

F88RL ECU

The **F88RL ECU** is the most cost effective engine management system from the suffix **L** series. Based on the **F88** architecture the **RL** is by no means a compromise, it just has less inputs and outputs for applications that do not require the complexity of the full **F88**. The twin processor unit uses a high speed **RISC** processor for code execution and an additional large **FPGA** for high speed engine position tracking, allowing the scheduling of code to be independent of signal patterns, increasing flexibility, efficiency and accuracy under transient conditions. This powerful combination also allows advanced control algorithms but yet remains easy to calibrate for the end user.



Processing	Powerful RISC CPU for advanced strategy execution Custom synchronous FPGA processor for engine position tracking up to 25,000 rpm
Outputs	12 user configurable general purpose Pulse Width Modulated power outputs, including: 4 ignition coil outputs IGBT or TTL (Software configurable) 8 fuel injector outputs 2 full bridges also configurable as 4 half bridges or 4 PWMs
Inputs	12 user configurable general purpose analogue sensor inputs, including 4 bipolar, inductive or hall effect speed / engine position inputs 3 dedicated inputs, including: 2 acoustic knock sensor inputs 1 wideband (NTK UEGO) lambda sensor interfaces
Interfaces	100 MHz full duplex Ethernet for calibration, configuration and data download 2 CAN 2.0B interfaces for communication with other controllers or logging systems RS232 serial interface for communication with other controllers or logging systems
Memory	16MB battery backed internal logging memory Ultra Fast data download via Ethernet Time/Date stamped data via real time clock
Power Supply	6V to 32V input voltage range with reverse polarity protection 2 regulated 5V sensor supply outputs with individual short circuit protection Unregulated sensor supply output which tracks the ECU supply voltage with nominal 17V clamp 5 separately protected sensor and communication ground inputs
Physical	88 Way Bosch / AMP sealed connector High pressure die case black powder coated aluminium case Maximum dimensions including the connectors are 183 x 122 x 36 mm Total mass is ~480 grams
Upgrades	6 Ignition Outputs Adaptive Knock Control Direct Motor Control Gearbox Control Second Lambda Input Traction Control

F88RL ECU Pinout

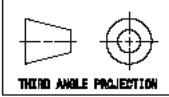
Mating Connector: 88Way Connector Kit

PIN	FUNCTION	PIN	FUNCTION
1	POWER GROUND	45	LAMBDA V #02 ⁽⁴⁾
2	DO NOT CONNECT	46	DO NOT CONNECT
3	DO NOT CONNECT	47	DO NOT CONNECT
4	IGNITION #06 ⁽²⁾	48	RS232 RX
5	IGNITION #05 ⁽²⁾	49	FUEL #08
6	DO NOT CONNECT	50	FUEL #06
7	KNOCK #02 ⁽³⁾	51	FUEL #04
8	DO NOT CONNECT	52	FUEL #03
9	DO NOT CONNECT	53	FUEL #02
10	INPUT #12 (5V/TH/BI/FREQ)	54	FUEL #01
11	INPUT #10 (5V/TH/BI/FREQ)	55	POWER GROUND
12	DO NOT CONNECT	56	BATTERY SUPPLY
13	DO NOT CONNECT	57	BATTERY SUPPLY
14	INPUT #07 (5V/TH)	58	H-BRIDGE #01 ⁽⁵⁾
15	INPUT #05 (5V/TH)	59	H-BRIDGE #02 ⁽⁵⁾
16	INPUT #03 (5V/TH)	60	H-BRIDGE #03 ⁽⁵⁾
17	INPUT #01 (5V/TH) ⁽¹⁾	61	H-BRIDGE #04 ⁽⁵⁾
18	LAMBDA V #01	62	DO NOT CONNECT
19	DO NOT CONNECT	63	5V OUT #02
20	DO NOT CONNECT	64	5V OUT #01
21	RS232 TX	65	KNOCK GROUND
22	FUEL #07	66	DO NOT CONNECT
23	FUEL #05	67	SENSOR GROUND #02
24	IGNITION #04	68	DO NOT CONNECT
25	IGNITION #03	69	SENSOR GROUND #01
26	IGNITION #02	70	DO NOT CONNECT
27	IGNITION #01	71	DO NOT CONNECT
28	POWER GROUND	72	SENSOR GROUND #02
29	POWER GROUND	73	DO NOT CONNECT
30	DO NOT CONNECT	74	SENSOR GROUND #01
31	DO NOT CONNECT	75	LAMBDA I #02 ⁽⁴⁾
32	DO NOT CONNECT	76	LAMBDA I #01
33	DO NOT CONNECT	77	LAMBDA GROUND
34	DO NOT CONNECT	78	COMMS GROUND
35	KNOCK #01 ⁽³⁾	79	CAN LO #02 ⁽⁶⁾
36	DO NOT CONNECT	80	CAN HI #02 ⁽⁶⁾
37	DO NOT CONNECT	81	CAN LO #01
38	INPUT #11 (5V/TH/BI/FREQ)	82	CAN HI #01
39	INPUT #09 (5V/TH/BI/FREQ)	83	DO NOT CONNECT
40	DO NOT CONNECT	84	DO NOT CONNECT
41	INPUT #08 (5V/TH)	85	LAN RX +
42	INPUT #06 (5V/TH)	86	LAN RX -
43	INPUT #04 (5V/TH)	87	LAN TX +
44	INPUT #02 (5V/TH)	88	LAN TX -

FOOTNOTES:

- ⁽¹⁾ INPUT #01 TH utilises a 47K pull-up, all other TH inputs utilise a 3K pull-up
- ⁽²⁾ "6 Ignition Outputs" upgrade required for use otherwise DO NOT CONNECT
- ⁽³⁾ "Adaptive Knock Control" upgrade required for use otherwise DO NOT CONNECT
- ⁽⁴⁾ "Second Lambda Input" upgrade required for use otherwise DO NOT CONNECT
- ⁽⁵⁾ "Direct Motor Control" upgrade required for use otherwise DO NOT CONNECT
- ⁽⁶⁾ Master/Slave link only, not for general use

LFR-276-01A



182.3 OVERALL WIDTH

121.35 OVERALL DEPTH
105.35

36 OVERALL HEIGHT

88 PIN AUTOMATIVE CONNECTOR

GENERAL TOLERANCES:

LINEAR	0.20 ±0.05
AND	0.0 ±0.2
RAZIAL	0 ±0.5


ANGULAR

±1°

THIS DRAWING AND THE COPYRIGHT THEREIN IS THE PROPERTY OF LIFE RACING LIMITED. IT MAY NOT BE COPIED, REPRODUCED, PUBLISHED OR DISCLOSED TO ANY OTHER PARTY, IN WHOLE OR IN PART, WITHOUT THE WRITTEN CONSENT OF AN AUTHORISED LIFE RACING REPRESENTATIVE.

NOTES: UNLESS OTHERWISE STATED

1. ALL DIMENSIONS ARE IN MILLIMETRES (mm)
2. THREADS: ISO COARSE TO CLASS 6H/6g U.G.S
3. GENERAL FINISH: REMOVE BURRS & LIGHTLY BREAK SHARP EDGES
4. DO NOT SCALE

01A	-	RELEASED FOR MANUFACTURE	T08	T08	14082018
00A	-	RELEASED FOR INFORMATION & LAYOUT ONLY	T08		14082018
Issued	Rev.	Details	Drn.	App'd.	Date
Title	F88R.L-F88RS.L-F88RX.L-F88DI ECU - Installation Assembly			Date	Drawn by
Dwg. No.	LFR-276-01A			Life Racing Ltd Unit 6, Repton Close Burnt Mills Ind. Estate Basildon Essex, SS13 1LE www.liferacing.com Tel: 01206 274421 Email: info@liferacing.com	
Matl.	N/A				
Heat Treat.	N/A				
Surface Finish	N/A				
Scale	1:1	Size	A2	Sheet	1 of 1
		Qty per Assy			1