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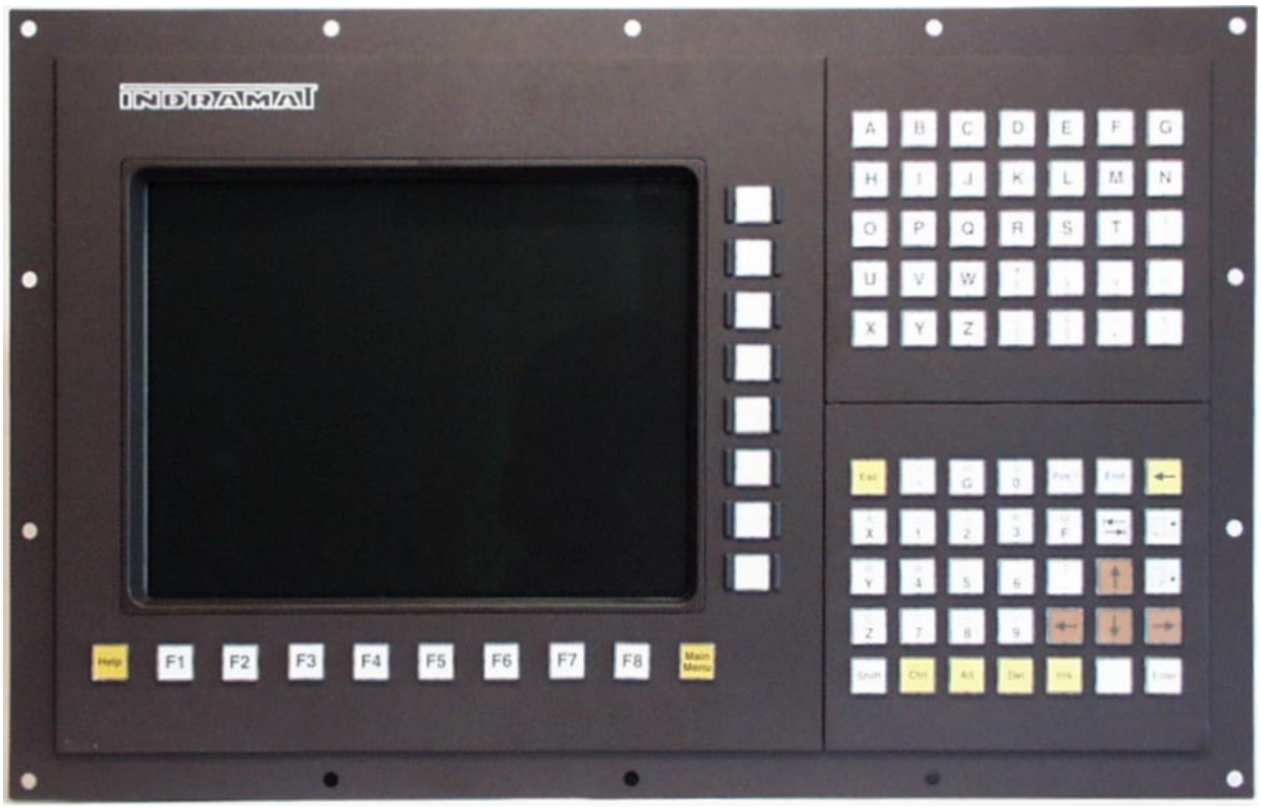

User and Visualization Terminal BTV01.4

Project Planning Manual

DOK-MT*CNC-BTV01.4****-PR02-EN-P

Rexroth
Indramat

Title
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BTV01.4

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Purpose of Documentation This documentation describes …
- the technical data
- the exterior dimensions
- the connector assignments

Record of Revisions

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Note This document has been printed on chlorine-free bleached paper.

Inhaltsverzeichnis

1 Summary Description

The BTV01.4 is mounting and connection compatible to the BTV1.2/1.3 which means that it can be used as a replacement unit or substitute.

1.1 Expansion Slots

The BTV01.4 has three expansion slots where slot 0 is reserved for CPU card and the interface slot is reserved for the parallel and second serial interface. The second serial interface is a galvanically de-coupled SIS (Serial Indramat interface). In short, the RS232 and RS485 interfaces are on one 15-pin D-subminiature connector.

Adapter cables for interfacing the SIS to 9-pin BTV1.2/1.3-standard are available:

SIS on RS485	IKB 0022
SIS on RS232	IKB 0023

Note: The interface slot is not directly connected to the ISA bus!

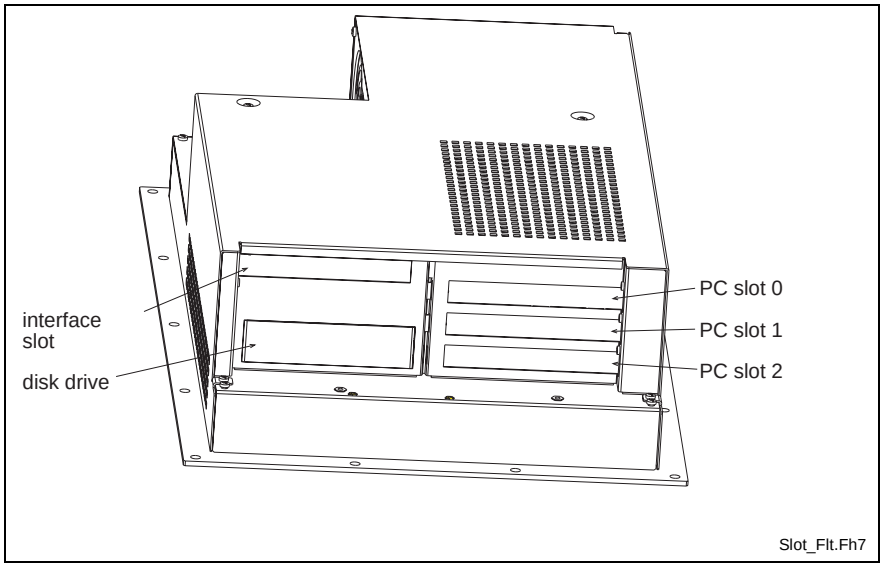

Fig. 1-1: The expansion slots

1.2 Floppy Disk Drive

The BTV01.4 is standardly equipped with a 1,44 MB, 3.5“ floppy disk drive. In order to accommodate external disk drives (PCD02 / PCD03), however, a control card can be outfitted at the same location in lieu of the disk drive. Then only the type of the external FDD (PCD02 or PCD03) is to be set by a switch. The control card then itself detects whether the unit is with or without a line driver. The connection is a 37-pin D-subminiature bushing.

1.3 Hard Disk Drive

The hard drive is mounted in a vibration and shock-dampened fast replaceable drawer.

Hard drives of 2.5“ are used.

Hard Drive Replacement

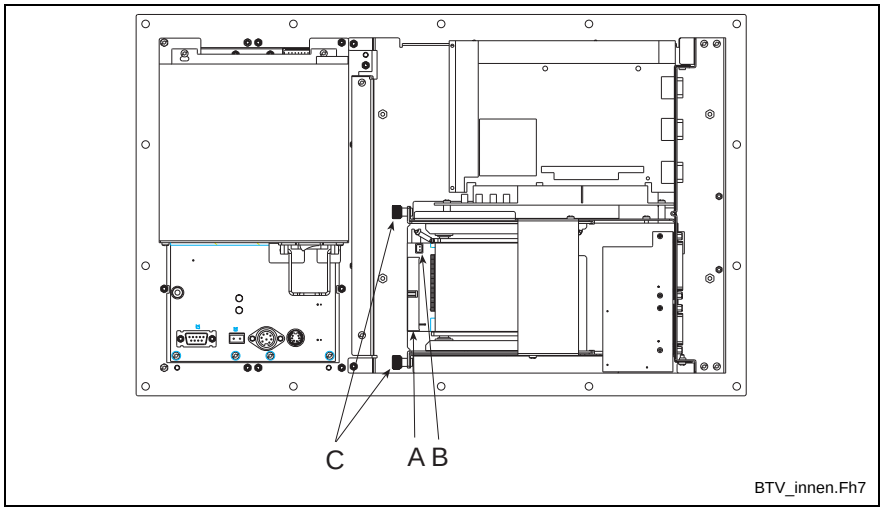

Fig. 1-2:: Replacing the hard drive

To replace the HDD, follow these steps:

- Switch off the BTV01.4 and separate it from network.
- Open the back lid of the housing (6 Torx 15 screws).
- Pull out the connectors (A, B) of the hard drive (see picture).
- Release the knurled screw (C).
- Replace the entire hard drive drawer.
- Tighten knurled screws, insert the connectors, close the housing, connect the power and network and switch the unit on.

2 Technical Data

2.1 General Data

Processor:	Intel Pentium 200MHz, MMX
Main memory:	32MB
Hard drive:	min. 500 MB
Interfaces:	1 x RS232, 1 x SIS (RS232 + RS485), 1 x parallel, 1 x VGA, 2 x ext. keyboard
Display:	10,4“ color TFT, resolution 640 x 480
Slots	2 x ISA bus
Keyboard:	NC full keyboard with 70 keys, 10 function keys, 8 machine function keys
Protection category:	Front panel IP65, housing IP20, DIN 40 050, IEC 529
Surface front panel:	Powder coated, color RAL 8019 gray brown, fine structure 89/60850 per Tiger 50µ
Voltage supply:	115/230 VAC +/- 15%; autorange
Typical heat loss:	65 W
Max. heat loss:	200 W
Weight:	approx. 8 kg

Fig. 2-1: General technical data

2.2 Ambient Conditions

	Operation	**Storage / Transport**
Max. ambient temperature:	+5°C to +45°C	-20°C to +60°C
Max. temperature gradient:	10 K/h	15 K/h
Relative humidity:	75% mean, 80% occasionally, no condensate, DIN 40 040 class F	
Air pressure:	860 to 1060 hPa, 1500 m	12 000 m
Max. external magnetic field:	6 Gauss	
Max. vibration: without / with FDD access:	1G / 0.5G	1G
Max. shock: without / with FDD access	20G / 5G	50G

Fig. 2-2: Ambient conditions

2.3 Dimensions

Housing Sizes

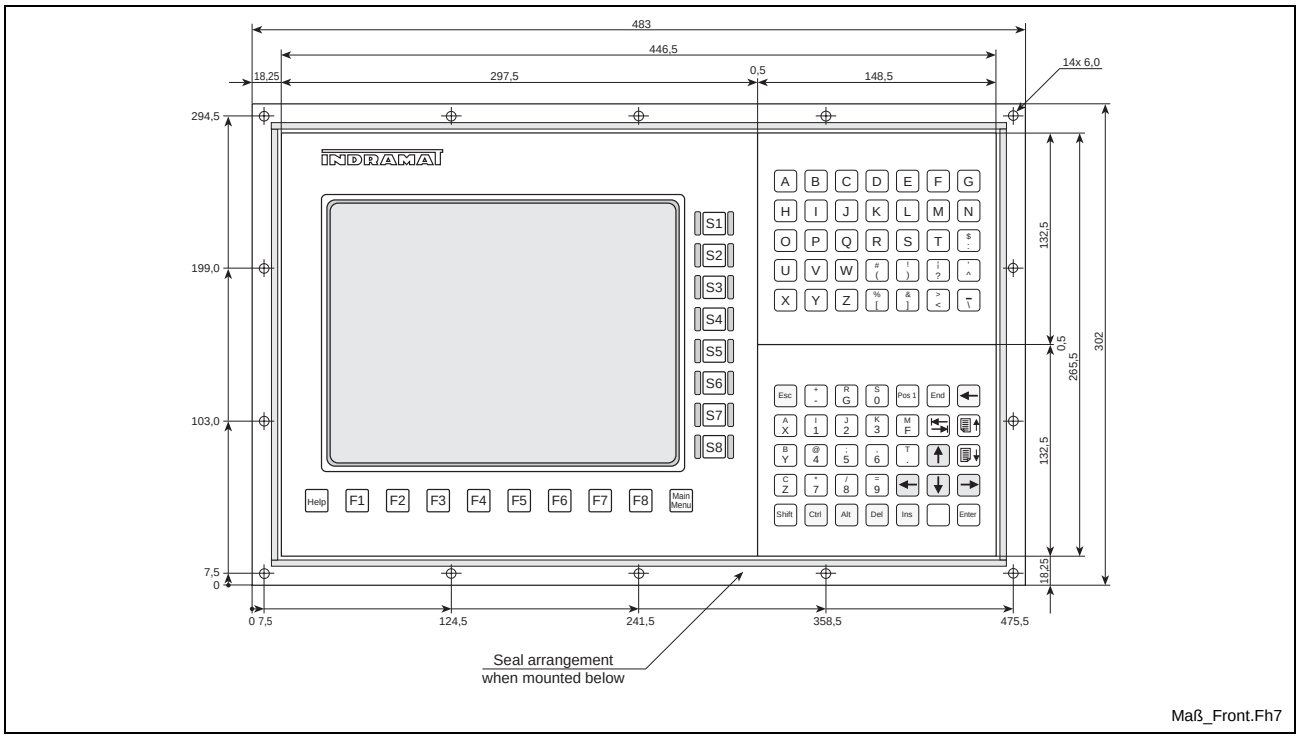

Fig. 2-3: BTV01.4 – Front view

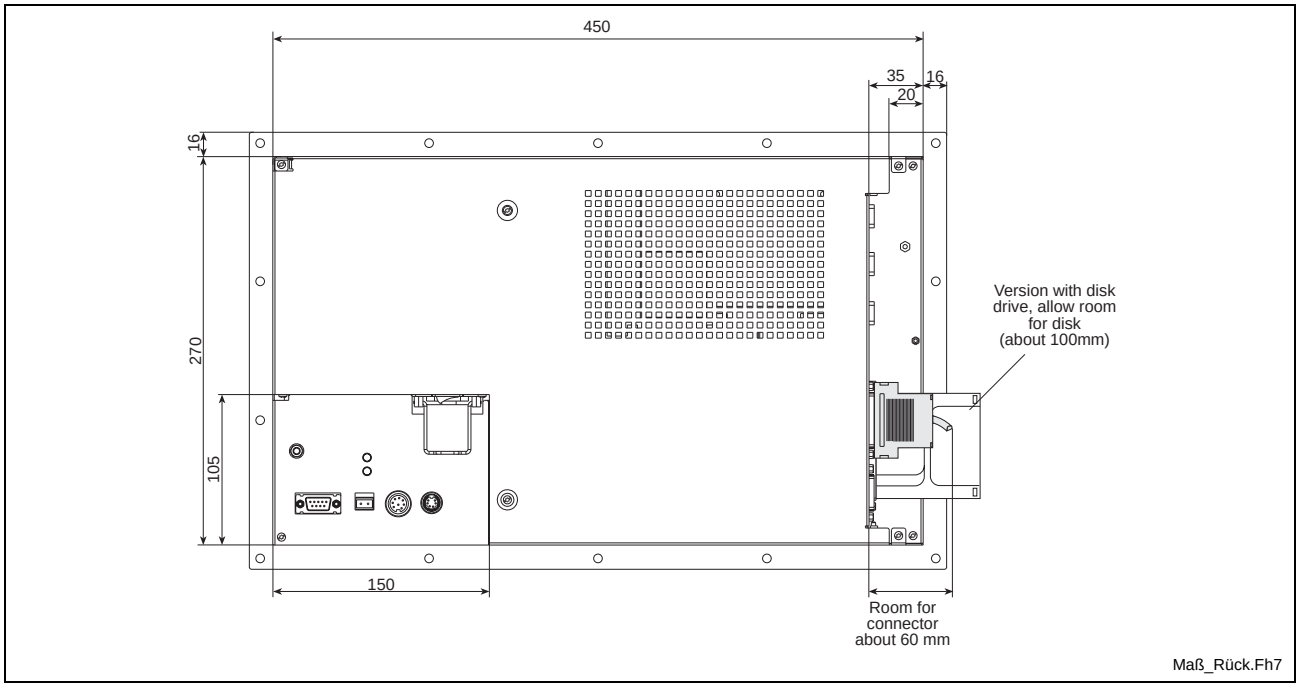

Fig. 2-4: BTV01.4 – Back view

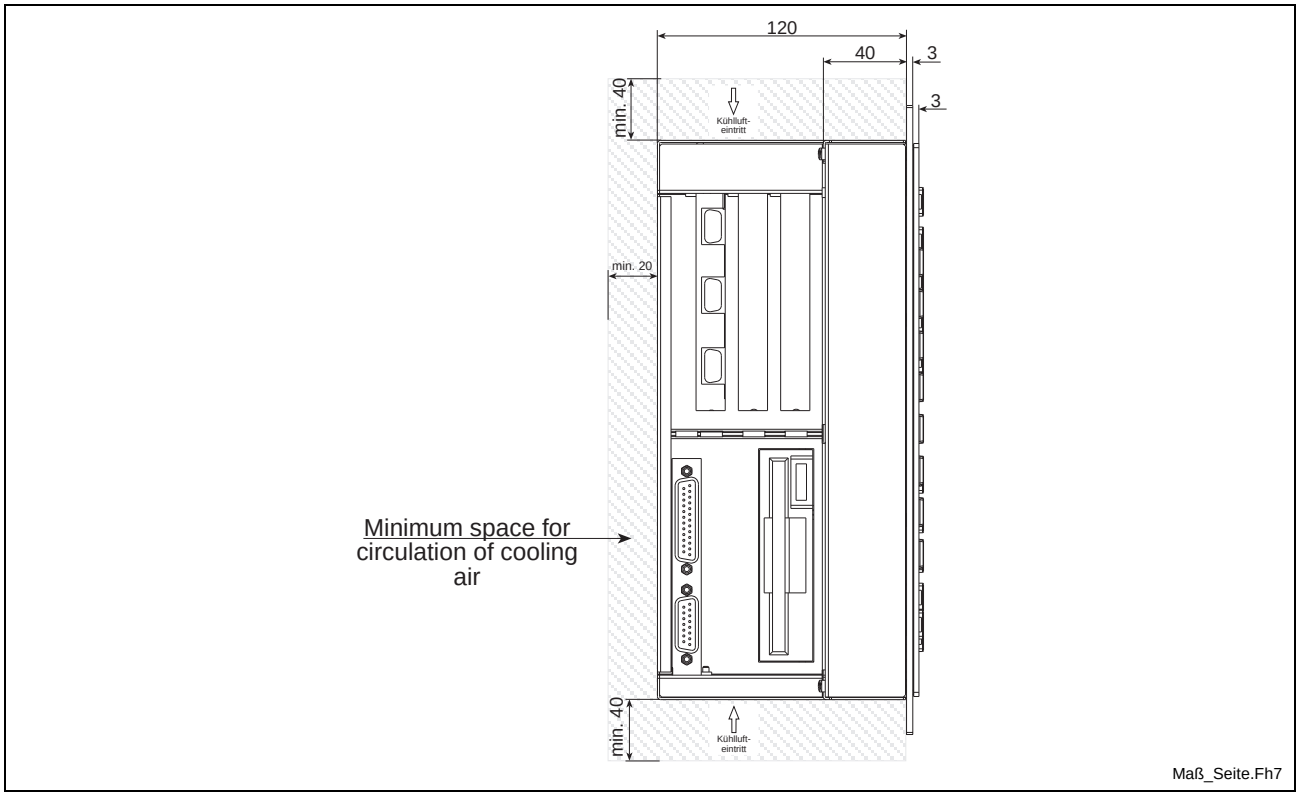

Fig. 2-5: BTV01.4 – Side view

Mounting Dimensions

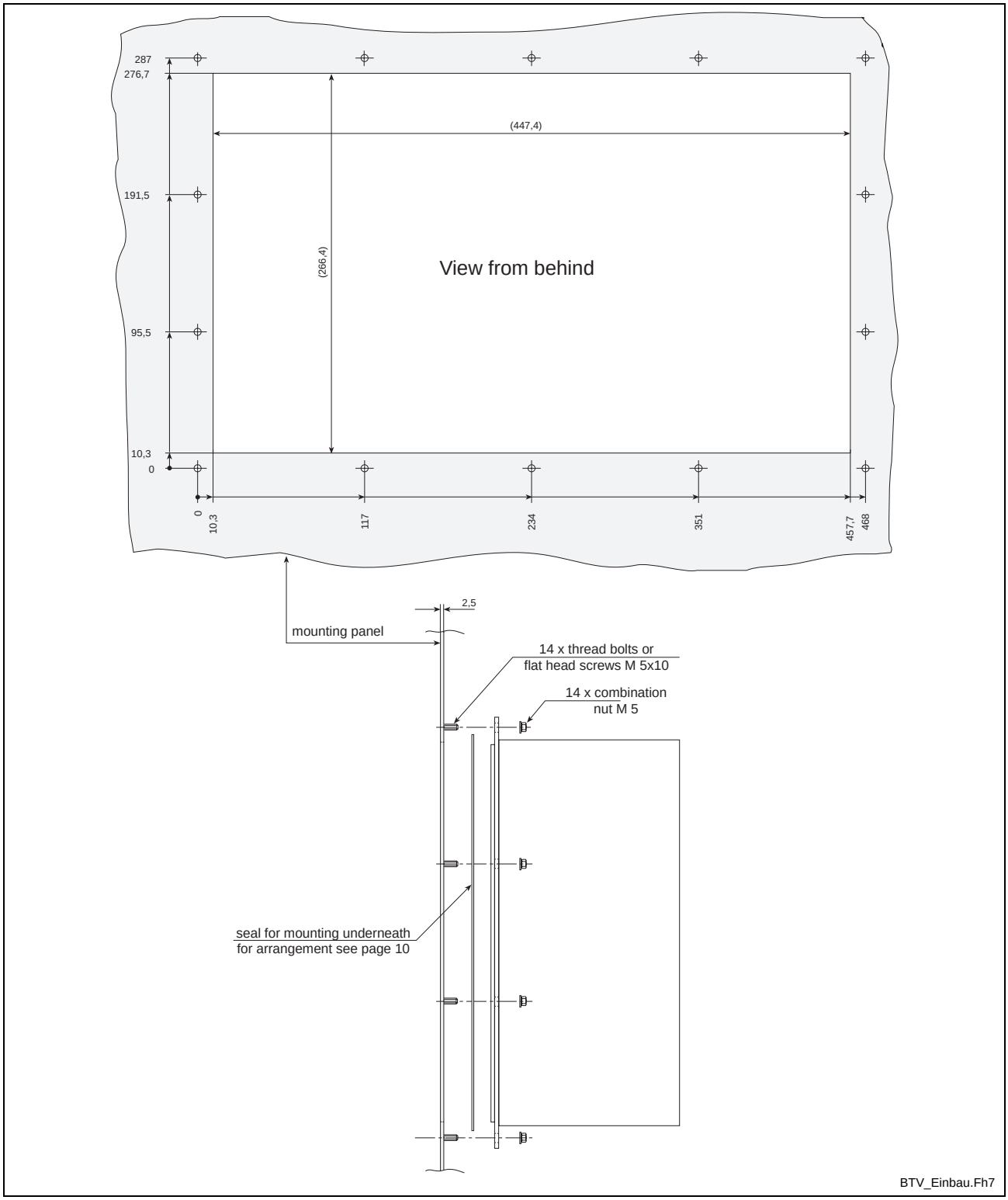

Fig. 2-6: Mounting dimensions

3 Interfaces

3.1 Interface Positions

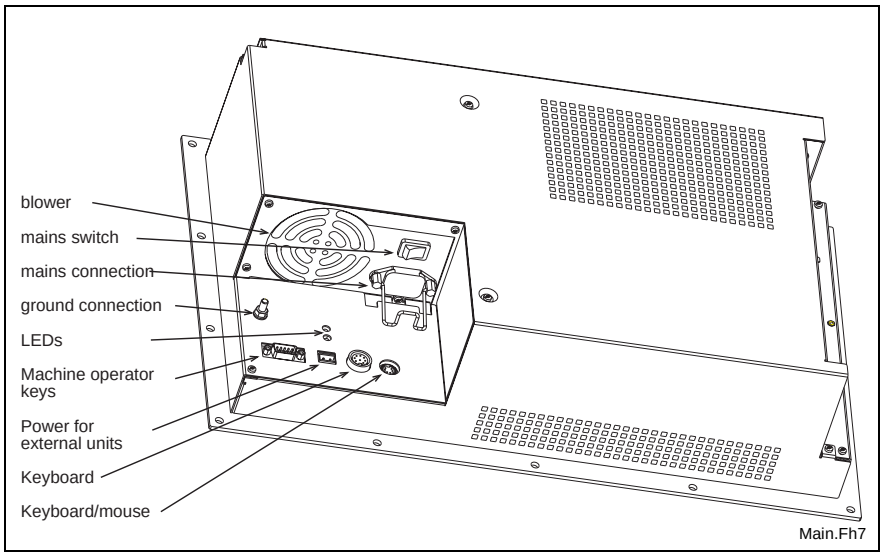

Fig. 3-1: View of standard interfaces

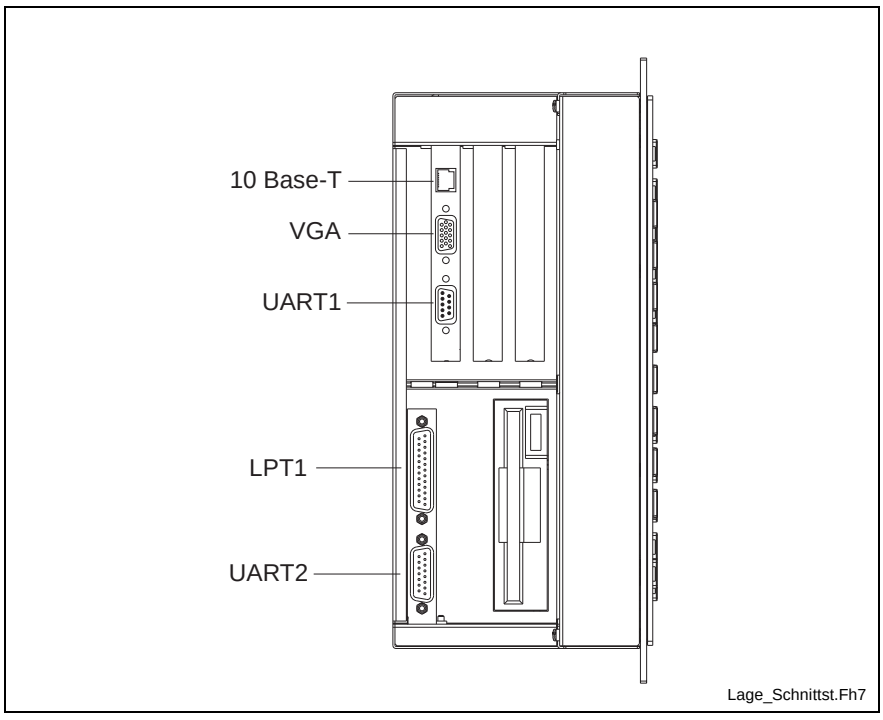

Fig. 3-2: Position of slot interfaces

3.2 Power Supply

The power supply connection is an inlet connector for non-heating apparatus with strain relief clip. Its mate is included in the overall delivery that accompanies the BTV01.4.

3.3 Machine Operator Buttons

The machine operator buttons are led to a 9-pin D-subminiature connector (compatible to BTV1.2/1.3).

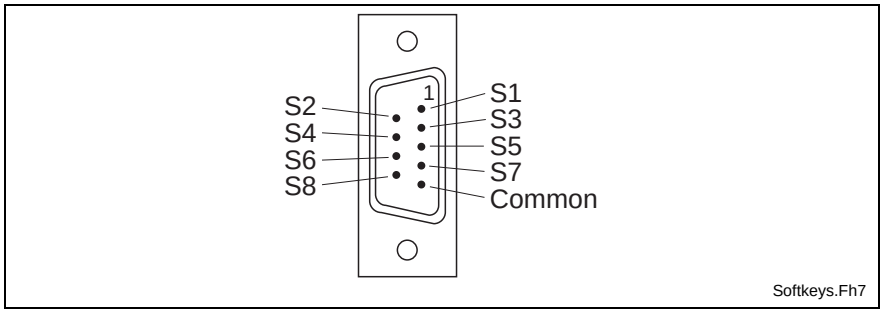

Fig. 3-3: Machine user button interface

3.4 Power Supply for External Units (BTM)

12V/ 1.7A power outlet for external units, especially the BTM.

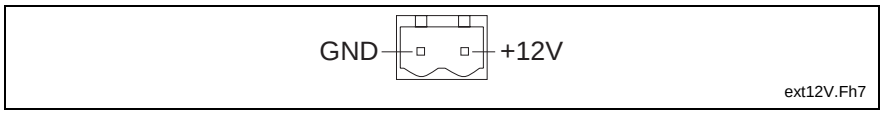

Fig. 3-4: 12V output

3.5 Keyboard

External keyboard connection. In addition to the present keyboard connection, the BTV01.4 is equipped with a combination connection for a PS/2 keyboard and a PS/2 mouse. Only one external keyboard can, however, be simultaneously operated with the internal keyboard.

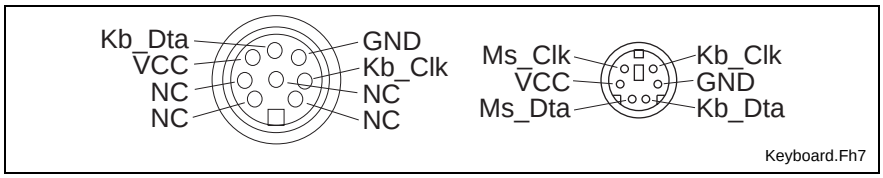

Fig. 3-5: Assigning keyboard interfaces

3.6 LEDs

The LEDs indecate power voltage present (5V, green) and hard disk activity (HDD, red). As control is only needed if there is a fault, the LEDs are mounted on the backside of the unit.

3.7 Network

Note: The 10Base-T interface in the BTV01.4 is not enabled in BIOS and cannot, therefore, not be used.

To, however, achieve an ethernet interface (with BNC connector) compatible to both a BTV01.2 and a BTV01.3, the auxiliary card PCM01.1E is used (see section 4.2).

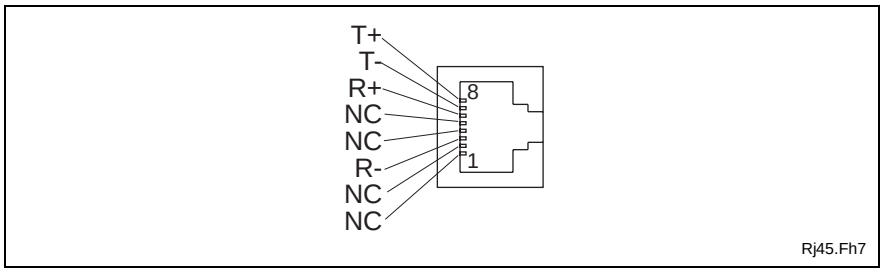

Fig. 3-6: Assigning 10Base-T interface

3.8 Video (VGA)

This interface is used to connect an optional monitor with a standard VGA connection.

Note: If a crt monitor is connected, the display is switched off. If monitor and display are to be operated simultaneously, the relevant setting is necessary in the BIOS (Micro Design Features Setup - LCD&CRT: LCD+CRT).

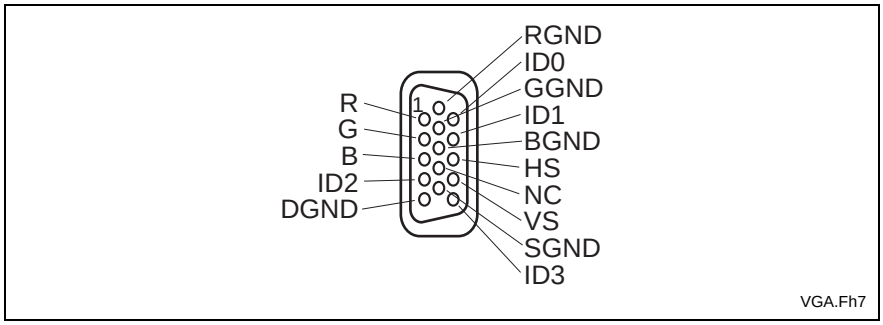

Fig. 3-7: Assigning VGA interface

3.9 Serial Interfaces

The BTV01.4 is supplied with two serial interfaces. In this case, the UART1 is the standard RS232 interface on a 9-pin D-subminiature connector, the UART2 is the galvanically isolated SIS (Serial Indramat interface) with RS232 and RS485 functionality at one 15 pin D-subminiature bushing.

Default settings: UART1 = COM1 (3F8,IRQ4)
UART2 = COM2 (2F8, IRQ3)

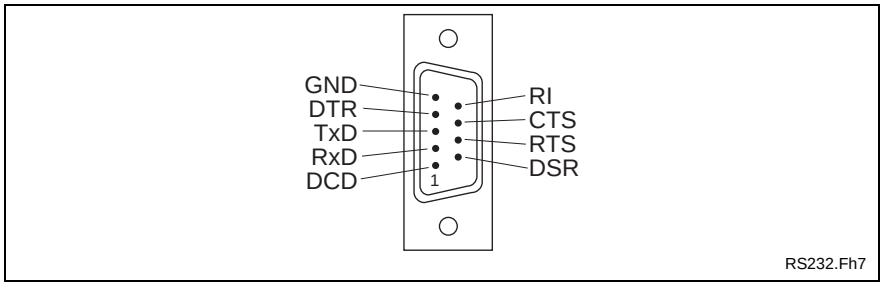

Fig. 3-8: Assigning UART1 (RS232)

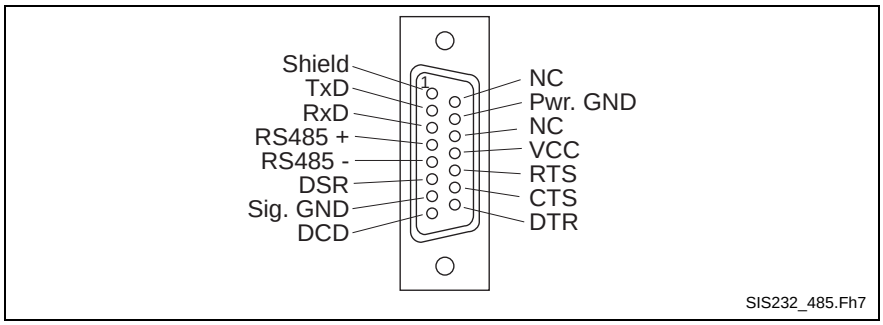

Fig. 3-9: Assigning UART2 (RS232 / RS485, galvanically isolated)

Assigning the adapter cable for compatibility with BTV1.2/1.3

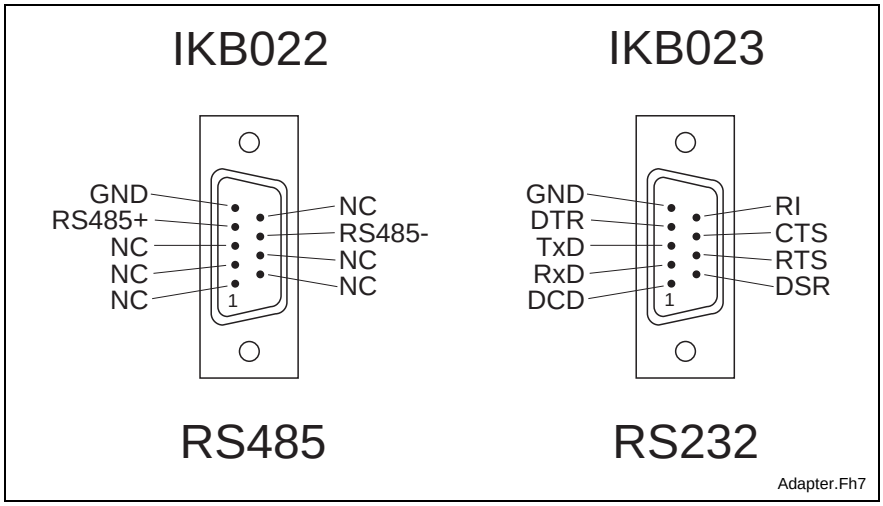

Fig. 3-10: Adapter cable connector assignment

UART2 (SIS) Configuration

The transmit mode of the RS485 function of the UART2 can be configured using a configuration switch.

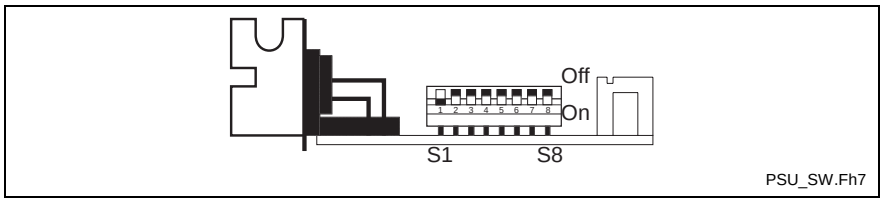

Fig. 3-11: Position of configuration switch on the UART2

Send with	S1	S2	S3	S4	S5	S6	S7	S8
/TxD (default)	On	Off	Off	Off	Off	X	X	X
/RTS	Off	On	Off	Off	Off	X	X	X
RTS	Off	Off	On	Off	Off	X	X	X
/DTR	Off	Off	Off	On	Off	X	X	X
DTR	Off	Off	Off	Off	On	X	X	X

Fig. 3-12: Setting the RS485 ready to send (X= Don't Care) signal

Note: If a user program should not work with the preset assignment UART1 = COM1 (IRQ4, IO 3F8), UART2 = COM2 (IRQ3, IO 2F8h), then the assignment can be reconfigured in the BIOS (Integrated Peripherals - Onboard UART1 / Onboard UART2).

3.10 Parallel Interfaces

The parallel interfaces can be operated in the following modes:

- Normal mode (default)
- EPP-1.7 mode
- EPP-1.9 mode
- ECP-1 mode
- ECP-3 mode
- ECP + EPP mode

The mode is set in the BIOS (Integrated Peripherals - Parallel Port Mode).

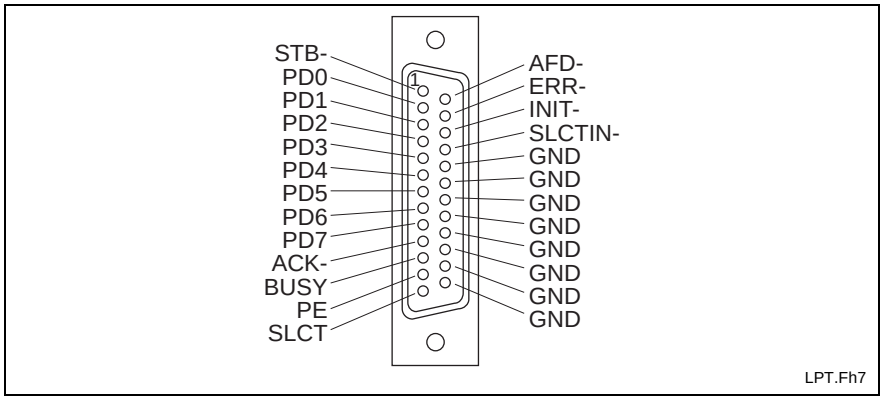

Fig. 3-13: Assigning parallel interfaces

4 Expansion Cards

Depending on the application, up to two (2) ISA bus expansion cards with a length of maximum 180 mm can be used.

4.1 Profibus Card

Profibus interface „PROFI-IF-PCAT“ Configuration

The Profibus-Card occupies 64KByte memory adress space of the CPU and one interrupt. The adress space is adjusted by a DIP-switch, the IRQ by a jumper field.

S1	S2	S3	S4	S5	S6	S7	S8
Off	Off	Off	Off	On	On	Off	On

Fig. 4-1: Profibus interface configuration

Interrupt settings

Inerrupt	Jumper position
IRQ 10	1 - 3
IRQ 11 (Default)	*3 - 5*
IRQ 12	2 - 4
IRQ 15	4 - 6

Fig. 4-2: Interrupt settings of the Profibus card

The default configuration is IRQ 11 (3 - 5)

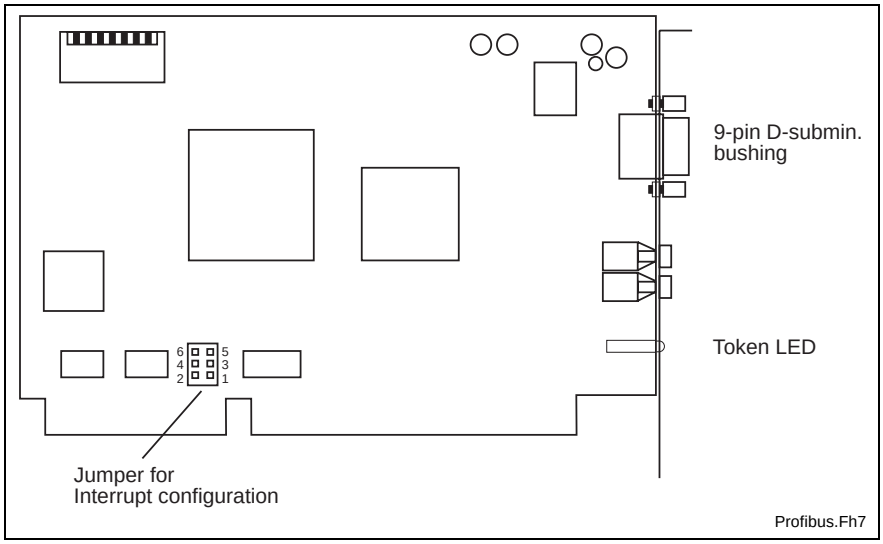

Fig. 4-3: DIP switch position

For further information about auxiliary cards, see the document on multi-protocol interface 01VRS, mat. no. 283450.

4.2 Ethernet Card (PCM01.1E)

Excerpt from document PCM01.1E, mat. no. 284492

Elements on the Slot Panel

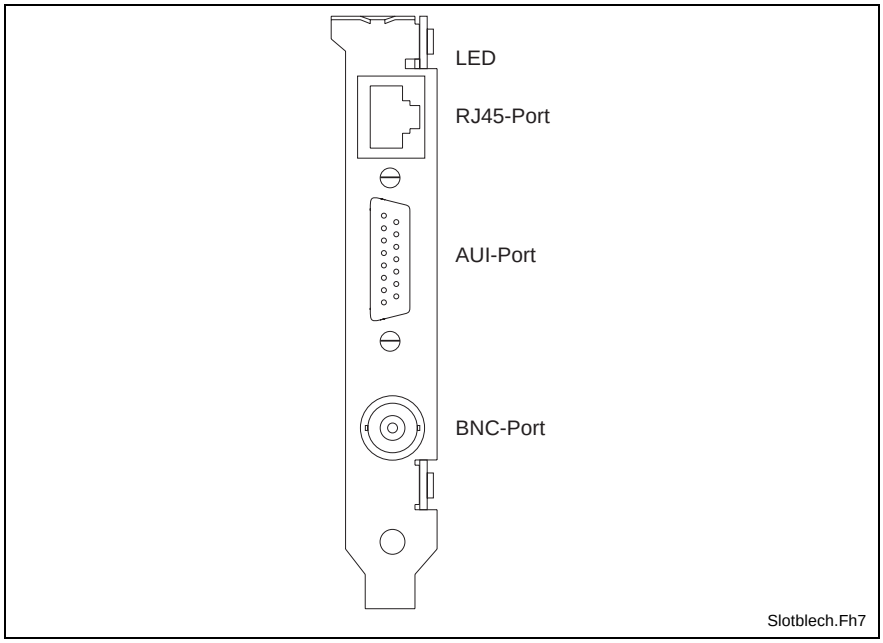

Fig. 4-4: The plug-in connector on the slot panel

RJ45 port

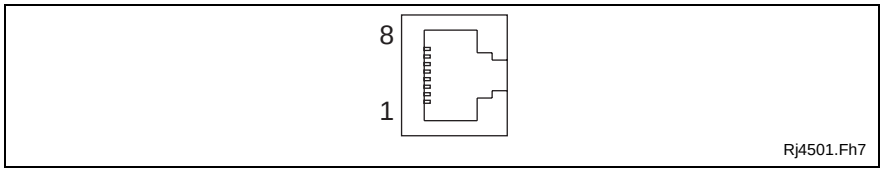

Fig. 4-5: The RJ45 port

Pin	Assignment
1	TD+
2	TD-
3	RD+
4	n. c.
5	n. c.
6	RD-
7	n. c.
8	n. c.

Fig. 4-6: RJ45 port assignment

The AUI port

The AUI port is a 15-pin D-subminiature bushing with slide lock.

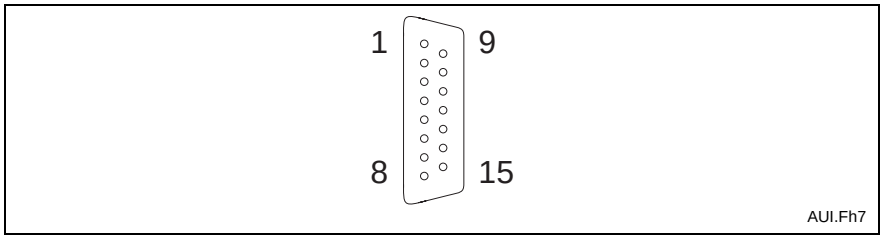

Fig. 4-7: The AUI port

Pin	Signal name
1	Collision shield
2	Collision +
3	Transmit +
4	Receive shield
5	Receive +
6	Power return
7	n. c.
8	n. c.

Pin	Signal name
9	Collision -
10	Transmit -
11	Transmit shield
12	Receive -
13	+ 12 V
14	Voltage shield
15	n. c.

Fig. 4-8: AUI port assignment

The BNC port

The BNC port is to be used to connect a 50 ohm coaxial cable. The connection uses a T-piece. This makes it possible to loop the computer into a network line.

When used as end unit (no second outgoing line), it is necessary to mount a 50 ohm terminating resistor into the free output.

The Link LED

The PCM01 has an LED to display the connection status of the 10Base T interface. The definition of the displays is as follows:

LED on	If a network driver is installed, then an active connection is displayed. If no network driver is installed, then it is displayed that there is a connection to the hub.
LED off	no connection to hub
LED blinking	cable faulty (polarity ?)

Fig. 4-9: LED definitions

As the LED is set back into the slot panel, it is difficult to recognize when the housing is closed.

Installation

Hardware Installation

- Switch PC off
- Open PC housing
- Search for a free ISA slot
- Remove the blind cover in the holding cage
- Use the PCM card in the plug-in connector.
- Fix the card by screwing it into the holding cage.
- Establish the network connection (use the BNC bushing, do not forget the matching resistor!)

Software-Installation

Installing the network card with Microsoft Windows NT4.0

- Start the NT.
- Under system control select ‘Network’.
- Select menu item ‘Network card’.
- Select: ‘Insert’.
- Insert driver disk 1 into drive.
- Select ‘Disk...’.
- In selection box select ‘3Com Etherlink III (3c509) ISA Adapter’.

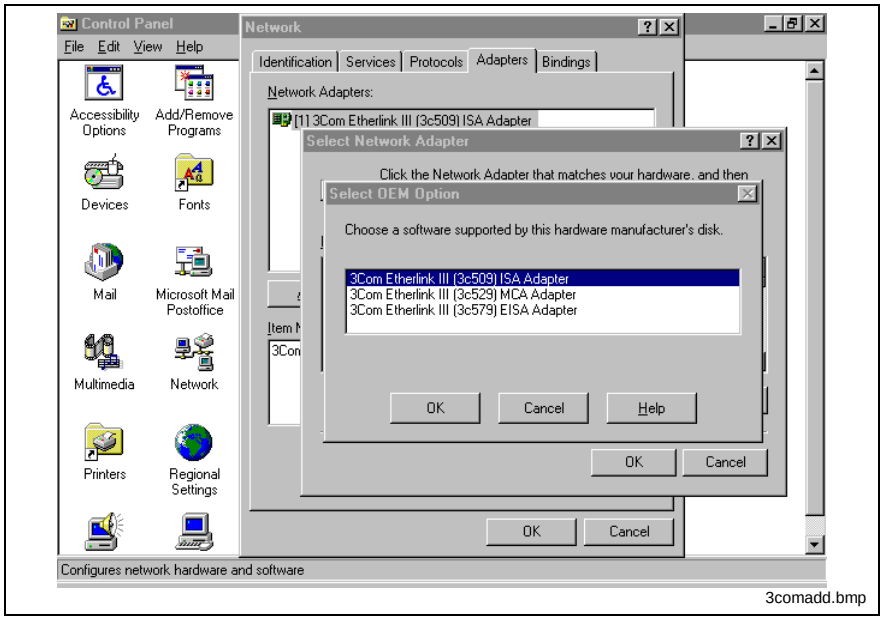

Fig. 4-10: Monitor when selecting the ethernet adapter

- Make sure that ‘Bus type: ISA’ and ‘Bus number 0’ are being displayed and start the installation program with ‘ok’.

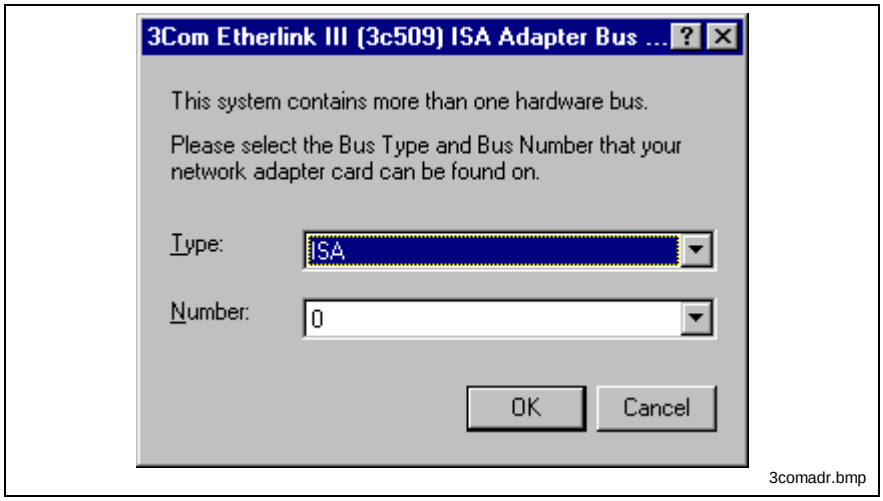

Fig. 4-11: Monitor reading when selecting the bus

- Select ‘Custom Installation’ (‘Next’).
- Set the following parameters in the configuration monitor:

I/O base address:	0x240
Interrupt Request Level:	10
Boot PROM Size:	disabled
Transceiver type:	Auto Select
Network driver optimization:	Windows or OS/2 Client
Maximum modem speed:	9600 baud
Plug and play capability:	disabled
I/O synchronous ready capability:	disabled

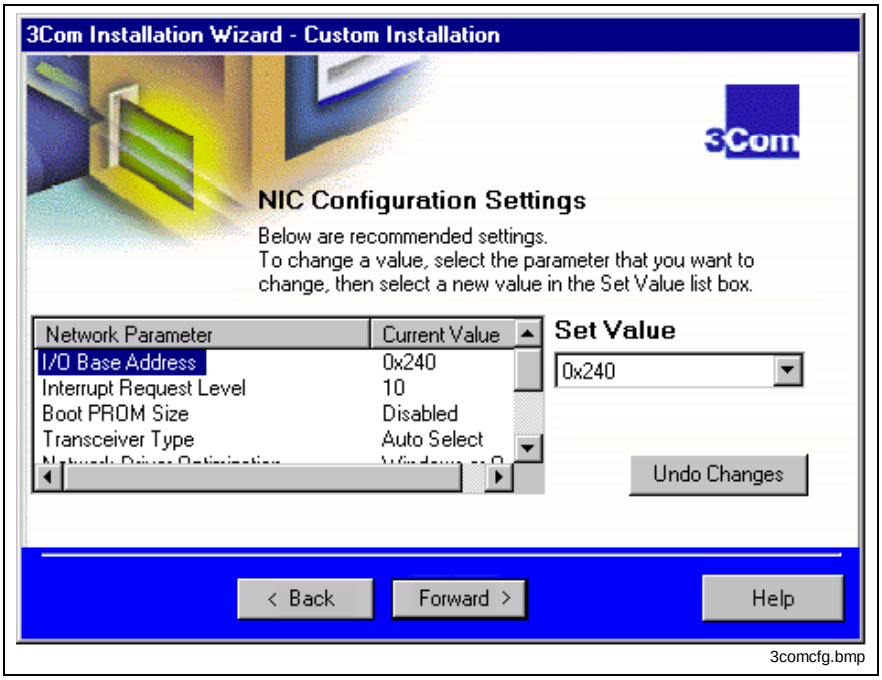

Fig. 4-12: The configuration monitor

- Running the NIC test. No error should be displayed. (Message: tests complete).
- The 'Network Connection Test' should only be run if the network functions of NT have already been installed. Otherwise, there is no error message here.
- The installation of 'Dynamic Access Software' is generally not necessary, as the functions are supported in only a few programs.
- This concludes the installation of the network card.
- To simplify the installation of several similar network cards, it is possible to store the settings.

For details on installing network functions (Identification, services, protocols, connections) please ask your network administrator.

4.3 Interface Cards

Excerpt from document PC-Z interface cards RS485/SIS, mat. no. 283968.

Configuration

Configuration

All configuration use the DIP switch.

The card is configured at the factory as COM2 (IRQ3, address 02F8H). The relevant settings are in cursive writing.

The second port on the card should be switched off.

Collisions with other functions, e.g., with already existing COM ports, should be avoided. If necessary, set one of the ports to a different value or switch it off.

Entering an 'X' in the table below means that the entry should not be evaluated („don't care").

Position locations of the configuration switch

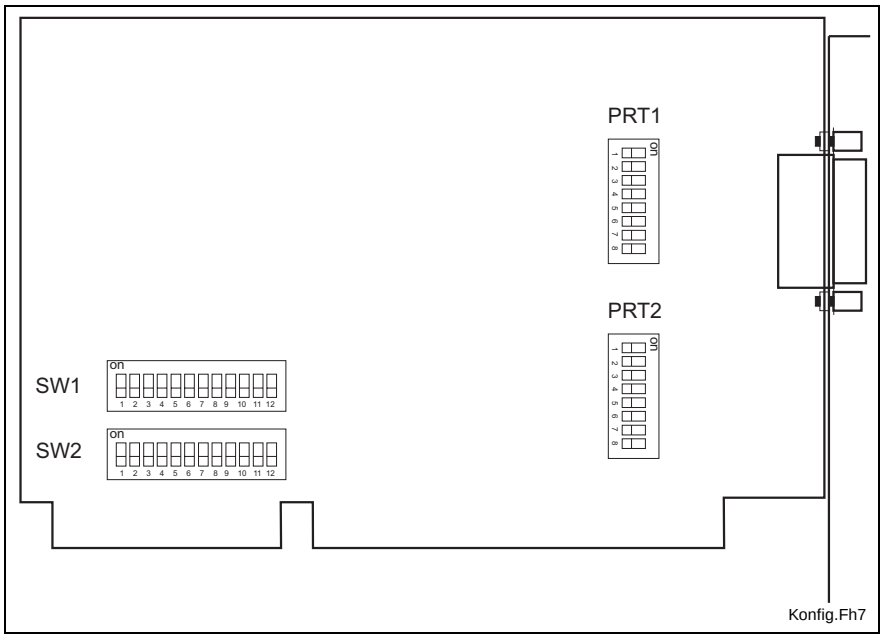

Fig. 4-13: Assignment of configuration switch

Setting the Interrupts

IRQ	SW 1.1	SW 1.2	SW 1.3	SW 1.4	SW 1.5	SW 1.6	SW 1.7	SW 1.8
none	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
3	***OFF***	***OFF***	***OFF***	***ON***	***OFF***	***OFF***	***OFF***	***OFF***
4	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
5	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
7	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF
9	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON
10	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
11	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
12	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Fig. 4-14: Setting interrupt channel 1 (IRQ3)

IRQ	SW 2.1	SW 2.2	SW 2.3	SW 2.4	SW 2.5	SW 2.6	SW 2.7	SW 2.8
none	***OFF***	***OFF***	***OFF***	***OFF***	***OFF***	***OFF***	***OFF***	***OFF***
3	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF
4	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
5	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
7	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF
9	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON
10	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
11	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
12	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Fig. 4-15: Setting interrupt channel 2 (none)

Setting the base address

Port	address	SW1.9	SW1.10	SW1.11	SW1.12
Disabled	-	X	X	OFF	X
COM1	03F8H	OFF	OFF	ON	X
COM2	***02F8h***	***ON***	***OFF***	***ON***	***X***
COM3	03E8H	OFF	ON	ON	X
COM4	02E8H	ON	ON	ON	X

Fig. 4-16: Setting base address channel 1 (COM2)

Port	address	SW2.9	SW2.10	SW2.11	SW2.12
Disabled	***-***	***X***	***X***	***OFF***	***X***
COM1	03F8H	OFF	OFF	ON	X
COM2	02F8h	ON	OFF	ON	X
COM3	03E8H	OFF	ON	ON	X
COM4	02E8H	ON	ON	ON	X

Fig. 4-17: Setting base address channel 2 (Disabled)

Setting the operating mode

Operating mode	PRT 1.1	PRT 1.2	PRT 1.3	PRT 1.4	PRT 1.5
DTR control	ON	OFF	ON	ON	OFF
RTS control	***ON***	***OFF***	***ON***	***OFF***	***ON***
automatic control	ON	ON	OFF	ON	OFF

Fig. 4-18: Setting the operating mode (RTS control)

PRT2 has no function.

Setting terminating

Terminating	PRT1.6	PRT1.7	PRT1.8
none	***OFF***	***OFF***	***X***
active: 330R - 120R - 330R	ON	ON	X

Fig. 4-19: Setting terminating channel 1 (none)

Terminating	PRT2.6	PRT2.7	PRT2.8
none	***OFF***	***OFF***	***X***
active: 330R - 120R - 330R	ON	ON	X

Fig. 4-20: Setting terminating channel 2 (none)

Connector Assignment

Signal	Pin
-	1
-	2
-	3
RS485 +	4
RS485 -	5
-	6
Signal ground	7
-	8

Signal	Pin
-	9
GND	10
-	11
VCC	12
-	13
-	14
-	15
housing	shield

Fig. 4-21: Connector assignment

5 BIOS Configuration

The description of BIOS Configuration is only an example. The settings are dependent of the current BIOS Release and may differ from these.

5.1 Base Settings in BIOS Release 2.06

Standard CMOS Setup

Date (mm:dd:yy): enter date (month, day, year, weekday is automatically set).
Time (hh:mm:ss): enter time (hour, minute, second).

HARD DISKS		TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	:	User	528	1024	16	65535	0	63	Normal
Primary Slave	:	None	0	0	0	0	0	0	------
Secondary Master	:	None	0	0	0	0	0	0	------
Secondary Slave	:	None	0	0	0	0	0	0	------

Drive A : 1.44M, 3.5 in.
Drive B : None

Video : EGA/VGA
Hold at : All Errors

Fig. 5-1: Default settings for standard CMOS setup

BIOS Features Setup

CPU Internal Cache	:	Enabled	Video BIOS Shadow	:	Enabled
External Cache	:	Enabled	C8000-CBFFF Shadow	:	Disabled
Quick Power On Self Test	:	Disabled	CC000-CFFFF Shadow	:	Disabled
Boot Sequence	:	A,C,SCSI	D0000-D3FFF Shadow	:	Disabled
Swap Floppy Drive	:	Disabled	D4000-D7FFF Shadow	:	Disabled
Boot Up Floppy Seek	:	Enabled	D8000-DBFFF Shadow	:	Disabled
Boot Up Numlock Status	:	Off	DC000-DFFFF Shadow	:	Disabled
Boot Up System Speed	:	High			
Gate A20 Option	:	Fast			
Typematic Rate Setting	:	Enabled			
Typematic Rate (Chars/Sec)	:	6			
Typematic Delay (Msec)	:	250			
Security Option	:	Setup			
PS/2 mouse function control	:	Enabled			
PCI/VGA Palette Snoop	:	Disabled			
OS Select For DRAM > 64MB	:	Non-OS2			

Fig. 5-2: Default settings BIOS features setup

Chipset Features Setup

DRAM Auto Configuration	:	70ns
DRAM Timing Control	:	Auto
Sustained 3T Write	:	Disabled
2 Bank PBSRAM	:	3-1-1-1
Read Pipeline	:	Disabled
Write Pipeline	:	Enabled
Video BIOS Cacheable	:	Enabled
System BIOS Cacheable	:	Disabled
Memory Hole At 15Mb Addr.	:	Disabled
ISA Bus Clock	:	7.159MHz

Fig. 5-3: Default settings chipset features setup

Power Management Setup

Power Management	:	Disable	IRQ5	(LPT 2)	:	Primary
PM Control by APM	:	Yes	IRQ6	(Floppy Disk)	:	Primary
Video Off Option	:	Suspend -> Off	IRQ7	(LPT 1)	:	Primary
Video Off Method	:	V/H SYNC+Blank	IRQ8	(RTC Alarm)	:	Disabled
MODEM Use IRQ	:	3	IRQ9	(IRQ2 Redir)	:	Secondary
			IRQ10	(Reserved)	:	Secondary
** PM Timers **			IRQ11	(Reserved)	:	Secondary
HDD Power Down	:	Disable	IRQ12	(PS/2 Mouse)	:	Primary
Doze Mode	:	Disable	IRQ13	(Coprocessor)	:	Primary
Suspend Mode	:	Disable	IRQ14	(Hard Disk)	:	Primary
			IRQ15	(Reserved)	:	Disabled
** PM Events **						
VGA	:	OFF				
LPT & COM	:	LPT/COM				
HDD & FDD	:	ON				
DMA/master	:	OFF				
RTC Alarm Resume	:	Enabled				
Primary INTR	:	ON				
IRQ3 (COM2)	:	Primary				
IRQ4 (COM1)	:	Primary				

Fig. 5-4: Default settings power management setup

PNP / PCI Configuration

Resources Controlled By	:	Manual	CPU to PCI Write Buffer	:	Enabled
Reset Configuration Data	:	Disabled	PCI Dynamic Bursting	:	Enabled
			PCI Master 0 WS Write	:	Enabled
IRQ-3 assigned to	:	Legacy ISA	PCI Peer Concurrency	:	Enabled
IRQ-4 assigned to	:	Legacy ISA	PCI Delay Transaction	:	Disabled
IRQ-5 assigned to	:	Legacy ISA			
IRQ-7 assigned to	:	PCI/ISA PnP	PCI IRQ Actived By	:	Edge
IRQ-9 assigned to	:	Legacy ISA			
IRQ-10 assigned to	:	Legacy ISA	Primary IDE INT#	:	A
IRQ-11 assigned to	:	Legacy ISA			
IRQ-12 assigned to	:	PCI/ISA PnP			
IRQ-14 assigned to	:	PCI/ISA PnP	Reserve Memory at	:	N/A
IRQ-15 assigned to	:	Legacy ISA			
DMA-0 assigned to	:	PCI/ISA PnP			
DMA-1 assigned to	:	PCI/ISA PnP			
DMA-3 assigned to	:	PCI/ISA PnP			
DMA-5 assigned to	:	PCI/ISA PnP			
DMA-6 assigned to	:	PCI/ISA PnP			
DMA-7 assigned to	:	PCI/ISA PnP			

Fig. 5-5: Default settings PnP / PCI Configuration

Integrated Peripherals

IDE HDD Block Mode	:	Enabled	Onboard FDC Controller	:	Enabled
IDE Prefetch Mode	:	Enabled	Onboard UART 1	:	3F8/IRQ4
			Onboard UART 2	:	2F8/IRQ3
OnChip IDE First Channel	:	Enabled	Onboard UART 2 Mod	:	Standard
IDE Primary Master PIO	:	Mode 1			
IDE Primary Slave PIO	:	Auto			
IDE Primary Master UDMA	:	Auto	Onboard Parallel Port	:	378/IRQ7
IDE Primary Slave UDMA	:	Auto	Parallel Port Mode	:	Normal
OnChip USB	:	Disabled			

Fig. 5-6: Default settings Integrated Peripherals

Micro Design Features Setup

MD-Feature port	:	110h
Contrast	:	7Fh
Brightness	:	7Fh
Onboard-Ethernet	:	Disabled
LCD&CRT	:	Auto

Fig. 5-7: Default settings Micro Design Features Setup

5.2 Special Configurations

As the COM3 with RS232 functionality was optional with the BTV01.3, but in the BTV01.4 the third serial interface was only available as RS485 plug-in card, configuration may be necessary to achieve full compatibility.

UART1 and UART2 are configured in the BIOS setup screen ‘Integrated Peripherals’.

Interface	**Settings without expansion card**	**Settings with expansion cards**
UART1	COM1 (3F8h, IRQ4)	COM3 (3E8h, IRQ4)
UART2	COM2 (2F8h, IRQ3)	COM2 (2F8h, IRQ3)
Expansion card	-	COM1 (3F8h, IRQ4)

Fig. 5-8: Configuring the serial interfaces

6 Ordering Informations

6.1 Type Code

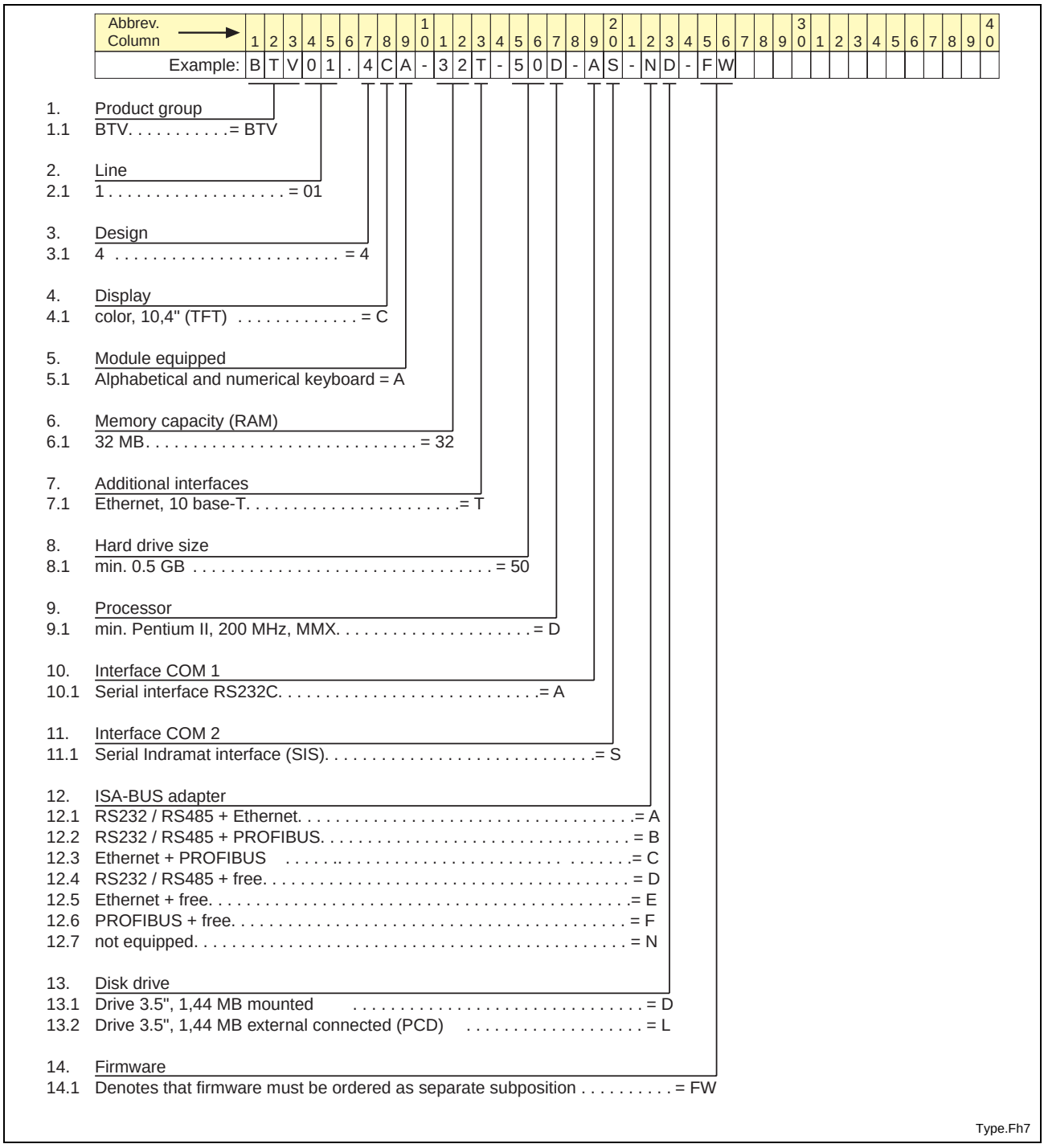

Fig. 6-1: Type code BTV01.4

6.2 Accessories

Floppy Disk Drive PCD03.1

The PCD03.1 is a 3,5" Floppy disk drive which is destined for montage to a front panel of a machine control board. The protection rating of IP 65 is complied with a lockable floppy disk flap. Behind the flap there is a bush to connect an external keyboard.

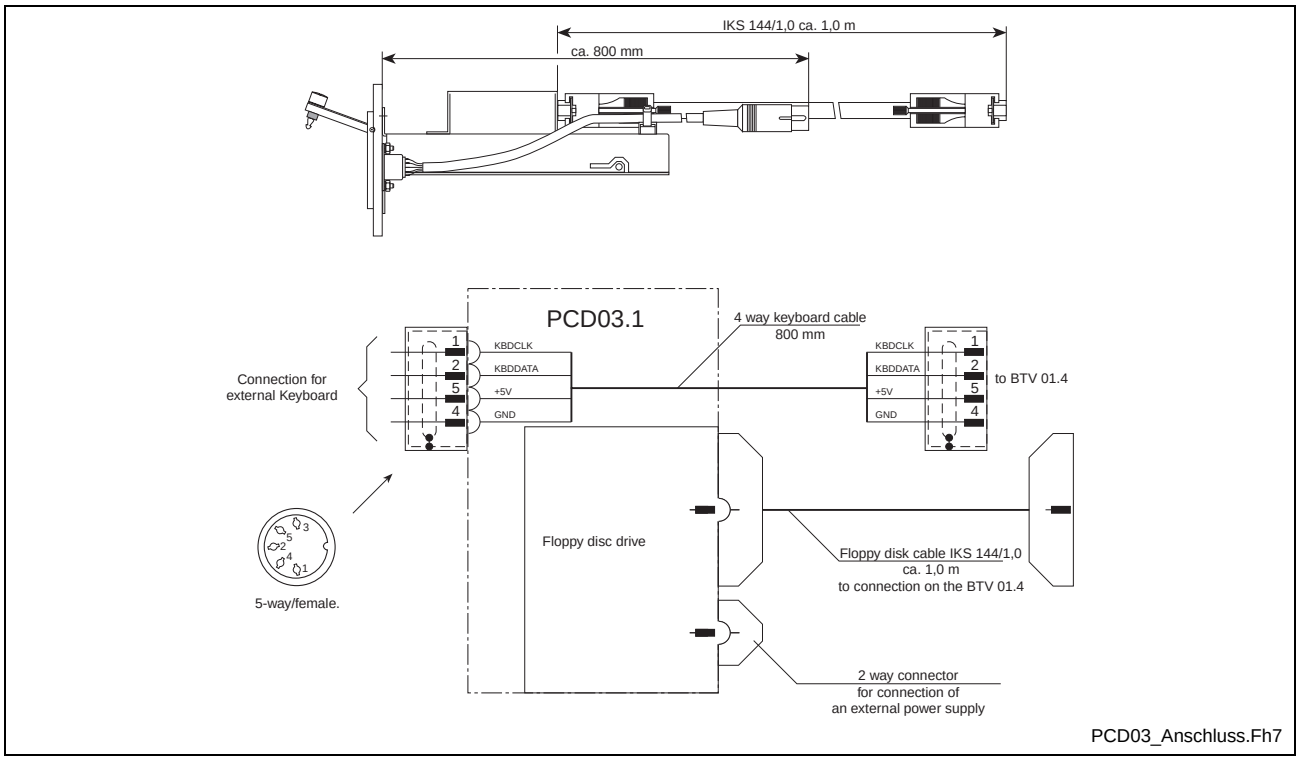

Fig. 6-2: Connection plan with pin assignments of the PCD03.1

Technical Datas

Weight	approx. 0,85 kg
Protection rating	Front IP65, IP20 DIN 40050, IEC529
Max. ambient temperature	+5°C ... 45°C (Operation) -20°C ...+60°C (Storage/Transport)
Relative humidity	75% average, 85% occasional No condensation, DIN 40040 class F
Air pressure	860 to 1060 hPa, 1500m
Surface front panel	Powder coated, color RAL8019 gray brown, fine structure 89/60850 per Tiger 50µ
Disks	3,5" 2HD disk 1,44 MB 3,5" 2DD disk 720 KB

Fig. 6-3: Technical datas of the PCD03.1

Housing Dimensions

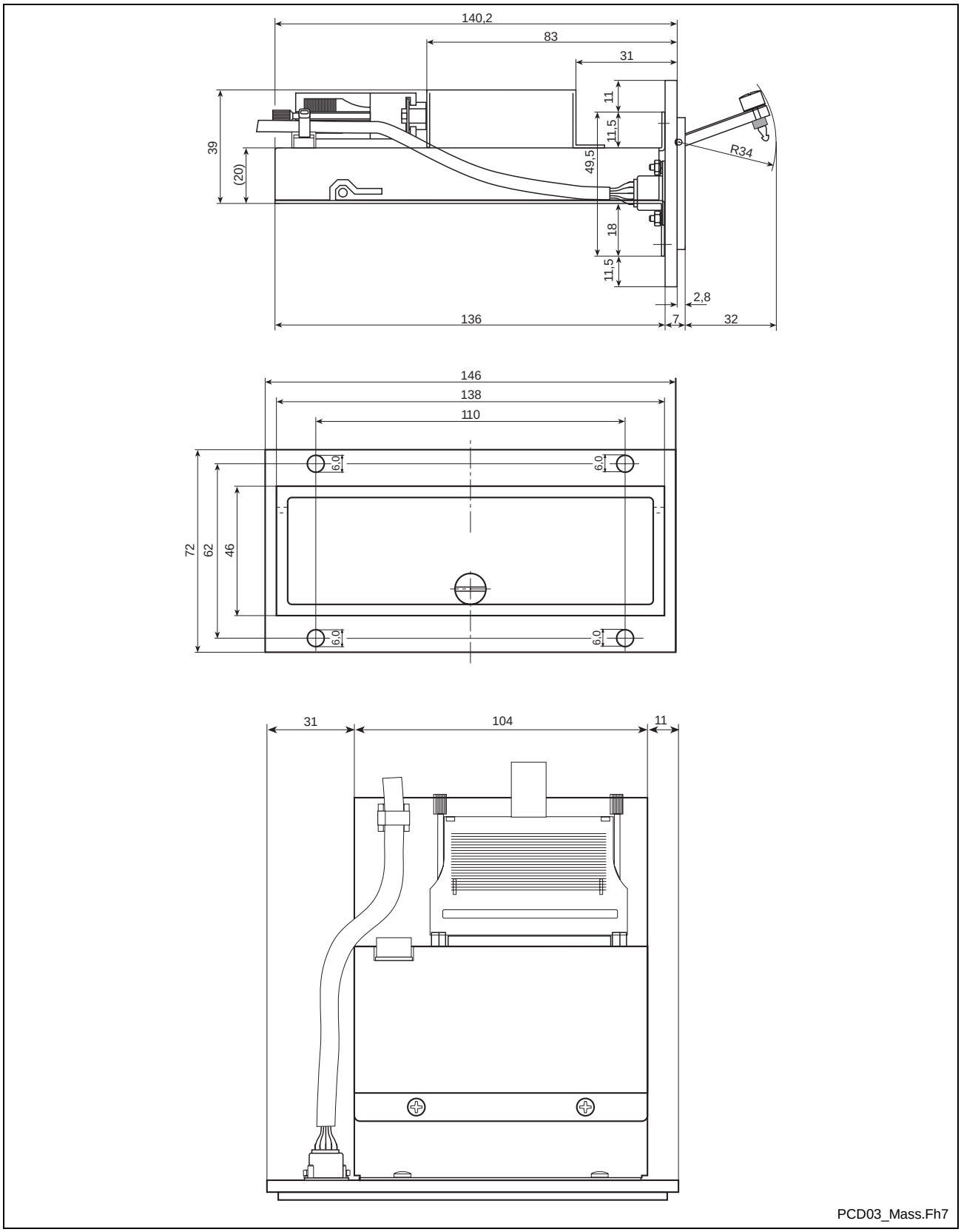

Fig. 6-4: Housing Dimensions of the PCD03.1

Mounting Dimensions

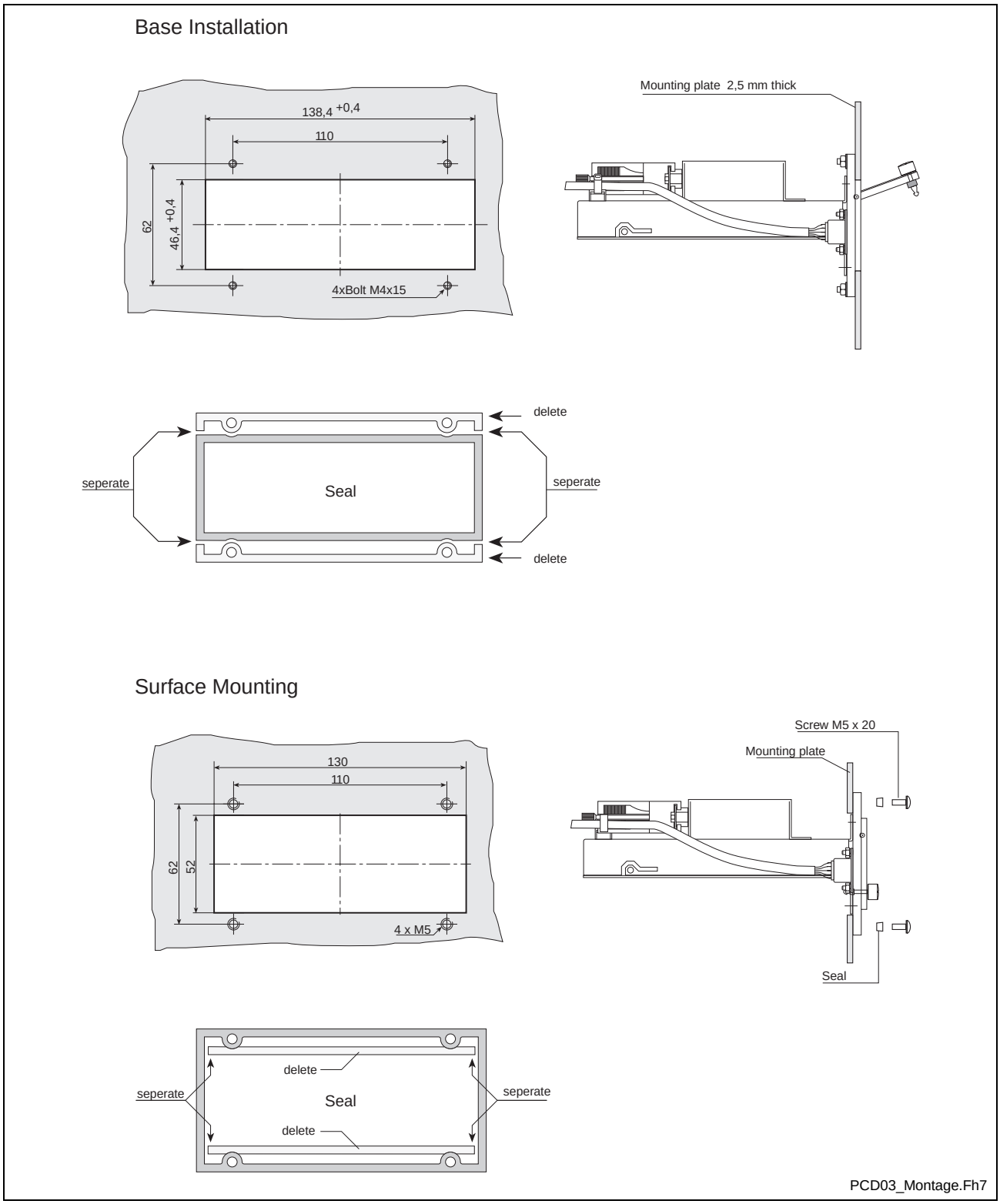

Fig. 6-5: Mounting Dimensions of the PCD03.1

7 Substitution List with BTV01.1/01.2/01.3

BTV01.1 BTV01.2 BTV01.3								**BTV01.4**							
BTV01.1AA	08N	25C	AA	NN	FW	265524		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.1AA	08N	25C	AB	ND	FW	265525		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.1AA	08N	25C	AB	NN	FW	265526		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.1AA	08N	25C	AN	ND	FW	265528		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.1AA	08N	25C	AN	NN	FW	265646		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.1AA	08N	25C	BA	NN	FW	266340		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.1AA	08N	25C	BB	ND	FW	266137		BTV01.4	CA	32T	50D	AS	DD	FW	
BTV01.1AA	08N	25C	BN	ND	FW	266239		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.1CA	08E	25C	AN	ND	FW	265436		BTV01.4	CA	32T	50D	AS	ED	FW	
BTV01.1CA	08N	25C	AA	ND	FW	265530		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.1CA	08N	25C	AA	NN	FW	266663		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.1CA	08N	25C	AB	ND	FW	265531		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.1CA	08N	25C	AN	ND	FW	265527		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.1CA	08N	25C	AN	NN	FW	265529		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.1CA	08N	25C	BN	ND	FW	266370		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.1CA	16E	25C	AA	BD	FW	265532		BTV01.4	CA	32T	50D	AS	ED	FW	
BTV01.1CA	16E	25C	AA	ND	FW	265533		BTV01.4	CA	32T	50D	AS	ED	FW	
BTV01.1CA	16E	25C	AB	BD	FW	265534		BTV01.4	CA	32T	50D	AS	ED	FW	
BTV01.1CA	16E	25C	AB	BN	FW	265939		BTV01.4	CA	32T	50D	AS	EL	FW	
BTV01.1CA	16N	25C	AN	NN	FW	266089		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2AA	08E	50B	AA	ND	FW	274883		BTV01.4	CA	32T	50D	AS	ED	FW	
BTV01.2AA	08N	50A	AA	NL	FW	271096		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2AA	08N	50A	AA	NN	FW	267150		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2AA	08N	50A	AB	BN	FW	267603		BTV01.4	CA	32T	50D	AS	ND (DD)	FW	1)
BTV01.2AA	08N	50A	AB	ND	FW	267152		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.2AA	08N	50A	AB	NL	FW	270219		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2AA	08N	50A	AB	NN	FW	267151		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2AA	08N	50A	AN	ND	FW	269360		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.2AA	08N	50A	AN	NL	FW	270929		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.2AA	08N	50A	AN	NN	FW	267149		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2AA	08N	50A	BA	NN	FW	267148		BTV01.4	CA	32T	50D	AS	NL	FW	

Fig. 7-1: Substitution list with BTV01.1/01.2 and BTV01.3 (Part 1)

BTV01.1 BTV01.2 BTV01.3								**BTV01.4**							
BTV01.2AA	08N	50A	BB	ND	FW	267147		BTV01.4	CA	32T	50D	AS	DD	FW	
BTV01.2AA	08N	50A	BN	ND	FW	267146		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.2AA	08N	50B	AA	NN	FW	272781		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2AA	08N	50B	AB	ND	FW	274824		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.2AA	16N	50A	AB	ND	FW	267306		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.2AA	16N	50A	AN	ND	FW	268672		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.2AA	16N	50A	BB	FD	FW	265518		BTV01.4	CA	32T	50D	AS	BD	FW	
BTV01.2AA	16N	50A	BB	ND	FW	269123		BTV01.4	CA	32T	50D	AS	DD	FW	
BTV01.2AA	16N	50A	BB	NL	FW	267848		BTV01.4	CA	32T	50D	AS	DL	FW	
BTV01.2AA	16N	50B	AB	ND	FW	273334		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.2AA	16N	50B	BB	FD	FW	269850		BTV01.4	CA	32T	50D	AS	BD	FW	
BTV01.2AA	32N	50A	AB	FD	FW	269143		BTV01.4	CA	32T	50D	AS	FD (BD)	FW	1)
BTV01.2AA	32N	50B	AB	ND	FW	273251		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.2CA	08E	50A	AB	NL	FW	269738		BTV01.4	CA	32T	50D	AS	EL	FW	
BTV01.2CA	08E	50B	AB	ND	FW	271087		BTV01.4	CA	32T	50D	AS	ED	FW	
BTV01.2CA	08N	50A	AA	BN	FW	268807		BTV01.4	CA	32T	50D	AS	NL (DL)	FW	1)
BTV01.2CA	08N	50A	AA	NL	FW	269971		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2CA	08N	50A	AA	NN	FW	267155		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2CA	08N	50A	AB	BD	FW	268869		BTV01.4	CA	32T	50D	AS	ND (DD)	FW	1)
BTV01.2CA	08N	50A	AB	ND	FW	268115		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.2CA	08N	50A	AB	NN	FW	267574		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2CA	08N	50A	AN	ND	FW	267154		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.2CA	08N	50A	AN	NN	FW	267153		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2CA	08N	50A	BA	BD	FW	271697		BTV01.4	CA	32T	50D	AS	ND (DD)	FW	1)
BTV01.2CA	08N	50A	BA	NL	FW	272318		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2CA	08N	50A	BB	ND	FW	271021		BTV01.4	CA	32T	50D	AS	DD	FW	
BTV01.2CA	08N	50B	AA	BL	FW	273989		BTV01.4	CA	32T	50D	AS	NL (DL)	FW	1)
BTV01.2CA	08N	50B	AA	NL	FW	273897		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2CA	08N	50B	AA	NN	FW	272058		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2CA	08N	50B	AB	ND	FW	271126		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.2CA	08N	50B	AB	NL	FW	274573		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2CA	08N	50B	AB	NN	FW	272862		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2CA	08N	50B	AN	ND	FW	271570		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.2CA	08N	50B	AN	NL	FW	271787		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2CA	08N	50B	AN	NN	FW	272339		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2CA	08N	50B	BB	NL	FW	273431		BTV01.4	CA	32T	50D	AS	DL	FW	

Fig. 7-2: Substitution list with BTV01.1/01.2 and BTV01.3 (Part 2)

BTV01.1 BTV01.2 BTV01.3								**BTV01.4**							
BTV01.2CA	16E	50A	AA	ND	FW	268446		BTV01.4	CA	32T	50D	AS	ED	FW	
BTV01.2CA	16E	50B	AA	ND	FW	271084		BTV01.4	CA	32T	50D	AS	ED	FW	
BTV01.2CA	16E	50B	AB	ND	FW	270136		BTV01.4	CA	32T	50D	AS	ED	FW	
BTV01.2CA	16E	50B	AN	ND	FW	272244		BTV01.4	CA	32T	50D	AS	ED	FW	
BTV01.2CA	16E	50B	AN	NL	FW	273151		BTV01.4	CA	32T	50D	AS	EL	FW	
BTV01.2CA	16E	50B	AN	NN	FW	273688		BTV01.4	CA	32T	50D	AS	EL	FW	
BTV01.2CA	16N	50A	AA	ND	FW	267820		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.2CA	16N	50A	AA	NL	FW	271182		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2CA	16N	50A	AB	FD	FW	269497		BTV01.4	CA	32T	50D	AS	FD (BD)	FW	1)
BTV01.2CA	16N	50A	AB	NL	FW	270927		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2CA	16N	50B	AB	ND	FW	272382		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.2CA	16N	50B	AB	NL	FW	274097		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2CA	16N	50B	AN	ND	FW	272790		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.2CA	16N	50B	AN	NL	FW	273693		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.2CA	32E	50A	AA	FD	FW	268900		BTV01.4	CA	32T	50D	AS	CD	FW	2)
BTV01.2CA	32E	50A	AB	FD	FW	268371		BTV01.4	CA	32T	50D	AS	CD	FW	2)
BTV01.2CA	32E	50B	AA	FD	FW	271085		BTV01.4	CA	32T	50D	AS	CD	FW	2)
BTV01.2CA	32E	50B	AB	ND	FW	270506		BTV01.4	CA	32T	50D	AS	ED	FW	
BTV01.2CA	32E	50B	BA	NL	FW	274780		BTV01.4	CA	32T	50D	AS	EL	FW	
BTV01.2CA	32N	50B	AB	ND	FW	270564		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.2CA	32N	50B	BA	NL	FW	272507		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.3AA	08E	50B	AA	ND	FW	276625		BTV01.4	CA	32T	50D	AS	ED	FW	
BTV01.3AA	08N	50B	AA	NN	FW	275169		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.3AA	08N	50B	AB	ND	FW	275167		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.3AA	08N	50B	BB	ND	FW	275764		BTV01.4	CA	32T	50D	AS	BD	FW	
BTV01.3AA	16N	50B	AB	NL	FW	276567		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.3AA	16N	50B	AB	NN	FW	279851		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.3AA	16N	50B	AN	ND	FW	276277		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.3AA	16N	50B	AN	NN	FW	279825		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.3AA	16N	50B	BA	ND	FW	276859		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.3AA	16N	50B	BB	NL	FW	277410		BTV01.4	CA	32T	50D	AS	DL	FW	
BTV01.3AA	16N	50B	NA	ND	FW	278921		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.3AA	16N	50B	NN	NN	FW	279400		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.3AA	32N	50B	AB	ND	FW	275380		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.3AA	32N	50B	BA	ND	FW	277085		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.3CA	08N	50B	AA	ND	FW	275253		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.3CA	08N	50B	AA	NL	FW	275162		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.3CA	08N	50B	AA	NN	FW	275786		BTV01.4	CA	32T	50D	AS	NL	FW	

Fig. 7-3: Substitution list with BTV01.1/01.2 and BTV01.3 (Part 3)

BTV01.1 BTV01.2 BTV01.3								**BTV01.4**							
BTV01.3CA	08N	50B	AB	ND	FW	275160		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.3CA	08N	50B	AB	NL	FW	275164		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.3CA	08N	50B	AB	NN	FW	275397		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.3CA	08N	50B	AN	NL	FW	275161		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.3CA	08N	50B	AN	NN	FW	275838		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.3CA	08N	50B	BB	ND	FW	275437		BTV01.4	CA	32T	50D	AS	DD	FW	
BTV01.3CA	16E	50B	AA	ND	FW	277716		BTV01.4	CA	32T	50D	AS	ED	FW	
BTV01.3CA	16E	50B	AB	ND	FW	275159		BTV01.4	CA	32T	50D	AS	ED	FW	
BTV01.3CA	16N	50B	AA	ND	FW	275442		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.3CA	16N	50B	AA	NL	FW	276279		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.3CA	16N	50B	AB	ND	FW	275484		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.3CA	16N	50B	AB	NL	FW	279221		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.3CA	16N	50B	AN	ND	FW	276405		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.3CA	16N	50B	AN	NL	FW	278126		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.3CA	16N	50B	AN	NN	FW	278460		BTV01.4	CA	32T	50D	AS	NL	FW	
BTV01.3CA	16N	50B	BB	NL	FW	275608		BTV01.4	CA	32T	50D	AS	DL	FW	
BTV01.3CA	32E	50B	AB	NL	FW	275403		BTV01.4	CA	32T	50D	AS	EL	FW	
BTV01.3CA	32E	50B	BA	NL	FW	275165		BTV01.4	CA	32T	50D	AS	EL	FW	
BTV01.3CA	32N	50B	AA	ND	FW	279628		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.3CA	32N	50B	AB	ND	FW	276799		BTV01.4	CA	32T	50D	AS	ND	FW	
BTV01.3CA	32N	50B	AN	NL	FW	277168		BTV01.4	CA	32T	50D	AS	NL	FW	

Fig. 7-4: Substitution list with BTV01.1/01.2 and BTV01.3 (Part 4)

Note 1) to the extent that Com3 is not needed, otherwise ()

2) Com3 dropped

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