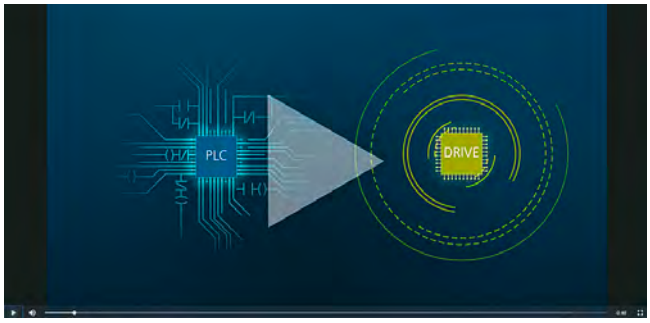
Overview



SIMATIC Drive Controller Video:
https://players.brightcove.net/1813624294001/70fecf0f-fbad-4fad-a077-d0e26af4d84c_default/index.html?videoId=6138318810001

The SIMATIC Drive Controller is available in two performance classes and meets even the most demanding Motion Control needs with the two fail-safe technology CPUs (CPU 1504D TF and CPU 1507D TF).

The fail-safe CPUs permit the processing of standard and safety programs on the same controller.

As technology CPUs, they also have extensive Motion Control functions such as:

- Speed and positioning axes
- Synchronous operation functions
  - Synchronizing with/without specifying the synchronization position
  - Actual value coupling
  - Shifting of the master value at following axis
  - Camming
  - Cross-PLC synchronous operation
- Cam
- Up to 4 encoder or measuring systems as actual position for position control
- Cyclic specification of the motion vector from the application (MotionIn interface)
- Kinematics
  - With up to 4 interpolating axes (e.g. cartesian portal, delta picker, roller picker, articulated arm, cylindrical robot, tripod picker and SCARA)
  - User-defined kinematics with up to 4 interpolating axes
  - Up to 6 interpolating axes with the additional Motion Control package "S7-1500T Motion Control KinPlus"
- External encoders, output cams and measuring inputs

The extensive integrated interfaces and technology I/Os are consistently available in all performance classes and enable the efficient implementation of compact and modular automation solutions with Motion Control based on the SINAMICS S120 drive system.

Thanks to fast system response times, the SIMATIC Drive Controller is the ideal solution wherever axes with high configuration limits and the shortest cycle times for high machine cycle rates and optimum product quality through deterministic and reproducible machine behavior are required.

The SIMATIC Drive Controller is configured in TIA Portal V16 or higher with the SIMATIC STEP 7 Professional engineering software and SINAMICS Startdrive.
The SIMATIC Drive Controller can be extended with components from the modular SINAMICS S120 drive system and SIMATIC automation components such as HMI and I/O systems. Additional drive systems such as e.g SINAMICS S210 or SINAMICS G can easily be integrated via PROFINET.

Overview

CPU 1504D TF

CPU 1504D TF

- For standard and fail-safe applications with medium requirements for program scope and processing speed
- Ultra-compact due to the integration of fail-safe SIMATIC S7-1500 technology CPU, SINAMICS S120 drive control and technology I/Os in a single device
- Extensive integrated communication interfaces and technology I/Os for the efficient implementation of automation solutions with Motion Control
- Tried-and-tested engineering in TIA Portal

CPU 1507D TF

CPU 1507D TF

- For standard and fail-safe applications with high to very high requirements for program scope and processing speed
- Ultra-compact due to the integration of fail-safe SIMATIC S7-1500 technology CPU, SINAMICS S120 drive control and technology I/Os in a single device
- Extensive integrated communication interfaces and technology I/Os for the efficient implementation of automation solutions with Motion Control
- Tried-and-tested engineering in TIA Portal

Ordering data

	Article No.
SIMATIC S7-1500 Drive Controller CPU 1504D TF With SINAMICS S120 Integrated; Fail-safe technology CPU; Work memory: 4 MB for program, 6 MB for data; Interfaces: 12 DI, 16 DI/DQ, 4 DRIVE-CLiQ, 3 PROFINET: 3+1+1 ports, 1 PROFIBUS; SIMATIC Memory Card required	**6ES7615-4DF10-0AB0**
SIMATIC S7-1500 Drive Controller CPU 1507D TF With SINAMICS S120 Integrated; Fail-safe technology CPU; Work memory: 15 MB for program, 40 MB for data; Interfaces: 12 DI, 16 DI/DQ, 4 DRIVE-CLiQ, 3 PROFINET: 3+1+1 ports, 1 PROFIBUS; SIMATIC Memory Card required	**6ES7615-7DF10-0AB0**
Accessories	
SIMATIC Memory Card [1]	
• 4 MB	**6ES7954-8LC03-0AA0**
• 12 MB	**6ES7954-8LE03-0AA0**
• 24 MB	**6ES7954-8LF03-0AA0**
• 256 MB	**6ES7954-8LL03-0AA0**
• 2 GB	**6ES7954-8LP03-0AA0**
• 32 GB	**6ES7954-8LT03-0AA0**

	Article No.
S7-1500T Motion Control KinPlus For up to 6 interpolating axes with CPU 1507D TF	
• Motion Control package S7-1500T Motion Control KinPlus [3]	**6ES7823-0KE00-1AA0**
• SIMATIC Memory Card 2 GB for S7-1500T Motion Control KinPlus	**6ES7954-8LP80-0AA0**
• SIMATIC Memory Card 32 GB for S7-1500T Motion Control KinPlus	**6ES7954-8LT80-0AA0**
Drive licenses for integrated drive control	
Safety Integrated Extended Functions Certificate of License (CoL) for a SINAMICS S120 axis	
• CoL in electronic form[3] Email address required for delivery	**6SL3074-0AA10-0AH0**
Safety Integrated Advanced Functions Certificate of License (CoL) for a SINAMICS S120 axis	
• CoL in electronic form[3] Email address required for delivery	**6SL3074-0AA20-0AH0**

[1] When using the integrated SINAMICS S120 drive control, a memory card size of at least 12 MB is recommended (at least 24 MB for extensive DCC use, e.g. with a DCB Extension Library). A memory card size of at least 256 MB is required for firmware updates.

[3] Up-to-date information and download availability can be found under http://www.siemens.com/tia-online-software-delivery.

Ordering data	Article No.
Cogging torque compensation	
Certificate of License (CoL) for a SINAMICS S120 axis	
• CoL in electronic form[3] Email address required for delivery	**6SL3074-0AA15-0AH0**
Advanced Position Control (APC)	
Certificate of License (CoL) for a SINAMICS S120 axis	
• CoL in electronic form[3] Email address required for delivery	**6SL3074-0AA05-0AH0**
Advanced Synchronous Reluctance Control	
Certificate of License (CoL) for a SINAMICS S120 axis	
• CoL in electronic form[3] Email address required for delivery	**6SL3074-0AA06-0AH0**
Technology Extension VIBX (Vibration Extinction)	
Certificate of License (CoL) per SINAMICS Integrated	
• CoL in electronic form[3] Email address required for delivery	**6SL3077-0AA00-5AH0**
Technology Extension SERVCOUP (Servo Coupling)	
Certificate of License (CoL) per SINAMICS Integrated	
• CoL in electronic form[3] Email address required for delivery	**6SL3077-0AA00-8AH0**
DCB Extension Library	
Certificate of License (CoL) per SINAMICS Integrated	
• CoL in electronic form[3] Email address required for delivery	**6SL3077-0AA00-0AH0**
For other SINAMICS licenses (controller parameter adaption, dynamic grid support and line droop control, DC-DC converter), see SIMATIC Drive Controller system manual	
Control licenses	
SIMATIC OPC UA S7-1500 Small	
Required for CPU 1504D TF Single Runtime License	
• License certificate for OPC UA Server (Data Access and OPC UA Client)	**6ES7823-0BA00-1BA0**
• Download incl. license certificate for OPC UA Server (Data Access and OPC UA Client) [3] Email address required for delivery	**6ES7823-0BE00-1BA0**
SIMATIC OPC UA S7-1500 Large	
Required for CPU 1507D TF Single Runtime License	
• License certificate for OPC UA Server (Data Access and OPC UA Client)	**6ES7823-0BA00-1DA0**
• Download incl. license certificate for OPC UA Server (Data Access and OPC UA Client) [3] Email address required for delivery	**6ES7823-0BE00-1DA0**

	Article No.
Accessories for PROFIBUS (interface X126)	
PROFIBUS RS485 bus connector	
With angular cable outlet (35°) with screw-type terminals, max. transmission rate 12 Mbps	
• Without programming device/ PC interface	**6ES7972-0BA42-0XA0**
• With programming device/ PC interface	**6ES7972-0BB42-0XA0**
PROFIBUS FastConnect RS485 bus connector	
With angular cable outlet (35°) with insulation displacement technology, max. transmission rate 12 Mbps	
• Without programming device/ PC interface	**6ES7972-0BA61-0XA0**
• With programming device/ PC interface	**6ES7972-0BB61-0XA0**
FastConnect cables for PROFIBUS	
(sold by the meter; max. delivery unit 1000 m; minimum order quantity 20 m)	
• FC standard cable GP	**6XV1830-0EH10**
• FC robust cable	**6XV1830-0JH10**
• FC flexible cable	**6XV1831-2K**
• FC trailing cable, sheath color: Petrol	**6XV1830-3EH10**
• FC trailing cable, sheath color: Violet	**6XV1831-2L**
• FC food cable	**6XV1830-0GH10**
• FC ground cable	**6XV1830-3FH10**
• FC FRNC cable GP	**6XV1830-0LH10**
Accessories for PROFINET (interface X150 and X160; X130 only up to 100 Mbps)	
IE FC RJ45 plug 145	
145° cable outlet (10/100 Mbps)	
• 1 unit	**6GK1901-1BB30-0AA0**
• 10 units	**6GK1901-1BB30-0AB0**
• 50 units	**6GK1901-1BB30-0AE0**
FastConnect cables for Industrial Ethernet/PROFINET	
(sold by the meter; max. delivery unit 1000 m; minimum order quantity 20 m)	
• IE FC standard cable GP 2×2	**6XV1840-2AH10**
• IE FC flexible cable GP 2x2	**6XV1870-2B**
• IE FC trailing cable GP 2×2	**6XV1870-2D**
• IE FC trailing cable 2×2	**6XV1840-3AH10**
• IE FC marine cable 2×2	**6XV1840-4AH10**
Accessories for PROFINET [2] (interface X130, for up to 1000 Mbps)	
IE FC RJ45 plug 180	
180° cable outlet (10/100/1000 Mbps)	
• 1 unit	**6GK1901-1BB12-2AA0**
• 10 units	**6GK1901-1BB12-2AB0**
• 50 units	**6GK1901-1BB12-2AE0**
FastConnect cables for Industrial Ethernet/PROFINET	
(sold by the meter; max. delivery unit 1000 m; minimum order quantity 20 m)	
• IE FC standard cable GP 4×2	**6XV1878-2A**
• IE FC flexible cable GP 4×2	**6XV1878-2B**

[2] The Ethernet interface X130 supports 10, 100 and 1000 Mbps. For 1000 Mbps, 8-wire cables (4x2) and the 180° FastConnect plug in 1000 Mbps version must be used.

[3] Up-to-date information and download availability can be found under http://www.siemens.com/tia-online-software-delivery.

Ordering data

	Article No.
Other accessories	
PROFIBUS FastConnect stripping tool Pre-adjusted stripping tool for fast stripping of PROFIBUS FastConnect bus cables	**6GK1905-6AA00**
IE FC stripping tool Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	**6GK1901-1GA00**
Dust protection blanking plugs For sealing unused DRIVE-CLiQ and PROFINET ports; blanking plug (50 units)	**6SL3066-4CA00-0AA0**
Spare parts	
Bottom cover	**6ES7615-0AC10-0AA0**
Top cover	**6ES7615-0AC10-1AA0**
Spacer	**6SL3064-1BB00-0AA0**
Terminal Kit • 3 x I/O plug for X122/X132/X142 • 1 x 24 V plug for X124 • 5 x DRIVE-CLiQ blanking cover	**6SL3064-2CB00-0AA0**

	Article No.
Engineering software	
The following engineering software is required for the SIMATIC Drive Controller: • STEP 7 Professional V18 for configuring control functionality • STEP 7 Safety Advanced V18 for creating safety-related programs • S7-PLCSIM Advanced V5.0 for simulation and validation of the control functionality • SINAMICS Startdrive Basic V18[4] or SINAMICS Startdrive Advanced V18 for configuring the integrated drive control (SINAMICS Integrated) • SINAMICS DCC V18 (option package for SINAMICS Startdrive) for the graphical configuration of control, computing and logic blocks	For engineering software ordering data for controllers, see Catalog section 12. For engineering software ordering data for drive systems, see SiePortal.
Documentation	
SIMATIC Manual Collection Electronic manuals on DVD, multilingual	**6ES7998-8XC01-8YE0**
SIMATIC Manual Collection Update service for 1 year Current Manual Collection DVD and the three subsequent updates	**6ES7998-8XC01-8YE2**

[4] The SINAMICS Startdrive Basic commissioning tool is available for free on the Internet at: https://www.siemens.com/startdrive

Technical specifications

Article number	**6ES7615-4DF10-0AB0** SIMATIC Drive Controller, CPU 1504D TF	**6ES7615-7DF10-0AB0** SIMATIC Drive Controller, CPU 1507D TF
General information		
Product type designation	CPU 1504D TF	CPU 1507D TF
Engineering with		
• STEP 7 TIA Portal configurable/ integrated from version	V18 (FW V3.0) / V16 (FW V2.8) or higher	V18 (FW V3.0) / V16 (FW V2.8) or higher
Integrated drive control		
• Number of axes for servo control, max.	6	6
• Number of axes for vector control, max.	6	6
• Number of axes for V/f control, max.	12	12
• Remark	alternative control modes; drive control based on SINAMICS S120 CU320-2 (firmware version V5.x); functional subset compared to CU320-2: no free function blocks, ... ; for details, see the manual	alternative control modes; drive control based on SINAMICS S120 CU320-2 (firmware version V5.x); functional subset compared to CU320-2: no free function blocks, ... ; for details, see the manual
Supply voltage		
Rated value (DC)	24 V	24 V

Technical specifications

Article number	**6ES7615-4DF10-0AB0** SIMATIC Drive Controller, CPU 1504D TF	**6ES7615-7DF10-0AB0** SIMATIC Drive Controller, CPU 1507D TF
Memory		
Work memory		
• integrated (for program)	4 Mbyte	15 Mbyte
• integrated (for data)	6 Mbyte	40 Mbyte
Load memory		
• Plug-in (SIMATIC Memory Card), required	12 Mbyte; Recommended at least when integrated drive is used	12 Mbyte; Recommended at least when integrated drive is used
• Plug-in (SIMATIC Memory Card), max.	32 Gbyte	32 Gbyte
Counters, timers and their retentivity		
S7 counter		
• Number	2 048	2 048
IEC counter		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
S7 times		
• Number	2 048	2 048
IEC timer		
• Number	Any (only limited by the main memory)	Any (only limited by the main memory)
Data areas and their retentivity		
Flag		
• Size, max.	16 kbyte	16 kbyte
Address area		
I/O address area		
• Inputs	32 kbyte; All inputs are in the process image	32 kbyte; All inputs are in the process image
• Outputs	32 kbyte; All outputs are in the process image	32 kbyte; All outputs are in the process image
Time of day		
Clock		
• Type	Hardware clock	Hardware clock
Digital inputs		
integrated channels (DI)	28; max. depending on parameterization	28; max. depending on parameterization
Digital outputs		
integrated channels (DO)	16; max. depending on parameterization	16; max. depending on parameterization
Digital outputs, parameterizable	Yes; 8 DI/DQ (X122/X132, SINAMICS Integrated) + 8 DI/DQ (X142, PLC)	Yes; 8 DI/DQ (X122/X132, SINAMICS Integrated) + 8 DI/DQ (X142, PLC)
Short-circuit protection	Yes; electronic/thermal	Yes; electronic/thermal
1. Interface		
Interface types		
• RJ 45 (Ethernet)	Yes; X150	Yes; X150
• Number of ports	3	3
• integrated switch	Yes	Yes
Protocols		
• IP protocol	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes
• Media redundancy	Yes	Yes

Technical specifications

Article number	**6ES7615-4DF10-0AB0** SIMATIC Drive Controller, CPU 1504D TF	**6ES7615-7DF10-0AB0** SIMATIC Drive Controller, CPU 1507D TF
PROFINET IO Controller		
Services		
- PG/OP communication	Yes	Yes
- Isochronous mode	Yes	Yes
- Direct data exchange	Yes; Requirement: IRT and isochronous mode (MRPD optional)	Yes; Requirement: IRT and isochronous mode (MRPD optional)
- shortest clock pulse	500 µs	250 µs
- IRT	Yes	Yes
- PROFIenergy	Yes; per user program	Yes; per user program
- Prioritized startup	Yes; Max. 32 PROFINET devices	Yes; Max. 32 PROFINET devices
- Number of connectable IO Devices, max.	256; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	256; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Of which IO devices with IRT, max.	64	64
- Number of connectable IO Devices for RT, max.	256	256
- of which in line, max.	256	256
- Number of IO Devices that can be simultaneously activated/ deactivated, max.	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
PROFINET IO Device		
Services		
- PG/OP communication	Yes	Yes
- Isochronous mode	No	No
- shortest clock pulse	500 µs	250 µs
- IRT	Yes	Yes
- PROFIenergy	Yes; per user program	Yes; per user program
- Shared device	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4
- activation/deactivation of I-devices	Yes; per user program	Yes; per user program
- Asset management record	Yes; per user program	Yes; per user program
2. Interface		
Interface types		
• RJ 45 (Ethernet)	Yes; X160	Yes; X160
• Number of ports	1	1
• integrated switch	No	No
Protocols		
• IP protocol	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	Yes	Yes
• PROFINET IO Device	Yes	Yes
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes; Optionally also encrypted	Yes; Optionally also encrypted
• Web server	Yes	Yes
• Media redundancy	No	No

Technical specifications

Article number	**6ES7615-4DF10-0AB0** SIMATIC Drive Controller, CPU 1504D TF	**6ES7615-7DF10-0AB0** SIMATIC Drive Controller, CPU 1507D TF
PROFINET IO Controller		
Services		
- PG/OP communication	Yes	Yes
- Isochronous mode	No	No
- Direct data exchange	No	No
- IRT	No	No
- PROFIenergy	Yes; per user program	Yes; per user program
- Prioritized startup	No	No
- Number of connectable IO Devices, max.	128; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	128; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET
- Number of connectable IO Devices for RT, max.	128	128
- of which in line, max.	128	128
- Number of IO Devices that can be simultaneously activated/ deactivated, max.	8; in total across all interfaces	8; in total across all interfaces
- Number of IO Devices per tool, max.	8	8
- Updating times	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data	The minimum value of the update time also depends on communication share set for PROFINET IO, on the number of IO devices, and on the quantity of configured user data
PROFINET IO Device		
Services		
- PG/OP communication	Yes	Yes
- Isochronous mode	No	No
- IRT	No	No
- PROFIenergy	Yes; per user program	Yes; per user program
- Prioritized startup	No	No
- Shared device	Yes	Yes
- Number of IO Controllers with shared device, max.	4	4
- activation/deactivation of I-devices	Yes; per user program	Yes; per user program
- Asset management record	Yes; per user program	Yes; per user program
3. Interface		
Interface types		
• RJ 45 (Ethernet)	Yes; X130	Yes; X130
• Number of ports	1	1
• integrated switch	No	No
Protocols		
• IP protocol	Yes; IPv4	Yes; IPv4
• PROFINET IO Controller	No	No
• PROFINET IO Device	No	No
• SIMATIC communication	Yes	Yes
• Open IE communication	Yes	Yes
• Web server	Yes	Yes
4. Interface		
Interface types		
• RS 485	Yes; X126	Yes; X126
• Number of ports	1	1
Protocols		
• PROFIBUS DP master	Yes	Yes
• PROFIBUS DP slave	No	No
• SIMATIC communication	Yes	Yes
PROFIBUS DP master		
• Number of DP slaves, max.	125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET	125; In total, up to 1 000 distributed I/O devices can be connected via AS-i, PROFIBUS or PROFINET

Technical specifications

Article number	**6ES7615-4DF10-0AB0** SIMATIC Drive Controller, CPU 1504D TF	**6ES7615-7DF10-0AB0** SIMATIC Drive Controller, CPU 1507D TF
Protocols		
Number of connections		
• Number of connections, max.	384; Via integrated interfaces of the CPU	384; Via integrated interfaces of the CPU
Redundancy mode		
Media redundancy		
- Media redundancy	only via interface X150	only via interface X150
- MRP	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client	Yes; MRP Automanager according to IEC 62439-2 Edition 2.0, MRP Manager; MRP Client
- MRP interconnection, supported	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0	Yes; as MRP ring node according to IEC 62439-2 Edition 3.0
- MRPD	Yes; Requirement: IRT	Yes; Requirement: IRT
- Switchover time on line break, typ.	200 ms; For MRP, bumpless for MRPD	200 ms; For MRP, bumpless for MRPD
- Number of stations in the ring, max.	50	50
SIMATIC communication		
• S7 routing	Yes	Yes
OPC UA		
• OPC UA Client	Yes; Data Access (registered Read/Write), Method Call	Yes; Data Access (registered Read/Write), Method Call
• OPC UA Server	Yes; Data Access (Read, Write, Subscribe), Method Call, Alarms & Condition (A&C), Custom Address Space	Yes; Data Access (Read, Write, Subscribe), Method Call, Alarms & Condition (A&C), Custom Address Space
• Alarms and Conditions	Yes	Yes
Supported technology objects		
Motion Control	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool	Yes; Note: The number of technology objects affects the cycle time of the PLC program; selection guide via the TIA Selection Tool
• Number of available Motion Control resources for technology objects	3 200	12 800
• Required Motion Control resources		
- per speed-controlled axis	40	40
- per positioning axis	80	80
- per synchronous axis	160	160
- per external encoder	80	80
- per output cam	20	20
- per cam track	160	160
- per probe	40	40
• Number of available Extended Motion Control resources for technology objects	160	420
• Required Extended Motion Control resources		
- per cam (1 000 points and 50 segments)	2	2
- per cam (10 000 points and 50 segments)	20	20
- for each set of kinematics	30	30
- Per leading axis proxy	3	3
• kinematics functions		
- kinematics with up to 4 interpolating axes	Yes; max. 3D + orientation	Yes; max. 3D + orientation
- kinematics with 5 or more interpolating axes	No	Yes; only with S7-1500T Motion Control KinPlus, as of TIA Portal V18 / FW V3.0
- user-defined kinematics	Yes	Yes
- SIMATIC Safe Kinematics	No	Yes; optional, SIMATIC Safe Kinematics V17 or higher
Controller		
• PID_Compact	Yes; Universal PID controller with integrated optimization	Yes; Universal PID controller with integrated optimization
• PID_3Step	Yes; PID controller with integrated optimization for valves	Yes; PID controller with integrated optimization for valves
• PID-Temp	Yes; PID controller with integrated optimization for temperature	Yes; PID controller with integrated optimization for temperature
Counting and measuring		
• High-speed counter	Yes	Yes

Technical specifications

Article number	**6ES7615-4DF10-0AB0** SIMATIC Drive Controller, CPU 1504D TF	**6ES7615-7DF10-0AB0** SIMATIC Drive Controller, CPU 1507D TF
Standards, approvals, certificates		
Highest safety class achievable in safety mode		
Probability of failure (for service life of 20 years and repair time of 100 hours)		
- Low demand mode: PFDavg in accordance with SIL2	< 14.00E-04	< 14.00E-04
- Low demand mode: PFDavg in accordance with SIL3	< 2.00E-05 PLd (if exclusively F-CPU is used)	< 2.00E-05 PLd (if exclusively F-CPU is used)
- High demand/continuous mode: PFH in accordance with SIL2	< 14.00E-09	< 14.00E-09
- High demand/continuous mode: PFH in accordance with SIL3	if exclusively F-CPU is used: < 1.00E-09 (at a site altitude of up to 3000 m); < 2.00E-09 (at a site altitude of more than 3000 m and up to 4000 m)	if exclusively F-CPU is used: < 1.00E-09 (at a site altitude of up to 3000 m); < 2.00E-09 (at a site altitude of more than 3000 m and up to 4000 m)
Ambient conditions		
Ambient temperature during operation		
• min.	0 °C	0 °C
• max.	55 °C	55 °C
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	4 000 m; as of an altitude of 2000 m, the maximum ambient air temperature is reduced by 7 °C per 1000 m; see SINAMICS documentation for SINAMICS S120 drive components	4 000 m; as of an altitude of 2000 m, the maximum ambient air temperature is reduced by 7 °C per 1000 m; see SINAMICS documentation for SINAMICS S120 drive components
• Ambient air temperature-barometric pressure-altitude	Permissible air pressure: 620 hPa ... 1 060 hPa	Permissible air pressure: 620 hPa ... 1 060 hPa
Configuration		
Programming		
Programming language		
- LAD	Yes; incl. failsafe	Yes; incl. failsafe
- FBD	Yes; incl. failsafe	Yes; incl. failsafe
- STL	Yes	Yes
- SCL	Yes	Yes
- CFC	No	No
- GRAPH	Yes	Yes
Know-how protection		
• User program protection/password protection	Yes	Yes
• Copy protection	Yes	Yes
• Block protection	Yes	Yes
Access protection		
• protection of confidential configuration data	Yes	Yes
• Protection level: Write protection	Yes; Specific write protection both for Standard and for Failsafe	Yes; Specific write protection both for Standard and for Failsafe
• Protection level: Read/write protection	Yes	Yes
• Protection level: Write protection for Failsafe	Yes	Yes
• Protection level: Complete protection	Yes	Yes
Dimensions		
Width	50 mm	50 mm
Height	300 mm	300 mm
Depth	226 mm; 270 mm with spacer (included in scope of supply)	226 mm; 270 mm with spacer (included in scope of supply)
Weights		
Weight, approx.	2 400 g	2 400 g
Other		
Note:	The SIMATIC Drive Controller deviates from the usual SIMATIC S7-1500 ambient conditions and specifications as well as the available approvals and certificates because of the drive design. For details, see the SIMATIC Drive Controller device and system manual. Operation is without fan.	The SIMATIC Drive Controller deviates from the usual SIMATIC S7-1500 ambient conditions and specifications as well as the available approvals and certificates because of the drive design. For details, see the SIMATIC Drive Controller device and system manual. Operation is without fan.