

# **LET Communication Checker for vehicle external diagnostic equipment**

26Nov2021	0.1	First edition	K.Sakai
Date	Version	History	Make

## ■ What is a LET Communication Checker for vehicle external diagnostic equipment?

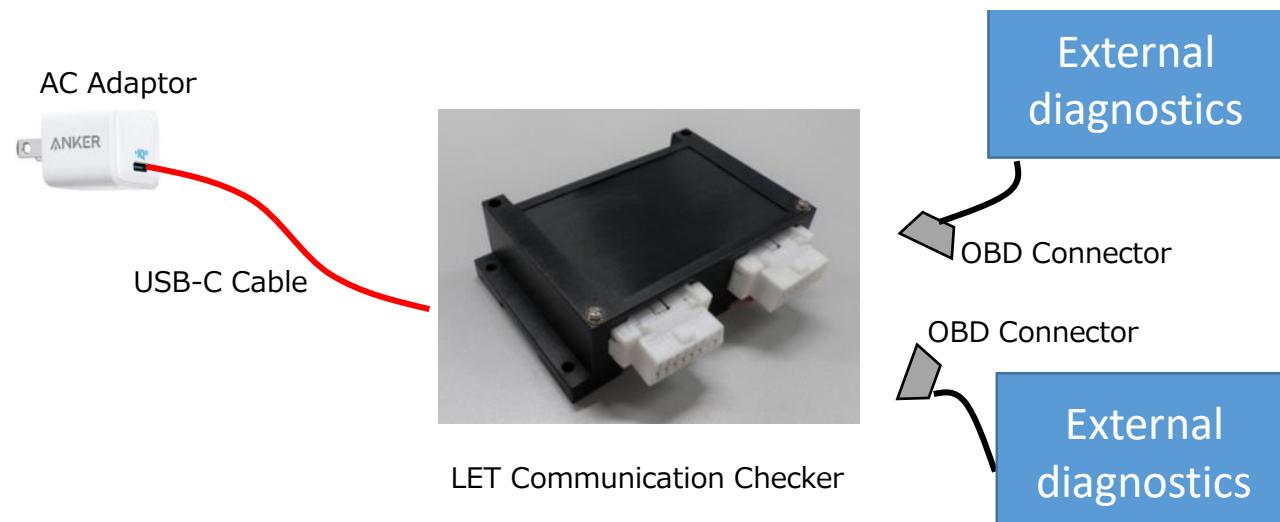
### 【 Objective 】

- ① Extract 12V from USB PD charger Supply power to two external diagnostic devices
- ② Connect the OBD wires of the two external diagnostic equipment and check if the external diagnostic equipment can communicate with each other.

### 【 Supplemental Information】

Vehicle external diagnostic equipment refers to equipment that uses external tools to diagnose the health of the vehicle.

## ■ Directions for use



## ■ Specifications

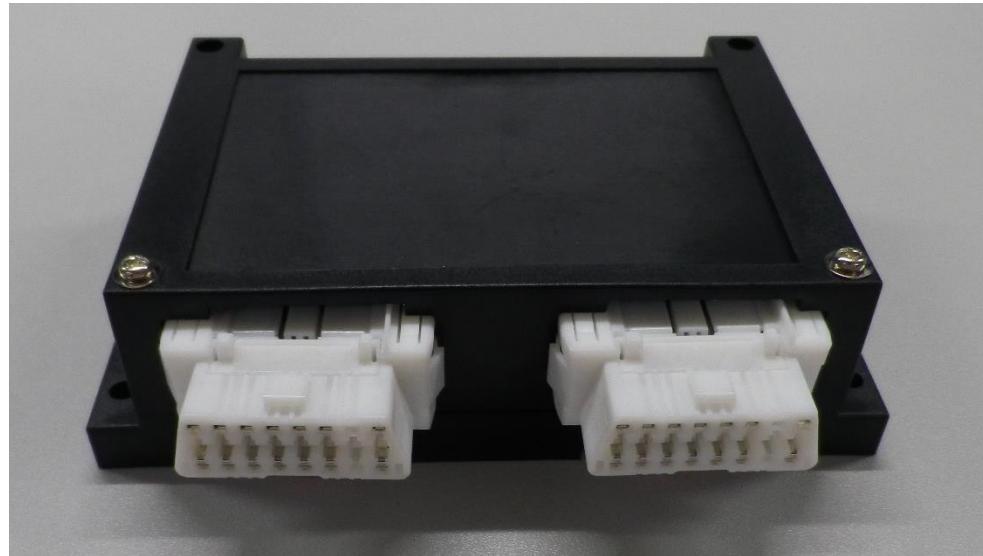
Test Standards	Standard	Operation range		
		MIN	TYP	MAX
USB Type-C input	USB PD3.0 DC15V/2A	-	-	-
OBD Connector Standard	SAE J1962	-	-	-
OBD+B Output Voltage		11.5V	12V	12.5V
OBD+B Output Current		-	1.2A	2A
Operating atmosphere range		0°C	25°C	45°C
Storage temperature range		-25°C	25°C	60°C
Operating humidity range		10%Rh	-	90%Rh

## ■ Appearance

External dimensions (not including protruding parts of OBD connector)

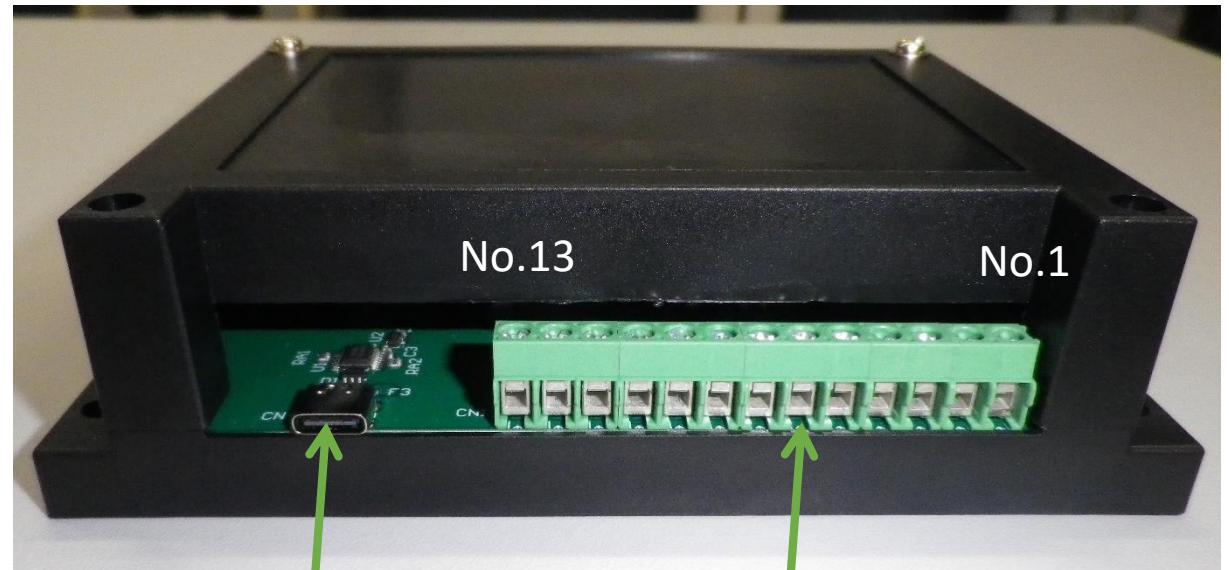
Length: 110mm x Width: 145mm x Height: 40mm Weight: 210g

OBD connector: POM (white)



OBD Connector

OBD Connector



USB  
Type-C

terminal block (electrical)

# ■ Wiring diagram for use

External diagnostic equipment1

OBD-1	
1	
2	
3	Tx(+)
4	FG
5	SG
6	CANHI
7	Kline
8	Wakeup
9	SCS
10	
11	Tx(-)
12	Rx(+)
13	Rx(-)
14	CANLO
15	
16	+B

External diagnostic equipment2

OBD-2	
1	
2	
3	Tx(+)
4	FG
5	SG
6	CANHI
7	Kline
8	Wakeup
9	SCS
10	
11	Tx(-)
12	Rx(+)
13	Rx(-)
14	CANLO
15	
16	+B

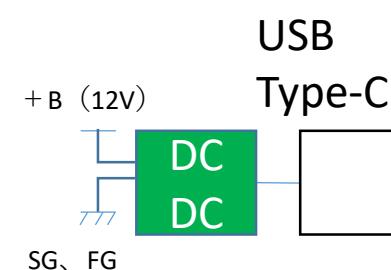
LET Communication Checker

Wiring relation table

OBD-1

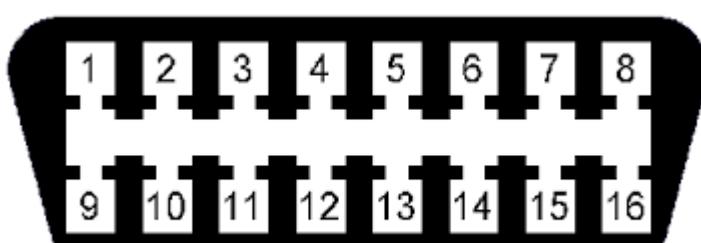
	OBD-1	OBD-2	terminal block (electrical)
	1	1	2
Tx(+)	3	12	9
FG	4	4	1
SG	5	5	1
CAN-HI	6	6	7
K-Line	7	7	3
Wakeup	8	9	6
SCS	9	8	5
Tx(-)	11	13	10
Rx(+)	12	3	11
Rx(-)	13	11	12
CAN-LO	14	14	8
L-LINE	15	15	4
+B	16	16	13

OBD-2

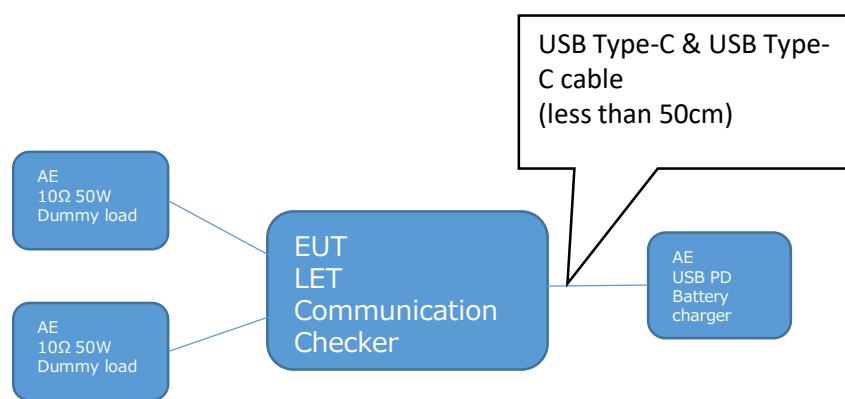


USB PD charger or USB PD compatible portable battery

OBD Connector Pinout



# ■ Configuration under test



# ■ Test

Test Standards	Standards
FCC Subpart 15	47 CFR 15 Subpart B ※1
EN55032	Class A Internal frequency 108MHz or less
EN55035	IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-6 All Performance Standard C

※1 This product falls under the category of digital devices used only as electronic control systems and power systems in industrial plants, and is exempt from the requirements. However, conformity tests will be conducted to confirm safety.

## CAUTION!!

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## ■ eligibility criteria

### Operation check after test

Test Standards	How to check	Eligibility criteria
OBD voltage output	Connect a USB PD compatible charger to USB Type-C and <b>OBD-1</b> Connector Pin 4 and Pin 16 Measure the voltage between	No more than $\pm 5\%$ change in voltage after the test compared to before the test (reference 12V)
	Connect a USB PD compatible charger to USB Type-C and <b>OBD-2</b> Connector Pin 4 and Pin 16 Measure the voltage between	The voltage after the test shall not change by more than $\pm 1\%$ compared with the voltage before the test. No more than $\pm 5\%$ change in voltage after the test (Reference 12V)
	Connect a USB PD compatible charger to USB Type-C and <b>Terminal block</b> No. 13 and No. 1 Measure the voltage between	No more than $\pm 5\%$ change in voltage after the test compared to before the test (reference 12V)

Wiring Relationship Table  
(Reference)

	OBD-1	OBD-2	terminal block (electrical)
	1	1	2
Tx(+)	3	<b>12</b>	9
FG	4	4	1
SG	5	5	1
CAN-HI	6	6	7
K-Line	7	7	3
Wakeup	8	<b>9</b>	6
SCS	9	<b>8</b>	5
Tx(-)	11	<b>13</b>	10
Rx(+)	12	<b>3</b>	11
Rx(-)	13	<b>11</b>	12
CAN-LO	14	14	8
L-LINE	15	15	4
+B	16	16	13

Terminal block (Reference)

