CALYS 1000

Transportable documenting multifunction calibrator with high accuracy 0.02%

CALYS 1000 is the ideal solution to simultaneously simulate and measure with a high accuracy of 0.02%: voltage, current, resistance, temperature (thermocouple or RTD), frequency and pulse.

Description

CALYS 1000 is a transportable multifunction calibrator with 0.02% accuracy and insulated channels. CALYS 1000 is the ideal solution to simultaneously simulate and measure: voltage, current, resistance, temperature (thermocouple or RTD), frequency and pulse. Its large graphical dual display with backlight enables INPUT and OUTPUT values to be simultaneously displayed and leads to keyboard simplification. On-line help messages are available at any time in case additional information on displayed options is needed. Extended functionalities: data processing, customized signal linearization, transmitter function, ramp and step function, relative measurements... Offered into a compact benchtop housing, the instrument is designed to meet the requirements of instrumentation engineers and quality managers, both in laboratory and in field work. It is widely used in metrological departments, quality-control departments, research and development laboratories and also by maintenance and approval companies. Advanced flexibility and high performance has been achieved using a 32 bit microprocessor and a fast A/D conversion technology.

Applications:

Due to its outstanding performances and quality, CALYS 1000 meets the requirements of a wide range of applications:

- Accurate measurement for calibration of signal generators such as sensors, voltage and current sources, resistance, and for the verification of general process control instruments
- Temperature simulation, voltage and current sourcing, resistance simulation for calibration of measuring equipment such as chart recorders, logical controllers, PLC

analogue inputs...
- Test of signal conditioners or transmitters, using CALYS 1000 simultaneous sensor simulation and output signal measurement capability.

Specifications

Specifications and performances in temperature @23°C ±5°C

Uncertainty is given in % of reading (CALYS 1000 display) + fixed value.

Resistive probes: Measurement and simulation

Sensor	Range (Input and Output)	Resolution	Accuracy / 1 year
Pt100 (α = 3926)	-200°C to +850°C	0.01°C	0.02% RDG + 0.05°C
Pt100 (α = 3902)	-200°C to +650°C	0.01°C	0.02% RDG + 0.05°C
Pt100 (α = JIS SAMA)	-200°C to +600°C	0.01°C	0.02% RDG + 0.05°C
Pt200 (α = 3851)	-200°C to +850°C	0.1°C	0.02% RDG + 0.15°C
Pt500 (α = 3851)	-200°C to +850°C	0.1°C	0.02% RDG + 0.1°C
Pt1000 (α = 3851)	-200°C to +850°C	0.01°C	0.02% RDG + 0.1°C
Cu10 (α = 427)	-70°C to +150°C	0.1°C	0.02% RDG + 0.4°C
Cu100 (α = 428)	-180°C to +150°C	0.1°C	0.02% RDG + 0.05°C
Ni100 (α = 618)	-60°C to +180°C	0.1°C	0.02% RDG + 0.05°C
Ni120 (α = 672)	0°C to +150°C	0.1°C	0.02% RDG + 0.05°C

Connections: 2, 3 and 4 wires Rtd simulation excitation current: from 0.01 to 5 mA without incremental error Rtd measurement excitation current: 0.4 mA @ 400 Ω and 0.04 mA @ 4000 Ω Rtd cable compensation: up to 100 Ω (for each wire) Rtd cable compensation error (Pt100): ±0.005°C/ of total wire Maximum load resistance: 1000 Ω @ 20 mA Measurement sampling time: 250 ms

Thermocouples: Measurement and simulation

Type	Range	Résolution	Accuracy / 1 an
J	-210 to +1200°C	0.01°C	0.02% RDG + 0.1°C
K	-270 to +1370°C	0.01°C	0.02% RDG + 0.1°C
T	-270 to +400°C	0.01°C	0.02% RDG + 0.1°C
R	-50 to 1760°C	0.1°C	0.02% RDG + 0.2°C
S	-50 to 1760°C	0.1°C	0.02% RDG + 0.2°C
B	+50 à +1820°C	0.1°C	0.02% RDG + 0.3°C
C	0 to 2300°C	0.1°C	0.02% RDG + 0.2°C

G	0 to 2300°C	0.1°C	0.02% RDG + 0.3°C
D	0 to 2300°C	0.1°C	0.01% RDG + 0.3°C
U	-200 to +400°C	0.01°C	0.02% RDG + 0.1°C
L	-200 to +760°C	0.01°C	0.02% RDG + 0.1°C
N	-270 to +1300°C	0.01°C	0.02% RDG + 0.1°C
E	-270 to +1000°C	0.1°C	0.02% RDG + 0.1°C
F	0 to +1400°C	0.1°C	0.02% RDG + 0.1°C

Display units: °C, °F and K Reference junction compensation: - Internal automatic: from -10°C to +55°C - External: from -50°C to 100°C - Remote with external Pt100: from -10°C to 100°C Rj compensation drift: ±0.015°C/°C from -10 °C to +55°C RJ compensation error: - Internal: ±0.15°C - Remote: ±0.3°C Input impedance: > 10 MΩ Measurement sampling time: 250 ms

Specifications and performances in process @23°C ±5°C

DC voltage: Measurement and simulation

Range	Resolution	Accuracy / 1 an
-20 mV to +200 mV	1 µV	0.02% RDG + 2 µV
-0.2 V to +2 V	10 µV	0.02% RDG + 10 µV
-2 V to +20 V	100 µV	0.02% RDG + 0.08 mV

Input impedance: > 10 MΩ Output impedance (emf output): < 0.5 Ω with a maximum current of 0.5 mA Output noise (at 300 Hz): < 2 µV pp for ranges up to 200 mV < 10 µV pp for ranges up to 2 V < 80 µV pp for ranges up to 20 V Measurement sampling time: 250 ms

DC current: Measurement and simulation

With or without loop supply

Type	Range	Resolution	Accuracy / 1 an
Measurement	-5 mA to 50 mA	0.1 µA	0.02% RDG + 0.4 µA
Emission	0 mA to 50 mA	0.1 µA	0.02% RDG + 0.4 µA

Input impedance: < 140 Ω at 1 mA
Maximum load resistance: 1000 Ω at 20 mA Loop supply: 24 V
Measurement sampling time: 250 ms

Resistance: Measurement and simulation

Type	Range	Resolution	Accuracy / 1 an
Measurement	0 to 500 Ω	1 mΩ	0.02% RDG + 12 mΩ
	0 to 5000 Ω	10 mΩ	0.02% RDG + 120 mΩ
Simulation	0 to 500 Ω	1 mΩ	0.02% RDG + 20 mΩ
	0 to 5000 Ω	10 mΩ	0.02% RDG + 200 mΩ

Connections: 2, 3 and 4 wires Source resistance effects: ±1 µV error for 1000 Ω source resistance Simulation excitation current: from 0.01 to 5 mA without incremental error Measurement excitation current: 0.4 mA @ 400 Ω and 0.04 mA @ 4000 Ω Maximum load resistance: 1000 Ω @ 20 mA Measurement sampling time: 250 ms

Frequency, pulse: Measurement and simulation

Type	Range	Resolution	Accuracy / 1an
Frequency	1 to 200 Hz	0.001 Hz	0.005% RDG + 0.001 Hz
	1 to 2 kHz	0.01 Hz	0.005% RDG + 0.001 Hz
	1 to 20 kHz	0.1 Hz	0.005% RDG + 0.001 Hz
Pulse counter	0 to 106	1 pulse	Infinite
Pulse (Output)	0 to 6000 pulse / min	1 pulse / min	1 pulse / min
	0 to 36000 pulse / h	1 pulse / h	1 pulse / min

Further features

Scaling in measurement and simulation modes	5 different settings with zero and span programmable within -399999 and +999999 Scaling allows process signals to be displayed in % of FS or in all other units. This function also allows sensors to be corrected after a calibration.
Square root	In combination with scaling function
Statistical functions	hold, max, min, offset, zero, average
Transmitters tests	The feature enables any transmitter to be controlled and calibrated with simultaneous display of input and output values in % F.S. or in actual unit. The measuring circuit is also able to power the loop for a direct connection to the transmitter under test.
Ramp and step generation	Manual operating mode, automatic (set number of cycles) or continuous mode (non-limited number of cycles) Continuous or step cycles, with programmable Start, End, Rises, Soaks, and Falls parameters Direct keypad access to 20

	programmable memory stored values
Transmitter function	CALYS 1000 can be used as a transmitter. Any input signal can be converted into a 4-20 mA output. The galvanic insulation between the input and output channels allows this function o be used on the prcess directly.

General specifications

Size	264 x 96 x 172 mm
Weight	Nett: 4 kg Gross: 5.5 kg
Display	240 x 64 pixel LCD graphical display with LED backlite Display of result as table of values or trend curve
Power supply	100 – 120 - 230 VAC ±10 %, 50/60 Hz
Battery	Type: Rechargeable Ni-Cd Charging time: 5 h at 90% and 6 h at 99%, if instrument switched off Life time: 6 h (Tc and V), 3.5 h at 20 mA
Communication ports	RS 232, full bidirectional TTL
Storage capacity	> 1,500 measured values 20 data with manual or automatic recall

Environmental specifications

Reference range	23°C ±5°C
Operating reference range	-10 to 55°C
Storage temperature limits	-30°C to +60°C (without battery)

Safety specifications

Protections	Fuses
EMC conform ity	89/336/CEE

Models and accessories

Instrument:

CALYS1000 Transportable benchtop multifunction calibrator with accuracy 0.02%

Delivered in standard with:

- Battery
- RS 232 interface
- Vinyl soft carrying case
- Instruction manual
- Factory test report

Accessories:

BB880038 Vinyl soft carrying case

Certification:

QMA11EN COFRAC certificate of calibration

With all relevant data points where the device has been tested

Packing information:

Size 264 x 96 x 172 mm

Weight (net) 4 kg

Weight (gross) 5.5 kg