



ADMIE

MEASUREMENTS AND INSTRUMENTS SECTION

MAY 2013

PROGRAMMABLE DISPLAY & DATA RECORDERS

SCOPE

This technical description covers the technical characteristics and the required tests for Programmable Display and Data Recorders to be installed in Transmission Substations.

USE

These Programmable Display and Data Recorders will accept at its inputs analogue DC signals for measuring, recording and displaying on TFT-display simultaneously at least six (6) values, by selection, I, V, W, VAR, HZ and $\cos\phi$. All these data must be stored to a detachable circular buffer for duration of at least 90 days.

REGULATIONS

The technical characteristics and tests of these Programmable Display and Data Recorders must be in accordance with DIN 43700, EN 61010, EN 60529, EN 50081-1, EN 5082-2, EN 61326.

TECHNICAL CHARACTERISTICS

1. **Number of Inputs:** Twelve (12)
2. **Input Types:** ± 20 mA DC, 4-20 mA DC & ± 50 V DC for each programmable input
3. **Inputs Accuracy**
Voltage accuracy: $\pm 0.2\%$ up to 10 V DC & $\pm 0.1\%$ greater than 10 V DC
Current accuracy: $\pm 0.2\%$ with external shunt resistor
4. **Range:** Four, by selection, programmable in steps up to 0.5 mA
5. **Input Impedance:** Current circuit $< 10 \Omega \pm 5\%$
Voltage circuit $> 1 \text{ M}\Omega$

6. **Digital indications and recording:** Colored of at least 12 colors.
7. **Display:** Colored touch screen of high definition LCD (TFT) and of industrial resistance. All settings, operations of the data recorder will take place via the touch screen.
8. **Screen size:** At least 5.5" (diagonal)
9. **Display analysis:** at least 320 X 240 pixels (QVGA)
10. **Screen update rate:** Every 1 sec
11. **Internal Storage Media:** internal storage media at least 400 MB, for 12 inputs and sample rate 1 sec, data storage for at least 90 days
12. **External Storage Media:** PCMCIA at least 512 MB, possibility of extracting data via a removable USB memory card.
13. **Programming Port:** Serial Port USB or RS232 or RS485
14. **Communication Port:** Serial Port RS485 Modbus RTU and Ethernet 10/100 base-T.
15. **Clock:** It will be of calendar function, adjusted manually as well as with a program via a portable PC. Power supply via a lithium battery with life duration of at least 10 years. It will also have the possibility of automatic change of summer hour.
16. **Display Modes:**
 1. Numerical indicators in full screen displaying simultaneously up to 6 values
 2. Vertical or Horizontal charts. Chart speed for 1 mm/h up to 120 mm/h
 3. Vertical Bargraphs
 4. Horizontal Bargraphs
 5. Maximum and minimum values.
17. **History Presentation:** Values, date and time, channel and zoom of the area of interest.
18. **Event Markers:** Adequate number of event markers for limit monitoring, open circuits, etc.

19. **Math Functions:** Appearance and recording of values via mathematic functions.
20. **Auxiliary Voltage:** 90 ÷ 260 V AC/DC 50 VA max
21. **Security:** Programming security codes in several levels.
22. **Dimensions:** 144x144mm
23. **Construction:** Flush-mounting back connected panel for panels of thickness 2-20 mm according to DIN 43700. The back case shall be made of galvanized steel or proper synthetic material.
24. **Operation Temperature:** -10°C ÷ 50°C

TYPE TESTS

1. Accuracy and stability tests of the measured values.
2. Electromagnetic compatibility tests for industrial environment according to EN 61326 Class B.
3. According to EN 61010-1 category II, pollution degree 2. Test voltage between analogue input channels and earth 300 V DC or peak AC and 100 V DC or peak AC among the input channels.
4. Protection class test of front part IP 55 and rear part IP 20.

ROUTINE TESTS

1. Accuracy test and certificate print.
2. Operation check and certificate print.
3. Dielectric test of inputs and certificate print.

A. ADDITIONAL PURCHASE REQUIREMENTS

1. Detailed manuals for the operation and programming in English.
2. Along with delivery of the Programmable Display & Data Recorders it should be also offered necessarily, according to the specified quantity by the inquiry, PCMCIA cards.
3. Suitable software in Windows XP environment for programming the display and data recorders, reading and processing the data of multiple use licenses. The software will have the possibility of data conversion to excel sheets.
4. Suitable software in Windows XP environment for telemetering data via PSTN modem of multiple use licenses.

B. ADDITIONAL OFFER REQUIREMENTS

1. Along with the technical offer, it must be submitted CE and ISO 9001 conformity certificates.
2. A sample from type tests certificates by an internationally recognized private or state laboratory, has to be submitted with the technical offer.
3. All bidders must in detail refer to every single paragraph of the Technical Description, otherwise it will constitute a sufficient reason for the rejection of the offer.