

IO-Link Interface Description

34D Allfluid 0/160 digital

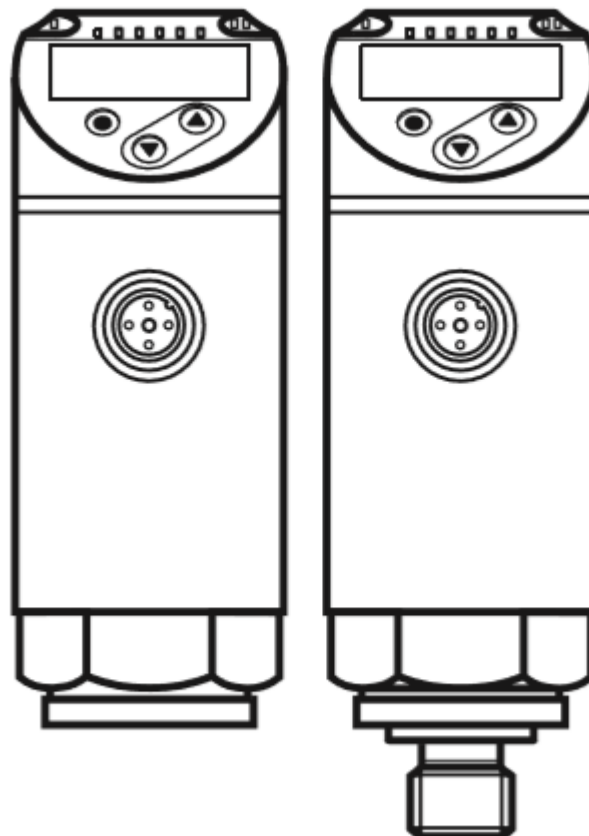
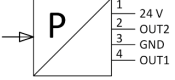



Table of Contents

1 Device variant	.....	3
2 Communication	.....	4
3 Parameter overview	.....	5
4 System Commands	.....	6
5 Identification	.....	7
6 Observation	.....	8
6.1 Process Data Input/Output	.....	8
7 Parameter	.....	9
7.1 Output configuration	.....	9
7.2 Digital output 1	.....	9
7.2.1 Pressure	.....	9
7.3 Digital output 2	.....	10
7.3.1 Pressure	.....	10
7.4 Memory	.....	10
7.4.1 Pressure	.....	10
7.5 Damping	.....	11
7.6 Setting of the sensor display	.....	11
7.7 Colour frame	.....	12
7.7.1 Colour frame	.....	12
7.8 Setup	.....	12
8 Diagnosis	.....	13
8.1 Diagnosis	.....	13
8.1.1 Pressure	.....	14
9 Events	.....	15
10 Error types	.....	16
11 Unit conversion	.....	17

1 Device variant

<p>34D Allfluid 0/160 digital</p> <p>Electronic pressure sensor, 0.0...160.0 bar</p>		
---	---	---

2 Communication

Vendor ID	0x03AE 942 d / Bytes 3d 174d
Device ID	0x000800D 32781 d / Bytes 128d 13d
Bit rate	COM2
Minimum cycle time	3 ms
SIO mode supported	Yes
Block parameterization	Yes
Data storage	Yes
Supported profiles	Measuring Sensor Identification and Diagnosis
Support of IO-Link 1.0	Yes



NOTE:

If the Vendor ID and Device ID is referenced in your PLC system, then it is ensured that

- the connected Device type is correct
- the IO-Link datastorage is enabled
- your application is still able to work, even your Device has been exchanged with a successor model.



For process value update rate, as well as further information concerning sensor performance, see datasheet

3 Parameter overview

Parameter	Index	Subindex	Type	Factory setting
Device Access Locks	12		RecordT (16 Bit)	false
Vendor name	16		StringT (11 Byte)	IMI Norgren
Vendor text	17		StringT (21 Byte)	www.imi-precision.com
Product Name	18		StringT (26 Byte)	34D Allfluid 0/160 digital
Product ID	19		StringT (16 Byte)	34D-P160G-DD1-AA
Product Text	20		StringT (28 Byte)	allfluid 34D pressure switch
Serial Number	21		StringT (12 Byte)	
Hardware Version	22		StringT (2 Byte)	
Firmware Version	23		StringT (5 Byte)	
Application Specific Tag	24		StringT (32 Byte)	***
Function Tag	25		StringT (32 Byte)	***
Location Tag	26		StringT (32 Byte)	***
Device Status	36		UIntegerT (8 Bit)	0 (Device is OK)
Detailed Device Status	37		OctetStringT (3 byte) [8]	0x00,0x00,0x00
Process data input	40		RecordT (32 Bit)	
P-n	500		UIntegerT (8 Bit)	0 (PnP)
dAP	510		UIntegerT (16 Bit)	60
Active Events	545		RecordT (32 Bit)	
Param configuration fault	546		UIntegerT (32 Bit) [10]	0 (OK)
Loc	550		UIntegerT (8 Bit)	1 (uLoc)
uni	551		UIntegerT (8 Bit)	1 (bar)
diS	552		RecordT (16 Bit)	
coLr	554		UIntegerT (8 Bit)	2 (rEd / Displayed value red)
cFL - PRES	555		IntegerT (16 Bit)	0
cFH - PRES	556		IntegerT (16 Bit)	16000
Hi - PRES	560		IntegerT (16 Bit)	
Lo - PRES	561		IntegerT (16 Bit)	
ou1	580		UIntegerT (8 Bit)	3 (Hno / Hysteresis fct normally open)
dS1	581		UIntegerT (16 Bit)	0
dr1	582		UIntegerT (16 Bit)	0
SP1 (FH1) - PRES	583		IntegerT (16 Bit)	4000
rP1 (FL1) - PRES	584		IntegerT (16 Bit)	3680
ou2	590		UIntegerT (8 Bit)	3 (Hno / Hysteresis fct normally open)
dS2	591		UIntegerT (16 Bit)	0
dr2	592		UIntegerT (16 Bit)	0
SP2 (FH2) - PRES	593		IntegerT (16 Bit)	12000
rP2 (FL2) - PRES	594		IntegerT (16 Bit)	11680
HIPS	5003		IntegerT (16 Bit)	16000
HIPC	5004		UIntegerT (32 Bit)	
MDC Descr	16512		RecordT (88 Bit)	
Lower limit	16512	1	IntegerT (32 Bit)	0 (0)
Upper limit	16512	2	IntegerT (32 Bit)	16000 (16000)
Unit code	16512	3	UIntegerT (16 Bit)	1130 (Pa)
Scale	16512	4	IntegerT (8 Bit)	3 (3)

4 System Commands



System Command information
 - Address: Index 2, Subindex 0
 - Datatype: UInteger (8 Bit)
 - AccessRight: Write Only

System Commands	Text	Description
1	Upload Start	Start block parameter upload
2	Upload End	End block parameter upload
3	Download Start	Start block parameter download
4	Download End	Stop block parameter download
5	Store	Finalize block parameterization and start Data Storage
6	Break	Cancel block parameterization
130	Restore Factory Settings	
161	Reset [Hi] and [Lo] memory	
162	Reset [Lo] memory	
163	Reset [Hi] memory	
222	Flash On	
223	Flash Off	
240	IO-Link 1.1 system test command 240, Event 8DFE appears	
241	IO-Link 1.1 system test command 241, Event 8DFE disappears	
242	IO-Link 1.1 system test command 242, Event 8DFF appears	
243	IO-Link 1.1 system test command 243, Event 8DFF disappears	

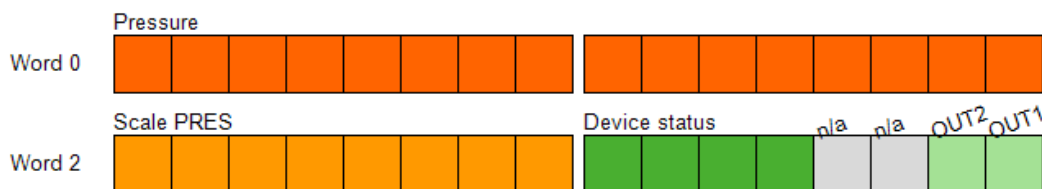
5 Identification

Vendor name Factory setting	Index 16 IMI Norgren	Subindex 0	StringT (11 Byte)	ReadOnly
Vendor text Factory setting	Index 17 www.imi-precision.com	Subindex 0	StringT (21 Byte)	ReadOnly
Product Name Factory setting	Index 18 34D Allfluid 0/160 digital	Subindex 0	StringT (26 Byte)	ReadOnly
Product Text Factory setting	Index 20 allfluid 34D pressure switch	Subindex 0	StringT (28 Byte)	ReadOnly
Product ID Factory setting	Index 19 34D-P160G-DD1-AA	Subindex 0	StringT (16 Byte)	ReadOnly
Serial Number	Index 21	Subindex 0	StringT (12 Byte)	ReadOnly
Hardware Version	Index 22	Subindex 0	StringT (2 Byte)	ReadOnly
Firmware Version	Index 23	Subindex 0	StringT (5 Byte)	ReadOnly
Application Specific Tag Factory setting	Index 24 ***	Subindex 0	StringT (32 Byte)	ReadWrite
Function Tag Plant designation, describes the device functionality Factory setting	Index 25 ***	Subindex 0	StringT (32 Byte)	ReadWrite
Location Tag Location designation, identifies the device location Factory setting	Index 26 ***	Subindex 0	StringT (32 Byte)	ReadWrite

6 Observation

6.1 Process Data Input/Output

Process data input	Index 40	Subindex 0	RecordT (32 Bit)
Pressure			IntegerT (16 Bit)
Current pressure			
Value range [bar]	(0 To 16800) * 0.01 32760 32764	(OL) (NoData)	
Device status			UIntegerT (4 Bit)
Current device status, a copy of the parameter [Device Status, Index 36] in the process data channel			
Value range	0 1 2 3 4	(Device is OK) (Maintenance required) (Out of specification) (Functional check) (Failure)	
OUT2			BooleanT
Current status of the digital signal [OUT2]			
Value range	false true	(OFF) (On)	
OUT1			BooleanT
Current status of the digital signal [OUT1]			
Value range	false true	(OFF) (On)	



-Scale PRES: A PLC function block calculates the pressure part of the process data (from WORD 0) into the profiled unit [Pa]



Process data displayed according device sort order.
Please note: Siemens PLCs swap the high and low byte when using byte addressing.

7 Parameter

7.1 Output configuration

ou1	Index 580	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Output configuration [OUT 1]				
Factory setting	3	(Hno / Hysteresis fct normally open)		
Value range	3	(Hno / Hysteresis fct normally open)		
	4	(Hnc / Hysteresis fct normally closed)		
	5	(Fno / Window fct normally open)		
	6	(Fnc / Window fct normally closed)		
	16	(OFF / Output Off)		

ou2	Index 590	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Output configuration [OUT 2]				
Factory setting	3	(Hno / Hysteresis fct normally open)		
Value range	3	(Hno / Hysteresis fct normally open)		
	4	(Hnc / Hysteresis fct normally closed)		
	5	(Fno / Window fct normally open)		
	6	(Fnc / Window fct normally closed)		
	16	(OFF / Output Off)		

P-n	Index 500	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Output polarity for the switching outputs				
Factory setting	0	(PnP)		
Value range	0	(PnP)		
	1	(nPn)		

7.2 Digital output 1

dS1	Index 581	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Switching delay for [OUT 1]				
Factory setting	0			
Value range [s]	(0 To 500) * 0.1			

dr1	Index 582	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Reset delay for [OUT 1]				
Factory setting	0			
Value range [s]	(0 To 500) * 0.1			

7.2.1 Pressure

SP1 (FH1) - PRES	Index 583	Subindex 0	IntegerT (16 Bit)	ReadWrite
Switch point 1 / Pressure. SP1 shall be above rP1. Min distance SP1...rP1 = 0.80 bar. For details, see operating manual.				
Factory setting	4000			
Value range [bar]	(128 To 16000) * 0.01			

7 Parameter

rP1 (FL1) - PRES	Index 584	Subindex 0	IntegerT (16 Bit)	ReadWrite
Reset point 1 / Pressure. Reset point 1 / Pressure. rP1 shall be below SP1. Min distance SP1...rP1 ==> see SP1.				
Factory setting Value range [bar]	3680 (48 To 15920) * 0.01			

7.3 Digital output 2

dS2	Index 591	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Switching delay for [OUT 2]				
Factory setting Value range [s]	0 (0 To 500) * 0.1			

dr2	Index 592	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Reset delay for [OUT 2]				
Factory setting Value range [s]	0 (0 To 500) * 0.1			

7.3.1 Pressure

SP2 (FH2) - PRES	Index 593	Subindex 0	IntegerT (16 Bit)	ReadWrite
Switch point 2 / Pressure. SP2 shall be above rP2. Min distance SP2...rP2 = 0.80 bar. For details, see operating manual.				
Factory setting Value range [bar]	12000 (128 To 16000) * 0.01			

rP2 (FL2) - PRES	Index 594	Subindex 0	IntegerT (16 Bit)	ReadWrite
Reset point 2 / Pressure. Reset point 2 / Pressure. rP2 shall be below SP2. Min distance SP2...rP2 ==> see SP2.				
Factory setting Value range [bar]	11680 (48 To 15920) * 0.01			

7.4 Memory

7.4.1 Pressure

Lo - PRES	Index 561	Subindex 0	IntegerT (16 Bit)	ReadOnly
Minimum memory value				
Value range [bar]	(0 To 16800) * 0.01 32760 32764	(OL) (NoData)		

Hi - PRES	Index 560	Subindex 0	IntegerT (16 Bit)	ReadOnly
Maximum memory value				
Value range [bar]	(0 To 16800) * 0.01 32760 32764	(OL) (NoData)		

7 Parameter

7.5 Damping

dAP	Index 510	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Damping of the measured signal				
Factory setting Value range [s]	60 (0 To 4000) * 0.001			

7.6 Setting of the sensor display

diS	Index 552	Subindex 0	RecordT (16 Bit)	ReadWrite
Display settings				
Display On / OFF		bitOffset 7	BooleanT	
Factory setting Value range	false false true	(On) (On) (OFF)		

Display orientation		bitOffset 6	BooleanT	
Factory setting Value range	false false true	(Not rotated) (Not rotated) (Rotated 180°)		

Update rate		bitOffset 0	UIntegerT (6 Bit)	
Factory setting Value range	2 1 2 4	(d2 / medium) (d1 / fast) (d2 / medium) (d3 / slow)		

coLr	Index 554	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Colour configuration of the display				
Factory setting Value range	2 2 3 4 5 6 7 8 9 10 11	(rEd / Displayed value red) (rEd / Displayed value red) (GrEn / Displayed value green) (r1ou / Displayed value red when OUT1 switches) (G1ou / Displayed value green when OUT1 switches) (r2ou / Displayed value red when OUT2 switches) (G2ou / Displayed value green when OUT2 switches) (r-12 / Displayed value red when the measured value is inside the limits of OUT1 and OUT2) (G-12 / Displayed value green when the measured value is inside the limits of OUT1 and OUT2) (r-cF / Displayed value red when the measured value is inside the limits of [cFL] and [cFH]) (G-cF / Displayed value green when the measured value is inside the limits of [cFL] and [cFH])		

uni	Index 551	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Selection of the physical unit				
Factory setting Value range	1 0 1 2	(bar) (MPa) (bar) (psi)		

Loc	Index 550	Subindex 0	UIntegerT (8 Bit)	ReadWrite
[Loc] locks the local user interface to prevent unintentional changes, [Loc] is resettable at the device				
Factory setting Value range	1 0 1	(uLoc) (Loc) (uLoc)		

7 Parameter

7.7 Colour frame

7.7.1 Colour frame

cFH - PRES	Index 556	Subindex 0	IntegerT (16 Bit)	ReadWrite
Upper value for colour change. cFH shall be above cFL. Min distance cFH...cFL = 0.80 bar. For details, see operating manual.				
Factory setting	16000			
Value range [bar]	(80 To 16000) * 0.01			

cFL - PRES	Index 555	Subindex 0	IntegerT (16 Bit)	ReadWrite
Lower value for colour change. cFL shall be below cFH. Min distance cFH...cFL ==> see cFH				
Factory setting	0			
Value range [bar]	(0 To 15920) * 0.01			

7.8 Setup

Device Access Locks	Index 12	Subindex 0	RecordT (16 Bit)	ReadWrite
Local User Interface Lock				
Factory setting	false	bitOffset 3	BooleanT	
MDC Descr	Index 16512	Subindex 0	RecordT (88 Bit)	ReadOnly
Description of the measurement data channel				
Lower limit		Subindex 1	IntegerT (32 Bit)	
Lower value measurement range				
Factory setting	0	(0)		
Value range	0	(0)		
Upper limit		Subindex 2	IntegerT (32 Bit)	
Upper value measurement range				
Factory setting	16000	(16000)		
Value range	16000	(16000)		
Unit code		Subindex 3	UIntegerT (16 Bit)	
Unit code of the measurement data				
Factory setting	1130	(Pa)		
Value range	1130	(Pa)		
Scale		Subindex 4	IntegerT (8 Bit)	
Range shifting (10 scale)				
Factory setting	3	(3)		
Value range	3	(3)		

8 Diagnosis

8.1 Diagnosis

Device Status	Index 36	Subindex 0	UIntegerT (8 Bit)	ReadOnly
Factory setting	0	(Device is OK)		
Value range	0	(Device is OK)		
	1	(Maintenance required)		
	2	(Out of specification)		
	3	(Functional check)		
	4	(Failure)		
	(5 To 255) (Reserved)			

Detailed Device Status	Index 37	Subindex 0	OctetStringT (3 byte) [8]	ReadOnly
Factory setting	0x00,0x00,0x00			

Active Events	Index 545	Subindex 0	RecordT (32 Bit)	ReadOnly
Bit mask for current pending events				
Bit_31		bitOffset 31	BooleanT	
Test Event 2. Device Status = 1 (Maintenance required)				
Factory setting	0	(noEv)		
Value range	0	(noEv)		
	1	(0x8DFF)		
Bit_30		bitOffset 30	BooleanT	
Test Event 1. Device Status = 1 (Maintenance required)				
Factory setting	0	(noEv)		
Value range	0	(noEv)		
	1	(0x8DFE)		
Bit_29		bitOffset 29	BooleanT	
Flash sequence active. Device Status = 1 (Maintenance required)				
Factory setting	0	(noEv)		
Value range	0	(noEv)		
	1	(0x8CDB)		
Bit_9		bitOffset 9	BooleanT	
Process variable range under-run				
Factory setting	0	(noEv)		
Value range	0	(noEv)		
	1	(0x8C30)		
Bit_8		bitOffset 8	BooleanT	
Process variable range over-run				
Factory setting	0	(noEv)		
Value range	0	(noEv)		
	1	(0x8C10)		
Bit_2		bitOffset 2	BooleanT	
Short circuit				
Factory setting	0	(noEv)		
Value range	0	(noEv)		
	1	(0x7710)		
Bit_1		bitOffset 1	BooleanT	
Parameter error				
Factory setting	0	(noEv)		
Value range	0	(noEv)		
	1	(0x6320)		

8 Diagnosis

Active Events	Index 545	Subindex 0	RecordT (32 Bit)	ReadOnly
Bit_0		bitOffset 0	BooleanT	
Device hardware fault				
Factory setting	0	(noEv)		
Value range	0	(noEv)		
	1	(0x5000)		

Param configuration fault	Index 546	Subindex 0	UIntegerT (32 Bit) [10]	ReadOnly
Displays the incorrectly set parameters				
Factory setting	0	(OK)		
Value range	0	(OK)		
	786432	(Device Access Locks, Index = 12)		
	38207488	(SP1 (FH1) - PRES, Index = 583)		
	38273024	(rP1 (FL1) - PRES, Index = 584)		
	38862848	(SP2 (FH2) - PRES, Index = 593)		
	38928384	(rP2 (FL2) - PRES, Index = 594)		
	38010880	(ou1, Index = 580)		
	38666240	(ou2, Index = 590)		
	38076416	(dS1, Index = 581)		
	38141952	(dr1, Index = 582)		
	38731776	(dS2, Index = 591)		
	38797312	(dr2, Index = 592)		
	36110336	(uni, Index = 551)		
	32768000	(P-n, Index = 500)		
	33423360	(dAP, Index = 510)		
	36306944	(coLr, Index = 554)		
	36438016	(cFH - PRES, Index = 556)		
	36372480	(cFL - PRES, Index = 555)		
	36175872	(diS, Index = 552)		
	36044800	(Loc, Index = 550)		
	327876608	(HIPS, Index = 5003)		

8.1.1 Pressure

HIPC	Index 5004	Subindex 0	UIntegerT (32 Bit)	ReadOnly
Pressure overload counter				
Value range	(0 To 4294967295)			

HIPS	Index 5003	Subindex 0	IntegerT (16 Bit)	ReadWrite
Configuration of pressure overload counter switch point				
Factory setting	16000			
Value range [bar]	(0 To 16000) * 0.01			

9 Events

Code	Device status	PQ*	Class	Name	Description
0x5000 20480d	4 (Failure)	invalid	Error	Device hardware fault	Device Exchange
0x6320 25376d	3 (Functional check)	invalid	Error	Parameter error	Check data sheet and values
0x7710 30480d	3 (Functional check)	valid	Error	Short circuit	Check installation
0x8C10 35856d	2 (Out of specification)	valid	Warning	Process variable range over-run	Process data uncertain
0x8C30 35888d	2 (Out of specification)	valid	Warning	Process variable range under-run	Process data uncertain
0x8CDB 36059d	1 (Maintenance required)	valid	Warning	Flash sequence active. Device Status = 1 (Maintenance required)	Deactivate flash sequence
0x8DFE 36350d	1 (Maintenance required)	valid	Warning	Test Event 1. Device Status = 1 (Maintenance required)	Event appears by setting index 2 to value 240, Event disappears by setting index 2 to value 241
0x8DFF 36351d	1 (Maintenance required)	valid	Warning	Test Event 2. Device Status = 1 (Maintenance required)	Event appears by setting index 2 to value 242, Event disappears by setting index 2 to value 243



Events are raised by the device itself to notify irregular device states
PQ* = Process data quality

10 Error types

Code	Name	Description
0x8000 32768d	Device application error - no details	Service has been refused by the device application and no detailed information of the incident is available
0x8011 32785d	Index not available	Access occurs to a not existing index
0x8012 32786d	Subindex not available	Access occurs to a not existing subindex
0x8020 32800d	Service temporarily not available	Parameter is not accessible due to the current state of the device application
0x8021 32801d	Service temporarily not available - local control	Parameter is not accessible due to an ongoing local operation at the device
0x8022 32802d	Service temporarily not available - device control	Parameter is not accessible due to a remote triggered state of the device application
0x8023 32803d	Access denied	Write access on a read-only parameter
0x8030 32816d	Parameter value out of range	Written parameter value is outside its permitted value range
0x8033 32819d	Parameter length overrun	Written parameter length is above its predefined length
0x8034 32820d	Parameter length underrun	Written parameter length is below its predefined length
0x8035 32821d	Function not available	Written command is not supported by the device application
0x8036 32822d	Function temporarily unavailable	Written command is not available due to the current state of the device application
0x8040 32832d	Invalid parameter set	Written single parameter collides with other actual parameter settings
0x8041 32833d	Inconsistent parameter set	Parameter inconsistencies were found at the end of block parameter transfer, device plausibility check failed
0x8082 32898d	Application not ready	Read or write service is refused due to a temporarily unavailable application



Error types are used for the ISDU response. Values unequal '0' indicate the cause of a failed ISDU read or write service.

11 Unit conversion



This list provides conversion formulas to convert the transmitted IO-Link raw data into physical units.

Value in [bar]	= Transmitted value	* 0.01
Value in [psi]	= Transmitted value	* 0.1450377
Value in [MPa]	= Transmitted value	* 0.001