

CONTROL



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CONTROL SYSTEMS



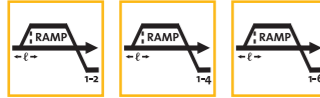

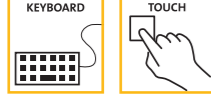
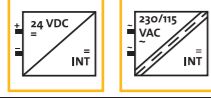
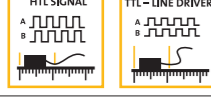
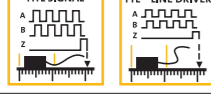







MEASURE ▶ CONTROL ▶ POSITION



ELGO Electric GmbH was established in 1977 and has specialized in the development and production of length measuring systems, position indicators and position controllers. With a strong development department, the company is able, on a customer-specific basis, to deliver standard as well as one-off customized special solutions, and to do so cost-effectively in all cases. The flexibility on the market is reflected in the fact that **ELGO** is represented in a large number of areas in the mechanical engineering sector.

Symbols for technical data and their meaning

Property control	Symbol	Explanation
Digital output signals		Potential-free NO contact or electronic output signal
PID drive control		PID analogue output for 1-2, 1-4 or 1-6 axes
Drive control ramp function		Ramp-controlled analogue output for 1-2, 1-4 or 1-6 axes
Display mode		Monochrome or colour LCD
Type of input		Keyboard or touchscreen
Connection voltage		24 VDC or 230/115 VAC supply voltage
Incremental measuring system input without index impulse		HTL- (single ended) or TTL-signal (coincident)
Incremental measuring system input with index impulse		HTL- (single ended) or TTL-signal (coincident)
Absolute measuring system input		Interface for absolute ELGO measuring system
Measuring system supply		24 VDC supply voltage for rotary impulse sensor or linear measuring systems
Type of protection		IP43 in installed condition and IP00 in uninstalled condition and/or IP00 in installed and in uninstalled condition
Number of axes		1, 1-2, 1-4 or up to 6 axes
Interfaces		RS232 communication

The position controllers

In the automation era, the demands faced by the mechanical engineering sector have risen: never before has it been so essential to satisfy wishes for quality, flexibility and customized solutions in an application-oriented context.

ELGO expertly reflects these aims and objectives in its product portfolio of controllers and offers user-friendly and cost-effective solutions in the axis positioning, angle adjustment and speed monitoring sectors. To satisfy the requirements of diverse sectors, ELGO can supply compact controllers, programmable controller systems and IPCs.

These positioning controllers offer significant benefits.

- Positioning via bipolar analogue outputs or digital travel signals
- Storage of axis parameters and function blocks
- Simple assembly and installation
- Menu-guided user interface
- User-friendly design
- Small footprint - i.e. not much space required
- Cost-effective variants
- Tailor-made software solutions
- CoDeSys: licence-free programming software



Overview Control systems

Contents

Compact controllers:

Used in conjunction with the tried and tested ELGO compact controllers (P85 and P87), the integrated position controllers (P30 and P40 series) once again stand out as the ideal solution for applications requiring compact designs, optimum price-performance ratio and simple connection technology.

P30	P. 2
P40	P. 4

Modular controls:

The P50/P100 modular positioning system featuring an integrated and freely programmable controller has been developed as an extension to the 'conventional' ELGO compact controllers, for use with today's ever more complex machine management systems.

Terminals	P50-LCT	P. 8
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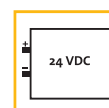
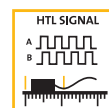
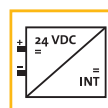
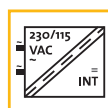
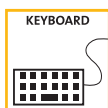
P30

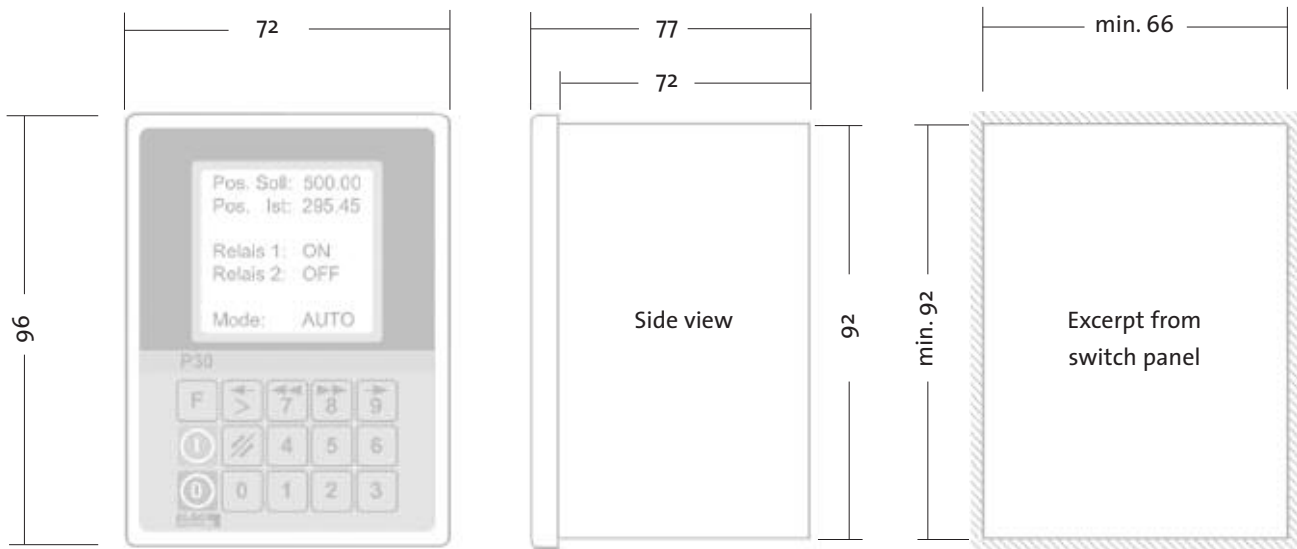
Type: **compact position controllers**
 Controller capacities: **1 axis**



Features:

- Compact design
- Comprehensive parameters menu
- Integrated 115/230 VAC power unit
- Potential free normally opened contact (NOC) relay outputs
- Program memory (99 lines)
- Manual inching operation
- Dot matrix LCD with back lighting





⇆ Installation depth including connector = 90 mm
 ⇆ all dimensions in mm

The P30 is a very compact, user-friendly simple controller with relay outputs which enable a positioning with up to three speed options. An extensive range of common position parameters like, for example: spindle adjustment, manipulation tolerance window, adjustment limit, adjustable departure functions, reference values, saw blade/tool corrector and many others are included.

An integrated adjustable impulse assessment factor and flank evaluation including a programmable decimal point are included in order to adapt to the relevant measuring system (rotary encoder or magnetic length measuring system).

The P30 can be operated in manual inching mode (manual operation) and, in programmed operations, has a 99 lines memory available.

Technical data:

Display:	Dot matrix LCD with back lighting
Supply voltage:	230 VAC/50 Hz or 115 VAC/60 Hz +/- 10 % optional 24 VDC +/- 10 %; 450 mA at 24 VDC, 25 VA at 115 VAC, 5 VA at 230 VAC
Measuring system supply:	24 VDC
Digital input signals:	PNP, (optional NPN) min. 200 ms impulse duration
Input frequency of meas. syst:	15 kHz (higher available upon request) per channel, A or B
Output signals:	potential free NOC 220 V/ 2 A
Connection technology:	Plug-type, tension-relieved screw terminals
Hardware:	32 Bit microprocessor with 768 KByte flash and 24 KByte RAM
Housing:	Metal
Keyboard:	Flim, short stroke keys
Protection class:	IP43 (in installed condition from the front)
Operating temperature:	0...50°C
Storage temperature:	0...70°C
Relative humidity:	Non-condensing max. 80 %

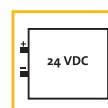
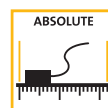
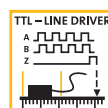
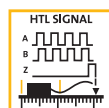
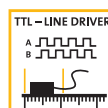
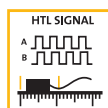
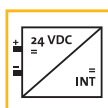
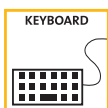
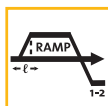
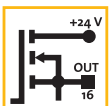
P40

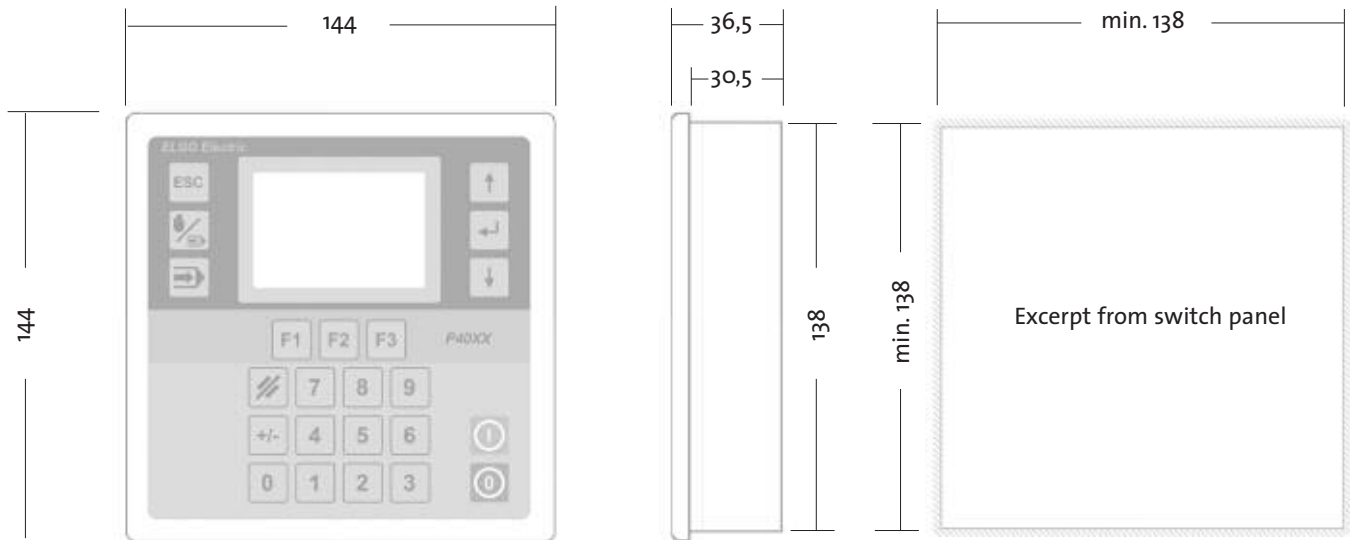
Type: **compact position controllers**
 Controller capacities: **1 and 2 axes controllable**



Features:

- Diverse interfaces (CANopen, RS485, RS422)
- User-friendly
- Manual inching operation
- Individual record operation
- LCD display
- Program memory 500 lines
- Integrated diagnosis operation
- 16 digital outputs (+24 V-PNP)
- PID – analogue output available as an option





⇄ Installation depth including connector and cable bend radius = 100 mm
 ⇄ all dimensions in mm

The P40 is predestined for simple positioning applications in mechanical engineering. The principal benefit is the convenient and rapid input of nominal value and, if required, input of a quantity figure. The actual value, nominal value, quantity and other important values are shown in the LCD display. Parameterisation is carried out in plain text via a graphic menu.

The P40 is available with an extensive software standard and an internal program memory of up to 500 lines. For positioning, there are three different variants of output signal available: Shutdown positioning (for one to three speeds), PID and ramp controlled analogue output.

Depending on the variant concerned, the P40 can be supplied with either 24 VDC or 24 VAC. It can communicate with a superordinate system via an optional interface.

Technical data:

Display:	LCD dot matrix with back lighting
Connection voltage:	24 VDC (+/-10%), max. 200 mA; 24 VAC, max. 10 VA with unimpaired outputs
Measuring system supply:	24 VDC
Digital input signals:	PNP, min. 200 ms impulse duration
Input frequency of meas. syst:	25 kHz per channel, A or B
Digital output signals:	Open emitter, with limited resistance to short circuits, max. 100 mA output current, integrated free wheeling diodes.
Analogue output signals:	+/- 10 V resolution 11 bit PID or ramp control
Connection technology:	DSUB plug connectors or terminals
Hardware:	32 Bit microprocessor with 768 KByte flash and 24 KByte RAM
Housing:	Metal
Keyboard:	Film keyboard
Protection class:	IP 43 (in assembly)
Operating temperature:	0...50°C
Storage temperature:	0...70°C
Relative humidity:	Non-condensing max. 80 %

ELGO – the new generation

Trainees:

- Male or female electrical engineer for devices and systems
- Male or female industrial clerk
- Female industrial clerk for international business management with foreign languages
- Skilled worker for warehouse logistics

BA students:

- Bachelor of Arts – Small and medium-sized businesses
- Engineer (BS) with focus of studies on electrical engineering/automation engineering
- Bachelor of Arts – trade/sales management



guides you into the future



ELGO
ELECTRIC

P50-LCT

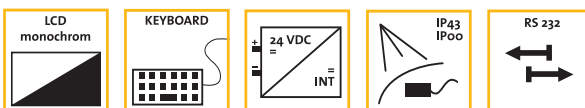
Type: **Low cost terminal**

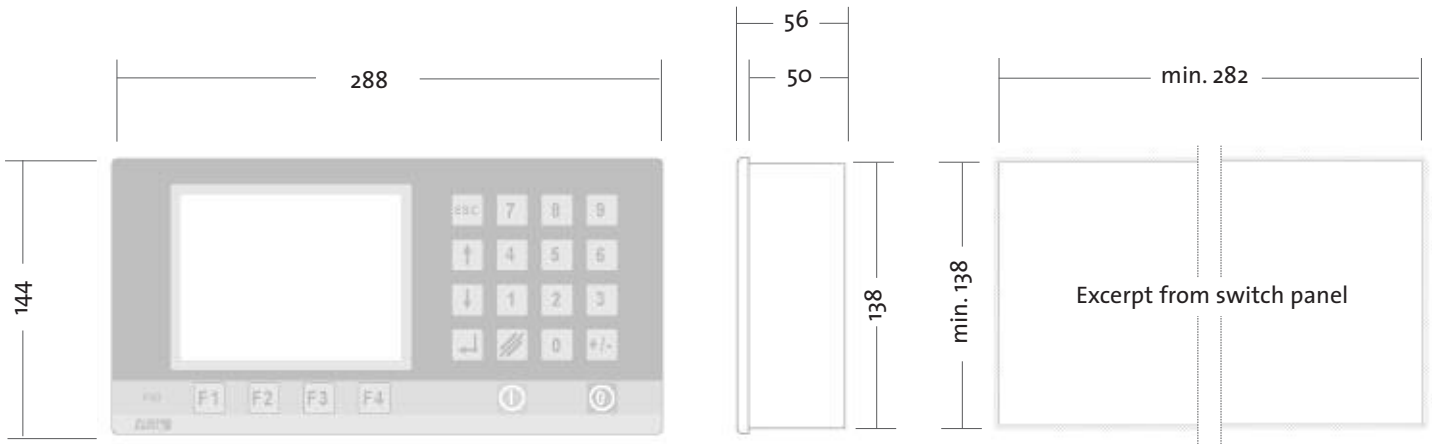
Controller capacities: **in conjunction with P50-CPU 1-4 axes or P100-CPU up to 6 axes**



Features:

- High resolution LCD monochrome display (320x240 pixels)
- Low cost terminal for all ELGO positioning modules
- Screens programmable via CoDeSys
- RS232 interface (optional CANopen, RS422, RS485)
- All ELGO CPU boards can be connected via RS232
- Freely programmable function keys
- Pictogram function





- ↔ Installation depth including connector and cable bend radius = 120 mm
- ↔ all dimensions in mm

Exactly the same, regardless of sector or application: Interface between man and machine, the P50-LCT terminal offers maximum transparency. Main benefit: a cost-effective solution.

Robust, compact and multi-faceted, the terminal is easily installed in a wide range of applications. The unit's parameters can be set in a variety of languages, including Eastern and Cyrillic scripts.

Technical data:

Display:	LCD point matrix with back lighting
Connection voltage:	24 VDC max. 500 mA
Connection technology:	Plug connectors
Hardware:	16 bit microcontroller
Housing:	Metal
Keyboard:	Flim, short stroke keys
Protection class:	IP43 (in installed condition from the front)
Operating temperature:	0...50°C
Storage temperature:	0...70°C
Relative humidity:	Non-condensing max. 80 %

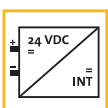
P100-IPC

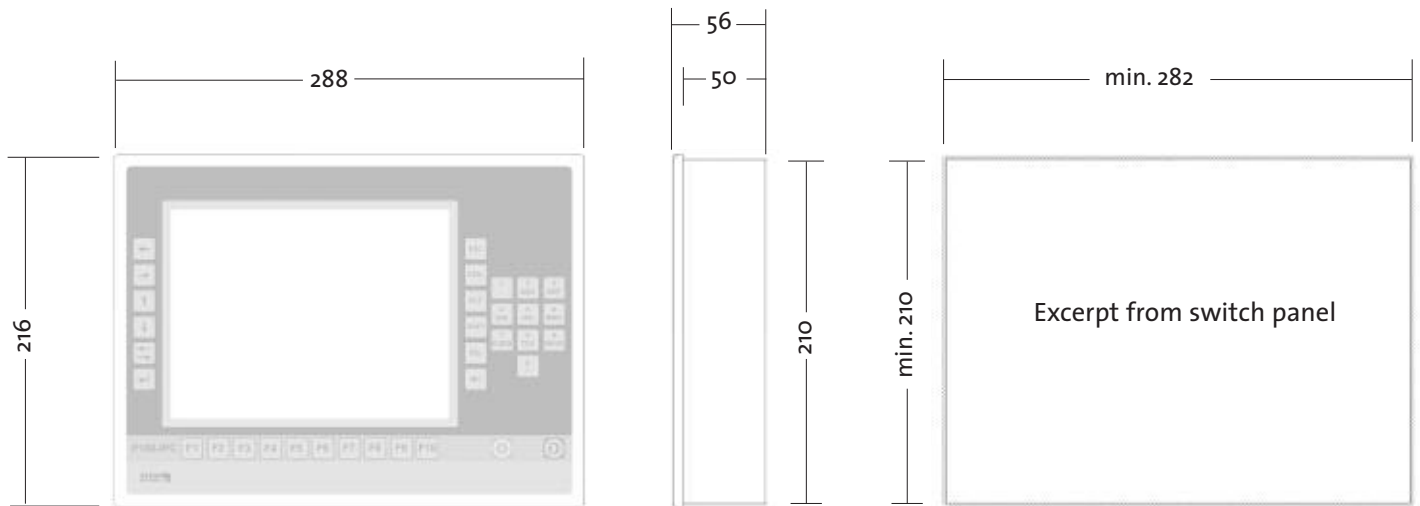
Type: Industry-standard programmable controller
 Controller capacities: in conjunction with P50-CPU 1-4 axes or
 P100-CPU up to 6 axes



Features:

- High-resolution 8.4" TFT colour screen
- RS232 interface (optional CANopen, Ethernet, RS422)
- Up to 4 freely available RS232 and USB interfaces
- Processor based on Eden CPU 400 MHz
- 1 GByte compact flash card
- Short stroke keys for data input
- All ELGO CPU boards can be connected via RS232
- Freely programmable function keys
- Optional touchscreen function





- ↔ Installation depth including connector and cable bend radius = 150 mm
 ↔ all dimensions in mm

An industry-standard programmable controller characterized by an optimum price-performance ratio, openness and expandability. One platform can therefore be used to combine several automation functions.

Standard interfaces in hardware and software deliver greater flexibility when planning out individual applications.

Technical data:

Display:	TFT 8.4" colour screen with CFL background lighting
Connection voltage:	24 VDC max. 2 A
Connection technology:	Plug connectors
Hardware:	VIA Eden CPU ETX board with CF card (1 GByte)
Housing:	Metal
Keyboard:	Film, short stroke keys
Protection class:	IP43 (in installed condition from the front)
Operating temperature:	0...50°C
Storage temperature:	0...70°C
Relative humidity:	Non-condensing max. 80%

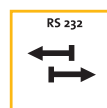
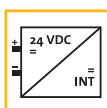
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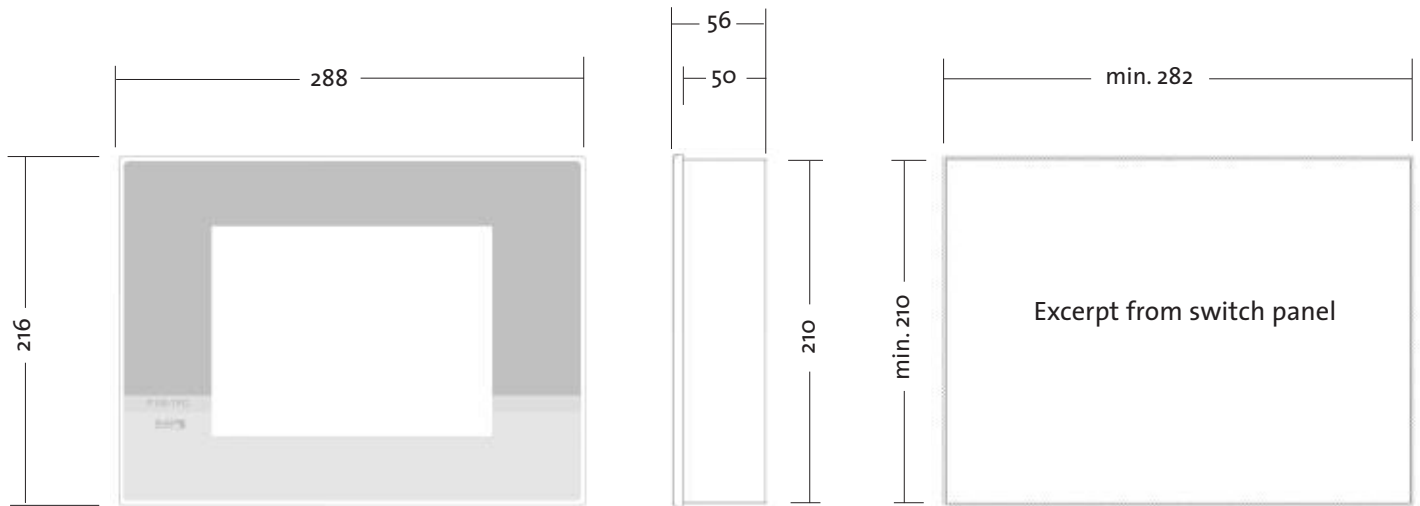
Type: Industry-standard PC with touchscreen
 Controller capacities: in conjunction with P50-CPU 1-4 axes or P100-CPU up to 6 axes



Features:

- High-resolution 8.4" TFT LCD screen
- RS232 interface (optional CANopen, Ethernet, RS422)
- Up to 4 freely available RS232 and USB interfaces
- Processor based on Eden CPU 400 MHz
- 1 GByte compact flash card
- Touchscreen for data input
- All ELGO CPU boards can be connected via RS232





- ↔ Installation depth including connector and cable bend radius = 150 mm
 ↔ all dimensions in mm

A touchscreen terminal based on IPC, characterised by an optimum price/performance ratio, openness and ultra-simple operation.

Standard interfaces in hardware and software deliver greater flexibility when planning out individual applications.

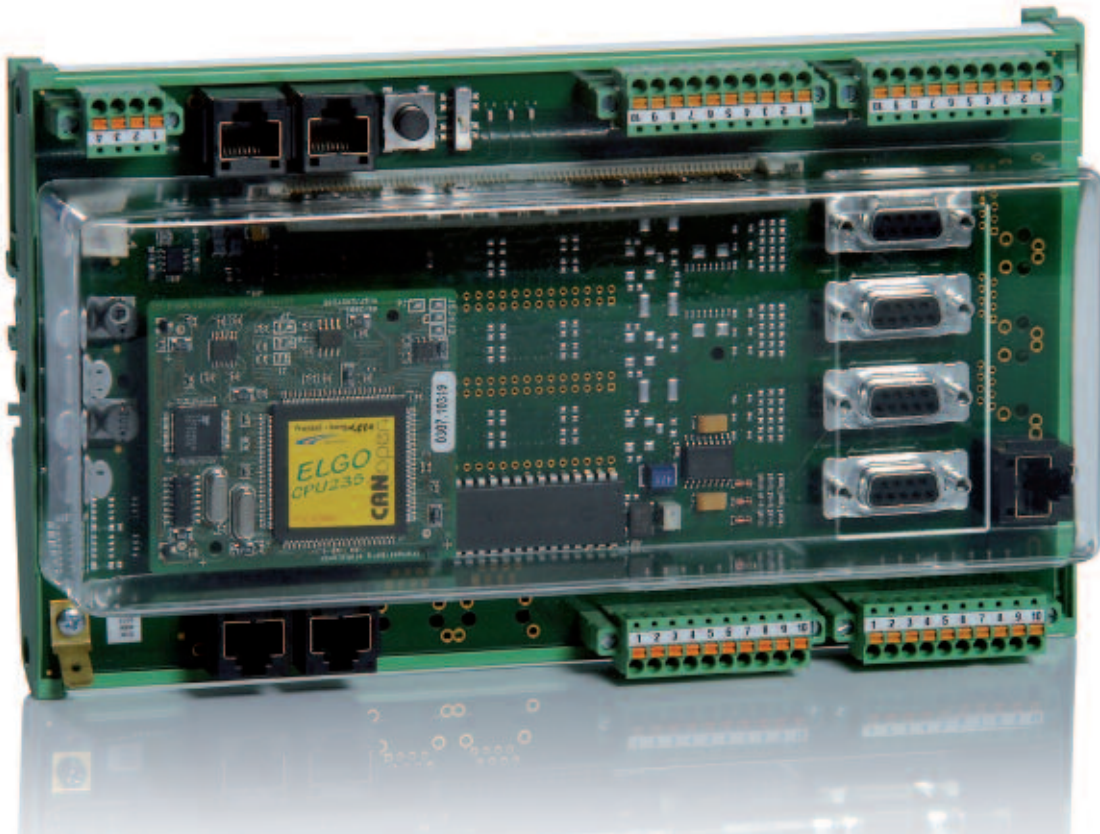
Technical data:

Display:	TFT 8.4" colour screen with CFL background lighting
Connection voltage:	24 VDC max. 2A
Connection technology:	Plug connectors
Hardware:	VIA Eden CPU ETX board with CF card (1 GByte)
Housing:	Metal
Keyboard:	Film, touch (resistive)
Protection class:	IP43 (in installed condition from the front)
Operating temperature:	0...50 °C
Storage temperature:	0...70 °C
Relative humidity:	Non-condensing max. 80%

P50-CPU

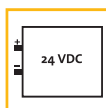
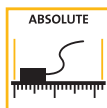
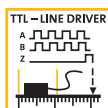
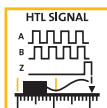
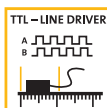
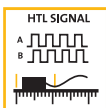
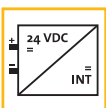
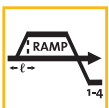
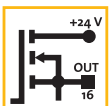
Type: **Low-cost programmable controller board with positioning function**

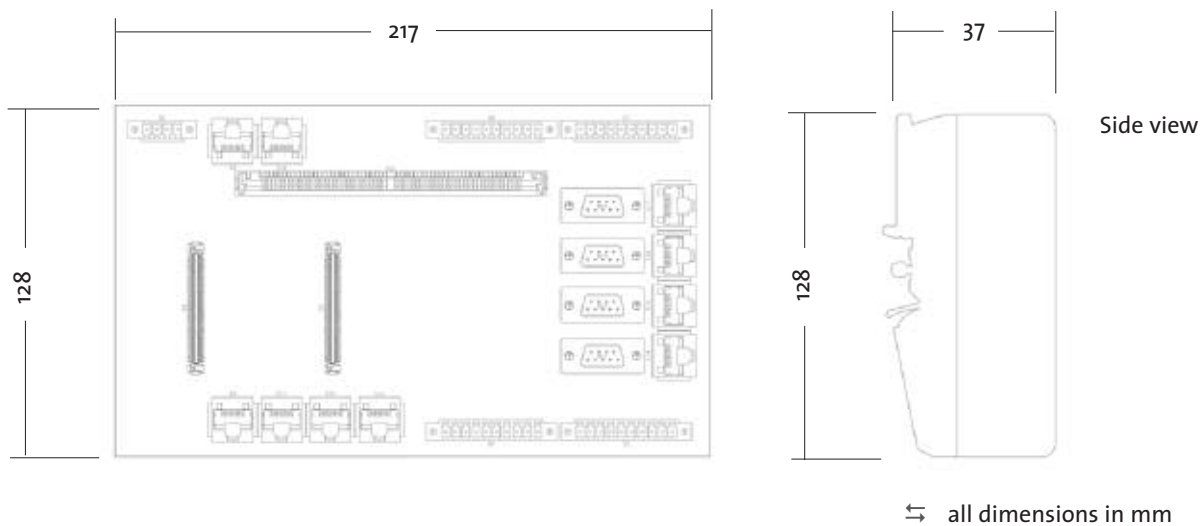
Controller capacities: **up to 4 axes, 16 digital inputs and outputs**



Features:

- Control of drive unit can be either digital (fast speed, gradual speed, low speed) or via analogue output (+/-10 V)
- Optionally up to 4 analogue inputs with 12 Bit resolution available
- All ELGO terminals can be connected via RS232
- Low cost
- Inputs and outputs easy to connect using 'cage clamp'
- Integrated CANopen interface for the connection of expansion modules
- Simple connection of P100-MCC – DC servo controller by means of patch cables
- Programming of programmable controllers in acc. with IEC1131 (CoDeSys)
- 16 digital inputs
- 16 digital outputs





Motion control and programmable controller in alignment with maximum cost reduction. Areas of use range from relay and switch backup, right up to complex automation tasks in stand-alone operation. The programmable controller peripherals can be sub-divided into 1-4 axes. Application-specific adaptation and programming is possible. All the programmer needs to have is a knowledge of the familiar CoDeSys programming language for programmable controllers.

Incremental signals (e.g. rotary impulse sensor) or absolute measuring systems can be used as measuring systems on individual axes. The CAN bus has a wireless connection to the expansion cards involving the use of patch cables. The other connections take the form of plug-type, tension-relieved screw terminals.

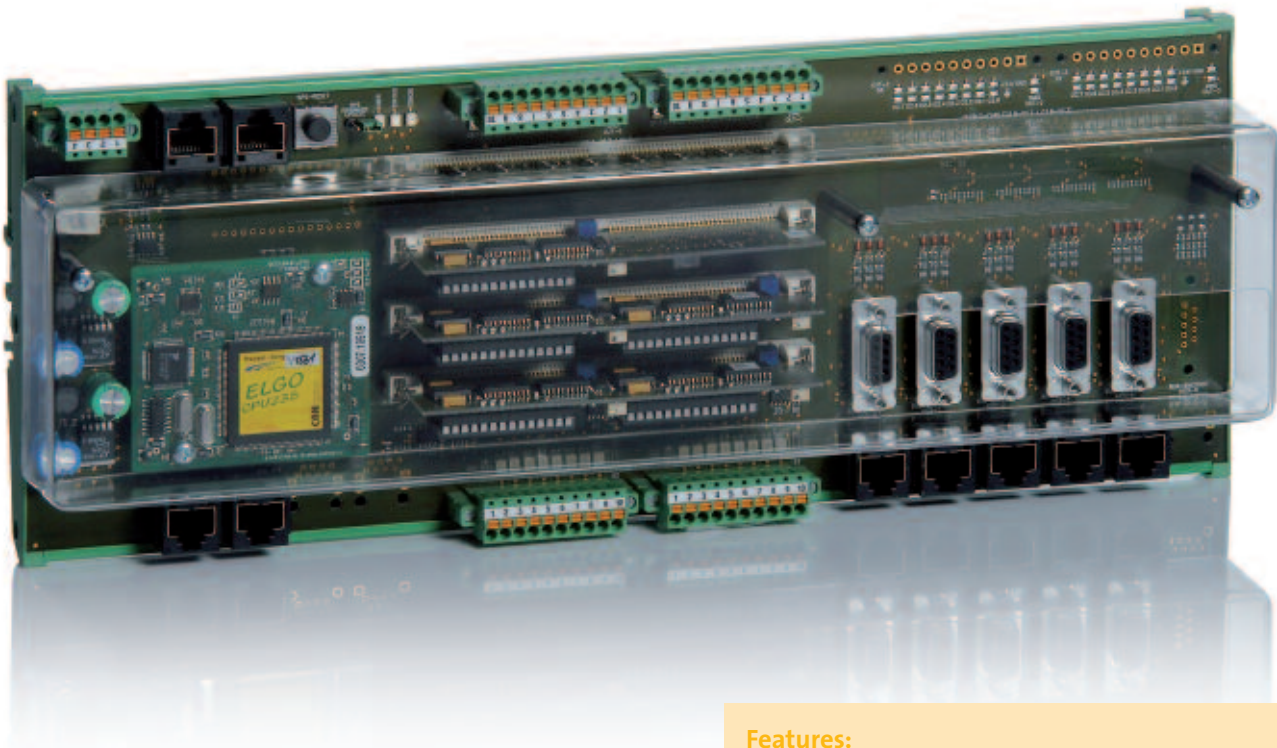
Technical data:

Connection voltage:	24 VDC, max. 0.7 A with unimpaird output signals
Measuring system supply:	24 VDC
Digital input signals:	PNP, min. 200 ms impulse duration
Input frequency of meas. syst:	15 kHz per channel, A or B
Digital output signals:	Open emitters, with limited resistance to short circuits, max. 100 mA output current or 50 mA push-pull output, integrated free-wheeling diodes
Analogue output signals:	+/- 10 V resolution 11 bit PID or ramp control
Connection technology:	Plug connectors
Hardware:	ST10 CPU with 2 MByte Flash E-Prom and 512 KByte RAM
Housing:	Standard rail snap-connection shell with transparent cover
Operating temperature:	0...50 °C
Storage temperature:	0...70 °C
Relative humidity:	Non-condensing max. 80 %

P100-CPU

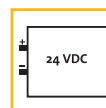
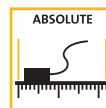
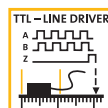
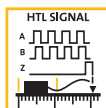
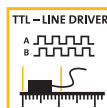
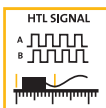
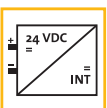
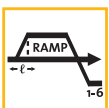
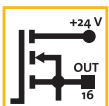
Type: High-end programmable controller board with positioning function

Controller capacities: up to 6 axes, 16 digital inputs and outputs



Features:

- Control of drive unit can be either digital (fast speed, gradual speed, low speed) or via analogue output (+/-10 V)
- All ELGO terminals can be connected via RS232
- Inputs and outputs easy to connect using 'cage clamp'
- Integrated CANopen interface for the connection of expansion modules
- Simple connection of P100-MCC – DC servo controller by means of patch cables
- Programming of programmable controllers in acc. with IEC1131 (CoDeSys)





Thanks to the combination of up to 6 positioning axes with an expandable programmable controller, even complex, industrial processes can be automated extremely easily. The P100-CPU can be extended in a modular fashion, enabling it to be used for central expansion as well as for remote structures. By virtue of this modular design principle, it is a quick and easy task to replace defective components if a malfunction occurs. This reduces downtime and also makes service and maintenance work much simpler.

The programmable controller peripherals can be subdivided into 1-6 axes. Application-specific adaptation and programming is possible. All the programmer needs to have is a knowledge of the familiar CoDeSys programming language for programmable controllers. Incremental signals (e.g. rotary impulse sensor) or absolute measuring systems can be used as measuring systems on individual axes. The CAN bus has a wireless connection to the expansion cards involving the use of plug-connected patch cables. The other connections take the form of plug-type, tension-relieved screw terminals.

Technical data:

Connection voltage:	24 VDC, max. 1 A with unimpaird output signals
Meas. syst. power supply:	24 VDC
Digital input signals:	PNP, min. 200 ms impulse duration
Input frequency of meas. syst.:	15 kHz per channel, A or B
Digital output signals:	Open emitters, with limited resistance to short circuits, max. 100 mA output current or 50 mA push-pull output, integrated free-wheeling diodes
Analogue output signals:	+/- 10 V resolution 11 bit PID or ramp control
Connection technology:	Plug connectors
Hardware:	ST10 CPU with 2 MByte Flash E-Prom and 512 KByte RAM
Housing:	Standard rail snap-connection shell with transparent cover
Operating temperature:	0...50°C
Storage temperature:	0...70°C
Relative humidity:	Non-condensing max. 80%

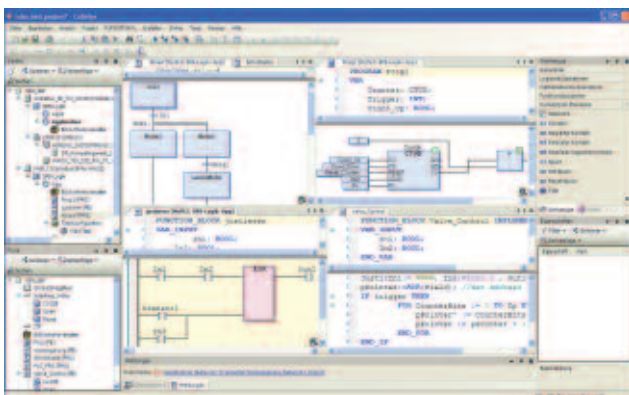


CoDeSys

IEC 61131-3 Editors

All the editors defined in the standard are available for the programming of individual controller applications: structured text (ST), procedural language (AS or SFC), free-graphic function diagram (CFC), function plan diagram (FUP), contact plan (KOP) and instructions list (AWL). In all these editors, CoDeSys places great emphasis on achieving the highest possible levels of practicality. Comments and proposals from experienced users are incorporated in all development work.

CoDeSys includes all editors contained in the standard



A few examples:

- In offline and online operation, the view of modules being programmed in FUP/KOP or AWL can be switched at will between any of these programming languages.
- Language elements can either be entered directly, or can be pulled into the editor from a toolbox.
- In addition, an intelligent input aid and an extended IntelliSense function is available.
- In these text editors, associated language constructs (e.g. IF queries, FOR loops, variable classes etc.) can be unfolded and folded back down.
- Language constructs are supplemented automatically (e.g. IF ==> END_IF).
- The procedural language can be used in a non-compliant and in a simplified form.
- In addition, the procedural language features a convenient time monitoring function for steps as well as an online diagnosis function.
- Steps and transitions in the procedural language and any desired elements in the CFC can be summarized in macros.
- Moreover, CoDeSys can implement a wide range of additional functions which make day to day work easier.

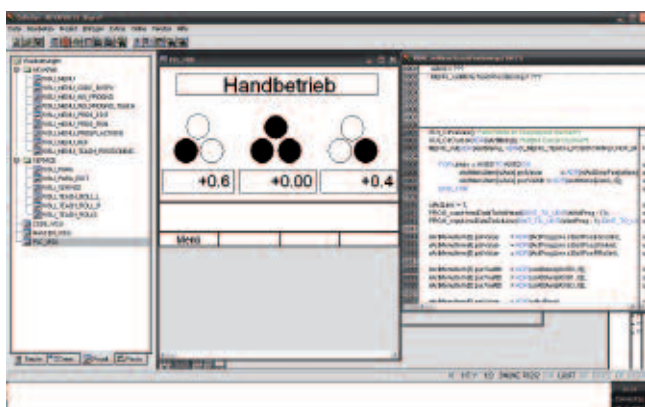
Integrated IEC 61131-3 visualization

CoDeSys also offers an integrated solution for operation and monitoring.

Visualization directly inside the controller programming system

To view the data in a controller which can be programmed with CoDeSys, no additional tool is required - the CoDeSys programming system for programmable controllers includes an integrated viewing editor.

The CoDeSys viewing function in practice: creation and configuration of the screens directly in the programmable-controller programming system



Properties:

- All the main viewing elements are available
- Implementation of viewing elements based on IEC 61131-3 applications
- Generation of operating screens with integrated viewing editor
- Reuse of complete operating screens as a complex viewing element
- Segregating out complex viewing elements via the interface for parameter transfer
- Configuration of element parameters in corresponding Properties windows
- Image pool for the administration of bitmaps for generated screens

In this way, integration offers many benefits:

- The viewing function integrated in CoDeSys can access variables directly from the controller – externally generated lists of variables or symbols are not required.
- Automatic projection of communication – therefore no need for an error-prone OPC configuration.
- Project planning of controller and viewing modules can be conducted in parallel fashion by an applications developer.
- Integration makes it possible to achieve more extensive functionality than that available with any classical division of development interfaces, e.g. array accesses from viewing facility, recording of real-time data etc.

ELGO system components

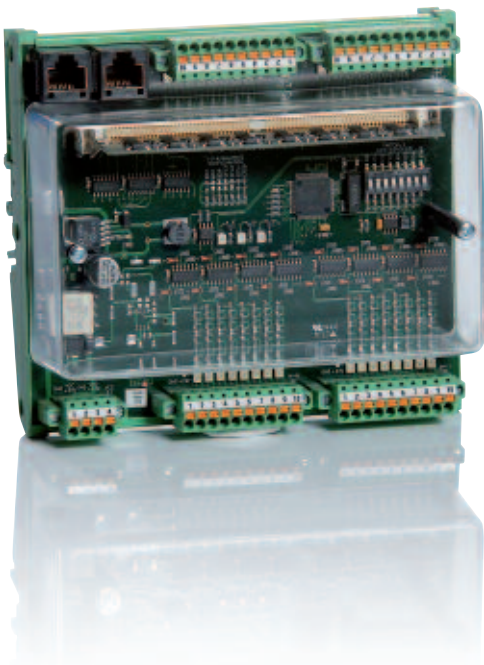
P100 MCC-DC



Servo Controller

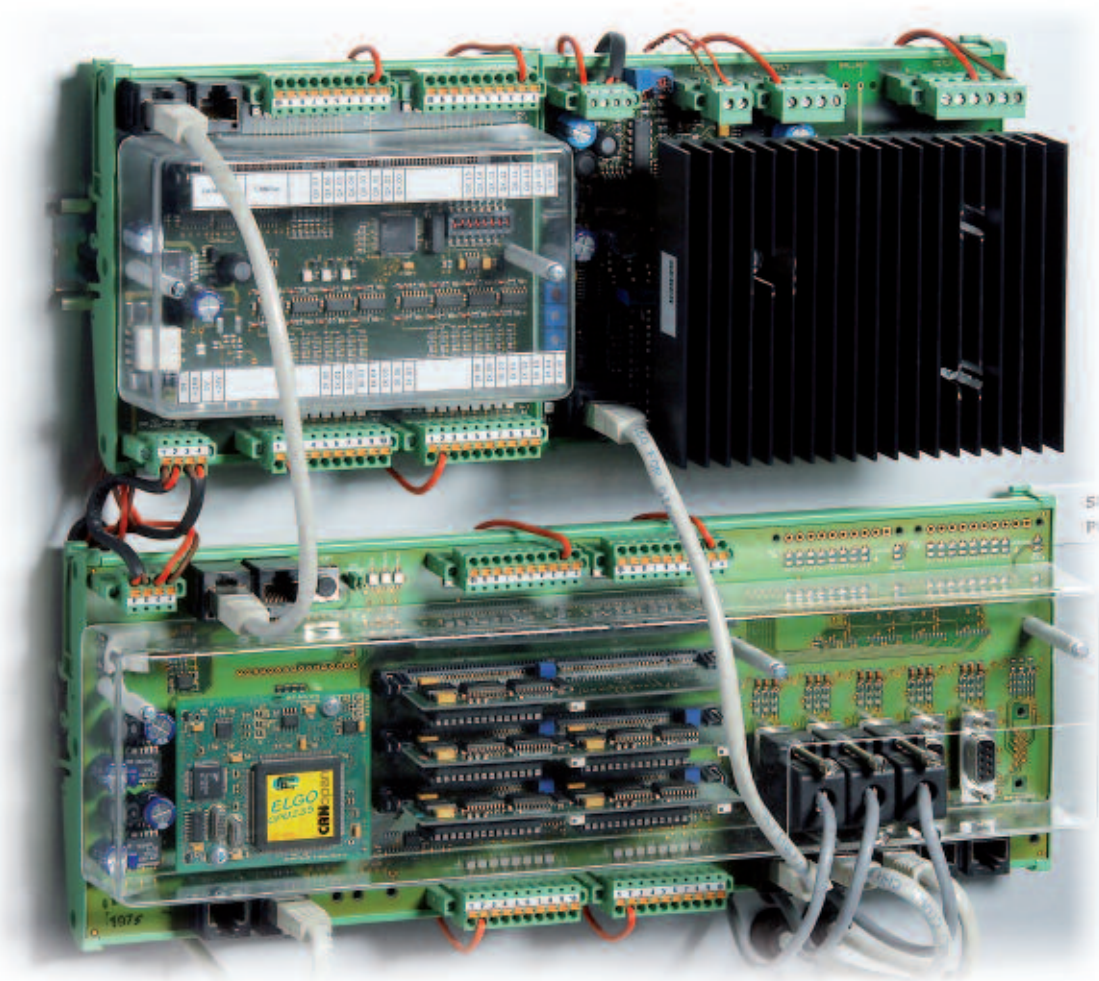
- 24 V to 42 VDC, 250 W motor connected load
- Nominal value input
- Speed and torque control
- Static and dynamic current limit
- Approval logic
- Temperature monitoring for device and motor

CAN-I/O



Expansion module

- 16 digital inputs
- 16 digital 500 mA outputs, PNP (long-term short-circuit-proof) or 16 x 50 mA PNP/push-pull (long-term short-circuit-proof)
- Diag-LED
- Connection to SPS via patch cable (no more cable packaging required)
- max. 32 I/O expansions possible (512 inputs and outputs)
- DIP switch for I/O configuration



Patch cables



All system connections from CPU/SPS sub-system to components take the form of plug-connected patch cables.

Our proven compact controllers

Note: Available until further notice

P8511



Simple controller without programmable memory

- For simple positioning applications
- With optional integrated PID analogue output (+/- 10 V)
- Manual inching operation
- Up to 3 speeds
- Additional quantity window
- Display of actual value, nominal value and quantity on control panel
- Using the keypad, nominal value and quantity can be specified and the positioning operation can be started.
- 24 VDC power supply or integrated 115/230 VAC power unit
- Available with relay or digital outputs
- Optional RS232 interface

P8721



Simple controller with programmable memory

- Identical basic functions to the P85
- 200 records program memory
- With optional integrated PID analogue output (+/- 10 V)
- Manual inching operation
- Individual record operation
- 24 VDC power supply or integrated 115/230 VAC power unit
- Available with relay or digital outputs
- Optional RS232 interface

P8822



Two-axis controller with programmable memory

- Designed for the positioning of two axes
- With a few restrictions, it matches the functional capabilities of the P87
- 24 VDC power supply or integrated 115/230 VAC power unit
- 200 records program memory
- Manual control unit
- Available with relay or digital outputs

P9511/P9521



Compact simple controller with program memory

- Program memory (10 records)
- Manual movement function
- Compact design
- Comprehensive parameters menu
- Potential-free changeover relay outputs
- 24 VDC power supply or integrated 115/230 VAC power unit

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The dimensions quoted are accurate to the nearest 1mm.

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You can download operating manuals, summary descriptions and product photos as soon as you have registered at www.elgomanual.de

Please be assured that our team is always on hand to answer any further questions you may have. We look forward to hearing from you!

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