KISTLER

CoMo II-S

5859A...

The CoMo II-S is a universal measuring, display and analytical instrument. Piezoelectric sensors for mechanical measurands and potentiometric sensors for displacement and angle. The device can capture 2 measurands simultaneously and represent one of them in function of time or versus the other. The CoMo II-S can be used to control and monitor any production process through freely definable analytical functions (thresholds, boxes, end position, tolerance band etc.).

The CoMo II-S is the appropriate extension of the successful CoMo II. The main characteristics taken from the CoMo II are now supplemented with self-learning functions. This simplifies alignment of the instrument, scaling of the axes and defining the analytical functions.
The S-type dispenses with the facility for simultaneous processing of a second measuring channel (y_2) as well as the special connection facility for other types of sensor.

The restriction to the connection of piezoelectric sensors (charge sources) and to the measuring functions y = f(t) and y = f(s) allowed a considerable reduction in cost compared with the CoMo II (y stands for the mechanical value to be measured such as force, pressure, acceleration ...).

- Direct connection of piezoelectric sensors for measuring and monitoring mechanical values
- Alignment of the instrument with self-learning functions or optionally by hand
- Same operating concept for CoMo II and CoMo II-S
- Predefined measuring processes available for selection
- Display of the measuring function recorded on a graphic display and/or a numerical value display. Hardcopy of the display possible.
- Process monitoring with boxes, thresholds, envelope curves or end position function
- 8 digital control inputs and outputs each
- Integral interface RS-232C for connection to PC, printer or an over-riding control
- Flashloader
- Switched mode power unit 90 ... 264 V AC without switching
- Mounting set for panel mounting
- Conforming to CE

Construction

As with the CoMo II, the CoMo II-S has a modular construction and can be individually assembled for the appropriate requirements. It consists of various basic components:

- *LV & U plug-ins with inputs for charge and voltage signals and a RS-232C interface*
- *a channel card which includes digital inputs and outputs*
- *the case (Table-top case or 19" cassette)*
- *the supply unit (switched mode power unit)*
- *the front panel with illuminated LCD display and keyboard*

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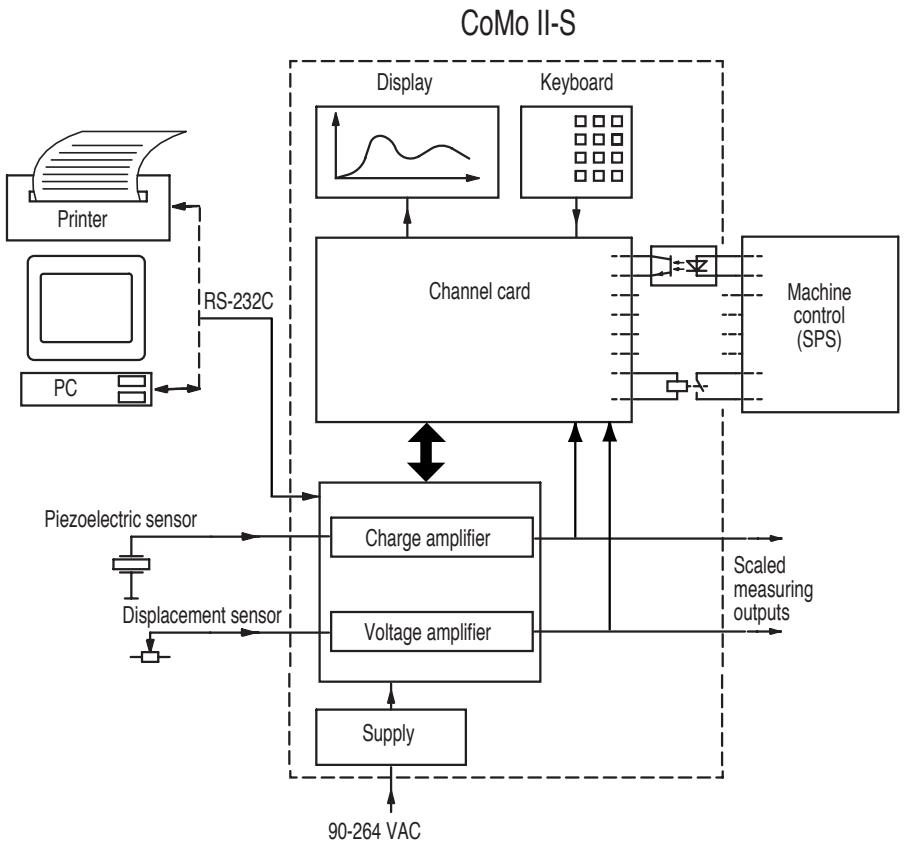
Basic Circuit Diagram



Piezoelectric sensors for mechanical measurands (force, pressure, acceleration) can be connected directly to the instrument. Displacement is measured by a potentiometric sensor powered by the device. The CoMo II-S can thus be used for the control and monitoring of any production processes.

The production process is monitored and analyzed at particularly critical points or over the entire process by means of freely definable analytical functions (thresholds, boxes, end position, tolerance band).

For monitoring functions, the analog amplifier output signal can be taken from separate outputs
8 digital inputs and outputs are used to connect the CoMo II-S to a machine control system. Operation is menu-driven via the keyboard or, using the software available as an option, via a PC connected to the RS-232C interface. Interconnecting with a dominating control system (e.g. SPC) is via the RS-232C interface. This allows controlling the device and reading out data, e.g. for documenting the quality. An illuminated graphic display (LCD) is used to display the process.

The instrument meets the safety requirements of EN 61010-1 and the EMC regulations EN 50081-1 (interference emission) and EN 50082-2 (interference immunity). Inputs and outputs are protected against electrostatic discharges.

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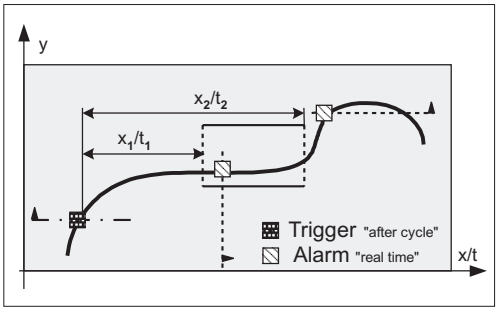
Evaluation functions

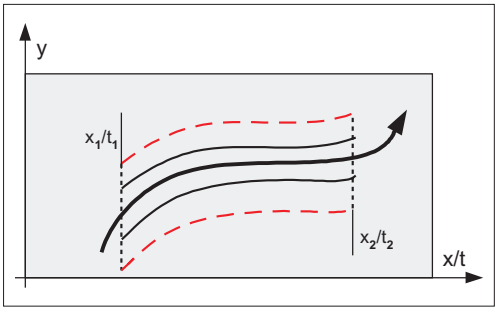


A microprocessor processes the digitized sensor signals and sends them to the display unit. Various mutually combining analysis functions can be selected to monitor the process such as tolerance band, boxes, end position or thresholds. Control signals can be triggered by each of the analytical functions selected (good/bad with parts counting, collective message, etc.) and fed to the interfaces (digital outputs, RS-232C).

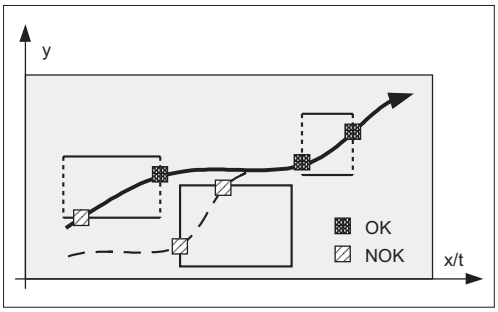
Thresholds

Thresholds monitor one or more sub-areas of a signal progression. They also serve to monitor safety criteria or the triggering of trigger signals. Analysis takes place 'in the measuring cycle' or 'after the measuring cycle'.

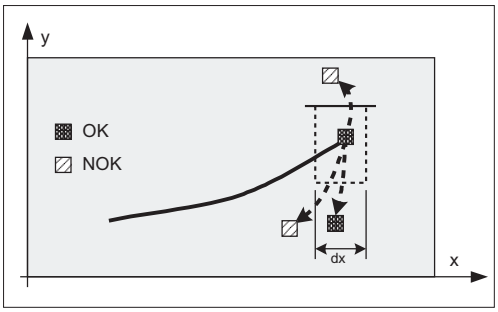
Evaluation functions



Tolerance band
A tolerance band with adjustable width is placed alongside the “learned” reference curve. If necessary, the learned reference curve can be tracked with the process (trend monitoring). Monitoring reveals whether the signal progression remains within the tolerance band.



Boxes
The box function monitors whether the signal enters and exits through the prescribed side of the box. The other sides must not be touched.



End position
The end position of a process is checked while the end of the process is monitored with a box. In a pressure grouting process, for example, this can be the greatest pressure-grouting depth.

Technical data

Basic instrument: analog channel inputs		2
Sampling frequency for canal (sampling both channels simultaneously)	kHz	5,5
Number of measuring points per cycle (standard software)		512
A/D converter resolution (corresp. 21 Vpp)	Bit	12
Error, with calibration	%	<±1,5
Linearity	% FS	<±0,15
Repeat error	% FS	<0,1
Voltage between measuring and protective grounds	V_{rms}	<50
Charge input		
for piezoelectric sensors	Type	BNC
Measuring range FS	pC	±100 ... ±1'000'000
Zero offset (Reset ▯ Operate)		corrected by SW
Drift (Operate)	pC/s	<±0,03
Voltage input		
e.g. for potentiometric displacement sensors	Type	DSub-15
Measuring range FS (differential input)	V	±0,5 ... ±10
Input voltage (constant)	V	<±20
Input resistance	MΩ	>10
Zero shift	V	±10
Input filter (activ 2nd order)	kHz	0,5
Error	%	<±1

Analog monitor outputs		
(2 mm socket or D-Sub-15)	-	2
Output voltage	V	±10
Output current	mA	<3
Output resistance	Ω	10
Error (with calibration)	%	<±1,5
Voltage sources for sensor supply		
Voltage I	V	–10
	%	<±0,2
Voltage II	V	+10
	%	<±0,2
Output current, per source	mA	≤20
Internal resistance, per source	Ω	≈1,0
Digital inputs (electrically isolated via optocouplers)		8
Logical input level HIGH	V	14 ... 30
Logical input level LOW	V	<8
Input current at 24	mA	5
Voltage between the inputs and the protective ground	V_{rms}	<40
Digital outputs (Photo-MOS relay, electrically isolated, every 4 outputs unilaterally connected)		8
Voltage, constant	V	±42
Current load, constant	mA	<100
Current load (pulse < 0,1 s)	mA	<300
Resistance (on)	Ω	<50
	Ω	typ. 30
Voltage between the outputs and the protective ground	V_{rms}	<40

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Auxiliary feed for external electronics
(Aux. GND / Aux. +24V, electrically isolated)

Voltage at supply rated voltage	V (%)	24 (±15)
Current load	mA	<300
Voltage between Aux. GND and protective ground	V_{rms}	<50

Evaluation functions	'in cycle'	'after cycle'
Thresholds	2	4
Boxes	-	4
End position	-	1
Tolerance band	-	2
min./max. and statistical values	-	6

Interface RS-232C (without control leads, electrically isolated)

Voltage at receiver input	V	< ±20
Baud rates	1200, 2400, 4800, 9600, 19'200	
Data bit	7 or 8	
Stop bit	1	
Parity	no, even, odd	

General

Operating temperature range	°C	0 ... 45
Degree of proection	IP40 (DIN40050)	
Supply connection 2P+E (Safety Class I)		
Connector type	IEC 320C14	
Voltage	V AC	90 ... 264
Frequency	Hz	48...62
Output	VA	≈25
Dimensions		
- Cassette according to DIN 41494 Part 5	42 TE • 3 HE	
- Table-top case (W • H • D) mm	236•151•255	
Weight (with case)	kg	≈4

Order code for the basic instrument Control Monitor CoMo II-S **Type 5859A** ☐

Case	
• 19" cassette without table-top case	0
• 19" cassette integrated in table-top case Type 5749A1	1
• 19" cassette, with panel mounting set	2

Scope of delivery *Art.-No.*

- Power cord — country-specific
- Test cable for monitor outputs, l =1,5 m
  red 5.590.096
  black 5.590.097
- Cable connector for digital in/outputs D-Sub-37P — 7.640.062
- Cable connector for displacement sensor D-Sub-15P — 7.640.049
- Software for PC operation and backup (dots mean: number of version) Type 2833A1-..
- Flashloader from Firmware V1.1 (For the new programming of firmware via the serielle Interface)

Accessories *Type*

- Printer cable RS-232C, 3 m long, D-Sub-25P/D-Sub-25P — 1467A3
- Cable adapter DB-9P with fastening screw / DB-25S wit fastening nut — 1479
- PC-link cable RS-232C, 3 m long, DB-25P/DB-9S — 1465A3
- PC-link cable RS-232C, 5 m long, DB-9P/DB-9S — 1200A27
- Potentiometric displacement sensor with 2 m cable and connector, range 0 ... 25 mm — 2101A1

Art.-No.

- Spare key (operator/supervisor) — 5.331.044
- CoMo-simulator, incl. cable — Z15822

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