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SYSTEM200
BTA20.3

Project Planning Manual

SYSTEM200

DOK-MTC200-BTA20.3****-PR01-EN-P

Rexroth
Indramat

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What is the purpose of this document?

The following documentation describes .....

- the hardware functions of the BTA20
- the technical datas
- the connection and mounting

Course of modifications

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Contents

1 System Presentation

1.1 Brief Description

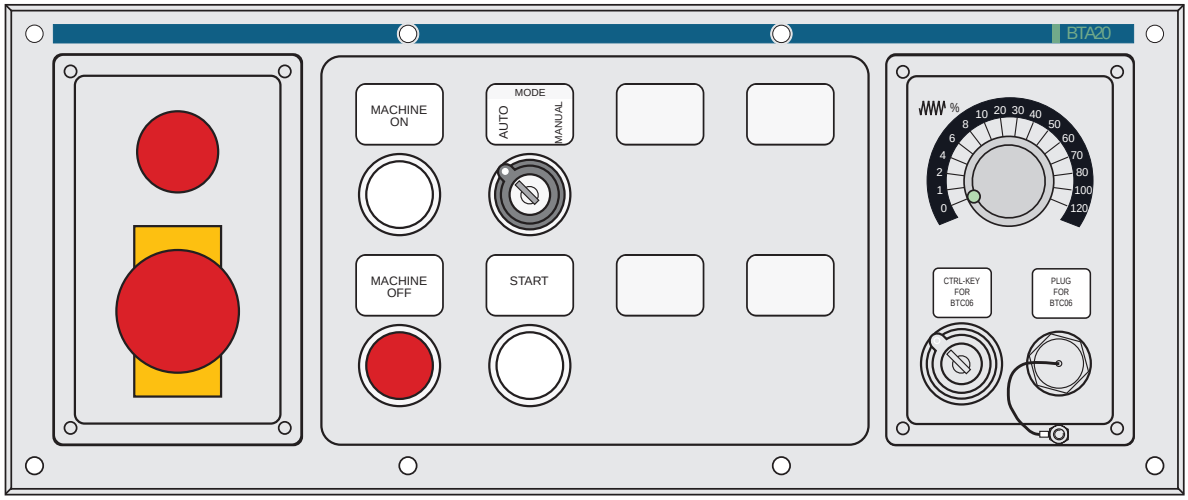


Fig. 1-1: BTA20 Front view

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 of the ZB2 series of Telemecanique. Subsequently mounted circuit elements are directly connected to the INTERBUS. The right auxiliary contact can be wired potential free by jumpers if needed.

30-pin socket

All contacts required for the hard-wired connection are available on three 10 pin socket (X1-X3). 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 manual control units) are available on both module slots. Each module can be mounted left or right.

Integrated INTERBUS connection

The built-in INTERBUS 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 serial RS232 interface with the RS422 interfaces of the small human machine interface BTV05 or the manual control unit BTC06 without the need to equip the MTS-P with in additional interface board.

2 Module Layout, Address Assignments

2.1 Base Module

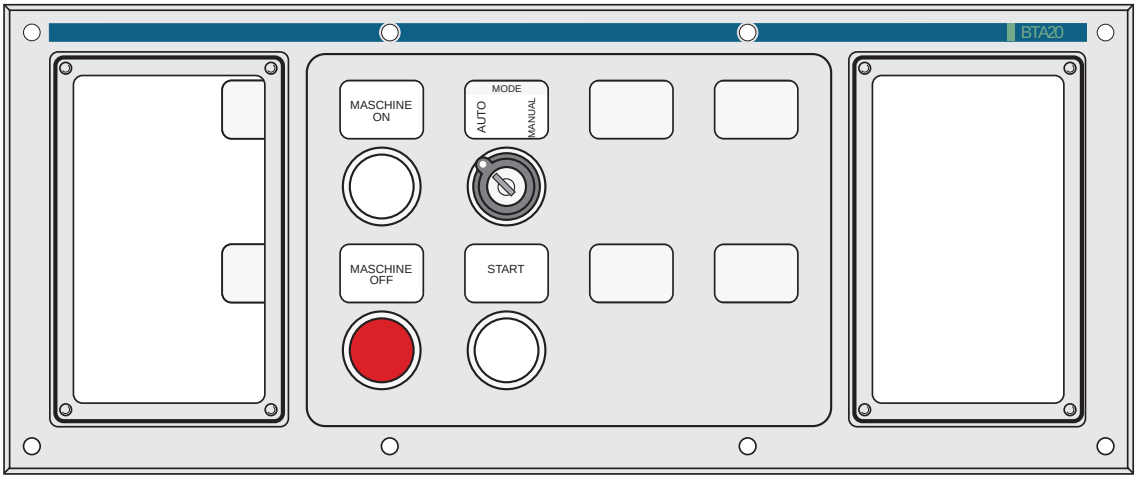


Fig. 2-1: BTA20 Basic module

The BTA20 base module permits a maximum of eight standard switching elements of the Telemecanique **ZB2-B...** program to be inserted (any elements). Each element features a maximum of two contacts and one indicator lamp. All knockouts in the front panel are pre-milled to 0.5 mm. The next section explains how such a knockout can be opened. Insert strips provide for key labeling.

Instructions for installing additional switches

ESD – electrostatic sensitive components!

⇒ Whenever you work in the open unit, your working position and the employed tools must comply with the ESD protective measures.

To insert an additional switch element in the front of the BTA20.3 unit, use the following procedure:

1. Unscrew the enclosure from the unit.
2. Dismantle the electronics unit.

a) Use a 5.5-mm socket wrench to loosen the six spacing bolts A and B (see Fig. 2-2).

Caution: There are different lengths !

b) Remove the electronics block with the LK-BIB and the main board.

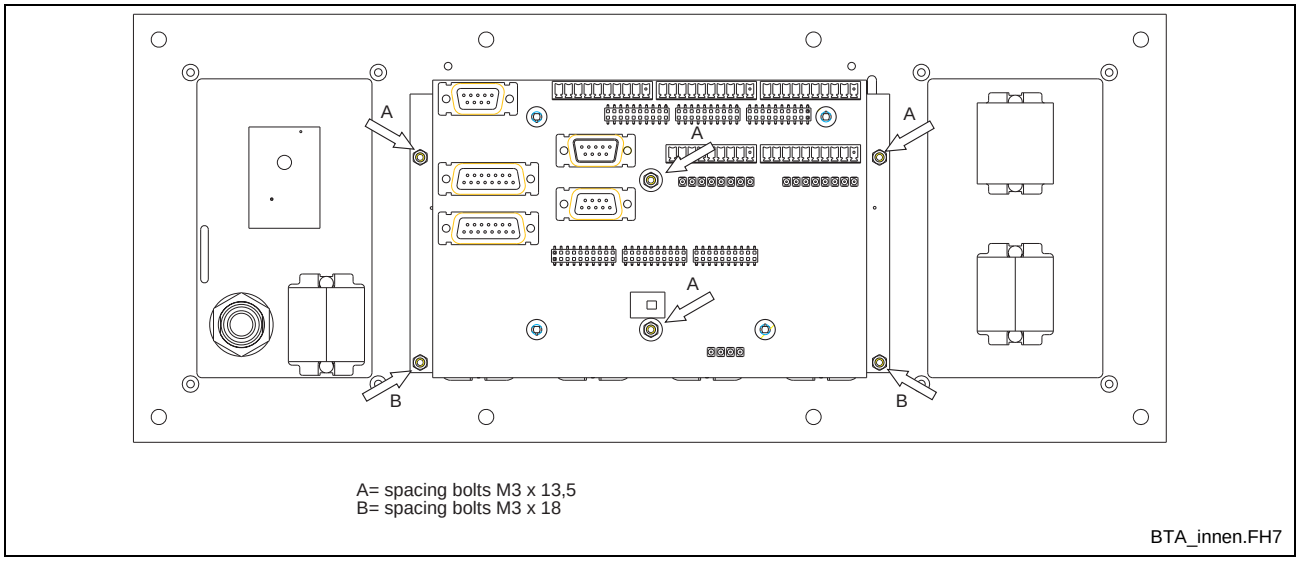


Fig. 2-2: Location of the spacing bolts

Note: Removing the electronics part is an important step. Removing the knockouts may produce chips that can be the cause of malfunctions.

3. Use a knife (scalpel) to cut the front film in the shape of the pre-milled knockout contour (see Fig. 2-3)

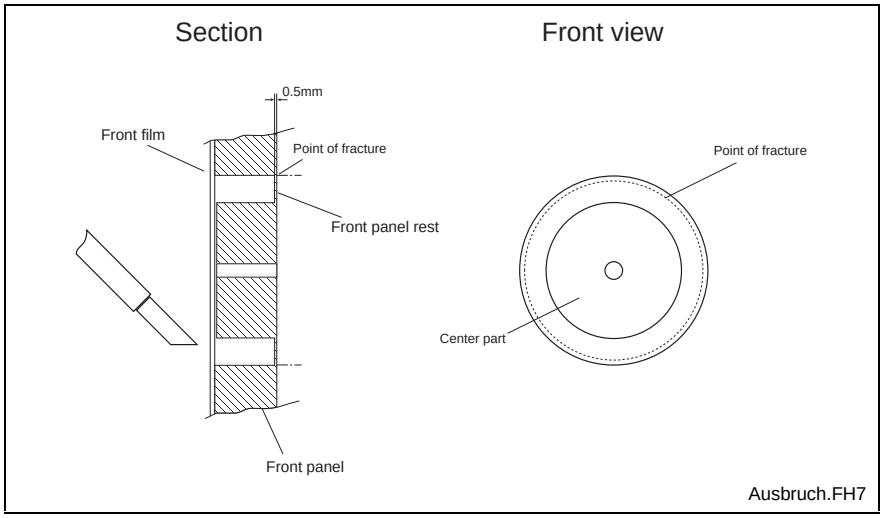


Fig. 2-3: Front panel cross section

4. Using a knife, slightly scratch along the pre-milled front panel contour (0.5 mm thick).
5. Use your thumb to knock out the center part.
6. Remove the resulting burr and clean the chips off the front panel.
7. Insert the required front panel element (pushbutton, lamp, key switch) and screw it tight.
8. Plug the required switching elements (NC/NO contacts) onto the main board, and select the jumper positions for internal or external mode of the right-hand switching element.
9. Position the board block onto the switching elements.
10. Tighten the six spacing bolts.
11. Position the enclosure and tighten the retaining screws.

Main board configuration

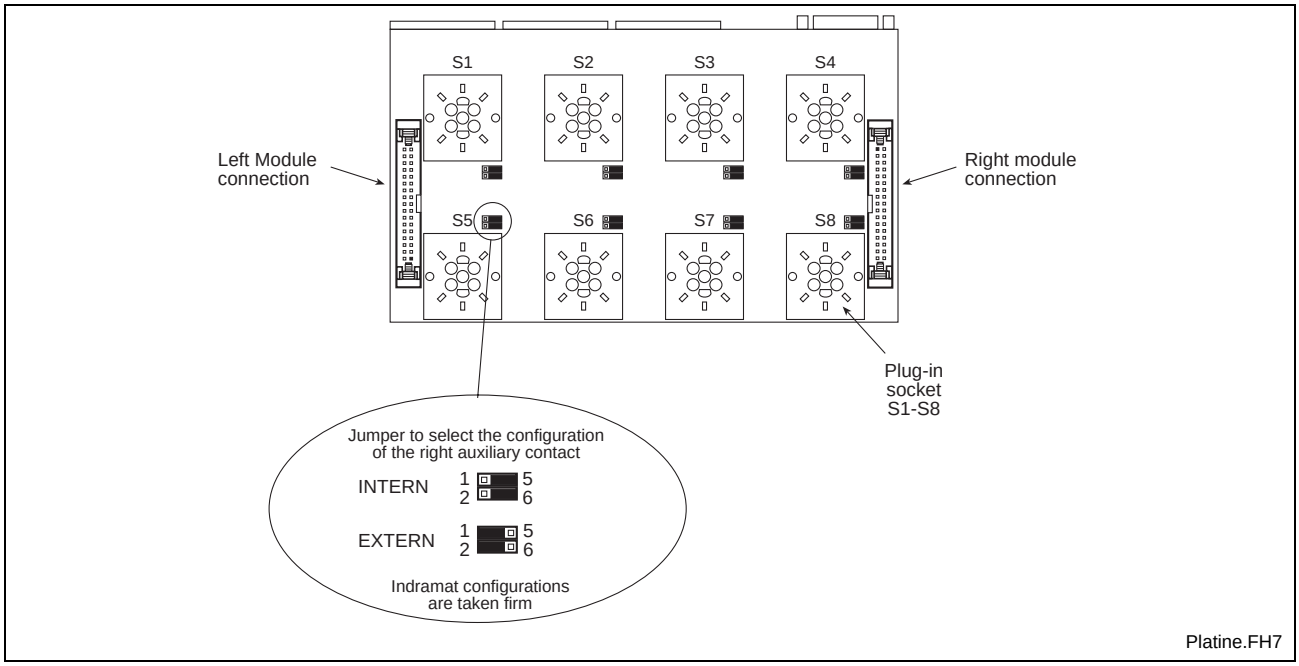


Fig. 2-4: Main board

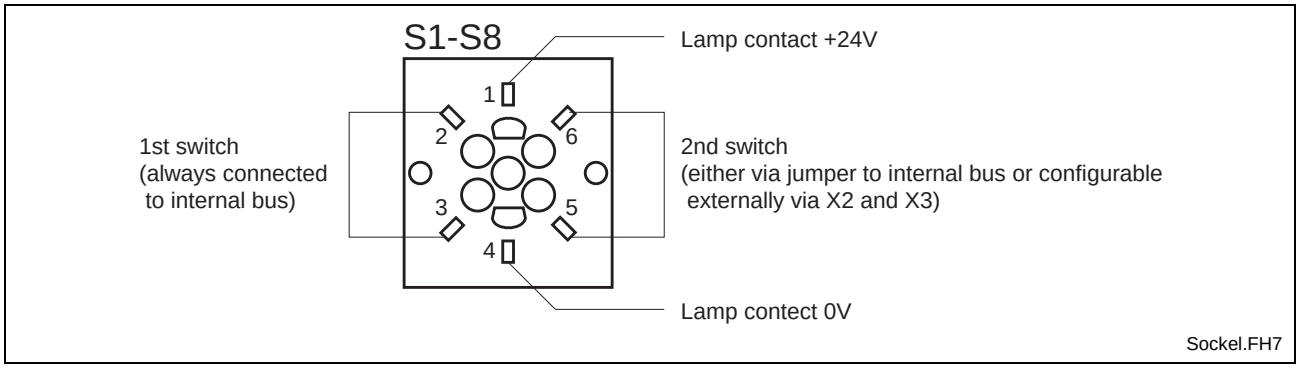


Fig. 2-5: Plug-in socket

The main board is equipped with eight plug-in sockets. Such a socket features two locations for switching contacts (NC/NO contacts) or lamp contacts. The first contact is used for internal bus operation. To support external wiring, jumpers permit the right-hand auxiliary contact of each switch to be set to either bus interface (internal) or X2 and X3 terminal bar (external). Illumination elements are controlled via pins 1 and 4 (as shown in the Figure).

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. 2-6: 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. 2-7: Addresses of the circuit elements with the basic module

Interface converter

In the normal state of the BTA20.3, the X8A and X9 connectors provide RS422 communication capability. The interface converter enables the data exchange between a BTC06 manual control unit or an PLC to be organized.

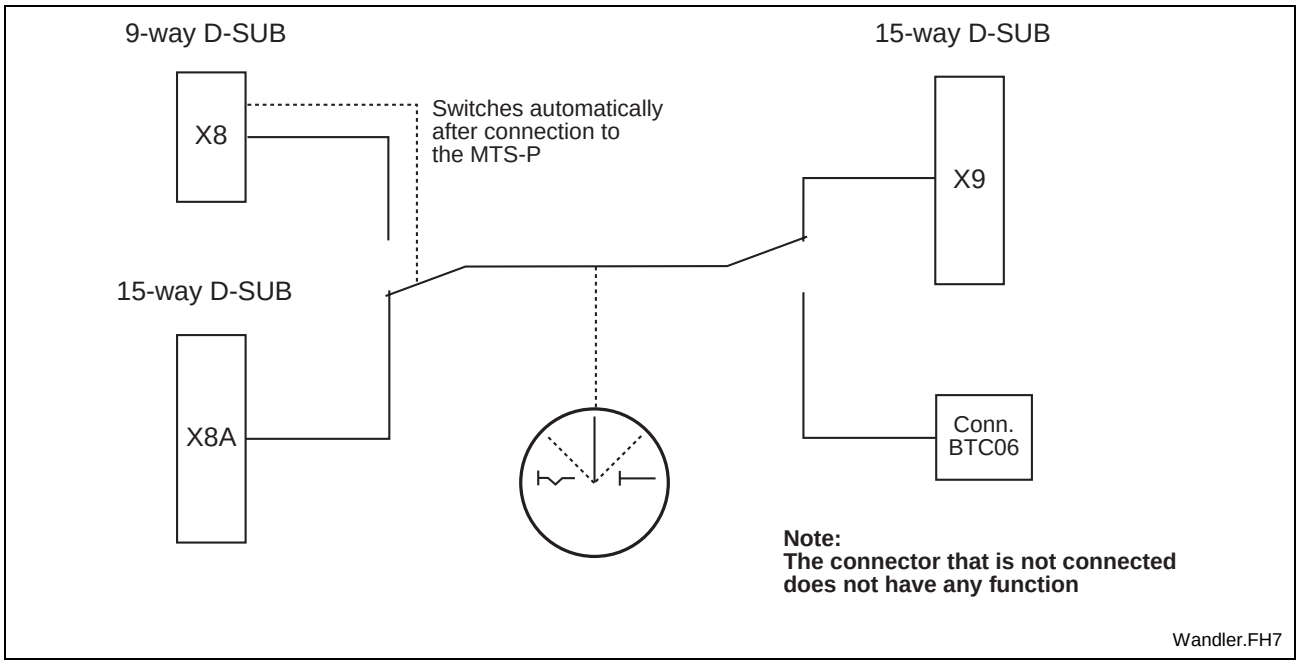


Fig. 2-8: Switching principle of the interface converter

As shown in the Figure, the converter has a switching function. In its normal position, there is a connection between RS422 IN and RS422 OUT. This means that data can be received and transmitted using the RS422 protocol. The converter becomes active if RS232 must be connected with RS422 communication. If, for example, an MTS-P module (PLC plug-in module at the BTV20 unit) is connected to a BTA20.3 unit, the converter automatically switches over and the X8 connection (RS232 IN) becomes operational. A prerequisite is the correct initialization of the MTS-P module. Devices connected to X9 may exchange data with the PLC.

Note: Thus, the X8A (RS422 IN) connector is without a function

Using a BTC06 unit requires the key switch on the NB or VA module. The manual control unit is connected with the SPS when the key switch is in its left-hand position.

Note: In this case, the X9 connector is without a function.

Using a BTC06 manual control unit and maintaining communication with other RS422 devices at the same time is not possible.

2.2 Type NA Emergency Stop Module

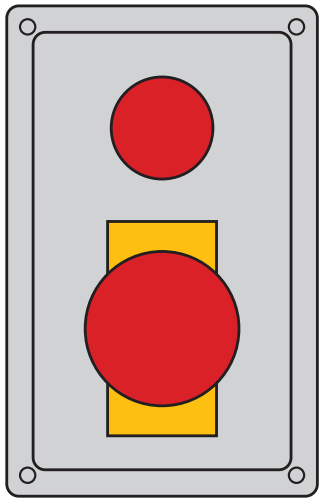


Fig. 2-9: Type NA emergency stop module

The NA emergency stop module possesses an emergency stop switch and a signal lamp that can be switched on via INTERBUS.

From the emergency stop switch, an NC contact is looped into each emergency stop circuit. Another NC contact is connected to the INTERBUS as an auxiliary contact; likewise is the signal lamp.

Addressing when installation to the Left Module Slot

Outputs

Location	Address
Lamp	Q*1.0

Fig. 2-10 Address of the signal lamp within the E-stop module

Inputs

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

Fig. 2-11: Address of the auxiliary contact within the E-stop module

Addressing when installation to the Right Module Slot

Outputs

Location	Address
Lamp	Q*1.4

Fig. 2-12: Address of the signal lamp within the E-stop module

Inputs

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

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

2.3 Type NB Emergency Stop Module

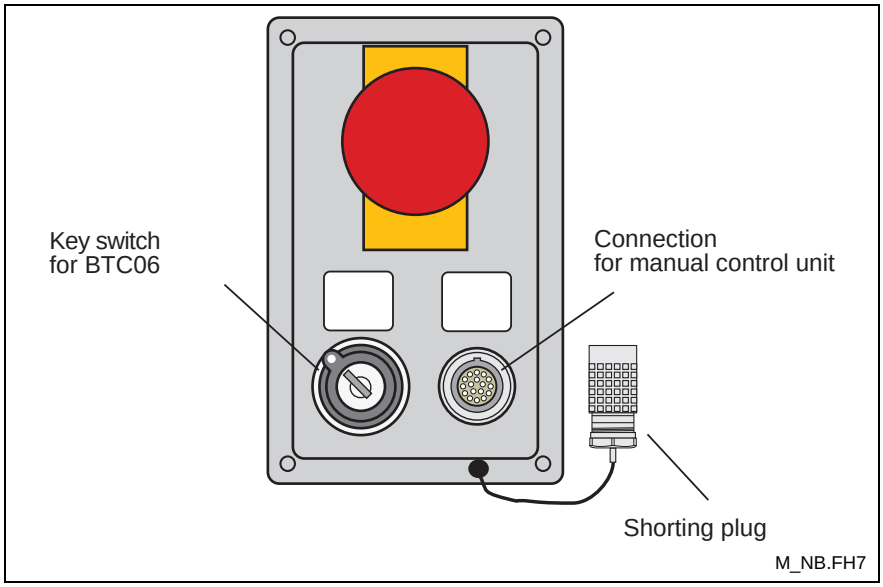


Fig. 2-14: Type NB emergency stop module

In addition to the emergency stop switch, the NB module features a connection for the BTC06 manual control unit, and a key switch that functionally connects the manual control unit (the switch positions are explained in Fig. 2-15).

From the emergency stop button, an NC contact is looped into each of the two emergency stop circuits. Another NC contact is connected to the INTERBUS as an auxiliary contact.

The connection for the manual control unit possesses two emergency stop circuits that are jumpered by the shorting plug during normal operation. When a manual control unit is connected, the emergency stop contacts of the socket are jumpered during the insertion process by setting the adjacent key switch to its right-hand position. This version only employs two confirmation circuits; the third one is routed via the key switch.

Switching positions of the key switch

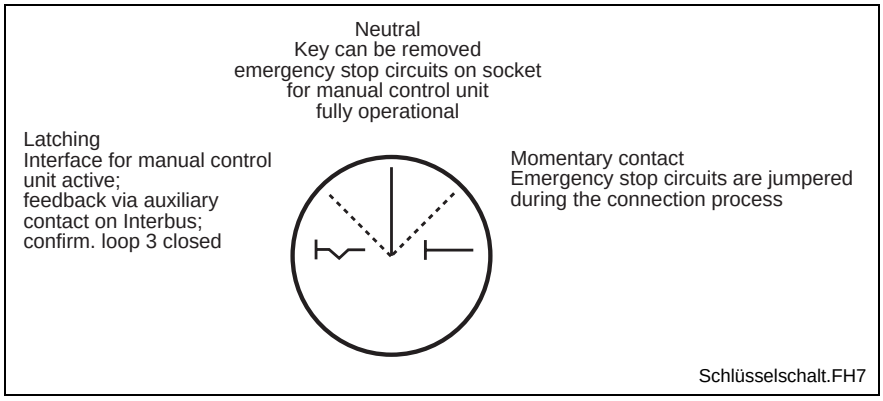


Fig. 2-15: Switching positions of the key switch

Switch for selecting the left/right module location

Commissioning a BTC06 manual control unit at the BTA20 unit additionally requires the switch at the rear of the unit (see Fig. 2-16) to be set correctly. The switching position depends on the module location in which the module with the manual control unit connection has been installed.

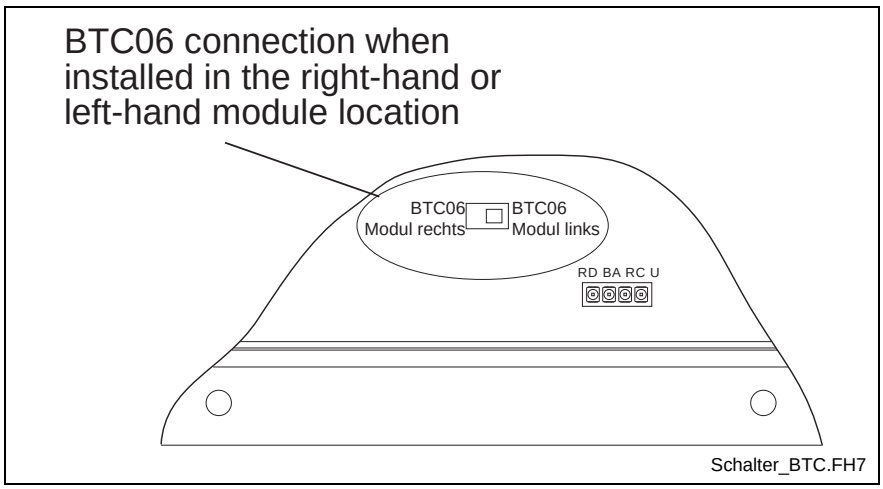


Fig. 2-16: Location of the switch for BTC06 connection right/left

Addressing when installation to the Left Module Slot

Inputs

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

Fig. 2-17: Address of the auxiliary contact within the E-stop module

Addressing when installation to the Right Module Slot

Inputs

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

Fig. 2-18: Address of the auxiliary contact within the E-stop module

2.4 Type VA Feed Module

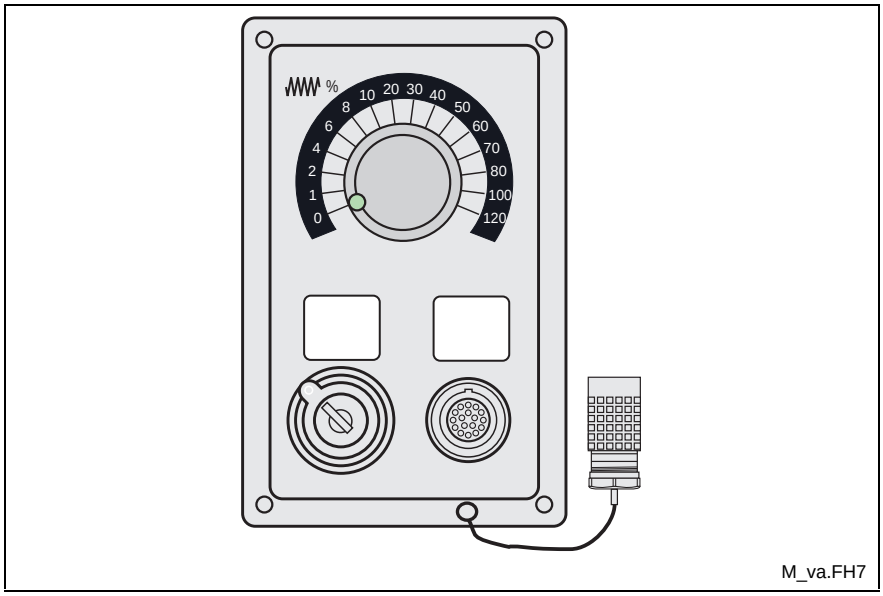


Fig. 2-19: Type VA feed module

This module features a Gray code override switch, a key switch, and a connection for a BTC06 manual control unit.

The connection for the manual control unit possesses two emergency stop circuits that are jumpered by the shorting plug during normal operation. When a manual control unit is connected, the emergency stop contacts of the socket are jumpered during the insertion process by the adjacent key switch. This version only employs two confirmation circuits; the third one is routed via the key switch.

Switching positions of the key switch

Chapter 2.3 Emergency Stop Module type NB

Switch for selecting the left/right module location

Chapter 2.3 Emergency Stop Module type NB

Addressing when installation to 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. 2-20: Addresses of the feedrate override switch

Addressing when installation to 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 key switch	I*9.4

Fig. 2-21: Addresses of the feedrate override switch

Gray-code table

The feedrate override 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

Fig. 2-22: Gray-code table of the VA module

2.5 Type VB Feed Module

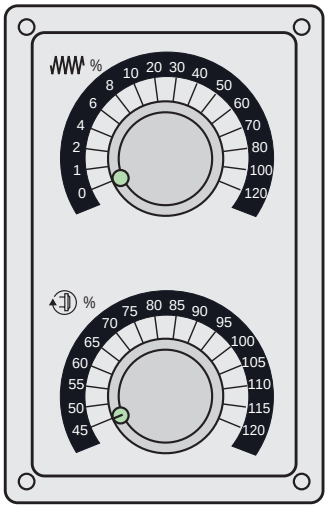


Fig. 2-23: Type VB feed module

This feed module for special machines features two Gray code override switches for feed and spindle.

Addressing when installation to 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 4	I*8.4
Spindle override bit 5	I*8.5
Spindle override bit 6	I*8.6
Spindle override bit 7	I*8.7

Fig. 2-24: Addresses of the feedrate override switch (left)

Addressing when installation to 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 4	I*9.4
Spindle override bit 5	I*9.5
Spindle override bit 6	I*9.6
Spindle override bit 7	I*9.7

Fig. 2-25: Addresses of the feedrate override switch (right)

Gray-code table

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

Scale value Feed (Bit 0-3)	Scale value Spindle (Bit 4-7)	Bit 0 / 4	Bit 1 / 5	Bit 2 / 6	Bit 3 / 7
0 %	45 %				
1 %	50 %	X			
2 %	55 %	X	X		
4 %	60 %		X		
6 %	65 %		X	X	
8 %	70 %	X	X	X	
10 %	75 %	X		X	
20 %	80 %			X	
30 %	85 %			X	X
40 %	90 %	X		X	X
50 %	95 %	X	X	X	X
60 %	100 %		X	X	X
70 %	105 %		X		X
80 %	110 %	X	X		X
100 %	115 %	X			X
120 %	120 %				X

Fig. 2-26: Gray-code table of the VB module

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, 40 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

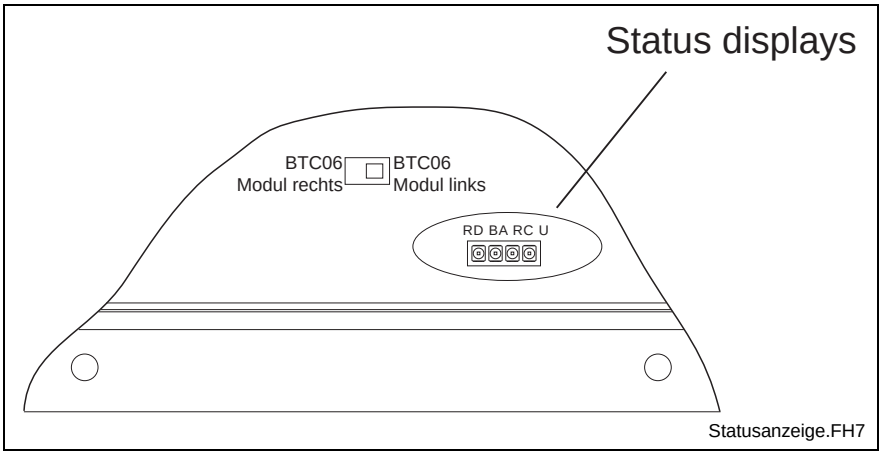


Fig. 3-1: Location of the status displays

LED	Meaning
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.
RC, green	Remote bus check - monitoring of the incoming INTERBUS cable (X6). RC ON if the link is O.K. RC OFF in case of INTERBUS-S reset by the control
U, green	Supply voltage applied

Fig. 3-2: 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
24V inputs	U_{IN} = typ. 18-30V potential free I_{IN} = min. 7mA
24V outputs	U_{OUT} = typ. 18-30V potential free I_{OUT} = typ. 200mA

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

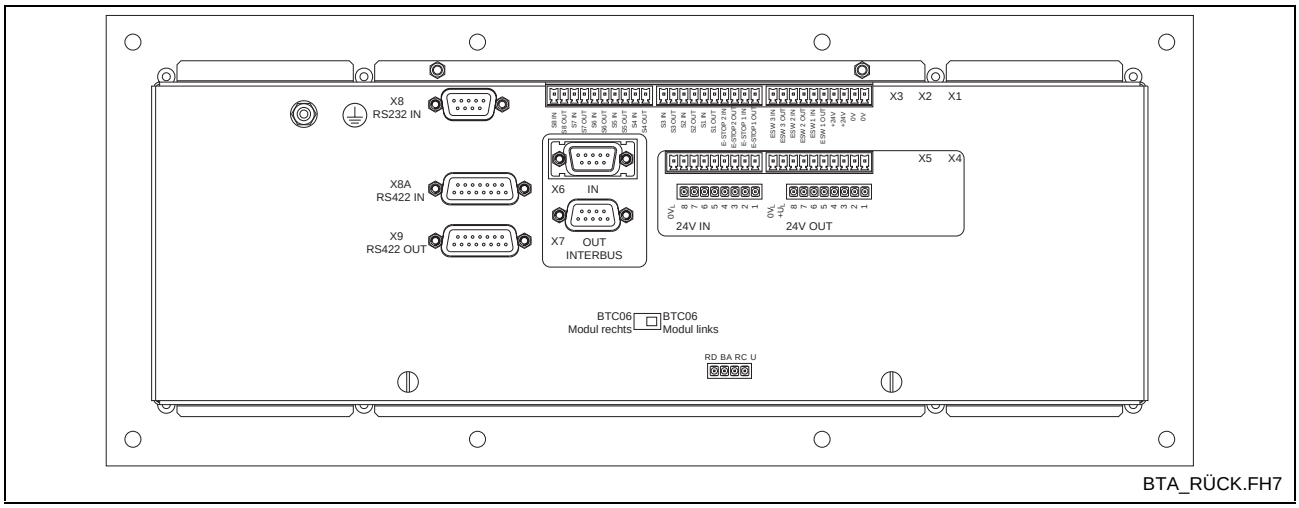


Fig. 5-1: Location of the terminal connectors

5.2 24V Outputs X4 (potential free)

Adressing

Terminal	Adress
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. 5-2: Adressing of the 24V outputs (X4)

5.3 24V Inputs X5 (potential free)

Adressing

Terminal	Adress
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. 5-3: Adressing of the 24V inputs (X5)

5.4 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. 5-4: INTERBUS IN (X6)

5.5 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. 5-5: INTERBUS OUT (X7)

5.6 Interface RS232 IN (X8)

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

Fig. 5-6: RS232 pin assignment X8

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

5.7 Interface RS422 IN (X8A)

Pin	Signal	Pin	Signal
1	Shield	2	N. C.
3	N. C.	4	RS422 RxD+
5	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. 5-7: RS422 pin assignment X8A

5.8 Interface RS422 OUT (X9)

Pin	Signal	Pin	Signal
1	Shield	2	N. C.
3	N. C.	4	RS422 RxD+
5	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. 5-8: RS422 pin assignment X9

5.9 Terminal Connectors X1...X3

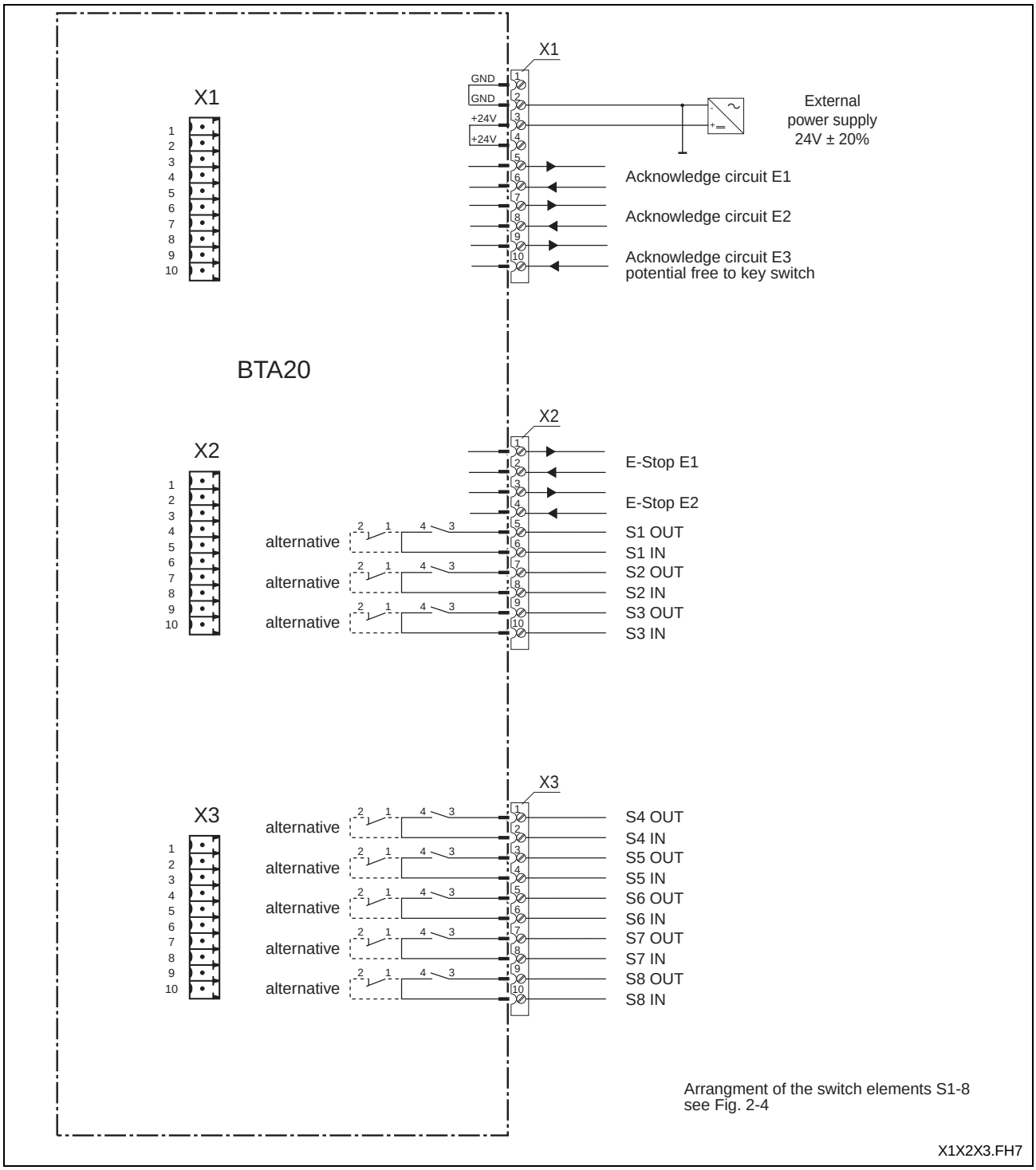


Fig. 5-9: Terminal connectors X1...3

5.10 Terminal Connectors X4 and X5

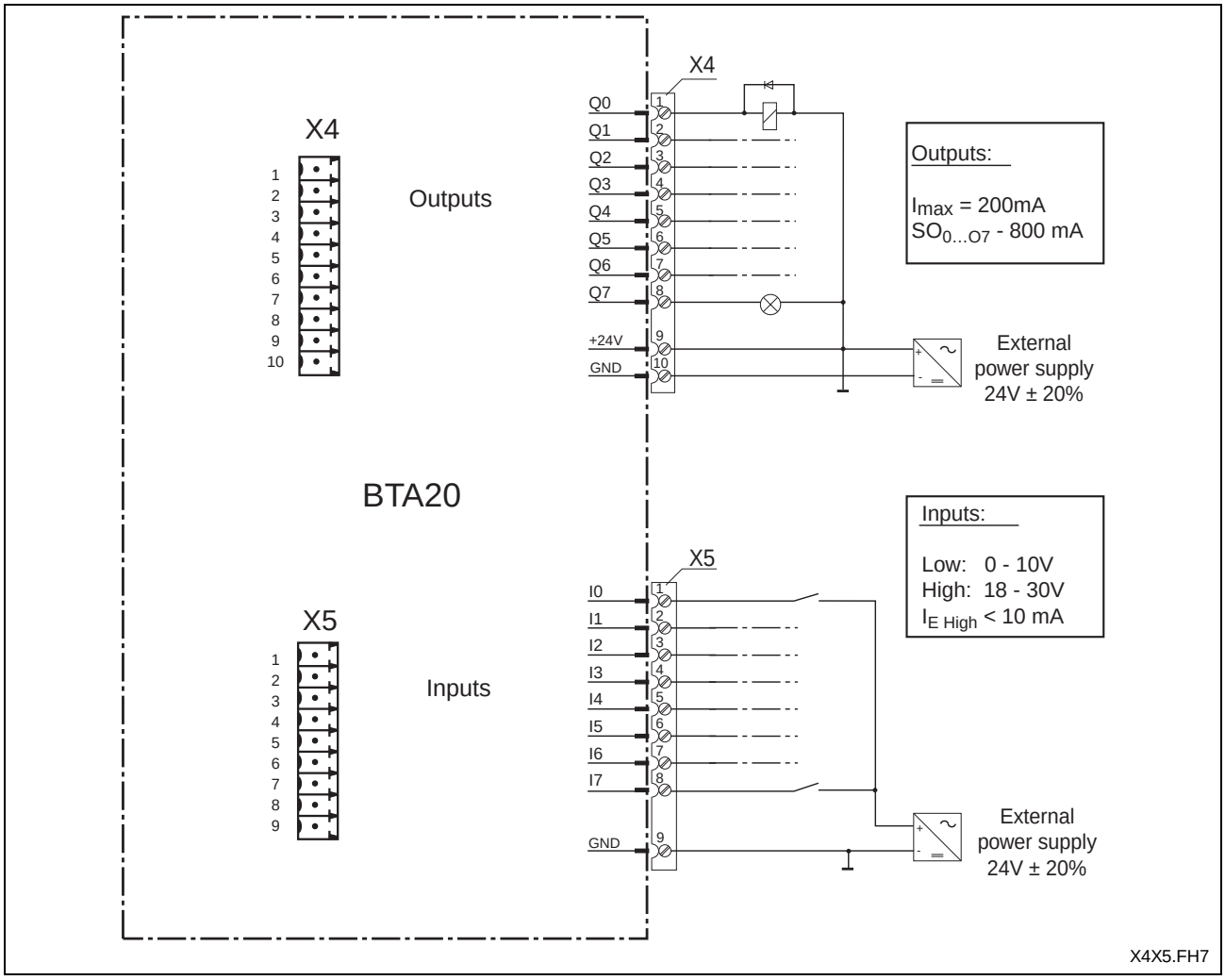


Fig. 5-10: Terminal Connectors X4 and X5

5.11 E-Stop and Acknowledge Circuits

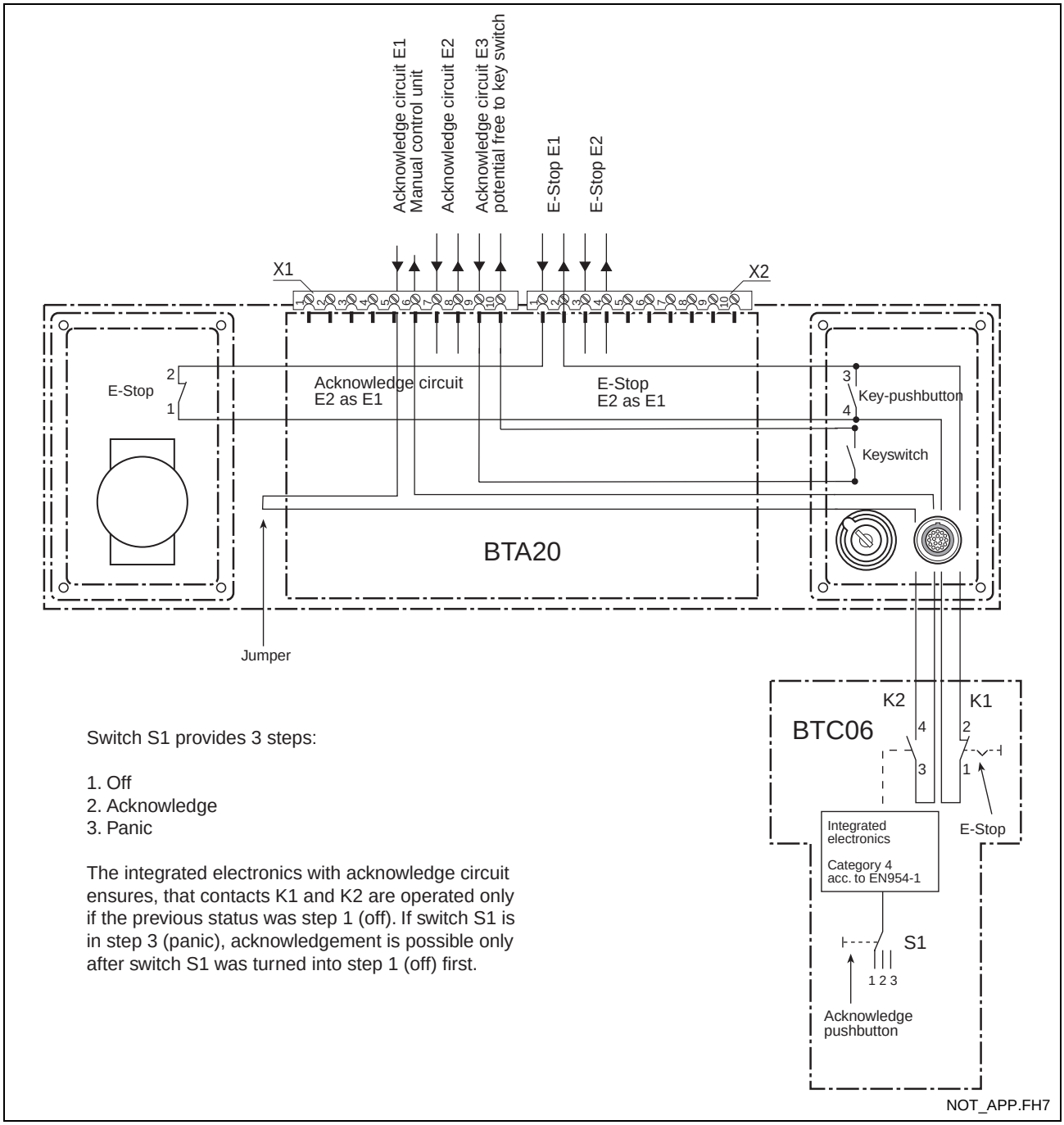


Fig. 5-11: Application example E-Stop and acknowledge circuits

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 alternative by the customer.

6 Dimensions

6.1 Enclosure Dimensions

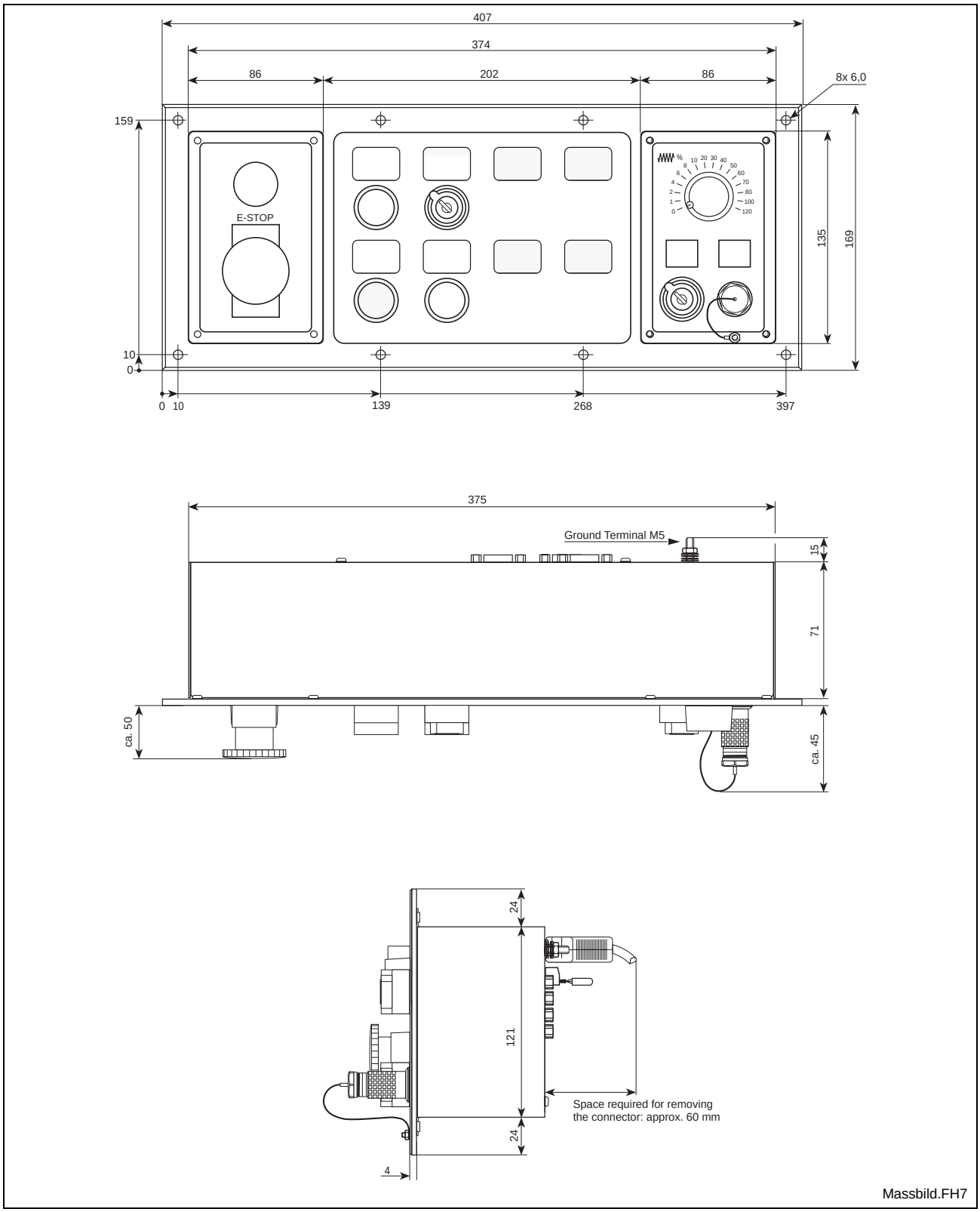


Fig. 6-1: Encloser dimensions

6.2 Mounting Dimensions

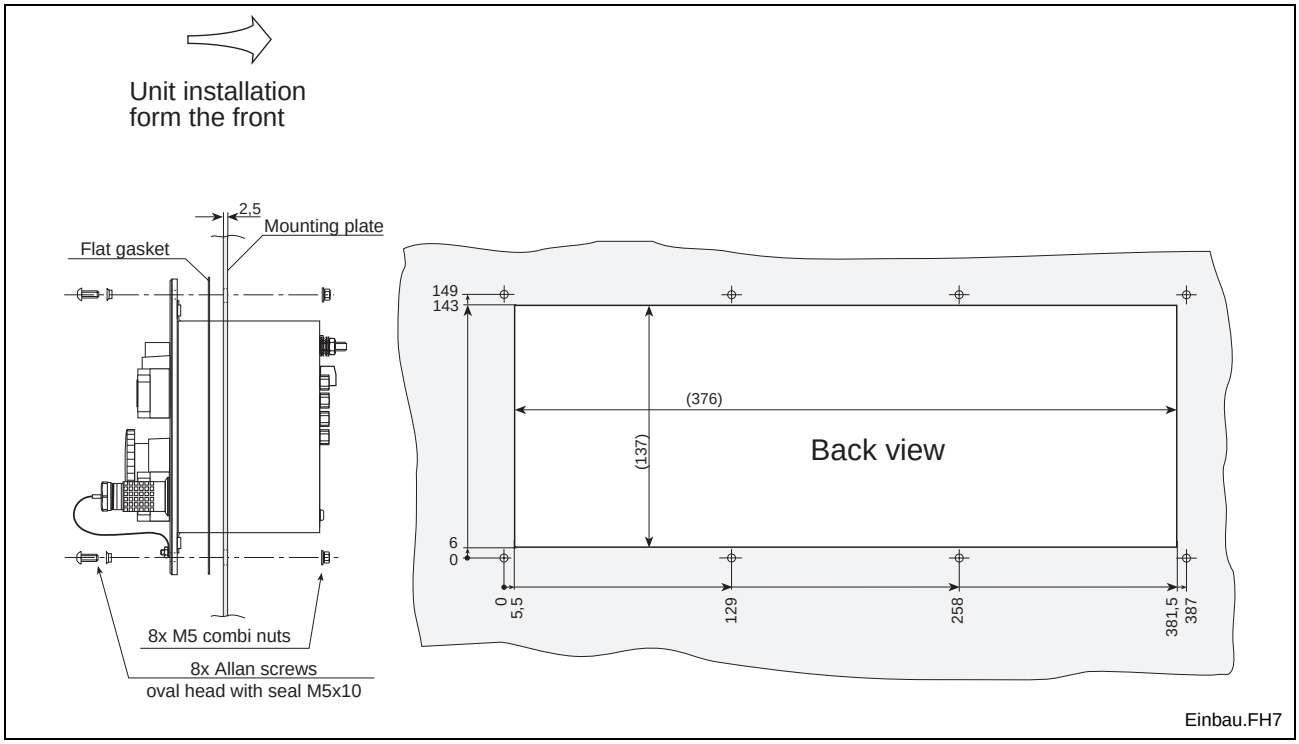


Fig. 6-2: Mounting dimensions

7 Typical Applications

7.1 INTERBUS-S-Connection

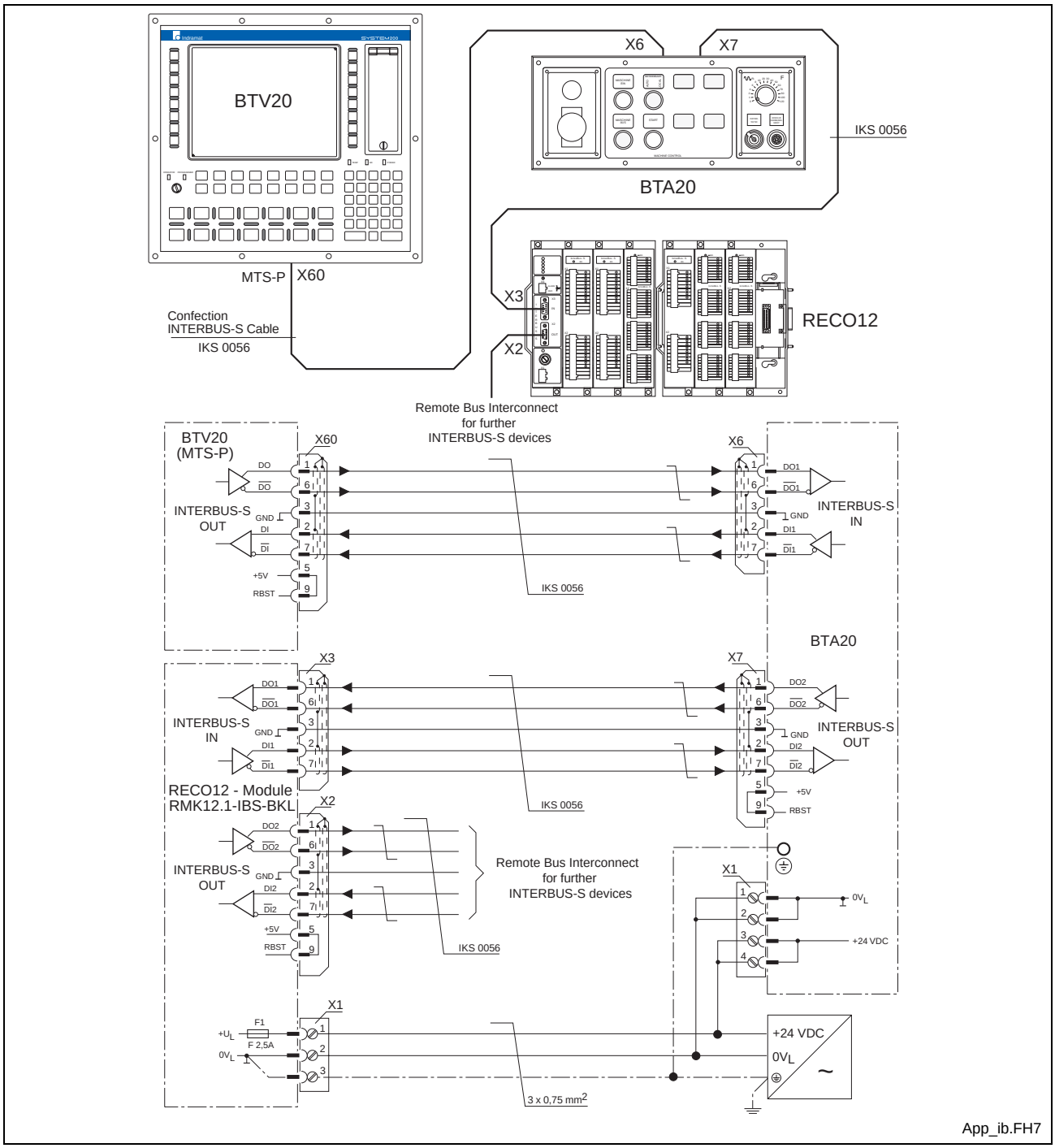


Fig. 7-1: INTERBUS-S connection example

7.2 RS422 connection with BTA10

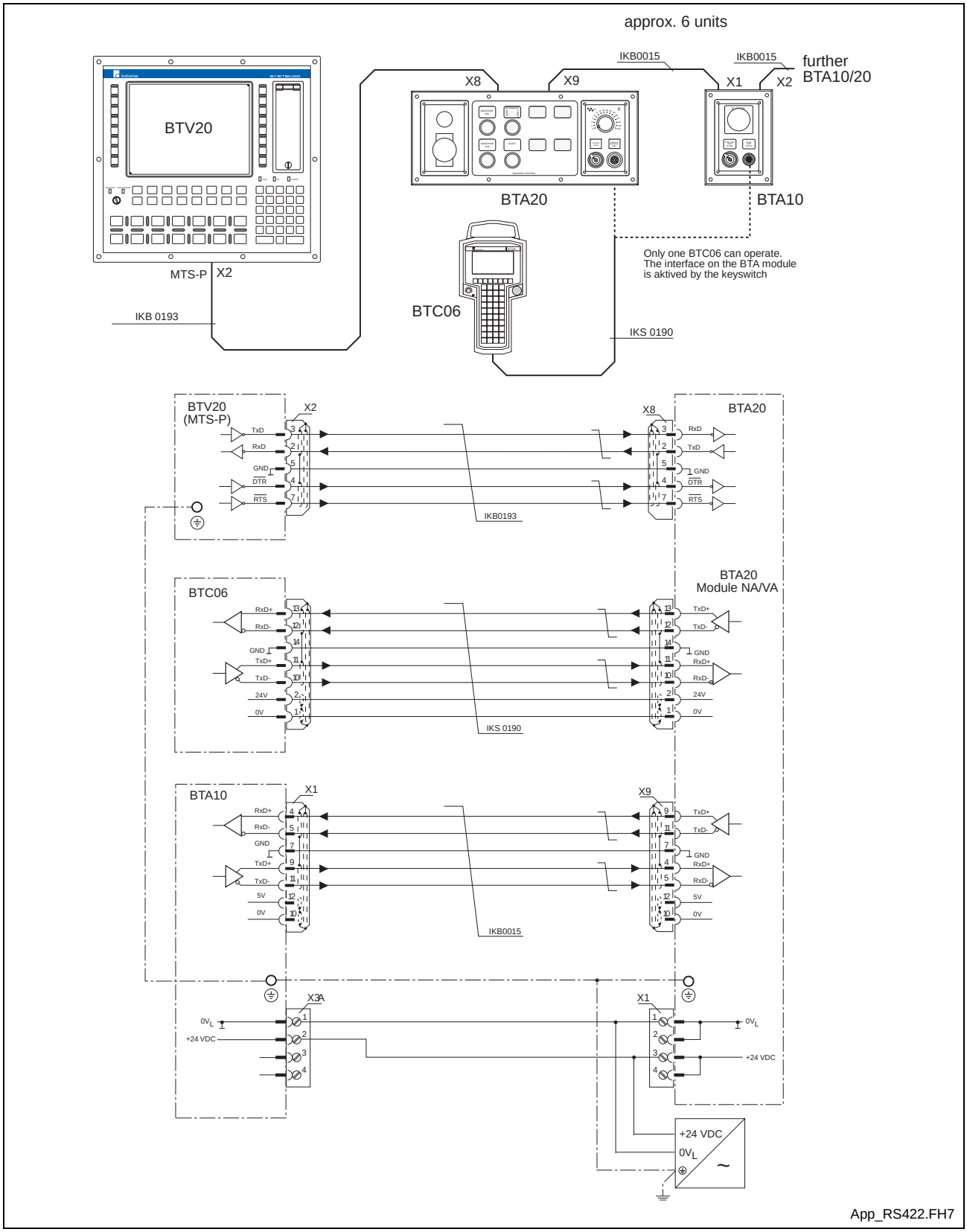


Fig. 7-2: RS422 connection example with a BTA10

7.3 RS422 connection with two BTA20

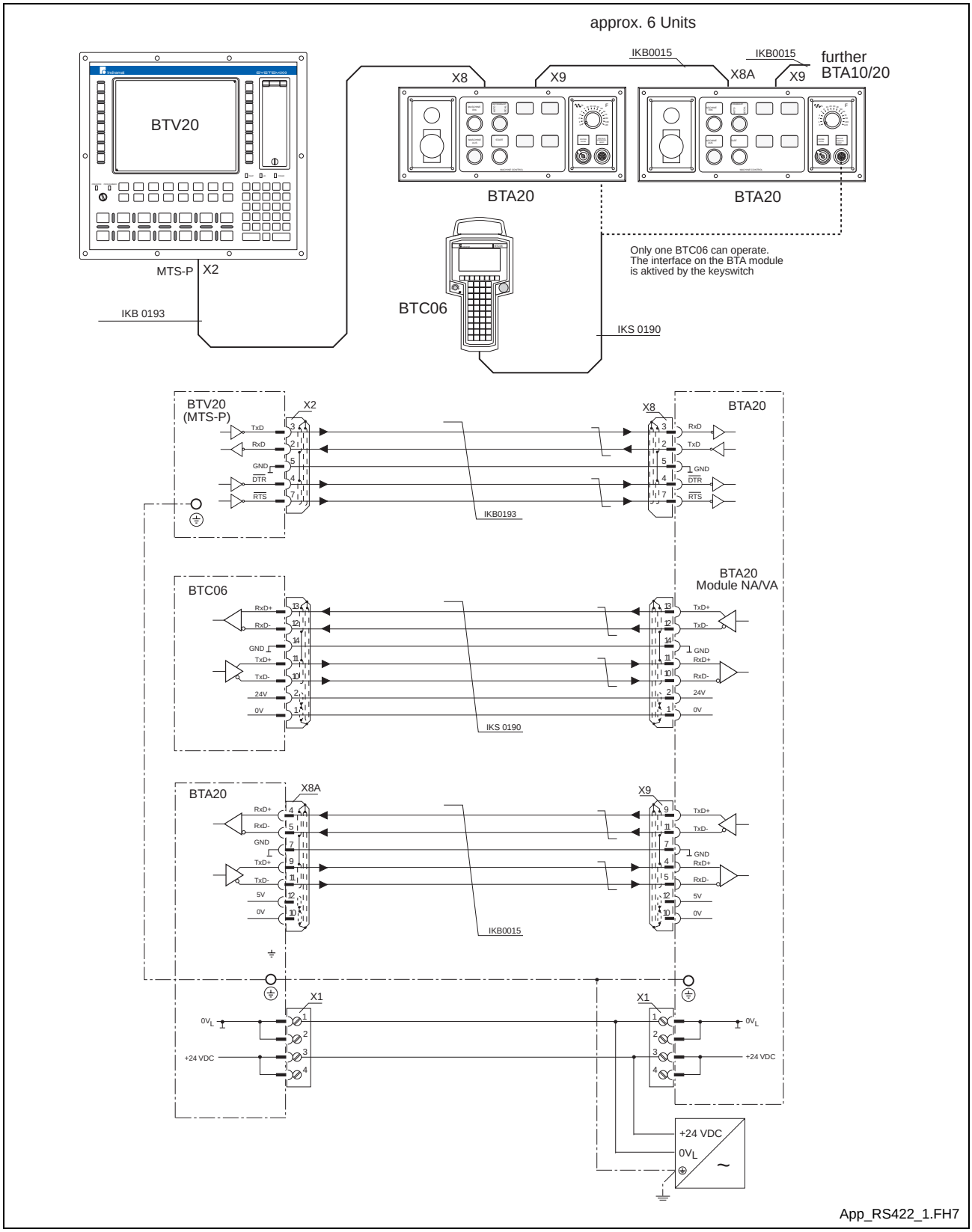


Fig. 7-3: RS422 connection example with two BTA20

7.4 Assembly of the Required Cables

IKB0015

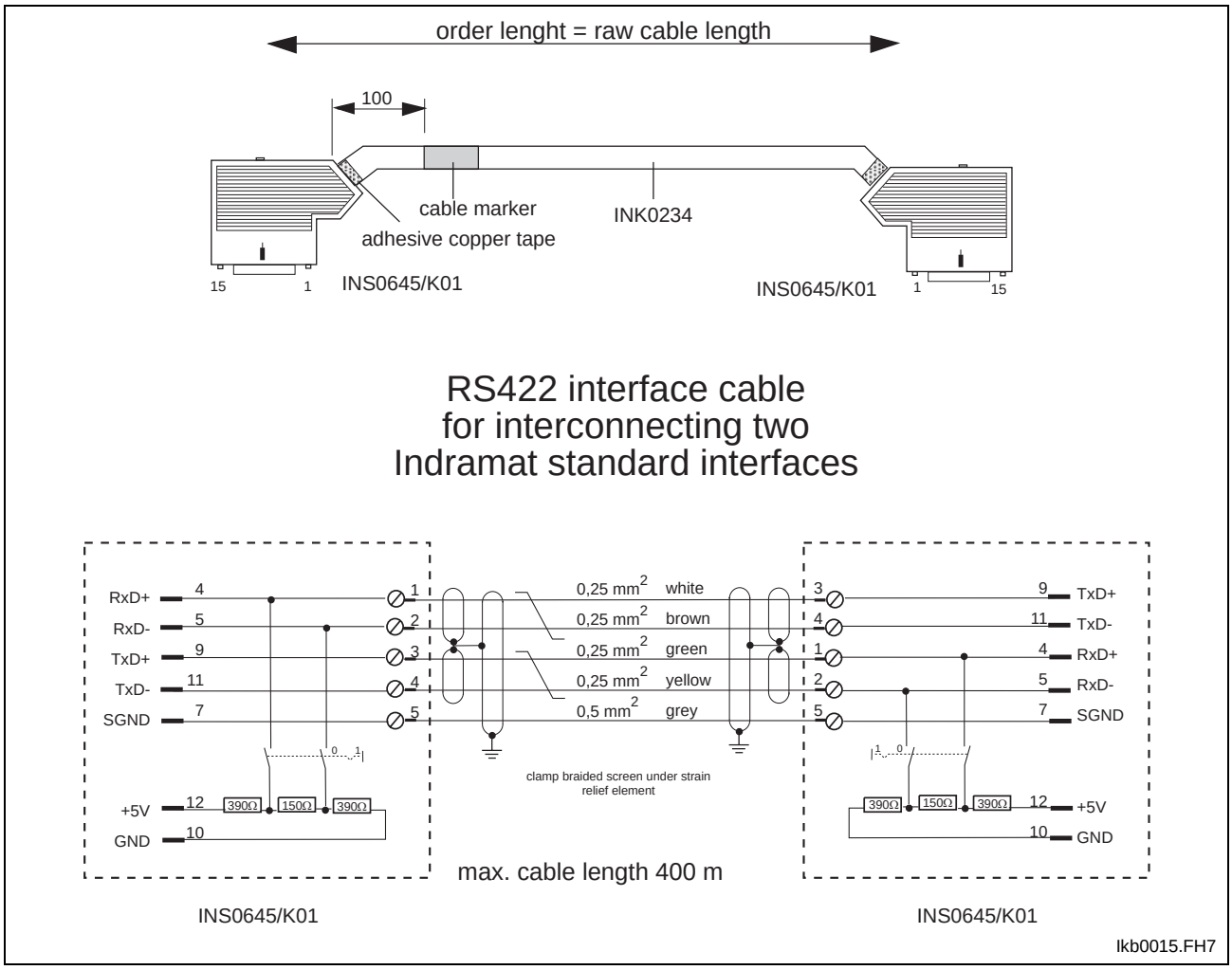


Fig. 7-4: Cableplan for connecting cable IKB0015

IKB0193

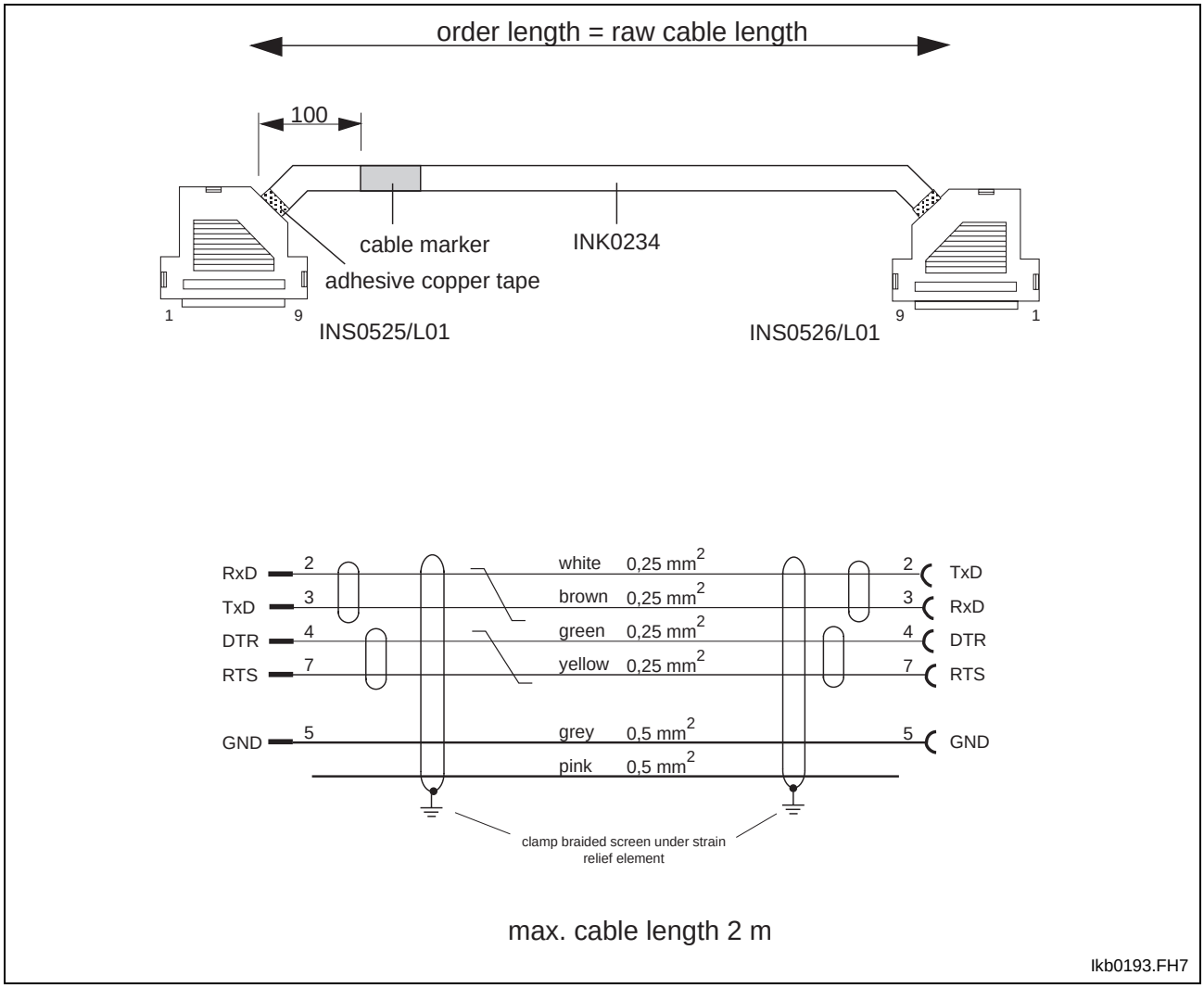


Fig. 7-5: Cableplan for connecting cable IKB0193

IKS0056

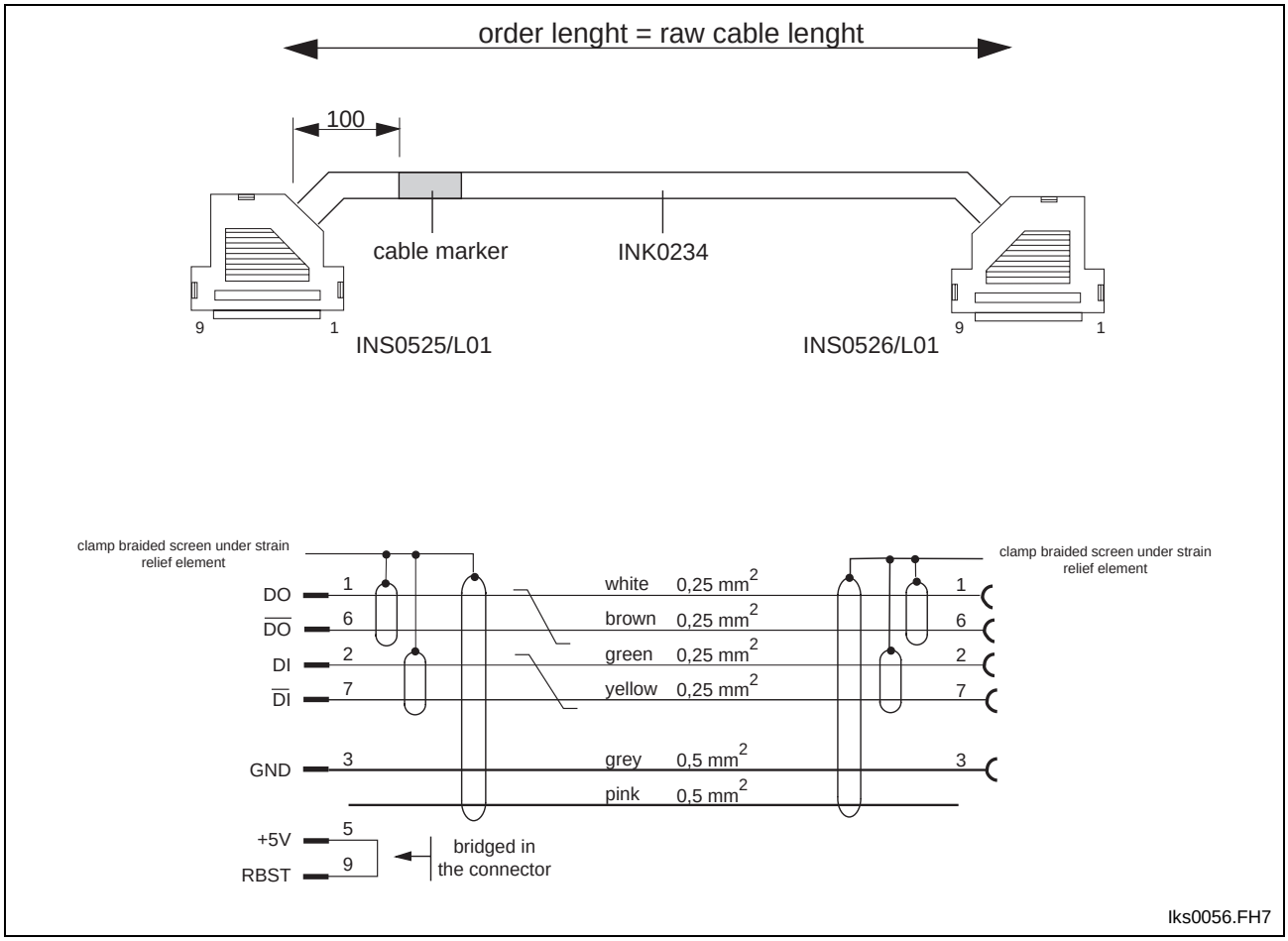


Fig. 7-6: Cableplan for connecting cable IKS0056

8 Ordering Information

8.1 Type code

Abbrev. Column	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5	6	7	8	9	30	1	2	3	4	5	6	7	8	9	40
Example:	B	T	A	2	0	.	3	-	N	A	-	Z	P	-	V	A	-	B	S																						

1. Product group
1.1 BTA. . . . . = BTA

2. Line
2.1 20 . . . . . = 20

3. Design
3.1 3 . . . . . = 3

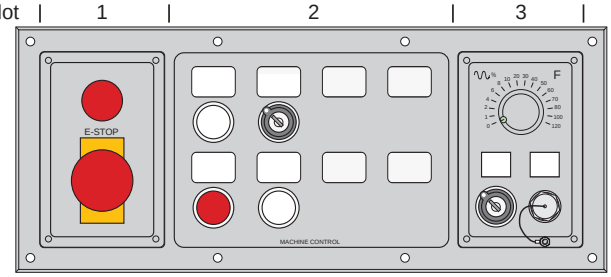
4. Configuration ①
fixed and documented by Rexroth Indramat.
4.1 e.g., NA-ZP-VA . . . . . .= NA-ZP-VA
(Columns: 9 to 10 = Module slot 1
12 to 13 = Module slot 2
15 to 16 = Module slot 3)

5. Communication bus
5.1 RS422 for BTC06 . . . . . = BN
5.2 INTERBUS-S / BT-BUS . . . . . = BS
5.3 without communication bus. . . . . = NN

Note:
① see INDRAnet - Sales - Market Intro and Discontinuation lists

Illustration example: BTA20.3

Module slot | 1 | 2 | 3 |



Type.FH7

Fig. 8-1: Type code BTA20.3

8.2 Typical Configurations

BTA20.3-NA-SP-VA-BS

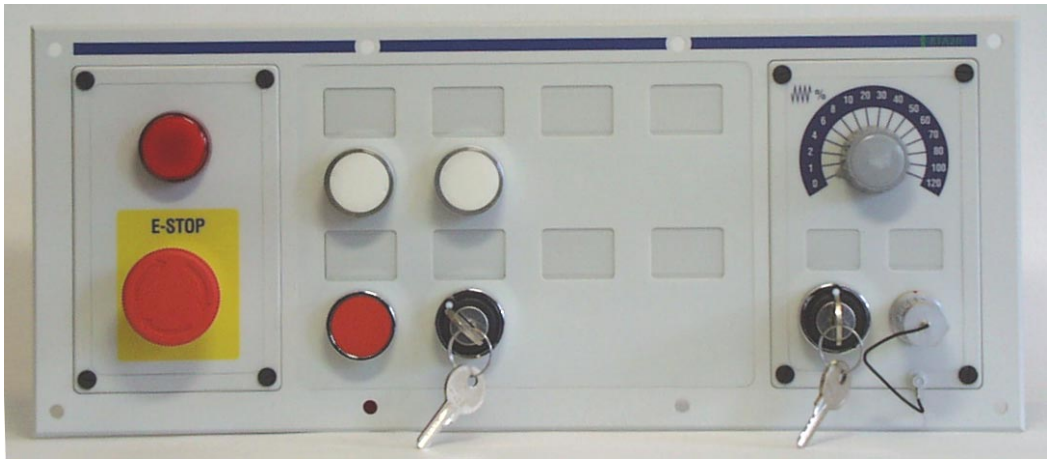


Fig. 8-2: BTA20.3-NA-SP-VA-BS

	Module	Function
Module left-hand side	NA	Emergency stop; indicator lamp
Module right-hand side	VA	Override switch, manual control unit connection

Module center

	Front	Left	Right	Lamp	Switching path (right-hand module)	
					In	Out
S1	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S2	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S3	not equiped					
S4	not equiped					
S5	Red pushbutton	NC contact	NC contact	No	External	External
S6	BG2 key switch	NC contact	NO contact	No	Internal	Internal
S7	not equiped					
S8	not equiped					

Fig. 8-3: BTA20.3-NA-SP-VA-BS configuration

BTA20.3-NA-SP-BA-BS

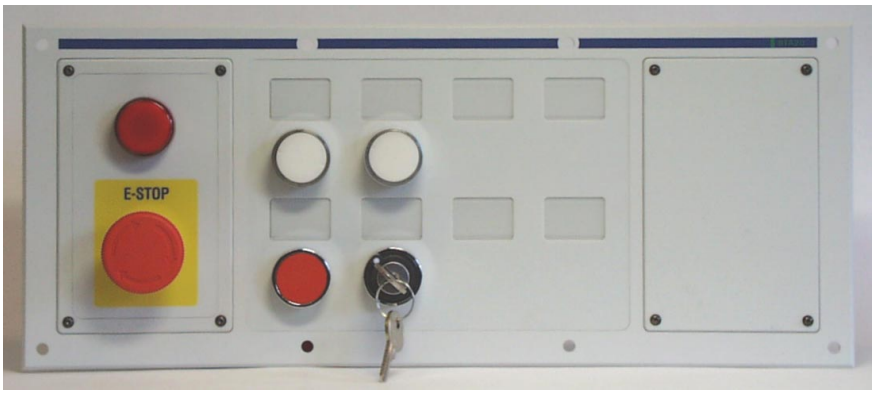


Fig. 8-4: BTA20.3-NA-SP-BA-BS

	Module	Function
Module left-hand side	NA	Emergency stop; indicator lamp
Module right-hand side	BA	Blank module

Module center						
	Front	**Left**	**Right**	**Lamp**	**Switching path (right-hand module)**	
					In	Out
S1	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S2	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S3	not equiped					
S4	not equiped					
S5	Red pushbutton	NC contact	NC contact	No	External	External
S6	BG2 key switch	NC contact	NO contact	No	Internal	Internal
S7	not equiped					
S8	not equiped					

Fig. 8-5: BTA20.3-NA-SP-BA-BS configuration

BTA20.3-NA-ZP-VA-BS

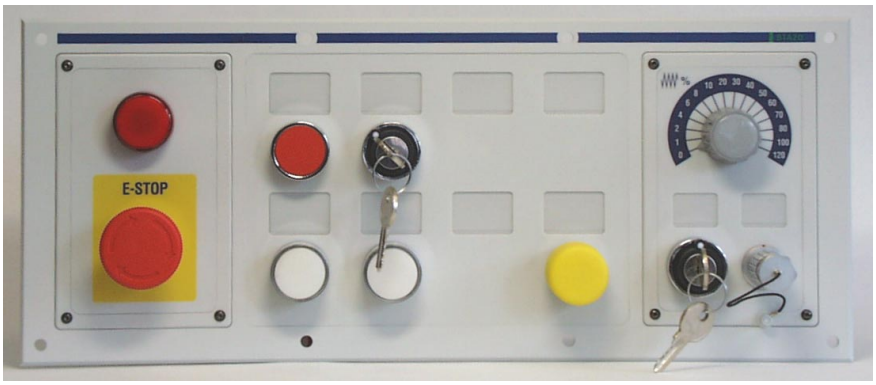


Fig. 8-6: BTA20.3-NA-ZP-VA-BS

	Module	Function
Module left-hand side	NA	Emergency stop; indicator lamp
Module right-hand side	VA	Override switch, manual control unit connection

Module center						
	Front	**Left**	**Right**	**Lamp**	**Switching path (right-hand module)**	
					In	Out
S1	Red pushbutton	NC contact	NC contact	No	External	External
S2	BG2 key switch	NC contact	NO contact	No	External	External
S3	not equiped					
S4	not equiped					
S5	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S6	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S7	not equiped					
S8	Yellow mushroom button	NC contact	NC contact	No	External	External

Fig. 8-7: BTA20.3-NA-ZP-VA-BS configuration

BTA20.3-NA-ZP-BA-BS

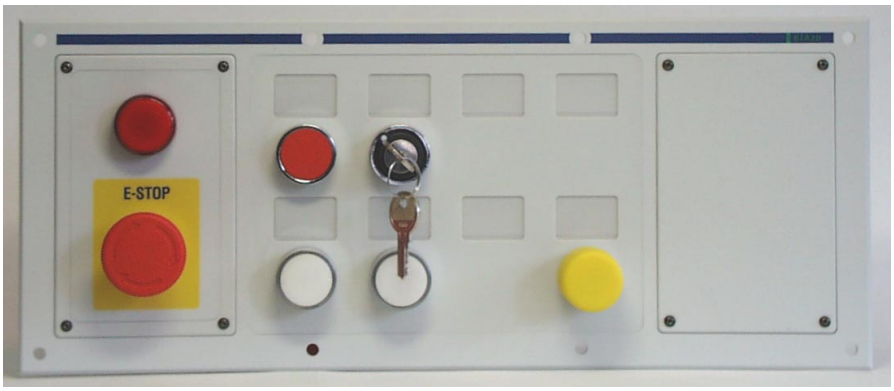


Fig. 8-8: BTA20.3-NA-ZP-BA-BS

	Module	Function
Module left-hand side	NA	Emergency stop; indicator lamp
Module right-hand side	BA	Blank module

Module center						
	Front	**Left**	**Right**	**Lamp**	**Switching path (right-hand module)**	
					In	Out
S1	Red pushbutton	NC contact	NC contact	No	External	External
S2	BG2 key switch	NC contact	NO contact	No	External	External
S3	not equiped					
S4	not equiped					
S5	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S6	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S7	not equiped					
S8	Yellow mushroom button	NC contact	NC contact	No	External	External

Fig. 8-9: BTA20.3-NA-ZP-BA-BS configuration

BTA20.3-NB-HP-VB-BS

Fig. 8-10: BTA20.3-NB-HP-VB-BS

	Module	Function
Module left-hand side	NB	Emergency stop; manual control unit connection
Module right-hand side	VB	Feedrate- and spindle override

Module center

	Front	Left	Right	Lamp	Switching path (right-hand module)	
					In	Out
S1	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S2	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S3	Green illum. pushbutton	NO contact	NO contact	Yes	External	External
S4	White illum. pushbutton	NO contact	NC contact	Yes	Internal	External
S5	Red pushbutton	NC contact	NC contact	No	External	External
S6	BG2 key switch	NC contact	NO contact	No	Internal	Internal
S7	Blue illum. pushbutton	NO contact	NC contact	Yes	Internal	External
S8	Yellow mushroom button	NC contact	NC contact	No	External	External

Fig. 8-11: BTA20.3-NB-HP-VB-BS configuration

BTA20.3-NB-LP-KA-BS

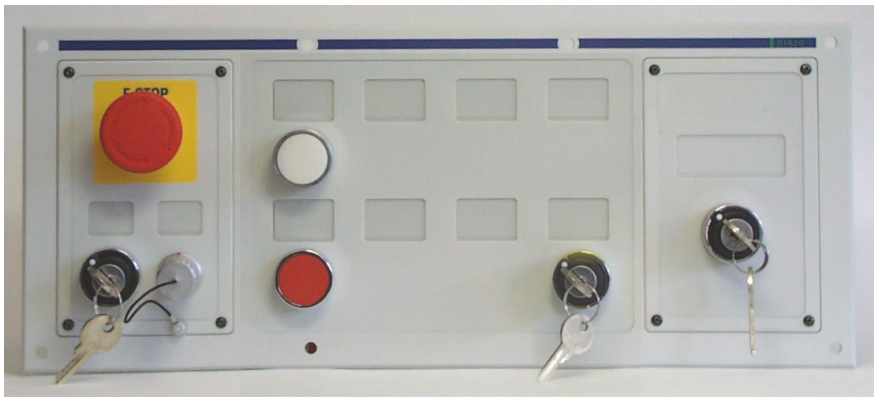


Fig. 8-12: BTA20.3-NB-LP-KA-BS

	Module	Function
Module left-hand side	NB	Emergency stop; manual control unit connection
Module right-hand side	KA	Custom specific

Module center						
	Front	**Left**	**Right**	**Lamp**	**Switching path (right-hand module)**	
					In	Out
S1	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S2	not equiped					
S3	not equiped					
S4	not equiped					
S5	Red pushbutton	NC contact	NC contact	No	External	External
S6	not equiped					
S7	not equiped					
S8	BG6 key switch	NO contact	NO contact	No	External	External

Fig. 8-13: BTA20.3-NB-LP-KA-BS configuration

BTA20.3-NB-LF-KA-BS

Fig. 8-14: BTA20.3-NB-LF-KA-BS

	Module	Function
Module left-hand side	NB	Emergency stop; manual control unit connection
Module right-hand side	KA	Custom specific

Module center						
	Front	**Left**	**Right**	**Lamp**	**Switching path (right-hand module)**	
					In	Out
S1	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S2	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S3	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S4	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S5	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S6	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S7	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S8	White illum. pushbutton	NO contact	NO contact	Yes	External	External

Fig. 8-15: BTA20.3-NB-LF-KA-BS configuration

BTA20.3-NB-FP-VB-BS

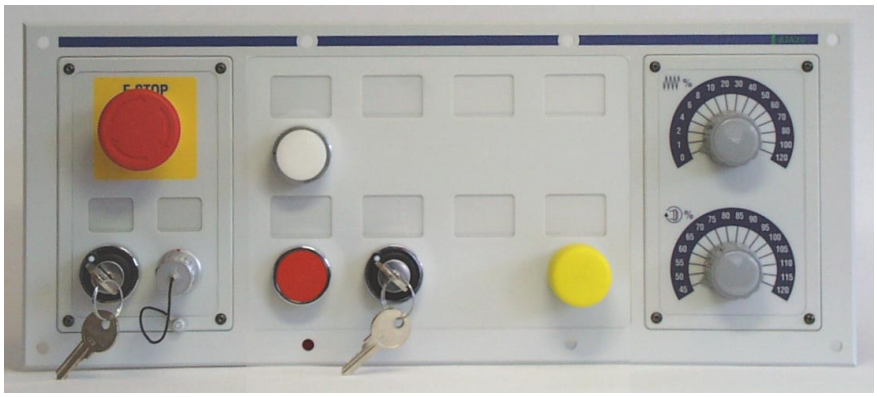


Fig. 8-16: BTA20.3-NB-FP-VB-BS

	Module	Function
Module left-hand side	NB	Emergency stop; manual control unit connection
Module right-hand side	VB	Feedrate- and spindle override

Module center

	Front	Left	Right	Lamp	Switching path (right-hand module)	
					In	Out
S1	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S2	not equiped					
S3	not equiped					
S4	not equiped					
S5	Red pushbutton	NC contact	NC contact	No	External	External
S6	BG2 key switch	NO contact	NO contact	No	External	External
S7	not equiped					
S8	Yellow mushroom button	NC contact	NC contact	No	External	External

Fig. 8-17: BTA20.3-NB-FP-VB-BS configuration

BTA20.3-NA-WE-VB-BS

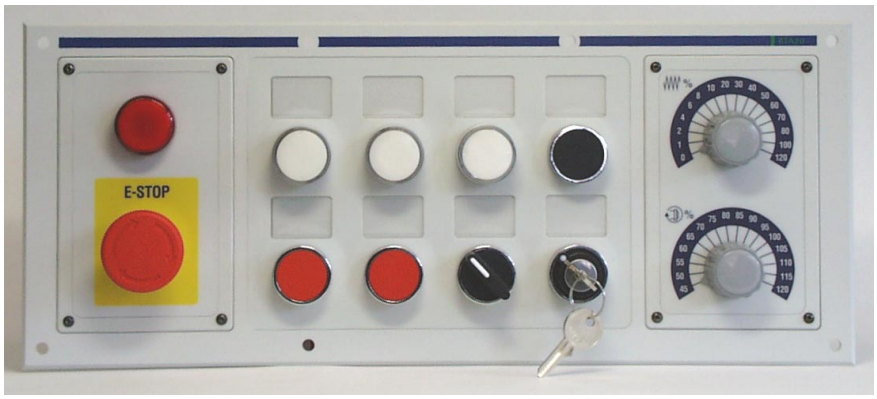


Fig. 8-18: BTA20.3-NA-WE-VB-BS

	Modul	Function
Module left-hand side	NA	Emergency stop; indicator lamp
Module right-hand side	VB	Feedrate- and spindle override

Module center						
	Front	**Left**	**Right**	**Lamp**	**Switching path (right-hand module)**	
					In	Out
S1	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S2	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S3	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S4	Black pushbutton	NO contact	NO contact	No	External	External
S5	Red pushbutton	NC contact	NC contact	No	External	External
S6	Red pushbutton	NC contact	NC contact	No	External	External
S7	BD2 switch toggle	NC contact	NO contact	No	Internal	Internal
S8	BG2/E2 * key switch	NC contact	NO contact	No	External	External

Fig. 8-19: BTA20.3-NA-WE-VB-BS configuration

* E2-closing

BTA20.3-NA-WH-BA-BS

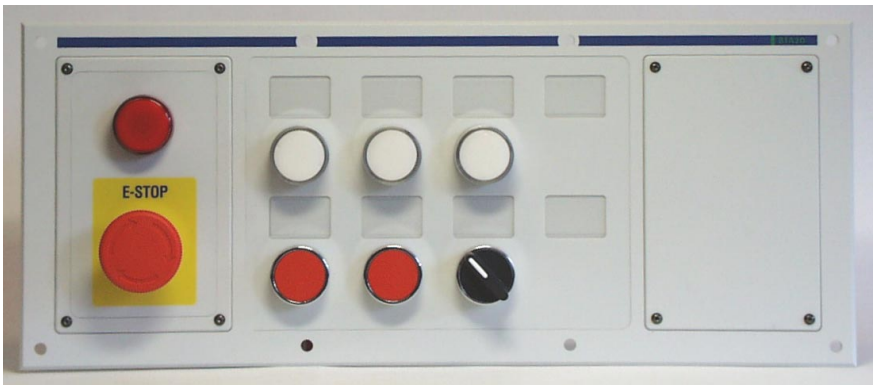


Fig. 8-20: BTA20.3-NA-WH-BA-BS

	Module	Function
Module left-hand side	NA	Emergency stop; indicator lamp
Module right-hand side	BA	Blank module

Module center						
	Front	**Left**	**Right**	**Lamp**	**Switching path (right-hand module)**	
					In	Out
S1	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S2	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S3	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S4	not equiped					
S5	Red pushbutton	NC contact	NC contact	No	External	External
S6	Red pushbutton	NC contact	NC contact	No	External	External
S7	BD2 switch toggle	NC contact	NO contact	No	Internal	Internal
S8	not equiped					

Fig. 8-21: BTA20.3-NA-WH-BA-BS configuration

BTA20.3-NA-WH-VA-BS

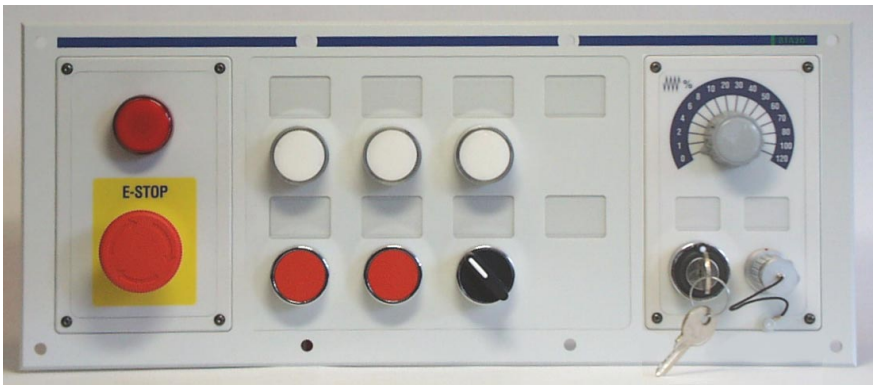


Fig. 8-22: BTA20.3-NA-WH-VA-BS

	Modul	Function
Module left-hand side	NA	Emergency stop; indicator lamp
Module right-hand side	VA	Override switch, manual control unit connection

Module center						
	Front	**Left**	**Right**	**Lamp**	**Switching path (right-hand module)**	
					In	Out
S1	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S2	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S3	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S4	not equiped					
S5	Red pushbutton	NC contact	NC contact	No	External	External
S6	Red pushbutton	NC contact	NC contact	No	External	External
S7	BD2 switch toggle	NC contact	NO contact	No	Internal	Internal
S8	not equiped					

Fig. 8-23: BTA20.3-NA-WH-VA-BS configuration

BTA20.3-NA-WS-VA-BS

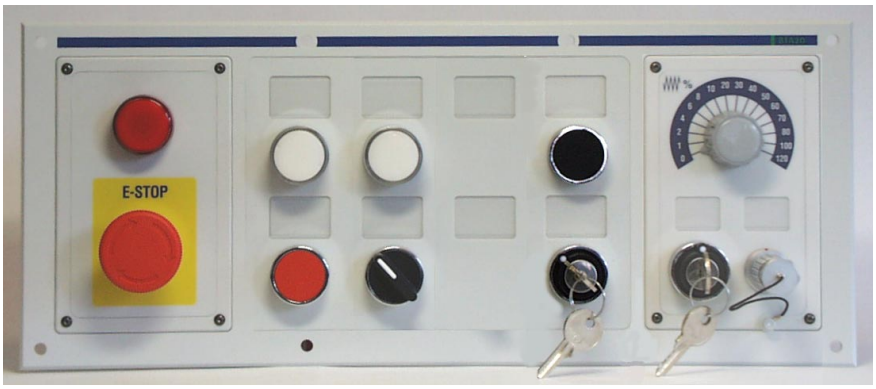


Fig. 8-24: BTA20.3-NA-WS-VA-BS

	Module	Function
Module left-hand side	NA	Emergency stop; indicator lamp
Module right-hand side	VA	Override switch, manual control unit connection

Module center

	Front	Left	Right	Lamp	Switching path (right-hand module)	
					In	Out
S1	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S2	White illum. pushbutton	NO contact	NO contact	Yes	External	External
S3	not equiped					
S4	Black pushbutton	NO contact	NO contact	No	External	External
S5	Red pushbutton	NC contact	NC contact	No	External	External
S6	BD2 switch toggle	NC contact	NO contact	No	Internal	Internal
S7	not equiped					
S8	BG2/E2 * key switch	NC contact	NO contact	No	External	External

Fig. 8-25: BTA20.3- NA-WS-VA-BS configuration

* E2-closing

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