



VD 5 VFL.0 /-V-I4M020

Vendor ID	348 / 0x015C
Vendor Name	HYDAC FILTERTECHNIK GMBH
Vendor Text	Justus-von-Liebig-Str., D-66280 Sulzbach/Saar
Vendor URL	http://www.hydac.com
Device ID	9279010 / 0x8D9622


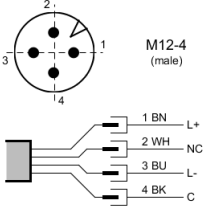
Communication

IO - Link Revision	V1.1
Bitrate	COM2
Minimum Cycle Time	10 ms
SIO Mode supported	no

Features

Block Parameter	yes
Data Storage	yes
Profiles	16384 / 0x4000 (Common Application Profile: Identification & Diagnosis)
Access Locks	Parameter: no Data Storage: yes Local Parameterization: no Local User Interface: no

Device Variant

		927901
		VD 5 VFL.0 /-V-I4M020
		Virtual Fluid Lab (VFL) for remaining service life determination with IO-Link interface.

Process Data

Process Data In						
Name	Description	Subindex	Offset	Data Type	Length	Allowed Values
VFL		0		RecordT	96 Bit	
Rest Lifetime	Rest lifetime in h with 1 decimal place.	1	64	UIntegerT	32 Bit	
Operating Hours	Operating hours in h with 1 decimal place.	2	32	UIntegerT	32 Bit	
Error	Calculation inactive or disabled. See device status for details.	3	5	BooleanT	1 Bit	
Temperature Not Available	Temperature not available. Calculation uses reference temperature (40 °C).	4	4	BooleanT	1 Bit	
Filter Full	Filter full.	5	3	BooleanT	1 Bit	
Temperature Out Of Range	Temperature below temperature threshold or above maximum temperature (120 °C). No calculation done.	6	2	BooleanT	1 Bit	
Pressure Low	Pressure below pressure threshold. No calculation done.	7	1	BooleanT	1 Bit	
Initialization	Calculation in initialization phase.	8	0	BooleanT	1 Bit	

Process Data Out						
Name	Description	Subindex	Offset	Data Type	Length	Allowed Values
Temperature		0		IntegerT	16 Bit	

Variables

Name	Description	Index	Subindex	Offset	Data Type	Length	Access Rights	Default	Allowed Values
Direct Parameters 1		0x00 (0)	0		RecordT	128 Bit	rw		
Reserved			1	120	UIntegerT	8 Bit	ro		
Master Cycle Time			2	112	UIntegerT	8 Bit	ro		
Min Cycle Time			3	104	UIntegerT	8 Bit	ro		
M-Sequence Capability			4	96	UIntegerT	8 Bit	ro		
IO-Link Version ID			5	88	UIntegerT	8 Bit	ro	17	
Process Data Input Length			6	80	UIntegerT	8 Bit	ro		
Process Data Output Length			7	72	UIntegerT	8 Bit	ro		
Vendor ID 1			8	64	UIntegerT	8 Bit	ro		
Vendor ID 2			9	56	UIntegerT	8 Bit	ro		
Device ID 1			10	48	UIntegerT	8 Bit	ro		
Device ID 2			11	40	UIntegerT	8 Bit	ro		
Device ID 3			12	32	UIntegerT	8 Bit	ro		
Reserved			13	24	UIntegerT	8 Bit	ro		
Reserved			14	16	UIntegerT	8 Bit	ro		
Reserved			15	8	UIntegerT	8 Bit	ro		
Standard Command			16	0	UIntegerT	8 Bit	wo		
Direct Parameters 2		0x01 (1)	0		RecordT	128 Bit	rw		
Device Specific Parameter 1			1	120	UIntegerT	8 Bit			
Device Specific Parameter 2			2	112	UIntegerT	8 Bit			
Device Specific Parameter 3			3	104	UIntegerT	8 Bit			
Device Specific Parameter 4			4	96	UIntegerT	8 Bit			
Device Specific Parameter 5			5	88	UIntegerT	8 Bit			
Device Specific Parameter 6			6	80	UIntegerT	8 Bit			
Device Specific Parameter 7			7	72	UIntegerT	8 Bit			
Device Specific Parameter 8			8	64	UIntegerT	8 Bit			
Device Specific Parameter 9			9	56	UIntegerT	8 Bit			
Device Specific Parameter 10			10	48	UIntegerT	8 Bit			
Device Specific Parameter 11			11	40	UIntegerT	8 Bit			
Device Specific Parameter 12			12	32	UIntegerT	8 Bit			
Device Specific Parameter 13			13	24	UIntegerT	8 Bit			
Device Specific Parameter 14			14	16	UIntegerT	8 Bit			
Device Specific Parameter 15			15	8	UIntegerT	8 Bit			
Device Specific Parameter 16			16	0	UIntegerT	8 Bit			
Standard Command		0x02 (2)	0		UIntegerT	8 Bit	wo		(128) Device Reset (130) Restore Factory Settings (164) Reset Min/Max Process Values (170) Reset VFL Calculation (240) Set Test Event 1 (241) Reset Test Event 1 (242) Set Test Event 2 (243) Reset Test Event 2
Device Access Locks		0x0C (12)	0		RecordT	16 Bit	rw		

Variables

Name	Description	Index	Subindex	Offset	Data Type	Length	Access Rights	Default	Allowed Values
Parameter (write) Access			1	0	BooleanT	1 Bit			(False) Unlocked (True) Locked
Data Storage (do not use - set to false)			2	1	BooleanT	1 Bit			
Local Parameterization			3	2	BooleanT	1 Bit			(False) Unlocked (True) Locked
Local User Interface			4	3	BooleanT	1 Bit			(False) Unlocked (True) Locked
Vendor Name		0x10 (16)	0		StringT	max 64 Byte	ro	HYDAC FILTERTECHNIK GMBH	
Product Name		0x12 (18)	0		StringT	max 64 Byte	ro	VD 5 VFL.0 /-V- I4M020	
Product ID		0x13 (19)	0		StringT	max 64 Byte	ro	927901	
Serial Number		0x15 (21)	0		StringT	max 16 Byte	ro		
Hardware Version		0x16 (22)	0		StringT	max 64 Byte	ro		
Firmware Version		0x17 (23)	0		StringT	max 64 Byte	ro		
Application Specific Tag		0x18 (24)	0		StringT	max 32 Byte	rw	***	
Error Count		0x20 (32)	0		UIntegerT	16 Bit	ro		
Device Status		0x24 (36)	0		UIntegerT	8 Bit	ro		(0) Device is OK (1) Maintenance required (2) Out of specification (3) Functional check (4) Failure [5..255] Reserved
Detailed Device Status		0x25 (37)	0		OctetStringT[64]	max 24 Byte	ro		
Process Data Input		0x28 (40)	0				ro		
Process Data Output		0x29 (41)	0				ro		
Function Tag		0x19 (25)	0		StringT	max 32 Byte	rw	***	
Location Tag		0x1A (26)	0		StringT	max 32 Byte	rw	***	
Parameter 1	Pressure threshold in bar with 2 decimal places.	0x40 (64)	0		IntegerT	16 Bit	rw	50	[5..100]
Parameter 2	Temperature threshold in °C.	0x41 (65)	0		IntegerT	16 Bit	rw	35	[0..40]

Variables

Name	Description	Index	Subindex	Offset	Data Type	Length	Access Rights	Default	Allowed Values
Parameter 3	Filtration end pressure in bar with 1 decimal place.	0x42 (66)	0		IntegerT	16 Bit	rw	50	[10..100]
Parameter 4	Viscosity at 40 °C in cSt with 2 decimal places.	0x43 (67)	0		IntegerT	32 Bit	rw	4500	[10..100000]
Parameter 5	Viscosity at 100 °C in cSt with 2 decimal places.	0x44 (68)	0		IntegerT	32 Bit	rw	670	[10..100000]
Parameter 6	Service parameter with 2 decimal places. Do not use.	0x45 (69)	0		IntegerT	16 Bit	ro	-33	[-500..-20]
Parameter 7	Service parameter with 2 decimal places. Do not use.	0x46 (70)	0		IntegerT	16 Bit	ro	-33	[-500..-20]
Parameter 8	Service parameter with 1 decimal place. Do not use.	0x47 (71)	0		UIntegerT	32 Bit	ro	99990	[10000..1000000]
Parameter 9	Service parameter. Do not use.	0x48 (72)	0		UIntegerT	32 Bit	ro	6000	[1000..10000]
Parameter 10	Service parameter with 1 decimal place. Do not use.	0x49 (73)	0		UIntegerT	32 Bit	ro	1000	[10..10000]
Parameter 11	Service parameter. Do not use.	0x4A (74)	0		UIntegerT	32 Bit	ro	3	[1..2000]
Parameter 12	Service parameter. Do not use.	0x4B (75)	0		UIntegerT	16 Bit	ro	30	[0..80]
Parameter 13	Service parameter. Do not use.	0x4C (76)	0		UIntegerT	16 Bit	ro	80	[50..99]
Parameter 14	Service parameter. Do not use.	0x4D (77)	0		IntegerT	16 Bit	ro	500	[10..500]
Parameter 15	Service parameter. Do not use.	0x4E (78)	0		BooleanT	1 Bit	ro	true	
Parameter 16	Service parameter with 2 decimal places. Do not use.	0x4F (79)	0		IntegerT[14]	16 Bit	ro		
Parameter 17	Service parameter with 2 decimal places. Do not use.	0x50 (80)	0		IntegerT[14]	16 Bit	ro		
Rest Lifetime	Rest lifetime in h with 1 decimal place.	0x60 (96)	0		UIntegerT	32 Bit	ro		
Operating Hours	Operating hours in h with 1 decimal place.	0x61 (97)	0		UIntegerT	32 Bit	ro		
Status	Status of rest lifetime calcution.	0x64 (100)	0		RecordT	8 Bit	ro		
Initialization	Calculation in initialization phase.		1	0	BooleanT	1 Bit			
Pressure Low	Pressure below pressure threshold. No calculation done.		2	1	BooleanT	1 Bit			
Temperature Out Of Range	Temperature below temperature threshold or above maximum temperature (120 °C). No calculation done.		3	2	BooleanT	1 Bit			
Filter Full	Filter full.		4	3	BooleanT	1 Bit			
Temperature Not Available	Temperature not available. Calculation uses reference temperature (40 °C).		5	4	BooleanT	1 Bit			
Error	Calculation inactive or disabled. See device status for details.		6	5	BooleanT	1 Bit			
Device Temperature	Device temperature process values since manual reset. Manual reset can be done with Standard Command 164.	0x7F (127)	0		RecordT	48 Bit	ro		
Current Value	Current device temperature value in °C with 1 decimal place.		1	32	IntegerT	16 Bit			
Min Value	Minimum device temperature value in °C with 1 decimal place.		2	16	IntegerT	16 Bit			
Max Value	Maximum device temperature value in °C with 1 decimal place.		3	0	IntegerT	16 Bit			

Variables

Name	Description	Index	Subindex	Offset	Data Type	Length	Access Rights	Default	Allowed Values
Pressure Filter Constant	Filter time constant for pressure process values in ms. Time constants below the sample rate of 1 ms have no effect.	0x84 (132)	0		UIntegerT	16 Bit	rw	0	[0..1000]

Events

Code	Type	Name	Description
0x4210 (16912)	Warning	Device temperature over-run	Clear source of heat
0x4220 (16928)	Warning	Device temperature under-run	Insulate device
0x5000 (20480)	Error	Device hardware fault	Device Exchange
0x6320 (25376)	Error	Parameter error	Check data sheet and values
0x8C00 (35840)	Error	Technology specific application fault	Reset device
0x8C20 (35872)	Error	Measurement range over-run	Check application
0x8DFE (36350)	Error	Test Event 1	Test event 1 for conformance test. Event appears after writing Standard Command 240. Event disappears after writing Standard Command 241.
0x8DFF (36351)	Error	Test Event 2	Test event 2 for conformance test. Event appears after writing Standard Command 242. Event disappears after writing Standard Command 243.

Error Types

Error Code	Additional Code	Name	Description
0x80 (128)	0x11 (17)	Index not available	Access occurs to a not existing index
0x80 (128)	0x12 (18)	Subindex not available	Access occurs to a not existing subindex
0x80 (128)	0x20 (32)	Service temporarily not available	Parameter is not accessible due to the current state of the device application
0x80 (128)	0x22 (34)	Service temporarily not available - device control	Parameter is not accessible due to a remote triggered state of the device application
0x80 (128)	0x23 (35)	Access denied	Write access on a read-only parameter
0x80 (128)	0x30 (48)	Parameter value out of range	Written parameter value is outside its permitted value range
0x80 (128)	0x31 (49)	Parameter value above limit	Written parameter value is above its specified value range
0x80 (128)	0x32 (50)	Parameter value below limit	Written parameter value is below its specified value range
0x80 (128)	0x33 (51)	Parameter length overrun	Written parameter length is above its predefined length
0x80 (128)	0x34 (52)	Parameter length underrun	Written parameter length is below its predefined length
0x80 (128)	0x35 (53)	Function not available	Written command is not supported by the device application
0x80 (128)	0x36 (54)	Function temporarily unavailable	Written command is not available due to the current state of the device application
0x80 (128)	0x40 (64)	Invalid parameter set	Written single parameter collides with other actual parameter settings
0x80 (128)	0x41 (65)	Inconsistent parameter set	Parameter inconsistencies were found at the end of block parameter transfer, device plausibility check failed
0x81 (129)	0x10 (16)	Persistent memory error	No details.
0x81 (129)	0x11 (17)	Parameter store failed	Parameter could not be stored in persistent memory.