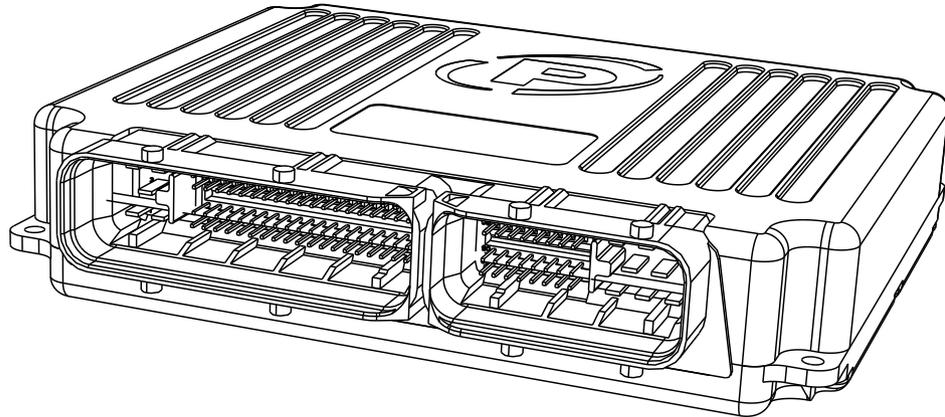# Pectel Injector Driver Unit - IDU1

Introduction

The IDU1 is an injector driver box for use with Gasoline Direct Injection (GDI) Engines. There are six GDI injector drivers on the unit and 2 low-side injector drivers that can be used to drive an appropriate fuel pump. The injectors drivers are turned on and off by a separate Pectel ECU.

The Injector Driver Unit (IDU) has been designed to run the Bosch HDEV5 direct injectors and the HDP5 mechanical fuel pump with MSV valve. It is pin compatible with the Bosch HPI 1.1 injector driver box, but with the addition of being able to drive the HDP 5 fuel pump.

In the documentation below recommended wire gauges are stipulated to ensure there is no significant voltage drop to the injectors from the driver box. It is recommended that the length of loom from the driver box to the injectors does not exceed 2m in length.

The firing order of the GDI injectors must use an odd-even-odd-even sequence, using the injector drive numbers that are indicated in the pinout details.

Dimensions
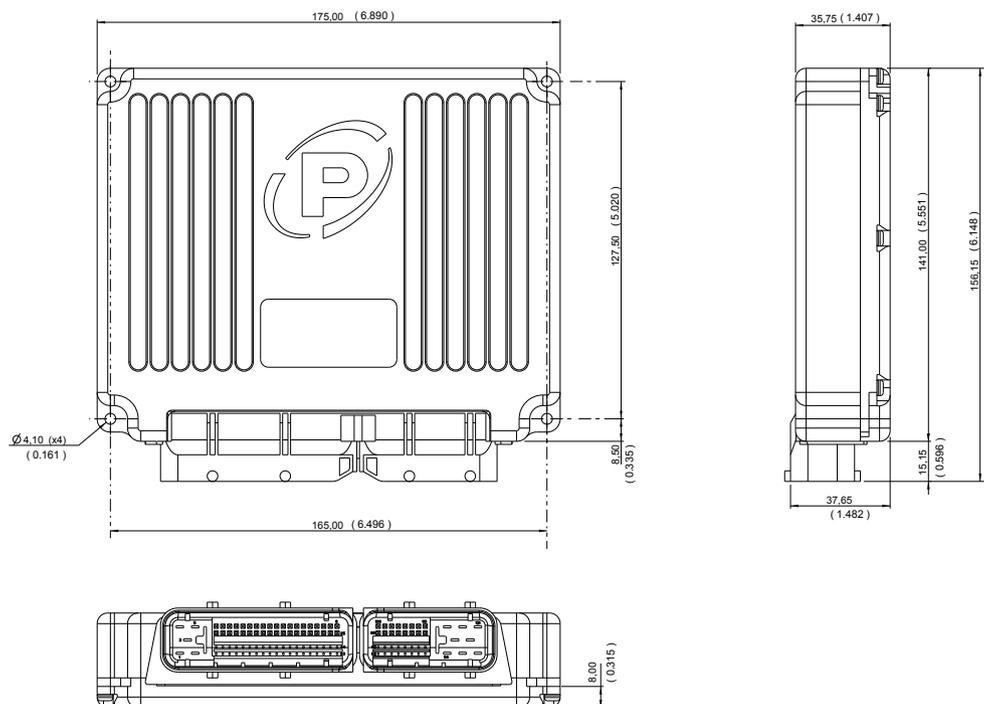
Dimensions in millimetres (and inches)

Specifications

Description	Value
Engine Configuration	Up to 6 cylinders. Additional units can be used with the same controlling ECU for larger engines.
Supply Voltage	8V to 18V reverse battery, over-voltage and load dump protection
Communication	1 RS232 3 CAN 2.0B (with 120 ohm termination) 1 Ethernet (10MBit)
Internal Sensors	ECU Internal Temperature x 4 Battery Voltage
Case Operating Temp.	-40°C to +70°C
Environmental	IP67
Vibration	DV-V(a) DV-V(b) DV-V(c) DV-V(c+)
Weight	906g

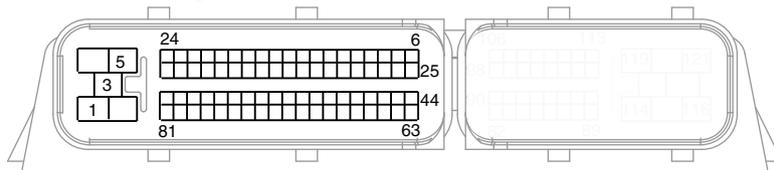| Description	Value
Injector Drivers	6 off with a boosted voltage to drive GDI injectors. 12 A peak current
Low side injector drivers	2 off. 8 A peak

Ordering Information

Product	Part number
Pectel IDU1	01E-501060
IDU1 / SQ7Di Connector Kit (IDC)	13E-501059

Connector Details

ECU Connector	Mating Connectors
Tyco 1241434-3	Tyco 1355171-1
	Tyco 1355172-1

Connector part A   Pinout Details

Pin	Signal Name	Recommended Wire Size	Signal Description
1.	ENG GND	14AWG	Power Supply Negative
2.	ENG GND	14AWG	Power Supply Negative
3.	ENG GND	14AWG	Power Supply Negative
4.	BATPOS	14AWG	Power Supply Positive
5.	BATPOS	14AWG	Power Supply Positive
6.	INJLS7	22AWG	GDI Pump Demand Valve (INJ7 Low-Side Driver)
7.	INJLS8	22AWG	INJ8 Low-Side Driver
8 - 24.	N/C	--	Do not Connect
25.	INJLS7	22AWG	GDI Pump Demand Valve (INJ7 Low-Side Driver)
26.	INJLS8	22AWG	INJ8 Low-Side Driver
27 - 43.	N/C	--	Do not Connect
44.	INJECUCMD1	24AWG	Active-Low Injector Command from ECU
45.	INJECUCMD2	24AWG	Active-Low Injector Command from ECU
46.	INJECUCMD3	24AWG	Active-Low Injector Command from ECU
47.	INJECUCMD4	24AWG	Active-Low Injector Command from ECU
48.	INJECUCMD5	24AWG	Active-Low Injector Command from ECU
49.	INJECUCMD6	24AWG	Active-Low Injector Command from ECU
50.	ENABLE#	24AWG	Active-Low GDI Injector Enable from ECU
51.	ENABLE	24AWG	Active-High GDI Injector Enable from ECU
52.	CANHC	24AWG	CAN Port C (IDU to ECU Comms)
53.	CANLC	24AWG	CAN Port C (IDU to ECU Comms)
54.	CANHC	24AWG	
55.	CANLC	24AWG	
56.	ENG GND		Power Supply Negative (attach screens)
57 - 62.	N/C	--	Do not Connect
63.	INJECUCMD8	24AWG	Active-Low Injector Command from ECU
64.	N/C	--	Do not Connect
65.	INJECUCMD7	24AWG	Active-Low GDI Pump Demand Valve command from ECU
66 - 77.	N/C	--	Do not Connect
78.	EXTGND1	24AWG	Protected ground
79.	EXTGND2	24AWG	ECU ground for injector command inputs
80.	EXTGND3	24AWG	Comms GND
81.	N/C	--	Do not Connect

Connector part B   Pinout Details
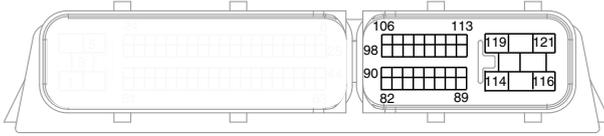
Pin	Signal Name	Recommended Wire Size	Signal Description
82 - 89.	N/C	--	Do not Connect
90.	INJLS3	22AWG	GDI Low-Side Injector Driver
91.	INJLS3	22AWG	GDI Low-Side Injector Driver
92.	INJLS6	22AWG	GDI Low-Side Injector Driver
93.	INJLS6	22AWG	GDI Low-Side Injector Driver
94.	INJHS6	22AWG	GDI High-Side Injector Driver
95.	INJHS6	22AWG	GDI High-Side Injector Driver
96.	INJHS3	22AWG	GDI High-Side Injector Driver
97.	INJHS3	22AWG	GDI High-Side Injector Driver
98.	ETHER-TX -	CAT5e	10 Base-T Ethernet Port (IDU Comms)
99.	CANHA	24AWG	CAN Port A
100.	ETHER-RX -	CAT5e	10 Base-T Ethernet Port (IDU Comms)
101.	Comms SCR	--	
102.	RS232-TX	24AWG	RS232 Serial Port (IDU Comms)
103.	CANHB	24AWG	CAN Port B
104.	N/C	--	Do not Connect
105.	N/C	--	Do not Connect
106.	ETHER-TX +	CAT5e	10 Base-T Ethernet Port (IDU Comms)
107.	CANLA	24AWG	CAN Port A
108.	ETHER-RX +	CAT5e	10 Base-T Ethernet Port (IDU Comms)
109.	Comms GND	24AWG	
110.	RS232-RX	24AWG	RS232 Serial Port (IDU Comms)
111.	CANLB	24AWG	CAN Port B
112.	N/C	--	Do not Connect
113.	N/C	--	Do not Connect
114.	INJLS1	14AWG	GDI Low-Side Injector Driver
115.	INJLS4	14AWG	GDI Low-Side Injector Driver
116.	INJHS5	14AWG	GDI High-Side Injector Driver
117.	INJLS2	14AWG	GDI Low-Side Injector Driver
118.	INJHS4	14AWG	GDI High-Side Injector Driver
119.	INJLS5	14AWG	GDI Low-Side Injector Driver
120.	INJHS1	14AWG	GDI High-Side Injector Driver
121.	INJHS2	14AWG	GDI High-Side Injector Driver

Recycling and Environmental Protection

Cosworth Electronics is committed to conducting its business in an environmentally responsible manner and to strive for high environmental standards.

Manufacture

Cosworth products comply with the appropriate requirements of the Restriction of Hazardous Substances (RoHS) directive (where applicable).

Disposal

Electronic equipment should be disposed of in accordance with regulations in force and in particular in accordance with the Waste in Electrical and Electronic Equipment directive. (WEEE)

Battery

This equipment contains a battery. (Lithium Thionylchloride)
The equipment may be returned to Cosworth Electronics for a replacement battery. (A charge may be made for this service)
Removal of the battery by the user may void any warranty on the equipment.
To remove the battery for recycling:

- Remove the case cover(s).
- Remove the printed circuit boards from the case.
- Remove the battery from the printed circuit board.

Dispose of the battery in accordance with regulations in force.

Declaration of Conformity

We, the undersigned,

Cosworth Electronics Limited
Brookfield Technology Centre,
Cottenham,
Cambridgeshire, CB24 8PS
United Kingdom

Certify and declare under our sole responsibility that the following equipment:

IDU1 – part number 01E-501060

An ECU for use only in motorsport applications

Conforms to the following EC directives including applicable amendments:

EMC Directive 89/336/EEC, 72/245/EEC (last amended 2004/104/EC)

The following standards have been applied:

2004/104/EC

Cottenham, 12 April 2010

Martin Tolliday – Director of Motorsport