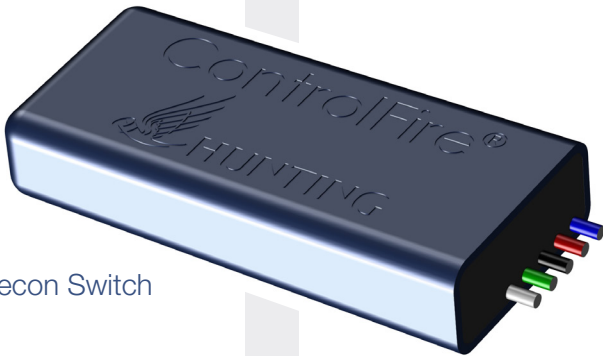
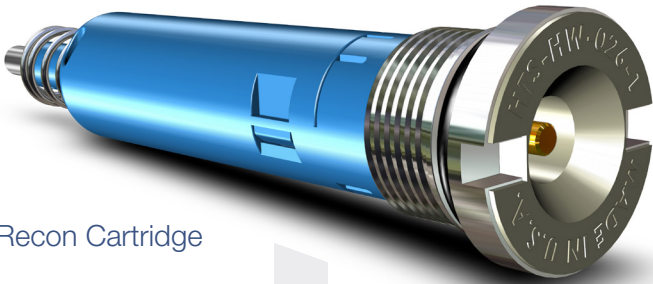


ControlFire Recon™



ControlFire® Recon Switch



ControlFire® Recon Cartridge



RF-Safe Addressable Switch System:
Control Panel, Rapid Arming Software,
Recon Switches and Cartridge Technology

ControlFire® Systems

Hunting's ControlFire system is the industry standard in safe, efficient and reliable addressable switch technology. ControlFire has evolved in both product offering and functionality to provide the leading select-fire platform for wireline applications. Recent additions include advanced switch and cartridge technology, upgraded software, faster communication protocols and an addressable power charge.

System Features and Benefits

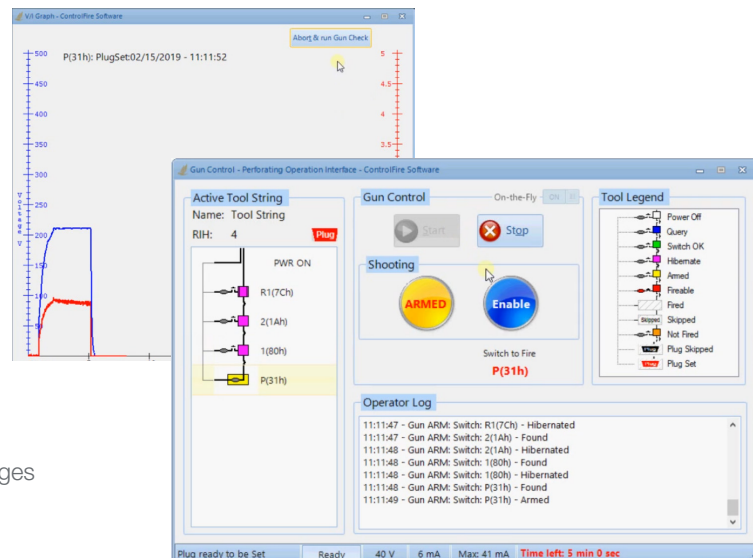
- Increased safety, reliability and efficiency with addressable switch compared to conventional mechanical switches
- Expendable wired switch options that can be integrated into industry hardware
- Plug-n-Play Cartridge technology utilized in Hunting's modular Perforating Systems, release tool, setting tools and top fire systems.
- Addressable technology delivers real time shot verification and skip over capabilities
- Low power communication protocol allows 100+ guns per run
- ControlFire Shooting Power Supply (SPS) eliminates the need for an additional surface panel
- VeriFire Switch Tester provides safe interrogation of armed gun at surface while the SPS panel provides switch check anytime downhole.
- New ControlFire Recon™ product offering features detonator and power charge detection
- API RP 67 Group II compliant options available: safe from radio frequency, stray voltage, and electrostatic discharge at the well site

Industry recognized independent testing agency, Franklin Applied Physics, confirmed that “users of the RF-Safe ControlFire System are safe from stray voltage up to 500V, from personnel-borne ESD, and from nearby radio transmitters of types commonly found at inland or offshore oil-well sites.”

ControlFire On-the-Fly Software

Hunting's user friendly ControlFire On-The-Fly (OTF) software reduces the communication time between firing guns and provides advanced troubleshooting tutorial windows.

- Updated command sequences to optimize communication performance
- Automatically starts next switch check and arming sequence after firing
- On-The-Fly Rapid Arm bypasses shot validation (available upon request)
- 20% faster between firing than older software versions
- Reduces five mouse clicks to two
- More intuitive troubleshooting guide windows
- Automatically configures between switch versions
- Optimized for use with Hunting Release Tools and PowerSet® power charges



ControlFire Recon Switch

The advanced V2.0 ControlFire Recon Switch enables safe, reliable, and confident perforating operations. This wired expendable switch option provides the user with unparalleled insight into the downhole tool string to prevent misruns and mitigate lost time during troubleshooting. The Recon Switch provides all previous ControlFire features and benefit plus:

- Additional transistor on detonator firing circuit to eliminate possibility of single point failure
- Ability to detect an open circuit to detonator and igniter
- Detonator/Igniter presence can be confirmed with the VeriFire® on surface and downhole via ControlFire software.
- Measures top of tool voltage (+/-10%) to aid in troubleshooting
- Faster communication to handle shooting “On-The-Fly”



ControlFire® Recon Switch

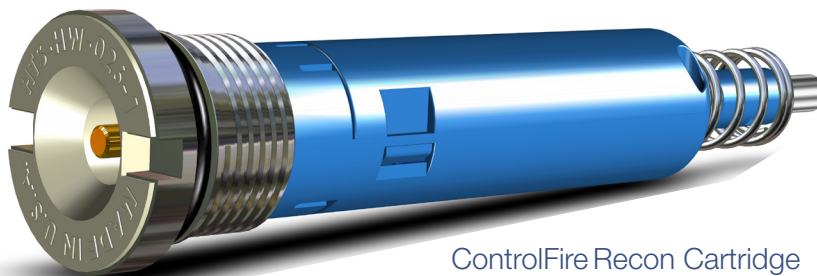


99.999% Success Rate Over 5,000,000 Runs

ControlFire Recon Cartridge

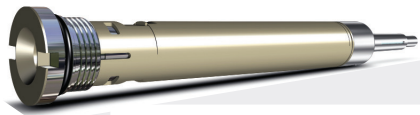
The ControlFire Recon Cartridge is the latest and most advanced detonator offering from Hunting. The compact select-fire initiation device features the v3.0 ControlFire Recon Switch pre-assembled to Hunting’s proprietary Recon Detonator. The combination of these technologies provides unmatched safety and real-time performance status from surface to detonator during perforating operations.

- Compliant with API RP 67 Group 2 Detonator
- Convenient package contains Recon Switch, detonator, and pressure bulkhead
- Eliminates wiring during gun assembly and arming at well site
- Integrated electrical shunt on switch’s detonator circuit for added protection
- Ability to measure detonator resistance (+/- 5) ohm with VeriFire® at surface or via ControlFire Software downhole
- More robust firing circuit with redundant voltage blocking
- Ideal for use in combination with Hunting’s addressable power charge – PowerSet Recon*

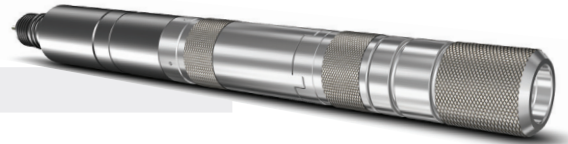


ControlFire Recon Cartridge
DETO-SBC-A140F-T V3.0

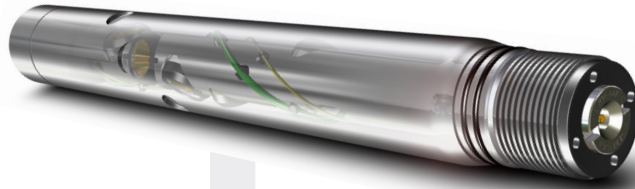
*See your local Hunting sales rep for additional details regarding PowerSet Recon



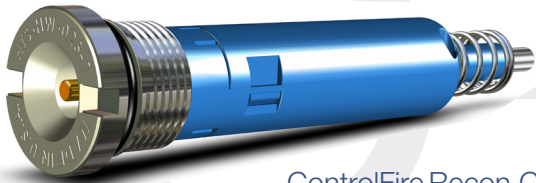
ControlFire® Ballistic Release Cartridge
81AR-275-600



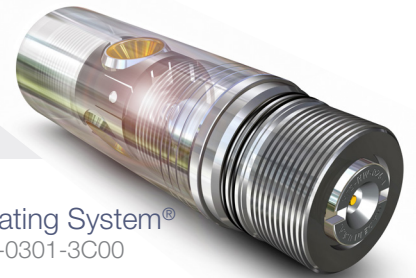
Hunting Release Tool - Ballistic
81AR-275-610



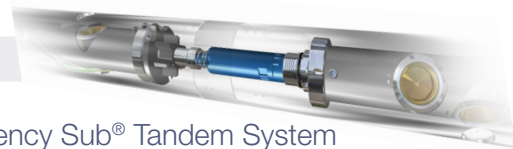
H-1 Perforating System®
H1W-312-SHA-A010-06060



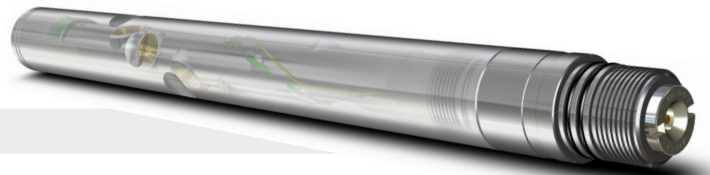
ControlFire Recon Cartridge
DETO-SBC-A140F-T V3.0



H-2 Perforating System®
H2-312-0301-3C00



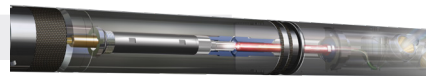
Efficiency Sub® Tandem System
0363-ESUB-040B



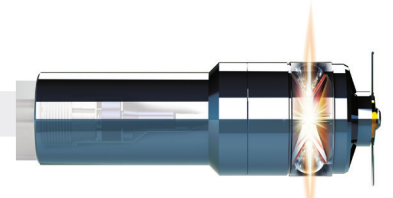
E-Gun™ Perforating System
EGN-312-SHA-B010-06060



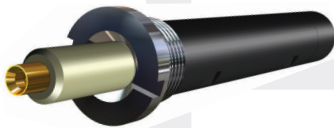
ControlFire® Topfire Cartridge
DETO-TF-CFC-A140F-T V1.8



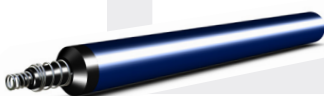
Hunting Topfire Perforating Guns
TFA-312-000



Spectra® 2 Casing Cutters
SCP-C3500T302



ControlFire® Plug Cartridge
HTS-PSC-000



PowerSet Recon™ #10F
HPC-0010-442



T-Set Setting Tools
T-Set One®
TSET-ONE-000

ControlFire® Switch Specifications

ENVIRONMENTAL	
Operating Temperature Range	-20 to 347 °F (-29 to 175 °C)
Survival Temperature	-58 to 392 °F (-50 to 200 °C)
Max. Thermal Change	9 °F/min (5 °C/min)
Vibration Compliance	Compliant to all hollow carrier gun systems
Vibration (3 axis)	50G RMS @ Sweep Frequency 50-1,000 Hz
ELECTRICAL	
Operating Voltage Range	-500 VDC
Operating Current – Standby	>1 mA
Maximum Voltage Rating	Forward -550 VDC / 15 sec Reverse -550 VDC / 30 sec
Maximum Firing Current	Forward (Nominal) - 1A / 12 sec Forward (Maximum) - 1.5A - 5 sec
Transient Voltage	Forward -500 VDC Reverse -500 VDC
Maximum Switches in a Gun String	100+
Current – Communicating	10 mA at Surface • 30 mA Downhole
Communications	Bi-Directional
COMPATIBILITY	
Detonators – Hot Wire	50 ohms or higher (single or double resistor types)
Igniters – Setting Tools	50 ohms or higher

ControlFire® Shooting Power Supply Specifications

ENVIRONMENTAL	
Operating Temperature Range	14 to 131 °F (-10 to 55 °C)
ELECTRICAL	
AC Power Supply	110-120 VAC
Power Supply Frequency	50-60 Hz, Single Phase, 2-Wire Plus Ground
Voltage Output	0 to ±450 VDC (Filtered & Continuously Adjustable)
Current Output	0 to 2.5 A
Power Output	>800 W (±350 VDC @ 2.33 A with 150 ohm load)
Output Current Limit	3.0 A
Output Ripple (rms)	<2% @ ±300 VDC and 2 A
Output Noise (p-p)	<1% @ ±300 VDC and 2 A
GENERAL SPECIFICATION	
Dimensions	3.5 x 19 x 14 in. (8.9 x 48.3 x 35.6 cm)
Weight	28.8 lb (10.6 kg)
Mount	19 in. Rack with Slide Rails & Grab Handles
Certifications	CE Certified

Hunting Part Numbers

CONTROLFIRE SWITCH SYSTEM

Switch (V1.8)	9002-013-120-1.8
Recon Switch (V2.0)	9002-013-120-V2
Command and Control Panel (portable)	9002-013-510
VeriFire Panel	9002-021-200
Wireline Switch Simulator Panel	9002-013-610
Panel External Test Block	9002-013-320
Cable Kit*	9002-013-017
EBFire® Feed Thru w/ Ground	9400-EBTW-WR
Grounded Retainer Nut – ¼” ID w/ Ground	9400-EBRN-WR

RF-SAFE CONTROLFIRE ASSEMBLY (WITH AUSTIN POWDER DETONATOR SELECTION)

RF-Safe Switch with A-140F & Block Detonator	DETO-CFA-A140F-T V1.8
RF-Safe Switch with A-140S Detonator	DETO-CFA-A140S-T V1.8

RF-SAFE CONTROLFIRE CARTRIDGE TECHNOLOGY	PART NUMBER	APPLICATIONS
ControlFire® Cartridge	DETO-SBC-A140F-T V1.8	H-1®, H-2, ESUB, E-Gun
ControlFire® Recon Cartridge (V3.0)	DETO-SBC-A140F-V3.0	H1, ESUB, E-Gun
ControlFire® Ballistic Release Cartridge	81AR-275-600	Hunting Release Tool - Ballistic
ControlFire® Topfire Cartridge	DETO-TF-CFC-A140F-T V1.8	Topfire Perforating Guns, Spectra® 2 Casing Cutters
ControlFire® Plug Cartridge	HTS-PSC-000	T-Set Setting Tools, T-Set One®
PowerSet® Recon - #10F (Fast Burn)	HPC-0010-442	T-Set Setting Tools, T-Set One®
PowerSet® Recon - #20	HPC-0020-541	T-Set Setting Tools

HUNTING SHOOTING POWER SUPPLY

ControlFire Shooting Power Supply	9002-013-810-1
-----------------------------------	----------------

*Cable kit only required for portable panel 9002-013-510
 †Refer to application's product literature for further information.



ControlFire Shooting Power Supply



VeriFire® Switch Tester



Portable Command and Control Panel

Further Information

Web

www.hunting-intl.com

Email

sales.titan@hunting-intl.com
support.titan@hunting-intl.com

Global Headquarters

Hunting Energy Services Inc.
 16825 Northchase Drive, Suite 600
 Houston, Texas 77060-3236
 USA

T. +1 281 442 7382



'Excellence in Energy Services for over 100 years'

© Hunting