



## DESCRIPTION

The Hunttec M-4 LOPO Transmitter is a time domain, battery operated transmitter weighing 18 . 2 kg with battery pack. It delivers over 160 watts of DC power into loads from 100 ohms to 6000 ohms. It operates at reduced power into all loads from a short circuit to an open circuit.

It may be used with any time domain receiver, and special timing options are available if the standard 16 combinations are insufficient.

Output current is automatically controlled to within 1%, of a current set point chosen by the operator, and is affected neither by battery voltage, nor by load variations.

The battery pack is detachable and rechargeable. Typically, when used a full day's operation may be obtained between charges. The LOPO is a highly portable, rapid field system, comparable in performance to other systems of several times the weight and power.

Available for rental from:

Fugro Ground Geophysics  
Phone: 61 2 9418 8077  
Fax: 61 2 9418 8581  
email: [ground.dept@fugroground.com](mailto:ground.dept@fugroground.com)



## M-4 "LOPO" Induced Polarization and Resistivity Transmitter

### FEATURES

- One man portable, operates from rechargeable battery pack.
- Automatic regulation of output current, eliminates errors due to changing polarization potential, battery voltage and load resistance.
- Adjustable timing cycle to suit all geologic conditions.
- Precision control of timing by crystal clock.
- Precision calibrated signal output for receiver testing.
- Operates into a short circuit without damage at 1.5 amps maximum.
- Maximum of 1800 volts output for high resistivity areas.
- Delivers full power in both arctic and tropical regions.

LOAD RANGE SELECTION		RESISTANCE, Ohms	CURRENT Amperes	
			Min	Max
1		0	0.100	1.50
		50	0.080	1.20
		100	0.068	1.02
MATCHED LOAD RANGE	1	100	0.068	1.02
		160	0.063	0.95
		220	0.050	0.75
	2	220	0.050	0.75
		370	0.040	0.60
		520	0.033	0.50
	3	520	0.033	0.50
		835	0.026	0.40
		1150	0.022	0.33
	4	1150	0.022	0.33
		1925	0.016	0.24
		2700	0.015	0.22
	5	2700	0.015	0.22
		4450	0.011	0.16
		6200	0.009	0.14
5	10,000	0.008	0.100	
	20,000	0.007	0.055	
	40,000	0.003	0.030	
	80,000	0.002	0.017	

## SPECIFICATIONS

### OUTPUT

<b>Maximum Current</b>	1.5A DC
<b>Maximum Voltage</b>	1.800V DC
<b>Load Range</b>	Zero to infinity in five ranges.
<b>Maximum Load Power</b>	In excess of 160 watts at 75% efficiency into following load resistances: Range 1 = 100 to 230 ohms Range 2 = 230 to 520 ohms Range 3 = 520 to 1200 ohms Range 4 = 1200 to 2700 ohms Range 5 = 2700 to 6100 ohms Continuously adjustable, Max. Current/Min. Current = 15/1 When the transmitter is operated at half its available output current, it will hold this current constant to within 1% while the load resistance changes by $\pm 100\%$ , or when the input voltage changes by $\pm 20\%$ of its original value.
<b>Load Current</b>	less than $10^{-3}$ seconds.
<b>Turn On Time</b>	Less than $10^{-3}$ seconds.
<b>Turn Off Time</b>	2, 4, 8, or 16 seconds. Cycle time is defined as 2 x (current on time + current off time).
<b>Cycle Time</b>	1:1, 1.28:1, 1.67:1, 2.2:1 Duty ratio is defined as: (current on time) / (current off time).
<b>Duty Ratio</b>	$\pm 0.01\%$ Additional timing programmes including square wave output are available as options.
<b>Timing Accuracy</b>	

## INPUT REQUIREMENTS

<b>Voltages</b>	24 and 36 volts DC
<b>Maximum Current</b>	12 amperes
<b>Batteries</b>	Six CC-680-1 lead-acid Gel/Cel, 7.5 amp-hour. The input power source can be, batteries or any unregulated DC source between 30-40 volts supplying 10 to 15 amperes, and 24V at 2A.

## FRONT PANEL

### Switches and Controls

- Load resistance selector switch.
- Current adjustment continuous control.
- Function Switch: (a) C<sub>1</sub>-C<sub>2</sub>, ohms, (b) STBY, (c) DC Input Volts, (d) 1-5A, (e) 0.5A
- Battery ON/OFF master switch (magnetically tripped circuit breaker).
- High voltage ON/OFF (Standby/Operate) switch.
- Fuses: one 25A Slo-Blo for main power, one 2A Slo-Blo for control circuits.

### Connections

- Output terminals to current stakes.
- Receiver calibration signal output:
- $V_p = 500$  millivolts
- $V_s/V_p = 20\%, 2\%$
- Panel grounding terminal.

### Indicators

- Standby/Overheat light: Steady green when set is on Standby (High Voltage off). Flashing green when maximum temperature being approached.
- Low-volt/Hi-volt: Steady amber when input voltage greater than 40 volts. Flashing amber when input voltage drops below 30 volts. Normally off.

## ENVIRONMENTAL

<b>Ambient Temperatures</b>	-25°C to +50°C
<b>Altitude</b>	-9150 to +6100 m. Note: if the upper limit is exceeded, high voltage breakdown during operation may occur.
<b>Humidity</b>	The set may be operated in saturated air, and in rain without damage or risk of malfunction.

## MECHANICAL

<b>Instrument Package</b>	31.8 cm x 17.8 cm x 17.8 cm 6.8 kg
<b>Battery Package</b>	31.8 cm x 17.8 cm x 17.8 cm 11.4 kg
<b>Total Package</b>	31.8 cm x 17.8 cm x 30.5 cm 18.2 kg