Toucan Touchscreen Gauge and CAL Selection Unit

Keypad CAN setup V1.2

For Toucan Firmware Version 1.84 and above

Disclaimer

Although every care is taken with the design of this product, JT Innovations Ltd. can in no way be held responsible for any consequential damage resulting from the use of Toucan in your vehicle.

Always operate your vehicle safely and do not allow yourself to be distracted by your Toucan display while driving. Minimise the amount of time you spend viewing the screen. Do not access any function requiring prolonged use of the menus whilst driving.

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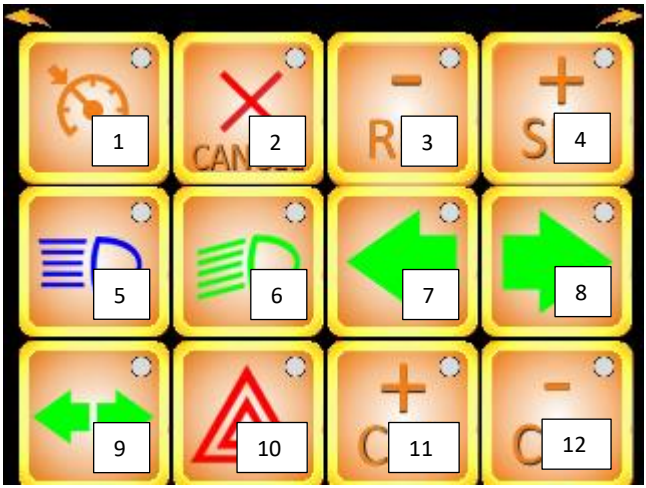
Introduction

A keypad was introduced from firmware version V1.81. This can be enabled from the “More” menus and allows control of other equipment, such as Power Distribution Units, via CANbus messages.

Layout

The keypad has 12 buttons, with optional indicators. The switches are numbered as follows:



The button icons can be changed using the “Display Setup” menus – a button “blank” is provided if gaps are wanted in the button layout.

CAN Transmit

Button presses are transmitted at the CAN data rate selected on “More” menu page 4, using 11 bit identifiers. The data format depends on whether “BITS”, “BYTES” or “WORDS” is chosen.

BITS

Data is transmitted on **CAN ID 0x741 (1857 decimal)** with the following data content.

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
0	**0**	**Buttons 9-12** Bit 0 = Button 9 Bit 3 = Button 12	**Buttons 1-8** Bit 0 = Button 1 Bit 7 = Button 8	**0**	**0**	**0**	**0**

BYTES

Data is transmitted on **CAN ID 0x213 and 0x214 (531 and 532 decimal)** with the following data content.

- 0 = button off
- 1 = button on

CAN ID	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
0x213	Button1	Button2	Button3	Button4	Button5	Button6	Button7	Button8
0x214	Button9	Button10	Button11	Button12	X	X	X	x

WORDS

Data is transmitted on **CAN ID 0x213, 0x214 and 0x215 (531, 532 and 533 decimal)** with the following data content.

- 0 = button off
- 1 = button on

CAN ID	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
0x213	0	Button1	0	Button2	0	Button3	0	Button4
0x214	0	Button5	0	Button6	0	Button7	0	Button8
0x215	0	Button9	0	Button10	0	Button11	0	Button12

CAN Receive

If indicators are enabled on the keypad, these can be set by sending the appropriate message via CANbus to Toucan.

LED messages are received at the CAN data rate selected on “More” menu page 4, using 11 bit identifiers on **CAN ID 0x740 (1856 decimal)** with the following data content.

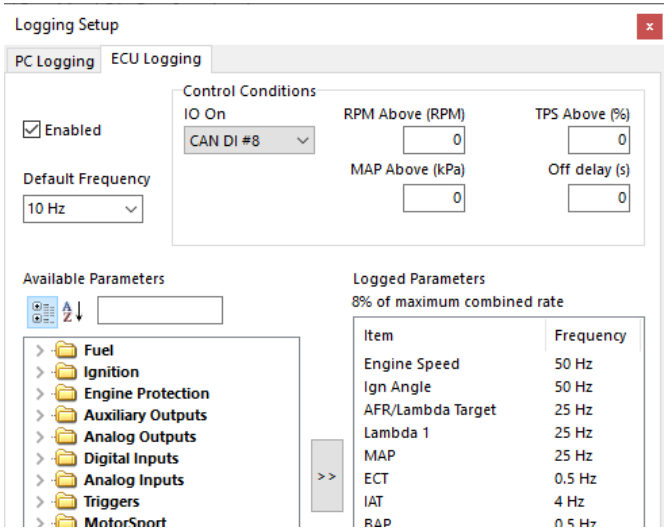
Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
x	x	**Buttons 9-12** Bit 0 = Indicator 9 Bit 3 = Indicator 12	**Buttons 1-8** Bit 0 = Indicator 1 Bit 7 = Indicator 8	x	x	x	x

If the bit is set, the button indicator will illuminate and if cleared the indicator will be turned off.

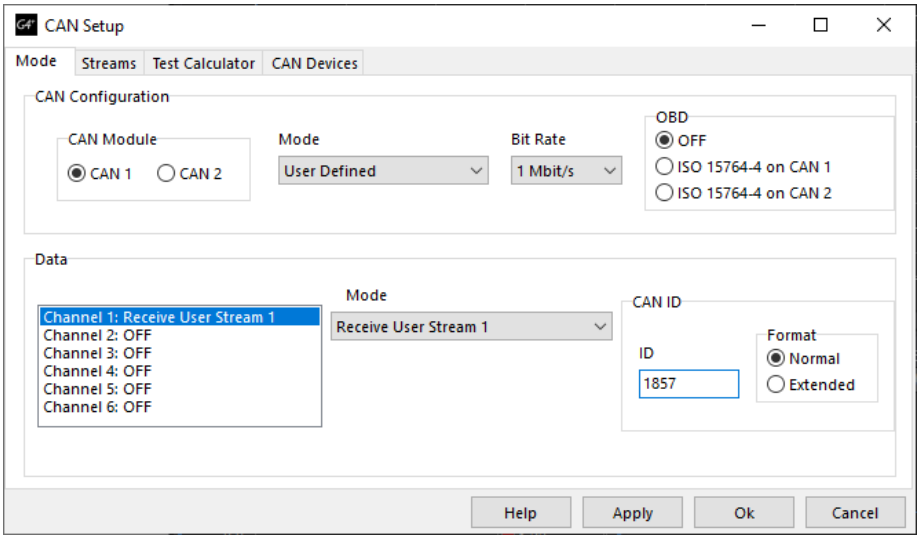
Link G4+ and CAN DIs

The keypad can be used with a Link G4+ ECU to control various functions. As an example, data logging can be turned on and off as follows, using a “LOG” icon on button 7 - button 7 status will be transmitted as Bit 6 of Byte 3 in the CAN Transmit message.

The G4+ allows logging to be initiated by a “CAN DI” via the “Logging Setup” menus as shown here, using CAN DI 8 as an example.

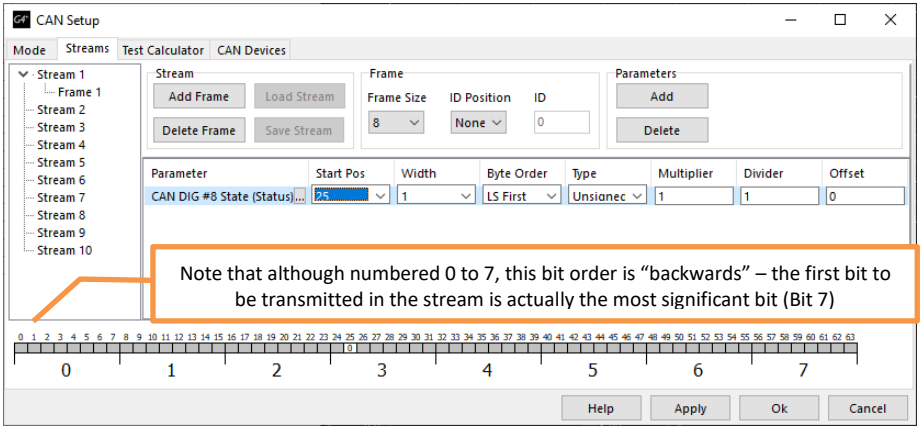


To setup the CAN DI to do this, use “CAN Setup” and first configure the ECU to receive an (unused) User Stream on CAN ID 1857.



Via the “Streams” tab, add a frame for the User Stream chosen in the first step, and add the required CAN DI as a parameter.

This example uses CAN DI 8 which we want to be set from button 7; bit 6 of Byte 3 in the CAN Transmit message. Since the data is transmitted most-significant bit first, the actual bit we need in the stream is Bit 25, as below.



Ensure that no other streams are configured to change the CAN DI's used for the keypad. This includes the usual "Toucan Can DI" streams used to allow table switching via Toucan's CAL Select feature.

The start positions for all 12 buttons are as follows:

Button	Start Position
1	31
2	30
3	29
4	28
5	27
6	26
7	25
8	24
9	23
10	22
11	21
12	20

If wished, the keypad button indicator can be used to confirm that logging is enabled. This requires a CAN stream to be set up to transmit on ID 1856, and the exact same bit position as above assigned to the Logging Status parameter.