

CAN-to-ADR Test Guidelines

GADN / ANNA-FG Series with

u-blox NEO-M8L



ANNA-F9 High Precision Series with

u-blox ZED-F9R



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CAN-to-ADR Test Guidelines



Change History

Version	Date	Author	Description
1.0	2019/8/1	Haney Huang	First version release
2.0	2020/1/9	Vincent Cheng	Modified the document according to GADN-FG firmware settings.
3.0	2020/2/11	Haney Huang Vincent Cheng	Added Introduction and the Commands for Forward/Backward Algorithm
4.0	2020/10/15	Haney Huang	Added new series related information to the document. (GADN-F, ANNA-F, ANNA-F9)
4.1	2020/10/16	Haney Huang	 Changed the serial port baud rate for NEO-M8L from 9600 to 115200 bps Modified the pictures in Ch 6.2



1. Introduction

For general ADR application, there are two input signals that are required to be connected to the NEO-M8L / ZED-F9R module:

- 1. Wheel-tick signal
- 2. Forward/Backward Signal

(Note: The forward and backward information only affect the positioning accuracy when the module loses or with poor satellite signals.)

Antzer Tech's CAN-to-ADR solution utilizes the speed information on vehicle CAN bus and an algorithm for direction discrimination which is developed using accelerometer on the GADN/ANNA card.

	Speed	Direction	
General ADR	Wheel-tick signal	Forward/Backward Signal	Need Extra Cabling Effort
Antzer Tech	Speed Information from	Algorithm for Direction	
CAN-to-ADR	Vehicle CAN Bus	Discrimination (*)	

(*) Since the algorithm needs to be initialed with specific calibration procedures, the default setting of the algorithm is "OFF" and the direction signal will keep on "High" signal level ("Forward") to the GNSS module. Please follow the steps in Chapter 5 to enable the algorithm.



2. CAN Bus Connection to the Vehicle

Please connect the vehicle CAN bus to the card.



• GADN Series

Connect the CAN PORT_1 on GADN card with vehicle CAN Bus (J1939 or OBDII connecter)

ANNA-FG / ANNA-F9 High Precision Series

Connect the CAN PORT_0 on ANNA card with vehicle CAN Bus (J1939 or OBDII connecter)



3. Enable CAN-to-ADR Function Under Linux

Step 1 OPEN the serial port of GNSS module on the card to change the configuration required for DR.

The configure process (Step 2 ~Step 4) of GNSS module only needs to be done once. The settings will be kept in the module after Step 4.

GADN / ANNA-FG Series

- Serial port for GNSS module: ttyUSB1
- The baud rate for factory setting is 115200 bps (NEO-M8L module default: 9600 bps)

😣 🖱 🗊 root@vincent-PC: /home/vinc	cent	
root@vincent-PC:/home/vincent# root@vincent-PC:/home/vincent#	stty -F /dev/ttyUSB1 115200	

ANNA-F9 High Precision Series

- Serial port for GNSS module: ttyUSB0
- The baud rate for factory setting is 921600 bps (ZED-F9R module default: 38400 bps)





Step 2 Enable ADR/UDR function of the GNSS module

• GADN / ANNA-FG Series



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// Use ADR/UDR

echo -ne



Step 3 Enable Automatic IMU-mount Alignment of the GNSS module

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// Automatic IMU-mount Alignment

echo -ne

D" > /dev/ttyUSB0



Step 4 Save the configuration



echo -ne

ANNA-F9 High Precision Series

// Save the configuration

echo -ne

 $1D\xAB'' > /dev/ttyUSB0$



Step 5 OPEN the serial port of the MCU on the card (ttyUSB0) to change the settings in the firmware.

• The default baud rate is 921600 bps







Step 6 Set the CAN Bus baud rate.

- The default baud rate is 250K bps.
- The picture shown below is the setting example of 500K bps.
- Please choose the same baud rate as it on the vehicle CAN Bus

GADN Series

CAN Port for CAN-to-ADR application: CAN PORT_1

//set CAN port baud rate (Port1, <mark>500k</mark>)

echo -ne

//set CAN port baud rate (Port1, 250k)

echo -ne



ANNA-FG / ANNA-F9 High Precision Series

• CAN Port for CAN-to-ADR application: CAN PORT_0

	root@eric-K50IN: /home/eric	000
File Edit View Search Terminal	Help	
root@eric-K50IN:/home/eric# 00\x00\x00\x00\x00\x00\x00\ root@eric-K50IN:/home/eric#	echo -ne "\x10\x02\x02\x00\x02\x00\x00\x00\x00\x00\x0	90\x00\x

//set CAN port baud rate (Port0, <mark>500k</mark>)

echo -ne

//set CAN port baud rate (Port0, 250k)

echo -ne



Step 7 Use mode active command to enable CAN to ADR function

• The picture shown below is the setting example of OBDII protocol.

GADN Series

• CAN Port for CAN-to-ADR application: CAN PORT_1



//set mode active (CAN Port 1, OBDII protocol)

echo -ne

// set mode active (CAN Port 1, J1939 protocol)

echo -ne



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CAN Port for CAN-to-ADR application: CAN PORT_0

					root@eri	:-K50IN: /	home/erio	:			- • •
File	Edit	View	Search	Terminal	Help						
root 00\x root	@eric 00\x0 @eric	- K50] 00\x00 - K50]	IN:/hor 3\x00\> IN:/hor	ne/eric# ‹00\x00\› ne/eric#	echo -ne (00\x00\x1	"\x10\x 0\x03"	02\x11\x > /dev/t	00\x04\ tyUSB0	x00\x00	\x00\x00	V\x00\x

//set mode active (CAN Port 0, OBDII protocol)

echo -ne

// set mode active (CAN Port 0, **J1939 protocol**)

echo -ne



Step 8 If the CAN-to-ADR function is enabled and received speed information from vehicle CAN bus successfully. The LED indicator will be turned ON.



[GADN-F Series]



[ANNA-F Series]



[GADN-M Series]



4. Enable CAN-to-ADR Function Under Windows

Step 1 Configure the GNSS module under windows using u-center

- Please follow the instructions in Chapter 2 of the document: *"Antzer Tech GPS DR Calibration Instructions.pdf."* to configure the GNSS module.
- The configure process of GNSS module only needs to be done once. The settings will be kept in the module after saving.

GADN / ANNA-FG Series

- Serial port for GNSS module: Standard COM port
- The baud rate for factory setting is 115200 bps (NEO-M8L module default: 9600 bps)

ANNA-F9 High Precision Series

- Serial port for GNSS module: Enhanced COM port
- The baud rate for factory setting is 921600 bps (ZED-F9R module default: 38400 bps)



Step 2 OPEN Serial Port to change the setting of the MCU on the card (Enhanced COM Port shown in device manager)

	COM Port	Setting			Command List			
COM Port 12 V	undrate: 021600 💌	StonBits: 1	Parity None	🖂 Choose All Comma	nds	HEX 🗆	Enter	Delay(mS)
	1921000 ·		Tony. None -	I: 100211000000	000000000000000000000000000000000000000	v	7 1	Raw can
ByteSize: 8 🔻 Flo	ow Control: No Ctrl Flo	ow 🔻	Open Port	2: 100211000400	000000000000000000000000000000000000000	v	2	R OBDII
				. 3: 100211000500	000000000000000000000000000000000000000		7 3	CAN2AE
				4: 100215010000	000000000000000000000000000000000000000		4	Get UAR
				✓ 5: 100202000300	000000000000000000000000000000000000000		5	port0 con
				✓ 6: 100202000200	000000000000000000000000000000000000000		6	onfig 500
				7:			7	
				▼ 8: 100211000100	000000000000000000000000000000000000000		8	de Active
				9: 100211000200	000000000000000000000000000000000000000	V .	i 9	J1939 Mc
				10:			i 10	
				11 :			11	
				□ 12: □			12	
				▼ 13: 100241100241	100000000000000000000000000000000000000		13	
				14:			14	
				□ 15:			15	
				□ 16: □ 16:			16	
				▼ 17: 100211000400	000000000000000000000000000000000000000		17	
							18	
							19	
				✓ 20: 100211000D0	000000000000000000000000000000000000000		20	UBX OFI
20-10-13_14:42:37:299] Oj	pen COM Port Success			✓ 21: 100211000C0			21	JBX ON
				▼ 22: 100221000B0	000000000000000000000000000000000000000		22	: baudrate
				23.			20	
	Operati	ion		25: 10022000000			24	115200
Clear Information	DTR RTS	🔲 View File	✓ Show Time	26: 10022000000			26	921600
	HEX String	Show In HEY	Send With Enter	27: 10020600000			27	GET FW
nput String:	I HEA SUME	J♥ DIDW INTIEX		✓ 28: 1002FA02000			28	factory
			^ Send Command	✓ 29: 1002FA01000	000000000000000000000000000000000000000		29	save
			×	1				10000000
			Cond Wile	Load Test Script	Clear All Commands		Kun Times:	10000000
Salaat Eila			Sena rue			Delay	Time(mS):	1000
Select File								

• The default baud rate is 921600 bps



Step 3 Set the CAN Bus baud rate.

- The default baud rate is 250K bps.
- The picture shown below is the setting example of 500K bps.
- Please choose the same baud rate as it on the vehicle CAN Bus

GADN Series

• CAN Port for CAN-to-ADR application: CAN PORT_1

COM Port Setting	Command La	t			
COM Port 15 - Bandrate 115200 - StonBite 1 - Parity None -	Choose All Commands	HF	X T	Enter	Delay(mS)
	T 1: 102000000000000000000000000000000000	003 🔽	1		port1 con
ByteSize: 8 - Flow Control: No Ctrl Flow - Close Port	2: 10300000000000000000000000000000000000	003 🔽	-	2	onfig 250
	3:	Г.	1	3	
019-08-01_18:13:02:357]10 02 A0 00 00 00 00 00 00 00 00 00 00 00 00	F 4: 104000000000000000000000000000000000	003 🔽		4	mode acti
Deturned 00. Command set successfully	☐ 5: 101006400000000000000000000000000000000	003 🔽	v 1	5	Auto requ
Returned OU, Command Set Successionly	F 6:		1	6	
	□ 7: □	Г	1	7	
	□ 8: □	- r	. 1	8	
	F 9:	- r	· 🔽	9	
	□ 10:	- C	1	10	
	□ 11: □	E	1	11	
	□ 12:	- c	. 1	12	
	T 13:	- r		13	
	14:	- F	. 1	14	
	T 15:	- F	1	15	
	□ 16:	- r	. 1	16	
	T 17:	- F	· 1	17	
	□ 18: □	- r	. 1	18	
	II 19:	- r		19	
	20:	- r	-	20	
019-08-01 18:10:05:088] Open COM Port Success		- r		21	
	☐ 22: [- r	1	22	
	23:	- r	1	23	
	₩ 24:	- F		24	
Operation	25:	- F		25	
Clear Information DIR RIS View File View File	C 26:	- r	V .	26	<u> </u>
		1000	1. 400		



ANNA-FG / ANNA-F9 High Precision Series

• CAN Port for CAN-to-ADR application: CAN PORT_0

QCOM_V1.6			-	
out				
COM Port Setting	Command List			
COM Port 12 V Baudrate: 921600 V StopBits: 1 V Parity: None V	Choose All Commands	HEX	Enter	Delay(mS)
	▼ 1: 100211000000000000000000000000000000		✓ 1	Raw can
ByteSize: 8 - Flow Control: No Ctrl Flow - Close Port	▼ 2: 100211000400000000000000000000000000000		2	R OBDII
	▼ 3: 100211000500000000000000000000000000000		✓ 3	CAN2AE
2020-10-13_14:49:00:573]10 02 A0 00 00 00 00 00 00 00 00 00 00 00 00	✓ 4: 100215010000000000000000000000000000000		✓ 4	Get UAR
Returned 00, Command set successfully	▼ 5: 100202000300000000000000000000000000000	V	✓ 5	onfig 250
,	✓ 6: 10020200020000000000000000000000000000		V (6)	onfig 500
	7:		₹ 7	
	▼ 8: 10021100010000000000000000000000000000		✓ 8	de Active
	9: 10021100020000000000000000000000000000		✓ 9	J1939 Mc
			✓ 10	
			✓ 11 11	
			✓ 12	
	▼ 13: 100241100241000000000000000000000000000		✓ 13	
			14	
			✓ <u>15</u>	
	57 17: 100211000400000000000000000000000000000		10	
			v 17	
			10	
			20	UBX OFF
120-10-12 14:49:50:2001 Open COM Part Suscen	21: 100211000000000000000000000000000000		20	TBX ON
120-10-15_14.40.50.500J Open COM 181/Success	Z2: 100221000B00000000000000000000000000000		22	handrate
			23	
	24:		24	1' I
Operation	25: 10022000000000000000000000000000000000		25	115200
Clear Information 🗌 DTR 📄 RTS 📄 View File 🔽 Show Time	✓ 26: 100220000400000000000000000000000000000		▼ 26	921600
HEX String V Show In HEX V Send With Enter	▼ 27: 100206000000000000000000000000000000000		✓ 27	GET FW
nput sung:	▼ 28: 1002FA0200000000000000000000000000000000		28	factory
Send Command	▼ 29: 1002FA0100000000000000000000000000000000		✓ 29	save
	Load Test Script Clear All Commands		Run Times:	10000000
Select rue		Dela	y Time(mS):	1000

//set CAN port baud rate (Port0, 500k)

//set CAN port baud rate (Port0, 250k)



Step 4 Use mode active command to enable CAN to ADR function

• The picture shown below is the setting example of OBDII protocol.

GADN Series

• CAN Port for CAN-to-ADR application: CAN PORT_1

COM Port Setting	-	Command List			
COM Port 15 T Bandham 11 200 T StonBits 1 T Parity Mone T	Choos	se All Commands	HEX	Enter	Delay(mS)
and the second s	F 1: [102000000000000000000000000000000000000	•	√ 1	portl con
ByteSize: 8 - Flow Control: No Ctrl Flow - Close Port	□ 2: □	103000000000000000000000000000000000000	~	2	onfig 250
	□ 3: □		Г	√ 3	
2019-08-01_18:13:02:357]10 02 A0 00 00 00 00 00 00 00 00 00 00 00 00	□ 4: □	104000000000000000000000000000000000000	7	7 4	mode acti
1019-08-01_18:15:45:382]10 02 A0 <mark>00</mark> 00 00 00 00 00 00 00 00 00 00 00 00	F 5: [101006400000000000000000000000000000000	~	√ 5	Auto requ
Deturned 00 Command set successfully	□ 6: □			7 6	
Returned 00, Command Set Successionly	□ 7: □			7 7	
	□ 8:		F	7 8	
	F 9: [F	7 9	
	□ 10: □		E	✓ 10	
	□ □ 11: □			🗸 11	
	□ 12: □		F	▼ 12	
	□ 13: □		E	✓ 13	
	□ 14: □		F	₹ 14	
	□ 15: □		Г	✓ 15	
	□ 16: □		Г	✓ 16	
	□ 17: □		Г	✓ 17	
	□ 18: □		F	✓ 18	
	IF 19: □		E	✓ 19	
	□ 20: □		Г	20	
019-08-01_18:10:05:088] Open COM Port Success	□ 21: □			✓ 21	
	□ 22: □		Г	22	
	□ 23: □		Г	23	
	₹ 24:		Г	24	
Operation	□ 25: □		Г	25	
Clear Information 🗌 DTR 🕅 RTS 🥅 View File 🔽 Show Time	□ 26: □		Г	26	
	E 27 E		E	2 27	1



ANNA-FG / ANNA-F9 High Precision Series

• CAN Port for CAN-to-ADR application: CAN PORT_0

2 QCOM_V1.6	-	
bout		
COM Port Setting	Command List	
COM Port: 12 - Baudrate: 921600 - StopBits: 1 - Parity: None -	Choose All Commands HEX T Enter	Delay(mS)
	▼ 1: 100211000000000000000000000000000000	Raw can
ByteSize: 8 - Flow Control: No Ctrl Flow - Close Port	▼ 2: 100211000400000000000000000000000000000	R OBDII
	▼ 3: 100211000500000000000000000000000000000	CAN2AE
(2020-10-13_14:49:00:573]10 02 A0 00 00 00 00 00 00 00 00 00 00 00 00	▼ 4: 100215010000000000000000000000000000000	Get UAR
[2020-10-13_15:17:02:291]10 02 A0 <mark>00</mark> 00 00 00 00 00 00 00 00 00 00 00 00 0	▼ 5: 100202000300000000000000000000000000000	onfig 250
Returned 00, Command set successfully	Image: 6: 10020200020000000000000000000000000000	onfig 500
	Image: 8: 10021100010000000000000000000000000000	de Active
		J1939 Mc
		<u> </u>
		UBX OF
2020-10-13 14:48:50:3081 Open COM Port Success		JBX ON
	▼ 22: 100221000B00000000000000000000000000000	: baud rate
	23:	
	24:	
Operation	▼ 25: 10022000000000000000000000000000000000	115200
Clear Information 🗌 DTR 📄 RTS 📄 View File 🔽 Show Time	▼ 26: 100220000400000000000000000000000000000	921600
Insuit Shines I HEX String V Show In HEX V Send With Enter	▼ 27: 100206000000000000000000000000000000000	GET FW
inputsuing.	▼ 28: 1002FA0200000000000000000000000000000000	factory
Send Command	▼ 29: 1002FA0100000000000000000000000000000000	save
	Load Test Script Clear All Commands Run Times:	0000000
Send Pile	Delay Time (mS): 1	.000
Save Log	Save & Sovint Duo	Ston

//set mode active (<mark>CAN Port 0</mark>, <mark>OBDII Protocol</mark>)

// set mode active (CAN Port 0, J1939 Protocol)



Step 5 If the CAN-to-ADR function is enabled and received speed information from vehicle CAN bus successfully. The LED indicator will be turned ON.



[GADN-F Series]



[ANNA-F Series]



[GADN-M Series]



5. Get GNSS Module Calibrated and Check the Status

Step 1 Start Calibration

Please follow the instructions in Chapter 3 of the document: *"Antzer Tech GPS DR Calibration Instructions.pdf."* to finish calibration and the GNSS module will enter DR mode.

Note:

The instruction in Chapter 3 is the standard procedure to do the calibration and to make sure the module enter DR mode in short time while testing.

In practical applications, the GNSS module will also do the calibration automatically while driving and enter DR mode after some distance.





Step 2 Make sure the GNSS module is calibrated and enter DR Mode

You could check the status of GNSS module from the NEMA Information through the serial port of GNSS model

GADN / ANNA-FG Series

- Serial port for NMEA data: ttyUSB1
- The baud rate for factory setting is 115200 bps (NEO-M8L module default: 9600 bps)

🛞 🖱 💿 root@vincent-PC: /home/vincent
root@vincent-PC:/home/vincent# stty -F /dev/ttyUSB1 115200 root@vincent-PC:/home/vincent# cat /dev/ttyUSB1
X,03,00#12 Colley of sadats. of thrats three ford to a s and three
SCNDT, 484, 3 5 7 8 5 7 8 38471
SGNRMC
SGNUTG
SCNCGA , , , , , , , , , , , , , , , , , , ,
SCNICSA (A, 1)
Sunusa, A. (5), 777777777777977977977977977977977977977
SCLCSV £ \$ 300 494
SGNGLL Y Nº 78
Sundra , the second sec
SCNST, .8. 9000 2322200 332200 0 8000 3730000 7750000 77 0000 78
SGN2DA
SONTHS / A SE
SCAVLW
SPUDA, 09, 0998-19, 09, 0999-30000, 18, 00000, 00000, E 22, 000, 10, 10, 10, 10, 10, 10, 10, 10, 1

ANNA-F9 High Precision Series

- Serial port for NMEA data: ttyUSB0
- The baud rate for factory setting is 921600 bps (ZED-F9R module default: 38400 bps)





If the GNSS module is calibrated and enter DR Mode, the fifth value in \$GPGGA message will turn to be "6".

GGA	GA - essential fix data which provide 3D location and accuracy data.										
\$GP0	\$GPGGA,123519,4807.038,N,01131.000,E,1,08,0.9,545.4,M,46.9,M,,*47										
Where	e:										
	GGA	Global Positioning System Fix Data									
	123519	Fix taken at 12:35:19 UTC									
	4807.038,N	Latitude 48 deg 07.038' N									
	01131.000,E	Longitude 11 deg 31.000' E									
	1	Fix quality: 0 = invalid									
		1 = GPS fix (SPS)									
		2 = DGPS fix									
		3 = PPS fix									
		4 = Real Time Kinematic									
		5 = Float RTK									
		6 = estimated (dead reckoning) (2.3 feature)									
		7 = Manual input mode									
		8 = Simulation mode									
	08	Number of satellites being tracked									
	0.9	Horizontal dilution of position									
	545.4,M	Altitude, Meters, above mean sea level									
	46.9,M Height of geoid (mean sea level) above WGS84										
		ellipsoid									
	(empty field) time in seconds since last DGPS update									
	(empty field) DGPS station ID number									
	*47	the checksum data, always begins with st									

Detailed NEMA information \rightarrow

https://www.gpsinformation.org/dale/nmea.htm#GGA



6. Test with CAN Bus Simulator

6.1 Connect to CAN Bus simulator

To test CAN-to-ADR with CAN Bus simulator, please connect the simulator signals to CAN port on the card.

After the CAN Bus Signal is connected, please use commands to enable CAN-to-ADR function on GADN.

** Please refer to Chapter 3 or 4 for the instructions of commands.

GADN-F Series

Please connect to CAN Port_1 on the card.







GADN-M Series





CAN-to-ADR Test Guidelines





Pin #3GNDPin #2Port 0 CAN-LPin #1Port 0 CAN-H



[ANNA-F9 High Precision Series]

Pin #3 GND Pin #2 Port 0 CAN-L Pin #1 Port 0 CAN-H



[ANNA-FG Series]



CAN-to-ADR Test Guidelines



6.2 Check the Waveform

If the CAN-to-ADR mode has been set successfully, the PWM signal will be generated from MCU to the GNSS module. You could use a scope to check the waveform.

GADN-F Series



[Measurement Point on GADN-F, Extension Board]





GADN-M Series



[Measurement Point on GADN-M]



ANNA-FG Series



[Measurement Point on ANNA-FG]



ANNA-F9 High Precision Series



[Measurement Point on ANNA-F9]

CAN-to-ADR Test Guidelines



The waveform of speed signal shown on the scope will differ from the speed from the simulator.



If the direction signal is not connected to the card, it will keep at the high level as light blue line shown in the scope below. (There's a pull-high resistor on the card)





7. Speed Information shown in u-center

Step 1 On the main page of u-center, click on **View** on the upper left menu bar →Messages View

Step 2 Click on graph under UBX→ ESF → MEAS

If the Wheel-tick signal has been connected correctly you will see the value changing in the graph.



Note: The number in **Decode data** shouldn't change when the speed of the vehicle is the same. If it changes when the car doesn't move or change the speed, you might connect the wrong signal from the vehicle.





8. Forward/Backward Algorithm

Step 1 Install the PC with the card onto the vehicle.

Step 2 Use command below to enable Forward/Backward algorithm

Command = 0x6D: Set Forward/Backward Algorithm Enable/Disable

Framing: Total = 21 bytes									
DLE	STX	CMD	Enable/Disable	Reserved	DLE	ETX			
1 byte	1 byte	1 byte	1 byte	15 bytes	1 byte	1 byte			
0x10	0x02	0x6D	0x00 - Disable		0x10	0x03			
			0x01 - Enable						

Response = 0xA0: ACK (Acknowledgements)

Framing: Total = 21 bytes									
DLE	STX	CMD	Code	Reserved	DLE	ETX			
1 byte	1 byte	1 byte	1 byte	15 bytes	1 byte	1 byte			
0x10	0x02	0xA0	0x00 - Succeed		0x10	0x03			
			0x01 - Error						

Step 3 Start calibration procedures for the Forward/Backward algorithm

- A. Keep the vehicle in static mode for 10 seconds.
- B. Operate the vehicle straight forward and speed up to 40 km per hour.



Step 4 Check the status of the calibration in the response of the command below.

Command = 0x6E: Get States of Forward/Backward Algorithm

Framing: Total = 21 bytes								
DLE	STX	CMD	Reserved	DLE	ETX			
1 byte	1 byte	1 byte	16 bytes	1 byte	1 byte			
0x10	0x02	0x6E		0x10	0x03			

Response = 0xB5: Get States of Forward/Backward Algorithm

	Framir	Framing: Total = 21 bytes								
DLE	STX	CMD	Enable/Disable	Calibration	Reserved	DLE	ETX			
1 byte	1 byte	1 byte	1 byte	1 byte	14 bytes	1 byte	1 byte			
0x10	0x02	0xB5	0x00 - Disable	0x00 – No Calibrated		0x10	0x03			
			0x01 - Enable	0x01 - 1 Calibrated						
				0x02 - 2 Calibrated						
				0x03 - 3 Calibrated						
				0x04 - 4 Calibrated						
				0x05 - 5 Calibrated						

• **Enable / Disable:** The status of the forward/backward algorithm

• Calibration:

"0x00" means the calibration is not finished or failed. "0x01"~"0x05" means the calibration has been done successfully



Step 5 If success, the calibration process is done. If the response of the "calibration" in Step 4 shows "0x00", please use command below to clear the calibration values and then go back to Step 3.

Framing: Total = 21 bytes									
DLE	STX	CMD	Reserved	DLE	ΕΤΧ				
1 byte	1 byte	1 byte	16 bytes	1 byte	1 byte				
0x10	0x02	0x6C		0x10	0x03				

ad Over Clean calibration value of Forward (Packward Algorith)

Response = 0xA0: ACK (Acknowledgements)

Framing: Total = 21 bytes									
DLE	STX	CMD	Code	Reserved	DLE	ΕΤΧ			
1 byte	1 byte	1 byte	1 byte	15 bytes	1 byte	1 byte			
0x10	0x02	0xA0	0x00 - Succeed		0x10	0x03			
			0x01 - Error						