

## IPS32 Power Control System (Draft Copy)

The Cosworth IPS32 is an intelligent solid state power control module designed to replace a conventional 12V or 24V power distribution system.

The unit simplifies overall wiring harness design and allows changes to circuit capacity without loom or switch box modification, giving improved reliability and functionality compared to normal hard-wired power junction boxes.

The unit consists of 32 separate power outputs, with 5 types of output 7.5A, 15A, 25A, 50A and 75A, designed to accommodate a wide range of electrical loads. Each output has PWM functionality with

Twenty two switch inputs and 4 analogue inputs are provided to enable direct control of power outputs. The mapping of switches to outputs is controlled by software and there are no hardware connections between switches and outputs.



Outputs may also be controlled via the CAN bus from ECUs, chassis controllers or devices such as the Cosworth MSP range of switch membrane panels.

### Specifications

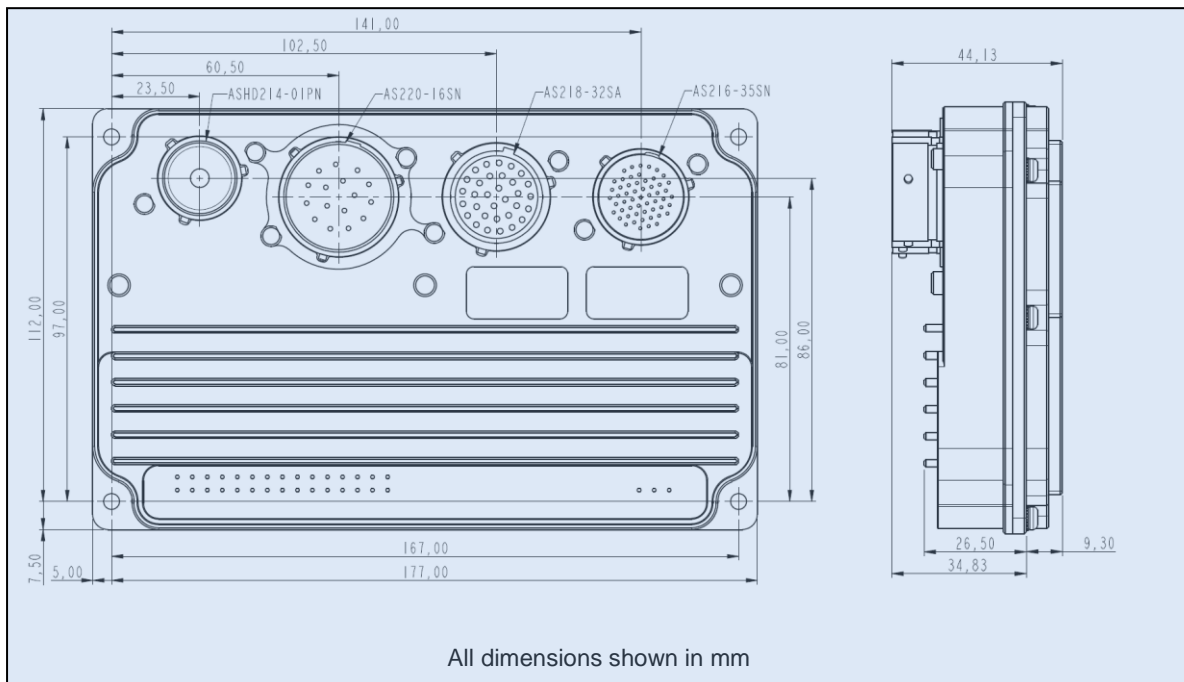
Electrical Data	
Operating voltage	8 to 30V
Nominal voltage	12V or 24V
Power (estimate)	8W
Power Outputs (peak current)	2 x 75A
	2 x 50A
	8 x 25A
	4 x 15A
	16 x 7.5A
Long term capability	125A total
Short term capability	200A for 2 mins
Load dump protection	100A for 1 second
Internal sensors	4x Internal Temperature 1x Battery voltage
CAN ports	2 x Independent CAN ports Max BAUD rate: 1MBit/s 128 message buffers per port Software selectable 120Ω resistor
Ethernet	1 x 100MB/s - PC comms
LIN Bus	1 x LIN Bus Master ( custom applications)

Mechanical Data	
Size without connectors	177 x 112 x 36 mm
Weight	780 grams
Environmental	IP65
Operating temperature	-40°C to +70°C
Storage temperature	-40°C to +80°C
Vibration	TBC

### Ordering Information

Part Number	
Cosworth IPS32	011-610040

## Dimensions



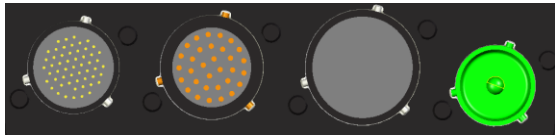
## Installation

When installing the IPS32 Power Control Module:

- Ensure unit is protected against severe vibrations by mounting using supplied M4 AV mounting kit. Also ensure unit is not fouling other structures which may experience severe vibrations.
- Ensure unit is positioned in an area with an ambient temperature of less than 50°C or with sufficient cooling air flow to prevent over heating.
- Ensure unit is mounted away from sources of electrical interference
- Ensure unit is mounted in position where unit will not come into contact with water

**Connector Information**

**J1 – Power In**

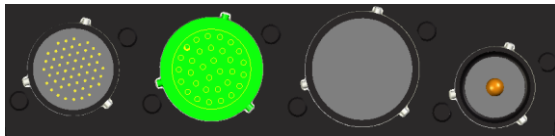


Connector	Mating Connector
ASHD214-1PN	ASHD614-1SN

**Connector Pinout**

Pin	Function	Signal Description	Notes
1.	Batt+	Main Battery +	125A long term; 200A for 2 minutes

**J2 – Output 1**



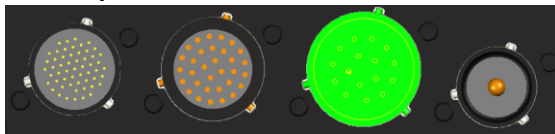
Connector	Mating Connector
AS218-32SN	AS618-32PN

**Connector Pinout**

Pin	Channel	Channel Current	Pin Current	Surge Current		Notes
				10us	1ms	
B	Output 1	7.5A	7.5A	75A	35A	Slow Wiper
T	Output 2	7.5A	7.5A	75A	35A	Fast Wiper
C	Output 3	7.5A	7.5A	75A	35A	400Hz PWM
D	Output 4	7.5A	7.5A	75A	35A	400Hz PWM
E	Output 5	7.5A	7.5A	75A	35A	400Hz PWM
F	Output 6	7.5A	7.5A	75A	35A	400Hz PWM
G	Output 7	7.5A	7.5A	75A	35A	400Hz PWM
H	Output 8	7.5A	7.5A	75A	35A	400Hz PWM
J	Output 9	7.5A	7.5A	75A	35A	400Hz PWM
K	Output 10	7.5A	7.5A	75A	35A	400Hz PWM
L	Output 11	7.5A	7.5A	75A	35A	
M	Output 12	7.5A	7.5A	75A	35A	
N	Output 13	7.5A	7.5A	75A	35A	
P	Output 14	7.5A	7.5A	75A	35A	
R	Output 15	7.5A	7.5A	75A	35A	
S	Output 16	7.5A	7.5A	75A	35A	
X	Output 17	15A	7.5A	120A	35A	Slow Wiper
Y			7.5A			
(a)	Output 18	15A	7.5A	120A	35A	Fast Wiper
(b)			7.5A			
Z	Output 19	15A	7.5A	120A	35A	

Pin	Channel	Channel Current	Pin Current	Surge Current		Notes
				10us	1ms	
(h)			7.5A			
(c)	Output 20	15A	7.5A	120A	35A	
(j)			7.5A			
(d)	Output 21	25A	7.5A	120A	35A	
(e)			7.5A			
(f)			7.5A			
(g)			7.5A			
A	Output 22	25A	7.5A	120A	35A	
U			7.5A			
V			7.5A			
W			7.5A			

**J3 – Output 2**

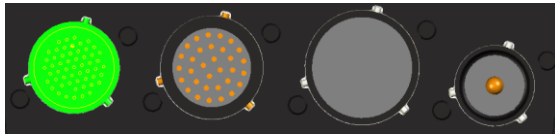


Connector	Mating Connector
AS220-16SN	AS620-16PN

**Connector Pinout**

Pin	Channel	Channel Current	Pin Current	Surge Current		Notes
				10us	1ms	
L	Output 23	25A	25A	400A	35A	Medium PWM ; High Surge
K	Output 24	25A	25A	120A	35A	Medium PWM
J	Output 25	25A	25A	120A	35A	
H	Output 26	25A	25A	120A	35A	
G	Output 27	25A	25A	120A	35A	
F	Output 28	25A	25A	120A	35A	Combined current pins F+S+R
R		25A	25A	120A	35A	Combined current pins F+S+R
S		25A	25A	120A	35A	Combined current pins F+S+R
C	Output 29	50A	25A	400A	120A	20kHz PWM
D			25A			
B	Output 30	50A	25A	400A	120A	20kHz PWM
N			25A			
A	Output 31	75A	25A	400A	120A	
M			25A			
E	Output 32	75A	25A	400A	120A	
P			25A			

**J4 – Control**



Connector	Mating Connector
AS216-35SN	AS616-35PN

**Connector Pinout**

Pin	Name	Function	Pin Current	Notes
1	VBatt	Fused Batt+	2A	For switch use
2	Gnd	Ground	100mA	For switch use
3	Switch 1	Switch input		Switch to GND / VBATT
4	Switch 2	Switch input		Switch to GND / VBATT
5	Switch 3	Switch input		Switch to GND / VBATT
6	Switch 4	Switch input		Switch to GND / VBATT
7	Switch 5	Switch input		Switch to GND / VBATT
8	Switch 6	Switch input		Switch to GND / VBATT
9	Switch 7	Switch input		Switch to GND / VBATT
10	Switch 8	Switch input		Switch to GND / VBATT
11	Switch 9	Switch input		Switch to GND
12	Switch 10	Switch input		Switch to GND
13	Switch 11	Switch input		Switch to GND
14	Switch 12	Switch input		Switch to GND
15	Switch 13	Switch input		Switch to GND
16	Switch 14	Switch input		Switch to GND
17	Switch 15	Switch input		Switch to GND
18	Switch 16	Switch input		Switch to GND
19	Switch 17	Switch input		Switch to GND
20	Switch 18	Switch input		Switch to GND
21	Switch 19	Switch input		Switch to GND
22	Switch 20	Switch input		Switch to GND
23	Switch 21	Switch input		Switch to GND
24	Switch 22	Switch input		Switch to GND
25	VBatt	Fused Batt+	2A	For switch use
26	Gnd	Ground	100mA	For switch or analogue input use
27	AN1	Analogue input		0 to 5V
28	AN2	Analogue input		0 to 5V
29	AN3	Analogue input		0 to 5V
30	AN4	Analogue input		0 to 5V
31	PWMout1	PWM control	100mA	Low side PWM control output
32	CAN1-L	CAN 1 Low		CAN max 1Mb
33	CAN1-H	CAN 1 High		
34	+5V	5V sensor supply	100mA	
35	+5V	5V sensor supply	100mA	

Pin	Name	Function	Pin Current	Notes
36	12V/24V System	Selects 12 or 24V operation		Unconnected = 12V system Connect to GND = 24V system
37	GND	Ground	100mA	Link to pin 36 for 35V limit
38	PWMout2	PWM control	100mA	Low side PWM control output
39	PWMout3	PWM control	100mA	Low side PWM control output
40	CAN2-L	CAN 2 Low		1MB/s max CAN Bus
41	CAN2-H	CAN 2 High		
42	LIN	LIN bus		LIN bus
43	GND	Ground		
44	PWMin1	PWM control		PWM control input
45	PWMin2	PWM control		PWM control input
46	PWMout4	PWM control	100mA	Low side PWM control output
47	GND	Ground	2A	IPS32 main ground
48	100T Rx+	Ethernet Comms Rx+		Ethernet White + Green
49	100T Rx-	Ethernet Comms Rx-		Ethernet Green
50	GND	Ground		Comms ground
51	100T Tx+	Ethernet Comms Tx+		Ethernet White + Orange
52	100T Tx-	Ethernet Comms Tx-		Ethernet Orange
53	USB-D+	Programming Comms		USB data +ve
54	USB-VBUS	Programming Comms		USB supply
55	USB-D-	Programming Comms		USB data -ve

## 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 rechargeable battery. (Lithium Vanadium Pentoxide).

The equipment may be returned to Cosworth Electronics for a replacement battery. (A charge will 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 Required

