FUJI HART EXPLORER INSTRUCTION MANUAL





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Versions

Date	Date	Modification	Author
11/2005	Version 1.0	Creation	P.DURIEZ, J.LAMESCH
01/03/2007	Version 1.1	Add warning	P.DURIEZ

About this guide

Purpose

This guide introduces the features of the software "FUJI HART EXPLORER", and shows you how to configure, monitor and manage Hart devices.

This software is designed for communicating with devices using Hart protocol. The software gives full functionalities to some devices like "FUJI FCX A-C II pressure transmitter". The others devices can be used in generic mode.

In the future, the software can be extended by developing plug-in for specific devices.

Audience

This guide is intended for those responsible for setting up Hart devices, and especially Fuji Hart devices. It assumes that you are familiar with the devices and Hart protocol.

Scope

"FUJI HART EXPLORER" allows you to

- work in English or French
- work directly with a device connected (online mode) or work on files (offline mode)
- monitors dynamics variables

FUJI ELECTRIC FRANCE Contact Information

To contact FUJI ELECTRIC FRANCE SA by	Use :
World Wide Web	http://www.fujielectric.fr
Email	sales@fujielectric.fr
Telephone (France)	04 73 98 26 98
Telephone (other locations)	+33 4 73 98 26 98

Installing the application

Using the serial Hart Modem

You need not to install the modem, only to connect it. (compatible Windows 98, 2000, XP)

Using the USB Hart Modem

You need to install the driver for the USB Hart Modem.

- Power on your computer.
- Plug in the modem. Windows will detect a new device named "HCOMUSB".
- Follow the instructions displayed :

Installation example for Windows 2000, XP :



Insert CD for installation

Installation possibilities :

- STANDARD AND AUTOMATICALLY INSTALLATION (RECOMMENDED)

- Select to install from a specific location.



Assistant Matériel détecté
Veuillez patienter pendant que l'Assistant recherche
ар ноомизв.
Ś
< Précédent Suivant > Annuler

Select the path of the driver named 'AP3CDC.inf' for windows 2000, XP.

Let Windows go on.





If there is a warning message concerning the software, please choose to continue.

At the end of the installation, a new communication port is added to your system. You can see it using the configuration panel.

Installation example for Windows 98 :



Select the second choice to select the path of the drivers.

Please go on.



Windows show you a list of available drivers.

Click on the "drive" button.



Browse your CD :

Example: D:\\Hart Modem A3\Win 98.

You have to see following files :

- Modem98.inf
- Usbcdc98.inf

The USB modem will be installed.

Assistant Ajout de nouveau matériel



Assistant Ajout de nouv	eau matériel	The modem is installed.
	Modem USB CDC/ACM Windows a terminé l'installation du logiciel que vous avez sélectionné et qui est nécessaire à votre nouveau périphérique matériel.	
Assistant Ajout de nouv	< <u>Précéden</u> Terminer Annuler eau matériel	A new device is detected.
	Windows recherche les fichiers du pilote pour ce périphérique : Modem USB CDC/ACM Windows s'apprête maintenant à installer le pilote sélectionné pour ce périphérique. Cliquez sur Précédent pour choisir un autre pilote, ou sur Suivant pour poursuivre. Emplacement du périphérique : C:\MODEMH~1\USBCDC98.INF	
	< <u>P</u> récédent Suivant > Annuler	



Assistant Ajout de nouveau matériel Cliquez sur fabricant et le modèle de votre matériel. Si vous disposez du pilote mis à jour, cliquez sur Disquette fournie. Cliquez sur Terminer pour installer le pilote mis à jour. Constructeurs : Modèles : (Modem de type VoiceView 🔺 VoiceView 9600 bps Modem (Types de modems standar VoiceView 14400 bps Modem VoiceView 19200 bps Modem 3Com 3X VoiceView 28800 bps Modem Accton Technology Corpor 🖉 Ae ∎ Disquette fournie.. < Précédent Suivant > Annuler

The communication port is detected.

Windows show you different kinds of drivers.

Pleas click on the "drive" button.



Click on "browse" button.



Browse to display the following files :

- Modem98.inf
- Usbcdc98.inf



The port is installed.

Propriétés	Système					? ×
Général	Gestionnaire	de périphériques	Profils mat	ériels Perfo	ormances	
💽 Affic	her les péripl	nériques par <u>t</u> ype	C Affi <u>c</u> h	er les périphé	ériques par con	inexion
	dinateur Cartes graph Cartes résea CD-ROM Clavier Contrôleurs	hiques au de bus USB 280TAA USB Univ USB CDC/ACM rot Hub de disque dur de disque dur de disquette disque USB HART® HCC as système	versal Host	Controller		
Pro	priétés	Act <u>u</u> aliser	<u>S</u> up	oprimer	Imprimer	
				OK	An	nuler

Using the panel configuration >> System icon >> System drivers you can verify that the modem is installed.

You have to see :

- Modem USB CDC
- Modem USB hart

Installing the application (FUJI HART EXPLORER)

Double click on the file named "setup.exe" and follow the instructions.

Uninstalling the application

If you have already installed the application, you can uninstall it by launching "setup.exe" one more time or by using the classical uninstall procedure from the configuration panel.

Starting the application

After started the application you've got the "About windows" :



What can you do ?

See the actual version number		Version 2.1
Contact Fuji Electric	click on the email button	¢
	Or double click one the address	sales@fujielectric.fr
See our web site	click on the web button	
	Or double click one the URL	www.fujielectric.fr
Close the windows		x

Main windows



Description

The windows contains

- a toolbar
- a tree view
- a communication area
- a general information area

The toolbar



What can you do ?

The toolbar gives you the possibility to

- display the "About Windows"
- select the interface language



Communication area

□ □	ation —			
Address	Send	Rcv	Err	

The communication area show you :

THE ADDRESS OF THE DEVICE FOR THE ACTUAL COMMUNICATION

- a send indicator
- a receive indicator
- an error indicator
- some time an error button





What can you do ?

You can get information about the communication.

Indicator		Meaning
Send	is flashing green	Data are sent to the device during the green
		state.
Rcv	Is flashing green	A device is sending data back
Rcv	Is flashing red	A response was expected but the device
		doesn't answer
Err	Is flashing red	A communication error occurs.
		THE COMMAND IS REJECTED BY
		THE DEVICE (VALUE/COMMAND
		REJECTED)
		,
		AN ERROR IS DETECTED DURING
		THE COMMUNICATION

When an error occurs in a Hart command, the error button appears. You can click on it to get the Hart Error Code. See "Communication error" in the paragraph "Annexes".

General information area

22/11 12:18:50

This area show you :

THE CURRENT DATE AND TIME

- a button to display help file
- an area for process and error messages

The tree view



The tree view show you

- the computer name
- the <u>available</u> serial communication ports
- the connected devices
- the files saved for offline mode

Functionalities

When you select an item of the tree view, the right panel of the window is refreshed and display information depending on the kind of the selected item (computer, communication port, device, file).

Right clicking on the item displays a contextual menu :

Item	Contextual menu	(right click)	Functionality
			-
Computer			Detect all devices for all
	Find all transmitters		addresses and all
Communication port	Find all burn anithmus		Eind all transmitters for all
Communication port	Find transmitter		addresses for that
		1	communication port.
		2 3	
		3	Find a transmitter for a
		5	specific address.
		6	
		7	
		9	
		10	
		11	
		12	
		14	
		15	
Device generic	Selftest		
	Looptest		SELFTEST
	Rerange		
	Variables		LOOPTEST
	Save to file		
	Load from file		
	Detting report		RE RANGE
			MONITORING OF
			PROCESS
			SAVE PARAMETERS
			LOAD PARAMETERS
			MAKE A REPORT OF ALL PARAMETERS

Other Device	See specific documentation	

Offline		
File not loaded	Load Unload Save Read Transmitter informations Delete file Copy file	LOAD FILE AS DEVICE
File	t d	
File loaded	Unload Save Read Transmitter informations Delete file Copy file	UNLOAD FILE SAVE ALL PARAMETERS REFRESH ALL
		PARAMETERS FROM FILE MAKE A REPORT DELETE FILE COPY THE FILE

Loading a device (online mode)

Right click on the port and select "Find all transmitters" if you don't know its address or select "Find transmitter" with the good address.

Finding a transmitter with address 0

Find all transmitters	
Find transmitter 💦 🕨	0
	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15

You will see the communication indicators flashing. If "Recv" indicator turns in green a device is detected and is sending frame.

-Communica	ation —			
Address	Send	Rcv	Err M	

Please mind :

- For the point to point communication the address (poll address) is always "0".

- FOR COMMUNICATION IN MULTIDROP MODE THE ADDRESSES FROM 1 TO 15 HAVE TO BE PROGRAMMED.

IF A DEVICE IS DETECTED A NEW ITEM IS CREATED UNDER THE COMMUNICATION PORT ITEM.

- Puji FCX-A/C II BON

💷 🔯 🛛 Fuji FCX-A/C II BON

🖻 🌉 COM1

🖻 💷 COM1

Example of generic device :

Example of FCX device :

The item is defined with

A ICON

- the manufacturer name
- the device name
- the tag

If the device is not especially implemented in the software, it can be manage in generic mode. The icon is ?. Otherwise, if the device is fully implemented, like "FUJI FCX pressure transmitter", the icon is **?**.

?

Fuji

BON

FCX-A/C II

Device in error :

If a device is detected and a diagnostic problem occurs during the detection, the textual information is barred.



You will see

Loading a device in offline mode

Introduction

Offline mode allows you to work on a file that contains all the parameters of a device of any kind. Those files are created by using a connected device and saving all its parameters. You can modify the parameters inside that file directly, like if the device were connected. After, you can download your file to a device of the same kind.

To load a device

You have to select a file under the root named "Offline", right click and select "Load" option.



The file is loaded exactly like if the device was really connected. You can modify settings values and save them. The main differences are :

THE CONTEXTUAL MENU IS SPECIFIC TO THE OFFLINE MODE, NOT TO THE DEVICE KIND. SO, YOU CAN'T DO SELF TEST, LOOP TEST ...

THE INPUT OUTPUT FUNCTIONS ARE DIRECTED TO AND FROM THE FILE INSTEAD OF THE DEVICE. USUALLY, PARAMETER VALUES ARE CHECKED (AND MAY BE REJECTED) BY THE DEVICE. IN OFFLINE MODE, INCORRECT VALUES OR COMBINATIONS CAN'T BE DETECT. YOU WILL GET AN ERROR ONLY WHEN YOU WILL DOWNLOAD THE FILE TO A DEVICE.

Working on a device

In online and offline, you can work on a device by selecting it and open a contextual menu with a right click.

Working in generic mode

Introduction

The "Fuji Hart Explorer" is able to manage any kind of Hart devices. If a device is fully implemented, the software give you access to device specific functions. Otherwise, you can work in generic mode. It does mean that you can only use Hart generic functions. In the future, Fuji can develop plug in for implementing new device.

Parameters panels

The parameters are group by panel. You can select a group by clicking on the associated button. In generic mode, there are 4 parameters panels.



HART GENERAL INFORMATIONS PANEL

TRANSMITTER / DEVICE INFORMATIONS PANEL

MEASUREMENT CELL INFORMATIONS PANEL

PROCESS INFORMATIONS PANEL

The panels are refreshed only if necessary, and commands are sent to the device to take back needed data. Only readable data are dimmed. When you change a writable parameter, the "Write" button become available. At any time, if you need to read back data, click on read button.



HART general information panel

HART	Transmitter Meas. Cell Process
	Informations HART : Generic mode
HABT inf	ormations
Manufa	acturer Id.
×	15 Fuji
Device	type code Polling adresse
×	1 FCX-A/C
Device	id. N° of preambles Sensor Serial No.
× BE	i927 5 226705
Revisions	3
Unive	ersal command rev. Transmitter specific rev.
×	5 × 1
Softw	vare rev. Hardware rev.
×	2 × 8
Devic	
×	0
	Read

Hart general information		
Manufacturer Id	Official code of the manufacturer in hexadecimal. The next	
	field is the name associated .	
Device type code	Official code associated with the device. (in hexadecimal).	
	The next field is its name.	
Polling address	Address of the device. (selectable, see page 19)	
Device id.	Device Code identification.	
N° of preambles	Number of preambles used by the device	
Sensor Serial No.	Serial Number of the sensor	
Revisions		
Universal command rev.		
Transmitter command rev.		
Software command rev.		
Hardware command rev.		
Device function flags		

Warning : if you change the "polling address" parameter, it's recommended to restart the application.

Transmitter information panel

HART Transmitter Meas. Cell Process
Transmitter informations : Generic mode
Transmitter informations
Descriptor Date 00/00/00
Message
Final Assembly number × B6927 Sensor S/N 0
Private Label x15 · Write Protect Off- Oui-
Read

Transmitter information	
Tag	Tag number of the measuring device
Descriptor	Description of the measuring point
Date	Date
Message	Possible message can be written in 32 digits
Final Assembly number	
Sensor S/N	
Private Label	
Write Protect	Enables or inhibits the write function in the different panels

Measurement cell information panel

HART	Transmitter	Meas. Cell	Process
	Me	asuring cell i	informations : generic mode
Cell infor	mations	1274 864	
			Unit Code
Lower S	ensor Limit	j -1274.864	mbar
Minimun	n span	12.749	
		Re	ad Willo

Measurement cell information		
Upper sensor limit	Maximum setting limit	
Lower sensor limit	Minimum setting limit	
Minimum span	Minimum span	
Unit code	Unit (can not be changed)	

Please mind :

Upper/lower sensor limit corresponds to the interval between upper and lower sensor limits for the possible setting of the span of the measuring device. This interval does not correspond to the max. range of the device.

Process information panel

Process Process Value	0.05 kPa
Analog value	80.00 - 15.332 mA 60.00 -
Percent Range	70.83 % 40.00 - 20.00 -
	0.00 -
Unit Selected Upper Range Value Lower Range Value	▼ kPa ↓ 16.000 kPa ↓ -16.000 kPa ↓ 0.12 Sec
Transfer Function	Square root output
	Lire Exatre

Process information	
Process value	Process value indicated in the programmed unit
Analog value	Analog output signal
Percent range	Output in % - also indicated on the bar graph
Unit	Programmable unit for the software
URV	Upper range value (20mA)
LRV	Low range value (4 mA)
Damping	Damping of the output signal
Transfer function	Not supported by the Hart protocol in generic mode

Device functions

Introduction

You can access the device functions in online mode by right clicking on the device item in the tree view.


Self test function

Introduction

Initiates the Self-test function in the device. The device responds immediately to the command and then performs the Self Test. Refer to the device specific Hart documentation for specific implementation details.

Procedure

This panel is very simple. Just click on start button to proceed the test.

Selftes	t						
Selftest is	: testi	ng the c	ommunio	cation ar	nd the transr	nitter.	
Selftes	t						
85te ()	8yte 1	8,	de 2	8yte 3		
\ ()	\ 0		0	\ 0		Start
		-					
Commu	nical	tion					
Send	E	roi					
					7		
				Close			

After the test, you can read the 4 status bytes. Please refer to the Hart documentation of the device to get the meaning of those status bytes.

🐢 Selftest	×
Selftest is testing the communication and the transmitter.	
Selftest	
Byte 0 Byte 1 Byte 2 Byte 3 x 0 x 0 x 0 x 0 x 0 Test OK.	tart
Communication	
Send Error	
Close	

Loop test function

Introduction

This test will fix the analog current at specified value.

Procedure

Type in the set point value, and click on generate button :

🕸 Looptest.	×
The looptest will generate an output current in the loop.	
Output current	
Set point (mA) 🚔 4.000 Generate Stop	
Actual ImA) 4 (00) Fixed output signal	
Communication	
Send Enor	
Close	

The device is in fixed output signal and the actual value is displayed. Click on stop button or close button to go back in output signal.

🐢 Looptest.	×
The looptest will generate an output current in the loop.	
Output current	
Set point (mA) 🚽 4.000 Generate Stop	
Actual (mA) 4.000 Output signal Fixed output signal	
Communication	
Send Error	
Close	

Dactrim function

Introduction

This function will adjust the output signal. It will

TRIM THE ZERO OR 4 MILLIAMP POINT OF THE DIGITAL TO ANALOG CONVERTER SO THAT THE CONNECTED CURRENT METER READS 4 MILLIAMP.

TRIM THE GAIN OR 20 MILLIAMP POINT OF THE DIGITAL TO ANALOG CONVERTER SO THAT THE CONNECTED CURRENT METER READS 20 MILLIAMP.

Procedure

Settings		
4 má 🛛 🗍 20 má 🗍	4 (00) .0000	Start
Communication		
Send Eiroi	Output signal	•
	Fixed output signal	-

When clicking on START button, the following window is displayed.

🙊 Output signal adjus	stment		×		
Calibration of NA conve	rter at 4 mA and 20 mA.		eas. Cell Proc	ess	
			ಝ Current value inpu	ut	×
Settings			Please write the current	input value.	
50 vý 4 vý	4 000 10.000	Start			
Communication			Actual current	4.000	
Send Error	Output signal	-			
	Fixed output signal				
	Close			Cancel Ok	

Enter the output signal displayed on the milliamp – meter connected to the transmitter in the "actual current" space.

- first for the LRV
- next for the URV

Calibrate the output signal only with a high accurate milliamp – meter (3 digits after the point) Close the window on "Close" button.

Re range function

Introduction

This function is mainly used for an easy adjustment of the zero elevation or suppression for example on a liquid level measurement.

The reference pressure needs to be applied on the transmitter for zero and adjusted span to use this function. (for example : wet leg has to be filled for a level measurement)

When the zero elevation/suppression (on Rerange LRV button) is adjusted, the calibrated span will also be elevated or suppressed of the same value than the zero.

Procedure

Mount the transmitter in the application condition.

Click on Rerange LRV for the 4 mA output adjustment (reference pressure is required) Click on Rerange URV for the 20 mA output adjustment (reference pressure is required) Close the window after adjustment.

Example : Transmitter before Re ranging of LRV for zero suppression or elevation :

🖬 Rerange 🛛 🔀						
Apply the corresponding input signal to adjust LRV (4 mA) and URV (20 mA).						
Settings						
Rerange LRV Rerange URV						
LRV 0.000 URV 320.000 mm H20						
Communication						
Send Eiroi						
Close						

Example : Zero elevation is done by clicking on LRV button :

🔤 Rerange 🛛 🔀	
Apply the corresponding input signal to adjust LRV (4 mA) and URV (20 mA).	
Settings	
Rerange LRV Rerange URV	Diago mind LDV and UDV
LRV -129.854 URV 190.146 mm H20	values showing the zero
Communication	elevation without changing the transmitter span
Send Error	
Close	

Process values monitoring function

Introduction

This panel allows you to monitor the process values. The maximum duration depends on your free disk space.

You can set the following parameters :

SAMPLE (IN SECOND)

MINIMUM AND MAXIMUM AXIS VALUES OF THE GRAPH

After the monitoring, you can export data to a CSV (Comma Separated Value) file compatible with Excel.

Procedure

Set the parameters and click on start button.

٩	Generi	c mode :	Variables	5							
	100.0-										
	60.0										
	-20.0-										
	-60.0										
	-100.0-	1			_						99
			535.Z		87%.X					×/	
	Ð	xport	in H2O		osv in H2O		in H	20	e ir	* H2O	
	max min -	100.0 100.0	0	.000		0.000		0.000		0.000	
	Meas Stop (sure Start	Comm.	Sample (s)	Close					

🏶 Gene	ric mode :	Variables	5							×
100.0-										
60.0-										-1
20.0-										
-20.0-										
-60.0-										
-100.0-									_	
 	0					_				99
	Export	PV kPa		SV deg C		¥۲ سی	30	(P)	¥ ⊌xn	
max	100.0		052		25 161		0.000		0.000	
min	-100.0	, ,			20.101				3 0.000	
Me Stop	asure Start	Comm.	Sample	(s)	Close					

Example of monitoring every 2 seconds.

Click on stop button, stops the monitoring. Export button is available. If you click on it, you will be asked to name the file.

()	Generio	c mode : Variables	×
1	00.0-		
			- 8
	60.0-		- 11
		Fichier d'export	- 8
	20.0-	Directory History: C:\AFFAIRES\HART\Dev2.0a\Result	-8
		Enregistrer dans : 🔁 Result 💌 🖛 🛍 🏢 🗸	- 8
	-20.0-	5.csv	-11
			- 8
	-60.0-		- 11
			- 8
-1	00.0-		99
Ē		Nom du fichier : CSV Enregistrer	
		Type : (*.csv) - Annuler	
"	nin -		
	Meas	sure Comm. Sample (s)	
S	top 🌉	Start 2.0	

Saving parameters function

Introduction

This function allows you to save all the parameters displayed in the panels into a file. After that operation, you can download the file in the device or work on it using the offline mode.

Procedure

Select the menu and choose a name file.

Ouvrir			<u>?</u> ×
Directory History:	FAIRES\HART\Dev2.0a\data		•
Rechercher dans :	🔁 data	▼ ← 🗈 📰 -	
🗐 1.dta			
2.dta			
FRC 1.dta			
I			
Nom de fichier :	*.dta		ОК
Туре:	(*.dta)	Ţ	Annuler

The saved parameter file will be displayed in the tree view under "off line".

Loading parameters function

Introduction

This function allows you to write all parameters already saved into an existing device. Only the parameters of saved transmitter configurations are displayed in the panels.

Procedure

Select the function and choose the file corresponding to the kind of your device.

🔅 Configurtion file selection	×
Fuji FCX-A/C II	1
Downloading transmitter settings using file selection.	
TEST	
Cancel Load	T

Load an transmitter configuration by clicking on the Load button.

Warning: it's impossible to load a parameter file if you don't use the same language.

Parameters reporting function

Introduction

The report function is useful for taking a picture of your parameters. This function displays the parameters of all the panels into your browser. So you can print it, saved it using your browser.

Procedure

After selection in the menu, a new window is opened in your browser. You can see a title and a 3 column tab of parameters for each panel. The tab show you the parameter description, value and value meaning.

		r uji
Device type code	0x2	FCX-A/CI
N° of preambles	5	
Universal command rev	. 0x5	
Transmitter specific rev.	0x2	
Software rev.	0x6	
Hardware rev.	0x8	
Device func. flags	0x0	
Device id.	0x23456	
Polling address	0	

Working with a "Fuji FCX A-C II pressure transmitter"

Please mind : If the transmitters has the local LCD indicator option, please check that the switch "LOCAL/COMM" is in COMM position.



LOCAL/COMM switch

Introduction

The "Fuji Hart Explorer" includes a plug in for totally implementing the device "Fuji FCX A-C II Pressure Transmitter".

Parameters panels

The parameters are grouped by panel. You can select a group by clicking on the associated button. There are 5 parameters panels.



HART GENERAL INFORMATION PANEL

TRANSMITTER / DEVICE INFORMATION PANEL

MEASUREMENT CELL INFORMATION PANEL

PROCESS INFORMATION PANEL

LDC INDICATOR PANEL

The panels are refreshed only if necessary, and commands are sent to the device to take back needed data. Fields associated with only readable data are dimmed. When you change a writable parameter, the "Write" button becomes available to really write the data. At any time, if you need to read back data, click on read button.

Read	Write
------	-------

HART general information panel

HART	Transmitter	Meas.Cell	Process	LCD ind		
	HART information : FCX-A/C II					
HABT in	formations	_	_	_	_	
Manufa	acturer Id.					
×	15 Fi	ıji				
Device	type code					
×	2 F(CX-A/C II				
Device	id.	l	N° of preamble	s	Polling address	
× 23	3456		5			
Revision	s					
Univ	ersal command	rev. Tra	ansmitter speci	fic rev.		
Softw	C C	× Ha	Z ardware rev			
×	6	×	8			
Devi	ce func. flags					
×	0					
				7		
		Re	ad Wike			
				J		

Hart general informations	
Manufacturer Id	Official code of the manufacturer in hexadecimal. The next
	field is the name associated.
Device type code	Official code associated with the device. (in hexadecimal).
	The next field is its name.
Polling address	Address of the device. (selectable, see page 19)
Device id.	Device Code identification.
N° of preambles	Number of preambles used by the device
Revisions	
Universal command rev.	
Transmitter command rev.	
Software command rev.	
Hardware command rev.	
Device function flags	
Warning; if you ahanga the "	nolling address?" normator, it's recommended to restart the appli

Warning: if you change the "polling address" parameter, it's recommended to restart the application.

Transmitter information panel

HART	Transmitter	Meas.Cell	Process	LCD ind.		
	Transmitter information : FCX-A/C II.					
Transmit	ter information -					
Tag	00				_	
Mode	FKCT3	3V4AAAYYAAA				
Desc	riptor		Date	00/00/00		
Mess	Message					
Final Ass nr	embly x 120	000 S/N		Priv. label Distrib.	×15	
	W	Inite Proctect Off	Ena	Local Adjust. screw able		
	Read Write					

Transmitter information	
Tag	Tag number of the measuring device
Model	Fuji transmitter model number
Descriptor	Description of the measuring point
Date	Date
Message	Possible message can be written in 32 digits
Final Assembly number	
S/N	
Private Label	
Write Protect	Enables or inhibits the write function in the different panels
Local Adjust. screw	Enables or inhibits the adjustment screw on the transmitter electronics housing

Measurement cell information panel

HART	Transmitter	Meas.Cell	Process	LCD ind.		
Measuring cell information : FCX-A/C II.						
Measuring cell information						
Upper S	ensor Limit 🛛	160.000		Body	12345678	
Lower S	ensor Limit 🛛	0.000	Unit mbar			
Minimum	n span	1.600				
Read Willow						

Measurement cell information			
Upper sensor limit	Maximum setting limit		
Lower sensor limit	Minimum setting limit		
Minimum span	Minimum span		
Unit code	Unit (can not be changed)		
Body			

Please mind :

Upper/lower sensor limit corresponds to the interval between upper and lower sensor limits for the possible setting of the span of the measuring device. This interval does not correspond to the max. range of the device.

Process information panel

	Process information :	FCX-A/C II.	
- Process			
		PV (%)	
Process Value	0.05 kPa	100.00 -	
	15.000 mA	80.00-	
Analog Value	15.33Z MA	60.00 -	
Recent Range	70.83 %	40.00-	
		20.00-	
		0.00-	
- Settings			
i Lat			
UTIL	KFa	Burst mode	
URV (20 mA)	🗘 16.000 kPa	high - 216 mA	
LRV(4mA)	🗧 -16.000 kPa	on hold - 🔫	
Damping		low - U 38mA 💌	
Transfer Function	Square root output	-	
C + D-i-t	Linear Output		
Cut Point	✓ Square root output		
Read Write			

Process information			
Process value	Process value indicated in the programmed unit		
Analog value	Analog output signal		
Percent range	Output in % - also indicated on the bar graph		
Unit	Programmable unit for the software		
URV	Upper range value (20mA)		
LRV	Low range value (4 mA)		
Damping	Damping of the output signal		
Burnout	Burnout mode is selectable between high (over scale), hold,		
	and low (under scale). In case on high and low burnout, the		
	burnout values are programmable for high between 20.8 to		
	21.6 and for low between 3.2 and 3.8 mA output signal		
Transfer function	Transfer function allows to program the output signal in		
	linear or square root.		
Cut Point	Cut point, (the start of the output signal in square root) for		
	square root output is programmable between 0 and 20% of		
	output.		

	Process information :	FCX-A/C II.	
Process			
		PV (%)	
Process Value	0.05 kPa	100.00-	
Angles Makes	15.222 mA	80.00-	
Analog value	10.332	60.00-	
Recent Range	70.83 %	40.00-	
		20.00-	
		0.00-	
- Settings			
Unit	T kPa		
(Conne)		Burst mode	
URV (20 mA)	🛊 16.000 kPa	high - 21.6 m/	
LRV(4mA)	-16.000 kPa	on hold - 🦰	
Damping	0.12 Sec	low - U	
Transfer Function	Square root output		
Cot Dated	A 7.07		
Cut Point	7.07		
Read Write			

LCD indicator information panel

The LCD indicator can be configured concerning the values to be indicated and the units.

HART	Transmitter	Meas.Cell	Process	LCD ind.	
	FC	X-A/C II : LO	CD indicate	ur informations	
LCD indi	cator information	n			
Ű.	JRV (20 mA)	÷.	1 00		
L	.RV (4 mA)	÷.	0	[
C	ecimal Point Po	osition 🗐	2	1	
L	Jnit	F	^D a	1	
			-	7	
		Re	ad Willia		

Process information	
<u>URV (20mA)</u>	Indication for 20 mA output signal
<u>LRV (0mA)</u>	Indication for 4 mA output signal
Decimal Point Position	Configure the decimal point position of the indication
Unit	Unit of the indicator
	A large quantity of LCD indicator units are available for
	pressure, flow and level indications. If you choose a flow
	unit, the indicated value will be automatically a flow
	indication in square root independent of the
	output signal mode. (see transfer function). If a pressure
	or level unit is programmed, the indication will be linear.

Device functions

Introduction

You can access the device functions in online mode by right clicking on the device item in the tree view.



Self test function

Introduction

Procedure

This panel is very simple. Just click on start button to proceed the test.

Selftest Selftest is tes	ting the com	munication a	ind the transmitt	er.
Selftest				
8ડ્ર્ય્યર 0	854e i	8yte 2	85483	
N 0	N 0	\ 0	N 0	Start
<u> </u>				
Communica	tion			
Send E	iroi			
		Close		

After the test, you can read the response code (4 status bytes).

🙀 Selftest			×
Selftest is te	sting the comr	nunication and the transmitter.	
Selftest			
Byte 0	Byte 1	Byte 2 Byte 3	
× O	× 0	× 0 × 0	Start
Test OK.			
Communic	ation		
Send	Error		
-	-		
		Close	

Response code	
0	No command-specific errors
6	Transmitter-Specific command error

Loop test function

Introduction

Fix the analog current at specified value.

Procedure

Type in the set point value, and click on generate button :

🏟 Looptest.	×
The looptest will generate an output current in the loop.	
Output current	
Set point (mA) 🚽 4.000 Generate Stop	
Actual IIIA) 4 (00) Fixed output signal	
Communication	
Send Enor	
Close	

The device is in fixed output signal and the actual value is displayed. Click on stop button or close button to go back in output signal.

🐢 Looptest.	×
The looptest will generate an output current in the loop.	
Output current	
Set point (mA) 🚽 4.000 Generate Stop	
Actual (mA) 4.000 Output signal Fixed output signal	
Communication	
Send Error	
Close	

Dactrim function

Introduction

This function will adjust the output signal. It will

TRIM THE ZERO OR 4 MILLIAMP POINT OF THE DIGITAL TO ANALOG CONVERTER SO THAT THE CONNECTED CURRENT METER READS 4 MILLIAMP.

TRIM THE GAIN OR 20 MILLIAMP POINT OF THE DIGITAL TO ANALOG CONVERTER SO THAT THE CONNECTED CURRENT METER READS 20 MILLIAMP.

Procedure

Settings		
1 mA 20 mA	4 000	Start
Communicatio	n	
Sand Eiro	e Output signal	-
	Fixed output signal	-

When clicking on START button, the following window is displayed.

🕸 Output signal adjustment	
Calibration of NA converter at 4 mA and 20 mA.	eas. Cell Process
	🏟 Current value input 🔀
Settings	Please write the current input value.
4 má 4 000 20 má	
Communication	Actual current 4.000
Send Error Output signal	
Fixed output signal	
Close	Cancel Ok

Enter the output signal displayed on the milliamp – meter connected to the transmitter in the "actual current" space.

- first for the LRV
- next for the URV

Calibrate the output signal only with a high accurate milliamp – meter (3 digits after the point) Close the window on "Close" button.

	🥨 Current value input
	Please write the current input value.
😳 Output signal adjustment	
Calibration of NA converter at 4 mA and	
Settings	Actual current 20.000
4 mA 4.000	
20 mA	
J	Cancel Ok
Communication	Calical OK
Send Error 0	
Fixed out	tput signal
	1
Close	

Re range function

Introduction

This function is mainly used for an easy adjustment of the zero elevation or suppression for example on a liquid level measurement.

The reference pressure needs to be applied on the transmitter for zero and adjusted span to use this function. (for example : wet leg has to be filled for a level measurement)

When the zero elevation/suppression (on Rerange LRV button) is adjusted, the calibrated span will also be elevated or suppressed of the same value than the zero.

Procedure

Mount the transmitter in the application condition.

Click on Rerange LRV for the 4 mA output adjustment (reference pressure is required) Click on Rerange URV for the 20 mA output adjustment (reference pressure is required) Close the window after adjustment.

Example : Transmitter before Re ranging of LRV for zero suppression or elevation :

🖬 Rerange 🛛 🔀
Apply the corresponding input signal to adjust LRV (4 mA) and URV (20 mA).
Settings
Rerange LRV Rerange URV
LRV 0.000 URV 320.000 mm H20
Communication
Send Eiroi
Close

Example : Zero elevation is done by clicking on LRV button :

💀 Rerange	
Apply the corresponding input signal to adjust LRV (4 mA) and URV (20 mA).	
Settings	
Rerange LRV Rerange URV	
LRV -129.854 URV 190.146 mm H20	
Communication	_
Send Error	
Close	

Calibration function

Introduction

Zero and span can be calibrated by applying the accurate reference pressure and by applying on the concerned buttons.

Accurate reference pressure is required corresponding to zero and span.

Procedure

Zero calibration example :

Calibration	
Calibration should be perform	n by applying the corresponding input value.
Settings	mbar
0.000	LRV (4 mA)
\$ 320.000	URV (20 mA)
Current (mA) 3.998	PV (%) -0.01
Cond Error	
	Close

Span calibration example :

Calibration				
Calibration should be perfor	rm by applying the corresponding input value.			
Settings	mbar			
0.000	LRV (4 mA)			
\$ 320.000) URV (20 mA)			
Current (mA)	18 PV (%) 99.99			
Communication				
Send Error				
Close				

Process values monitoring function

Introduction

This panel allows you to monitor the process values. The maximum duration depends on your free disk space.

You can set the following parameters :

PERIOD (IN SECOND)

MINIMUM AND MAXIMUM AXIS VALUES OF THE GRAPH

After the monitoring, you can export data to a CSV (Comma Separated Value) file compatible with Excel.

Procedure

Set the parameters and click on start button.

🕸 Yariables : FCX-A/C II. 🔀 🔀						
100.0-						
60.0-						
20.0-						
20.0-						
20.0						
-20.0-						
-60.0-						
-100.0-						
0						
	PV	SV				
max 100.0	in H20	in H2O				
Export 100.0	ş					
min -100.0	0.000	0.000				
C						
Measure Comm. Sa	imple (s):	Close				
Stop 💓 Start 🔟 🗐	2.0					



Example of recoding the process values every 2 seconds.

Click on stop button, stops the monitoring. Export button is available. If you click on it, you will be asked to name the file.

🙊 Yariables : FC	K-A/C II.						×
100.0-							
60.0-	ichier d'export					? ×	-1
20.0	Directory History:	AFFAIRES\HART\D	ev2.0a\Result		•		-1
-20.0-	Enregistrer dans :	रे 🔁 Result		- + 🗈 🖩	<u>⊞</u> ▼		
-20.0	2,0,034						
-60.0							
-100.0-							99
	Nom de fichier :	5.csv				Enregistrer	
Export	Туре :	[*.csv]			V	Annuler	
		16.204		20.273			
Measure Stop 🍋 S	Comm. Sarr tart 🔟 🗐	ple (s) 2.0	Close				
FUJI HART EXPLORER

Saving parameters function

Introduction

This function allows you to save all the parameters displayed in the panels into a file. After that operation, you can download the file in the device or work on it using the offline mode.

Procedure

Select the menu and choose a name file.

Ouvrir			<u>?×</u>
Directory History:	AIRES\HART\Dev2.0a\data	<u>•</u>]
Rechercher dans :	🔁 data	▼ ← 🗈 💷+	
🗐 1.dta			
2.dta			
TEST.dta			
Nom de fichier :	*.dta		OK
Туре:	(*.dta)		Annuler

The saved parameter file will be displayed in the tree view under "off line".

Warning: it's impossible to load a parameter file if you don't use the same language.

Loading parameters function

Introduction

This function allows you to write all parameters already saved into an existing device. Only the parameters of saved transmitter configurations are displayed in the panels.

Procedure

Select the function and choose the file corresponding to the kind of your device.

🏟 Configurtion file selection	×
Fuji FCX-A/C II	
Downloading transmitter settings using file selection.	
TEST	
Cancel Load	

FUJI HART EXPLORER

Parameters reporting function

Introduction

The report function is useful for taking a picture of your parameters. This function displays the parameters of all the panels into your browser. So you can print it, saved it using your browser.

Procedure

After selection in the menu, a new window is opened in your browser. You can see a title and a 3 column tab of parameters for each panel. The tab show you the parameter description, value and value meaning.

FUJI ELECTRIC FRANCE :	Hart Ex	plorer	
2005-11-22 10:1 2: 05			
HART information : FCX-A/			
Manufacturer Id	0x15	Fuii	
Device type code	0x2	FCX-A/C II	
N° of preambles	5		
Universal command rev.	0x5		
Transmitter specific rev.	0x2		
Software rev.	0x6		
Hardware rev.	0x8		
Device func. flags	0x0		
Device id.	0x23456		
Polling address	0		
Fransmitter information : F	FCX-A/C	н.	
Message			
Descriptor			
Date 0	0/00/00		
Write Proctect)ff		

Annexes

Communication error

If an error occurs during the communication with the device a button appears. If you press that button, you will see a panel explaining the error.

	COM2 COM3	Command error		
	COM4 COM5 COM6 COM7	invalid sel	ection	
	ifLine TEST (Fuji FCX-A, FRC 1 (Fuji FRC) 2 (Rosemount 305 1 (Fuji FCX-A/C)		device malfunction configuration changed cold start undefined output current fixed analog output saturated variable (not primary) out of limits primary variable out of limits	Close
inia :ss	sation Send Rov Err			
				Read Write

This window can show you multiple error messages : maybe only one is correct in your case.