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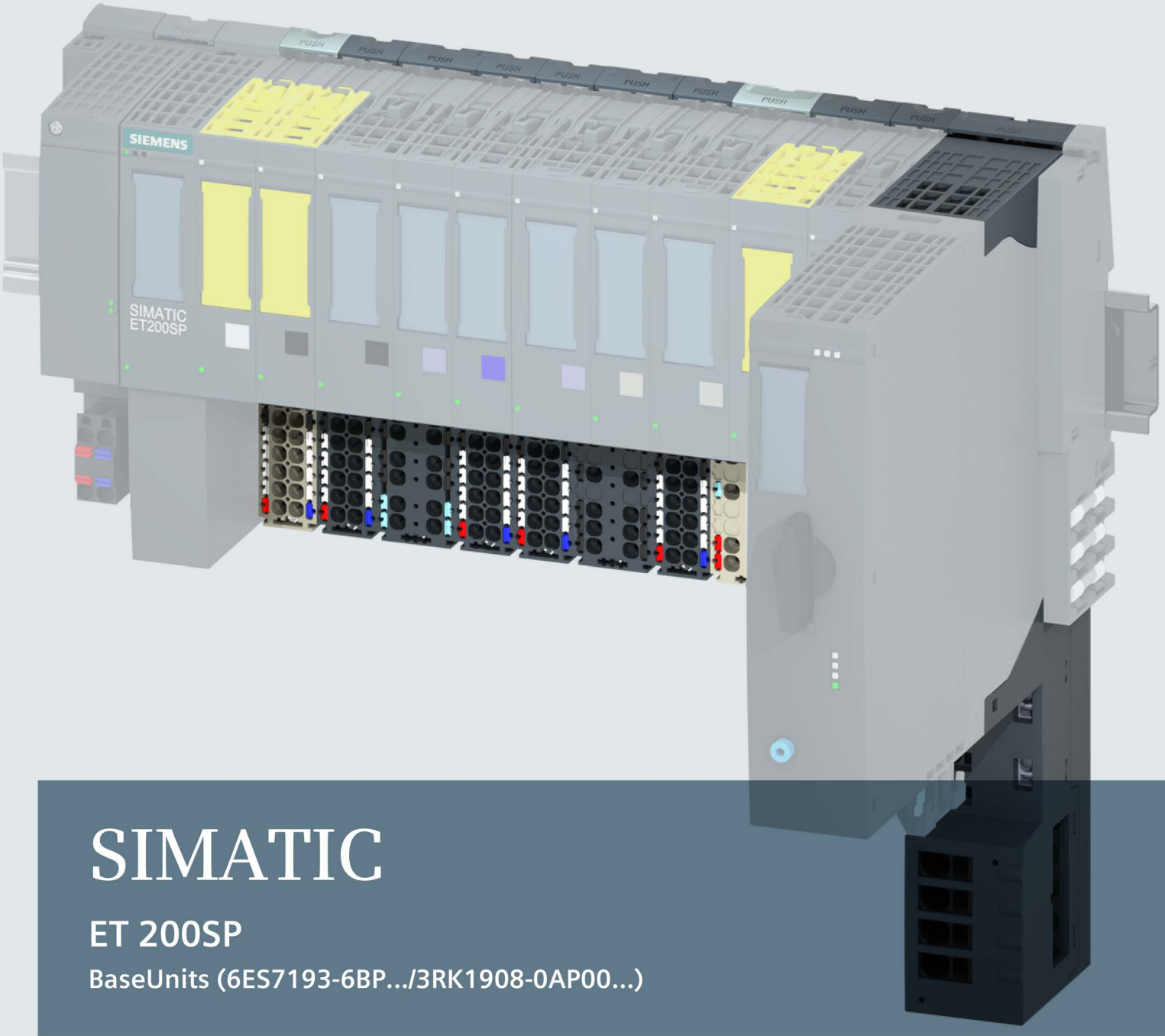

SIMATIC

ET 200SP

BaseUnits (6ES7193-6BP.../3RK1908-0AP00...)

Manual

Edition 12/2016

siemens.com

SIEMENS

SIMATIC

ET 200SP BaseUnits (6ES7193-6BP.../3RK1908-0AP00…)

Manual

12/2016

A5E03727049-AG

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER

indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠ WARNING

indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ CAUTION

indicates that minor personal injury can result if proper precautions are not taken.

NOTICE

indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ WARNING

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

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All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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GERMANY

A5E03727049-AG
℗ 12/2016 Subject to change

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Preface

Purpose of the documentation

This manual supplements the system manual ET 200SP distributed I/O system (http://support.automation.siemens.com/WW/view/en/58649293). Functions affecting the system in general are described there.

The information provided in this manual and in the system/function manuals supports you in commissioning the system.

Conventions

Please also observe notes marked as follows:

Note

A note contains important information on the product described in the documentation, on the handling of the product and on the section of the documentation to which particular attention should be paid.

Changes compared to the previous version

In contrast to the previous version, the chapters "BaseUnits for motor starters" and "Dimension drawings for motor starters" have been added to this manual.

Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, solutions, machines, equipment and/or networks. They are important components in a holistic industrial security concept. With this in mind, Siemens' products and solutions undergo continuous development. Siemens recommends strongly that you regularly check for product updates.

For the secure operation of Siemens products and solutions, it is necessary to take suitable preventive action (e.g. cell protection concept) and integrate each component into a holistic, state-of-the-art industrial security concept. Third-party products that may be in use should also be considered. You can find more information about industrial security on the Internet (http://www.siemens.com/industrialsecurity).

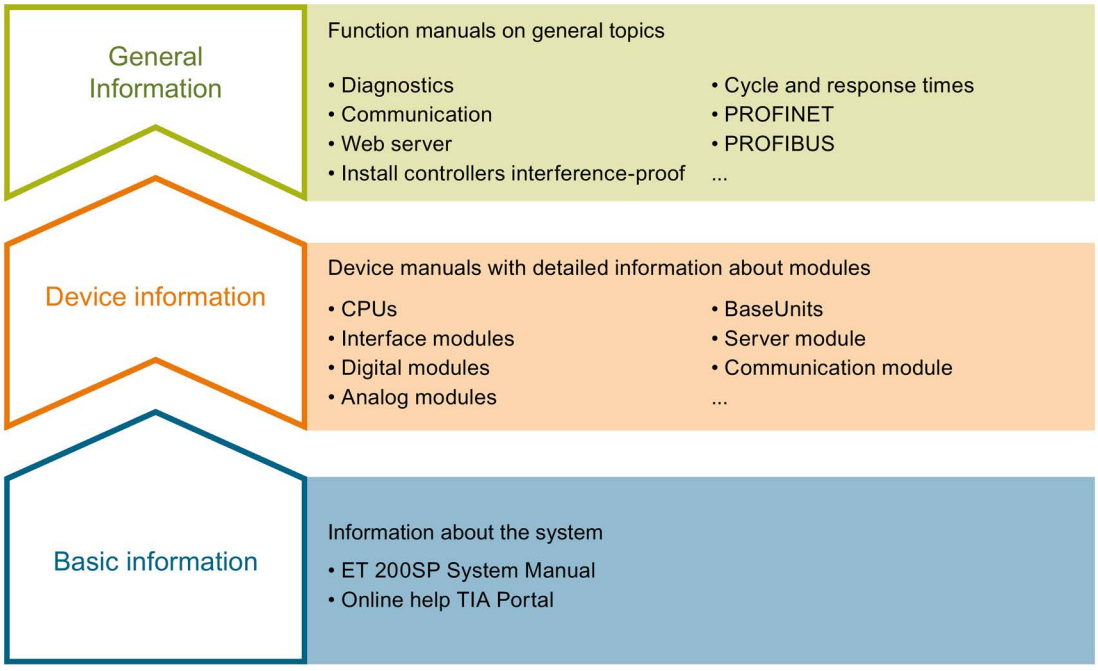
To stay informed about product updates as they occur, sign up for a product-specific newsletter. You can find more information on the Internet (http://support.automation.siemens.com).

Table of contents

Guide to the documentation

1

The documentation for the SIMATIC ET 200SP distributed I/O system is arranged into three areas.
This arrangement enables you to access the specific content you require.



Basic information

The system manual describes in detail the configuration, installation, wiring and commissioning of the SIMATIC ET 200SP. distributed I/O system. The STEP 7 online help supports you in the configuration and programming.

Device information

Product manuals contain a compact description of the module-specific information, such as properties, terminal diagrams, characteristics and technical specifications.

General information

The function manuals contain detailed descriptions on general topics regarding the SIMATIC ET 200SP distributed I/O system, e.g. diagnostics, communication, Web server, designing interference-free controllers.

You can download the documentation free of charge from the Internet (http://w3.siemens.com/mcms/industrial-automation-systems-simatic/en/manual-overview/tech-doc-et200/Pages/Default.aspx).

Changes and supplements to the manuals are documented in a Product Information.

You can download the product information free of charge from the Internet.

Manual Collection ET 200SP

The Manual Collection contains the complete documentation on the SIMATIC ET 200SP distributed I/O system gathered together in one file.

You can find the Manual Collection on the Internet (http://support.automation.siemens.com/WW/view/en/84133942).

"mySupport"

With "mySupport", your personal workspace, you make the most of your Industry Online Support.

In "mySupport" you can store filters, favorites and tags, request CAx data and put together your personal library in the Documentation area. Furthermore, your data is automatically filled into support requests and you always have an overview of your current requests.

You need to register once to use the full functionality of "mySupport".

You can find "mySupport" in the Internet.

"mySupport" - Documentation

In the Documentation area of "mySupport", you have the possibility to combine complete manuals or parts of them to make your own manual.
You can export the manual in PDF format or in an editable format.

You can find "mySupport" - Documentation in the Internet (http://support.industry.siemens.com/My/ww/en/documentation).

"mySupport" - CAx Data

In the CAx Data area of "mySupport", you can have access the latest product data for your CAx or CAe system.

You configure your own download package with a few clicks.

In doing so you can select:

- Product images, 2D dimension drawings, 3D models, internal circuit diagrams, EPLAN macro files
- Manuals, characteristics, operating manuals, certificates
- Product master data

You can find "mySupport" - CAx Data in the Internet (http://support.industry.siemens.com/my/ww/en/CAxOnline).

Application examples

The application examples support you with various tools and examples for solving your automation tasks. Solutions are shown in interplay with multiple components in the system - separated from the focus in individual products.

You can find the application examples on the Internet (http://support.industry.siemens.com/cs/ww/en/ps/ae).

TIA Selection Tool

With the TIA Selection Tool, you can select, configure and order devices for Totally Integrated Automation (TIA).
This tool is the successor of the SIMATIC Selection Tool and combines the known configurators for automation technology into one tool.
With the TIA Selection Tool, you can generate a complete order list from your product selection or product configuration.

You can find the TIA Selection Tool on the Internet (http://w3.siemens.com/mcms/topics/en/simatic/tia-selection-tool).

Product overview

2

General properties of the BaseUnits

In the ET 200SP distributed I/O system, there are a number of different BaseUnits. The BaseUnit determines, among other things, the process connection, the suitable I/O modules/motor starters, and the infeed of the supply voltage. All properties can be identified by the short designation of the BaseUnit which is explained below.

Table 2- 1 Properties of the BaseUnits

Short description BU15-P16+A10+2D/T (example)			BaseUnit properties
Module width	BU	15	BaseUnit with width of 15 mm
		20	BaseUnit with width of 20 mm
		30	BaseUnit with width of 30 mm
Process connection	P	4	• Connection method: Push-in terminal • Number of terminals to the I/O module: 4
		8	• Connection method: Push-in terminal • Number of terminals to the I/O module: 8
		16	• Connection method: Push-in terminal • Number of terminals to the I/O module: 16
Connection to the AUX busbar	A	0	No connection to the AUX busbar
		10	n = number of AUX terminals, e.g. 10
Self-assembling voltage buses	2		2 push-in terminals for supplying or tapping the supply voltage via the self-assembling voltage buses P1, P2 (see D, B)
	12		• 2 push-in terminals for supplying or tapping the supply voltage via the self-assembling voltage buses P1, P2 (see D, B) • 2x5 push-in additional terminals (1B to 5B, 1C to 5C) for connecting further potential up to a maximum supply current of 24 V DC / 10 A
	0		No terminals with access to the self-assembling voltage buses P1, P2
		B	• Looping through the potential group • Tapping of the supply voltage for external components or looping through with a maximum total current of 10 A per potential group
		D	• Opening a new potential group • Feeding in of supply voltage up to a maximum supply current of 10 A
Additional functions	T		Integrated temperature sensor to compensate the reference junction temperature for thermocouples

Properties of the BaseUnits for motor starters

The following table lists the properties of the individual BaseUnits for motor starters:

BaseUnit	Properties
BU30-MS1	• Push-in terminals for opening a new potential group (24 V DC). • Feeding in of supply voltage up to a maximum supply current of 7 A DC. • Opening a new supply voltage potential group (500 V AC) • Feeding in of supply voltage up to a maximum supply current of 32 A AC.
BU30-MS2	• Looping through the potential group (24 V DC) • Push-in terminals for opening a new supply voltage potential group (500 V AC) • Feeding in of supply voltage up to a maximum supply current of 32 A AC.
BU30-MS3	• Push-in terminals for opening a new potential group (24 V DC). • Feeding in of supply voltage up to a max. supply current of 7 A DC • Looping through the supply voltage potential group (500 V AC)
BU30-MS4	• Looping through the supply voltage potential group (500 V AC) • Looping through the potential group (24 V DC)
BU30-MS5	• Looping through the potential group (24 V DC) • Push-in terminals for opening a new supply voltage potential group (500 V AC) • Feeding in of supply voltage up to a maximum supply current of 32 A AC. • One fail-safe digital input
BU30-MS6	• Looping through the potential group (24 V DC) • Looping through the supply voltage potential group (500 V AC) • Push-In terminals • One fail-safe digital input

Selecting, installing and connecting BaseUnits

See the System Manual ET 200SP distributed I/O system (http://support.automation.siemens.com/WW/view/en/58649293)

WARNING

Personal injury or damage to equipment is possible.

Connecting a rated supply voltage to the BaseUnit higher than the one given in the technical specifications may lead to dangerous situations in your plant or cause defects in ET 200SP components.

Therefore, only connect the rated supply voltage given in the technical specifications to the BaseUnit.

The connected rated supply voltage must correspond to the rated supply voltage of the I/O modules in the potential group.

When mains voltage is connected to the BaseUnit, you must ensure that all other supply voltages on this BaseUnit use the same phase as the mains.

The Totally Integrated Automation Selection Tool (TIA Selection Tool) (http://www.siemens.com/tia-selection-tool) supports you in selecting, configuring and ordering the ET 200SP modules. This tool can be downloaded free of charge from the Internet (http://support.automation.siemens.com/WW/view/en/58649293).

WARNING

Hazardous Voltage (when using ET 200SP motor starters)
Can Cause Death, Serious Injury, or Property Damage.

Proper use of hardware products

This equipment is only allowed to be used for the applications described in the catalog and in the technical description, and only in conjunction with non-Siemens equipment and components recommended by Siemens.

Correct transport, storage, installation and assembly, as well as careful operation and maintenance, are required to ensure that the product operates safely and without faults.

EU note: Start-up/commissioning is absolutely prohibited until it has been ensured that the machine in which the component described here is to be installed fulfills the regulations/specifications of Machinery Directive 2006/42/EC.

WARNING

Hazardous Voltage (when using ET 200SP motor starters)
Can Cause Death, Serious Injury, or Property Damage.

Please take note of our latest information.

Systems with safety-related characteristics are subject to special operational safety requirements on the part of the operator. The supplier is also obliged to comply with special product monitoring measures. For this reason, we publish a special newsletter containing information on product developments and features that are (or could be) relevant to operation of safety-related systems. By subscribing to the appropriate newsletter, you will ensure that you are always up-to-date and able to make changes to your system, when necessary:

Siemens Newsletter (http://www.industry.siemens.com/newsletter)

Sign on to the following newsletter under "Products & Solutions":

- Control Components and System Engineering News
- Safety Integrated Newsletter

BaseUnits for I/O modules

3

3.1 BU15-P16+A10+2D (BU type A0)

3.1.1 Product overview

Article number

6ES7193-6BP20-0DA0

View

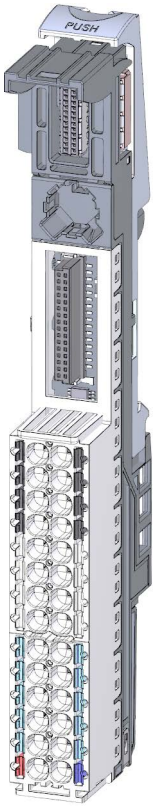


Figure 3-1 BaseUnit BU15-P16+A10+2D

Properties

- BaseUnit suitable for all I/O modules of the BaseUnit type "A0/A1". Can be recognized by the last two digits of the article number.
  - Supply voltage (L+ terminal, ground): Max. 24 VDC/10 A
  - Current-carrying capacity per process terminal (terminal 1 to 16): Max. 2 A
- The BaseUnit opens up a new potential group. The self-assembling voltage buses P1 and P2, and the AUX busbar are interrupted to the left-hand neighboring module (BaseUnit, interface module).
- Access to the AUX busbar via terminals
- 16 terminals to the process (assignment through the I/O module)
- 10 AUX terminals for connecting a protective conductor or potential. The AUX busbar is not connected to the I/O module.
- Connection method using push-in terminals

Maximum configuration per potential group

The number of I/O modules that can be used per potential group depends on the following factors:

1. Total power requirement of all I/O modules operated on this potential group
2. Total power requirement of all loads connected externally to this potential group

The total current calculated from the sum of 1 and 2 may not exceed 10 A.

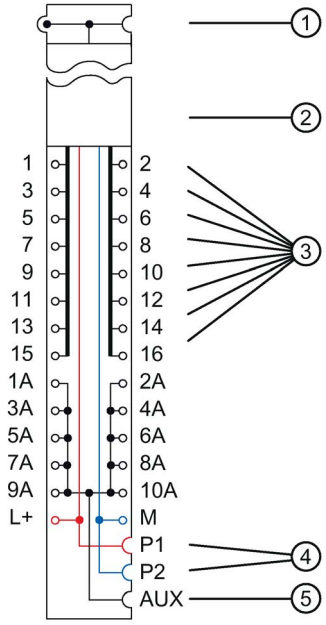
3.1.2 Connecting up

Pin assignment

Table 3- 1 Pin assignment for BaseUnit BU15-P16+A10+2D

Pin assignment for BaseUnit BU15-P16+A10+2D	
Terminal	**Descriptions**
1 to 16	Assignment is determined by the I/O module. See manual I/O Module (http://support.automation.siemens.com/WW/view/en/55679691/133300).
1A, 2A, 3A, 4A, 5A, 6A, 7A, 8A, 9A, 10A, AUX	Protective-conductor terminal or potential bus freely usable up to 24 V DC with max. 10 A
L+, P1 / M, P2	L+: Rated supply voltage 24 V DC with max. 10 A M: Ground

Block diagram



① Backplane bus
② I/O module
③ Terminals with connection to the I/O module
④ Interrupted voltage buses with connection to the terminals for infeed
⑤ Disconnected AUX busbar connected to the terminals

Figure 3-2 Block diagram BU15-P16+A10+2D

3.1.3 Technical specifications

Technical specifications of the BaseUnit BU15-P16+A10+2D

	6ES7193-6BP20-0DA0
Product type designation	BU15-P16+A10+2D
Supply voltage	
Rated value (DC)	24 V
External fuse for power supply lines	Yes: 24 VDC / 10 A miniature circuit breaker with type B or C tripping characteristic
Current carrying capacity	
Current carrying capacity up to 60 °C, max.	10 A
Electrical isolation	
between backplane bus and supply voltage	Yes
between the potential groups	Yes
Isolation	
Isolation tested with	707 VDC (type test)
Dimensions	
Width	15 mm
Height	141 mm
Weights	
Weight, approx.	50 g

3.2 BU15-P16+A0+2D (BU type A0)

3.2.1 Product overview

Article number

6ES7193-6BP00-0DA0

View

Figure 3-3 BaseUnit BU15-P16+A0+2D

Properties

- BaseUnit suitable for all I/O modules of the BaseUnit type "A0/A1". Can be recognized by the last two digits of the article number.
  - Supply voltage (L+ terminal, ground): Max. 24 VDC/10 A
  - Current-carrying capacity per process terminal (terminal 1 to 16): Max. 2 A
- The BaseUnit opens up a new potential group. The self-assembling voltage buses P1 and P2, and the AUX busbar are interrupted to the left-hand neighboring module (BaseUnit, interface module).
- No access to the AUX busbar via terminals
- 16 terminals to the process (assignment through the I/O module)
- Connection method using push-in terminals

Maximum configuration per potential group

The number of I/O modules that can be used per potential group depends on the following factors:

1. Total power requirement of all I/O modules operated on this potential group
2. Total power requirement of all loads connected externally to this potential group

The total current calculated from the sum of 1 and 2 may not exceed 10 A.

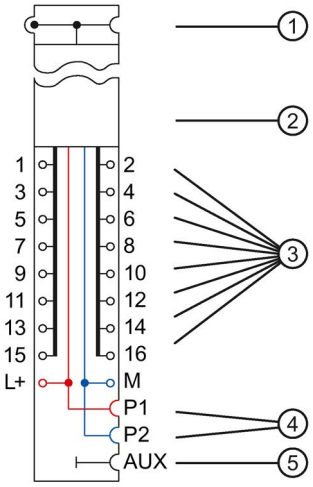
3.2.2 Connection

Pin assignment

Table 3- 2 Pin assignment for BaseUnit BU15-P16+A0+2D

Pin assignment for BaseUnit BU15-P16+A0+2D	
Terminal	**Descriptions**
1 to 16	Assignment is determined by the I/O module. See manual I/O Module (http://support.automation.siemens.com/WW/view/en/55679691/133300).
(AUX)	No access to the AUX busbar via terminals
L+, P1 / M, P2	L+: Rated supply voltage 24 V DC with max. 10 A M: Ground

Block diagram



① Backplane bus
② I/O module
③ Terminals with connection to the I/O module
④ Interrupted voltage buses with connection to the terminals for infeed
⑤ Disconnected AUX busbar not connected to the terminals

Figure 3-4 Block diagram BU15-P16+A0+2D

3.2.3 Technical specifications

Technical specifications of the BaseUnit BU15-P16+A0+2D

	6ES7193-6BP00-0DA0
Product type designation	BU15-P16+A0+2D
Supply voltage	
Rated value (DC)	24 V
External fuse for power supply lines	Yes: 24 VDC / 10 A miniature circuit breaker with type B or C tripping characteristic
Current carrying capacity	
Current carrying capacity up to 60 °C, max.	10 A
Electrical isolation	
between backplane bus and supply voltage	Yes
between the potential groups	Yes
Isolation	
Isolation tested with	707 VDC (type test)
Dimensions	
Width	15 mm
Height	117 mm
Weights	
Weight, approx.	40 g

3.3 BU15-P16+A10+2B (BU type A0)

3.3.1 Product overview

Article number

6ES7193-6BP20-0BA0

View

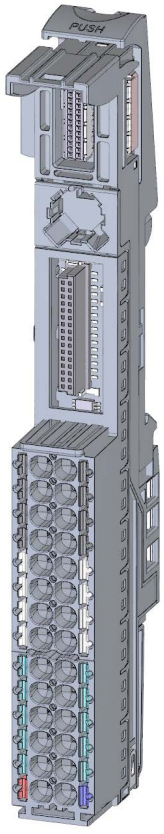


Figure 3-5 BaseUnit BU15-P16+A10+2B

Properties

- BaseUnit suitable for all I/O modules of the BaseUnit type "A0/A1". Can be recognized by the last two digits of the article number.
  - Current-carrying capacity per process terminal (terminal 1 to 16): Max. 2 A
- The BaseUnit conducts the potential group further. The self-assembling voltage buses P1 and P2, and the AUX busbar are connected to the left-hand neighboring module (BaseUnit).
- Access to the AUX busbar via terminals
- 16 terminals to the process (assignment through the I/O module)
- 10 AUX terminals for connecting a protective conductor or potential. The AUX busbar is not connected to the I/O module.
- Connection method using push-in terminals

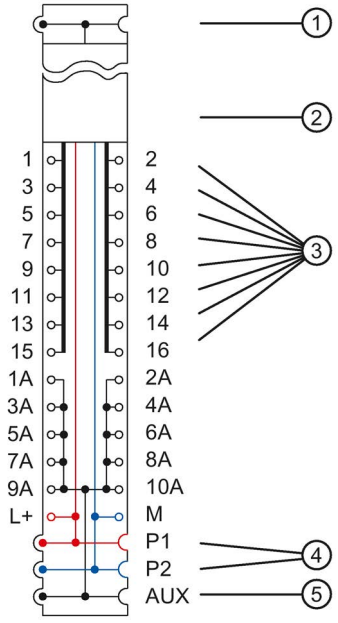
3.3.2 Connection

Pin assignment

Table 3- 3 Pin assignment for BaseUnit BU15-P16+A10+2B

Pin assignment for BaseUnit BU15-P16+A10+2B	
Terminal	**Descriptions**
1 to 16	Assignment is determined by the I/O module. See manual I/O Module (http://support.automation.siemens.com/WW/view/en/55679691/133300).
1A, 2A, 3A, 4A, 5A, 6A, 7A, 8A, 9A, 10A, AUX	Protective conductor connection or voltage bus freely usable up to 24 V DC with max. 10 A
L+, P1 / M, P2	L+: Rated supply voltage 24 V DC with max. 10 A M: Ground

Block diagram



① Backplane bus
② I/O module
③ Terminals with connection to the I/O module
④ Connected voltage buses with connection to the terminals
⑤ Connected AUX busbar connected to the terminals

Figure 3-6 Block diagram BU15-P16+A10+2B

3.3.3 Technical specifications

Technical specifications of the BaseUnit BU15-P16+A10+2B

	6ES7193-6BP20-0BA0
Product type designation	BU15-P16+A10+2B
Supply voltage	
Rated value (DC)	24 V
External fuse for power supply lines	Yes: 24 VDC / 10 A miniature circuit breaker with type B or C tripping characteristic
Current carrying capacity	
Current carrying capacity up to 60 °C, max.	10 A
Electrical isolation	
between backplane bus and supply voltage	Yes
Isolation	
Isolation tested with	707 VDC (type test)
Dimensions	
Width	15 mm
Height	141 mm
Weights	
Weight, approx.	50 g

3.4 BU15-P16+A0+2B (BU type A0)

3.4.1 Product overview

Article number

6ES7193-6BP00-0BA0

View

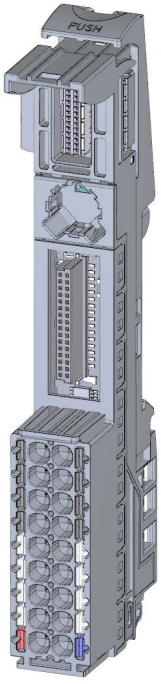


Figure 3-7 BaseUnit BU15-P16+A0+2B

Properties

- BaseUnit suitable for all I/O modules of the BaseUnit type "A0/A1". Can be recognized by the last two digits of the article number.
  - Current-carrying capacity per process terminal (terminal 1 to 16): Max. 2 A
- The BaseUnit conducts the potential group further. The self-assembling voltage buses P1 and P2, and the AUX busbar are connected to the left-hand neighboring module (BaseUnit).
- No access to the AUX busbar via terminals
- 16 terminals to the process (assignment through the I/O module)
- Connection method using push-in terminals

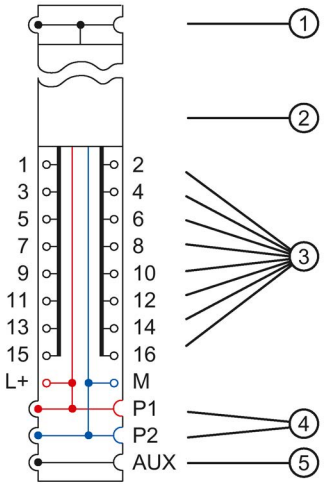
3.4.2 Connection

Pin assignment

Table 3- 4 Pin assignment for BaseUnit BU15-P16+A0+2B

Pin assignment for BaseUnit BU15-P16+A0+2B	
Terminal	**Descriptions**
1 to 16	Assignment is determined by the I/O module. See manual I/O Module (http://support.automation.siemens.com/WW/view/en/55679691/133300).
(AUX)	No access to the AUX busbar via terminals
L+, P1 / M, P2	L+: Rated supply voltage 24 V DC with max. 10 A M: Ground

Block diagram



① Backplane bus
② I/O module
③ Terminals with connection to the I/O module
④ Connected voltage buses with connection to the terminals
⑤ Connected AUX busbar not connected to the terminals

Figure 3-8 Block diagram BU15-P16+A0+2B

3.4.3 Technical specifications

Technical specifications of the BaseUnit BU15-P16+A0+2B

	6ES7193-6BP00-0BA0
Product type designation	BU15-P16+A0+2B
Supply voltage	
Rated value (DC)	24 V
External fuse for power supply lines	Yes: 24 VDC / 10 A miniature circuit breaker with type B or C tripping characteristic
Current carrying capacity	
Current carrying capacity up to 60 °C, max.	10 A
Electrical isolation	
between backplane bus and supply voltage	Yes
Isolation	
Isolation tested with	707 VDC (type test)
Dimensions	
Width	15 mm
Height	117 mm
Weights	
Weight, approx.	40 g

3.5 BU15-P16+A0+12D/T (BU type A1)

3.5.1 Product overview

Order number

6ES7193-6BP40-0DA1

View

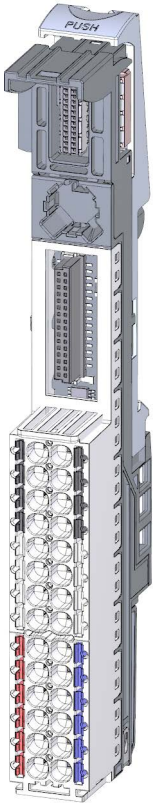


Figure 3-9 BaseUnit BU15-P16+A0+12D/T

Properties

- BaseUnit for all I/O modules of BaseUnit type "A1". Can be recognized by the last two digits of the order number.

  Note

  Using another I/O module can trigger an internal, non-exchangeable fuse and you must exchange the terminal box.

  - Supply voltage (L+ terminal, ground): Max. 24 VDC/10 A
  - Current-carrying capacity per process terminal (terminal 1 to 16): Max. 2 A
- The BaseUnit opens up a new potential group. The self-assembling voltage buses P1 and P2, and the AUX busbar are interrupted to the left-hand neighboring module (BaseUnit, interface module).
- No access to the AUX busbar via terminals
- 16 terminals to the process (assignment through the I/O module)
- 2x5 additional terminals for supplying a supply voltage up to 24 V DC/ 10 A. The additional terminals are not connected to the I/O module.
- Recording of the terminal temperature for internal temperature compensation at connected thermocouples
- Connection method using push-in terminals

Maximum configuration per potential group

The number of I/O modules that can be used per potential group depends on the following factors:

1. Total power requirement of all I/O modules operated on this potential group
2. Total power requirement of all loads connected externally to this potential group

The total current calculated from the sum of 1 and 2 may not exceed 10 A.

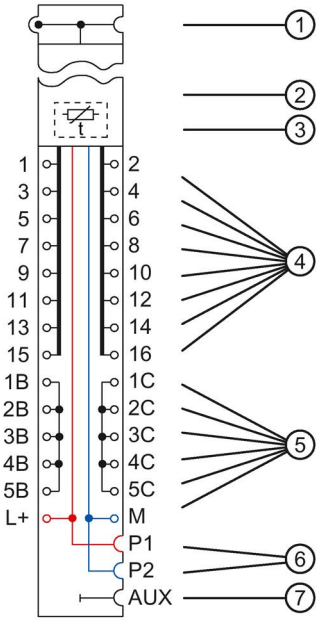
3.5.2 Connection

Pin assignment

Table 3- 5 Pin assignment for BaseUnit BU15-P16+A0+12D/T

Pin assignment for BaseUnit BU15-P16+A0+12D/T	
Terminal	**Descriptions**
1 to 16	Assignment is determined by the I/O module. See manual I/O Module (http://support.automation.siemens.com/WW/view/en/55679691/133300).
1B, 2B, 3B, 4B, 5B / 1C, 2C, 3C, 4C, 5C	2 x 5 add-on terminals for the infeed of a supply voltage up to 24 V DC with max. 10 A
(AUX)	No access to the AUX busbar via terminals
L+, P1 / M, P2	L+: Rated supply voltage 24 V DC with max. 10 A M: Ground

Block diagram



① Backplane bus
② I/O module
③ Internal reference junction for temperature compensation
④ Terminals with connection to the I/O module
⑤ Additional terminals for feeding an additional supply voltage
⑥ Interrupted voltage buses with connection to the terminals for infeed
⑦ Disconnected AUX busbar not connected to the terminals

Figure 3-10 Block diagram BU15-P16+A0+12D/T

3.5.3 Technical specifications

Technical specifications of the BaseUnit BU15-P16+A0+12D/T

	6ES7193-6BP40-0DA1
Product type designation	BU15-P16+A0+12D/T
Supply voltage	
Rated value (DC)	24 V
External fuse for power supply lines	Yes: 24 VDC / 10 A miniature circuit breaker with type B or C tripping characteristic
Current carrying capacity	
Current carrying capacity up to 60 °C, max.	10 A
Analog inputs	
Thermocouple (TC)	
Temperature compensation	
• Internal temperature compensation	Yes
Electrical isolation	
between backplane bus and supply voltage	Yes
between the potential groups	Yes
Isolation	
Isolation tested with	707 VDC (type test)
Dimensions	
Width	15 mm
Height	141 mm
Weights	
Weight, approx.	50 g

3.6 BU15-P16+A0+2D/T (BU type A1)

3.6.1 Product overview

Article number

6ES7193-6BP00-0DA1

View

Figure 3-11 BaseUnit BU15-P16+A0+2D/T

Properties

- BaseUnit for all I/O modules of BaseUnit type "A1". Can be recognized by the last two digits of the article number.

  Note

  Using another I/O module can trigger an internal, non-exchangeable fuse and you must exchange the terminal box.

  - Supply voltage (L+ terminal, ground): Max. 24 VDC/10 A
  - Current-carrying capacity per process terminal (terminal 1 to 16): Max. 2 A
- The BaseUnit opens up a new potential group. The self-assembling voltage buses P1 and P2, and the AUX busbar are interrupted to the left-hand neighboring module (BaseUnit, interface module).
- No access to the AUX busbar via terminals
- 16 terminals to the process (assignment through the I/O module)
- Recording of the terminal temperature for internal temperature compensation at connected thermocouples
- Connection method using push-in terminals

Maximum configuration per potential group

The number of I/O modules that can be used per potential group depends on the following factors:

1. Total power requirement of all I/O modules operated on this potential group
2. Total power requirement of all loads connected externally to this potential group

The total current calculated from the sum of 1 and 2 may not exceed 10 A.

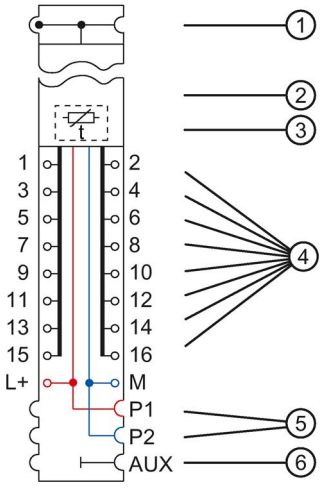
3.6.2 Connection

Pin assignment

Table 3- 6 Pin assignment for BaseUnit BU15-P16+A0+2D/T

Pin assignment for BaseUnit BU15-P16+A0+2D/T	
Terminal	**Descriptions**
1 to 16	Assignment is determined by the I/O module. See manual I/O Module (http://support.automation.siemens.com/WW/view/en/55679691/133300).
(AUX)	No access to the AUX busbar via terminals
L+, P1 / M, P2	L+: Rated supply voltage 24 V DC with max. 10 A M: Ground

Block diagram



① Backplane bus
② I/O module
③ Internal reference junction for temperature compensation
④ Terminals with connection to the I/O module
⑤ Interrupted voltage buses with connection to the terminals for infeed
⑥ Disconnected AUX busbar not connected to the terminals

Figure 3-12 Block diagram BU15-P16+A0+2D/T

3.6.3 Technical specifications

Technical specifications of the BaseUnit BU15-P16+A0+2D/T

	6ES7193-6BP00-0DA1
Product type designation	BU15-P16+A0+2D/T
Supply voltage	
Rated value (DC)	24 V
External fuse for power supply lines	Yes: 24 VDC / 10 A miniature circuit breaker with type B or C tripping characteristic
Current carrying capacity	
Current carrying capacity up to 60 °C, max.	10 A
Analog inputs	
Thermocouple (TC)	
Temperature compensation	
• Internal temperature compensation	Yes
Electrical isolation	
between backplane bus and supply voltage	Yes
between the potential groups	Yes
Isolation	
Isolation tested with	707 VDC (type test)
Dimensions	
Width	15 mm
Height	117 mm
Weights	
Weight, approx.	40 g

3.7 BU15-P16+A0+12B/T (BU type A1)

3.7.1 Product overview

Article number

6ES7193-6BP40-0BA1

View

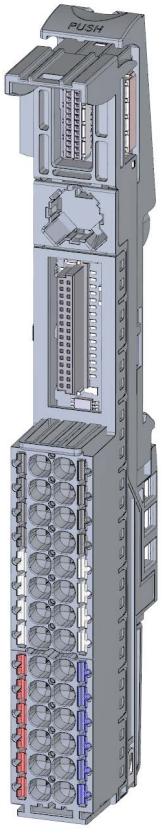


Figure 3-13 BaseUnit BU15-P16+A0+12B/T

Properties

- BaseUnit suitable for all I/O modules of BaseUnit type "A1". Can be recognized by the last two digits of the article number.

  Note

  Using another I/O module can trigger an internal, non-exchangeable fuse and you must exchange the terminal box.

  – Current-carrying capacity per process terminal (terminal 1 to 16): Max. 2 A
- The BaseUnit conducts the potential group further. The self-assembling voltage buses P1 and P2, and the AUX busbar are connected to the left-hand neighboring module (BaseUnit).
- No access to the AUX busbar via terminals
- 16 terminals to the process (assignment through the I/O module)
- 2x5 additional terminals for feeding a supply voltage up to 24 VDC/ 10 A. The additional terminals are not connected to the I/O module.
- Recording of the terminal temperature for internal temperature compensation at connected thermocouples
- Connection method using push-in terminals

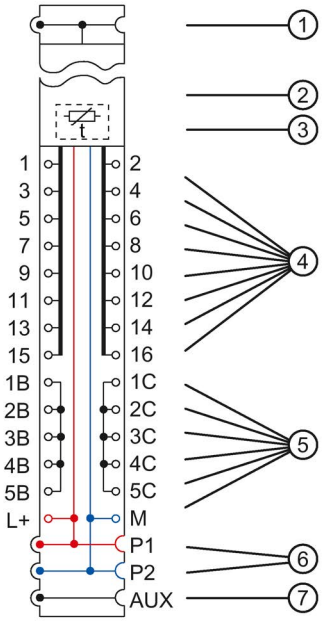
3.7.2 Connection

Pin assignment

Table 3- 7 Pin assignment for BaseUnit BU15-P16+A0+12B/T

Pin assignment for BaseUnit BU15-P16+A0+12B/T	
Terminal	**Descriptions**
1 to 16	Assignment is determined by the I/O module. See manual I/O Module (http://support.automation.siemens.com/WW/view/en/55679691/133300).
1B, 2B, 3B, 4B, 5B / 1C, 2C, 3C, 4C, 5C	2 x 5 add-on terminals for the infeed of a supply voltage up to 24 V DC with max. 10 A
(AUX)	No access to the AUX busbar via terminals
L+, P1 / M, P2	L+: Rated supply voltage 24 V DC with max. 10 A M: Ground

Block diagram



① Backplane bus
② I/O module
③ Internal reference junction for temperature compensation
④ Terminals with connection to the I/O module
⑤ Additional terminals for feeding an additional supply voltage
⑥ Connected voltage buses with connection to the terminals
⑦ Connected AUX busbar not connected to the terminals

Figure 3-14 Block diagram BU15-P16+A0+12B/T

3.7.3 Technical specifications

Technical specifications of the BaseUnit BU15-P16+A0+12B/T

	6ES7193-6BP40-0BA1
Product type designation	BU15-P16+A0+12B/T
Supply voltage	
Rated value (DC)	24 V
External fuse for power supply lines	Yes: 24 VDC / 10 A miniature circuit breaker with type B or C tripping characteristic
Current carrying capacity	
Current carrying capacity up to 60 °C, max.	10 A
Analog inputs	
Thermocouple (TC)	
Temperature compensation	
• Internal temperature compensation	Yes
Electrical isolation	
between backplane bus and supply voltage	Yes
Isolation	
Isolation tested with	707 VDC (type test)
Dimensions	
Width	15 mm
Height	141 mm
Weights	
Weight, approx.	50 g

3.8 BU15-P16+A0+2B/T (BU type A1)

3.8.1 Product overview

Article number

6ES7193-6BP00-0BA1

View

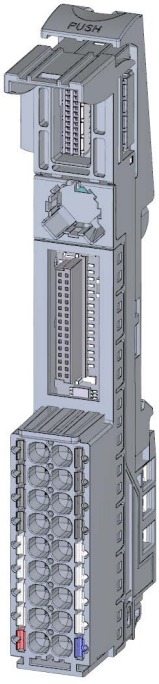


Figure 3-15 BaseUnit BU15-P16+A0+2B/T

Properties

- BaseUnit suitable for all I/O modules of BaseUnit type "A1". Can be recognized by the last two digits of the article number.

  Note

  Using another I/O module can trigger an internal, non-exchangeable fuse and you must exchange the terminal box.

  – Current-carrying capacity per process terminal (terminal 1 to 16): Max. 2 A
- The BaseUnit conducts the potential group further. The self-assembling voltage buses P1 and P2, and the AUX busbar are connected to the left-hand neighboring module (BaseUnit).
- No access to the AUX busbar via terminals
- 16 terminals to the process (assignment through the I/O module)
- Recording of the terminal temperature for internal temperature compensation at connected thermocouples
- Connection method using push-in terminals

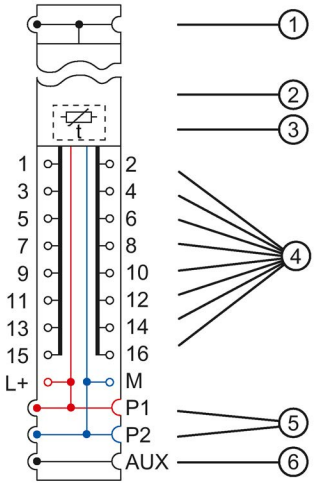
3.8.2 Connection

Pin assignment

Table 3- 8 Pin assignment for BaseUnit BU15-P16+A0+2B/T

Pin assignment for BaseUnit BU15-P16+A0+2B/T	
Terminal	**Descriptions**
1 to 16	Assignment is determined by the I/O module. See manual I/O Module (http://support.automation.siemens.com/WW/view/en/55679691/133300).
(AUX)	No access to the AUX busbar via terminals
L+, P1 / M, P2	L+: Rated supply voltage 24 V DC with max. 10 A M: Ground

Block diagram



① Backplane bus
② I/O module
③ Internal reference junction for temperature compensation
④ Terminals with connection to the I/O module
⑤ Connected voltage buses with connection to the terminals
⑥ Connected AUX busbar not connected to the terminals

Figure 3-16 Block diagram BU15-P16+A0+2B/T

3.8.3 Technical specifications

Technical specifications of the BaseUnit BU15-P16+A0+2B/T

	6ES7193-6BP00-0BA1
Product type designation	BU15-P16+A0+2B/T
Supply voltage	
Rated value (DC)	24 V
External fuse for power supply lines	Yes: 24 VDC / 10 A miniature circuit breaker with type B or C tripping characteristic
Current carrying capacity	
Current carrying capacity up to 60 °C, max.	10 A
Analog inputs	
Thermocouple (TC)	
Temperature compensation	
• Internal temperature compensation	Yes
Electrical isolation	
between backplane bus and supply voltage	Yes
Isolation	
Isolation tested with	707 VDC (type test)
Dimensions	
Width	15 mm
Height	117 mm
Weights	
Weight, approx.	40 g

3.9 BU20-P12+A4+0B (BU type B0)

3.9.1 Product overview

Article number

6ES7193-6BP20-0BB0

View

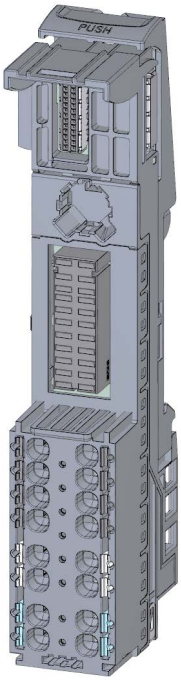


Figure 3-17 BaseUnit BU20-P12+A4+0B

Properties

- BaseUnit suitable for all I/O modules of the BaseUnit type "B0/B1". Can be recognized by the last two digits of the article number.
  - Current-carrying capacity per process terminal (terminal 1 to 12): Max. 5 A
- The BaseUnit conducts the potential group further. The self-assembling voltage buses P1 and P2, and the AUX busbar are connected to the left-hand neighboring module (BaseUnit).
- Access to the AUX busbar via terminals
- 12 terminals to the process (assignment with the I/O module)
- Connection method using push-in terminals

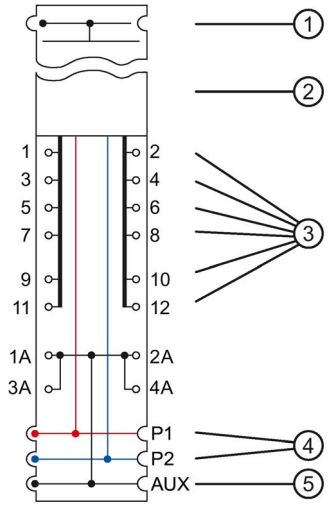
3.9.2 Connecting

Pin assignment

Table 3- 9 Pin assignment for BaseUnit BU20-P12+A4+0B

Pin assignment for BaseUnit BU20-P12+A4+0B	
Terminal	**Descriptions**
1 to 12	Assignment is determined by the I/O module. See manual I/O Module (http://support.automation.siemens.com/WW/view/en/55679691/133300).
1A, 2A, 3A, 4A, AUX	Protective conductor connection or voltage bus (freely usable up to 230 V AC/ DC with max 10 A). If you connect a voltage, it must belong to the same potential group as the rated supply voltage.

Block diagram



① Backplane bus
② I/O module
③ Terminals with connection to the I/O module
④ Connected voltage buses without connection to the terminals
⑤ Connected AUX busbar connected to the terminals

Figure 3-18 Block diagram BU20-P12+A4+0B

3.9.3 Technical specifications

Technical specifications of the BaseUnit BU20-P12+A4+0B

	6ES7193-6BP20-0BB0
Product type designation	BU20-P12+A4+0B
Supply voltage	
Rated value (DC)	24 V
Rated value (AC)	230 V; 110 V
Current carrying capacity	
Current carrying capacity up to 60 °C, max.	10 A
Electrical isolation	
between backplane bus and supply voltage	Yes
Isolation	
Isolation tested with	3250 VDC
Dimensions	
Width	20 mm
Height	117 mm
Weights	
Weight, approx.	48 g

3.10 BU20-P12+A0+4B (BU type B1)

3.10.1 Product overview

Article number

6ES7193-6BP20-0BB1

View

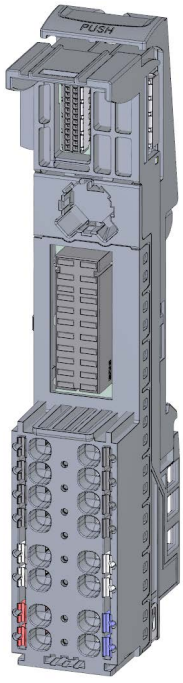


Figure 3-19 BaseUnit BU20-P12+A0+4B

Properties

- BaseUnit suitable for all I/O modules of the BaseUnit type "B1". Can be recognized by the last two digits of the article number.
  - Current-carrying capacity per process terminal (terminal 1 to 12): Max. 5 A
- The BaseUnit conducts the potential group further. The self-assembling voltage buses P1 and P2, and the AUX busbar are connected to the left-hand neighboring module (BaseUnit).
- No access to the power and AUX busbars via terminals
- 12 terminals to the process (assignment with the I/O module)
- Connection method using push-in terminals

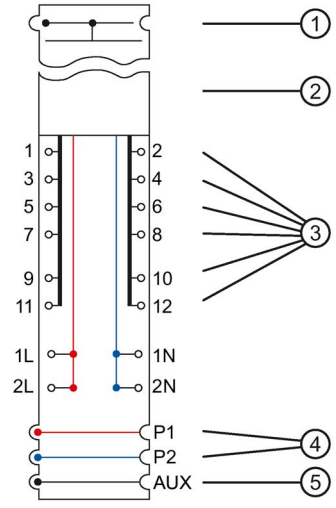
3.10.2 Connecting up

Pin assignment

Table 3- 10 Pin assignment for BaseUnit BU20-P12+A0+4B

Pin assignment for BaseUnit BU20-P12+A0+4B	
Terminal	**Descriptions**
1 to 12	Assignment is determined by the I/O module. See manual I/O Module
(AUX)	No access to the AUX busbar via terminals
1L, 2L, (P1) / 1N, 2N, (P2)	1L, 2L: Rated supply voltage up to 230 V AC with max. 10 A 1N, 2N: Neutral/ground

Block diagram



① Backplane bus
② I/O module
③ Terminals with connection to the I/O module
④ Connected voltage buses without connection to the terminals
⑤ Connected AUX busbar not connected to the terminals

Figure 3-20 Block diagram BU20-P12+A0+4B

3.10.3 Technical specifications

Technical specifications of the BaseUnit BU20-P12+A0+4B

	6ES7193-6BP20-0BB1
Product type designation	BU20-P12+A0+4B
Supply voltage	
Rated value (DC)	24 V
Rated value (AC)	230 V; 110 V
Current carrying capacity	
Current carrying capacity up to 60 °C, max.	10 A
Electrical isolation	
between backplane bus and supply voltage	Yes
between process terminals and supply voltage	Yes
between Powerbus and supply voltage	Yes
Isolation	
Isolation tested with	3250 VDC
Dimensions	
Width	20 mm
Height	117 mm
Weights	
Weight, approx.	48 g

3.11 BU20-P6+A2+4D (BU type C0)

3.11.1 Product overview

Article number

6ES7193-6BP20-0DC0

View

Figure 3-21 BaseUnit BU20-P6+A2+4D

Properties

- BaseUnit suitable for all I/O modules of BaseUnit type "C0/C1". Can be recognized by the last two digits of the article number.
  - Supply voltage (terminal 1L, 2L / 1N, 2N): Max. 230 V AC/10 A
  - Current-carrying capacity per process terminal (terminal 1 to 4): Max. 5 A
  - Current carrying capacity per process terminal (terminal 5 and 6): Max. 10 A
- The BaseUnit opens up a new potential group by means of the inserted I/O module. The self-assembling voltage buses P1 and P2, and the AUX busbar are interrupted to the left-hand neighboring module (BaseUnit, interface module).
- Access to the AUX busbar via terminals
- 6 terminals to the process (assignment with the I/O module)
- Two AUX terminals for connecting a PE terminal or potential. The AUX busbar is not connected to the I/O module.
- Connection method using push-in terminals

Maximum configuration per potential group

The number of I/O modules that can be used per potential group depends on the following factors:

1. Total power requirement of all I/O modules operated on this potential group
2. Total power requirement of all loads connected externally to this potential group

The total current calculated from the sum of 1 and 2 may not exceed 10 A.

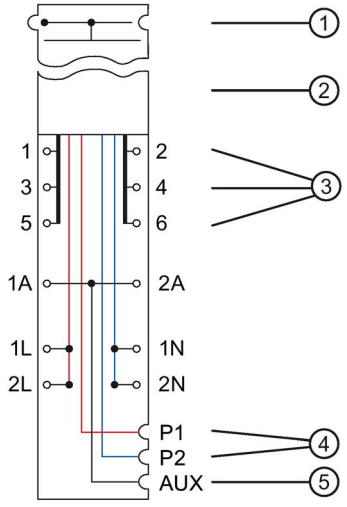
3.11.2 Connecting

Pin assignment

Table 3- 11 Pin assignment for BaseUnit BU20-P6+A2+4D

Pin assignment for BaseUnit BU20-P12+A2+4D	
Terminal	**Descriptions**
1 to 6	Assignment is determined by the I/O module. See manual I/O Module (http://support.automation.siemens.com/WW/view/en/55679691/133300).
1A, 2A, AUX	Protective conductor connection or voltage bus freely usable up to 230 V AC/ DC with max 10 A. If you connect a voltage, it must belong to the same potential group as the rated supply voltage.
1L, 2L, (P1) / 1N, 2N, (P2)	1L, 2L: Rated supply voltage up to 230 V AC with max. 10 A 1N, 2N: Neutral/ground

Block diagram



① Backplane bus
② I/O module
③ Terminals with connection to the I/O module
④ Interrupted voltage buses with connection to the terminals for infeed (via the plugged-in I/O module)
⑤ Disconnected AUX busbar connected to the terminals

Figure 3-22 Block diagram BU20-P6+A2+4D

3.11.3 Technical specifications

Technical specifications of the BaseUnit BU20-P6+A2+4D

	6ES7193-6BP20-0DC0
Product type designation	BU20-P6+A2+4D
Supply voltage	
Rated value (DC)	24 V; 30 V
Rated value (AC)	230 V; 110 V
External fuse for power supply lines	Yes; 10 A miniature circuit breaker with type B or C tripping characteristic for the respective rated supply voltage
Current carrying capacity	
Current carrying capacity up to 60 °C, max.	10 A
Electrical isolation	
between backplane bus and supply voltage	Yes
between process terminals and supply voltage	Yes
Isolation	
Isolation tested with	3250 VDC
Dimensions	
Width	20 mm
Height	117 mm
Weights	
Weight, approx.	47 g

3.12 BU20-P6+A2+4B (BU type C1)

3.12.1 Product overview

Article number

6ES7193-6BP20-0BC1

View

Figure 3-23 BaseUnit BU20-P6+A2+4B

Properties

- BaseUnit suitable for all I/O modules of BaseUnit type "C0/C1". Can be recognized by the last two digits of the article number.
  - Current-carrying capacity per process terminal (terminal 1 to 4): Max. 5 A
  - Current carrying capacity per process terminal (terminal 5 and 6): Max. 10 A
- The BaseUnit conducts the potential group further. The self-assembling voltage buses P1 and P2, and the AUX bus are connected to the left-hand neighboring module (BaseUnit).
- Access to the AUX busbar via terminals
- 6 terminals to the process (assignment with the I/O module)
- Two AUX terminals for connecting a PE terminal or potential. The AUX busbar is not connected to the I/O module.
- Connection method using push-in terminals

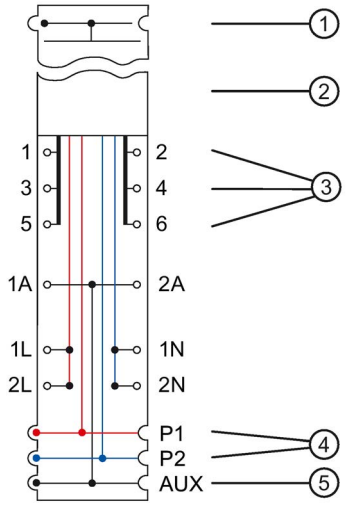
3.12.2 Connecting

Pin assignment

Table 3- 12 Pin assignment for BaseUnit BU20-P6+A2+4B

Pin assignment for BaseUnit BU20-P12+A2+4B	
Terminal	**Descriptions**
1 to 6	Assignment is determined by the I/O module. See manual I/O Module (http://support.automation.siemens.com/WW/view/en/55679691/133300).
1A, 2A, AUX	Protective conductor connection or voltage bus freely usable up to 230 V AC/ DC with max 10 A. If you connect a voltage, it must belong to the same potential group as the rated supply voltage.
1L, 2L, (P1) / 1N, 2N, (P2)	1L, 2L: Rated supply voltage up to 230 V AC with max. 10 A 1N, 2N: Neutral/ground

Block diagram



① Backplane bus
② Power module
③ Terminals with connection to the I/O module
④ Connected voltage buses with connection to the terminals for infeed (via the plugged-in I/O module)
⑤ Connected AUX busbar connected to the terminals

Figure 3-24 Block diagram BU20-P6+A2+4B

3.12.3 Technical specifications

Technical specifications of the BaseUnit BU20-P6+A2+4B

	6ES7193-6BP20-0BC1
Product type designation	BU20-P6+A2+4B
Supply voltage	
Rated value (DC)	24 V; 30 V
Rated value (AC)	230 V; 110 V
Current carrying capacity	
Current carrying capacity up to 60 °C, max.	10 A
Electrical isolation	
between backplane bus and supply voltage	Yes
between process terminals and supply voltage	Yes
Isolation	
Isolation tested with	3250 VDC
Dimensions	
Width	20 mm
Height	117 mm
Weights	
Weight, approx.	47 g

3.13 BU20-P12+A0+0B (BU type D0)

3.13.1 Product overview

Article number

6ES7193-6BP00-0BD0

View

Figure 3-25 BaseUnit BU20-P12+A0+0B

Properties

- BaseUnit suitable for all I/O modules of the BaseUnit type "D0". Can be recognized by the last two digits of the article number.
  - Current-carrying capacity per process terminal (terminal 1 to 12): Max. 5 A
- The BaseUnit conducts the potential group further. The self-assembling voltage buses P1 and P2, and the AUX busbar are connected to the left-hand neighboring module (BaseUnit).
- No access to the power and AUX busbars via terminals
- 12 terminals to the process (assignment with the I/O module)
- Connection method using push-in terminals

Note

The shield connection (shield support and shield terminal) is not intended for BaseUnit BU20-P12+A0+0B and must not be installed.

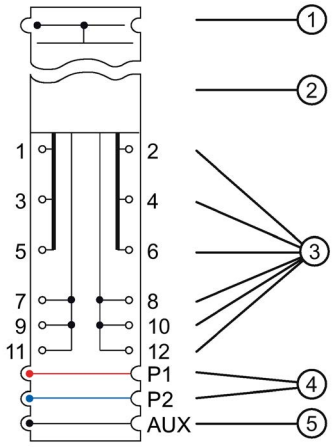
3.13.2 Connecting

Pin assignment

Table 3- 13 Pin assignment for BaseUnit BU20-P12+A0+0B

Pin assignment for BaseUnit BU20-P12+A0+0B	
Terminal	**Descriptions**
1 to 12	Assignment is determined by the I/O module. See manual I/O Module (http://support.automation.siemens.com/WW/view/en/55679691/133300)

Block diagram



① Backplane bus
② I/O module
③ Terminals with connection to the I/O module
④ Connected voltage buses without connection to the terminals
⑤ Connected AUX busbar not connected to the terminals

Figure 3-26 Block diagram BU20-P12+A0+0B

3.13.3 Technical specifications

Technical specifications of the BaseUnit BU20-P12+A0+0B

	6ES7193-6BP00-0BD0
Product type designation	BU20-P12+A0+0B
Supply voltage	
Rated value (AC)	400 V; 230 VAC (L1/ N)
Current carrying capacity	
Current carrying capacity up to 60 °C, max.	5 A
Electrical isolation	
between backplane bus and supply voltage	Yes
Isolation	
Isolation tested with	3250 VDC
Dimensions	
Width	20 mm
Height	117 mm
Weights	
Weight, approx.	47 g

3.14 BU20-P8+A4+0B (BU type F0)

3.14.1 Product overview

Note when you use the AUX terminals as a PE busbar:

NOTICE
If AUX is used as PE, AUX must be identified as green-yellow (e.g., gn/ye color-coded labels). These identifications must be removed if the terminals are no longer used as PE.

Article number

6ES7193-6BP20-0BF0

View

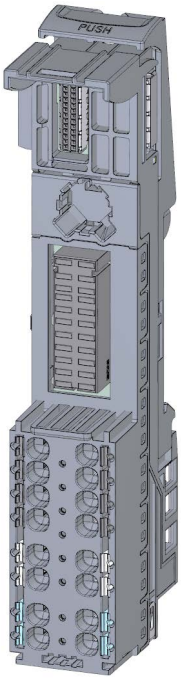


Figure 3-27 BaseUnit BU20-P8+A4+0B

Properties

- BaseUnit suitable for all I/O modules of the BaseUnit type "F0". Can be recognized by the last two digits of the order number.
  - Current carrying capacity per process terminal (terminals 1 to 4 and 9 to 12): Max. 5 A
- The BaseUnit loops the potential group through with the self-assembling voltage buses P1, P2 and the AUX bus of the left-hand neighboring module (BaseUnit).
- Access to the AUX busbar via terminals 1A to 4A
- 8 terminals to the process (occupied by the I/O module)
- Connection method using push-in terminals

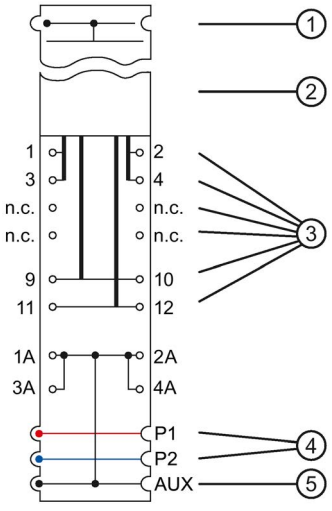
3.14.2 Connecting up

Pin assignment

Terminals of a potential group	Fail-safe module Overvoltage category 3	Non-fail-safe module Overvoltage category 2
1 to 4	Up to 230 VAC/VDC (AC only one phase) Assignment is determined by the I/O module. See manual I/O Module (http://support.automation.siemens.com/WW/view/en/55679691/133300)	
9 to 12	Safe extra low voltage SELV/PELV Assignment is determined by the I/O module. See manual I/O Module (http://support.automation.siemens.com/WW/view/en/55679691/133300)	
P1, P2, AUX (1A to 4A)	SELV/PELV (max. 10 A)	SELV/PELV or Up to 230 VAC/VDC (AC only one phase) (max. 10 A)

The AUX terminals may only be used with an identical voltage or PE associated with the supply voltage.

Block diagram



① Backplane bus
② I/O module
③ Terminals with connection to the I/O module
④ Connected voltage buses without connection to the terminals
⑤ Connected AUX busbar connected to the terminals

Figure 3-28 Block diagram BU20-P8+A4+0B

3.14.3 Technical specifications

Technical specifications of the BaseUnit BU20-P8+A4+0B

	6ES7193-6BP20-0BF0
Product type designation	BU20-P8+A4+0B
Supply voltage	
Rated value (DC)	See manual
Rated value (AC)	See manual
Current carrying capacity	
Current carrying capacity up to 60 °C, max.	10 A
Electrical isolation	
between backplane bus and supply voltage	Yes
between process terminals and supply voltage	Yes
between Powerbus and supply voltage	Yes
Insulation	
Insulation tested with	3250 VDC 1 min (type test); 2545 VDC 2 s (routine test)
Dimensions	
Width	20 mm
Height	117 mm
Weights	
Weight, approx.	48 g

BaseUnits for motor starters

4

4.1 Introduction

Properties of the infeed bus

- The infeed bus is set up by connecting the BaseUnits, and wiring takes place automatically
- The infeed bus distributes the energy to the SIMATIC ET 200SP motor starter within one load group
- The max. current carrying capacity is up to 32 A (3-phase)
  - With infeed (for one load group) and motor connection
  - Infeed bus: 3-pole + PE
  - The voltage range for power infeed is 48 … 500 V AC

You must observe the deratings depending on the configuration.

Properties of the self-assembling voltage bus (power bus)

- Maximum current: 7 A
- Rated voltage: 24 V DC

You must observe the deratings depending on the configuration.

AUX1 bus

The AUX1 bus is not supported in the BaseUnits of the SIMATIC ET 200SP motor starters.

You can find assembly rules of the BaseUnits for the SIMATIC ET 200SP motor starter in the System Manual SIMATIC ET 200SP motor starters.

4.2 BU30-MS1 - BaseUnit with 24 V DC and 500 V AC infeed

4.2.1 Product overview

Article number

3RK1908-0AP00-0AP0

View

Figure 4-1 BaseUnit with 24 V DC and 500 V AC infeed

Properties

- BaseUnit suitable for all fail-safe and non-fail-safe SIMATIC ET 200SP High Feature motor starters
- The BaseUnit opens a new potential group (24 V DC). The power buses P1 and P2 are interrupted to the left-hand neighboring module (BaseUnit, interface module/CPU).
- The BaseUnit opens a new potential group (500 V DC). The infeed bus L1 (L), L2 (N), L3, PE is interrupted to the left-hand BaseUnit of the ET 200SP motor starter.
- Connection method using push-in terminals
- The touch protection cover for the infeed bus (3RK1908-1DA00-2BP0) is included in the scope of delivery.
- The fail-safe input F-DI of the fail-safe motor starter is connected to the power bus.

Maximum configuration per voltage group (24 V DC)

The number of I/O modules that can be used per potential group depends on the following factors:

1. Total power requirement of all I/O modules operated on this potential group
2. Total power requirement of all loads connected externally to this potential group

The total overall current calculated according to 1. and 2. must not exceed 7 A.

Maximum configuration of the infeed bus (500 V AC)

The number of motor starters that can be used per infeed group depends on the following factors:

1. Total current requirement of all motor starters operated on this infeed group.
2. Ambient temperature and installation type in which the motor starters are operated. You can find further information in the derating table in the Manual SIMATIC ET 200SP motor starters (https://support.industry.siemens.com/cs/ww/en/view/109479973).

4.2.2 Connection

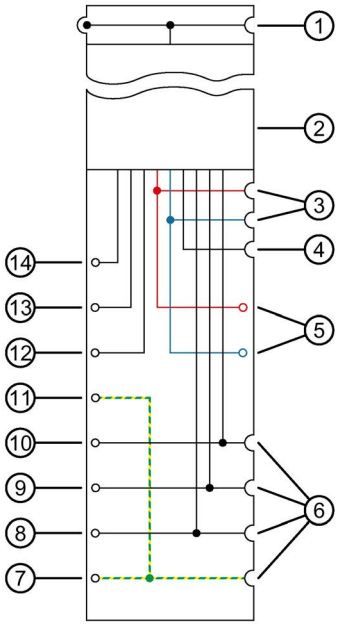
Pin assignment

Table 4- 1 Pin assignment for BaseUnit with 24 V DC and 500 V AC infeed

Pin assignment for BaseUnit with 24 V DC and 500 V AC infeed	
Terminal	**Descriptions**
L1(L), L2(N), L3, PE	Power supply Assignment is determined by the motor starter. See Manual ET 200SP motor starters (https://support.industry.siemens.com/cs/ww/en/view/109479973).
T1, T2, T3, PE	Motor feeder
24 V DC, M	24 V DC: Supply voltage 24 V DC with max. 7 A M: Ground

Block diagram

The figure below shows the block diagram of the BaseUnit with 24 V DC and 500 V AC infeed.



① Backplane bus
② Motor starter module
③ Interrupted power buses 24 V DC, M
④ Interrupted AUX bus
⑤ Terminals for 24 V DC and ground M
⑥ Interrupted busbars for the infeed system L1(L), L2(N), L3, PE
⑦ Infeed terminal for protective ground PE
⑧ Infeed terminal L3
⑨ Infeed terminal L2(N)
⑩ Infeed terminal L1(L)
⑪ Terminal for protective ground PE
⑫ Terminal T3
⑬ Terminal T2
⑭ Terminal T1

Figure 4-2 Block diagram BaseUnit with 24 V DC and 500 V AC infeed

4.2.3 Technical specifications

Technical specifications of the BaseUnit with 24 V DC and 500 V AC infeed

	3RK1908-0AP00-0AP0
Product type designation	BU30-MS1
Galvanic isolation	
Galvanic isolation between backplane bus and supply voltage	Yes
Insulation tested with	2500 V AC
Rated operating voltage	24 V DC
Max. operating current	7 A (observe derating)
Rated insulation voltage in accordance with IEC 60947-1	500 V
Impulse withstand voltage/rated value U_{imp} according to IEC 60947-1	6 kV
Operating voltage range	48 ... 500 V AC
Max. current-carrying capacity	32 A (observe derating)
Isolating function between the infeed terminals L1(L), L2 (N), L3 and motor feeder terminals T1, T2, T3 for motor starters in parking position, or removed motor starters: impulse withstand voltage/rated value Uimp according to IEC 60947-1	6 kV
Wiring	
Push-in	Required tools for releasing: Standard screwdriver size 1 (SZF1 - 0.6x3.5)
Dimensions	
Width	30 mm
Height	215 mm
Weights	
Weight, approx.	164 g

4.3 BU30-MS2 - BaseUnit with 500 V AC infeed

4.3.1 Product overview

Article number

3RK1908-0AP00-0CP0

View

Figure 4-3 BaseUnit with 500 V AC infeed

Properties

- BaseUnit suitable for all fail-safe and non-fail-safe SIMATIC ET 200SP High Feature motor starters
- The BaseUnit handles the potential group (P1, P2) of the left-hand neighboring module.
- The BaseUnit opens a new 500 V AC infeed group. The potential group (24 V DC) is looped through.
- Connection method using push-in terminals
- The touch protection cover for the infeed bus is included in the scope of delivery.
- The fail-safe input F-DI of the fail-safe motor starter is connected to the power bus.

Maximum configuration of the infeed bus (500 V AC)

The number of motor starters that can be used per infeed group depends on the following factors:

1. Total current requirement of all motor starters operated on this infeed group.
2. Ambient temperature and installation type in which the motor starters are operated. You can find further information in the derating table in the Manual SIMATIC ET 200SP motor starters.

4.3.2 Connection

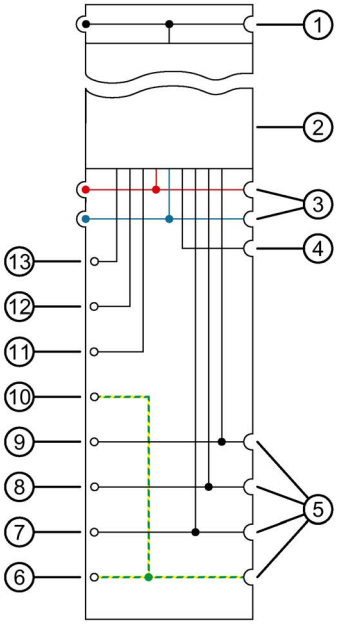
Pin assignment

Table 4- 2 Pin assignment for BaseUnit with 500 V AC infeed

Pin assignment for BaseUnit with 500 V AC infeed	
Terminal	**Descriptions**
L1(L), L2(N), L3, PE	Power supply Assignment is determined by the motor starter. See Manual ET 200SP motor starters (https://support.industry.siemens.com/cs/ww/en/view/109479973).
T1, T2, T3, PE	Motor feeder

Block diagram

The figure below shows the block diagram of the BaseUnit with 500 V AC infeed.



① Backplane bus
② Motor starter module
③ Connected power buses 24 V DC, M
④ Interrupted AUX bus
⑤ Interrupted busbars for the infeed system L1(L), L2(N), L3, PE
⑥ Infeed terminal for protective ground PE
⑦ Infeed terminal L3
⑧ Infeed terminal L2(N)
⑨ Infeed terminal L1(L)
⑩ Terminal for protective ground PE
⑪ Terminal T3
⑫ Terminal T2
⑬ Terminal T1

Figure 4-4 Block diagram BaseUnit with 500 V AC infeed

4.3.3 Technical specifications

Technical specifications of the BaseUnit with 500 V AC infeed

	3RK1908-0AP00-0CP0
Product type designation	BU30-MS2
Galvanic isolation	
Galvanic isolation between backplane bus and supply voltage	Yes
Insulation tested with	2500 V AC
Rated operating voltage	24 V DC
Max. operating current	7 A (observe derating)
Rated insulation voltage in accordance with IEC 60947-1	500 V
Impulse withstand voltage/rated value U_{imp} according to IEC 60947-1	6 kV
Operating voltage range	48 ... 500 V AC
Max. current-carrying capacity	32 A (observe derating)
Isolating function between the infeed terminals L1(L), L2 (N), L3 and motor feeder terminals T1, T2, T3 for motor starters in parking position, or removed motor starters: impulse withstand voltage/rated value Uimp according to IEC 60947-1	6 kV
Wiring	
Push-in	Required tools for releasing: Standard screwdriver size 1 (SZF1 - 0.6x3.5)
Dimensions	
Width	30 mm
Height	215 mm
Weight, approx.	160 g

4.4 BU30-MS3 - BaseUnit with 24 V DC infeed

4.4.1 Product overview

Article number

3RK1908-0AP00-0BP0

View

Figure 4-5 BaseUnit with 24 V DC infeed

Properties

- BaseUnit suitable for all fail-safe and non-fail-safe SIMATIC ET 200SP High Feature motor starters
- The BaseUnit opens a new potential group (24 V DC). The power buses P1 and P2 are interrupted to the left-hand neighboring module (BaseUnit, interface module/CPU).
- This BaseUnit handles the infeed bus (500 V AC) of the left-hand BaseUnit and loops this through.
- Connection method using push-in terminals
- The touch protection cover for the infeed bus is not included in the scope of delivery.
- The fail-safe input F-DI of the fail-safe motor starter is connected to the power bus.

Maximum configuration per voltage group (24 V DC)

The number of I/O modules that can be used per potential group depends on the following factors:

1. Total power requirement of all I/O modules operated on this potential group
2. Total power requirement of all loads connected externally to this potential group

The total overall current calculated according to 1. and 2. must not exceed 7 A.

4.4.2 Connection

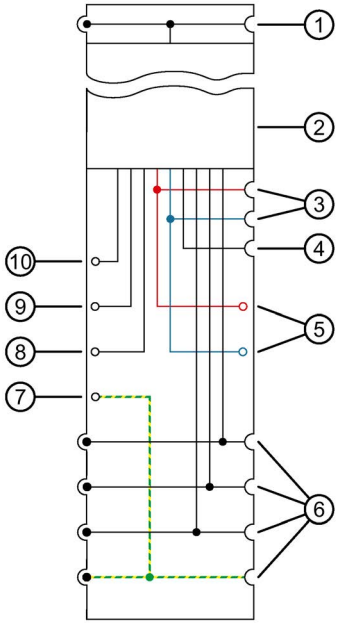
Pin assignment

Table 4- 3 Pin assignment for BaseUnit with 24 V DC infeed

Pin assignment for BaseUnit with 24 V DC infeed	
Terminal	**Descriptions**
T1, T2, T3, PE	Motor feeder
24 V DC, M	24 V DC: Rated supply voltage 24 V DC with max. 7 A M: Ground

Block diagram

The figure below shows the three-phase connection with 24 V infeed and mains infeed.



① Backplane bus
② Motor starter module
③ Interrupted power buses 24 V DC, M
④ Interrupted AUX bus
⑤ Terminal for 24 V DC and ground M
⑥ Connected busbars for the infeed system L1(L), L2(N), L3, PE
⑦ Terminal for protective ground PE
⑧ Terminal T3
⑨ Terminal T2
⑩ Terminal T1

Figure 4-6 Block diagram BaseUnit with 24 V DC infeed

4.4.3 Technical specifications

Technical specifications of the BaseUnit with 24 V DC infeed

	3RK1908-0AP00-0BP0
Product type designation	BU30-MS3
Galvanic isolation	
Galvanic isolation between backplane bus and supply voltage	Yes
Insulation tested with	2500 V AC
Rated operating voltage	24 V DC
Max. operating current	7 A (observe derating)
Rated insulation voltage in accordance with IEC 60947-1	500 V
Impulse withstand voltage/rated value U_{imp} according to IEC 60947-1	6 kV
Operating voltage range	48 ... 500 V AC
Max. current-carrying capacity	32 A (observe derating)
Isolating function between the infeed terminals L1(L), L2 (N), L3 and motor feeder terminals T1, T2, T3 for motor starters in parking position, or removed motor starters: impulse withstand voltage/rated value Uimp according to IEC 60947-1	6 kV
Wiring	
Push-in	Required tools for releasing: Standard screwdriver size 1 (SZF1 - 0.6x3.5)
Dimensions	
Width	30 mm
Height	215 mm
Weight, approx.	152 g

4.5 BU30-MS4 - BaseUnit without infeed

4.5.1 Product overview

Article number

3RK1908-0AP00-0DP0

View

Figure 4-7 BaseUnit without infeed

Properties

- BaseUnit suitable for all fail-safe and non-fail-safe SIMATIC ET 200SP High Feature motor starters
- No new potential groups are opened with this BaseUnit.
- The potential group (24 V DC) is looped through.
- The infeed group (500 V AC) is looped through.
- Connection method using push-in terminals
- The touch protection cover for the infeed bus is not included in the scope of delivery.
- The fail-safe input F-DI of the fail-safe motor starter is connected to the power bus.

4.5.2 Connection

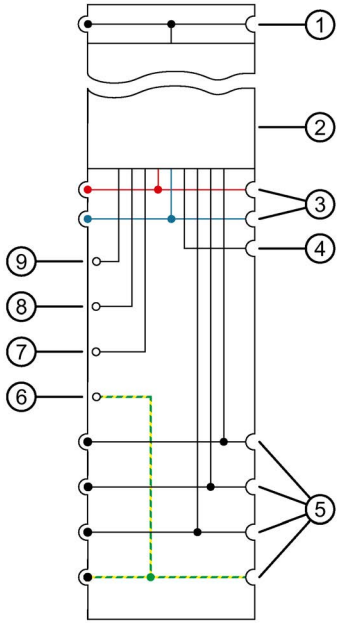
Pin assignment

Table 4- 4 Pin assignment for BaseUnit without infeed

Pin assignment for BaseUnit without infeed	
Terminal	**Descriptions**
T1, T2, T3, PE	Motor feeder

Block diagram

The figure below shows the block diagram of the BaseUnit without infeed.



① Backplane bus
② Motor starter module
③ Connected power buses 24 V DC, M
④ Interrupted AUX bus
⑤ Connected busbars for the infeed system L1(L), L2(N), L3, PE
⑥ Terminal for protective ground PE
⑦ Terminal T3
⑧ Terminal T2
⑨ Terminal T1

Figure 4-8 Block diagram BaseUnit without infeed

4.5.3 Technical specifications

Technical specifications of BaseUnit without infeed

	3RK1908-0AP00-0DP0
Product type designation	BU30-MS4
Galvanic isolation	
Galvanic isolation between backplane bus and supply voltage	Yes
Insulation tested with	2500 V AC
Rated operating voltage	24 V DC
Max. operating current	7 A (observe derating)
Rated insulation voltage in accordance with IEC 60947-1	500 V
Impulse withstand voltage/rated value U_{imp} according to IEC 60947-1	6 kV
Operating voltage range	48 ... 500 V AC
Max. current-carrying capacity	32 A (observe derating)
Isolating function between the infeed terminals L1(L), L2 (N), L3 and motor feeder terminals T1, T2, T3 for motor starters in parking position, or removed motor starters: impulse withstand voltage/rated value Uimp according to IEC 60947-1	6 kV
Wiring	
Push-in	Required tools for releasing: Standard screwdriver size 1 (SZF1 - 0.6x3.5)
Dimensions	
Width	30 mm
Height	215 mm
Weight, approx.	150 g

4.6 BU30-MS5 BaseUnit with 500 V AC infeed and F-DI

4.6.1 Product overview

Article number

3RK1908-0AP00-0EP0

View

Figure 4-9 BaseUnit with 500 V AC and F-DI

Properties

- BaseUnit suitable for all fail-safe SIMATIC ET 200SP High Feature motor starters
- The BaseUnit handles the potential group (P1, P2) of the left-hand neighboring module.
- The BaseUnit opens a new 500 V AC infeed group. The potential group (24 V DC) is looped through.
- The BaseUnit has one F-DI input terminal for fail-safe control signals of the motor starter. This signal is not forwarded to neighboring motor starters.
- Connection method using push-in terminals
- The touch protection cover for the infeed bus is included in the scope of delivery.

Maximum configuration of the infeed bus

The number of I/O modules that can be used per potential group depends on the following factors:

1. Total power requirement of all I/O modules operated on this potential group
2. Total power requirement of all loads connected externally to this potential group

The total overall current calculated according to 1. and 2. must not exceed 7 A.

Properties of the F-DI input

The fail-safe digital input "F-DI" has the following properties:

- Use of interconnection type 1oo1 possible
- Sink input
- Input delay 10 ms
- Status indication of input F-DI at motor starter module (green LED)

4.6.2 Connection

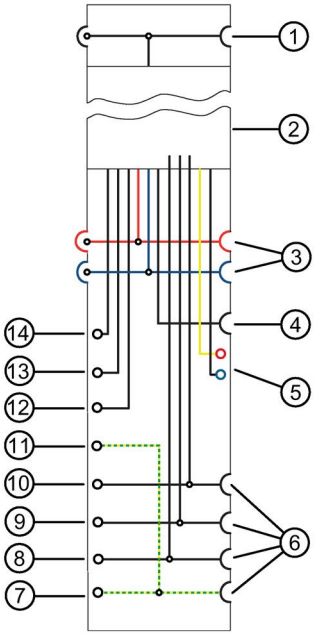
Pin assignment

Table 4- 5 Pin assignment for BaseUnit with 500 V AC infeed and F-DI

Pin assignment for BaseUnit with 500 V AC infeed and F-DI	
Terminal	**Descriptions**
T1, T2, T3, PE	Motor feeder
F-DI, M	F-DI: Connection of fail-safe signal M: Reference potential of fail-safe signal
L1(L), L2(N), L3, PE	Power supply Assignment is determined by the motor starter. See Manual ET 200SP motor starters (https://support.industry.siemens.com/cs/ww/en/view/109479973).

Block diagram

The figure below shows the two-phase connection with 500 V AC infeed and F-DI:



① Backplane bus
② Motor starter module
③ Connected power buses 24 V DC, M
④ Interrupted AUX bus
⑤ Safety input F-DI (P24/M)
⑥ Interrupted busbars for the infeed system L1(L), L2(N), L3, PE
⑦ Infeed terminal for protective ground PE
⑧ Infeed terminal L3
⑨ Infeed terminal L2(N)
⑩ Infeed terminal L1(L)
⑪ Terminal for protective ground PE
⑫ Terminal T3
⑬ Terminal T2
⑭ Terminal T1

Figure 4-10 BaseUnit block diagram with 500 V AC infeed and fail-safe input

4.6.3 Technical specifications

Technical specifications of the BaseUnit with 500 V AC infeed and F-DI

	3RK1908-0AP00-0EP0
Product type designation	BU30-MS5
Galvanic isolation	
Galvanic isolation between backplane bus and supply voltage	Yes
Insulation tested with	2500 V AC
Rated operating voltage	24 V DC
Max. operating current	7 A (observe derating)
Galvanic isolation between fail-safe digital input and supply voltage	Yes
Rated insulation voltage in accordance with IEC 60947-1	500 V
Impulse withstand voltage/rated value U_{imp} according to IEC 60947-1	6 kV
Operating voltage range	48 ... 500 V AC
Max. current-carrying capacity	32 A (observe derating)
Isolating function between the infeed terminals L1(L), L2 (N), L3 and motor feeder terminals T1, T2, T3 for motor starters in parking position, or removed motor starters: impulse withstand voltage/rated value Uimp according to IEC 60947-1	6 kV
Wiring	
Push-in	Required tools for releasing: Standard screwdriver size 1 (SZF1 - 0.6x3.5)
Dimensions	
Width	30 mm
Height	215 mm
Weight, approx.	152 g

4.7 BU30-MS6 BaseUnit without infeed and with F-DI

4.7.1 Product overview

Article number

3RK1908-0AP00-0FP0

View

Figure 4-11 BaseUnit without 500 V AC infeed, with F-DI

Properties

- BaseUnit suitable for all fail-safe SIMATIC ET 200SP High Feature motor starters
- The BaseUnit handles the potential group (P1, P2) of the left-hand neighboring module.
- This BaseUnit handles the potential group/infeed bus (500 V AC) of the left-hand BaseUnit and loops this through.
- The BaseUnit has one F-DI input terminal for fail-safe control signals of the motor starter. This signal is not forwarded to neighboring motor starters.
- Connection method using push-in terminals
- The touch protection cover for the infeed bus is not included in the scope of delivery.

Properties of the F-DI input

The fail-safe digital input "F-DI" has the following properties:

- Use of interconnection type 1oo1 possible
- Sink input
- Input delay 10 ms
- Status indication of input F-DI at motor starter module (green LED)

4.7.2 Connection

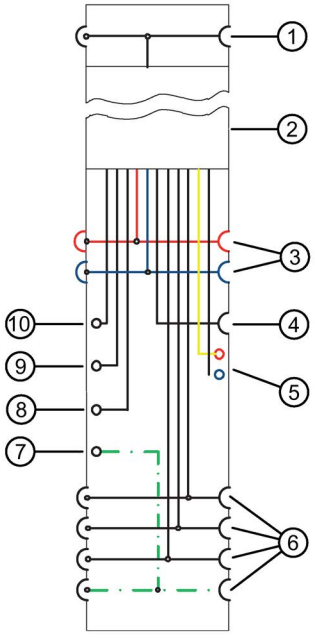
Pin assignment

Table 4- 6 Pin assignment for BaseUnit with 24 V DC infeed

Pin assignment for BaseUnit with 24 V DC infeed	
Terminal	**Descriptions**
T1, T2, T3, PE	Motor feeder
F-DI, M	F-DI: Connection of fail-safe signal M: Reference potential of fail-safe signal

Block diagram

The following figure shows the block diagram for the BaseUnit without infeed, but with fail-safe input:



① Backplane bus
② Motor starter module
③ Connected power buses 24 V DC, M
④ Interrupted AUX bus
⑤ Safety input F-DI (P24/M)
⑥ Connected busbars infeed system L1, L2, L3, PE
⑦ Terminal for protective ground PE
⑧ Terminal T3
⑨ Terminal T2
⑩ Terminal T1

Figure 4-12 Block diagram BaseUnit without infeed, with fail-safe input

4.7.3 Technical specifications

Technical specifications of BaseUnit without infeed, with F-DI

	3RK1908-0AP00-0FP0
Product type designation	BU30-MS6
Galvanic isolation	
Galvanic isolation between backplane bus and supply voltage	Yes
Insulation tested with	2500 V AC
Rated operating voltage	24 V DC
Max. operating current	7 A (observe derating)
Rated insulation voltage in accordance with IEC 60947-1	500 V
Galvanic isolation between fail-safe digital input and supply voltage	Yes
Impulse withstand voltage/rated value U_{imp} according to IEC 60947-1	6 kV
Operating voltage range	48 ... 500 V AC
Max. current-carrying capacity	32 A (observe derating)
Isolating function between the infeed terminals L1(L), L2 (N), L3 and motor feeder terminals T1, T2, T3 for motor starters in parking position, or removed motor starters: impulse withstand voltage/rated value Uimp according to IEC 60947-1	6 kV
Wiring	
Push-in	Required tools for releasing: Standard screwdriver size 1 (SZF1 - 0.6x3.5)
Dimensions	
Width	30 mm
Height	215 mm
Weight, approx.	152 g

Dimension drawings of I/O modules

A

Dimension drawing BU15-P16+A10+2D, BU15-P16+A10+2B, BU15-P16+A0+12D/T, BU15-P16+A0+12B/T

The figure below shows the dimension drawing of the BU15-P16+A10+2D with plugged-in I/O module as an example.

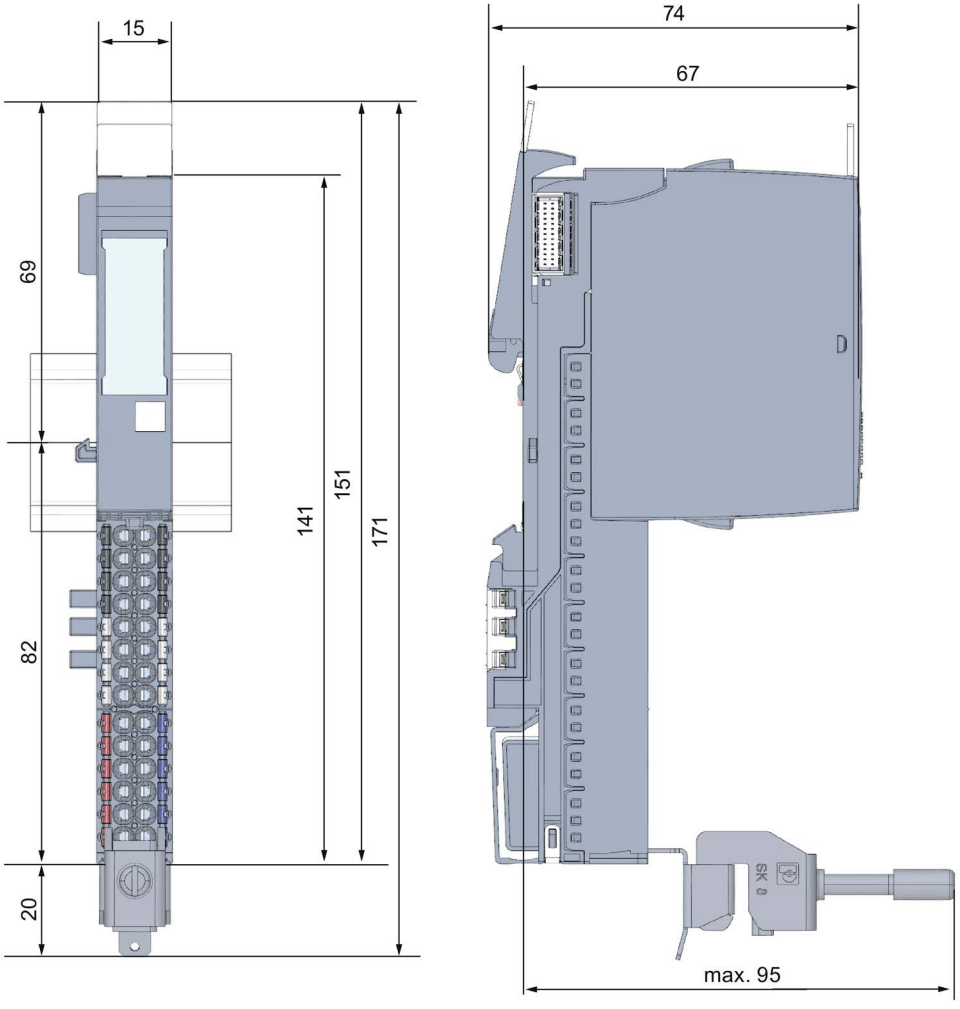


Figure A-1 Dimension drawing BU15-P16+A10+2D

Dimension drawing BU15-P16+A0+2D, BU15-P16+A0+2B, BU15-P16+A0+2D/T, BU15-P16+A0+2B/T

The figure below shows the dimension drawing of the BU15-P16+A0+2D with plugged-in I/O module as an example.

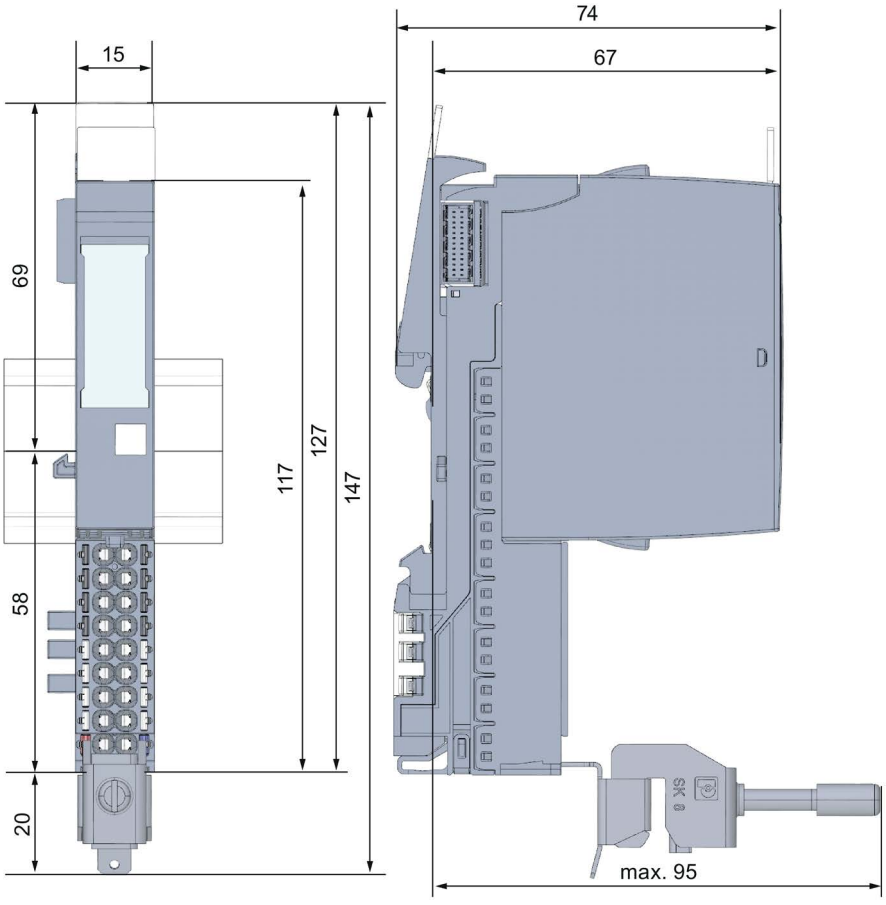


Figure A-2 Dimension drawing BU15-P16+A0+2D

Dimension drawing BU20-P6+A2+4D, BU20-P6+A2+4B, BU20-P12+A4+0B, BU20-P12+A0+0B, BU20-P12+A0+4B, BU20-P8+A4+0B

The figure below shows the dimension drawing of the BU20-P12+A4+0B with plugged-in I/O module as an example.

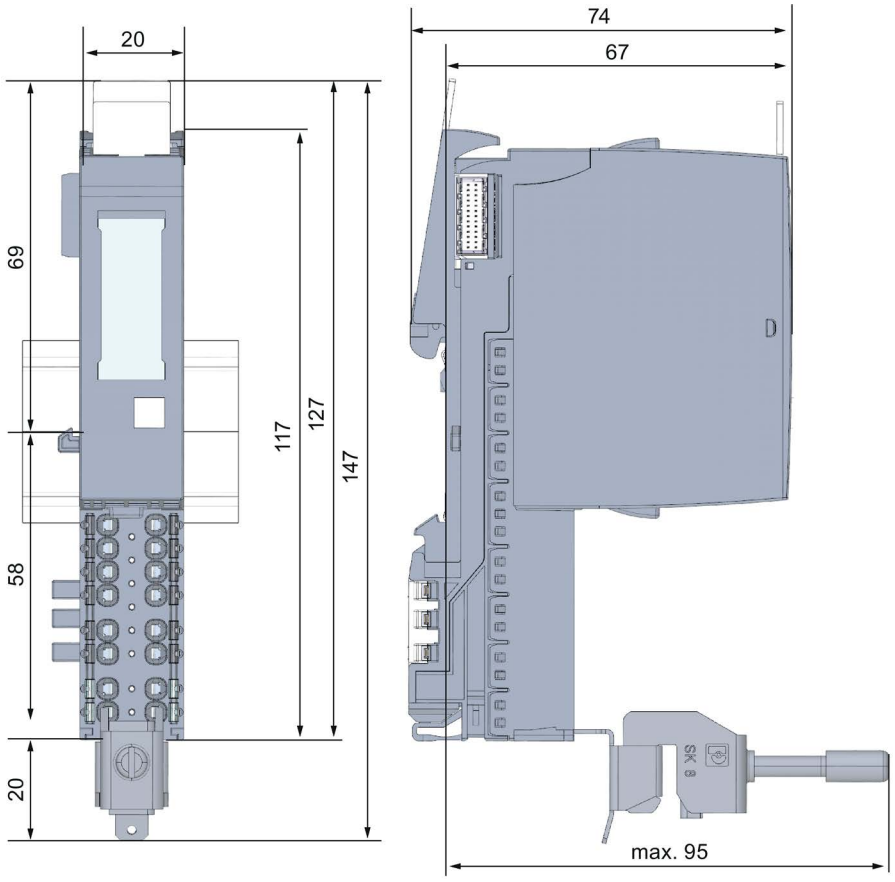


Figure A-3 Dimension drawing BU20-P12+A4+0B

Dimension drawing test probe for measurement tap

The figure below shows the dimension drawing of a suitable test probe for measurement tap at the BaseUnit.

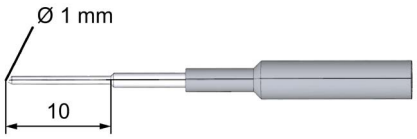


Figure A-4 Dimension drawing test probe

Dimension drawings of motor starters

B

Dimension drawing BU30-MS1, BU30-MS2, BU30-MS3, BU30-MS4, BU30-MS5, BU30-MS6

The figure below shows the dimension drawing of the BU30-MS-1 with plugged-in motor starter module as an example.

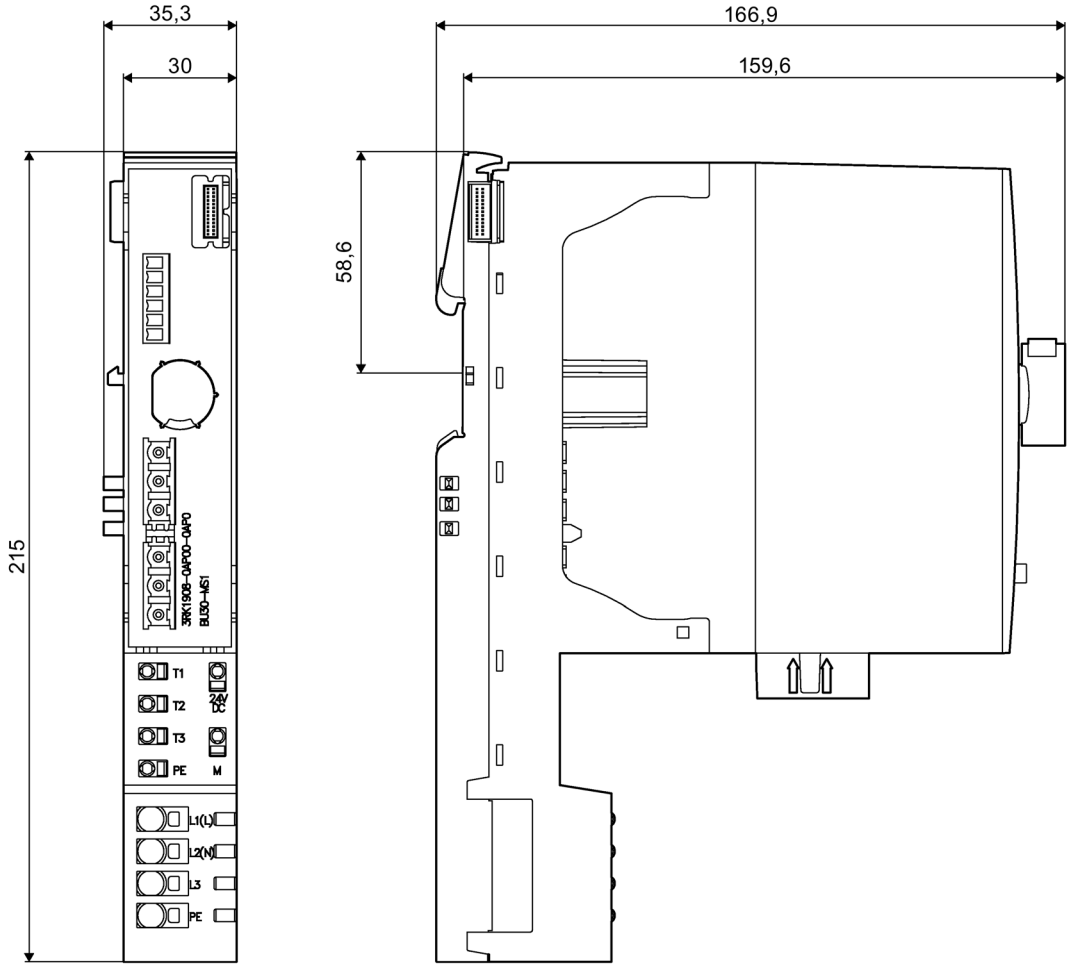


Figure B-1 Dimension drawing BU30-MS1