I-7570

Serial To HART Converter

User's Manual

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Table of Contents

1.	Int	roduct	ion	4
	1.1		Features	4
	1.2		Specifications	5
2.	На	rdware	9	7
	2.1		Block Diagram	8
	2.2		Pin Assignment of I-7570	9
		2.2.1	Pin Function Description	9
		2.2.2	Wiring of Serial Port	10
		2.2.3	HART Connection	.11
	2.3		Terminator Resistor Settings	13
	2.4		Default / Normal Dip-switch	14
		2.4.1	Firmware Update Mode	14
		2.4.2	Firmware Operation Mode	15
	2.5		LED Indication	17
		2.5.1	LED Function	17
		2.5.2	LED Indication Table	18
	2.6		Cable Selection	18
3.	Re	served	l	20
4.	HC	_Tool	Utility	21
	4.1		Run Utility	21
	4.2		Serial Port and HART Command Settings	21
		4.2.1	Serial port settings	21
		4.2.2	HART Frame Settings	22
	4.3		Search HART devices	23
		4.3.1	Search HART devices automatically	23
		4.3.2	Search HART devices manually	24
		4.3.3	Search HART devices	25
	4.4		Send / Receive HART Frame (SRMsg)	27
	4.5		HART Information Log (Data Log)	29
	4.6		HART Configuration (HTCfg)	30
	4.7		Module Configuration (ModCfg)	32
5.	FA	Q		35
	Q0′	1 : How 1	to use I-7570 to communicate with HART devices ?	35
	Q04	4 : Set H	IART device address by using HART converter ?	35
	Q05	5 : How	to send HART command for writing (Ex: CMD51)?	37
	Q06	6 : How 1	to connect with HART OPC server?	39

6.	Version History5	54
	Q08 : How to listen HART network communication by HART converter	51

1. Introduction

I-7570 is a Serial to HART converter designed as the master device of HART protocol. It allows users to access the HART slaves by using RS-232 / RS-422 / RS-485. These HART slave devices may be a transmitter, actuator, current output device, and so forth. In addition, by using the I-7570 utility tool, users can configure module and test HART communication easily and quickly.

The following is the application structure of the Serial/HART module.



1.1 Features

- Support HART Short / Long frame.
- Support HART Burst mode.
- Support point-to-point or multi-drop HART mode.
- Support connecting up to 15 HART slave devices.

- Allow two HART masters.
- Provide utility tool for module configuration and HART communication.
- Support firmware update via serial port.
- Provide PWR / TxD / RxD indication LED
- Isolated COM 1: RS-232 / RS-422 / RS-485
- 4KV ESD Protection
- Built-in Watchdog
- Selectable 250Ω load resistor

1.2 Specifications

[Serial spec.]

- COM1 : RS-232 (Tx / Rx / GND) / RS-422 / RS-485
- Baud Rate : 1200 bps (For FW_v1.1) 1200 ~ 115200bps (For FW_v1.1 / HW_v1.2)
- Data Format : O(odd parity), 8(data bit), 1(stop bit) (For FW_v1.1) N/O/E(parity), 8(data bit), 1/2(stop bit) (For FW_v1.1 / HW_v1.2)

[HART spec.]

- Channel:1
- Connector : 2-pin screwed terminal block
- Network : Point to Point or Multi-drop
- Baud Rate : 1200 bps
- Frame : Short or Long
- Operates as a HART Master and supports all HART commands
- Support up to 15 HART slave devices
- Isolation Voltage : 3KVdc on the HART side

[Power Requirement]

- Power : Unregulated +10 ~ +30 VDC
- Power reverse protection, Over-Voltage brown-out protection
- Power consumption : 1 W

[Module spec.]

- Dimensions : 121 mm x 72 mm x 35 mm (H x W x D)
- Operating temperature : -25 to 75°C (-13 to 167°F);
- Storage temperature : -30 to 85°C (-22 to 185°F);
- Humidity: 5 to 95%, non-condensing;
- Indication LED :
 - <u>PWR LED</u> : Module power status
 - TxD LED : Data received from Serial port
 - RxD LED : Data received from HART port

[Utility Tool]

- Provide module configuration and HART communication easily and quickly.
- Provide HART devices search automatically.
- Provide diagnostic Information of HART device.
- Provide data logging for HART communication.

[Application]

- Current Measuring.
- Petrochemical Industry Application.
- Environment Monitoring.
- Tunnel Monitoring.
- Monitor system.
- Building Monitoring.

2. Hardware



Figure 2-1: Hardware externals of I-7570

2.1 Block Diagram

Figure 2-2 is a block diagram illustrating the functions on the I-7570 module. It provides the 3000Vrms Isolation in the HART interface.



Figure 2-2: Block diagram of I-7570

2.2 Pin Assignment of I-7570



Figure 2-3: Pin Assignment of I-7570

2.2.1 Pin Function Description

Pin No.	Pin Name	Pin Function Description
1	HART+	HART+
2	HART-	HART-
3		N/A
4		N/A
5		N/A
6		N/A
7		N/A
8		N/A
9	+Vs	V+ of Power Supply (+10V~+30Vdc)
10	GND	GND of Power Supply
11	RXD	Receive Data of RS-232
12	TXD	Transmit Data of RS-232
13	GND	GND of RS-232
14	RX+	Receive Data+ of RS-422
15	RX-	Receive Data- of RS-422
16	TX+	Transmit Data+ of RS-422

I-7570 Serial/HART Converter User's Manual (Ver 1.6, 2019/02/14) ------9

17	TX-	Transmit Data- of RS-422
18	-	N/A
19	D+	Data+ of RS-485
20	D-	Data- of RS-485

- 2.2.2 Wiring of Serial Port
- (1) RS-232 Wiring :
 - [1] I-7570 TXD pin connects to Rx pin of serial port.
 - [2] I-7570 RXD pin connects to Tx pin of serial port.
 - [3] I-7570 GND pin connects to GND pin of serial port.



(2) RS-485 Wiring :



(3) RS-422 Wiring :



2.2.3 HART Connection

The HART connection can be divided into the following two types :

- (1) "Loop Power Source" Mode.
- (2) "External Power Source" Mode.









Ex3 : Loop Power Source (External Resistance)



Ex4 : External Power Source (Internal Resistance)

2.3 Terminator Resistor Settings

There is a Jumper (JP4) at the I-7570 module, shown in Figure 2-4. The jumper can provide HART network with 250 Ω (1/4 W) load resistor. When the pin 1&2 of JP4 is connected, the resistor will connect to HART network. When the pin 2&3 of JP4 is connected, it will disconnect the resistor from HART network. By default, the pin1&2 of JP4 is connected.



Figure 2-4. Internal Load Resistor

2.4 Default / Normal Dip-switch

There is a DIP switch on the back of the I-7570 module, as shown in Figure 2-5.

(1) Firmware Operation Mode :

Set the DIP switch to the "Normal" position.

(2) Firmware Update Mode :

Set the DIP switch to the "Default" position.



Figure 2-5: Dip Switch

2.4.1 Firmware Update Mode

Please follow the steps below to complete the firmware update process of I-7570.

(1) Set the Dip-switch to the "Default" position and reboot I-7570. Then the I-7570 will work under the "<u>Firmware Update Mode</u>". In this mode, users can update the firmware of I-7570 via RS-232.

(2) Execute the "FW_Update_Tool" utility. (Download from http://ftp.icpdas.com/pub/cd/fieldbus_cd/hart/converter/i-7570/software/) and follow the steps below to complete the firmware updating process.
[1] Choose "COM" interface and "COM Port" number (like : COM1).
[2] Click "Browser" button to choose FW file. (like : I7570_v1.00.fw)
[3] Click "Firmware Update" button to start the FW update process. The result will show in "Firmware Update" field.

FW_Update_Tool v1.06	
1. Download Interface COM COM Port : C USB COM1 •	www.icpdas.com
2. Firmware Path	
FA2011/HART/Senial_HARTM-7570/firmw	vare\Obj\17570_V10.fw
	Browser
3. Firmware Update	
Firmware Update Success Please Reboot]	Module !
	Firmware Update
	Frit

Figure 2-5.1: FW_Update_Tool

2.4.2 Firmware Operation Mode

In operation mode, users need to set the Dip-switch to the "Normal" position and then reboot I-7570. In this mode, users can send / receive HART command via serial port. In hardware v1.2 or newer (with firmware v1.1), JP5 is provided to run in "Communication" or "Configuration" mode. (1) "**Comm.**" Mode :

[1] Connect pin 1&2 of JP5 like Figure 2-5.2 and then reboot I-7570.



Figure 2-5.2: JP5 position of Comm. mode

[2] Used to send / receive HART command and communicate with HART slave devices.

[3] The default baud parameter is "**1200,O,8,1**" and can be modified in "Config." mode.

(1) "Config." Mode :

[1] Connect pin 2&3 of JP5 like Figure 2-5.3 and then reboot I-7570.



Figure 2-5.3: JP5 position of Config. mode

[2] Used to set / get module information.

[3] The baud parameter is fixed to be "115200,N,8,1".

[4] The following is the command table for configuration.

Cmd No.	Function	Parameter	Return
\$1	Set Serial Baud	B_D_P_S	!
\$2	Get Serial Baud	None	>B_D_P_S
\$3	Get Module Info	None	>(Data)
\$4	Reset Module	None	!

[5] Example for Command 1 :

```
<1> B => Baudrate (bps)
```

(1200 / 2400 / 4800 / 9600 / 57600 / 38400 / 19200 / 115200)

- <2> D => DataBit (5 / 6 / 7 / 8)
- <3> P => Parity (None / Odd / Even)

```
<4> S => StopBit (1 / 2)
```

[Set serial port baud parameter to be "15200, 8, N, 1"]

Send => \$17_3_0_0

- Return => !(Success) , ?(Failure)
- [6] Example for Command 2 :

[Get serial port baud parameter]

Send => **\$2**

Return => >0_3_1_0 (1200, 8, 0, 1)

[7] Example for Command 3 :

```
[Get Module Info]
```

```
Send => $3
Return => >0101 (The firmware version is v1.1)
[8] Example for Command 4 :
  [Reset Module ]
  Send => $4
Return => !(Success), ?(Failure)
```

2.5 LED Indication

There are three LEDs provided to indicate the status of I-7570. The Figure 2-6 is the illustration of these three LEDs.



Figure 2-6: LED position of I-7570

2.5.1 LED Function (1) PWR LED :

When I-7570 turned on, if it is in the firmware operation mode, then the PWR LED will be on permanently in communication mode or flash per second in configuration mode. If I-7570 is in the firmware update mode, then the all LED will flash permanently.

(2) TxD LED :

When I-7570 is receiving data from serial port, then the TxD LED will

flash until the data transmission completed.

(3) RxD LED :

When I-7570 is receiving the HART frame from HART device, then the RxD LED will flash until the data transmission completed.

2.5.2 LED Indication Table

Mode LED Name	Power off	FW Update	FW Operation	Serial Port Data Received	HART Port Data Received
PWR LED	off	flash	On (Comm.) Flash (Conf.)	on	on
TxD LED	off	flash	off	flash	off
RxD LED	off	flash	off	off	flash

2.6 Cable Selection

The HART bus is a balanced (differential) 2-wire interface running over a Shielded Twisted Pair (STP), Un-shielded Twisted Pair (UTP), or Ribbon cable. Please refer to the following table to decide what cable type, cable length, and terminator to use in the HART bus network.

No. Network Devices	Cable Capacitance – pf/ft (pf/m)					
	20 pf/ft	30 pf/ft	50 pf/ft	70 pf/ft		
	(65 pf/m)	(95 pf/m)	(160 pf/m)	(225 pf/m)		
1	9,000 ft	6,500 ft	4,200 ft	3,200 ft		
	(2,769 m)	(2,000 m)	(1,292 m)	(985 m)		
5	8,000 ft	5,900 ft	3,700 ft	2,900 ft		
	(2,462 m)	(1,815 m)	(1,138 m)	(892 m)		
10	7,000 ft	5,200 ft	3,300 ft	2,500 ft		
	(2,154 m)	(1,600 m)	(1,015 m)	(769 m)		
15	6,000 ft	4,600 ft	2,900 ft	2,300 ft		
	(1,846 m)	(1,415 m)	(892 m)	(708 m)		

Allowable cable lengths for 1.0 mm (#18 AWG) shield twisted pair

Note: The AWG means a standard method used to measure wire. The numbering system works backwards from what people would think, the thicker (heavier) the wire, the lower the number.

3. Reserved

4. HC_Tool Utility

HC_Tool utility is provided to configure all ICP DAS's HART converter modules (like I-7567 / I-7570) and transmit / receive HART frame for HART communication easily and quickly. HC_Tool utility can be downloaded from the ICP DAS web site :

http://ftp.icpdas.com/pub/cd/fieldbus_cd/hart/converter/i-7567/software/.

4.1 Run Utility

Run the "**HC_Tool**", like Figure 4-1. If users can't run "HC_Tool", please install .NET Framework 3.5 first.

(http://www.microsoft.com/downloads/details.aspx?familyid=333325FDAE 52-4E35-B531-508D977D32A6&displaylang=en).

HC_Tool	HC_Tool v1.02 (ICP DAS)						
Settings	Data Log	SRMsg	HTCfg	ModCfg	About		
COM6 :	Open	Clo	se				
Search :	Start	Sto	P				
Status :	Idle						
Informat	tion :						

Figure 4-1: HC_Tool Utility

4.2 Serial Port and HART Command Settings

Please click "**Settings**" menu to open setting window of serial port and HART parameters like Figure 4-2.

4.2.1 Serial port settings

(1) Please select serial port no. of PC like Figure 4-2.

HC_Tool v1.02 (ICP DAS)							
Sett	tings Data Log SRMsg HTCfg ModCfg About						
CO	M6 : Open Close						
Sea	rch : Start Stop						
Stat	Settings						
_In	Com Port						
	Port Name : COM6						
	□ I-7570 : 1200 🔹 O 🔹 8 🔹 1 💌						
	HART (For Cmd 0)						
	Auto Configure : Enable 👻						
	Frame type : Short 🗸 Master type : Primary 🔽						
	Preambles : 5 Address : 0						
	Manufacturer ID : 62 Device type : 1						
	Device ID: 250205						
	UK Cancel						

Figure 4-2: Set Serial Port No.

(2) If using I-7570 module, please check "I-7570" item and select the communication parameters of PC serial port. Note, the settings of the communication parameters must be the same with those in I-7570.

4.2.2 HART Frame Settings

The following are the descriptions of HART command fields.

Auto Configure : (1) Enable : search HART devices automatically.

(2) Disable : search HART devices according to manual parameters.

ng).
ng

- Master type : Select Primary master or Secondary master.
- Preambles : Select 5~20 bytes (0xFF) number.
- Address : Select HART Polling Address (0~15).

Manufacturer ID: Manufacturer Identification Code

- Device type : Manufacturer Device Type Code
- **Device ID** : Manufacturer Device Identification Code.

Settings		
Com Port		
Port Name :	COM6 🛛 🔽]
🔲 I-7570 :	1200	0 💙 8 💙 1 💟
HART (For Cmd 0)		
Auto Configure :	Disable 💌	
Frame type :	Long 💌	Master type : Primary 🔽
Preambles :	5	Address : 0
Manufacturer ID :	62	Device type : 1
Device ID :	250205	
		OK Cancel

Figure 4-3: Set HART Frame Format

4.3 Search HART devices

4.3.1 Search HART devices automatically

Set the option of "Auto Configure" field to be "Enable" and the option of "Master type" field to be "Secondary" like Figure 4-4. Then HC_Tool utility will automatically search all HART devices by using HART short frame with "Secondary Master" identity.

Settings	🗵
Com Port	
Port Name : COM6 💌	
🔲 I-7570 : 1200 💌	0 🗸 8 🗸 1 🗸
HART (For Cmd 0)	
Auto Configure 🛛 Enable 🛛 👻	
Frame type : Short 💽	Master type Secondary 💉
Preambles : 5	Address : 0
Manufacturer ID : 62	Device type : 1
Device ID : 250205	
	OK Cancel

Figure 4-4: Auto Configure - Enable

4.3.2 Search HART devices manually

Set the option of "Auto Configure" field to be "Disable" and then users can set the HART frame manually to search HART devices.

 (1) If the option of "Frame type" field is "Short", then "Master type", "Preambles", "Address" fields need to be configured like Figure 4-5.

ettings		
Com Port		
Port Name :	СОМб 🗸 🗸]
🔲 I-7570 :	1200	0 🗸 8 🗸 1 🗸
HART (For Cmd 0) Disable	
Frame type :	Short 💌	Master type : Secondary 🛛 👻
Preambles	5	Address : 0
Manufacturer ID :	62	Device type : 1
Device ID :	250205	
		OK Cancel

Figure 4-5: Short frame settings

(2) If the option of "Frame type" field is "Long", then "Master type", Preambles", "Manufacturer ID", "Device type", "Device ID" fields need to be configured like Figure 4-6.

Settings		
Com Port		
Port Name :	СОМб 🛛 🔽]
🔄 I-7570 :	1200	0 💌 8 💌 1 💌
HAR <u>T</u> (For Cmd 0))	
Auto Configure :	Disable 💌	
Frame type :	Long 💌	Master type : Secondary 💌
Preambles :	5	Address : 0
Manufacturer ID :	62	Device type : 1
Device ID :	250205	
		OK Cancel

Figure 4-6: Long frame settings

If the setting of serial port and HART frame format is finished, please click the "OK" button. Then users can test the HART communication.

4.3.3 Search HART devices

(1) Click "**Open**" button to open the com port of PC like Figure 4-7. If com port open failed, please check the com port setting.



Figure 4-7: Click "Open" button

(2) Click "**Start**" button to search all HART devices and the result will be shown in the "Information" field like Figure 4-8.



Figure 4-8: HART device Information

If the error message - "Search Device Failed !!" shows like Figure 4-9, please check HART network status and HART command format.

HC_Tool	v1.02 (IC	P DAS)				
Settings	Data Log	SRMsg	HTCfg	ModCfg	About	
COM6 :	Open	Clo	œ			
Search :	Start	Sto	P			
Status :	Idle					
Informa	tion :			_		
(⊫	—Search Dev	vice Failed	!!	.]		
				_		



4.4 Send / Receive HART Frame (SRMsg)

(1) Click "**SRMsg**" menu and it will open the HART command function window for HART communication like Figure 4-10.



Figure 4-10: SRMsg Function

- (2) Please type the HART command in the "Send Data" filed and click "Send" button to send out the HART command like Figure 4-11.
 - [1] "With Parity Check" item :

When check the item, it will add the "check byte" automatically while sending the HART frame.

[2] "Auto Scroll" item :

When check the item, it will scroll the HART message field automatically to show the latest HART message information.

Send & Receive Msg	
Send Data	
FF FF FF FF FF 02 80 00 00	Send
V With Parity Check	
Auto Scroll	Clear
Receive Data	
	~
Auto Scroll	Clear

Figure 4-11: Send HART Command

(3) When HART device responses the HART information, it will show in the "Receive Data" field like Figure 4-12. If error happened in HART communication, it will not show any message in the "Receive Data" field. Please check the HART command in the "Send Data" field if it is correct.

Send & Receive Msg	
Send Data	
FF FF FF FF 02 80 00 00	Send
V With Parity Check	
下午 07:20:52.703—>FF FF FF FF FF 02 80 00 00 82	<u>~</u>
	~
Auto Scroll	Clear
Receive Data	
下午 07:20:53.062<—FF FF FF FF FF 06 80 00 0E 00 00 FE 16 85 07 05 02 0B 08 02 0B 0A 42 A7	
	~
Auto Scroll	Clear

Figure 4-12: Receive HART Command

4.5 HART Information Log (Data Log)

When using "SRMsg" or "Start" function for HART communication, all the HART command information will be logged in the "Data Log" function. Users can click "**Data Log**" item and all the HART communication information will be shown in "Log" field like Figure 4-13.

HC_Tool v1.02 (ICP DAS)	
Settings Data Log SRMsg HTCfg ModCfg About	
COM6 : Open Close Search : Start Stop	
Status : Idle	
Data Log	
Log	
\uparrow 4 05:27:58.812 \Longrightarrow FF	
Anto Semil	
	Clear

Figure 4-13: HART Information Log

4.6 HART Configuration (HTCfg)

When HART devices are searched in HC_Tool, then users can use "**HTCfg**" function to configure HART devices like Figure 4-14. (Supported by HC_Tool v1.02 or newer)

HC_Tool v1.02 (ICP DAS)	
Settings Data Log SRMsg HTCfg ModCfg About	
COM6 : Open Close Search : Start Stop	
Status : Idle	
Information :	
[Polling Address : 0] Manufacturer ID Code : 22 (0x16) => Hartmann & Braun (ABB) Manufacturer Device Type Code : 133 (0x85) => AS800 (Pressure) Number of Preambles Required : 7 Universal Command Revision : 5 Device-Specific Command Revision : 2 Software Revision : 11 Hardware Revision : 8 Device Function Flags : 2 Device ID Number : 723522 (0x0B0A42) Unique Address : 0x16850B0A42	
[Polling Address : 1] Manufacturer ID Code : 20 (0x14) => Invensys/Foxboro Manufacturer Device Type Code : 46 (0x2E) => I/A Pressure/IA Series (Pressure) Number of Preambles Required : 5 Universal Command Revision : 5 Device-Specific Command Revision : 1 Software Revision : 32 Device Function Flags : 1 Device ID Number : 8659467 (0x84220B) Unique Address : 0x142E84220B) =

Figure 4-14: HTCfg Item

The following are the function descriptions of "HTCfg" screen. (Like Figure 4-15)

- (1) "DevAddr" Field: Assign the HART device for configuration.
- (2) "Response" Field: Show the response message of HART

configuration command.

- (3) "**Universal**" Page: Choose the "Universal" command for configuration. (Support HART Command version v6.0)
- (4) "**Common**" Page: Choose the "Common-Practice" for configuration. (Support HART Command version v6.0)
- (5) "Start" Button: Trig to send the HART configuration command.
- (6) "Listen Mode" item: Check it and click the "Start" button, HC_Tool will listen HART bus and show the received HART message information.
- (7) "HART RecvMsg Count" Area: Show the total count of the received HART messages. (Including Master sending message and Slave response message)

ART Commnad	
HART Device DevAddr : 00 (Hartmann & Braun (ABB) - AS800) 00 (Hartmann & Braun (ABB) - AS800) 01 (Invensys/Foxboro - I/A Pressure/IA Series) 02 (Smar - LD290(1)) Master type : Secondary Preambles : 7 Period (ms) : 0 Response : 0x0000 => OK Universal Common Specific	HART RecvMsg Count Master Msg : 0 Slave Msg : 1 Listen_Mode Stop Start
Universal Cmd : 03 : Read Dynamic Variables And Lo HART Setting & Info Cmd1 Cmd2 Cmd3 Cmd6 Cmd7 Cmd8 Cmd9 Cmd11 Read Dynamic Variables and Loop Current Current : 20.123780 mA	Cmd12 Cmd13 Cmd14 Cn <>
PV : 0.384189 kPa SV : 24.378250 deg(C) TV : 100.773600 % QV : None Unit	

Figure 4-15: HTCfg Screen

4.7 Module Configuration (ModCfg)

Click "**ModCfg**" item, it will show the below two options to open the module configuration screen of HART Converter like Figure 4-16.

(1) HC_Tool : v1.02 or newer supported.

(2) I-7567 : FW_v1.5 or newer supported.

(3) I-7570 : FW_v1.4 or newer supported

HC_Tool	v1.02 (IC	P DAS)					
Settings	Data Log	SRMsg	HTCfg	ModCfg	About		
COM6 : Search :	Open Start	Cla Sto	se P	For J	All (-7570	-	
Status :	Idle						
Informa	tion :						



The following is the function description of "ModCfg".

1. "For All" Option : (Like Figure 4-17) Note : It is used for all HART Converter modules

HC Module Info	
Config Cmd : 1 : Get Module FW Version 1 : Get Module FW Version 2 : Reset Module 3 : Get HART Send/Recv Count 4 : Reset HART Send/Recv Count	Send

Figure 4-17: "For All" Option - Configuration Screen

(1) "Get Module FW Version":

=> Return the firmware version of HART converter module.

(2) "Reset Module":

=> Reset HART converter module.

(3) "Get HART Send/Recv Count":

=> Return the total count of the sending and receiving HART messages in HART converter module.

(4) "Reset HART Send/Recv Count":

=> Reset the total count of the sending and receiving HART messages in HART converter module.

2. "For I-7570" Option : (Like Figure 4-18)

Note : It is just used to I-7570 module and make sure the I-7570 must run in "Config Mode" first.

I-7570 Config	
Config Cmd : 2 : Get Serial Baudrate 1 : Set Serial Baudrate 2 : Get Serial Baudrate 3 : Get Module Info 4 : Reset Module (SWWDT) 5 : Reset Module (HWWDT)	Send
[Note : Make sure 1-7570 in "Config M	ode" first ‼]

Figure 4-18: "For I-7570" Option - Configuration Screen

(1) "Set Serial Baudrate":

=> Set the baudrate parameters of the serial port in I-7570.

I-7570 Config	
Config Cmd : 1 : Set Serial Baudrate 115200 V N V 8 V 1 V	
Response :	Send
[Note : Make sure I-7570 in "Config M	ode" first ‼]

Figure 4-19: "Set Serial Baudrate" Function

(2) "Get Serial Baudrate":

=> Get the baudrate parameters of the serial port in I-7570.

(3) "Get Module Info":

=> Return the hardware information of I-7570. (Like: Firmware Version)

- (4) "Reset Modue (SWWDT)": => Reset I-7570. (Using Software WDT) •
- (5) "Reset Modue (HWWDT)":

=> Reset I-7570. (Using Hardware WDT) ${\scriptstyle \circ}$

5. FAQ

Q01 : How to use I-7570 to communicate with HART devices ? A01:

1. Install I-7570 "USB Driver" and it will create the virtual com port. (refer to chapter 3)

2. Run "HC_Tool" utility to communicate with HART devices. (refer to chapter 4)

Q04 : Set HART device address by using HART converter ? A04: (2016/03/17)

Please follow the steps below.

- Just connect one HART device to one HART converter (like : I-7567 / I-7570 / I-7547).
- (2) Run "HC_Tool" software.
 - [1] Open the ComPort ${\scriptstyle \circ}$

[2] Click the "Start" button to search HART device automatically. As the figure below, the original address of the HART device is 0.

HC_Tool v1.05 (ICP DAS)	
Settings Data Log SRMsg HTCfg ModCfg About	
COM5 : Open Close Search : Start Stop Status : Idle	
[Polling Address : 0] Manufacturer ID Code : 22 (0x16) => Hartmann & Braun (ABB) Manufacturer Device Type Code : 133 (0x85) => AS800 (Pressure) Number of Preambles Required : 7 Universal Command Revision : 5 Device-Specific Command Revision : 2 Software Revision : 11 Hardware Revision : 8 Device Function Flags : 2 Device ID Number : 723522 (0x0B0A42) Unique Address : 0x16850B0A42	

[3] Click the "HTCfg" button to open HART configuration page.

[4] Choose the "HART device" for configuration. In the "Universal" page, click the "Cmd6" option and users can choose the new address of HART device (Example : set to 1). Then click the "Start" button to set the new address.

HART Commad
HART Device DevAddr 00 (Hartmann & Braun (ABB) - AS800) 00 (Hartmann & Braun (ABB) - AS800) HART Commend
Master type : Secondary Preambles : 7 Period (ms) : 0 Listen_Mode Start
Universal Cmd : 06 : Write Polling Address
Write Polling Address Polling Addr: 1

[5] After the setting for the new address is successful, the below message will show.



[6] Click the "Start" button in the main page to search HART device again. Then the address of the HART device will be 1 as the below figure.



Q05 : How to send HART command for writing (Ex: CMD51)? A05: (2017/04/05)

Please follow the steps below.

- (1) Just connect one HART device to I-7570
- (2) Run "HC_Tool" software.
 - [1] Open the ComPort •
 - [2] Click the "Start" button to search HART device automatically.

[3] Click the "HTCfg" button to open HART configuration page. 23 HC_Tool v1.06 (ICP DAS) SRMsg Settings Data Log HTCfg ModCfg About 2 COM3 : 1 Open Close Search : 2 Start Stop Status : Idle Information : [Polling Address : 0] Manufacturer ID Code : 26 (0x1A) => Kent (ABB) Manufacturer Device Type Code : 11 (0x0B) => TTx300 family (Temperature) Number of Preambles Required : 5 (Master to Slave) Universal Command Revision : 5 Device-Specific Command Revision : 3 Software Revision : 178 Hardware Revision : 8 (HW_Rev:1 / Bell_202_Current) Device Function Flags : 2 Device ID Number : 5303245 (0x50EBCD) Unique Address : 0x1A0B50EBCD

[4] Choose the "HART device" for configuration. In the "Common" tab, select no.51 from the "Common-Practice Cmd" dropdown menu and users can enter dynamic variable assignments. Then click the "Start" button and check the responses.

ART Command Master type : Secondary - Preambles : 5 - Period (ms) : 0 Response : Universal Common Specific	Slave Msg : 0 Clear Listen_Mode Start
Response : Universal Common Specific	Start
Universal Common Specific	
Common-Practice Cmd : 51 : Write Dynamic Variable Assign DataLink PVRange Current DevMan TransTrim MapProVar PriVar Dev HART Cmd : 51 : Wr Cmd50 Cmd51	ments • Var Burst AnalogCly ite Dynamic Variable Assignments •
Write Dynamic Variable Assignments	
Device Variable Code for PV (Dec) : 0 Device Variable Code for SV (Dec	ode for TV (Dec) : 0 ode for QV (Dec) : 0
Response	
Device Variable Code for PV (Dec) : Device Variable Code Device Variable Code for SV (Dec) : Device Variable Code	ode for TV (Dec) :

Q06 : How to connect with HART OPC server? A06: (2017/06/22)

HART OPC server provided by HCF can be downloaded from the following link: <u>https://fieldcommgroup.org/hart-server</u>

After installation finished, open the HART OPC server and follow the steps below: (1) Right click the HARTServer icon and choose Add Network



(2) Choose Single Serial Port option

(3)

	Add Network
	Connected To: Server: HARTServer
	Network Type: Single Serial Port
	Add Cancel Help
Open COM F	Port
	Network Properties
	Network Type: Single Serial Port Name: I-7570
	Properties Address: COM36 (available) Master: Primary Retries: 3
	OK Cancel Help

(4) After module added to the server successful, right click on the module icon and choose Add Device

Add Device Add Device Add Device Learn Statistics Expand Collapse Lockdown Delete	File View He	
Add Device Add Device Learn Statistics Expand Collapse Lockdown Delete		. ?
Add Device Learn Statistics Expand Collapse Lockdown Delete	⊟- I HARTServ	er
Learn Statistics Expand Collapse Lockdown Delete		Add Device
Statistics Expand Collapse Lockdown Delete		Learn
Expand Collapse Lockdown Delete		Statistics
Collapse Lockdown Delete		Expand
Lockdown Delete		Collapse
Delete		Lockdown
		Delete
Properties		Properties

(5) Choose polling address, and click OK for Instrument Properties window

Add Instrument
Connected To:
Network: I-7570
Instrument Location
Poll Address:
Add Cancel Help

Instrument Propertie	s	×
_Instrument Identifica	tion	
Tag Name:	PRESSURE TRANSMITTER	
Descriptor:	В	
Message:	PRESSURE TRANSMITTER	
Manufacturer:	Fuji	
Model:	FCX-A/C	
ID:	1541427	
Revs:	5,1,2,1	Reset
Properties Poll Address:	Date: 21 7 1900 Number of Prea	mbles: 5
	OK Cancel Help	

(6) Check device data	a: double click on t	he device i	con added		
🚟 未命名標題 - HART Server				_	10.41
<u>F</u> ile <u>V</u> iew <u>H</u> elp					
🗅 🖻 🖬 🎒 💡		D(ouble click		
HARTServer		Name		Address 1	Гуре Status
<mark>I-7570 کر</mark> ے۔۔۔۔		🔞 PRESSU	IRE TRANSMITTER	00 F	CX-A/C Ok
HARTServer.I-7570.PRE	SSURE TRANSMITTER	R - Generic H	ART Host		
File Edit View Help					
🐱 X 🖻 🛍 洲 🎖					
Process / Output Device H	HART Status Comm	mand			
Process			1		D.C.J
PV	-942.3215 V	Pa			Refresh
11	1	10			Send
Units Select	kPa 💌				
Loop Current]		
Analog Value	11.9232 m	LA .			
Percent Range	49.52 %	5			
Upper Range Value	0.00 k	Pa			
Lower Range Value	-1866.4026 k	Pa			
Damping	9.60 \$8	ec			
Transfer Function	Linear				

Q07 : How to connect with HART FDT software? A07: (2018/11/27)

ICP DAS converter can be used with FDT software. The following introduces 3 different FDT software and connection instruction.

(1) PACTware



COM1 Paramet	er					
Communica	tion interface	HART moder	n			~
Serial Interf	ace	COM1 (\Devi	ce\Serial1)		*
HABT prote		COM14 (\Dev	vice/USBS	SER000)		
nam poo		COM31 (Seria COM32 (Seria	ai30) ai31)			45
		Number of cor retries	nmunicatio	on 3	~	
[2] Add HART [Device DTM	(Generic	HART	DTM)		
PACTware		•		,		
<u>F</u> ile <u>E</u> dit <u>V</u> iew	<u>P</u> roject <u>D</u> ev:	ce E <u>x</u> tras	<u>W</u> indow	<u>H</u> elp		
i 🗅 💕 🖬 🎒	da - 1 🛄 😋	🗖 🔍 I	Q 🖸	😟 🧕	36 🛠	M 🗾
Project		Ψ×				
Device tag						
💻 HOST PC						
COM14	<u>C</u> onnect					
	Disconnect					
	Get device state				-	
<u> </u>	Load from devic	e				
	Store to device					
	Parameter				-	
	_ Measured value					
	Simulation					
	<u>D</u> iagnosis					
	Display channels	:			-	
	Channels			•		
	Up-/Download-1	lanager			-	
	Print	-				
	Additional <u>f</u> unct	ions		•		
<u>9</u>	<u>A</u> dd device	Ν			1	
<u>8</u>	D <u>e</u> lete device	16				
	Properties <com< th=""><th>114>HART Co</th><th>ommunicat</th><th>tion</th><th></th><th></th></com<>	114>HART Co	ommunicat	tion		

Device for						
		All Devices				
		Device		Protocol	Vendor	
Driver		<u></u>				
📲 🙀 Gateway		🔠 Deltapilot S /	DB 5x / V1.x	HART	Endress+Hauser	
		E Deltapilot S /	DB 5x / ¥2.0	HART	Endress+Hauser	
		Compared S /	FMB 707 702.10.xx	HART	Endress+Hauser	
		Gammapilot I	A / FMG 60 / YULXX	HARI	Endress+Hauser	
			TDTM	HARI	Endress+Hauser	_
		iTemp / TMT	1227 V1 1	HART	Endress+Hauser	
Vendor Group Type Protocol		CT iTemp / TMT	142 / ¥1.03.00	HART	Endress+Hauser	~
Show unselected devices to	0	<				>
All Devices	<u> </u>	**PROFILE	_REVISION::5;**;			
		IS_GENE	RIC::1;			
					OK C	Cancel
	DT					
[3] Connect to HA	١א	device and sh	ow HAR I inf	ormatio	n	_
PAC Tware						
File Edit View	Proje	ect Device Extras	: Window Hel	n		
	1-0, 1- ()		Na na 140 1	r 11 3.2 🛠		
Project		. <mark>1955 O </mark> : E - 355		84 NUA - NA		
; Hoject		-				
Device tag						
📃 HOST PC						
Ganavia UADT	DTM					
The second secon	DIM	えた Connect	N			
		<u>D</u> isconnec	t			
PAC Tware						
File Edit View Proiect	Device	e Extras Window Help				
			38. 宋 國 🔳			
	-0					
Project		+ ×				
I HOST PC						
Generic HART DTM	_					
	\$¢	<u>C</u> onnect				
	₩.	Disconnect				
		Get device state				
	<u>Q</u>	Load from device				
	<u>N</u>	Store to device				
		Parameter		• P	aramatarization	
		Measured value				
		Simulation				
		Diamoria				
		Drinet				
		Līng		•		
		Additional <u>f</u> unctions		•		
	-9	<u>A</u> dd device				
	8	D <u>e</u> lete device				
		Properties «O.Generic HAPTI	TM>Generic HART DTM			
		Tiopernes so, Generic HART I	ANY OCHER RAKIDIM			



(2) FieldCare

[1] Enabling SQLFIELDCARE

SQL Active Directory Helper Service	Enabl		已停用	Network S
🎭 SQL Server (MSSQLSERVER)	Provi į	已啓動	自動	本機系統
🎭 SQL Server (SQLEXPRESS)	Provi		手動	Network S
🎭 SQL Server (SQLFIELDCARE)	Provi i	已啓動	手動	本機系統
🎭 SQL Server Agent (MSSQLSERVER)	Exec		已停用	Network S
SQL Server Agent (SQLEXPRESS)	Exec		已停用	Network S
SQL Server Agent (SQLFIELDCARE)	Exec	已啓動	自動	Network S
SQL Server Browser	Provi	已啓動	目動	Local Serv
SQL Server VSS Writer	Provi į	已啓動	自動	本機系統

[2] Add HART Communication DTM

Connection Wizard					
Select the communication protocol and the CommDTM with which you wish to connect to devices!					
1. Select the communication protocol: Protocol HART SERVICE SERVICE Select the Communication DTM to be up	red				
2. Select the Communication DTM to be u	Communication Hardware	Version	Manufacturer		
HART Communication	FXA191; FXA195	1.0.42	CodeWrights GmbH		
HART OPC Client	-	2.0	Endress+Hauser, Met		
FX4520	FieldGate FXA520	1.05.09	Endress+Hauser		
<u>H</u> elp			Next > Cancel		

Network	1 ×	Generic HART DTM (Online I	Parameterize) 🔟	
Network Network Tag Hot PC G NART Communic C Network 1997 Network Tag Network 1997 Network 19	Connection Channel A. Device type DTM) Physication A Physicate type DTM Physication A Physicate A Phy	Ceneric HART DTM (Online I HART DTM (Online I HART DTM (Online I Online Parameterize Online Parameterize Active Messued Values Display Disgnois Calbrate device Data state Contected Code Refresh Cycle Time 5 * s Professional	Parameterice) Parameterice)	Endress + Hauser Everitie Preside for Process Automation
DTM messages				Ψ×
Tag	Error/User message			Timestamp
Generic HART DTM	Reading of the device parameter succeeded	N		2013-09-10 10:36:58.343
(T) 6 11	1 TT 1 1 1 1 1 1 1	1		
I he tollowin,	g error or user messages were recerved. User messages were answered automatica.	uy with the default answer. Messages :	are collected to this view when Commiserver is running and while reading/writing.	
3				Administrator Administrator /

[3] Connect to HART device and show HART information

(3) Siemens PDM

[1] Add HART Device DDL (ABB AS-800 as example) SIMATIC Manager <u>File View Options Window H</u>elp D 😅 🛛 Customize.. Ctrl+Alt+E SIMATIC <u>P</u>DM Sho<u>w</u> Log <u>M</u>anage Device Catalog Set PG/PC Interface.. HART server Start <u>L</u>ifeList Open protocol Settings. SIMATIC PDM Manage Device Catalog Source: D:\Edward\Fieldbus\Doc\HART\HART_Soft\Siemens PDM\CD_2 OK Browse. Device type: Abort ~ <u>H</u>elp - 🗹 🗚 🖉 🕂 📝 HART Infact I
 Actuators
 Actuators
 Sensors
 Fow
 Fow
 Fow
 Fow
 Fow
 For Pressure
 PROFILEUS PA Sort.. 🗄 🔲 PROFIBUS PA 🕂 🗌 Auma 🗄 🔲 Berthold Technologies GmbH & Co.KG 🛨 🔲 Bopp & Reuther Heinrichs Select all 🗄 🔲 buerkert fluid control systems Deselect all . . n ۰. . Mark HCF library Information on the Device type: Attribute Value >

Properties of -/- (HART device)					
General Device Upload to PC	C/programming Device Download to De	evice Change log Import Connection			
Davies type:					
Device type					
Device DDL:	\HART\HCF\16\85\0202\AS800.DDL				
Order-No: *		<u>N</u> ew Selection			
MANUFACTURER: HAI	RTMANN_BRAUN (22)				
DD_REVISION: 2					
DEVICE_TYPE: _AS	\$800				
DEVICE_REVISION: 2					
Subobjects: O (n	maximum permissible number)				
Redundancy: ?					
Address list:		Communication path			
Communication A. Con	mmunication path	HWConfig			
selected O Pdm	mTmpOO\Networks\HART modem\[0] -/				
,					
OK Cancel]	Help			
21 Scan HART Device	e (ComPort)				
File View Ontions Window	w Help				
	Ctrl+Alt+E				
SIMATIC PDN	M 🕨 Show Log	z ali			
CALDO DO LA	<u>M</u> anage De	- Device Catalog			
Set PG/PC Inte	HART serv	ver			
	Start <u>L</u> ifeL	List N			

Open protocol S<u>e</u>ttings... 2

SIMATIC PDM LifeList						×
Communication						
	_		_			
C PROFIBUS Add	ress 0		··· 12	26		
• HART modem <u>C</u> OP	ví port 🛛 🖸	OM3		•		
					_	
_Scan						
	_					
✓ Scan immediately after Start		<u>W</u> 1th d1	agnosi	tucs		
🔲 Sca <u>n</u> cyclically	V	Scan s <u>u</u>	ibnets			
✔ Display dialog during startup						
		Cancel	1		Jahn	1
		Calcer			licip	
31 Check HART Device infor	mation					
SIMATIC PDM/- [Temporary project]	- Induition I					
ïle <u>D</u> evice <u>V</u> iew <u>O</u> ptions <u>H</u> elp						
Networks	Paramete	r Value	Unit	Status		
🖶 🖳 CHARLIE-80DAC5C	Online					
		1	inH2 I	nitial		
	Analog ou	1 1	mA I	nitial		
		1	inH2	nitial		
	Version 1.	1 Englis	IIII 12 I	nitial		
	» Devic	e setup				
	»» Pr	ocess va	riable	s		
		1	inH2 I	nitial		
	% rnge	1.0	% I	nitial		
	Analog out	tp 1.000	mA I	nitial		

Distributor Acrom

1.0

Status grou

Tag

Unit

Damp

» »))

LSL

USL

LRV

URV

Unit

Xfer fnctn

» » » Calibration » » Basic setup

> -/inH2O

1

1 inH2O

» » » Device information

Linear 1.000 s

Range values

1.00 inH2 Initial

1.00 inH2 Initial

inH2 Initial

inH2 Initial

Initial

Initial

TV Value 1.00e inH2 Initial » » Diag/Service » » » Test device » » » » Status Status grou

deg Initial

Initial

Initial

Initial

Initial

Initial

Display Measured Value/- (Online)						
Process variables						
	-0] kPa				
% rnge	-0.0]%				
Analog output	3.997]mA				
	22.1	degC				
TV Value	}1.81e-002]%				
Close	Messages	Help				

Q08 : How to listen HART network communication by HART

converter

A08: (2019/02/14)

HART converter is a good tool for analyzing and debugging HART network communication. To do so, please follow the instruction below:

Hardware:

ICP DAS HART converter *1

Software:

HC_Tool

Download from: http://ftp.icpdas.com.tw/pub/cd/fieldbus_cd/hart/converter/i-7570/software/

Steps:

1. Add HART converter to the existing HART network.



- 2. Make sure the loop resistance is 250 Ω, if HART converter's built-in resistor needs to turn off, please refer to section 2.3 of Terminator Resistor Settings.
- 3. Use HC_Tool to record HART communication frames
 - (1) Simple data logging (does not affect existing communication)

[1] "Open" Com Port and click the "Data Log" button

HC_Tool v1.0	08 (ICP DAS)					
Settings	Data Log	SRMsg	HTCfg	ModCfg	About	
COM15 :	Open	Close				
Search : [Start	Stop				

[2] Click the "**Start Record**" button to record communication frames, and click "**Stop Record**" to end

ta Log	
Log	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	0B 50 EB CD 03 00 E6 0B 50 EB CD 03 10 00 50 41 2D 91 95 20 41 D8 F5 FA 20 41 E0 F0 28 24 3F 8B 0D 6D FA 7F A0 00 00 FA 0B 50 EB CD 03 00 E6 0B 50 EB CD 03 1A 00 50 41 2D 94 EA 20 41 D8 E6 25 20 41 E0 F0 28 24 3F 8B 03 24 FA 7F A0 00 00 1B 0B 50 EB CD 03 1A 00 50 41 2D 90 2C 20 41 D8 F4 38 20 41 E0 F0 28 24 3F 8B 0C 48 FA 7F A0 00 00 A5 0B 50 EB CD 03 1A 00 50 41 2D 90 2C 20 41 D8 F4 38 20 41 E0 F0 28 24 3F 8B 0C 48 FA 7F A0 00 00 A5 0B 50 EB CD 03 1A 00 50 41 2D 9C CE 20 41 D9 04 02 20 41 E0 EC 99 24 3F 8B 16 8A FA 7F A0 00 00 A5 0B 50 EB CD 03 1A 00 50 41 2D 9C CE 20 41 D9 04 02 20 41 E0 EC 99 24 3F 8B 16 8A FA 7F A0 00 00 A5 0B 50 EB CD 03 1A 00 50 41 2D 79 F9 20 41 D8 D8 77 20 41 E0 EC 99 24 3F 8B 16 8A FA 7F A0 00 00 AA 0B 50 EB CD 03 1A 00 50 41 2D 9A 58 20 41 D9 00 EE 20 41 E0 EC 99 24 3F 8B 14 8A FA 7F A0 00 00 8F 0B 50 EB CD 03 1A 00 50 41 2D 9A 58 20 41 D9 00 EE 20 41 E0 EC 99 24 3F 8B 14 8A FA 7F A0 00 00 0C B 50 EB CD 03 1A 00 50 41 2D 9A 58 20 41 D9 00 EE 20 41 E0 EC 99 24 3F 8B 14 8A FA 7F A0 00 00 CD 0B 50 EB CD 03 1A 00 50 41 2D 9A 58 20 41 D9 00 EE 20 41 E0 EC 99 24 3F 8B 14 8A FA 7F A0 00 00 CD 0B 50 EB CD 03 1A 00 50 41 2D 9A 20 41 D8 F7 41 20 41 E0 EC 99 24 3F 8B 0E 41 FA 7F A0 00 00 CD 0B 50 EB CD 03 00 E6 0B 50 EB CD 03 10 05 0B 50 EB CD 03 10 85 0B 50 EB CD 03
∢ ▼ Auto Seroll	Start Record Clear
	Stop Record Clear

- (2) Listen mode analysis data logging (may affect existing communication)
 - [1] "Open" Com Port and "Start" searching HART network device
 - [2] After finish searching device, click "HTCfg" button

	HC_Tool v1.(08 (ICP DAS)					x
	Settings	Data Log	SRMsg	HTCfg	ModCfg	About	
	COM3 :	Open	Close				
	Search :	Start	Stop				
	Status :	Idle					
	Informatio	n :					
31 Tio	[Polling Manufact Manufact	Address : 0] turer ID Code : turer Device Tyj Mode " an	26 (0x1A) = pe Code : 11 d click th	> Kent (ABB (0x0B) => T ne " Start ') Tx300 family ' button	v (Temperature)	*
<u> </u>							
HART C	ommnad						
HART C	ommnad ART Device evAddr : 00 (Undef	ined (Undefined) - U	Indefined)		HAI Ma	RT Send/RecvMsg Count ister Msg : 0 lave Msg : 0	Clear
HART C	ommnad ART Device evAddr : 00 (Undef ART Command	ined (Undefined) - U	Indefined)		HAI Ma	RT Send/RecvMsg Count ister Msg : 0 lave Msg : 0 SendCnt : 0	Clear
HART C	ommnad ART Device evAddr : 00 (Undef ART Command Master type : Seconds	ined (Undefined) - U uy v Pre	Indefined) eambles : 7	 Period (m 	HAI Ma S (5): 0	RT Send/RecvMsg Count uster Msg : 0 lave Msg : 0 SendCnt : 0 Uisten_Mode	Clear
HART C	ommnad ART Device evAddr : 00 (Undef ART Command daster type : Seconde Response :	ined (Undefined) - U ury v Pre	Indefined) ambles : 7	 Period (m 	s): 0	RT Send/RecvMsg Count ster Msg : 0 lave Msg : 0 SendCnt : 0 Visten_Mode	Clear

HC_Tool v1.0	08 (ICP DAS))			
Settings	Data Log	SRMsg	HTCfg	ModCfg	About
COM15 :	Open (Close			
Search :	Start	Stop			

[5] Click the "Start Record" button to record communication frames, and click "Stop Record" to end

Data Log		
Log		
2019/02/14 2019/02/14 HART Ans	13:57:58.885 < FF FF FF FF FF 82 1A 0B 50 EB CD 03 00 E6 13:57:59.335 < FF FF FF FF FF 86 1A 0B 50 EB CD 03 1A 00 50 41 2C FD 1C 20 41 D8 3C 63 20 41 E0 A4 24 24 3F 8A 94 E0 FA 7F A0 Jysis 0x0050 => OK / More_Status Config_Changed / Sec-Master_Addr=0_Cmd=3	00 00 03
2019/02/14 2019/02/14 HART Ans	! 13:57:59.912 <— FF FF FF FF FF 82 1A 0B 50 EB CD 03 00 E6 ! 13:58:00.422 <— FF FF FF FF FF 86 1A 0B 50 EB CD 03 1A 00 50 41 2C EB 29 20 41 D8 25 F3 20 41 E0 A4 24 24 3F 8A 86 4E FA 7F A0 i Jysis 0x0050 ⇒ OK / More_Status Config_Changed / Sec-Master_Addr=0_Cmd=3	00 00 15
2019/02/14 2019/02/14 HART Ans	13-58:00.902 <= FF FF FF FF FF 82 1A 0B 50 EB CD 03 00 E6 13-58:01.322 <= FF FF FF FF FF 86 1A 0B 50 EB CD 03 1A 00 50 41 2C F0 16 20 41 D8 2C 1C 20 41 E0 A4 24 24 3F 8A 8A 4E FA 7F A0 lysis 0x0050 => OK / More_Status Config_Changed / Sec-Master_Addr=0_Cmd=3	00 00 DB
2019/02/14 2019/02/14 HART Ans	↓ 13:58:01 922 <= FF FF FF FF FF 82 1A 0B 50 EB CD 03 00 E6 ↓ 13:58:02.432 <= FF FF FF FF FF 86 1A 0B 50 EB CD 03 1A 00 50 41 2C F5 B8 20 41 D8 33 26 20 41 E0 A4 24 24 3F 8A 8E E0 FA 7F A0 Jysis 0x0050 => OK / More_Status Config_Changed / Sec-Master_Addr=0_Cmd=3	00 00 FF
2019/02/14 2019/02/14 HART Ans	↓ 13:58:02.942 <— FF FF FF FF FF 82 1A 0B 50 EB CD 03 00 E6 ↓ 13:58:03.392 <— FF FF FF FF FF 86 1A 0B 50 EB CD 03 1A 00 50 41 2C EE E8 20 41 D8 2A A1 20 41 E0 A6 9F 24 3F 8A 89 58 FA 7F A0 Jysis 0x0050 => OK / More_Status Config_Changed / Sec-Master_Addr=0_Cmd=3	00 00 2C
2019/02/14 2019/02/14 HART Ans	↓ 13:58:03:962 <— FF FF FF FF FF 82 1A 0B 50 EB CD 03 00 E6 ↓ 13:58:04.382 <— FF FF FF FF FF 86 1A 0B 50 EB CD 03 1A 00 50 41 2C DA 7E 20 41 D8 11 1F 20 41 E0 A6 9F 24 3F 8A 78 C7 FA 7F A0 Jysis 0x0050 => OK / More_Status Config_Changed / Sec-Master_Addr=0_Cmd=3	00 00 65
2019/02/14 2019/02/14 HART Ans	↓ 13:58:04 982 <— FF FF FF FF FF 82 1A 0B 50 EB CD 03 00 E6 ↓ 13:58:05:402 <— FF FF FF FF FF 86 1A 0B 50 EB CD 03 1A 00 50 41 2C ED 7E 20 41 D8 28 DF 20 41 E0 A6 9F 24 3F 8A 88 33 FA 7F A0 Jysis 0x0050 => OK / More_Status Config_Changed / Sec-Master_Addr=0_Cmd=3	00 00 AF
_		
🔽 Auto Sc	roll Start Record	Clear
	Stop Record Clear	

6.Version History

Ver.	Author	Date	Description
1.0	Bill	2011/07/29	1. First version
1.1	Edward	2012/03/02	1. Update content.
1.2	Edward	2012/10/04	 FW update to v1.3 : Solve HART data losing when receiving. Add module configuration mode. (2.4.2) HC_Tool update to v1.01 : Solve the Auto-Search HART device function failed problem.
1.3	Edward	2012/12/20	 Update FW to v1.4 [1] Add "Config" Function. Update HC_Tool to v1.02 [1] Add "Config" screen. [2] Add HART v6.0 Universal and Common-Practice Command. [3] Add "Listen" HART communication Function.
1.4	Peter	2017/6/22	 Add FAQ Q05 [1] how to send command for writing Add FAQ Q06 [2] how to connect with HART OPC server
1.5	Peter	2018/11/27	1. Add FAQ QO7 [1] how to connect with HART FDT software
1.6	Peter	2019/02/14	 Add FAQ QO8 [1] how to listen HART network communication by HART converter