

Configuration via OBD Torque (available for android)		Configuration via OBD Fusion (available for android and iphone/ipad)	
1	Press gear wheel symbol in main menu lower left corner => Manage extra PIDs/Sensors	1	Go to Settings => Preferences => Advanced
2	In top right corner, select "Add Custom PID"	2	Enter data as described in following pages (on format AAXXXX) at "Commands" under "INTERFACE INITIALIZATION"
3	Enter data according to last column in Proprietary PID configuration tables below		
4	Enter "OBD2 Mode and PID" data as described in following pages (on format AAXXXX)	3	Go back to main menu and press "DISCONNECT" and then "CONNECT"
5	Scroll down and press "Test"	4	Remove configuration code from "Commands" under "INTERFACE INITIALIZATION"
	Now byte/word is configured (written to NVM memory)		Now data byte/word is configured (written to NVM memory)

OBD Torque App Proprietary PID Configuration							
OBD2 Mode	Long Name	Short Name	Min Value	Max Value	Scale Factor	Unit Type	Equation
01AA	Engine Oil Pressure MECH	Eng Oil Pres	0	765	X1	kPa	A * 3
01A8	Config Information	Config Info	0	16777216	X1	-	(A * 65536) + (B * 256) + C
01A9	Transmission Oil Temperature	Trans Temp	0	210	X1	DegC	A - 40
01AB	Proprietary Analog Input A	User Defined	0	255	X1	User Defined	User Defined (Min 0, Max 255)
01AC	Proprietary Analog Input B	User Defined	0	255	X1	User Defined	User Defined (Min 0, Max 255)
01AD	Proprietary Analog Input C	User Defined	0	255	X1	User Defined	User Defined (Min 0, Max 255)
01B1	Proprietary Analog Input D	User Defined	0	255	X1	User Defined	User Defined (Min 0, Max 255)
01AE	Proprietary Digital Input A	User Defined	0	1	X1	User Defined	User Defined (Min 0, Max 1)
01AF	Proprietary Digital Input B	User Defined	0	1	X1	User Defined	User Defined (Min 0, Max 1)
01B0	Proprietary Digital Input C	User Defined	0	1	X1	User Defined	User Defined (Min 0, Max 1)
01B2	Engine Oil Pressure PIEZO	Eng Oil Pres	0	765	X1	kPa	A * 3
01B8	Proprietary Analog Input E	User Defined	0	255	X1	User Defined	User Defined (Min 0, Max 255)
01BA	Proprietary Analog Input F	User Defined	0	255	X1	User Defined	User Defined (Min 0, Max 255)
01BB	Proprietary Analog Input G	User Defined	0	255	X1	User Defined	User Defined (Min 0, Max 255)
01BC	Proprietary Frequency A	User Defined	0	65535	X1	User Defined	User Defined (Min 0, Max 65535)
01BD	Proprietary Frequency B	User Defined	0	65535	X1	User Defined	User Defined (Min 0, Max 65535)
01BE	Proprietary Period A	User Defined	0	65535	X1	User Defined	User Defined (Min 0, Max 65535)
01BF	Proprietary Period B	User Defined	0	65535	X1	User Defined	User Defined (Min 0, Max 65535)

OBD Fusion App Proprietary PID Configuration										
Name	Description	Category	Metric Units	Min Value	Max Value	Module Header	OBD Mode	PID Number	Priority	Equation
Eng Oil Pres	Engine Oil Pressure MECH	Engine	kPa	0	765	ALL	01	AA	Medium	A * 3
Config Info	Config Information	Engine	-	0	16777216	ALL	01	A8	Low	(A * 65536) + (B * 256) + C
Trans Temp	Transmission Oil Temperature	Engine	DegC	0	210	ALL	01	A9	Low	A - 40
User Defined	Proprietary Analog Input A	Engine	User Defined	0	255	ALL	01	AB	Medium	User Defined (Min 0, Max 255)
User Defined	Proprietary Analog Input B	Engine	User Defined	0	255	ALL	01	AC	Medium	User Defined (Min 0, Max 255)
User Defined	Proprietary Analog Input C	Engine	User Defined	0	255	ALL	01	AD	Medium	User Defined (Min 0, Max 255)
User Defined	Proprietary Analog Input D	Engine	User Defined	0	255	ALL	01	B1	Medium	User Defined (Min 0, Max 255)
User Defined	Proprietary Digital Input A	Engine	User Defined	0	1	ALL	01	B2	Medium	User Defined (Min 0, Max 1)
User Defined	Proprietary Digital Input B	Engine	User Defined	0	1	ALL	01	AE	Medium	User Defined (Min 0, Max 1)
User Defined	Proprietary Digital Input C	Engine	User Defined	0	1	ALL	01	AF	Medium	User Defined (Min 0, Max 1)
Eng Oil Pres	Engine Oil Pressure PIEZO	Engine	kPa	0	765	ALL	01	B0	Medium	A * 3
User Defined	Proprietary Analog Input E	Engine	User Defined	0	255	ALL	01	B8	Medium	User Defined (Min 0, Max 255)
User Defined	Proprietary Analog Input F	Engine	User Defined	0	255	ALL	01	BA	Medium	User Defined (Min 0, Max 255)
User Defined	Proprietary Analog Input G	Engine	User Defined	0	255	ALL	01	BB	Medium	User Defined (Min 0, Max 255)
User Defined	Proprietary Frequency A	Engine	User Defined	0	65535	ALL	01	BC	Medium	User Defined (Min 0, Max 65535)
User Defined	Proprietary Frequency B	Engine	User Defined	0	65535	ALL	01	BD	Medium	User Defined (Min 0, Max 65535)
User Defined	Proprietary Period A	Engine	User Defined	0	65535	ALL	01	BE	Medium	User Defined (Min 0, Max 65535)
User Defined	Proprietary Period B	Engine	User Defined	0	65535	ALL	01	BF	Medium	User Defined (Min 0, Max 65535)

OBDX PRO INPUT CONFIGURATION CODES

Pull-Up Inputs: There are 4 inputs that are pulled up to internal 5 Volt via a 820 Ω resistor. The inputs are located on the green connector on positions 7, 8, 9 and 10 counting from left. Which signal and sensor type each input shall connect to is configured by replacing X for signal type and Y for sensor type in the tables 1 and 2 below. Signal 0: Code AA00XY, Signal 1: AA01XY, Signal 2: AA02XY and Signal 3: AA03XY

Table 1		Table 2	
X codes	Pull-Up Input Signal Type	Y codes	Pull-Up Input Sensor Type (X codes 0-9)
0	Engine Oil Pressure (mechanical) (PID AA)	0	One Wire Fluid Temperature Sensor
1	Engine Coolant Temperature (PID 05)	1	Two Wire Fluid Temperature Sensor
2	Intake Air Temperature (PID 0F)	2	Mechanical Pressure Sensor
3	Ambient Air Temperature (PID 46)	3	User Defined Linear Resistive Pull-Up Sensor (see Table 5)
4	Engine Oil Temperature (PID 5C)	4	Two Wire Air Temperature Sensor
5	Transmission Oil Temperature (PID A9)		
6	Proprietary Analog Input A (PID AB)		
7	Proprietary Analog Input B (PID AC)	Y codes	Pull-Up Input Sensor Type (X code A) see Table 3
8	Proprietary Analog Input C (PID AD)		
9	Proprietary Analog Input D (PID B1)		
A	Fuel Level (PID 2F)		
B	Proprietary Digital Input A (PID AE)	Y codes	Pull-Up Input Sensor Type (X codes B-D)
C	Proprietary Digital Input B (PID AF)	0	FALSE < 1.5 Volt, TRUE > 3.0 Volt
D	Proprietary Digital input C (PID B0)	1	TRUE < 1.5 Volt, FALSE > 3.0 Volt
Table 3		Table 4	
X codes	Fuel Level Sensor Type	Code	User Defined Fuel Level Setting
0	Ford < 1987, Mopar < 1987, AMC < 1978 (73 Ω - 10 Ω)	AA0EXXXX	XXXX = resistance in Ω (hexadecimal) when fuel level is full
1	VDO aftermarket (10 Ω - 180 Ω)	AA10XXXX	XXXX = resistance in Ω (hexadecimal) when fuel level is empty
2	Autometer/Classic Instruments aftermarket (240 Ω - 33 Ω)		
3	GM < 1965 (0 Ω - 30 Ω)		
4	GM 1965 - 1997 (0 Ω - 90 Ω)		
5	Ford > 1987 (16 Ω - 158 Ω)	Code	User Defined Linear Resistive Sensor Setting
6	GM > 1997 (40 Ω - 250 Ω)	AA12XXXX	XXXX = resistance in Ω (hexadecimal) when high
7	User Defined (see Table 4)	AA14XXXX	XXXX = resistance in Ω (hexadecimal) when low

Pull-Down Inputs: There are 5 inputs that are pulled down to ground via a 2700 Ω resistor. The inputs are located on the black connector on positions 1, 3, 5, 7 and 9 counting from left. Which signal and sensor type each input shall connect to is configured by replacing X for signal type and Y for sensor type in the tables 6 and 7 below. Signal 4: Code AA04XY, Signal 5: AA05XY, Signal 6: AA06XY, Signal 7: AA07XY and Signal 8: AA08XY. In addition to the 5 electrical pull-down inputs there is one on-board pressure sensor capable of measuring between 50 and 250 kPa absolute pressure. This signal is named Signal 9: AA09XY. The connection to signal 9 is via the hose that are connected to the barb fitting on the short side of the OBDX Pro unit.

Table 6		Table 7	
X codes	Pull-Down Input Signal Type	Y codes	Pull-Down Input Sensor Type
0	Engine Oil Pressure PIEZO (PID B2)	0	User defined linear voltage A (See Table 8)
1	Throttle Position (PID 11)	1	Piezoelectric Pressure Sensor 30psi (scale: 3 kPa/bit)
2	Ethanol Fuel Ratio (PID 52)	2	Piezoelectric Pressure Sensor 100psi (scale: 3 kPa/bit)
3	Exhaust Pressure (PID 73)	3	Piezoelectric Pressure Sensor 1600psi (scale: 50 kPa/bit)
4	Fuel Pressure (PID 0A)	4	User defined linear voltage B (see Table 9)
5	Proprietary Analog Input E (PID B8)	5	Internal Pressure Sensor (Only for X codes 8 - 9)
6	Proprietary Analog Input F (PID BA)		
7	Proprietary Analog Input G (PID BB)		
		Code	User Defined Linear Voltage A Setting
8	Absolute Barometric Pressure (PID 33)	AA16XXXX	XXXX = voltage in millivolts (hexadecimal) when high
9	Intake Manifold Absolute Pressure (PID 0B)	AA18XXXX	XXXX = voltage in millivolts (hexadecimal) when low
		Code	User Defined Linear Voltage B Setting
		AA1AXXXX	XXXX = voltage in millivolts (hexadecimal) when high
		AA1CXXXX	XXXX = voltage in millivolts (hexadecimal) when low

Pulse Inputs: There are 2 pulse inputs. The inputs are located on the green connector on positions 1 and 2 counting from left. Which signal and sensor type each input shall connect to is configured by replacing X for signal type and Y for sensor type in the tables 10 and 11 below. Signal A: Code AA0AXY and Signal B: AA0BXY. Only use signal A (pin 1 on green connector) if engine speed shall be measured with wire connected directly to the ignition coil.

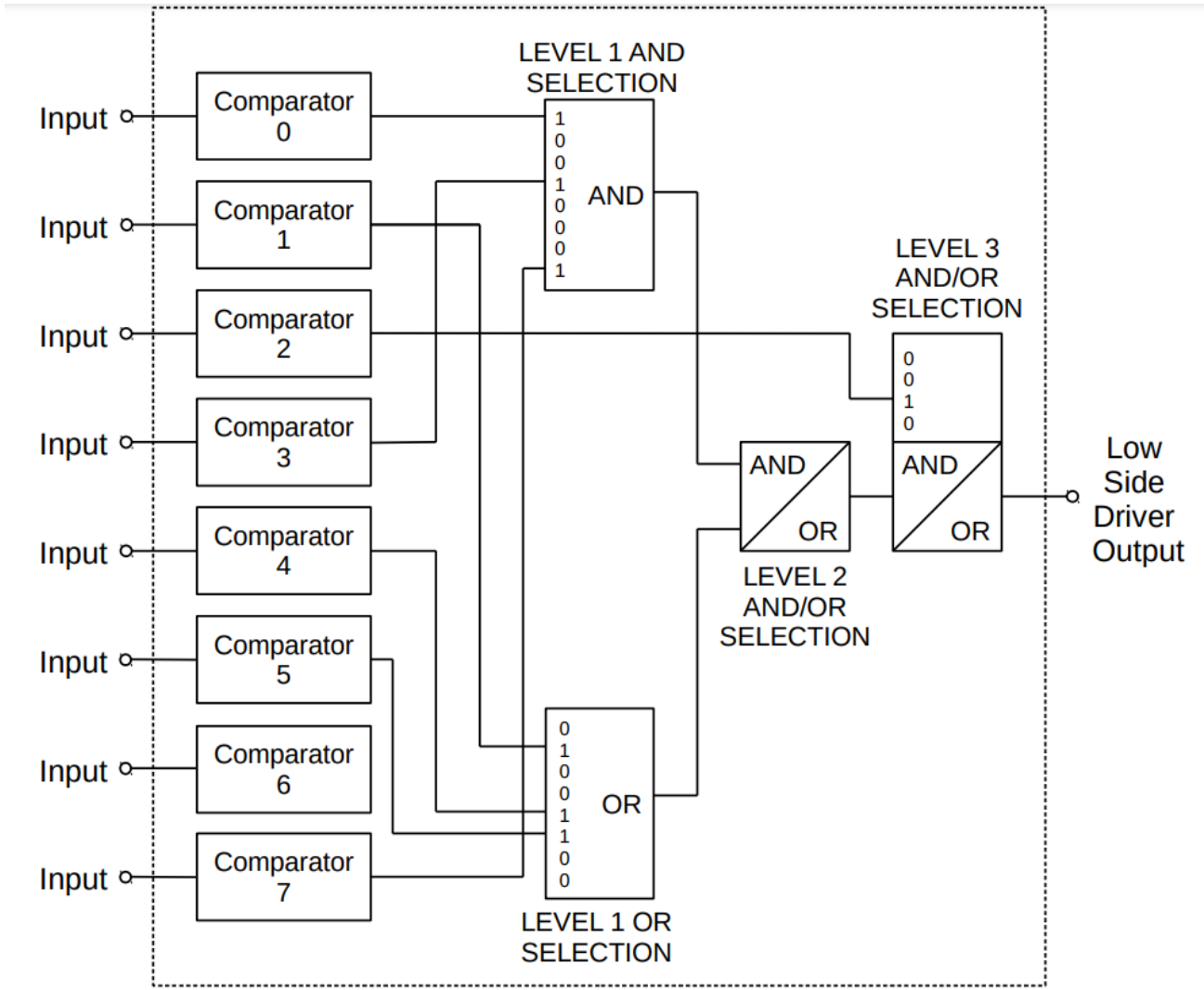
Table 10		Table 11		
X codes	Pulse Input Signal Type	Y codes	Period Range (microseconds)	Frequency Range (Hz)
0	Engine Speed (PID 0C) (see Table 12)	0	0 – 1 (1 us/bit)	763 and above (1 Hz/bit)
1	Vehicle Speed (PID 0D) (see Table 13)	1	1 – 10 (1 us/bit)	95 – 763 (0.1 Hz/bit)
2	Proprietary Frequency A (PID BC)	2	10 – 84 (10 us/bit)	12 – 95 (0.01 Hz/bit)
3	Proprietary Frequency B (PID BD)	3	84 – 335 (10 us/bit)	3 – 12 (0.01 Hz/bit)
4	Proprietary Period A (PID BE)			
5	Proprietary Period B (PID BF)			
		Y codes	Table 12	
		1	Number of cylinders	
		1	1	
		2	2	
		3	3	
		4	4	
		5	5	
		6	6	
		8	8	
Table 13				
Code	Vehicle Speed Calibration			
AA0CFFFF	Sets Vehicle Speed in calibration mode.			
AA0CXXXX	XXXX = recorded data from PID A8 @ 100 km/h			

How to calibrate Vehicle Speed: Send AA0CFFFF to set vehicle speed in calibration mode. Run vehicle in 100 km/h and record the value in OBDXProReport (PID A8). Make a note of the data displayed at index '12' and convert data to hexadecimal (with help of calculator or on-line dec to hex converter) and replace XXXX in AA0CXXXX with the data. Do this with the vehicle in stand-still (for safety).

OBDX PRO OUTPUT CONFIGURATION CODES

There are 4 low side driver outputs that are pulled to ground when activated. Each output can be used to drive a load up to approximately 800 mA each @ 25°C. The total current (all 4 outputs) is limited to 1500 mA @ 25 °C. The outputs are suitable for driving relays and solenoids as they are able to clamp inductive kick-back voltages and they can of course drive resistive loads and LEDs as well. In the case of an overload or an over temperature condition, the output will shut off automatically.

The outputs are located on the green connector on positions 3, 4, 5 and 6 counting from left. A selection of input signals can be used to control each output via the comparator functionality described on the next page. The logic function available to control each output is shown in the figure below:



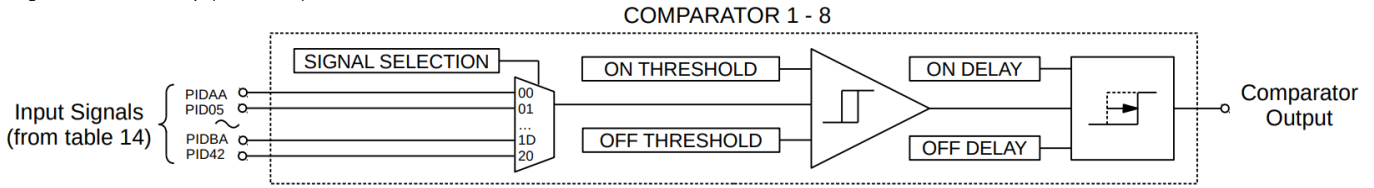
Input, threshold and delay configuration for the comparators is shown on next page. One of the logic functions shown above is available for each output. The configuration of each logic block is handled via 4 configuration labels which are described in table 16.

Table 16 Output Logic Configuration (in AAXXY, replace XX with parameter code for the output and YY with parameter value)

Parameter	Value	Output 0	Output 1	Output 2	Output 3
LEVEL 1 AND SELECTION	Set bit position to '1' for the comparators that shall be included and convert to hex. <i>Example: comparator 1 and 6 shall be used:</i> <i>Bit positions: 76543210</i> <i>Selected comparators: 01000010 => 42 in hexadecimal presentation</i> <i>If LEVEL 1 AND SELECTION shall be used for Output2, the following code shall be used: AA7642</i>	6C	71	76	7B
LEVEL 1 OR SELECTION	Set bit position to '1' for the comparators that shall be included and convert to hex <i>Example: comparator 2, 4 and 7 shall be used:</i> <i>Bit positions: 76543210</i> <i>Selected comparators: 10010100 => 94 in hexadecimal presentation</i> <i>If LEVEL 1 OR SELECTION shall be used for Output2, the following code shall be used: AA7794</i>	6D	72	77	7C
LEVEL 2 AND/OR SELECTION	00: OR function selected 01: AND function selected <i>Example:</i> <i>If LEVEL 2 AND/OR SELECTION shall be used for Output2, the following code shall be used: AA7801</i>	6E	73	78	7D
LEVEL 3 AND/OR SELECTION	This parameter is split in high nibble and low nibble. Low nibble (hex figure to the right) selects OR or AND function (0 = OR, 1 = AND) High nibble (hex figure to the left) handle included comparators (only comparators 0-3 selectable) <i>Example: AND function selected and comparator 0 and 3 selected:</i> <i>Bit positions: XXXX3210</i> <i>Selected comparators: 1001</i> <i>OR/AND selection bit: XXX1XXXX</i> <i>Result: 00011001 => 19 in hexadecimal presentation.</i> <i>If LEVEL 3 AND/OR SELECTION shall be used for Output2, the following code shall be used: AA7919</i>	6F	74	79	7E

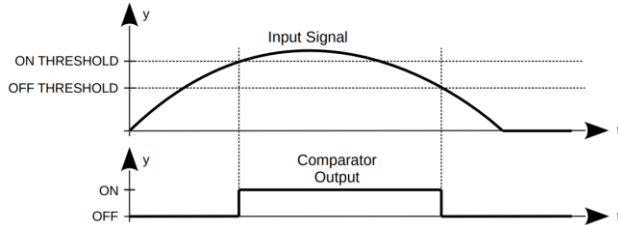
OBDX PRO COMPARATOR CONFIGURATION CODES

There are 8 comparators equipped with individual timers and hysteresis. The comparators compare the selected input signal (a PID from table 14) with configured ON and OFF thresholds and configured ON and OFF delays (see table 15).



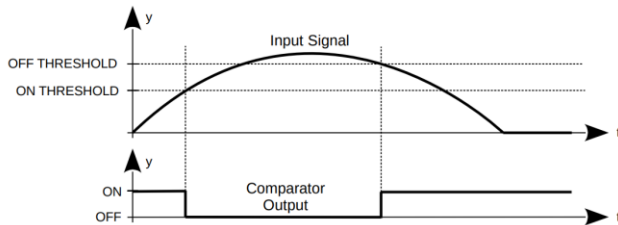
If the ON threshold is greater than the OFF threshold:

- The comparator output will go TRUE if the input signal value goes above the ON threshold (if the ON delay is set to zero).
- The comparator output will go FALSE if the input signal value goes below the OFF threshold (if the OFF delay is set to zero).



If the OFF threshold is greater than the ON threshold:

- The comparator output will go TRUE if the input signal goes below the ON threshold (if the ON delay is set to zero).
- The comparator output will go FALSE if the input signal goes above the OFF threshold (if the OFF delay is set to zero).



If the ON threshold is greater than the OFF threshold:

- The comparator output will go TRUE if the input signal value goes above the ON threshold and the ON delay has expired.
- The comparator output will go FALSE if the input signal value goes below the OFF threshold and the OFF delay has expired.

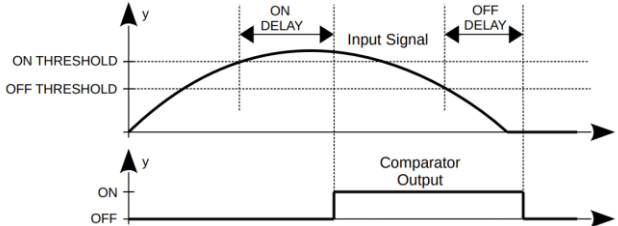


Table 14 Comparator Input Signal Selection

("Value" shall be assigned to the SIGNAL SELECTION parameter of the comparator of interest)

PID	Value	Description	Scale Factor	Scale Offset	PID	Value	Description	Scale Factor	Scale Offset
PIDAA	00	Engine Oil Pressure MECHANICAL	3 kPa/bit	0 kPa	PID52	10	Ethanol Fuel Ratio	0.39215%/bit	0%
PID05	01	Engine Coolant Temperature	1 °C/bit	40°C	PID73	11	Exhaust Pressure	3 kPa/bit	0 kPa
PID0F	02	Intake Air Temperature	1 °C/bit	40°C	PID0A	12	Fuel Pressure	3 kPa/bit	0 kPa
PID46	03	Ambient Air Temperature	1 °C/bit	40°C	PIDB4	13	Proprietary Analog Input D	Lo: 0 Hi: 255	0
PID5C	04	Engine Oil Temperature	1 °C/bit	40°C	PIDB5	14	Proprietary Analog Input E	Lo: 0 Hi: 255	0
PIDA9	05	Transmission Oil Temperature	1 °C/bit	40°C	PIDB6	15	Proprietary Analog Input F	Lo: 0 Hi: 255	0
PIDAB	06	Proprietary Analog Input A	Lo: 0 Hi: 255	0	PID33	16	Absolute Barometric Pressure	1 kPa/bit	0 kPa
PIDAC	07	Proprietary Analog Input B	Lo: 0 Hi: 255	0	PID0B	17	Intake Manifold Abs Pressure	1 kPa/bit	0 kPa
PIDAD	08	Proprietary Analog Input C	Lo: 0 Hi: 255	0	PID0C	18	Engine Speed	0.25 rpm/bit	0
PIDB1	09	Proprietary Analog Input D	Lo: 0 Hi: 255	0	PID0D	19	Vehicle Speed	1 km/h/bit	0
PID2F	0A	Fuel Level	0.39215%/bit	0%	PIDB7	1A	Frequency 1	see table 11	0
PIDAE	0B	Proprietary Digital Input A	OFF: 0 ON: 1	0	PIDB8	1B	Frequency 2	see table 11	0
PIDAF	0C	Proprietary Digital Input B	OFF: 0 ON: 1	0	PIDB9	1C	Period 1	see table 11	0
PIDB0	0D	Proprietary Digital Input C	OFF: 0 ON: 1	0	PIDBA	1D	Period 2	see table 11	0
PIDB3	0E	Engine Oil Pressure PIEZO	3 kPa/bit	0 kPa	PID42	20	Battery Voltage	1 mV/bit	0V
PID11	0F	Throttle Position	0.39215%/bit	0%					

Table 15 Comparator Threshold and Delay Configuration (in AAXXY, replace XX with parameter code and YY with parameter value)

Example: Select Engine Speed as SIGNAL SELECTION to comparator 5 with an ON THRESHOLD of 5500 RPM, OFF THRESHOLD of 5000 RPM and a 500 millisecond OFF DELAY

SIGNAL SELECTION: Engine Speed => PID0C => 18, SIGNAL SELECTION code for comparator 5 => 4C so SIGNAL SELECTION = AA4C18

ON THRESHOLD: 5500 RPM x 0.25 rpm/bit = 22000 => 55F0 in hexadecimal representation, ON THRESHOLD code for comparator 5 => 4E so ON THRESHOLD = AA4E5F0

OFF THRESHOLD: 5000 RPM x 0.25 rpm/bit = 20000 => 4E20 in hexadecimal representation, OFF THRESHOLD code for comparator 5 => 50 so OFF THRESHOLD = AA504E20

ON DELAY: 0 ms x 100 ms/bit = 0 => 0 in hexadecimal representation, ON DELAY code for comparator 5 => 52 so ON DELAY = AA5200

OFF DELAY: 500 ms x 100 ms/bit = 5 => 05 in hexadecimal representation, OFF DELAY code for comparator 5 => 53 so OFF DELAY = AA5305

Parameter	Value Scaling	Comparator 1 code	Comparator 2 code	Comparator 3 code	Comparator 4 code	Comparator 5 code	Comparator 6 code	Comparator 7 code	Comparator 8 code
SIGNAL SELECTION	value from table 14	2C	34	3C	44	4C	54	5C	64
ON THRESHOLD	as selected signal	2E	36	3E	46	4E	56	5E	66
OFF THRESHOLD	as selected signal	30	38	40	48	50	58	60	68
ON DELAY	100 ms/bit	32	3A	42	4A	52	5A	62 (1 sec/bit)	6A (1 sec/bit)
OFF DELAY	100 ms/bit	33	3B	43	4B	53	5B	63 (1 sec/bit)	6B (1 sec/bit)