



## LPM-33E™

### Low Power Modem

#### ALL MODEMS ARE NOT ALIKE!

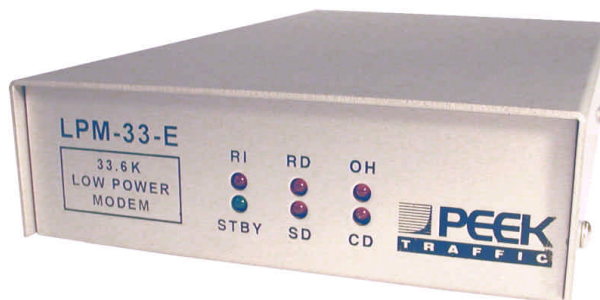
Commercially available modems are generally not suitable for use in roadside applications. The temptation is strong to use least-cost modems, but Peek and its customers have found out through direct experience that commercial indoor modems, and even "industrial" modems, can have low reliability in field use.

That's why Peek offers the LPM-33, specifically designed to provide data communications in roadside applications requiring remote access via standard dial access telephone service. It is designed to meet the rigors imposed by extreme outdoor data collection and control cabinet environments. It is designed to operate over a temperature range of -40°F to +162°F (-40°C to +72°C).

The LPM-33 can be powered by any source in the range from 5 to 36 Vdc. It features a low power standby mode that allows it to be battery powered. In standby mode, the LPM-33 requires less than 0.5mA of current at 12 Vdc. A solar panel-charged battery provides a fully satisfactory method of powering the LPM-33. Alternatively, the LPM-33 can be powered by a nominal 12 Vac from an available AC to DC wall mount transformer for use with any 120 Vac outlet.

Baud rates up to 33,600 are supported by the LPM-33. It is fully compatible with applicable Bell and CCITT standards, including those for error correction and data compression. The LPM-33 will operate in auto-answer and originate modes.

The LPM-33 uses several timers to reduce net power consumption in typical applications. Sixty seconds after the termination of ringing voltage or 120 seconds after stopping of DTE data the LPM-33 will automatically revert to its low power standby mode. Standby mode will also occur 10 seconds after the loss of carrier is detected. The standby mode of the LPM-33 can be disabled, leaving the modem in continuous active mode.



The LPM-33 is easy to use and install. It comes equipped with an RS-232 serial interface that can be directly connected to the RS-232 port of most traffic recorders and traffic devices. Two RJ-11 jacks allow quick connection to the telephone circuit and a utility phone that can be used while the modem is inactive. Six front panel LEDs provide complete status information. When power is available to the LPM-33, the green "STBY" LED flashes. This indicates the modem is in low power standby mode. The LED will turn off when the modem receives DTE data or auto-answers an incoming call.

The LPM-33 conforms to the industry standard set of AT commands. Two user-defined profiles can be stored in non-volatile memory by connecting the communications port of a PC directly to the RS-232 connector of the LPM-33 and using a communications program such as HyperTerminal®.

The LPM-33 is housed in a rugged aluminum case. In its standard configuration the LPM-33 is placed on a shelf or flat horizontal surface. It is equipped with four non-slip rubber feet.

## Specifications

Characteristic	Description
Modem Standards .....	<b>CCITT:</b> V.34, V.32 bis, V.32, V.22 bis, V.22, V.21 <b>Bell:</b> 103, 212A
Error Correction.....	MNP 2-4, LAP-M
Data Compression.....	MNP 5, V.42 bis
Command Set.....	Hayes AT—Additional AT commands for data compression, error correction, cellular operation
Interface to DTE .....	<b>Type:</b> RS-232, DB 25 connector <b>Speed:</b> Auto-detects with AT command, up to 115,200 Baud <b>Signaling:</b> N-8-1
Operation .....	<b>Speed:</b> Baud rates to 33,600 <b>Type:</b> Auto-answer and originate
Profiles .....	2, set to factory default, user-definable, stored in non-volatile EEPROM
Mode Control .....	<b>Standby (normal):</b> Awaiting ringing voltage or DTE data, flashing green LED <b>Standby to Active:</b> Transitions within 6 seconds of ringing voltage or 200 msec of DTE data, LED on steady <b>Answer:</b> After transition to active mode answers call in accordance with S0 register setting for ring delay <b>Disconnect:</b> Loss of carrier, DTR drop or on-hook AT command <b>Active to Standby</b> (selectable link controlled): Active Connection—10 seconds after loss of carrier No Connection—60 seconds after last ring or 120 seconds after last DTE data
LED Indicators .....	Standby: Green, flashes awaiting call Ringing: Red Send Data: Red Receive Data: Red Carrier Detect: Red Off Hook: Red
Power .....	<b>Voltage:</b> 5.0 to 36 VDC; 12 VDC typical; wall mount transformer for 120 VAC source - Stancor STA-4112A <b>Consumption:</b> Standby: 0.5mA @ 12 VDC maximum Active: 85 mA @ 12 VDC typical
Dimensions.....	1.9"H x 5.3"W x 8.6"D (49mm x 135mm x 219mm)
Weight .....	20 oz.
Environmental Range.....	<b>Storage:</b> -40°F to +185°F (-40°C to +85°C) <b>Operating:</b> -40°F to +162°F (-40°C to +72°C) <b>Humidity:</b> 0 to 95% non-condensing

Characteristic	Description
Construction .....	<b>Housing:</b> Fully enclosed, anodized aluminum; Not intended for direct exposure to weather, precipitation. Suitable for installation in standard traffic control or traffic data collection field cabinets. Removable screws allow inside access. <b>Electrical:</b> Single printed circuit board inside housing conformally coated for protection
Mounting .....	Cabinet, shelf or desktop, Rubber feet for shelf/desktop
Controls .....	Internal: Jumper JP1 disables standby operation if jumper is on External: All operational control is via RS-232 connector
Connectors.....	<b>DTE:</b> DB-25 Female, configured as RS-232, DCE Pin 1: Protective Ground Pin 2: Send Data Pin 3: Receive Data Pin 4: Request to Send Pin 5: Clear to Send Pin 6: Data Set Ready Pin 7: Signal Ground Pin 8: Carrier Detect Pin 20: Data Terminal Ready Pin 22: Ring In <b>Power:</b> Standard 3.5mm recessed jack, female, center positive <b>Telephone:</b> Dual female RJ-11, wired in parallel, phone & line
Line Protection.....	Standard internal gas tube arrestor, 230 Vdc across tip and ring to ground External telco or user-provided protection against surges and high voltage is recommended
Regulatory .....	Designed to meet applicable FCC standards.

This specification describes the physical and functional properties of the Peek LPM-33E low-power, field modem manufactured by Peek Traffic Corporation. Peek reserves the right to alter any of the Company's products or published technical data relating thereto at any time without notice.

### Two-Year Limited Warranty

Peek Traffic Corporation warrants this product against manufacturing defects in materials and workmanship for two years from the date of shipment from Peek. Specific contracts and regional laws may vary or alter these terms.

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**Peek Traffic Corporation**

A Quixote Company  
2511 Corporate Way  
Palmetto, Florida 34221  
phone: (941) 845-1200  
toll free in the US: 1 (866) 260-7335  
fax: 1 (941) 365-0837