

MTC200/MT-CNC Machine Operator Panel BTM15

Project Planning

DOK-MTC200-BTM15*****-PRJ1-EN-P

Title	Machine Operator Panel BTM15
Type of Documentation	Project Planning
Documentation type	DOK-MTC200-BTM15*****-PRJ1 -EN-P
Internal filing	Drawing no.: 109-1041-4141-01/EN
Purpose of the document	<ul style="list-style-type: none"> • Description of BTM15 hardware functions • BTM15 technical data • BTM15 connection installation • BTM15 programming

Configuration control

Documentation identification of previous releases	Release date	Comment
109-1041-4141-01/EN	01	New issue

Copyright © INDRAMAT GmbH, 1998
 Copying this document, and giving it to others and the use or communication of the contents thereof without express authority are forbidden. Offenders are liable for the payment of damages. All rights are reserved in the event of the grant of a patent or the registration of a utility model or design (DIN 34-1).

Validity All rights are reserved with respect to the content of this documentation and the availability of the product.

Published by INDRAMAT GmbH • Bgm.-Dr.-Nebel-Str. 2 • D-97816 Lohr a. Main
 Telefon 09352/40-0 • Tx 689421 • Fax 09352/40-4885

Abt. ESM1 (MM)

Note This documentation is printed on chlorine free bleached paper.

Contents

1 Description	1-1
1.1 Description.....	1-1
2 Connections	2-1
2.1 Connector Pin Out.....	2-1
3 Dimensions	3-1
3.1 Dimensions.....	3-1
3.2 Mounting Cutout when Mounting from the back.....	3-1
3.3 Mounting Cutout when Mounting from the front	3-1
4 Application Example	4-1
4.1 Interbus-S Design.....	4-1
5 Interbus-S System Design	5-1
5.1 Interbus-S System Design and Adressing.....	5-1
6 SPS Adressing	6-1
6.1 Local Standard Inputs and Outputs.....	6-1
6.2 Key Pad Module (-TA-).....	6-1
6.3 Spindle Override Module (-SA-).....	6-1
6.4 Feed Override Module (-VA-)	6-1
6.5 Feed Override Module (-VB-)	6-1
6.6 Rapid Override Module (-VE-).....	6-1
6.7 Setup Module (-WE-).....	6-1
6.8 Hand Wheel Module (-HA-)	6-1
7 Product Type Code	7-1
7.1 Type Code BTM15.....	7-1
8 Modul Selection List	8-1
8.1 Modul Selection List.....	8-1
9 Diagnostic	9-1
9.1 Interbus-S Diagnostic List.....	9-1
10 Technical Data	10-1
10.1 General technical Data	10-1

11 Selection	11-1
11.1 Connection/Cable Overview	11-1

Table of Contents:

Description	2
Connector Pin Out	3-4
Dimensions	5
Mounting from Back	6
Mounting from Front	6
Application Example	7
InterBus-S System Design and Addressing	8
SPS Addressing	9-12
-Local Standard Inputs and Outputs	9
-Key Pad Module (-TA-)	10
-Spindle Override Module (-SA-)	11
-Feed Override Module (-VA-)	11
-Feed Override Module (-VB-)	11
-Rapid Override Module (-VE-)	11
-Setup Module (-WE-)	11
-Hand Wheel Module (-HA-)	12
Product Type Code	13
Module Selection List	14-15
InterBus-S Diagnostic LED's	15
General Technical Data	15
Connection/Cable Overview	16



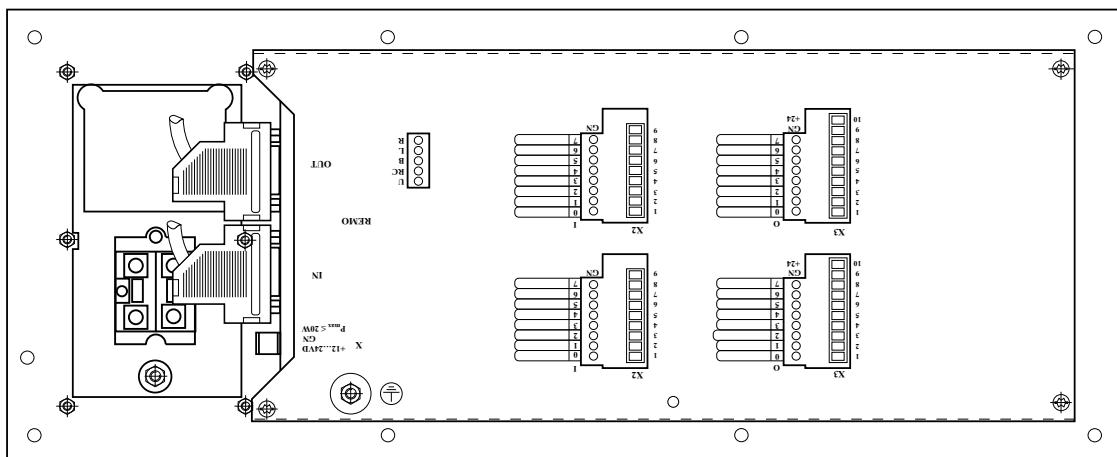
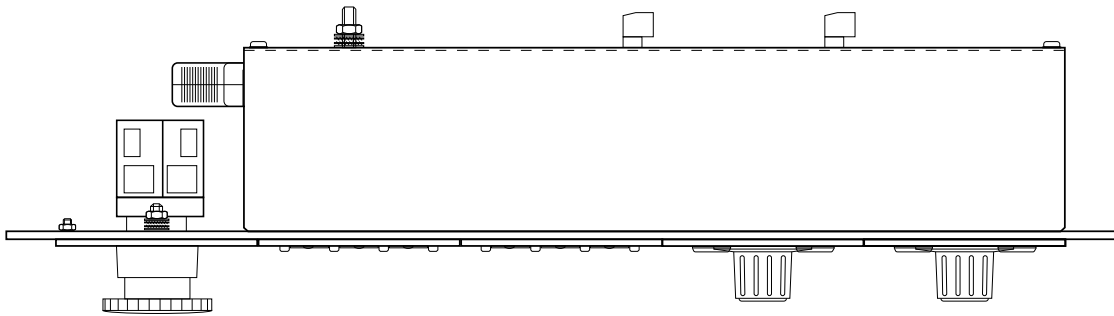
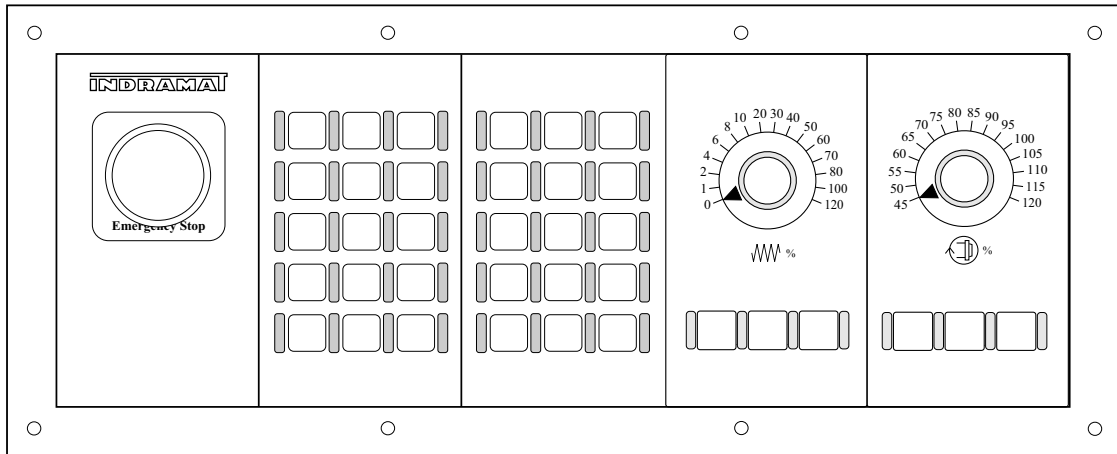
Description:

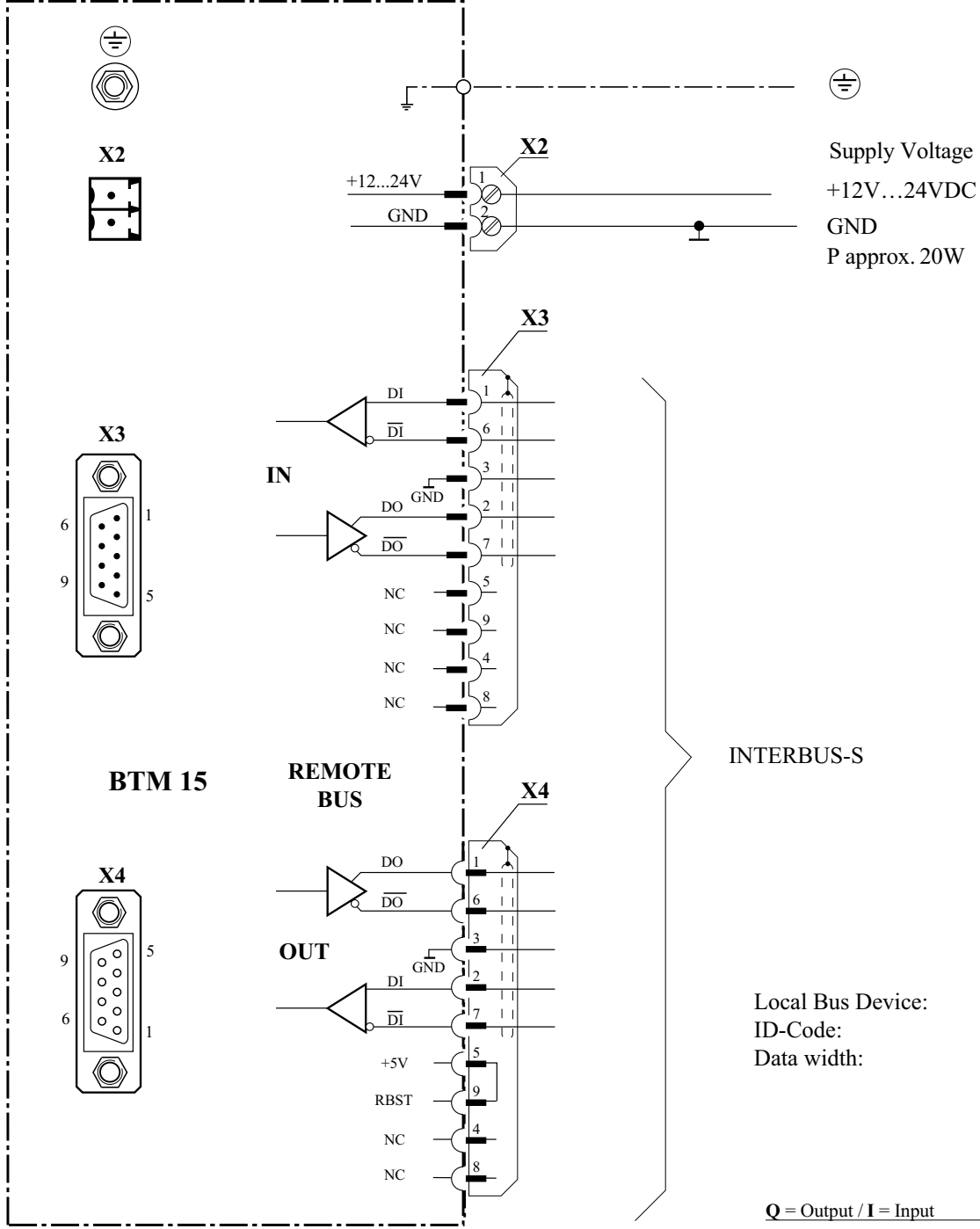
The BTM 15 is a configurable operator panel consisting of the basic rack and 5 modules. It can be built into the machine control panel. The modular design allows it to adapt to machine requirements. 16 Local inputs and 16 Local outputs are provided at the BTM 15's rear side. The InterBus-S Remote Bus connection is used to communicate with the control.

The following modules are available at this time:

- E-Stop Module
- Emergency Return Module
- Override Module
- Hand Wheel Module
- Empty Slot Cover Module
- Keypad Module

The BTM 15 is available only as a complete device from INDRAMAT, configured according to type code (15/16).

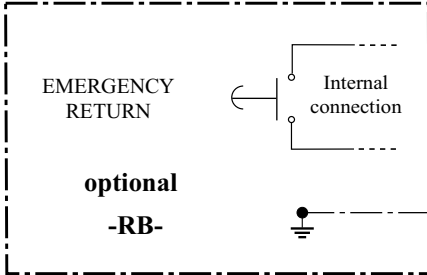




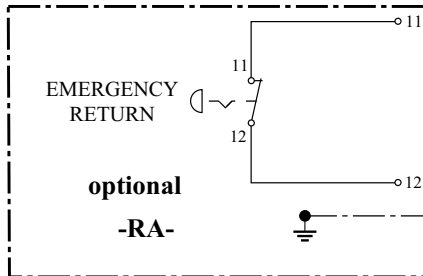
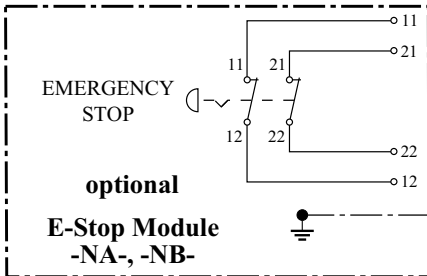
Local Bus Device:
ID-Code: BF(HEX)
Data width: 01(HEX)

I*.0.0

Q = Output / I = Input
Logical Address (1...999)
Byte-No.
Bit-No.

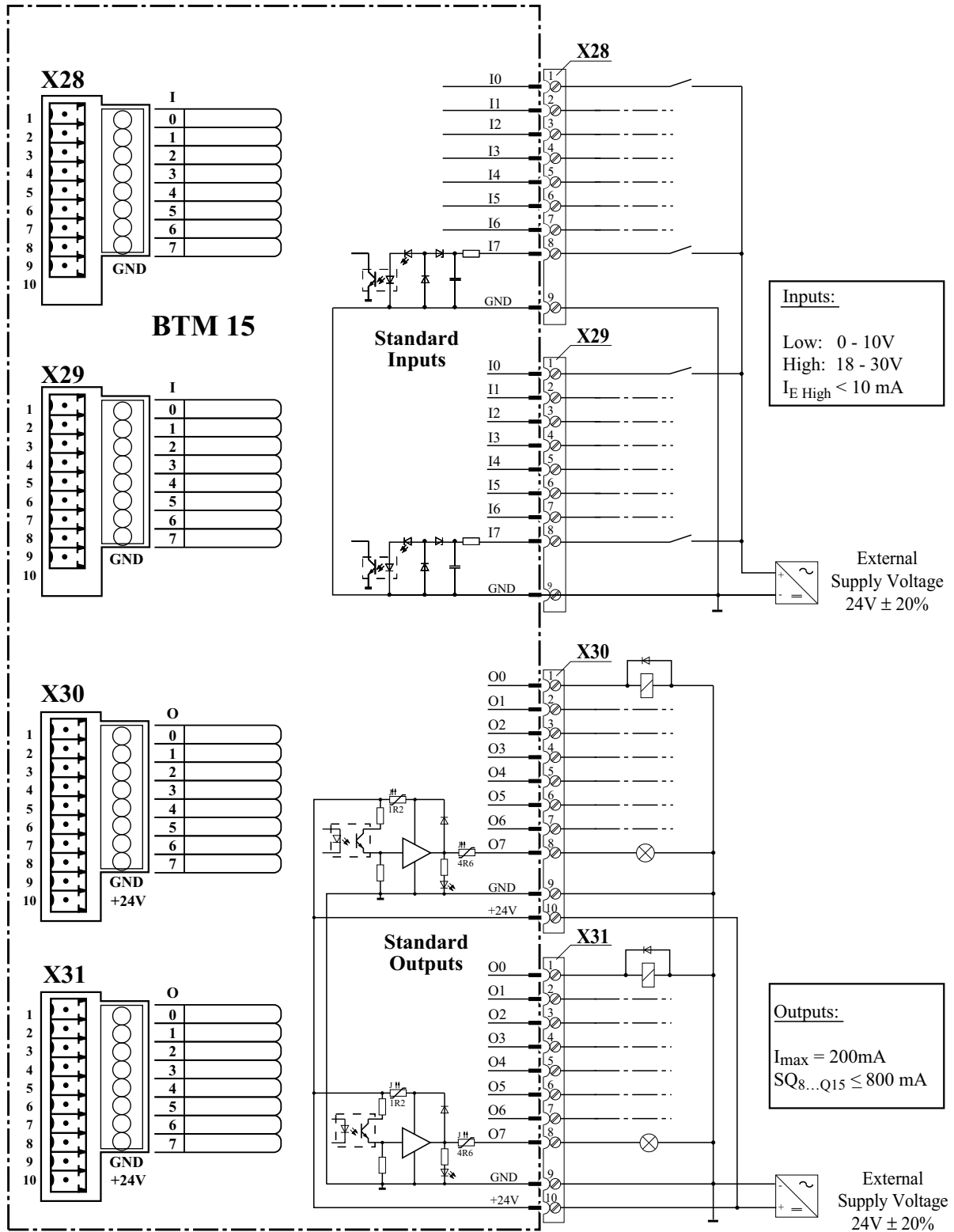


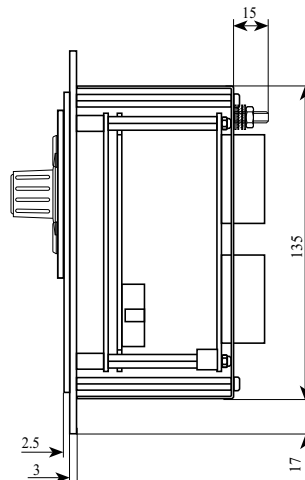
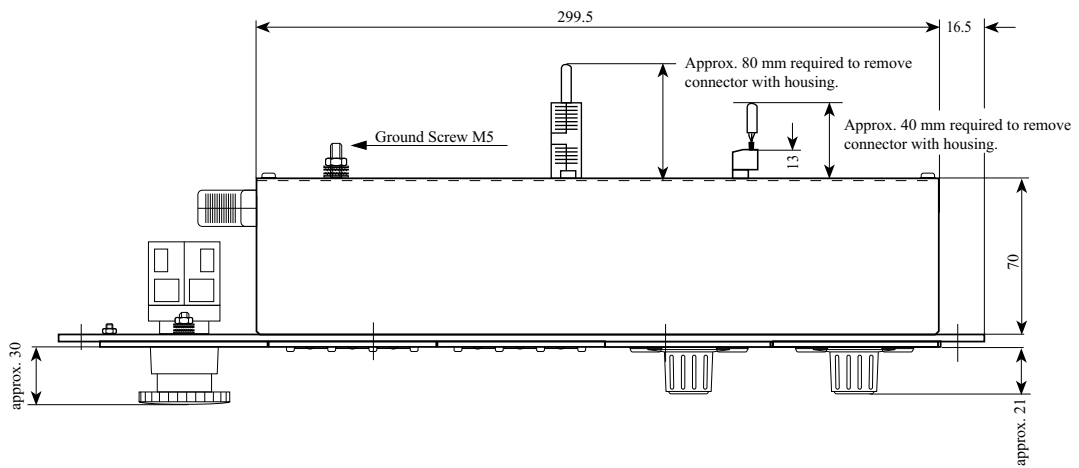
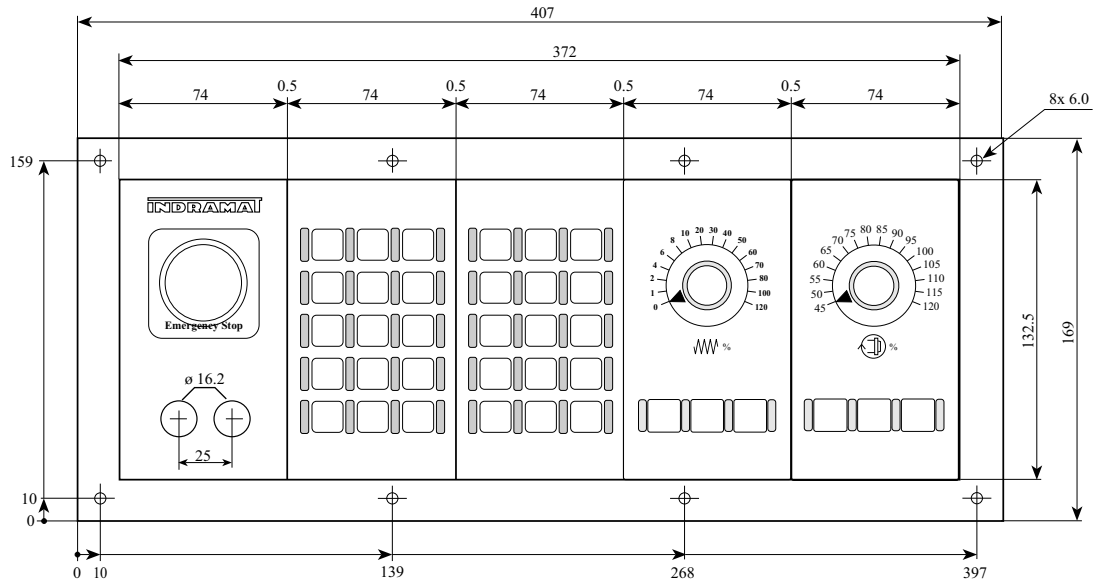
RB Address | I*.2.0



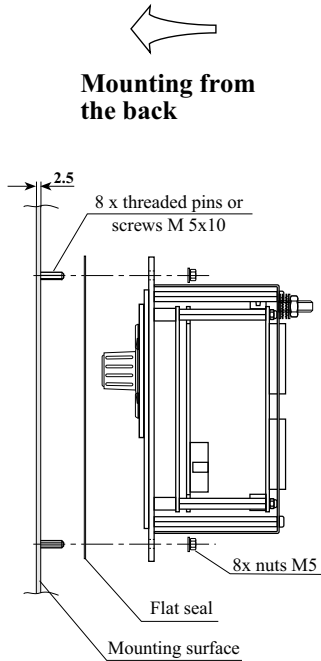
Max. Dry Contact Ratings:

U_{max} 220V DC/AC
 I_{max} 2A DC/AC

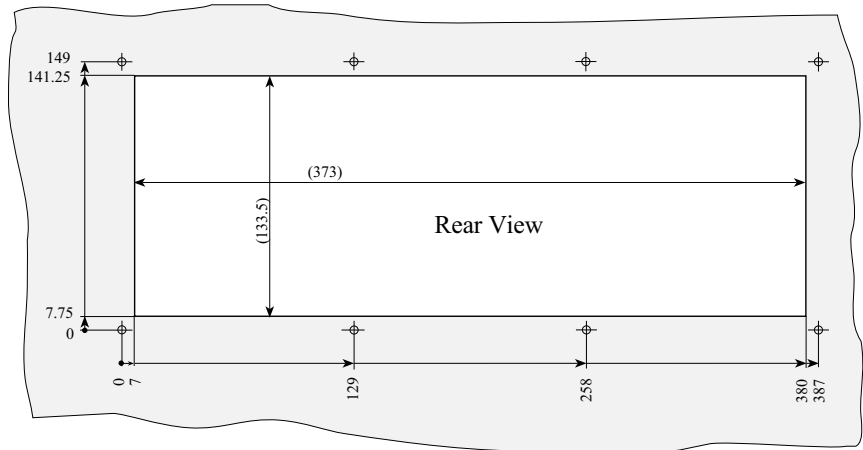




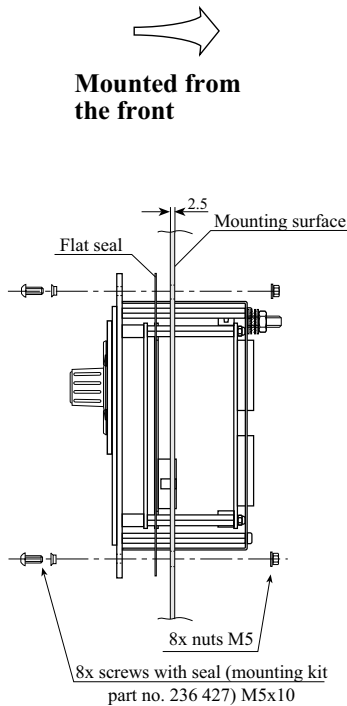
Mounting Cutout when Mounting from the back:



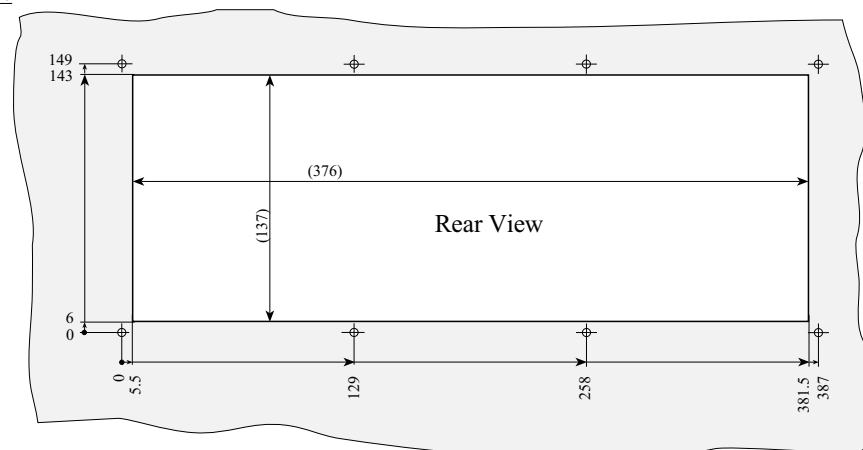
Mounting from the back



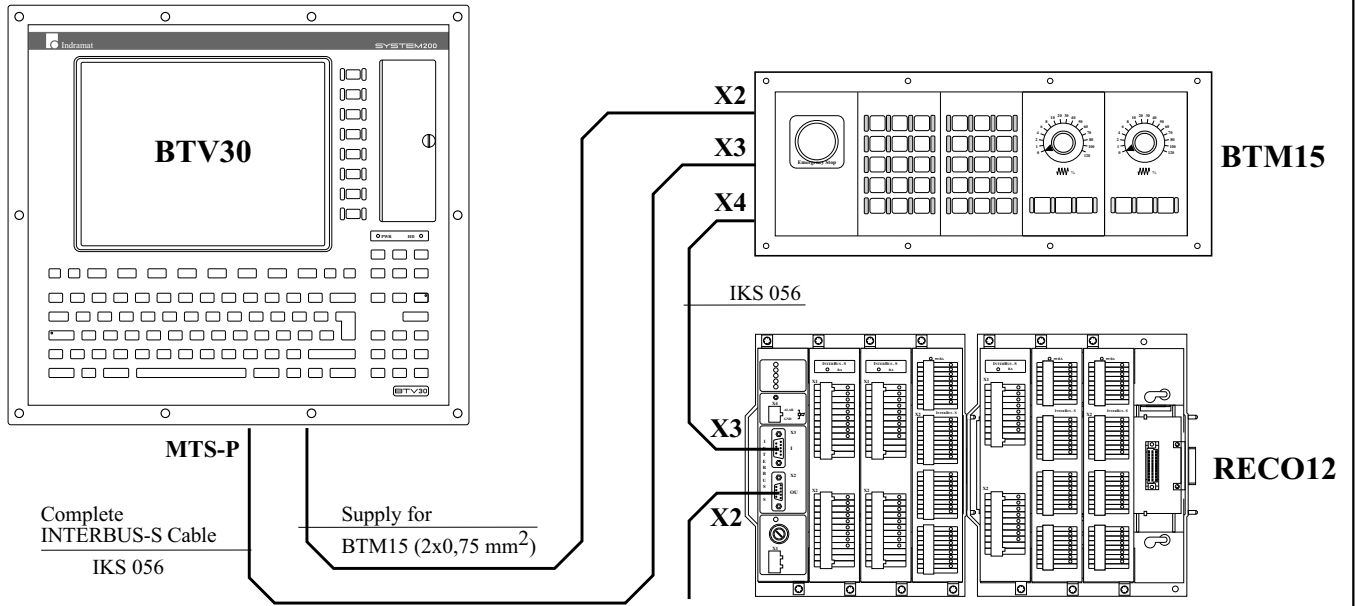
Mounting Cutout when Mounting from the front:



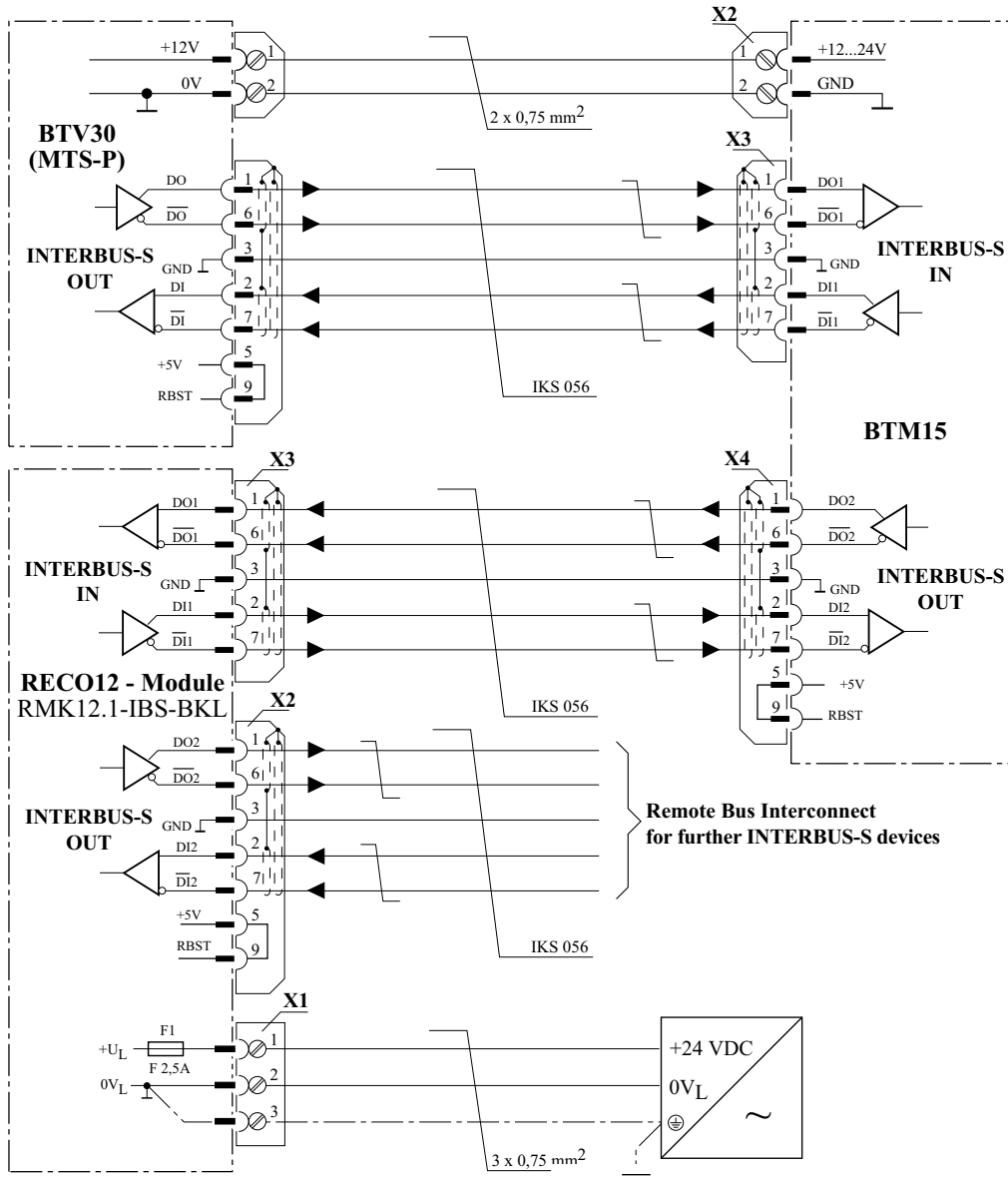
Mounted from the front



Application Example for InterBus-S Interface:



Remote Bus Interconnect to further INTERBUS-S devices



2. BTM 15 -> MTS-P of BTV03

InterBus-S System Design

InterBus-S uses REMOTE BUS and LOCAL BUS.

The Remote Bus is used for long distances and can consist of a max of 256 segments.

The Local Bus branches of the Remote Bus and can consist of a max of 8 devices.

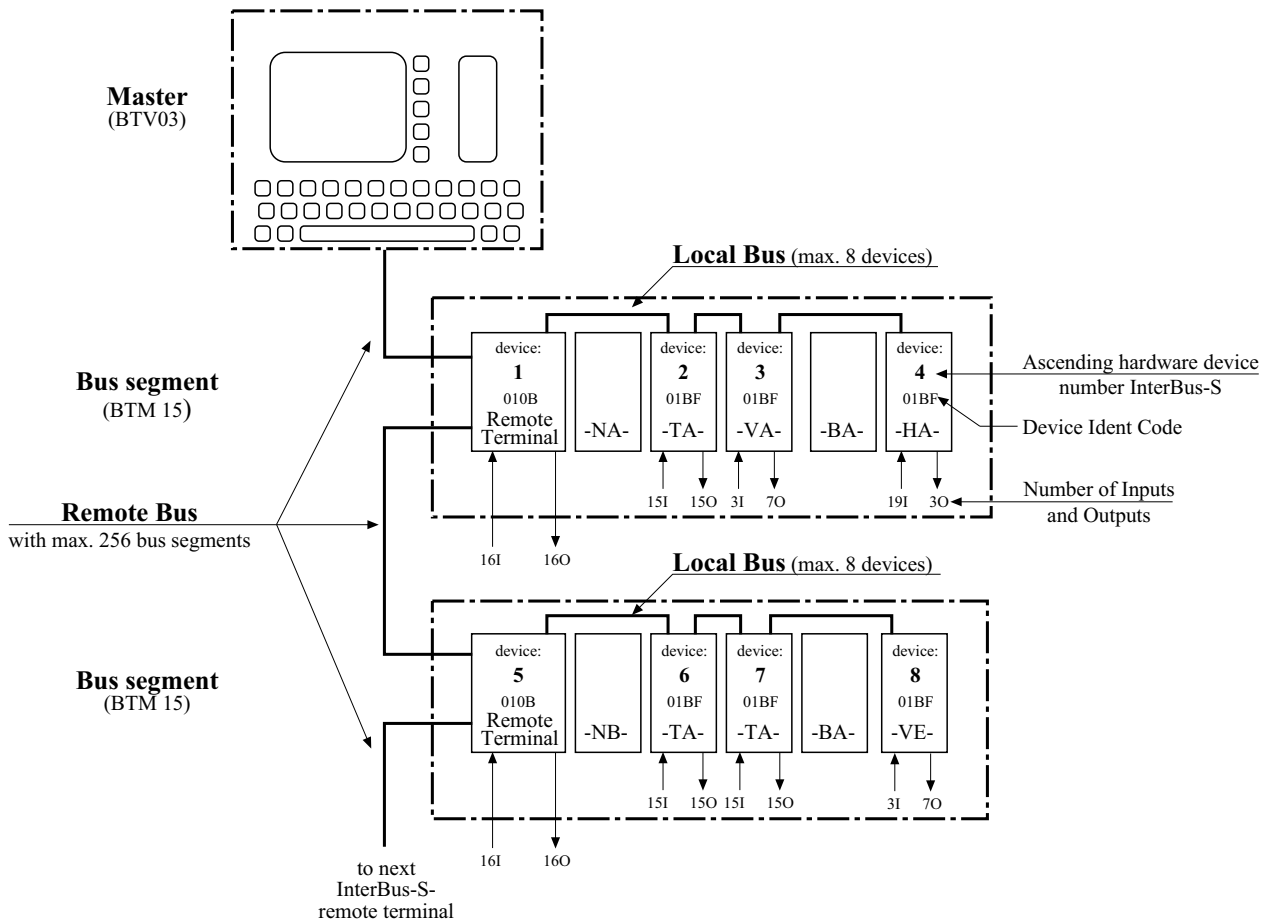
The connection from the Remote to the Local Bus is contained on the motherboard (remote terminal) electronics of the BTM 15. The motherboard also provides a standard 16 local input and 16 local outputs. Most BTM 15 modules have an InterBus-S interface and are connected via the Local Bus to the Remote Bus.

Addressing

The absolute addresses (device numbers) in InterBus-S depend on the physical arrangement, starting at the Master, e.g. BTV03. This means that a device number is assigned to the BTM 15 motherboard and all its available modules.

In the SPS system, the user must assign a unique logical device address used in the program. The sequence (top-bottom) must hereby correspond to the physical wiring sequence of Remote and Local Bus, starting at the module connected to the Master. This addressing system does not require hardware address selection at the devices.

Configuration Example:



SPS Addressing:

Remote Bus Device: DI/DO
 ID-Code: 0B(HEX) = 11
 Data width: 01(HEX) (1 Word) = 16 Bit (bi-directional)

Legend:

Q = Output / I = Input

Logical Address (1...999)

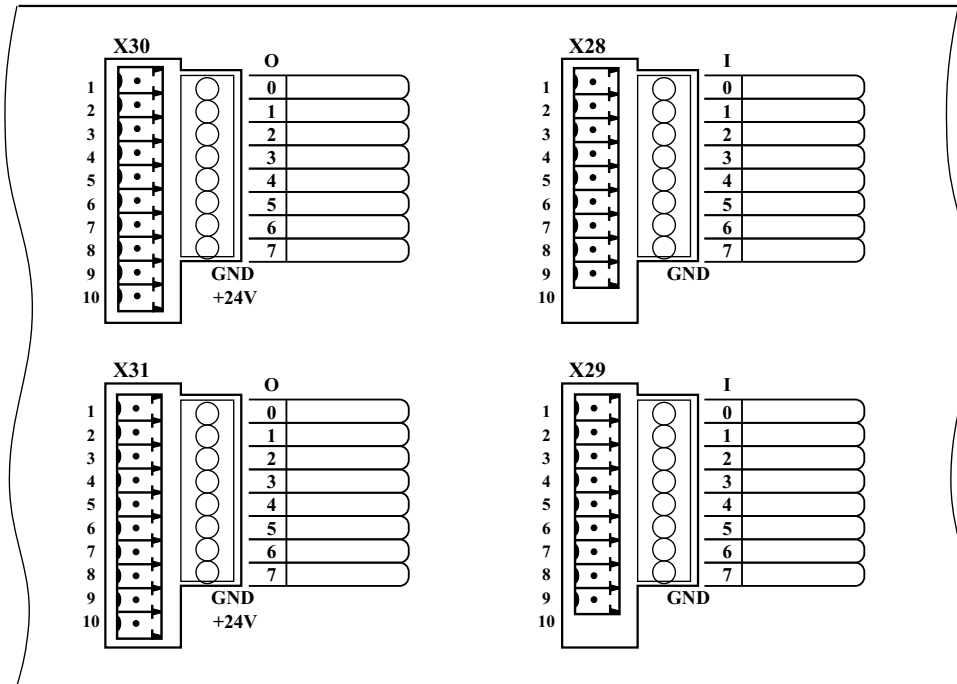
Byte-No.

Bit-No.

Q*.0.5

Output-Module (-Q-)

Input-Module (-I-)



Rear View Section BTM 15

Addresses:

Connector Input	X28	X29	Connector Input	X30	X31
I0	I*.2.0	I*.3.0	O0	Q*.0.0	Q*.1.0
I1	I*.2.1	I*.3.1	O1	Q*.0.1	Q*.1.1
I2	I*.2.2	I*.3.2	O2	Q*.0.2	Q*.1.2
I3	I*.2.3	I*.3.3	O3	Q*.0.3	Q*.1.3
I4	I*.2.4	I*.3.4	O4	Q*.0.4	Q*.1.4
I5	I*.2.5	I*.3.5	O5	Q*.0.5	Q*.1.5
I6	I*.2.6	I*.3.6	O6	Q*.0.6	Q*.1.6
I7	I*.2.7	I*.3.7	O7	Q*.0.7	Q*.1.7

SPS Addressing:

Local Bus Device: DI/DO
 ID-Code: BF(HEX) = 191
 Data width: 01(HEX) (1 Word) = 16 Bit (bi-directional)

Legend:

Q = Output / **I** = Input

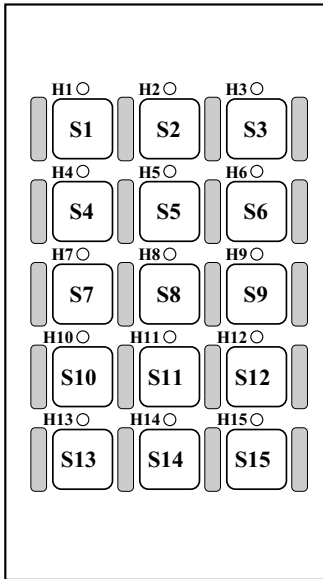
Logical Address (1...999)

Byte-No.

Bit-No.

Q*.0.5

Key Pad (-TA-)



Addresses:

Key	Address	Key	Address
S1	I*.2.0	H1	Q*.0.0
S2	I*.2.1	H2	Q*.0.1
S3	I*.2.2	H3	Q*.0.2
S4	I*.2.3	H4	Q*.0.3
S5	I*.2.4	H5	Q*.0.4
S6	I*.2.5	H6	Q*.0.5
S7	I*.2.6	H7	Q*.0.6
S8	I*.2.7	H8	Q*.0.7
S9	I*.3.0	H9	Q*.1.0
S10	I*.3.1	H10	Q*.1.1
S11	I*.3.2	H11	Q*.1.2
S12	I*.3.3	H12	Q*.1.3
S13	I*.3.4	H13	Q*.1.4
S14	I*.3.5	H14	Q*.1.5
S15	I*.3.6	H15	Q*.1.6

Override and Setup Modules:

Local Bus Device: DI/DO
 ID-Code: BF(HEX) = 191
 Data width: 01(HEX) (1 Word) = 16 Bit (bi-directional)

Legend:

Q = Output / I = Input

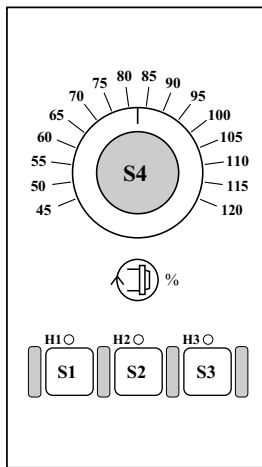
Logical Address (1...999)

Byte-No.

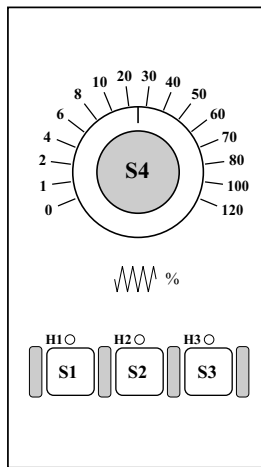
Bit-No.

Q*.0.1

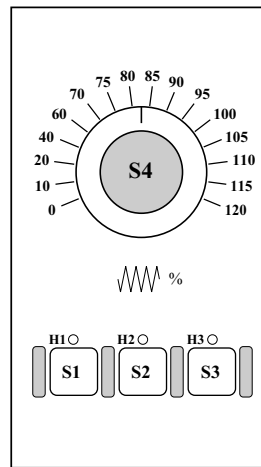
Spindle Override Module (-SA-)



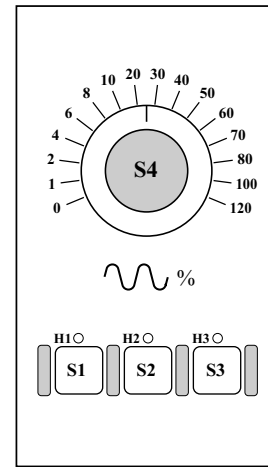
Feed Override-Module (-VA-)



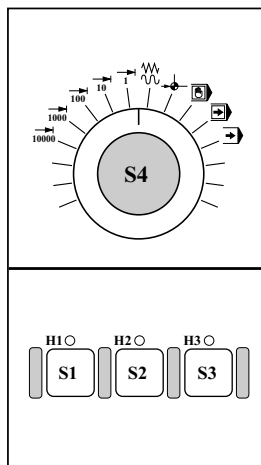
Feed Override-Module (-VB-)



Rapid Override-Module (-VE-)



Setup-Module (-WE-)



Addresses:

Key	Address
S1	I*.2.0
S2	I*.2.1
S3	I*.2.2
S4 Bit A	I*.3.0
S4 Bit B	I*.3.1
S4 Bit C	I*.3.2
S4 Bit D	I*.3.3
LED	Address
H1	Q*.0.0
H2	Q*.0.1
H3	Q*.0.2

Gray-Code

S4 Bit	Bit				
	A	B	C	D	E
SA	VA	VB	VE	WE	
45	0	0	0	-	
50	1	10	1	-	●
55	2	20	2	-	● ●
60	4	40	4	10000	●
65	6	60	6	1000	● ●
70	8	70	8	100	● ● ●
75	10	75	10	10	● ●
80	20	80	20	1	●
85	30	85	30	100	● ●
90	40	90	40	1000	● ● ●
95	50	95	50	10000	● ● ● ●
100	60	100	60	100000	● ● ● ●
105	70	105	70	1000000	● ● ● ●
110	80	110	80	-	● ● ●
115	100	115	100	-	● ● ●
120	120	120	120	-	●

S4 = Gray-Code-Switch (5 Bit)

Hand Wheel Module:

Local Bus Device: DI/DO
 ID-Code: BF (HEX) = 191
 Data width: 02 (HEX) (2 Word) = 32 Bit (bi-directional)

Legend:

Q = Output / **I** = Input

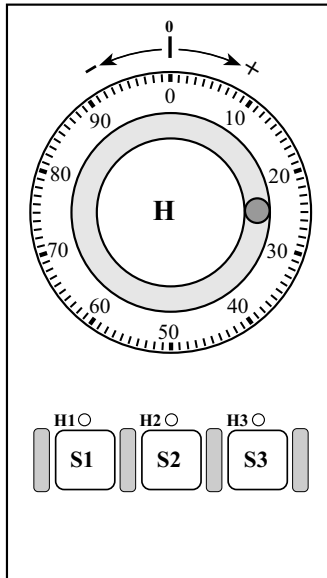
Logical Address (1...999)

Byte-No.

Bit-No.

Q*.0.2

Hand Wheel (-HA-)



Addresses:

Key	Address	LED	Address
S1	I*.4.0	H1	Q*.0.0
S2	I*.4.1	H2	Q*.0.1
S3	I*.4.2	H3	Q*.0.2
HW High Byte Low Byte	I*.6 I*.7		

Hand Wheel Addressing Example (HR):

I*.2 = High Byte

I*.3 = High Byte

Type Code:

BTM 15.1 - NA - TA - TA - VA - HA - 2EA

Product Name

BTM = BTM

Model Number

15 = 15

Hardware Revision

1 = 1

Slot 1

1. Letter: Module Type

2. Letter: Module Version

Blank cover = BA

Emergency stop = NA, NB, NN

Emergency return = RA, RB

Spindle override w/3 PB/LEDs . = SA

15 pushbuttons /15 LEDs = TA

Feed override w/3 PB/LEDs . . = VA, VB, VE

Slot 2

1. Letter: Module Type

2. Letter: Module Version

Blank cover = BA

Spindle override w/3 PB/LEDs . = SA

Emergency return = RB

15 pushbuttons /15 LEDs = TA

Feed override w/3 PB/LEDs . . = VA, VB, VE

Slot 3

as slot 2

Slot 4

as slot 2 + 3

Slot 5

as slot 1 but also

Hand wheel = HA

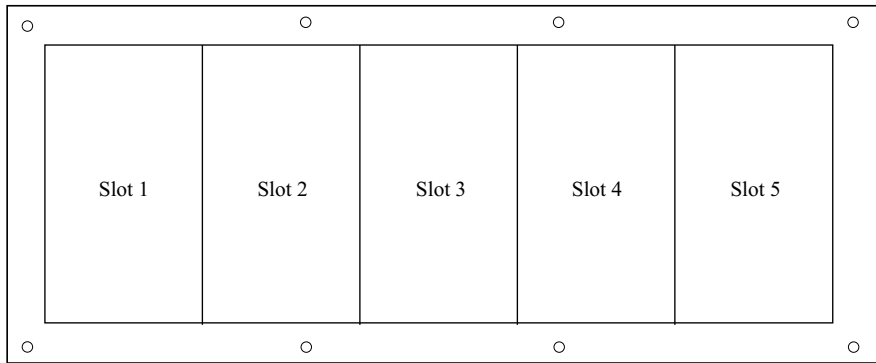
Motherboard Location

slot 2 = 2

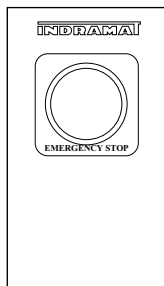
Local input and output (standard)

16 inputs, 16 outputs = EA

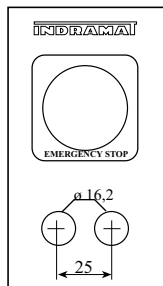
Module Selection List:



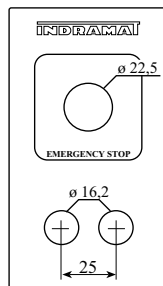
-Module Frame BTM 15-



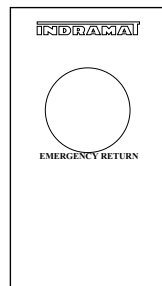
-NA-



-NB-

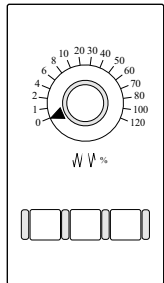


-NN-

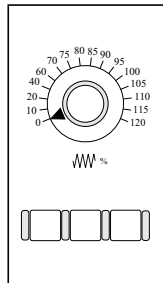


-RA-

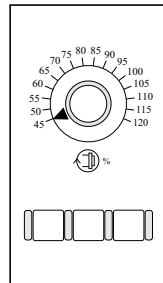
These modules can only be placed in slot 1 or 5 on the BTM 15.



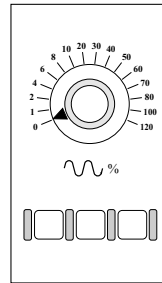
-VA-



-VB-

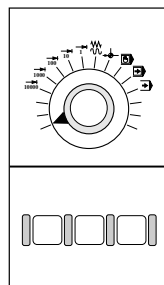


-SA-

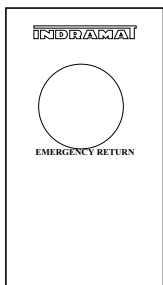


-VE-

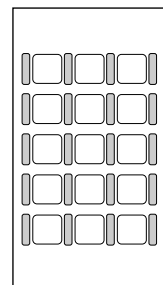
These modules can be placed in any slot of the BTM 15.



-WE-



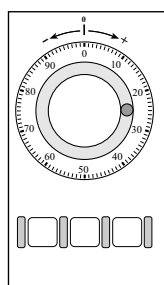
-RB-



-TA-



-BA-



-HA-

This module can only be placed in slot 5 on the BTM 15.

Module Selection List:

Pos	Type	Description
-NA-	BGR BTM15-NA	E-Stop Module with twist unlock PB and 2 NC contacts
-VA-	BGR BTM15-VA	Feedrate override Module
-SA-	BGR BTM15-SA	Spindle override Module
-TA-	BGR BTM15-TA	Key pad with 15 keys: label insert
-BA-	BGR BTM15-BA	Empty slot cover
-HA-	BGR BTM15-HA	Hand wheel Module
	Mounting kit M1-SOT/BTM	Mounting kit

InterBus-S Diagnostic LED's:


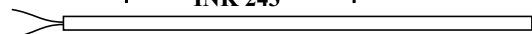


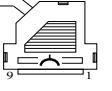


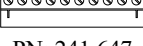
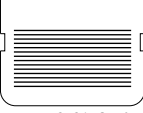
The back of the BTM 15 provides five InterBus-S diagnostic LEDs:

- ⊗ green **U** Supply voltage present
- ⊗ green **RC** RemoteBus Check
Monitor of input Remote Bus cable (X3)
RC = ON if connection is o.k.
RC = OFF if InterBus-S reset of control.
- ⊗ green **BA** Bus Active
BA = ON if InterBus-S transfer is active.
- ⊗ red **LD** LocalBus Disable
LD = ON if Local Bus is disabled.
- ⊗ red **RD** RemoteBus Disable
RD = ON if Remote Bus is disabled.

General Technical Data:

Weight:	Approx. 2 kg
Type of Protection:	Front plate IP 65 housing IP 00 DIN 40 050, IEC 529
Maximum Ambient Temperature:	+5°C to +45°C - Operating -20°C to +60°C - Storage/shipping
Operating Humidity:	75% average, 85% occasional without condensation DIN 40 040 class F
Operating Air Pressure:	860 to 1060 hPa, 1500 m
Maximum Power Dissipation:	20 W
Surface of Front Plate:	Powder coated, color RAL 7037 dust gray Fine structure 89/60850 as of tiger 50µ

Connector/Cable Overview:

Module and Connector	Complete cable	Opposing Connector of Control	Raw Cable	Cable and Configuration
X2	--- ¹⁾	MC 1.5/2ST ²⁾  PN: 253 897	INK 243  PN: 213 383	Supply Voltage
X3, X4	IKS 056/.. PN: 255 968	INS 525 PN: 259 759 	INK 234 PN: 220 143 	INS 526 PN: 259 762  InterBus-S Connection
X28...X31	---	MC 1.5/9ST ²⁾  PN: 241 591 KGG-MC 1.5/9ST ²⁾  PN: 261 869		Opposing Input Module Connector
	---	MC 1.5/10ST ²⁾  PN: 241 647 KGG-MC 1.5/10ST ²⁾  PN: 261 870		Opposing Output Module Connector

1) Not available as complete cable.
2) Included in control shipment.

