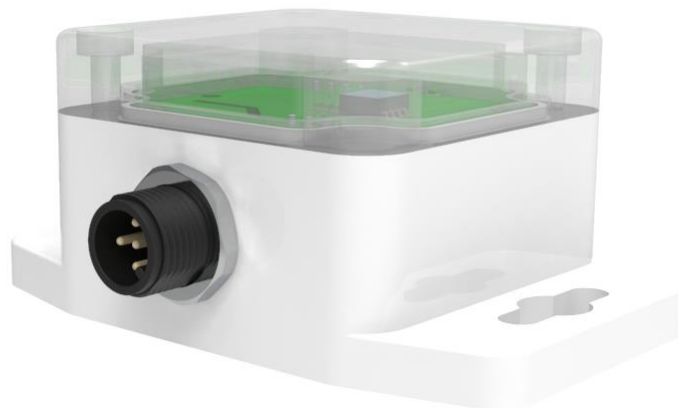


CAN2CAN converter

Version 1.00



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1 Important Notices

Information in this document is subject to change without notice. LXNAV reserves the right to change or improve their products and to make changes in the content of this material without obligation to notify any person or organization of such changes or improvements.



A Yellow triangle is shown for parts of the manual which should be read very carefully and are important when operating the CAN2CAN.



Notes with a red triangle describe procedures which are critical and may result in loss of data or any other critical situation.



A bulb icon is shown when a useful hint is provided to the reader.

1.1 Limited Warranty

This Can2Can product is warranted to be free from defects in materials or workmanship for two years from the date of purchase. Within this period, LXNAV will, at its sole option, repair or replace any components that fail in normal use. Such repairs or replacement will be made at no charge to the customer for parts and labour, provided that the customer pays for shipping costs. This warranty does not cover failures due to abuse, misuse, accident, or unauthorized alterations or repairs.

THE WARRANTIES AND REMEDIES CONTAINED HEREIN ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED OR STATUTORY, INCLUDING ANY LIABILITY ARISING UNDER ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, STATUTORY OR OTHERWISE. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, WHICH MAY VARY FROM STATE TO STATE.

IN NO EVENT SHALL LXNAV BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM THE USE, MISUSE, OR INABILITY TO USE THIS PRODUCT OR FROM DEFECTS IN THE PRODUCT.

Some states do not allow the exclusion of incidental or consequential damages, so the above limitations may not apply to you. LXNAV retains the exclusive right to repair or replace the unit or software, or to offer a full refund of the purchase price, at its sole discretion. SUCH REMEDY SHALL BE YOUR SOLE AND EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY.

To obtain warranty service, contact your local LXNAV dealer or contact LXNAV directly.

1.2 Packing Lists

- CAN2CAN converter
- Optional M12 – J1939 adapter

2 Technical Data

2.1 General specifications

Parameter	Condition	Min	Typ	Max	Unit
Operating supply voltage		8	12	32	V
Current consumption			14		mA
Load equivalent number		1			LEN
Operating temperature		-20		+65	°C
Storage temperature		-40		+85	°C
Recommended humidity		0		95	RH
Weight		74			g
Housing length		94			mm
Housing width		71.6			mm
Housing height		35			mm
Ingress Protection		IP67			

Table1: General specifications

2.2 NMEA2000 specifications

Parameter	description
Compatibility	NMEA2000 compatible
Bit rate	250kbps
Connection	A coded M12 connector

Note1: Supplied via M12 NMEA2000 connector

Table2: General specifications

3 Connectors on CAN2CAN converter

3.1 NMEA2000 Connector

M12 5-pin A-coded connector on side of unit is compatible with NMEA2000 and has standard pinout.

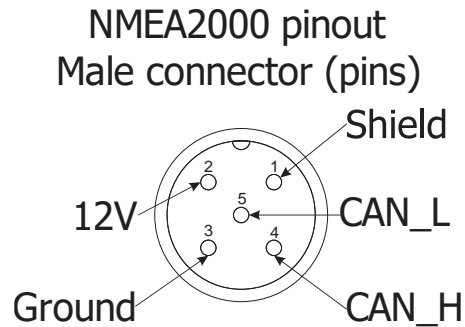


Figure 1: NMEA2000 M12 Male connector pinout (view from unit side)



CAN2CAN converter has isolated power supply for each side. It means we need to provide 12V power supply to each M12 connector.

3.2 Port A

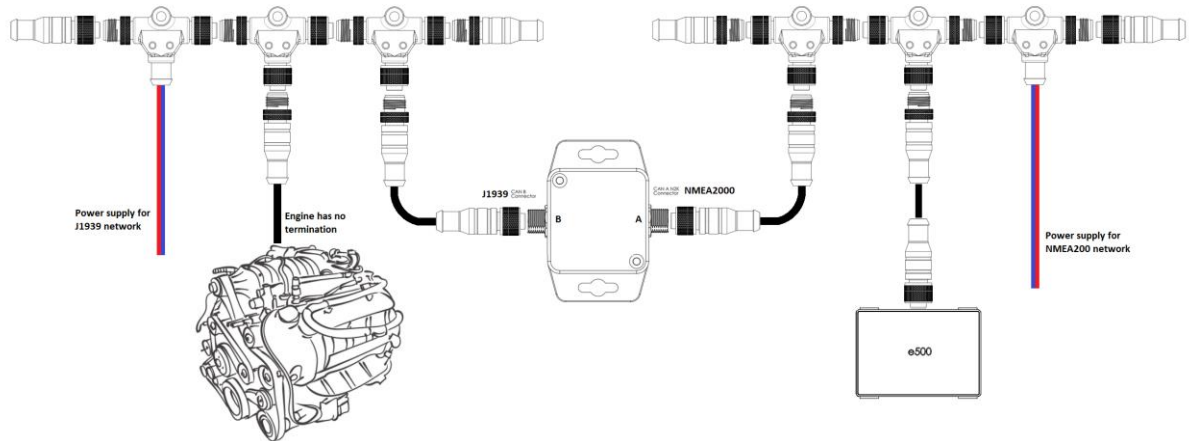
M12 Port A is for NMEA2000 bus. To this port is connected NMEA2000 network of the vessel. Converter is supplied from port A.

3.3 Port B

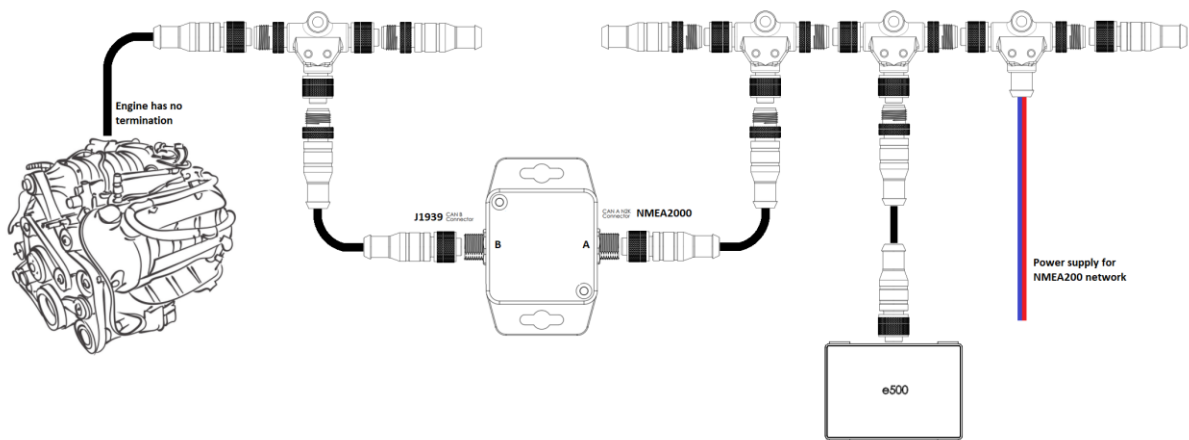
M12 Port B is for J1939 bus. To this port is connected engine network adapter, which could be 6 or 12 pins. Port B also need power supply, because the ports A and B are isolated.

4 Typical installations

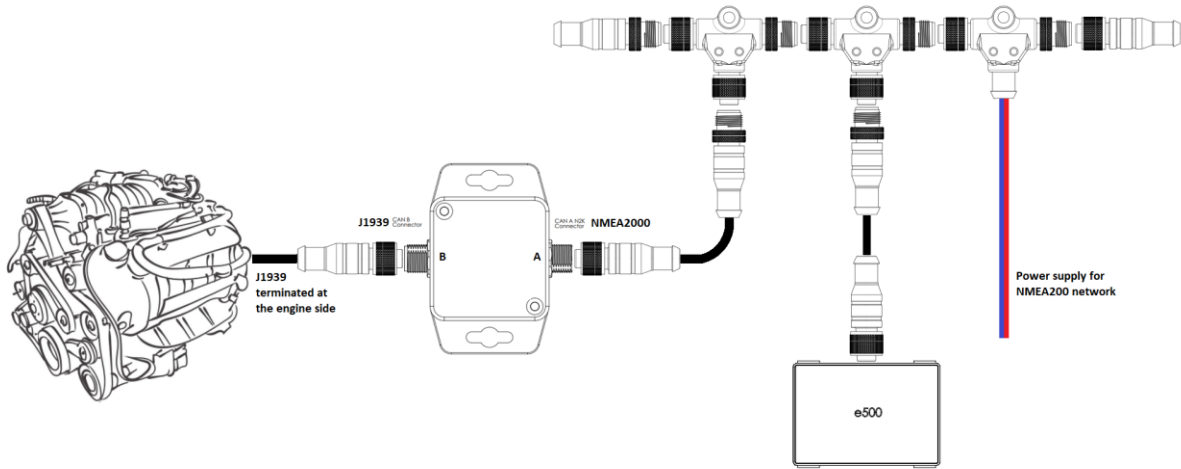
4.1 Engine does not provide power supply and termination



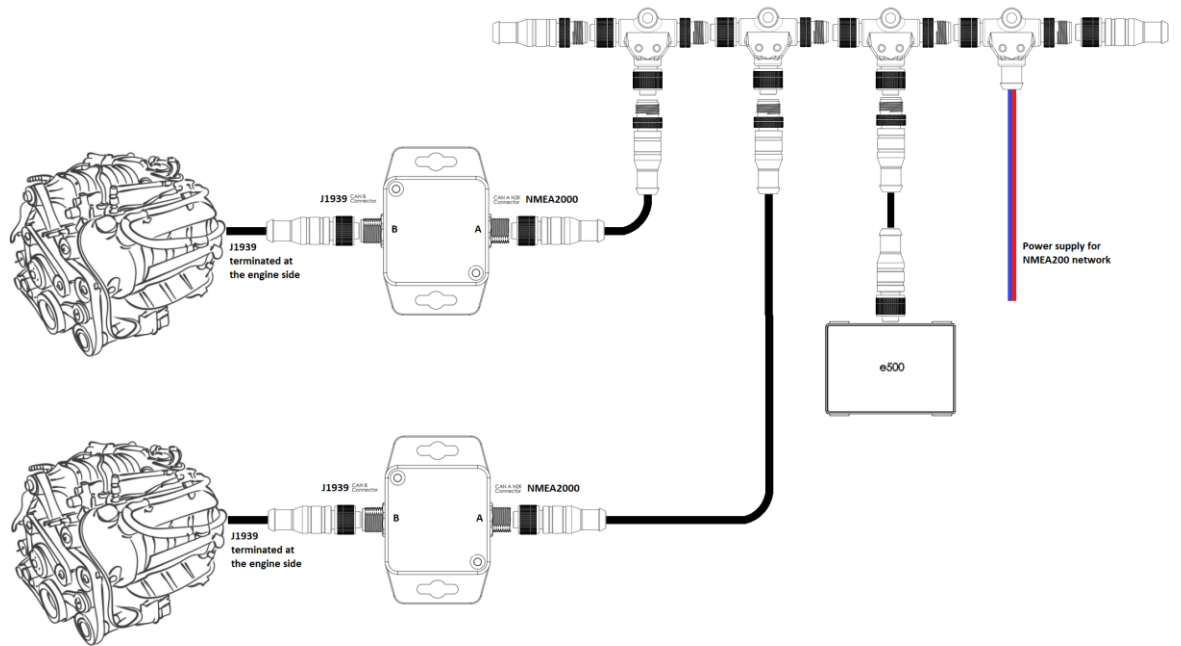
4.2 Power supply for J1939 is provided by engine, external terminators



4.3 Power supply and termination for J1939 is provided by engine

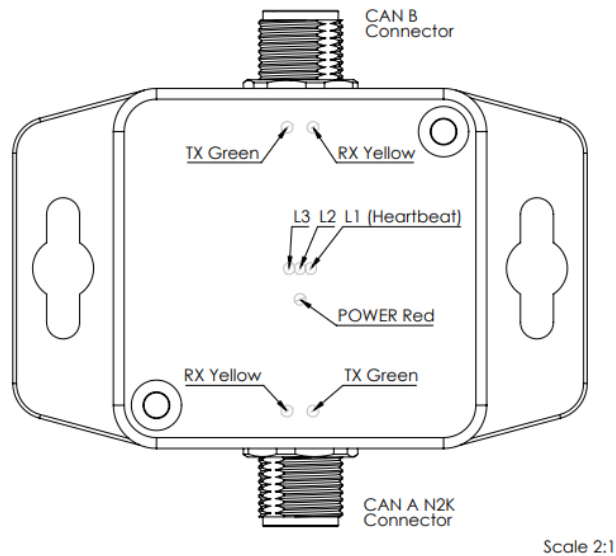


4.4 Twin engine installation



For multi engine installation an instance number must be assigned with the DIP switch.

5 Description



Port B is assigned as J1939 network interface, Green led on this side, indicates CAN2CAN transmits data to J1939 network, Yellow led indicates, data is receiving from J1939 network.

LED1 (L1) represents heartbeat of the CAN2CAN unit. It blinks with approximately 1Hz and indicates the unit is alive.

LED2 and LED3 are not in use.

Power Red LED indicates power supply at the NMEA2000 side where is supplied complete electronics.

Port A is assigned as NMEA2000 network interface, Green led on this side, indicates CAN2CAN transmits data to NMEA2000 network, Yellow led indicates, data is receiving from NMEA2000 network.



In case that RX/TX LEDs are not blinking, please check connection and power supply. Unit needs power supply for each network separately.

With the DIP switch we can assign engine instance number. For example, all switches to OFF, the instance number is 1. Instance number 1 is normally right engine. First switch to ON will assign the instance number 2.

At the bottom of the PCB is another DIP switch, which selects the bitrate of the J1930. All switches off means, the J1939 bitrate is 250kbps. Switch 1 ON, set the J1939 bitrate to 500kbps.

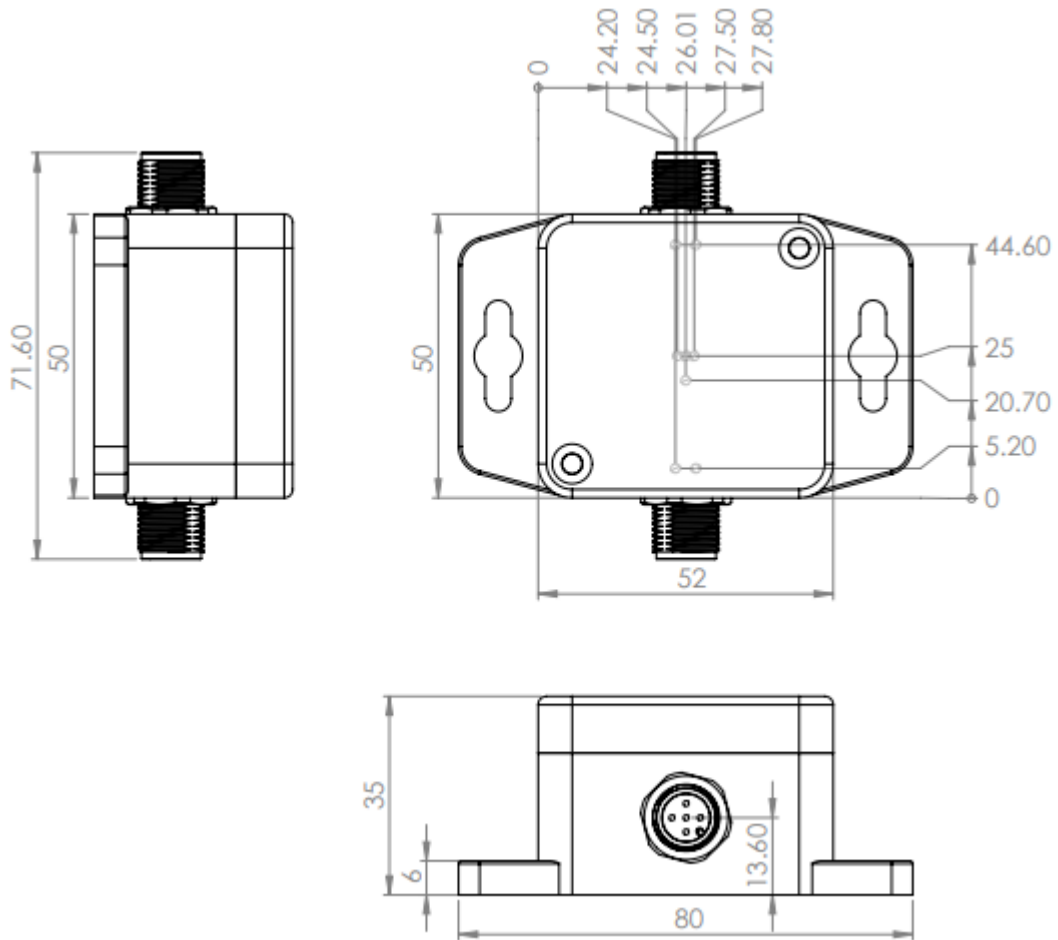
6 Data conversion table

This table describes conversion of J1939 application layer messages to NMEA2000 messages. Only messages related to engine are converted. This also includes DTC codes as well as transmission messages. The full list of converted messages is listed below.

N2K Field name	N2K PGN	J1939 Field name	J1939 PGN	J1939 SPN	N2K Device
Engine speed	127488	Engine speed	61444	190	Engine
Engine boost pressure	127488	Engine intake manifold pressure	65270	102	Engine
Engine oil pressure	127489	Engine oil pressure	65263	100	Engine
Engine oil temperature	127489	Engine oil temperature	65262	175	Engine
Engine coolant temperature	127489	Engine coolant temperature	65262	110	Engine
Alternator potential	127489	Charging system potential	65271	167	Engine
Fuel rate	127489	Engine fuel rate	65266	183	Engine
Total engine hours	127489	Total engine hours	65253	247	Engine
Percent engine load	127489	Percent engine load	61443	92	Engine
Water in fuel ind.	127489	Water in fuel	65279	97	Engine
Engine emergency stop	127489	DTC	65226	Any	Engine
Check engine	127489	DTC	65226	100 – Oil press 158 – L/H sys. voltage 102 – High boost press 106 - 190 – Rev limit exceeded 110 – Over temp. 111 – Eng. coolant lvl. 97 – Water in fuel 94 – Fuel del. Press. 98 – Eng. Oil level	Engine
Low oil pressure	127489	DTC	65226	100	Engine
Low system voltage	127489	DTC – Keyswitch batt. voltage	65226	158	Engine
High boost pressure	127489	DTC -	65226	102 & 106	Engine
Rev limit exceeded	127489	DTC	65226	190	Engine
Over temperature	127489	DTC	65226	110	Engine
Water in fuel indicator	127489	DTC	65226	97	Engine
Battery voltage	127508	Battery voltage	65271	168	Battery
Battery voltage	127508	Battery potential 2	65165	444	Battery
Transmission oil	127493	Transmission oil	65272	127	Engine

pressure		pressure			
Transmission oil temp.	127493	Transmission oil temp.	65272	177	Engine
Outside ambient air temp.	130310	Outside ambient air temp.	65269	171	Temperature
Low fuel pressure	127489	DTC - Low fuel pressure	65226	94	Engine
Low oil level	127489	DTC – Low oil level	65226	98	Engine
Low coolant level	127489	DTC – Low coolant lvl	65226	111	Engine
Percent Engine Torque	127489	Percent torque	61444	513	Engine
Fuel pressure	127489	Engine fuel delivery pressure	65263	94	Engine
Engine coolant pressure	127489	Engine coolant pressure	65263	109	Engine
Fluid level	127505	Engine fuel level	65276	96	Fluid level
Fluid level	127505	Engine oil level	65263	98	Fluid level

7 Dimensions



8 Revision history

Date	Revision	Version	Description
April 2020	1	1.0	Initial release of this manual
June 2021	2	1.0	Added conversion table
June 2022	3	1.0	Added chapter 4.4
July 2022	4	1.0	Updated chapter 4.4, 5
Feb. 2023	5	1.0	Added general specification
Aug 2023	6	1.0	Updated chapter 5