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for Automotive and Motorsport

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PDUX2B (24V)
Datasheet

The PDUX2B (24V) is a high-performance solid state power distribution unit with a total of 16 powered output channels and maximum current capacity of 200A.

This includes 4 flexible 35A output drivers which may be configured as half bridge, high side, high side PWM (100Hz-20kHz), with the ability to soft start electrical loads with closed loop current limitation and two 35A high side capable output drivers, with the ability to soft start electrical loads.

In addition eight 12.5A capable output drives, high side and high side PWM (100Hz-20kHz) with the ability to soft start electrical loads and two 12.5A high side capable output drivers, with the ability to soft start electrical loads.

Using digitised, voltage, or linearised values from its 12 analogue inputs and from any of 3 CAN buses the PDUX2B is calibrated using a clear graphical interface with full logic simulation ability and live monitoring.

The PDUX2B is able to operate in a low power standby state, drawing <2mA, with configurable activation based on physical or CAN input.

Additionally, the PDUX2B may be used to expand input and output functionality of any Life Racing ECU.

The PDUX2B is available as 12V, 24V and 48V variants as well as an internal IMU option as detailed in the 'Ordering Information' section.

Features:

- Schematic based calibration including logic simulation tool
- Custom CAN across 3 buses including mux frames and retransmission (gateway) features, configured with the help of a graphical display and import/export tool
- Low power state woken on physical input, CAN activity, or specific CAN frame
- Configurable evaluation frequency operation of schematic components in circuitry – "Expert Frequency Mode"
- Optional internal IMU (Inertial Measurement Unit) feature offers a six-axis gyro and accelerometer which can be processed internally or transmitted over CAN.

Outputs:

- 16 main Power Outputs
  - 4 multifunction high side, low side, high side PWM (100Hz-20kHz) outputs (35A continuous, soft-start inrush limiting 65A, hard-start inrush 65A, capacitive load start feature)
  - 2 high side outputs (35A continuous, hard-start inrush 65A, capacitive load start feature)
  - 8 high side, high side PWM (100Hz-20kHz) outputs (12.5A continuous, hard-start inrush 30A, capacitive load start feature)
  - 2 high side outputs (12.5A continuous, hard-start inrush 30A, capacitive load start feature)
- Output linking ('teaming') to support very high current devices
- 2 additional low side outputs with configurable PWM (100Hz-10kHz)
- All outputs short circuit and thermally protected with multi-stage in-rush control
- All outputs additionally protected by physical fuses as required by worldwide regulations
- Combined diagnostic output with reset input
- 128 scaleable CAN ('soft') outputs
- Custom datastream (CAN) – i.e. customisable channel current, channel state and device information

Inputs:

- 12 physical 0-5V inputs, including software selectable 3k ohm pull-up resistors
- 4x inputs capable of programmable "wake " functionality
- Comparing and manipulating real numbers (floating point decimal) in schematic
- Analogue inputs can be linearised, viewed as raw voltage or Boolean value
- Dedicated wake pin
- 128 CAN 'soft' inputs with configurable scaling

Interfaces:

- 2x 100Mbit/s full duplex Ethernet (can be used as Ethernet switch)
- 3x CAN 2.0B – fully flexible
- *Option for galvanically isolated CAN bus (CAN3 - custom projects only)*
- *RS232C serial interface (custom projects only)*
- *LIN Bus (custom projects only)*

Power Supply:

- 6V to 20V input voltage (12V option), 6V to 30V input voltage (24V option), 6V to 60V (48V option
- Dedicated logic power input
- Regulated 5V sensor reference supply output with full circuit protection

Sleep State:

- Low power standby state with configurable wake options:
  - Wake by voltage signal (1.6mA)
  - Wake by any CAN activity (CAN1 only) (2mA)
  - Wake by specific CAN frame (two frames required, CAN1 only) (2mA)
  - Wake by CAN specific CAN frame with low latency (one frame required, CAN1 only) (10mA)

ECU Slaving:

- Allows a Life Racing ECU to “claim” unused pins across a dedicated CAN bus utilising the following PDU I/O:
- Outputs 1..4 with additional functionality including H-Bridge pairing and configurable PWM frequencies
- Low Outputs 5..6 with configurable PWM frequencies
- All 12 inputs, including 4 frequency capable (optionally bipolar), and all with software selectable 3k ohm pull-up resistors

Physical:

- 1 Leavyseal connector with a total of 62 pins
- Amphenol SurLok Power Stud
- Machined Aluminium enclosure
- 145x175x50mm (including connectors)
- 750 grams
- Operating Temperature -40C to +85C

Ordering Information:

Description	Part number
PDUX2	PDU-C06
PDUX2 24V	PDU-E06
PDUx 200A Connector Kit	CON-B11
3-axis accelerometer and 3-axis gyroscope	PDU-FEAT-IMU
Two pin wheel speed sensor inputs	PDU-BTC-WS

Wiring Information:

Power Stud

Mating connector: Surlok SLPPBxxBSR
(xx=size: 35 150A, 50 200A)

Pin	Gauge	Signal Name	Signal Notes
1	-	+24V Supply	Positive battery supply

Connector 1

Mating Connector: TE 1-1418883-1, Hood TE 1418882-1

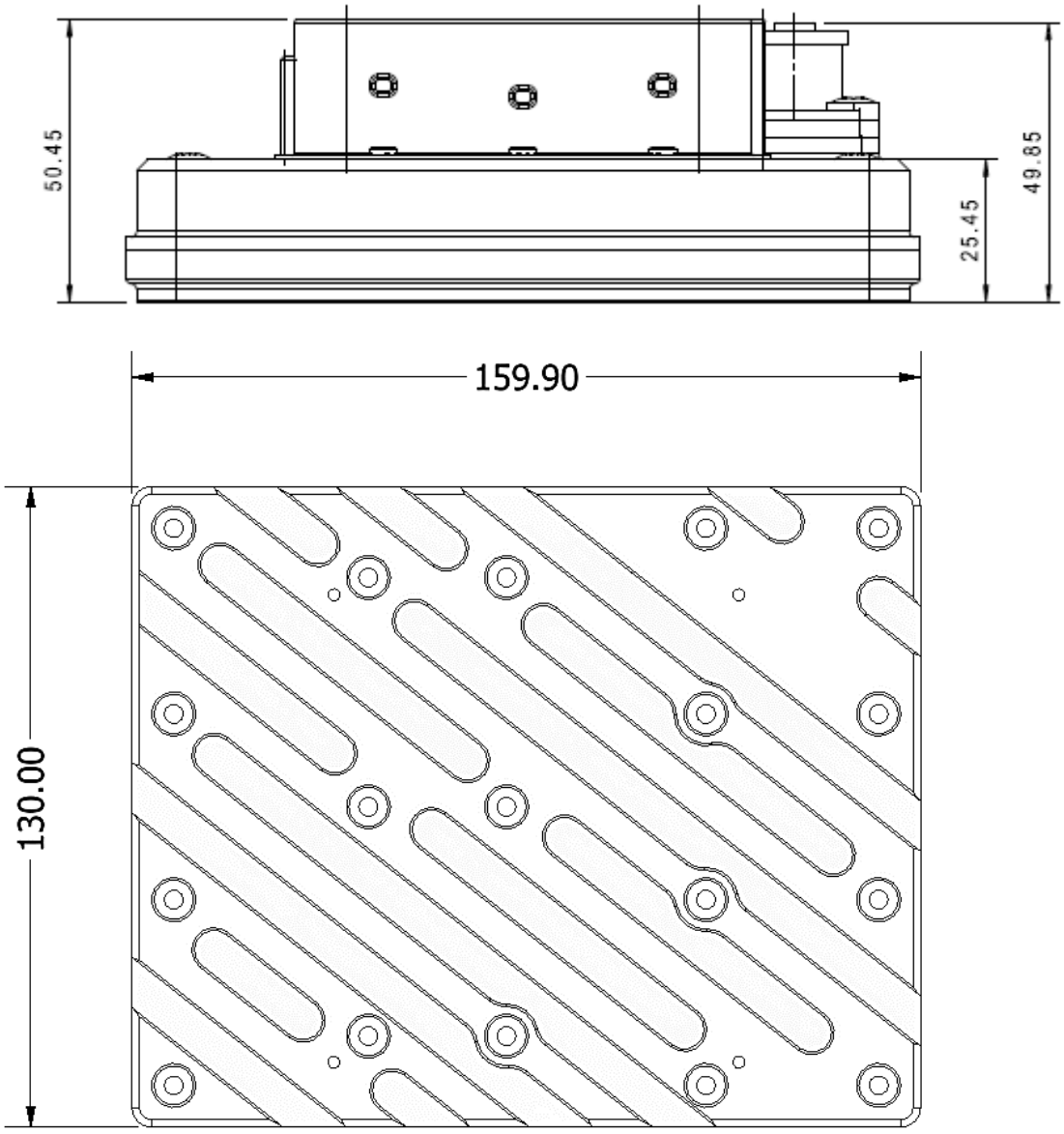
Pin	Gauge	Signal Name	Signal Notes
1	24-16AWG	5V OUT	Regulated 5V sensor reference supply
2	24-16AWG	INPUT #12	Analogue 0-5V, 3kΩ programmable pullup to 5V, Wake(1)
3	24-16AWG	INPUT #11	Analogue 0-5V, 3kΩ programmable pullup to 5V, Wake(1)
4	24-16AWG	INPUT #10	Analogue 0-5V, 3kΩ programmable pullup to 5V, Wake(1)
5	24-16AWG	INPUT #09	Analogue 0-5V, 3kΩ programmable pullup to 5V, Wake(1)
6	24-16AWG	INPUT #08	Analogue 0-5V, 3kΩ programmable pullup to 5V
7	24-16AWG	INPUT #07	Analogue 0-5V, 3kΩ programmable pullup to 5V
8	24-16AWG	INPUT #06	Analogue 0-5V, 3kΩ programmable pullup to 5V
9	24-16AWG	INPUT #05	Analogue 0-5V, 3kΩ programmable pullup to 5V
10	24-16AWG	INPUT #04	Analogue 0-5V, 3kΩ programmable pullup to 5V SLAVED: Analogue or frequency; 0-5V, -5V to +5V, 3kΩ programmable pullup to 5V, fixed frequency voltage thresholds
11	24-16AWG	INPUT #03	Analogue 0-5V, 3kΩ programmable pullup to 5V SLAVED: Analogue or frequency; 0-5V, -5V to +5V, 3kΩ programmable pullup to 5V, fixed frequency voltage thresholds
12	24-16AWG	INPUT #02	Analogue 0-5V, 3kΩ programmable pullup to 5V SLAVED: Analogue or frequency; 0-5V, -5V to +5V, 3kΩ programmable pullup to 5V, fixed frequency voltage thresholds
13	24-16AWG	INPUT #01	Analogue 0-5V, 3kΩ programmable pullup to 5V SLAVED: Analogue or frequency; 0-5V, -5V to +5V, 3kΩ programmable pullup to 5V, fixed frequency voltage thresholds
14	24-16AWG	SENSOR GND	Protected sensor ground
15	-	DO NOT CONNECT	LR Internal use only
16	24-16AWG	LIN	NOT CURRENTLY IN USE
17	24-16AWG	RS232 TX	RS232 transmit
18	24-16AWG	RS232 RX	RS232 receive
19	24-16AWG	CAN #03 LO	CAN communication port 120Ω software selectable termination
20	24-16AWG	CAN #03 HI	CAN communication port 120Ω software selectable termination
21	24-16AWG	CAN #02 LO	CAN communication port 120Ω software selectable termination ECU Slave – when paired with LR ECU (terminated)
22	24-16AWG	CAN #02 HI	CAN communication port 120Ω software selectable termination ECU Slave – when paired with LR ECU (terminated)
23	24-16AWG	CAN #01 LO	CAN communication port 120Ω software selectable termination
24	24-16AWG	CAN #01 HI	CAN communication port 120Ω software selectable termination
25	-	DO NOT CONNECT	LR Internal use only
26	-	DO NOT CONNECT	LR Internal use only

Pin	Gauge	Signal Name	Signal Notes
27	24-16AWG	ETHERNET2 TX-	Ethernet communication port 2
28	24-16AWG	ETHERNET2 TX+	Ethernet communication port 2
29	24-16AWG	ETHERNET2 RX-	Ethernet communication port 2
30	24-16AWG	ETHERNET2 RX+	Ethernet communication port 2
31	24-16AWG	ETHERNET1 TX-	Ethernet communication port 1
32	24-16AWG	ETHERNET1 TX+	Ethernet communication port 1
33	24-16AWG	ETHERNET1 RX-	Ethernet communication port 1
34	24-16AWG	ETHERNET1 RX+	Ethernet communication port 1
35	-	DO NOT CONNECT	LR Internal use only
36	-	DO NOT CONNECT	LR Internal use only
37	24-16AWG	WAKEUP	Dedicated Wake[1]
38	24-16AWG	LOGIC POWER IN	+12V Battery supply; recommended independent logic supply <0.5A
39	24-16AWG	Low Output 06	Low Side, Low Side PWM (100Hz-10kHz) SLAVED: Low Side PWM variable frequency
40	24-16AWG	Low Output 05	Low Side, Low Side PWM (100Hz-10kHz) SLAVED: Low Side PWM variable frequency
41	24-16AWG	WARNING AND RESET SW	Warning output for an LED to ground. Short to ground for manual reset.
42	24-16AWG	Output 16D	High Side with Diode intended for wiper operation 15A
43	24-16AWG	Output 16	High Side 12.5A
44	24-16AWG	Output 15	High Side 12.5A
45	24-16AWG	Output 14	High Side/High Side PWM (100Hz-20kHz), Soft start, Capacitive load start, 12.5A
46	24-16AWG	Output 13	High Side/High Side PWM (100Hz-20kHz), Soft start, Capacitive load start, 12.5A
47	24-16AWG	Output 12	High Side/High Side PWM (100Hz-20kHz), Soft start, Capacitive load start, 12.5A
48	24-16AWG	Output 11	High Side/High Side PWM (100Hz-20kHz), Soft start, Capacitive load start, 12.5A
49	24-16AWG	Output 10	High Side/High Side PWM (100Hz-20kHz), Soft start, Capacitive load start, 12.5A
50	24-16AWG	Output 9	High Side/High Side PWM (100Hz-20kHz), Soft start, Capacitive load start, 12.5A
51	24-16AWG	Output 8	High Side/High Side PWM (100Hz-20kHz), Soft start, Capacitive load start, 12.5A
52	24-16AWG	Output 7	High Side/High Side PWM (100Hz-20kHz), Soft start, Capacitive load start, 12.5A
53	24-16AWG	Power Ground	Negative battery supply
54	24-16AWG	Power Ground	Negative battery supply
55	24-16AWG	Power Ground	Negative battery supply
56	24-16AWG	Power Ground	Negative battery supply
57	22-14AWG	Output 6	High Side, Capacitive load start, 35A[2]
58	22-14AWG	Output 5	High Side, Capacitive load start, 35A[2]
59	22-14AWG	Output 4	High Side/Low Side/High Side PWM (100Hz-20kHz), Soft start, Capacitive load start, 35A[2] SLAVED: Half Bridge, Full Bridge paired with Output 3, Low Side, Variable frequency PWM
60	22-14AWG	Output 3	High Side/Low Side/High Side PWM (100Hz-20kHz), Soft start, Capacitive load start, 35A[2] SLAVED: Half Bridge, Full Bridge paired with Output 3, Low Side, Variable frequency PWM
61	22-14AWG	Output 2	High Side/Low Side/High Side PWM (100Hz-20kHz), Soft start, Capacitive load start, 35A[2] SLAVED: Half Bridge, Full Bridge paired with Output 3, Low Side, Variable frequency PWM
62	22-14AWG	Output 1	High Side/Low Side/High Side PWM (100Hz-20kHz), Soft start, Capacitive load start, 35A[2] SLAVED: Half Bridge, Full Bridge paired with Output 3, Low Side, Variable frequency PWM

Footnotes:

[1]Can be calibrated to bring unit out of sleep mode when driven high.
[2] Default PWM frequency for Outputs 1-6 is 20kHz.

Dimensions:



Warranty and Servicing:

- 1 year limited warranty when used within supplied specification.