

# MWD Gamma Detector Module (MWD-GDM)

Titan Division | Instruments



## Features

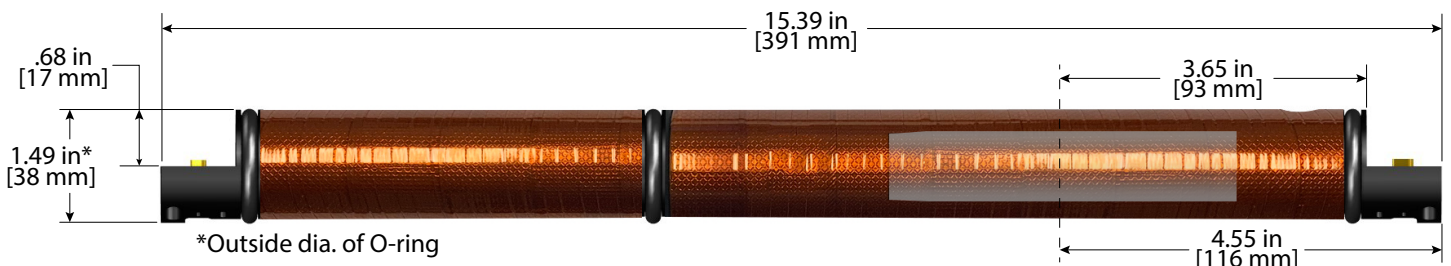
- Proprietary shock and vibration technology
- Continuous operation at 347°F (175°C)
- High sensitivity and repeatability
- Low power operations, optimized for battery operations to maximize battery life
- MDM 15-pin connectors with industry standard through wiring allow drop-in replacement in most MWD systems
- Compact and rugged. High survivability in underbalanced and air drilling environments
- Unaffected by MWD pulser or EM transmitter electrical noise
- Detector design minimizes vibration and shock induced false counts
- Customizable options include choice of negative or positive pulse outputs, Optional qBUS or CAN interfaces available.<sup>(1)</sup>
- Optional grounded or ungrounded (floating) chassis for EM applications

Hunting's ruggedized MWD Gamma Detector Module has been field proven in both conventional MWD and EM-MWD drilling applications

The tool's scintillation crystals and integral PMT assemblies are manufactured using Hunting's proprietary assembly and shock-mounting technology. This technology provides outstanding protection against damage under higher shock and vibration drilling conditions.

Optional direct pulse output or output derived from digital filtering and random noise rejection filter provided by onboard microcontroller.<sup>(1)</sup>

1. Available Q1 2020.



### Standard Gamma Detector Assembly

The PMT & Crystal Assemblies are mechanically connected forming a highly reliable detector for Gross Count Rate Gamma MWD/LWD and Well Logging applications.



- Extreme shock, impact and vibration resistance
- PMT and Crystal assembly protected by patented shock and vibration mounting technology†
- Can be qualified for up to 200°C (392°F) [Hamamatsu R3991AH required]
- Patented self-healing optical coupler reduces interface light loss to improve output pulse height
- Serviceable assembly, PMT or Crystal assembly may be replaced by customers qualified technicians.

### Harsh Environment HID Assembly

Highly Integrated Gamma Detector

The harsh environment HID detector combines the photomultiplier tube (PMT) and crystal in a single hermetically sealed package. Hunting's proprietary shock and impact protection packing is used internally to protect the PMT and crystal from damage. This mounting configuration produces an extremely rugged detector for use in the more severe MWD and LWD logging applications.



- Patented shock and vibration mounting technology†
- PMT coupled directly to crystal with exclusive coupler†
- Can be qualified for up to 200°C (392°F) [Hamamatsu R3991AH required]
- Extreme shock and vibration resistance
- HID packaging improves pulse height resolution by up to 25%. Only one interface is necessary providing for superior optical coupling.
- Patented compound coupler reduces interface light loss to improve output pulse height

†US patents: 7,115,873 7,381,957 7,485,865 7,485,851

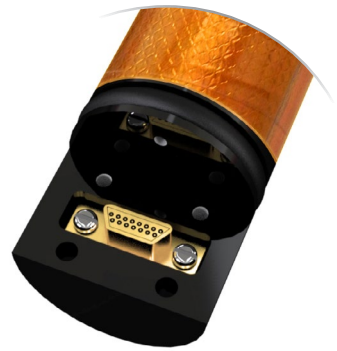
## Specifications (MWD-GDM)

<b>Part Number Series</b>	
Standard Ruggedized	8100-17558SH087-04-XX
Harsh Environment HID	8100-17558HI083-04-XX
<b>Measurements</b>	
Thin Bed Resolution 8 in. hole diameter @ 50% points	6.8 in (173 mm)
Maximum Count Rate	>10,000 cps
Count Rate Stability over Temperature	±10% 0°C to 175°C (32°F to 347°F)
Standard Detector Sensitivity (beryllium copper housing)	1.3 +/-0.1 API/cps
HID Detector Sensitivity (beryllium copper housing)	1.5 +/-0.1 API/cps
Active NaI(Tl) Crystal Size	Standard 0.84 in x 4.18 in (21.3 x 106.2 mm) HID 0.83 in x 3.57 in (21.1 mm x 90.7 mm)
<b>Environmental (Tested to following specifications)</b>	
Operating Temperature Rating	-40 to 175°C (-40 to 347°F)
Maximum Temperature Gradient	3°C/min (5.4°F/min)
Total Vibration (3 Axis)	30 G RMS (50 – 1000 Hz)
Shock (X-Y Axis)	1000 G (0.5 ms)
Shock (Z Axis)	1000 G (0.5 ms)
<b>Mechanical</b>	
O.D. with O-Rings	1.485 in (37.7 mm)
Length	15.39 in (391 mm)
Electrical Connections	MDM 15-pin male/female
<b>Electrical - Operating</b>	
Operating Voltage Range	18-38 VDC
Maximum Operating Voltage	40 VDC
Operating Current (constant power)	13 ±5 mA
Output Pulse TTL or CMOS Selectable	Negative (+5VDC to 0VDC), Positive (0VDC to +5VDC)
Output Pulse Width	3 to 5 microseconds
Photomultiplier Tube Type	Hamamatsu
<b>Smart Gamma Option</b>	
Available Bus Interfaces	qBUS or CAN (Can be customized to Customer's specifications)
Data Averaging	10 Second FIFO Averaging Filtering (Longer Averaging Times Available)
Deglitching Filter	Prevents noise burst caused by shock and vibration from affecting count rate
Unique Bus Addresses	Multiple Gammas can be connected to MWD Tool BUS

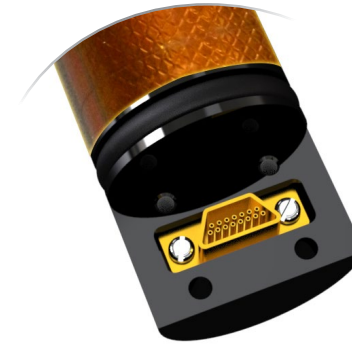
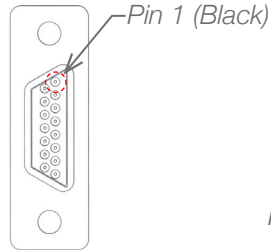
• MWD Gamma Detector Module\_Tool Specifications

### About Hunting's Titan Division

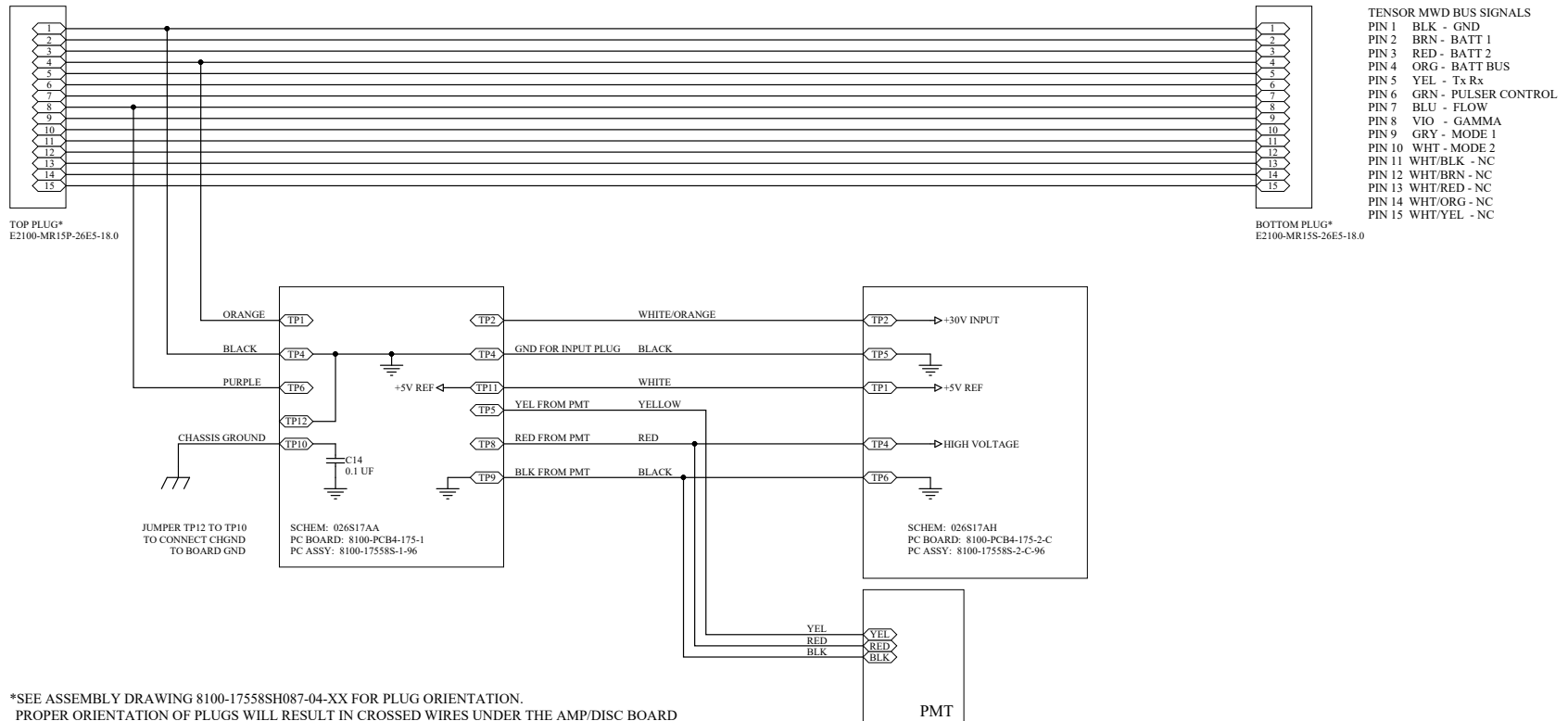
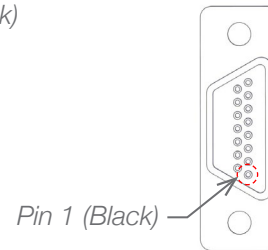
For successful cased hole logging and perforating services, tool reliability, availability, and time line of delivery are essential. Hunting supplies customers worldwide with the right tools to get the job done. Our product lines include state of the art, high quality wireline and tubing conveyed perforating (TCP) gun systems, hardware and accessories, shaped charges, and electronic logging tools.



Top End MDM Connection



Bottom End MDM Connection



\*SEE ASSEMBLY DRAWING 8100-17558SH087-04-XX FOR PLUG ORIENTATION.  
PROPER ORIENTATION OF PLUGS WILL RESULT IN CROSSED WIRES UNDER THE AMP/DISC BOARD