



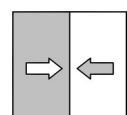
Technical information

DD90

Interface description IO-Link

PRO-LINE® differential pressure transmitter
2-channel version

09015496 • TI_EN_DD90_2K_IO-Link • Rev. ST4-A • 02/26



Masthead

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Version history

Rev. ST4-A 02/26 Version 1 (first edition)

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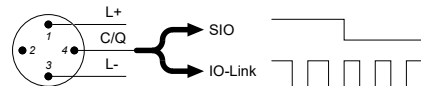
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1 Device variant

Device ID	DD90
Description	PRO-LINE® differential pressure transmitter, 2 channels
Device Symbol	
IO-Link connection	M12-4 Class A
Transmission Rate	COM 2 = 38,4 kBaud
Pin assignment	acc. IEC 60974-5-2



• pin1	brown	L+
• pin2	white	n.c.
• pin3	blue	L-
• pin4	black	C/Q
Power supply device	max. 200 mA	

1.1 Notes on configuration

NOTICE! Observe the information in the operating instructions for parameterising the device.

The DD90 is a complex device with mutually modifying parameters. Although parameterisation via IO-Link is possible in principle, this requires precise knowledge of the various functions of the device.

The manufacturer FISCHER Mess- und Regeltechnik GmbH therefore recommends parameterisation using the inTouch® PC software. Further adjustments to individual parameters can then be made via IO-Link.

2 Identification

Vendor ID	1796 (0x0704)
Vendor Name	FISCHER Mess- und Regeltechnik GmbH
Vendor Text	developing solutions
Vendor URL	https://www.fischermesstechnik.de/
Device-ID	66305 (0x010301)
Device Family	Differential pressure transmitter

3 Index assignment of data objects

	Parameter	Index
	Direct Parameters-Page1	0
	System Command	2 Command interface
	Vendor Name	16 FISCHER Mess- und Regeltechnik GmbH
	Vendor Text	17 developing solutions
	Product Name	18 DE90
	Product ID	19 66305 (0x010301)
	Serial Number	21
	Hardware Revision	22
	Firmware Revision	23
	Application-specific Tag	24
Process data	PD Input	40 (depending on parameter switching output)
Device parameters	Switch output	67 Number of switching outputs (read only)
	Language	257 Display
	LCD colour	258 Display
	LCD contrast	259 Display
	Damping C1	285 Measuring range C1
	Damping C2	286 Measuring range C2
	Offset C2	287 Measuring range C1
	Offset C2	288 Measuring range C2
	Zero-pt. window C1	289 Measuring range C1
	Zero-pt. window C2	290 Measuring range C2
	Col.ch. assignment	291 Colour change assignment - channel
	Meas.data display	292 Display of measured value - Display
	Meas.range I1 unit	293 Input 1 (read only)
	Meas.range I2 unit	294 Input 2 (read only)
	Meas.range I1 start	295 Input 1 (read only)
	Meas.range I2 start	296 Input 2 (read only)
	Meas.range I1 end	297 Input 1 (read only)
	Meas.range I2 end	298 Input 2 (read only)
	Mode C1	299 Selecting the operating mode - Channel 1
	Meas.range C1 unit	301 Measuring range C1
	Meas.range C2 unit	302 Measuring range C2
	Meas.range C1 start	303 Measuring range C1
	Meas.range C2 start	304 Measuring range C2
	Meas.range C1 end	305 Measuring range C1
	Meas.range C2 end	306 Measuring range C2
	Displ.range C1 unit	311 Characteristic curve C1: Flow
	No. of value pairs	313 Characteristic curve C1: Table Channel 1
	Input value 1	315 Characteristic curve C1: Table Channel 1
	Input value 2	316 Characteristic curve C1: Table Channel 1
	...	
	Input value n	(314+n) Characteristic curve C1: Table Channel 1
	...	
	Input value 30	344 Characteristic curve C1: Table Channel 1

Display value 1	375 Characteristic curve C1: Table Channel 1
Display value 2	376 Characteristic curve C1: Table Channel 1
...	
Display value n	(374+n) Characteristic curve C1: Table Channel 1
...	
Display value 30	404 Characteristic curve C1: Table Channel 1
Displ.range C1 unit	439 Characteristic curve C1: Table Channel 1
Limit C1	441 Measuring range C1
Limit C2	442 Measuring range C2
Number format C1	443 Selecting the number format Channel 1
Number format C2	444 Selecting the number format Channel 2
Col.ch. C1 red-grn	445 Colour change C1
Col.ch. C2 red-grn	446 Colour change C2
Col.ch. C1 grn-red	447 Colour change C1
Col.ch. C2 grn-red	448 Colour change C2
Col.ch. C1 red-ylw	449 Colour change C1
Col.ch. C2 red-ylw	450 Colour change C2
Col.ch. C1 ylw-grn	451 Colour change C1
Col.ch. C2 ylw-grn	452 Colour change C2
Col.ch. C1 grn-ylw	453 Colour change C1
Col.ch. C2 grn-ylw	454 Colour change C2
Col.ch. C1 ylw-red	455 Colour change C1
Col.ch. C2 ylw-red	456 Colour change C2
Col.ch. C1 hyst.	457 Colour change C1
Col.ch. C2 hyst.	458 Colour change C2
Col.ch. C1 delay on	459 Colour change C1
Col.ch. C2 delay on	460 Colour change C2
SP1 assignment	491 Switching output
SP2 assignment	492 Switching output
SP3 assignment	493 Switching output
SP4 assignment	494 Switching output
SP1 function	495 Switching output
SP2 function	496 Switching output
SP3 function	497 Switching output
SP4 function	498 Switching output
SP1 delay on	499 Switching output
SP2 delay on	500 Switching output
SP3 delay on	501 Switching output
SP4 delay on	502 Switching output
SP1 on	503 Switching output
SP2 on	504 Switching output
SP3 on	505 Switching output
SP4 on	506 Switching output
SP1 off	507 Switching output
SP2 off	508 Switching output
SP3 off	509 Switching output
SP4 off	510 Switching output

Col.ch. C1 delay off	514 Colour change C1
Col.ch. C2 delay off	515 Colour change C2
SP1 delay off	517 Switching output
SP2 delay off	518 Switching output
SP3 delay off	519 Switching output
SP4 delay off	520 Switching output
Formula C1	521 Characteristic curve C1: Volume flow
Disp.range C1 end	523 Characteristic curve C1: Volume flow
K factor C1	525 Characteristic curve C1: Volume flow
Air density C1	527 Characteristic curve C1: Volume flow
LCD lighting	539 Display
Disp.range C1 unit	546 Characteristic curve C1: Volume flow
Slope C1	548 Characteristic curve C1: Linear function
Offset C1	550 Characteristic curve C1: Linear function
Displ.range C1 start	552 Characteristic curve C1: Linear function
Displ.range C1 end	554 Characteristic curve C1: Linear function
Displ.range C1 unit	556 Characteristic curve C1: Linear function
Mode C3	558 Selecting the operating mode Channel 3
Limit C3	559 Measuring range K3
Number format C3	560 Selecting the number format Channel 3
Meas.range C3 unit	561 Measuring range K3
Meas.range C3 start	562 Measuring range K3
Meas.range C3 end	563 Measuring range K3
Formula C3	564 Measuring range K3: Differenz (C1, C2)
Col.ch. C3 red-grn	565 Colour change K3
Col.ch. C3 grn-red	566 Colour change K3
Col.ch. C3 red-ylw	567 Colour change K3
Col.ch. C3 ylw-grn	568 Colour change K3
Col.ch. C3 grn-ylw	569 Colour change K3
Col.ch. C3 ylw-red	570 Colour change K3
Col.ch. C3 Hyst.	571 Colour change K3
Col.ch. C3 delay. on	572 Colour change K3
Col.ch. C3 delay. off	573 Colour change K3
Damping C3	650 Characteristic curve C3: Difference
Offset C3	651 Characteristic curve C3: Difference
Zero-pt. window C3	652 Characteristic curve C3: Difference
Displ.range C3 start	653 Characteristic curve C3: Flow
Displ.range C3 end	654 Characteristic curve C3: Flow
Displ.range C3 unit	655 Characteristic curve C3: Flow
Displ.range C3 unit	656 Characteristic curve C3: Table Channel 3
No. of value pairs	657 Characteristic curve C3: Table Channel 3
Input value 1	658 Characteristic curve C3: Table Channel 3
Input value 2	659 Characteristic curve C3: Table Channel 3
...	
Input value n	(657+n) Characteristic curve C3: Table Channel 3
...	
Input value 30	687 Characteristic curve C3: Table Channel 3

Display value 1	688 Characteristic curve C3: Table Channel 3
Display value 2	689 Characteristic curve C3: Table Channel 3
...	
Display value n	(687+n) Characteristic curve C3: Table Channel 3
...	
Display value 30	717 Characteristic curve C3: Table Channel 3
Displ.range C1 start	4403 Characteristic curve C1: Flow
Displ.range C1 end	4405 Characteristic curve C1: Flow

4 Data types

5-octet string ASCII

octet	0	1	2	3	4			
bit offset	39-32	31-24	23-16	15-8	7-0			

16-octet string UTF8

octet	0	1	2	3	4	5	6	7
bit offset	127-120	119-112	111-104	103-96	95-88	87-80	79-72	71-64

octet	8	9	10	11	12	13	14	15
bit offset	63-56	55-48	47-40	39-32	31-24	23-16	15-8	7-0

20-octet string UTF8

octet	0	1	2	3	4	5	6	7
bit offset	159-152	151-144	143-136	135-128	127-120	119-112	111-104	103-96

octet	8	9	10	11	12	13	14	15
bit offset	95-88	87-80	79-72	71-64	63-56	55-48	47-40	39-32

octet	16	17	18	19				
bit offset	31-24	23-16	15-8	7-0				

64-octet string UTF8

octet	0	1	2	3	4	5	6	7
bit offset	511-504	503-496	495-488	487-480	479-472	471-464	463-456	455-448

octet	8	9	10	11	12	13	14	15
bit offset	447-440	439-432	431-424	423-416	415-408	407-400	399-392	391-384

octet	16	17	18	19	20	21	22	23
bit offset	383-376	375-368	367-360	359-352	351-344	343-336	335-328	327-320

octet	24	25	26	27	28	29	30	31
bit offset	319-312	311-304	303-296	295-288	287-280	279-272	271-264	263-256

octet	32	33	34	35	36	37	38	39
bit offset	255-248	247-240	239-232	231-224	223-216	215-208	207-200	199-192

octet	40	41	42	43	44	45	46	47
bit offset	191-184	183-176	175-168	167-160	159-152	151-144	143-136	135-128

octet	48	49	50	51	52	53	54	55
bit offset	127-120	119-112	111-104	103-96	95-88	87-80	79-72	71-64

octet	56	57	58	59	60	61	62	63
bit offset	63-56	55-48	47-40	39-32	31-24	23-16	15-8	7-0

8-bit UInteger

octet	0							
bit offset	7-0							
element bit	7-0							

16-bit Unsigned

octet	0	1						
bit offset	15-8	7-0						
element bit	15-8	7-0						

Float 32

octet	0	1	2	3				
bit offset	31-24	23-16	15-8	7-0				
element bit	31-24	23-16	15-8	7-0				

5 Standard variables

5.1 Identification

Manufacturer name

Description	Manufacturer name assigned to a manufacturer ID
ID	V_VendorName
Index	16
Data type	64-octet string UTF-8
Default value	FISCHER Mess- und Regeltechnik GmbH
Access rights	Read only

Manufacturer text

Description	Additional information about the manufacturer
ID	V_VendorText
Index	17
Data type	64-octet string UTF-8
Default value	developing solutions
Access rights	Read only

Product name

Description	Full product name
ID	V_ProductName
Index	18
Data type	64-octet string UTF-8
Default value	
Access rights	Read only

Product ID

Description	Manufacturer-specific product or type identification (e.g. article number or order number)
ID	V_ProductID
Index	19
Data type	64-octet string UTF-8
Default value	
Access rights	Read only

Serial number

Description	Unique, manufacturer-specific identification of the individual device
ID	V_SerialNumber
Index	21
Data type	16-octet string UTF-8
Default value	
Access rights	Read only

Hardware revision

Description	Unique, manufacturer-specific identification of the hardware revision of the individual device
ID	V_HardwareRevision
Index	22
Data type	64-octet string UTF-8
Default value	
Access rights	Read only

Firmware revision

Description	Unique, manufacturer-specific identification of the hardware revision of the individual device
ID	V_FirmwareRevision
Index	23
Data type	64-octet string UTF-8
Default value	
Access rights	Read only

Application-specific indicator

Description	Possibility of labelling a device with user or application-specific information
ID	V_ApplicationSpecificTag
Index	24
Data type	20-octet string UTF-8
Default value	---
Access rights	Read write

5.2 Process data

Description	Last valid process input data of the device
ID	V_ProcessDataInput
Index	40
Data type	see PI_ProcessDataIn_#Rel (#=0,1,2,3,4)
Access rights	Read only

5.2.1 Process data (4 switch outputs)

Description	Input process data
Condition	V_InfoRelCount =4
ID	PI_ProcessDataIn_4Rel
Data type	104-bit Record (Subindex access not supported)

sub index	bit offset	Data Type	Value range	Name
1	72	Float32	3,4e+38 ... +3,4e+38	K1
2	40	Float32	3,4e+38 ... +3,4e+38	K2
3	8	Float32	3,4e+38 ... +3,4e+38	K3
4	5	3-Bit Integer	-2/-1/0/1/2	Color change
5	0	Boolean	0/1	SP1
6	1	Boolean	0/1	SP2
7	2	Boolean	0/1	SP3
8	3	Boolean	0/1	SP4

octet	0							
bit offset	103	102	101	100	99	98	97	96
subindex	1							
element bit	31	30	29	28	27	26	25	24

octet	1							
bit offset		94	93	92	91	90	89	88
subindex	1							
element bit	23	22	21	20	19	18	17	16

octet	2							
bit offset		86	85	84	83	82	81	80
subindex	1							
element bit	15	14	13	12	11	10	9	8

octet	3							
bit offset		78	77	76	75	74	73	72
subindex	1							
element bit	7	6	5	4	3	2	1	0

octet	4							
bit offset	71	70	69	68	67	66	65	64
subindex	2							
element bit	31	30	29	28	27	26	25	24

octet	5							
bit offset	63	62	61	60	59	58	57	56
subindex	2							
element bit	23	22	21	20	19	18	17	16

octet	6							
bit offset	55	54	53	52	51	50	49	48
subindex	2							
element bit	15	14	13	12	11	10	9	8

octet	7							
bit offset	47	46	45	44	43	42	41	40
subindex	2							
element bit	7	6	5	4	3	2	1	0

octet	8							
bit offset	39	38	37	36	35	34	33	32
subindex	3							
element bit	31	30	29	28	27	26	25	24

octet	9							
bit offset	31	30	29	28	27	26	25	24
subindex	3							
element bit	23	22	21	20	19	18	17	16

octet	10							
bit offset	23	22	21	20	19	18	17	16
subindex	3							
element bit	15	14	13	12	11	10	9	8

octet	11							
bit offset	15	14	13	12	11	10	9	8
subindex	3							
element bit	7	6	5	4	3	2	1	0

octet	12							
bit offset	7	6	5	4	3	2	1	0
subindex	4			////	8	7	6	5

Fig. 1: PI_ProcessDataIn_4Rel

5.3 Direct parameters - Page 1

Page 1 contains predefined system parameters that are necessary for successful communication establishment and is used exclusively for IO-Link internal purposes.

Description	Contains the necessary parameters for communication properties and the identifiers for device validation.
ID	V_DirectParameters_1
Index	0
Data type	128-bit Record

octet	0	1	2	3	4	5	6	7
bit offset	127-120	119 - 112	111 - 104	103 - 96	95 - 88	87 - 80	79 - 72	71 - 64
subindex	1	2	3	4	5	6	7	8
element bit	7 - 0	7 - 0	7 - 0	7-0	7 - 0	7 - 0	7 - 0	7-0

octet	8	9	10	11	12	13	14	15
bit offset	63 - 56	55 - 48	47 - 40	39 - 32	31 - 24	23 - 16	15 - 8	7 - 0
subindex	9	10	11	12	13	14	15	16
element bit	7 - 0	7 - 0	7 - 0	7-0	7 - 0	7 - 0	7 - 0	7-0

sub index	bit offset	Name	Beschreibung
1	120	Reserved	
2	112	Master Cycle Time	Current communication cycle duration used by the master. This value defines the process data cycle.
3	104	Min Cycle Time	Minimum communication cycle duration supported by the device. This value defines the lowest possible process data cycle.
4	96	M-Sequence Capability	Information on the structure and the supported features of the communication messages.
5	88	IO-Link Revisions-ID	Identifier for the currently used communication protocol revision.
6	80	Process Data Input Length	Information on width and features of the process input data (Process Data from Device to Master).
7	70	Process Data Output Length	Information on width of the process output data (Process Data from Master to Device).
8	64	Vendor ID 1	Highest octet of the Vendor ID.
9	56	Vendor ID 2	Lowest octet of the Vendor ID.
10	48	Device-ID 1	Highest octet of the Device ID.
11	40	Device-ID 2	Middle octet of the Device ID.
12	32	Device-ID 3	Lowest octet of the Device ID.
13	24	Reserved	
14	16	Reserved	
15	8	Reserved	
16	0	System Command	Command interface for devices without ISDU support. Validity and execution of commands are not confirmed.

Fig. 2: V_DirectParameters_1

5.4 System command

Description	Command interface for applications. A positive response indicates that the requested function has been executed completely and correctly.
ID	V_SystemCommand
Index	2
Data type	8-bit UInteger

Permitted values

131	0x83	Back to box
-----	------	-------------

6 Device parameters



NOTICE

Permitted values

The maximum possible value ranges are specified in the IODD. In some cases, however, the actual permitted value ranges depend on certain parameters.

Example: Offset

The value range permitted for this parameter is specified as -33333 to +33333. However, only values $\pm\frac{1}{3}$ of the basic measuring range are actually accepted.

With a measuring range of 0 to 6 mbar, the permissible value range for the offset is therefore -2,000 to +2,000 mbar.

6.1 Input [factory setting]

The following values for the basic measuring range are specified when ordering and are set by the manufacturer.

6.1.1 Meas.range I1 unit

Description	Pressure unit (basic measuring range input 1)
ID	V_In1_PressureUnit
Index	293
Data type	8-bit UInteger
Default value	4
Access rights	Read only

Default setting

0	[Pa]	
1	[kPa]	
2	[MPa]	
3	[bar]	
4	[mbar]	Default value
5	[mmHg]	
6	[mmH ₂ O]	
7	[inH ₂ O]	
8	[psi]	

6.1.2 Meas.range I1 start

Description	Basic measuring range start (input 1)
ID	V_In1_RangeMin
Index	295
Data type	Float32
Default value	0
Access rights	Read only

Default setting	Unit <i>depending on</i>
99999 ... +99999	[mbar] <i>Meas. range E1 unit</i> <i>[V_In1_PressureUnit]</i>

6.1.3 Meas.range I1 end

Description	Basic measuring range end (input 1)
ID	V_In1_RangeMax
Index	297
Data type	Float32
Default value	1000
Access rights	Read only

Default setting	Unit <i>depending on</i>
99999 ... +99999	[mbar] <i>Meas. range E1 unit</i> <i>[V_In1_PressureUnit]</i>

6.1.4 Meas.range I2 unit

Description	Pressure unit (basic measuring range input2)
ID	V_In2_PressureUnit
Index	294
Data type	8-bit UInteger
Default value	4
Access rights	Read only

Default setting

0	[Pa]	
1	[kPa]	
2	[MPa]	
3	[bar]	
4	[mbar]	Default value
5	[mmHg]	
6	[mmH ₂ O]	
7	[inH ₂ O]	
8	[psi]	

6.1.5 Meas.range I2 start

Description	Basic measuring range start (input 2)
ID	V_In2_RangeMin
Index	296
Data type	Float32
Default value	0
Access rights	Read only

Value range	Unit <i>depending on</i>
99999 ... +99999	[mbar] <i>Meas. range E2 Unit</i> <i>[V_In2_PressureUnit]</i>

6.1.6 Meas.range I2 end

Description	Basic measuring range end (input 2)
ID	V_In2_RangeMax
Index	298
Data type	Float32
Default value	1000
Access rights	Read only

Default setting	Unit <i>depending on</i>
99999 ... +99999	[mbar] <i>Meas. range E2 Unit</i> <i>[V_In2_PressureUnit]</i>

6.2 Channel 1

6.2.1 Mode C1

Description	This parameter can be used to select different operating modes for the 1st measuring channel.
ID	V_Ch1_PressureMode
Index	299
Data type	8-bit UInteger
Default value	0
Access rights	Read write Modifies other variables

Permitted values

0	Linear	Menu extension: not applicable
1	Flow rate	Menu expansion: characteristic C1
2	Table	Menu expansion: characteristic C1
3	Volume flow	Menu expansion: characteristic C1
4	Linear function	Menu expansion: characteristic C1

6.2.2 Measurement C1

6.2.2.1 Meas. range C1 unit

Description	A unit other than the basic measuring range can be defined for channel 1.
ID	V_Ch1_PressureUnit
Index	301
Data type	8-bit UInteger
Default value	4
Access rights	Read write Modifies other variables

Permitted values

0	[Pa]	
1	[kPa]	
2	[MPa]	
3	[bar]	
4	[mbar]	Default value
5	[mmHg]	
6	[mmH ₂ O]	
7	[inH ₂ O]	
8	[psi]	

6.2.2.2 Meas. range C1 start

Description	Initial value of the measuring range for channel 1
ID	V_Ch1_RangeMin
Index	303
Data type	Float32
Default value	0
Access rights	Read write Modifies other variables

Permitted values	Unit	<i>depending on</i>
-99999 ... 99999 ^{*)}	[mbar]	<i>Meas. range C1 unit [V_Ch1_PressureUnit]</i>

^{*)} depending on the basic measuring range

6.2.2.3 Meas. range C1 end

Description	End value of the measuring range for channel 1
ID	V_In1_RangeMax
Index	305
Data type	Float32
Default value	1000
Access rights	Read write Modifies other variables

Permitted values	Unit	<i>depending on</i>
-99999 ... 99999 ^{*)}	[mbar]	<i>Meas. range C1 unit [V_Ch1_PressureUnit]</i>

^{*)} depending on the basic measuring range

6.2.2.4 Damping C1

Description	Damping of the meas.data display of channel 1
ID	V_Ch1_Damping
Index	285
Data type	16-bit UInteger
Default value	0
Access rights	Read write

Permitted values	Unit
0 to 600	[s]

6.2.2.5 Offset C1

Description	Correction of a zero offset of channel 1
ID	V_Ch1_Offset
Index	287
Data type	Float32
Default value	0
Access rights	Read write

Permitted values	Unit	<i>depending on</i>
-33333 ... 33333 ^{*)}	[mbar]	<i>Meas. range C1 unit [V_Ch1_PressureUnit]</i>

^{*)} 1/3 of the basic measuring range

6.2.2.6 Zero-pt. window C1

Description	The parameter value defines a range around zero, the so-called zero-point window.
ID	V_Ch1_ZeroPtWindow
Index	289
Data type	Float32
Default value	0
Access rights	Read write

Permitted values	Unit	<i>depending on</i>
0 to 33333 ^{*)}	[mbar]	<i>Meas. range C1 unit [V_Ch1_PressureUnit]</i>

^{*)} 1/3 of the basic measuring range

6.2.2.7 Limit C1

Description	The parameter switches the limit for the set measuring range on or off.
ID	V_Ch1_Limit
Index	441
Data type	8-bit UInteger
Default value	0
Access rights	Read write

Permitted values	
0	OFF
1	ON

6.2.3 Characteristic C1 [menu extension]

6.2.3.1 Flow rate channel 1

Condition: `V_Ch1_PressureMode = 1` (flow rate)

6.2.3.1.1 Displ.range C1 unit

Description	This parameter is used to define the display range unit.
ID	V_Ch1_SqrtUnit
Index	311
Data type	5-octet string ASCII
Default value	m ³ /h
Access rights	Read write

Permitted values

Windows 1252 code page Only certain characters can be displayed (see appendix of the operating instructions)

6.2.3.1.2 Displ.range C1 start

Description	The start of the display range is defined with this parameter.
ID	V_Ch1_SqrtRangeMin
Index	4403
Data type	Float32
Default value	0
Access rights	Read write Modifies other variables

Permitted values

-999999 to 999999

Unit

[m³/h]

*depending on
Displ.range C1 unit
[V_Ch1_SqrtUnit]*

6.2.3.1.3 Displ.range C1 end

Description	The end of the display range is defined with this parameter.
ID	V_Ch1_SqrtRangeMax
Index	4405
Data type	Float32
Default value	1000
Access rights	Read write Modifies other variables

Permitted values

-999999 to 999999

Unit

[m³/h]

*depending on
Displ.range C1 unit
[V_Ch1_SqrtUnit]*

6.2.3.2 Table channel 1

Condition: `V_Ch1_PressureMode` = 2 (table)

6.2.3.2.1 Displ.range C1 unit

Description	This parameter defines the unit of the display area for the table.
ID	<code>V_Ch1_TabUnit</code>
Index	439
Data type	5-octet string ASCII
Default value	%
Access rights	Read write

Permitted values

Windows 1252 code page	Only certain characters can be displayed (see appendix of the operating instructions)
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6.2.3.2.2 No. of value pairs

Description	This parameter is used to set the number of value pairs (<code>TableInput</code> <code>TableDisplay</code>) and thus the size of the table.
ID	<code>V_Ch1_TableLength</code>
Index	313
Data type	8-bit UInteger
Default value	30
Access rights	Read write
	Modifies other variables

Permitted values

2 to 30

6.2.3.2.3 Input value 1

ID	V_Ch1_TabInput_1
Index	315
Data type	Float32
Default value	0
Access rights	Read write

Permitted values	Unit	<i>depending on</i>
-999999 to 999999	[mbar]	<i>Meas. range C1 unit [V_Ch1_PressureUnit]</i>

6.2.3.2.4 Input value 2 to 30

The data format of the following input values in the table corresponds to the data format of input value 1.

Index	ID	Default value [mbar]
316	V_Ch1_TabInput_2	34.5
317	V_Ch1_TabInput_3	69.0
318	V_Ch1_TabInput_4	103.4
319	V_Ch1_TabInput_5	137.9
320	V_Ch1_TabInput_6	172.4
321	V_Ch1_TabInput_7	206.9
322	V_Ch1_TabInput_8	241.4
323	V_Ch1_TabInput_9	275.9
324	V_Ch1_TabInput_10	310.3
325	V_Ch1_TabInput_11	344.8
326	V_Ch1_TabInput_12	379.3
327	V_Ch1_TabInput_13	413.8
328	V_Ch1_TabInput_14	448.3
329	V_Ch1_TabInput_15	482.8
330	V_Ch1_TabInput_16	517.2
331	V_Ch1_TabInput_17	551.7
332	V_Ch1_TabInput_18	586.2
333	V_Ch1_TabInput_19	620.7
334	V_Ch1_TabInput_20	655.2
335	V_Ch1_TabInput_21	689.7
336	V_Ch1_TabInput_22	724.1
337	V_Ch1_TabInput_23	758.6
338	V_Ch1_TabInput_24	793.1
339	V_Ch1_TabInput_25	827.6
340	V_Ch1_TabInput_26	862.1
341	V_Ch1_TabInput_27	896.6
342	V_Ch1_TabInput_28	931.0
343	V_Ch1_TabInput_29	965.5
344	V_Ch1_TabInput_30	1000.0

6.2.3.2.5 Display value 1

ID	V_Ch1_TabDisplay_1
Index	375
Data type	Float32
Default value	0
Access rights	Read write

Permitted values	Unit	<i>depending on</i>
-999999 to 999999	[%]	<i>Displ.range C1 uni [V_Ch1_TabUnit]</i>

6.2.3.2.6 Display value 2 to 30

The data format of the following display values in the table corresponds to the data format of display value 1.

Index	ID	Default value [%]
376	V_Ch1_TabDisplay_2	3.4
377	V_Ch1_TabDisplay_3	6.9
378	V_Ch1_TabDisplay_4	10.3
379	V_Ch1_TabDisplay_5	13.8
380	V_Ch1_TabDisplay_6	17.2
381	V_Ch1_TabDisplay_7	20.7
382	V_Ch1_TabDisplay_8	24.1
383	V_Ch1_TabDisplay_9	27.6
384	V_Ch1_TabDisplay_10	31.0
385	V_Ch1_TabDisplay_11	34.5
386	V_Ch1_TabDisplay_12	37.9
387	V_Ch1_TabDisplay_13	41.4
388	V_Ch1_TabDisplay_14	44.8
389	V_Ch1_TabDisplay_15	48.3
390	V_Ch1_TabDisplay_16	51.7
391	V_Ch1_TabDisplay_17	55.2
392	V_Ch1_TabDisplay_18	58.6
393	V_Ch1_TabDisplay_19	62.1
394	V_Ch1_TabDisplay_20	65.5
395	V_Ch1_TabDisplay_21	69.0
396	V_Ch1_TabDisplay_22	72.4
397	V_Ch1_TabDisplay_23	75.9
398	V_Ch1_TabDisplay_24	79.3
399	V_Ch1_TabDisplay_25	82.8
400	V_Ch1_TabDisplay_26	86.2
401	V_Ch1_TabDisplay_27	89.7
402	V_Ch1_TabDisplay_28	93.1
403	V_Ch1_TabDisplay_29	96.6
404	V_Ch1_TabDisplay_30	1000.0

6.2.3.3 Volume flow C1

Condition: `V_Ch1_PressureMode` = 3 (volume flow)

6.2.3.3.1 Displ.range C1 unit

Description	This parameter is used to define the display range unit.
ID	V_Ch1_VFlowUnit
Index	546
Data type	8-bit UInteger
Default value	0
Access rights	Read write Modifies other variables

Permitted values	Unit	
0	[m ³ /h]	Default value
1	[l/min]	
2	[cfm]	

6.2.3.3.2 Displ.range C1 end

Description	This parameter is used to define the display range.
ID	V_Ch1_VFlowRangeMax
Index	523
Data type	Float32
Default value	1000
Access rights	Read write Modifies other variables

Permitted values	Unit	<i>depending on</i>
0 to 999999	[m ³ /h]	<i>Displ.range C1 unit</i> <i>[V_Ch1_VFlowUnit]</i>

6.2.3.3.3 K factor C1

Description	This parameter is used to enter the specific calibration factor for the panel type.
ID	V_Ch1_VFlowRangeMax
Index	525
Data type	Float32
Default value	3000
Access rights	Read write

Permitted values	
0 to 9999	dimensionless

6.2.3.3.4 Air density C1

Description	This parameter can be used to enter the air density at operating temperature.
ID	V_Ch1_VFlowAirDensity
Index	527
Data type	Float32
Default value	1,204
Access rights	Read write

Permitted values	Unit
0,250 to 2,000	[kg/m ³]

6.2.3.3.5 Formula C1

Description	Formula specified by the manufacturer for calculating the volume flow.
ID	V_Ch1_VFlowFunc
Index	521
Data type	8-bit UInteger
Default value	0
Access rights	Read write

Permitted values	
0	Standard
1	Comefri
2	EBM Papst
3	Fläkt Woods
4	Nicotra Gebhardt
5	Rosenberg
6	Ziehl-Abegg
7	SIEGLE + EPPLE

6.2.3.4 Linear function C1

Condition: `V_Ch1_PressureMode` = 4 (linear function)

6.2.3.4.1 Displ.range C1 unit

Description	This parameter is used to specify the unit. It must have a length of at least 5 characters.
ID	<code>V_Ch1_LinFUnit</code>
Index	556
Data type	5-octet string US_ASCII
Default value	" " (<i>space</i>)
Access rights	Read write

Permitted values

Windows 1252 code page	Only certain characters can be displayed (see appendix of the operating instructions)
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6.2.3.4.2 Displ.range C1 start

Description	The start of the display range is defined with this parameter.
ID	<code>V_Ch1_LinFRangeMin</code>
Index	552
Data type	Float32
Default value	0
Access rights	Read write Modifies other variables

Permitted values
-999999 to 999999

Unit *depending on*
" " *Displ.range C1 unit*
 [V_Ch1_LinFUnit]

6.2.3.4.3 Displ.range C1 end

Description	The end of the display range is defined with this parameter.
ID	<code>V_Ch1_LinFRangeMax</code>
Index	554
Data type	Float32
Default value	1000
Access rights	Read write Modifies other variables

Permitted values
-999999 to 999999

Unit *depending on*
" " *Displ.range C1 unit*
 [V_Ch1_LinFUnit]

6.2.3.4.4 Slope C1

Description	This parameter defines the slope (m) of the linear characteristic curve ($f(x) = mx + b$).
ID	V_Ch1_LinFSlope
Index	558
Data type	Float32
Default value	1
Access rights	Read write

Permitted values	Unit
-10 to 10	dimensionless

6.2.3.4.5 Offset C1

Description	This parameter defines the intercept (b) of the linear characteristic curve.
ID	V_Ch1_LinFOffset
Index	550
Data type	Float32
Default value	0
Access rights	Read write

Permitted values	Unit	<i>depending on</i>
-999999 to 999999	" "	<i>Displ.range C1 unit [V_Ch1_LinFUnit]</i>

6.2.4 Number format C1

Description	This parameter defines the decimal places of the display values.
ID	V_Ch1_NumberFormat
Index	443
Data type	8-bit UInteger
Default value	1
Access rights	Read write

Permitted values

0	±123456	
1	±12345.6	Default value
2	±1234.56	
3	±123.456	
4	±12.3456	
5	±1.23456	

6.2.5 Colour change C1

- The following units are set as the default values for all switching thresholds, depending on the selected mode.
- Modifying the unit affects all switching thresholds.
- Decimal places are accepted when entering the switching thresholds.

Permitted values	Index / Variable	Mode C1
-999999 to 999999	[mbar] 301 [V_Ch1_PressureUnit]	Linear
	[m ³ /h] 311 [V_Ch1_SqrtUnit]	Flow rate
	[%] 439 [V_Ch1_TabUnit]	Table
	[m ³ /h] 546 [V_Ch1_VFlowUnit]	Volume flow
	[] 556 [V_Ch1_LinFUnit]	Lin. Function

6.2.5.1 Col.ch. C1 red–grn

Description	This parameter defines the switching threshold for the specified colour change.
ID	V_Ch1_ColorChange_RedGreen
Index	445
Data type	Float32
Default value	100
Access rights	Read write

Permitted values	Unit
-999999 to 999999	depending on the mode

6.2.5.2 Col.ch. C1 grn–red

Description	This parameter defines the switching threshold for the specified colour change.
ID	V_Ch1_ColorChange_GreenRed
Index	447
Data type	Float32
Default value	900
Access rights	Read write

Permitted values	Unit
-999999 to 999999	depending on the mode

6.2.5.3 Col.ch. C1 red–ylw

Description	This parameter defines the switching threshold for the specified colour change.
ID	V_Ch1_ColourChange_RedYellow
Index	449
Data type	Float32
Default value	100
Access rights	Read write

Permitted values
-999999 to 999999

Unit
depending on the mode

6.2.5.4 Col.ch. C1 ylw–grn

Description	This parameter defines the switching threshold for the specified colour change.
ID	V_Ch1_ColorChange_YellowGreen
Index	451
Data type	Float32
Default value	200
Access rights	Read write

Permitted values
-999999 to 999999

Unit
depending on the mode

6.2.5.5 Col.ch. C1 grn–ylw

Description	This parameter defines the switching threshold for the specified colour change.
ID	V_Ch1_ColorChange_GreenYellow
Index	453
Data type	Float32
Default value	800
Access rights	Read write

Permitted values
-999999 to 999999

Unit
depending on the mode

6.2.5.6 Col.ch. C1 ylw-red

Pick and place machine	This parameter defines the switching threshold for the specified colour change.
Description	
ID	V_Ch1_ColourChange_YellowRed
Index	455
Data type	Float32
Default value	900
Access rights	Read write

Permitted values

-999999 to 999999

Unit

depending on the mode

6.2.5.7 Col.ch. C1 hyst.

Description	This parameter can be used to set an hysteresis for all switch thresholds.
ID	V_Ch1_ColourChange_Hyst
Index	457
Data type	Float32
Default value	0
Access rights	Read write

Permitted values

-999999 to 999999

Unit

depending on the mode

6.2.5.8 Col.ch. C1 delay on

Description	This parameter can be used to set an activation delay for all switch thresholds.
ID	V_Ch1_ColourChange_DelayOn
Index	459
Data type	32-bit UInteger
Default value	0
Access rights	Read write

Permitted values	Unit
0 to 1800	[s]

6.2.5.9 Col.ch. C1 delay off

Description	This parameter can be used to set a deactivation hysteresis for all switch thresholds.
ID	V_Ch1_ColourChange_DelayOff
Index	514
Data type	32-bit UInteger
Default value	0
Access rights	Read write

Permitted values	Unit
0 to 1800	[s]

6.3 Channel 2

6.3.1 Measurement C2

6.3.1.1 Meas. range C2 unit

Description	A unit other than the basic measuring range can be defined for channel 2.
ID	V_Ch2_PressureUnit
Index	302
Data type	8-bit UInteger
Default value	4
Access rights	Read write Modifies other variables

Permitted values

0	[Pa]	
1	[kPa]	
2	[MPa]	
3	[bar]	
4	[mbar]	Default value
5	[mmHg]	
6	[mmH ₂ O]	
7	[inH ₂ O]	
8	[psi]	

6.3.1.2 Meas. range C2 start

Description	Initial value of the measuring range for channel 2
ID	V_Ch2_RangeMin
Index	304
Data type	Float32
Default value	0
Access rights	Read write Modifies other variables

Permitted values	Unit	<i>depending on</i>
-99999 ... 99999 ^{*)}	[mbar]	<i>Meas. range C2 unit [V_Ch2_PressureUnit]</i>

^{*)} depending on the basic measuring range

6.3.1.3 Meas. range C2 end

Description	End value of the measuring range for channel 2
ID	V_Ch2_RangeMax
Index	306
Data type	Float32
Default value	1000
Access rights	Read Write modifies other variables

Permitted values	Unit	<i>depending on</i>
-99999 ... 99999 ^{*)}	[mbar]	<i>Meas.range C2 unit [V_Ch2_PressureUnit]</i>

^{*)} abhängig vom Grundmessbereich

6.3.1.4 Damping C2

Description	Damping of the meas.data display of channel 2
ID	V_Ch2_Damping
Index	286
Data type	16-bit UInteger
Default value	0
Access rights	Read write

Permitted values	Unit
0 to 600	[s]

6.3.1.5 Offset C2

Description	Correction of a zero offset of channel 2
ID	V_Ch2_Offset
Index	288
Data type	Float32
Default value	0
Access rights	Read write

Permitted values	Unit	<i>depending on</i>
-3333 to 3333 ^{*)}	[mbar]	<i>Meas. range C2 unit [V_Ch2_PressureUnit]</i>

^{*)} 1/3 of the basic measuring range

6.3.1.6 Zero-pt. window C2

Description	The parameter value defines a range around zero, the so-called zero-point window.
ID	V_Ch2_ZeroPtWindow
Index	290
Data type	Float32
Default value	0
Access rights	Read write

Permitted values	Unit	<i>depending on</i>
0 to 3333 ^{*)}	[mbar]	<i>Meas. range C2 unit [V_Ch2_PressureUnit]</i>

^{*)} 1/3 of the basic measuring range

6.3.1.7 Limit C2

Description	The parameter switches the limit for the set measuring range on or off.
ID	V_Ch2_Limit
Index	442
Data type	8-bit UInteger
Default value	0
Access rights	Read write

Permitted values	
0	OFF
1	ON

6.3.2 Number format C2

Description	This parameter defines the decimal places of the display values.
ID	V_Ch2_NumberFormat
Index	444
Data type	8-bit UInteger
Default value	1
Access rights	Read write

Permitted values

0	±123456	
1	±12345.6	Default value
2	±1234.56	
3	±123.456	
4	±12.3456	
5	±1.23456	

6.3.3 Colour change C2

- Depending on the selected mode, the following units are set as default values for all switching thresholds.
- Modifying the unit affects all switching thresholds.
- Decimal places are accepted when entering the switching thresholds.

Permitted values	Index / Variable	Mode C2
-999999 bis 999999	[mbar] 302 [V_Ch2_PressureUnit]	Linear

6.3.3.1 Col.ch. C2 red–grn

Description	This parameter defines the switching threshold for the specified colour change.
ID	V_Ch2_ColorChange_RedGreen
Index	446
Data type	Float32
Default value	100
Access rights	Read write

Permitted values	Unit
-999999 to 999999	depending on the mode

6.3.3.2 Col.ch. C2 grn–red

Description	This parameter defines the switching threshold for the specified colour change.
ID	V_Ch2_ColorChange_GreenRed
Index	448
Data type	Float32
Default value	900
Access rights	Read write

Permitted values	Unit
-999999 to 999999	depending on the mode

6.3.3.3 Col.ch. C2 red–ylw

Description	This parameter defines the switching threshold for the specified colour change.
ID	V_Ch2_ColourChange_RedYellow
Index	450
Data type	Float32
Default value	100
Access rights	Read write

Permitted values
-999999 to 999999

Unit
depending on the mode

6.3.3.4 Col.ch. C2 ylw–grn

Description	This parameter defines the switching threshold for the specified colour change.
ID	V_Ch2_ColorChange_YellowGreen
Index	452
Data type	Float32
Default value	200
Access rights	Read write

Permitted values
-999999 to 999999

Unit
depending on the mode

6.3.3.5 Col.ch. C2 grn–ylw

Description	This parameter defines the switching threshold for the specified colour change.
ID	V_Ch2_ColorChange_GreenYellow
Index	454
Data type	Float32
Default value	800
Access rights	Read write

Permitted values
-999999 to 999999

Unit
depending on the mode

6.3.3.6 Col.ch. C2 ylw-red

Pick and place machine	This parameter defines the switching threshold for the specified colour change.
Description	
ID	V_Ch2_ColorChange_YellowRed
Index	456
Data type	Float32
Default value	900
Access rights	Read write

Permitted values

-999999 to 999999

Unit

depending on the mode

6.3.3.7 Col.ch. C2 hyst.

Description	This parameter can be used to set an hysteresis for all switch thresholds.
ID	V_Ch2_ColourChange_Hyst
Index	458
Data type	Float32
Default value	0
Access rights	Read write

Permitted values

-999999 to 999999

Unit

depending on the mode

6.3.3.8 Col.ch. C2 delay on

Description	This parameter can be used to set an activation delay for all switch thresholds.
ID	V_Ch2_ColourChange_DelayOn
Index	460
Data type	32-bit UInteger
Default value	0
Access rights	Read write

Permitted values	Unit
0 to 1800	[s]

6.3.3.9 Col.ch. C2 delay off

Description	This parameter can be used to set a deactivation hysteresis for all switch thresholds.
ID	V_Ch2_ColourChange_DelayOff
Index	515
Data type	32-bit UInteger
Default value	0
Access rights	Read write

Permitted values	Unit
0 to 1800	[s]

6.4 Channel 3

6.4.1 Mode C3

Description	This parameter can be used to select different operating modes for the 3rd measuring channel.
ID	V_Ch3_VirtMode
Index	558
Data type	8-bit UInteger
Default value	0
Access rights	Read write Modifies other variables

Permitted values

0	Inact.	Channel 3 not applicable
1	Difference	Menu extension: not applicable
2	+ flow rate	Menu extension: Characteristic C3
3	+ table	Menu extension: Characteristic C3
4	Dyn. filter mon.	Menu extension: Characteristic C3

6.4.2 Measurement C3 (difference)

Condition:

V_Ch3_VirtMode = 1 (difference) or

V_Ch3_VirtMode = 2 (difference + flow rate) or

V_Ch3_VirtMode = 3 (difference + table)

6.4.2.1 Meas. range C3 unit

Description	Unit for channel 3
ID	V_Ch3_DiffUnit
Index	561
Data type	8-bit UInteger
Default value	4
Access rights	Read write Modifies other variables

Permitted values

0	[Pa]	
1	[kPa]	
2	[MPa]	
3	[bar]	
4	[mbar]	Default value
5	[mmHg]	
6	[mmH ₂ O]	
7	[inH ₂ O]	
8	[psi]	

6.4.2.2 Meas. range C3 start

Description	Initial value of the measuring range for channel 3
ID	V_Ch3_DiffRangeMin
Index	562
Data type	Float32
Default value	0
Access rights	Read write Modifies other variables

Permitted values	Unit	<i>depending on</i>
-99999 ... 99999	[mbar]	<i>Meas. range C3 Unit [V_Ch3_DiffUnit]</i>

6.4.2.3 Meas. range C3 end

Description	End value of the measuring range for channel 3
ID	V_Ch3_DiffRangeMax
Index	563
Data type	Float32
Default value	1000
Access rights	Read write Modifies other variables

Permitted values	Unit	<i>depending on</i>
-99999 ... 99999	[mbar]	<i>Meas. range C3 Unit [V_Ch3_DiffUnit]</i>

6.4.2.4 Damping C3

Description	Damping of the meas.data display of channel 3
ID	V_Ch3_DiffDamping
Index	650
Data type	16-bit UInteger
Default value	0
Access rights	Read write

Permitted values	Unit
0 to 600	[s]

6.4.2.5 Offset C3

Description	Correction of a zero offset of channel 3
ID	V_Ch3_DiffOffset
Index	651
Data type	Float32
Default value	0
Access rights	Read write

Permitted values	Unit	<i>depending on</i>
-3333 to 3333 ⁾	[mbar]	<i>Meas. range C3 Unit [V_Ch3_DiffUnit]</i>

⁾ 1/3 of the basic measuring range

6.4.2.6 Zero-pt. window C3

Description	The parameter value defines a range around zero, the so-called zero-point window.
ID	V_Ch3_DiffZeroPtWindow
Index	652
Data type	Float32
Default value	0
Access rights	Read write

Permitted values	Unit	<i>depending on</i>
0 to 3333 ⁾	[mbar]	<i>Meas. range C3 Unit [V_Ch3_DiffUnit]</i>

⁾ 1/3 of the basic measuring range

6.4.2.7 Limit C3

Description	The parameter switches the limit for the set measuring range on or off.
ID	V_Ch3_Limit
Index	559
Data type	8-bit UInteger
Default value	0
Access rights	Read write

Permitted values	
0	OFF
1	ON

6.4.2.8 Formula C3

Description	The formula for calculating the difference is defined.
ID	V_Ch3_DiffFunc
Index	564
Data type	8-bit UInteger
Default value	0
Access rights	Read write

Permitted values

0	Channel 1 – Channel 2
1	Channel 2 – Channel 1
2	Chnl 1 + chnl 2

6.4.3 Characteristic C3 [menu extension]

6.4.3.1 Difference + flow rate

Condition: `V_Ch3_VirtMode = 2` (+flow rate)

6.4.3.1.1 Displ.range C3 unit

Description	This parameter is used to define the display range unit.
ID	V_Ch3_DiffSqrtUnit
Index	655
Data type	5-octet string ASCII
Default value	m ³ /h
Access rights	Read write

Permitted values

Windows 1252 code page Only certain characters can be displayed (see appendix of the operating instructions)

6.4.3.1.2 Displ.range C3 start

Description	The start of the display range is defined with this parameter.
ID	V_Ch3_DiffSqrtRangeMin
Index	653
Data type	Float32
Default value	0
Access rights	Read write Modifies other variables

Permitted values

-999999 to 999999

Unit

[m³/h]

*depending on
Displ.range C3 unit
[V_Ch3_DiffSqrtUnit]*

6.4.3.1.3 Displ.range C3 end

Description	The end of the display range is defined with this parameter.
ID	V_Ch3_DiffSqrtRangeMax
Index	654
Data type	Float32
Default value	1000
Access rights	Read write Modifies other variables

Permitted values

-999999 to 999999

Unit

[m³/h]

*depending on
Displ.range C3 unit
[V_Ch3_DiffSqrtUnit]*

6.4.3.2 Difference + table

Condition: `V_Ch3_VirtMode = 3 (+table)`

6.4.3.2.1 Displ.range C3 unit

Description	This parameter defines the unit of the display area for the table.
ID	V_Ch3_DiffTabUnit
Index	656
Data type	5-octet string ASCII
Default value	%
Access rights	Read write

Permitted values

Windows 1252 code page Only certain characters can be displayed (see appendix of the operating instructions)

6.4.3.2.2 No. of value pairs

Description	This parameter is used to set the number of value pairs (TableInput TableDisplay) and thus the size of the table.
ID	V_Ch3_DiffTabLen
Index	657
Data type	8-bit UInteger
Default value	30
Access rights	Read write
	Modifies other variables

Permitted values

2 to 30

6.4.3.2.3 Input value 1

ID	V_Ch3_DiffTabInput_1
Index	658
Data type	Float32
Default value	0
Access rights	Read write

Permitted values	Unit	<i>depending on</i>
-99999 ... 99999	[mbar]	<i>Meas. range C3 Unit [V_Ch3_DiffUnit]</i>

6.4.3.2.4 Input value 2 to 30

The data format of the following input values in the table corresponds to the data format of input value 1.

Index	ID	Default value [mbar]
659	V_Ch3_DiffTabInput_2	34.5
660	V_Ch3_DiffTabInput_3	69.0
661	V_Ch3_DiffTabInput_4	103.4
662	V_Ch3_DiffTabInput_5	137.9
663	V_Ch3_DiffTabInput_6	172.4
664	V_Ch3_DiffTabInput_7	206.9
665	V_Ch3_DiffTabInput_8	241.4
666	V_Ch3_DiffTabInput_9	275.9
667	V_Ch3_DiffTabInput_10	310.3
668	V_Ch3_DiffTabInput_11	344.8
669	V_Ch3_DiffTabInput_12	379.3
670	V_Ch3_DiffTabInput_13	413.8
671	V_Ch3_DiffTabInput_14	448.3
672	V_Ch3_DiffTabInput_15	482.8
673	V_Ch3_DiffTabInput_16	517.2
674	V_Ch3_DiffTabInput_17	551.7
675	V_Ch3_DiffTabInput_18	586.2
676	V_Ch3_DiffTabInput_19	620.7
677	V_Ch3_DiffTabInput_20	655.2
678	V_Ch3_DiffTabInput_21	689.7
679	V_Ch3_DiffTabInput_22	724.1
680	V_Ch3_DiffTabInput_23	758.6
681	V_Ch3_DiffTabInput_24	793.1
682	V_Ch3_DiffTabInput_25	827.6
683	V_Ch3_DiffTabInput_26	862.1
684	V_Ch3_DiffTabInput_27	896.6
685	V_Ch3_DiffTabInput_28	931.0
686	V_Ch3_DiffTabInput_29	965.5
687	V_Ch3_DiffTabInput_30	100.0

6.4.3.2.5 Display value 1

ID	V_Ch3_DiffTabDisplay_1
Index	688
Data type	Float32
Default value	0
Access rights	Read write

Permitted values	Unit	<i>depending on</i>
-99999 ... 99999	[%]	<i>Meas. range C3 unit [V_Ch3_DiffTabUnit]</i>

6.4.3.2.6 Display value 2 to 30

The data format of the following display values in the table corresponds to the data format of display value 1.

Index	ID	Default value [%]
689	V_Ch3_DiffTabDisplay_2	3.4
690	V_Ch3_DiffTabDisplay_3	6.9
691	V_Ch3_DiffTabDisplay_4	10.3
692	V_Ch3_DiffTabDisplay_5	13.8
693	V_Ch3_DiffTabDisplay_6	17.2
694	V_Ch3_DiffTabDisplay_7	20.7
695	V_Ch3_DiffTabDisplay_8	24.1
696	V_Ch3_DiffTabDisplay_9	27.6
697	V_Ch3_DiffTabDisplay_10	31.0
698	V_Ch3_DiffTabDisplay_11	34.5
699	V_Ch3_DiffTabDisplay_12	37.9
700	V_Ch3_DiffTabDisplay_13	41.4
701	V_Ch3_DiffTabDisplay_14	44.8
702	V_Ch3_DiffTabDisplay_15	48.3
703	V_Ch3_DiffTabDisplay_16	51.7
704	V_Ch3_DiffTabDisplay_17	55.2
705	V_Ch3_DiffTabDisplay_18	58.6
706	V_Ch3_DiffTabDisplay_19	62.1
707	V_Ch3_DiffTabDisplay_20	65.5
708	V_Ch3_DiffTabDisplay_21	69.0
709	V_Ch3_DiffTabDisplay_22	72.4
710	V_Ch3_DiffTabDisplay_23	75.9
711	V_Ch3_DiffTabDisplay_24	79.3
712	V_Ch3_DiffTabDisplay_25	82.8
713	V_Ch3_DiffTabDisplay_26	86.2
714	V_Ch3_DiffTabDisplay_27	89.7
715	V_Ch3_DiffTabDisplay_28	93.1
716	V_Ch3_DiffTabDisplay_29	96.6
717	V_Ch3_DiffTabDisplay_30	100.0

6.4.4 Number format C3

Description	This parameter defines the decimal places of the display values.
ID	V_Ch3_NumberFormat
Index	560
Data type	8-bit UInteger
Default value	1
Access rights	Read write

Permitted values

0	±123456	
1	±12345.6	Default value
2	±1234.56	
3	±123.456	
4	±12.3456	
5	±1.23456	

6.4.5 Colour change C3

- Für alle Schaltschwellen sind abhängig vom gewählten Modus die folgenden Einheiten als Standardwert festgelegt.
- Eine Modifikation der Einheit wirkt sich auf alle Schaltschwellen aus.
- Bei der Eingabe der Schaltschwellen werden Nachkommastellen akzeptiert.

Erlaubte Werte	Modus K3
-999999 bis 999999	[mbar] Differenz
	[m ³ /h] Differenz +Durchfluss
	[%] Differenz +Tabelle

6.4.5.1 Col.ch. C3 red–grn

Description	This parameter defines the switching threshold for the specified colour change.
ID	V_Ch3_ColorChange_RedGreen
Index	565
Data type	Float32
Default value	100
Access rights	Read write

Permitted values	Unit
-999999 to 999999	depending on the mode

6.4.5.2 Col.ch. C3 grn–red

Description	This parameter defines the switching threshold for the specified colour change.
ID	V_Ch3_ColorChange_GreenRed
Index	566
Data type	Float32
Default value	900
Access rights	Read write

Permitted values	Unit
-999999 to 999999	depending on the mode

6.4.5.3 Col.ch. C3 red–ylw

Description	This parameter defines the switching threshold for the specified colour change.
ID	V_Ch3_ColourChange_RedYellow
Index	567
Data type	Float32
Default value	100
Access rights	Read write

Permitted values
-999999 to 999999

Unit
depending on the mode

6.4.5.4 Col.ch. C3 ylw–grn

Description	This parameter defines the switching threshold for the specified colour change.
ID	V_Ch3_ColorChange_YellowGreen
Index	568
Data type	Float32
Default value	200
Access rights	Read write

Permitted values
-999999 to 999999

Unit
depending on the mode

6.4.5.5 Col.ch. C3 grn–ylw

Description	This parameter sets the switching threshold for the specified colour change.
ID	V_Ch3_ColorChange_GreenYellow
Index	569
Data type	Float32
Default value	800
Access rights	Read Write

Permitted values
-999999 bis 999999

Unit
depending on the mode

6.4.5.6 Col.ch. C3 ylw-red

Pick and place machine	This parameter defines the switching threshold for the specified colour change.
Description	
ID	V_Ch3_ColorChange_YellowRed
Index	570
Data type	Float32
Default value	900
Access rights	Read write

Permitted values

-999999 to 999999

Unit

depending on the mode

6.4.5.7 Col.ch. C3 hyst.

Description	This parameter can be used to set an hysteresis for all switch thresholds.
ID	V_Ch3_ColourChange_Hyst
Index	571
Data type	Float32
Default value	0
Access rights	Read write

Permitted values

-999999 to 999999

Unit

depending on the mode

6.4.5.8 Col.ch. C3 delay on

Description	This parameter can be used to set an activation delay for all switch thresholds.
ID	V_Ch3_ColorChange_DelayOn
Index	572
Data type	32-bit UInteger
Default value	0
Access rights	Read write

Permitted values	Unit
0 to 1800	[s]

6.4.5.9 Col.ch. C3 delay off

Description	This parameter can be used to set a deactivation hysteresis for all switch thresholds.
ID	V_Ch3_ColourChange_DelayOff
Index	573
Data type	32-bit UInteger
Default value	0
Access rights	Read write

Permitted values	Unit
0 to 1800	[s]

6.5 Switch output

- Depending on the selected mode, the following units are set as default values for all switching points.
- Modifying the unit affects all switching points.
- Decimal places are accepted when entering switching points.

Permitted values	Index / Variable	Mode C1
-999999 bis 999999	[mbar] 301 [V_Ch1_PressureUnit]	Linear
	[m ³ /h] 311 [V_Ch1_SqrtUnit]	Flow rate
	[%] 439 [V_Ch1_TabUnit]	Table
	[m ³ /h] 546 [V_Ch1_VFlowUnit]	Volume flow
	[" "] 556 [V_Ch1_LinFUnit]	Linear function

Permitted values	Index / Variable	Mode C2
-999999 bis 999999	[mbar] 302 [V_Ch1_PressureUnit]	Linear

Permitted values	Mode C3
-999999 bis 999999	[mbar] difference
	[m ³ /h] Difference + flow rate
	[%] Difference + table

6.5.1 Number of switch outputs

Description	Number of switch outputs
ID	V_Info0RelCount
Index	67
Data type	8-bit UInteger
Default value	4
Access rights	Read only

Default setting 4 switch outputs

6.5.2 Switch output 1

6.5.2.1 SP1 assignment

Description	This menu is used to assign switch output 1 to a channel or to switch it off.
ID	V_Rel1_ChSel
Index	491
Data type	8-bit UInteger
Default value	1
Access rights	Read write Modifies other variables

Permitted values

0	inactive
1	Channel 1
2	Channel 2
3	Channel 3

6.5.2.2 SP1 function

Description	This parameter is used to define the contact type.
ID	V_Rel1_Type
Index	495
Data type	8-bit UInteger
Default value	0
Access rights	Read write

Permitted values

0	NOC
1	Opener

6.5.2.3 SP1 On

Description	The activation point is set with this parameter.
ID	V_Rel1_On
Index	503
Data type	Float32
Default value	300
Access rights	Read write

Permitted values

-999999 to 999999

Unit

depending on the mode

6.5.2.4 SP1 Off

Description	The deactivation point is defined with this parameter.
ID	V_Rel1_Off
Index	507
Data type	Float32
Default value	600
Access rights	Read write

Permitted values	Unit
-999999 to 999999	depending on the mode

6.5.2.5 SP1 delay on

Description	This parameter can be used to set an activation delay for all switch thresholds.
ID	V_Rel1_DelayOn
Index	499
Data type	32-bit UInteger
Default value	0
Access rights	Read write

Permitted values	Unit
0 to 1800	[s]

6.5.2.6 SP1 delay off

Description	This parameter can be used to set an activation delay for all switch thresholds.
ID	V_Rel1_DelayOff
Index	517
Data type	32-bit UInteger
Default value	0
Access rights	Read write

Permitted values	Unit
0 to 1800	[s]

6.5.3 Switch output 2

6.5.3.1 SP2 assignment

Description	This menu is used to assign switch output 2 to a channel or to switch it off.
ID	V_Rel2_ChSel
Index	492
Data type	8-bit UInteger
Default value	1
Access rights	Read write Modifies other variables

Permitted values

0	inactive
1	Channel 1
2	Channel 2
3	Channel 3

6.5.3.2 SP2 Function

Description	This parameter is used to define the contact type.
ID	V_Rel2_Type
Index	496
Data type	8-bit UInteger
Default value	0
Access rights	Read write

Permitted values

0	NOC
1	Opener

6.5.3.3 SP2 On

Description	The activation point is set with this parameter.
ID	V_Rel2_On
Index	504
Data type	Float32
Default value	300
Access rights	Read write

Permitted values

-999999 to 999999

Unit

depending on the mode

6.5.3.4 SP2 Off

Description	The deactivation point is defined with this parameter.
ID	V_Rel2_Off
Index	508
Data type	Float32
Default value	600
Access rights	Read write

Permitted values	Unit
-999999 to 999999	depending on the mode

6.5.3.5 SP2 delay on

Description	This parameter can be used to set an activation delay for all switch thresholds.
ID	V_Rel2_DelayOn
Index	500
Data type	32-bit UInteger
Default value	0
Access rights	Read write

Permitted values	Unit
0 to 1800	[s]

6.5.3.6 SP2 delay off

Description	This parameter can be used to set an activation delay for all switch thresholds.
ID	V_Rel2_DelayOff
Index	518
Data type	32-bit UInteger
Default value	0
Access rights	Read write

Permitted values	Unit
0 to 1800	[s]

6.5.4 Switch output 3

6.5.4.1 SP3 assignment

Description	This menu is used to assign switch output 3 to a channel or to switch it off.
ID	V_Rel3_ChSel
Index	493
Data type	8-bit UInteger
Default value	2
Access rights	Read write Modifies other variables

Permitted values

0	inactive
1	Channel 1
2	Channel 2
3	Channel 3

6.5.4.2 SP3 function

Description	This parameter is used to define the contact type.
ID	V_Rel3_Type
Index	497
Data type	8-bit UInteger
Default value	0
Access rights	Read write

Permitted values

0	NOC
1	Opener

6.5.4.3 SP3 On

Description	The activation point is set with this parameter.
ID	V_Rel3_On
Index	505
Data type	Float32
Default value	300
Access rights	Read write

Permitted values

-999999 to 999999

Unit

depending on the mode

6.5.4.4 SP3 Off

Description	The deactivation point is defined with this parameter.
ID	V_Rel3_Off
Index	509
Data type	Float32
Default value	600
Access rights	Read write

Permitted values	Unit
-999999 to 999999	depending on the mode

6.5.4.5 SP3 delay on

Description	This parameter can be used to set an activation delay for all switch thresholds.
ID	V_Rel3_DelayOn
Index	501
Data type	32-bit UInteger
Default value	0
Access rights	Read write

Permitted values	Unit
0 to 1800	[s]

6.5.4.6 SP3 delay off

Description	This parameter can be used to set an activation delay for all switch thresholds.
ID	V_Rel3_DelayOff
Index	519
Data type	32-bit UInteger
Default value	0
Access rights	Read write

Permitted values	Unit
0 to 1800	[s]

6.5.5 Switch output 4

6.5.5.1 SP4 assignment

Description	This menu is used to assign switch output 4 to a channel or to switch it off.
ID	V_Rel4_ChSel
Index	494
Data type	8-bit UInteger
Default value	2
Access rights	Read write Modifies other variables

Permitted values

0	inactive
1	Channel 1
2	Channel 2
3	Channel 3

6.5.5.2 SP4 function

Description	This parameter is used to define the contact type.
ID	V_Rel4_Type
Index	498
Data type	8-bit UInteger
Default value	0
Access rights	Read write

Permitted values

0	NOC
1	Opener

6.5.5.3 SP4 On

Description	The activation point is set with this parameter.
ID	V_Rel4_On
Index	506
Data type	Float32
Default value	300
Access rights	Read write

Permitted values

-999999 to 999999

Unit

depending on the mode

6.5.5.4 SP4 Off

Description	The deactivation point is defined with this parameter.
ID	V_Rel4_Off
Index	510
Data type	Float32
Default value	600
Access rights	Read write

Permitted values	Unit
-999999 to 999999	depending on the mode

6.5.5.5 SP4 delay on

Description	This parameter can be used to set an activation delay for all switch thresholds.
ID	V_Rel4_DelayOn
Index	502
Data type	32-bit UInteger
Default value	0
Access rights	Read write

Permitted values	Unit
0 to 1800	[s]

6.5.5.6 SP4 delay off

Description	This parameter can be used to set an activation delay for all switch thresholds.
ID	V_Rel4_DelayOff
Index	520
Data type	32-bit UInteger
Default value	0
Access rights	Read write

Permitted values	Unit
0 to 1800	[s]

6.6 Display

6.6.1 Language

Description	Changing the menu language
ID	V_Language
Index	257
Data type	8-bit UInteger
Default value	0
Access rights	Read write

Permitted values

0	German	German language
1	English	English language
2	Español	Spanish language
3	Français	French language
4	Italiano	Italian language
5	Português	Portuguese language
6	Magyar	Hungarian language

6.6.2 Meas. data display

Description	In this menu the channel, whose measured value is displayed, is defined.
ID	V_DisplayChSel
Index	292
Data type	8-bit integer
Default value	255
Access rights	Read write

Permitted values

1	Channel 1
2	Channel 2
3	Channel 3
255	All channels

6.6.3 Col.ch. assignment

Description	Definition of the controlling channel for the colour change
ID	V_ColourChangeChSel
Index	291
Data type	8-bit record (subindex access not supported)
Access	Read write

sub index	bit offset	Daten Typ	Wertebereich	Name
1	0	Boolean	0/1	K1
2	1	Boolean	0/1	K2
3	2	Boolean	0/1	K3

octet	0							
bit offset	7	6	5	4	3	2	1	0
subindex	////	////	////	////	////	3	2	1

Fig. 3: Colour change assignment

6.6.4 LCD colour

Description	Changing the backlight
ID	V_LCDColour
Index	258
Data type	8-bit UInteger
Default value	5
Access rights	Read write

Permitted values

0	Off	
1	Green	
2	Blue	
3	White	
4	red	
5	Red/green	Colour change
6	Red/yellow/ green	Colour change
7	Cyan	
8	Yellow	
9	Margenta	

6.6.5 LCD lighting

Description	This parameter can be used to switch off the lighting based on a timer.
ID	V_LCDTimeout
Index	539
Data type	32-bit UInteger
Default value	0
Access rights	Read write

Permitted values

0	[s]	Lighting permanently on
1 to 600	[s]	Time until switch-off

Unit

6.6.6 LCD contrast

Description	Contrast setting of the display
ID	V_LCDCContrast
Index	259
Data type	8-bit integer
Default value	0
Access rights	Read write

Permitted values

-15 to +15

Unit

dimensionless



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