100% Made & Designed in Italy

DAQ SOFTWARE



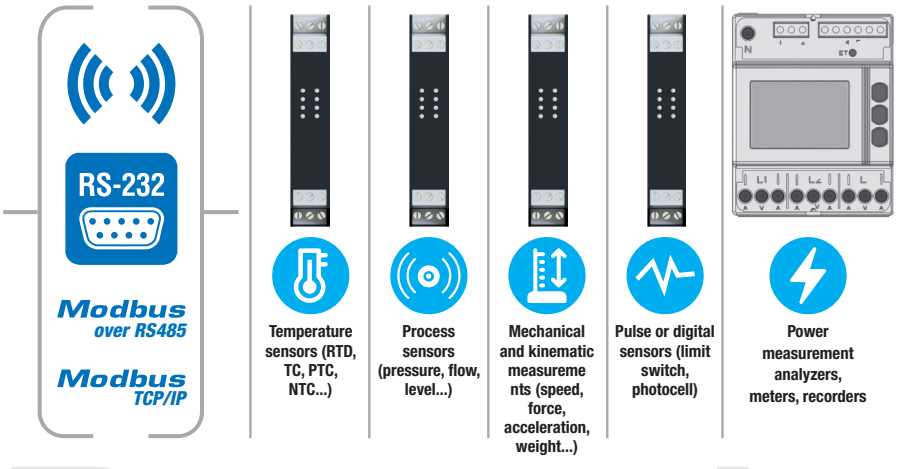
SENECA

www.seneca.it

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ACQUISITION, RECORDING, DISPLAYING





Data Recorder

Step forward with **Data Recorder**

Data Recorder is an open, scalable and inexpensive Windows PC-based software recorder, ideal for professionals, maintenance engineers, students, researchers, designers and technical department managers working in thetest, measurement and simulation sessions, in test benches, in electronics laboratories and for teaching, in test rooms, climatic chambers, engine rooms, industrial ovens, environmental measures, energy and plant monitoring.

Physical data acquisition takes place through distributed I/O modules of the SENECA Z-PC Series

(with or without CPU), and in general from any standard ModBUS RTU slave device. The communication between hardware and PC can be serial (RS232/RS485/ModBUS RTU) or Ethernet/ ModBUS TCP, on wired or wireless physical medium.

The normalized graphic representation can be set with nibs or display (digits).

The real-time display offers multiple selection options: channel groups, representation range, on-screen scrolling direction. It is also guaranteed the consultation of the historical archive (data and alarms) with a specific display software tool (Trend Viewer).

The export and exchange of data as well as in .csv format (manageable with Microsoft Excel) can to take place with standard SQLite and OPC Server technologies suitable for integration with Scada, management systems, automation devices, databases and Cloud platforms.

Data Recorder also provides advanced alarm management functions (with intervention on digital outputs), report management (with trigger events) and mathematical processing with algebraic, linear, trigonometric functions, boolean (digital channels), average calculation, compensation and deviations on measures.

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MODBUS DATA ACQUISITION AND RECORDING SOFTWARE

DATA

free license 2 channels downloadable from www.seneca.it/data-recorder

BENEFITS

- Plug & Play solution for data acquisition and real-time measurement
- DAQ system realization in 3 steps
- Data storage and export in standard format
- Full use of PC computing power- Use without specialist training
- Environment suitable for both industrial and educational laboratories
- Flexible and multi-format historical data and trend display
- Alarm management functions, reports and integrated mathematical processing

TOOLS / OPTIONS

Hardware requirements

O.S. Windows 8 or later
RAM 128 MB
HD 3G
SVGA 800x600

Data acquisition and measurements via system SENECA Remote I/O Z-PC-series



Windows & OPC tested & supported



Ready to use portable measuring kits



TECHNICAL DATA

Max Nr. of devices connected simultaneously	ModBUS TCP: depending on the application ModBUS RTU: More than 40 with SENECA I/O modules Z-PC Series Third party ModBUS devices: Up to 32 before amplifying the RS485 signal
Max Nr. of simultaneously recordable I/O systems	Depending on the application
Max. Nr. of recordable channels	From a minimum of two channels to unlimited channels depending on license size
Data logging sampling time	From a minimum of 1s to a maximum of 24h
Max Nr. of manageable display pages simultaneously	64
Max. Nr. display per page	48
Max. Nr. of pens per chart	8
Max. Nr. of alarms associated to each channel	4 thresholds (high alarm, high alarm, low alarm, low alarm) in display and storage on database 1 writing alarm threshold on an output channel
Manual Recording	Start and stop button
Automatic Recording	Three different scheduling methods: At fixed times and days Continuous and periodic with settable departure time and duration Start and stop on digital input status Recording option also with PC in stand-by mode
Dat export	CSV, OPC SERVER UA/DA, SQLITE (database format)
Math functions	Arithmetic operators (+, -, *, /, ^) Boolean operators (AND, OR, XOR, NOT) Analog functions (Sin(), Cos(), Tan(), Sqrt(), exp(), ln(), log(), int(), sgn()) Temperature Saturation
Calibration	On different groups of channels associated with thermocouples or thermoresistances by linear interpolation From 1 to 5 points per channel
Interface language	Italian, English
Operating Systems supported	Windows 10/8.1/8/7, Vista, XP, Windows Server 2016, 2012 R2, 2012, 2008 R2, 2008, 2003

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BASIC FUNCTIONS

CHANNEL MANAGEMENT



From Z-NET4 environment are edited display pages containing groups of channels that show the instantaneous values acquired from the system.

LICENSING



Licensing is managed with USB key and covers a display range from 2 to unlimited channels, be they analog, digital, impulsive or calculated. In the Package PLUS you can find the multi-client functionality.

REAL-TIME VISUALIZATION



At each display page corresponds to a time chart real-time containing a maximum of eight contemporary pens or customizable displays, with time axis settable.

HISTORICAL DATA VISUALIZATION



The integrated tool “Trend Viewer” allows to display graphs, filter, process and print the data recorded on the database both in graphic format and tabular.

DATA STORAGE AND EXPORT



Each registration generates a database where for each sample is written the instantaneous, maximum, minimum value and medium.
Data storage and export is available in csv, opc server formats UA/DA, Sqlite.

DAQ HARDWARE



It is guaranteed the acquisition of measures from MODBUS RTU and TCP devices, in particular through distributed I/O modules SENECA Z-PC Series, with interfaces serial, Ethernet and wireless.

ADVANCED FUNCTIONS

RECORDING SCHEDULING



Flexible scheduling allows the manual recording mode or the automatic recording up to 8 hours prefixed, continuous and with start from digital input.

MATH FUNCTIONS



In addition to the physical channels you can create of channels calculated from combination of imported channels and mathematical operators, with insertion of a possible scaling for each channel.

ALARM FUNCTIONS



For each analog channel you can enable a set of threshold alarms (high alarm, high alarm, alarm low and low alarm) displayed in real-time with the possibility of activate an output channel.

REPORTS



Automatic reports generation at the end of each registration with pages of project visualization that may include graphs, charts, tables of values and tables of recorded alarms.

TEMPERATURE SENSORS CALIBRATION



Possibility to perform calibrations of different groups of channels associated with TC or RTD by linear interpolation from a minimum of one point to a maximum of five points per channel.

MULTICLIENT OPTIONAL PACKAGE

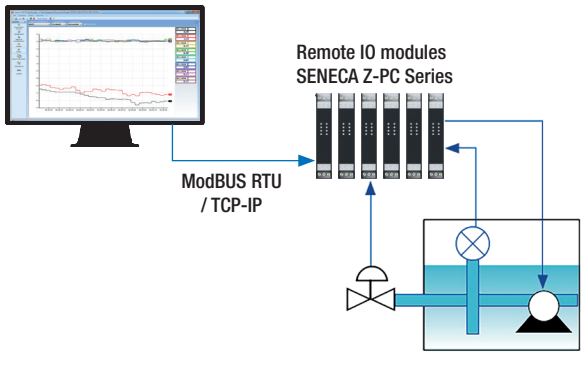


The PLUS package - Multi-Client allows you to manage multiple independent sessions and simultaneous measurement (and recording) on the same PC where they come created and managed separate databases.

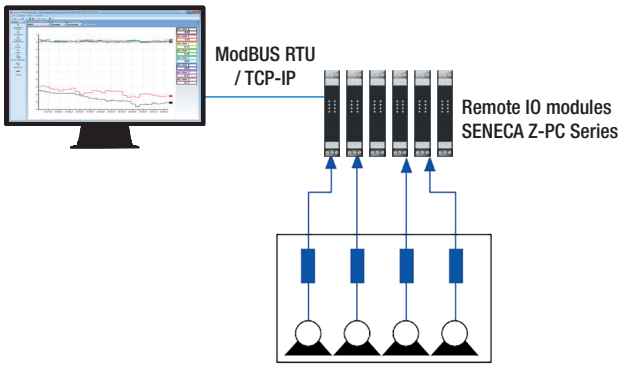
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APPLICATION SCHEMES

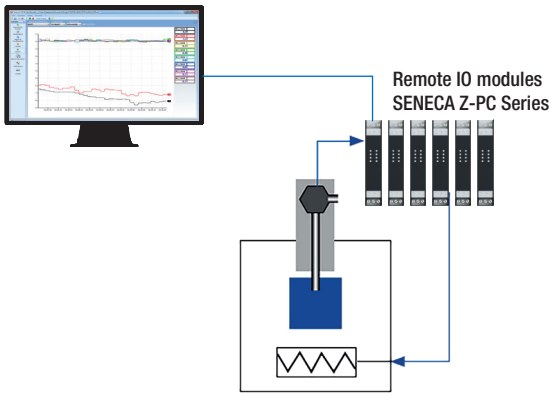
MONITORING WATER QUALITY PARAMETERS



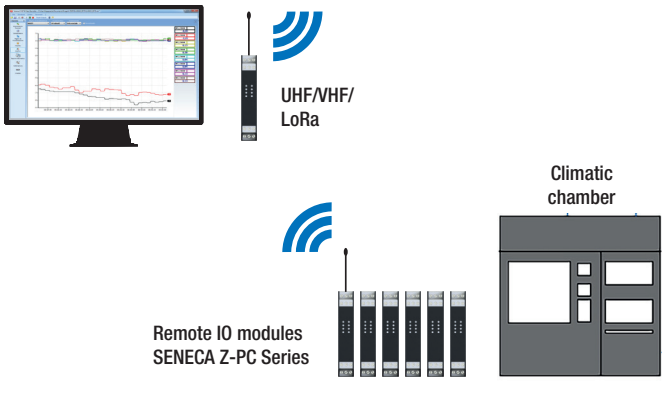
TESTS, TRIALS AND DATA ACQUISITION FOR ELECTRIC MOTORS



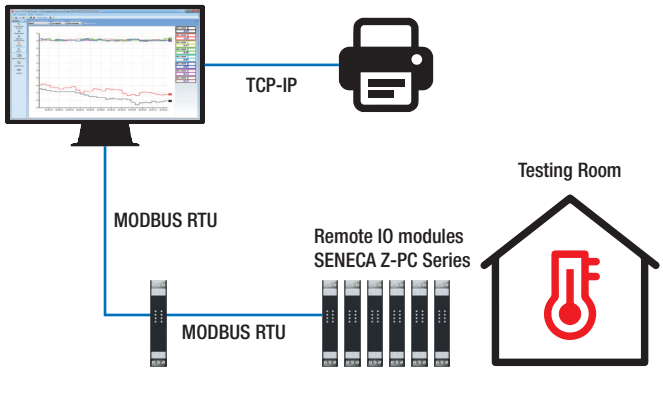
TEMPERATURE AND HUMIDITY MONITORING



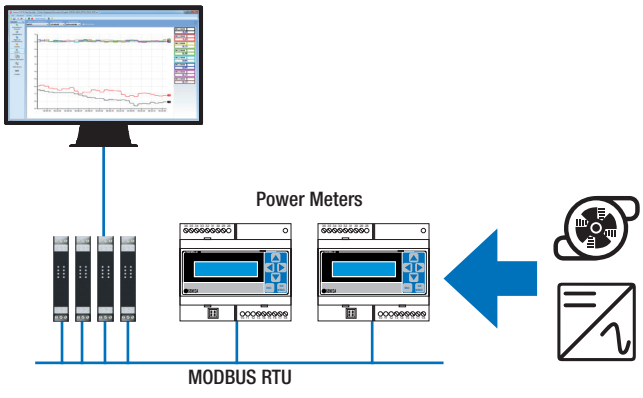
CLIMATIC CHAMBERS MONITORING



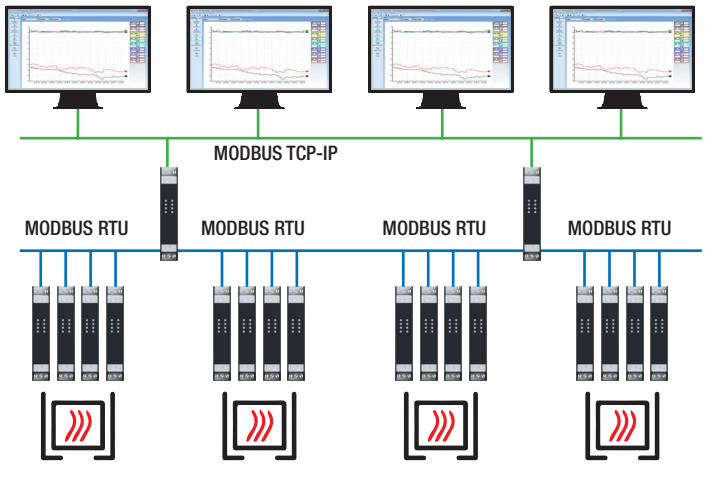
LEAKAGE TESTS IN TESTING ROOM



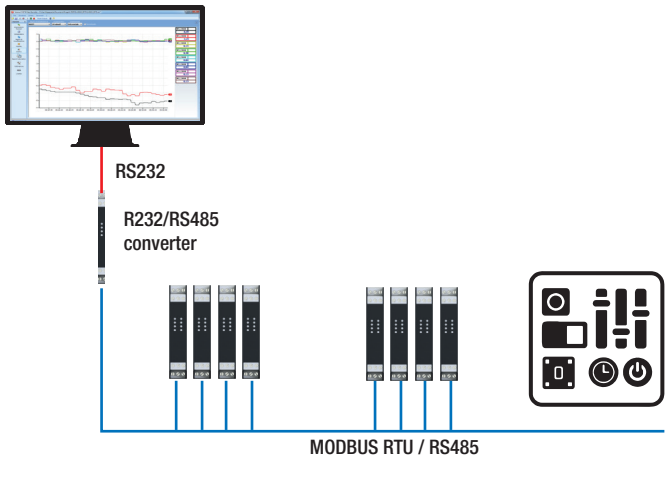
POWER CONSUMPTION MONITORING AND REPORTING



POLYMER PRODUCTION OVENS MONITORING



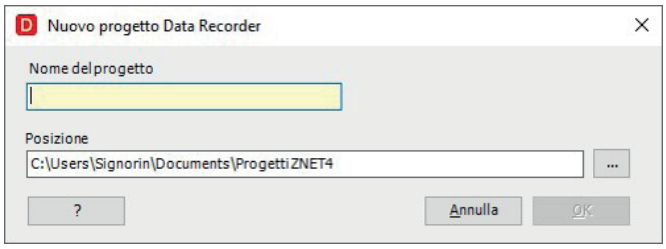
TEMPERATURE AND PRESSURE TESTS FOR INSULATING MATERIALS



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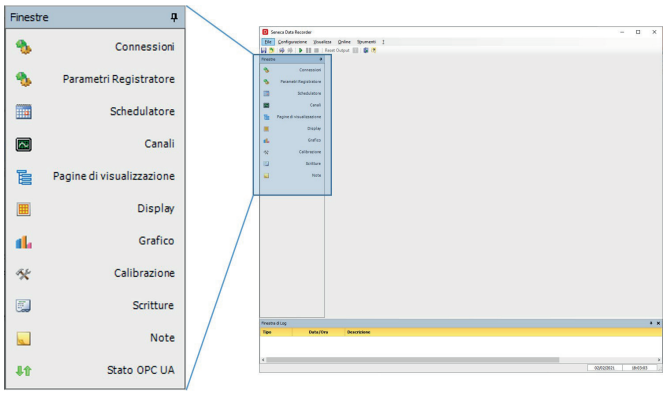
DEVELOPMENT OF AN APPLICATION WITH DATA RECORDER

PROJECT CREATION



To create a new project you can from the File menu select the item New or, alternatively, select the New button on the Toolbar. Following insertion of the project name, the following menu appears on the left menu which summarizes the project management and control options

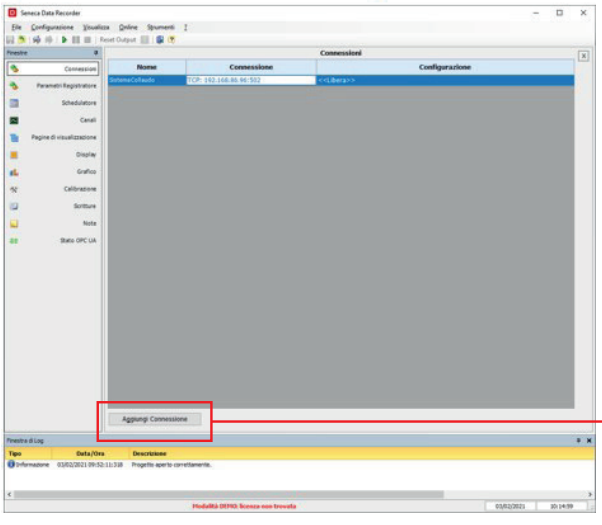
SETUP WINDOWS



- Hardware configuration, scheduler, displays, graphs, calibration, writes, notes, OPC UA status
- Communication parameters configuration
- Channels configuration (I/O, variables, tags, name, description, start/end of scale)
- Configuration of each single channel by range, description, tag
- Mathematical functions: algebraic, linear, trigonometric, Boolean, average values, offsets, deviations on average values, compensations, deviations on measurements
- Possibility of elaborating channels calculated in real time with formulas and combinations of acquired variable
- Calculation of fluid characteristics: mass density, enthalpy vapor/saturated liquid, pressure/temperature saturated, pressure/saturation temperature, viscosity. Specific heat of mass.
- Alarm setting for single channel (L, LL, H, HH).
- Online test configuration

CONNECTIONS

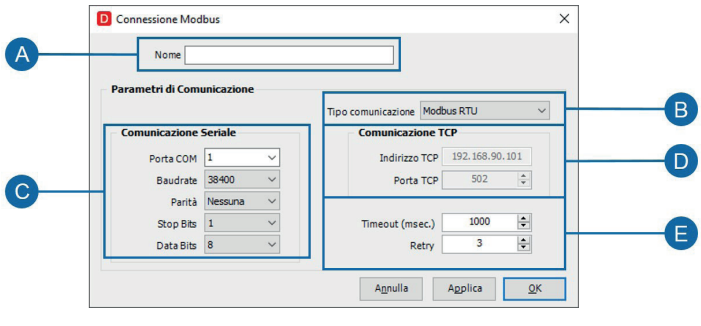




Selecting Connections from the options listed on the left, opens the window in the center the window in which the respective Modbus networks will be reported.

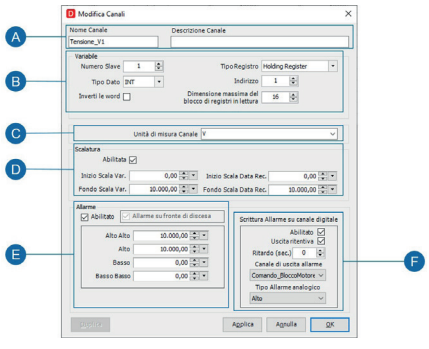
By clicking on the Add Connection button a window appears in which you can type the name of the connection and define the communication parameters. Several connections can be created within a project.

MODBUS PARAMETERS



(A) Enter the connection name, **(B)** Select the communication type, **(C)** If Modbus RTU -> Set serial, **(D)** If Modbus TCP -> Set TCP address and connection port, **(E)** Set communication parameters (valid for both choices).

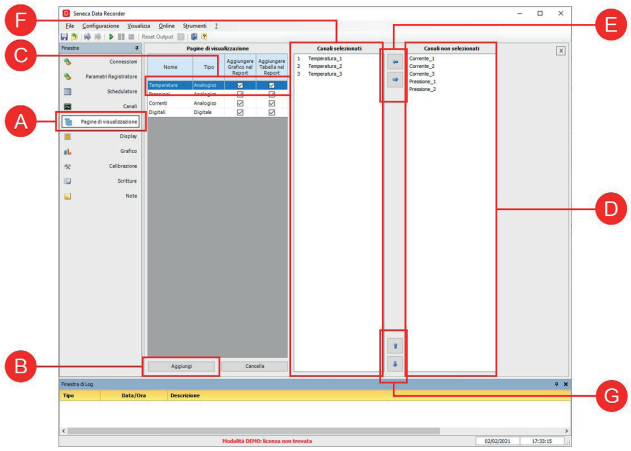
CHANNELS CONFIGURATION



(A) Enter the name and description of the channel.
(B) Set the parameterization mandatory for the acquisition of Modbus register.
(C) Select the Unit of Measurement which will then be displayed and exported.
(D) If enabled, define the variable scaling. On the left the "raw" values and on the right the "scaled values"
(E) If enabled, define the alarm thresholds. Each exceeding the alarm threshold alarm threshold will be stored in the event file.
(F) If enabled, it can be associated to a single alarm the writing of a digital variable.

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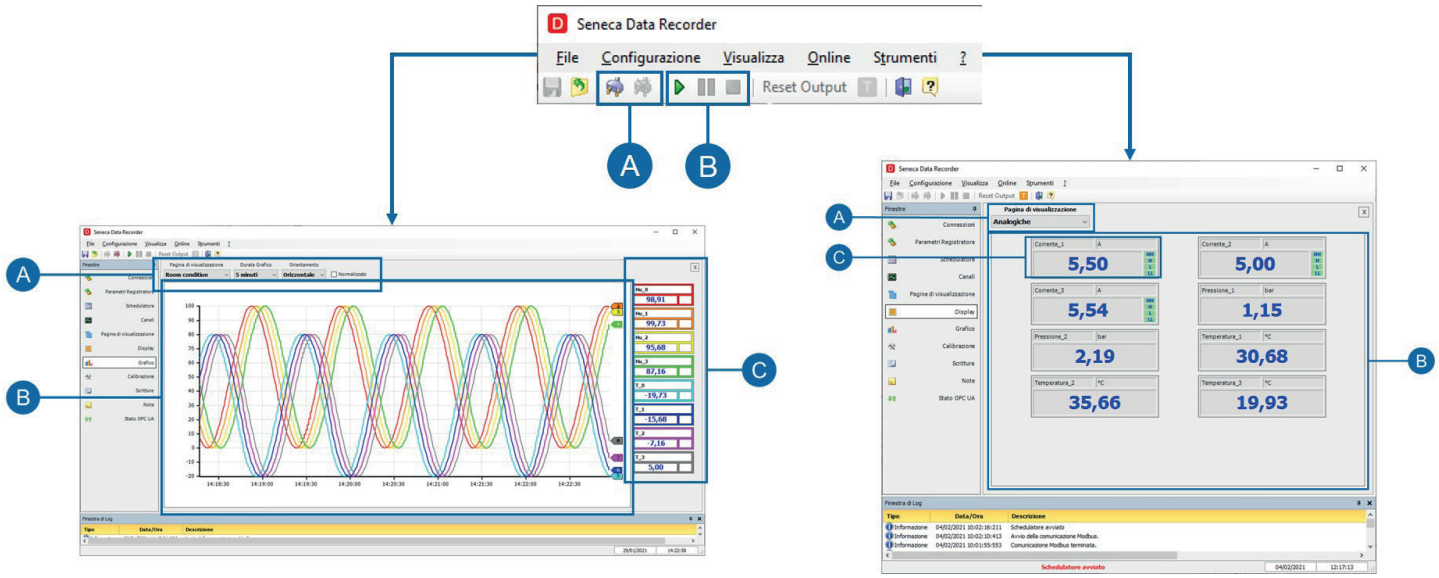
SETTING VISUALIZATION PAGES



- Creation of instant data display pages
- Pages - channels association
- Insertion of up to 48 channels viewable at the same time (display)
- Insertion of up to 8 channels that can be displayed simultaneously (graphic)
- Display independent from the fact that the software is recording data in a database

(A) Select Visualization Pages
(B) To add a custom display page press “Add”.
(C) Enter the name of the page and select if you want to display “Analog” or “Digital” channels
(D) Select the channels you want to insert in the page(
(E) Use the arrows to add or remove channels from the display.
(F) Displayed channels. On the Chart page the first 8 channels will be displayed, while on the Display page up to 48 channels will be displayed. up to 48 channels will be displayed.
(G) With these arrows you can move the channels you want to display on the graph.

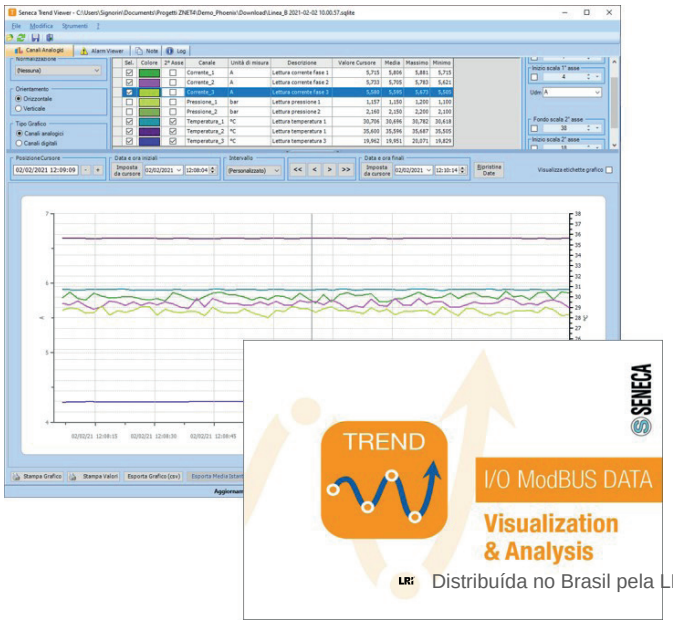
AVVIO REGISTRAZIONE



Data acquisition from 2 to unlimited channels (minimum sampling period 1 second)
MIN, MAX and AVERAGE recording for each channel in the sampling period
Simultaneous acquisition of channels from different ModBUS RTU/TCP nodes
Display of real-time measured values
Display in pen or display mode
Alarm display

Start / stop / pause recording commands
Scroll, range, channel group selection
Automatic report generation
Scheduling of recordings
Thermocouple calibration
Independent multiclient recording sessions

TREND VIEWER



- Historical data storage and access
- Real-time visualization with active Data Recorder
- Visualization, filtering (on channels and times) and printing of recorded historical data through Data Recorder
- Max 20 customizable pages
- Minimum display period 1 second (from DR)
- Customizable time scale and punctual selection of the instant of measurement
- Print and export data in Excel (.csv) format
- Instantaneous average
- Displayed graph
- Complete database
- SQLite database management
- Double vertical axis with customizable scale
- Customizable reports (graphic and tabular)
- Historical archive consultation (data log, events and alarms) with specific visualization tool
- Independent visualization for different signal groups

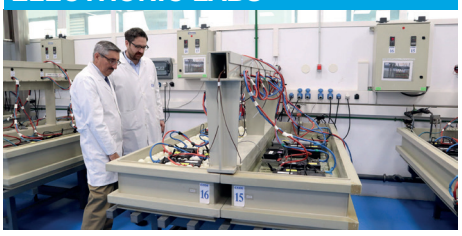
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DATA RECORDER

APPLICATION AREAS

TESTING ROOMS


ENGINE ROOMS


ELECTRONIC LABS


EDUCATIONAL WORKSHOPS


TEST BENCHES


CLIMATIC CHAMBERS


INDUSTRIAL OVENS


METROLOGY OFFICES


TECHNICAL DEPARTMENTS


CONFIGURATIONS

Codes		Description
Basic package	**DR-**	Data acquisition and visualization software for I/O modules and Modbus RTU/TCP-IP devices with alarm management functions, mathematical elaborations, reports
Version (Nr of channels)	**-02**	Acquisition and management of 2 recordable channels (video tracks)
	-04	Acquisition and management 4 recordable channels (video tracks)
	-08	Acquisition and management of 8 recordable channels (video tracks)
	-16	Acquisition and management 16 recordable channels (video tracks)
	-32	Acquisition and management 32 recordable channels (video tracks)
	-64	Acquisition and management of 64 recordable channels (video tracks)
	-UN	Acquisition and management of unlimited recordable channels (video tracks)
Option	-PLUS	Multi-client PLUS package
	-UPGRADE	Data Recorder license upgrade service

ORDER CODES

Code	Description
I/O MODULES	
R-16DI-8DO	24-CH - 16 digital inputs / 8 digital relay outputs Modbus TCP-IP / Modbus RTU Ethernet module
Z-10-D-IN	10-CH digital inputs / RS485 - ModBUS RTU module
Z-10-D-OUT	10-CH digital outputs / RS485 - ModBUS RTU module
Z-4DI-2AI-2DO	8-CH, 4 digital inputs, 2 analog inputs, 2 digital outputs, RS485 - ModBUS RTU module
Z-3AO	3-CH analog outputs / RS485 - ModBUS RTU module
Z-4AI	4-CH analog inputs V-I / RS485 - ModBUS RTU module
Z-4RTD2	4-CH thermoresistance inputs / RS485 - ModBUS RTU module
Z-4TC	4-CH thermocouple inputs / RS485 - ModBUS RTU module
Z-5DI-2DO	7-CH, 5 digital inputs, 2 digital outputs RS485 - ModBUS RTU module
Z-8AI	8-CH, 8 single ended or 4 differential analog inputs / RS485 - ModBUS RTU module
Z-8NTC	8-CH, NTC inputs / RS485 - ModBUS RTU module
Z-8TC-1	8-CH thermocouple inputs / RS485 - ModBUS RTU module, Micro USB port
Z-8TC-LAB	8-CH thermocouple inputs / RS485 - ModBUS RTU module, Micro USB port with intechangeable terminals
Z-DAQ-PID	2-CH, universal I/O module with PID / RS485 control - ModBUS RTU
Z-D-IN	5-CH 5 digital inputs / RS485 - ModBUS RTU module
Z-D-IO	6-CH, 6 digital inputs, 2 digital outputs / RS485 ModBUS RTU control module
Z-D-OUT	5-CH relay outputs / RS485 - ModBUS RTU module
ZE-2AI	2-CH analog inputs, ModBUS RTU / ModBUS TCP-IP module
ZE-4DI-2AI-2DO	8-CH, 2 analog inputs, 2 digital outputs, 4 digital inputs, ModBUS RTU / ModBUS TCP-IP, mixed module
Z-SG	Strain gauge / RS485 - ModBUS RTU converter module
Z-SG2	Advanced strain gauge / RS485 - ModBUS RTU converter module
POWER METERS	
S203RC-D	Three-phase network analyzer, 600 Vac / 1000 Arms, Rogowski, analog and pulse outputs, LCD display, Micro USB app
S203T	Three-phase network analyzer, 600 Vac / 100 mA, class 0.2, analog output, precision CT
S203TA	Three-phase network analyzer, 600 Vac / 5 Arms, class 0.2, analog output, TA standard
S203TA-D	Three-phase network analyzer, 600 Vac / 5 Arms, analog and pulse outputs, standard TA, LCD display, Micro USB app
S604B-6-MOD	Network Analyzer Basic x TA1/5A-RS485 Modbus,1MB mem. log.
S604B-6-ETH	Basic Network Analyzer x TA1/5A-Ethernet,1MB mem. log.

ORDER CODES

Code	Description
POWER METERS	
S604B-80-MOD	Basic Network Analyzer 80A-RS485 Modbus,1MB log. mem.
S604B-80-ETH	Basic Network Analyzer 80A-Ethernet,1MB mem. log.
S604E-6-MOD	Network Analyzer Energy PLUS x TA1/5A-RS485 Modbus,8MB log. Harmonics
S604E-6-ETH	Network Analyzer Energy PLUS x TA1/5A-Ethernet,8MB log. Harmonics
S604E-80-ETH	Network Analyzer Energy PLUS 80A-Ethernet,8MB log. Harmonics
S604E-80-MOD	Network Analyzer Energy PLUS 80A-RS485 Modbus,8MB log. Harmonics
S711B6MOD	Network Analyzer LCD 96x96 BASIC for TA1/5A-RS485 Modbus,1MB mem. log. 1 DI 2 DO
S711E6MOD	Network Analyzer LCD 96x96 Energy PLUS x TA1/5A-RS485 Modbus,8MB log.,1 DI 2 DO, Harmonics
S711E6MODAO	Network Analyzer LCD 96x96 Energy PLUS x TA1/5A-RS485 Modbus,8MB log.,1 DI 2 DO 1AO, Harmonics
S711E6ETH	Network Analyzer LCD 96x96 Energy PLUS x TA1/5A-Ethernet,8MB log, 1 DI 2 DO, Harmonics
COMMUNICATION INTERFACES	
EASY-USB	USB - UART TTL converter with CD and programming software
R-KEY-LT	Compact ModBUS industrial gateway
RM169-1	Radiomodem 169 MHZ with RS232/RS485 interface compliant with RED 2014/53/EU directive
RTURADIO-169	Rtu Radio 169MHZ 0.5W, 4DI, 2 DO, 1 counter,2 AO,2 AI,1 RS485, BNC-F connector
S107P	RS232 - RS485/422 serial converter, portable version
S107USB	Portable USB/RS485 serial converter
S117P1	Portable RS232-TTL-RS485/USB Serial Converter
Z107	RS232 - RS485/422 serial converter from back panel, 24 Vac/dc
Z-AIR-1	Radiomodem 868MHz 0.5W with integrated omnidirectional antenna
Z-KEY-0	Industrial Gateway - Serial Device Server
Z-KEY-MBUS	Gateway - ModBUS RTU / TCP-IP - M-BUS protocol converter
Z-KEY-WIFI	2-port ModBUS RTU industrial gateway / serial device server with built-in Wi-Fi
Z-LINK1-LO	Radiomodem 869 Mhz with RS232/RS485 interface with LoRa technology
Z-LINK1-NM	Radiomodem 869 Mhz with RS232/RS485 interface
Z-MBUS	M-BUS interface adapter - RS232-RS485
Z-MODEM	GSM - GPRS Quadband Industrial Modem
Z-MODEM-3G	3G industrial modem with micro USB interface

SENECA

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