

# CROSS-FIRE™

THE WIRELESS FIRING HEAD FROM METROL

Well exploration is becoming more complex and demanding, and Metrol's CROSS-FIRE offers a safe and precise perforating system. For example, Metrol does not have to send a coded pressure signature to initiate detonation and this allows a 'low perm' section of the reservoir to be perforated and cleaned-up before shooting a 'higher perm' section. Planning a perforating sequence in this way improves reservoir understanding, productivity and testing efficiency.

## DESCRIPTION

CROSS-FIRE utilises a combination of industry proven technologies to deliver capabilities unavailable elsewhere.

CROSS-FIRE is designed to actuate any percussion style firing head by emulating the action of a drop bar and ensures that the pressure safety feature of the standard hydrostatic firing head is maintained.

The tool is unaffected by high well deviation and heavy mud environments. The elimination of pressure activated firing heads allows the packer to be tested in the direction of intended operation.

CROSS-FIRE has been designed with a comprehensive set of safeguards which have been independently tested according to API Recommended Practice 67.

## FEATURES & BENEFITS

### FEATURES

- > Multiple tools can be run at the same time, for fully selectable zonal testing
- > Integrated with proven Metrol Paragon Telemetry system
- > Long battery life with power save functionality, minimum of 40 days
- > Coded digital fire command sequence
- > Adaptable to all makes, models and sizes of drop bar/hydrostatic firing heads

### BENEFITS

- > Ability to adapt to changing well test sequence as required, no pre-set fire sequences
- > Removes uncertainty of conventional 'blind' pressure activation with bi-directional real time communications
- > Eliminates risk of misfire due to incorrect pressure calculations, and permits use in highly deviated wells
- > Full choice of TCP gun vendor

## SAFETY

**Software Security** – Password protected standalone firing head software. Unique factory set identifier ensuring that CROSS-FIRE only responds to messages intended for it.

**Electronically Commutated Motor** – Key information required to fire is not held in the tool and is sent digitally in two parts via the prime and fire commands.

**Temperature Range** – The tool will only operate within software set limits.

**Prime & Fire** – Two distinct commands required in the correct order and within a time window.

**Hydrostatic Firing Head** – Used in conjunction with industry percussion style firing heads. A minimum hydrostatic set pressure is required on the (drop-bar) firing head in order to operate.

**Thermal Switch** – Mechanical temperature switch eliminates the risk of activation at surface by preventing operation below minimum temperature.

**Eutectic Lock Out** - Should guns fail to fire for any reason once firing sequence has been initiated, as the string is being pulled out of hole it will cool below the lock out temperature and the Metrol Firing Head will be mechanically locked preventing any movement of the firing mechanism.

## SPECIFICATIONS

<b>Outside Diameter:</b>	1.75" (45mm)
<b>Maximum Pressure:</b>	15,000psi (103MPa)
<b>Temperature Rating:</b>	347°F (175°C)
<b>Length:</b>	10ft (3m)
<b>Duration (delayed fire):</b>	> 40 days

