

SIMATIC MICRO-DRIVE servo drive system

Built-in drive controllers

Servo converters/PDC drive controllers

Overview

- PDC drive controller (ProfiDriveControl) for SIMATIC MICRO-DRIVE
- Available in the variants: Standard (PDCxxx), Failsafe (PDCxxxF)

Variant	Power	Device width	Start of delivery
Standard			
PDC100	100 W	50 mm	Available
PDC600	600 W	90 mm	Available
PDC1000 V1	1000 W	90 mm	Available
Failsafe			
PDC100F	100 W	50 mm	Available
PDC600F	600 W	90 mm	Available

Function

Basic functions (for standard PDC for all PDC drive controller variants)

- PROFIdrive profile via PROFINET
- Hardware STO
- Digital inputs and outputs
- PDC100 and PDC100F with integrated braking chopper
- PROFINET line-capable (2 × PROFINET ports)
- PROFINET Shared Device
- TTL/HTL Hall signals
- Optional: SSI absolute encoder can be connected

In addition to standard PDC for PDCxxxF variants

- Extended Safety drive functions STO, SS1, SLT ¹⁾, SLS ²⁾ and SSM ²⁾ via PROFIsafe
- PROFIsafe

Technical specifications

Article No.	6BK1630-1AA10-0AA0 SIMATIC MICRO-DRIVE PDC100 boxed	6BK1630-2AA10-0AA0 SIMATIC MICRO-DRIVE PDC100F boxed
General information		
Product type designation	DC and EC motor controller	DC and EC motor controller
Product description	Control of DC and EC motors	Control of DC and EC motors
Mean time between failures (MTBF)	100 000 h	100 000 h
Product function		
• Isochronous mode	Yes	Yes
• Four-quadrant operation	Yes	Yes
• Speed control with encoder	Yes	Yes
• Speed control without encoder	No	No
• Safety Functions	Yes; STO	Yes; STO, SS1, SLT, SLS, SSM
Protection function		
• Undervoltage protection	Yes	Yes
• Overvoltage protection	Yes	Yes
• Overload protection	Yes	Yes
• Ground-fault protection	Yes	Yes
• Short-circuit protection	Yes	Yes
Engineering with		
• STEP 7 TIA Portal configurable/integrated from version	V14 SP1	V14 SP1
Installation type/mounting		
Mounting type	35 mm rail, screw mounting	35 mm rail, screw mounting
Type of ventilation	Convection cooling	Convection cooling

¹⁾ Only for PDC100F.

²⁾ Only with the Siemens-certified EC partner motors and the integrated encoder systems.

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Article No.	6BK1630-1AA10-0AA0 SIMATIC MICRO-DRIVE PDC100 boxed	6BK1630-2AA10-0AA0 SIMATIC MICRO-DRIVE PDC100F boxed
Supply voltage		
Design of the power supply	DC	DC
Rated value (DC)	24 V	24 V
permissible range, lower limit (DC)	19.2 V	19.2 V
permissible range, upper limit (DC)	28.8 V	28.8 V
Supply voltage of the motor		
• Type of motor voltage	24 ... 48 V DC, SELV / PELV	24 ... 48 V DC, SELV / PELV
• permissible range, lower limit (DC)	19.2 V	19.2 V
• permissible range, upper limit (DC)	50.4 V	50.4 V
Output current		
Current output (rated value)	1.56 A	1.56 A
Output current, max.	2.3 A	2.3 A
Digital inputs		
Number of digital inputs	4	4
Number of safety inputs	1; For STO, antivalent (2-pin) - 24 V DC	1; For STO, antivalent (2-pin) - 24 V DC
Input characteristic according to IEC 61131	Permissible DC leakage current (0 signal) to 2 mA	Permissible DC leakage current (0 signal) to 2 mA
Digital outputs		
Type of digital output	Source output (PNP, current-sourcing)	Source output (PNP, current-sourcing)
Number of digital outputs	2	2
Number of safety outputs	0	0
Encoder		
Connectable encoders		
• Incremental encoder (symmetrical)	Yes; Up to 200 kHz	Yes; Up to 200 kHz
• Incremental encoder (asymmetrical)	Yes	Yes
• Absolute encoder (SSI)	Yes; 350 kHz	Yes; 350 kHz
Interfaces		
Number of industrial Ethernet interfaces	0	0
Number of PROFINET interfaces	2	2
Degree and class of protection		
IP degree of protection	IP20	IP20
Standards, approvals, certificates		
CE mark	Yes	Yes
CSA approval	No	No
cULus	Yes	Yes
FM approval	Yes	Yes
RCM (formerly C-TICK)	Yes	Yes
KC approval	Yes	Yes
EAC (formerly Gost-R)	Yes	Yes
China RoHS compliance	Yes	Yes
Reference designation according to IEC 81346-2 (2009)	T	T
Highest safety class achievable in safety mode		
• Performance level according to ISO 13849-1	d	d
• SIL acc. to IEC 61508	SIL 2	SIL 2

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Article No.	6BK1630-1AA10-0AA0 SIMATIC MICRO-DRIVE PDC100 boxed	6BK1630-2AA10-0AA0 SIMATIC MICRO-DRIVE PDC100F boxed
Ambient conditions		
Ambient temperature during operation		
• min.	-20 °C	-20 °C
• max.	60 °C	60 °C
• horizontal installation, max.	40 °C	40 °C
Ambient temperature during storage/transportation		
• Storage, min.	-20 °C	-20 °C
• Storage, max.	80 °C	80 °C
Relative humidity		
• Operation, max.	95 %; no condensation	95 %; no condensation
• Storage, max.	95 %; no condensation	95 %; no condensation
Vibrations		
• Vibration resistance during operation acc. to IEC 60068-2-6	5 ... 8.5 Hz / 3.5 mm, 8.5 ... 150 Hz / 1 g; for wall mounting: 9 ... 29 Hz / 1.5 mm, 29 ... 200 Hz / 5 g	5 ... 8.5 Hz / 3.5 mm, 8.5 ... 150 Hz / 1 g; for wall mounting: 9 ... 29 Hz / 1.5 mm, 29 ... 200 Hz / 5 g
• Vibration resistance during storage acc. to IEC 60068-2-6	5 ... 9 Hz / 3.5 mm, 9 ... 500 Hz / 1 g	5 ... 9 Hz / 3.5 mm, 9 ... 500 Hz / 1 g
Shock testing		
• Shock resistance during operation acc. to IEC 60068-2-27	15 g / 11 ms; for wall mounting: 10 g / 30 ms, 25 g / 6 ms	15 g / 11 ms; for wall mounting: 10 g / 30 ms, 25 g / 6 ms
Cables		
Cable length for motor, shielded, max.	10 m	10 m
Dimensions		
Width	50 mm	50 mm
Height	125 mm; 136 mm with protective collar for PN connector	125 mm; 136 mm with protective collar for PN connector
Depth	120 mm	120 mm
Weights		
Weight, approx.	350 g	350 g
Other		
Brake design	Holding brake	Holding brake
Braking chopper	Yes; Onboard, expandable	Yes; Onboard, expandable
Note:	Maximum 30 J per braking process, maximum 30 J per minute	Maximum 30 J per braking process, maximum 30 J per minute

Article No.	6BK1630-1AA60-0AA0 SIMATIC MICRO-DRIVE PDC600 boxed	6BK1630-2AA60-0AA0 SIMATIC MICRO-DRIVE PDC600F boxed
General information		
Product type designation	EC motor controller	EC motor controller
Product description	Control of EC motors	Control of EC motors
Mean time between failures (MTBF)	100 000 h	100 000 h
Product function		
• Isochronous mode	Yes	Yes
• Four-quadrant operation	Yes	Yes
• Speed control with encoder	Yes	Yes
• Speed control without encoder	No	No
• Safety Functions	Yes; STO	Yes; STO, SS1, SLS, SSM
Protection function		
• Undervoltage protection	Yes	Yes
• Overvoltage protection	Yes	Yes
• Overload protection	Yes	Yes
• Ground-fault protection	Yes	Yes
• Short-circuit protection	Yes	Yes
Engineering with		
• STEP 7 TIA Portal configurable/integrated from version	V14 SP1	V14 SP1
Installation type/mounting		
Mounting type	35 mm rail, screw mounting	35 mm rail, screw mounting
Type of ventilation	Convection cooling	Convection cooling

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Article No.	6BK1630-1AA60-0AA0 SIMATIC MICRO-DRIVE PDC600 boxed	6BK1630-2AA60-0AA0 SIMATIC MICRO-DRIVE PDC600F boxed
Supply voltage		
Design of the power supply	DC	DC
Rated value (DC)	24 V	24 V
permissible range, lower limit (DC)	19.2 V	19.2 V
permissible range, upper limit (DC)	28.8 V	28.8 V
Supply voltage of the motor		
• Type of motor voltage	24 ... 48 V DC, SELV / PELV	24 ... 48 V DC, SELV / PELV
• permissible range, lower limit (DC)	16.8 V	16.8 V
• permissible range, upper limit (DC)	52.8 V	52.8 V
Output current		
Current output (rated value)	11 A	11 A
Output current, max.	22 A	22 A
Output frequency	500 Hz	500 Hz
Digital inputs		
Number of digital inputs	4	4
Number of safety inputs	1; For STO, antivalent (2-pin) - 24 V DC	1; For STO, antivalent (2-pin) - 24 V DC
Digital outputs		
Type of digital output	Source output (PNP, current-sourcing)	Source output (PNP, current-sourcing)
Number of digital outputs	2	2
Number of safety outputs	0	0
Encoder		
Connectable encoders		
• Incremental encoder (symmetrical)	Yes; Up to 200 kHz	Yes; Up to 200 kHz
• Incremental encoder (asymmetrical)	Yes	Yes
• Absolute encoder (SSI)	Yes; 350 kHz	Yes; 350 kHz
Interfaces		
Number of industrial Ethernet interfaces	0	0
Number of PROFINET interfaces	2	2
Degree and class of protection		
IP degree of protection	IP20	IP20
Standards, approvals, certificates		
CE mark	Yes	Yes
CSA approval	No	No
cULus	Available soon	Available soon
FM approval	Available soon	Available soon
RCM (formerly C-TICK)	Available soon	Available soon
KC approval	Available soon	Available soon
EAC (formerly Gost-R)	Available soon	Available soon
China RoHS compliance	Yes	Yes
Highest safety class achievable in safety mode		
• Performance level according to ISO 13849-1	d	d
• SIL acc. to IEC 61508	SIL 2	SIL 2

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Article No.	6BK1630-1AA60-0AA0 SIMATIC MICRO-DRIVE PDC600 boxed	6BK1630-2AA60-0AA0 SIMATIC MICRO-DRIVE PDC600F boxed
Ambient conditions		
Ambient temperature during operation		
• min.	-20 °C	-20 °C
• max.	60 °C	60 °C
Ambient temperature during storage/transportation		
• Storage, min.	-20 °C	-20 °C
• Storage, max.	80 °C	80 °C
Relative humidity		
• Operation, max.	95 %; no condensation	95 %
• Storage, max.	95 %; no condensation	95 %
Vibrations		
• Vibration resistance during operation acc. to IEC 60068-2-6	5 ... 8.5 Hz / 3.5 mm, 8.5 ... 150 Hz / 1 g; for wall mounting: 9 ... 29 Hz / 1.5 mm, 29 ... 200 Hz / 5 g	5 ... 8.5 Hz / 3.5 mm, 8.5 ... 150 Hz / 1 g; for wall mounting: 9 ... 29 Hz / 1.5 mm, 29 ... 200 Hz / 5 g
• Vibration resistance during storage acc. to IEC 60068-2-6	5 ... 8.5 Hz / 3.5 mm, 8.5 ... 500 Hz / 1 g	5 ... 8.5 Hz / 3.5 mm, 8.5 ... 500 Hz / 1 g
Shock testing		
• Shock resistance during operation acc. to IEC 60068-2-27	15 g / 11 ms; for wall mounting: 5 g / 30 ms, 15 g / 11 ms	15 g / 11 ms; for wall mounting: 5 g / 30 ms, 15 g / 11 ms
Cables		
Cable length for motor, shielded, max.	10 m	10 m
Dimensions		
Width	90 mm	90 mm
Height	125 mm; 136 mm with protective collar for PN connector	125 mm; 136 mm with protective collar for PN connector
Depth	120 mm	120 mm
Weights		
Weight, approx.	0.65 kg	0.65 kg
Other		
Braking chopper	Yes; External resistance	Yes; External resistance

Article No.	6BK1630-1BA00-0AA0 SIMATIC MICRO-DRIVE PDC1000-V1 boxed
General information	
Product type designation	EC motor controller
Product description	Control of EC motors
Mean time between failures (MTBF)	100 000 h
Product function	
• Isochronous mode	Yes
• Four-quadrant operation	Yes
• Speed control with encoder	Yes
• Speed control without encoder	No
• Safety Functions	No
Protection function	
• Undervoltage protection	Yes
• Overvoltage protection	Yes
• Overload protection	Yes
• Short-circuit protection	Yes
Engineering with	
• STEP 7 TIA Portal configurable/ integrated from version	V14 SP1
Installation type/mounting	
Mounting type	35 millimeter rail and mounting plate screw connection
Type of ventilation	Convection cooling

Article No.	6BK1630-1BA00-0AA0 SIMATIC MICRO-DRIVE PDC1000-V1 boxed
Supply voltage	
Design of the power supply	DC
Rated value (DC)	24 V
permissible range, lower limit (DC)	19.2 V
permissible range, upper limit (DC)	28.8 V
Supply voltage of the motor	
• Type of motor voltage	24 ... 48 V DC, SELV / PELV
• permissible range, lower limit (DC)	19.2 V
• permissible range, upper limit (DC)	57.6 V
• Relative negative tolerance	-20 %
• Relative positive tolerance	20 %
Output current	
Current output (rated value)	17.3 A
Output current, max.	34.6 A
Output frequency	500 Hz
Digital inputs	
Number of digital inputs	4
Number of safety inputs	1
Digital outputs	
Number of digital outputs	2; 24 V DC, 1 A
Number of safety outputs	0

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Article No.	6BK1630-1BA00-0AA0 SIMATIC MICRO-DRIVE PDC1000-V1 boxed
Encoder	
Connectable encoders	
• Incremental encoder (symmetrical)	Yes; Up to 200 kHz
• Absolute encoder (SSI)	Yes; With SSI interface
Interfaces	
Number of industrial Ethernet interfaces	0
Number of PROFINET interfaces	2
Degree and class of protection	
IP degree of protection	IP20
Standards, approvals, certificates	
CE mark	Yes
CSA approval	No
cULus	No
FM approval	No
RCM (formerly C-TICK)	No
KC approval	No
EAC (formerly Gost-R)	No
China RoHS compliance	No
Reference designation according to IEC 81346-2 (2009)	T
Ambient conditions	
Ambient temperature during operation	
• min.	-20 °C
• max.	60 °C
Ambient temperature during storage/transportation	
• Storage, min.	-20 °C
• Storage, max.	80 °C

Article No.	6BK1630-1BA00-0AA0 SIMATIC MICRO-DRIVE PDC1000-V1 boxed
Ambient conditions (continued)	
Relative humidity	
• Operation, max.	90 %; no condensation
• Storage, max.	95 %; no condensation
Vibrations	
• Vibration resistance during operation acc. to IEC 60068-2-6	5 ... 8.5 Hz / 3.5 mm, 8.5 ... 150 Hz / 1 g; for wall mounting: 9 ... 29 Hz / 1.5 mm, 29 ... 200 Hz / 5 g
• Vibration resistance during storage acc. to IEC 60068-2-6	5 ... 9 Hz / 3.5 mm, 9 ... 500 Hz / 1 g
Shock testing	
• Shock resistance during operation acc. to IEC 60068-2-27	15 g / 11 ms; for wall mounting: 10 g / 30 ms, 25 g / 6 ms
Cables	
Cable length for motor, shielded, max.	10 m
Connection method	
Type of connection	Plug-in terminal
Dimensions	
Width	90 mm
Height	125 mm; 136 mm with protective collar for PN connector
Depth	120 mm
Weights	
Weight, approx.	0.65 kg
Other	
Brake design	Holding brake
Braking chopper	Yes; External resistance
Note:	Maximum 1 000 J per braking process, maximum 1 000 J per minute

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Selection and ordering data

PDC drive controller (ProfiDriveControl) for SIMATIC MICRO-DRIVE		
Variant	Start of delivery	Article No.
Standard		
• PDC100 V2 with TÜV-certified hardware STO; Power 100 W	Available	6BK1630-1AA10-0AA0
• PDC600; Power 600 W	Available	6BK1630-1AA60-0AA0
• PDC1000 V1; Power 1000 W	Available	6BK1630-1BA00-0AA0
Failsafe		
with Extended Safety drive functions		
• PDC100F; Power 100 W	Available	6BK1630-2AA10-0AA0
• PDC600F; Power 600 W	Available	6BK1630-2AA60-0AA0