

# INNOVATE

## MOTORSPORTS



**INSIDE:  
The New  
Digital MTX  
Wideband  
Air/Fuel Gauge**

14.01 sec
10.04 AFR
10.22 AFR
11.23 AFR
11.86 AFR
18.38 AFR
260 RPM
9.76 PSia
133 degF
0.2 kPa
132.05 Sec
7.90 PSia

O2 Sensor 2  
**14.7**  
AFR  
18:07:10  
LM 22 Air/Fuel Ratio Meter

27.36 sec
11.73 AFR
17.74 AFR
18.76 AFR
14.06 AFR
7.51 AFR
7020 RPM
2.04 PSia
432 degF
37.5 kPa
27.01 Sec
1.44 PSia



# 2011 Catalog

## NOW YOU'RE TUNING!

At the track, on the street, on the dyno, drag, rally, sprint, kart, drift, autocross, or any other form of motor sport, you need accurate tuning tools. Domestic or import, EFI, MFI or carbureted, land, water, or snow – the need for precise, cost-effective, and easy-to-use tuning tools is greater now than ever. Innovate Motorsports develops, manufactures, and markets professional-quality digital tuning tools at grassroots prices. New for 2011 are breakthrough products in all areas – wideband, data recorders, and gauges. Regardless of your setup, you'll win with Innovate.

### LOGWORKS 3.0



Shipped with every Innovate product and available online for free, LogWorks delivers a complete 32 channel tuning workshop on your PC. LogWorks can calculate and graph horsepower, allowing direct mapping and comparison of HP vs. RPM vs. AFR. This enables users to gather performance data with a number of different fuel maps (or jetting changes), then use LogWorks to directly determine peak efficiency at any RPM or load. In other words, LogWorks can tell you not only what your AFRs are, but also what they should be.

### LOGWORKS MOBILE™



**Free App for iPhone™, iPod Touch™ and iPad™, features the following functionality:**

- Performance Meter – 0-60 acceleration, HP calculation, Lateral G's, Timer (1/8 mile, 1/4 mile, and more.)
- Efficiency Meter – Interactive efficiency calculator (MPG, GPM, and AES)
- Advanced Diagnostics – Record and analyze critical vehicle parameters. Read and clear DTCs (Diagnostic Trouble Codes). OT-2 required.
- Multi-function Gauge – View and log critical engine data such as RPM, throttle position, MAP, IAT and more! OT-2 required.

See OT-2 for more info.



## “DIGITAL MTX SERIES”

### WIDEBAND AIR/FUEL RATIO GAUGE, ALL-IN-ONE

The new Innovate Motorsports Digital MTX Series Air/Fuel Ratio Gauge utilizes the only 100% digital Wideband air/fuel ratio technology on the market! The patented Direct Digital™ technology we use is faster and more accurate than common “UEGO” gauges and is now more affordable! In addition, the gauge features a water resistant casing, interchangeable faceplates and bezels, and 2 fully programmable linear analog outputs for use with aftermarket engine managements systems and dataloggers!



### KEY FEATURES

- The only 100% digital wideband air/fuel ratio technology!
- Water Resistant 52mm (2 1/16”) round dash-mountable casing is perfect for automotive, powersports, marine, and demanding racing applications
- Built-in Direct Digital™ Wideband Controller reduces wiring and simplifies installation
- Wideband O2 Sensor is compatible with all fuel types (Leaded, Unleaded, Diesel, Methanol, E85, etc)
- Ability to calibrate O2 sensor for increased accuracy
- (2) 0-5v fully programmable linear analog outputs for use with engine management systems “closed-loop” and external dataloggers
- Interchangeable faceplates and bezels: Black and silver bezel, black and white faceplates included
- Large digital readout and programmable “Digital Needle” provides the functionality of a needle style gauge with the pinpoint accuracy of a digital display
- Datalog using LogWorks on your PC
- Serial IN and OUT ports allows for easy connection with other Innovate MTS and other devices

### MTX-L Display Range

Fuel Type	Low	High
Gasoline	7.35	22.4
Lambda	0.50	1.52
Diesel	7.3	99.9
Methonal	3.2	9.95
E85	4.9	14.93
LPG (Propane)	7.85	23.91

Coming soon to the “DIGITAL MTX SERIES”: Vacuum/Boost, Water Pressure/Temperature, Oil Pressure/Temperature, Exhaust Gas Temperature (EGT), and Voltage

3844	MTX-L: Air/Fuel Ratio Gauge Kit, Includes Harness, O2 Sensor & Bung
3845	MTX-L: Air/Fuel Ratio Gauge Kit, Powersports applications, Shorter 3ft. Sensor Cable, Universal



All Innovate wideband products feature patented DirectDigital™ measurement technology. DirectDigital™ applies advanced digital signal processing (DSP) algorithms to zirconia sensing elements, delivering superior response times, self-calibration to compensate for sensor drift, and advanced diagnostics. DirectDigital™ – enabling the next generation of high-performance, high-efficiency engines.



## LM-2 DIGITAL AIR/FUEL RATIO METER

The LM-2 combines an air/fuel ratio meter, a full-function 32-channel datalogger, and powerful software to deliver a complete tuning workshop for less than the cost of one dyno day. Whether you have a piggy-back fuel controller, race carb, aftermarket ECU, OBD-II tuning software, or a flash/chip programmer, an LM-2 is the measurement tool you need to dial in maximum HP. The meter's digital signal processing technology provides data on exactly how rich or lean an engine is running at any load. The LM-2's self-calibrating circuitry also compensates for changes in temperature, altitude, and sensor condition.

- Use Patented Direct Digital™ Wideband Technology
- Single or Dual Channel A/F Version Available
- OBD-II Scan Tool – Read/Clear DTCs, and log up to 16 channels of OBD-II / CAN Data
- Log up to 32 channels directly to SD memory card (included)
- Wideband O2 compatible with ALL fuel types
- Built-in RPM converter (direct frequency or with optional inductive clamp)
- 4 fully-differential analog inputs and 2 configurable analog outputs
- Large, high contrast graphics LCD
- Innovate MTS serial IN and OUT
- USB connection to your PC
- Playback log data on screen or with LogWorks software
- 16v DC Compatible – NEW!

3806	LM-2 Kit: Single Wideband O2 sensor
3807	LM-2 Dual Kit: Dual Wideband O2 sensors
3837	LM-2 Basic Kit: Single Wideband O2 sensor

**P/N: 3806 & 3807 LM-2 Complete Kits** include the LM-2 meter, Bosch wide-band oxygen sensor (x2 for Dual Channel Kit), 8 ft sensor cable (x2 for Dual Channel Kit), cigarette-lighter power adapter, analog in/out cable, OBD-II/CAN interface cable, SD memory card, USB cable for PC connection, weld-in bung and plug, LogWorks software CD, and quick-start guide. Carrying Case also included.

**P/N: 3837 LM-2 "Basic" Kit (Single Wideband O2)** includes the LM-2 meter, Bosch wide-band oxygen sensor, 8 ft sensor cable, cigarette-lighter power adapter, USB cable for PC connection, weld-in bung and plug, LogWorks software CD, and quick-start guide.



P/N: 3806



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## OT-2

### ALL-IN-ONE WIRELESS METER FOR IPHONE™ / IPOD TOUCH™ / IPAD™

The OT-2 is a simple device that wirelessly connects your iPhone, iPod Touch or iPad, to your vehicle. When used with the free Logworks Mobile app, the OT-2 transforms your device into a wireless Gauge, Dyno, OBD-II Scan Tool, Efficiency Meter and Datalogger! The OT-2 combines thousands of dollars in expensive equipment into a single, affordable device! OT-2 features:



3831

OT-2: "OpenTune" OBD-II/CAN Wireless (WiFi) Interface



#### GAUGE

The OT-2 Gauge allows you to view and record your choice of critical engine information such as RPM, TPS, MAP, IAT, and timing advance and more! Share your data by emailing your logs instantly to friends, tuner or anyone else.



#### DYNO

The OT-2 Dyno function allows you to measure the performance of your vehicle quickly and accurately. This includes 0-60 acceleration, HP calculation, Acceleration G's, 1/8th and 1/4 mile times and more! Find out how much power your performance modifications add without the cost of renting a dyno. *Share your results by emailing your dyno test or upload to facebook!*



#### OBD-II SCAN TOOL

Does your check engine light come on regularly? The OT-2 device is a powerful OBDII scan tool. Wirelessly scan your vehicle for Diagnostic Trouble Codes (DTCs), view and clear in seconds! Quickly diagnose simple problems and save money on costly diagnosis and repairs. The OT-2 also performs "Emission Tests Status" checks to let you know if your vehicle is ready to get smog tested.



#### EFFICIENCY METER

Learn to drive more efficiently! The OT-2 features a built-in efficiency meter that trains you to use less fuel by keeping the tree green. Automatically calculate, track and graph your fuel economy and expenses over time. Simply input your cost at each fill-up and watch your spending and carbon footprint shrink!

POWERED BY **LOGWORKS MOBILE**. FREE APP!

Available on the  
**App Store**



### OT-2 WIDEBAND BUNDLE

Turn your iPhone, iPod Touch or iPad, into a wireless air/fuel ratio gauge! This kit combines the powerful OT-2 WiFi device and the Innovate Motorsports LC-1 to enable you to monitor and log your air/fuel ratio wirelessly. Simply plug in the LC-1 into the serial port of the OT-2 and you're ready to monitor your air/fuel ratio. In addition, you can utilize all the other wireless logging and monitoring features of the OT-2 including dyno, efficiency meter, OBD-II Scan Tool and multi-function gauge!

3832

OT-2: "OpenTune" Interface with LC-1 Wideband Controller & O2 Sensor



## LC-1 STANDALONE WIDEBAND CONTROLLER "LAMBDA CABLE"

The LC-1 is a complete wideband controller built into a sealed cable. It features the same award-winning patented digital measurement principal found in the LM-2, and includes digital input, output, and 2 programmable linear analog outputs. The LC-1 can interface directly with most dynos, ECUs, and data recorders on the market via two configurable 0 to 5v analog outputs. The LC-1 can also log directly into LogWorks via the Innovate MTS data bus. This enables laptop or PC-based logging directly from one or more LC-1 controllers. Since the LC-1 can be daisy-chained, users can now affordably tune individual cylinders for precision power balancing.



3744	LC-1: Wideband Controller Cable
3769	LC-1: Wideband Controller Cable (w/ Bosch Sensor) & Bung



## G2 SERIES GAUGES

The Innovate G2 Air/Fuel Ratio gauge (52mm, 2 1/16") features a high-speed stepper motor, through-dial backlighting, silver face and bezel and an illuminated pointer.

3801	G2 Gauge Kit: Complete Air/Fuel Ratio Gauge Kit, Incl. LC-1 & Sensor
3803	G2 Gauge: Silver/Silver (Gauge Only) Accessory for LC-1, LM-1 or LM-2
3815	G2 Vacuum/Boost Gauge Kit (Mechanical)
3817	G2 Water Temperature Gauge Kit (Electronic)
3819	G2 Oil Pressure Gauge Kit (Electronic)



## G3 SERIES GAUGES

The Innovate G3 Air/Fuel Ratio gauge (52mm, 2 1/16") features a high-speed stepper motor, through-dial backlighting, and an illuminated pointer which is blacked out when powered off, and illuminated when powered on.

3802	G3 Gauge Kit: Complete Air/Fuel Ratio Gauge Kit, Incl. LC-1 & Sensor
3804	G3: Silver/Black (Gauge Only) Accessory for LC-1, LM-1 or LM-2
3816	G3 Vacuum/Boost Gauge Kit (Mechanical)
3818	G3 Water Temperature Gauge Kit (Electronic)
3820	G3 Oil Pressure Gauge Kit (Electronic)

# PRODUCTS

## G4 GAUGE

The Innovate G4 Air/Fuel Ratio gauge (White face/Chrome bezel, 52mm, 2 1/16") features a high-speed stepper motor, through-dial backlighting, and an illuminated pointer.

3821	G4 Gauge Kit: Complete Air/Fuel Ratio Gauge Kit, Incl. LC-1 & Sensor
3823	G4 Gauge: White Face/Chrome Bezel (Gauge Only) Accessory for LC-1, LM-1, or LM-2



## G5 GAUGE

The Innovate G5 Air/Fuel Ratio gauge (Black face/Chrome bezel, 52mm, 2 1/16") features a high-speed stepper motor, through-dial backlighting, and an illuminated pointer.

3822	G5 Gauge Kit: Complete Air/Fuel Ratio Gauge Kit, Incl. LC-1 & Sensor
3824	G5 Gauge: Black Face/Chrome Bezel (Gauge Only) Accessory for LC-1, LM-1, or LM-2



## DB GAUGES

The Innovate DB Air/Fuel Ratio gauge (52mm, 2 1/16") features a bright LED (available in blue or red) and is blacked out when powered off.

3793	DB Gauge Blue, Accessory for LC-1, LM-1 or LM-2
3794	DB Gauge Red, Accessory for LC-1, LM-1 or LM-2
3795	DB Gauge Blue Kit: Complete Air/Fuel Ratio Gauge Kit, Incl. LC-1 & Sensor
3796	DB Gauge Red Kit: Complete Air/Fuel Ratio Gauge Kit, Incl. LC-1 & Sensor



## AUTO TIMER & WIDEBAND AIR / FUEL RATIO DISPLAY

Designed to prolong the life of your turbocharger and/or oil. The Innovate Motorsports Auto Timer will allow a vehicle to idle the engine for a timed period, with the ignition key removed. This conveniently allows the engine oil and turbo center cartridge to cool down properly and prolong turbo and oil life. This can be done by two programmable count down presets, or you can use its three auto timer modes (Low-Normal-High). A Manual Timer, Volt-Meter, and \*Wideband Air/Fuel Ratio Display are also standard features. Using the Auto Timer to display your Wideband Air/Fuel Ratio requires one of the following Innovate Motorsports wideband controllers: LC-1, LM-1, or LM-2 (\*Not included in base Auto Timer kit, P/N: 3830). The Auto Timer Air/Fuel Ratio display range is 7.4 to 22.4, with a 0-5 volt linear input. The safety option for the parking brake can be used to disengage operation if vehicle is attempted to be moved without the key.

3830	Auto Timer
3833	Auto Timer: Complete Air/Fuel Ratio Display kit, Incl. LC-1 & Sensor



## DL-32 DATALOGGER AND SENSOR CONTROLLER



The DL-32 is a complete vehicle-mounted data-logging system for advanced engine tuning. The system includes acceleration (dual-axis) sensors for RPM, MAP, temperature, duty cycle, and analog inputs. The DL-32 unit features the following:

- Up to 32-channels of data recording, 12 samples per second
- 17 minutes of recording per MB of SD card capacity
- 1-bar to 3-bar pressure sensor (MAP, Vacuum, Boost, etc.)
- Thermocouple amplifier (EGT, CHT, etc.)
- Duty cycle (dwell) sensor (or frequency)
- 2-axis accelerometer (acceleration Gs, braking Gs, and cornering Gs)
- RPM converter
- 5v power supply for external sensors

3782 | DL-32 Datalogger and Sensor Controller

## LMA-3 "AUXBOX" MULTI-SENSOR DEVICE



The LMA-3 (AuxBox) is a multi-sensor interface for the MTS. The LMA-3 has the same 5 built-in sensors as the DL-32 datalogger. The AuxBox also includes 5 external inputs for connecting external sensors in lieu of the internal sensors.

3742 | LMA-3: "AuxBox" Multi-Sensor Device

## SSI-4 SIMPLE SENSOR INTERFACE



The SSI-4 is a 4-channel simple sensor interface for the MTS. It can digitize tach/inductive signals for RPM, frequency, duty cycle, and analog 0-5v inputs.

3783 | SSI-4: Simple Sensor Interface

## TC-4 THERMOCOUPLE AMPLIFIER



The TC-4 is a 4-channel (K-Type) thermocouple amplifier with two temperature ranges for exhaust gas temperature (EGT) or cylinder head temperature (CHT). K-Type thermocouple probes not included.

3784 | TC-4: Thermocouple Amplifier



# PRODUCTS

## ACCESSORIES & REPLACEMENT PARTS



### EXHAUST CLAMP

Patented, Venturi-effect, tapped exhaust clamp for obtaining accurate air-fuel ratio measurements without welding a bung in the system.

Perfect for dyno applications or temporary installation.



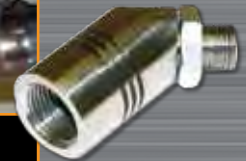
3728	Exhaust Clamp
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3814	LM-2 Window Mount
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3835	12mm to 18mm Motorcycle Bung Ach
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3729	HBX-1 (Heat-Sink Bung Extender) High Heat Applications
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3834	Inductive Clamp (for use with LMA-3, DL-32 & LM-2)
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### Exhaust Bung & Plug Kits (1 inch)

3764	Mild Steel
3838	Stainless Steel
3842	Titanium



3737	Wideband O2 Sensor (Bosch LSU 4.2)
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### Sensor Cables for LM-2 & MTX-L

3843	3 Foot
3810	8 Foot
3828	18 Foot

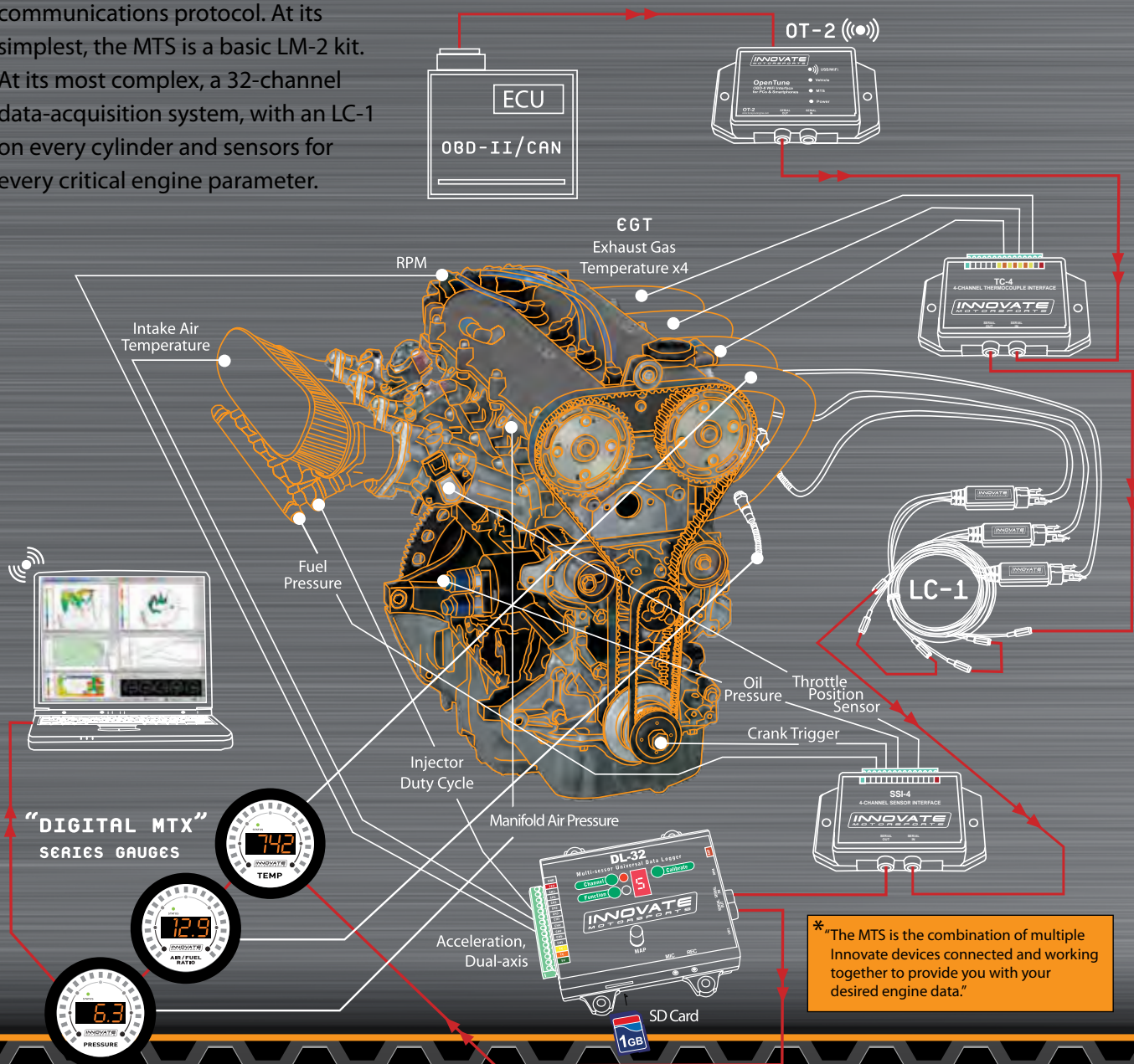
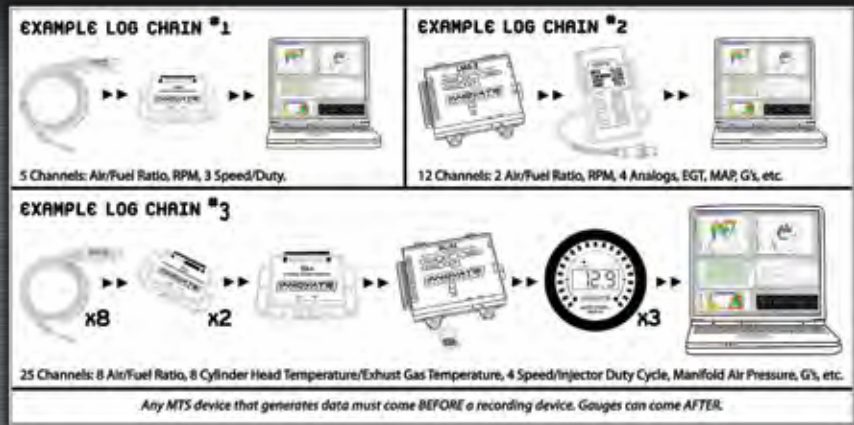


3733	USB-to-Serial Adapter
3811	LM-2 Analog Cable
3812	LM-2 Serial Patch Cable (MT5)
3746	Program Cable: LC-1, XD-16, DC-32
3750	Terminator Plug
3760	Serial Patch Cable: 4 ft., m2.5 to m2.5

3787	1 GB SD Card, LM-2, DL-32
3789	Serial Patch Cable: 6 inch, 2.5 to 2.5
3808	Power Cable: LM-2
3809	OBD-II Cable: LM-2
3813	USB Cable: LM-2
3836	Carrying Case: LM-2

## EXAMPLE LOG CHAINS & MODULAR TUNING SYSTEM (MTS\*)

Unique in the industry is Innovate's concept of the modular logging chain. The Modular Tuning System (MTS™) includes meters, sensors, gauges, and recorders designed to work together. The MTS is scalable, and all components share a common communications protocol. At its simplest, the MTS is a basic LM-2 kit. At its most complex, a 32-channel data-acquisition system, with an LC-1 on every cylinder and sensors for every critical engine parameter.



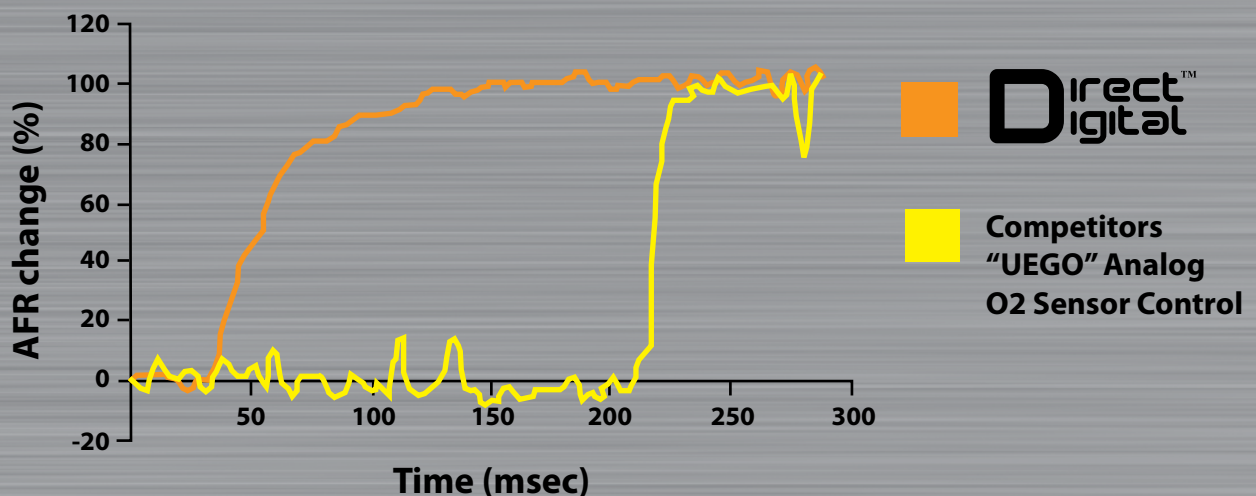
## THE DIRECT DIGITAL™ DIFFERENCE

All Innovate wideband products feature patented Direct Digital™ measurement technology. Direct Digital™ applies advanced digital signal processing (DSP) algorithms to zirconia sensing elements, delivering superior response times, self-calibration to compensate for sensor drift, and advanced diagnostics.

Direct Digital™ is the ONLY FULLY-DIGITAL wideband technology in the performance aftermarket today. With competitors analog technology, the sensor slowly “chases” the signal with a variable-amplitude current. With Direct Digital™ the sensors oscillate at a high frequency, and the resulting duty cycle (aka pulse density) is a direct digital conversion of the gas composition. Benefits of the Innovate method include:

- Instant and **dead-on accurate calibration**. The Innovate system enables easy user calibration that compensates for sensor wear and for barometric correction.
- This enables the **highest accuracy** of any wideband on the market. Better calibration, inherent linearity, and internal drift correction combine to delivery perfect results, every time. Accurate to +/- .007 (.1 AFR).
- The **fastest response time** on the market. See individual ignition misses, accelerator-pump shots, vacuum-related boost issues, and other important information, that are invisible with slower analog meters.
- Our **sensor feedback** allows us to determine when the sensor is damaged. The Innovate system will display a sensor error code when the sensor is damaged as opposed to displaying erroneous data.

***“IF YOU’RE NOT USING DIRECT DIGITAL™ TECHNOLOGY,  
YOU’RE IGNORING CRITICAL ENGINE DATA!”***



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