

WATER SUPPLIES DEPARTMENT
STANDARD SPECIFICATION E-81-02
STRIP CHART AND PAPERLESS RECORDERS

1. GENERAL

Chart and paperless recorders are instrument used to record the trends of various process and electrical signals. This standard specification sets out the standards for strip chart recorders and paperless recorders but not circular chart recorders, XY-recorders or other recorders.

2. DESIGN

2.1 General Requirement for Strip Chart and Paperless Recorders

Inputs	:	Universal inputs for thermocouple, RTD, mV, mA and V
Configuration	:	Configuration of the recorder shall be from the front fascia or via a portable computer
Channel isolation	:	The channel inputs shall be electrically isolated from each other
Recording width	:	100 mm minimum
Power supply	:	220V 50 Hz unless otherwise specified in the Particular Specification

2.2 Strip Chart Recorders

Strip chart recorders consist of a roll or strip of paper that is passed linearly beneath one or more pens. As the signal changes, the pens deflect producing the required chart.

2.2.1 Particular Requirement for Strip Chart Recorders

Recording method	:	Individual continuous pen traces for up to 3 channels. Dot printing or continuous pen traces for more than 3 channels. (Printing interval for each channel shall be not more than 5 seconds.)
Pen accuracy	:	Better than 0.5% of span
Chart type	:	Z-folded, minimum length 15 metres Charts shall be scaled with 0-100% markings
Chart speed	:	Dual speeds of 20 mm/hour and 60 mm/hour, or as specified in the Particular Specification

- Chart drive method : Synchronous or stepper motor
- Pen system : Fibre tipped pen fed from leak-proof disposable ink capsule by capillary action with different colour provided for each input
- Pen response time : Less than 1 sec. for full chart width travel

2.3 Paperless Recorders

Paperless recorders display the chart on the recorders' graphic display. The data can be stored in the memory for later transfer to a computer.

2.3.1 Particular Requirement for Paperless Recorders

- Recording method : Electronic recording
- Display : Colour LCD
- Communications : Ethernet/RS232/RS485
- Data Storage : Compact flash memory

3. CONSTRUCTION

The recorder shall be suitable for flush panel-front mounting without front fastenings, and with the chart surface vertical or up to 20° from the vertical. The recorder front bezel shall be 144 x 144 mm overall. The recorder shall not protrude more than 400 mm behind the panel face.

For the strip chart recorder, the scales and the most recent 70 mm of the chart shall be visible through a hinged front door of clear perspex or toughened glass. The recorder chassis shall be plug-in, the removal of which shall not interrupt the current signal loop. The chart cassette and pen tray shall be removable. The circuit boards shall be of modular plug-in type. Control switches for power supply on-off and chart drive on-off shall be provided on the front panel of the recorder within the hinged front door.

4. ACCESSORIES

4.1 Strip Chart Recorders

Sufficient charts, ink capsules and replaceable pen tips for 12 months continuous operation shall be supplied with each recorder. The fibre-tipped pens shall be suitably packed for storage of up to two years. Unit price of consumables shall be stated in the tender for comparison of running costs.

When required under the Particular Specification, a control switch shall be provided for selection between a number of input signals. The switch shall be so designed as not to interrupt the current loops when the input signals are not selected for recording, nor during the selection process. Input selection shall be as detailed in the Particular Specification.

If the chart recorder can be configured with a portable computer, the configuration software shall be provided.

4.2 Paperless Recorders

The configuration software package for portable computer shall be provided.

5. EQUIPMENT PARTICULARS

The following equipment particulars shall be given in the Particular Specification:-

- (a) Type of recorder (strip chart or paperless)
- (b) No. of inputs
- (c) Type of inputs
- (d) Scale ranges
- (e) Power supply
- (f) Recording method
- (g) Chart speed for strip chart recorder