# CONTROLLERS

Full architecture solutions featuring the supply of comprehensive automation packages is now possible thanks to the introduction of the CORE Pro controller line.

Extensive industrial applications, including full task capabilities on robotic devices, are perfectly accomplished thanks to the cutting edge technology provided by this innovative and flexible system, which ensures extreme modularity based on its standardized interfaces design.

Its full and perfect harmonization with our complete series of motors and drives makes of this motion control bundle an optimized total solution for any application and ensures highest efficiency in performances and time to market.
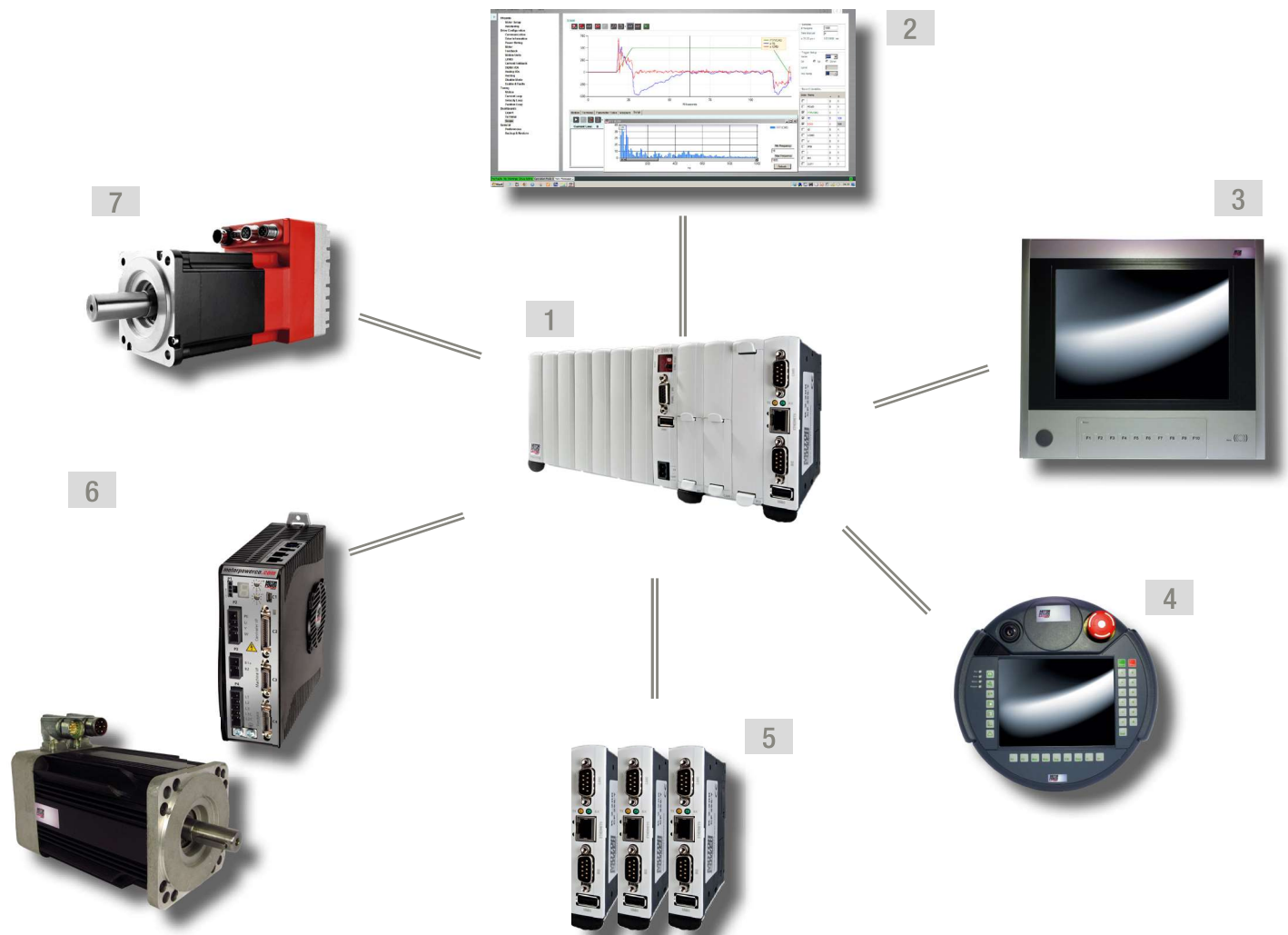
1. Control with various CPU modules	2. Toolsuite for automation challenges	3. Stationary operating panels	4. Mobile handheld terminals	5. Modular I/O system with mountable modules (bus link modules allow decentralized placement of the modules)	6. Drive technology	7. Duet & Duet Flexi for integrated servomotor

Reliability, flexibility and modularity are ensured either in applications characterized by basic control tasks requirement up to more sophisticated demanding industrial duties.
The control range consists of three CPU series providing processor speed capability from 600MHz up to 1.4GHz, with different industrial standard fieldbus protocols (CAN Open, Ethercat and Ethernet) available in the standard configuration. Expandability is easy and quick with simple plug in modules addition.

FEATURES

> USE OF MARKET STANDARDS

The CORE PRO control platform is based on the CoDeSys project design and run-time system, the market standard among PLC programming tools. As a result of the systematic use of industrial standards, CORE PRO furnishes straightforward enlargement. EtherCAT is available for real-time Ethernet applications along with CANopen for Motion application. Ethernet TCP/IP for uncomplicated networking with any peripheral connecting. ProfiBus expansions modules (master and slave) are availlable for different interfacing. Motion functionalities are managed via PLC Open standards.

> LOW TRAINING EXPENDITURE

Use of the CoDeSys industrial standard facilitates control system operation. Anyone who has already worked with CoDeSys can start immediately and utilize all the CORE PRO functions in the familiar CoDeSys development environment. This greatly reduces training expenditure.

> **CPU-MODULES**

A CPU module is a intelligent processing unit, which is responsible for the execution of the automation programs. CPU modules are available in the following performance levels.

PRODUCT DATA

CP 240/A	CP 242/A	CP 255/X
The entry level CPU for general pourpose applications	Best compromise between price and performance. Ideal for a wide range of industrial appli-cations	Ideal for Robotics applica-tion and perfect in industrial automation tasks
CanOpen and EtherCAT on board up to 8 axis*	CanOpen and EtherCAT on board up to 16 axis*	CanOpen on board up to 64 axis*
*Depending by fieldbus	*Depending by fieldbus	*Depending by fieldbus

Name	Performances	Interfaces
CP 240/A	Intel ATOM 600MHZ, 512MB RAM	1xCAN, 2xUSB, 1xEthernet, 1xEtherCAT, 1xDVI
CP 242/A	Intel ATOM 1,1GHZ, 512MB RAM	1xCAN, 2xUSB, 1xEthernet, 1xEtherCAT, 1xDVI
CP 255/X	Intel Pentium 1,4GHz, 512MB RAM	1xCAN, 2xUSB, 1xEthernet, 1xDVI

EXTENSION MODULES

The CPU devices provide different slots for extension modules (additional CAN-, Ethernet- or serial connections) on the front side. The following table shows the available extension modules, which can be inserted into the CPU (depending on the availability of slots)

Model	Description	CP 24X	CP 25X
FX 200/A	CAN interface module		✓
FX 271/A	Sercos III interface module, 2 additional Ethernet interfaces 100MBit		✓
NX 252/A	Ethernet interface module, 1x100MBit	✓	✓
SX 210/A	Serial interface module, RS232-C, full duplex		✓
SX 220 /A	Serial interface module, CL (20mA)		✓
SX 230/A	Serial interface module, RS485/422-A		✓

EXPANSION MODULES

> EXTENSIVE MODULE UNIT RANGE

The functional scope of the control system can be enlarged by means of a selection from an extensive product range. CORE PRO extensions include standard, technological and communications modular units, which are easily configured via CoDeSys.

> SIMPLE AND UNLIMITED POSSIBILITIES FOR EXPANSION

Depending on the machine situation, the I/Os can be arranged in any order. The enlargements can either be attached directly to the control module unit, or operated decentrally via bus coupling module groups. This provides an effective reduction in product variations.

SEE IT BEFORE IT HAPPENS

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EXPANSION MODULES

DIGITAL IN/OUT MODULES

Name	IN	OUT	Description
DI260/A	16		2 DI Interrupt able
DO272/A		14	2A at 50%, short-circuit proof
DM272/A	8	8	2xDI interrupt able, DO's 2A at 50%, short-circuit proof
DM276/A	6	8	2xDI interrupt able, DO's 2A at 50%, short-circuit proof,output against ground

ANALOG IN/OUT MODULES

Name	IN	OUT	Description
AI 240/A	4		0..10V,+/-10V, 14Bit
AO 240/A		4	+/-10V, 12Bit
AM 280/A	4	4	IN: +/-10V, 14Bit OUT: +/-10V, 12Bit
AM 280/B	4	4	IN: 0/4..20mA, 14Bit OUT: 0/4..20mA, 12Bit

TEMPERATURE MODULES

Name	IN	OUT	Description
TM 225/A	4		PRT100, 2- and 4-wired, 14Bit
TM 240/A	6		Thermocouple type J,K,L, 14 Bit, galvanic Insolation

ENCODER INTERFACE MODULES

Name	IN	OUT	Description
MM 240/A	2		Incremental Encoder, 32Bit, 2 additional latch inputs

SERIAL INTERFACE MODULES

Name	IN	OUT	Description
SM 210/A	2		RS232-C, full duplex
SM 220/A	2		CL (20mA)
SM 230/A	2		RS485/422-A
SM 250/A	4		SSI-Encoder inputs

FIELDBUS MODULES

Name	CONNECTORS	Description
FM 200/A	2	CAN module for IOs
SM 220/A	1	Profibus Master module, DPV1
SM 230/A	1	Profibus Slave module, DPV1

CORE PRO

The range of high-contrast and high-resolution stationary panels includes display diagonals from 8.4, 12.1 and 15 inches. In order to better integrate the operating device into the overall design, its appearance can be matched to that of the machine.

FEATURES

> TOOL LESS MOUNTING

Complete installation of the operating devices is posible without any special tool. The panel simply needs to be locked into the rectangular recess and screwed in place.

> EASY CONNECTION

A single cable is sufficient for connection of dispaly, touch screen and function keys.

Panel	Description
OP 430-LD/A-0000	8,4" TFT, 800x600 pixel, 10 keys with LED, 16 digital inputs
OP 430-LD/A-0010	8,4" TFT, 800x600 pixel, 10 keys with LED, 16 digital inputs, RFID
OP 450-LD/A-0000	12,1" TFT, 800x600 pixel, 10 keys with LED, 16 digital inputs
OP 450-LD/A-0010	12,1" TFT, 800x600 pixel, 10 keys with LED, 16 digital inputs, RFID
OP 460-LD/A-0000	15" TFT, 1024x768 pixel, 10 keys with LED, 16 digital inputs
OP 460-LD/A-0010	15" TFT, 1024x768 pixel, 10 keys with LED, 16 digital inputs, RFID

MOBILE PANEL

Mobile operating devices are extremely well protected against damage through robust housing design. Sensitive components are safeguarded by a special shell, which ensures that the mobile panel remain intact even when dropped from a height of 1.5 m and have an extremely long service life.

The handhelds are equipped with two, three-level enabling keys, as well as an emergency stop button, as standard features. All the safety functions possess two-circuit design and therefore the mobile panel corresponds with the machine guideline.

ADVANTAGES

> **EXCELLENT DAMAGE PROTECTION**

> **HIGHEST SAFETY STANDARDS IN SERIES**

> **HMI READY-TO-USE SPECIAL ROBOTIC SOLUTION**

Mobile Panel	Description
MP T50 RVx	6,5" TFT, 640x480 pixel, 64MB Flash, 64MB DRAM, robotic keyboard (31 keys), key switch, emergency stop switch, two 3-position enabling switches, Java VM

SEE IT BEFORE IT HAPPENS

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