ENDLESS POSSIBILITIES

- With the introduction of the MoTeC M1 Series ECUs comes an exciting new era of engine control. The M1's unique technology redefines the meaning of customisation.

- Traditionally, ECU customisation is limited to generic strategies where only the data can be modified. Now, MoTeC M1 technology takes custom configuration to a new level, allowing users to create algorithms and ECU functionality specifically for their application.

- The M1 Series includes ECUs suited to both port injection and direct injection, which are suitable for use with an ever increasing pool of packages built for specific applications.

- Highly advanced security strategies make these ECUs ideal for both category managed and unrestricted applications.

Get more information on MoTeC products at
www.motec.com/webinars

25 YEARS OF DRIVING SUCCESS

Race smart.

M1 SERIES FEATURES

- Unprecedented flexibility and customisation
- A Development Firmware Licence allows users to customise their own ECU functionality using M1 Build
- Latest generation high performance processor
- Extremely compact and lightweight in robust magnesium cases
- Direct injection diesel and gasoline capability
- Sequential gearbox control
- Suitable for modern engines with multiple Drive by Wire, variable cam control, multiple CAN buses etc.
- Broad range of models to suit cars, bikes, boats and custom vehicles
- Solutions for every level, from professional teams through club competition and weekend racers through to road going performance enthusiasts
- M1 series suits category management applications thanks to advanced security features and comprehensive configurability
- Extensive I/O on larger models (M190 has 52 outputs, 43 inputs, 6 communication ports)
- Large logging memory (up to 250 MB) with Ethernet for fast downloads
- Advanced logging features:
  - High speed
  - Multiple logs (with access logins)
  - Pro Analysis
- Knock measurement inputs
- Programmable injector drive characteristics and full diagnostics
- Programmable Digital Input system for Ref/Sync, wheel speeds etc. with programmable trigger levels and full diagnostics
- Lambda measurement via MoTeC Lambda to CAN modules - allows for multiple Lambda sensors
- Compatible with MoTeC's IGN4 compact 4 channel ignition coil amplifier and DHB Dual Half Bridge high current module
- Compatible with existing MoTeC products such as SLM Shift Light Module, Dash Loggers etc.
- All Auxiliary Outputs have PWM (Pulse Width Modulated) capability

M1 ECUS	PART NO.
M130	13130
M130 Ruggedised	13130R
M142 (Direct Injection Applications)	13142
M142 (Direct Injection Applications) Ruggedised	13142 R
M150	13150
M150 Ruggedised	13150R
M170	13170
M170 Ruggedised	13170R
M182 (Direct Injection Applications)	13182
M182 (Direct Injection Applications) Ruggedised	13182R
M190	13190
M190 Ruggedised	13190R

Some features are planned for future releases. Not all features will be available on all models.

DEVELOPMENT FIRMWARE LICENCE

A Development Firmware Licence turns a regular M1 ECU into a fully flexible M1 Development ECU that can be precisely tailored (using M1 Build) to meet specific application requirements.

Customers with an M1 Build Development Licence can access and modify a range of M1 Projects, develop their own control strategies, and onsell their finalised M1 Partner Package.

M1 BUILD SOFTWARE

M1 Build is, simply put, a revolution in engine management customisation. No longer are you restricted to merely modifying the parameters made available via a tuning application.

By investigating and experimenting with their own control strategies and developing their own intellectual property, customers can gain a distinct performance advantage and stay ahead of their opposition.

M1 Build customises the functionality of the ECU, providing an unprecedented level of control. It allows the user to add Tables, Parameters and Channels and to enter 'Script' that defines how the ECU operates. The Script is a 'C' like programming language that enables entry of logic, calculations and algorithms.

If a new strategy is required to give you the competitive edge, then an M1 Development ECU is ideal for you.

M1 DEVELOPMENT KIT	PART NO.
M1 ECU Development Licence	23102

UNPRECEDENTED FLEXIBILITY

CHOOSE M1 HARDWARE

For the right M1 ECU for your application, consider the feature comparison below.

CHOOSE M1 PACKAGE

MoTeC Online hosts all the available M1 Packages and links to M1 Partner Packages. It specifies the M1 ECU and licence required.

visit: moteconline.motec.com.au

M1 SOFTWARE

'M1 Tune': Used to tune fuel and ignition, set up sensors, outputs and available functions

'M1 Build'- Used to create or modify projects for user specific functions.

FEATURES	DIRECT INJECTION		PORT INJECTION			
	M142	M182	M130	M150	M170	M190
INJECTOR						
Peak & Hold Injector Outputs	-	-	8	12	8	12
Low Side Injector Outputs	6	6	2	6	2	12
Direct Injector Outputs	8	12	-	-	-	-
Injector Max Hold Current (Amps)	12	12	-	-	-	-
Injector Max Voltage (V)	90	90	-	-	-	-
IGNITION						
Low Side Ignition Outputs (max)	8	12	8	12	8	12
AUXILIARY OUTPUTS						
Low Side Output	-	-	-	-	-	6
Half Bridge Output	10	10	6	10	6	10
INPUTS						
Universal Digital Input	12	12	7	12	8	12
Digital Input	4	4	-	4	-	4
Analogue Voltage Input	17	17	8	17	8	17
Analogue Temperature Input	6	6	4	6	4	6
Knock Input	4	4	2	4	2	4
Lambda (narrow band)	2	2	-	2	-	2
DATA						
CAN Bus/RS232/LIN	3/1/1	3/1/1	1/0/0	3/1/1	1/0/0	3/1/1
Logging Memory (MB)	250	250	120	250	250	250
DIMENSIONS						
Size (mm)	162x127x40	162x127x40	107x127x39	162x127x40	107x127x39	162x127x40
Weight (g)	480	540	300	445	315	510
Connector type	Plastic	Autosport	Plastic	Plastic	Autosport	Autosport
Number of connectors	4	3	2	4	1	3
Pins	120	136	60	120	66	136
RUGGEDISED VERSION						
Weight (g)	785	830	470	750	500	800

The M1 magnesium alloy casings are robust, Lightweight and well suited to motorsport use. They are incredibly compact to suit a wide range of applications and are specially finished for maximum heat dissipation.

DATA LOGGING

In many applications the M1 ECU can control both engine and chassis, as well as being a fully featured data logger.

All models feature a large logging memory and options for advanced features such as high speed logging (up to 1 kHz), multiple independent logging systems with separate security.

The M1 series uses the acclaimed i2 Standard or i2 Pro analysis software, providing extensive data analysis features. (See www.motec.com/i2)

Within the M1 ECU there are 3 levels of data logging available. All ECUs come with basic diagnostic logging, Level 2 increases this to 100 channels at 200Hz and Level 3 increases this to 1000 channels at 1000Hz.

M1 DATA LOGGING LEVELS	PART NO.
Level 2 Data Logging	23011
Level 3 Data Logging	23012
I2 Professional Logging Analysis	23014

SECURITY

The M1 ECU allows different levels of access for different users e.g. engine tuner, chassis tuner, data engineer, and scrutineer. Each user can have a separate login to restrict access to particular areas of tuning and data logging.

The M1's advanced security system is based on public-key cryptography, the cornerstone of secure internet transactions, so it is virtually impossible to change the ECU function without authorised permission. Security is enforced by the ECU and protected by a microprocessor with integrated measures to prevent tampering.

RUGGEDISED M1 ECUS

Ruggedised versions are also available for where use is in extreme enironmental conditions or harsh terrain.

CATEGORY MANAGEMENT

The combination of an advanced security strategy, configurable firmware and a high performance processor make the M1 ECU an ideal choice for categories with restrictions in place for either performance parity or cost containment. Firmware can be written specifically for the category, limiting the functionality to the class requirements.

Multiple data logging sets are available which can be partitioned with restricted access to allow generation of both judicial (scrutineering) and team data from the same device.

The M1 ECU's security system prevents unauthorised access to data and implementation of unspecified functionality.

M1 PACKAGES

MoTeC Online hosts all the available genuine MoTeC M1 Packages and links to M1 Partner Packages. The site also outlines the corresponding M1 Series ECU and firmware licence required.
visit: moteconline.motec.com.au

M1 TUNE SOFTWARE

M1 Tune provides access to the tuning features of the M1 ECU. It is highly flexible, allowing multiple, customised screen layouts similar to the i2 Data Analysis software.

The program is unique in that it adapts to any customisations that have been made to the ECU via the M1 Build software. As Tables, Parameters or Channels are added, M1 Tune automatically conforms to provide access to these items.

It also features on screen logging whereby data from the ECU is automatically recorded for quick and easy analysis directly on the tuning screens.