

Control Monitor CoMo F

Type 5861

Specific measuring and indicating instrument

CoMo F is a specific measuring and indicating instrument for fast and reliable monitoring and classification of industrial processes. A piezoelectric measuring amplifier and a voltage input respectively allow the monitoring of a mechanical process quantity from the wide field of application covering joining, forming and inspection.

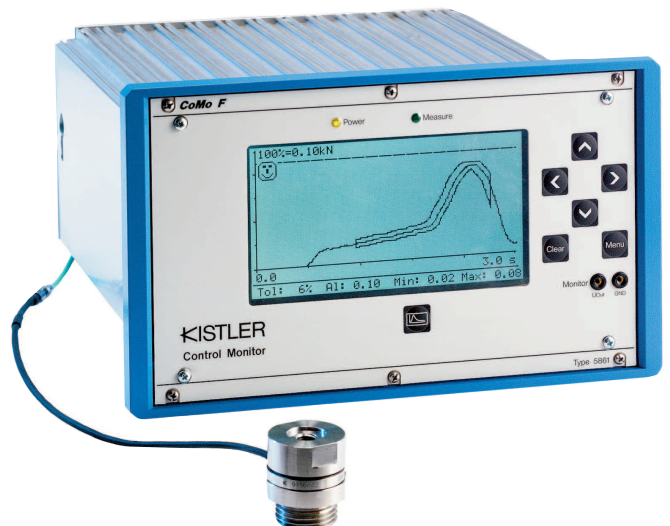
The large back-lit LC graphic display provides a clear display of the process curve. The instrument can be operated confidently and intuitively with the rugged touch-sensitive key-

board. The German, English and French dialog languages are all supported.

Process evaluation is carried out with a tolerance band and can optionally be combined with a real-time threshold. Processing is time-based.

Screw/plug-in connections facilitate the connection of cables. Panel mounting, 19" rack mounting or desk-top case allow installation in all environments.

- Monitors punching, presswork, riveting, turning and inspection processes
- Monitors over 600 workpieces per minute.
- Direct connection of piezoelectric sensors for force, strain, torque, pressure signals
- Process monitoring with tolerance band
- Real-time threshold
- Curve shown on graphics display
- Measurand display for minimum and maximum
- SPS-compatible digital inputs (4) and outputs (3)
- Menu-controlled operation in German, English or French
- Access authorization via USER codes
- RS 232C interface for recording
- Switched-mode power supply for easy use world-wide
- Conforming to **CE**



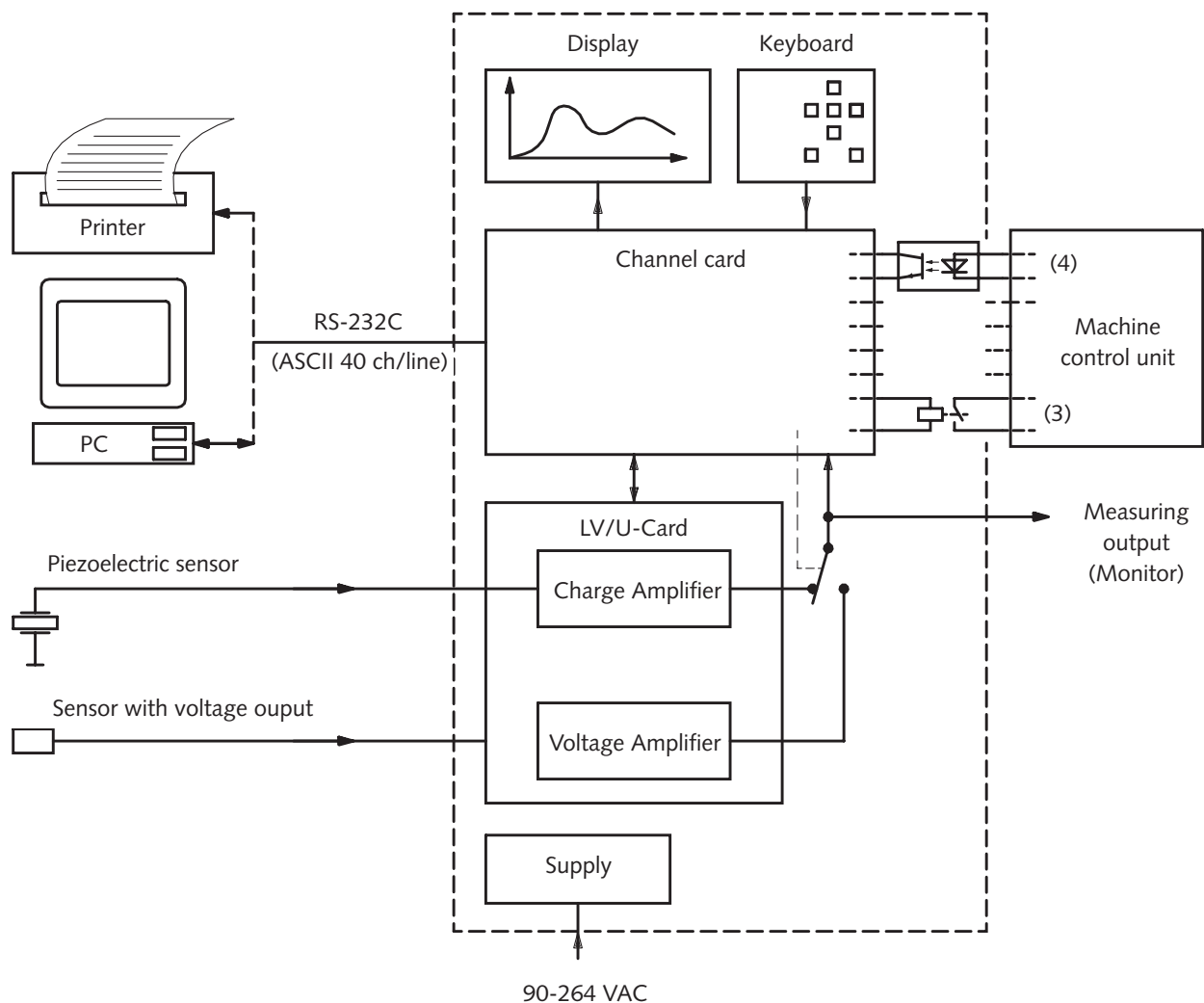
Equipment design

The CoMo F, as with the CoMo II and CoMo II-S, has a modular design. It consists of the following basic components.

- Charge amplifier and Voltage amplifier cards with inputs for charge and voltage signals as well as the RS 232C interface

- Channel card including digital inputs and outputs etc.
- Case (desk-top case or 19" cassette)
- Mounting set for panel mounting
- Power pack (switched-mode power supply)
- Front panel with back-lit LC display and keyboard

Schematic diagram



Piezoelectric sensors for measuring mechanical quantities (force, strain, torque, pressure) as a function of time can be connected directly to the instrument.

Sensors with a standardized $\pm 10V$ output signal can be connected to the voltage input.

Operating procedures cover selection of the measuring function $Q=f(t)$ or $U=f(t)$ as well as scaling of the axes provided that a relative measurement is not involved (in %).

After teach-in of the reference curve, the limits are established for the tolerance band monitoring and the alarm threshold.

The control signals for measurement start-stop and measurement readiness and the classification signals "conforming/nonconforming part information" are permanently assigned to the digital inputs/outputs.

The measuring curve, the "conforming/nonconforming part information" as well as the minimum and maximum values are shown in cycles.

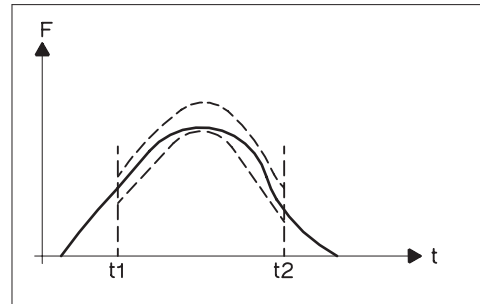
The minimum and maximum values, "OK" as conforming part information or "N!" as nonconforming part information as well as "AL" when the threshold is exceeded are sent in cycles via the serial interface.

The following functions are available for evaluation:

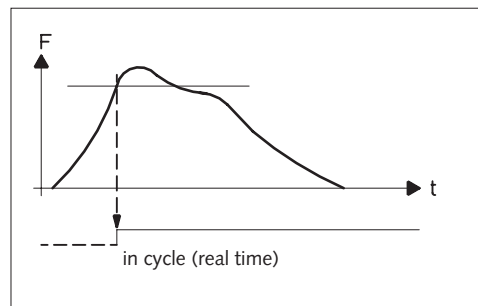
Evaluatin fuction	Evaluation in cycle (real time)	Evaluation after the cycle
Alarm threshold	1	
Tolerance band		1

The instrument is CE-approved and corresponds to the safety requirements according to EN61010-1 as well as the EMC standards EN 50081-1 (interference emission) and EN 50082-2 (interference immunity). The interference immunity test is performed with ground screw fitted. Inputs and outputs are protected against ESD (electrostatic discharges) with varistors.

Tolerance band



Alarm threshold



The output voltage proportional to the mechanical signal is present at the monitor output.

Technical Data

Charge amplifier for piezoelectric sensor (BNC)

Measuring range	pC	±10...1'000'000
Input filter, passive (with 10 m coax cable)	kHz	ca. 22
Error (with calibration)	Range ≤100pC	% <2,5
	Range >100pC	% <1,5
Error (without calibration)	Range ≤100pC	% <3,5
	Range >100pC	% <2,5
Zero point error (Reset ➔ Operate)	Software-corrected	
Drift	pC/s	<0,03
Time constant	s	>100'000
Noise voltage (FS=20V _{SS})	mV _{SS}	<20
Noise signal due to cable capacitance (at the input)	pC _{rms} /pF	2x10 ⁻⁵

Voltage amplifier

Measuring range	V	±10V
Input filter, passive	kHz	ca. 3
Error	%	<1
max. input voltage (continuous)	V	±20
Input resistance	MΩ	10

Monitor / measurement output

Output voltage for FS input signal	V	±10
Zero offset	mV	<±10

Analog inputs (general data)

		1
Sampling frequency	kHz	5,5
Number of measuring points per cycle		546
Linearity error	%FS	<0,15
Repetitive error	%FS	<0,1
Resolution		
Analog/digital converter(21V _{SS})	Bit	12
Voltage between measurement ground and protective ground	V _{rms}	<50

Digital inputs (optocoupler, electrically isolated)

		4
Logical input level	High	V >14
	Low	V <8
Input current at 24 V	mA	5

Digital outputs (photo, MOS-relay, electrically isolated)

		3
Outputs (unilaterally connected)		
Current loading, continuous	mA	<100
Resistance in switched-on condition	Ω	<50 (typ.30)
Voltage, continuous	V	<±42

Auxiliary supply for ext. applications

(Aux. GND/Aux. +24V, electrically isolated)

Voltage	V	24 ±15%
Current loading	mA	<100
Voltage between supply connections and protective ground	V _{rms}	<50

Interface RS-232C (without control line, level according to standard, electrically isolated)

Baud rate	Baud	9600
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General

Graphic LCD with fluorescent background lighting		
Dimension of the display area	mm	120x64
Organization	Dots	240x128
Data capacity of the lithium buffer battery for data memory	Years	>10
Operating temperature range	°C	0 ... 45
Degree of protection to EN60259		IP40
Power supply (range for selection)	VAC	90 ... 264
	Hz	48 ... 62
	VA	ca. 25

Dimensions

without case,		
cassette according to DIN 41494, Part 5		42TEx3HE
with case (BxHxT)	mm	236x151x255
Weight (incl. desk-top case)	kg	4

Ordering Code

Control Monitor, CoMo F

Type 5861A

without case	0
Built into desk-top case	1
with panel mounting set	2



Scope of delivery

• Power cord according to country	
(CH)	1507
(USA/Japan)	1508
(Germany/France)	1509
• Test cable for monitor outputs	
2mm-sockets (red)	5.590.097
(black)	5.590.096
• Phoenix terminals for digital inputs/outputs	
8-pol	5.510.278
7-pol	5.510.279
6-pol	5.510.251
2-pol	5.510.280

Type/Art.-No.

Accessories

• Printer cable RS-232C DB-25P / DB-25P	1467A3
• PC-link cable DB-25P / DB-9S	1465A3
• Cable adapter RS-232C	
Connecotr: DB-9P/DB-25S	1479

