Metis R&D CAN Development Kit

Generation 1

VAT Number: 236906884 Registered Company No. 10074810 Email: info@metisengineering.com

Revision History

Revision	Comment	Author	Date
0.1	Creation of Document	Joe Holdsworth	25-Jul-20
1	First Release	Joe Holdsworth	26-Jul-20
2	Change of Metis Engineering Logo	Claire Bishop	17-May-24

Contents

System Overview

This development kit is aimed at getting Metis CAN sensors up and working as quickly as possible.

The Kit can be used to quickly piece together CAN networks including a switch to select CAN termination on or off.

Add ons to this base kit allow easy expansion of the CAN network to allow the user to quickly adapt the network to include other sensors.

Units Specification

Environment	Operating temperature	-40 to +80	℃
	Dust and Water Ingress	no protection	

Mass		30	grams
Dimensions	Height x Width x Length	17x50x45	mm

CAN [1]	Baud Rates	up to 1000	kbps

Power [2]	Voltage Range	5 to 5.2	V
	Current	up to 200mA	mA @ 5V

Sensor Connector	On Unit	B06B-JWPF-SK-R
	Mating [3]	06R-JWPF-VSLE-D
	Crimp	SWPR-001T-P025
	Pin No.	Function
	1	Ignition/wakeup [3]
	2	Supply Voltage
	3	Ground
	4	CAN High
	5	CAN Low
	6	Factory Reset [4]

CAN connectors	On Unit	1 x D-Sub 9 Pin Male 1 x D-Sub 9 Pin Female
	Mating [3]	Any D-Sub 9 pin Male and Female
	Crimp	N/A
	Pin No.	Function
	1	Not Connected
	2	CAN Low
	3	Not Connected
	4	Not Connected
	5	Not Connected
	6	Ground
	7	CAN High
	8	Not Connected
	9	Not Connected

Switch	Position	Function
CAN Termination	On	CAN Bus Terminated and Filtered
	Off	CAN bus unterminated

Jumper	Position	Function
FACT_RST	Pins 1 and 2 jumped	Unit is set to factory defaults at power up
	Open or pins 2 and 3 jumped	No Function
WAKE (Not on all units)	Pins 1 and 2 jumped	If the wake feature is enabled jumping these 2 pins keeps the unit awake
	Open or pins 2 and 3 jumped	If the wake feature is enabled this causes the unit to sleep

TABLE 1 PRODUCT SPECIFICATION

Electrical

Mating Connector

Part No.: 06R-JWPF-VSLE-D

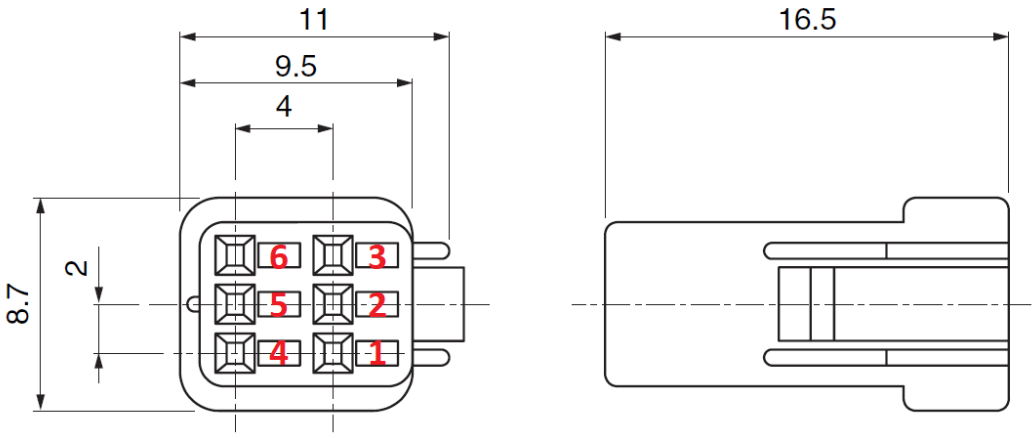


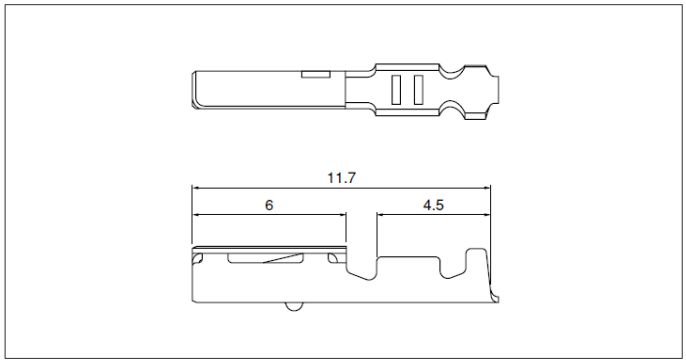
FIGURE 1 MATING CONNECTOR PIN NUMBERING (TOP DOWN VIEW)

Crimps

Crimp Part No.: SWPR-001T-P025

Crimp Tool Part No.: WC-JWPF

12” Pre-Crimped Cable Part No.: AJWPFJWPF22K305R



Model No.	Applicable wire		Insulation O.D (mm)	Q'ty / reel
	mm²	AWG#		
SWPR-001T-P025	0.13~0.33	26~22	1.4~1.7	8,200

Material and Finish
Copper alloy, tin-plated (reflow treatment)

RoHS compliance

Contact	Crimping machine	Applicator		
		Crimp applicator	Dies	Crimp applicator with dies
SWPR-001T-P025	AP-K2N	MKS-L	MK/SWPR/T-001-025	APLMK SWPR/T001-025
		–	–	–

FIGURE 2 CONNECTOR CRIMP DETAILS

Pin Outs

The unit is unterminated if this unit is the only unit on the CAN bus the CAN bus will need to be terminated by placing a 120 Ohm resistor between the CAN high and CAN low lines.

Pin No.	Function	Range
1	Ignition/wakeup (Switched off by default)	2.5 to 28V
2	Supply Voltage	7 to 28V
3	Ground	0V
4	CAN High	
5	CAN Low	
6	Factory Reset (pull high on power cycle to reset unit to default settings)	2.5 to 28V

TABLE 2 CONNECTOR PIN OUTS

Mechanical

Mount using 4 x M2.5 bolts and washers.

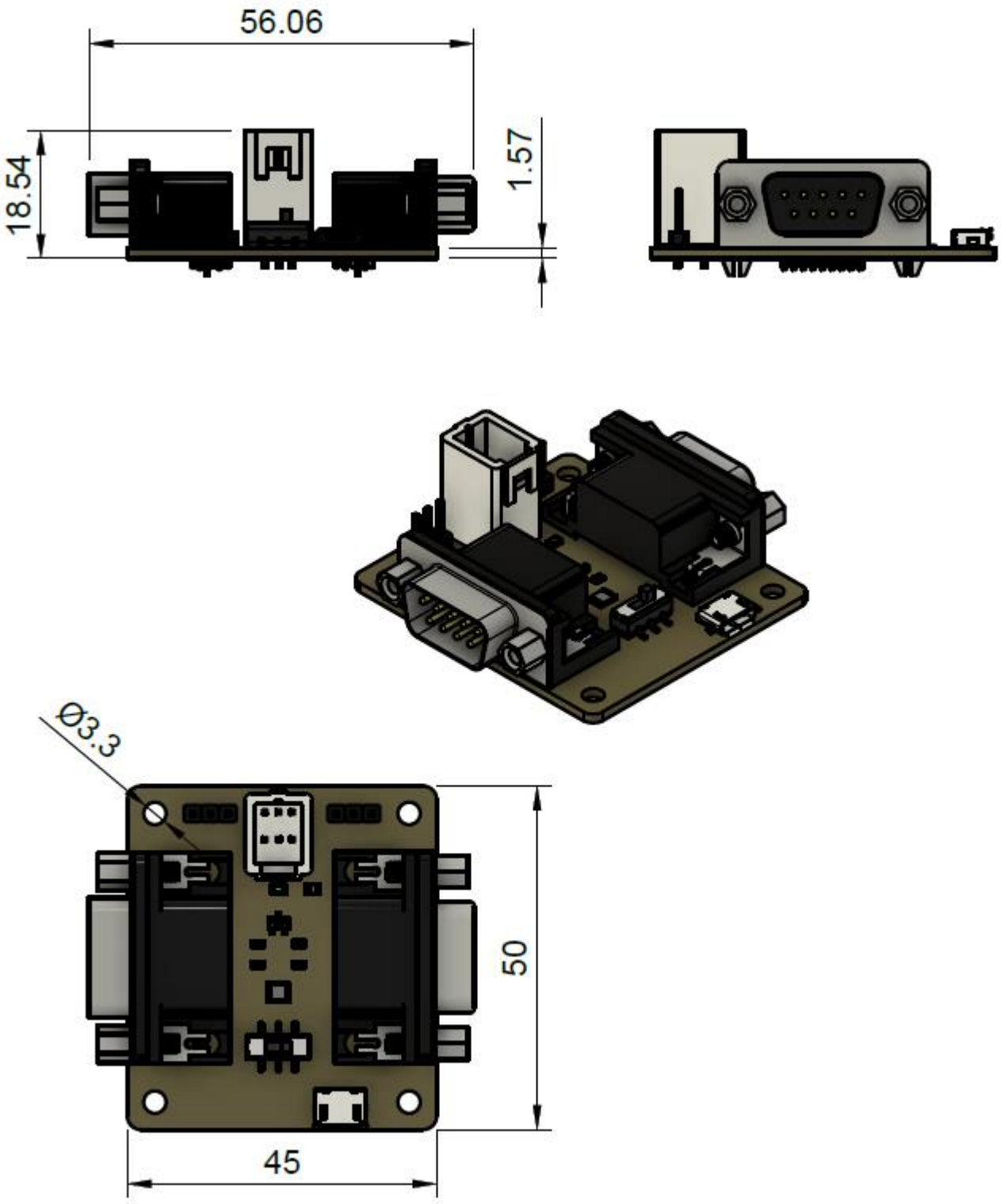


FIGURE 3 MECHANICAL DIMENSIONS

Suggested Mounting Orientation

The PCB has 4 x M3 holes in order to mount the board to a surface. Use standoffs to space the board away from the surface being fixed to.

Development Kit Usage

Overview

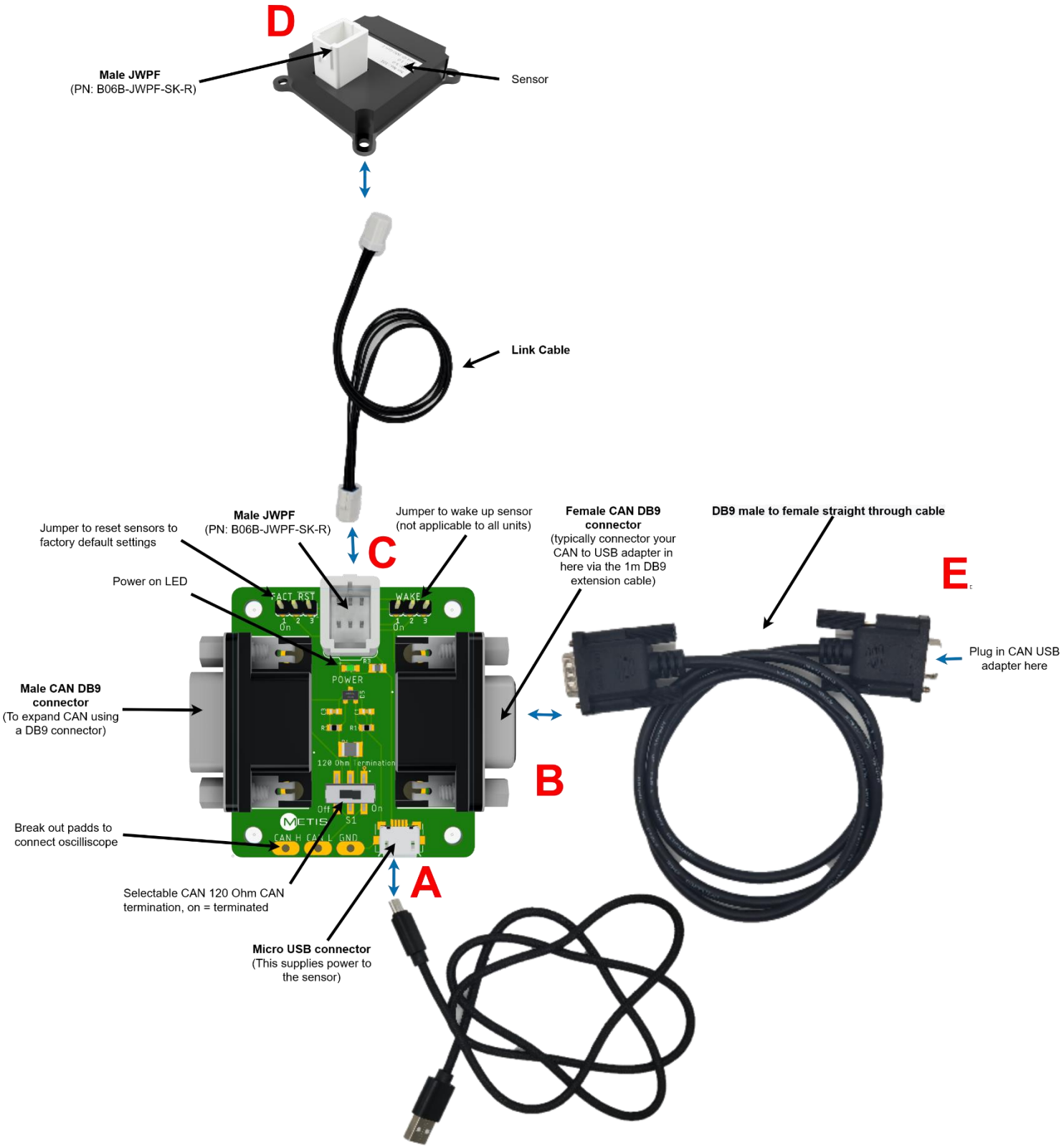


FIGURE 4 DEVELOPMENT KIT OVERVIEW

Step 1: Set CAN bus termination

If there is only one sensor in the network, set the CAN termination switch to on.

This will terminate the CAN bus with a 120 Ohm resistor. In a properly terminated CAN bus the bus should be terminated at both ends with a 120 Ohm resistor, however just using one to start with should work in this simple one node example.

Step 2: Power up board

1. Connect the supplied DB9 cable into port **B**.
2. Connect the supplied sensor link cable into **C** and then to the sensor **D**.
3. Connect a CAN tool (such as PCAN or Canalyzer) into **E.**
4. Connect the supplied micro USB into port **A**.
5. Connect the other end of the micro USB cable into a USB power supply or USB port capable of >=200mA at ~5.2 Volts.

   If power is on the development kits power LED will illuminate.

   If the sensor is powered up a light on the sensor will also illuminate (this may depend on the unit).

If the CAN tool is setup correctly (sensors are default CAN speed of 1000kbps) CAN messages will start to appear on the CAN network.

FIGURE 5 EXAMPLE SETUP USING PCAN

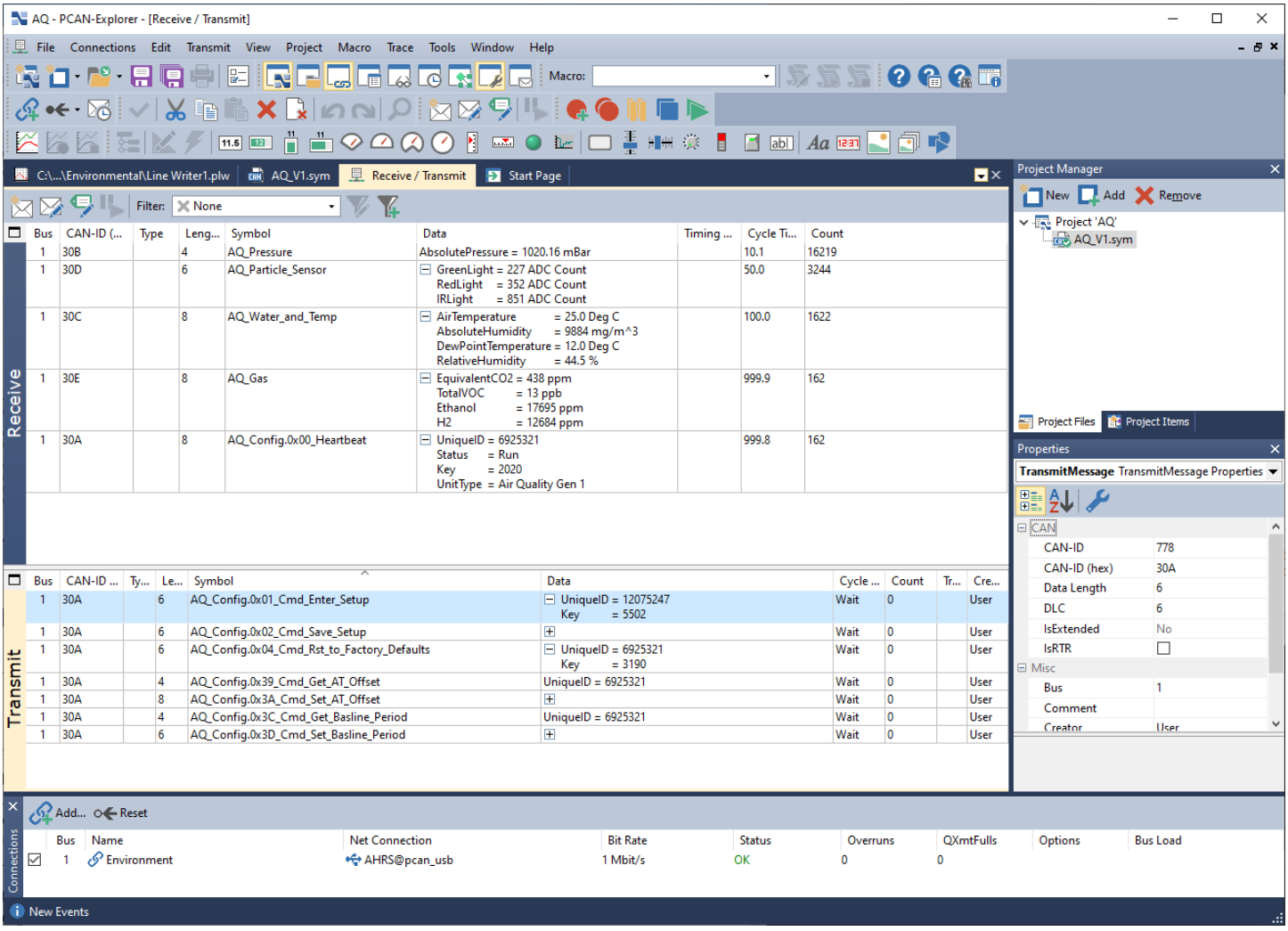


FIGURE 6 EXAMPLE OF CAN MESSAGES APPEARING IN PCAN

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