Development, Production and Engineering of Industrial Electronics

MEASURING TERMINAL MT-10SX

Measurement Program PM-11094E

Application

Measuring terminal MT-10SX is used for measurement, monitoring, control and analysis of electric quantities in low and medium voltage plants, distribution and industrial substations. Measuring terminal can directly substitute more than 50 conventional measuring instruments and transducers. Apart from measurement functions measuring terminal analyses current and voltage distorsion (THD measurement, and measurement of voltage and current harmonics). Optionaly measuring terminal includes 4 digital inputs used as status inputs and 4 digital outputs, that can be used for energy rationalization and management. Measuring terminal has memory of 2MB used for registration of average, minimal and maximal values of voltage, current, power, power factor energy and THD. Sampling interval for registration is adjustable from 1 second to 1 hour that ensures registration with time stamp in period from one day to few years. Digital inputs can optionaly be connected to ripple control receiver and used for switching between energy tariffs. During periodical inspection of the plant memorized data can be easily read out with Hand held terminal RT-10X. Analisys and registration of collected data is performed with PC program MT-DIALOG 2.
MT-10SX can be optionaly connected to the host computer via RS485, optical or Ethernet communication link. In this way all data are accesible on line.

Functional description

Measuring terminal MT-10SX combines sophisticated RISC processor technology, and advanced signal processing algorithms which results in high measurement accuracy, and wide range of monitoring control and analysis functions. Measurement is based on fast sampling of input currents and voltages, and afterwards calculation of powers, power factors, energies and frequency, regardless of signal distorsion. The device also calculates distorsion factor THD and harmonics (up to 15th) for currents and voltages. MT-10SX also performs calculation of average current values in selected time interval (MD - maximum demand values), and registers measured values with time stamp.User interface is implemented with keyboard and LCD (4 x 16 digits with backlight). By means of LCD and keyboard user can access measured and stored data and set parameters of the device.

Main features

- measurement of true RMS values of voltages, currents and power (P, Q, S) with 0,5% accuracy
- measurement of power factor (cosφ), frequency, active and reactive energy in 4 quadrants
- measurement of average MD values of currents in adjustable MD time interval
- THD and harmonics measurement (up to 15th) for currents and voltages
- measurement and registration of average, minimal and maximal values of currents, voltages and powers with time stamp
- registration of active and reactive energy in up to 3 tarife (option)
- four digital inputs and four digital outputs (option)
- 4 x 16 digits LCD with backlight
- communication for data read out on front panel
- optional double (optical, RS485) or Ethernet communication with host comuter
- MODBUS RTU, PROFIBUS DP or MODBUS TCP communication protocols
- power supply from measuring circuit or external
- small dimensions, according to DIN 43700 for panel instruments

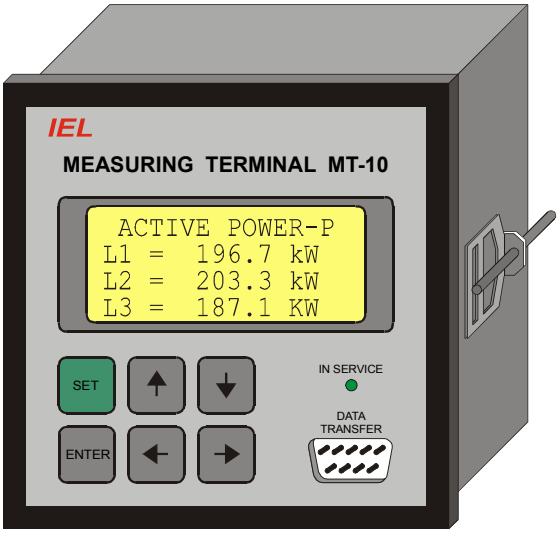

fig. 1. Measuring terminal series MT type MT-10SX

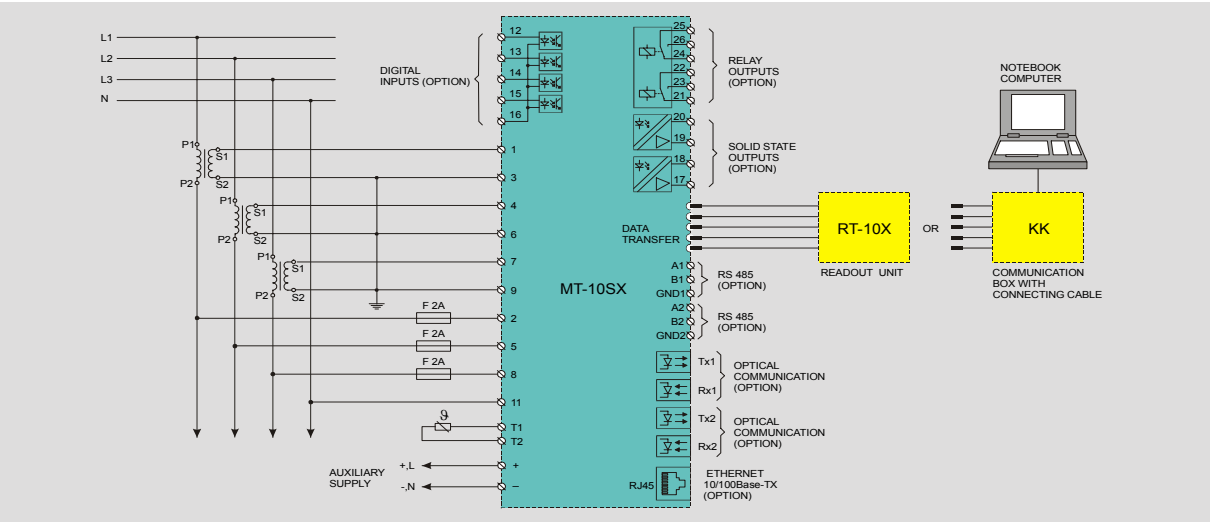

fig. 2a. MT-10SX connection in three phase four wire system with unbalanced load

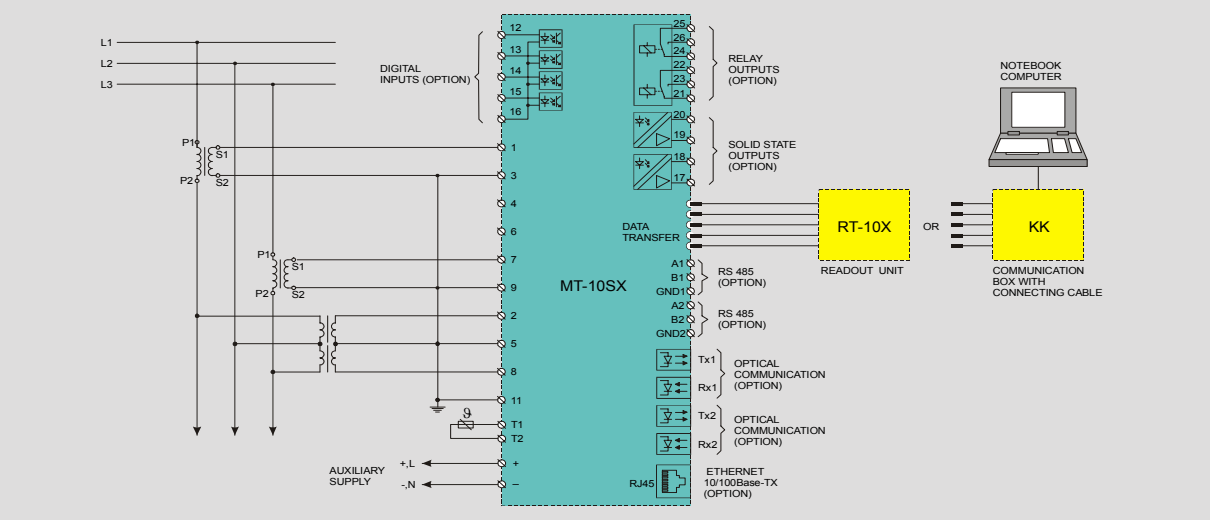

fig. 2b. MT-10SX connection in three phase three wire system with unbalanced load

Technical data

current inputs:
nominal current I_N ..... 1 or 5A
measuring range ..... 0 to 1,5 I_N
burden ..... <0,1VA
thermal withstand ..... 3 I_N continuous
25 I_N for 3s
50 I_N for 1s

voltage inputs:
nominal voltage U_N 57; 63,5; 230V
optional nominal voltage ..... 50 to 300V
at supply from measuring circuit:
measuring range ..... 0,8 to 1,2 U_N
burden ..... <3VA
auxiliary power supply:
measuring range ..... 0,1 to 1,5 U_N
burden ..... <0,1VA
thermal withstand ..... 1,5 U_N continuous
2 U_N for 10s

MD interval ..... 1 to 30 min

measuring accuracy:
I,U,P,Q,S,cosφ ..... 0,5% ± 1 digit
THD, harmonics, E ..... 1% ± 1 digit

display ..... 4 x 16 digits LCD with backlight

power supply:
from measuring circuit ..... see voltage inputs
auxiliary (option) ..... 220VAC, +10% ; -20% 24, 48, 110 or 220VDC +45% ; -20%
power consumption ..... < 3VA

communication:
for RT-10X ..... on front panel Db9 connector for data read out
RS485 (option) ..... on rear wall 3 pole plug-in terminal
optical (option) ..... on rear wall, 820nm, connector ST or 660nm, connector SNAP-IN
Ethernet ..... on rear wall RJ45 connector
protocols ..... MODBUS RTU, PROFIBUS DP, MODBUS TCP
analisys software ..... MT-DIALOG 2

general data:
temperature range ..... 0^oC.....$+50^oC$
extended temp. range (option) ..... -20^oC.....$+60^oC$
insulation test voltage ..... 2,5kV, 50Hz, 1min, between all insulated circuits

mechanical data:
mounting ..... in panel (DIN 43700)
dimensions ..... 96 x 96 x 90 mm

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