

CANdrive™

CANbus J1939 to Electric Gauge Interface



Patent applied for GB2424280



Features

- For modern electronic engines and equipment applications using SAE J1939 Controller Area Network
- Drives standard electric gauges
- User-configurable compatibility with Murphy, VDO or Datcon gauges
- Engine fault LED option

As part of the MurphyLink® family, CANdrive offers a cost effective instrument solution for modern electronic engines. CANdrive modules read engine ECU CANbus/J1939 data, drive standard electric panel gauges, and provide LED indication of status and faults.

CANdrive has three dedicated outputs for tachometer, oil pressure and coolant temperature gauges, with DIP switch-selectable compatibility for Murphy, VDO or Datcon gauges. For volume orders, the outputs can be custom-configured for other gauge types, lamps, relays or remote signalling.

CANdrive advantages include:

- the retrofitting of existing electric gauge panels to new, J1939 compatible engines
- the use of standard, economical electric gauges with new J1939 engines
- no need for installation of additional gauge senders, tachometer magnetic pickups and wiring.

CANdrive is packaged in a compact, surface mounted case with epoxy encapsulation for maximum durability and environmental sealing. Electrical connection is via a 12-way automotive type connector. Model CDV100F has a forward facing connector and one power/CAN status LED. Model CDV300R has 8 LEDs for indication of J1939-transmitted engine faults and status. All models include a 6-way DIP switch for flexible configuration.

Specifications

Power supply

Operating voltage,

12V range (switch S5 on/up): 7 to 16 VDC

24V range (switch S5 off/down): 19 to 30 VDC

Current consumption:

CDV100: 25 mA typ.

CDV300: 50 mA typ. (2 LEDs lit)

Inputs

CANbus: SAE J1939 protocol. Input has a 120 Ohm terminating resistor, removable by switch S4.

Outputs (all ratings non-reactive)

Oil pressure gauge, engine temperature gauge:

switch selectable for Murphy, VDO or Datcon gauges:

see Gauge Compatibility section for pressure/temperature verses equivalent sender resistance tables

Tachometer: pulsed DC, 119 Hz ±1% @ 1500 RPM

Physical

Electromagnetic compatibility: 2004/108/EC

Case material: polycarbonate / polyester / epoxy encapsulation

Overall dimensions (w x h x d):

68 x 92 x 22mm / 2.7 x 3.8 x 0.9 in.

(allow 50mm / 2.0 in. depth with connector)

Weight: approx 80g / 0.2 lb

Temperature:

operation: -40 to +85°C / -40 to +185°F, 70% RH

storage: -55 to +105°C / -67 to +221°F

Environmental sealing: IP60

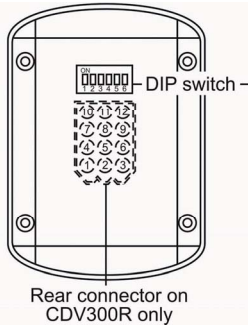
(CDV300R: IP65 from front with optional CDVG gasket)

Vibration: 15g, 10 to 2000 Hz, 3-axis

Shock: 50g, 11 mS, 3-axis

Warranty - A two year limited warranty on materials and workmanship is given with this FW Murphy product. A copy of the warranty may be viewed or printed by going to www.fwmurphy.co.uk/warranty

CDV100F front CDV300R front Rear view and configuration



Switch position	▲ on (up)	▼ off (down)	Options:
S1	▲	▼	Murphy temp. & pressure gauges
S2	▲	▲	Datcon temp. & 0 – 7 bar pressure gauges
S3	▲	▼	Datcon temp. & 0 – 10 bar pressure gauges
S4	▲	▲	VDO temp. & 0 – 5 bar pressure gauges
S5	▲	▼	VDO temp. & 0 – 10 bar pressure gauges
		▲	CAN 120 Ohm terminating resistor in circuit
		▼	CAN 120 Ohm terminating resistor removed
		▲	12V DC power supply
		▼	24V DC power supply

Gauge compatibility

Pressure gauge compatibility table: pressure versus approximate equivalent sender resistance (Ohms)

Pressure	psi	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140
	bar	0	0.7	1.4	2.1	2.8	3.4	4.1	4.8	5.5	6.2	6.9	7.6	8.3	9.0	9.7
Murphy		240	205	171	143	123	103	88	74	60	47	33				
Datcon 0 – 7 bar		240	195	160	140	115	100	82	68	55	43	35				
Datcon 0 – 10 bar		240	215	190	168	150	135	118	107	97	87	77	67	58	50	42
VDO 0 – 5 bar		10	38	61	85	110	130	155	180							
VDO 0 – 10 bar		15	30	45	60	70	81	92	103	114	125	136	148	160	170	182

Temperature gauge compatibility table: temperature versus approximate equivalent sender resistance (Ohms)

Temperature	°C	40	50	60	70	80	90	100	110	120	130	140
	°F	104	122	140	158	176	194	212	230	248	266	284
Murphy		1029	680	460	321	227	164	120	89	74	52	40
Datcon		360		160		80		50		38		
VDO		282.4	190.0	134.0	95.2	69.1	51.2	38.5	29.4	22.7	18.0	14.5

Tachometer compatibility: pulsed DC output, 119 Hz ±1% at 1500 RPM, e.g. for use with Murphy ATA and ATHA tachometers

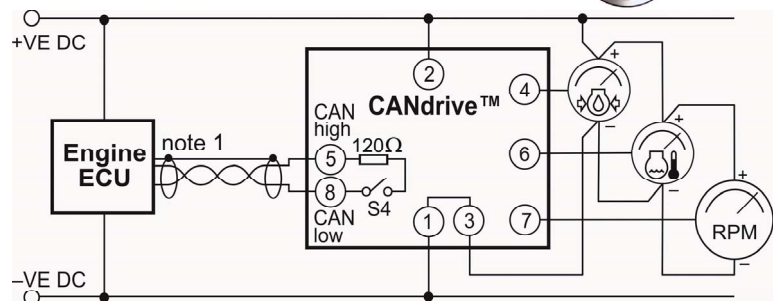
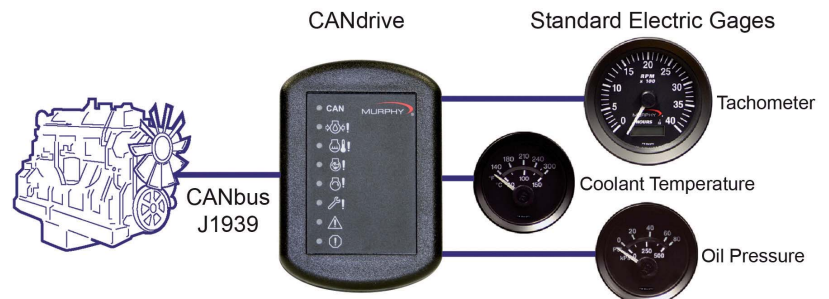
How to order

Stock code	Description
79.70.0001	CDV100F, CANdrive™ J1939 to gauge interface, 1 x CAN status LED, connector forward
79.70.0002	CDV300R, CANdrive™ J1939 to gauge interface, 8 x status/fault LEDs, connector rearward
78.00.0437	CDV-PW-30, 8 way wiring harness, length 30 in./760mm
79.70.1003	CDVG, optional sealing gasket for CDV300R
78.70.0363	CDV100F plus CDV-PW-30 harness
78.70.0364	CDV300R, CDV-PW-30 and CDVG gasket
79.70.1001	CANdrive connector plug shell
79.70.1002	Connector pins for above (pack of 50)

Further information

Document	Description
00-02-0618	CANdrive installation and operation
00-02-0251	EG(S)21 series electric gage installation
00-02-0258	AT series tachometer installation

Connection



Notes: 1) CANbus J1939 networks typically have two 120 Ohm terminating resistors (one at each end), with a shield/screen connected to ground/earth at one end only. Check engine & ECU documentation for details.