



# MTC200 / MT-CNC Machine Control Terminal BTV30.1 Functional Description

DOK-MTC200-BTV30.1\*\*\*\*-FKB1-EN-P



<b>Title</b>	Machine control terminal BTV30.1
<b>Documentation type</b>	Functional Description
<b>Document code</b>	DOK-MTC200-BTV30.1****-FKB1-EN-P
<b>Internal file reference</b>	Drawing number 109-1041-4122-EN/08.98 Mappe 4V2
<b>Purpose of the document</b>	This documentation serves the following purposes: <ul style="list-style-type: none"><li>• Description of the BTV30.1 hardware functions</li><li>• Connection and installation of the BTV30.1</li><li>• Technical data of the BTV30.1</li></ul>

Revision	Date	Remarks
109-1041-4122-01	08.98	First edition

**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 utility model or design (DIN 34-1).

**Validity** We reserve the right to revise the contents of the documentation and to make changes in product availability!

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

Dept. ESM2 (JA)

# Contents

<b>1 Presentation of the System</b>	<b>1-1</b>
1.1 Brief Description.....	1-1
1.2 Special Features.....	1-1
1.3 Function Types.....	1-2
1.4 Standard Configuration.....	1-2
1.5 Additional Modules.....	1-2
<b>2 Floppy Drive Cover, Keyboard</b>	<b>2-1</b>
2.1 Floppy Drive Cover.....	2-1
2.2 Diagnostic LEDs.....	2-1
2.3 Machine Function Keys.....	2-1
Pin Assignments in the Case of BTV30.1P.....	2-2
Addressing.....	2-2
2.4 Keyboard.....	2-3
Special Keys.....	2-3
Keyboard Mouse.....	2-4
Operating System.....	2-5
MS-DOS.....	2-5
Windows NT.....	2-5
<b>3 Technical Data</b>	<b>3-1</b>
3.1 General Technical Data.....	3-1
3.2 Ambient Conditions.....	3-1
3.3 Expendable Parts.....	3-2
<b>4 Dimensions</b>	<b>4-1</b>
4.1 Housing Dimensions.....	4-1
4.2 Installation Dimensions.....	4-3
<b>5 Connection Terminals</b>	<b>5-1</b>
5.1 General Connection Terminals.....	5-1
5.2 Interfaces of the Slot CPU.....	5-2
5.3 Application Examples.....	5-3
Application Example for INTERBUS-S Interfacing.....	5-3
Application Example for SERCOS Interface.....	5-4
<b>6 Ordering Code</b>	<b>6-1</b>

<b>7 List of Figures</b>	<b>7-1</b>
<b>8 Index</b>	<b>8-1</b>

# 1 Presentation of the System

## 1.1 Brief Description

The BTV30.1 is a machine control terminal in which one or several NC controllers with PLCs or one or several stand-alone PCLs can be integrated. The number of modules that can be integrated depends on their configuration (refer to the modules' ordering codes for information). Nine slots are currently available.

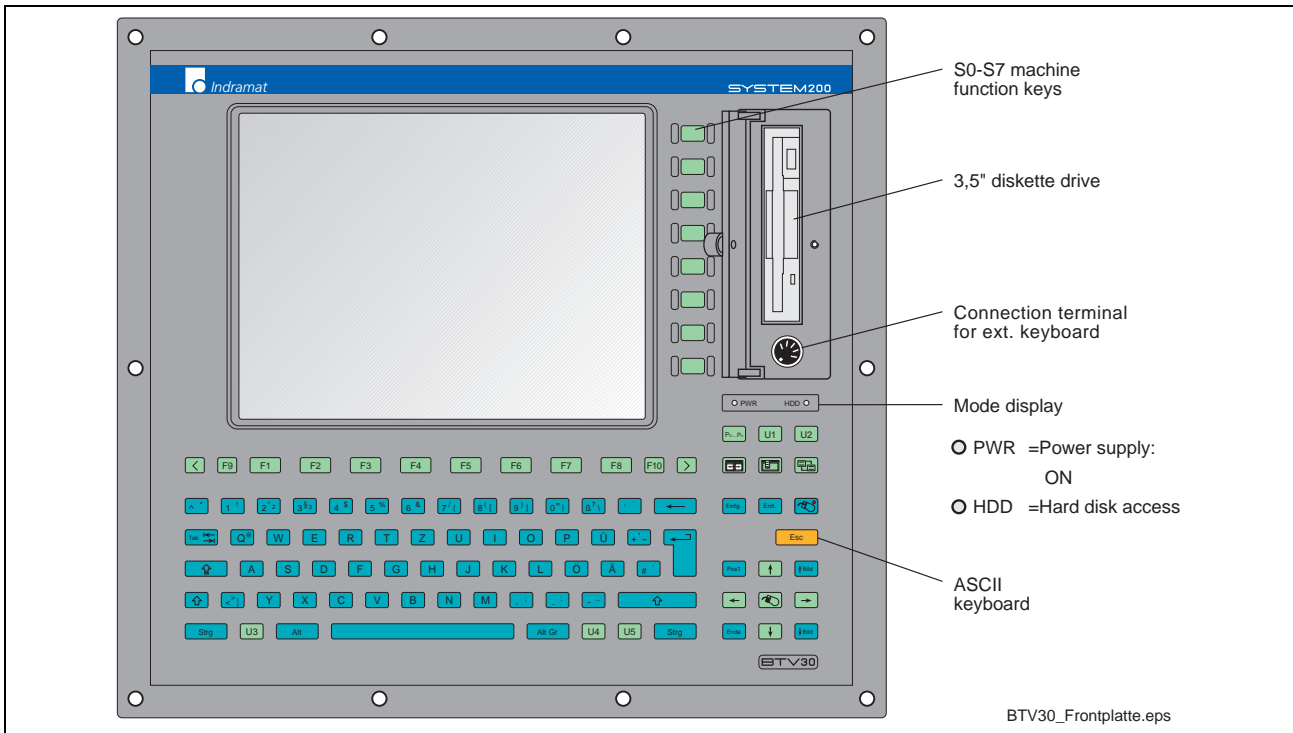


Figure 1-1: BTV30.1 front panel

## 1.2 Special Features

The BTV30.1 possesses the functionality and the operator controls of a complete industrial PC.

Besides the 10.4" flat color display and a complete ASCII keyboard (NFII-compatible) featuring a cursor block, a keyboard mouse and special Windows keys, it features a standard diskette drive and a connector for an external keyboard hidden behind a lockable cover.

While there are 8 PC function keys beneath the display, 8 machine function keys are located on the right of the display and can either be made externally available via a socket or - if a PLC module is integrated - are connected directly to the PLC.

Genuine key elements are recessed into the sturdy front panel made of PC/ABS to enable fatigue-free working even during the course of prolonged programming work.

The display is protected by a sturdy glass pane that conforms to EMC requirements. When the diskette cover is closed, the BTV30.1 conforms to the IP65 type of protection on the front and is resistant to all known coolants and lubricants.

The BTV30.1 is suitable for both surface and base installation. Together with the visually and dimensionally compatible machine control panels BTM15 and BTM16, a modern and attractive flat or console-type control panel can be generated.

## 1.3 Function Types

The following four function types of the BTV30.1 are available:

BTV30.1 <b>P</b>	=	Industrial PC without control systems
BTV30.1 <b>S</b>	=	PLC control system ISP200-P
BTV30.1 <b>C</b>	=	CNC control system MTC200-P
BTV30.1 <b>E</b>	=	CNC control system MTC200-P, export version

Refer to the ordering code (chapter 6) for further information about the configuration of the BTV30.1

## 1.4 Standard Configuration

- 166 MHz Pentium SLOT CPU with integrated graphics controller and 2 MB graphics memory
- 32 MB or 64 MB main memory (optional)
- At least 500 MB hard disk capacity
- 3.5" diskette drive
- 10.4" TFT color display, resolution 640 x 480 pixels
- Ethernet interface (10 Base-T)

## 1.5 Additional Modules

The following additional modules are currently available:

- Stand-alone PLC module featuring an INTERBUS-S interface and/or a 4-fold interface module (2 x RS232; 2 x RS485)
- PLC module featuring an INTERBUS-S interface and/or a 4-fold interface module (2 x RS232; 2 x RS485)
- CNC module featuring a Sercos drive interface

## 2 Floppy Drive Cover, Keyboard

### 2.1 Floppy Drive Cover

The floppy drive cover is locked by a snap lock. To open it, the knob is turned by approximately 180° to the left. To lock it, it suffices to press the knob to ensure that the lock engages again.

**Note:** IP 65 type of protection is only achieved when the floppy drive cover is closed.

The floppy drive cover can only be closed when there is no diskette in the drive.

When the floppy drive cover is open, it is possible to connect an external PC keyboard to the socket provided for this purpose. This can be used in parallel with the integrated keyboard.

### 2.2 Diagnostic LEDs

Under the floppy drive cover there are 2 red LEDs with the following meanings:

**Power** lights up as soon as the BTV30 is powered and is switched on

**HDD** lights up as soon as the hard disk is accessed

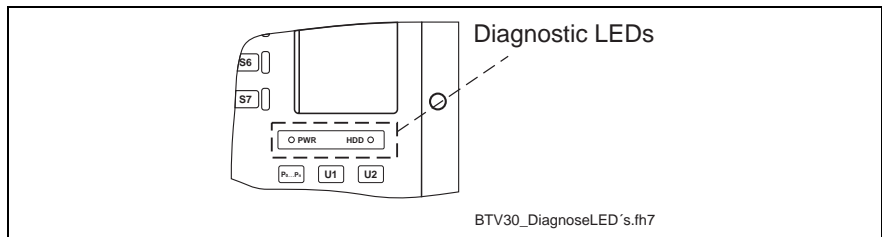


Figure 2-2: Enlargement showing the LED panel

### 2.3 Machine Function Keys

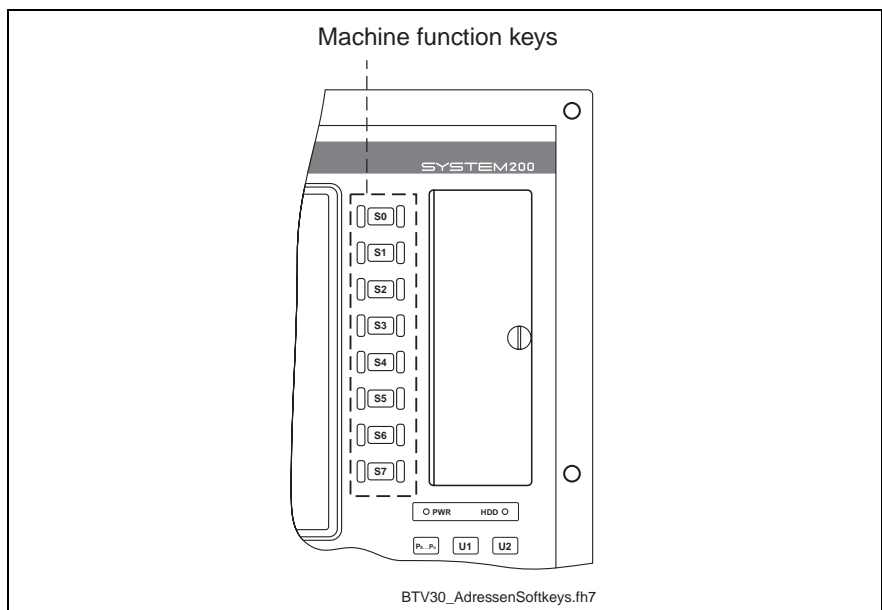


Figure 2-3: Enlargement showing the machine function keys

There are 8 vertically arranged function keys on the right of the display.

These keys are either connected directly to an integrated PLC type MTS-P or they are externally available via a 9-pole socket for connection to the I/O level of an external PC (e.g. MTS-R)

The key contacts can be operated with 5 VDC to 24 VDC. The maximum switching current is 200 mA.

## Pin Assignments in the Case of BTV30.1P

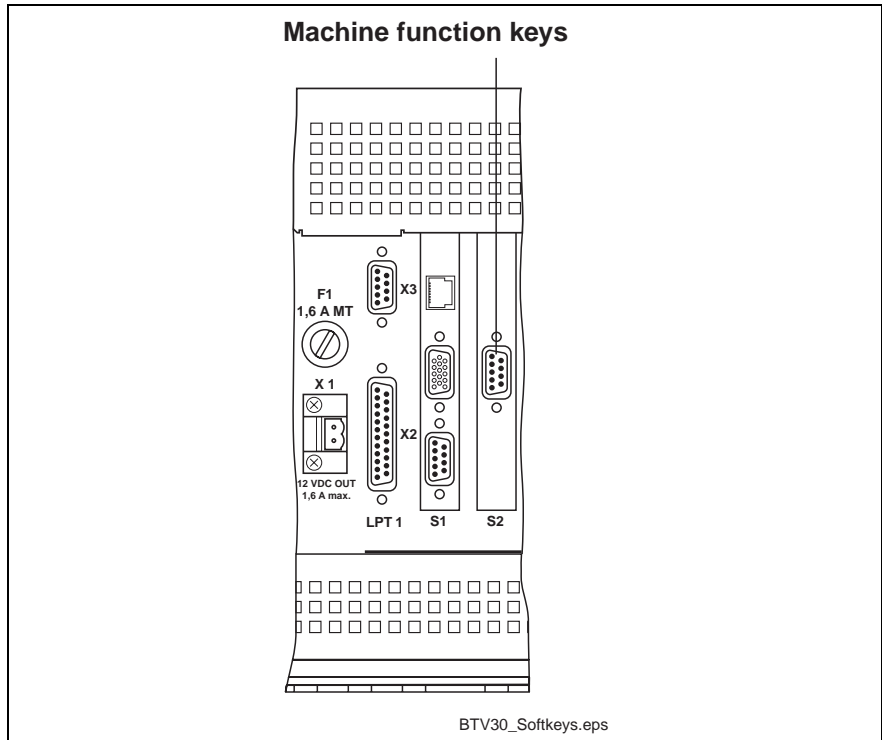


Figure 2-4: Machine function keys

If the unit consists of a pure industrial PC without an integrated controller, the 8 machine function keys are externally available via a 9-pole socket that is fitted in slot position 2.

Pin	Signal designation
1	S0
2	S2
3	S4
4	S6
5	+24V DC
6	S1
7	S3
8	S5
9	S7

Figure 2-5: Sub-D pin assignments

## Addressing

Function types C, E and S of the BTV feature an integrated PLC. In this case, the machine function keys are connected directly to the PLC and can therefore be addressed directly.



Machine function key	Address
S0	%I0.991.0
S1	%I0.991.1
S2	%I0.991.2
S3	%I0.991.3
S4	%I0.991.4
S5	%I0.991.5
S6	%I0.991.6
S7	%I0.991.7

Figure 2-6: Machine function key addresses

## 2.4 Keyboard

The BTV30.1 features a complete ASCII keyboard with a total of 93 keys. Besides the actual ASCII block, there is a function key block under the display as well as a cursor block featuring a few special keys on the right-hand side of the BTV30.1.

Depending on the location, the BTV30.1 can be ordered with an American or a German key layout.

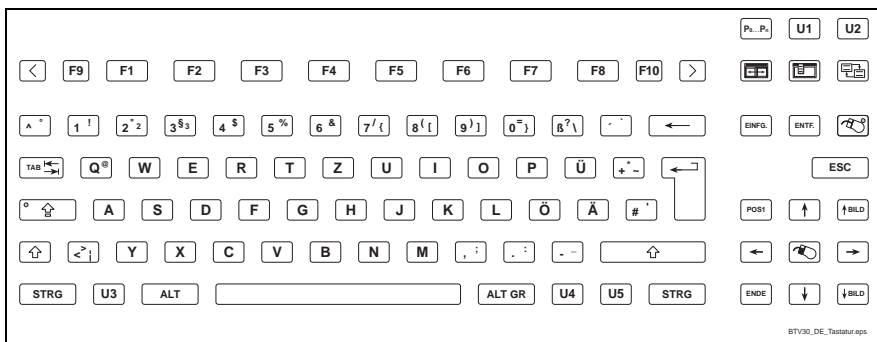


Figure 2-7: German keyboard layout

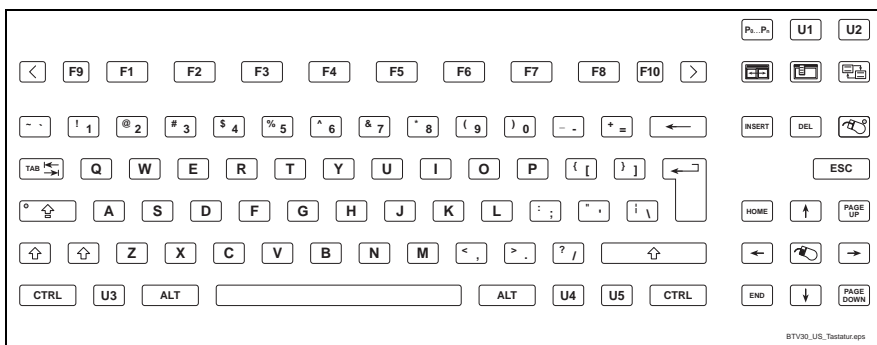


Figure 2-8: American keyboard layout

## Special Keys

The BTV30.1 keyboard features 13 special keys that are not to be found on a normal PC keyboard. These keys are listed in the following table. The table also gives details of how these keys can be emulated on an external standard keyboard.











Pictogram of the key on the BTV30.1	Corresponding key on a standard keyboard
	Num 
	5 
U1	currently not defined
U2	currently not defined
U3	
U4	
U5	
P0...Pn	currently not defined
	currently not defined
	currently not defined
	currently not defined
>	currently not defined
<	currently not defined
<small>SondertastenBTV30.fh7</small>	<small>SondertastenStandard.fh7</small>

Figure 2-9: Table of special keys

## Keyboard Mouse

The cursor block of the BTV30.1 can be switched over and can then be used for mouse control.

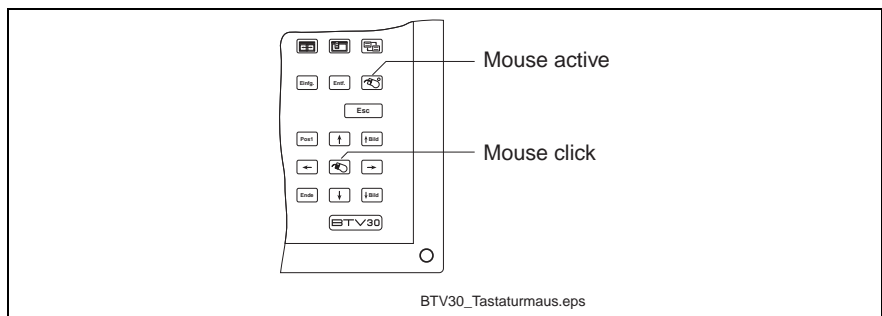

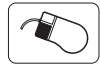


Figure 2-10: Enlargement of the cursor block showing the additional keyboard mouse keys

You can switch between mouse and cursor operation by pressing the  key. Mouse operation is active when the red LED in the key lights up.

The mouse pointer is moved horizontally, vertically or diagonally by pressing the arrow keys or PgUp, PgDn ...



You can trigger a mouse click (left mouse button) by pressing the key.

**Note:** The keyboard mouse function is only possible in conjunction with the Windows 95 or Windows NT operating system.

## Operating System

For licensing reasons, the BTV30.1 is only supplied with the operating system installed. MS DOS version 6.22 or Windows NT 4.0 is available depending on the application.

In addition to the operating system, it is also possible to preinstall the user interface of an MTC200 CNC controller or of an ISP200 PLC controller.

## MS-DOS

The following firmware configurations are available in conjunction with MS DOS version 6.22:

Firmware type	Software installed	Description
FWA-BTV30*-MSD-01VRS-DE	SWA-PC*MS*-DOS-06VRS-DE-C1,44	MS DOS operating system only, German
FWA-BTV30*-MSD-01VRS-DE-GBO	SWA-PC*MS*-DOS-06VRS-DE-C1,44 SWA-MTC200-GBO-17VRS-MS-C1,44-MS*DOS	MS DOS, German with GBO, version 17
FWA-BTV30*-MSD-02VRS-DE-GBO	SWA-PC*MS*-DOS-06VRS-DE-C1,44 SWA-MTC200-GBO-18VRS-MS-C1,44-MS*DOS	MS DOS, Germany with GBO, Version 18
FWA-BTV30*-MSD-01VRS-EN	SWA-PC*MS*-DOS-06VRS-EN-C1,44	MS DOS operating system only, English
FWA-BTV30*-MSD-01VRS-EN-GBO	SWA-PC*MS*-DOS-06VRS-EN-C1,44 SWA-MTC200-GBO-17VRS-MS-C1,44-MS*DOS	MS DOS, English with GBO version 17
FWA-BTV30*-MSD-02VRS-EN-GBO	SWA-PC*MS*-DOS-06VRS-EN-C1,44 SWA-MTC200-GBO-18VRS-MS-C1,44-MS*DOS	MS DOS, English with GBO version 18

Figure 2-11: Firmware configurations under MS DOS

## Windows NT

The following firmware configurations are available in conjunction with the Windows NT operating system:

Firmware type	Software installed	Description
FWA-BTV30*-WNT-01VRS-DE-GBO	SWA-PC*MS*-WNT-03VRS-DE-CD600 SWA-MTC200-GBO-17VRS-MS-C1,44-WIN*NT	Windows NT 3.51, German with GBO version 17
FWA-BTV30*-WNT-01VRS-EN-GBO	SWA-PC*MS*-WNT-03VRS-EN-CD600 SWA-MTC200-GBO-17VRS-MS-C1,44-WIN*NT	Windows NT 3.51, English with GBO version 17
FWA-BTV30*-WNT-02VRS-DE	SWA-PC*MS*-WNT-04VRS-DE-CD600	Windows NT 4.0 only, German
FWA-BTV30*-WNT-02VRS-EN	SWA-PC*MS*-WNT-04VRS-EN-CD600	Windows NT 4.0 only, English
FWA-BTV30*-WNT-02VRS-DE-GBO	SWA-PC*MS*-WNT-04VRS-DE-CD600 SWA-MTC200-GBO-18VRS-MS-C1,44-WIN*NT	Windows NT 4.0, German with GBO, version 18
FWA-BTV30*-WNT-02VRS-EN-GBO	SWA-PC*MS*-WNT-04VRS-EN-CD600 SWA-MTC200-GBO-18VRS-MS-C1,44-WIN*NT	Windows NT 4.0, English with GBO, version 18

Figure 2-12: Firmware configurations under Windows NT

**Note:** Orders for firmware FWA only embrace installation of the listed software. The software products SWA or SWL to be installed must be ordered separately.



## 3 Technical Data

### 3.1 General Technical Data

Processor	Pentium 166 MHz slot PC with integrated graphics controller
Main memory	32 MB or 64 MB (optional)
Hard disk	At least 500 MB
Interfaces	2 serial (RS 232), 1 parallel (Centronics)
Display unit	10.4" TFT color display, 640 x 480 pixels
Slots	10 slots, one of which is occupied by the slot CPU
Keyboard	Full ASCII keyboard, 8 machine function keys
Type of protection	Front panel IP 65, housing IP 20 DIN 40 050, IEC 529
Front panel surface	Material: PC/ABS Color: RAL 7037 dusty gray
Slide-in module dimensions	372 x 335 x 200 mm (WxHxD)
Dimensions with front panel	407 x 370 x 220 mm (WxHxD)
Power supply	115/230 VAC $\pm$ 15%; Autorange
Max. power consumption	$\leq$ 250 VA
Typical heat dissipation	100 W
Max. heat dissipation	200 W
Weight	approximately 10.5 kg

Figure 3-13: General technical data of the BTV30.1

### 3.2 Ambient Conditions

	Operation	Storage/transport
Maximum ambient temperature	+5°C to +45°C	-20°C to +60°C
Max. temperature gradient	10 K/h	15 K/h
Relative humidity	75% on average, 80% occasionally	No condensation, DIN 40 040 class F
Barometric pressure	860 to 1060 hPa, 1500m	Corresponding to 1200 m
Max. external magnetic field	6 Gauss	6 Gauss
Max. vibration without/with FDD access	1 G / 0.5 G	1 G
Max. shock without/with FDD access	20 G / 5 G	50 G

Figure 3-14: Ambient conditions of the BTV30.1

### 3.3 Expendable Parts

#### Expendable parts for which no warranty is provided

- Fan
- Backlight tubes
- Floppy disk drive (FDD)
- Hard disk drive (HDD)

The expendable parts have an average expected life cycle of 5 years or 20,000 hours of operation.

<b>The hard disk data applies under the following conditions</b>	
Write/read cycles	40 cycles/day x 200 days/years
Search operations	105 cycles/day x 200 days/years
Power supply on	14 hours/day x 200 days/years
Operating hours (read/write)	8 h /day x 200 days/years
Ambient conditions	25°C; 50%RH; 100kPa; no vibration, no shock

Figure 3-15: HD loads

# 4 Dimensions

## 4.1 Housing Dimensions

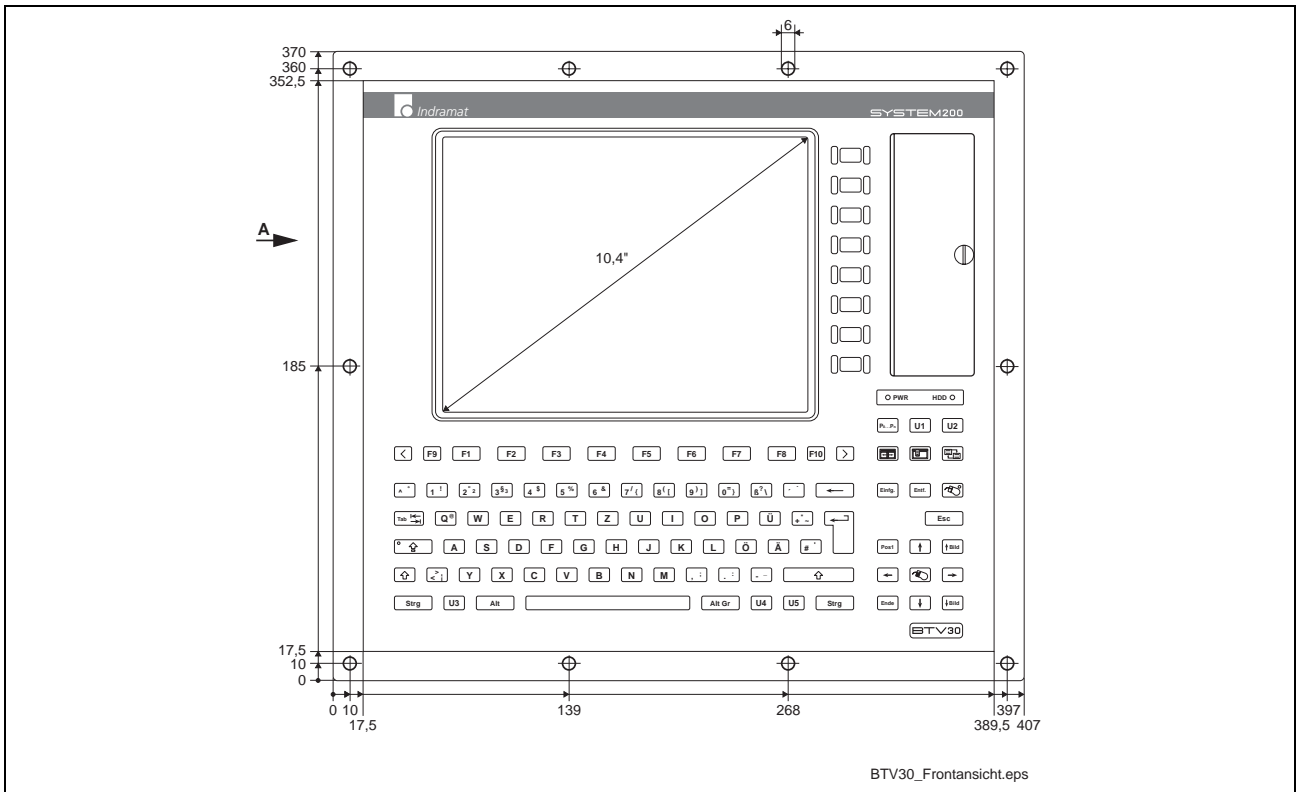


Figure 4-16: Front panel dimensions

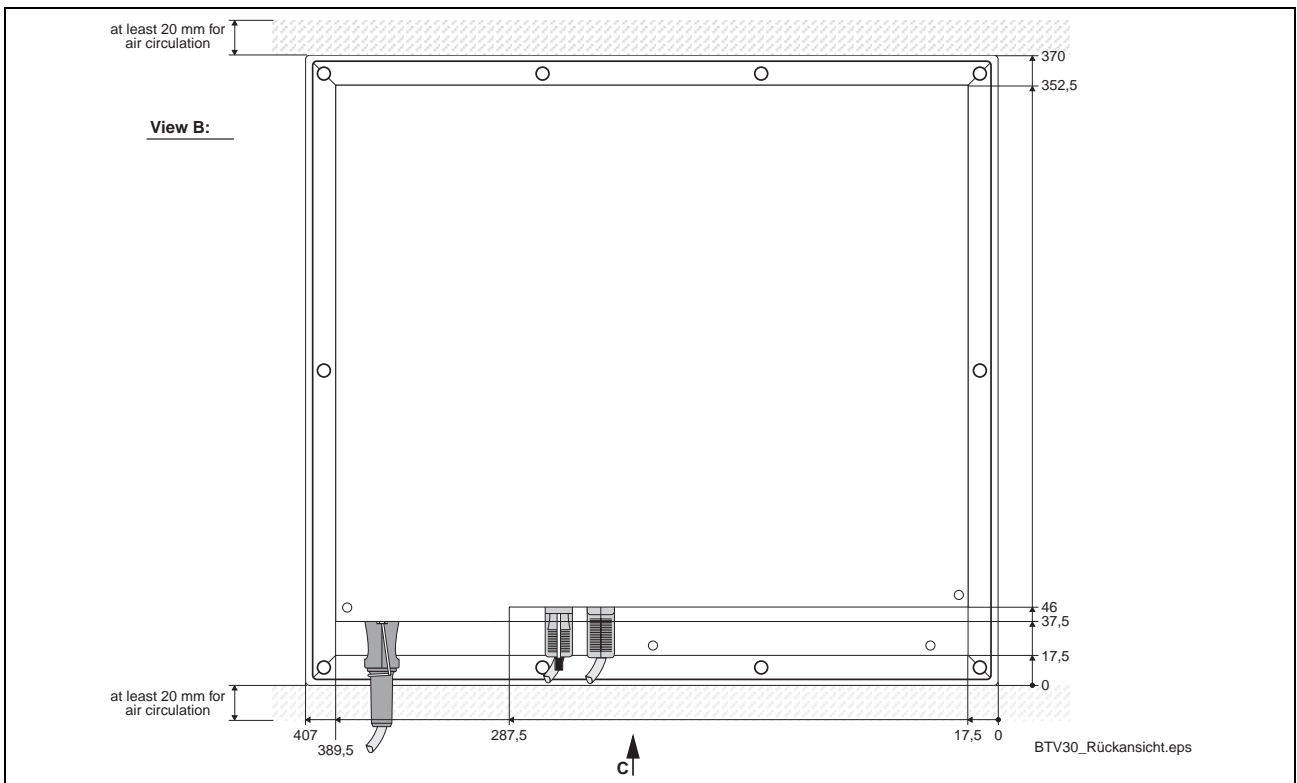


Figure 4-17: Rear view

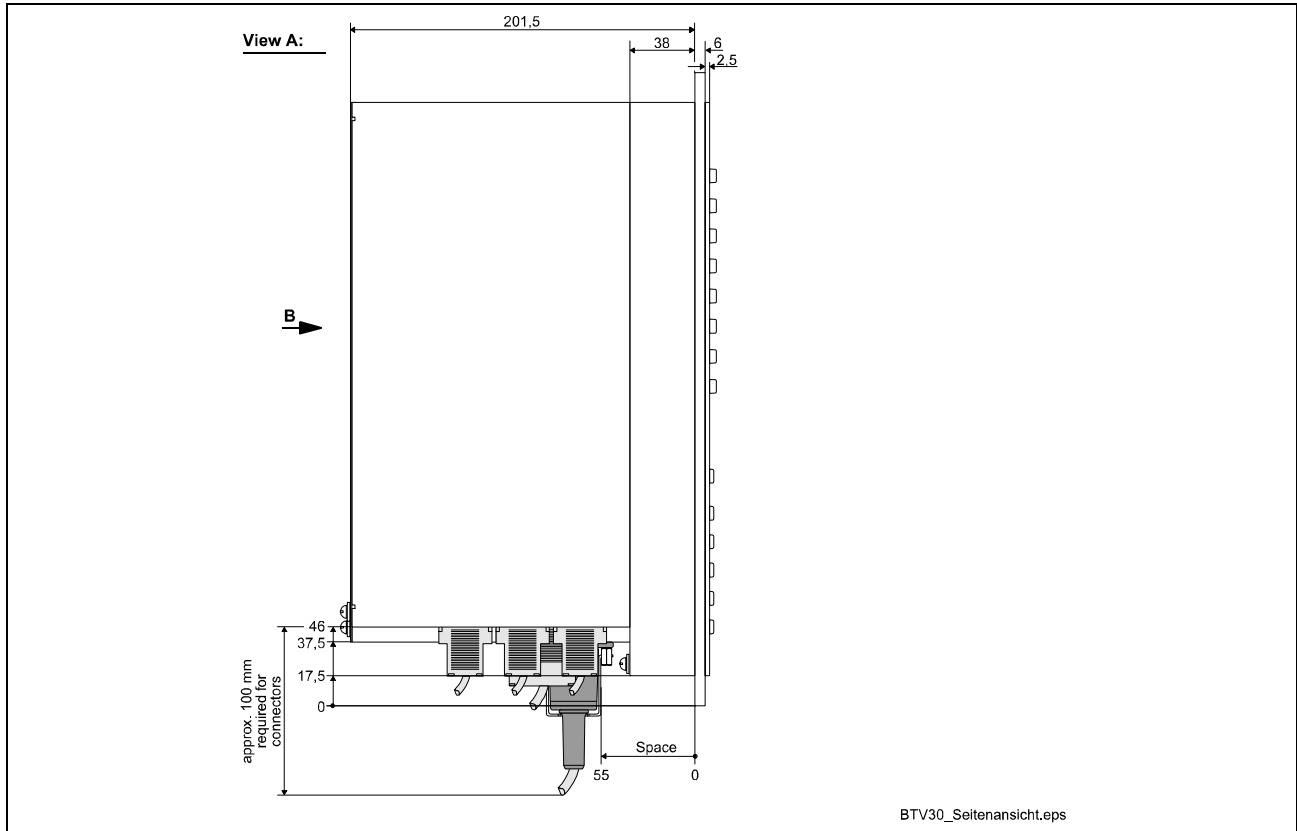


Figure 4-18: Side view

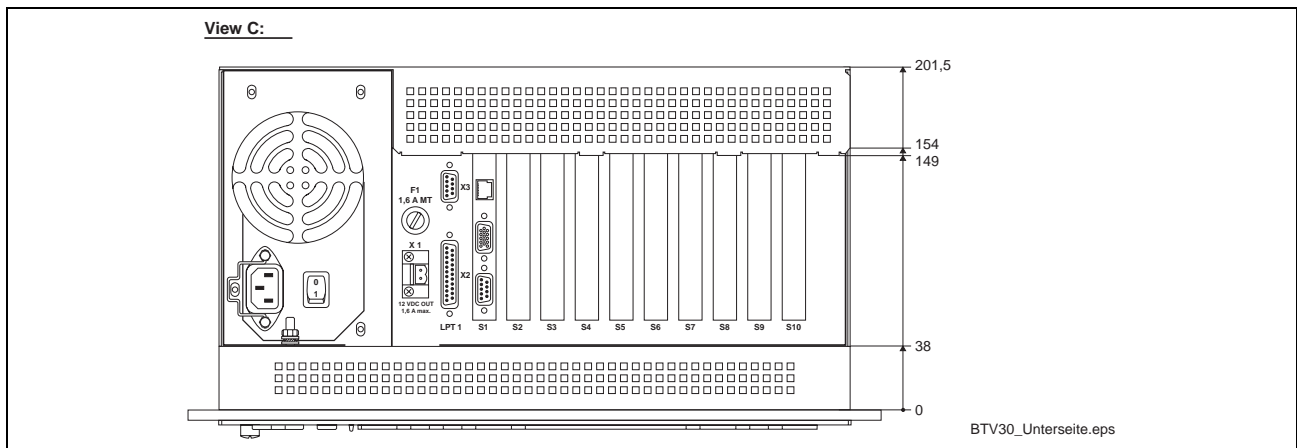


Figure 4-19: View from below



## 4.2 Installation Dimensions

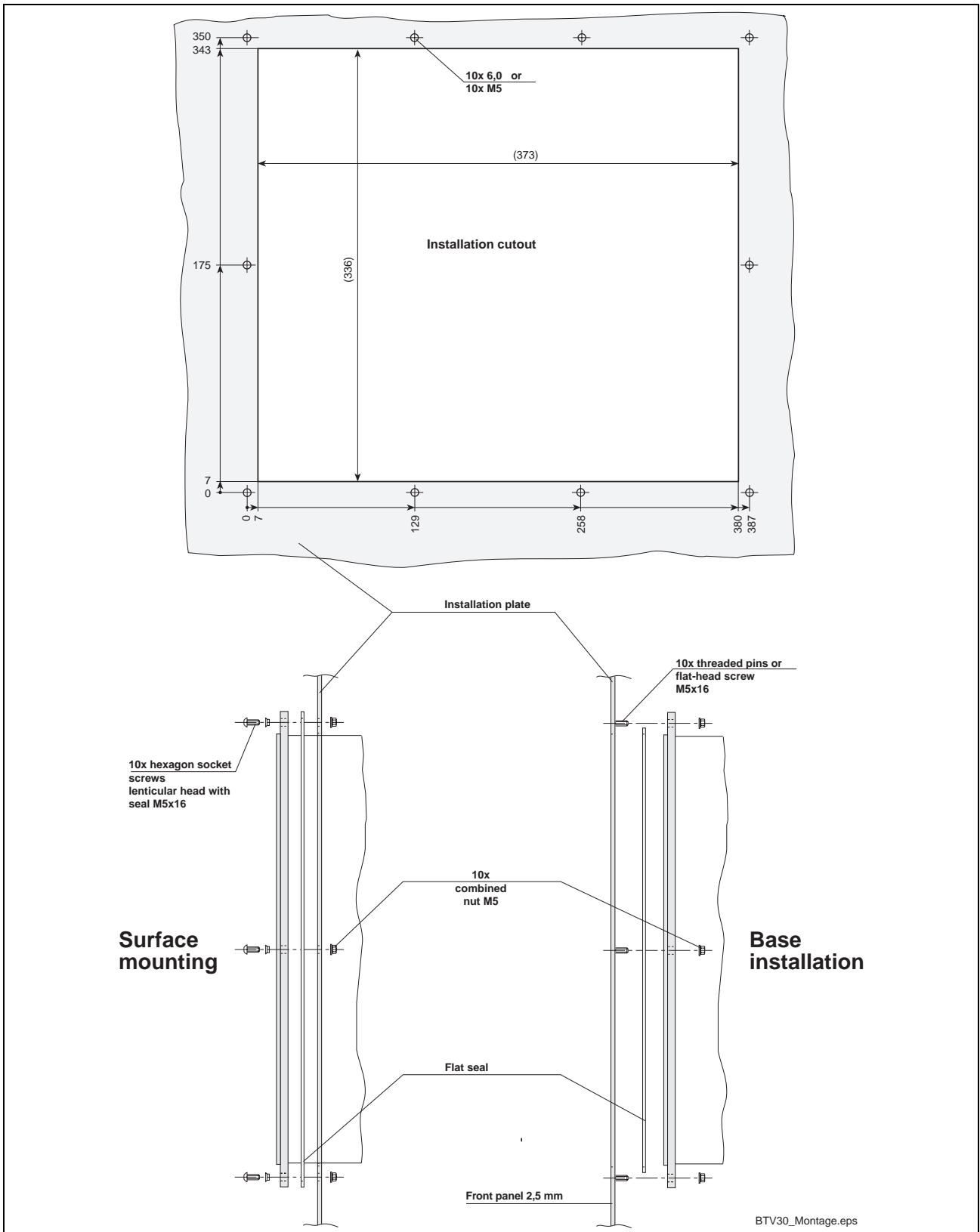


Figure 4-20: Installation cutout



# 5 Connection Terminals

## 5.1 General Connection Terminals

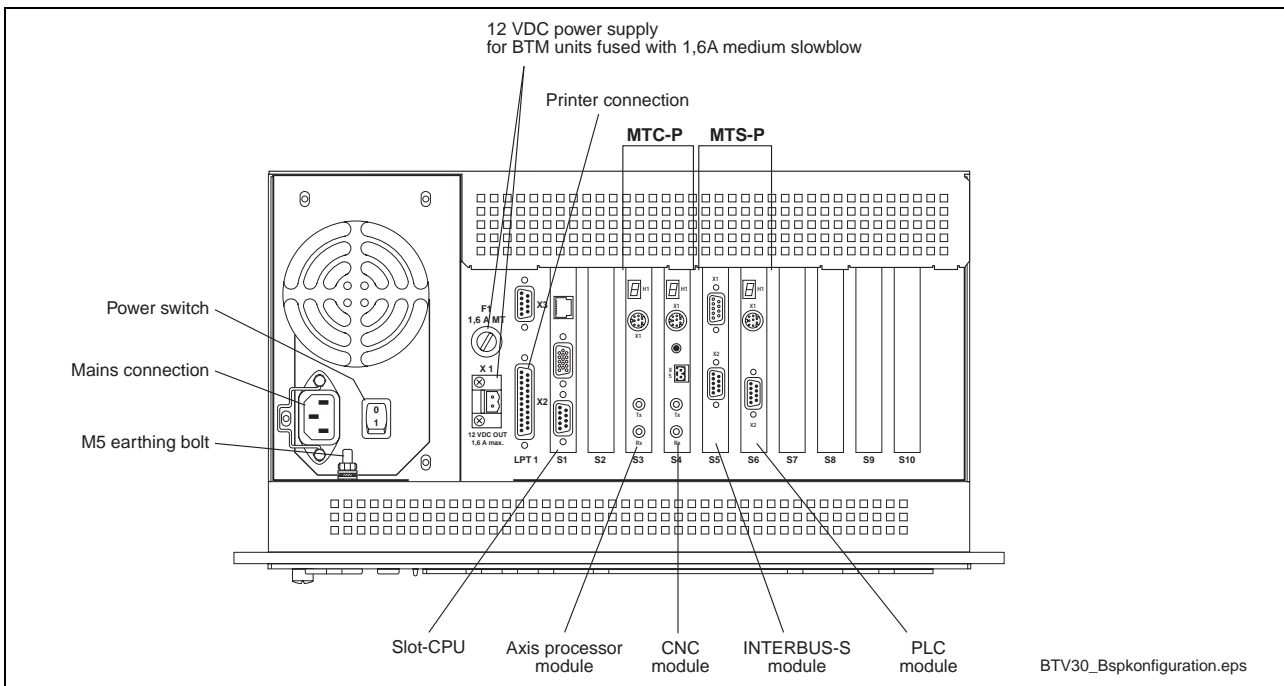


Figure 5-21: View from below in an example configuration

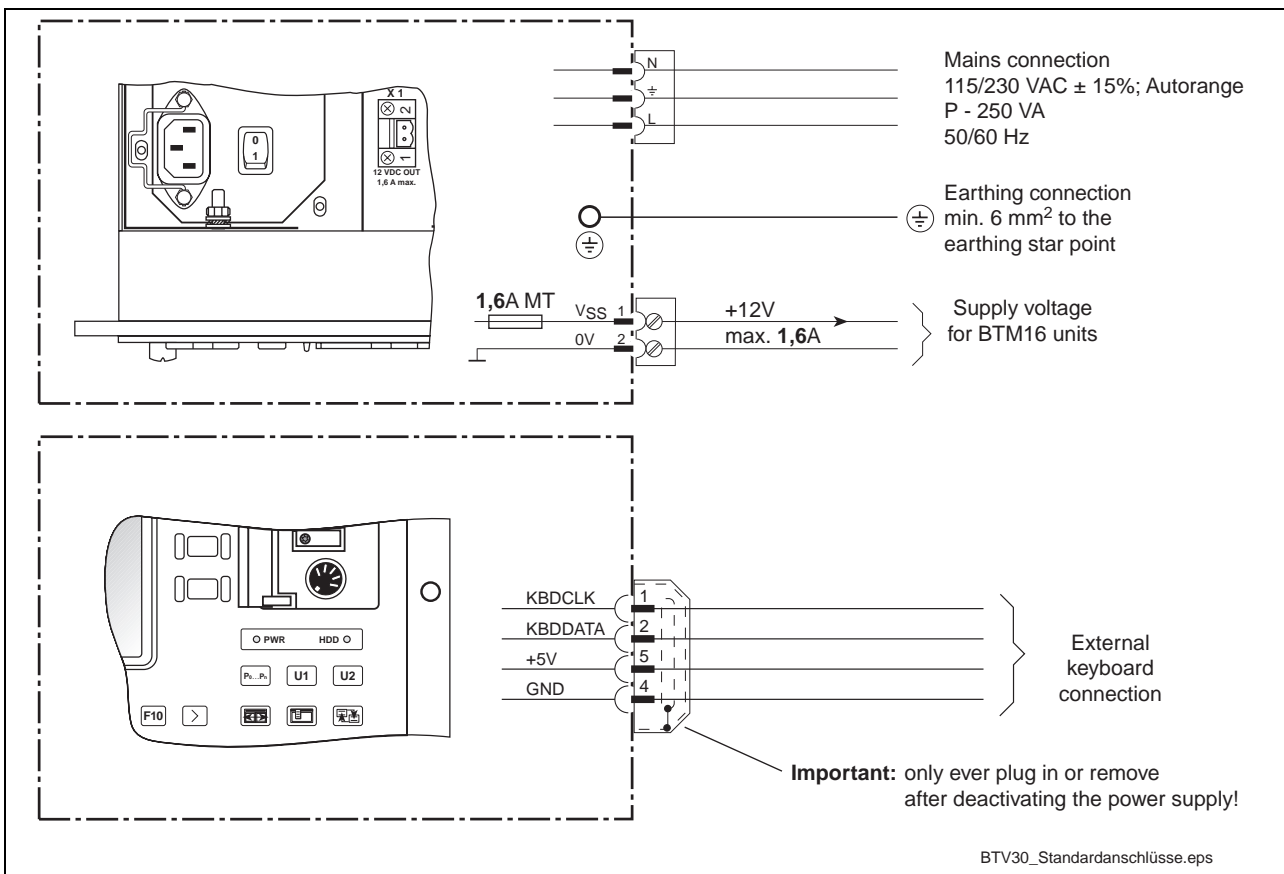


Figure 5-22: Standard connection terminals

## 5.2 Interfaces of the Slot CPU

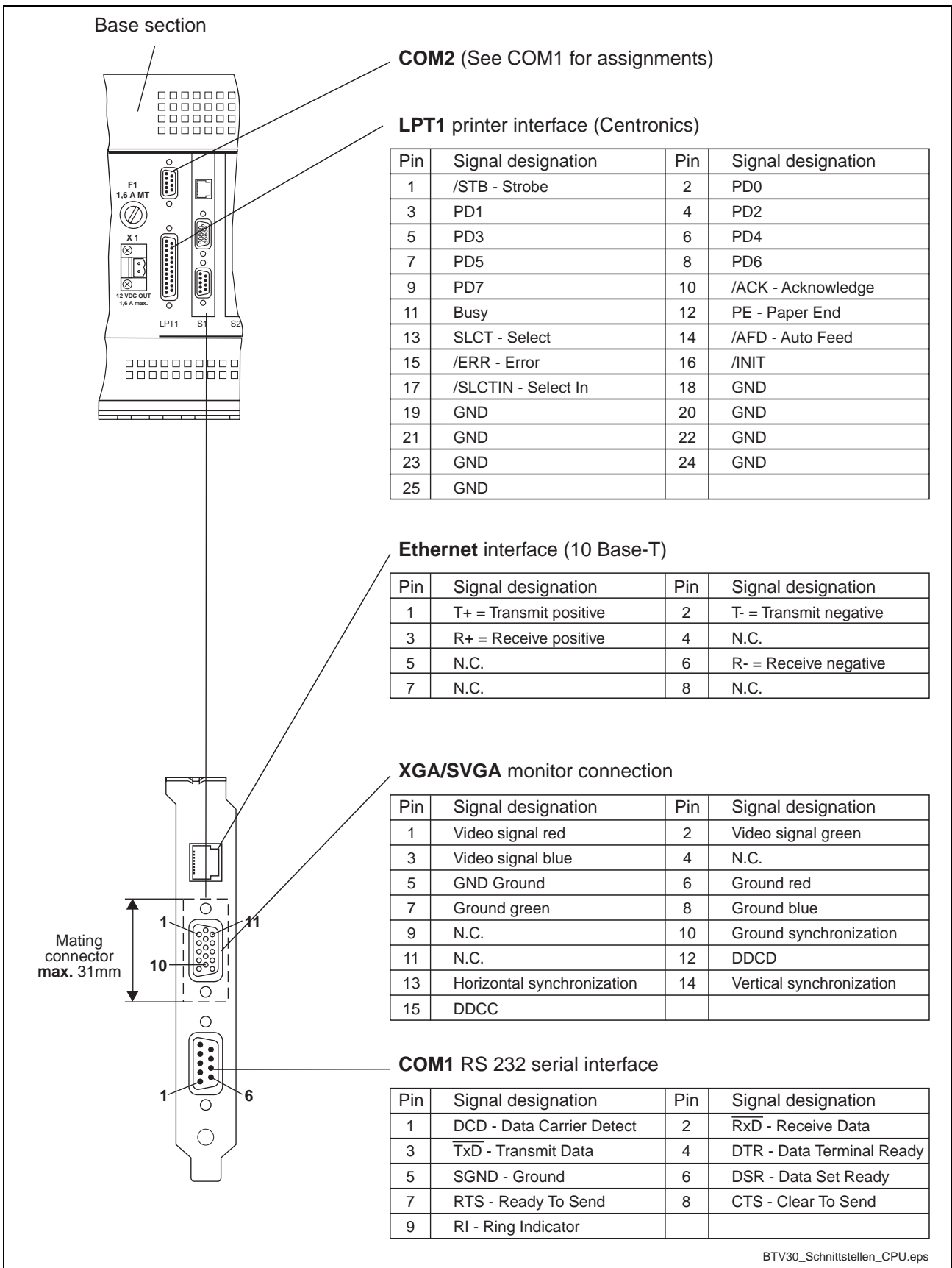


Figure 5-23: Interfaces of the slot CPU

### 5.3 Application Examples

#### Application Example for INTERBUS-S Interfacing

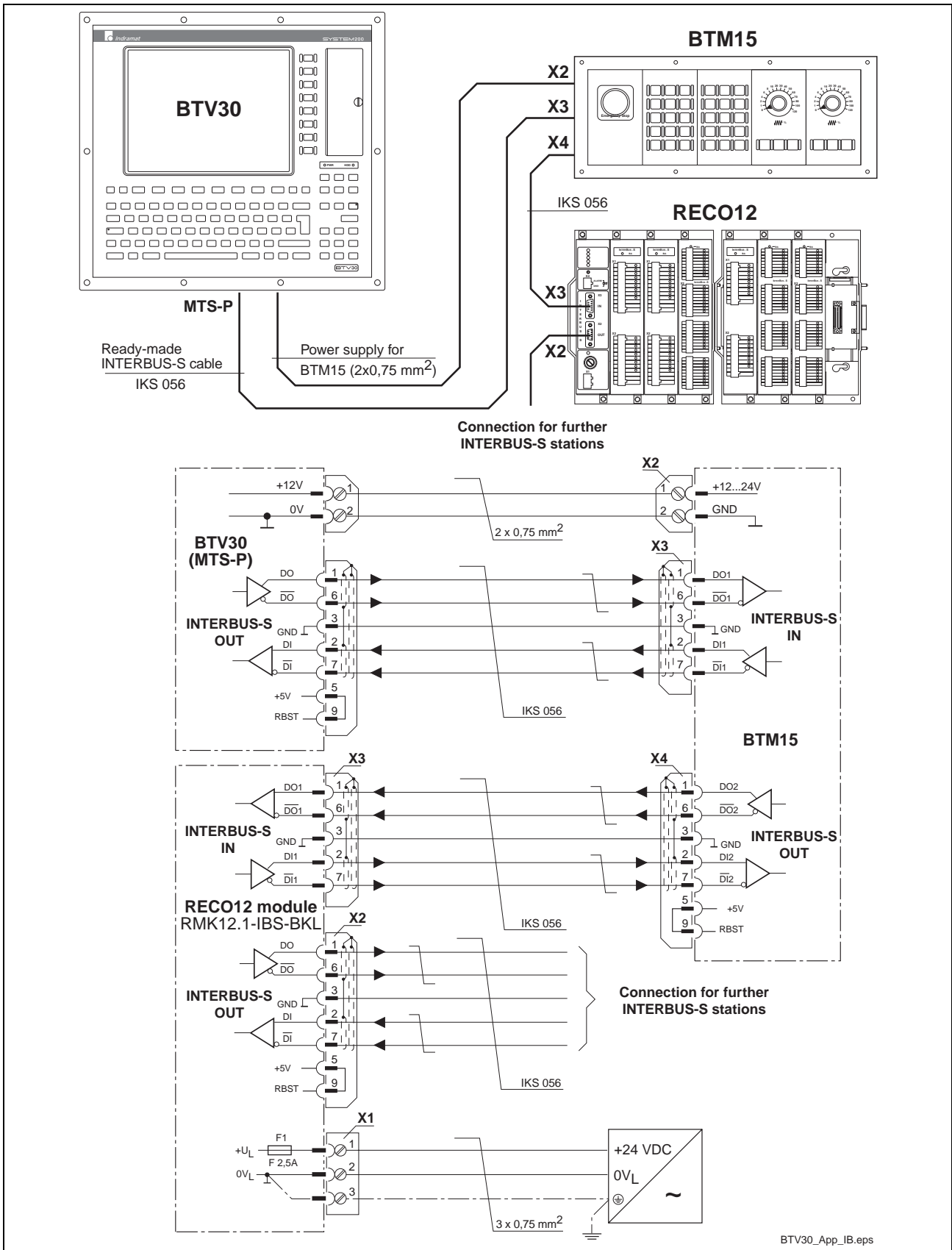


Figure 5-24: INTERBUS-S example interfacing

### Application Example for SERCOS Interface

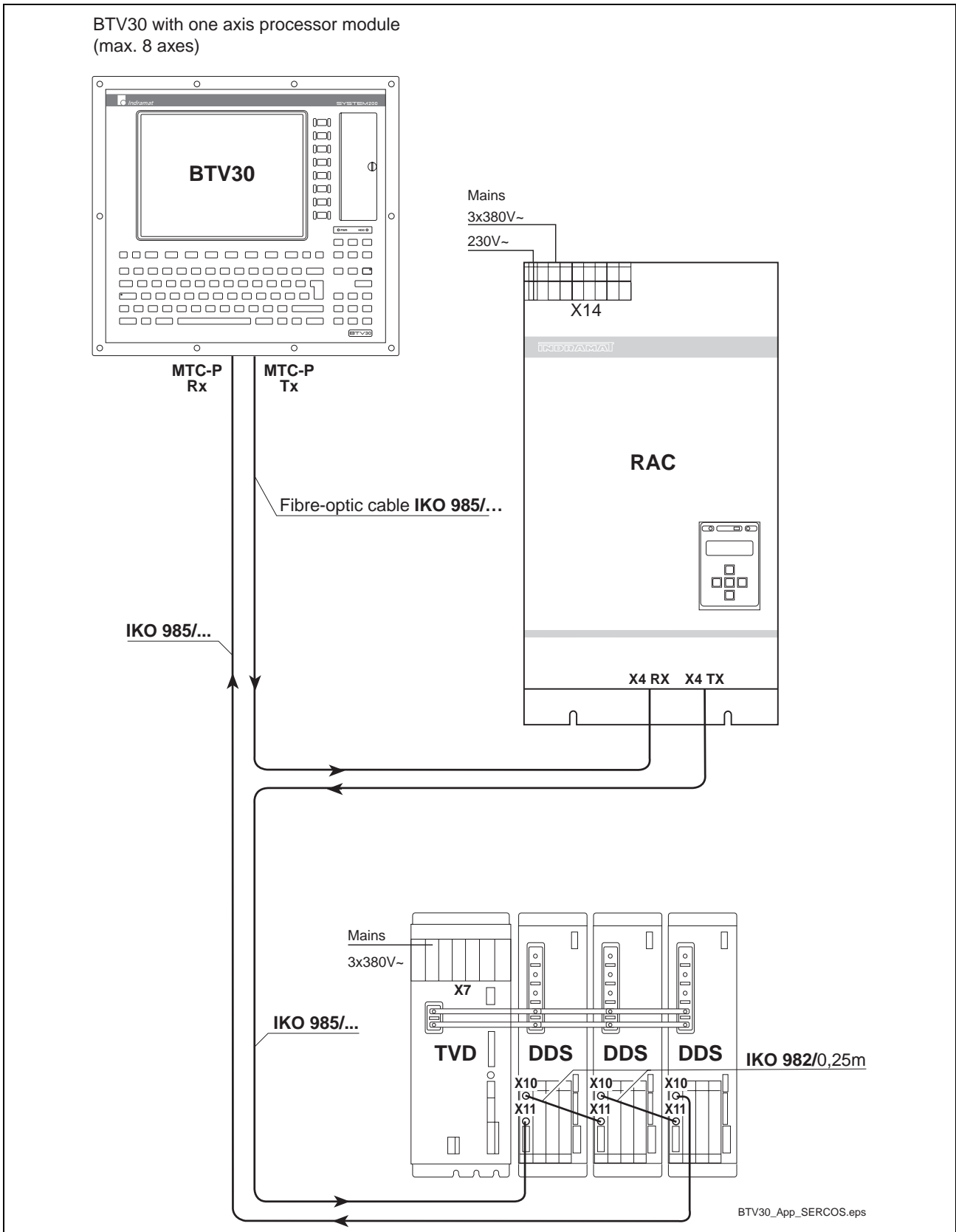


Figure 5-25: SERCOS interfacing BTV30.1 with 1 axis processor module (i.e. for 8 axes)







## 7 List of Figures

Figure 1-1: BTV30.1 front panel .....	1-1
Figure 2-2: Enlargement showing the LED panel.....	2-1
Figure 2-3: Enlargement showing the machine function keys .....	2-1
Figure 2-4: Machine function keys.....	2-2
Figure 2-5: Sub-D pin assignments .....	2-2
Figure 2-6: Machine function key addresses.....	2-3
Figure 2-7: German keyboard layout.....	2-3
Figure 2-8: American keyboard layout.....	2-3
Figure 2-9: Table of special keys.....	2-4
Figure 2-10: Enlargement of the cursor block showing the additional keyboard mouse keys .....	2-4
Figure 2-11: Firmware configurations under MS DOS .....	2-5
Figure 2-12: Firmware configurations under Windows NT .....	2-5
Figure 3-13: General technical data of the BTV30.1 .....	3-1
Figure 3-14: Ambient conditions of the BTV30.1 .....	3-1
Figure 3-15: HD loads.....	3-2
Figure 4-16: Front panel dimensions.....	4-1
Figure 4-17: Rear view .....	4-1
Figure 4-18: Side view .....	4-2
Figure 4-19: View from below.....	4-2
Figure 4-20: Installation cutout .....	4-3
Figure 5-21: View from below in an example configuration.....	5-1
Figure 5-22: Standard connection terminals.....	5-1
Figure 5-23: Interfaces of the slot CPU .....	5-2
Figure 5-24: INTERBUS-S example interfacing .....	5-3
Figure 5-25: SERCOS interfacing BTV30.1 with 1 axis processor module (i.e. for 8 axes) .....	5-4
Figure 6-26: Type codes of the BTV30.1.....	6-1



## 8 Index

### A

Ambient conditions 3-1  
Axis processor module 5-4

### B

Backlight tubes 3-2

### C

Connection terminals 5-1

### E

Expendable parts 3-2

### F

Fan 3-2  
Front panel 1-2

### H

Heat dissipation 3-1  
Housing dimensions 4-1

### I

Installation cutout 4-3  
Installation dimensions 4-3  
INTERBUS-S 5-3  
Interfaces 3-1, 5-2

### M

Main memory 3-1  
Modules 1-2

### N

NC control 1-1

### O

Ordering code 6-1

### P

Power consumption 3-1  
Power supply 3-1  
Processor 3-1

### S

SERCOS 5-4

Slots 1-1  
Stand-alone PLC 1-1, 1-2

## T

Technical data 3-1  
Type codes 6-1  
Type of protection 3-1

## W

Weight 3-1

# 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
INDRAMAT GmbH Bgm.-Dr.-Nebel-Str. 2 D - 97816 Lohr am Main Telefon: +49 (0)9352/40-0 Telefax: +49 (0)9352/40-4885	INDRAMAT GmbH Beckerstraße 31 D - 09120 Chemnitz Telefon: +49 (0)371/35 55-0 Telefax: +49 (0)371/35 55-333	INDRAMAT GmbH Harkortstraße 25 D - 40849 Ratingen Telefon: +49 (0)2102/43 18-0 Telefax: +49 (0)2102/41 315	INDRAMAT GmbH Kieler Straße 212 D - 22525 Hamburg Telefon: +49 (0)40/85 31 57-0 Telefax: +49 (0)40/85 31 57-15
Vertriebsgebiet Süd Germany South <input checked="" type="checkbox"/> V/S <input type="checkbox"/> Service	Gebiet Südwest Germany South-West <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service		INDRAMAT Service-Hotline INDRAMAT GmbH Telefon: +49 (0)172/660 04 06 oder Telefon: +49 (0)171/333 88 26
INDRAMAT GmbH Ridlerstraße 75 D-80339 München Telefon: +49 (0)89/540138-30 Telefax: +49 (0)89/540138-10	INDRAMAT GmbH Böblinger Straße 25 D-71229 Leonberg Telefon: +49 (0)7152/9 72-6 Telefax: +49 (0)7152/9 72-727		

Kundenbetreuungsstellen in Deutschland - Service agencies in Germany

## Europa - Europe

<p>Austria <input checked="" type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Mannesmann Rexroth Ges.m.b.H. Geschäftsbereich INDRAMAT Hägelingasse 3 A - 1140 Wien</p> <p>Telefon: +43 (0)1/9852540-400 Telefax: +43 (0)1/9852540-93</p>	<p>Austria <input type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Mannesmann Rexroth G.m.b.H. Geschäftsbereich INDRAMAT Industriepark 18 A - 4061 Pasching</p> <p>Telefon: +43 (0)7221/605-0 Telefax: +43 (0)7221/605-21</p>	<p>Belgium <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Mannesmann Rexroth N.V.-S.A. Geschäftsbereich INDRAMAT Industrielaan 8 B-1740 Ternat</p> <p>Telefon: +32 (0)2/5823180 Telefax: +32 (0)2/5824310</p>	<p>Denmark <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>BEC AS Zinkvej 6 DK-8900 Randers</p> <p>Telefon: +45 (0)87/11 90 60 Telefax: +45 (0)87/11 90 61</p>
<p>England <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Mannesmann Rexroth Ltd. INDRAMAT Division 4 Esland Place, Love Lane GB - Cirencester, Glos GL7 1YG</p> <p>Telefon: +44 (0)1285/658671 Telefax: +44 (0)1285/654991</p>	<p>Finland <input checked="" type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Rexroth Mecman OY Ansatie 6 SF-017 40 Vantaa</p> <p>Telefon: +358 (0)9/84 91 11 Telefax: +358 (0)9/84 91 13 60</p>	<p>France <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Mannesmann Rexroth S.A. Division INDRAMAT Parc des Barbanniers 4, Place du Village F-92632 Gennevilliers Cedex</p> <p>Telefon: +33 (0)141 47 54 30 Telefax: +33 (0)147 94 69 41 Hotline: +33 (0)6 08 33 43 28</p>	<p>France <input checked="" type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Mannesmann Rexroth S.A. Division INDRAMAT 270, Avenue de Lardenne F - 31100 Toulouse</p> <p>Telefon: +33 (0)5 61 49 95 19 Telefax: +33 (0)5 61 31 00 41</p>
<p>France <input checked="" type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Mannesmann Rexroth S.A. Divisione INDRAMAT 91, Bd. Irène Joliot-Curie F - 69634 Vénissieux Cedex</p> <p>Telefon: +33 (0)4 78 78 53 65 Telefax: +33 (0)4 78 78 52 53</p>	<p>Italy <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Mannesmann Rexroth S.p.A. Divisione INDRAMAT Via G. Di Vittoria, 1 I - 20063 Cernusco S/N.MI</p> <p>Telefon: +39 (0)2/92 36 52 70 Telefax: +39 (0)2/92 36 55 12</p>	<p>Italy <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Mannesmann Rexroth S.p.A. Divisione INDRAMAT Via Borgomanero, 11 I - 10145 Torino</p> <p>Telefon: +39 (0)11/7 71 22 30 Telefax: +39 (0)11/7 71 01 90</p>	<p>Italy <input checked="" type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Mannesmann Rexroth S.p.A. Divisione INDRAMAT Via del Progresso, 16 (Zona Ind.) I - 35020 Padova</p> <p>Telefon: +39 (0)49/8 70 13 70 Telefax: +39 (0)49/8 70 13 77</p>
<p>Italy <input type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Mannesmann Rexroth S.p.A. Divisione INDRAMAT Via de Nicola, 12 I - 80053 Castellamare di Stabia NA</p> <p>Telefon: +39 (0)81/8 72 30 37 Telefax: +39 (0)81/8 72 30 18</p>	<p>Italy <input checked="" type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Mannesmann Rexroth S.p.A. Divisione INDRAMAT Viale Oriani, 38/A I - 40137 Bologna</p> <p>Telefon: +39 (0)51/34 14 14 Telefax: +39 (0)51/34 14 22</p>	<p>Netherlands <input checked="" type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Hydraudyne Hydrauliek B.V. Kruisbroeksestraat 1 P.O. Box 32 NL - 5281 RV Boxtel</p> <p>Telefon: +31 (0)411/65 19 51 Telefax: +31 (0)411/65 14 83</p>	<p>Netherlands <input type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Hydrocare B.V. Kruisbroeksestraat 1 P.O. Box 32 NL - 5281 RV Boxtel</p> <p>Telefon: +31 (0)411/65 19 51 Telefax: +31 (0)411/67 78 14</p>
<p>Spain <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Mannesmann Rexroth S.A. División INDRAMAT Centro Industrial Santiga Obradors s/n E-08130 Santa Perpetua de Mogoda Barcelona</p> <p>Telefon: +34 937 47 94 00 Telefax: +34 937 47 94 01</p>	<p>Spain <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Goimendi S.A. División Indramat Jolastokieta (Herrera) Apartado 11 37 E - 20017 San Sebastian</p> <p>Telefon: +34 9 43/40 01 63 Telefax: +34 9 43/39 17 99</p>	<p>Sweden <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Rexroth Mecman Svenska AB INDRAMAT Division Varuvägen 7 S - 125 81 Stockholm</p> <p>Telefon: +46 (0)8/727 92 00 Telefax: +46 (0)8/64 73 277</p>	<p>Switzerland - East <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Mannesmann Rexroth AG Geschäftsbereich INDRAMAT Gewerbestraße 3 CH-8500 Frauenfeld</p> <p>Telefon: +41 (0)52/720 21 00 Telefax: +41 (0)52/720 21 11</p>
<p>Switzerland - West <input checked="" type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Mannesmann Rexroth SA Département INDRAMAT Chemin de l'Ecole 6 CH-1036 Sullens</p> <p>Telefon: +41 (0)21/731 43 77 Telefax: +41 (0)21/731 46 78</p>	<p>Russia <input type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Tschudnenko E.B. Arsenia 22 RUS - 153000 Ivanovo Rußland</p> <p>Telefon: +7 093/223 96 33 oder/or +7 093/223 95 48 Telefax: +7 093/223 46 01</p>	<p>Slowenia <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>DOMEL Elektromotorji in gospodinjski aparati d. d. Otoki 21 SLO - 64 228 Zelezniki</p> <p>Telefon: +386 64/61 73 32 Telefax: +386 64/64 71 50</p>	<p>Turkey <input checked="" type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Mannesmann Rexroth Hidropar A..S. Fevzi Cakmak Cad No. 3 TR - 34630 Sefaköy Istanbul</p> <p>Telefon: +90 212/541 60 70 Telefax: +90 212/599 34 07</p>

Europäische Kundenbetreuungsstellen (ohne Deutschland)  
European Service agencies (without Germany)

## Außerhalb Europa - outside Europe

<p>Argentina <input checked="" type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Mannesmann Rexroth S.A.I.C. Division INDRAMAT Acassusso 48 41/7 RA - 1605 Munro (Buenos Aires)</p> <p>Telefon: +54 (0)1/756 01 40 +54 (0)1/756 01 36</p>	<p>Argentina <input type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>NAKASE Asesoramiento Tecnico Calle 49, No. 5764-66 RA - 1653 Villa Balester Provincia de Buenos Aires</p> <p>Telefon: +54 (0) 1/768 24 13 Telefax: +54 (0) 1/768 36 43</p>	<p>Australia <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>AIMS - Australian Industrial Machinery Services Pty. Ltd. Unit 3/45 Horne ST Campbellfield 3061 AUS - Melbourne, VIC</p> <p>Telefon: +61 (0)3/93 59 02 28 Telefax: +61 (0)3/93 59 02 86</p>	<p>Brazil <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Mannesmann Rexroth Automação Ltda. Divisão INDRAMAT Rua Georg Rexroth, 609 Vila Padre Anchieta BR - 09951-270 Diadema-SP [ Caixa Postal 377 ] [ BR-09901-970 Diadema-SP ]</p> <p>Telefon: +55 (0)11/745 90 60 +55 (0)11/745 90 70 Telefax: +55 (0)11/745 90 50</p>
<p>Canada <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Basic Technologies Corporation Burlington Division 3426 Mainway Drive Burlington, Ontario Canada L7M 1A8</p> <p>Telefon: +1 905/335 55 11 Telefax: +1 905/335-41 84</p>	<p>China <input checked="" type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Mannesmann Rexroth (China) Ltd. Shanghai Office - Room 206 Shanghai Internat. Trade Centre 2200 Yanan Xi Lu PRC - Shanghai 200335</p> <p>Telefon: +86 21/62 75 53 33 Telefax: +86 21/62 75 56 66</p>	<p>China <input type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Mannesmann Rexroth (China) Ltd. Shanghai Parts &amp; Service Center 199 Wu Cao Road, Hua Cao Minhang District PRC - Shanghai 201 103</p> <p>Telefon: +86 21/62 20 00 58 Telefax: +86 21/62 20 00 68</p>	<p>China <input checked="" type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Mannesmann Rexroth (China) Ltd. 15/F China World Trade Center 1, Jianguomenwai Avenue PRC - Beijing 100004</p> <p>Telefon: +86 10/65 05 03 80 Telefax: +86 10/65 05 03 79</p>
<p>China <input checked="" type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Mannesmann Rexroth (China) Ltd. A-5F., 123 Lian Shan Street Sha He Kou District PRC - Dalian 116 023</p> <p>Telefon: +86 411/46 78 930 Telefax: +86 411/46 78 932</p>	<p>Hongkong <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Rexroth (China) Ltd. 19 Cheung Shun Street 1st Floor, Cheung Sha Wan, Kowloon, Hongkong</p> <p>Telefon: +852 27/41 13 51/-54 oder/or +852 27/41 14 30 Telefax: +852 27/86 07 33</p>	<p>India <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Mannesmann Rexroth (India) Ltd. INDRAMAT Division Plot. 96, Phase III Peenya Industrial Area IND - Bangalore - 560058</p> <p>Telefon: +91 (0)80/8 39 21 01 Telefax: +91 (0)80/8 39 43 45</p>	<p>India <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Mannesmann Rexroth (India) Ltd. INDRAMAT Division Plot. A-58, TTC Industrial Area Thane Turbhe Midc Road Mahape Village IND - Navi Mumbai - 400 701</p> <p>Telefon: +91 (0)22/7 61 46 22 Telefax: +91 (0)22/7 68 15 31</p>
<p>Indonesia <input checked="" type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>PT. Rexroth Wijayakusuma Jl. Raya Bekasi Km 21 Pulogadung RI - Jakarta Timur 13920</p> <p>Telefon: +62 21/4 61 04 87 +62 21/4 61 04 88 Telefax: +62 21/4 60 01 52</p>	<p>Japan <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Rexroth Automation Co., Ltd. INDRAMAT Division 1F, I.R. Building Nakamachidai 4-26-44 Tsuzuki-ku, Yokohama-shi J - Kanagawa-ken 224-004</p> <p>Telefon: +81 459/42-72 10 Telefax: +81 459/42-03 41</p>	<p>Korea <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Mannesmann Rexroth-Seki Co Ltd. 1500-12 Da-Dae-Dong ROK - Saha-Ku, Pusan, 604-050</p> <p>Telefon: +82 (0)51/2 60 06 18 Telefax: +82 (0)51/2 60 06 19</p>	<p>Korea <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>Seo Chang Corporation Ltd. Room 903, Jail Building 44-35 Yeouido-Dong Yeoungdeungpo-Ku C.P.O.Box 97 56 ROK - Seoul</p> <p>Telefon: +82 (0)2/7 80 82 08 +82 (0)2/7 80 82 09 Telefax: +82 (0)2/7 84 54 08</p>
<p>Mexico <input checked="" type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Rexroth Mexico S.A. de C.V. Calle Neptuno 72 Unidad Ind. Vallejo MEX - 07700 Mexico, D.F.</p> <p>Telefon: +52 5 754 17 11 +52 5 754 36 84 +52 5 754 12 60 Telefax: +52 5 754 50 73 +52 5 752 59 43</p>		<p>South Africa <input checked="" type="checkbox"/> V/S <input checked="" type="checkbox"/> Service</p> <p>HYTEC Automation (Pty) Ltd. 28 Banfield Road, Industria North RSA - Maraisburg 1700</p> <p>Telefon: +27 (0)11/673 20 80 Telefax: +27 (0)11/673 72 69</p>	<p>Taiwan <input checked="" type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Rexroth Uchida Co., Ltd. No.1, Tsu Chiang Street Tu Cheng Ind. Estate Taipei Hsien, Taiwan, R.O.C.</p> <p>Telefon: +886 2/2 68 13 47 Telefax: +886 2/2 68 53 88</p>

Kundenbetreuungsstellen außerhalb Europa - Service agencies outside Europe

**Außerhalb Europa / USA - outside Europe / USA**

<p>USA <input type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Mannesmann Rexroth Corporation INDRAMAT Division 5150 Prairie Stone Parkway USA - Hoffman Estates, IL 60192-3707 Telefon: +1 847/6 45 36 00 Telefax: +1 847/6 45 62 01</p>	<p>USA <input type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Mannesmann Rexroth Corporation INDRAMAT Division Central Region Technical Center USA - Auburn Hills, MI 48326 Telefon: +1 248/3 93 33 30 Telefax: +1 248/3 93 29 06</p>	<p>USA <input type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Mannesmann Rexroth Corporation INDRAMAT Division Southeastern Technical Center 3625 Swiftwater Park Drive USA - Suwanee Georgia 30174 Telefon: +1 770/9 32 32 00 +1 770/9 32 19 03</p>	<p>USA <input type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Mannesmann Rexroth Corporation INDRAMAT Division Northeastern Technical Center 99 Rainbow Road USA - East Granby, Connecticut 06026 Telefon: +1 860/8 44 83 77 +1 860/8 44 85 95</p>
<p>USA <input type="checkbox"/> V/S <input type="checkbox"/> Service</p> <p>Mannesmann Rexroth Corporation INDRAMAT Division Charlotte Regional Sales Office 14001 South Lakes Drive USA - Charlotte, North Carolina 28273 Telefon: +1 704/5 83 97 62 +1 704/5 83 14 86</p>			

Kundenbetreuungsstellen außerhalb Europa / USA  
Service agencies outside Europe / USA



## Notes

