WATER SUPPLIES DEPARTMENT

STANDARD SPECIFICATION E-82-11

LIGHTNING PROTECTION UNIT FOR ELECTRONIC EQUIPMENT

1. GENERAL

Lightning protection unit (LPU) shall be provided for the data or signal cablings specified so as to safeguard the connected instruments such as transmitters, switches, solenoid valves, process control devices etc.; telecommunication networks including telemetry devices; and communication systems against the transient surges that are induced in the cablings by a nearby lightning discharge or high-level transients. The design of the LPU shall meet the individual requirements for diverting the surge current to ground and prohibiting the unwanted voltage in entering the connected instruments, telecommunication networks or communication systems with the characteristics of rapid operation, accurate voltage control and automatic resetting once the over-voltage has ceased.

2. DESIGN

The LPU shall have the following two levels of protection:

(a) High current surge diversion

(b) Voltage clamping

Fuse protection, where provided, shall only be used as a back-up to safeguard against malfunctions within the lightning protection unit. The use of circuit breaker, surge relay, air or carbon spark gaps connected between line and earth for lightning protection shall not be acceptable.

The LPU shall meet the following design requirements:

(a) For Low Resistance Instrument Networks

Discharge surge current	:	Not less than 10 kA pulse 8/20μs waveform
Response time	:	Less than 10 nanoseconds
Network working current	:	Suitable for 4 - 20mA
Network working voltage	:	Suitable for 24V d.c.

(b) For Telecommunication Networks

Discharge surge current	:	Not less than 10 kA pulse 8/20μs waveform
Response time	:	Less than 10 nanoseconds
Network working current and voltage	:	Suitable for the type of telecommunication networks (i.e. PSTN, Telemetry Outstations etc.) to be protected as specified in the Particular Specification

(c) For Communication Systems

Discharge surge current	:	Not less than 10 kA pulse 8/20μs waveform
Response time	:	Less than 10 nanoseconds
System working current and voltage	:	Suitable for the type of communication systems (i.e. RS232, RS422, RS485, bus powered systems etc.) to be protected as specified in the Particular Specification

3. CONSTRUCTION

The LPU shall be an intrinsically safe surge protector, with space-saving design and easy installation facilities. It shall be maintenance free.

4. EQUIPMENT PARTICULARS

The tenderer should refer to the Particular Specification for the following particulars of the equipment :-

(a) No. of channels per unit (with respect to earth)

(b) Type of instrument, network and/or communication system to be protected

(c) Network working current and voltage

(d) System working current and voltage

- End of this Specification -