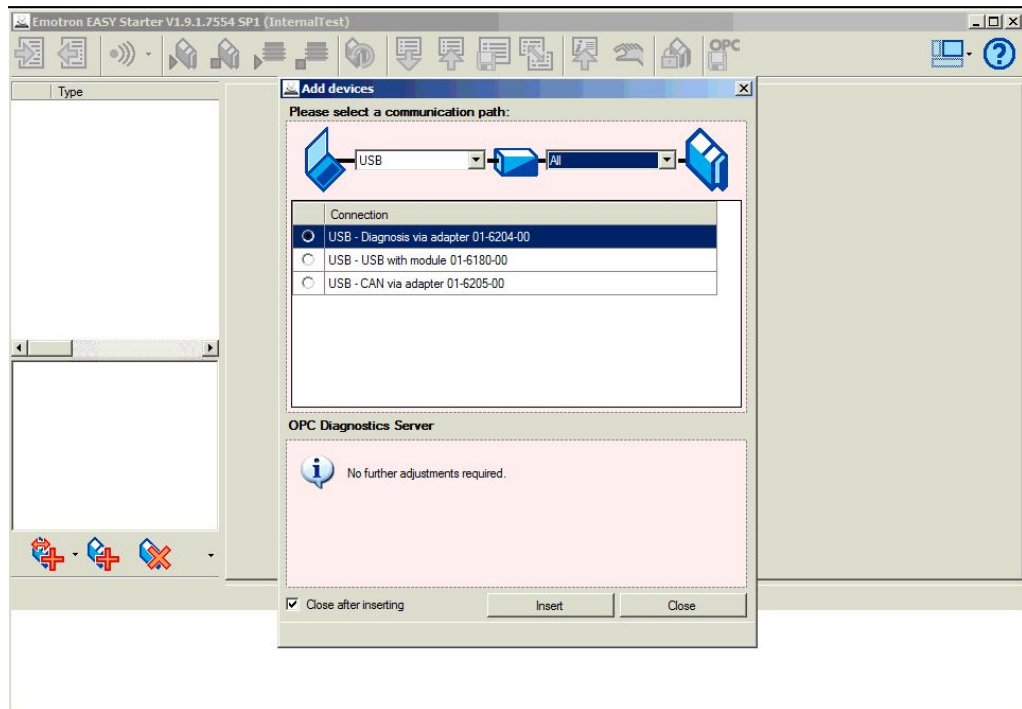
It is easy to set up the AC drive based on the parameter factory settings with "Emotron EASY Starter". The specified parameter settings can then be safely stored in the AC drive and will be retained in the event of a power failure.



#### Note!

Please observe all the necessary safety precautions as set out in section 2.1, before carrying out the following set-up steps or switching on the device.

- Open "Emotron EASY Starter" for configuration purposes
- After starting the PC program, select the interface you want to connect to and confirm by selecting **Insert**. It is standard for the AC drive to have an RJ69 diagnostic interface. You will need an **Emotron USB diagnose adapter** to connect to the PC.
- The PC program will establish the connection. After connecting to the AC drive, all parameters will be selected.

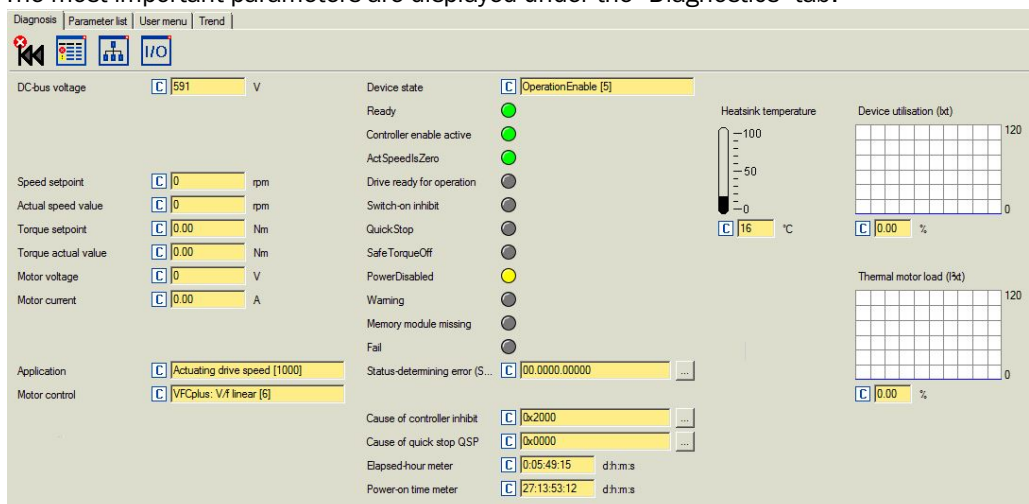


#### 4.3 "Emotron EASY Starter" functions

- The connected AC drive will be displayed on the left side in the program window. On the right are the "Diagnostics", "Parameter list", "User menu" and "Trend" tabs.



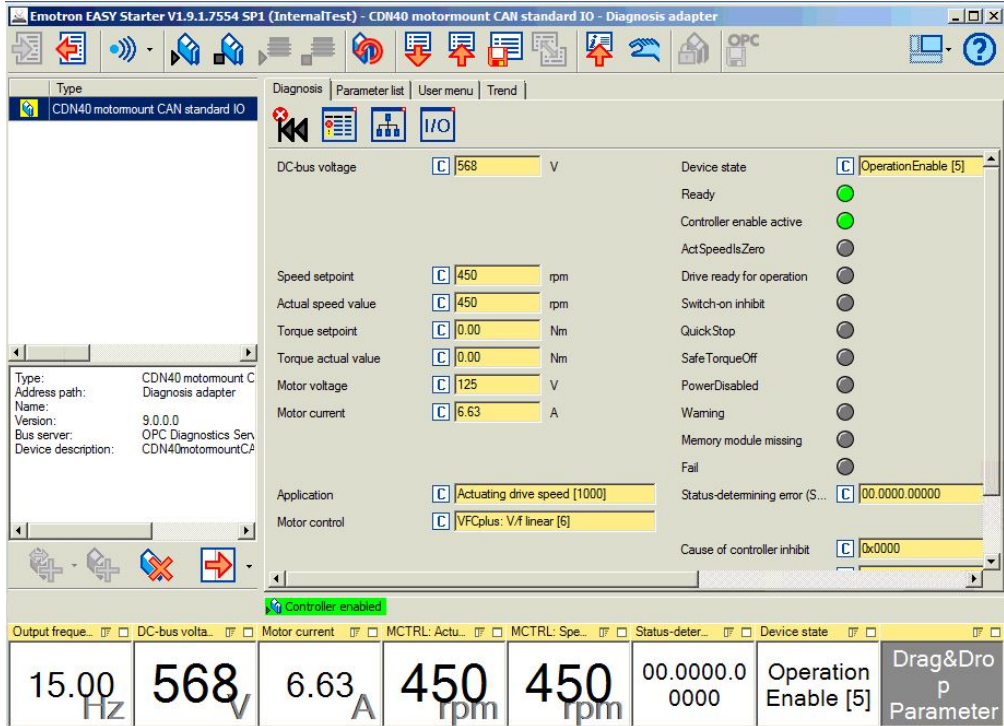
- The most important parameters are displayed under the "Diagnostics" tab.



- Up to 8 self-defined parameters will be displayed in the monitor window. Drag and drop the required code point from the parameter list or "Diagnostics" tab to the desired position in the monitor window.



- The enable status of the AC drive is displayed in colour under the display area. **Controller enabled** – **Controller locked**



- Select current parameter set on the device and save as a file (\*.gdc)



Upload parameter set from device and save into file (F7)

- Transmit parameter set to the device. This command overwrites the current parameter settings in the AC drive with the "Emotron EASY Starter" parameter settings.



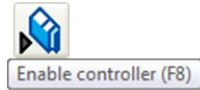
Download parameter set from file to device (F5)

- Storing parameter settings in a power-failure proof memory. In order to prevent the parameter settings set in the device from being lost by a mains switch, you must save the parameter set explicitly in the device in a power-failure proof memory.



Save parameter set within device (F6)

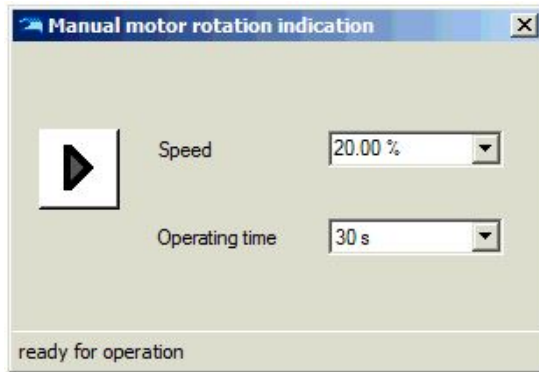
- Enable the AC drive  
Enabling can only take place if the AC drive is connected to mains voltage and no faults are present




- Lock the AC drive



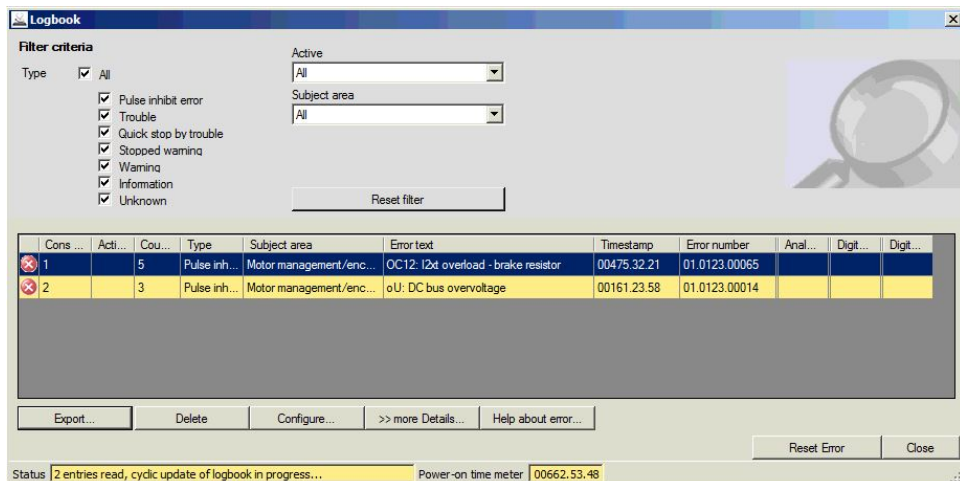
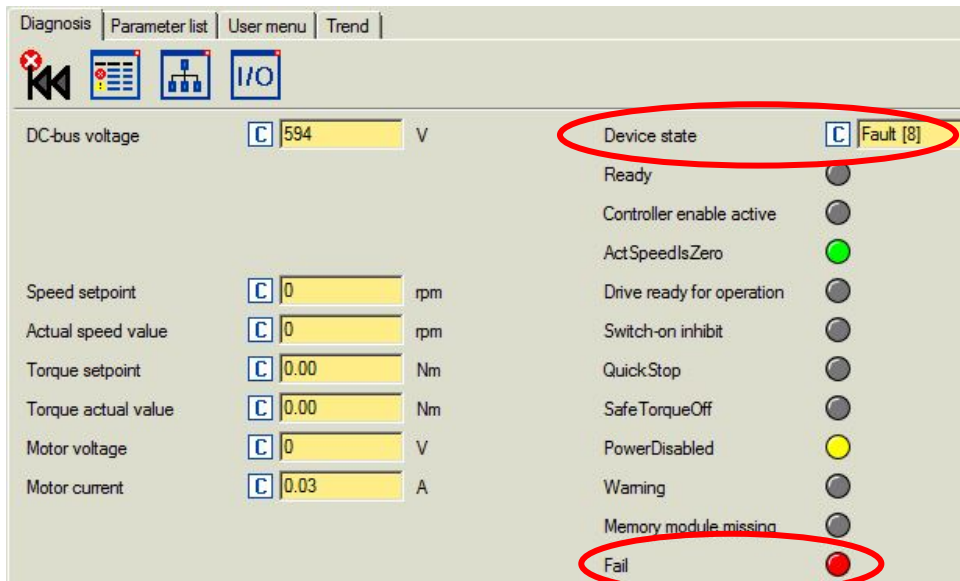
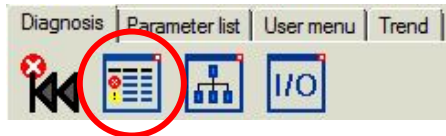
- Activate manual control  
Lock the AC drive (F9) and open the "Manual Control" dialogue box



- The values displayed in pale yellow are overwrite protected (read-only) and cannot be changed. The symbol in the first column shows that the value does not correspond to the factory setting.

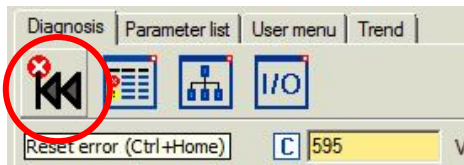
Diagnosis		Parameter list	User menu	Trend		
Code	Subcode	Name	Value	Unit		
51	0	MCTRL: Actual speed value	0	rpm		
53	0	DC-bus voltage	597	V		
54	0	Motor current	0.00	A		
61	0	Heatsink temperature	20	°C		
137	0	Device state	SwitchedOn [4]			
166	3	Mess. - error state	No error			
11	0	Appl.: Reference speed	1500	rpm		
39	1	Fixed setpoint 1	40.00	%		
39	2	Fixed setpoint 2	60.00	%		
	12	Accel. time - main setpoint	5.000	s		
	13	Decel. time - main setpoint	2.000	s		

- **Errors** can be easily detected and eliminated during set-up with the "Emotron EASY Starter". Proceed as follows:  
 Check whether there are any error reports displayed in "Emotron EASY Starter". Error messages are displayed at several locations, for example under the **Diagnostics** tab or in an orderly table in the **Logbook**, which you can find under the **Diagnostics** tab by selecting the "Logbook" button.

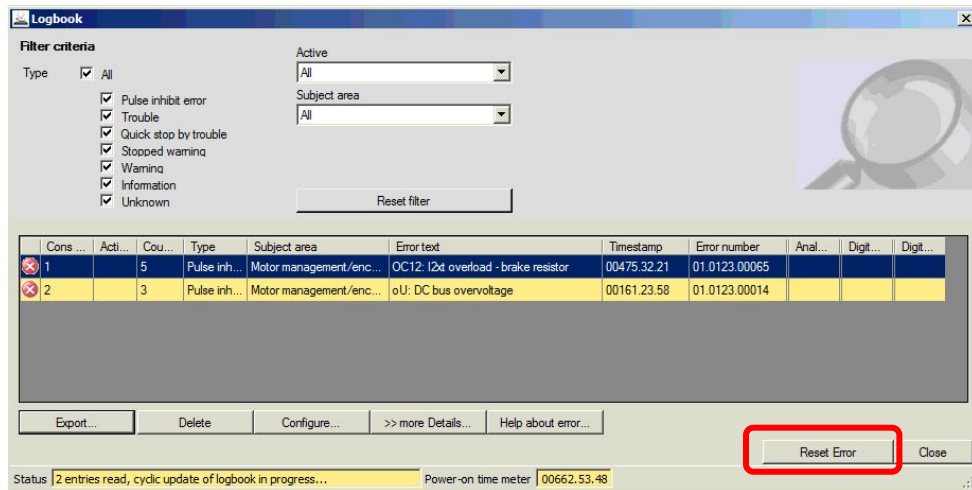




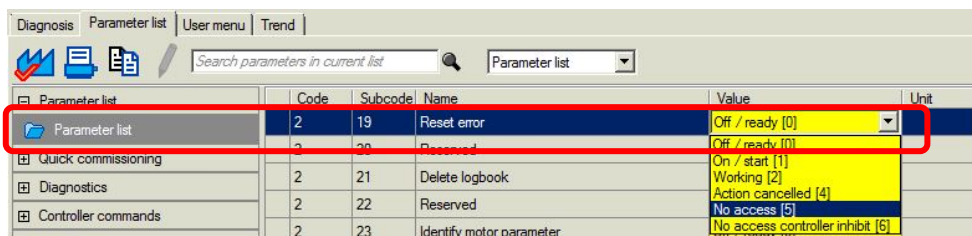
- Errors can be reset in "Emotron EASY Starter" via the Diagnostics tab by selecting the "Reset Error" button



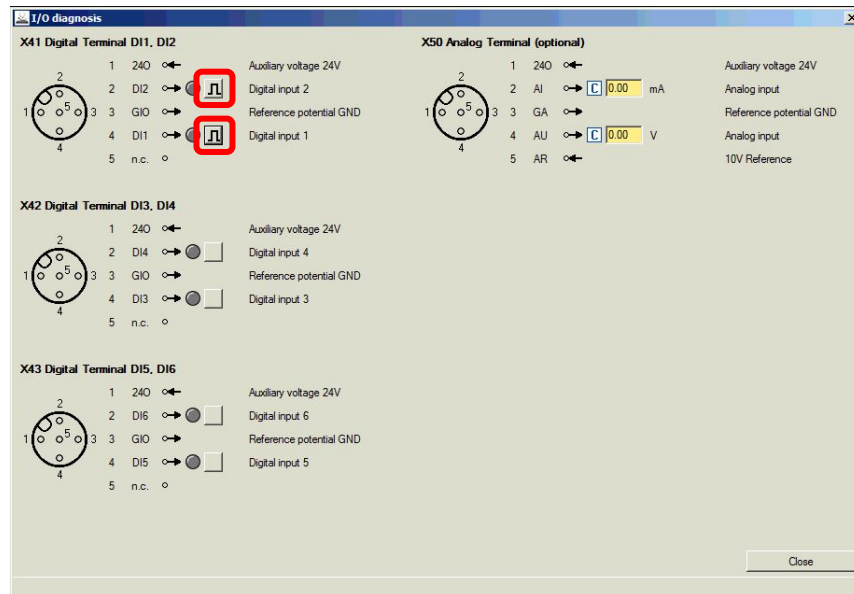
Or in the **Logbook** display area to the bottom right



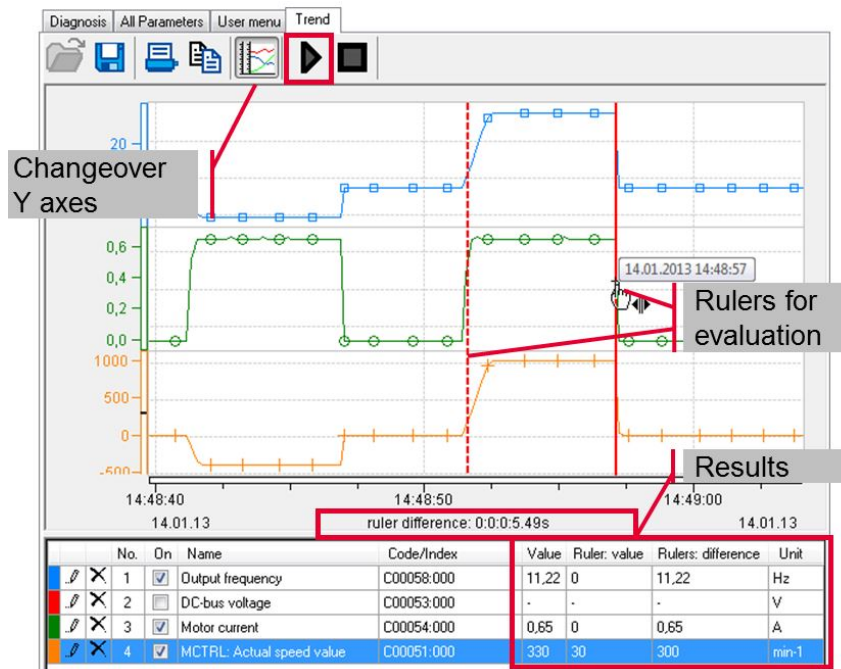
Or by setting the **Parameter List** tab, code set 2, subcode 19 to 1 (C00002: 019)



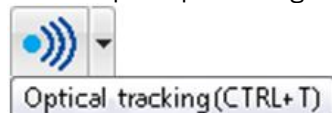
- With "Emotron EASY Starter", the status of the digital inputs and the analogue inputs and outputs (Option) can be displayed on the **Diagnostics** tab by selecting the **IO Diagnostics** button. Click to reverse the available inputs.



- Trend function analysis



- Activate optical positioning and observe the AC drives' LED (LED flashing blue)





## 5. Configuring the CDU

Some of the CDU parameters (code points) have sub-parameters (sub code).

To configure, select the **Parameter List** tab.

Code point names or code points can be entered into the input field of the search function.

Appropriate matching code points are assigned on the left-hand side of the display.

All parameters are listed in the section **Parameter Lists**.

The following information from the selected parameter is displayed in the lower display area: code point, subcode, parameter name, current value as text with its corresponding decimal value, the decimal value, the hexadecimal value and the factory setting value.

Code	Subcode	Name	Value	Unit
2	19	Reset error	Off / ready [0]	
2	20	Reserved	Off / ready [0]	
2	21	Delete logbook	Off / ready [0]	
2	22	Reserved	Off / ready [0]	
2	23	Identify motor parameter	Off / ready [0]	
2	24	Reserved	Off / ready [0]	
2	25	Reserved	Off / ready [0]	
2	26	CAN reset node	Off / ready [0]	
2	27	Device search function	Off / ready [0]	
2	28	Reserved	Off / ready [0]	
2	29	Reserved	Off / ready [0]	
2	30	Reserved	Off / ready [0]	
2	31	Reserved	Off / ready [0]	
2	32	Reserved	Off / ready [0]	
3	0	Status of last device command	Successful [0]	

**C00002:019 Reset error**

Value: Off / ready [0]  
 Raw value decimal: 0  
 Raw value hexadecimal: 0x00  
 Factory setting: Off / ready [0]

Key parameters are explained below.

### 5.1 Factory settings (C00002:001) – loading the factory settings

Start initial set-up by loading the factory settings by setting the value of the code points [C00002](#), subcode 1 on 1.

## 5.2 Motor control (C00006) – selecting the desired motor control



### Note!

In factory settings, the U/f characteristic control (VFCplus) is configured in [C00006](#) as motor control, with a linear characteristic curve.

- The U/f characteristic control (VFCplus) is a motor control for conventional AC drive applications based on a simple and robust control method for the operation of machines with a linear or quadratic load moment profile (e.g. fans).
- The parameter settings are preset so that the AC drive is immediately ready for operation without further configuration when the assignment of the AC drive and the 50 Hz asynchronous machine matches and the motor is operating to a satisfactory level.

To facilitate motor control selection, the following table provides recommendations and alternatives to standard applications.

Application	Motor control (C00006) blue = with speed feedback grey = alternative
with constant load	6 VFCplus: U/f linear
	7 VFCplus: U/f linear + encoder
	4 SLVC: Vector controller
	11 VFCplusEco: U/f energy saving
with strongly fluctuating loads	6 VFCplus: U/f linear
	7 VFCplus: U/f linear + encoder
	4 SLVC: Vector controller
with heavy start	4 SLVC: Vector controller
	7 VFCplus: U/f linear + encoder
	6 VFCplus: U/f linear
with speed control (speed feedback)	7 VFCplus: U/f linear + encoder
Torque limitation	4 SLVC: Vector controller
with torque limitation (power control)	6 VFCplus: U/f linear
	7 VFCplus: U/f linear + encoder
	4 SLVC: Vector controller
Three-phase reluctance motor / shift motor / motor with fixed frequency / voltage characteristics	6 VFCplus: U/f linear
Synchronous machine	3 SLPSM: Sensorless PSM
Pump and fan drives with square load characteristic	11 VFCplusEco: U/f energy saving
	8 VFCplus: U/f quadr
	4 SLVC: Vector controller
horizontal conveyor technology	11 VFCplusEco: U/f energy saving
	9 VFCplus: U/f quadr + encoder
	8 VFCplus: U/f quadr
	4 SLVC: Vector controller

## 5.3 Motor data and identification run (for asynchronous motor only)

### Note!

- Motor data must be configured, especially for sensorless vector control. The motor data includes the motor type plate data as well as the motor replacement circuit diagram data.
- Before initial start-up of the sensorless vector control (SLVC), motor parameter identification is strongly recommended.
- We recommend that the motor parameter identification of the motor is first carried out in order to improve concentricity. The motor parameters can then be adapted manually. To improve performance, make sure that the inverter fault characteristic is matched to the drive system and the motor cable resistance is known. Both factors are determined in the course of motor parameter identification.
- Only perform motor parameter identification when the engine is cold.
- The load machine can remain coupled. Existing holding brakes can remain in the braking position.
- If the motor is idle, a small angular misalignment may occur on the motor shaft.
- The amplitude of the motor rated current ([C00088](#)) is stamped to identify stator resistance. If the motor rated current is less than 60% of the inverter nominal current, at least 60% of the inverter nominal current is impressed in order to ensure sufficient accuracy in motor parameter identification.

### Note!

The process of motor parameter identification may be prematurely interrupted by the drive controller if a special motor (e.g. medium-frequency motor) is used or if there is a significant difference between the inverter and motor power.

Another reason for aborting motor parameter identification may be the implausibility of type plate data entered, e.g. when a motor power rating of  $P = 0$  kW is entered.

### Warning!

During motor parameter identification, the motor is energised via drive controller outputs U, V and W.


### Stop!

Aborting motor parameter identification can cause unstable drive behaviour.

**Proceed as follows:**

All relevant code points for the configuration of motor data from the motor-type-plate mounted motor are listed under "Motor control" → "Motor data".



1. If the AC drive is enabled, lock the AC drive  **Inhibit controller (F9)**, code point [C00002/16](#) or with LOW signal at terminal RFR.
2. Wait until the drive has stopped.
3. Transfer type plate data to the following code points:
  - [C00081](#): Rated motor power
  - [C00087](#): Rated motor speed
  - [C00088](#): Rated motor current (according to the type of connection)
  - [C00089](#): Rated motor frequency (according to the type of connection)
  - [C00090](#): Rated motor voltage (according to the type of connection)
  - [C00091](#): Motor cos phi
4. Start motor parameter identification with device command [C00002/23](#) – only for asynchronous motors.
5. Re-enable the AC drive.



**Enable controller (F8)**

6. Re-lock the AC drive.
  - Motor parameter identification will start.
  - Motor parameter identification will last approximately 30 seconds.
  - Identification is finished when the report [C00002/23](#) appears as "0: On/Off".

The inverter characteristic, the influences on the motor cable and the motor parameters listed in the following table can be automatically identified with the device command "Identify Motor Parameters" ([C00002/23](#)):

Parameters	Info	ASM	PSM
<a href="#">C00015</a>	U/f cut-off frequency	<input type="checkbox"/>	<input type="checkbox"/>
<a href="#">C00016</a>	U <sub>min</sub> increase	<input type="checkbox"/>	<input type="checkbox"/>
<a href="#">C00021</a>	Slip compensation	<input type="checkbox"/>	
<a href="#">C00084</a>	Motor stator resistance	<input type="checkbox"/>	<input type="checkbox"/>
<a href="#">C00085</a>	Motor stator leakage inductance	<input type="checkbox"/>	<input type="checkbox"/>
<a href="#">C00092</a>	Motor master field inductance	<input type="checkbox"/>	
<a href="#">C00095</a>	Motor magnetising current	<input type="checkbox"/>	

**Manually adjust motor data**

We recommend that the motor parameter identification of the motor is first carried out in order to improve concentricity. The motor parameters can then be adapted manually. To improve performance, make sure that the inverter fault characteristic is matched to the drive system and the motor cable resistance is known. Both factors are determined in the course of motor parameter identification.

### Recommendations for the following applications

If AC drives and motors vary greatly in performance: set the I<sub>max</sub> limit (motor) in [C00022](#) to double the rated motor current.

If a high initial torque is required:

Set the U<sub>min</sub> increase in the motor control in [C00016](#) so that the rated motor current is flowing at a rotating field frequency of f = 3 Hz (display in [C00058](#)).

For a high torque to be available at low speeds and without feedback:

Select the "Sensorless Vector Control (SLVC)" as the motor control in [C00006](#).

Parameters	Info	ASM	PSM
<a href="#">C00084</a>	Motor stator resistance	<input type="checkbox"/>	<input type="checkbox"/>
<a href="#">C00085</a>	Motor stator leakage inductance	<input type="checkbox"/>	<input type="checkbox"/>
<a href="#">C00095</a>	Motor magnetising current	<input type="checkbox"/>	
<a href="#">C00092</a>	Motor master field inductance	<input type="checkbox"/>	
<a href="#">C00015</a>	VFC: U/f cut-off frequency	<input type="checkbox"/>	<input type="checkbox"/>
<a href="#">C00021</a>	Slip compensation	<input type="checkbox"/>	
<a href="#">C00075</a>	Vp current controller	<input type="checkbox"/>	<input type="checkbox"/>
<a href="#">C00076</a>	Ti current controller	<input type="checkbox"/>	<input type="checkbox"/>
<a href="#">C00273</a>	Moment of inertia	<input type="checkbox"/>	<input type="checkbox"/>
<a href="#">C00016</a>	VFC: U <sub>min</sub> increase	<input type="checkbox"/>	<input type="checkbox"/>
<a href="#">C00070/3</a>	SLPSM: Vp speed controller		<input type="checkbox"/>
<a href="#">C00071/3</a>	SLPSM: Ti speed controller	<input type="checkbox"/>	<input type="checkbox"/>
<a href="#">C00011</a>	Appl.: Reference speed	<input type="checkbox"/>	<input type="checkbox"/>
<a href="#">C00022</a>	I <sub>max</sub> motor	<input type="checkbox"/>	<input type="checkbox"/>
<a href="#">C00982</a>	VFC-ECO: Ramp voltage dip	<input type="checkbox"/>	
<a href="#">C00073</a>	Vp I <sub>max</sub> controller	<input type="checkbox"/>	<input type="checkbox"/>

- In principle, a synchronous motor without speed feedback can also be operated with the control type [U/f characteristic control \(VFCplus\)](#). Correspondingly, parameters for this type of control (e.g. U/f cut-off frequency) also have an effect with synchronous motors.

**5.4 Control mode ([C00007](#))** - select the desired control mode – wired as in chapter 3.1.  
The following table explains the preconfigured control modes.

Control mode C00007	Assigning digital terminals				
	DI1	DI2	DI3	DI4	DI5
Terminals 0	JOG 1/3	JOG 2/3	DCB	Cw/Ccw	BrkRelease
Terminals 2	JOG 1/3	JOG 2/3	QSP	Cw/Ccw	BrkRelease
Terminals 11	Cw/Ccw	DCB	MPotUp	MPotDown	BrkRelease
Terminals 16	JOG 1/3	JOG 2/3	Cw/QSP	Ccw/QSP	BrkRelease
<b>Abbreviations used:</b>					
JOG	Selection <a href="#">C00039/1...3</a> within configured set points 1...3				
DCB	Manual DC braking				
Cw/Ccw	Clockwise rotation / anti-clockwise rotation				
QSP	Quick stop				
MPotUp	Motor potentiometer: Increase rotation speed				
MPotDown	Motor potentiometer: Reduce rotation speed				
Cw/QSP	Wire break-proof specification for the direction of rotation in connection with quick stop				
Ccw/QSP					
BrkRelease	Manually ventilate holding brake <ul style="list-style-type: none"> <li>Under this default factory setting, brake control is turned off (deactivated).</li> </ul> Set <input type="checkbox"/> operating mode in <a href="#">C02580</a> .				



**Tip!**

You can change the preconfigured I/O connection in the selected control mode via configuration parameters.



**Note!**

If changing the preconfigured assignment of digital and analogue input / output terminals, a user-defined terminal assignment is available.  
In [C00007](#), the control mode is "0: modified wiring displayed".  
If you select another control mode in [C00007](#), all configuration parameters ([C00620/x](#), [C00621/x](#), [C00700/x](#) and [C00701/x](#)) are reset to the factory settings for the selected control mode.

## 5.5 Application parameters

Parameters		Factory setting		Info
		Status value	Unit	
<b>4</b>	Runtime master control input ( <a href="#">C00012</a> )	2.0	s	The control input is fed via a ramp-function generator with a linear characteristic. The ramp-function generator transfers control jump inputs at the entrance to a ramp.
<b>5</b>	Runtime master control input ( <a href="#">C00013</a> )	2.0	s	
<b>6</b>	Reference speed ( <a href="#">C00011</a> )	1500	min-1	All speed control inputs are given as a percentage and always refer to motor speed control inputs in <a href="#">C00011</a> . The reference speed of the motor is indicated on the type plate of the motor.
<b>7</b>	Quick stop expiry time ( <a href="#">C00105</a> )	5.0	s	When "Quick stop" is selected, the motor control is decoupled from the control input setting and the motor comes to a standstill within the set time period specified in <a href="#">C00105</a> ( $n_{is} = 0$ ).  - Activate/cancel quick stop <a href="#">C00002/17</a> - Quick stop sources and triggers <a href="#">C00159</a>
<b>8</b>	Fixed control input 1 ( <a href="#">C00039/1</a> )	40.0	%	A fixed control input can be activated via the <i>bJogSpeed1</i> and <i>bJogSpeed2</i> selection inputs for the control input generator instead of the master control input.  • The control input settings are set in [%] based on the reference speed <a href="#">C00011</a> .
<b>9</b>	Fixed control input 2 ( <a href="#">C00039/2</a> )	60.0	%	
<b>10</b>	Fixed control input 3 ( <a href="#">C00039/3</a> )	80.0	%	

## 5.6 Enable the AC drive and specify the speed

### Stop!

Before specifying a speed control input, check whether the brake applied to the motor shaft as a holding brake is well ventilated.

### Note!

If, when the mains are switched on, the controller is enabled and the autostart option "Lock Device" is activated (factory setting) in [C00142](#), the AC drive will remain in the state "[ReadyToSwitchOn](#)".

To change to "[SwitchedOn](#)", controller enable must first be cancelled. Set terminal RFR to LOW gauge.

When the AC drive is in the "[SwitchedOn](#)" state:

1. Enable AC drive: Function key "F8" in "Emotron EASY Starter", code point [C00002/16](#) or set RFR terminal to HIGH gauge.
2. Specify rotation speed:
  - By specifying a voltage at the analogue input in control mode "Terminals 0" or by selecting a control input value via digital inputs DI1 / DI2.

DI1	DI2	Motor speed settings
LOW	LOW	The motor speed master control input is set via analogue input 1 <ul style="list-style-type: none"> <li>Standardisation: 10 V corresponds to 100% of the reference motor speed (<a href="#">C00011</a>)</li> </ul>
HIGH	LOW	Fixed control input 1 ( <a href="#">C00039/1</a> ) is used as a master control input for the motor speed. <ul style="list-style-type: none"> <li>Factory setting 40% of the reference motor speed (<a href="#">C00011</a>)</li> </ul>
LOW	HIGH	Fixed control input 2 ( <a href="#">C00039/2</a> ) is used as the master control input. <ul style="list-style-type: none"> <li>Factory setting 60% of the reference motor speed (<a href="#">C00011</a>)</li> </ul>
HIGH	HIGH	Fixed control input 3 ( <a href="#">C00039/3</a> ) is used as the master control input. <ul style="list-style-type: none"> <li>Factory setting 80% of the reference motor speed (<a href="#">C00011</a>)</li> </ul>



### Note!

Please observe the actual speed value (display in [C00051](#)) and the LED status display On the AC drive.

## 5.7 Actual value

Current process, motor and AC drive values can be dragged and dropped in the monitor window, in the respective code points on the parameter list, and in the "Diagnostics" tab.

If the online connection to the AC drive is active, actual values relating to the motor will be displayed under the following code points:

Parameters	Info
<a href="#">C00051</a>	Motor speed value
<a href="#">C00052</a>	Motor voltage
<a href="#">C00053</a>	Intermediate circuit voltage
<a href="#">C00054</a>	Motor current
<a href="#">C00066</a>	Thermal motor load (12xt)
Grey background = display parameters	



## 6. Error notifications

### 6.1 Brief overview of error notifications

The following table lists all drive controller error notifications in alphabetical order.

Error number			Error notification	Response (Factory setting)	configurable in	CAN Emergency Error Code
	32 Bit	16 Bit <sub>hex</sub>				
<a href="#">4xx.0125.00001</a>	0x1901	6401	An01: AIN1_I < 4 mA	Fault	<a href="#">C00598/1</a>	0xF000
<a href="#">4xx.0131.00002</a>	0x1f02	7938	CA06: CAN CRC errors	No response	<a href="#">C00592/1</a>	0x8000
<a href="#">4xx.0131.00007</a>	0x1f07	7943	CA07: CAN Bus Warn	No response	<a href="#">C00592/3</a>	0x8000
<a href="#">4xx.0131.00008</a>	0x1f08	7944	CA08: CAN Bus Stopped	No response	<a href="#">C00592/4</a>	0x8000
<a href="#">4xx.0131.00011</a>	0x1f0b	7947	CA0b: CAN Bus Live Time	No response	<a href="#">C00592/5</a>	0x8130
<a href="#">4xx.0131.00015</a>	0x1f0f	7951	CA0F: CAN control word	Fault	<a href="#">C00594/2</a>	0xF000
<a href="#">4xx.0127.00002</a>	0x1b02	6914	CE04: MCI communications error	Fault	<a href="#">C01501/1</a>	0x7000
<a href="#">4xx.0127.00015</a>	0x1b0f	6927	CE0F: MCI control word	Fault	<a href="#">C00594/2</a>	0xF000
<a href="#">4xx.0135.00001</a>	0x2301	8961	CE1: CAN RPDO1	No response	<a href="#">C00593/1</a>	0x8100
<a href="#">4xx.0135.00002</a>	0x2302	8962	CE2: CAN RPDO2	No response	<a href="#">C00593/2</a>	0x8100
<a href="#">4xx.0131.00000</a>	0x1f00	7936	CE4: CAN Bus Off	No response	<a href="#">C00592/2</a>	0x8000
<a href="#">4xx.0140.00013</a>	0x280d	10253	CI01: Module missing/incompatible	Fault	-	0x7000
<a href="#">4xx.0145.00001</a>	0x2d01	11521	dF01: Internal error 01	Fault	-	0x6108
<a href="#">4xx.0145.00002</a>	0x2d02	11522	dF02: Internal error 02	Fault	-	0x6100
<a href="#">4xx.0145.00003</a>	0x2d03	11523	dF03: Internal error 03	Fault	-	0x6100
<a href="#">4xx.0145.00004</a>	0x2d04	11524	dF04: Internal error 04	Fault	-	0x6107
<a href="#">4xx.0145.00005</a>	0x2d05	11525	dF05: Internal error 05	Fault	-	0x6100
<a href="#">4xx.0145.00006</a>	0x2d06	11526	dF06: Internal error 06	Fault	-	0x6100
<a href="#">4xx.0145.00007</a>	0x2d07	11527	dF07: Internal error 07	Fault	-	0x6100
<a href="#">4xx.0145.00008</a>	0x2d08	11528	dF08: Interner error 08	Fault	-	0x6100
<a href="#">4xx.0145.00009</a>	0x2d09	11529	dF09: Internal error 09	Fault	-	0x6100
<a href="#">4xx.0145.00010</a>	0x2d0a	11530	dF10: time-out I/O micro	Fault	-	0x5002
<a href="#">4xx.0145.00011</a>	0x2d0b	11531	dF11: oscillator fail	Fault	-	
<a href="#">4xx.0145.00012</a>	0x2d0c	11532	dF12: math error	Fault	-	
<a href="#">4xx.0145.00013</a>	0x2d0d	11533	dF13: DMA error	Fault	-	
<a href="#">4xx.0400.00105</a>	0x1a69	6761	dH69: Comparison data error	Fault	-	0x5530
<a href="#">4xx.0123.00057</a>	0x1739	5945	Id1: Motor data identification error	Fault	-	0xF000
<a href="#">4xx.0145.00198</a>	0x2dc6	11718	IoC: Comm module changed	Fault	-	0x6100
<a href="#">4xx.0123.00145</a>	0x1791	6033	LP1: Motor phase failure	No response	<a href="#">C00597</a>	0x3000
<a href="#">4xx.0123.00015</a>	0x170f	5903	LU: Intermediate circuit (DC link) undervoltage	Trouble	<a href="#">C00600/1</a>	0x3100

Error number	Error notification		Response (Factory setting)	configurable in	CAN Emergency Error Code	
	32 Bit	16 Bit <sub>hex</sub>				16 Bit <sub>dez</sub>
<a href="#">4xx.0444.33072</a>	0x36B1	14001	nt03: COM fault 3	Fault	-	
<a href="#">4xx.0444.33073</a>	0x36B2	14002	nt04: COM fault 4	Fault	-	
<a href="#">4xx.0444.33074</a>	0x36B3	14003	nt05: COM fault 5	Fault	-	
<a href="#">4xx.0444.33077</a>	0x36B6	14006	nt08: COM fault 8	Fault	-	
<a href="#">4xx.0444.21811</a>	0x3688	13960	nt14: COM fault 14	Fault	<a href="#">C01501/2</a>	
<a href="#">4xx.0444.24848</a>	0x3621	13857	nt15: COM fault 15	Fault	<a href="#">C01501/2</a>	
<a href="#">4xx.0444.24835</a>	0x3664	13924	nt16: COM fault 16	Fault	<a href="#">C01501/2</a>	
<a href="#">4xx.0123.00016</a>	0x1710	5904	oC1: Power unit short circuit	Fault	-	0x2000
<a href="#">4xx.0123.00017</a>	0x1711	5905	oC2: Power unit earth fault	Fault	-	0x2000
<a href="#">4xx.0119.00050</a>	0x1332	4914	oC5: Ixt overload	WarningLocked	<a href="#">C00604</a>	0x2000
<a href="#">4xx.0123.00105</a>	0x1769	5993	oC6: I2xt motor overload	WarningLocked	<a href="#">C00606</a>	0x2000
<a href="#">4xx.0123.00007</a>	0x1707	5895	oC7: Motor excess current	Fault	-	0x2000
<a href="#">4xx.0119.00052</a>	0x1334	4916	oC9: Ixt overload cut-off limit	Fault	-	0x2000
<a href="#">4xx.0123.00071</a>	0x1747	5959	oC11: Current clamp for too long (>1 sec)	Fault	-	0xF000
<a href="#">4xx.0123.00065</a>	0x1741	5953	OC12: I2xt brake resistance overload	Fault	-	0xF000
<a href="#">4xx.0123.00034</a>	0x1722	5922	oC18: Current monitoring overload	No response	<a href="#">C00584/1</a>	0x2000
<a href="#">4xx.0119.00001</a>	0x1301	4865	oH1: Excessive temperature of cooling element	Fault	-	0x4000
<a href="#">4xx.0119.00015</a>	0x130f	4879	oH3: Motor temperature triggered	Fault	<a href="#">C00585</a>	0x4000
<a href="#">4xx.0119.00000</a>	0x1300	4864	oH4: Cooling element temp. > Cut-off temp. -5° C	No response	<a href="#">C00582</a>	0x4000
<a href="#">4xx.0123.00032</a>	0x1720	5920	oS1: Maximum motor speed reached	No response	<a href="#">C00579</a>	0x8400
<a href="#">4xx.0123.00033</a>	0x1721	5921	oS2: Max. motor speed	Fault	-	0x8400
<a href="#">4xx.0123.00093</a>	0x175d	5981	ot2: Speed controller limitation	No response	<a href="#">C00567</a>	0xF000
<a href="#">4xx.0123.00014</a>	0x170e	5902	oU: Intermediate circuit (DC link) undervoltage	Trouble	-	0x3100
<a href="#">4xx.0144.00001</a>	0x2c01	11265	PS01: No memory module	Fault	-	0x6300
<a href="#">4xx.0144.00002</a>	0x2c02	11266	PS02: Par. sentence invalid	Fault	-	0x6300
<a href="#">4xx.0144.00003</a>	0x2c03	11267	PS03: Par. sentence invalid	Fault	-	0x6300
<a href="#">4xx.0144.00004</a>	0x2c04	11268	PS04: Par. sentence incompatible	Fault	-	0x6300
<a href="#">4xx.0144.00031</a>	0x2c1f	11295	PS31: Ident. error	Fault	-	0x6300
<a href="#">4xx.0123.00205</a>	0x17cd	6093	Sd3: Wire break feedback system	Fault	<a href="#">C00586</a>	0x7300
<a href="#">4xx.0123.00200</a>	0x17c8	6088	Sd10: Speed limit feedback system 12	Fault	<a href="#">C00607</a>	0x7300
<a href="#">4xx.0127.00003</a>	0x1b03	6915	Smr1: Internal watchdog or trap module	Fault	-	0x6100
<a href="#">4xx.0127.00004</a>	0x1b04	6916	Smr2: Module offline – no status or PDOs	Fault	-	0x6100
<a href="#">4xx.0127.00005</a>	0x1b05	6917	Smr3: Module timeout – timeout of one or more PDOs	Fault	-	0x6100
<a href="#">4xx.0127.00006</a>	0x1b06	6918	Smr4: SDO access failure	Fault	-	0x6100
<a href="#">4xx.0111.00002</a>	0x0b02	2818	Su02: network phase missing	WarningLocked	<a href="#">C00565</a>	0x3000
<a href="#">4xx.0980.00001</a>	0x6401	25601	US01: User error 1	Fault	<a href="#">C00581/1</a>	0xF000
<a href="#">4xx.0981.00001</a>	0x6501	25857	US02: User error 2	Fault	<a href="#">C00581/2</a>	0xF000



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