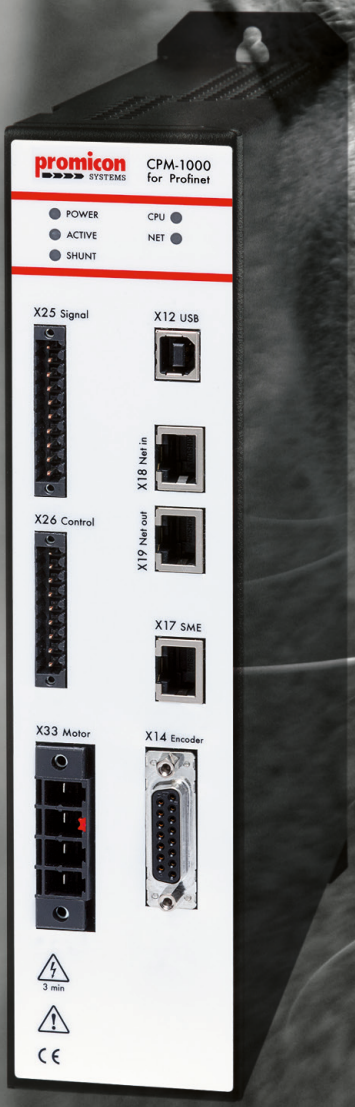
compact motion

Intelligent servo controller

for fieldbuses and networks



promicon SYSTEMS

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Universal in every aspect

PROFINET

EtherCAT

PROFIBUS

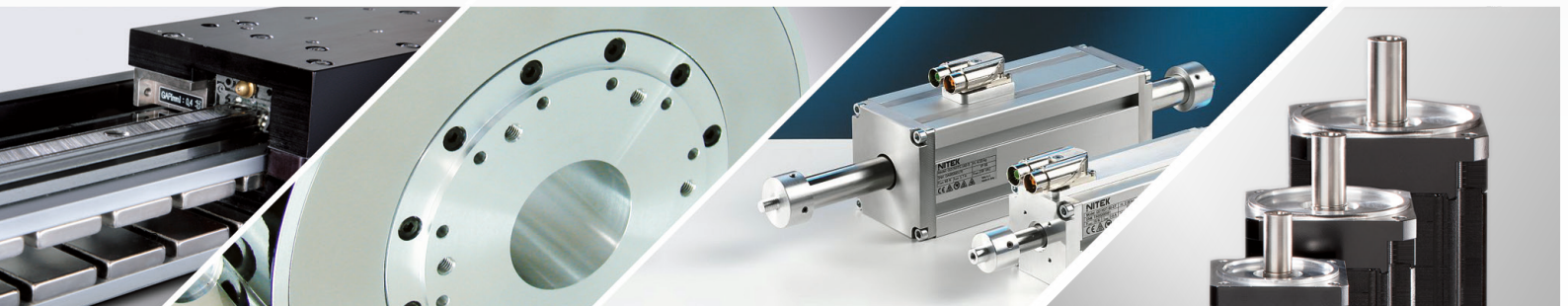
CANopen

Multifaceted

Our CPM-1000 Series servo controllers offer unbeatable levels of functionality and flexibility to achieve optimal efficiency and reliability when used with electric drives in a wide variety of challenging applications.

- Various motor types from different manufacturers can be directly connected and operated with no need for adaption in the controller's firmware. This feature is supported by a universal feedback interface for the most frequently encountered encoders.

- To gain best results of the dynamic and precise response potential offered by modern servo motors, the closed-loop control relies on a rapid RISC processor combined with high-performance algorithms. Promicon's long term experience in high-speed applications offer a prime resource in satisfying this criterion with ultimate effectiveness.



Close and cordial contact

The interfaces to both the hardware and the software assume salient significance when it comes to convenient integration of the CPM-1000 in a highly universal array of environments.

- Reliable connections with minimal effort are available thanks to various interface modules for linkage to established fieldbuses and networks. This creates the conditions for direct connection between the CPM-1000 and systems operating with PLC and PC support.

- Basic axis functions foster fast execution of standard tasks. The functionality range can be easily expanded as new requirements arise. This feature even allows implementation of special applications that are otherwise either difficult or impossible to achieve.

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Simple, flexible and potent

Software interface

Control signals from the higher-level PLC are expedited through prefabricated function modules. The resulting advantage is that the programmer only needs to devote minimal attention to the details of the axis. These function modules are completely implemented in the CPM-1000, while their input and output signals are transported through the fieldbus and the network. This provides benefits from multiple perspectives.

- Specific characteristics in the PLC have no effect on the function module's operation.
- The CPM-1000's high levels of processing power ensure rapid execution of function modules accompanied by elimination of potential delays in the PLC.
- This transparent interface creates considerable system reliability because no executable code is installed in the PLC.

Expandable function modules

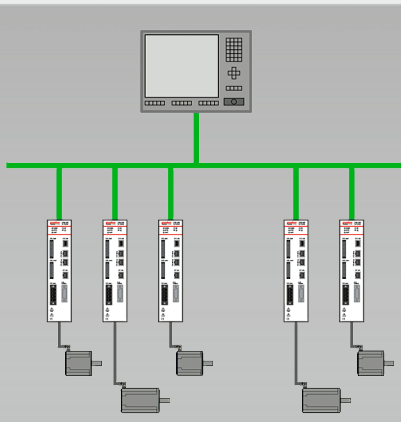
To equip the CPM-1000 for situations demanding functions extending beyond standard capabilities, its functionality can be expanded at any time with no need for Promicon to provide special firmware adaptations. This is made possible by complete and comprehensive user-level implementation of function modules furnished in the form of source code. This places programmers in a position to modify and expand existing function modules while also endowing them with the ability to create new ones. This strategy combines the simplicity of standard functions with the flexibility afforded by free programming. This concept creates conditions in which system manufacturers can rapidly respond to new demands while simultaneously retaining their own process know-how.

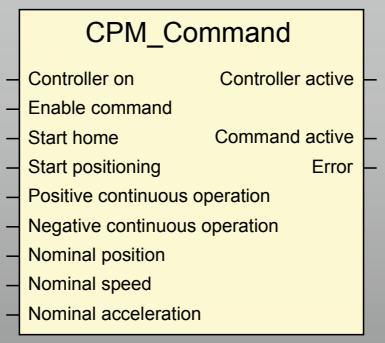
Flexible programming

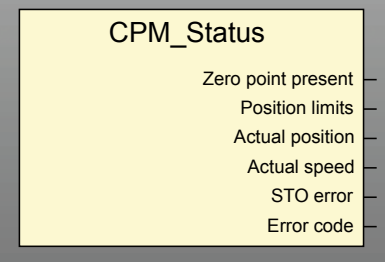
The CPM-1000 Series servo controllers incorporate all of the programming elements needed for unconstrained design of motion patterns and operational sequences.

- Arithmetic
- Remanent variables
- Flow control, subprograms
- Logical relationships
- Timers
- Mathematical functions

In combination with objects for modifying axis response, convenient implementation of a wide range of performance requirements such as travel to seizure, clearing of distance-to-go, current reduction, position detection with trigger input and speed profiles is also available. The possibilities are virtually limitless.







Lightning-fast response

A 32-bit RISC processor ensures optimally rapid response times and swift program processing. Tasks in which time is a critical factor are reliably executed and unnecessary delays are eliminated. One special feature is the instantaneous start of motion patterns, which produces a direct rise in machine performance. It is also possible to modify speed and target position „on-the-fly“ while travel motion is in progress, without waiting for the axis to come to a halt. Precise compliance with the programmed values for acceleration and jerk limitation remains ensured.

Unrestricted motor selection

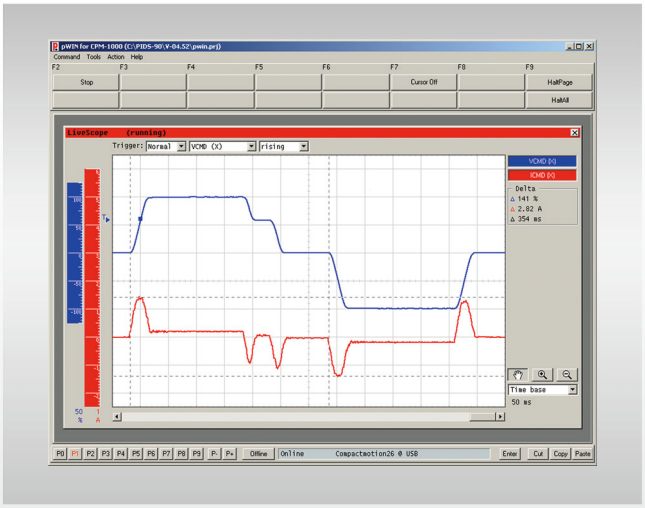
The CPM-1000's universal design structure supports application and operation of an unrestricted array of servo motors featuring various design configurations. This endows engineers with immense latitude in selecting the optimal motors for their specific applications. The modalities of parameter definition allow adaptation of a motor with no need for special implementations in the servo controller. The motor can assume operation at once.

- AC servo motors
- Torque motors
- Direct drives
- Linear motors
- Tubular motors

Oscillation reduction

During execution of travel motion targeted jerk limitation is applied in order to reduce oscillation within the mechanical system to a minimum. Thanks to the jerk limitation, acceleration on the axis is continuously and gradually increased or reduced instead of being changed in a single sudden process. This produces a particularly harmonious motion profile while preventing abrupt shifts in force levels, resulting in optimal protection of the power-transfer elements.

Live Scope



Drive calibration is facilitated by the real-time debugger's Live Scope, which allows observation and analysis of the drive's response characteristics at the computer. One of Live Scope's special features is to display in real-time mode like an oscilloscope, which allows immediate observation of events in the drive system.

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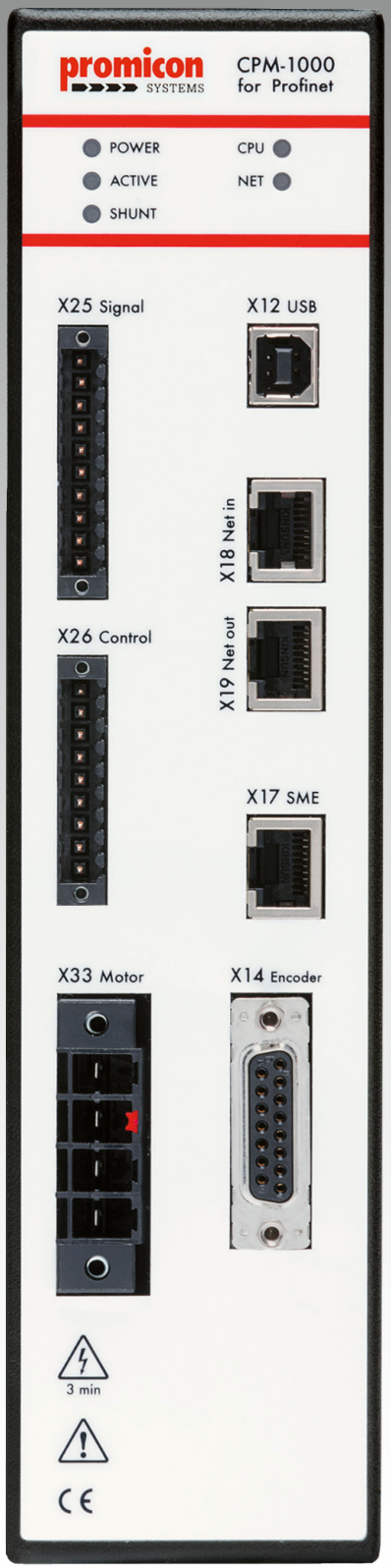
Uncompromising technology



6 digital inputs and
4 digital outputs

2 inputs for „Safe Stop" STO

Temperature monitoring for
the motor with PTC or KTY sensor

Continuous current up to 24 A_{rms}
Peak current up to 68 A

Power-supply connection
with integrated filter:
1 x 40 ... 230 V_{AC} or
3 x 160 ... 480 V_{AC}

USB for PC connection

Fieldbus / network

Safety expansion

Universal motor feedback for
EnDat, Hiperface, BiSS, SSI, Sine-
cosine, Incremental and Resolver

DC link connection
for multi-axis operation

Integrated ballast resistor,
external expansion possible

Universal motor feedback

Another special feature of the CPM-1000 is its universal feedback interface. This allows direct connection of various motor feedback systems with no need for special supplementary modules. The specific system is simply selected by defining the power unit parameters.

- EnDat 2.1 and 2.2
- BiSS
- Sine-Cosine
- Resolver
- Hiperface
- SSI
- Incremental

Functional safety

The „Safe Stop" (STO) function is available as standard equipment. The dual-channel version conforms to the latest EN 13849-1 and EN 61508 standards with „Performance Level" PL e and „Safety Integrity Level" SIL 3 for demanding requirements and has been certified by the German TÜV inspection agency. Operation is fully electronic and thus without wearing parts, and the device is suitable for direct combination with other safety components. Additional safety functions such as „Safely Limited Speed" (SLS) can be implemented with an external expansion module.

Fieldbuses and networks

Interface modules for various fieldbuses and networks are available to facilitate application of the CPM-1000 in an array of system topologies. All interface modules impress with a combination of high throughput and fast response times, factors of particular significance at high clock rates. To satisfy the demands associated with this criterion an ARM-based netX processor is used with Industrial Internet. Application of the netX processor will also allow easy implementation of other Ethernet protocols in the future. The CPM-1000 can still be connected to computers and other devices through interfaces used exclusively for data.

Currently the following interface modules are available:

- Profinet
- EtherCAT
- Profibus
- CANopen
- Ethernet TCP/IP
- RS232/RS485

Device overview

							
	CPM-1206	**CPM-1404**	**CPM-1408**	**CPM-1603**	**CPM-1606**	**CPM-1612**	**CPM-1624**
Power supply connection	1 x 40 V_{AC} … 1 x 100 V_{AC}	1 x 100 V_{AC} … 1 x 230 V_{AC}		3 x 160 V_{AC} … 3 x 480 V_{AC}			
Continuous current	6 A_{rms}	4 A_{rms}	8 A_{rms}	3 A_{rms}	6 A_{rms}	12 A_{rms}	24 A_{rms}
Peak current	17 A	11 A	22 A	8.5 A	17 A	34 A	68 A
Width	49 mm	49 mm	59 mm	49 mm	59 mm	69 mm	119 mm
Height	240 mm						
Depth	220 mm						

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A class of its own

Consultation and support

Our Technical Support is standing by to provide quick and comprehensive answers to your questions regarding the CPM-1000. It is staffed by experts able to call on many years of extensive experience in dealing with drives and automation components.

They can also provide users with competent advice in selecting, dimensioning and applying drives.

The company

Since its inception in 1984 Promicon has remained firmly focused on electrical drive technology with servo motors. Even then the emphasis was directed toward creation of closed-loop control systems for high-speed applications, always in pursuit of one ultimate objective: evolving the ideal solution.

Despite the metamorphosis in processes and boundary conditions that has accompanied the passage of the years, Promicon's primary commitment to implementing high-technology drive systems for difficult and demanding applications has never wavered.

This intense commitment combines with more than 25 years of experience to guarantee reliable and real-world cutting-edge technology. Now and in the years to come.

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