



Operating Manual

Control Box mini

Revision history

Revision	Datum	Comment	Chapter
01	02.03.2023	New version	Alle
02	24.03.2023	Addition size 2 control technology	5,10

Service

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Table of Contents

REVISION HISTORY	2
SERVICE	2
1. ABOUT THIS MANUAL	5
1.1 GENERAL	5
1.2 EC – LOW VOLTAGE DIRECTIVE	5
1.3 INTENDED USE	5
1.4 REASONABLY FORESEEABLE MISUSE	5
1.5 WARRANTY AND LIABILITY	6
1.6 GENERAL SAFETY INSTRUCTIONS	6
2. INTENDED USE	6
3. CONTROL BOX MINI STRUCTURE	7
3.1 CONTROL BOX COMPONENTS	7
3.2 TYPENSCHILD	7
3.1 TYP PLATE	8
3.2 ORDERING CODES	8
4. INSTALLATION	9
4.1 INSTALLATION ON THE ROBOT	9
4.2 CABLE CONNECTIONS TOOLDRIVES TO ROBOT	10
5. OPTION HANDHELD OPERATOR	10
5.1 SWITCH TO MANUAL OPERATION	10
5.2 ROBOT OPERATION	10
5.3 MANUAL OPERATION	10
5.4 CONNECTION TO THE CONTROL BOX MINI	11
5.5 DESCRIPTION OF FUNCTIONS	11
6. COMMISSIONING	12
6.1 EXAMPLE: LOAD PROGRAM IN CASE OF SETUP	12
6.2 CHANGE DISPLAY BETWEEN SPEED OR FREQUENCY	13
7. CONNECTIONS OF THE SSC-SD-AGL	13
7.1 CONNECTION AND OPERATION	13
7.2 OVERVIEW CONTROL TERMINALS	14
7.3 OVERVIEW OF ELECTRICAL CONNECTIONS, POWER	15
7.4 I/O- CONNECTIONS TERMINALS / SOCKET, SIGNAL	15
7.5 I/O- CONNECTIONS FUNCTIONS / OPERATING MODES	16
7.6 I/O- CONNECTIONS OUTPUTS	17
7.7 OUTPUTS TO THE PLC/SPS	17
7.8 CIRCUIT FOR CONTROL VIA TERMINALS (ANALOG)	18
7.9 CONTROL PANEL CONTROL CIRCUIT	18
8. ASSEMBLY	19
8.1 CONTROL CABINET ASSEMBLY	19
8.2 ELECTRICAL INSTALLATION	20
8.3 COMMUNICATION INTERFACES	21
9. FURTHER OPERATING OPTIONS OF THE SSC-SD-AGL	21

9.1	PRECONFIGURATION	21
9.2	FLOW CHART.....	22
9.3	SECURITY CIRCUIT	23
9.4	KEY PAD MOTOR POTI	23
9.5	SETTING UP VIA THE USB PORT X21	24
10.	SPECIFICATION SSC-SD-AGL.....	25
10.1	DEVICE DATA.....	25
10.2	DIMENSIONS BG1 (BG2).....	26
10.3	ERROR MESSAGES	26
11.	DIMENSIONS CONTROL BOX MINI.....	30
12.	DIMENSIONS HANDHELD OPERATOR	31

1. About this manual

1.1 General

- ▶ These instructions are intended for all persons who work with the Control Box mini and the Single Servo Controller-Spindle Drive-AGILE (SSC-SD-AGL) and put them into operation.
- ▶ Please find the structure and function description, as well as the hazard and safety regulations of the SSC-SD-AGL in the supplied original operating instructions.
- ▶ Please note that work on electrical devices requires training as an electrician.
- ▶ If supplementary sheets (e.g. for special applications) are attached to these instructions, the information contained therein is valid. Contradictory information in this manual is therefore invalid.

The original of this manual was created in German, all other language versions are translations of this guide.

1.2 EC – Low Voltage Directive

The Control Box mini was built in accordance with directive 2006/95 / EC. The electrical installation must be carried out in accordance with the relevant regulations (e.g. cable cross-sections, protection).

Compliance with the requirements for an entire system is the responsibility of the manufacturer of the complete system.

1.3 Intended use

The Control Box mini

- ▶ Is designed to be used in industrial systems within closed rooms and shall **not be used outdoors**.
- ▶ Is intended for use with robotic applications or manual machines for dry machining only.
- ▶ May only be operated with the SSC-SD-AGL installed upon delivery. Use on other controllers requires the recommendation or approval of **ToolDrives GmbH & Co. KG**, otherwise the warranty will expire.

1.4 Reasonably Foreseeable Misuse

- ▶ Any use that exceeds the maximum permissible values in the technical data, see Chapter 10.1 "Technical data", is considered improper and is therefore prohibited.
- ▶ The Control Box mini must not be operated in potentially explosive areas.
- ▶ For safe operation: the necessary protective devices must be available, properly installed and fully functional. They may not be removed, altered, circumvented or rendered ineffective.
- ▶ In emergency stop situations, power supply failures and/or damage to the electrical equipment, the Control Box mini

- be switched off immediately,
- be secured against uncontrolled restarting

1.5 Warranty and Liability

Warranty and liability claims for personal injury or damage to property are excluded, when

- ▶ Non-observance of the instructions for transport and storage;
- ▶ improper use (misuse);
- ▶ improper or non-executed maintenance or repair work;
- ▶ change of wiring;
- ▶ improper assembly / disassembly or improper operation;
- ▶ Changes or conversions that were carried out without the written approval of **ToolDrives GmbH & Co. KG**.

1.6 General safety instructions



Danger!

Faulty electrical connections or unauthorized electrical components lead to serious injuries and even death.

- Only have all electrical connection work carried out by specialist personnel.
- Replace damaged cables or plugs immediately.

2. Intended Use

With the Control Box mini, the ToolDrives modules are controlled in combination with an external control, e.g. with a robot or a handheld operator. The built-in Single Servo Controller-Spindle Drive-AGILE (SSC-SD-AGL) can be individually configured as a control cabinet controller with sensorless vector control for **synchronous motors** and is adapted for operating the ToolDrives spindle modules of the Basic and Compact Line . For this purpose, special software with a maximum output frequency of 1600 Hz for 400 V devices is installed on the device.

The sensorless control by the SSC-SD-AGL enables the targeted speed control, tailored to the machining requirements, with temperature monitoring for the optimal machining result.

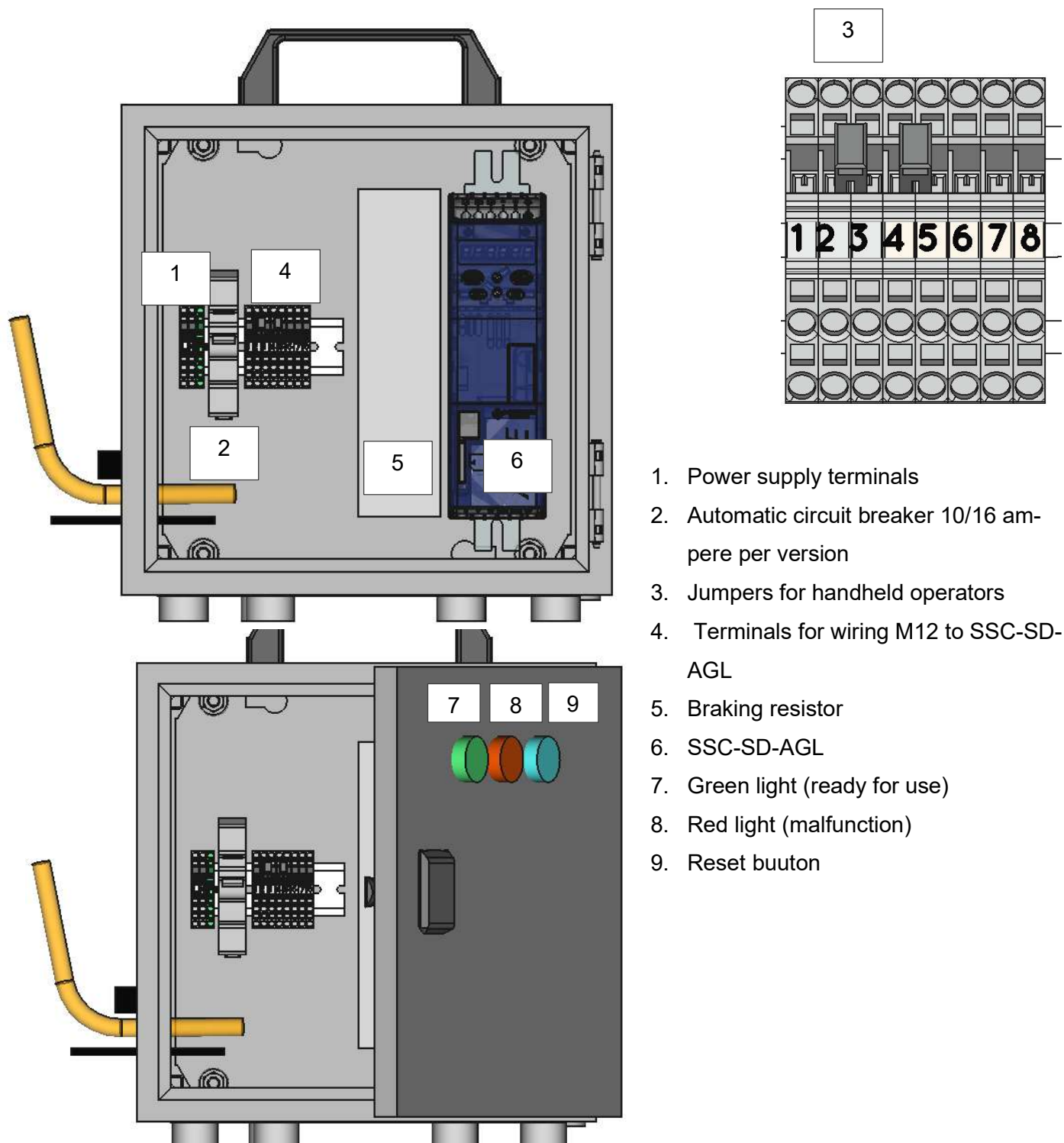
Note: When procuring a replacement device, please ensure that it is equipped with the special software as described.

Control Box mini

3. Control Box mini structure

3.1 Control Box components

The structure of the Control Box mini may vary. The description shows a content structure.



3.1 Typ plate

The type plate is located on the right side of the control box and contains the following information:

ToolDrives Intelligent services for smart processes	
Königlicher Wald 6 33142 Büren	
CE	
MODEL	Spindelsystem CV64/BV32
SERIAL NUMBER	S23XXXXXX
ARTICLE CODE	30000XXX
PRODUCTION DATE	0X/20XX
INPUT	XXXV AC, XXA / 50-60Hz
PROTECTION CLASS	IP40
WEIGHT	X Kg

3.2 Ordering codes:

Control Box assignment					
Control Box mini No.		3000051x	3000081x	3000061x	3000091x
To Servo Controller					
SSC-SD-AGL No.		30000081	30000317	30000529	30000363
Size / device voltage		1 / 230AC	1 / 400AC	2 / 230AC	2 / 400AC

Further technical data can be found in Chapter 10

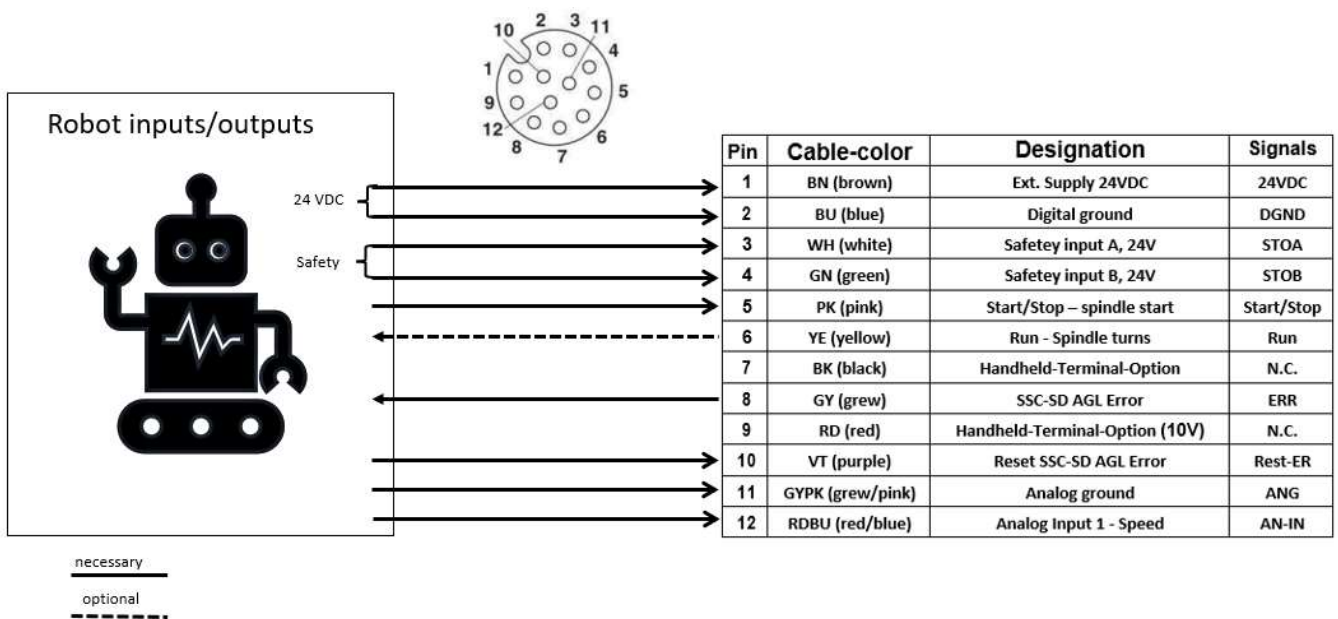
4. Installation

- The following installation instructions are for ToolDrives default settings. For more detailed installation and interface details, please refer to the controller manual.

4.1 Installation on the robot

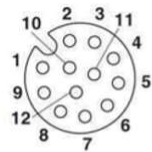
Wire the M12 signal cable to the robot as follows:

Note: If separate instructions for wiring are included, please use them.



Connection diagram within the Control Box mini to the controller

M12-Signal Connector

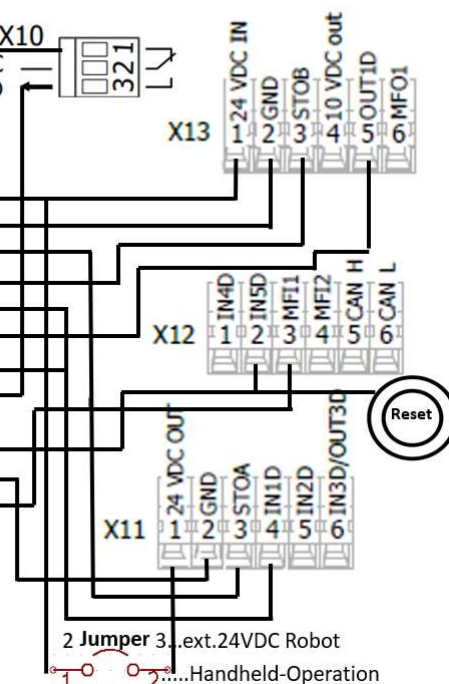


Status-LEDs



SSC-SD-AGL X11-13

Pin	Cable-color	Designation	Signals
1	BN (brown)	Ext. Supply 24VDC	24VDC
2	BU (blue)	Digital ground	DGND
3	WH (white)	Safety input A, 24V	STOA
4	GN (green)	Safety input B, 24V	STOB
5	PK (pink)	Start/Stop – spindle start	Start/Stop
6	YE (yellow)	Run - Spindle turns	Run
7	BK (black)	Handheld-Terminal-Option	N.C.
8	GY (grey)	SSC-SD AGL Error	ERR
9	RD (red)	Handheld-Terminal-Option (10V) ref.	N.C.
10	VT (purple)	Reset SSC-SD AGL Error	Rest-ER
11	GYPK (grey/pink)	Analog ground	ANG
12	RDBU (red/blue)	Analog Input 1 - Speed	AN-IN



4.2 Cable connections ToolDrives to robot

After successful wiring, the M12 cable must be plugged into the ToolDrives box.

The other two cables are already installed in the box upon delivery.



5. Option Handheld Operator



Danger!

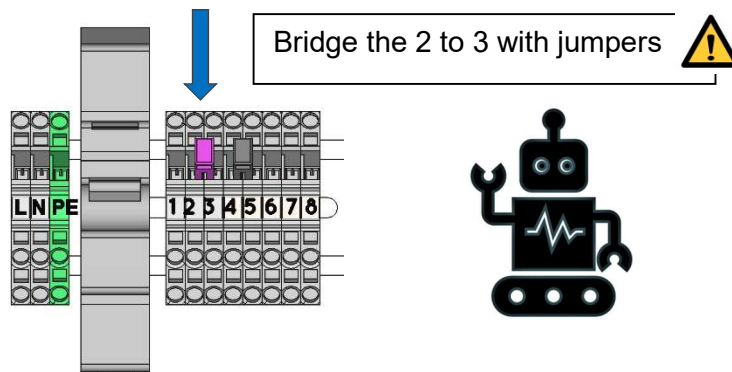
Risk of personal injury and damage to property when reaching into the Control Box mini. source of danger. Reference to an imminent danger that can result in death or serious injury.

5.1 Switch to manual operation

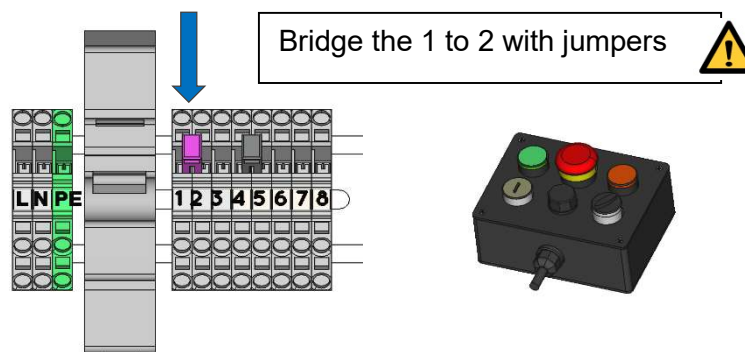
A handheld operator can be used for manual operation. The jumper bridge for the handheld operator must be repositioned. The jumper from 4 to 5 must remain plugged in.

5.2 Robot operation

(default setting)



5.3 Manual operation



Control Box mini

5.4 Connection to the Control Box mini

Connection: The 12-pin cable is plugged into the outside of the Control Box mini whereby both lights light up briefly, the green light does not go out and permanently indicates the status ready for operation. The controller SSC-SD-AGL in the Control Box mini shows "READY", the spindle is ready.

5.5 Description of functions



EMERGENCY STOP: The emergency stop is actuated with a short tap on the red button, the yellow area is then no longer visible. The SSC-SD-AGL controller displays the message "STOP" and the spindle does not rotate. The green light is still active because there is no error. The STO prevents further start. For emergency stop removal, the button is turned slightly clockwise and then snaps to the open position so that the yellow area is visible again.

START spindle: Move the START/STOP switch to the right. The controller SSC-SD-AGL starts up with the minimum speed.

Set the desired speed with SPEED. The speed appears on the display of the controller.

STOP spindle: Move the START/STOP switch to the left. The controller SSC-SD-AGL briefly displays speed 0 and then jumps to "READY".

RESET spindle: If the red light is active and "ERROR" appears on the controller SSC-SD-AGL, the RESET switch is pressed once to acknowledge the error (wiping effect). The controller SSC-SD-AGL shows "READY". Then the START/STOP switch must first be put back in the STOP position on the left in order to start again with START.

6. Comissioning

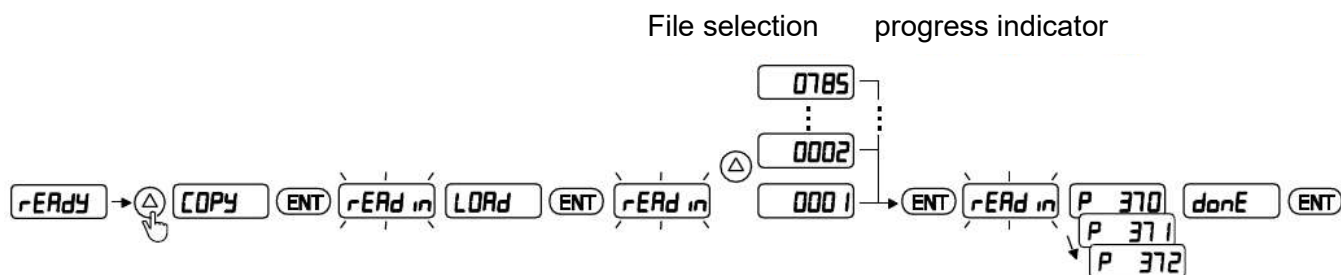
The SSC-SD-AGL controller is already preset customer-specifically. This means that the start-up curve, the control behavior and the speed range have been optimized for future processing before delivery.

After successful installation, the controller SSC-SD-AGL is immediately ready for operation.

In cases where your own program supplements or those made by ToolDrives are provided or the SSC-SD-AGL reports SETUP when switched on, the preset program can be loaded from the SD card.



6.1 Example: Load program in case of SETUP



To do this, insert the memory card at the bottom left and select on the control panel.

Use the arrow keys to menu "Copy", then ENT for the menu item "Load".

Confirm with "ENT". Use the arrow keys to select the file, e.g. 6401, which is on the SD card. This file is to be transferred to the single servo controller.

Confirm with "ENT". The parameter values of the selected file will be transferred to the single servo controller, this takes approx. 2 seconds.

A progress bar shows the parameter numbers and their values currently being transferred to the single servo controller.

DONE indicates the status Done and READY or STOP appears.

The SD card can be removed.



Control Box mini

6.2 Change display between speed or frequency

The factory setting on the control panel is the actual frequency, parameter 241.

To change to Actual Speed (Parameter 240), select the Actual menu. Confirm with "ENT".

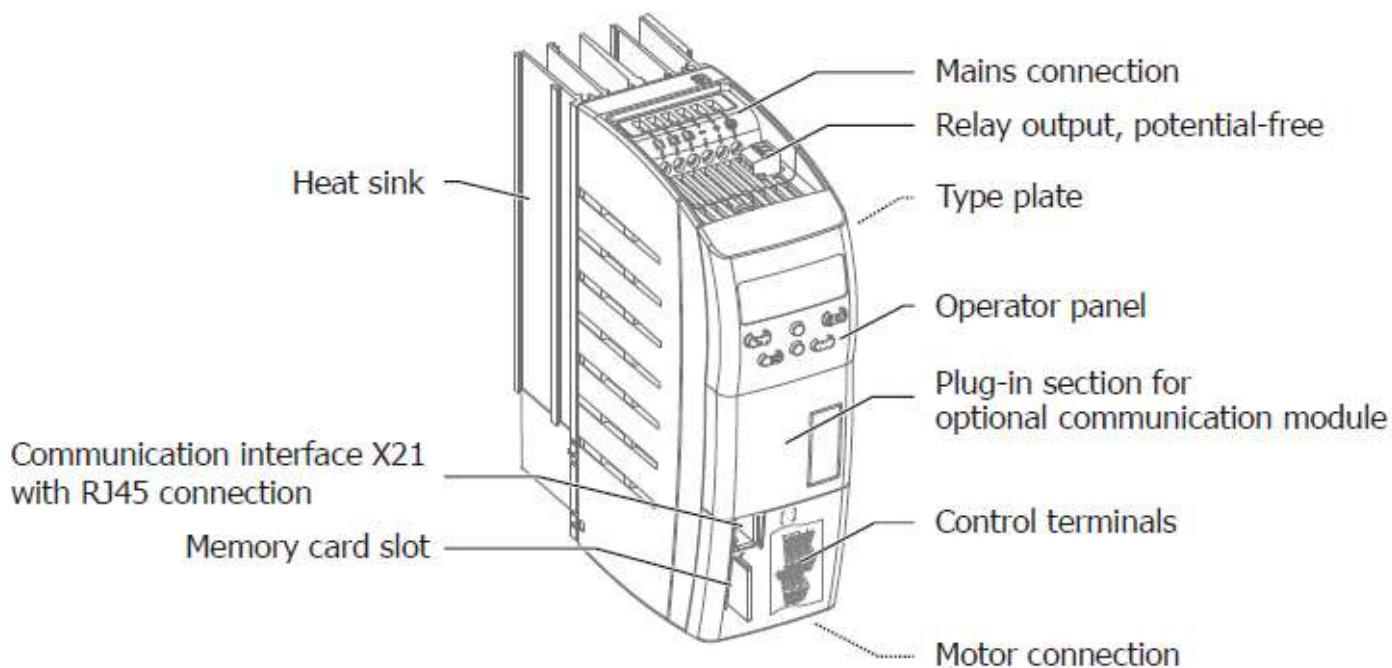
Use the arrow keys to select the parameter number (240). Confirm with "ENT".

The value is displayed. Press "ENT" for 1 second until the display flashes briefly.

The value is then permanently in the display.

7. Connections of the SSC-SD-AGL

7.1 Connection and operation

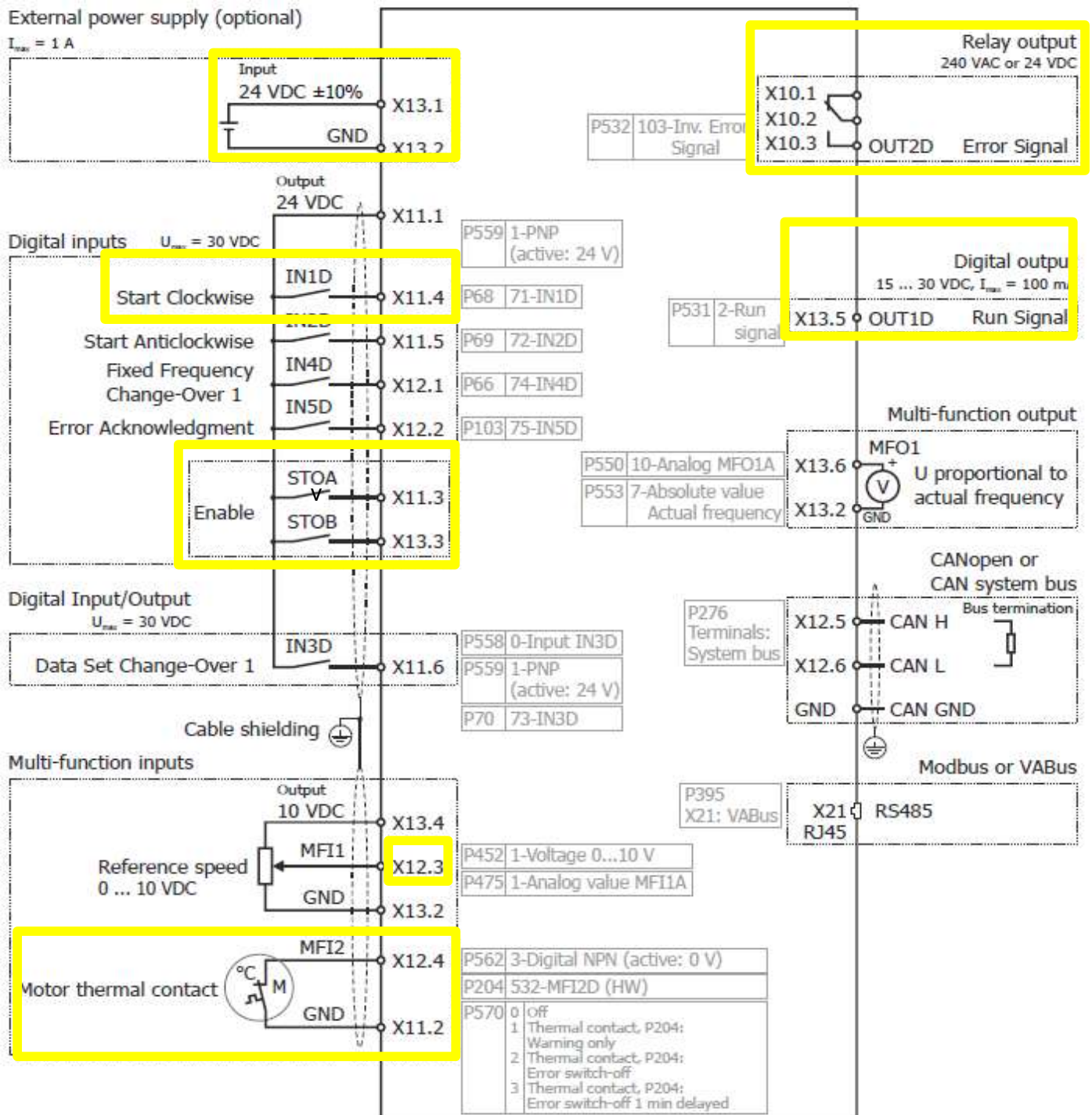


Number of control terminals

4 digital inputs	1 input for external voltage supply DC 24 V
2 digital inputs for enable	1 reference voltage output DC 10 V
1 digital input/output	1 voltage output DC 24 V
2 multifunction inputs: digital/analog input	1 relay output, potential-free
1 digital output	Control terminals for system bus or protocol CANopen®
1 multifunction output: digital/analog/frequency	

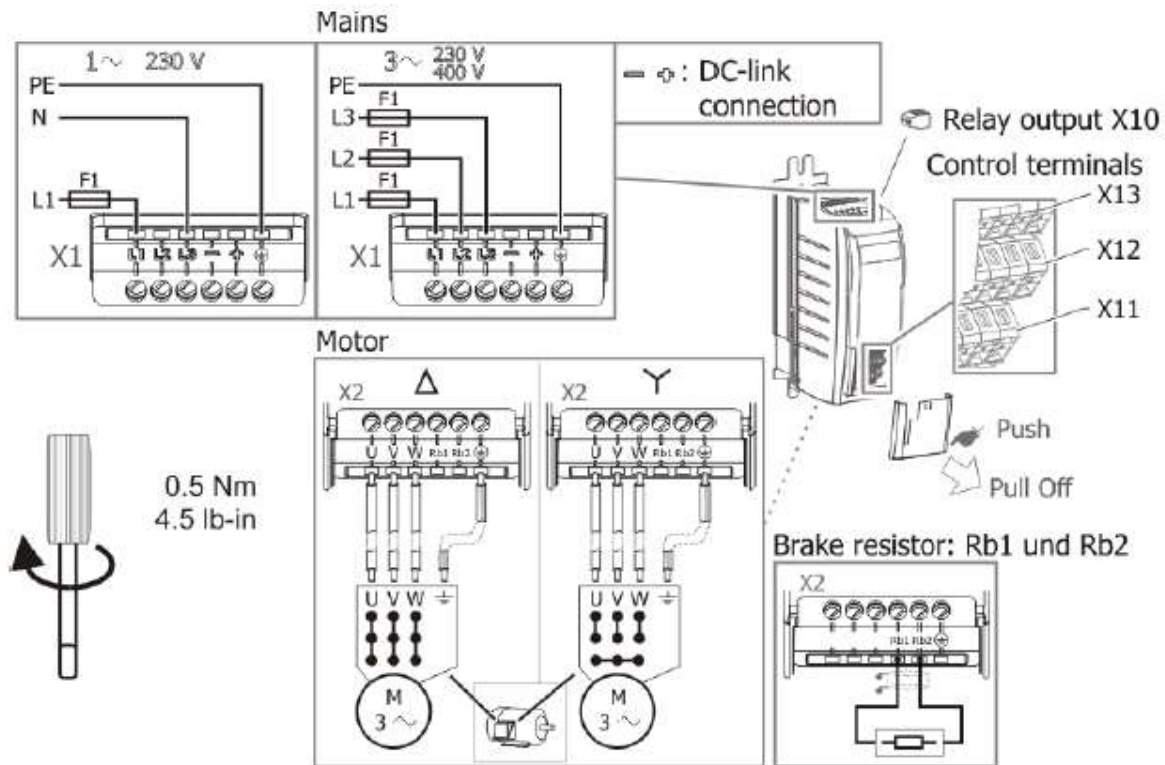
7.2 Overview control terminals

See frame for customer-specific connections

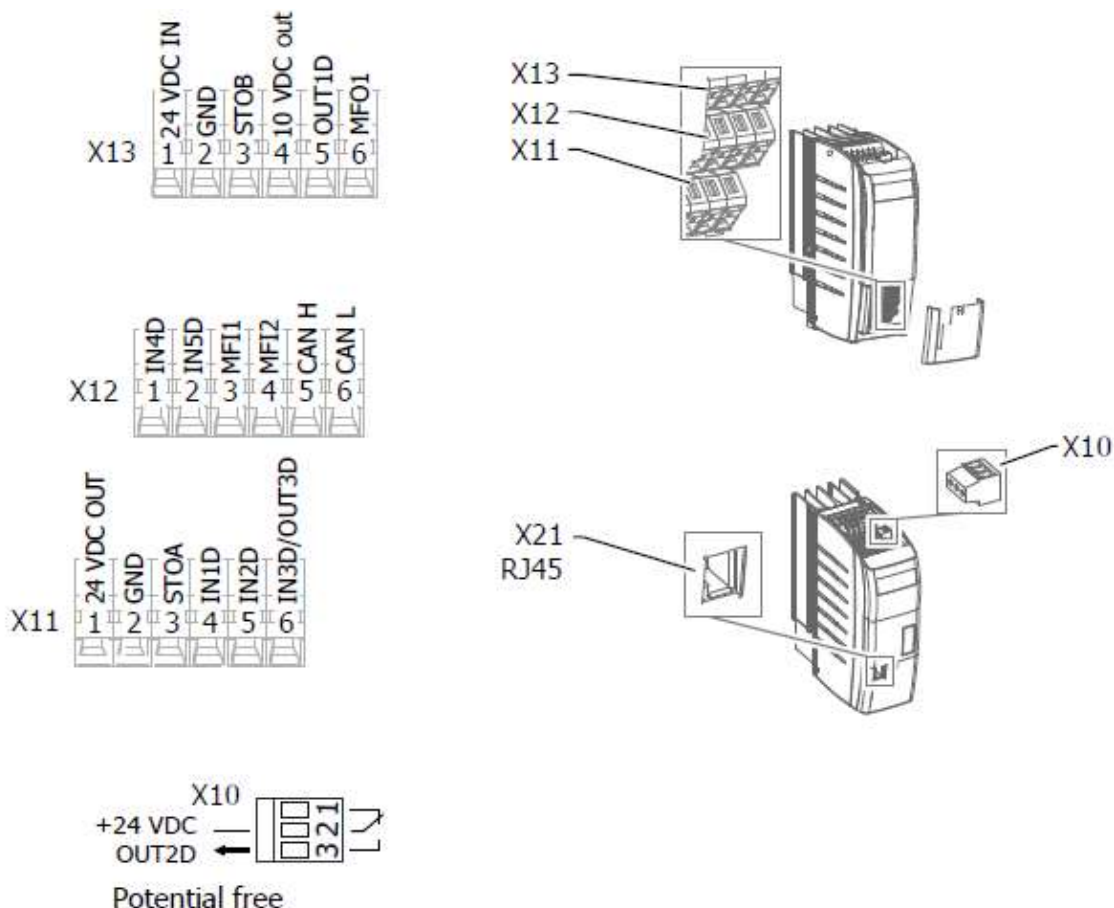


Control Box mini

7.3 Overview of electrical connections, power



7.4 I/O- Connections terminals / socket, signal



7.5 I/O- Connections functions / operating modes

Digital inputs:

Terminal		Signal for functions		Function
X11.4	IN1D	71	IN1D	<i>Start Clockwise</i> 68
X11.5	IN2D	72	IN2D	<i>Start Anticlockwise</i> 69
X12.1	IN4D	74	IN4D	<i>Fixed Frequency Change-Over 1</i> 66
X12.2	IN5D	75	IN5D	<i>Error Acknowledgment</i> 103
X11.3	STOA	70	Enable (fixed assignment)	Enable
X13.3	STOB	70	Enable (fixed assignment)	

Changeover of evaluation at digital inputs:

Terminal		Operation modes	
X11.4	IN1D	<i>Digital inputs</i> <i>PNP/NPN</i> 559	0 NPN (active: 0 V)
X11.5	IN2D		
X12.1	IN4D		1 PNP (active: 24 V)
X12.2	IN5D		

Multifunction inputs (analog input/digital input):

Terminal		Operation modes			Function
X12.3	Analog: MFI1A	1 voltage 0...10 V	<i>Operation Mode</i> <i>MFI1</i> 452	1 voltage 0 ... 10V	<i>Reference Frequency Source 1</i> 475 , <i>Reference Percentage Source 1</i> 476
	Digital: MFI1D	2 current 0...20 mA			
X12.4	Analog: MFI2A	3 digital NPN (active: 0V)	<i>Operation Mode</i> <i>MFI2</i> 562	3 digital PNP (active: 0V)	<i>Thermo contact for P570</i> 204 , <i>Set Operation Mode Motor Temp.</i> 570 to 1, 2 or 3
		4 digital PNP (active: 24V)			
	Digital: MFI2D	5 current 4...20 mA 6 voltage, characteristic 7 current, characteristic			

Digital output:

Terminal		Function	
X13.5	OUT1D	<i>Operation mode OUT1D (X13.5)</i> 531	2 Run Signal

Control Box mini

7.6 I/O- Connections outputs

Multifunction output (analog output/digital output):

Terminal		Operation modes			Function
X13.6	MFO1D	Operation Mode MFO1 (X13.6) 550	1	Digital MFO1D	Digital: Source MFO1D 554
	MFO1A		10	Analog (PWM) MFO1A	Analog: Source MFO1A 553
	MFO1F		20	Repetition frequency (RF) MFO1F	RF/PT: Output Value MFO1F 555
	MFO1F		30	Pulse Train (PT) MFO1F	PT: Scaling Frequency 557
			4		Setting Frequency
			7		Abs. value of actual frequency
			1		Actual Frequency

Relay output:

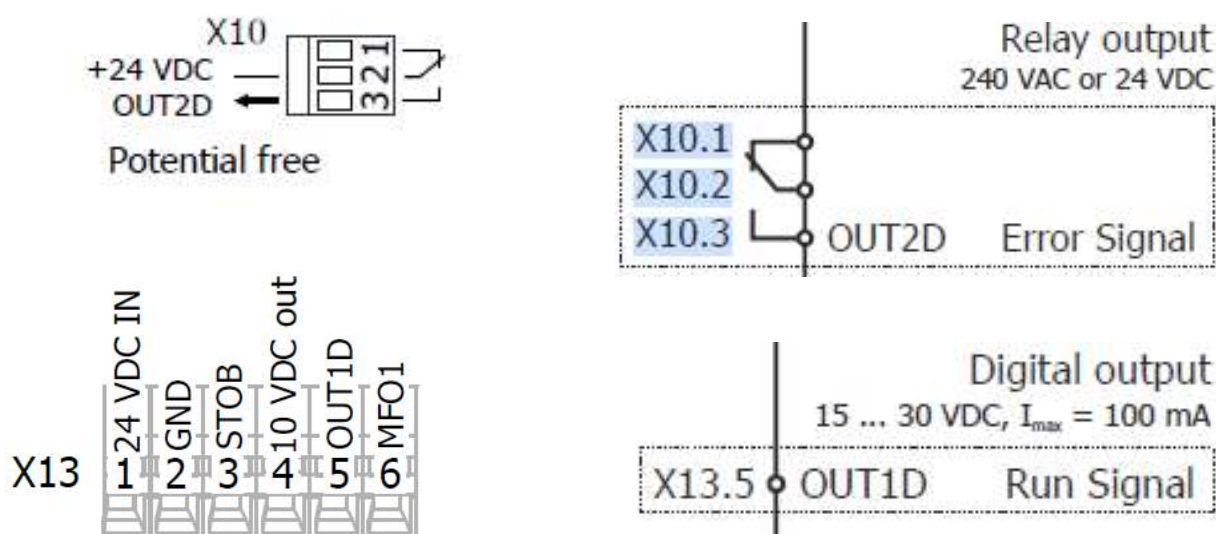
Terminal	Function
X10 OUT2D	Operation Mode OUT2D (X10/Relay) 532 103 Inv. error signal

Digital input/output:

Terminal		Operation modes				Function		
X11.6	IN3D	<i>Operation Mode Terminal X11.6 558</i>	0	Input IN3D	<i>Digital inputs PNP/NPN 559</i>	0	NPN (active: 0 V)	<i>Data Set Change-Over 1 70</i>
						1	PNP (active: 24 V)	
	OUT3D		1	Output OUT3D	<i>Op.Mode OUT3D (X11.6) 533</i>		103	Inv. error signal

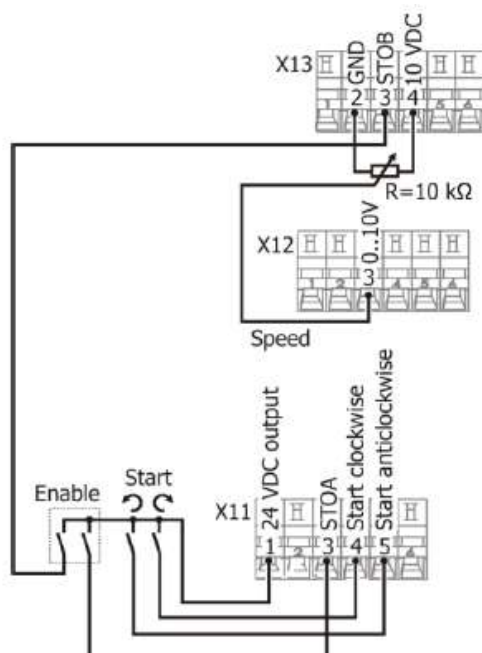
IN: input, OUT: output, MFI: Multi-function input MFO: Multi-function output, D: digital, A: analog, F: frequency, PT: pulse train, RF: Repetition frequency, Op. Mode: Operation Mode

7.7 Outputs to the PLC/SPS



Switches when speed is reached!
e.g. at 9,000 revolutions

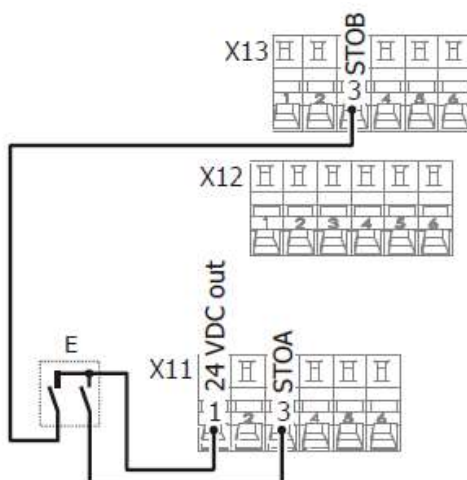
7.8 Circuit for control via terminals (analog)



Ø 1.5 mm²
max. 2.5 mm²

Start cw: Start clockwise operation
Start ccw: Start anticlockwise operation
VDC out: Voltage output
n: Speed
E: Enable

7.9 Control panel control circuit

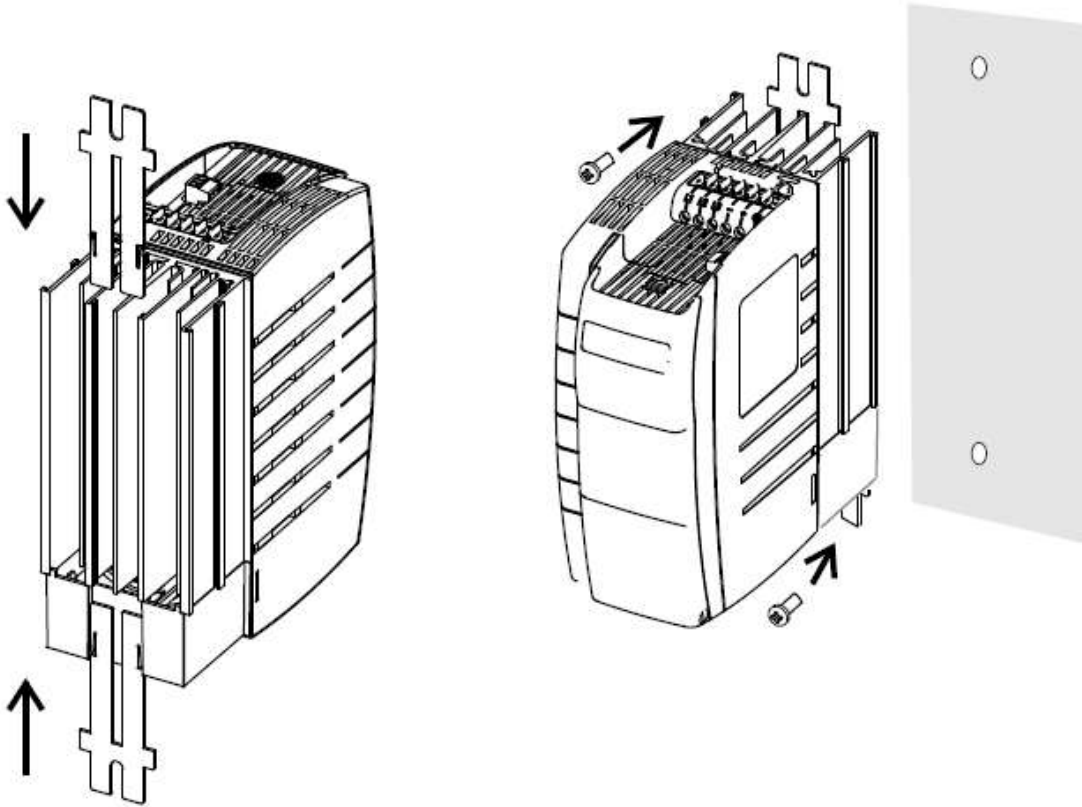


Ø 1.5 mm²
max. 2.5 mm²

VDC out: Voltage output
E: Enable

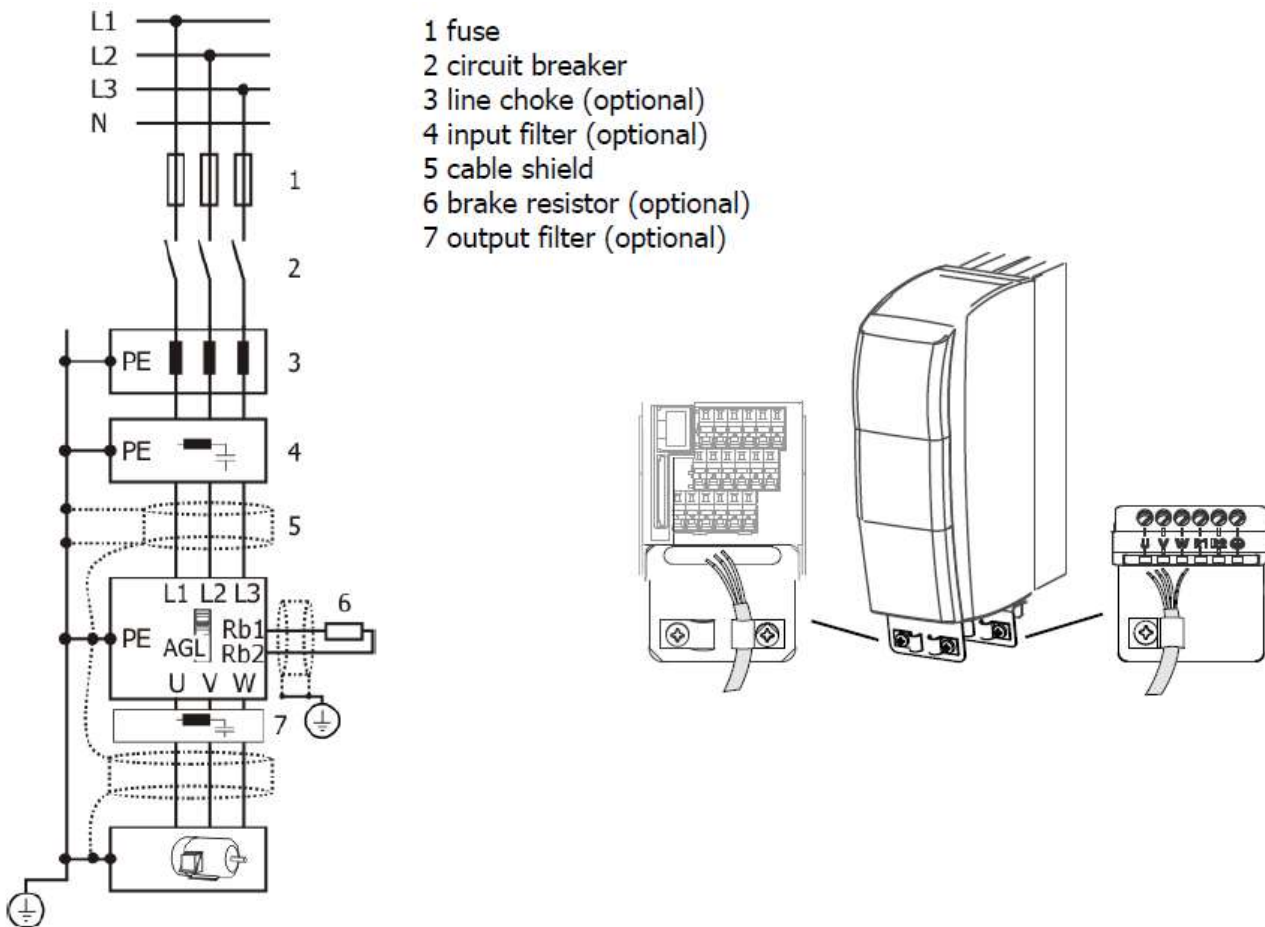
8. Assembly

8.1 Control cabinet assembly

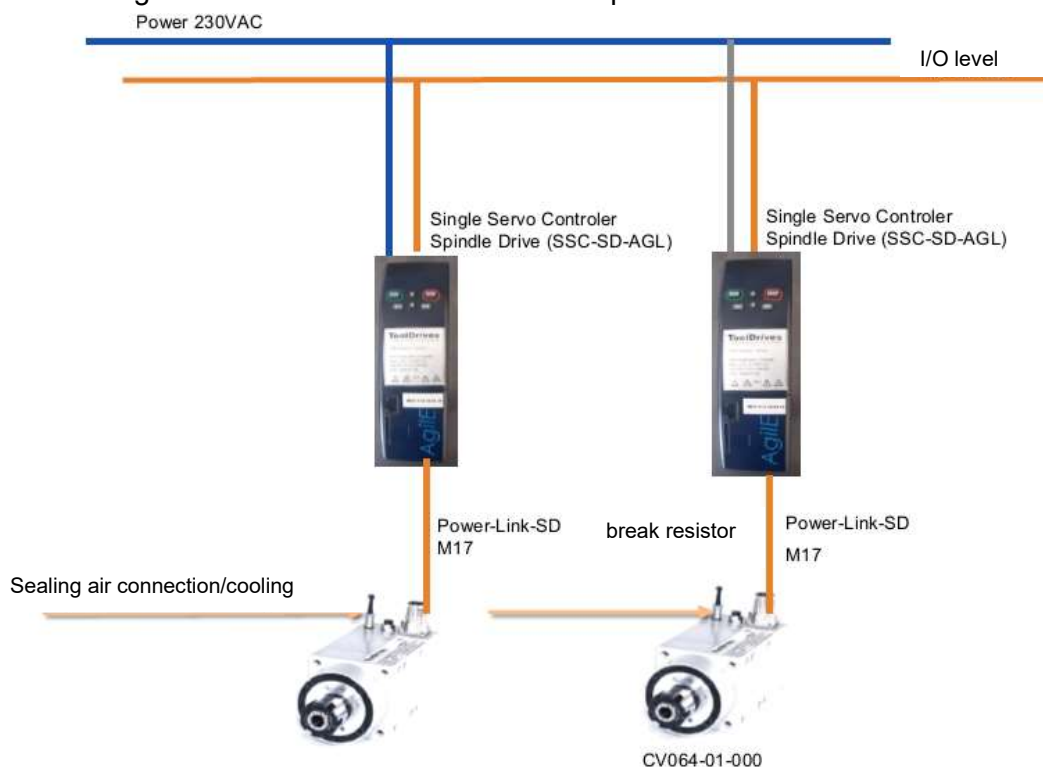


Use screws M6.

8.2 Electrical installation



Example block diagram for 2 SSC-SD-AGL with 2 Compact Modules

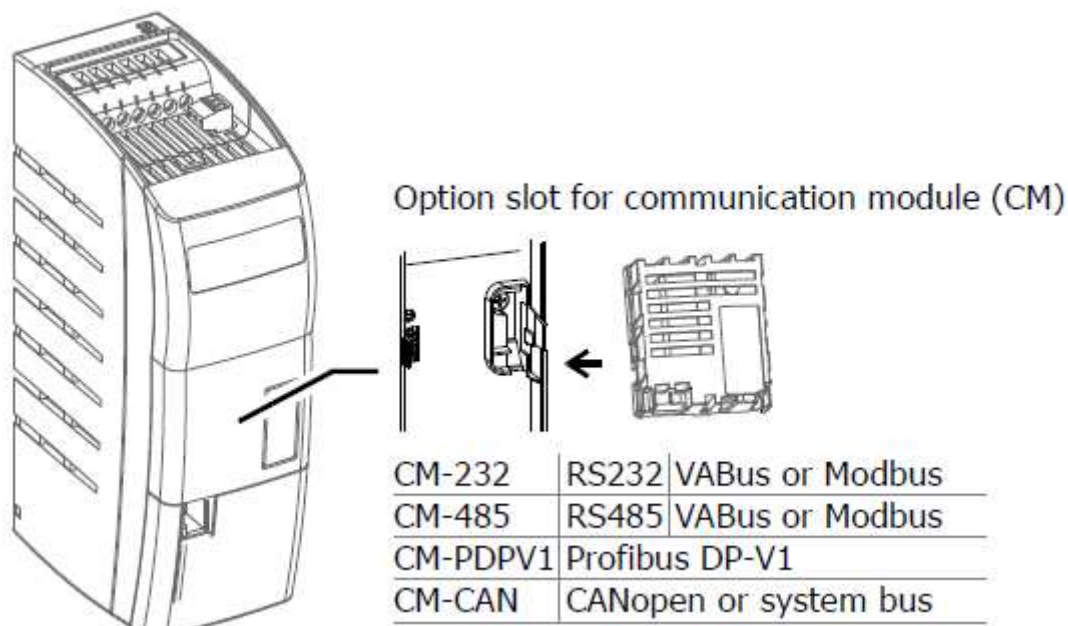


Control Box mini

8.3 Communication Interfaces

When using communication interfaces, the respective modules are plugged in and prepared for commissioning.

Please request detailed instructions for the respective module from info@tooldrives.de or directly from the manufacturer.



9. Further operating options of the SSC-SD-AGL

9.1 Preconfiguration

When specifying the target values or parameters when ordering, ToolDrives will supply the SSC-SD-AGL pre-configured to customer-specific parameters

In any case, please check the direction of rotation of the motor before you start machining on the workpiece.

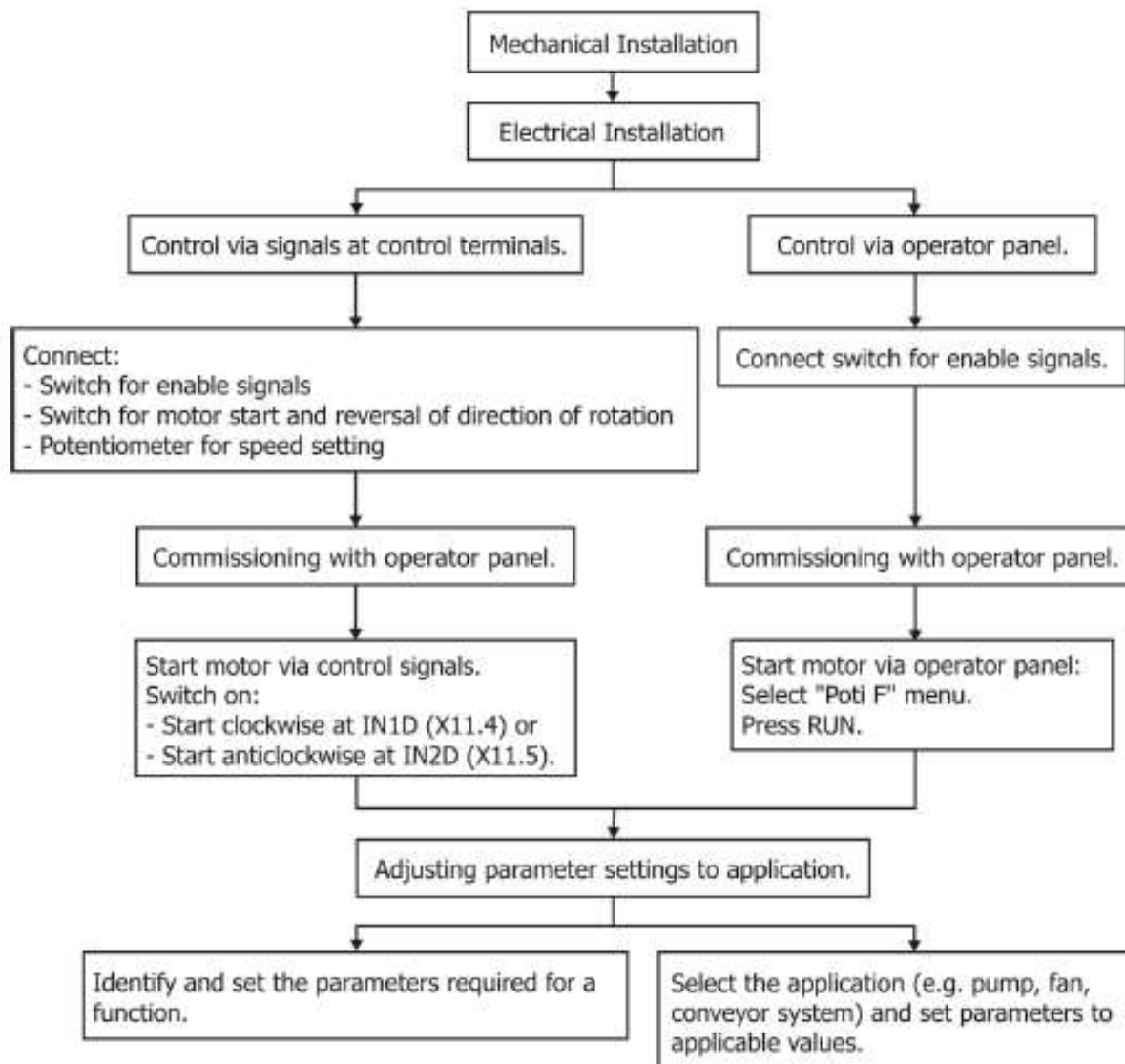
9.2 Flow chart

WARNING



The frequency inverter may only be commissioned by qualified staff.
Prior to commissioning, all covers must be fixed, all standard equipment components of the frequency inverter must be installed, and the terminals must be checked.

Procedure:



Control Box mini

9.3 Security circuit

WARNING



The frequency inverter may only be commissioned by qualified staff.
Prior to commissioning, all covers must be fixed, all standard equipment components of the frequency inverter must be installed, and the terminals must be checked.

STO:

Please note that the safety circuit is integrated into the overall machine. Without safety circuit, no function of the motor is possible. See also Chapter 7 of these instructions Control connections STO A+B functions.

The picture shows a wired controller including STO.

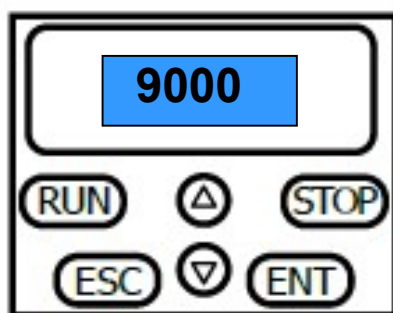


9.4 Key Pad Motor Poti

The Key Pad Motor Poti on the SSC-SD-AGL allows you to quickly change the speed parameters or the direction of rotation.

For operating the keypad on the SSC-SD-AGL, also refer to Chapter 7.5.3 Motor potentiometer in the original operating instructions.

For further help contact us at info@tooldrives.de.



The actual speed is displayed in the window

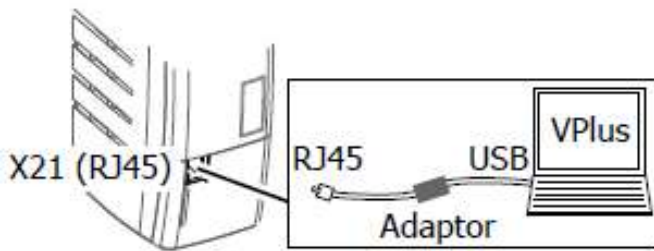
(RUN)	Start motor.	⬆	Increase speed in motor potentiometer function.
(STOP)	Stop motor. If fault is present: Fault reset	⬆	Switch to the higher parameter number. Increase parameter values.
(ESC)	Cancel. Back to previous menu.	⬇	Reduce speed in motor potentiometer function.
(ENT)	Confirm settings.	⬇	Switch to the lower parameter number. Reduce parameter values.
(RUN) +	Reverse direction of rotation in motor potentiometer function.		

9.5 Setting up via the USB port X21

In addition to operation via the keyboard on the SSC, there is also the option of using the VPlus PC program to carry out parameterization via the USB port X21.

Please note that a special adapter is required for this.

Adapter order information: **30000119** USB service adapter.



First, download the VPlus 8x installation instructions from the following link:

https://www.bonfiglioli.com/international/usefulDocuments/VPlus8_08_7.zip

The software is available from the following download link:

https://www.bonfiglioli.com/international/VPlus808_6.zip

All other functions are described in the original instructions. We are glad to help you with our experience and advise you on the settings.

Just contact us at info@tooldrives.de.

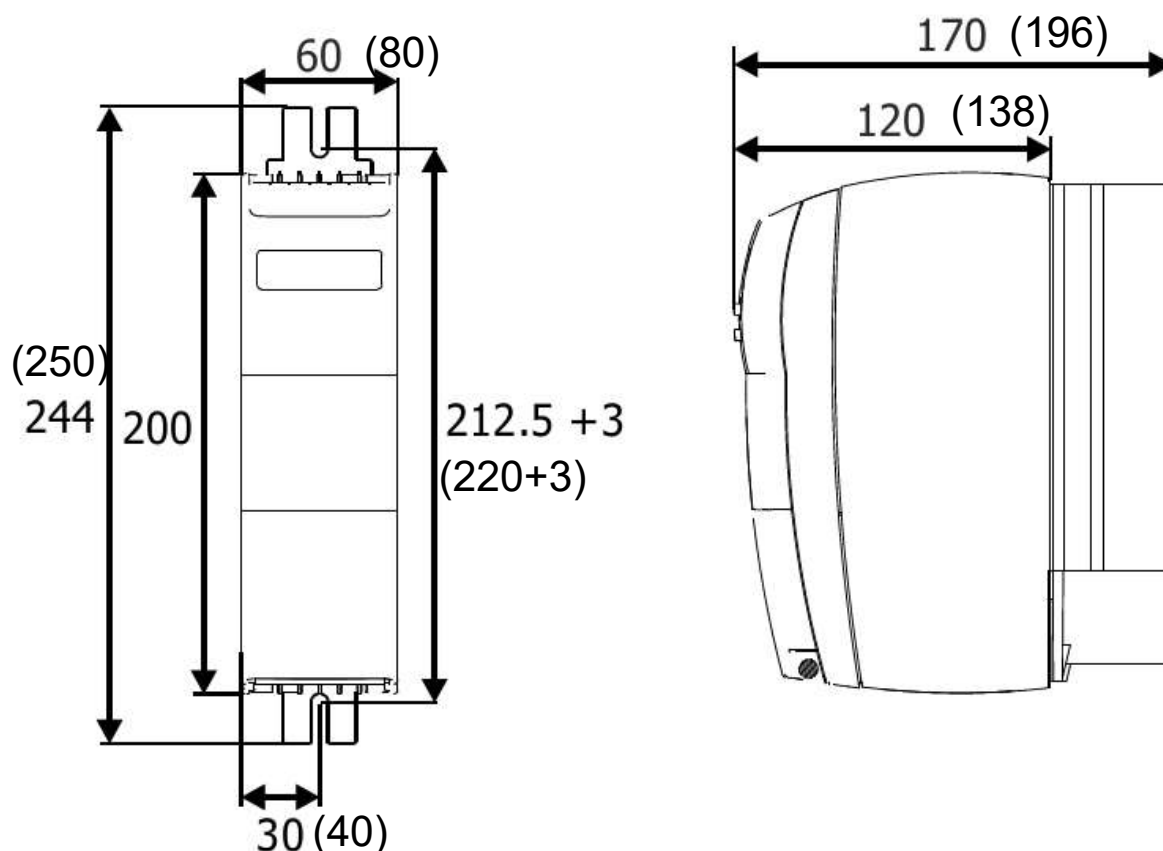
Control Box mini
10. Specification SSC-SD-AGL
10.1 Device Data

SSC-SD-AGL			30000081	30000317	30000529	30000363
Allocation Control Box mini No.			300051x	3000081x	3000061x	3000091x
Size			1	1	2	2
Device-Voltage		V	230AC	400AC	230AC	400AC
Main connections (Phasen)			1ph	3ph	1ph	3ph
Recommended motor shaft power	P	kW	1,1	2,2	2,2	4
Output current	I	A	5	5,5	9	9,5
Long term overload current (60s)	I	A	7,5	8,2	13,5	14,2
Short term overload current (1s)	I	A	10	11	18	19
switching frequency	f	kHz	2, 4, 8, 16			
Brake resistor output						
Minimum braking resistance	R	Ω	37	220	18,5	106
Recommended braking resistor (770 V)	R	Ω	70	220	41	106
Eingang Netzseite						
Nominal current	I	A	11,2	5,8	19,5	7,8
Maximum rated current¹⁾	I	A	15,5	7,3	28	12,8
Fuses	I	A	16	10	25	10
Mechanics						
Dimensions ²⁾	HxWxD	mm	200x60x170		200x80x196	
Weight (ca.)	m	Kg	1,1		1,5	
Degree of protection			IP20 (EN60529)		IP20 (EN60529)	
Mains and motor connection terminals	A	mm ²	0,2...4 (flexible with sleeve) 0,2...6 (starr)		0,2...4 (flexible with sleeve) 0,2...6 (starr)	
Connection terminals relay output	A	mm ²	0,1...1,5		0,1...1,5	
Assembly			vertical		vertical	
Interior fan			no		no	
Heatsink fan			yes		yes	
Environmental conditions						
Power loss (2 kHz switching frequency)	P	W	122	122	167	167

1) According DIN EN 61800-5-1

2) Dimensions of the basic device without accessories

10.2 Dimensions BG1 (BG2)



10.3 Error Messages

The following error messages with their meanings are listed in this manual for quick error analysis. Further error messages and details on troubleshooting can also be found in the original instructions.

259 Actual Error

Parameter *Actual Error 259* shows the error code.

Error code

Code		Meaning
Error messages		
F00	00	No fault has occurred.
Overload		
F01	00	Frequency inverter overloaded, check load behaviour. Reduce ramps and speed.
	01	Frequency inverter overloaded in low output frequency range.
	02	Frequency inverter overloaded (60 s), check load behaviour.
	03	Short-term overload (1 s), check motor and application parameters.
Heat Sink		
F02	00	Heat sink temperature too high, check cooling and ventilator.
	01	Heat sink temperature too cold, check allowed ambient temperature.
Inside		
F03	00	Inside temperature too high, check cooling and ventilator.
	01	Inside temperature too cold, check allowed ambient temperature.
	03	Capacitor temperature too high, check cooling and ventilator.

Control Box mini

Code		Meaning
Motor connection		
F04	00	Motor temperature too high or sensor defective, check connection at terminal X12.4.
	01	Motor circuit breaker tripped, check drive.
	02	V-belt monitoring reports no load on the drive.
	03	Phase failure, check motor and wiring.
Output current		
F05	00	Overloaded, check load situation and ramps.
	06	Motor phase current too high, check motor and wiring.
	07	Message from phase monitoring, check motor and wiring.
	08	Message from phase monitoring, check motor and wiring.
	09	Message from phase monitoring, check motor and wiring.
	11	Motor still rotates. The motor is still excited and rotates and – drive start command applies and the flying start function is deactivated or – a device test is tried to start
Internal Error.		
F06	xx	Internal Error. Please contact your Bonfiglioli office.
DC-link voltage		
F07	00	DC link voltage too high, check deceleration ramps and connected brake resistor.
	01	DC link voltage too small, check mains voltage.
	02	Power failure, check mains voltage and circuit.
	03	Phase failure mains, check mains fuses and circuit.
	04	<i>Reference DC-Link Limitation 680</i> too small, check mains voltage.
	05	Overvoltage brake chopper. Refer to chapter 13.3 "Troubleshooting" (Shut-down).
	06	Overvoltage motor chopper. Refer to chapter 13.3 "Troubleshooting" (Shut-down).
Electronics voltage		
F08	01	Electronics voltage DC 24 V too low, check control terminal.
	04	Electronics voltage too high, check wiring of control terminals.
	05	Fault in the the A/D converter. Remove all external connections (signal terminals etc.) and check if the fault remains
	06	Voltage supply for optional communication module too low. Communication via bus system faulty. Disconnect bus system wiring and acknowledge the error message. Check connections and wiring of the bus system. Replace the communication module if the error occurs, even if the bus system is disconnected. If the communication module is replaced and the error occurs, contact the service of BONFIGLIOLI.
Brake chopper		
F10	10	Brake chopper overcurrent. Also refer to chapter 7.10.4 "Brake chopper and brake resist".
Output frequency		
F11	00	Output frequency too high, check control signals and settings.
	01	Maximum frequency achieved by control. Check deceleration ramps and connected brake resistor.

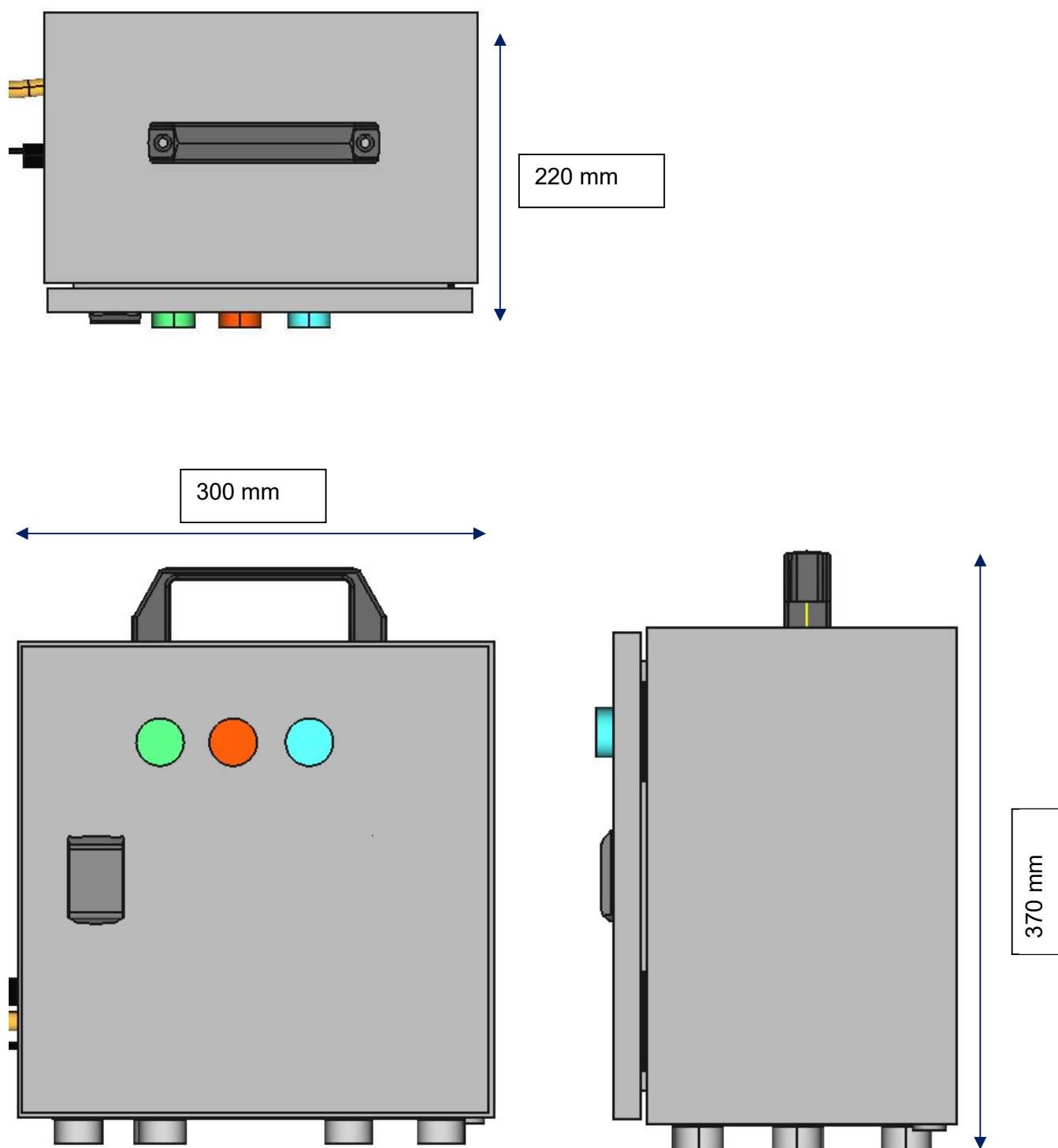
Code		Meaning
Enable		
F12	01	The STO Diagnosis software recognized a fault in the STO switch-off paths. Check wiring, connect screens. Check the EMC environment. If the fault remains, exchange the device.
	02	Fault of the STO diagnosis function. If the device remains after a new start up, exchange the device.
	04	Internal Fault. Contact the BONFILGLIOLI customer service.
	05	Enable signals STOA and STOB were not actuated at the same time, but with a high time offset. Check the circuitry of the enable input signals.
	06	The voltage of the STO signals is too low. Check the dimensioning of the DC 24 V supply that supplies the STO inputs.
	07	The STO diagnosis software was not able to detect a clear defined STO level. Check the wiring and STO triggering device. Ensure, that clear signal levels can be received (DC 0 V / DC 24 V). If the fault persists, check if the fault persists with another drive.
	08	The STO diagnosis software has recognized that the STO signal levels of the device don't correlate to each other at different measurement points. Check the wiring, put the screens on correctly. If the fault persists, exchange the device.
	09	The STO diagnosis software recognized that an STO signal is too high inside the device. Check the wiring; apply a clear defined signal level (0V / 24 V). If the fault persists, exchange the device.
Motor connection		
F13	00	Earth fault on output, check motor and wiring.
	10	Minimum current monitoring, check motor and wiring.
Control connection		
F14	01	Reference value on multifunctional input 1 faulty, check signal.
	02	Reference value on multifunctional input 2 faulty, check signal.
	07	Overcurrent on multifunctional input 1, check signal.
	08	Overcurrent on multifunctional input 2, check signal.
	09	No actual value for technology controller. Missing actual value was reported according to setting for <i>Operation mode actual value failure 440</i> .
	50	Temperature measurement with KTY measuring resistor defective. Check signal and measuring resistor.
	54	External error; drive responded according to parameter setting for <i>Operation mode ext. error 535</i> . Error was triggered via the logic signal or digital input signal assigned to parameter <i>External error 183</i> .
Modbus and VABus		
F20	10	Communication error according to parameter <i>X21: VABus Watchdog-Timer 1502</i> .
	11	Communication error according to parameter <i>CM: VABus Watchdog Timer 413</i> .

Control Box mini

Code		Meaning
Profibus		
F20	6x	Profibus Fault. Please check Profibus manual.
Internal Error.		
F20	7	Internal Error. Please contact your Bonfiglioli office.
System bus		
F21	nn	Fault message on system bus master when a fault at system bus slave occurs, nn = node-ID of slave (hex)
F22	00	Communication fault, system bus, timeout sync-telegram
	01	Communication fault, system bus, timeout RxPDO1
	02	Communication fault, system bus, timeout RxPDO2
	03	Communication fault, system bus, timeout RxPDO3
	10	Communication fault, system bus, bus-off
CANopen		
F23	nn	Heartbeat error, nn = triggering node.
CM module recognition		
F24	00	Unknown CM module. Check compatibility firmware and CM module.
Industrial Ethernet		
F27	nn	Industrial Ethernet Fault. Please check manual of used Ethernet module.
EtherCAT		
F28	nn	EtherCAT fault.
User Error		
F30	3n	User triggered Error of Internal PLC. Please check the application manual VPLC.
Optional components		
F0B	13	Assembly of communication module was done without disconnection of mains supply. Disconnect mains supply.
Internal monitoring		
F0C	40	After 6 warm starts in less than 3 minutes this fault is triggered, due to the expectation that a faulty programming of the PLC or the function table is at hand. Additionally the PLC / Function table is stopped (P. 1399 = 0 only in RAM).

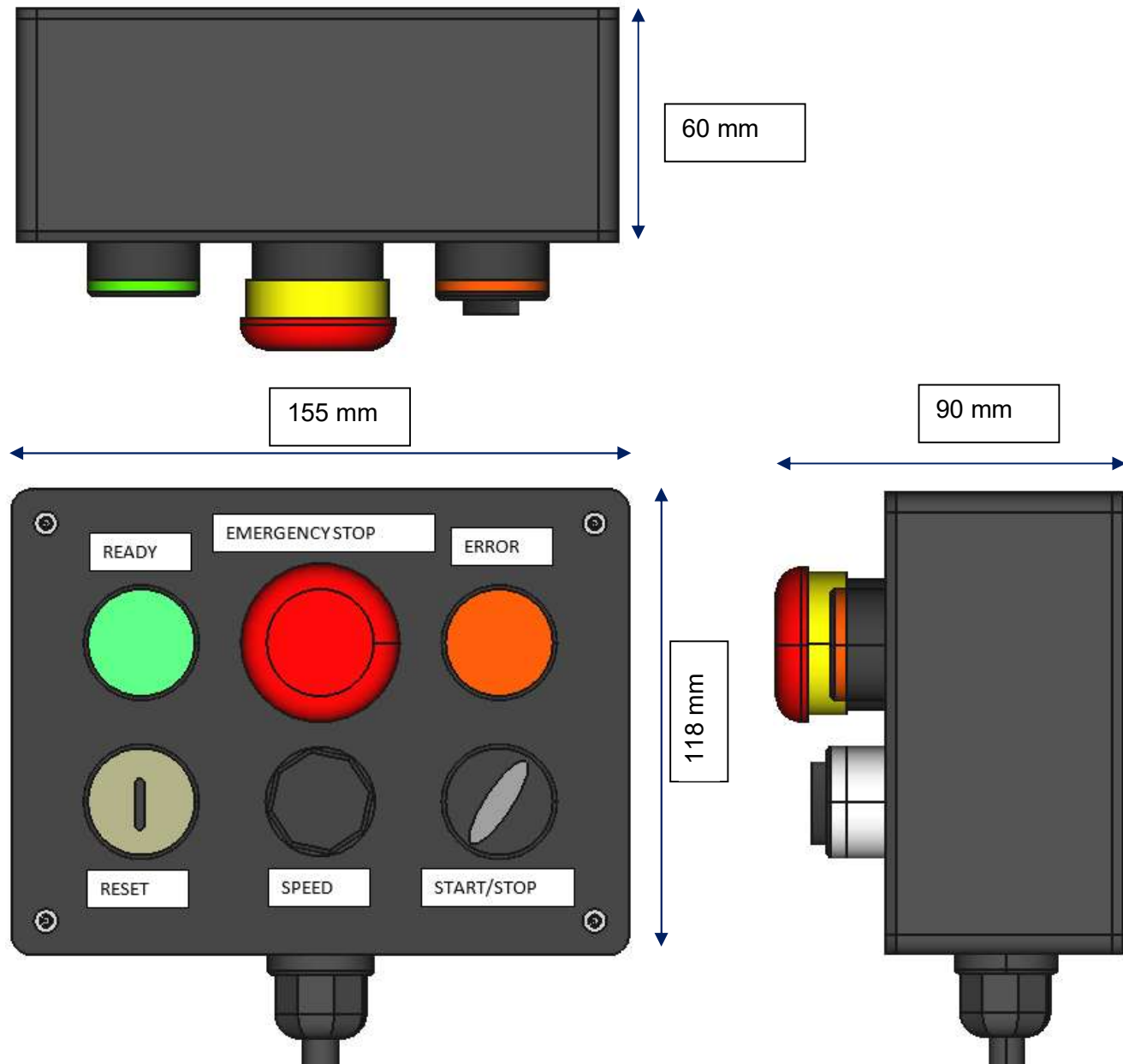
See also chapter 13 in the original manual

11. Dimensions Control Box mini



Control Box mini

12. Dimensions Handheld Operator



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