

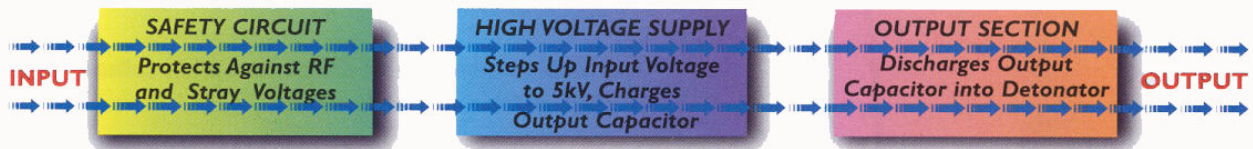
The Ecosse PX-1 is a low-cost, high performance expendable EBW/EFI fireset. As with most of the firesets on the market today, its circuit can be broken down into three sections: a safety circuit, a high voltage supply, and an output section. The safety circuit, of course, provides most of the protection. The high voltage supply takes the input voltage (205V@160mA), steps it up to 5kV, and charges the capacitor in the output section. The output section contains a sparkgap as an over voltage switch; when the voltage on the output capacitor reaches 5kV, the sparkgap breaks down and dumps the stored energy into the attached detonator.

The PX-1 has the highest temperature rating of any system on the market, with an operating range from -25°C to +225°C. It can initiate EFI detonators through six

inches of twisted-pair wires or 3 feet of coax cable; EBW detonators can be fired through 10 feet and more of twisted-pair wires. Its compact dimensions (5" X 0.82" X 0.74") allow it to fit in virtually every gun system in use today, including pressure housings with an OD of 1-3/8".

It has been fully certified by Orion International Technologies at Sandia National Laboratories to standards that exceed any practical level of threat that might exist in the oilfield environment, including stray DC voltages from -600VDC to +150VDC, AC voltages at 600Vrms from 40Hz through 20kHz, RF testing from 260kHz at 50 V/m to 18 GHz at 300V/m, electrostatic discharges, and severe direct lightning strikes to the wireline within 3 ft of the PX-1 itself. Particularly on offshore platforms, these safety features can result in very significant cost savings for the operator.

### PX-1 Block Diagram and Specifications



#### Safety Features (tested immune to)

<b>Negative DC:</b> -600VDC	<b>Size (LxWxH):</b> 5" x 0.82" x 0.74" (<1.06" dia)
<b>Positive DC:</b> +150VDC	<b>Weight:</b> 75gm
<b>AC:</b> 40Hz - 20kHz 600 VAC 32kHz - 2MHz 100VAC	<b>Temperature:</b> -25°C to +225°C / 2 hrs.
<b>RF Interference:</b> 260kHz - 500MHz 50V/m 500MHz - 1GHz 100V/m 1 GHz - 18GHz 300V/m	<b>Input:</b> 200 - 230VDC@160 - 260mA
<b>Electrostatic discharge:</b> 25kV 500pF 5kohm 30kV 400pF 250ohm	<b>Output:</b> 5000V / >2000A / <250ns Will fire EBWs through 10 ft. of twisted pair-wire, EFIs through 6" of twisted-pair wire
<b>Lightning Strike:</b> nearby 20kA 100m direct strike 70kA / 280A	<b>Rated Lifespan:</b> 1 x 1-sec test-fire into 100ohm load 1 x full discharge into detonator