SRG-48X
Engine Control Unit

MAGNETI MARELLI
MOTORSPORT

Description

The logic core is a high performance PowerPC microcontroller and an FPGA for diagnostic purposes.

Data logging and Communication side is managed by ARM 32-bit Cortex processor with an internal flash disk up to 1 Gbyte.

Communication from the PC based configuration tool and to other units (such as dashboard and logger) is by the 3 CAN lines, Ethernet line and USB2.0. The USB port can be enabled to log data on a remote flash disk (Optional functionality).

SRG-48X provides analogue inputs for single-ended, temperature and knock-sensor as well as an interface for a switching lambda sensor. The unit also provides H-Bridge output stages for use with suitable "Drive by Wire" actuators.

12 configurable speed sensor inputs (Inductive, Rate or Hall) provide full flexibility of configuration for engine angle detection as well as other frequency inputs such as wheel or shaft speed.

SRG-480 is a dedicated Engine Control Unit. A single unit can drive up to eight injectors Peak & Hold GDI with a Magneti Marelli custom Driver and up to eight drive **inductive command coils**.

SRG-481 is a dedicated Engine Control Unit. A single unit can drive up to eight injectors Peak & Hold GDI with a Magneti Marelli custom Driver and up to eight drive **logic command coils**. SRG-481 can also be configured to drive up to sixteen on-off injectors by using a combination of Peak & Hold and PWM outputs.

Main Features

- *33 Single-ended*
- *12 NTC/PT1000*
- *6 Differential*
- *2 Linear Lambda Sensor ILIOS*
- *4 Knock input for detonation*
- *12 Configurable speed sensor inputs*
- *8 command ignition drivers*
- *Up to 8 Peak & Hold injector drivers for GDI or 16 PFI*
- *4 H-Bridge: DC-Motor driver for "Drive by Wire" control*
- *16 PWM (Current controlled PWM)*
- *3 CAN line*
- *1 Ethernet line*
- *1 USB 2.0 line*
- *Up to 1 Gbyte internal memory for data logging*

Benefits

- *Integrated solution: the SRG directly drives GDI injectors (no external modules required)*
- *Flexible setup by means of a high number of Inputs/ Outputs*
- *SW selectable NTC/PT1000 temperature sensors*
- *Direct management of Marelli dashboard display*
- *Compatible with a wide range of professional Marelli software tools*
- *Easy to install*
- *Matlab / Simulink Platform for application software (on request)*

Typical Applications

GT cars
Rally cars

Technical Characteristics

Inputs

Analogue Single-ended	33
NTC/PT1000 temperature sensor (each selectable)	12
Differential	6
Linear Lambda sensor (ILIOS)	2
Knock sensor (gain selectable)	4
NTC internal temperature sensor	4
Accelerometer sensor XYX axis	1
VR Pick-ups or Hall effect	7
VR Rate or Hall effect	4
Hall effect	1
On/Off digital	2
Lap Trigger	1
"Code Load" enable pin	1

Outputs

Peak & Hold GDI Injector drivers	8
Logic command ignition drivers	8
Output Pump drivers	2
H-Bridges 6A	2
H-Bridges 5A	2
Lambda heater drivers	2
PWM 3 A	14
PWM 5 A	2
High side Vbatt 100 mA	4
Voltage references 70 mA	8

Communications

CAN line (1 Mbit/s)	3
Ethernet line (10/100 Mbit/s)	1
USB 2.0 line	1
Syncro (ISO9141)	1

Logic Core
MICRO CONTROLLER

Micro 32bit PowerPC CPU@264MHz	1
Flash E2PROM (x32 internal)	4 Mbyte
RAM memory (x32 internal)	256 Kbyte
Synchronous SRAM Memory (external x16)	2 Mbyte
MRAM memory (external x16)	512 Kbyte

DATA LOGGING and COMMUNICATION PROCESSOR

Micro (ARM–based 32bit @168MHz)	1
Flash E2PROM (x32 internal)	1 Mbyte
RAM memory (x32 internal)	128 Kbyte
Asynchronous SRAM Memory (external x16)	2 Mbyte
Flash Disc (external x8)	1 Gbyte
Time keeper	1
JEDI controller injector Peak & hold	2

Connectors

Deutsch Auto sport SOURIAU (66 Pin)	4

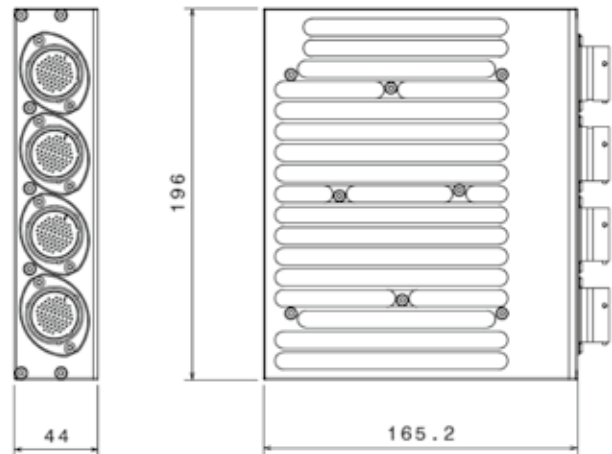### Other Characteristics

Power supply	8 to 18 V
Operating temperature range (internal)	-20 to 85 °C
Protection class	IP 65
Dimensions with connectors	196 x 181,7 x 44 mm
Weight (approx.)	1770 g

ENGINE CONTROL UNITS

SRG-48X
Engine Control Unit

Dimensions

Dimensions in millimetres

Application Schematics