



CALYS 75

Field documenting multifunction
calibrator

CALYS 75 is a field documenting multifunction calibrator within CALYS range. It is the perfect tool for advanced process maintenance and use on test bench in all industries. Suitable for all field and lab measurements, it can simultaneously measure and generate over two isolated channels various signals of temperature, resistance, process, pressure and frequency in one single instrument._

Description

CALYS 75 is a field documenting multifunction calibrator of high accuracy within CALYS range. It is the perfect tool for advanced process maintenance and use on test bench in all industries. Suitable for all field and lab measurements, it can simultaneously measure and generate over two isolated channels various signals of temperature, resistance, process, pressure and frequency in one single instrument.

Providing **extended functionalities** (temperature simulation, scaling, steps, synthesizer, statistical functions...), CALYS 75 makes advanced data exploitation and full data traceability easier, as well as quick access to functions by menus.

The instrument simultaneously measures and simulates:

- Temperature: Up to 0,014% RDG
- Resistance: Up to 0,012% RDG, 4 K Ω range
- Current: Up to 0,0175% RDG, 50 mA range + 24 V loop supply
- Voltage: Up to 0,013% RDG, 50 V range
- Frequency: Up to 0,005% RDG, 20 KHz range (10 KHz in simulation)
- When used with an external pressure module (ref. ACL433), CALYS 75 can measure and simulate pressure (comparison calibration with a pressure pump).

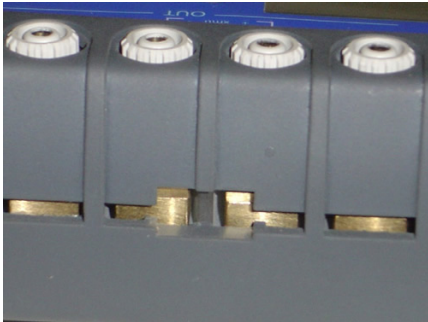


Using this user-friendly instrument, calibration tasks can be quickly carried out over the whole process chain. Take the 900 g documenting process calibrator to the field with you during the whole week with **10 calibration procedures stored** in the device. Run the procedure after connecting the probes to the instrument (Easy connect system®) and save the results for onsite easy and quick calibration. Back to the office, you can then upload the data on a computer in order to **issue customized calibration certificates** with dedicated calibration software DATACAL.

IP 54, fully protected by an antichoc rubber holster, CALYS 75 integrates "easyconnect"

terminals and a wide backlite display that makes it easy to use in any severe or dark conditions.

Easy connection system



Connect your probes by simply pushing on the terminal top and insert wires of up to 3 mm or 10 AWG diameter and compensated thermocouple connectors. Wires are held tight between two brass plates ensuring thermal stability and a very good cold junction compensation for thermocouples. This system also enables 4 mm banana plugs and security connectors to be connected on the terminal top.

CALYS series, 4 models from basic use to advanced performances

| Specifications | | CALYS 50 | CALYS 75 | CALYS 100 | CALYS 150 |
|-------------------------------|---------------------------------|---|--------------------|---------------------------------|-----------------------------------|
| Top accuracy | | 200 ppm | | 130 ppm | 50 ppm |
| Temperature accuracy | Thermocouples (14) RTDs (12) | 0.013% RDG for Tc K 0.012% RDG | | 0.01% RDG for Tc K 0.01% RDG | 0.005% RDG for Tc K 0.006% RDG |
| DC current + Loop supply 24 V | Range Accuracy | 50 mA 0.0175% RDG | | | 100 mA 0.007% RDG |
| DC voltage | Range Accuracy | 50 V IN / 20 V OUT 0.013% RDG | 50 V 0.013% RDG | 50 V 0.010% RDG | 50 V 0.005% RDG |
| Frequency | Range Accuracy | 20 KHz IN / 10 KHz OUT 0.005% RDG | | | 100 KHz 0.01% RDG |
| Resistance | Range Accuracy | 4000 Ω 0.012% RDG | | 4000 Ω 0.010% RDG | 50 KΩ 0.006% RDG |
| Pressure | Range Accuracy | Relative pressure: 30 bar / Absolute pressure: 1,000 bar 0.05% RDG | | | |
| Compliance to standards | | | | | 21 CFR Part 11 |
| | | | | | NADCAP Heat treatment AMS |

| | | | | |
|----------------------|---|--|--|---|
| | | | | 2750 |
| Additional functions | Advanced data exploitation: Scaling, relative measurement, simulation of ramps and steps, synthesizer, square root, statistical functions Transmitter function | | | |
| Additional functions | | Switch test Calibration of transmitters | | |
| Additional functions | | | | Comparison calibration HART: Digital calibration and data transfer Calibration of thermistors |
| Software | | DATACAL calibration software for configuration and data management | | |
| Memory | | 10,000 data stored and recalled on screen as curve or list | | |

Specifications

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

Uncertainty is given in % of reading (CALYS 75 display) + fixed value.

Resistive probes: Measurement and simulation

| Sensor | Range (Input and Output) | Resolution | Accuracy / 1 year (Measurement) | Accuracy / 1 year (Simulation) |
|----------------------------|--------------------------|------------|---------------------------------|--------------------------------|
| Pt50 ($\alpha = 3851$) | -220°C to +850°C | 0.01°C | 0.012% RDG + 0.06°C | 0.014% RDG + 0.18°C |
| Pt100 ($\alpha = 3851$) | -220°C to +850°C | 0.01°C | 0.012% RDG + 0.05°C | 0.014% RDG + 0.12°C |
| Pt100 ($\alpha = 3916$) | -200°C to +510°C | 0.01°C | 0.012% RDG + 0.05°C | 0.014% RDG + 0.12°C |
| Pt100 ($\alpha = 3926$) | -210°C to +850°C | 0.01°C | 0.012% RDG + 0.05°C | 0.014% RDG + 0.12°C |
| Pt200 ($\alpha = 3851$) | -220°C to +600°C | 0.01°C | 0.012% RDG + 0.12°C | 0.014% RDG + 0.33°C |
| Pt500 ($\alpha = 3851$) | -220°C to +850°C | 0.01°C | 0.012% RDG + 0.07°C | 0.014% RDG + 0.18°C |
| Pt1000 ($\alpha = 3851$) | -220°C to +850°C | 0.01°C | 0.012% RDG + 0.05°C | 0.014% RDG + 0.08°C |
| Ni100 ($\alpha = 618$) | -60°C to 180°C | 0.01°C | 0.012% RDG + 0.03°C | 0.014% RDG + 0.08°C |
| Ni120 ($\alpha = 672$) | -40°C to +205°C | 0.01°C | 0.012% RDG + 0.03°C | 0.014% RDG + 0.08°C |
| Ni1000 ($\alpha = 618$) | -60°C to +180°C | 0.01°C | 0.012% RDG + 0.03°C | 0.014% RDG + 0.08°C |
| Cu10 ($\alpha = 427$) | -50°C to 150°C | 0.01°C | 0.012% RDG + 0.18°C | 0.014% RDG + 0.1°C |
| Cu50 ($\alpha = 428$) | -50°C to +150°C | 0.01°C | 0.012% RDG + 0.06°C | 0.014% RDG + 0.15°C |

Resistive probes measurements in 2, 3 or 4 wires: automatic recognition of number of connected wires, with indication on screen

Accuracies are given for 4-wire mounted probes

Take into account particular error of temperature sensor used and implementation conditions

Measuring current: 0.25 mA (Measurement) or from 0.1 to 1 mA (Emission)

Temperature coefficient: < 10% of accuracy /°C

Thermocouples: Measurement and simulation

| Type | Input range | Resolution | Accuracy / 1 year (Measurement) | Output range | Resolution | Accuracy / 1 year (Simulation) |
|------|--|-------------------------------------|--|---|---------------------------|---|
| K | -250 to -200°C -200 to -120°C -120 to +0°C 0°C to +1372°C | 0.2°C 0.1 0.05°C 0.05°C | 0.8°C 0.25°C 0.1°C 0.013% RDG + 0.08°C | -240 to -50°C -50 to -0°C +0°C to +1372°C | 0.2°C 0.1 0.05°C | 0.6°C 0.1°C 0.013% RDG + 0.08°C |
| T | -250 to -200°C -200 to -120°C -120 to -50°C -50 to +400°C | 0.2°C 0.05°C 0.05°C 0.05°C | 0.7°C 0.25°C 0.1°C 0.013% RDG + 0.08°C | -240 to -100°C -100 to -0°C +0 to +400°C | 0.2°C 0.05°C 0.05°C | 0.4°C 0.1°C 0.013% RDG + 0.08°C |
| J | -210 to -120°C -120 to +0°C +0 to +1200°C | 0.05°C 0.05°C 0.05°C | 0.25°C 0.09°C 0.013% RDG + 0.07°C | -210 to -0°C +0 to +1200°C | 0.05°C 0.05°C | 0.2°C 0.013% RDG + 0.07°C |
| E | -250 to -200°C -200 to -100°C -100 to -0°C +0 to +1000°C | 0.1°C 0.05°C 0.05°C 0.05°C | 0.45°C 0.15°C 0.07°C 0.013% RDG + 0.05°C | -240 to -100°C -100 to +40°C +40 to 1000°C | 0.1°C 0.1°C 0.05°C | 0.25°C 0.1°C 0.013% RDG + 0.05°C |
| R | -50 to +150°C +150 to +550°C +550 to 1768°C | 0.5°C 0.2°C 0.1°C | 0.8°C 0.013% RDG + 0.35°C 0.013% RDG + 0.2°C | -50 to +350°C +350 to +900°C +900 to 1768°C | 0.5°C 0.2°C 0.1°C | 0.5°C 0.013% RDG + 0.35°C 0.013% RDG + 0.2°C |
| S | -50 to +150°C +150 to +550°C +550 to +1768°C | 0.5°C 0.2°C 0.1°C | 0.80°C 0.013% RDG + 0.35°C 0.013% RDG + 0.25°C | -50 to +120°C +120 to +450°C +450 to +1768°C | 0.5°C 0.2°C 0.1°C | 0.8°C 0.013% RDG + 0.35°C 0.013% RDG + 0.25°C |
| B | +400 to +900°C +900 to +1820°C | 0.2°C 0.1°C | 0.013% RDG + 0.4°C 0.013% RDG + 0.2°C | +400 to +850°C +850 to +1820°C | 0.2°C 0.1°C | 0.013% RDG + 0.4°C 0.013% RDG + 0.2°C |
| U | -200 to +660°C | 0.05°C | 0.15°C | -200 to +600°C | 0.05°C | 0.15°C |

| | | | | | | |
|-----------|---|------------------------------------|---|---|------------------------------------|---|
| L | -200 to +900°C | 0.05°C | 0.2°C | -200 to +900°C | 0.05°C | 0.2°C |
| C | -20 to +900°C +900 to 2310°C | 0.1°C 0.1°C | 0.25°C 0.013% RDG + 0.15°C | -20 to +900°C +900 to 2310°C | 0.1°C 0.1°C | 0.25°C 0.013% RDG + 0.15°C |
| N | -240 to -190°C -190 to -110°C -110 to +0°C +0 to +1300°C | 0.2°C 0.1°C 0.05°C 0.05°C | 0.5°C 0.15°C 0.08°C 0.013% RDG + 0.06°C | -240 to -190°C -190 to -110°C -110 to +0°C +0 to +1300°C | 0.2°C 0.1°C 0.05°C 0.05°C | 0.3°C 0.15°C 0.08°C 0.015% RDG + 0.06°C |
| Platinum | -100 to +1400°C | 0.05°C | 0.3°C | -100 to +1400°C | 0.05°C | 0.3°C |
| Mo | +0 to +1375°C | 0.05°C | 0.013% RDG + 0.06°C | +0 to +1375°C | 0.05°C | 0.013% RDG + 0.06°C |
| NiMo/NiCo | -50 to +1410°C | 0.05°C | 0.013% RDG + 0.30°C | -50 to +1410°C | 0.05°C | 0.013% RDG + 0.3°C |

Thermocouples: D and G, for specifications, refer to the instruction manual (Available on request)

Accuracy is given for reference @ 0°C.

When using the internal reference junction (except couple B) add an additional uncertainty of 0.2 °C at 0 °C.

It is possible (thermocouple B excepted) to choose by programming the cold junction localization: External at 0°C, internal (temperature compensation of instrument's terminals) or manually entered.

Temperature coefficient: <10% of accuracy /°C

Display unit: °C and F

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

Pressure: Measurement by external digital sensor

| Range | 0-1 bar | 0-3 bar | 0-10 bar | 0-30 bar | 0-100 bar | 0-300 bar | 0-1000 bar |
|----------|---------|---------|----------|----------|-----------|-----------|------------|
| Absolute | X | X | X | X | X | X | X |
| Relative | X | X | X | X | | | |

Available in relative, absolute and differential pressure.

Connector: ¼ gas

Resolution: 0.02% FS

Accuracy:

-0.05% FS from 10 to 40°C

- 0.1% FS from -10 to +10°C and from 40 to 80°C

This digital pressure module ACL433 is connected to CALYS 75 through RS485 serial cable to the digital input connector. All data are digital. Measurements are compensated in temperature by a polynomial correction implemented into the firmware at factory.

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

DC current: Measurement

With or without loop supply

| Range | Res. | Accuracy / 1an | Rin |
|---------|------|--------------------|--------|
| 0-20 mA | 1 µA | 0.0175% RDG + 2 µA | < 25 Ω |
| 4-20 mA | 1 µA | 0.0175% RDG + 2 µA | < 25 Ω |
| ±50 mA | 1 µA | 0.0175% RDG + 2 µA | < 25 Ω |

Temperature coefficient: < 10 ppm/°C beyond reference domain

Loop supply: 24 V ±10%

HART® compatibility: Input impedance Rin = 280 Ω

Display with linear or quadratic scaling

DC voltage: Measurement

| Range | Res. | Accuracy / 1an | Rin |
|---------|--------|---------------------|---------|
| 100 mV | 1 µV | 0.013% RDG + 3 µV | > 10 MΩ |
| 1 V (1) | 10 µV | 0.013% RDG + 20 µV | > 10 MΩ |
| 10 V | 100 µV | 0.015% RDG + 200 µV | > 1 MΩ |
| 50 V | 1 mV | 0.015% RDG + 2 mV | > 1 MΩ |

Temperature coefficient < 7 ppm/°C beyond reference domain

(1) Specification domain: -0.8 V to +1 V

Frequency, counting: Measurement

| Range | Resolution | Accuracy / 1an |
|--------|------------|----------------|
| 20 kHz | 0.01 Hz | 0.005% RDG |

Temperature coefficient < 5 ppm/°C beyond reference domain

Scale unit: Pulse / min and Hz

Trigger level: 1 V

Measurement on frequency signals or dry contacts

Counting will be performed on defined time or infinite time.

Resistance: Measurement

| Range | Resolution | Accuracy / 1an |
|-------|------------|---------------------|
| 400 Ω | 1 mΩ | 0.012% RDG + 10 mΩ |
| 400 Ω | 10 mΩ | 0.012% RDG + 100 mΩ |

Resistance measurement in 2, 3 or 4 wires: automatic recognition of number of connected wires, with indication on screen

Accuracies are given for 4-wire mounted probes

Temperature coefficient: < 7 ppm/°C beyond reference domain
 Open circuit terminal voltage: < 10 V
 Continuity test: Open circuit for R > 1000 Ω and closed circuit for R < 1000 Ω
 Measurement current: 0.25 mA

DC current: Emission

With or without loop supply

| Range | Resolution | Accuracy / 1an |
|---------|------------|--------------------|
| 24 mA | 1 μA | 0.0175% RDG + 2 μA |
| 4-20 mA | 1 μA | 0.0175% RDG + 2 μA |
| 0-20 mA | 1 μA | 0.0175% RDG + 2 μA |

Temperature Coefficient < 10 ppm/°C beyond reference domain
 Settling time: < 5 ms

Specifications given for CALYS configurations in:

- Active mode (+24V ON) 1 Meter in passive mode (+24 V OFF)
- Passive mode (+24 V OFF) 1 Meter in active mode (+24 V ON)

Pre-programmed steps

| | 0% | 25% | 50% | 75% | 100% |
|----------------|-----------|-----|------|-----|------------|
| 4-20 mA linear | | 4 | 8 | 12 | 16 20 |
| 0-20 mA linear | | 0 | 5 | 10 | 15 20 |
| 4-20 mA quad | | 4 | 5 | 8 | 13 20 |
| 0-20 mA quad | | 0 | 1.25 | 5 | 11,25 20 |
| 4-20 mA valves | 3.8-4—4.2 | | | 12 | 19, 20, 21 |

DC voltage: Emission

| Range | Res. | Accuracy / 1an | Min load |
|--------|--------|---------------------|----------|
| 100 mV | 1 μV | 0.013% RDG + 3 μV | 1 kΩ |
| 2 V | 10 μV | 0.013% RDG + 20 μV | 2 kΩ |
| 20 V | 100 μV | 0.015% RDG + 200 μV | 4 kΩ |
| 50 V | 1 mV | 0.015% RDG + 2 mV | 4 kΩ |

Noise: 3 ppm (for 0.1 Hz to 10 Hz) and 5 ppm (for 10 Hz to 100 Hz)

Temperature coefficient: < 7 ppm/°C beyond reference domain

Settling time: < 5 ms

Frequency, pulse: Emission

| Range | Resolution | Accuracy / 1an |
|---------|------------|----------------|
| 1000 Hz | 0.01 Hz | 0.005% RDG |
| 10 kHz | 0.1 Hz | 0.005% RDG |

Temperature coefficient < 5 ppm/°C beyond reference domain

Resistance: Emission

| Range | Res. | Accuracy / I_{an} | Nota text |
|---------------|----------------|--|---------------|
| 40 Ω | 1 m Ω | 0.014% RDG + 3 m Ω 0.014% RDG + 10 m Ω | 10 mA 1 mA |
| 400 Ω | 10 m Ω | 0.014% RDG + 20 m Ω 0.014% RDG + 30 m Ω | 10 mA 1 mA |
| 4000 Ω | 100 m Ω | 0.014% RDG + 300 m Ω | 0.1 / 1 mA |

Temperature coefficient: < 5 ppm/°C beyond reference domain

Current establishing time: < 1 ms

text: Current received by the calibrator

Further features

Scaling in measurement and simulation modes

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.

Relative measurement

Models and accessories

Instrument:

CALYS75 On-site documenting multifunction calibrator
Delivered in standard with:

- User manual
- Battery charger
- Set of 6 testing leads
- Carrying strap
- Factory test report

Accessories:

ACL433 External digital pressure sensor for CALYS 75 / 100 / 150
(Absolute or relative pressure)

Different ranges available from 0 to 1,000 bar

Range from -1 -> 1; 3; 10; 30 (absolute or relative pressure)

Range from -1 -> 100; 300; 1,000 (absolute pressure only)

Standard accuracy: 0.05% FS

AN6050 Transport case for CALYS series

ACL9311 Set of 6 measuring cables with removable crocodile clips

ER 49504-000 USB cable

Software:

DATA CAL Calibration software for CALYS 75 / 100 / 150

Supplied with USB cable

Edition of 100 % customizable calibration reports

Certification:

QMA11EN COFRAC certificate of calibration

With all relevant data points where the device has been tested

Packing information:

Size 210 mm x 110 mm x 50 mm

Weight without packing 900 g