

Powertrain Control Unit TAG-320

TAG-320 is the main processing unit for powertrain control of a racing car. It may be used with an external driver unit to provide direct control of ignition and direct or manifold injection, along with all other powertrain control functions. The TAG-320 provides a powerful processing platform with minimum latencies for customer applications based on 32-bit microprocessors. Application code is autocoded from Matlab/Simulink control modules. Advanced data logging, high-speed telemetry control and rich communications are all provided.

The TAG-320 is built with full FIA security measures including advanced memory protection and supports applications already running on the TAG-310B.

In Detail

Application

- Control and monitoring of a racing car powertrain
- Up to 8-cylinder engines
- Throttle-by-wire
- Clutch-by-wire
- Semi-automatic gearbox
- Powerful onboard data logging and telemetry control
- Ethernet connection to application and data analysis tools (System Monitor and ATLAS)

Key Features

- Application processing power 4000MIPS
- Extremely low latency, high frequency input sampling
- Digital filtering on all analogue inputs
- Data logging memory 8GB Flash

Electrical

- Supply voltage 7.5 to 16V DC
- Supply voltage not to exceed 17V continuous (the unit is protected against transients and reverse polarity)

- Supply current quiescent (ignition off) 4mA
- Supply current operating (no load on outputs) 3A typical at 13.8V
- Supply current operating (max load on supplies) 5A typical at 13.8V
- 32-bit Real Time Operating System
- Internal tri-axis accelerometer

Mechanical

- Aluminium case (hard black anodised)
- Weight 1.35kg

Connection definition

Integral, sealed, motorsport connectors:

- Connector A 66-way
- Connector B 114-way
- Connector C 114-way

Environmental

- Splash resistant to standard motorsport fluids
- Lids sealed with o-rings
- Maximum humidity 100%
- Minimum operating temperature 0°C
- Internal temperature not to exceed 70°C as measured by internal diagnostic sensors
- Adequate forced-air cooling must be applied to ensure the internal operating temperature remains within specified limits
- Storage temperature -25°C to +85°C
- Vibration 100 to 1000Hz, all axes, 24 hours
- Vibration isolation is recommended

Electro Magnetic Compatibility

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

Service

Recommended service interval 12 months (internal battery is replaced)

Sensor Inputs

- Up to 66 general-purpose 0 to 5V analogue inputs (12-bit, 10ksps, four of which are software configurable as general-purpose TTL outputs)
- 16 general-purpose configurable 0 to 5V or Pt1000 analogue inputs (12-bit, 10ksps)
- Eight general-purpose configurable 0 to 5V analogue inputs with optional strong pull-ups for use with digital switches (12-bit, 10ksps)
- Four high-speed 0 to 5V analogue inputs (12-bit, 100ksps)
- "Pits pedal" and "Ethernet IP address" analogue inputs (12-bit, 1ksps)
- Three inductive or DHE speed inputs (factory configured)
- Eight DHE speed inputs
- Two K-type thermocouple inputs (12-bit)
- Two wide-band lambda interfaces (12-bit)
- Lap trigger interface
- Ignition switch input

Outputs

- 10 \pm 12mA servo valve drive stages (10ksps)
- 10 3A low-side drive stages (software configurable for freewheel or fast-turn-off operation)
- 10 1A high-side drive stages
- One 3A high-side drive stage
- Eight 7A high-side drive stages

- Eight TTL injection control outputs
- Up to four general-purpose TTL outputs (all of which are software configurable as analogue inputs)
- Eight open-drain ignition control outputs
- Eight general purpose open-drain outputs
- Two RS422 differential outputs for 1ms time synchronisation and engine synchronisation signals
- Two oscilloscope outputs
- Four 150mA 12V sensor supplies
- One 150mA 10V sensor supply for digital-output sensors
- One 150mA 5V supply for lap trigger receiver
- Eight 100mA 5V precision sensor supplies

Communications

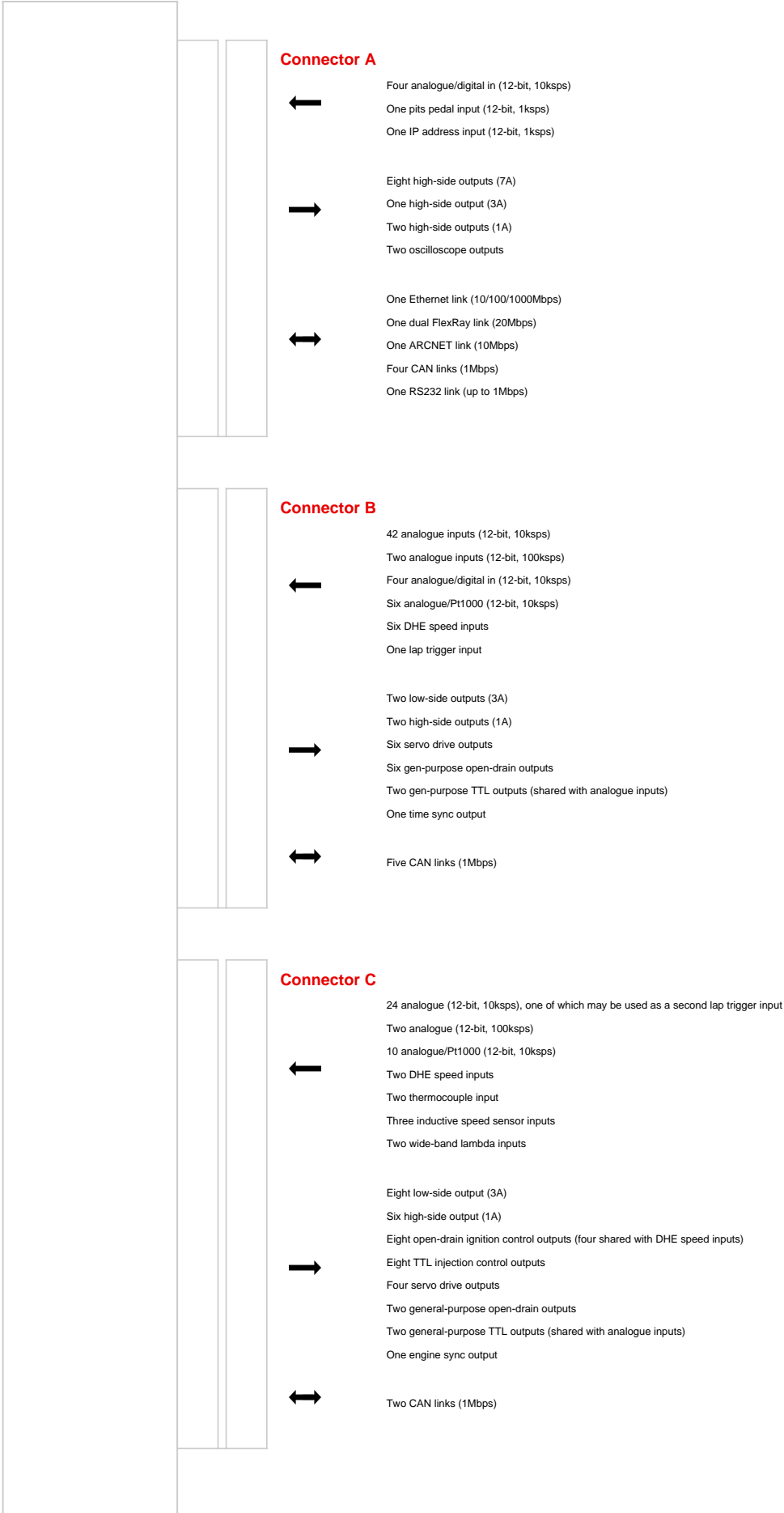
- One Wired Gigabit Ethernet interface
- One RS232 interface (1Mbps maximum)
- One ARCNET interface (10Mbps maximum)
- One dual-channel FlexRay interface (20Mbps)
- 11 CAN interfaces (1Mbps maximum)

Images/Diagrams

O 030 072 017 000

Connector Diagram

Connector Details



Ordercodes

Description	Ordercode
TAG-320 (eight ignition control outputs and eight DHE speed inputs)	O 030 072 017 000