

BAUMÜLLER

**ADDITIONAL DESCRIPTION  
COMPACT UNIT  
BUM 616**

Technical Description and  
Operation Manual

Edition 22. December 1995

<b>E</b>	5.95298.01
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# BAUMOTRONIC

## ADDITIONAL DESCRIPTION TO COMPACT UNIT BUM 616

### Technical Description and Operation Manual

Edition 22. December 1995

5.95298.01

This operation manual is intended as a complement to the technical description and the operation manual of the apparatus.

<p><b>READ AND COMPLY WITH THE OPERATION MANUAL AND THE SAFETY NOTES BEFORE COMMISSIONING</b></p>
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This manual contains the necessary information for normal operation of the products described therein. The drives may only be used, maintained and repaired by personnel familiar with the operation manual and the applicable regulations on working safety and accident prevention. The devices are manufactured to a high technical specification and are operationally safe. Provided that all safety instructions have been adhered to, there will be no personal danger during the installation and commissioning stages.

The commissioning is prohibited until it has been positively determined that the machine, into which these components are to be incorporated, complies with EC machine regulations.

This technical description replaces and nullifies all previous description. In order to provide the best possible service, we reserve the right to alter information without notice.

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**Country of origin:** Made in Germany

**Date of manufacture:** Determined from the serial number on the machine/motor.

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## **1 SAFETY NOTES**

See Technical Description and Operation Manual BUM 618/619.

## 2 TECHNICAL DATA

### 2.1 General

BUM 618 and BUM 619 are digital single-axis controllers for the operation of 0.5 kW, 0.75 kW or 1.5 kW servo motors.

#### Features

##### Feed in / power supply

The BUM 616 is a special type of the compact unit BUM 618 with external supply of the controller's power supply.

##### Control

See Technical Description and Operation Manual BUM 618/619.

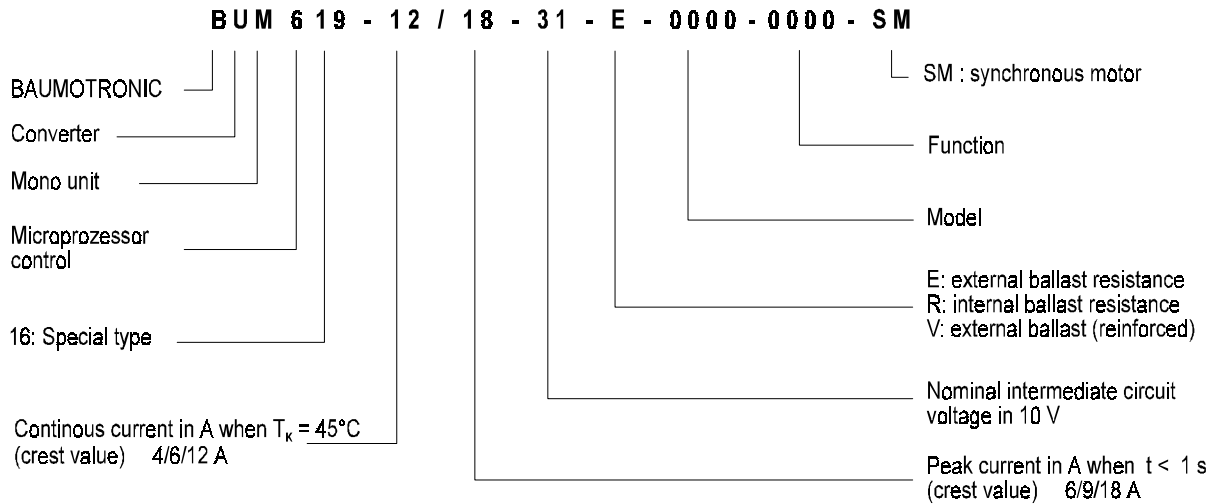
##### Options

See Technical Description and Operation Manual BUM 618/619.

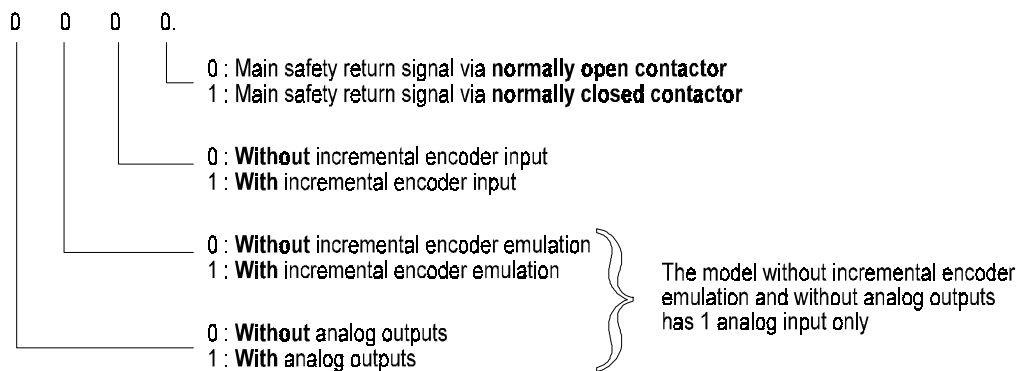
2.2 Electrical Data

	BUM 618/619 - 4 / 6	BUM 618/619 - 6 / 9	BUM 618/619 - 12 / 18
Connection voltage (controller)	1 x 230 V <sub>AC</sub> ± 10% 50 / 60 Hz		
Fusing power supply	2 A slow fuse		
Connection voltage power unit	1 x 230 V <sub>AC</sub> i.e. 3 x 230 V <sub>AC</sub> + 6 % / - 10 % 50 / 60 Hz	3 x 230 V <sub>AC</sub> + 6 % / - 10 % 50 / 60 Hz	
Fusing	10 A slow fuse		
Nominal intermediate circuit voltage	310 V DC		
Output voltage	0 ... connection voltage		
Output performance	1.1 kVA	1.7 kVA	3.4 kVA
Output nominal current $\hat{I}_N$ ( $I_{eff}$ ) when $T_K = 45\text{ °C}$	4 A ( 2.8 A <sub>eff</sub> )	6 A ( 4.2 A <sub>eff</sub> )	12 A ( 8.5 A <sub>eff</sub> )
Output peak current $\hat{I}_S$ ( $I_{eff}$ ) (t < 1s) when $T_K = 45\text{ °C}$	6 A ( 4.2 A <sub>eff</sub> )	9 A ( 6.4 A <sub>eff</sub> )	18 A ( 12.7 A <sub>eff</sub> )
Permitted transistor clock frequency	8 kHz		
Typical motor performance	0.5 kW	0.75 kW	1.5 kW
External reactance (with 1 x 230 V)	4 % u <sub>k</sub>	4 % u <sub>k</sub>	-
Low voltage supply Connection to	connection voltage 230 V ~ L1 and L3 before main contactor K1		
Main contactor K1 Coil	3 x 12 A / 250 V AC 15 V 80 mA (minimum life span > 800 000 switching cycles)		
Integrated earth leakage circuit-breaker	hesitation approx. 1 s      minimum pause time approx. 5 s		
Earth fault monitoring	set to 2 A		
Ballast resistance, internal Ballast resistance, external	R <sub>B</sub> = 47 Ω / 50 W peak performance (t ≤ 1s) 3 kW R <sub>B</sub> > 47 Ω		
Initialising time	max. 20 s		
Power loss P <sub>V</sub> , without ballast	in nominal use 100 W      in stand-by 40 W		
Operating ambient temp. T <sub>B</sub>	single phase	0 ... 45 °C (with a power reduction of 2 %/°C, up to 55 °C)	
	3 phase	0 ... 55 °C (with a power reduction of 2 %/°C, up to 55 °C)	
Use > 1000 m above sea level	power reduction by 1 % per 100 m over 1000 m above sea level		
Relative air humidity	15 % ...95 % no dew		
Storage temperature range	- 30 °C ... + 70 °C		
Weight	1 kg		

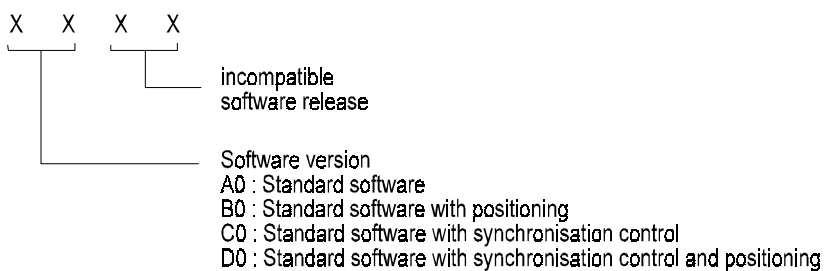
## 2.3 Type Code



### Model:



### Function:



## NOTE

In models 0000, 0001, 0010 and 0011 (all types, which neither allow installation via incremental encoder nor analog outputs) only one analog input is available.

All other types allow installation via 2 analog inputs.



### **3 TRANSPORT, REMOVAL OF THE PACKAGING**

See Technical Description and Operation Manual BUM 618/619.

### **4 ASSEMBLY**

See Technical Description and Operation Manual BUM 618/619.

#### **4.1 Dimensions**

#### **4.2 Assembly Notes**

See Technical Description and Operation Manual BUM 618/619.

## **5 INSTALLATION**

### **5.1 Hazard Notes**

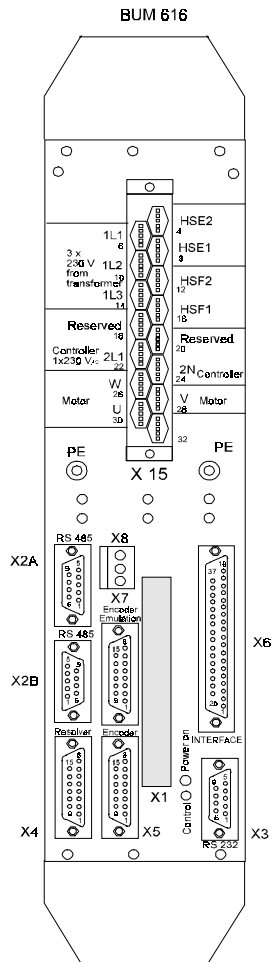
### **5.2 EMC Notes**

See Technical Description and Operation Manual BUM 618/619.

# Installation

## 5.3 Checks prior to Installation

- Note down the type and no. of the unit and motor
- Check the terminals by means of the terminal diagram, in particular the motor windings terminal
- Check the mains lead connection:



- PC connection via RS 232  
Setting of the drive address in binary code via DIP-switch on front plate.

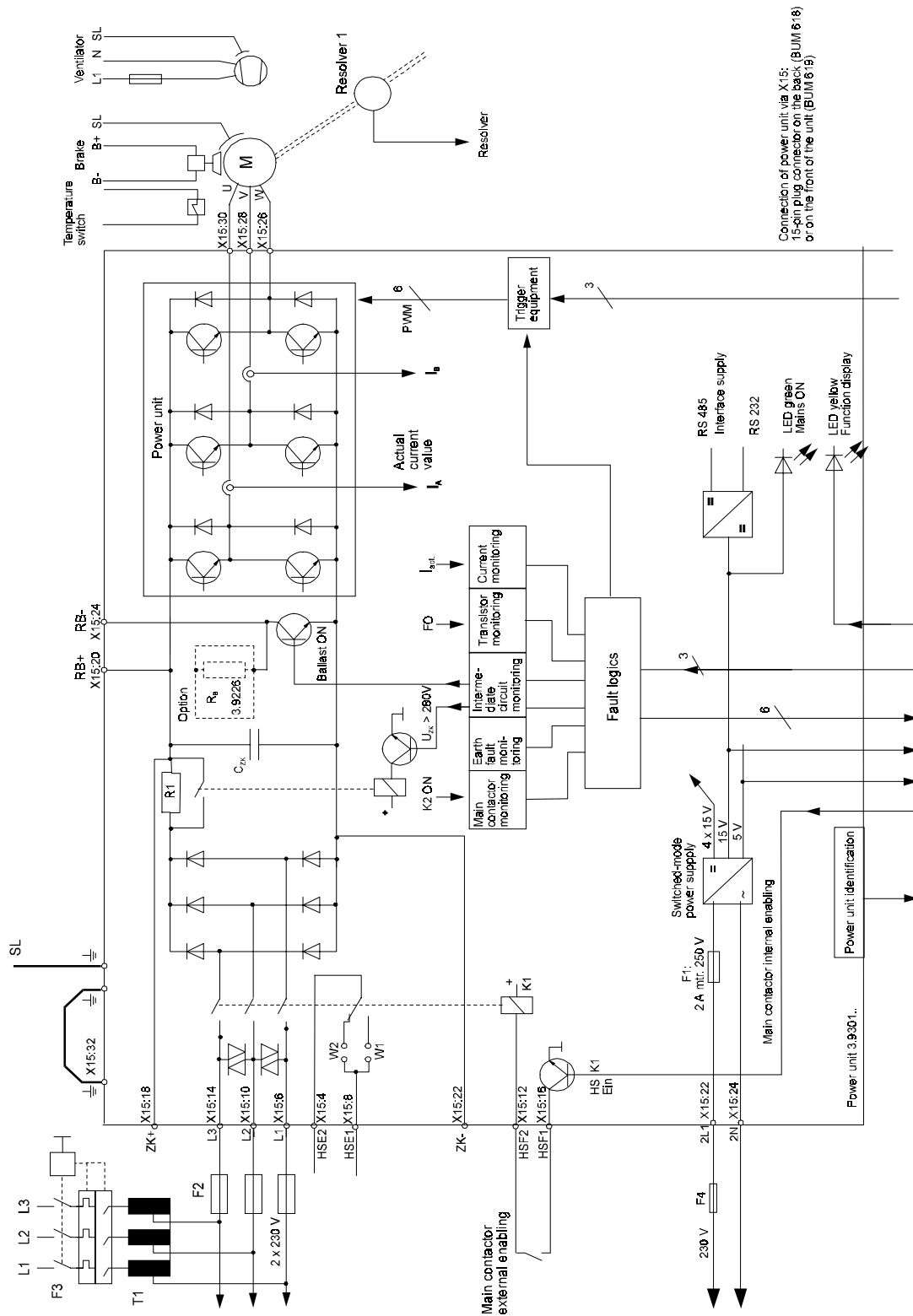
### NOTE

DIP switch cannot be set from outside!

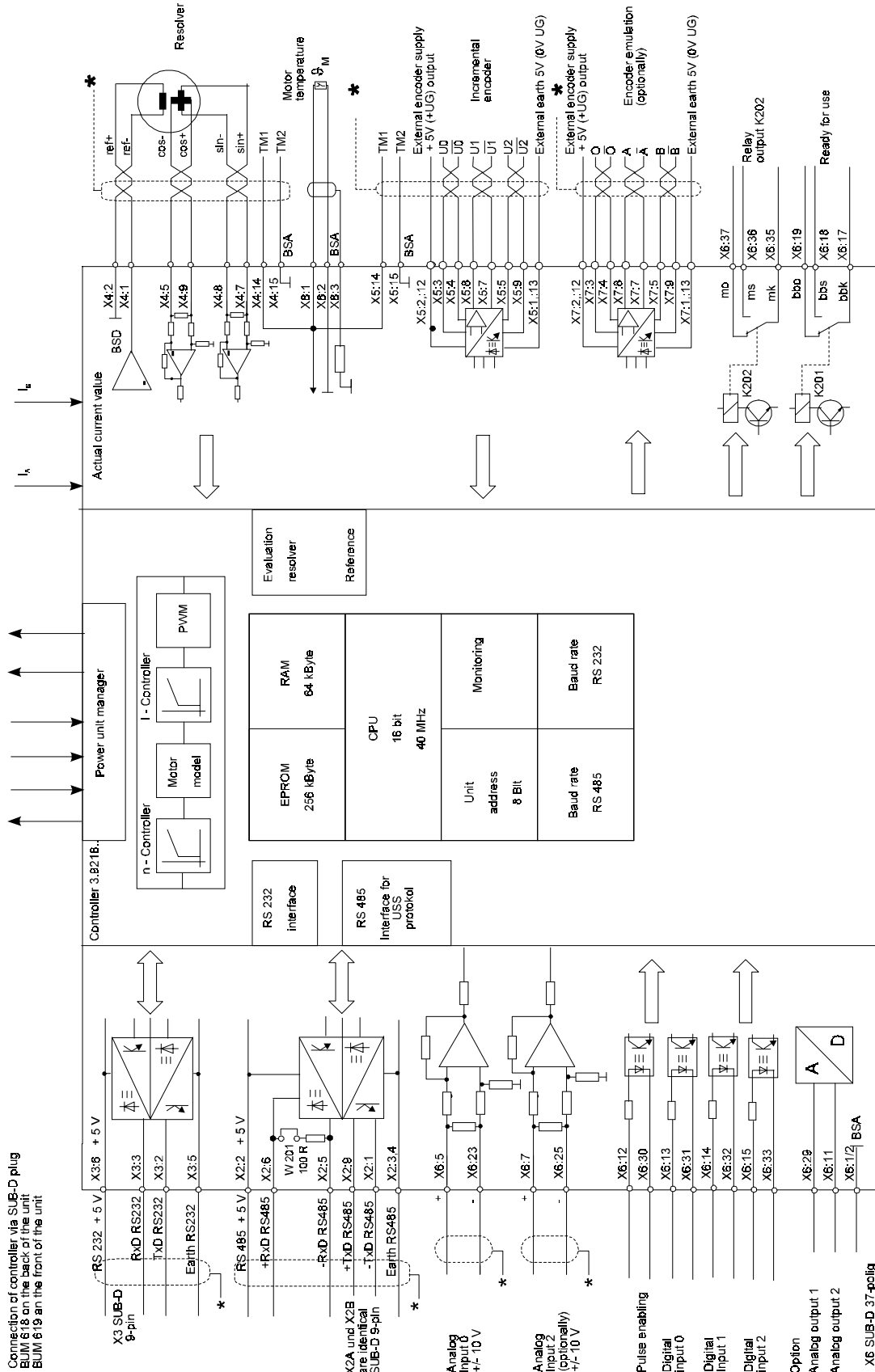
## 5.4 LED Display

See Technical Description and Operation Manual BUM 618/619.

### 5.5 Terminal Diagram



Connection of power unit via X15:  
15-pin plug connector on the back (BUM 618)  
or on the front of the unit (BUM 619)



\* The cable shieldings must be connected to the housings.

## Terminal notes

Earth leakage circuit-breaker	Relatively high leakage to earth occurs in the converter and the motor, i.e. the drive may be incompatible with residual current protective devices. Reference should be made to VDE 0160, sect. 5.5.3.4 and sect. 6.5.2.1 before configuration.
K1	Line contactor (internal) with auxiliary contact for controller enabling.
HSE1 HSE2	"Main contactor on" message (contact closed) Contact can be loaded to a minimum of 50 mA, and a maximum of 1 A
HSF1 HSF2	Main contactor enabling by closing an external make contact; Loading, approx. 80 mA. After enabling the main contactor, the intermediate circuit is charged via a charging circuit. Charging contactor K2 picks up after approx. 1 s. The power unit, or drive, is ready for use after this hesitation.
K2,R1	The charging circuit prevents the permitted non-repetitive peak current $I_{ON}$ of the supply from being exceeded. After approx. 1 second, charging contactor K2 bridges charging resistor R1. The power unit, or drive, is ready for use after this hesitation.
RB	Internal ballast resistor RB is only fitted to the BUM619-12/18-31-R-XXX version (option 3.9226). An additional external ballast resistor can <b>not</b> be connected to units with internal ballast.
Switched-mode power supply	The switched-mode power supply supplies the controller with 5 V and 15 V, and is not designed for external loading. The switched-mode power supply is protected by a miniature 2A/medium time-lag/250V fuse. This fuse can only be accessed after dismantling the unit.
F4	Fusing according VDE 0100 at least 2 A / slow / 250 V
2L1, 2N	Power supply connection of the controller's auxiliary power supply.

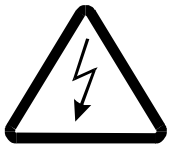
ZK+, ZK-

The terminals may not be connected to the intermediate circuits of other units. They are for checking the intermediate circuit voltage or for earthing if an isolating transformer is used, or for rapid discharging of the intermediate circuit.

Specified value of the intermediate circuit:  $U_{ZK} = 310 \text{ V} \pm 10 \%$

Discharging the intermediate circuit in  $t > 1$  minute.

Rapid discharge of the intermediate circuit via resistor  $R = 22\Omega / 50\text{W}$ , if necessary.



### DANGER

The intermediate circuit is potential-charged when using auto-transformers.

The intermediate circuit is to be earthed to ZK- when using isolating transformers.

U, V, W

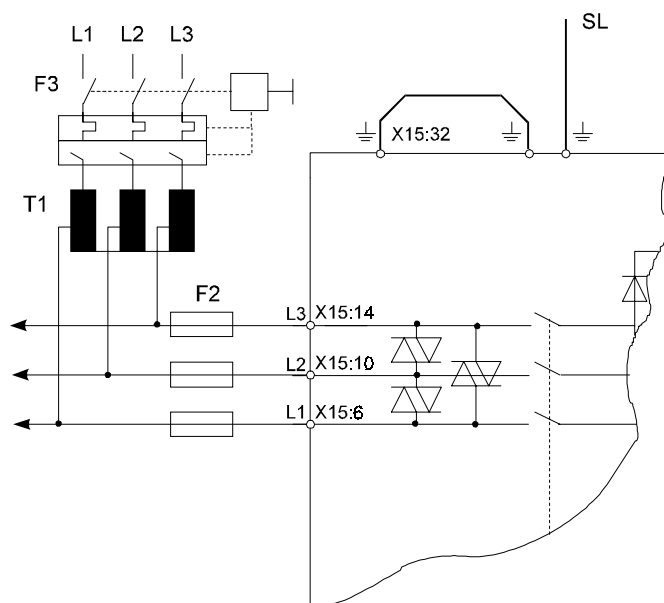
Motor terminals profile, according to VDE 0113/0298.

The cables are to be twisted and laid separately from the signal and control cables.

They need only be shielded if it is not possible to keep them separated from the signal cables, or when faults in the communication equipment are to be expected. In these cases, the motor cables are to be laid out shielded on both sides, and with low impedance. See EMC notes

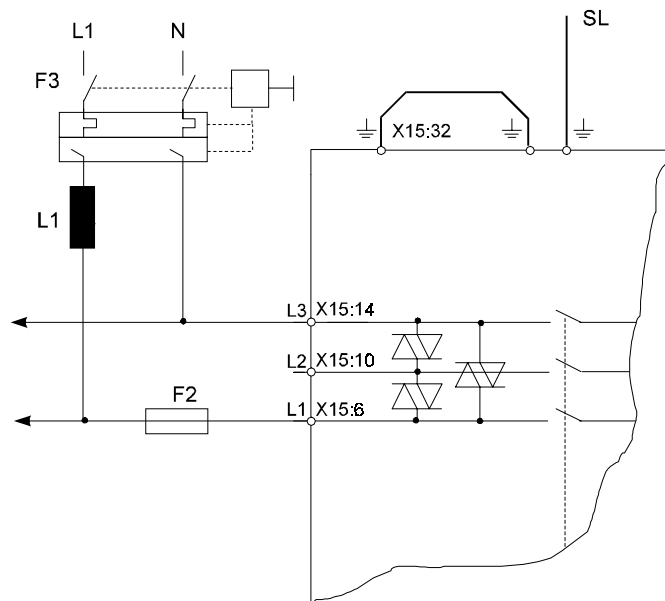


## 3-phase terminal



- F3** Cable protection according to VDE 0100.  
Slow fuse, 2..3 x transformer nominal current or motor circuit breaker (advantage: switch-off of all phases is always guaranteed)
- F2** 10 A slow fuses are provided for cable protection and protection of the input diodes.
- T1** Transformer YNO or isolating transformer YNyO.  
On connection via transformer it should be noted that the intermediate circuit must not be earthed, and that potential is to be found in both the intermediate circuit and the motor.  
Connection voltage BUM 618/619: 230 V, + 6% ... -10%, 50/60Hz.  
Do not connect the star-point of the transformer to the mains neutral conductor "N".  
Short circuit voltage: auto-transformer  $u_k \geq 2 \%$   
isolating transformer  $u_k \geq 4 \%$
- L1, L2, L3,  $\perp$**  Connections to transformer T1.  
Profile according to VDE 0113/0298  
To be laid separate from signal and control cables.

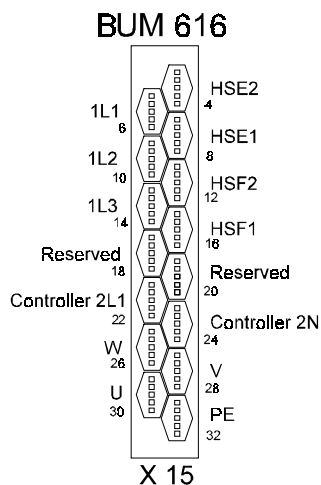
## 1-phase terminal



- F3 Cable protection according to VDE 0100.  
Slow fuse, 2..3 x transformer nominal current or motor circuit breaker
- F2 10 A slow fuses are provided for cable protection and protection of the input diodes.
- L1 The transformer is not used when working with a single phase, thus a line reactance must be implemented as a filter.

## 5.6 Connector Pin Assignment

### 5.6.1 Power Terminals



Isolated 6,3 mm tab connector.

- **1L1, 1L2, 1L3, PE**

1L1	X15:6
1L2	X15:10
1L3	X15:14
PE	X15:32

Transformer connections.

- **U, V, W**

U	X15:30
V	X15:28
W	X15:26

The cables are twisted and laid separately from the signal and control cables.  
See EMC notes.

# Installation

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- **Controller 2L1, 2N**

L1	X15:22
N	X15:24

Connection of the controller's auxiliary power supply.

- **HSF 1 and HSF 2**

HSF 1	X15:16
HSF 2	X15:12

Main contactor enable:      contact load    15 V    80 mA  
ON:      close external contact for enable  
OFF:      open external contact

- **HSE 1 and HSE 2**

HSE 1	X15:4
HSE 2	X15:8

Main contactor ON message:      contact load    250 V<sub>AC</sub> 125 V<sub>DC</sub>    1 A (min. 50 mA)

## 5.6.2 BUM 616 Control Terminals

See Technical Description and Operation Manual BUM 618/619.

## 5.7 Connection Cable

## 5.8 Mains Transformer Technical Data

## 5.9 Line Reactor Technical Data

## 5.10 Accessories

See Technical Description and Operation Manual BUM 618/619.

## 6 COMMISSIONING

See Technical Description and Operation Manual BUM 618/619.

### 7 PARAMETERS

See Technical Description and Operation Manual BUM 618/619.

## 8 MAINTENANCE

See Technical Description and Operation Manual BUM 618/619.

### 9 APPENDIX

See Technical Description and Operation Manual BUM 618/619.