



SYSTEM 200 BTA20

Functional Description

DOK-MTC200-BTA20.2***-FKB2-EN-P



- Title** SYSTEM200 BTA20
- Type of document** Functional Description
- Documentation type** DOK-MTC200-BTA20.2***-FKB2-EN-P
- Internal filing**
- Drawing no.: 109-1057-4101-02/EN
- Purpose of the document**
- Description of the BTA20's hardware functions
 - BTA20 technical data
 - Mounting and connection

Configuration control

Documentation identification of previous releases	Release date	Comment
109-1057-4101-01	02.98	New issue
109-1057-4101-02	07.98	

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1 System Presentation

1.1 Brief Description

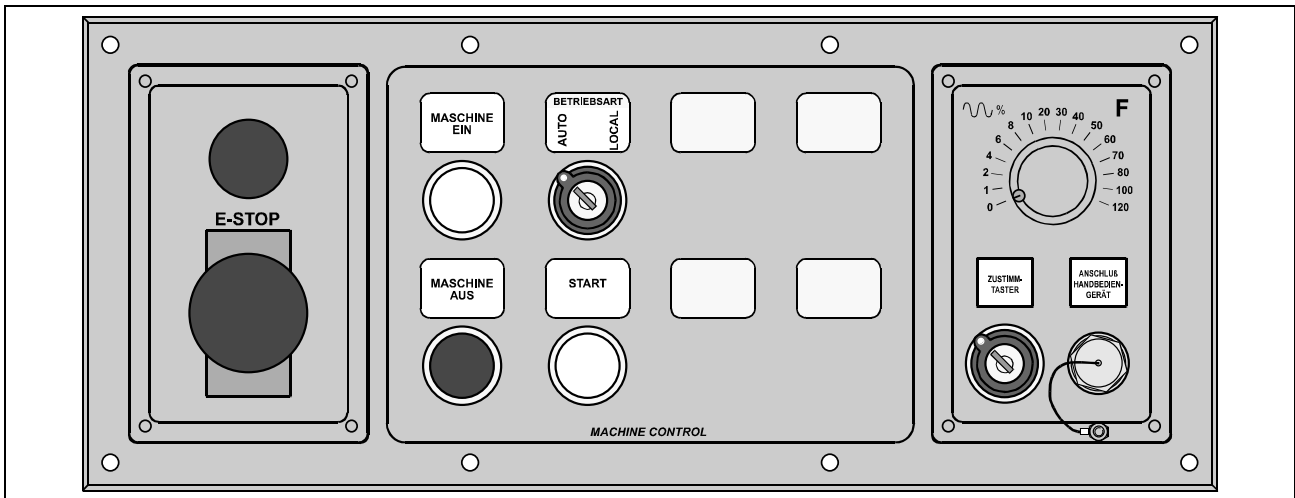


Fig. 1-1: BTA20 Front view

The BTA20 was especially designed for use in conjunction with the BTV20. In this way, a suitable machine control panel consisting of three components is provided for the user. This panel can be equipped as needed and ordered according to project requirements.

1.2 Exceptional Features

Minimum wiring with high flexibility

Wiring is reduced to a minimum due to the slots for 22,5mm standard built-in components. Subsequently mounted circuit elements are directly connected to the remote bus. One of the auxiliary contacts can be wired potential free if needed.

30-pin socket

All contacts required for the hard-wired connection are available on a 30 pin socket. These are:

- Emergency Stop,
- acknowledge circuit and
- a potential free contact of each standard built-in component, which can be connected from the bus to the socket via jumper.

Freely-configurable modules

Two emergency stop and three acknowledge circuits (for handheld devices) are available on both module slots. Each module can be mounted left or right.

Integrated remote bus connection

The built-in remote bus adapter contains the entire, active electronics on a single printed circuit board. The BTA20 uses an I/O width of 3 words. Eight potential free 24V inputs and outputs are available for external connections (for example signal lamps, etc.).

Potential-free interface converter

The integrated interface converter serves the connection of the MTS-P's RS232 modem interface with the RS422/485 interfaces of the small operator panels BTV04/05 or the handheld terminal BTC06 without the need to equip the MTS-P with in additional interface board.

2 Module Layout , Addressing

2.1 Basic Module

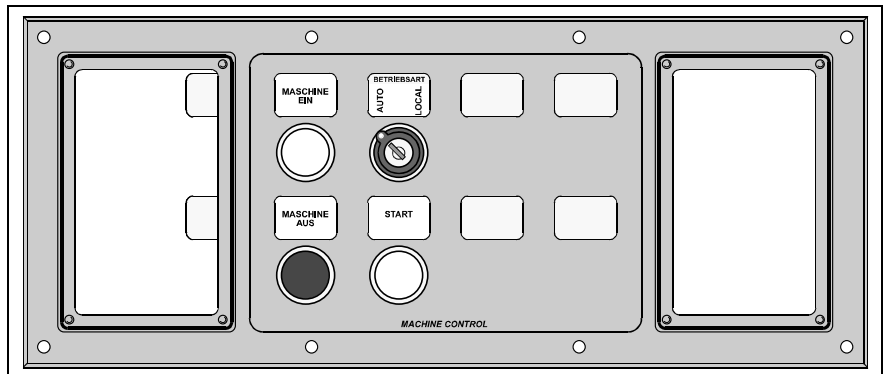


Fig. 2-1: BTA20 Basic module

Up to eight standard built-in components of any type of the Telemecanique **ZB2-B ...** program can be mounted into the BTA20 basic module. Each component consists of maximum 2 contacts and a signal lamp. All cutouts except 3 intermediate fillets are prepared. Slide-in strips are used for key labeling.

Main PCB Configuration

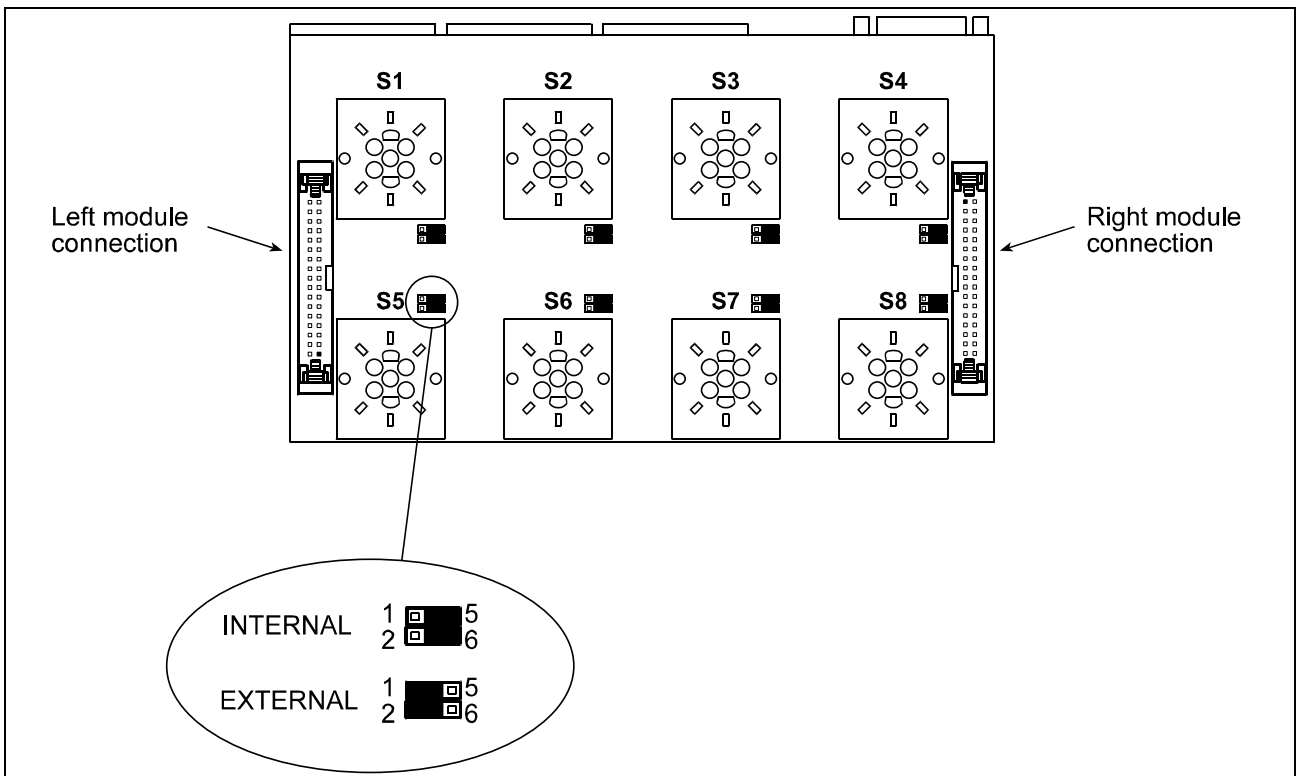


Fig. 2-2: Main PCB

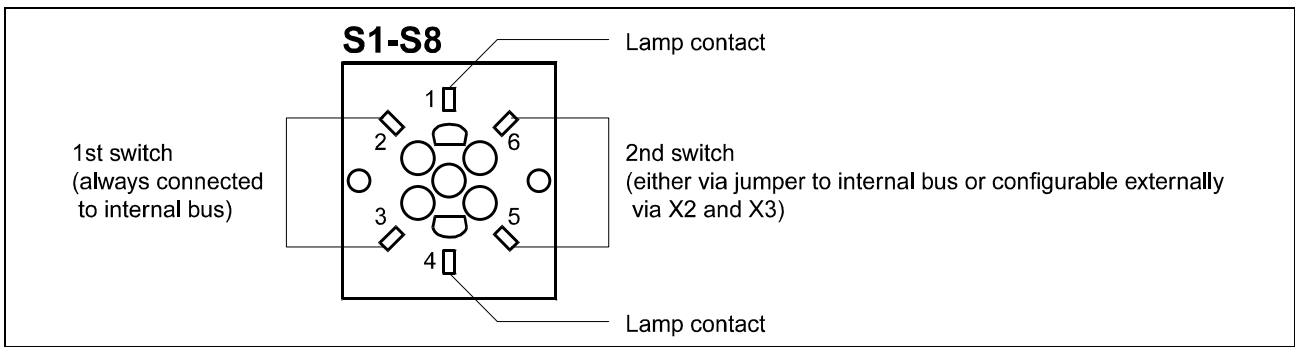


Fig. 2-3: Plug-in socket

The main PCB is equipped with plug-in sockets for each location. Via a jumper, each switch's assignment for the right auxiliary contact can be determined to be either a bus connection (internal) or a socket (external).

Addressing

Outputs

Position	Address
Lamp S1	Q*0.0
Lamp S2	Q*0.1
Lamp S3	Q*0.2
Lamp S4	Q*0.3
Lamp S5	Q*0.4
Lamp S6	Q*0.5
Lamp S7	Q*0.6
Lamp S8	Q*0.7

Fig. 2-4: Lamp addresses within the basic module

Inputs

Circuit Element / Location	Address
S 1-left aux. contact	I*6.0
S 1-right aux. contact	I*6.1
S 2-left aux. contact	I*6.2
S 2-right aux. contact	I*6.3
S 3-left aux. contact	I*6.4
S 3-right aux. contact	I*6.5
S 4-left aux. contact	I*6.6
S 4-right aux. contact	I*6.7
S 5-left aux. contact	I*7.0
S 5-right aux. contact	I*7.1
S 6-left aux. contact	I*7.2
S 6-right aux. contact	I*7.3
S 7-left aux. contact	I*7.4
S 7-right aux. contact	I*7.5
S 8-left aux. contact	I*7.6
S 8-right aux. contact	I*7.7

Fig. 2-5: Addresses of the circuit elements with the basic module

2.2 E-Stop Module Type NA

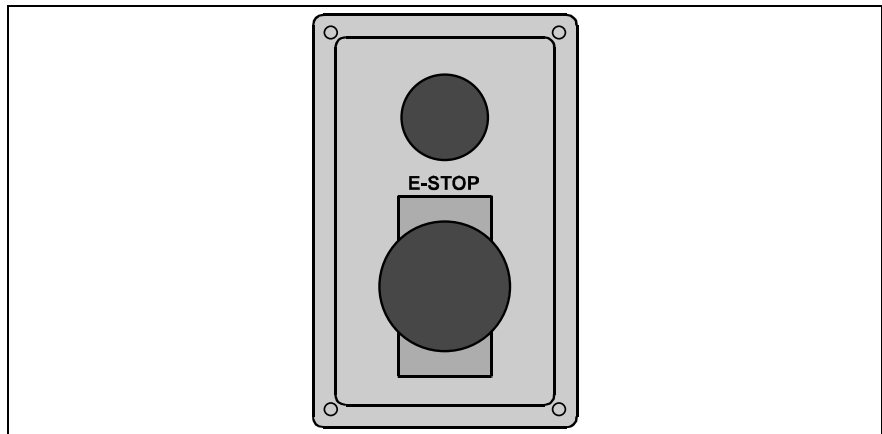


Fig. 2-6: E-stop module type NA

Two NO contacts are available at the E-stop PB, one for each of the two E-stop circuits. Another auxiliary NO contact and the signal lamp is available at the remote bus.

Addressing of the Left Module Slot

Outputs	Location	Address
	Lamp	Q*1.0

Fig. 2-7: E-stop module lamp address

Inputs	Circuit Element / Location	Address
	Aux. contact E-stop	I*8.0

Fig. 2-8: Address of the auxiliary contact within the E-stop module

Addressing of the Right Module Slot

Outputs	Location	Address
	Lamp	Q*1.4

Fig. 2-9: Address of the signal lamp within the E-stop module

Inputs	Circuit Element / Location	Address
	Auxiliary contact E-stop	I*9.0

Fig. 2-10: Address of the auxiliary contact within the E-stop module

2.3 E-Stop Module Type NB

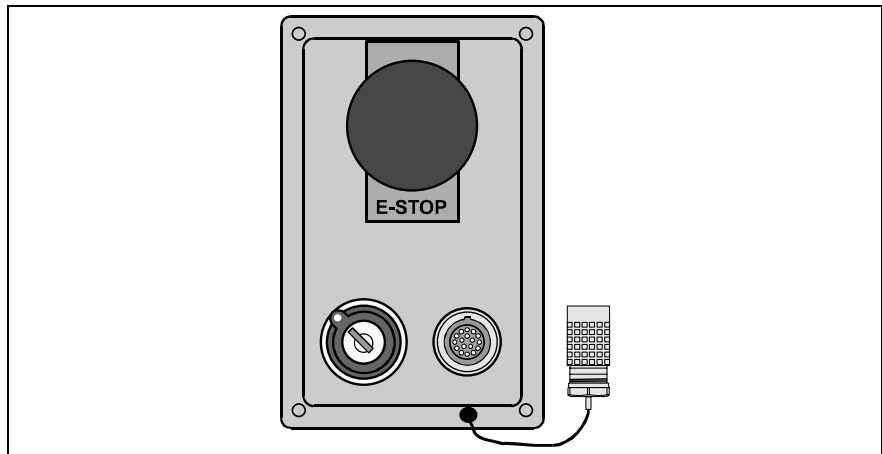


Fig. 2-11: E-stop module type NB

Two NO contacts are available at the E-stop PB, one for each of the two E-stop circuits. Another auxiliary NO contact is available at the remote bus.

The handheld terminal connection provides two E-stop circuits which are jumpered using a short-circuit plug during normal operation. The E-stop contacts of the socket are jumpered using the keyswitch located next to the socket when connecting a handheld device. This model uses only 2 acknowledge circuits. The third one is jumpered within the module.

Addressing of the Left Module Slot

Inputs	Circuit Element / Location	Address
	Aux. contact E-stop	I*8.0
	Aux. contact keyswitch	I*8.4

Fig. 2-12: Auxiliary contact within E-stop module

Addressing of the Right Module Slot

Inputs	Circuit Element / Location	Address
	Aux. contact E-stop	I*9.0
	Aux. contact keyswitch	I*9.4

Fig. 2-13: Address of the auxiliary contact within the E-stop module

2.4 Feedrate Override Module Type VA

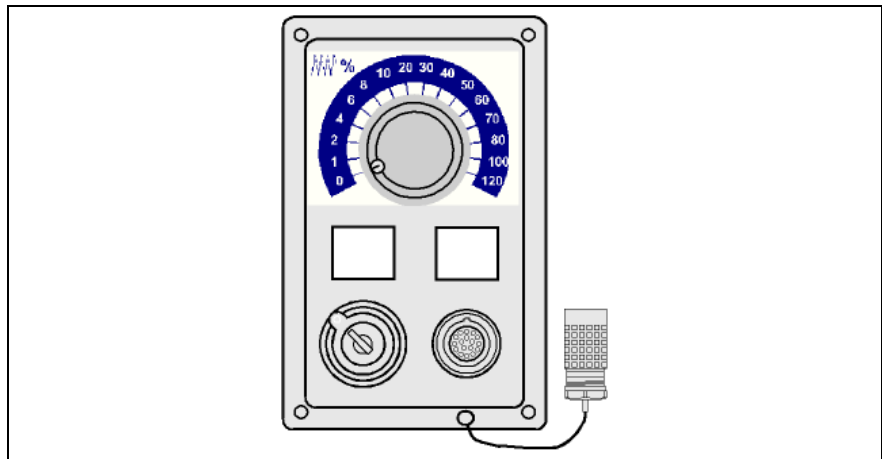


Fig. 2-14: Feedrate Override Module Type VA

The handheld terminal connection provides two E-stop circuits which are jumpered using a short-circuit plug during normal operation. The E-stop contacts of the socket are jumpered using the keyswitch located next to the socket when connecting a handheld device. This model uses only 2 acknowledge circuits. The third one is jumpered within the module.

Gray-code table

The feedrate override rotary switch outputs a 4-bit gray-code signal. The code is assigned to the scale value as shown in the table below:

Scale value	Bit 0	Bit 1	Bit 2	Bit 3
0 %				
1 %	X			
2 %	X	X		
4 %		X		
6 %		X	X	
8 %	X	X	X	
10 %	X		X	
20 %			X	
30 %			X	X
40 %	X		X	X
50 %	X	X	X	X
60 %		X	X	X
70 %		X		X
80 %	X	X		X
100 %	X			X
120 %				X

Addressing of the Left Module Slot

Inputs

Circuit Element / Location	Address
Override bit 0	I*8.0
Override bit 1	I*8.1
Override bit 2	I*8.2
Override bit 3	I*8.3
Aux. contact keyswitch	I*8.4

Fig. 2-15: Addresses of the feedrate override rotary switch

Addressing of the Right Module Slot

Inputs

Circuit Element / Location	Address
Override bit 0	I*9.0
Override bit 1	I*9.1
Override bit 2	I*9.2
Override bit 3	I*9.3
Aux. contact keyswitch	I*9.4

Fig. 2-16: Addresses of the feedrate override rotary switch

2.5 Feedrate Override Module Type VB

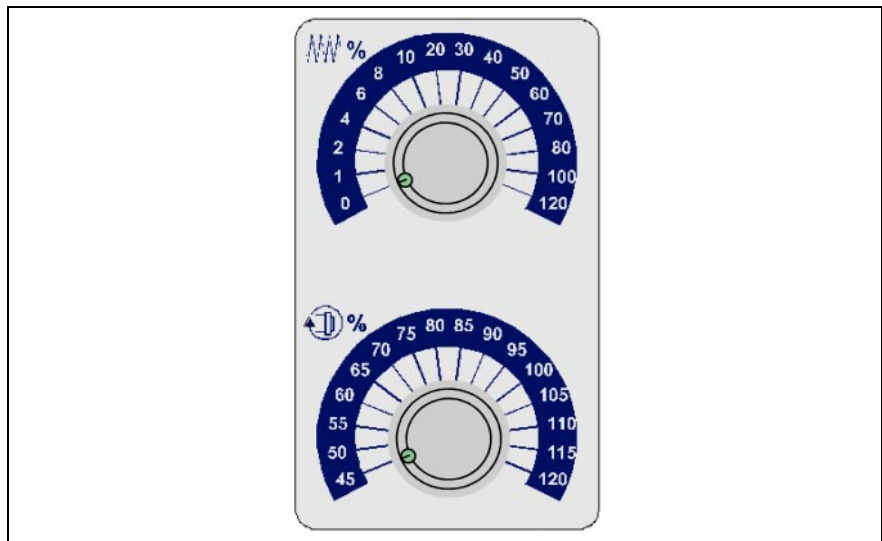


Fig. 2-17: Feedrate Override Module Type VB

This feedrate override module provides two gray-code override switches for feedrate and spindle override (for gray-code assignment see 'Feedrate Override Module Type VA', page 2-5).

Addressing of the Left Module Slot

Inputs	Circuit Element / Location	Address
	Feedrate override bit 0	I*8.0
	Feedrate override bit 1	I*8.1
	Feedrate override bit 2	I*8.2
	Feedrate override bit 3	I*8.3
	Spindle override bit 0	I*8.4
	Spindle override bit 1	I*8.5
	Spindle override bit 2	I*8.6
	Spindle override bit 3	I*8.7

Fig. 2-18: Addresses of the feedrate override rotary switch (left)

Addressing of the Right Module Slot

Inputs	Circuit Element / Location	Address
	Feedrate override bit 0	I*9.0
	Feedrate override bit 1	I*9.1
	Feedrate override bit 2	I*9.2
	Feedrate override bit 3	I*9.3
	Spindle override bit 0	I*9.4
	Spindle override bit 1	I*9.5
	Spindle override bit 2	I*9.6
	Spindle override bit 3	I*9.7

Fig. 2-19: Addresses of the feedrate override rotary switch (right)

2.6 24V Outputs X4

Addressing

Terminal	Address
X4 - 1	O*2.0
X4 - 2	O*2.1
X4 - 3	O*2.2
X4 - 4	O*2.3
X4 - 5	O*2.4
X4 - 6	O*2.5
X4 - 7	O*2.6
X4 - 8	O*2.7

Fig. 2-20: Addresses of the 24V outputs

2.7 24V Inputs X5

Addressing

Terminal	Address
X5 - 1	I*10.0
X5 - 2	I*10.1
X5 - 3	I*10.2
X5 - 4	I*10.3
X5 - 5	I*10.4
X5 - 6	I*10.5
X5 - 7	I*10.6
X5 - 8	I*10.7

Fig. 2-21: Addresses of the 24V inputs

3 InterBus-S

3.1 Characteristics of the InterBus Module

- InterBus-S ID-code 3 (Digital devices with inputs and outputs)
- Remote bus, 500 Kbaud with 2 conductors
- Three words data width of the module, i.e., 48 Bit.
24 outputs, 48 inputs
- 24 Volt level for all inputs,
32 inputs for internal modules and switching devices without physical separation,
further 8 physically separated inputs (input byte 4) on a 9 pin terminal (X5) of the InterBus module.
- All 24 outputs at 24 Volt level,
16 outputs for internal indicator lights and modules
further 8 outputs as physically separated external outputs on a 10 pin terminal (X4) of the InterBus module.

3.2 Status Displays

LED	Meaning
U, green	Supply voltage applied
RC, green	Remote bus check - monitoring of the incoming fieldbus cable (X6). RC ON if the link is O.K. RC OFF in case of InterBus-S reset by the control
RD, red	Remote bus disable is ON, if the remote bus is switched off.
BA, green	Bus active ON, if an InterBus-S transmission takes place.

Fig. 3-1: InterBus-S status LEDs

4 Technical Data

4.1 General Technical Data

Weight	Approx. 2,1 kg
Protection	Front plate, basic module IP65 Housing IP20 DIN40 050, IEC 529
Maximum ambient temperature	Operation +5°C to +45°C Transportation -20°C to +60°C
Air pressure (Operation)	860 to 1060 hPa, 1500 m
Max. heat dissipation	Approx. 10 W
Front plate surface	Varnished aluminum and holohedrally let in polyester foil resistant against chemicals
Color	RAL 7035 light gray

4.2 Interface Converter

Baudrate	0 to 38400 Baud
Input voltage RS232	±5 to ±12V
Output voltage RS422/485	0/5 V, 5V diff., max. 60mA
+5V Output for bus connection	max. 50mA

5 Connections

5.1 Location of the Terminal Connectors

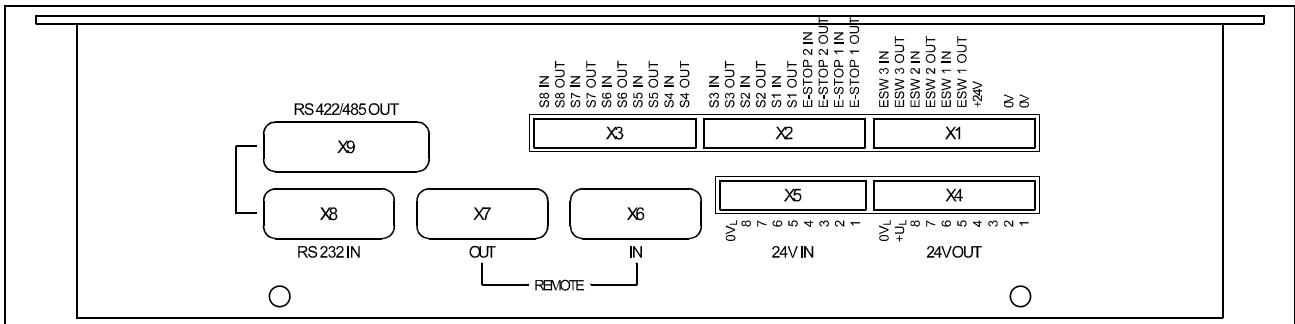


Fig. 5-1: Location of the terminal connectors

5.2 InterBus-S Interface IN X6

Pin	Signal	Pin	Signal
1	DO1 Data Out 1	2	DI1 Data in 1
3	GnD	4	N. C.
5	N. C.	6	/DO1 Data Out 1
7	/DI1 Data in 1	8	N. C.
9	N. C.		

Fig. 5-2: RS232 Pin arrangement X8

5.3 InterBus-S Interface OUT X7

Pin	Signal	Pin	Signal
1	DO2 Data Out 2	2	DI2 Data in 2
3	GnD	4	N. C.
5	+ 5 V out	6	/DO2 Data Out 2
7	/DI2 Data in 2	8	N. C.
9	RBST		

Fig. 5-3: RS232 Pin arrangement X8

5.4 RS232 Interface X8

Pin	Signal	Pin	Signal
1	Shield	2	/RxD
3	/TxD	4	DTR
5	GND	6	
7	RTS	8	
9			

Fig. 5-4: RS232 Pin arrangement X8

The interface converter's RS232 input is directly wired (socket and plug) to the MTS-P's modem interface.

5.5 RS422/485 Interface X9

Pin	Signal	Pin	Signal
1	Shield	2	N. C.
3	N. C.	4	RS485+ /RS422 RxD+
5	RS485- / RS422 RxD-	6	N. C.
7	Signal Ground	8	N. C.
9	RS422 TxD+	10	Ground
11	RS422 TxD-	12	+5 V out
13	N. C.	14	N. C.
15	N. C.		

Fig. 5-5: RS485/422 Pin arrangement X9

5.6 Terminal Connectors X1...X3

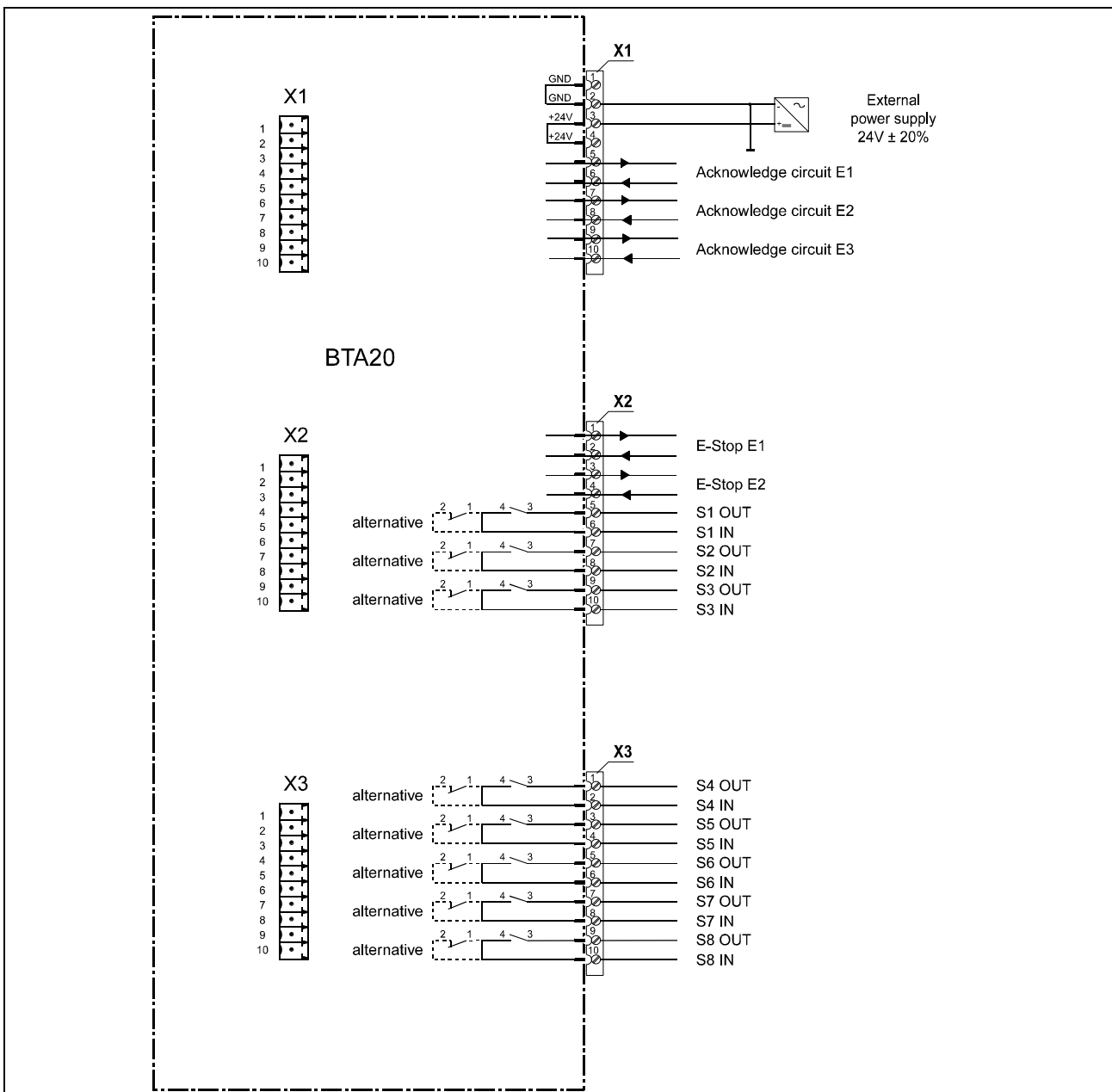


Fig. 5-6: Terminal connectors X1...3

5.7 Terminal Connector X4 and X5

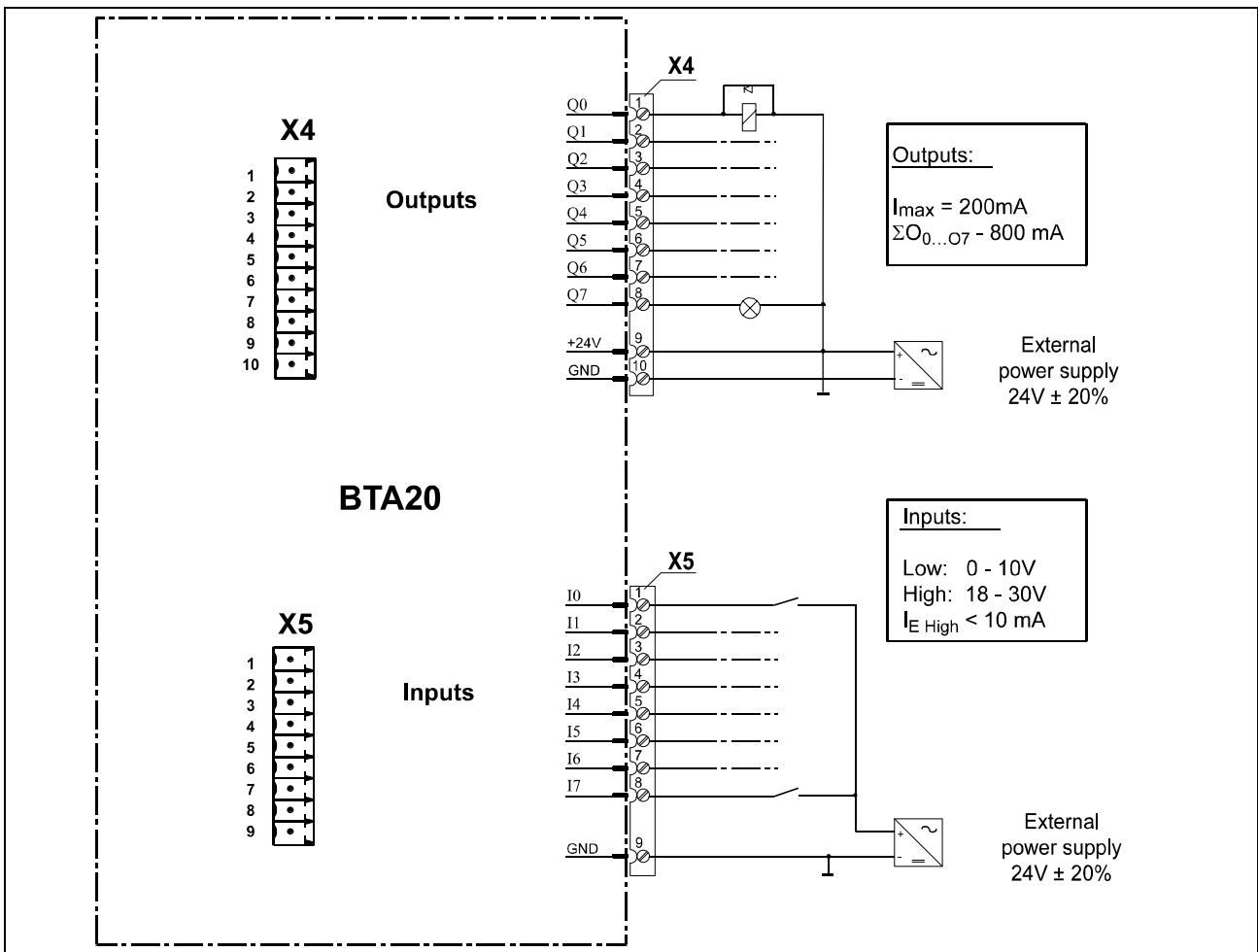


Fig. 5-7: Terminal connector X4 and X5

5.8 E-Stop and Acknowledge Circuits

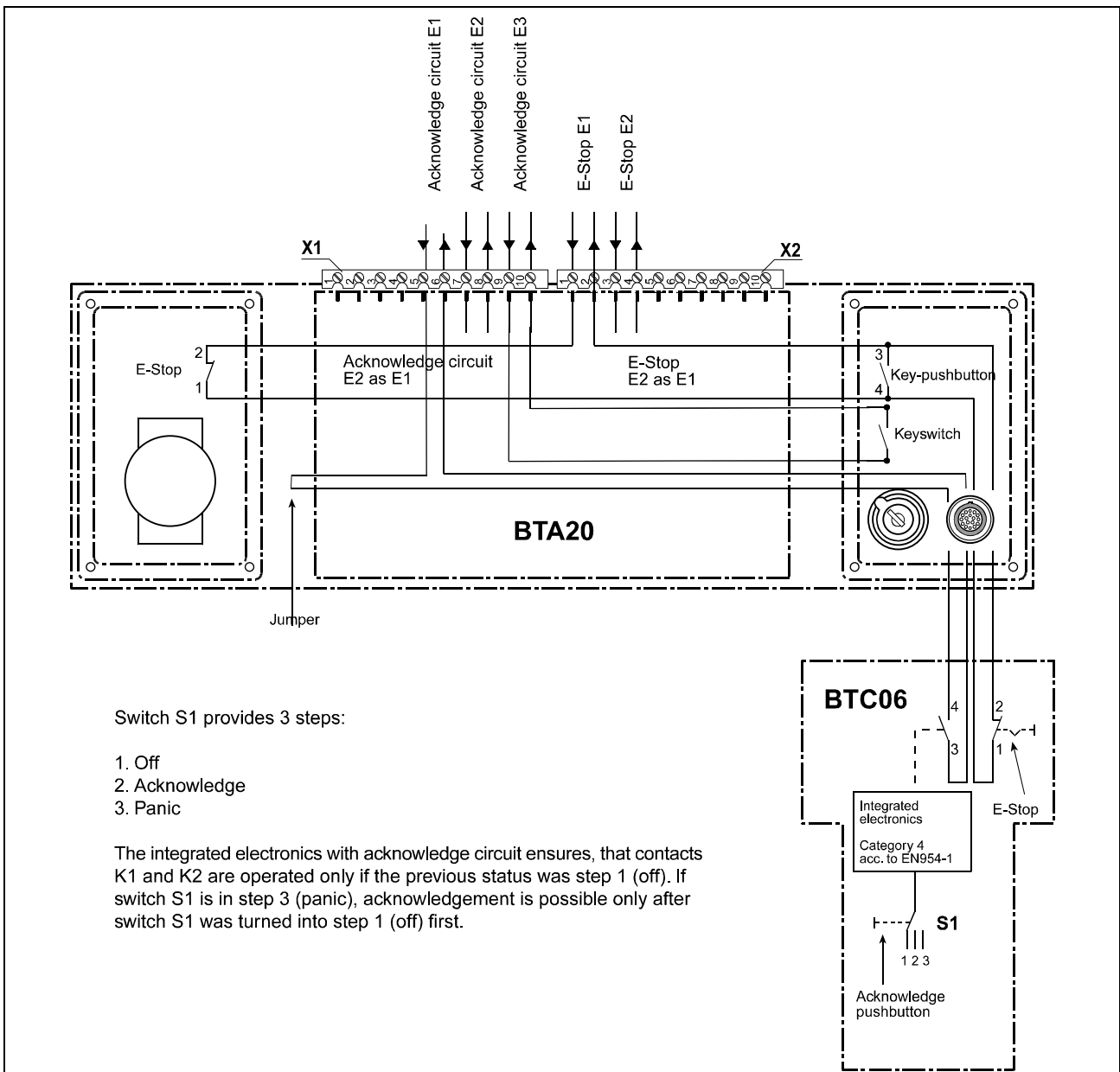


Fig. 5-8: Application example E-Stop and acknowledge circuits

In this example, the BTA20 is shown together with a BTC06. For a better overview only one circuit is displayed. Two acknowledge circuits are used for modules NB and VA together with the BTC06. The third circuit can be used for future expansions.

6 Dimensions

6.1 Housing Dimensions

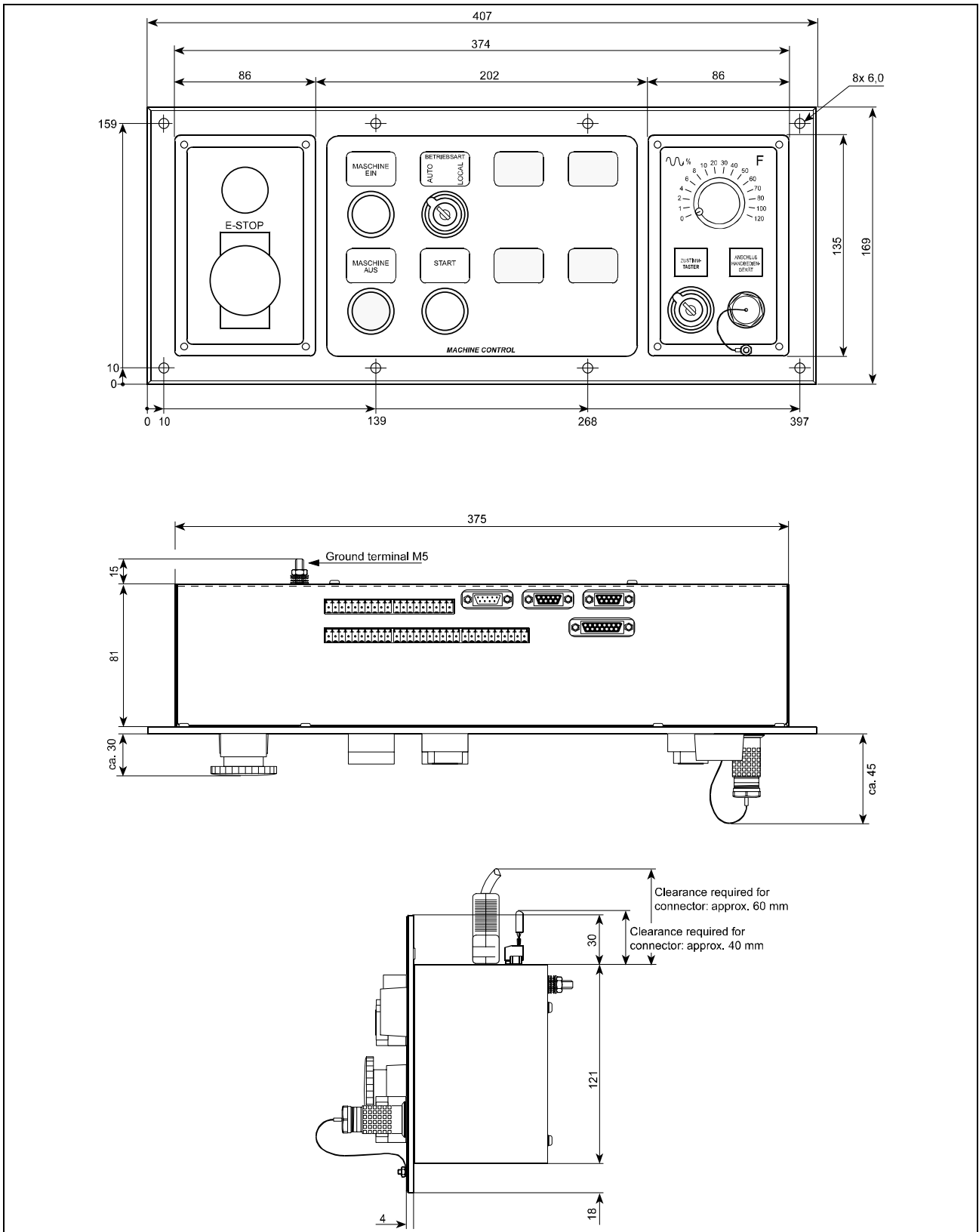


Fig. 6-1: Housing dimensions

6.2 Mounting Dimensions

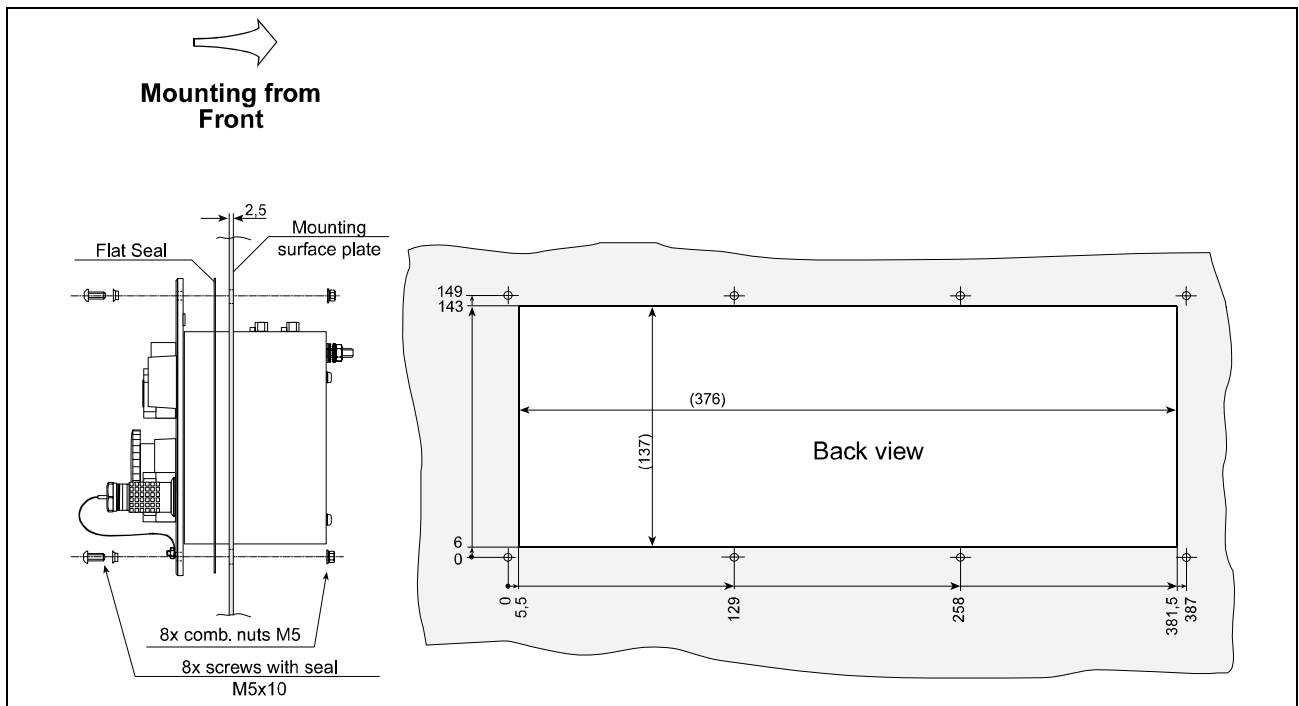


Fig. 6-2: Mounting dimensions

7 Type Code BTA20

Abbrev. Column	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40															
Example:	B	T	A	2	0	.	1	-	N	A	-	S	P	-	V	A	-	D	P																																				

1. Product group
 1.1 BTA = BTA

2. Design
 2.1 20 = 20

3. Line
 3.1 1 = 1

4. Configuration ①
 fixed and documented by Indramat.
 4.1 e.g., NA-SP-VA = NA-SP-VA
 (Columns: 9...10 = Module slot 1
 12...13 = Module slot 2
 15...16 = Module slot 3)

5. Communication bus
 5.1 INTERBUS-S = BS
 5.2 PROFIBUS-DP = DP

Note:
 ① for applicable configuration see BBS list "Marketing Introduction of New Configuration - BTA"

Configuration example: BTA20.1

Module slot

1	2	3	
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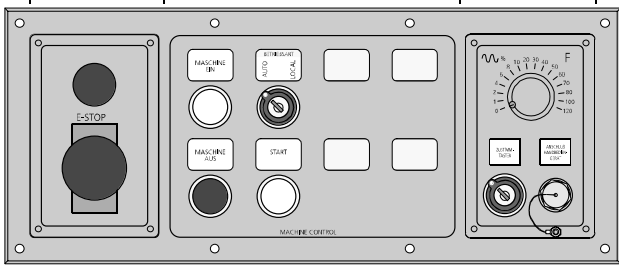


Fig. 7-1: Type code

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Kundenbetreuungsstellen - Sales & Service Facilities

Deutschland - Germany

Vertriebsgebiet Mitte Germany Centre <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service	Vertriebsgebiet Ost Germany East <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service	Vertriebsgebiet West Germany West <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service	Vertriebsgebiet Nord Germany North <input checked="" type="checkbox"/> V/S <input type="checkbox"/> Service
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Europa - Europe

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Europäische Kundenbetreuungsstellen (ohne Deutschland)
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Kundenbetreuungsstellen außerhalb Europa - Service agencies outside Europe

Außerhalb Europa / USA - outside Europe / USA

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Notes

