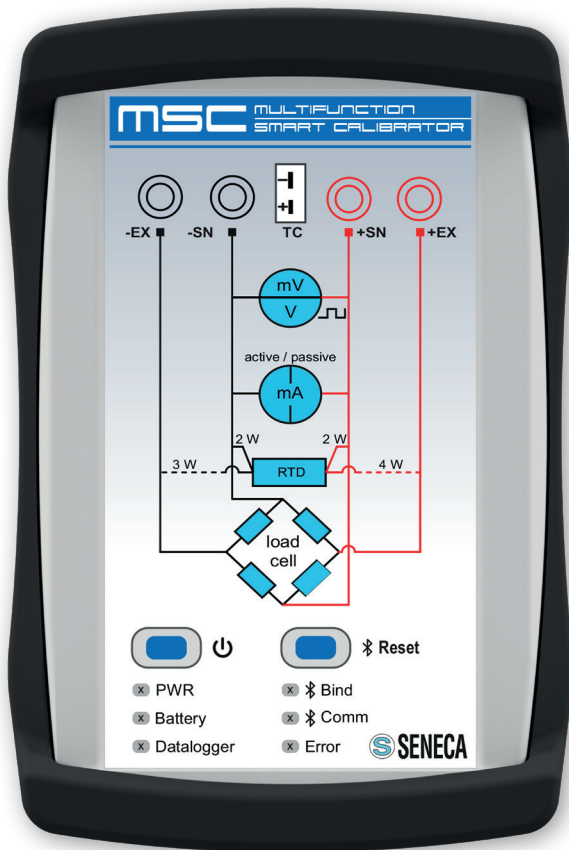


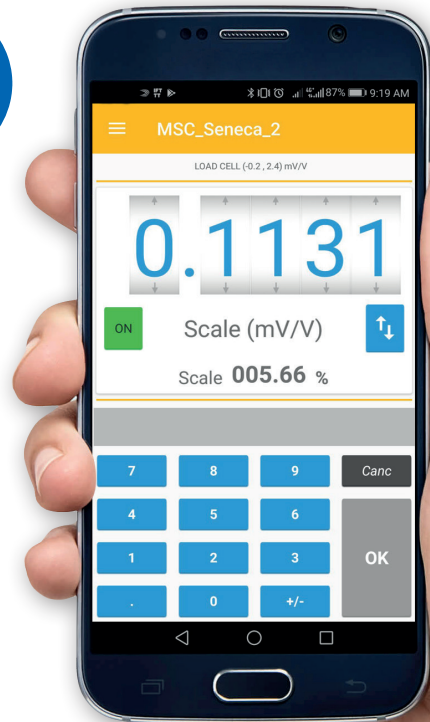
THE FIRST PORTABLE CALIBRATION AND MEASUREMENT APP BASED SYSTEM

MSC

MULTIFUNCTION SMART CALIBRATOR



Bluetooth[®]
Low Energy



Prozess Mess Regeltechnik
PMR HandelsgmbH

SENECA
www.seneca.it/msc

MSC - Multifunction Smart Calibrator



Handheld Bluetooth universal calibrator

MSC (Multifunction Smart Calibrator) is a flexible device for maintenance and testing of sensors and process meters.

With best-in-class accuracy at 0.05% for each type of input / output, MSC offers measurement, generation and simulation of analog and digital signals, temperature sensors and load cells. Data visualization and parameters setting are provided by Bluetooth 4.1 connection through the mobile app (MSC by SENECA) multilingual and available for iOS and Android devices.

MSC includes programmable ramp generation functions, datalogging with data export in .csv format thanks to MSC tool software and the possible use as a Automatic Testing System through LabVIEW libraries.

Equipped with a rechargeable lithium polymer battery, MSC can power external devices and sensors and can be used without continuous power supply with 20 hours battery life.

The calibrator, with a reading capacity up to 100,000 measurements, is suitable for professional and industrial use for PLC programmers, maintenance technicians, technical assistance, measurement laboratories, control -and calibration, industry (laboratories, workshops and production), quality control.

HIGHLIGHTS

SIGNAL MEASUREMENT



SIGNAL GENERATOR / SIMULATOR



RAMPS FUNCTION



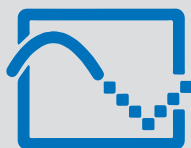
Single / Loop,
max 9 segments

DATALOGGER



100.000 readings
Csv data format
Sampling time > 500 ms

UNIVERSAL SIGNALS



V, mV, mA, TC, RTD, load cell,
pulse, frequency

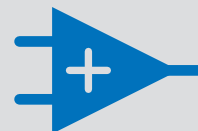
MULTILANGUAGE APP FOR INTERFACE AND CONTROL



BLUETOOTH LOW ENERGY AND MICRO USB CONNECTIONS



LABVIEW LIBRARIES FOR AUTOMATIC TEST EQUIPMENTS



DIAGNOSTIC AND CALIBRATION



For PLCs, sensors, regulators,
valve, industrial devices of
every kind and brand

ACCURACY



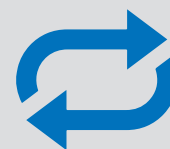
0,05%

ELECTRICITY NETWORK AND BATTERY POWER SUPPLY



From battery: 3.400 mAh
(max lifetime 20 hours)

LOOP POWER SUPPLY



@24 V

MULTI-DEVICE DATA VISUALIZATION



SIGNALLING



Power-on, communication fail,
BT pairing, datalogger on,
battery status leds, buzzer
overload

MULTI-FUNCTION AND PROFESSIONAL USE

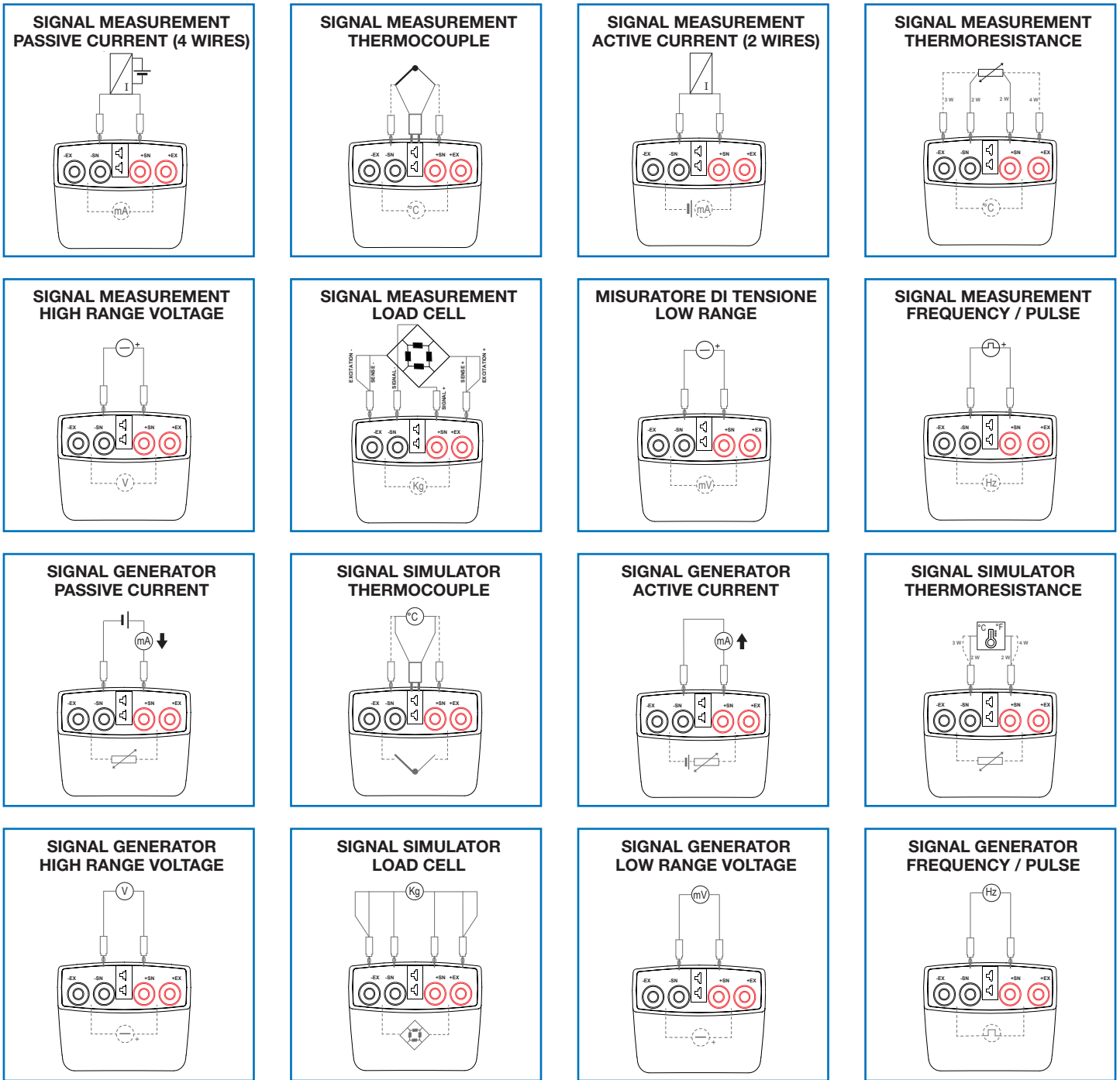


COSTS REDUCTION



Universal instrument
Multiple configurations
Real-time measurements
reading / writing / visualization

DIAGRAMS



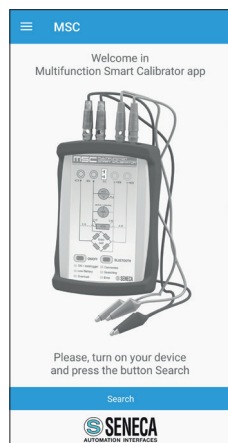
MSC by SENECA - CALBRATOR MANAGEMENT APP



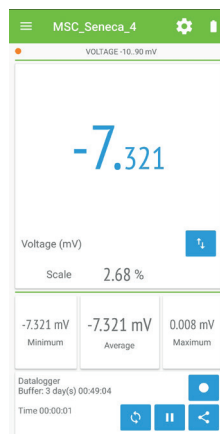
In order to use the MSC calibrator you need to install on your own mobile device the free APP "MSC by Seneca" available for iOS and Android devices.

Then you need to verify that the tablet and / or smartphone is equipped with bluetooth 4.1 or higher.

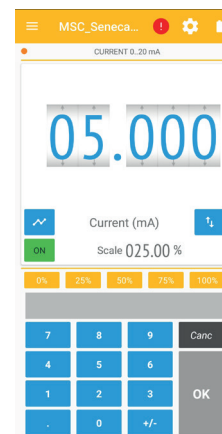
For the installation of the App on smartphone or tablet you have to scan the QR Code.



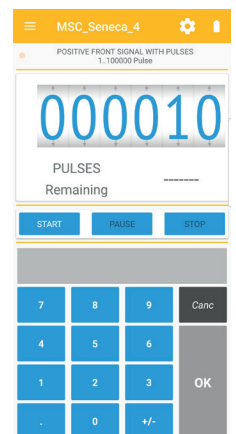
Start screen
(1) Navigation menu
(2) Search



Signal measurement screen example



Signal generation / simulation screen example



Signal generation / simulation screen example

MSC - Multifunction Smart Calibrator



TECHNICAL DATA

GENERAL DATA

Power supply	From electricity network 230 Vac through USB standard battery charge
Battery power	1 batterie Lithium Polymer (LiPo) 3400 mAh; lifetime 8 hours (min @ max load), 20 hours (max)
Protection degree	IP20
Operating temperature	-20..50°C (non charging), 0..45°C (during charging)
Warehouse temperature	0..35°C
Humidity	30..90 % non condensing
Isolation	Battery powered device, intrinsically isolated. No isolation towards USB port.
Overtoltage protection	230 Vac max senza danni permanenti
Rejection	50/60 Hz
Sampling frequency	10 Hz
Operating mode	Signal Meter, Signal Generator, Datalogger
Dimension	147 x 88 x 25 mm
Weight	330 g
Bundle	Connection cables (4 pcs), battery charger
Calibration certificate	On demand
Approval	CE
Norms	EN61326-1; EN61010-1

SIGNAL MEASUREMENT ACCURACY

Accuracy	0,03% (basic), 0,04% (current)
Resolution	1 µA; 1 mV; 5 µV; 0,1°C; 0,1uV/V

SIGNAL GENERATION ACCURACY

Accuracy	0,03% (basic), 0,04% (current)
Resolution	1 µA; 1 mV; 5µV; 0,1°C; 0,02 Ohm; 0,1 uV/V;

INTERFACES AND SIGNALING

Buttons	On / Off - Pairing Power Communication Error
LED	Pairing BT Datalogger on Battery status
Buzzer	Overload signaling / impossible simulating
Standard input socket	Nr.4 4mm input sockets
Thermocouple socket	Mini plug (7,9 mm) for TC measurement and simulation
Power Supply	Micro USB
Micro USB	Firmware update or ModBUS communication (Virtual COM)
Wireless communication	Bluetooth Low Energy 4.1 verso Smart phone e Tablet Android o Ios

SIGNAL MEASUREMENT FUNCTIONS

Current	0..24 mA active / passive; protection ± 28 V
Voltage (V)	0..27 V
Voltage (mV)	-10..+90 mV
Thermocouple	Type J,K,T,E,N,R,S,B,L
Thermoresistance (2,3,4 wires)	Pt100, Pt500, Pt1000, Cu50, Cu100, Ni100, Ni120
Load cell	350 Ohm; -0,2..+2,4mV/V
Pulse	Max counting 1.000 Hz
Frequency	0,1..1.000 Hz

SIGNAL GENERATION FUNCTIONS

Current	0,1..24 mA active / passive; protection ± 28 V
Voltage (V)	0,1..24 V
Voltage (mV)	-10..90 mV
Thermocouple	Type J,K,T,E,N,R,S,B,L
Thermoresistance (2 wires)	Pt100, Pt500, Pt1000, Cu50, Cu100, Ni100, Ni120
Load cell	350 Ohm; -0,2..+2,4mV/V
Pulse	Min 0,5 ms (1..24V) settable number of pulses
Frequency	0,1..1.000 Hz

DATALOGGER

Datalogger	Yes
Sampling time	>500 ms

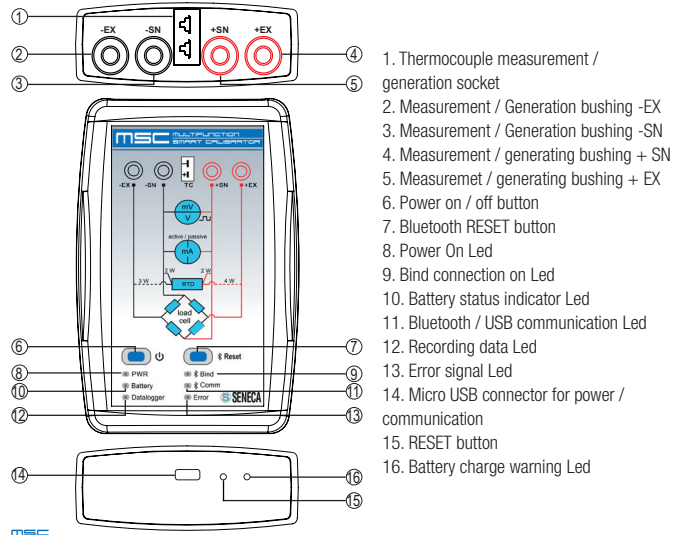
RAMP FUNCTION

Signal	Current / Voltage / TC / RTD / Load cell
Functions	Single / Loop
Type	Max 9 segments, ramp resolution 100ms, min ramp duration 1 s

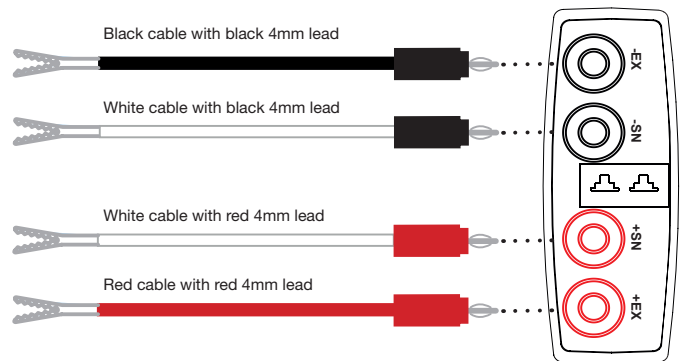
CALIBRATOR MANAGEMENT APP

Available language	Italian, English, German, French, Spanish
O.S / Store	IoS 10.3 or later (App Store) / Android 4.0.3 or later (Play Store)
Functions menu	General setup (operating mode, signal type, language selection) Signal measurement (Voltage / current / passive current / thermocouple / thermoresistance / load cell / pulse; average-min-max value, reset contatore, meter pause; value sharing; change of scale selection) Signal generation (Voltage / current / passive current / thermocouple / thermoresistance / load cell / pulse; on-off; change fo scale selection)
Error signaling	Out of scale - Overload generation Low battery - Internal error

FEATURE DIAGRAM



SUPPLIED CABLES



SIGNAL RANGE

SIGNAL TYPE	U.M.	SIGNAL GENERATION	SIGNAL MEASUREMENT
Voltage (hi range)	[dc V]	0..27 V	0..27 V
Voltage (low range)	[dc mV]	-10..+90 mV	-10..+90 mV
Active current	[dc mA]	0,1..+24 mA	0..+24 mA
Passive current	[dc mA]	0,1..+24 mA (3..29 V)	0..+24 mA
Pt100	[°C]	-200..+859°C	-200..+850°C
Pt500	[°C]	-200..+859°C	-200..+850°C
PT1000	[°C]	-200..+859°C	-200..+850°C
Cu50 / Cu100	[°C]	-180..+200°C	-180..+200°C
Ni100 / Ni120	[°C]	-80..+260°C	-60..+250°C
Thermocouple J	[°C]	-210..+1200°C	-210..+1200°C
Thermocouple K	[°C]	-270..+1372°C	-200..+1372°C
Thermocouple T	[°C]	-270..+400°C	-200..+400°C
Thermocouple E	[°C]	-270..+1000°C	-200..+1000°C
Thermocouple N	[°C]	-270..+1300°C	-200..+1300°C
Thermocouple R	[°C]	-50..+1768°C	-50..+1768°C
Thermocouple S	[°C]	-50..+1768°C	-50..+1768°C
Thermocouple B	[°C]	0..+1820°C	250..+1820°C
Thermocouple L	[°C]	-200..+800°C	-200..+800°C
Load Cell 350 Ohm	[mV/V]	-0,2..+2,4 mV/V	-0,2..+2,4 mV/V
Pulse / Frequency	[Hz]	0,1..1000 Hz (1..24 V)	0,1..1000 Hz (3..24 Vdc)

ORDER CODES

Code	Description
MSC	Multifunction Smart Calibrator - Signal meter / generator, Bluetooth app-based calibrator
MSC TOOL	Windows software for firmware update and csv format data export