



ROTHENBUHLER ENGINEERING®

HOME OF THE *Talkie Tooter!*

1678 Remote Firing Device

*Department of Commerce license
may be required for export*



NEW FEATURES:

- 8-Position Controller fires up to 8 Remotes
- Mini Controller fires up to 4 Remotes
- Rechargeable batteries are user replaceable
- Light display toggles between bright & dim
- Up to 12 Miles L.O.S. 2-way communication
- Faster communication
- Increased firing capacity
- 5 position charger and conditioner
- New and improved Test Box features

The 1678 Remote Firing Device is designed with the same solid performance and excellent reputation as our 1669 model. Smaller and more compact, the Mini Controller fires up to four remotes, built with hard anodized, extremely tough and corrosion resistant cases. The increased firing capacity, **user replaceable** smart battery system and **brighter LEDs** with a dim setting are just a few of the enhanced features this new design offers.

The Rothenbuhler 1678 Remote Firing Device (RFD) is an intelligent and discrete 2-way controlled initiation system used on land as a primary firing mechanism to detonate explosive charges. The Remotes respond only to commands transmitted from a similar digitally encoded (addressed) Mini Controller. The RFD's unique and field proven design will only allow a system with the correct "address" to interrogate and actuate the Remotes. The latest microprocessor and message encoding/validation technology (CRC-32) has been combined to provide a SAFE, RELIABLE, ACCURATE and COMPACT tool.

The RFD is safer to use than conventional electric initiation methods. The Remotes have a timed automatic disarming feature for added safety. All Mini Controller and Remote buttons, LEDs and hardware are recessed, to minimize the possibility of damage. All system cases are WATERTIGHT to a depth of 100 ft. All RFD cases have a vent for pressure equalization and airtight to an altitude of 30,000 ft.

The RFD has a versatility and reliability not before seen in demolition initiation systems. Due to the unique design of the Rothenbuhler RFD, the system can individually command from 1-4 Remotes with each Mini Controller unit. The Remotes can be individually selected on, armed, fired, and interrogated for status via the keypad on the Mini Controller. If a Remote has a low battery, this will also be indicated on the Mini Controller's keypad if the Remote is within range. With the 1678 system and the SLEEP MODE feature, the Remotes can be left in standby mode for approximately 200 hours and still maintain the energy to initiate blasting caps.



5-Position Charger →

Provides discharge/battery conditioning and will charge a unit in about 2 hours. It has advanced features that maximize the health and performance of the 1678's battery packs.

← 1678 Test Box

Allows the user to test and display system information, as well as perform diagnostic checks through a programming interface between a computer and the RFD units. It can also be used to reprogram certain settings and parameters.



~ Patent Pending ~

MODEL 1678 REMOTE FIRING DEVICE

STANDARD FEATURES & FUNCTIONS

RADIO

CARRIER FREQUENCY: 150-174 MHz
FCC Certified

OPERATING TEMPERATURE RANGE: -30°C to 60°C / -22°F to 140°F
-26°C to 60°C / -15°F to 140°F (RSTI)

	<u>MINI CONTROLLER</u>	<u>REMOTES: ELECTRIC & RSTI</u>
FREQUENCY STABILITY	±2.5PPM or (0.0000025%)	±2.5PPM or (0.0000025%)
MODULATION	11K2F3D (AFSK)	11K2F3D (AFSK)
MAX TRANSMIT POWER	5 Watts (Both Controllers)	2 Watts (Electric Remote)
	0.75 Watt (Test Box)	5 Watts (RSTI)
OPERATING POWER	7.2 VDC	7.2 VDC
TRANSMISSION RANGE (LOS)	5-12 Miles*	1-12 Miles*
	3 Feet (Test Box)	

(*) Range is specified as line-of-sight. The typical transmission range is based on transmitter power, antenna gain, frequency used, local geography, and local radio interference.

PHYSICAL

SIZE (w/out antenna) (in)	6.4H x 3.5W x 2.5D (MINI)	6.4H x 3.5W x 2.4D
SIZE (w/out antenna) (cm)	16.3H x 8.9W x 6.4D (MINI)	16.3H x 8.9W x 6.1D
SIZE (w/out antenna) (in)	7.2H x 3.5W x 2.6D (8-Pos.)	
SIZE (w/out antenna) (cm)	18.3H x 8.9W x 6.6D (8-Pos.)	
WEIGHT (w/battery) (lb.)	2.7 lbs.(Mini) / 3 lbs.(8-Pos.)	2.5 lbs.
WEIGHT (w/battery) (kg)	1.2 kg(Mini) / 1.4kg(8-Pos.)	1.1 kg
CASE	6061 Aluminum	6061 Aluminum
COLOR	Black	Black
CASE FINISH	Hard Anodized	Hard Anodized

BATTERY

BATTERY PACK	Rechargeable NiMH	Rechargeable NiMH
RUN TIME PER CHARGE	12+ Hours	Adjustable between 12-300 Hours Typical User Setting is 200 Hours*
BATTERY RECHARGE	1-4 Hours**	1-4 Hours**
BATTERY LIFE	Approximately 2 years or 300 charge cycles	Approximately 2 years or 300 charge cycles
STANDBY CURRENT	110 milliamps	80 milliamps
TRANSMIT CURRENT	1-2.5 Amp	1-2.5 Amp

(*) At the end of the 200 hours, the Electric Remote Unit can initiate 14 (2-Ohm) blasting caps Connected in series and attached to 100 feet (30 meters) of 18AWG firing cable.

(**) Actual charge time depends on the model of the charger used, initial charge of the battery, And the condition of the battery. This estimate does not include discharge or reconditioning operations.

DETONATE OUTPUT

FIRING ENERGY
PULSE VOLTAGE LEVEL
CAPACITOR
MAX FIRING RESISTANCE

ELECTRIC REMOTE

2.8 Joule (typical), 1.8 Joule (minimum)
50 VDC (typical), 45 VDC (minimum)
2,200µF Electrolytic
28Ω (This includes firing cables, detonators & detonator leg wires)

RSTI REMOTE

0.470 Joule (typical), 0.350 Joule (minimum)
2,500 VDC (typical), 2,250 VDC (minimum)

TIMING

ARM TIME: 4 ± 0.5 Seconds
ARM TIME PERIOD (BEFORE AUTO DISARM): 1-60 Minutes (20 Minute Default)*
DISARM TIME: 3 ± 0.1 Seconds
ELECTRIC REMOTE FIRE TIME: 20 Milliseconds
RSTI FIRE TIME: 225 ± 125 Milliseconds

(*) This is the amount of time the unit will remain Armed (ready to fire), before automatically returning to the disarmed state. This figure is normally set at 20 min. but can be changed.

WARRANTY The 1678 Remote Firing Device is guaranteed for 2 years (batteries - 1 year, spark tips excluded) against defects in workmanship and materials. If the equipment should fail during this period, we will repair it at our factory or at the nearest authorized service facility. Warranty service on this equipment must be performed only by an authorized dealer. Unauthorized service procedures or parts will void and cancel your warranty, and may cause radio equipment to fail, resulting in accidents and/or personal injury. This is a limited warranty and is given in place of legally implied warranties of merchantability and fitness for a particular purpose. Our liability is expressly limited to the cost of repair or replacement of the RFD under this guarantee, and does not extend to additional or consequential damages resulting from the operation of equipment.



**ROTHENBUHLER
ENGINEERING®**