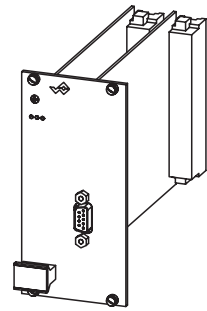


Digital 2-axis controller with integrated amplifier ED2

- optional for 4 proportional solenoids or 2 valves with the ± 10 V interface
- simple control via MPCS with the digital inputs and outputs
- integrated travel profiles generator (travel profile with acceleration, speed, deceleration and stop time)
- direct connection of analogue/digital measuring systems
- Fieldbus adaption possible (CAN/profibus DP)
- Parameters on card set with parameterising software PASO
- Multi-axis synchronous control by cross-linking


DESCRIPTION

Digital 2-axis controller in double Eurocard format (double-decker style). 2 plug connector terminal strips in accordance with DIN 41612, type F. Standard version with front plate with incorporated RS232 interface. The hardware can be expanded by means of plug-on modules. The software can be adapted to customer-specific requirements. The setting (parameterising and establishment of travel profiles) of the card is carried out in a user-friendly way with the parameterising software PASO.

FUNCTION

Digital 2-axis controller for the positioning of two axes. The setpoint position is predefined either externally (e.g., with a potentiometer) or internally by means of freely establishable travel profiles. As actual value transmitters, all standardized absolute and incremental measuring systems can be directly connected to the card. Numerous digital inputs and outputs enable the connection to a super-ordinate machine control system. Via the field-bus interface (CAN/profibus DP), the card can, e.g., communicate directly with, e.g., an MPCS. Furthermore the bus interface makes the interlinking of several 2-axis controller cards possible, so that up to 4 axis can be controlled synchronously.

APPLICATION

Typical applications for the digital 2-axis controller are control systems, where an accurately repeatable following of a travel profile is important or where a position has to be run up to and held several times. The travel profiles to be travelled can be established and stored by the user himself. As a result of its comprehensive equipment, the digital 2-axis controller can be flexibly and precisely adapted to any application.

CONTENTS

GENERAL SPECIFICATIONS	1
ELECTRICAL SPECIFICATIONS	2
DIMENSIONS	2
START-UP	2
ADDITIONAL INFORMATIONS	2
BLOCK DIAGRAM	3
ADDITIONAL DESCRIPTIONS	5ff

TYPE CODE

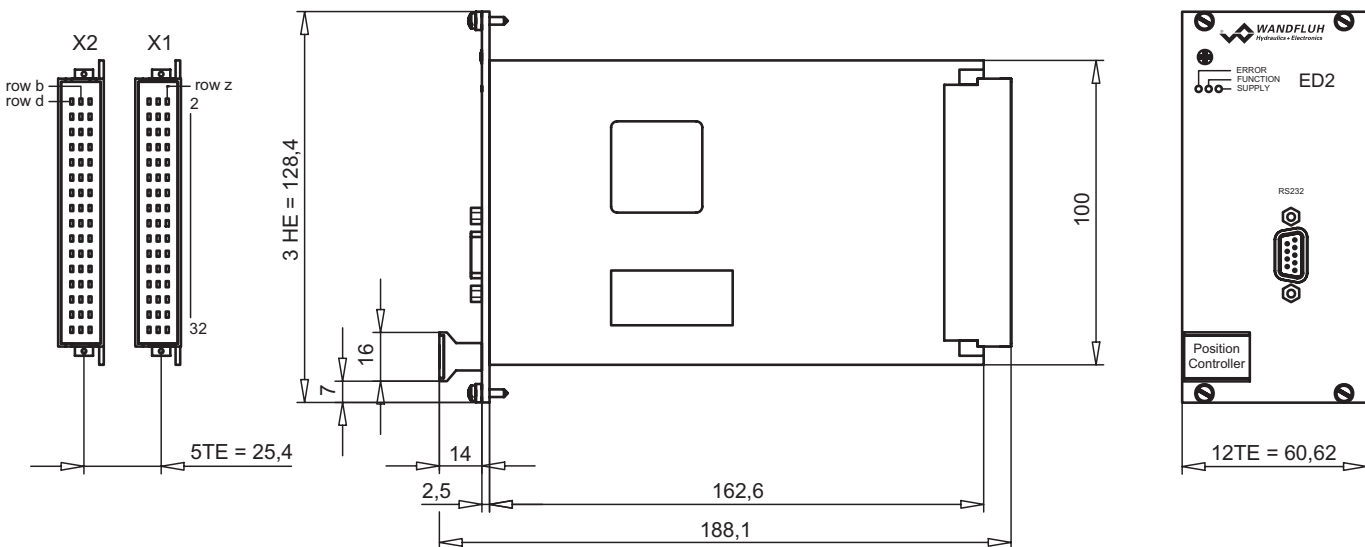
	E	D2	3	4	D2	0	0	#	
Eurocard	<input checked="" type="checkbox"/>								
Digital		<input checked="" type="checkbox"/>							
Parameters to be set with: PC-Software			<input checked="" type="checkbox"/>						
Basic card			<input type="checkbox"/>						
additionally 4 analogue inputs 16-Bit			<input type="checkbox"/>						
4-solenoid version				<input checked="" type="checkbox"/>					
24 VDC supply voltage					<input checked="" type="checkbox"/>				
Preset value input selection						<input checked="" type="checkbox"/>			
Feedback signal input selection							<input checked="" type="checkbox"/>		
Network function									
Position controller									<input type="checkbox"/>
Position controller Slave for Network									<input type="checkbox"/>
Position controller Master for Network									<input type="checkbox"/>
Control system:									
analog (only pption 16-Bit) and digital									<input type="checkbox"/>
with profibus DP									<input type="checkbox"/>
with CAN-bus									<input type="checkbox"/>
Design-Index (Subject to change)									

GENERAL SPECIFICATIONS

Execution:	Double eurocard (double-layer print)
Dimensions:	Front plate: 60,6 x 128,4 ; 12TE/3HE Print plate: 160 x 100mm
Weight:	220g
Connections:	2 plug strip according to DIN 41612, type F48
Working temperatur:	-20...+60°C

ELECTRICAL SPECIFICATIONS

Supply voltage	24VDC	Solenoid output	Short circuit proof with negativ surge suppression diode
Voltage range	21...30VDC	Solenoid current	Minimal current I _{min} adjustable 0...950mA Factory setting 150mA Max current I _{max} adjustable I _{min} ...1800mA Factory setting 700mA
Ripple on supply voltage	±10%	Dither	Frequency adjustable 20...250Hz Factory setting 100Hz Amplitude adjustable 0...200mA Factory setting 100mA
Fuse protection:	The card must be fuse protected by the user with a slow fuse (Amp value = no load power + maximum solenoid current)	Digital outputs	6 outputs optically coupled; high-side switch Max output current with high-signal 0,7A Max current of all outputs together 3A Supply 10...34VDC
Temperature-drift	< 1% at ΔT = 40°C	Analogue outputs	2 analogue outputs Output voltage ±10VDC Max output current ±5mA Resolution 12-Bit
No load power	8W	Free pins	6 pins AUX1-AUX6 reserved for customer specific adaptations on plug-in modules
Analogue inputs	2 differential inputs 10-Bit ±10V 2 differential inputs 10-Bit 0/4...20mA optional: 4 differential inputs 16-Bit ±10V or 0/4...20mA	Status indication by LED's	LED green Supply voltage LED yellow Function LED red Error
Input resistance	Voltage differential inputs > 80kOhm Burden for current inputs = 200Ohm	EMC	Immunity EN 61 000-6-2 Emission EN 61 000-6-4
Digital inputs	18 inputs high-active Switching threshold high 12-34VDC Switching threshold low 0-5VDC		
Control system inputs	Max. 2 inputs selectable: Incremental TTL (RS422) <1MHz Absolute via SSI, resolution max. 24-Bit gray or binary		
Serial interface	1 interface D-SUB 9-pin socket female on front plate to RS232 C standard		
CAN interface	CAN-spec. 2,0A optional galvanically separated		
Stabilised output voltage	1 output +15VDC max. load 50mA 1 output -15VDC max. load 30mA 1 output +10VDC max. load 10mA 1 output -10VDC max. load 10mA 1 output +5VDC max. load 500mA		
Tolerance on stab. output voltage	±2% for +5VDC and ±15VDC ±1,5% for ±10VDC		

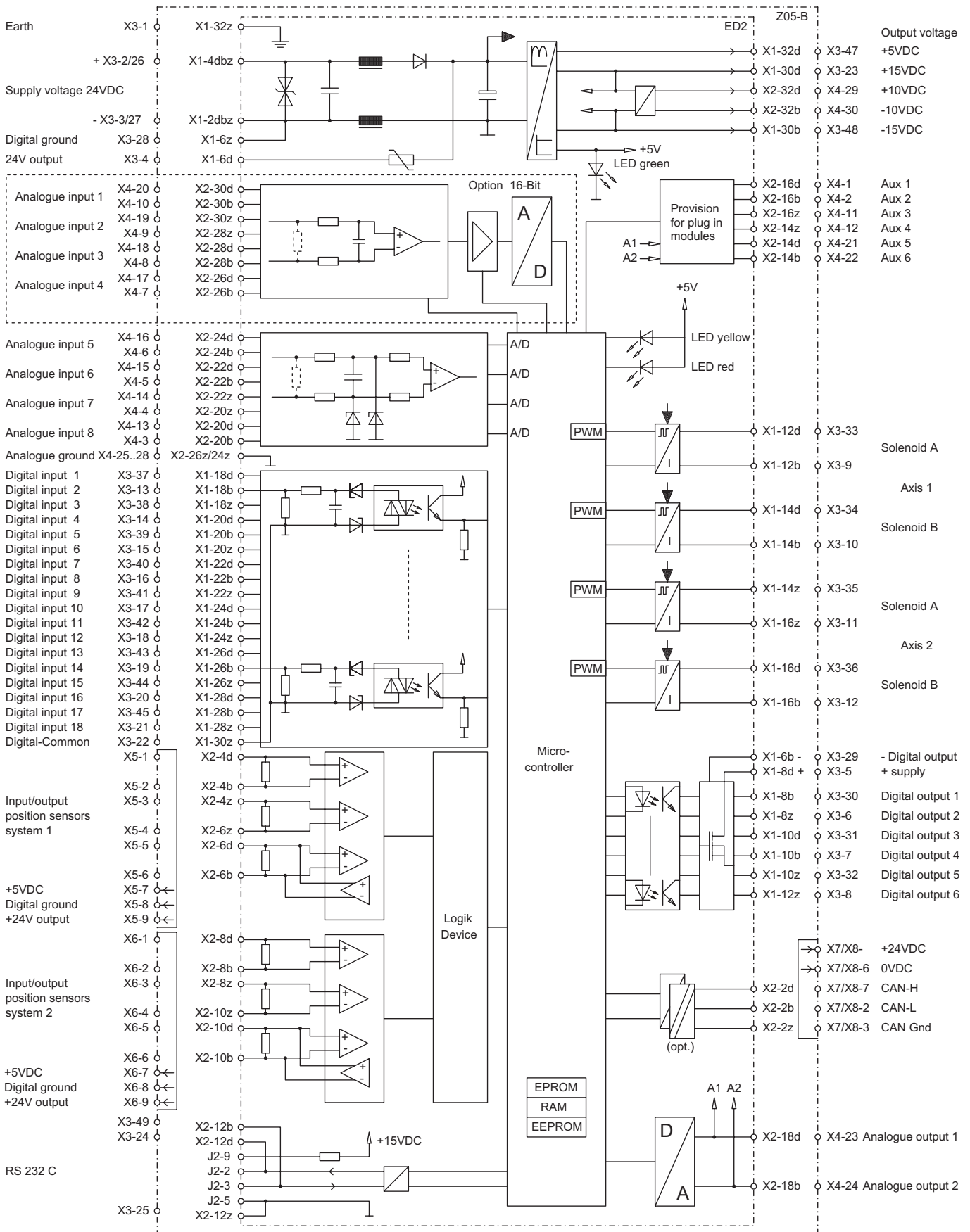
DIMENSIONS

START-UP

The informations required for connenction and start-up are included with each 2-axis controller card.
These informations are also available separatly on request:

Operating instruction ED2

ADDITIONAL INFORMATION

Wandfluh electronics general	Wandfluh-Dokumentation
Accessories	Register 1.13
Proportional directional control valves	Register 1.13
Proportional pressure control valves	Register 1.10
Proportional flow control valves	Register 2.3
	Register 2.6

BLOCK DIAGRAM


DESCRIPTION OF ED23X4D20-A (2-AXIS CONTROLLER)
Instruction

The axis controller ED2 is constructed as a double-layer Eurocard. All inputs and outputs have to be contacted to the connector. The version ED23 has a 9-pole plug for an RS 232 interface on the front plate, through which the configuration and the parameterization are carried out and through which also some diagnostic functions can be called up.

Function

The controller is designed as a digital 2-axis controller for the positioning of 1 axis or for the synchronised movement of 2 axis. The preset position can either be preset externally (e.g., by means of a potentiometer, only version ED231) or internally by means of freely adjustable travel profiles. As actual value transmitters all standardized absolute or incremental measuring systems can be directly connected to the controller. Several digital inputs and outputs enable the connection to a superordinate machine control system. Through the fieldbus interface (CAN/profibus DP), the controller can, e.g., directly communicate with an SMCS. The bus interface furthermore makes it possible to network several axis controllers.

- Manual operation
The control can be operate in the manual or automatic operation. In the manual operation, there are commands available for forward, backward, rapid speed, creep speed etc. With these commands it is possible to move the cylinders without a superordinate control
- Automatic operation
In the automatic operation, the cylinders will be moved either with the internally adjustable and selected travel profiles or with the externally given preset values (only version ED231).

The parameterization software (PASO) running under Windows provided together with the card makes it possible for the user to make various adjustments through the RS232 interface. The control characteristics can be adapted to the corresponding control system by means of various parameters. It is furthermore also possible to completely switch off the control system for test - and adjustment purposes.

Changed parameters are stored in a non-volatile memory, so that they are available once more after the controller has been switched on again.

Analogue inputs (only version ED231)

There are 4 differential inputs for preset or actual values available on the card. 2 are voltage signal inputs (voltage range $\pm 5\text{VDC}$ or $\pm 10\text{VDC}$), 2 are current signal inputs (current range $0/4 \dots 20\text{mA}$). The analogue signal is digitalized with 16-Bit.

Digital inputs

The digital inputs will be used for the control of the card. For example the travel profiles can be started, the connected cylinder can be moved manually etc. The digital inputs are „high-active“, opto-coupled and have to be connected to 24VDC for activation.

The following inputs are available:

- release control
- switch over between automatic/ manual operation
- choice between complete travel profile/sequence
- start/stop of a travel profile
- travel profile selection (4 inputs for 16 travel profiles, binary coded)
- choice between cylinder 1/cylinder 2 in the manual operation
- forward/backward in the manual operation
- rapid/creep speed in the manual operation
- search for reference for digital position measuring systems (encoder)
- single/synchronised movement in the manual operation
- limit switch positiv/limit switch negative
- reference switch

Inputs for the digital position measuring systems

The input/output interface provides the possibility of connecting different measuring systems to the axis controller.

- Absolute measuring systems
Temposonic systems with Synchron Seriell Interface (SSI)
- Relative measuring systems
Encoder systems with A+B track and a referenz-impuls track

Analogue outputs

The 4 solenoid outputs have a 1000Hz Pulse Width Modulated current output with superimposed dither. The polarity of the connected solenoids does not matter. The outputs are short-circuit-proof and can each be loaded with maximum 1.8 Amp. Additionally, the card has 2 analogue outputs. The analogue output 1, resp., 2 corresponds to the controller output value for the axis 1, resp., axis 2 and can be used to control a valve.

Digital outputs

The digital outputs serve for the remote signal for some conditions on a superordinate control. For example a control deviation or the position reached are noticed. The digital outputs are „high-active“, opto-coupled and have to be connected to 24VDC.

Travel profiles

The axis controller is in a position to save and to run through complete travel profiles, which have been preset by the user. A travel profile is a sequence of individual profiles (sequences). The travel command data of each sequence consist of:

- preset position (sequence target or endposition)
- speed (travelling preset speed value)
- acceleration (acceleration or deceleration, necessary for reaching travelling speed, starting from a given initial speed value)
- deceleration (deceleration or acceleration necessary for reaching the sequence end speed)
- stop time
- function "profile end reached" output

A travel profile as a minimum consists of one - and as a maximum of 100 sequences. As a maximum there are 16 travel profiles possible. A travel profile can be run through either completely or else step by step (sequence by sequence).

In the travel profile generator, the travel profiles can be adjusted and graphically displayed. This graphic display gives a good overview on the adjusted travel profiles.

Controller type

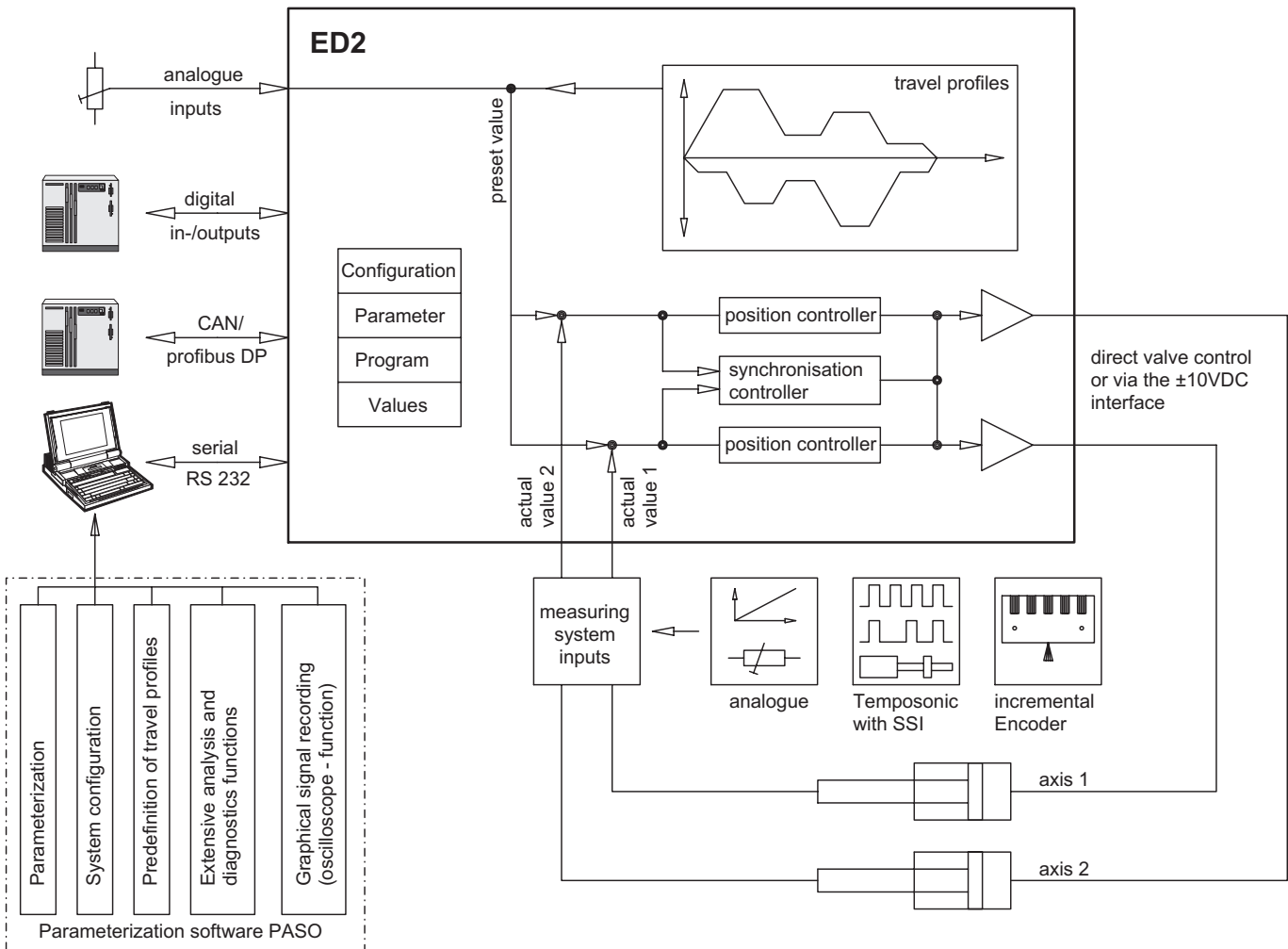
There are 2 controller types available:

- Position controller (1-axis application)
The function of the card is to control a position of one cylinder. The 2. cylinder is not active. The cylinder moves to the preset position and this position will be controlled. The control characteristic can be adjusted to the respective control system by means of various parameters.
- Synchronised movement (2-axis application)
The function of the card is to control a position of two cylinder. Both cylinders are active. The cylinders move synchronised to the preset position and this position will be controlled. The control characteristic can be adjusted to the respective control system by means of various parameters.

Signal recording

All relevant data (preset value, actual value, difference value etc.) of the connected card are read-in and displayed graphically (cathode-ray oscillograph function). It is possible to trigger to a desired signal. Also the sample time can be adjusted.

Function diagram



Multi-axis synchronous control by cross-linking

