

#### ABB MEASUREMENT & ANALYTICS | RELEASE NOTES

# Spirit<sup>IT</sup> Flow-Xpress Flow computer configuration software

## Spirit<sup>IT</sup> Flow-Xpress 2.1 (March 2018)

Spirit<sup>IT</sup> Flow-Xpress 2.1 was released in March of 2018. Besides the features and changes mentioned below, this release also contains about 10 minor improvements and bug fixes. For a complete list of changes, please contact ABB.

### **New Features/Changes**

#### New calculation functions

Flow-Xpress 2.1.0 contains a number of new calculation functions that support the following standards:

- ISO 6976: 2016
- AGA-8 Part 1 : 2017
- AGA-8 Part 2 : 2017 (GERG)
- AGA-3: 2012
- GOST-30319: 2015 (SGERG)
- GPA-2172: 2009 and 2004 with tables GPA-2145: 2006
- OIML R22: 1975 International Alcoholometric tables

## Spirit<sup>IT</sup> Flow-Xpress 2.0 (December 2017)

Spirit<sup>IT</sup> Flow-Xpress 2.0 was released in December of 2017. Besides the features and changes mentioned below, this release also contains over 500 minor improvements and bug fixes. For a complete list of changes, please contact ABB.

### **New Features/Changes**

#### New hardware platforms

With Spirit<sup>IT</sup> Flow-Xpress 2.0 ABB introduces support for a new line of Spirit<sup>IT</sup> Flow-X hardware. The Flow-X/M and Flow-X/P line of flow computers have received a major hardware update, and a minor change in appearance. With this update even larger applications with more intensive flow calculations can be supported. For example, next to the existing support for the GERG2008 Gas calculation it is now possible to make use of the GERG2008 Flash calculation on the flow computer. The new models are fully compatible with existing Spirit<sup>IT</sup> Flow-X applications and can be used as drop-in replacements.

Next to the familiar Flow-X/M and Flow-X/P line of flow computer hardware a new member of the Spirit<sup>IT</sup> Flow-X family is introduced, the Flow-X/C:



The Flow-X/C combines a single stream Flow-X/M with the intuitive graphical touch-screen interface offered by the Flow-X/P range of flow computers.

#### **Changes to Branding**

Because Spirit IT has become a member of the ABB group, logo's, colors, icons, etc. have been updated to ABB branding.

- The ABB logo replaces the Spirit IT logo in various places:

Spirit <sup>#</sup> - Lice	ensing System	x
	se enter the wing details:	ABB
End-User:	user	
Company:	Spirit IT	
System:	1	
		ОК
About Spi	rit IT Flow-Xpress	
AI	•	
Spirit IT Flo	w-Xpress	Running on:
Version 2.0	.0.7779	Microsoft Excel 2016
Build Date:	Mar 22 2017	Version 16.4339
	© 2007 ABB Switzerland Ltd. ar_22_2017-232640	Copyright Microsoft Corporation
Licensed to	:	Installed options:
		Flow-Xpress Basic
		Flow-Xpress Professional
		Flow-Xpress Brand Exchange
internation program, o penalties, a the law.	r any portion of it, may result and will be prosecuted to the	oduction or distribution of this in severe civil and criminal maximum extent possible under
www.spirit	it.com Details I	icense Manager Close

- Various places in the user interface that used orange now use a blue tint instead:

How X OLE 10.0.32.100      Spent I PERCUSH      HOME / SYSTEM / RESET	a (100000)	Apps - X GOL 15A 12 300	<ul> <li>□ ×</li> <li>10.002.00000 ● 15.44</li> <li>■ 10.00000000000000000000000000000000000</li></ul>
Reset	1 OF 2	Reset	1 OF 2
Reset and Clear		Reset and Clear	
RESET AND CLEAR ALL	RESET AND CLEAR ALL	RESET AND CLEAR ALL	RESET AND CLEAR ALL
Reset totals	Reset totals	Reset totals	Reset totals
Reset parameters	Reset parameters	Reset parameters	Reset parameters
Clear reports	Clear reports	Clear reports	Clear reports
Clear events	Clear events	Clear events	Clear events
Clear archives	Clear archives	Clear archives	Clear archives
Clear print-queue	Clear print-queue	Clear print-queue	Clear print-queue
Restart		Restart	
	· <b>x</b>		<b>v</b> <u>z</u>
Ó			Ò

- New icons for Flow-Xpress and related utilities:



#### Firmware

- Modbus communications can now be switched between RTU and ASCII transmission modes at runtime.
- The IP address of the remote Modbus Server for the Modbus Client Protocol can now be configured at runtime.
- A Modbus proxy can now be configured forwarding Modbus message from an Ethernet server to serial master connection.
- COM port settings can now be configured as parameters:
  - The COM Port settings check box on the Upload to Device dialogue is disabled:



• COM port settings on the Ports & Devices tab are disabled:

+ New - >	<		
Device	Description	Configuration	
Module 1		Baudrate	(flow computer parameter)
🍠 сомі	Serial Port 1	DataBits	(flow computer parameter)
J COM2	Serial Port 2	Mode	(flow computer parameter)
COM4	Analog input 1, pin B11	Parity	(flow computer parameter)
COM5	Analog input 2, pin B13	StopBits	(flow computer parameter)

• COM port settings are now configurable from the Parameters tab:

Parameters					
💕 🛃 🍇 i 🗽 🏛 i	6				
Location	[	Parameter	Value	Unit	Range
🗄 💧 Product	~	COM1			
+ H Flow meter		TTT COMI			
🛨 🎍 Temperature		RW Baudrate	9600: 9600		
+ 🙆 Pressure		mil Parity	0: None		
🛨 🦾 Density		i Data bits	8:8		
+ I++I Batch		Stop bits	1: 1		
🛨 🔮 Proving		W UART mode	232: RS-232	<b>×</b>	
🛨 🍾 Sampling			232: RS-232	1	
🛨 🚘 Valve Control			422: RS-485 4-w		
🛨 🚔 Flow Control			485: RS-485 2-w	ire	
🛨 🚔 Pressure Control					
+ Y BSW					
🕂 🚄 Viscosity					

This change streamlines the configuration of COM port settings by making it no different from configuring other settings on the flow computer. In particular, it is now possible to make configuration changes to the COM port settings at run time simply by changing a tag value. I.e. remote configuration of COM port settings is now possible using the Flow-X HTTP interface, or by adding the relevant tags to a Flow-X Communications sheet to enable configuration over e.g. Modbus

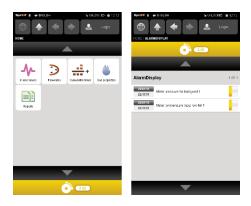
#### NOTE:

Before updating to this new version of Spirit<sup>IT</sup> Flow-Xpress, please take note of the current COM port settings for your application. You will need to adjust the COM port parameter settings to match with these settings manually, before writing the application to a device. Writing the application to a device without updating these parameters will cause serial communications to use default settings (i.e. 9600 bauds, no parity, 8 data bits, 1 stop bit), even if no parameters are overwritten.

- It is now possible to conditionally show or hide individual tags on tag displays:

🗧 🛔 Temperature 👘	Tag	Display Text	Display Unit	Format	Condition	
😑 🧣 Run	LM_Run!TT_CUR	Meter temperature	°C	0.0000		^
👗 Meter temperature	LM_Run!TT_SEL	Meter temperature				
🛓 Meter temperature	LM_RunITT_INP_VAL	Meter temperature input	°C	0.0000		::
🛓 Density temperature	🛅 Override	Override				
🜡 Density temperature	REAL LM_Run!TT_OVRMODE	Meter temperature override	×		LEVEL > 5000	
Station	M LM_Run!TT_OVRVAL	Meter temperature override	°C	·		
Prover	Process alarm limits	Process alarm limits				
👃 Auxiliary	WILM RUNITT HIHIITM	Meter, temperature bi bi limit	90			~

A new type of Alarm has been introduced: a "warning". This allows for the distinction between critical and non-critical conditions. Where an alarm is typically an abnormal condition that requires (immediate) action by the operator, a warning is a condition that the operator needs to be aware of but which does not require immediate action. An example use of the warning alarm type is a self-diagnostic notification from a measurement device. An operator needs to be aware of this, but no immediate action may be required as the measurement device is still operating within acceptable parameters.



#### Functions

- A new function fxGasViscosity\_2004(..) is added which calculates gas viscosity according to an equation published in the International Journal of Thermophysics in 2004.
- Gas compressibility calculations are added that are in accordance with MR113 and GOST 30319 standards.
- The fxISO15377 function is extended with support for ISO/TR 15377 Quarter Circle and Conical Entrance tappings.
- The fxISO6976\_1995 function is extended with user-definable components.
- (new models only) A new function fxGERG2008\_Flash(..) is added which can calculate the compressibility and density of a gas/liquid mixture in accordance with the GERG2008 standard.

#### Supported versions of Microsoft Windows & Office

- Starting with Spirit<sup>IT</sup> Flow-Xpress 2.0, ABB no longer supports the use of Spirit<sup>IT</sup> Flow-Xpress on Windows XP or Windows Vista. Flow-Xpress 2.0 is supported on the following windows versions:
  - Windows 7
  - Windows 8 and Windows 8.1
  - Windows 10
  - Windows Server 2008 R2
  - Windows Server 2012
  - Windows Server 2012 R2
  - Windows Server 2016

ABB recommends that you keep your Windows installation up-to-date with the latest Service Packs and Updates.

 Starting with Flow-Xpress 2.0, ABB no longer supports the use of Spirit<sup>IT</sup> Flow-Xpress on Microsoft Office 2003 and Microsoft Office 2007 prior to Service Pack 2. Flow-Xpress 2.0 is supported on the following versions of Microsoft Office:

- Microsoft Office 2007 (Minimum Service Pack 2)
- Microsoft Office 2010
- Microsoft Office 2013
- Microsoft Office 2016
- Microsoft Office 365 (up to and including the versions based on 2016)
- Spirit<sup>IT</sup> Flow-Xpress 2.0 now fully supports both 32-bit and 64-bit installations of Microsoft Office.
   With this addition, it is now possible to support more and larger applications than ever before.

## Spirit<sup>IT</sup> Flow-Xpress 1.7 (July 2014)

Spirit<sup>IT</sup> Flow-Xpress 1.7 was released in July of 2014. Besides the features and changes mentioned below, this release also contains 25 minor improvements and bug-fixes. For a complete list of changes please contact ABB.

### **New Features/Changes**

#### Functions

- The GERG2008 Wide-Range Equation of State for Natural Gases and Other Mixtures is now available for use on the Spirit<sup>IT</sup> Flow-X range of flow computers. fxGERG2008\_Gas (..)
- The MR113 calculation for humidity of gas is now available for use on the Spirit<sup>IT</sup> Flow-X range of flow computers.

#### fxMR113 ( .. )

#### Flow-X/P Touch Screen

The touch screen of the Flow-X/P flow computer can now automatically be dimmed after a configurable amount of time. This reduces the power consumption and amount of heat generated by Flow-X/P series flow computers.

Spirit 🕒 👔 🌩 ENGLISH	
	Login
HOME / SYSTEM / DISPLAY	
	<b>`</b>
Display	1 OF 1
Touchscreen	
Display Orientation	Vertical
Calibrate Display	Calibrate Display
LCD Backlight Intensity	100 %
Screensaver	
Relative Intensity	10 %
Inactivity Time Out	60 s
	,
	•

#### Firmware

- Important Notice

This notice <u>only</u> applies to:

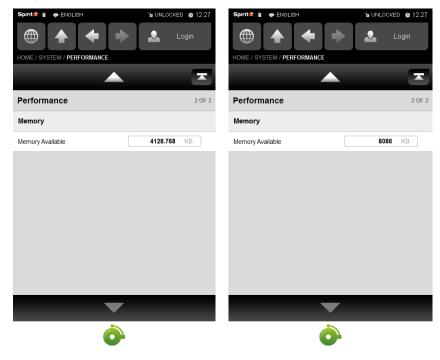
- FPGA version 6557-700-52-13 (shipped between Nov 2013 and Nov 2014).
- Flow meters with a dual-pulse output for which pulse fidelity level A is enabled.

If one of the above conditions does not apply, the below statement is not applicable and no further action is required.

The FPGA is a digital signal processor in the Spirit<sup>IT</sup> Flow-X module with its own embedded software. For FPGA version 13 the pulse fidelity checking algorithm may occasionally reject correct meter pulses resulting in a lower flow rate than expected. Spirit<sup>IT</sup> Flow-Xpress version 1.7.3 therefore disables the correction of flow pulses for FPGA version 13, which effectively results in pulse fidelity level B (no correction, error detection only). For other FPGA versions, level A functionality remains in-use.

The actual FPGA version can be checked on the display 'System/Versions', item 'FPGA product number', where the last number indicates the FPGA version. In case a Spirit<sup>IT</sup> Flow-Xpress upgrade is not desired, it is advised to change to 'Pulse fidelity level B' (refer to display 'IO/Module <x>/Configuration/Pulse input'), item 'Dual pulse fidelity level'). When 'Pulse fidelity level A' is required, it is advised to downgrade the FPGA version. Please contact Technical Support at ABB for more information.

A new memory manager has been implemented for the Spirit<sup>IT</sup> Flow-X series flow computer. This allows for the flow computer to run larger applications with more runs. The below screenshots shows the difference in memory available for the "Liquid USC Master 2.1.0" standard application. The left screenshot shows the memory usage with Spirit<sup>IT</sup> Flow-X firmware 1.6, the right screenshot shows the memory usage with Spirit<sup>IT</sup> Flow-X firmware 1.7.



#### **Historical Archives**

A new system has been implemented for the on-device storage of Historical Archives. With this system it is possible to store an increased number of snapshots. It is possible for existing archives to be upgraded the new format. You can read more about the new storage system in the manual.

Clear archives     Clear archives     Clear archives       Remove old-style archives     Remove old-style archives     Remove old-style archives       Vacuum database     Vacuum database     Vacuum database
Remove old-style archives     Image: Remove old-style archives       Storage system:     Default Storage System       Vacuum database     Vacuum database
ULRuniFLOW_DIRECT SQLite Database Storage System
COLL, RunIMTR_ID     Meter 1     COLL, RunIMTR_ID_REV     Meter 1
ing UL RuniBATOH_BROATE_PRV Previous b ing UL_RuniBATOH_BROTME_PRV Previous b

#### **Reports & Printers**

The end-of-page behavior of serial text printers has been changed to match that of network text printers. In previous versions of Spirit<sup>IT</sup> Flow-Xpress a serial text printer would always send the next-page character(s) at the end of a page, even for the last page in a print job. This has been changed so that the next-page character(s) is only send to the printer between pages. The result is that e.g. printed reports will no longer include an empty page at the end. The end-of-page handling can be restored to the previous behavior by including the end-of-page character in the end-of-report characters.

#### Microsoft Office / Excel

- The Spirit<sup>IT</sup> Flow-Xpress 1.7 release includes preliminary support for 64-bit installations of Microsoft Office 2010 and Microsoft Office 2013. Please note that while Spirit<sup>IT</sup> Flow-Xpress 1.7 can now be used with 64-bit versions of Microsoft Excel, we kindly ask you to report any issues you may encounter to ABB.
- 64-bit versions of Microsoft Excel are only supported under Windows 7.

## Flow-Xpress 1.6 (April 2013)

Flow-Xpress 1.6 was released in April 2013. Besides the features and changes mentioned below, this release also contains more than 70 minor improvements and bug-fixes. For a complete list of changes please contact ABB.

### **New Features/Changes**

#### Favorites

- Large lists of favorite flow computers can be split into groups and subgroups.

Image: Image	👷 New Favorite 🔀 🧎				
Recently Accessed     afe Specify IP     favorites     favorites     for favorites (5)     for favorites				🖌 Pol	ling Enabled
aje Specify IP State Specify IP My favorites (5) Corporate	Favorite Name Device Name	Address û	Application	Version	Status
Favorites My favorites (5)	1st FlowX	10.0.101.230	DefaultXM.xls	1.0.3.1320	-01
My favorites (5)	2nd FlowX	10.0.101.240	Gas_Metric_1.2.3.xls	1.7.0.2617	
🖃 🛅 Corporate	CP2 3rd FlowX	10.0.101.241	Gas_Metric_1.2.3.xls	1.7.0.2617	
	CP2 4th FlowX	10.0.101.242	Gas_Metric_1.2.3.xls	1.7.0.2617	
🚞 South pipe (4)					
Nord pipe (3)	1				
_	1				

- It is possible to disable polling the status of flow computers to save the network bandwidth.
- Lists of flow computers can be imported and exported.

#### **Reports & Printers**

- Some settings of network printers (e.g. network address, password) can now be changed on the flow computer without having to restart it.

Spirit <sup>®</sup> Flow-X			I VI	TRUVIUSWEG	<b>ENGLISH</b>	î∎ UNLOCKED	<b>©</b> 0:09
		Login				Ò	
HOME / SYSTEM / PRINTERS / PCL	PRINTER	L Contraction of the second seco					
Flow-X Navigation		Address	0	\\dc	01\kmc45	2bw	8
Alarms						)	
Printers		Username	0	NETWOR	K\Johann	esGute	e .
PCL Printer							_
LPD Printer		Password	0	1	397@Main	IZ	6
Diagnostics	E						

- Multiple printers can now be assigned to a report.

Navigation	Reports	
Device Setup	🛷 Configuration 🛕 Preview	
Ports &	📣 New Report 🛛 🔏 🖹 🗙	aje
<ul> <li>Devices</li> <li>Settings</li> <li>Displays</li> <li>Languages</li> <li>Parameters</li> <li>Reports</li> <li>Security</li> <li>Calculations</li> <li>Logging</li> <li>Alarming</li> <li>Chira &amp; Formats</li> </ul>	Cosyneric Cosynerics     Cosynerics	Generate  Frigger: Period  HOURLY  Storage  Keep data for max: 100 Files  Print to  Printer  Generate copies  Reprint copies  Text Printer  1  adkup Printer  2  1
Enumerations		'Generate copies' is used to print the report when it is created.

- The number of print-copies can be freely configured.

- Support for 'Excel-based' report-sheets has been dropped. Flow-Xpress 1.4 or 1.5 can be used to convert the old-style reports to the new format, after which they can be loaded in 1.6 or higher.

#### Update to Master

- The Update to Master wizard has been re-designed to easier view/edit changes and resolve conflicts.
- In normal circumstances you can optionally view the changes or just click 'Update' to proceed:

🗐 Update Application to Master	
Select Application changes and resolve conflicts Click Update' to update the application to the new master or use 'View or Edit changes' to review/modify any changes. In case any conflicts exist, they must be resolved first!	
Changes found, click the link below to view/edit the changes or 'Update' to continue <u>View or Edit Changes</u>	<u>.</u>
< <u>B</u> ack Update Car	ncel

- When viewing or editing changes, conflicts that must be resolved are clearly highlighted:

4 unresolved	conflicts 🤣 🤣 Go to Next U	Inresolved Co	onflict 🔒	4				Quick Acti
vigation	📁 Displays							
	Change	Master	Application			Change	Previous Master	Application
f.c	🖃 🗾 Liquid_USC	0	0		×	Name	Loading sampling	
Sheets	🕀 🜉 Loading				X	mageName	sampling	
unceu	🖃 💐 Loading sampling	0	٥		X	FemplateName	Liquid_USC	
<u>یک</u>	🕀 🌂 Sample control				X	Condition	(LU_Loading!SMP1_ENABLED) A	
2	🕀 🌂 Can overview							
Ports &	🕀 🌂 Can 1							
Devices	+ 🌂 Can 2							
~1	🕀 🌂 Can 3							
	+ 🌂 Can 4 + 🌂 Can 5							
Displays	🛨 🌂 Can 5			::				
	🛨 🔨 Can 6							
	+ X Can 8							
	🕀 🌂 Can 9							
Reports	🕀 🌂 Can 10							
-	🕂 🌂 Can 11							
	🕀 🏹 Can 12							
Historical	🕀 💘 Can 13							
Data	🕀 🌂 Can 14							
-	🕀 🌂 Can 15							
	🕀 🌂 Can 16							
	🛨 🎆 Historical data	$\bigcirc$	٢					
Other Changes	🖃 🚀 Configuration	0	$\bigcirc$					
	\pm 💅 Overall setup			$\mathbf{v}$				

#### Firmware

- Reduced memory usage so larger applications can be loaded (released in 1.5.1)
- Added new 'syslog' for enhanced diagnostic capabilities.
- Various improvements & fixed to redundancy support.

#### Flow-X GUI (formerly known as stand-alone GUI)

- Now available for these platforms: x86 (Windows XP/Vista/7/CE6), ARM (CE5/CE6).
- Fully configurable through both registry & command-line.
- Support for physical keyboard input.
- Auto-login and auto-restart support.
- Size and position are configurable.

## Flow-Xpress 1.5 (August 2012)

Flow-Xpress 1.5 was released in August 2012. Besides the features and changes mentioned below, this release also contains more than 60 minor improvements and bug-fixes. For a complete list of changes please contact ABB.

### New Features/Changes

#### Functions

- New ASTM (Butadiene) functions: fxASTM\_D1550\_RD60 (..), fxASTM\_D1550\_Ctl (..)
- New Ethylene functions: fxEthylene\_NIST1045 (..) fxAPI\_MPMS\_11\_3\_2\_1(..)
- Added '2009' edition to the fxGPA2172\_96\_C(..) compressibility function.

#### **New User Interface**

- The Flow-X User Interface has been completely re-imagined and contains a beautiful new theme!

Spirit FLOW:	Spirit FLOW-X - ENGLISH 1 UNLOCKED 0 04/20/12 08:56:41				🗧 🗭 ENGLISH	1 UNLOCKED	04/20/12 02:51:50	Spirit # FLOW-X @ ENGLISH	1∎ UNLOCKED
		▶ .	operator (2000)		•	•	Login		operator (2000)
HOME								HOME / CONFIGURATION / OVERA	LL SETUP / OVERALL SETUP
	_			Login				2	
		-		Login				Overall setup	1 OF 3
_≁_		$\mathbf{i}$	<del></del> +	oper	ator			Prover A type	Master meter 🕨 🕨
Live Data	Product	Flow Rates	Cumulative Totals	••••	•••••			Pro Common product	t / batch (Disabled)
Flow Meter	Temperature	Pressure	Density	Engl		Login		Stat Determines whether a	common product and batch ter runs or if each meter run
[++] Batch	Proving	Reports	Alarms			Login		Con Enabled	Disabled
			<u> </u>	g w	e r t	y u	i o p	Common viscosity input	0 III Disabled
Audit trail	Period data	Configuration	Calculation Test	a s	d f	g h j	K I	Station proving reverse totals	0 III Disabled
			T	- <b>↑</b> - z	xc	v b n	m		<b>v</b> <u>z</u>
	Ċ	7 (7)	)	CLEAR	s	PACE	123	(	

- Each display can be configured with its own distinct image.



- The alarm indicator shows number of active & unacknowledged alarms.



- Location-bar shows full path of current display.

HOME / TEMPERATURE / RUN 1 / METER TEMP. OVERRIDE

- Reports can be viewed in Full screen.

irit 🖥 🛿 FLOW-X 🌩 ENGLISH	1 UNLOCK	KED (9) 04/20/12 (	9:00:21				×
⊕   ♠   ●		operator	(2000)		DAILY REPO	DRT	
E / REPORTS / DAILY REPOR		04/20/12 00:00:00					
IE / REFORTS / BAIET REFOR	IOT DAILT IT	04/20/12 00:00:00	_				
					Liquid_USC	_1.1.0_Enterprise_N	laster.xl
				Start date / time	04/19/12	20:48:44	
/20/12		_		End date / time	04/20/12	00:00:00	
:00:00	Print		1 OF 1	Meter ID			
				Batch number (at day end)		1	
				Batch ID (at day end)			
				API table version (at day end)		5/6 (1980)	
	DAILY REPO	DRT		Day totals		Forward	
				Indicated volume	bbl	0	
				Gross volume	bbl	0	
				Mass	klbm	0.000	
	Liquid USC	_1.1.0_Enterprise_M	laster.xls	Gross standard volume	bbl	0	
				Net standard volume	bbl	0	
Start date / time	04/19/12	20:48:44		Good pulses	pls	0	
End date / time	04/20/12	00:00:00		Error pulses	pls	0	
End duce / time	01/20/12	00.00.00		Sampler pulses	pls	U	
Meter ID				Day end totals		Forward	
Batch number (at day end)		1		Indicated volume	bbl	0	
Batch ID (at day end)				Gross volume	bbl	ō	
API table version (at day end)		5/6 (1980)		Mass	klbm	0.000	
				Gross standard volume	bbl	0	
Day totals		Forward	R	Net standard volume	bbl	0	
Indicated volume	bbl	0	0	Good pulses	pls	0	
Gross volume	bbl	0	0	Error pulses	pls	0	
Mass	klbm	0.000	0				
Gross standard volume	bbl	0	0	Time weighted averages		Forward	
Net standard volume	bbl	0	0	Indicated volume	bbl/h	0	
				Gross volume	bbl/h	0	
			<b>X</b>	Mass	klbm/h	0.000	
				Gross std volume	bbl/h	0	
Ì				Net std volume	bbl/h	0	
	5						
		7 (7)				Forward	
	<b>ò</b> (	7 (7)		Flow weighted averages Meter temp.	deg F	Forward 0.00	

- Added acknowledgement of single alarms.
- Sliders are shown for certain kind of tags

Meter pres. input gauge III	Prover Ahype Master meter 1 Prover Ahype Common product / batch (Disabled) Star Determines whether a common product and batch is used for all meter may or if a common mete
Meter pres. III Disabled	Con uses its own product / batch setup Con Enabled Disabled Content usets report

- The Web-UI has been redesigned from the ground up and uses the latest HTML techniques to provide the best performance and maximize compatibility with modern browsers and tablets. Needless to say, it is ready for the future!

<ul> <li>G Flow-X/P (Panel) - Liquid_U ×</li> <li>← → C S 192.168.0.50</li> </ul>	(					L 2	× ۵ ۱۱۰۰ ۲
Spirit Flow-X				FLOW-X	ENGLISH 🔓 UNLOCK	ED 6 04/20/12	09:19:02
		Operat	tor (2000)			07	
HOME							
Flow-X navigation Cumulative Totals		A		$\overline{\mathbf{D}}$	<b></b>	H	
Flow Meter					Cumulative		
Temperature		Live Data	Product	Flow Rates	Totals	Flow Meter	
Pressure							
Density		<u> </u>	(°)		<b> </b> ← → <b> </b>		
Batch		Temperature	Pressure	Duration	Batch	Proving	
Proving		Temperature	Pressure	Density	Batch	Proving	
Reports	E		-			Ö	
Alarms				P	minim		
Audit trail		Reports	Alarms	Audit trail	Period data	Configuration	
Period data		Reports	maillis	Auge U di	r chod data	comgaration	
Configuration		$\bigcirc$	*	:-:	20		
Calculation Test		÷,	Q.		2		
System		Calculation Test	System	ю	Communication		

- Multiple values can be edited in a single operation.

→ C ③ 10.0.0.40						섮
pirit <sup>ll</sup> Flow-X			E FLOV	V-X PENGLISH	unlocked 07/11	/12 16:34:
	operator (2000)				Ô.	B (10)
DME / PRESSURE / RUN 1				Discard ch	anges 🗙 Apply ch	4 hanges 🗸
Flow-X navigation	Meter pres.	200.00 psig	Meter pres. input units	(	gauge III	
Temperature	·					
Pressure	Meter pres.	Override	Meter pres. override	(	Enabled III	<b>v</b>
Run 1						
Run 2	Meter pres. override 🚯	200 psi 🗸	Meter pres. input	0	200.0000 psi	
Density				_		
Batch	Meter pres. lo limit 🛛 🚯	<b>-1000</b> psi 🗸	Meter pres. hi limit	0	<b>1000</b> psi	∕
Sampling						
Reports	■ Meter pres. lo lo limit 🚯	-1000 psi 🥒	Meter pres. hi hi limit	0	<b>1000</b> psi	<u> </u>
Alarms	Meter pres. ROC limit (per					
Period data	sec)	O psi 🥒				
IO						
Communications						

#### New File Formats

- Two new file formats are now supported:
  - .FXA ( Flow-Xpress Application)
  - .FXM (SFlow-Xpress Master)
- The new formats are a replacement for the .XLS file-format (which remains supported) and add the following benefits:
  - Reduced file-size.
  - Proprietary format (not viewable/editable without Flow-Xpress).
  - Support for upgrading applications to a new version of the Master.
  - Improved compatibility.
  - Can be opened directly from the Windows Explorer.

#### **Masters & Upgrading**

Whenever Spirit IT added new functionality to a Master (formerly known as Standard application), it was not easy for customers to migrate their changes onto that Master. To tackle this problem, the new .FXA and .FXM file formats were introduced. The .FXA file-format makes it possible to track changes made by the customer, and to migrate these onto a new Master. This process is called 'Upgrading'.

#### Creating an upgradable application

Obtain Master from Spirit IT website (or use Professional Mode to create your own).

Create New A	pplication	×
Create New App Select the st	lication arting application on which the new application will be based	
🔿 Create Blar	k Application	
© Create App	lication based on Master:	
Filename:	C:\Liquid_USC_Master 2.0.2.frm	
	< Rack Next > Cancel	

- Create an Application based on that Master.

#### Making changes to an application

The following properties can be modified and are eligible for upgrade (other types will be added in future versions):
 Calculation Sheets, Communication Sheets (e.g. Modbus Lists), Ports & Devices, Languages, Displays,

Reports, Historical Data, Calculations & Revision History.

 When modifying sheets (calculation or communication), create a copy and modify that rather than modifying the original. During the upgrade only new sheets are eligible for upgrade.

#### Upgrading an application

- Obtain newer (or older) version of the Master.
- Open the Application you wish to upgrade.
- Choose 'Upgrade to Master' and select the Master.

🗐 Upgrade A	pplication to Master 🛛 🔀	🕫 Upgrade Apple	cation to Haster			_	-
Select Applic Select th	cation ne Application to Upgrade to a Master.		ation changes you wish the changes to the applicato ick a charge on how to resolve		ed. In case the explication of 5	wiges cardict with pha	nges in
Application:		Reception	w Deploys				
Filename: File Info: Version: Upgrade to M Filename: File Info:	C\Custom_Liquid_USC 2.0.1.6xa	Desire Agents	Denor m A) Uset USCD	- O	Cange Inne Dispetane Texplatione Texplatione Unconfactmetarp DepletTexeTarp Californ	Application Audit that events loguet_stSC results(systemeses false that	Macter Aufti frad events Uspall_JSC ren/BQ/vy Homeus false true USPL entry record of
Version:	2.0.2.0 - Author: Han van Dal - Status: Test - Timestamp: Aug 06 2012 14:58:36					- Get	rafe Genal

- All the changes made by the customer are shown and selected by default.
- If the changes conflict with the Master, the user is given the choice to keep or discard the change.

## Flow-Xpress 1.4 (February 2012)

Flow-Xpress 1.4 was released in February 2012. Besides the features and changes mentioned below, this release also contains more than 30 minor improvements and bug-fixes. For a complete list of changes please contact ABB.

### **New Features/Changes**

#### Functions

 New ASTM (Asphalt) functions: fxASTM\_D4311M\_09\_C (..), fxASTM\_D4311M\_09\_M (..)

#### Event Logging

Added support for logging tag values (e.g. totalizers) with every message in the event-log.

Navigation	Logging						
🕽 Device Setup	Log Tags						
Sheets & Templates	The values of the configured tag	s are displayed next t	o log entries in the Ever	nt log. Recurring tags a	re automatical)	repeated f	for every mo
The Ports & Devices	Value separator =	Tag seg	serator				
😭 Settings	🔒 New Tag 🛛 🗙						
🥡 Displays	Tap	Module	Display Text	Show Text	Display Unit	Show	Display For
Languages	GM_Run1GV_FWD_CUM	(Al modules)	Run Total	w	m3		0.0
Parameters	GM_SHIGY_FWD_CUM		Station Total		m3		0.0
Reports	*						
Geourity							
http://www.calculations							
Historical Data							
Redundancy							
E Logging	Search		N. III				

	Event log	11
08/02/12 11:55:51	User autologin (Touchscreen) has logged in	Run Total 1 = 0.0 Run Total 2 = 0.0 Station Total = 0.0
08/02/12 11:55:27	User autologin (Touchscreen) has logged in	Run Total 1 = 0.0 Run Total 2 = 0.0 Station Total = 0.0
08/02/12 11:55:25	User autologin (Touchscreen) has logged in	Run Total 1 = 0.0 Run Total 2 = 0.0 Station Total = 0.0
08/02/12 11:55:25	User autologin (Touchscreen) has logged in	Run Total 1 = 0.0 Run Total 2 = 0.0 Station Total = 0.0
08/02/12 11:55:25	User autologin (Touchscreen) has logged in	Run Total 1 = 0.0 Run Total 2 = 0.0 Station Total = 0.0
08/02/12 11:55:25	User autologin (Touchscreen) has logged in	Run Total 1 = 0.0 Run Total 2 = 0.0 Station Total = 0.0
08/02/12 11:55:23	Local module 1 comms fail changed from Normal to Alarm	
08/02/12 11:55:23	Local module 2 comms fail changed from Normal to Alarm	
08/02/12 11:55:23	Analog input 1 forced 1 changed from Normal to Alarm	
08/02/12 11:55:23	Analog input 2 forced 1 changed from Normal to Alarm	

#### Units

Added new unit 'Pressure' in order to differentiate between 'Pressure' and 'Differential Pressure' in application development.

#### Diagnostics

Added 'Read debug info from Device' option to Flow-Xpress. This option allows you to extract diagnostical information from a flow computer, which can then be submitted to Spirit IT for analysis.



#### Reporting

Added Find & Replace to the report editor.

	Но	urly Report	
Meter ID		Flow computer	
Period start Period end	Find & Replace		
Totals Indicated Gross volume Mass Base volume Energy	Find what: Hour Replace with: Uur Look in: Entire sheet	×	losing 0.( 0.( 0.( 0.(
Time weighted aver Indicated flow rate Gross volume flow rat		Replace All Cancel	
Mass flow rate	kg/h	0.00	

#### Performance

- Reduced memory usage, especially when working with large Modbus lists.
- Reduced CPU usage, especially for station functionality and the touchscreen-UI.

## Flow-Xpress 1.3 (October 2011)

Flow-Xpress 1.3 was released in October 2011. Besides the features and changes mentioned below, this release also contains more than 60 minor improvements and bug-fixes. For a complete list of changes please contact ABB.

### New Features/Changes

#### Functions

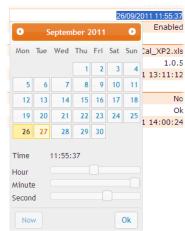
- New NIST (Ethylene) functions: fxNIST\_Ethylene\_Visc\_C (..), fxNIST\_Ethylene\_Visc\_M(..)
- Extended IUPAC (Ethylene) functions with new outputs: Isobaric heat capacity, Isochoric heat capacity, Specific heats ratio & Speed of sound.
- Added option to 'AGA10ex\_M(..)' to perform Fast calculations (without critical flow factor).

#### **Communication Drivers**

- Added support for Modbus Master RS485 listen-mode. (this item was released in version 1.2.5)
- Added 'xto\_ForceWrite' item option to tags used for communication drivers. This option always
  causes the item to be written to the remote device when triggered using a 'fxSetOn..()' function. (this
  item was released in version 1.2.5)

#### Displays

- Added Calendar to Web-UI.



- Improved support for Android devices.
- Improvements in various areas, including: Navigation, Feedback, Performance and Memory Usage.

#### Security

Added support for loading and saving security configurations to and from files:

Navigation	Security						
DW/	🔮 New User 🛛 🗙 alle 🔒 Se	🧟 New User 🛛 🗙 🧃 🔒 Set Password 📢 Set Pin 🛛 😂 🛃					
PEAN	Name	Full Name					
Parameters	administrator	Administrator (full rights)					
	angineer	Engineer					
Q	a operator	Operator					
	息 tech	Technician					
Security							

#### Redundancy

Added support for explicitly selecting the Duty/Standby flow computer. This can be done through display 'System\Redundancy\Redundancy Selection' or through tag 'SYSGLOBAL!REDUNDANCY\_DUTY'.

#### Tags

- Added support for entering parameter-values in Flow-Xpress using scientific notation (e.g. '1.0e12').
- Added system-tags for Virtual Devices. These tags are called 'SYSGLOBAL!VIRTUALDEVICE1..n'.

#### Reporting

Improved performance when scrolling through lots of reports on the Touchscreen UI and the Web-UI.

#### Web Server

Added default filter option 'writable' to '/tags' web-service and added ability to specify custom filters.

## Flow-Xpress 1.2 (June 2011)

Flow-Xpress 1.2 was released on June 1 2011. Besides the features and changes mentioned below, this release also contains more than 100 minor improvements and bug-fixes. For a complete list of changes please contact ABB.

### **New Features/Changes**

#### Reporting

- New Report Editor which is accessible from Basic Mode:

Configuration Q Preview				-						
🤣 New Report 🛛 🔏 🗈	🗙 alļe									
😑 💪 Liquid_Metric		Content Properties								
MeterTicket	( <b>P</b> -)	Sections 🔏 🗈 🛍 🚅		Font size: 10	÷ B / U					
RecalcTicket				1011101201 10						
less StationTicket	j∗.	=fxRelModuleValue(1,LM_Run!IV_B								
CompactProver		fxRelModuleValue(Relative Mo	dule,Value)	D	E F	G H	I			
PipeProver	8	Returns the value of tag or cell	on a specific relative mod	lule 00:00						
🤣 Run_Current	9			_						
Stn_Current	10	Meter ID				0				
🛅 Custom Reports	11									
	12	Batch totals		Run 1	Run 2	Run 3	Ru			
	13	Indicated volume	m3	0.0 0.0	0.0 0.0	0.0 0.0				
	14	Gross volume	m3	0.0 0.0	0.0 0.0	0.0 0.0				
	15	Mass	tonne	0.0 0.0	0.0 0.0	0.0 0.0				
	16	Gross standard volume	sm3	0.0 0.0	0.0 0.0	0.0 0.0				
	17	Net standard volume	sm3	0.0 0.0	0.0 0.0	0.0 0.0				
	18	Good pulses	pls	0 0	0.0	0.0				
	19	Error pulses	pls	0 0	0 0	0 0				
	20									
	21	Cumulative totals at bate	ch end	Run 1	Run 2	Run 3	Ru			
	22	Indicated volume	m3	0.0 0.0	0.0 0.0	0.0 0.0				
	23	Gross volume	m3	0.0 0.0	0.0 0.0	0.0 0.0				
	- 24	Macc	tonno	0.000	0.000	0 0 0 0				
	Sear	ch 🕞 🛤	🌲 🖾 🗽 🏢							
	Path		Name		Text					
	🛁 Sy	stem\IO\calibration\analog inputs	IO!AIN_CAL_CO	RVAL	currer	it corrected value				
	🔜 S)	stem\IO\calibration\analog inputs	IO!AIN_CAL_CO	RVAL_TXT	currer	it corrected value				
	📑 Sy	stem\IO\calibration\pt100 inputs	IO!PRT_CAL_CO	RVAL	currer	it corrected value				
	📑 S)	rstem\	SYSIDATE_CUR		currer	it date				
			OVER DETUR D	A.G. 147						

The New Report Editor replaces the report worksheets ("Report\_"-prefix) that previously required Professional Mode to be configured. The New Report Editor makes it a lot easier to create your own reports or customize existing ones. Reports can contain anything from static texts, formulas, tagreferences to event-log sections. Through the Properties-tab you can link a report to a certain trigger, such as a period, batch-end or tag.

 Report-names on the flow computer are now displayed in a new clean form (without date/time and such in the name).

#### Documentation

The help files are now included in the Flow-Xpress setup and directly accessible from within Flow-Xpress.

#### **Online Mode**

It is now possible to edit the users of multiple flow computers using Online Mode.

#### Debug Offline/Online

- Debug Offline now uses the same Parameters as configured in the application. When a parameter is changed in Debug Offline, it is automatically updated in the application.
- Debug Online now shows the contents of all sheets, instead of only the module that it was connected to.

#### Displays

- Ability to configure the default Display Units & Formats for Displays:

Default Display Unit	Default Display Format
(multiple units)	(multiple formats)
(multiple units)	0.00000E+00
(multiple units)	(multiple formats)
Pa.s	0.000000
%	(multiple formats)
(multiple units)	
bar(g)	(multiple formats)
cSt	(multiple formats)
mm	(multiple formats)
	(multiple formats)
(use default)	(multiple formats)
9	(multiple formats)
	(multiple formats)
	0.00E+00
	(multiple formats)
mg	
Mlbm	(multiple formats)
short ton	(multiple formats)
tonne	(multiple formats)
(multiple units)	(multiple formats)
m/s	0.000
(multiple units)	(multiple formats)
m3/hr	(multiple formats)
%vol	(multiple formats)
	(multiple units) (multiple units) Pa.s % (multiple units) Pa.s % (multiple units) bar(g) cSt mm (use default) g kg klom lbm lom long ton mg Mlbm short ton tonne (multiple units) m/s (multiple units) m/s (multiple units) m/s

The default units and formats can now be configured at one place. These default units are used for display purposes only and don't affect internal processing. This makes it very easy to change all the mass-related tags on the displays to for instance 'kg'. Apart from the default display units and format, it is still possible to change the unit or format of each tag individually.

- Add option 'Show All Displays' which disables all display-conditions for testing purposes.
- The touchscreen GUI now displays group-headers on tag-displays.
- All the texts on the Module LCD are now translatable.

#### Tags

Added 2 new system-tags which indicate the last started- and shutdown time of the device. These tags are called 'SYSTEM!STARTEDTIME' and 'SYSTEM!SHUTDOWNTIME'. These tags are visible in the 'System\Performance' display.

#### Web Server

- Added support for HTTPS (SSL). The use of HTTPS is optional and HTTP is still supported and enabled. The flow computer generates a self-signed Certificate, which can then be added to the Web Browser. HTTPS reduces the security risk by encrypting all data through a very strong key.
- Added ability to '/writetags' web-service to write tags by their name (instead of only their ID).

#### Functions

- New API functions: fxAPI\_Table53\_1952(..), fxAPI\_Table54\_1952(..) fxAPI\_Dens15C\_1952(..)
- New GOST8 functions: fxGOST8\_586\_2005\_EdgeRadius(..)

fxGOST8\_586\_2005\_SteelExpansionFactor(..) fxGOST8\_586\_2005\_MassFlowRate(..)

 fxSetOnCondition(..) is now volatile and copies the source-value to the target for every cycle that the 'condition' is set to True. Previously, the source-value was only copied to the target when any of the inputs was changed.

#### **Communication Drivers**

 Updated Communication Drivers diagnostics logging web-service ('/comm') and added it to the Web-UI:

Display	Show options Start Logging Stop Logging Clear (Incomming data (RX) = Blue, Outgoing data (TX) = Red)
Wetwork	Show options Start Logging Stop Logging Clear (Incomming data (RX) = Blue, Outgoing data (TX) = Red)
WCOM Ports	Show queries (All) RX TX Inf Alm Err Dbg
We Bus	
Versions	
Performance	1 Hart Master (COM5:1200,o,8,1) 🗸 🗸 🗸 🗸 🗸
Reset	# Date/Time Message
WAlarms	57 01/06/2011 17:24:05.405 [P01 Q01 <<] FF
🗆 🞾 Modules	56 01/06/2011 17:24:05.404 Protocol 1 - HART 1xmt (COM5:1200,0,8,1) Timeout receiving 0 of 19
🗉 📂 Panel	55 01/06/2011 17:24:03.354 [P01 Q01 <<] FF
🗆 🎾 Module 1	54 01/06/2011 17:24:00.302 [P01 Q01 <<] FF
Cevice Setup	53 01/06/2011 17:24:00.302 Protocol 1 - HART_1xmt (COM5:1200,o,8,1) Timeout receiving 0 of 19
<b>W</b> Display	52 01/06/2011 17:23:58.301 (P01 Q01 <<] FF
Wetwork 1	51 01/06/2011 17:23:58.301 Protocol 1 - HART_1xmt (COM5:1200,o,8,1) Timeout receiving 0 of 19
E      COM Ports	50 01/06/2011 17:23:56.252 [PO1 Q01 <<] FF
₩Bus	49 01/06/2011 17:23:56.251 Protocol 1 - HART_1xmt (COM5:1200,o,8,1) Timeout receiving 0 of 19
Versions	48 01/06/2011 17:23:54.201 [P01 Q01 <<] FF
Performance	47 01/06/2011 17:23:51.151 [P01 Q01 <<] FF
WReset	46 01/06/2011 17:23:51.150 Protocol 1 - HART_1xmt (COM5:1200,o,8,1) Timeout receiving 0 of 19
1 Alarms	45 01/06/2011 17:23:49.150 [P01 Q01 <<] FF
🗆 📂 Diagnostics	44 01/06/2011 17:23:49.150 Protocol 1 - HART_1xmt (COM5:1200,o,8,1) Timeout receiving 0 of 19
Boot Log	43 01/06/2011 17:23:47.099 [P01 Q01 <<] FF
Exceptions	42 01/06/2011 17:23:47.098 Protocol 1 - HART_1xmt (COM5:1200,o,8,1) Timeout receiving 0 of 19
Print Queue	41 01/06/2011 17:23:45.048 [P01 Q01 <<] FF
Communications	40 01/06/2011 17:23:41.946 [P01 Q01 <<] FF
🗉 💆 Debug Logs	39.01/06/2011 17:23:41 946 Protocol 1 - HART 1xmt (COM5:1200.o.8.1) Timeout receiving 0 of 19

- Added new datatype 'xd\_RevDouble' (reverse double).
- Added constants for communication driver query options (e.g. 'xqo\_BlockWrites').
- Added 'xqo\_WriteAll' query option to Modbus drivers. This option always causes the whole query to be written even when only a few items have changed.
- Added integrated communication protocol for use by the 'FlowXClient' protocol in eXLerate.