McLaren APPLIED TECHNOLOGIES

ENGINE CONTROL UNIT

TAG-400i

The TAG-400i is a compact, self-contained engine management system and data logger for race engines.

The unit is an evolution of the TAG-400 which has been used successfully in open-wheel and motorcycle racing applications. The TAG-400i has extended functionality with increased processing power and I/O capability.

The TAG-400i exploits Power PC technology, but with an uprated processor that now offers more than 6 times the application processing power than the TAG-400, providing a powerful and flexible platform for extracting the optimum performance from an engine.

The TAG-400i can be offered as part of a turnkey system or can support customer prepared applications autocoded from Simulink models using our Graphical Development Environment (GDE).

Electrical

- Supply Voltage 7.9 to 16.0V DC
- Supply Voltage not to exceed 17V continuous (the unit is protected against transients and reverse polarity)
- TAGOS 32-bit Real Time Operating System
- Data logging memory capacity 1Gbyte
- High performance application processor running at 264MHz

Mechanical

- Case material hard black anodised aluminium
- Weight 939g

Other Features

- One System Monitor configuration tool software licence supplied per team purchasing TAG-400i

Application

- Control and monitoring of engine and/or gearbox

Connection Definition

- Integral, sealed, military standard connectors

Environmental

- Splash resistant to standard motorsport fluids
- Lids sealed with O rings and screws sealed with silicone rubber
- Maximum humidity 95% non-condensing
- Minimum operating temperature -10°C
- Internal temperature not to exceed 70°C as measured by internal diagnostic sensors
- Storage temperature -10 to +85°C
- Vibration 100 to 1000Hz, all axes, 24hrs

Electro Magnetic Compatibility

- Complies with the essential protection requirements of 89/336/EEC

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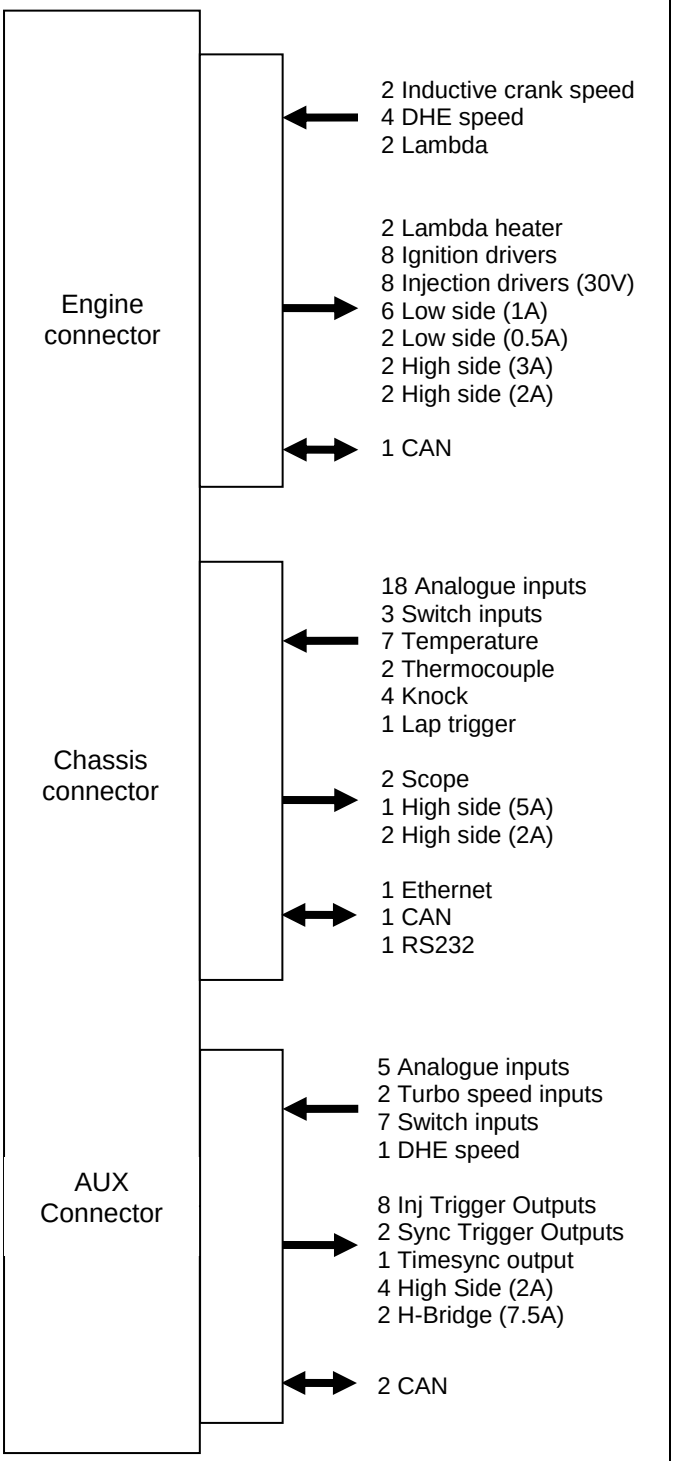

Sensor Inputs

- 4 Inductive Speed Sensors (2 Crank Sync; 2 Turbo speed)
- 1 DHE Cam Sensor
- 4 DHE Speed Sensors
- 23 Analogues (0 to 5V, 1KHz)
- 7 NTC Temperature Sensors (configurable as analogues)
- 2 K type thermocouples
- 2 Wideband Lambda
- 4 Knock Sensors (configurable as analogues)
- 10 switches
- 1 Lap trigger

Outputs

- 8 inductive ignition drive stages (20A)
- 8 manifold injector drive stages (30V)
- 8 trigger outputs for external injector drive unit
- 1 Timesync for external drive unit
- 1 High side driver (5A)
- 2 High side drivers (3A)
- 8 High side drivers (2A)
- 6 Low side drivers (1A)
- 2 Low side drivers (Tacho/Speedo) (0.5A)
- 2 H-Bridge Drivers (7.5A)
- 2 Engine Synchronous low side drivers (1.5A)
- 2 Lambda heaters
- 2 Oscilloscope Diagnostic
- External sensor supplies

Communications

- 1 Ethernet
- 4 CAN 2.0B bus (up to 1Mbps)
- 1 RS232 (up to 222kbps)

Data logging

- 1Gbyte

Diagnostics

- Sensor readings are checked for out of range and open circuit
- The following internal parameters are monitored:
  - Board temperatures
  - Unit supply voltages

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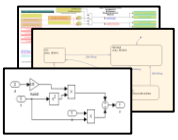
TAG-400i development system

Model based development environment for control strategies and processing algorithms compiled for embedded target

GDE



Model based code

Engine control unit

TAG-400i

8 Cylinder engine control
Onboard ignition and injection drive stages
Lambda and knock interfaces
100baseT ethernet
4x CAN interfaces
Onboard logging memory and data acquisition system

Application tool

System Monitor

Program version management
ECU reprogramming
Data tuning
Live parameter display
Puma link
ActiveX interface
CAN configuration
Data Acquisition configuration

Data analysis

ATLAS

Live data display via ethernet or wireless
Upload of logged data
Waveform, scatter, bar chart, histogram, FFT display types
MATLAB export
Numeric functions
ActiveX interface

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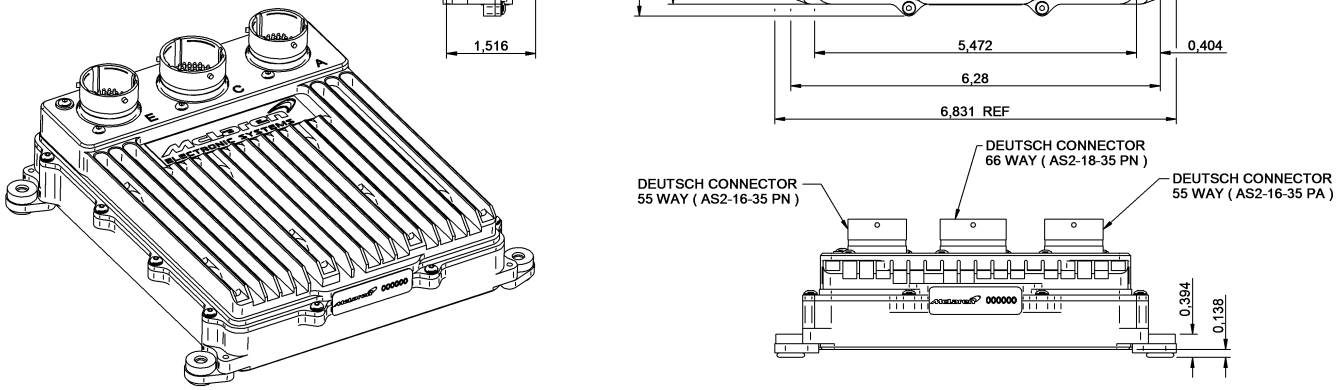

Description	Order Code
TAG-400i	O 030 012 015 000

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