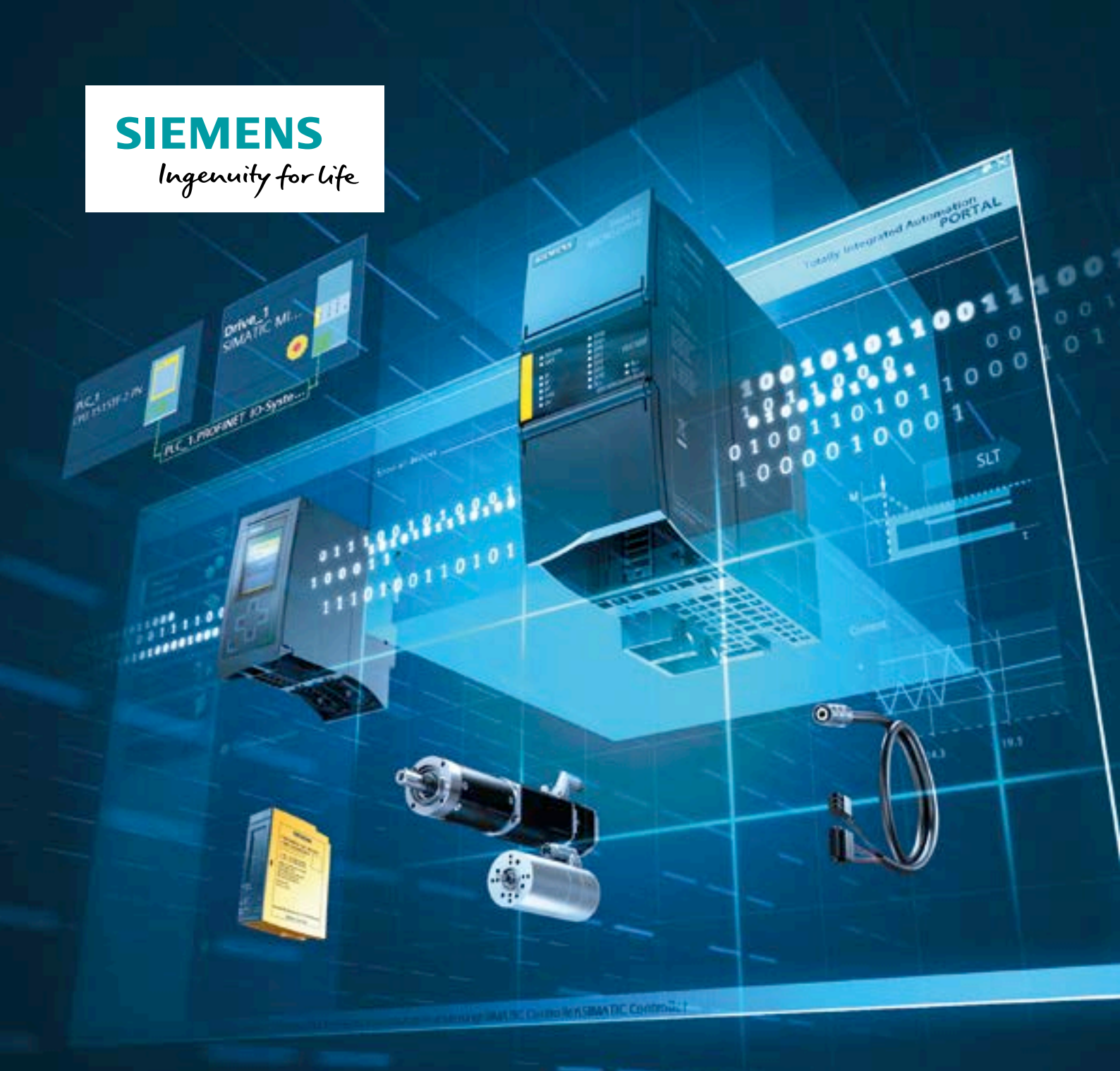
SIEMENS

Ingenuity for life



SIMATIC MICRO-DRIVE

Drive system for extra low voltage

Versatile. Seamless. Safety Integrated.

siemens.com/micro-drive

First-class drive in the protective extra-low voltage range

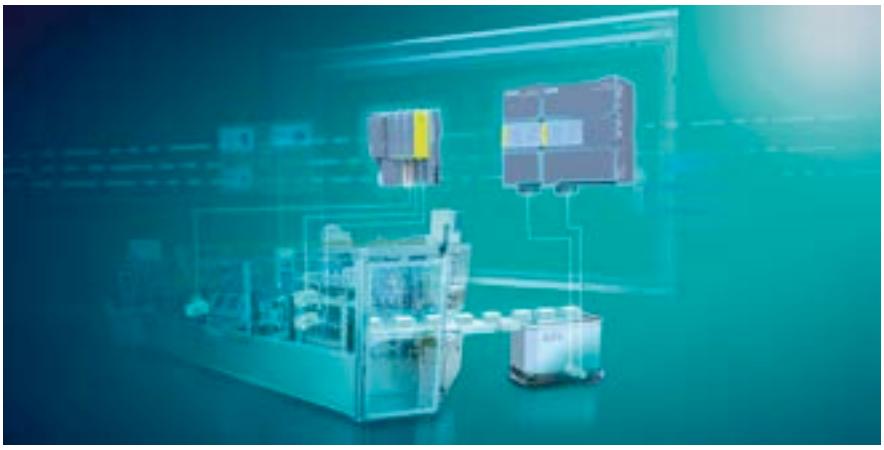
The requirements relating to motion control tasks in the automation environment are continuously increasing and becoming more diverse and complex. Digitalization is creating new solutions irrespective of the sector or the specific application.

Fit for digitalization with SIMATIC MICRO-DRIVE

The SIMATIC MICRO-DRIVE drive system allows you to make a perfect entry into the world of digitalization. Based on Totally Integrated Automation (TIA), converters and motors are completely integrated into the Siemens automation environment, and can be simply selected and configured using the TIA Selection Tool and the TIA Portal. A wide range of tools for the complete machine building cycle ensures efficient engineering and fast commissioning. Machine data is made available through MindSphere, the cloudbased, open IoT operating system from Siemens.

Well conceived, flexible and fit for the future

Can be combined with motors and plug-in cables from selected Siemens product partners The SIMATIC MICRO-DRIVE servo drive system is compatible with individual and supplementary motors (Dunkermotoren, ebm-papst) and plug-in cables (Harting, KnorrTec) from wellestablished Siemens product partners. You can optimally master all your drive system requirements. Meanwhile it is also compatible with third party company motors and cables. Further information and instructions can be found in the SIOS.



TM Drives

PDC

TM Drives
Designed for basic performances in industries with focus on compactness and simple safety requirement.

PDC
is a PROFINET participant with a focus on higher performance and extended safety funtionalities (e.g. SS1 and SLT*).

SIMATIC MICRO-DRIVE TM Drives the new integrated drive controller modules for SIMATIC ET 200SP, compact design and easy wiring and installation ensure top performance, while Safety Integrated provides maximum safety. The new F-TM StepDrive ST technology module for the SIMATIC ET 200SP drive system now makes it possible to control stepper motors with or without incremental encoders.

SIMATIC MICRO-DRIVE PDC (ProfiDrive-Control) standalone servo drive system is versatile, seamless, and safe for applications in the extra-low voltage range. It covers a wide range of applications, including precise positioning, shuttles for storage and retrieval machines and storage systems, automated guided vehicles (AGVs), and medical technology.

One system, many possibilities
SIMATIC MICRO-DRIVE PDC

The SIMATIC MICRO-DRIVE PDC drive system can be simply combined with numerous components to create a customized solution. The TIA Selection Tool helps you when making the optimum selection:
siemens.com/ts

1 Select the motor

Siemens Partner Program Products

ebm-papst motors
Power: 40 – 760 W

Dunkermotoren motors
Power: 40 – 1000 W

- Option with/without gearbox
- Option with/without holding brake

Third party company EC motors

With suitable encoder systems:
- Hall sensor and Incremental Enc.
- Hall sensor and IQ Encoder
- IQ Encoder
- Incremental Enc. with (A, B, Z track)

2 Select the cable

KnorrTec cables, Harting cables

- Lengths up to 10 m
- Freely configurable
- Freely configurable

Third party company cables

Cables from third party companies can also be used. For this purpose, manual wiring must be carried out at the supplied connection terminals. PDC drives already have the necessary terminals.

3 Select the converter

SIMATIC MICRO-DRIVE PDC variants:

Frame size:	50 mm
Power:	100 W
Frame size:	90 mm
Power:	600 – 1000 W
PDCxxx:	Hardwired STO
PDCxxxF:	Safety Integrated-functions via PROFIsafe

MLFB References:

PDC100:	6BK1630-1AA10-0AA0
PDC100F:	6BK1630-2AA10-0AA0
PDC600:	6BK1630-1AA60-0AA0
PDC600F:	6BK1630-2AA60-0AA0
PDC1000V1:	6BK1630-1BA00-0AA0

4 Select the control system

SIMATIC S7-1200 (F)
SIMATIC S7-1500 (F / T/ TF)
SIMATIC Open Controller (F / T / TF)

Done! It's that quick and simple to configure your optimum SIMATIC MICRO-DRIVE servo drive solution.

Technical data
SIMATIC MICRO-DRIVE PDC

Type	Servo drive system for extra low voltage
Applications	AGVs, shuttles, conveyor belts, actuator drives, medical systems
Power range	100 W – 1000 W
Motor supply voltage	24 – 48 V DC
Communication	PROFINET with PROFIdrive and PROFIsafe
Safety functions*	STO, SS1, SLT**, SLS, SSM
Application	TIA Selection Tool
Engineering	TIA Portal with HSP for SIMATIC MICRO-DRIVE
Update	Siemens Automation Tool (SAT)
EMC filter	Integrated EN 61800-3:C1 = EN 55011:B1 (residential areas) EN 61800-3:C2 = EN 55011:A1 (residential/industrial areas)
Standards	CE/UL-certified/RoHS, KC, EAC, RCM **Performance Level:** PL d according to IEC ISO 13849-1 **Safety Integrity Level:** SIL2 according to IEC 61508-1 **Safety Category:** Cat. 3 acc. to IEC ISO 13849-1
Motor connection system	M12 connector – encoder signals and power cable connected in one plug-in cable up to 200 W (Dunkermotoren) Bayonet connector – encoder signals and power cable in one plug-in cable up to 400 W (ebm-papst)
Typical controllers	SIMATIC S7-1200(F), S7-1500(F/T/TF), SIMATIC Open Controller(F/T/TF)
Construction technology	IP20 housing, no fan, convection cooling, mounting 35 mm DIN rail in accordance with DIN EN 60715
Motor versions	EC motors with suitable encoder system • Supported Encoder systems: – Hall Sensor an incremental encoer – Hall Sensor and IQ-Enocer – IQ-Encoder – Incremental Encoder with (A, B, Z track) • Optional as planetary gearbox or with holding brake • Additional gearbox types and connection systems are available in the Product Partner portfolio

* for PDC F-variant
** valid only for PDC100F

Leverage the benefits

Versatile

- Flexible system components that can be combined
- Wide range of certificates (UL, CE, etc.) for global system use
- The servo drive system can be simply commissioned as a result of the IQ encoder technology
- PDC braking chopper can be deactivated, allowing energy recovery for battery operation
- Planning and direct transfer of all operating modes to the SIMATIC control system so that data can be sent to Cloud platforms via MindConnect

Seamless

- For motor power ratings of 100 to 1000 watts
- Motor supply voltage in the protective extra-low voltage range from 24 to 48 V DC
- Operates perfectly with SIMATIC controllers
- Fast and secure communication via PROFINET IRT with PROFIdrive and PROFIsafe
- Seamless range of tools based on Totally Integrated Automation (TIA) – from selection and dimensioning using the TIA Selection Tool up to commissioning and service in the TIA Portal

Safety Integrated

- Higher-level, standard safety concepts can be drawn up with maximum safety for man and machine
- PDC: Safety Integrated functions STO, SS1, SLT*, SLS, SSM
- PDC: New SLT* function (Safely Limited Torque): Safely Limited Torque monitors the motor current and motor torque in operation
- All Safety Integrated functions are simply commissioned using the TIA Portal and control using a SIMATIC controller via PROFIsafe

* valid only for PDC100F

For all applications

Moving

Energy-efficient and rugged solutions for basic conveyor technology with roller or chain conveyors, for hoisting gear and elevators – as well as for storage and retrieval machines that demand a high dynamic performance – and always with Safety Integrated on board.

Processing

The ideal solution for continuous processes demanding high speed and torque precision, for instance, for extruders, centrifuges, agitators and all types of production machines – motion control, isochronous communication and Safety Integrated.

Positioning

When high dynamic performance and precision are demanded: The precise positioning of individual axes allows several axes to be interpolated in a coordinated fashion – for example, as required in complex robotic applications.

Integrated Drive System
SIMATIC MICRO-DRIVE TM DRIVES

The TM Drives is a technology module for the SIMATIC ET 200SP. It can be controlled from a SIMATIC S7-1500 / 1200 via technology objects (TO). In distributed system concepts, the TM Drives can be used in conjunction with a Distributed Controller or the SIMATIC ET 200SP Open Controller.

1 Choose the right motor for your application

Simple – Stepper Applications
- Simple
- Very compact
- Hight torque at low speed
- Encoderless positioning

High efficient speed axis simple positioning
- Servo motors with Inc. Encoder
- High Speed
- High positioning accuracy

High performance positioning with absolut encoder
- Servo and Stepper motors with Absolut or Inc. encoder

2 Select the converter

F-TM StepDrive ST
6BK1136-6SB00-0BU0

- Drive for bipolar Stepper motors up to 48 V, 5/10 A
- STO (SIL3)
- Without Encoder or with incremental encoder
- Motor holding brake logic
- DI for reference

F-TM ServoDrive ST
6BK1136-6AB00-0BU0

- Drive for EC motors up to 48 V, 5/10
- STO (SIL2)
- With Inc. Encoder
- Brake chopper
- Motor holding brake logic
- DI for reference

F-TM ServoDrive HF
6BK1136-6AB00-0CU0
in addition to
F-TM ServoDrive ST

- Drive for EC servo motors and stepper motors up to 48 V, 5/15 A
- STO (SIL3)
- with Abs. Multiturn Encoder (Biss-C) or Inc. Encoder

3 Select BaseUnit

Bright BaseUnit
6ES7193-6BP00-0DU0

- For starting of potential group
- Up to 10 A

Dark BaseUnit
6ES7193-6BP00-0BU0

- For extension of potantial group

4 Select SIMATIC ET 200SP Interface module or controller

Open Controller

ET 200SP CPU

Bus Interface

- IM155-BA up to 16 modules
- IM155-ST up to 32 modules
- IM155-HF up to 64 modules
- IM155-MF-HF up to 64 modules

Standalone PLC

- S7- 1500
- S7-1500F
- S7-1200
- S7-1200F

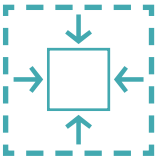
Finish

Technical data
TM Drives

Type	Drive system for extra low voltage
Applications	Assembly machines, 3D printing machines, labeling machines, textile machines
Power range	up to 280 W
Output current	I_{nom}: 5 A, I_{max}: 15 A
Motor supply voltage	24 – 48 V DC
Communication	PROFINET with PROFIdrive
Safety functions	Safety function STO hardwired
Application	TIA Selection Tool
Engineering	TIA Portal with HSP for SIMATIC MICRO-DRIVE
Update	Siemens Automation Tool (SAT)
EMV	According to EN 61800-3 Category C2 EN 61800-3:C2 = EN 55011:A1 (residential/industrial areas)
Standards	CE/UL-certified/RoHS, KC, EAC, RCM Performance Level: PL d according to IEC ISO 13849-1 **Safety Integrity Level:** SIL3 according to IEC 61508-1* Safety Category: Cat. 3 acc. to IEC ISO 13849-1
Typical controllers	SIMATIC S7-1200(F), S7-1500(F/T/TF), SIMATIC Open Controller(F/T/TF)
Construction technology	mounting 35 mm DIN rail in with Base Units accordance with DIN EN 60715
Motor versions	EC motors and bipolar Stepper motors are supported • EC motors with suitable encoder system for F-TM ServoDrives Supported Encoder systems: – IQ-Encoder – Incremental Encoder with (A, B, Z track) – Abs. Multiturn Encoder (Biss-C) • Optional as planetary gearbox or with holding brake** • Stepper motors for F-TM StepDrive ST – Encoderless operation – Incremental Encoder with (A, B, Z track)

* F-TM ServoDrives ST has safety level SIL2
** for TM ServoDrives, additional gearbox types and connection systems are abailable in the product Partner portfolio

Leverage the benefits



Compact

- With SIMATIC ET 200SP TM Drives, you can optimally use the space in your control cabinet: the system is about 50% narrower than comparable distributed peripherals.
- Output current 5 A – 15 A with 20 mm width
- Expandability of the station to 64 modules
- Compact dimensions, suitable for 80 mm standard control boxes

Seamless

- Operates perfectly with SIMATIC ET200SP controllers.
- SIMATIC ET 200SP adapts to your communication standard; Support of Ethernet based Field busses thanks to MultiFieldbus Interface Module
- Seamless range of tools based on Totally Integrated Automation (TIA) – from selection and dimensioning using the TIA Selection Tool up to commissioning and service in the TIA Portal

Easy to use

- Easy to use with TO and SINASPEED function with TIA portal
- No tools needed for wiring due to push-in technology
- Motor supply voltage in the protective extra-low voltage range from 24 to 48 V DC
- High efficient, no fan requirement (-30 ℃ ... +60 ℃)

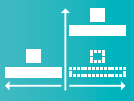
For all applications

Moving

Energy-efficient and rugged solutions for basic conveyor technology with roller or chain conveyors, for hoisting gear and elevators – as well as for storage and retrieval machines that demand a high dynamic performance – and always with Safety Integrated on board.

Processing

The ideal solution for continuous processes demanding high speed and torque precision, for instance, for extruders, centrifuges, agitators and all types of production machines – motion control, isochronous communication and Safety Integrated.



Positioning

When high dynamic performance and precision are demanded: The precise positioning of individual axes allows several axes to be interpolated in a coordinated fashion – for example, as required in complex robotic applications.

SIMATIC MICRO-DRIVE
Starter Kit and Demo Case

Starter Kit for the F-TM ServoDrive ST system

The F-TM ServoDrive Starter Kit is a value package that includes the F-TM ServoDrive and additional components for fast commissioning and efficient running.

Article number: 6BK1637-6AB00-0BU0

- F-TM ServoDrive ST
- SIMATIC ET 200SP Interface-Module IM 155-6PN ST
- SIMATIC ET 200SP BaseUnit
- Motor: ebm-papst ECI42.20 24V
- Cable: KnorrTec

Special price with savings of up to 64%

SIMATIC MICRO-DRIVE Demo Case

The demo case includes SIMATIC MICRO-DRIVE PDC100F, F-TM ServoDrive ST and ebm-papst EC motor.

Article number: 6AG1067-2AA00-0AE0

- PDC100F & F-TM ServoDrive ST
- Motor: ebm-papst ECI42.20 24V with angle disc
- Cable: KnorrTec AiO2 plug-in cable
- Built into carrier case

TIA Selection Tool – quick, easy, and smart configuration

For you to get the most out of our portfolio quickly and easily

Do you always need the optimum configuration for planning your project? Of course you do! For your application we offer the TIA Selection Tool to support all project planners, beginners and experts alike. No detailed portfolio knowledge is necessary. TIA Selection Tool is available for download as a free desktop version or a cloud variant.

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