



VOD/DATA RECORDERS AND ACCESSORIES
FOR ASSOCIATED APPLICATIONS

PRODUCT LIST

MREL DOCUMENT #: PROD250317

THESE PRODUCTS AND PRICES ARE AVAILABLE TO
PRE-SCREENED, PRE-APPROVED CUSTOMERS ONLY.

PRICES ARE IN USD AND SUBJECT TO CHANGE WITHOUT NOTICE.

TO OBTAIN FIRM PRICING, PLEASE REQUEST A QUOTATION
FROM YOUR LOCAL AUTHORIZED MREL BLASTING INSTRUMENTATION DEALER,
OR FROM MREL'S BLASTING INSTRUMENTATION DEPARTMENT.

5-779 Sir John A MacDonald Blvd. • Kingston, Ontario K7L 1H3 • Canada

T: +1 613.545.0466 • E: contact@mrel.com • W: www.mrel.com




ABOUT THIS PRODUCT:

If you would like to profile the explosives velocity of detonation (VOD) continuously along a sample of explosives (20 cm or 0.9 m long) or along an explosives column in a single blasthole (maximum 30m of explosives column length), the world's most affordable and easiest to use recorder is the [HandiTrap II™ VOD Recorder](#). If your requirements go beyond this, then consider the MicroTrap™ VOD/Data Recorder (Product 1-03-01) as an alternative.

HOW TO CONFIGURE THIS PRODUCT:

Select Product 1-02-01. Then select the correct accessories for this product depending on your application(s) as indicated below.

<u>Product #</u>	<u>Product Name</u>	<u>Unit</u>	<u>Unit Price (\$USD)</u>
1-02-01	HANDITRAP II™ VOD RECORDER	each	
	<p>Portable 1 channel continuous explosives velocity of detonation (VOD) recorder for explosives in one blasthole and explosives samples. Resolution = 12 bits, 1 part in 4,096. Recording speed is 1 MHz. Memory of 131,000 data points = 131 milliseconds recording time. Internal and external trigger mode. Pre-trigger time is 25% of the total recording time. Operates from internal rechargeable NiCad batteries (up to 8 hours). Includes HandiTrap II™ VOD Recorder, 120 or 230 VAC Battery Charger (as specified by the Customer), USB Communications Cable, External Trigger Adapter, padded HandiTrap II™ Carry Case, HandiTrap II™ Operations Manual (English), DAS™ Data Acquisition Suite Software for Windows 10™ and later. Includes MREL's Renewable 1 Year Comprehensive 100% Parts and Labour Warranty (contact MREL for more details).</p>		

HOW TO SELECT THE CORRECT ACCESSORIES FOR THIS PRODUCT:

Determine your application below, and select the appropriate compatible accessories listed later in this publication.

[APPLICATION #1: MEASURING VODS OF EXPLOSIVES IN BLASTHOLES](#) (Page 8)

[APPLICATION #2: MEASURING VODS OF EXPLOSIVES SAMPLES](#) (Page 12)






ABOUT THIS PRODUCT:

If you want to profile the explosives velocity of detonation (VOD) continuously along a sample of explosives (20 cm to 2.7 m long) or along the explosives columns in one or multiple blastholes, or determine the delay times between blastholes, the most affordable and easiest to use recorder is the [MicroTrap™ VOD/Data Recorder](#). It is the World's most popular VOD recorder and can be optionally extended to add 4 channels to record any sensor that outputs DC voltage such as pressure sensors and accelerometers. If your requirements go beyond this, then consider the DataTrap II™ Data/VOD Recorder (Product 1-04-01) as an alternative.

HOW TO SELECT THIS PRODUCT:

Select Product 1-03-01. Select Product 1-03-03 if you want to add other recording capabilities to the existing VOD recording capabilities of the MicroTrap™ VOD/Data Recorder. Select Product 1-03-04 to double the memory if you require a longer recording time. Then select the correct accessories for this product depending on your application(s) as indicated below.

Product #	Product Name	Unit	Unit Price (\$USD)
1-03-01	MICROTRAP™ VOD/DATA RECORDER	each	
	<p>Portable 1 channel continuous explosives velocity of detonation (VOD) recorder for explosives in one or more blastholes and explosives samples. Resolution = 14 bits, 1 part in 16,384. Recording speed is adjustable from 1 Hz to 2 MHz. Standard memory of 4,000,000 data points = 2 seconds recording time at a 2 MHz recording speed. Adjustable internal and multiple external trigger modes. Pre-trigger time is adjustable from 0% to 100% of the total recording time. Multiple event storage of up to 16 events in non-volatile memory. Operates from the internal rechargeable NiCad battery (up to 12 hours), or VAC mains, or an external 12-20 VDC power source (power source not included). Includes MicroTrap™ VOD/Data Recorder (VOD recording capabilities only), 120 or 230 VAC Battery Charger (as specified by the Customer), USB Communications Cable, padded MicroTrap™ Carry Case, MicroTrap™ Operations Manual (English), DAS™ Data Acquisition Suite Software for Windows 10™ and later. Includes MREL's Renewable 1 Year Comprehensive 100% Parts and Labour Warranty (contact MREL for more details).</p> <p><u>Optional Upgrades (not included):</u> MicroTrap™ Scope Upgrade (Product 1-03-03): Provides additional 4 channels of digital oscilloscope recording capabilities to the MicroTrap™ VOD/Data Recorder for recording accelerometers and pressure sensors. MicroTrap™ Memory Upgrade (Product 1-03-04): Provides an additional 4 million data points of memory to the MicroTrap™ VOD/Data Recorder.</p>		
1-03-03	MICROTRAP™ SCOPE UPGRADE	each	
	<p>Optional factory installed internal upgrade for the MicroTrap™ VOD/Data Recorder. Provides additional 4 channels of digital oscilloscope recording capabilities to the MicroTrap™ VOD/Data Recorder. Allows recording of any sensor (vibration, pressure, acceleration, temperature etc.) that produces a DC voltage signal between -10 VDC to +10 VDC. Adjustable input ranges +/-2.5, +/-5, +/-7.5, +/-10, 0-2.5, 0-5, 0-7.5, 0-10 VDC for each channel independently. Resolution = 14 bits, 1 part in 16,384. Recording speed is adjustable from 1 Hz to 1 MHz per channel. Utilizes the memory in the MicroTrap™. Adjustable internal and multiple external trigger modes. Pre-trigger time is adjustable from 0% to 100% of the total recording time. Multiple event storage of up to 16 events in non-volatile memory. Includes installation of MicroTrap™ Scope Upgrade circuit board. Includes MREL's Renewable 1 Year Comprehensive 100% Parts and Labour Warranty (contact MREL for more details).</p>		

1-03-04	MICROTRAP™ MEMORY UPGRADE	each	
<p>Optional factory installed internal upgrade for the MicroTrap™ VOD/Data Recorder. Provides additional 4,000,000 data points of memory to the MicroTrap™ VOD/Data Recorder. This upgrades the MicroTrap™ memory to 8 million data points = 4 seconds recording time at a 2 MHz recording rate. Reducing the recording speed increases the recording time. Includes MREL's Renewable 1 Year Comprehensive 100% Parts and Labour Warranty (contact MREL for more details).</p>			
			

HOW TO SELECT THE CORRECT ACCESSORIES FOR THIS PRODUCT:

Determine your application below, and select the appropriate compatible accessories listed later in this publication.

APPLICATION #1: MEASURING VODS OF EXPLOSIVES IN BLASTHOLES (Page 8)

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APPLICATION #3: MEASURING AIRBLAST OVERPRESSURES FROM EXPLOSIVES (Page 16)

APPLICATION #4: MEASURING UNDERWATER PRESSURES FROM EXPLOSIVES (Page 19)

APPLICATION #5: MEASURING NEAR-FIELD BLAST VIBRATIONS (Page 23)










ABOUT THIS PRODUCT:

If you want to record acceleration, pressure, and other dynamic sensors under tough outdoor conditions, then the [DataTrap II™ Data/VOD Recorder](#) is a rugged recorder that provides this capability. Uniquely it also has the optional ability to record explosives velocity of detonation (VOD) continuously along samples of explosives (20 cm to 2.7 m long) and along the explosives columns in one or many multiple blastholes, and determines the delay times between blastholes. It also has the optional ability to record dynamic strain in materials.

HOW TO SELECT THIS PRODUCT:

Select Product 1-04-01. Select Product 1-04-03 if you want to add VOD recording capabilities to the existing recording capabilities of the DataTrap II™ Data/VOD Recorder. Select Product 1-04-06 if you want to add Strain recording capabilities to the existing recording capabilities of the DataTrap II™ Data/VOD Recorder. Select Products 1-04-04 and 1-04-05 to increase the memory if you require a longer recording time. Then select the correct accessories for this product depending on your application(s) as indicated below.

Product #	Product Name	Unit	Unit Price (\$USD)
1-04-01	DATATRAP II™ DATA/VOD RECORDER	each	
	<p>Portable 8 channel, 10 MHz high speed, multi-purpose data acquisition recorder with standard 128 MB memory and 14 bit resolution. Programmable recording speeds independently set on each channel from 1 Hz to 10MHz, flexible trigger inputs and internal/signal triggering on programmable levels. Allows recording of any sensor (vibration, pressure, acceleration, temperature etc.) that produces a DC voltage signal between -10 VDC to +10 VDC. Adjustable input ranges +/-2.5, +/-5, +/-7.5, +/-10, 0-2.5, 0-5, 0-7.5, 0-10 VDC for each channel independently. Programmable pre-trigger and post-trigger recording times. Internal non-volatile memory. Post-test data output via USB-2. Sync port to connect multiple DataTrap II™s for more channels. Includes DataTrap II™ Data/VOD Recorder (VOD recording capabilities are not included – see Product 1-04-03), 120 VAC or 230 VAC Battery Charger (as specified by the Customer), USB Communications Cable, External Trigger Adapter, DataTrap II™ Operations Manual (English), DAS™ Data Acquisition Suite Software for Windows 10™ and later. Includes MREL’s Renewable 1 Year Comprehensive 100% Parts and Labour Warranty (contact MREL for more details).</p> <p><u>Optional Upgrades (not included):</u> DataTrap II™ VOD Upgrade (Product 1-04-03): Provides explosives velocity of detonation (VOD) recording capability to each of the 8 channels of the DataTrap II™ Data/VOD Recorder. DataTrap II™ Memory Upgrades (Products 1-04-04 and 1-04-05): Provide increased memory to the DataTrap II™ Data/VOD Recorder. DataTrap II™ Strain Upgrade (Product 1-04-06): Provides strain gauge recording capability to each of the 8 channels of the DataTrap II™ Data/VOD Recorder.</p>		
1-04-03	DATATRAP II™ VOD UPGRADE	each	
	<p>Optional factory installed internal upgrade for the DataTrap II™ Data/VOD Recorder. Provides VOD recording capability to each of the 8 channels of the DataTrap II™ Data/VOD Recorder allowing the Operator to select VOD or Scope input on each channel independently. Utilizes the memory in the DataTrap II™. Includes installation of DataTrap II™ VOD Upgrade circuit board. Includes MREL’s Renewable 1 Year Comprehensive 100% Parts and Labour Warranty (contact MREL for more details).</p> 		

1-04-04	DATATRAP II™ ENHANCED MEMORY UPGRADE FROM 128MB TO 256MB	each	
<p>Optional factory installed internal upgrade for the DataTrap II™ Data/VOD Recorder. Doubles the memory of the standard DataTrap II™ Data/VOD Recorder. Includes MREL's Renewable 1 Year Comprehensive 100% Parts and Labour Warranty (contact MREL for more details).</p> 			
1-04-05	DATATRAP II™ MAXIMUM MEMORY UPGRADE FROM 256MB TO 512MB	each	
<p>Optional factory installed internal upgrade for the DataTrap II™ Data/VOD Recorder. Quadruples the memory of the standard DataTrap II™ Data/VOD Recorder. Requires that the DataTrap II™ Enhanced Memory Upgrade is also installed, Product 1-04-04. Includes MREL's Renewable 1 Year Comprehensive 100% Parts and Labour Warranty (contact MREL for more details).</p> 			
1-04-06	DATATRAP II™ STRAIN UPGRADE	each	
<p>Optional upgrade for the DataTrap II™ Data/VOD Recorder. Can be attached to the lid of the DataTrap II™ Data/VOD Recorder by the Operator. Provides strain gauge recording capability to each of the 8 channels of the DataTrap II™ Data/VOD Recorder allowing the Operator to select strain input on each channel. Utilizes the memory in the DataTrap II™. Includes provision of the DataTrap II™ Strain Module, 8 ea. steel encased DataTrap II™ Strain Gauge Pre-Amplifiers (suitable for 120 ohm strain gauges, 350 ohm is optional – contact MREL), DataTrap II™ Strain Operations Guide (English). One DataTrap II™ Strain Signal & Power Cable (Product 1-04-08 or 1-04-09) is required for each Pre-Amplifier to be used in a test. Includes MREL's 1 year Comprehensive 100% Parts and Labour Warranty.</p> 			
1-04-08	DATATRAP II™ STRAIN SIGNAL & POWER CABLE (20 m)	each	
<p>Transmits power from the DataTrap II™ Data/VOD Recorder to one Strain Gauge Pre-Amplifier (see Product 1-04-06) and also provides strain gauge signal transmission from the Strain Gauge Pre-Amplifier to the DataTrap II™. Price per one 20 metre (65.6 ft) cable including appropriate connectors. One cable required per each Strain Gauge Pre-Amplifier used in a test.</p> 			
1-04-09	DATATRAP II™ STRAIN SIGNAL & POWER CABLE (100 m)	each	
<p>Transmits power from the DataTrap II™ Data/VOD Recorder to one Strain Gauge Pre-Amplifier (see Product 1-04-06) and also provides strain gauge signal transmission from the Strain Gauge Pre-Amplifier to the DataTrap II™. Price per one 100 metre (328 ft) cable including appropriate connectors. One cable required per each Strain Gauge Pre-Amplifier used in a test.</p> 			

HOW TO SELECT THE CORRECT ACCESSORIES FOR THIS PRODUCT:

Determine your application below, and select the appropriate compatible accessories listed later in this publication.

APPLICATION #1: MEASURING VODS OF EXPLOSIVES IN BLASTHOLES (Page 8)

APPLICATION #2: MEASURING VODS OF EXPLOSIVES SAMPLES (Page 12)

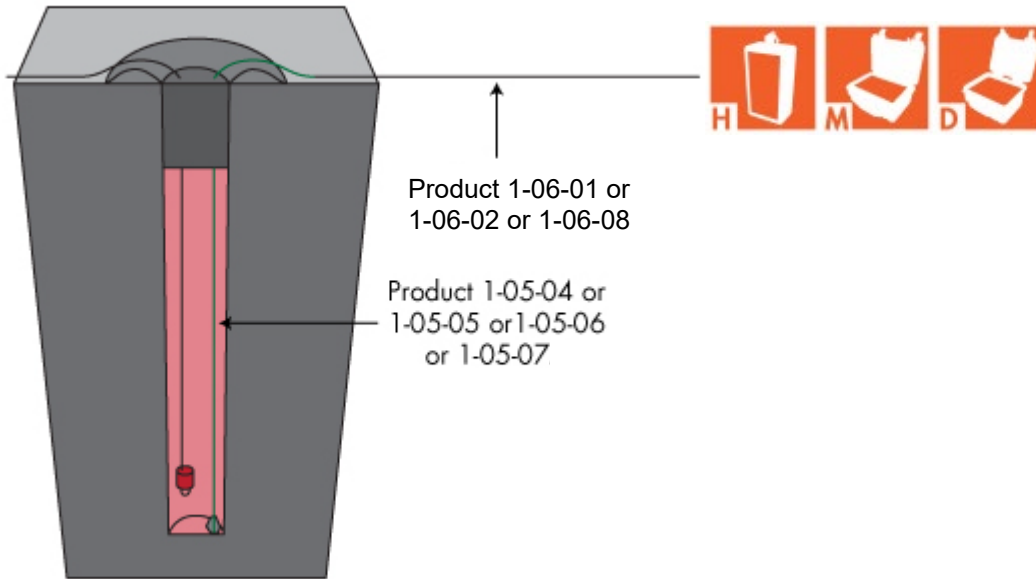
APPLICATION #3: MEASURING AIRBLAST OVERPRESSURES FROM EXPLOSIVES (Page 16)

APPLICATION #4: MEASURING UNDERWATER PRESSURES FROM EXPLOSIVES (Page 19)

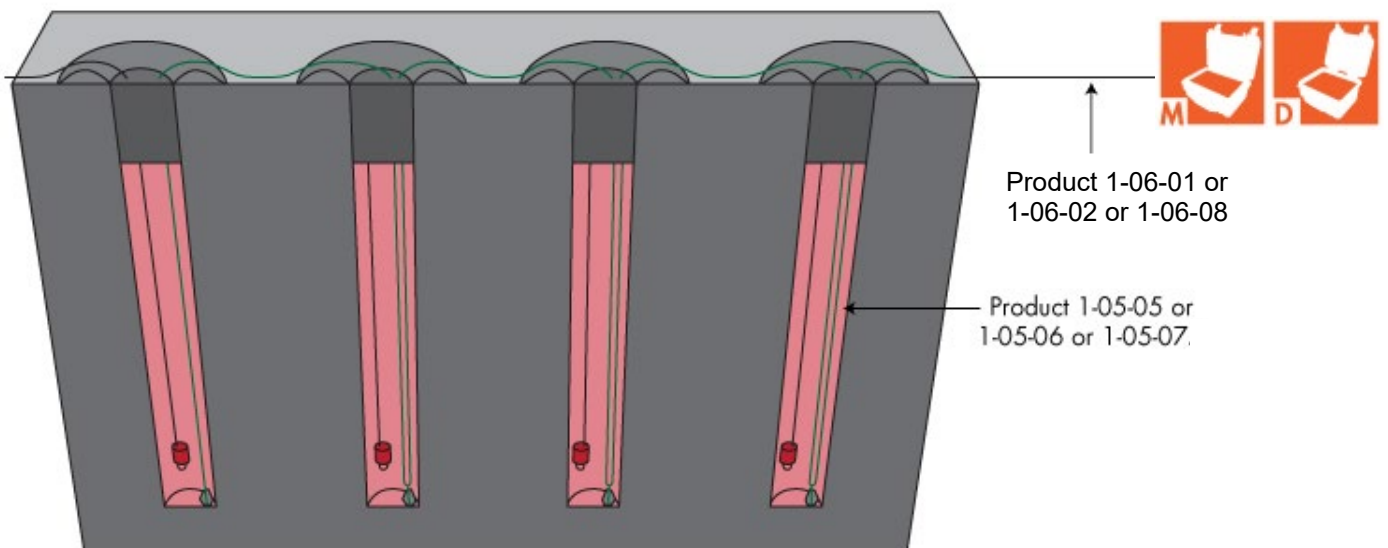
APPLICATION #5: MEASURING NEAR-FIELD BLAST VIBRATIONS (Page 23)

APPLICATION #1: MEASURING VODS OF EXPLOSIVES IN BLASTHOLES

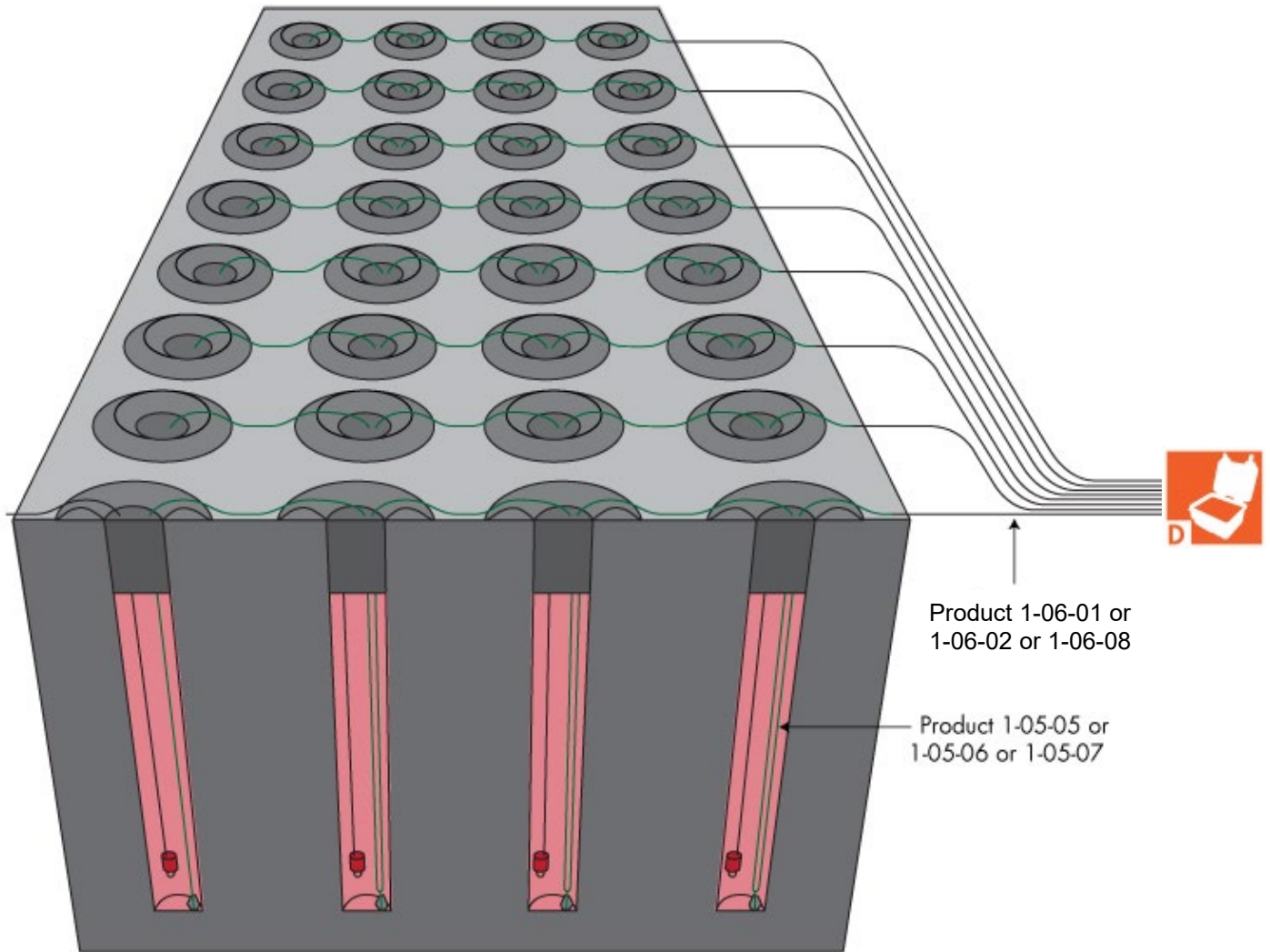
ONE BLASTHOLE:




ONE TO FOUR BLASTHOLES:





ONE TO THIRTY-TWO BLASTHOLES:





<u>Product #</u>	<u>Product Name</u>	<u>Unit</u>	<u>Unit Price (\$USD)</u>
1-05-04	VOD PROBECABLE-HT (30 m long, 12 ea.)	box	
Custom, calibrated resistance cable for use in explosives in a blasthole to monitor the continuous explosives VOD and deck delay times. VOD PROBECABLE-HT is recommended for HandiTrap II™ VOD Recorder operators recording VODs in a single hole. Supplied in a ready-to-use length of 30 m (100 ft.) on a spool. Packaged 12 spools per box. Compatible with all MREL VOD Recorders except for the HandiTrap™ VOD Recorders.			


1-05-05	VOD PROBECABLE "GREEN" (1000 m)	box	
<p>Custom, calibrated resistance cable for use in explosives in blastholes to monitor the continuous explosives VOD and hole/deck delay times. VOD PROBECABLE "GREEN" is recommended for operators recording across single or multiple holes. Supplied in "Reel in a Box" boxes. Packaged 1,000 m (3,280 ft.) per box. Compatible with all MREL VOD Recorders except for the HandiTrap™ and HandiTrap II™ VOD Recorders.</p>			
			



1-05-06	VOD PROBECABLE-LR "BLUE" (1000 m)	box	
<p>Custom, calibrated resistance cable for use in explosives in blastholes to monitor the continuous explosives VOD and hole/deck delay times. VOD PROBECABLE-LR "BLUE" is recommended for operators recording across multiple or many multiple holes. Supplied in "Reel in a Box" boxes. Packaged 1,000 m (3,280 ft.) per box. Compatible with all MREL VOD Recorders except for the HandiTrap™ and HandiTrap II™ VOD Recorders.</p>			
			

1-05-07	VOD PROBECABLE-K "KEVLAR" (1000 m)	box	
<p>Custom, calibrated resistance cable for use in explosives in blastholes to monitor the continuous explosives VOD and hole/deck delay times. VOD PROBECABLE-K "KEVLAR" contains Kevlar and is recommended for operators recording across single or multiple holes in blasting situations where the VOD PROBECABLE in the hole incurs very high shocks due to holes detonating on previous delays. Supplied in "Reel in a Box" boxes. Packaged 1,000 m (3,280 ft.) per box. Compatible with all MREL VOD Recorders except for the HandiTrap™ and HandiTrap II™ VOD Recorders.</p>			
			

1-06-01	RG-58C/U COAXIAL CABLE (100 M) ON LIGHT-DUTY CABLE REEL	each	
<p>100 m (328 ft.) RG-58C/U coaxial cable, complete with plastic hand-held reel and one male BNC connector (attached to one end of cable), to carry the VOD PROBECABLE or VOD PROBEROD to the MREL VOD Recorder. Compatible with all MREL VOD Recorders.</p>			
			

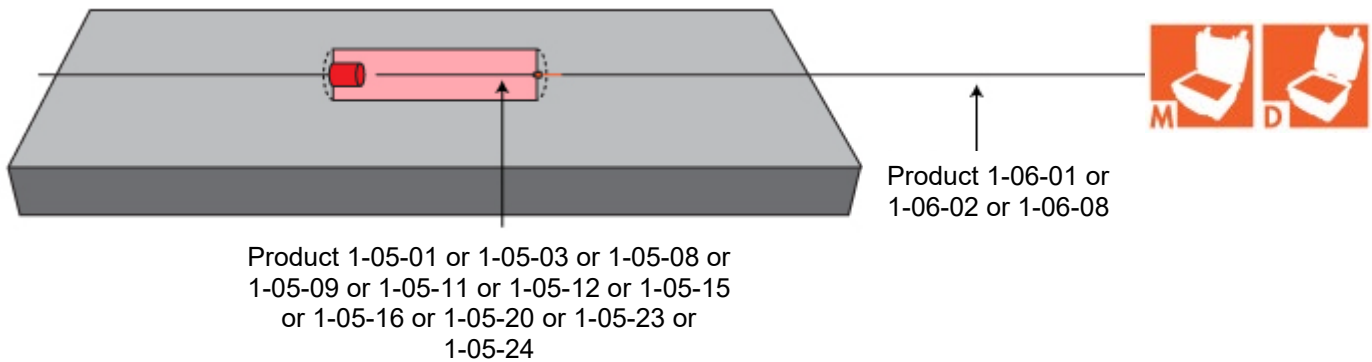
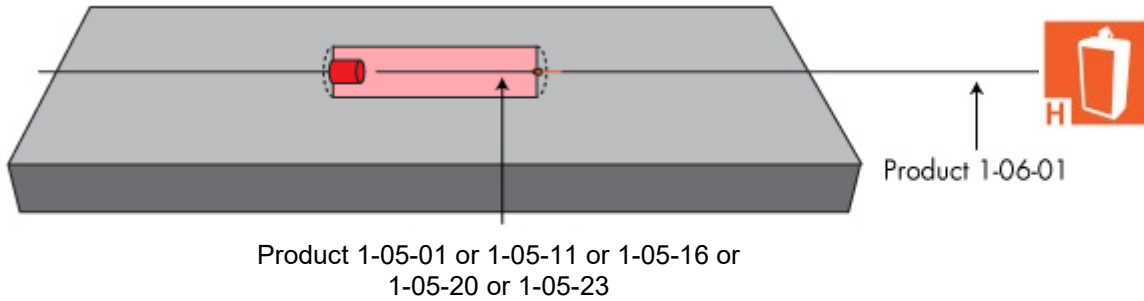
1-06-02	RG-58C/U COAXIAL CABLE (300 M) ON HEAVY-DUTY CABLE REEL	each	
<p>300 m (984 ft.) RG-58C/U coaxial cable, complete with steel cable reel and one male BNC connector (attached to one end of cable), to carry the VOD signal from the VOD PROBECABLE or VOD PROBEROD to the MREL VOD Recorder. Compatible with all MREL VOD Recorders except for the HandiTrap™ and HandiTrap II™ VOD Recorders.</p>			
			

1-06-08	RG-58C/U COAXIAL CABLE (300 M) IN PULL-BOX C/W MALE BNC	each	
<p>300 m (984 ft.) RG-58C/U coaxial cable provided in a fibreboard pull-box, complete with one male BNC connector (attached to one end of cable), to carry the VOD signal from the VOD PROBECABLE or VOD PROBEROD to the MREL VOD Recorder. Suitable for winding onto Customer's cable reel. As an alternative, consider Product 1-06-02 for the cable pre-loaded on a reusable heavy-duty steel cable reel. Compatible with all MREL VOD Recorders except for the HandiTrap™ and HandiTrap II™ VOD Recorders.</p>			
			

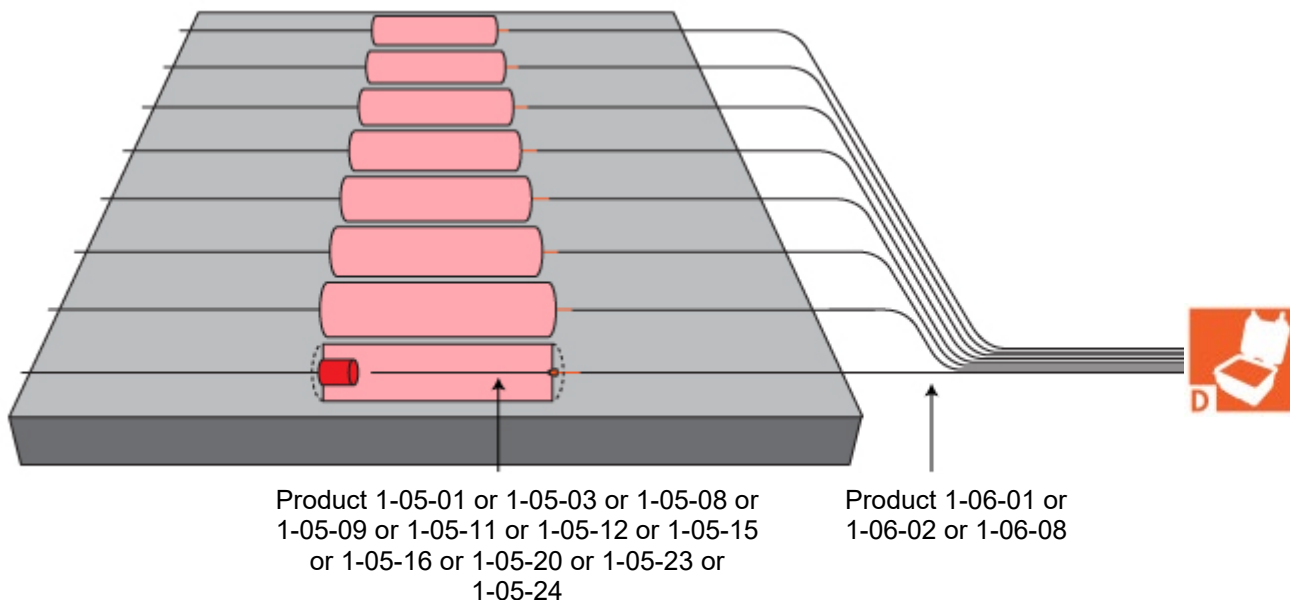
1-08-01	BLASTER'S OHMMETER MODEL 106	each	
	<p>MSHA approved digital blaster's galvanometer for use in blasting to determine the continuity and resistance of electrical circuits. This compact digital blaster's galvanometer is MSHA approved and safe for all blasting circuit measurements. Suitable for testing of VOD PROBECABLE and VOD PROBEROD circuits. Equipped with a LCD backlight feature and a standard Cordura protective case, this digital blaster's galvanometer employs solid state surface mount technology for ruggedness and reliability.</p> <p>Specifications: Weight: 0.14 kg (5 oz.) Size: 25 x 60 x 27 mm (4.6 x 2.4 x 1.1 in.) Seal: Dust and Damp MSHA Approved: Yes</p> <p>Range: 1 ohm - 2K ohms (1 ohm increments) Battery Type: 9V NEDA 1604/1604A Current Output: < 4mA</p>		
			







APPLICATION #2: MEASURING VODS OF EXPLOSIVES SAMPLES







ONE EXPLOSIVES SAMPLE PER TEST:



ONE TO EIGHT EXPLOSIVES SAMPLES PER TEST:



1-05-01	VOD PROBEROD (0.9 m long, 25 ea.)	package	
<p>Calibrated rigid resistance probe for use in explosives samples to monitor the continuous explosives VOD. Length = 0.9 m (3 ft.). Supplied 25 ea. per package. Compatible with all MREL VOD Recorders. Contact MREL for recommended applications. Custom lengths are available – contact MREL for details.</p>			
			
1-05-03	VOD PROBEROD-2E (0.9 m long, 25 ea.)	package	
<p>Two ended, calibrated rigid resistance probe for use when wiring together of several probes is desired in a test to monitor the continuous explosives VOD. Length = 0.9 m (3 ft.). Supplied 25 ea. per package. Compatible with all MREL VOD Recorders except for the HandiTrap™ and HandiTrap II™ VOD Recorders. Contact MREL for recommended applications. Custom lengths are available – contact MREL for details.</p>			
			
1-05-08	VOD PROBEROD-HR (0.3 m long, 25 ea.)	package	
<p>Custom, calibrated high-resistance rigid resistance probe for use in short explosives samples to monitor the continuous explosives VOD. Length = 0.3 m (1 ft.). Supplied 25 ea. per package. Compatible with all MREL VOD Recorders except for the HandiTrap™ and HandiTrap II™ VOD Recorders. Contact MREL for recommended applications. Custom lengths are available – contact MREL for details.</p>			
			
1-05-09	VOD PROBEROD-HR/HS (0.3 m long, 25 ea.)	package	
<p>Custom high-resistance, easily crushed, calibrated rigid resistance probe for use in short low energy explosives samples to monitor the continuous explosives VOD. Length = 0.3 m (1 ft.). Supplied 25 ea. per package. Compatible with all MREL VOD Recorders except for the HandiTrap™ and HandiTrap II™ VOD Recorders. Contact MREL for recommended applications. Custom lengths are available – contact MREL for details.</p>			
			
1-05-11	VOD PROBEROD-HS (0.9 m long, 25 ea.)	package	
<p>Easily crushed, calibrated rigid resistance probe for use in low energy explosives samples to monitor the continuous explosives VOD. Length = 0.9 m (3 ft.). Supplied 25 ea. per package. Compatible with all MREL VOD Recorders. Contact MREL for recommended applications. Custom lengths are available – contact MREL for details.</p>			
			
1-05-12	VOD PROBEROD (2.7 m long, 25 ea.)	package	
<p>Calibrated rigid resistance probe for use in explosives samples to monitor the continuous explosives VOD. Length = 2.7 m (9 ft.). Supplied 25 ea. per package. Compatible with all MREL VOD Recorders except for the HandiTrap™ and HandiTrap II™ VOD Recorders. Contact MREL for recommended applications. Custom lengths are available – contact MREL for details.</p>			
			

1-05-15	VOD PROBEROD (1.8 m long, 25 ea.)	package	
<p>Calibrated rigid resistance probe for use in explosives samples to monitor the continuous explosives VOD. Length = 1.8 m (6 ft.). Supplied 25 ea. per package. Compatible with all MREL VOD Recorders except for the HandiTrap™ and HandiTrap II™ VOD Recorders. Contact MREL for recommended applications. Custom lengths are available – contact MREL for details.</p>			
			
1-05-16	VOD PROBEROD-XT (0.9 m long, 25 ea.)	package	
<p>Calibrated rigid resistance probe for use in explosives samples at high temperatures, verified to temperatures up to 200°C (400 °F), to monitor the continuous explosives VOD. Length = 0.9 m (3 ft.). Supplied 25 ea. per package. Compatible with all MREL VOD Recorders. Contact MREL for recommended applications. Custom lengths are available – contact MREL for details.</p>			
			
1-05-20	VOD PROBEROD-OS (0.9 m long, 25 ea.)	package	
<p>Calibrated rigid resistance probe for use in low energy explosives samples to monitor the continuous explosives VOD. May also be suitable for use in recording the burning rate of some propellants. Length = 0.9 m (3 ft.). Supplied 25 ea. per package. Compatible with all MREL VOD Recorders. Contact MREL for recommended applications. Custom lengths are available – contact MREL for details.</p>			
			
1-05-23	VOD PROBEROD-HR (0.2 m long, 25 ea.)	package	
<p>Custom, calibrated high-resistance rigid resistance probe for use in short explosives samples to monitor the continuous explosives VOD. Length = 0.2 m (7.9 in.). Supplied 25 ea. per package. Compatible with all MREL VOD Recorders. Contact MREL for recommended applications. Custom lengths are available – contact MREL for details.</p>			
			
1-05-24	VOD PROBEROD-HR/HS (0.2 m long, 25 ea.)	package	
<p>Custom high-resistance, easily crushed, calibrated rigid resistance probe for use in short low energy explosives samples to monitor the continuous explosives VOD. Length = 0.2 m (7.9 in.). Supplied 25 ea. per package. Compatible with all MREL VOD Recorders except for the HandiTrap™ and HandiTrap II™ VOD Recorders. Contact MREL for recommended applications. Custom lengths are available – contact MREL for details.</p>			
			
1-06-01	RG-58C/U COAXIAL CABLE (100 M) ON LIGHT-DUTY CABLE REEL	each	
<p>100 m (328 ft.) RG-58C/U coaxial cable, complete with plastic hand-held reel and one male BNC connector (attached to one end of cable), to carry the VOD PROBECABLE or VOD PROBEROD to the MREL VOD Recorder. Compatible with all MREL VOD Recorders.</p>			
			

1-06-02	RG-58C/U COAXIAL CABLE (300 M) ON HEAVY-DUTY CABLE REEL	each
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300 m (984 ft.) RG-58C/U coaxial cable, complete with steel cable reel and one male BNC connector (attached to one end of cable), to carry the VOD signal from the VOD PROBE CABLE or VOD PROBEROD to the MREL VOD Recorder. Compatible with all MREL VOD Recorders except for the HandiTrap™ and HandiTrap II™ VOD Recorders.



1-06-08	RG-58C/U COAXIAL CABLE (300 M) IN PULL-BOX C/W MALE BNC	each
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300 m (984 ft.) RG-58C/U coaxial cable provided in a fibreboard pull-box, complete with one male BNC connector (attached to one end of cable), to carry the VOD signal from the VOD PROBE CABLE or VOD PROBEROD to the MREL VOD Recorder. Suitable for winding onto Customer's cable reel. As an alternative, consider Product 1-06-02 for the cable pre-loaded on a reusable heavy-duty steel cable reel. Compatible with all MREL VOD Recorders except for the HandiTrap™ and HandiTrap II™ VOD Recorders.



1-08-01	BLASTER'S OHMMETER MODEL 106	each
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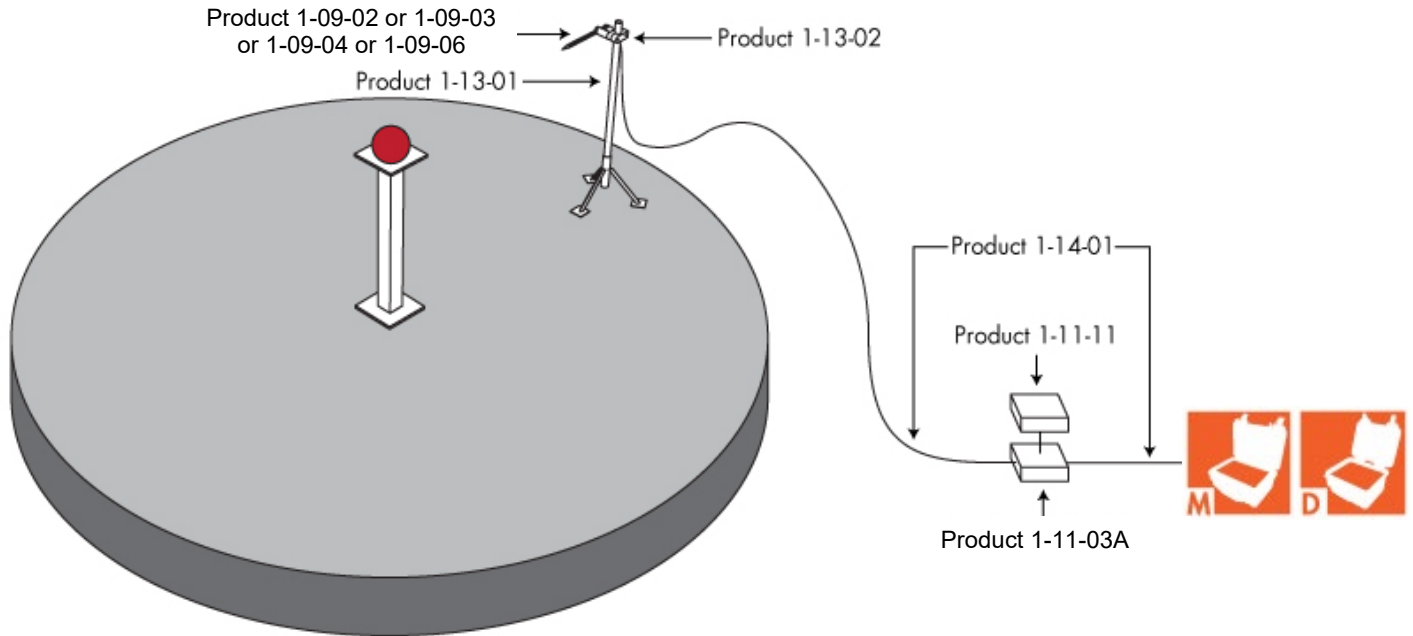
MSHA approved digital blaster's galvanometer for use in blasting to determine the continuity and resistance of electrical circuits. This compact digital blaster's galvanometer is MSHA approved and safe for all blasting circuit measurements. Suitable for testing of VOD PROBE CABLE and VOD PROBEROD circuits. Equipped with a LCD backlight feature and a standard Cordura protective case, this digital blaster's galvanometer employs solid state surface mount technology for ruggedness and reliability.

Specifications:
 Weight: 0.14 kg (5 oz.)
 Size: 25 x 60 x 27 mm (4.6 x 2.4 x 1.1 in.)
 Seal: Dust and Damp
 MSHA Approved: Yes

Range: 1 ohm - 2K ohms (1 ohm increments)
 Battery Type: 9V NEDA 1604/1604A
 Current Output: < 4mA



APPLICATION #3: MEASURING AIRBLAST OVERPRESSURES FROM EXPLOSIVES



HOW TO SELECT THIS PRODUCT:


MREL's DataTrap II™ Data/VOD Recorder can record up to 8 blast pressure pencil probes per test. MREL's MicroTrap™ VOD/Data Recorder containing the optional MicroTrap™ Scope Upgrade can record up to 4 blast pressure pencil probes per test. Select one or more blast pressure pencil probes Products 1-09-02 through 1-09-06 depending on the anticipated level of airblast overpressure to be measured. If you are unsure of anticipated airblast overpressure levels, then contact MREL's Blasting Instrumentation Department or your local MREL Blasting Instrumentation Dealer with details of your experiment including explosive type, explosive weight and distance(s) to the pencil probe(s). Select signal conditioner Product 1-11-03A. Select Product 1-11-11 if you wish to operate the signal conditioner from DC power. Select sufficient number of Products 1-13-01 and 1-13-02 to support the pencil probes at locations suited to your experiments. Select sufficient number of Product 1-14-01, one for each pencil probe.


<u>Product #</u>	<u>Product Name</u>	<u>Unit</u>	<u>Unit Price (\$USD)</u>
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1-09-02	FREE FIELD BLAST PRESSURE PENCIL PROBE (0-50 PSI)	each	
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"Pencil" Probes were originally developed at Aberdeen Proving Ground for measuring blast effects on structures and humans. This Pencil Probe incorporates an acceleration-compensated quartz element and integral microelectronics for long cable driving, improved stability and low thermal sensitivity. Compatible with MREL's DataTrap II™ Data/VOD Recorder (Product 1-04-01) and MicroTrap™ VOD/Data Recorder (Product 1-03-01) containing the optional MicroTrap™ Scope Upgrade (Product 1-03-03). Requires excitation power from Product 1-11-03A. MREL recommends Products 1-13-01 and 1-13-02 to hold the Pencil Probe in place. The sale of this item is controlled by federal authorities – export approval must be obtained by MREL for all Customers.







1-09-03	FREE FIELD BLAST PRESSURE PENCIL PROBE (0-250 PSI)	each	
<p>"Pencil" Probes were originally developed at Aberdeen Proving Ground for measuring blast effects on structures and humans. This Pencil Probe incorporates an acceleration-compensated quartz element and integral microelectronics for long cable driving, improved stability and low thermal sensitivity. Compatible with MREL's DataTrap II™ Data/VOD Recorder (Product 1-04-01) and MicroTrap™ VOD/Data Recorder (Product 1-03-01) containing the optional MicroTrap™ Scope Upgrade (Product 1-03-03). Requires excitation power from Product 1-11-03A. MREL recommends Products 1-13-01 and 1-13-02 to hold the Pencil Probe in place. The sale of this item is controlled by federal authorities – export approval must be obtained by MREL for all Customers.</p>			
			

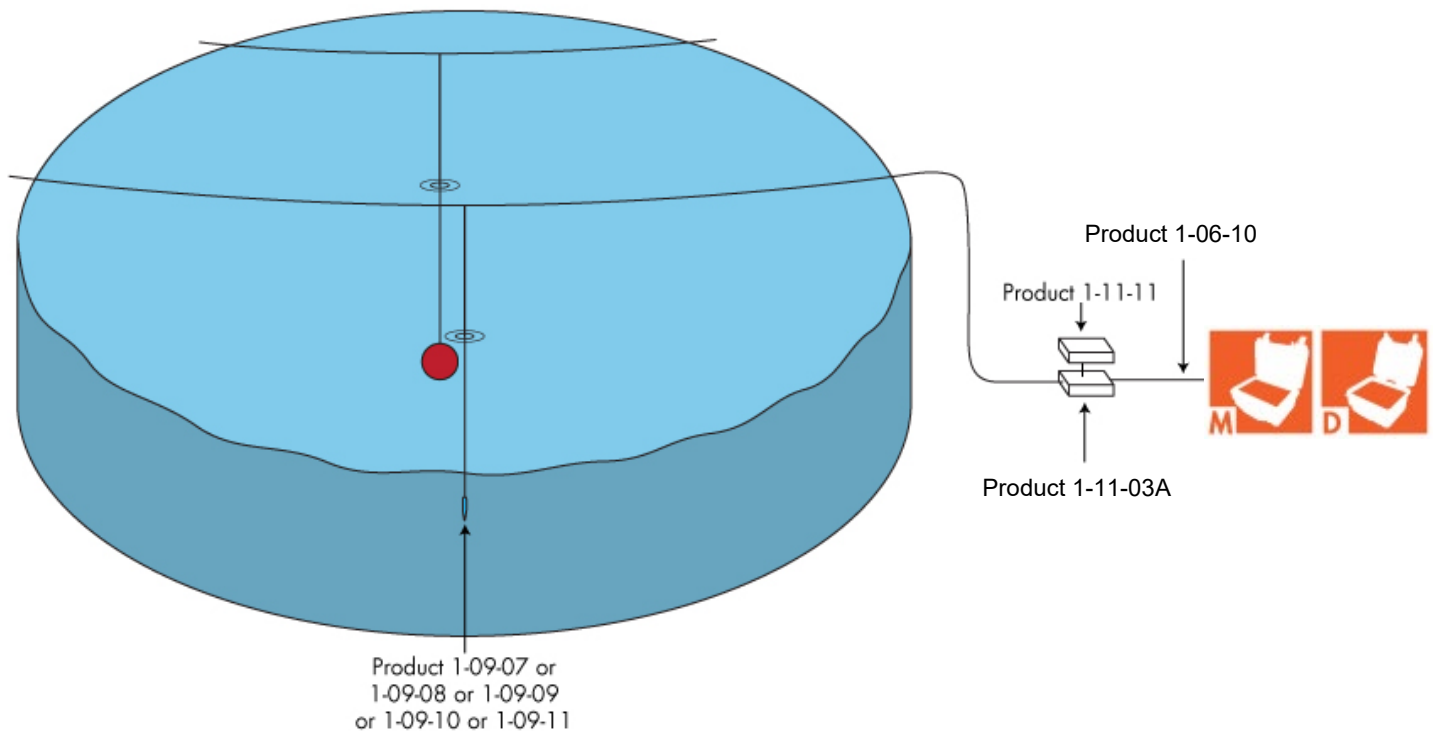
1-09-04	FREE FIELD BLAST PRESSURE PENCIL PROBE (0-500 PSI)	each	
<p>"Pencil" Probes were originally developed at Aberdeen Proving Ground for measuring blast effects on structures and humans. This Pencil Probe incorporates an acceleration-compensated quartz element and integral microelectronics for long cable driving, improved stability and low thermal sensitivity. Compatible with MREL's DataTrap II™ Data/VOD Recorder (Product 1-04-01) and MicroTrap™ VOD/Data Recorder (Product 1-03-01) containing the optional MicroTrap™ Scope Upgrade (Product 1-03-03). Requires excitation power from Product 1-11-03A. MREL recommends Products 1-13-01 and 1-13-02 to hold the Pencil Probe in place. The sale of this item is controlled by federal authorities – export approval must be obtained by MREL for all Customers.</p>			
			

1-09-06	FREE FIELD BLAST PRESSURE PENCIL PROBE (0-1000 PSI)	each	
<p>"Pencil" Probes were originally developed at Aberdeen Proving Ground for measuring blast effects on structures and humans. This Pencil Probe incorporates an acceleration-compensated quartz element and integral microelectronics for long cable driving, improved stability and low thermal sensitivity. Compatible with MREL's DataTrap II™ Data/VOD Recorder (Product 1-04-01) and MicroTrap™ VOD/Data Recorder (Product 1-03-01) containing the optional MicroTrap™ Scope Upgrade (Product 1-03-03). Requires excitation power from Product 1-11-03A. MREL recommends Products 1-13-01 and 1-13-02 to hold the Pencil Probe in place. The sale of this item is controlled by federal authorities – export approval must be obtained by MREL for all Customers.</p>			
			

1-11-03A	LINE POWERED HIGH FREQUENCY SIGNAL CONDITIONER FOR BLAST SENSOR (4 CHANNELS)	each	
<p>Switchable 120/220 VAC powered 4 channel high frequency signal conditioner providing low noise power to up to four blast sensors and couples them to the MREL Data Recorder. Frequency Range: 0.1 to 1000 kHz. Gain is fixed at x1 to maintain high frequency response. Constant current excitation adjustable 2.0 to 20 mA for use with MREL's RG-58C/U Blast Sensor Signal Cable (30 m) (Product 1-14-01) or with MREL's Underwater Pressure Sensors (Products 1-09-07 to 1-09-11) with their integrated water tight cable. Compatible with MREL's DataTrap II™ Data/VOD Recorder (Product 1-04-01) and MicroTrap™ VOD/Data Recorder (Product 1-03-01) containing the optional MicroTrap™ Scope Upgrade (Product 1-03-03). To operate this Product from a 12 VDC power source, Product 1-11-11 is required.</p>			
			




1-11-11	DC POWER PACK FOR LINE POWERED HIGH FREQUENCY SIGNAL CONDITIONERS	each	
<p>DC power pack powered by 9V x 4 Duracell MN1604 (or equivalent) alkaline batteries. Recommended for use to provide Product 1-11-03A with DC power.</p> 			
1-13-01	BLAST PRESSURE PENCIL PROBE STAND	each	
<p>Adjustable, portable, steel stand for mounting one or more airblast Pencil Probe Mounting Clamps (Product 1-13-02).</p> 			
1-13-02	BLAST PRESSURE PENCIL PROBE MOUNTING CLAMP	each	
<p>Adjustable, portable, precision machined aluminum clamp for holding Pencil Probe securely to Pencil Probe Stand (Product 1-13-01).</p> 			
1-14-01	RG-58C/U BLAST SENSOR SIGNAL CABLE (30 M) ON LIGHT-DUTY CABLE REEL C/W BNCS ATTACHED	each	
<p>30 m (100 ft.) RG-58C/U coaxial cable, complete with plastic handheld reel, to carry the Probe/Sensor signal to the Signal Conditioner. Also 3 m (10 ft.) RG-58C/U coaxial cable, to carry the signal from the Signal Conditioner to the MREL Data Recorder. Complete with appropriate connectors.</p> 			


APPLICATION #4: MEASURING UNDERWATER PRESSURES FROM EXPLOSIVES





HOW TO SELECT THIS PRODUCT:



MREL's DataTrap II™ Data/VOD Recorder can record up to 8 underwater pressure sensors per test. MREL's MicroTrap™ VOD/Data Recorder containing the optional MicroTrap™ Scope Upgrade can record up to 4 underwater pressure sensors per test. Select one or more underwater pressure sensors Products 1-09-07 through 1-09-11 depending on the anticipated level of underwater pressure to be measured. If you are unsure of anticipated underwater pressure levels, then contact MREL's Blasting Instrumentation Department or your local MREL Blasting Instrumentation Dealer with details of your experiment including explosive type, explosive weight and distance(s) to the underwater pressure sensor(s). Select signal conditioner Product 1-11-03A. Select Product 1-11-11 if you wish to operate the signal conditioner from DC power. Select sufficient number of Product 1-06-10, one for each underwater pressure sensor, to transmit the signal from the signal conditioner to the MREL recorder.

Product #	Product Name	Unit	Unit Price (\$USD)
1-09-07	UNDERWATER PRESSURE SENSOR (0-1000 PSI)	each	
<p>Tourmaline ICP omnidirectional underwater blast sensor measures shock wave pressures associated with underwater explosion testing, 19.3 cm (7.6 in.) length with 61 m (200 ft.) of 038 water tight cable terminating in a BNC plug. The sensor is structured with a volumetrically sensitive tourmaline crystal, suspended and sealed in an insulating, oil-filled vinyl tube. It has integral microelectronics. This underwater shock wave sensor provides a clean, non-resonant high-voltage output through long cables in adverse underwater environments. It contains a weight attachment hole to suspend the sensor in water at a given depth. Compatible with MREL's DataTrap II™ Data/VOD Recorder (Product 1-04-01) and MicroTrap™ VOD/Data Recorder (Product 1-03-01) containing the optional MicroTrap™ Scope Upgrade (Product 1-03-03). Requires excitation power from Product 1-11-03A. Sensors with other maximum pressure levels are available, contact MREL for more information. The sale of this item is controlled by federal authorities – export approval must be obtained by MREL for all Customers.</p> 			
1-09-08	UNDERWATER PRESSURE SENSOR (0-5000 PSI)	each	
<p>Tourmaline ICP omnidirectional underwater blast sensor measures shock wave pressures associated with underwater explosion testing, 19.3 cm (7.6 in.) length with 61 m (200 ft.) of 038 water tight cable terminating in a BNC plug. The sensor is structured with a volumetrically sensitive tourmaline crystal, suspended and sealed in an insulating, oil-filled vinyl tube. It has integral microelectronics. This underwater shock wave sensor provides a clean, non-resonant high-voltage output through long cables in adverse underwater environments. It contains a weight attachment hole to suspend the sensor in water at a given depth. Compatible with MREL's DataTrap II™ Data/VOD Recorder (Product 1-04-01) and MicroTrap™ VOD/Data Recorder (Product 1-03-01) containing the optional MicroTrap™ Scope Upgrade (Product 1-03-03). Requires excitation power from Product 1-11-03A. Sensors with other maximum pressure levels are available, contact MREL for more information. The sale of this item is controlled by federal authorities – export approval must be obtained by MREL for all Customers.</p> 			
1-09-09	UNDERWATER PRESSURE SENSOR (0-10000 PSI)	each	
<p>Tourmaline ICP omnidirectional underwater blast sensor measures shock wave pressures associated with underwater explosion testing, 19.3 cm (7.6 in.) length with 61 m (200 ft.) of 038 water tight cable terminating in a BNC plug. The sensor is structured with a volumetrically sensitive tourmaline crystal, suspended and sealed in an insulating, oil-filled vinyl tube. It has integral microelectronics. This underwater shock wave sensor provides a clean, non-resonant high-voltage output through long cables in adverse underwater environments. It contains a weight attachment hole to suspend the sensor in water at a given depth. Compatible with MREL's DataTrap II™ Data/VOD Recorder (Product 1-04-01) and MicroTrap™ VOD/Data Recorder (Product 1-03-01) containing the optional MicroTrap™ Scope Upgrade (Product 1-03-03). Requires excitation power from Product 1-11-03A. Sensors with other maximum pressure levels are available, contact MREL for more information. The sale of this item is controlled by federal authorities – export approval must be obtained by MREL for all Customers.</p> 			

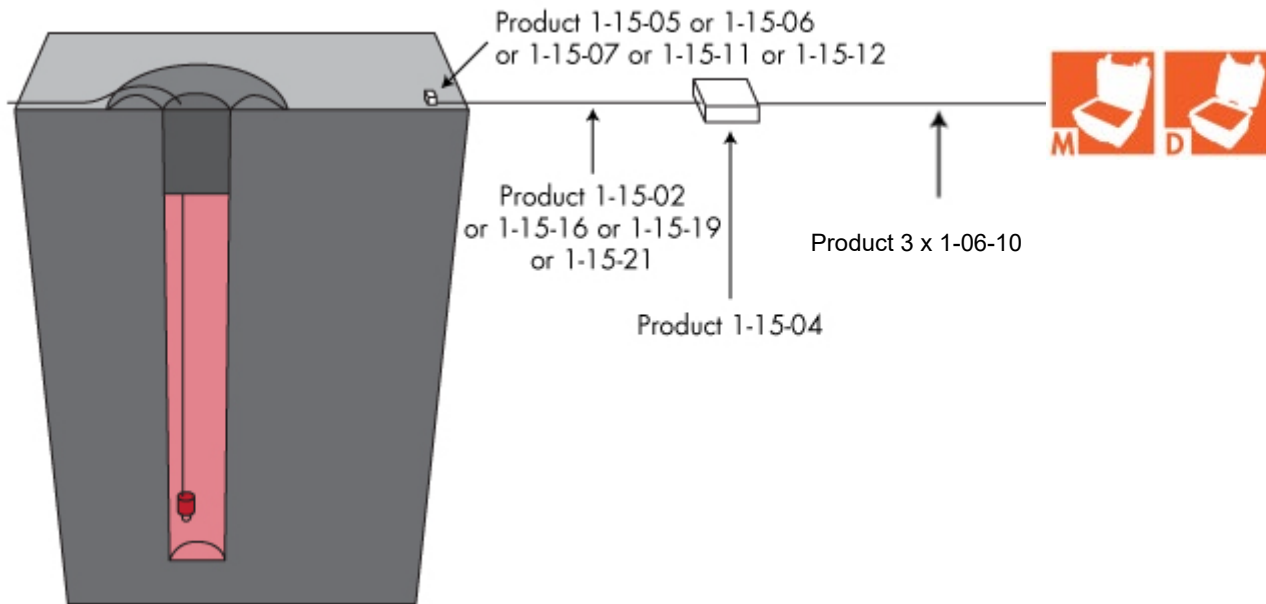
1-09-10	UNDERWATER PRESSURE SENSOR (0-25000 PSI)	each	
<p>Tourmaline ICP omnidirectional underwater blast sensor measures shock wave pressures associated with underwater explosion testing, 19.3 cm (7.6 in.) length with 61 m (200 ft.) of 038 water tight cable terminating in a BNC plug. The sensor is structured with a volumetrically sensitive tourmaline crystal, suspended and sealed in an insulating, oil-filled vinyl tube. It has integral microelectronics. This underwater shock wave sensor provides a clean, non-resonant high-voltage output through long cables in adverse underwater environments. It contains a weight attachment hole to suspend the sensor in water at a given depth. Compatible with MREL's DataTrap II™ Data/VOD Recorder (Product 1-04-01) and MicroTrap™ VOD/Data Recorder (Product 1-03-01) containing the optional MicroTrap™ Scope Upgrade (Product 1-03-03). Requires excitation power from Product 1-11-03A. Sensors with other maximum pressure levels are available, contact MREL for more information. The sale of this item is controlled by federal authorities – export approval must be obtained by MREL for all Customers.</p>			
			

1-09-11	UNDERWATER PRESSURE SENSOR (0-50000 PSI)	each	
<p>Tourmaline ICP omnidirectional underwater blast sensor measures shock wave pressures associated with underwater explosion testing, 19.3 cm (7.6 in.) length with 61 m (200 ft.) of 038 water tight cable terminating in a BNC plug. The sensor is structured with a volumetrically sensitive tourmaline crystal, suspended and sealed in an insulating, oil-filled vinyl tube. It has integral microelectronics. This underwater shock wave sensor provides a clean, non-resonant high-voltage output through long cables in adverse underwater environments. It contains a weight attachment hole to suspend the sensor in water at a given depth. Compatible with MREL's DataTrap II™ Data/VOD Recorder (Product 1-04-01) and MicroTrap™ VOD/Data Recorder (Product 1-03-01) containing the optional MicroTrap™ Scope Upgrade (Product 1-03-03). Requires excitation power from Product 1-11-03A. Sensors with other maximum pressure levels are available, contact MREL for more information. The sale of this item is controlled by federal authorities – export approval must be obtained by MREL for all Customers.</p>			
			

1-11-03A	LINE POWERED HIGH FREQUENCY SIGNAL CONDITIONER FOR BLAST SENSOR (4 CHANNELS)	each	
<p>Switchable 120/220 VAC powered 4 channel high frequency signal conditioner providing low noise power to up to four blast sensors and couples them to the MREL Data Recorder. Frequency Range: 0.1 to 1000 kHz. Gain is fixed at x1 to maintain high frequency response. Constant current excitation adjustable 2.0 to 20 mA for use with MREL's RG-58C/U Blast Sensor Signal Cable (30 m) (Product 1-14-01) or with MREL's Underwater Pressure Sensors (Products 1-09-07 to 1-09-11) with their integrated water tight cable. Compatible with MREL's DataTrap II™ Data/VOD Recorder (Product 1-04-01) and MicroTrap™ VOD/Data Recorder (Product 1-03-01) containing the optional MicroTrap™ Scope Upgrade (Product 1-03-03). To operate this Product from a 12 VDC power source, Product 1-11-11 is required.</p>			
			

1-11-11	DC POWER PACK FOR LINE POWERED HIGH FREQUENCY SIGNAL CONDITIONERS	each	
<p>DC power pack powered by 9V x 4 Duracell MN1604 (or equivalent) alkaline batteries. Recommended for use to provide Product 1-11-03A with DC power.</p> 			
1-06-10	RG-58C/U COAXIAL CABLE (2 M) C/W BNCS ATTACHED	each	
<p>2 m (6.6 ft.) RG-58C/U coaxial cable complete with two male BNC connectors (attached to cable), to carry the signal from the signal conditioner to the MREL VOD/Data Recorder. Compatible with MREL's DataTrap II™ Data/VOD Recorder (Product 1-04-01) and MicroTrap™ VOD/Data Recorder (Product 1-03-01) containing the optional MicroTrap™ Scope Upgrade (Product 1-03-03).</p> 			


APPLICATION #5: MEASURING NEAR-FIELD BLAST VIBRATIONS





HOW TO SELECT THIS PRODUCT:






MREL's DataTrap II™ Data/VOD Recorder can record up to 2 triaxial accelerometers per test. MREL's MicroTrap™ VOD/Data Recorder containing the optional MicroTrap™ Scope Upgrade can record 1 triaxial accelerometer per test. Select one or more accelerometers (Products 1-15-05, 1-15-06, 1-15-07, 1-15-11, or 1-15-12) depending on the anticipated level of vibration to be measured. Select one signal conditioner (Product 1-15-04) for each triaxial accelerometer to be recorded per test. Select one length of signal cable (Products 1-15-02, 1-15-16, 1-15-19, or 1-15-21) depending on distance required for each triaxial accelerometer to be recorded per test. Other ranges of triaxial and uniaxial accelerometers and associated signal conditioners and lengths of signal cables are available. Contact MREL's Blasting Instrumentation Department or your local MREL Blasting Instrumentation Distributor with details of your requirements and MREL will configure a system for you.



<u>Product #</u>	<u>Product Name</u>	<u>Unit</u>	<u>Unit Price (\$USD)</u>
1-15-11	TRIAxIAL ACCELEROMETER (+/- 5g)	each	
Calibrated, high sensitivity, triaxial ceramic shear accelerometer for triaxial shock and vibration measurements. Sensitivity: (±10%) 1000 mV/g (102 mV/(m/s ²)) Measurement Range: ±5 g pk (±49 m/s ² pk) Broadband Resolution: (1 to 10000 Hz) 0.00005 g rms (0.0005 m/s ² rms) Frequency Range: (±5%) 0.5 to 3000 Hz Electrical Connector: 1/4-28 4-Pin Weight: 0.88 oz (25 gm) Measures acceleration in three directions. Provided with bonding gel, adhesive mounting base and mounting stud. Compatible with MREL's DataTrap II™ Data/VOD Recorder (Product 1-04-01) and MicroTrap™ VOD/Data Recorder (Product 1-03-01) containing the optional MicroTrap™ Scope Upgrade (Product 1-03-03). Requires excitation power from Product 1-15-04 and signal cable Product 1-15-02 or 1-15-16 or 1-15-19 or 1-15-21.			

1-15-07	TRIAxIAL ACCELEROMETER (+/- 50g)	each	
<p>Calibrated, triaxial ceramic shear accelerometer for routine, triaxial shock and vibration measurements. Sensitivity: ($\pm 10\%$) 100 mV/g (10.2 mV/(m/s²)) Measurement Range: ± 50 g pk (± 490 m/s² pk) Broadband Resolution: (1 to 10000 Hz) 0.0002 g rms (0.002 m/s² rms) Frequency Range: ($\pm 5\%$) 2 to 5000 Hz Electrical Connector: 1/4-28 4-Pin Weight: 0.37 oz (10.5 gm) Measures acceleration in three directions. Provided with bonding gel, adhesive mounting base and mounting stud. Compatible with MREL's DataTrap II™ Data/VOD Recorder (Product 1-04-01) and MicroTrap™ VOD/Data Recorder (Product 1-03-01) containing the optional MicroTrap Scope™ Upgrade (Product 1-03-03). Requires excitation power from Product 1-15-04 and signal cable Product 1-15-02 or 1-15-16 or 1-15-19 or 1-15-21.</p> 			

1-15-12	TRIAxIAL ACCELEROMETER (+/- 100g)	each	
<p>Calibrated, triaxial quartz shear accelerometer for routine, triaxial shock and vibration measurements. Sensitivity: ($\pm 10\%$) 50 mV/g (5.1 mV/(m/s²)) Measurement Range: ± 100 g pk (± 981 m/s² pk) Broadband Resolution: (1 to 10000 Hz) 0.0002 g rms (0.002 m/s² rms) Frequency Range: ($\pm 5\%$) 1 to 5000 Hz Electrical Connector: 1/4-28 4-Pin Weight: 0.37 oz (10.5 gm) Measures acceleration in three directions. Provided with bonding gel, adhesive mounting base and mounting stud. Compatible with MREL's DataTrap II™ Data/VOD Recorder (Product 1-04-01) and MicroTrap™ VOD/Data Recorder (Product 1-03-01) containing the optional MicroTrap™ Scope Upgrade (Product 1-03-03). Requires excitation power from Product 1-15-04 and signal cable Product 1-15-02 or 1-15-16 or 1-15-19 or 1-15-21.</p> 			

1-15-06	TRIAxIAL ACCELEROMETER (+/- 200g)	each	
<p>Calibrated, triaxial quartz shear accelerometer for routine, triaxial shock and vibration measurements. Sensitivity: ($\pm 10\%$) 25 mV/g (2.6 mV/(m/s²)) Measurement Range: ± 200 g pk (± 1960 m/s² pk) Broadband Resolution: (1 to 10000 Hz) 0.0002 g rms (0.002 m/s² rms) Frequency Range: ($\pm 5\%$) 1 to 5000 Hz Electrical Connector: 1/4-28 4-Pin Weight: 0.37 oz (10.5 gm) Measures acceleration in three directions. Provided with bonding gel, adhesive mounting base and mounting stud. Compatible with MREL's DataTrap II™ Data/VOD Recorder (Product 1-04-01) and MicroTrap™ VOD/Data Recorder (Product 1-03-01) containing the optional MicroTrap™ Scope Upgrade (Product 1-03-03). Requires excitation power from Product 1-15-04 and signal cable Product 1-15-02 or 1-15-16 or 1-15-19.</p> 			

1-15-05	TRIAxIAL ACCELEROMETER (+/- 500g)	each	
<p>Calibrated, triaxial ceramic shear accelerometer for routine, triaxial shock and vibration measurements. Sensitivity: ($\pm 10\%$) 10 mV/g (1.02 mV/(m/s²)) Measurement Range: ± 500 g pk (± 4900 m/s² pk) Broadband Resolution: (1 to 10000 Hz) 0.0005 g rms (0.005 m/s² rms) Frequency Range: ($\pm 5\%$) 1 to 5000 Hz Electrical Connector: 1/4-28 4-Pin Weight: 0.37 oz (10.5 gm) Measures acceleration in three directions. Provided with bonding gel, adhesive mounting base and mounting stud. Compatible with MREL's DataTrap II™ Data/VOD Recorder (Product 1-04-01) and MicroTrap™ VOD/Data Recorder (Product 1-03-01) containing the optional MicroTrap™ Scope Upgrade (Product 1-03-03). Requires excitation power from Product 1-15-04 and signal cable Product 1-15-02 or 1-15-16 or 1-15-19 or 1-15-21.</p> 			
1-15-04	TRIAxIAL ACCELEROMETER SIGNAL CONDITIONER	each	
<p>Internal battery powered (3 x 9V batteries which are included) signal conditioner provides a low noise 27 volt, 3 mA constant current power to one triaxial accelerometer and couples it to an MREL Data Recorder. Gain of x1, x10 and x100. Compatible with MREL's DataTrap II™ Data/VOD Recorder (Product 1-04-01) and MicroTrap™ VOD/Data Recorder (Product 1-03-01) containing the optional MicroTrap Scope™ Upgrade (Product 1-03-03). Includes 3 ea. of 2 m (6 ft.) long coaxial cables for connecting to the MREL Data Recorder. Complete with connectors installed.</p> 			
1-15-16	TRIAxIAL ACCELEROMETER SIGNAL CABLE (3 m)	each	
<p>3 m (10 ft.) of low noise shielded signal transmission cable for connecting between a triaxial accelerometer and the triaxial accelerometer signal conditioner or between a triaxial accelerometer and long RG-58C/U signal transmission cables. 4-socket plug (female) to (3) BNC (male) (labeled X, Y, Z). Complete with connectors installed.</p> 			
1-15-19	TRIAxIAL ACCELEROMETER SIGNAL CABLE (6 m)	each	
<p>6 m (20 ft.) of low noise shielded signal transmission cable for connecting between a triaxial accelerometer and the triaxial accelerometer signal conditioner or between a triaxial accelerometer and long RG-58C/U signal transmission cables. 4-socket plug (female) to (3) BNC (male) (labeled X, Y, Z). Complete with connectors installed.</p> 			
1-15-21	TRIAxIAL ACCELEROMETER SIGNAL CABLE (15 m)	each	
<p>15 m (50 ft.) of low noise shielded signal transmission cable for connecting between a triaxial accelerometer and the triaxial accelerometer signal conditioner or between a triaxial accelerometer and long RG-58C/U signal transmission cables. 4-socket plug (female) to (3) BNC (male) (labeled X, Y, Z). Complete with connectors installed.</p> 			

1-15-02	TRIAxIAL ACCELEROMETER SIGNAL CABLE (30 m)	each	
<p>30 m (100 ft.) of low noise shielded signal transmission cable for connecting between a triaxial accelerometer and the triaxial accelerometer signal conditioner or between a triaxial accelerometer and long RG-58C/U signal transmission cables. 4-socket plug (female) to (3) BNC (male) (labeled X, Y, Z). Complete with connectors installed.</p>			
			
1-06-10	RG-58C/U COAXIAL CABLE (2 M) C/W BNCS ATTACHED	each	
<p>2 m (6.6 ft.) RG-58C/U coaxial cable complete with two male BNC connectors (attached to cable), to carry the signal from the signal conditioner to the MREL VOD/Data Recorder. Compatible with MREL's DataTrap II™ Data/VOD Recorder (Product 1-04-01) and MicroTrap™ VOD/Data Recorder (Product 1-03-01) containing the optional MicroTrap™ Scope Upgrade (Product 1-03-03).</p>			
			

MREL'S RENEWABLE 1 YEAR COMPREHENSIVE 100% PARTS AND LABOUR WARRANTY

PRODUCTS COVERED:

HANDITRAP II™ VOD RECORDER
MICROTRAP™ VOD/DATA RECORDER
MICROTRAP™ SCOPE UPGRADE
MICROTRAP™ MEMORY UPGRADE
DATATRAP II™ DATA/VOD RECORDER
DATATRAP II™ VOD UPGRADE
DATATRAP II™ ENHANCED MEMORY UPGRADE FROM 128MB TO 256MB
DATATRAP II™ MAXIMUM MEMORY UPGRADE FROM 256MB TO 512MB

SUMMARY:

The Customer must return the Product to MREL for annual inspection and calibration service within 1 year of the previous inspection and calibration service. Doing this will automatically extend the Product Warranty for an additional year. The number of years of Product Warranty is only limited by the requirement for annual inspection and calibration service.

DETAILS:

The MREL renewable annual warranty covers the repair or replacement, at MREL's sole discretion, of the product or defective parts. This warranty does not include routine maintenance, battery replacement, or mandatory yearly calibration service. Calibration service must be performed, at no longer than yearly intervals, to maintain the validity of the renewable annual warranty.

MREL reserves the right, at its sole discretion, to perform calibration and/or warranty service at its factory or at an MREL authorized calibration and repair facility.

Any product returned to MREL for warranty service must be accompanied by a clear and detailed explanation of the defect or problem found, and must specify the product name and serial number as it appears on the product. Written permission must be received before any product is returned to MREL for warranty service. This is conveniently accomplished through the Customer Service portal on MREL's website.

The warranty does not cover:

- a) consequences caused by accident, abuse, tampering, misuse, alteration, or other external causes;
- b) consequences caused by operating the product outside of the permitted or intended uses as described by MREL;
- c) consequences caused by failure to follow MREL's specific operating instructions;
- d) consequences caused by service performed by anyone other than an MREL representative or at an MREL authorized calibration and repair facility.

To the extent permitted by law, this warranty and the remedies set forth above are exclusive and in lieu of all other warranties, remedies, and conditions, whether oral or written, statutory, express, or implied. If MREL cannot lawfully disclaim statutory or implied warranties, then to the extent permitted by law all such warranties shall be limited to the duration of the express warranty and to the repair or replacement of the product as specified above. Furthermore, MREL expressly disclaims any liability for direct, indirect, incidental, special, or consequential damages of any nature. If any term of this warranty is held to be illegal or unenforceable, the legality or enforceability of the remaining terms shall not be affected or impaired.

ADDITIONAL INFORMATION:

More information on MREL's VOD/Data Recorders and Accessories is available online at www.mrel.com.

All prices are in USD, EXW Kingston, Ontario, Canada and prices are subject to change without notice.

To obtain firm pricing, please request a quotation from your local Authorized MREL Blasting Instrumentation Dealer, or from MREL's Blasting Instrumentation Department:

MREL GROUP OF COMPANIES LIMITED
5-779 Sir John A MacDonald Blvd.
Kingston, Ontario K7L 1H3
Canada
T: +1.613.545.0466 E: sales@mrel.com

MREL is committed to product innovation; accordingly products may undergo specification improvements without notice.

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