



Longman
RACING.COM

***2020 EFI
TECHNOLOGY
ECU RANGE***

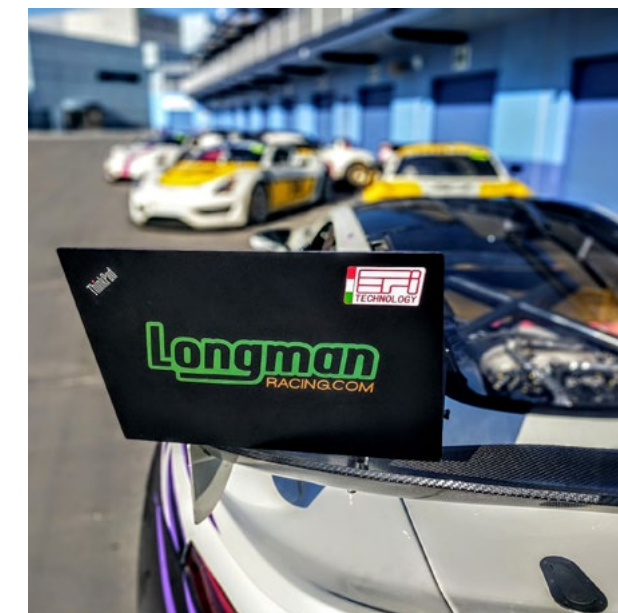
**PROFESSIONAL MOTORSPORT
ENGINE MANAGEMENT**

INTRODUCTION

About Longman Racing

Combining the modern world of high performance racing with the heritage of Richard Longman & Co, we are specialists in motorsport electronics, engine management systems, wiring looms, data-logging and engine mapping/vehicle calibration services. We are also the official UK sales, support and service of EFI Technology s.r.l products.

Longman Racing is a UK-based company with its headquarters in the Christchurch, Dorset. The company provides UK and worldwide support for its products on-site, at the race track or at customer facilities.



Parts and support

Longman Racing offers a complete and comprehensive range of EFI engine management systems and accessories to suit all levels of competition, control and complexity.

Aftersales service, technical support and repairs are all provided with direct support of EFI Technology.

About EFI

EFI Technology S.r.l. is an OEM-approved supplier of high tech engine management units (ECU) and automotive vehicle control systems based in Bologna, Italy. The company was originally founded by Piero Campi in the late 1980s.

Its experience and high level resources allows Longman Racing to provide a wide range of management solutions for both motorsport and automotive development purposes, in modern or classic engines, normally aspirated or forced induction, port fuel injection or direct injection.



Euro2 ECU

OAEFM13C

The entry level system popular with club level motorsport and project cars.

Euro2 offers extremely fast processing speeds, making the ignition and injection control very precise indeed. It features 4 injector drivers and 4 individual ignition drivers each individually programmable and it is perfectly suited to any firing order. Suited ideally to 4 cylinders, the Euro2 can also be used to run 5, 6- or 8-cylinder applications.



IN-DEPTH

The ECU software includes as standard features such as flat-shift (Powershift) for sequential type gearboxes, variable cam shaft timing, V-tec, programmable input/output controls, programmable firing order, boost control, idle control, CAN bus data export, shift light, 2 engine calibrations, as well as optional self-learn closed loop lambda control with the addition of an EFI NTK lambda controller (analogue or CAN output) and EFI NTK sensor.

The Euro2 can be supplied with ignition drivers* for inductive/power type or logic/digital type ignition coil drivers.

There is also provision for up to 4 speed sensor inputs*, either Hall effect or Inductive type or a combination of both.

Software selectable engine codes include: Honda K20, Honda CBR, Ford Duratec, Clio F4RRS as well as 60-2, 48-2(720'), 36-1, 36-2, 30-2, 24-2, 4equi, 5equi, 6equi, 8equi, 10equi, 12equi, 4+1, 12+1, Clio Williams F7R and Rover K Series crank trigger patterns.

Special software and encrypted hardware versions available for series or production use.

*Customer must specify the coil and speed sensor input type upon ordering.

GENERAL SPECIFICATION

- > 80 MHz processor
- > **4 individual injector / ignition outputs**
- > 4 digital speed inputs (cam/crank)
- > **8 low side digital outputs**
- > 3 analogue 0-5v inputs (pull-up)
- > **2 NTC temperature inputs**
- > 1 Voltage reference 5v supply
- > **1 CAN 2.0 bus**

ENVIRONMENTAL / ELECTRICAL SPECIFICATION

- > Body Mounted Device
- > **Operating temp: -30 to 80°C**
- > Storage temp: -30 to 90°C
- > **Operating voltage: Min 6V, Nominal 12V, Max 17V**
- > Gore-Tex diaphragm
- > **System shall retain its performance during engine starting**
- > Weight 381g
- > **Dimensions 165 x 95 x 21mm**

CONNECTOR

- > The ECU's connector is a 35 way from the series AMP which uses JPT contacts.

LONGMAN RACING ORDER CODE / RETAIL PRICE

EURO2-000 – EFI Euro2 ECU	GBP £600.00*
LRW-002 – EFI Universal Euro2 loom for 4 cylinders	GBP £595.00*
E2-CONN-KIT – AMP 35 way connector kit incl. contacts, covers & fixings	GBP £48.00*
EFT23 – EFI Lambda controller NTK CAN bus version	GBP £270.00*
LR-NTK-6 – EFI NTK wideband lambda sensor	GBP £260.00*

*Trade/Reseller discount available between -15% to -30% on single items

Euro4 ECU

OEFF14B

Professional level race system with outstanding capability in a compact size.

Euro4 is the next step on the ladder in terms of features and performance from EFI. A true professional motorsport ECU with 4 individual ignition drivers (logic or power coils) and 8 individual injector drivers with programmable firing order. Aimed at complex 4-cylinder engines having up to 8 injectors with the capability to suit 6- and 8-cylinder applications with ease. Euro4 is also suited to motorcycle applications with a dedicated software also available.



IN-DEPTH

Euro4 has all the features of the Euro2 system, but with added variable camshaft timing outputs, VTEC, Electronic throttle body driver, Traction control, Paddle shift gearbox control, Lambda self-learn closed loop, increased Input/output control, Flex fuel capability, pressure/temperature-based RPM limiters, Launch control, Knock control, 2 engine calibrations, on-board 8mb datalogging and CAN data export.

Euro4 also can run GDI applications in conjunction with EFI Technology EFN27 GDI module.

Software selectable engine codes include: Honda K20, Honda CBR, Triumph, Peugeot 206, Jaguar V8, Maserati V87, Honda S2000, Honda Jazz, GM LS3, GM LS7, Porsche Cayman, VW VR32, VW TFSI, GM Ecotec, Toyota ZR, BMW M3 S54, Clio F4RRS, BMW1000RR as well as 12 teeth evenly spaced, 60-2, 36-1, 24-2, 36-2 and 48-2 (Ducati) crank trigger patterns.

Latest pattern added – Toyota 2ZZ-GE

Special software and encrypted hardware versions available for series or production use.

GENERAL SPECIFICATION

- > 8 individual injector/digital outputs
- > **4 logic ignition outputs**
- > 4 inductive ignition outputs
- > **8 low side digital outputs**
- > 4 digital speed inputs (cam/crank)
- > **4 digital wheel speed inputs (hall effect)**
- > 10 analogue inputs (pull-up) general purpose
- > **5 analogue inputs (pull-up/down) PPS/TPS/POIL**
- > 5 analogue inputs (lambda)
- > **2 analogue inputs (knock sensors)**
- > 4 NTC temperature inputs
- > **4 Voltage reference 5v supply**
- > 2 CAN 2.0 bus
- > **1 ETB driver, NTK UEGO Lambda, Internal Baro sensor**
- > 1 internal 8mb datalogger

ENVIRONMENTAL / ELECTRICAL SPECIFICATION

- > Engine compartment or body mounted device - VW 801 01:2005-6.
- > **Operating temp: -40 to 105°C**
- > Storage temp: -40 to 120°C
- > **Operating voltage: Min 6.5V, Nominal 12V, Max 15V**
- > Gore-Tex diaphragm
- > **System shall retain its performance during engine starting**
- > Weight 365g
- > **Dimensions 165 x 95 x 21mm**

CONNECTOR

- > The mating connectors from the Molex CMC family, left & right versions.

LONGMAN RACING ORDER CODE / RETAIL PRICE

EURO4-000 – EFI Euro4 ECU	GBP £1450.00*
LRW-056 – EFI Universal Euro4 loom for 4 cylinders	GBP £895.00*
E4-CONN-KIT – Left & right connector kit incl. contacts, covers & fixings	GBP £65.00*
LR-NTK-6 – EFI NTK wideband lambda sensor	GBP £260.00*
LR-NTK-CONN-KIT – NTK (6-pin) Lambda mating connector kit incl. seals & contacts	GBP £9.50*

*Trade/Reseller discount available between -15% to -30% on single items

EURO5 ECU

OAEFS19B

Professional level direct injection engine control for the race track or the test development cell.

Euro5 is a combined port and direct injection engine management system designed around the latest 3 and 4-cylinder GDI Turbo charged engines found on the market today. The Euro5 specification is matched to accommodate OEM equipment and the complex control strategies required, such as DC motor wastegates, SENT communication protocol, PFI/GDI mixing and high-pressure fuel pump control.



IN-DEPTH

The Euro 5 also provides all of the professional motorsport level features expected too, including variable camshaft timing outputs, vtec, Electronic throttle body driver, Traction control, Paddle shift gearbox control, Lambda self-learn closed loop, increased Input/output control, Flex fuel capability, pressure/temperature-based RPM limiters, Launch control, Knock control, 5 engine calibrations, on-board 128mb datalogging & CAN data export over its 3 CAN bus ports. Euro 5 also benefits from Ethernet connection for rapid download/upload of data.

It comes readily compatible with ASAP3 communication, allowing easy integration into most automotive test cell environments and software selectable speed sensor input type (inductive EM / Hall).

Like all EFI ECU hardware there are software selectable engine types included: Honda Civic K20A PFI, Alfa Romeo 4C 1.7 DI, Honda Civic K20C DI, VW TFSI 2.0, PSA EP6DT, Ford 2.0 Ecoboost 4V TiVCT GTDI, Ford Ecoboost 2.3 4V TiVCT GTDI and HONDA 1.5 DI L15B as well as 60-2, 48-2 (360), 48-2 (720), 36-1, 36-2, 30-2, 24-2, 16-1, 4 equi, 5 equi, 6 equi, 8 equi, 10 equi, 12 equi, 4+1, 12+1 and 20+1 crankshaft trigger patterns.

*Latest pattern added: Honda Marine APT 2.0L

Special software and encrypted hardware versions available for series or production use.

GENERAL SPECIFICATION

- > 132 MHz processor
- > **4 direct GDI injector outputs – solenoid type**
- > 4 ported PFI injector outputs
- > **4 logic ignition outputs**
- > 4 inductive ignition outputs
- > **17 low side digital outputs (high/low current/relay type)**
- > 1 High pressure fuel pump output
- > **4 digital inductive speed inputs (cam/crank)**
- > 4 digital hall effect speed inputs (cam/crank)
- > **11 digital speed/switch inputs (hall effect)**
- > 10 analogue inputs (pull-up) general purpose
- > **4 analogue inputs (pull-up/down) PPS/TPS**
- > 2 analogue inputs (knock sensors)
- > **5 NTC temperature inputs**
- > 5 Voltage reference 5v supply
- > **3 CAN 2.0 bus**
- > 2 Half bridge outputs
- > **1 Full bridge ETB driver 7A max**
- > 1 NTK UEGO Lambda, Internal Baro sensor
- > **1 Ethernet port**
- > 1 internal 128mb datalogger

ENVIRONMENTAL / ELECTRICAL SPECIFICATION

- > Passenger compartment or body mounted device
- VW 801 01: 2004-07
- > **Operating temp: -40 to 70°C**
- > Storage temp: -40 to 90°C
- > **Operating voltage: Min 6V, Nominal 12V, Max 15V**
- > Gore-Tex diaphragm
- > **System shall retain its performance during engine starting**
- > 3 mounting holes on enclosure
- > **Weight 410g**
- > Dimensions 165 x 165 x 25mm

CONNECTOR

- > The ECU connector is divided in three separate sections, that helps in keeping separate Engine and Chassis functions. This results in an efficient design of chassis and engine wiring looms. Mating connectors are from the Molex CMC family. Two of them have 48 ways (with different key and colour ID), and the third one has 32 ways.

LONGMAN RACING ORDER CODE / RETAIL PRICE

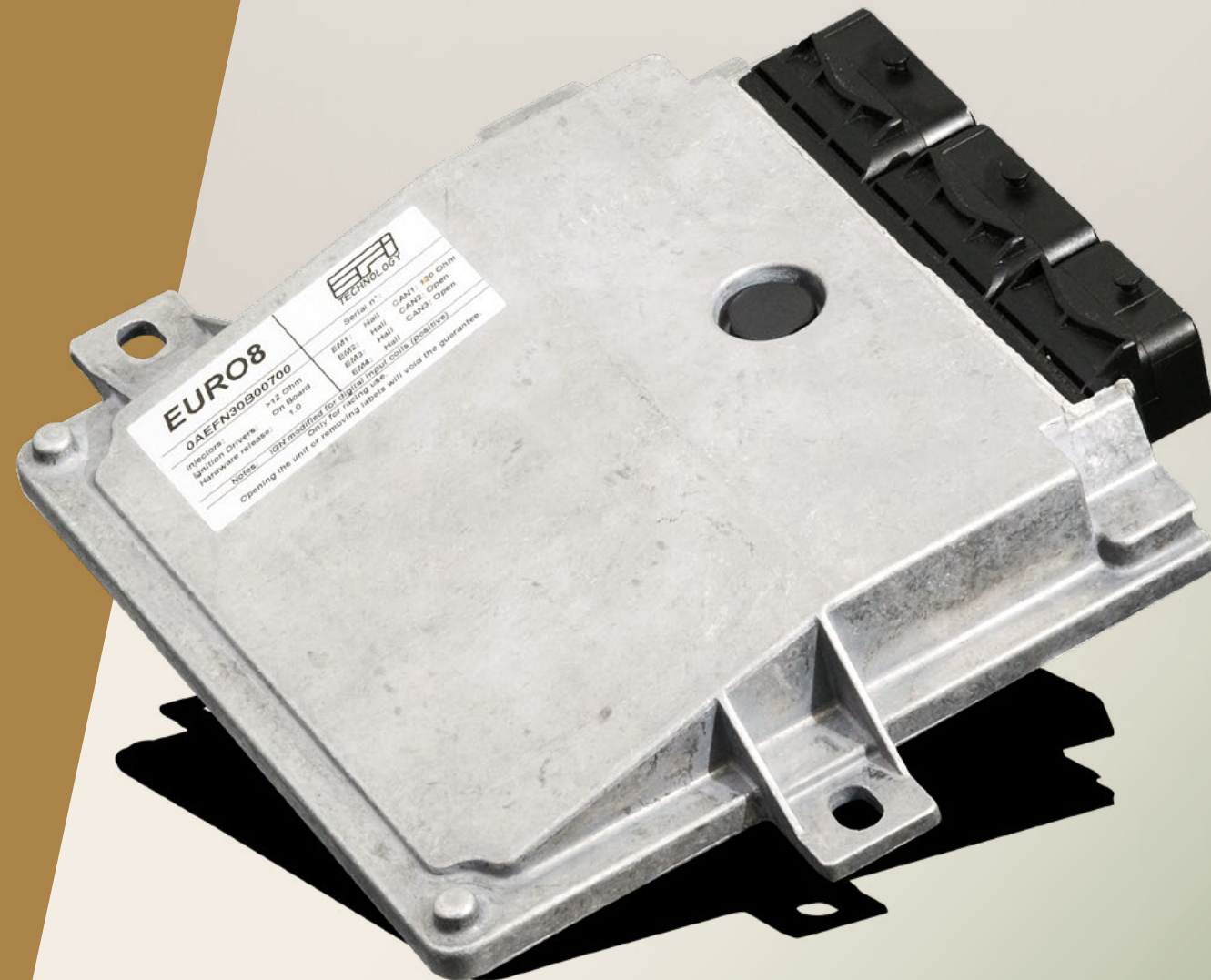
EURO5-000 – EFI Euro5 GDI ECU	GBP £2950.00*
.....	
E5-CONN-KIT – Left & right connector kit incl. contacts, covers & fixings	GBP £95.00*
.....	
LR-NTK-6 – EFI NTK wideband lambda sensor	GBP £260.00*
.....	
LR-NTK-CONN-KIT – NTK (6-pin) Lambda mating connector kit incl. seals & contacts	GBP £9.50*
.....	
*Trade/Reseller discount available between -15% to -30% on single items	

EURO8 ECU

OAEFN30C

Professional level engine control for twin bank engines for the race track or the test development cell.

Euro8 is an engine management system designed specifically with twin bank applications in mind. Within its hardware there is provision for 16 individually programmable port injector drivers and 8 individual ignition drivers (both logic or inductive type).



P10

IN-DEPTH

This ECU's specifications match OEM equipment and their necessary strategies, such as dual DC motor wastegate control, SENT communication protocol, PFI/GDI mixing and twin high-pressure fuel pump control. It also has provision for quad camshaft VCT with missing tooth trigger arrangement.

Twin NTK UEGO lambda, twin electronic throttle outputs, combined full bridge throttle output, Traction control, Paddle shift control, increased I/O control, Flex fuel capability, pressure/temperature-based RPM limiters, Launch control (Dragrace version), 5 engine calibrations, Knock control, on-board 128mb datalogging & CAN data export over its 3 CAN bus ports all feature as standard. Ethernet connection for rapid download/upload of data. Compatible with ASAP3 communication, allows easy integration into most automotive test cells. Speed sensor input type is software selectable (EM / Hall), second crank sensor input for redundancy.

Software selectable engine types included in the past: Corvette GM LS3, GM LS7, Mercedes E500, Nissan 350Z, Lotus Evora V6, BMW M3 V8, VIPER V10 GEN 4+5, V10 90deg 1 pulse cam, VIPER GEN 2+3, Ford Mustang Coyote V8, Honda K20, Honda K24, Lamborghini Gallardo V10, Dodge Hemi V8 Ford Ecoboost V6, Corvette C7 GM LT1, VIPER V10 GEN 1, Nissan 370Z, Mercedes M278 V8 as well as 60-2, 48-2 (360), 48-2 (720), 36-1, 36-2, 30-2, 24-2, 16-1, 40-1, 4 equi, 5 equi, 6 equi, 8 equi, 10 equi, 12 equi, 4+1, 12+1 and 20+1 crankshaft trigger patterns.

Latest pattern added: Honda BF250 (Marine)

Special software & encrypted hardware versions available for series or production use.

GENERAL SPECIFICATION

- > 132 MHz processor
- > **16 ported PFI injector outputs**
- > 8 inductive or logic ignition outputs (software selectable)
- > **20 low side digital outputs (high/low current/PWM/relay type)**
- > 4 digital inductive speed inputs (cam/crank)
- > **4 digital hall effect speed inputs (cam/crank)**
- > 13 digital speed/switch inputs (hall effect)
- > **10 analogue inputs (pull-up) general purpose**
- > 4 analogue inputs (pull-up/down) PPS/TPS
- > **2 analogue inputs (knock sensors)**
- > 5 NTC temperature inputs
- > **5 Voltage reference 5v supply**
- > 3 CAN 2.0 bus
- > **2 Half bridge outputs**
- > 2 Full bridge ETB driver 7A max
- > **2 NTK UEGO Lambda, 1 Internal Baro sensor**
- > 1 Ethernet port
- > **1 internal 256mb datalogger**

ENVIRONMENTAL / ELECTRICAL SPECS:

- > Passenger compartment or body mounted device - VW 801 01: 2004-07
- > **Operating temp: -40 to 85°C**
- > Storage temp: -40 to 85°C
- > **Operating voltage: Min 6V, Nominal 12V, Max 16V**
- > Gore-tex diaphragm
- > **System shall retain its performance during engine starting**
- > 3 mounting holes on enclosure
- > **Weight 410g**
- > Dimensions 165 x 165 x 25mm

P11

CONNECTOR

- > The ECU connector is divided in three separate sections, that helps in keeping separate Engine and Chassis functions. This results in an efficient design of Chassis and Engine wiring looms. Mating connectors are from the Molex CMC family. Two of them have 48 ways (with different key and colour id), and the third one has 32 ways.

LONGMAN RACING ORDER CODE / RETAIL PRICE

EURO8-300 – EFI Euro8 ECU Version C	GBP £3250.00*
EFR14 – EFI 12-cylinder direct injector driver module	GBP £3250.00*
E8-CONN-KIT – Left & right connector kit incl. contacts, covers & fixings	GBP £95.00*
LR-NTK-6 – EFI NTK wideband lambda sensor	GBP £260.00*
LR-NTK-CONN-KIT – NTK (6-pin) Lambda mating connector kit incl. seals & contacts	GBP £9.50*

*Trade/Reseller discount available between -15% to -30% on single items

Euro12 ECU

OAEFR18B

Professional Motorsport ECU for twin bank engines having up to 12 cylinders.

The Euro12 ECU is derived from the same platform as Euro8. The Euro12 engine management system is designed specifically with twin bank applications in mind. Within its hardware there is provision for 12 individually programmable port injector drivers and 12 individual ignition drivers (both logic or inductive type). Euro12 also features direct injection control strategies and much like the Euro8 requires the addition of EFI Technology's EFN27 or EFR14 direct injection driver modules. With the EFR14 module Euro12 provides a solution to run engines having up to 12 PFI and 12 GDI injectors combined.



P12

IN-DEPTH

The ECUs specifications match OEM equipment and their necessary strategies, such as dual DC motor wastegate control, SENT communication protocol, PFI/GDI mixing and twin high-pressure fuel pump control. It also has provision for quad camshaft VCT with missing tooth trigger arrangement.

Twin self-learn closed loop NTK lambdas, twin half bridge electronic throttle outputs, combined full bridge throttle output, Traction control, Paddle shift gearbox control, increased Input/output control, Flex fuel capability, pressure/temperature-based RPM limiters, Launch control, Knock control, 5 engine calibrations, on-board 128mb datalogging & CAN data export over its 3 CAN bus ports all feature as standard. Euro 12 also benefits from Ethernet connection for rapid download/upload of data.

It comes readily compatible with ASAP3 communication, allowing easy integration into most automotive test cell environments and software selectable speed sensor input type (inductive EM / Hall) as well as second switchable crank shaft sensor input for ultimate endurance reliability.

Euro12 is produced in a mil-spec package featuring 3 x Autosport/Mil-spec connections for reliability and endurance in the harshest of motorsport environments.

Software selectable engine types & patterns include: 60-2, 48-2 (360), 48-2 (720), 36-1, 36-2, 30-2, 4-2, 18-2, 4 equi, 5 equi, 6 equi, 8 equi, 10 equi, 12 equi, 4+1, 12+1, 20+1 (Zytek, McLaren NME V8), Gallardo V10, Corvette V8, Honda K20, BMW S65B40 V8, BMW S85B50 V10.

Special software & encrypted hardware versions available for series or production use.

GENERAL SPECIFICATION

- > 132 MHz processor
- > **12 ported PFI injector outputs**
- > 12 inductive ignition outputs
- > **12 logic ignition outputs**
- > 20 low side digital outputs (high/low current/PWM/relay type)
- > **4 digital inductive speed inputs (cam/crank)**
- > 4 digital hall effect speed inputs (cam/crank)
- > **13 digital speed/switch inputs (hall effect)**
- > 23 analogue inputs (pull-up) general purpose
- > **4 analogue inputs (pull-up/down) PPS/TPS**
- > 4 analogue inputs (knock sensors)
- > **10 NTC temperature inputs**
- > 10 Voltage
- > **reference 5v supply**
- > 3 CAN 2.0 bus
- > **2 Half bridge outputs**
- > 2 Full bridge ETB driver 7A max
- > **2 NTK UEGO Lambda, 1 Internal Baro sensor**
- > 1 Ethernet port
- > **1 internal 256mb datalogger**

ENVIRONMENTAL / ELECTRICAL SPECIFICATION

- > Passenger compartment or body mounted device - VW 801 01: 2004-07
- > **Operating temp: -40 to 70°C**
- > Storage temp: -40 to 90°C
- > **Operating voltage: Min 6V, Nominal 12V, Max 15V**
- > Gore-Tex diaphragm
- > **System shall retain its performance during engine starting**
- > Weight 580g (16 oz.)
- > **Dimensions 165 x 165 x 25mm**

P13

CONNECTOR

The ECU has 3 connectors from Autosport STA/AS Series each with 66 AWG22 pin contacts, with different keys:

- > 1 x Deutsch AS 2 18-35PN
- > **1 x Deutsch AS 2 18-35PA**
- > 1 x Deutsch AS 2 18-35PB

LONGMAN RACING ORDER CODE / RETAIL PRICE

EURO12-000 – EFI Euro12 ECU Version B	GBP £4995.00*
EFR14 – EFI 12-cylinder direct injector driver module	GBP £3150.00*
E12-CONN-KIT – Autosport connector kit incl. contacts	GBP £295.00*
LR-NTK-6 – EFI NTK wideband lambda sensor	GBP £260.00*
LR-NTK-AS – EFI NTK Wideband lambda sensor – Autosport connector	GBP £340.00*
LR-NTK-CONN-KIT – NTK (6-pin) Lambda mating connector kit incl. seals & contacts	GBP £9.50*

*Trade/Reseller discount available between -15% to -30% on single items

Customer Support



SOFTWARE

Full EFI ECU configuration software (ECT) tools, product pinouts, user handbooks & wiring information can be accessed via the website downloads section:
www.longmanracing.com/downloads

LEGACY SUPPORT FOR OUT-OF-PRODUCTION EFI ECUS

The ECU's listed in the current range above exclude the previous generations of engine management units produced by EFI. If you require any support information, documentation or software versions for Euro1, Euro96, Euro96 compact, Euro6, ToCA 6 or Euro12 (1st generation) then please visit our downloads page or contact us from below.

SALES & TECHNICAL

For sales enquiries, technical questions or support or ECU service please contact:

sales@longmanracing.com or
michael@longmanracing.com
Office: +44 (0) 1202 283234
Mobile: +44 (0) 7740 627630

Full range of motorsport electronics, including OBR Powerboxes, CAN switch panels, CAN steering wheel components can be found at:
www.longmanracing.com/motorsport-electronics

Full terms & conditions can be found at:
www.longmanracing.com/terms-and-conditions

Prices in GBP Sterling (excl VAT) and correct at time of print (Prices subject to change as detailed in T&C's).

About Longman Racing

At the cutting edge for nearly 50 years

Longman Racing now works at the cutting edge of motorsport electronics and technology, but it's a company with deep roots in racing going back nearly 50 years.

It was formed in 1971 by racing driver and engineer Richard Longman, who had already enjoyed huge success building cars with Downton Engineering alongside a career in saloon car racing with the iconic Longman-built Mini 1275 GTs, with Richard at the wheel, winning the 1978 and 1979 British Touring Car Championship crowns, as well as spectacular results throughout the 1980s in the Metro 1300, Ford Escort RS1600i and 1986 Ford Escort RS Turbo.



Strong links forged with Peugeot Talbot Sport resulted in works engine contracts until 2007, and work on Tom Walkinshaw's TWR with Jaguar Group C/IMSA programs.

With the many other notable customers, the company's engineering and engine tuning capabilities were always in demand, including work with Peugeot, Alfa Romeo and Proton both in the BTCC and ATCC. Richard formed the WK Longman Team with partner Edwin Tso in Hong Kong, taking multiple ATCC championships before further ATCC crowns with Petronas Syntium Proton.

When Richard retired, the company ticked over while son Michael was off forging his own career in motorsport engineering, electronics, engine management systems, wiring looms, datalogging and engine mapping/vehicle calibration services, returning to the fold in 2018 to bring his own expertise of the latest electronics and technology.

With Richard, still a globally respected race engineer, involved in an advisory capacity and Michael's expertise, the company is developing a new generation of motorsport technology and race team consultancy.



Longman Racing Ltd
Unit 4 Airfield Road
Christchurch, Dorset
United Kingdom.

www.longmanracing.com

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