

Overview



SIMOTION D is available in different performance versions. This ensures the highest degree of scalability and flexibility. The individual versions SIMOTION D425 (BASIC Performance), SIMOTION D435 (STANDARD Performance) und SIMOTION D445 (HIGH Performance) differ in their PLC performance and Motion Control performance. In addition, the integral drive control can operate up to 6 SERVO axes in all SIMOTION D versions.

Additional drives can be operated by means of PROFIBUS or PROFINET and SINAMICS CU320 Control Units.

On the D445 and D435, these can be operated direct on the DRIVE-CLiQ with the CX32. Alternatively to the servo control, the speed control can be operated using a vector or U/f control.

Design

Interfaces

- Display, diagnostics
 - LED's for displaying of operating statuses and alarms
 - 3 measuring sockets
- Interfaces
 - 4 x DRIVE-CLiQ (6 x DRIVE-CLiQ with D445)
 - 2 x Industrial Ethernet
 - 2 x PROFIBUS DP
- On-board I/O
 - 8 digital inputs
 - 8 digital in/outputs
- Option Boards
 - Communication Board CBE30 for connection to PROFINET IO
 - Terminal Board TB30 for expansion by 4 digital inputs, 4 digital outputs, 2 analog inputs and 2 analog outputs
- other
 - Connecting terminals for the 24 V electronic power supply

Data storage/data backup

SIMOTION D425, D435 and D445 modules have 320 KB of non-volatile and battery-backed SRAM for retentive tag storage. This backup is stored for at least 5 days. There are two options for storing retentive data for a longer period:

- System commands for storing retentive data on the SIMOTION CF (compact flash card)
- Use of a battery module (combined battery/fan module already included in the scope of supply of a D445)

Runtime software, user data and user programs are saved retentively using a compact flash (CF) card.

Connectable I/O

PROFINET IO: (optionally via CBE30)

- SIMATIC ET 200S/pro distributed I/O
- Distributed drives with the SINAMICS CU320 Control Unit with CBE20 as well as SINAMICS S120 Power Modules with CU310PN

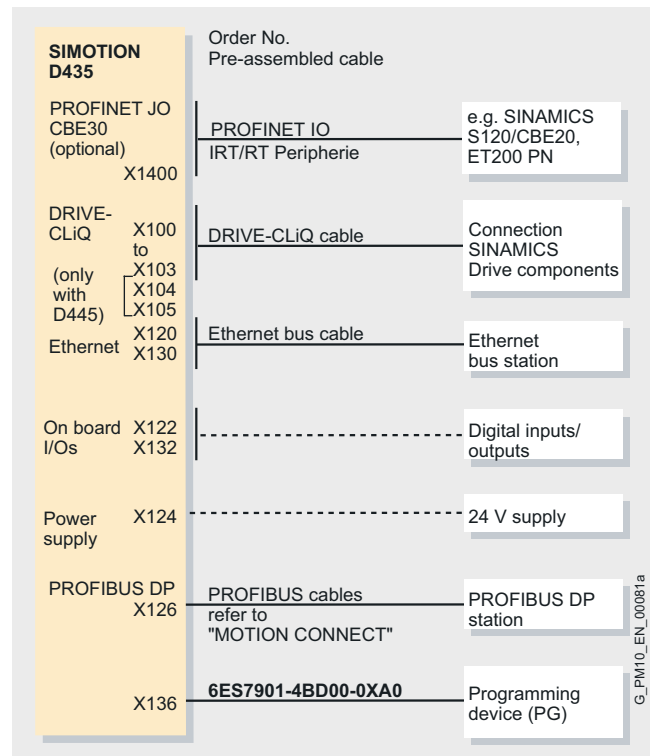
PROFIBUS DP:

- Certified PROFIBUS standard slaves (DP-V0, DP-V1, DP-V2)
- SIMATIC ET200S/M/X/eco/pro distributed I/O systems

DRIVE-CLiQ:

- Modules from the SINAMICS range
- DRIVE-CLiQ cables, which are required to connect line/motor modules to SIMOTION D, are supplied with the line/motor modules (standard length).

Integration



Connection overview SIMOTION D425/D435/D445

The maximum permissible cable lengths should be taken into account when planning the cable layout.

Functional faults can occur when using longer cables.

The permissible length of the PROFIBUS DP cables depends on the configuration.

SIMOTION D425/D435/D445

Technical specifications

SIMOTION	D425 – Basic Performance	D435 – Standard Performance	D445 – High Performance
Number of axes max.	16	32	64
Minimum interpolation cycle	2.0 ms	1.0 ms	0.5 ms
Integr. drive control (SERVO)	6	6	6
DRIVE-CLiQ interfaces	4	4	6
Ethernet interfaces	2	2	2
PROFIBUS interfaces	2	2	2
Battery/Fan module	optional	optional	1
Voltage supply			
• nominal value	24 V DC	24 V DC	24 V DC
• permiss. range	20.4 V ... 28.8 V	20.4 V ... 28.8 V	20.4 V ... 28.8 V
Current consumption, typ.	600 mA	600 mA	2 A
Making current, typ.	6.0 A	6.0 A	6.0 A
Power loss	15 W	15 W	50 W
Permiss. ambient temperature			
• Storage and transportation	-40 °C ... +70 °C (-40 °F ... 158 °F)	-40 °C ... +70 °C (-40 °F ... 158 °F)	-40 °C ... +70 °C (-40 °F ... 158 °F)
• Operation	0 °C ... +55 °C (32 °F ... +131 °F)	0 °C ... +55 °C (32 °F ... +131 °F)	0 °C ... +55 °C (32 °F ... +131 °F)
Permiss. relative air humidity (without condensation)	5% ... 95%	5% ... 95%	5% ... 95%
Air pressure	700 hPa ... 1060 hPa	700 hPa ... 1060 hPa	700 hPa ... 1060 hPa
Degree of protection according to IEC 529	IP20	IP20	IP20
Dimensions (W x H x D)	50 mm x 380 mm x 230 mm (1.97 in x 14.96 in x 9.1 in)	50 mm x 380 mm x 230 mm (1.97 in x 14.96 in x 9.1 in)	50 mm x 380 mm x 270 mm (1.97 in x 14.96 in x 10.63 in)
Weight			
• SIMOTION D	2500 g (5 lb)	2500 g (5 lb)	3600 g (8 lb)
• Compact Flash memory card	7 g (0.02 lb)	7 g (0.02 lb)	7 g (0.02 lb)
Digital inputs	8	8	8
Nominal value	24 V DC	24 V DC	24 V DC
• signal „1“	15 V ... 30 V	15 V ... 30 V	15 V ... 30 V
• signal „0“	-3 V ... +5 V	-3 V ... +5 V	-3 V ... +5 V
Galvanic isolation	Yes, in groups of 4	Yes, in groups of 4	Yes, in groups of 4
Typ. current consumption with signal level 1	10 mA at 24 V	10 mA at 24 V	10 mA at 24 V
Signal propagation delay	100 µs	100 µs	100 µs
Digital inputs/outputs (parameterizable)	8	8	8
When used as input			
• Input voltage			
- Nominal value	24 V DC	24 V DC	24 V DC
- signal „1“	15 V ... 30 V	15 V ... 30 V	15 V ... 30 V
- signal „0“	-3 V ... +5 V	-3 V ... +5 V	-3 V ... +5 V
• Galvanic isolation	No	No	No
• Typ. current consumption with signal level 1	10 mA at 24 V	10 mA at 24 V	10 mA at 24 V
• Signal propagation delay	100 µs (1 µs as probe)	100 µs (1 µs as probe)	100 µs (1 µs as probe)

Technical specifications (continued)

SIMOTION	D425 – Basic Performance	D435 – Standard Performance	D445 – High Performance
When used as output			
• Rated load voltage	24 V DC	24 V DC	24 V DC
- permissible range	20.4 V ... 28.8 V	20.4 V ... 28.8 V	20.4 V ... 28.8 V
• Output voltage			
- signal „1“, max.	15 V ... 30 V	15 V ... 30 V	15 V ... 30 V
• Galvanic isolation	No	No	No
• Current load, max.	500 mA per output	500 mA per output	500 mA per output
• Leakage current, max.	2 mA	2 mA	2 mA
• Output switching frequency			
- ohmic load	100 Hz	100 Hz	100 Hz
- inductive load	2 Hz	2 Hz	2 Hz
• Short-circuit protection	Yes	Yes	Yes
Backup real-time clock/SRAM			
• backup time, min.	5 days	5 days	5 days
• charging time, typ.	few minutes	few minutes	few minutes
Approbation according to cULus	http://www.ul.com File E164110	http://www.ul.com File E164110	http://www.ul.com File E164110

Ordering data

Order No.

SIMOTION D425	G	6AU1425-0AA00-0AA0
SIMOTION D435	G	6AU1435-0AA00-0AA1
SIMOTION D445	G	6AU1445-0AA00-0AA0
CompactFlash Card (CF) 512 MB with SINAMICS drive runtime software V2.4 and SIMOTION Kernel 4.0		6AU1400-2NA00-0AA0
SIMOTION Multi Axes Bundle D425 comprising of 1 piece of the following • SIMOTION D425 • CompactFlash Card 512 MB with Multi Axes Package license for D425 platform	G	6AU1425-0AA00-0CA0
SIMOTION Multi Axes Bundle D435 comprising of 1 piece of the following • SIMOTION D435 • CompactFlash Card 512 MB with Multi Axes Package license for D435 platform	G	6AU1435-0AA00-0CA1
Adapter for programming of CompactFlash Card (CF)		Please refer to „SIMOTION Software/ Engineering software“
Battery and Fan module • D425/D435 – optional • D445 – included in the scope of delivery		6FC5348-0AA01-0AA0

Accessories

Battery	6FC5247-0AA18-0AA0
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More information

More information

- on PROFIBUS DP, Industrial Ethernet and PROFINET can be found in the IK PI catalog or the interactive catalog under „Automation systems/SIMATIC NET communication systems“.
- on ordering data for SINAMICS drive components: Line Modules, Motor Modules, DRIVE-CLiQ cable etc. please refer to Catalog D21.1 (SINAMICS S120 Drive system) or the interactive catalog under „Drives/AC converters/...“.

G) Subject to export regulations: AL: N and ECCN: 4A994

CBE30 Communication Board

Overview



The CBE30 Communication Board for SIMOTION D425, D435 and D445 allows the SIMOTION to be connected to a PROFINET IO network. The SIMOTION D then assumes the function of a PROFINET IO Controller and can perform the following:

- PROFINET IO Controller functions
- 100 Mbit/s full duplex
- Supports real-time classes of PROFINET IO:
 - RT (RealTime)
 - IRT (Isochronous RealTime)
- Connects distributed IOs as PROFINET IO devices
- Connects drives as PROFINET IO devices using PROFIdrive compliant with specification V4
- Supports standard Ethernet communication (TCP/IP), e.g. for interfacing SIMOTION SCOUT, HMI or standard TCP, UDP communication, to devices of any other type
- Integrated 4-port switch with four RJ45 sockets based on the PROFINET ASIC ERTEC400. The optimum topology (line, star, tree) can therefore be configured without additional external switches.

Integration

The CBE30 Communication Board plugs into the option slot on the SIMOTION D Control Unit.

Technical specifications

Max. current requirement (at 24 V DC)	0.25 A
Permissible ambient temperature	
• Storage and transport	-40 °C to +70 °C (-40 °F to 158 °F)
• Operation	0 °C to +55 °C (32 °F to +131 °F)
Dimensions	113 mm x 77 mm (4.45 in x 3.03 in)
Weight, approx.	100 g (0.22 lb)

Ordering data

Order No.

CBE30 Communication Board	6FC5312-0FA00-0AA0
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Accessories

The following PROFINET cables and connectors are recommended:

Industrial Ethernet FC RJ45 Plug 145 (1 item)	6GK1901-1BB30-0AA0
Industrial Ethernet FC RJ45 Plug 145 (10 items)	6GK1901-1BB30-0AB0
Industrial Ethernet FC Stripping Tool	6GK1901-1GA00
Industrial Ethernet FC Standard Cable GP 2x2	6XV1840-2AH10
Industrial Ethernet FC Flexible Cable GP 2x2	6XV1870-2B
Industrial Ethernet FC Trailing Cable GP 2x2	6XV1870-2D
Industrial Ethernet FC Trailing Cable 2x2	6XV1840-3AH10
Industrial Ethernet FC Marine Cable 2x2	6XV1840-4AH10

For further details about connectors and cables, please refer to Catalog IK PI.