

# OMNIPLUS-RRH

Paddle wheel flow meter



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# 1 General

## 1.1 Info

Vendor ID	0x0554 / 1364 d
Vendor Name	Senseca Germany GmbH
Vendor Text	www.senseca.com
Vendor URL	<a href="https://www.senseca.com">https://www.senseca.com</a>
Device ID	0x000C08 / 3080 d

## 1.2 Communication

IO-Link Revision	V1.1
Bitrate	COM2
Minimum cycle time	20 ms
SIO Mode supported	Yes
ISDU supported	Yes

## 1.3 Functionality

Block parameterisation	Yes
Data storage	Yes
Supported profiles	0x4000 / 16384 d: Identification and Diagnosis

## 2 Process Data Input

Name	Description	Index	Subindex	Data type	Bit offset	Bit length	Value range	Unit
Flow	Current flow	40	1	IntegerT	48	16	-90.00 to 90.00 (-32760) UL (32764) OL	m <sup>3</sup> /h
Flow scale	Range adjustment (10 <sup>Scale</sup> )	40	2	IntegerT	40	8	-128 to 127	
Device error	Device Status Error	40	3	BooleanT	35	1	(false) Inactive (true) Active	
Alarm	Alarm state	40	4	BooleanT	34	1	(false) Inactive (true) Active	
Pin 5	State of Pin 5 (digital output)	40	5	BooleanT	33	1	(false) Inactive (true) Active	
Pin 4	State of Pin 4 (digital output)	40	6	BooleanT	32	1	(false) Inactive (true) Active	
Totalizer	Actual totalizer value since the last reset	40	7	Float32T	0	32		m <sup>3</sup>

### PLC-In Mapping

Word 0	Flow															
Word 1	Flow scale								Reserved				E	A	5	4
Word 2	Totalizer															
Word 3	Totalizer															

### 3 Observation

Name	Description	Index	Subindex	Data type	Length	Access rights	Unit
Flow Scale Select	Flow scale value	116	0	IntegerT	2 bytes	ro	
Process Data Input	Process Data Input	40	0	RecordT	8 Bytes	ro	
Internal Temperature	Internal MCU temperature	320	0	Float32T	4 Bytes	ro	°C
External 24 V Power Supply	External power supply	321	0	Float32T	4 Bytes	ro	V

## 4 Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default settings	Value range	Factor	Offset	Unit
<b>Identification</b>											
Vendor Name		16	0	StringT	max 32 Bytes	ro	Senseca Germany GmbH				
Vendor Text		17	0	StringT	max 32 Bytes	ro	www.senseca.com				
Product Name		18	0	StringT	max 32 Bytes	ro	Device specific				
Product Text		20	0	StringT	max 32 Bytes	ro	Screw volumeter				
Item Number		200	0	StringT	max 16 Bytes	ro	Device specific				
Serial Number		21	0	StringT	max 16 Bytes	ro	Device specific				
Hardware Version		22	0	StringT	max 32 Bytes	ro					
Firmware Version		23	0	StringT	max 32 Bytes	ro					
Application Specific Tag		24	0	StringT	max 32 Bytes	rw	***				
Function Tag		25	0	StringT	max 32 Bytes	rw	***				
Location Tag		26	0	StringT	max 32 Bytes	rw	***				
<b>Flow measuring</b>											
Unit	Unit of the displayed value of the flow measurement	104	0	UIntegerT	1 Byte	rw	(4) L/min	(0) % FS (% of Max velocity) (4) L/min (5) L/h (6) m <sup>3</sup> /h			

Name	Description	Index	Subindex	Data type	Length	Access rights	Default settings	Value range	Factor	Offset	Unit
								(7) % Bargraph			
Decimals	Number of decimal places for the display of the value of the flow measurement	105	0	UIntegerT	1 Byte	rw	(1) 0.0	(0) 0. (none) (1) 0.0 (2) 0.00 (3) 0.000 (127) variable (The maximum possible number of decimal places are always used in the display)			
Response time	Reaction time (Time constant measured value filter)	110	0	Float32T	4 Bytes	rw	0.5	0.0 to 99.9			s
<b>Volume totalizer</b>											
Totalizer	Activation of totalizer	120	0	UIntegerT	1 Byte	rw	(0) Off	(0) Off (1) On			
Reset mode	Totalizer Selection of the source for reset	121	0	UIntegerT	1 Byte	rw	(0) None	(0) None (1) Preset counter (2) External (pin5) (3) Ring			
Preset counter (Totalizer function)	Activation of the Preset mode for volume totalizer (Set preset value with reset signal)	122	0	UIntegerT	1 Byte	rw	(0) Off	(0) Off (1) On			
Preset unit	Totalizer Unit of the preset value	123	0	UIntegerT	1 Byte	rw	(1) Liter	(1) Liter (2) m <sup>3</sup>			

Name	Description	Index	Subindex	Data type	Length	Access rights	Default settings	Value range	Factor	Offset	Unit
Preset value	Totalizer start value (For preset mode = active)	124	0	IntegerT	4 Bytes	rw	1000000 (1000.000)	0 to 9999999 (0.000 to 9999.999)	0.001	0.000	
<b>Pin 2 settings</b>											
Function	Selection of the function of the analogue output	400	0	UIntegerT	1 Byte	rw	(1) Analog out flow	(0) Off (1) Analog out flow			
Analog out mode	Selection of the mode for the analogue output	401	0	UIntegerT	1 Byte	rw	(0) 4-20 mA	(0) 4-20 mA (1) 0-20 mA (2) 0-10 V (3) 2-10 V (4) 0-5 V (5) 1-5V (6) 0.5-4.5 V			
Analog out min	Value for the output of the start value at the analogue output (Depending on Analog out mode)	402	0	Float32T	4 Bytes	rw	0.0	-100.0 to 100.0			%
Analog out max	Value for the output of the end value at the analogue output (Depending on Analog out mode)	403	0	Float32T	4 Bytes	rw	100.0	-100.0 to 100.0			%
<b>Pin 4 settings</b>											
Function	Selection of the function	420	0	UIntegerT	1 Byte	rw	(0) Off	(0) Off (1) Flow switch output (3) Flow freq output (5) Flow pulse output			



Name	Description	Index	Subindex	Data type	Length	Access rights	Default settings	Value range	Factor	Offset	Unit
								(6) Flow preset counter			
Output driver (Pin 4)	Selection of the output driver function	421	0	UIntegerT	1 Byte	ro	(0) Push-Pull	(0) Push-Pull			
Switch logic (Pin 4)	Selection of the logic switching function	422	0	UIntegerT	1 Byte	rw	(1) Alarm low	(0) Alarm high (1) Alarm low			
Switch mode (Pin 4)	Selection of the switching function mode	423	0	UIntegerT	1 Byte	rw	(1) Single point max	(1) Single point max (2) Single point min (3) Window			
Hysteresis (Pin 4)	Switching function hysteresis	424	0	Float32T	4 Bytes	rw	2.0	0.0 to 100.0			%
Setpoint 1 (Pin 4)	Setpoint 1	425	0	Float32T	4 Bytes	rw	50.0	-100.0 to 100.0			%
Setpoint 2 (Pin 4)	Setpoint 2	426	0	Float32T	4 Bytes	rw	30.0	-100.0 to 100.0			%
Set time delay (Pin 4)	Time delay when switching on the output	427	0	UIntegerT	2 Bytes	rw	0 (0.0 s)	0 to 1000 (0.0 s to 100.0 s)	0.1	0.0	s
Reset time delay (Pin 4)	Time delay when switching off the output	428	0	UIntegerT	2 Bytes	rw	0 (0.0 s)	0 to 1000 (0.0 s to 100.0 s)	0.1	0.0	s
Frequency min (Pin 4)	Lower limit for frequency output function	440	0	Float32T	4 Bytes	rw	0.0	0.0 to 1995.0			Hz
Frequency max (Pin 4)	Upper limit for frequency output function	441	0	Float32T	4 Bytes	rw	1000.0	5.0 to 2000.0			Hz
Freq scale min (Pin 4)	Lower scaling value for frequency output function	442	0	Float32T	4 Bytes	rw	0.0	-100.0 to 100.0			%

Name	Description	Index	Subindex	Data type	Length	Access rights	Default settings	Value range	Factor	Offset	Unit
Freq scale max (Pin 4)	Upper scaling value for frequency output function	443	0	Float32T	4 Bytes	rw	100.0	-100.0 to 100.0			%
Pulse unit	Unit for the pulse output function	450	0	UIntegerT	1 Byte	rw	(0) Liter	(0) Liter (1) m <sup>3</sup>			
Pulse value	Value for the pulse output function	451	0	Float32T	4 Bytes	rw	10000.0	0.0 to 20000.0			
Pulse duration	Duration of the pulse output	452	0	UIntegerT	2 Bytes	rw	10	10 to 1000			ms
Pulse polarity	Polarity of the pulse output	453	0	UIntegerT	1 Byte	rw	(0) positive	(0) positive (1) negative			
Sync totalizer	Synchronization for volume totalizer	454	0	UIntegerT	1 Byte	rw	(0) Yes	(0) Yes (1) No			
Preset counter	Mode selection for output of the totalizer preset signal	460	0	UIntegerT	1 Byte	rw	(0) Output signal static	(0) Output signal static (1) Output pulse			
Counter duration	Pulse duration of the output signal (For Pin4 Count Preset = pulse)	461	0	UIntegerT	2 Bytes	rw	10 (1.0 s)	1 to 1000 (0.1 s to 100.0 s)	0.1	0.0	s
Counter polarity	Polarity of the output signal	462	0	UIntegerT	1 Byte	rw	(0) positive	(0) positive (1) negative			
<b>Pin 5 settings</b>											
Function (Pin 5)	Selection of the function	500	0	UIntegerT	1 Byte	rw	(7) Sensor input signal	(0) Off (1) Flow switch output (3) Flow freq output (5) Totalizer reset input (6) Inversed pin 4			

Name	Description	Index	Subindex	Data type	Length	Access rights	Default settings	Value range	Factor	Offset	Unit
								(7) Sensor input signal			
Output driver (Pin 5)	Selection of the output driver function	501	0	UIntegerT	1 Byte	rw	(0) Push-Pull	(0) Push-Pull (1) NPN o.c.			
Switch logic (Pin 5)	Selection of the logic switching function	502	0	UIntegerT	1 Byte	rw	(0) Alarm high	(0) Alarm high (1) Alarm low			
Switch mode (Pin 5)	Selection of the switching function mode	503	0	UIntegerT	1 Byte	rw	(1) Single point max	(1) Single point max (2) Single point min (3) Window			
Hysteresis (Pin 5)	Switching function hysteresis	504	0	Float32T	4 Bytes	rw	2.0	0.0 to 100.0			%
Setpoint 1 (Pin 5)	Setpoint 1	505	0	Float32T	4 Bytes	rw	70.0	-100.0 to 100.0			%
Setpoint 2 (Pin 5)	Setpoint 2	506	0	Float32T	4 Bytes	rw	30.0	-100.0 to 100.0			%
Set time delay (Pin 5)	Time delay when switching on the output	507	0	UIntegerT	2 Bytes	rw	0 (0.0 s)	0 to 1000 (0.0 s to 100.0 s)	0.1	0.0	s
Reset time delay (Pin 5)	Time delay when switching off the output	508	0	UIntegerT	2 Bytes	rw	0 (0.0 s)	0 to 1000 (0.0 s to 100.0 s)	0.1	0.0	s
Frequency min (Pin 5)	Lower limit for frequency output function	520	0	Float32T	4 Bytes	rw	0.0	0.0 to 1995.0			Hz
Frequency max (Pin 5)	Upper limit for frequency output function	521	0	Float32T	4 Bytes	rw	1000.0	5.0 to 2000.0			Hz
Freq scale min (Pin 5)	Lower scaling value for frequency output function	522	0	Float32T	4 Bytes	rw	0.0	-100.0 to 100.0			%

Name	Description	Index	Subindex	Data type	Length	Access rights	Default settings	Value range	Factor	Offset	Unit
Freq scale max (Pin 5)	Upper scaling value for frequency output function	523	0	Float32T	4 Bytes	rw	100.0	-100.0 to 100.0			%
Reset input	Trigger mode reset input (for volume totalizer)	540	0	UIntegerT	1 Byte	rw	(0) Edge low-high	(0) Edge low-high (1) Edge high-low (2) Static high (3) Static low			
<b>Display</b>											
Orientation	Rotation of the display	550	0	UIntegerT	1 Byte	rw	(0) 0°	(0) 0° (1) 180°			
<b>Simulation</b>											
Select	Select simulation off or on	701	0	UIntegerT	1 Byte	rw	(0) Off	(0) Off (1) On			
Flow value	Simulated value for flow	703	0	Float32T	4 Bytes	rw	100.0	-100.0 to 100.0			%

## 5 System Commands

Name	Description	Index	Subindex	Data Type	Length	Access rights	Value Range
Param Download Start	Start block mode transfer of variables	2	0	Button	1 Byte	wo	3
Param Download Store	Finish block mode transfer of variables	2	0	Button	1 Byte	wo	5
Device Reset	Device is restarted	2	0	Button	1 Byte	wo	128
Restore Factory Settings	Restore all variables to factory setting	2	0	Button	1 Byte	wo	130
Set Pin 2 Work	Set Pin 2 to normal mode	2	0	Button	1 Byte	wo	160
Set Pin 2 20mA	Set Pin 2 to 20 mA	2	0	Button	1 Byte	wo	161
Set Pin 2 10V	Set Pin 2 to 10 Volt	2	0	Button	1 Byte	wo	162
Set Pin 5 Work	Set Pin 5 to normal mode	2	0	Button	1 Byte	wo	168
Set Pin 5 Low	Set Pin 5 to high level	2	0	Button	1 Byte	wo	169
Set Pin 5 High	Set Pin 5 to low level	2	0	Button	1 Byte	wo	170
Set Pin 5 Freq	Set Pin 5 to 1 Hz	2	0	Button	1 Byte	wo	171
Reset totalizer	Set totalizer value to zero	2	0	Button	1 Byte	wo	172
Lock Hmi access	Lock the local HMI	2	0	Button	1 Byte	wo	176
Unlock Hmi access	Unlock the local HMI	2	0	Button	1 Byte	wo	177

## 6 Events

Code	Name and recommended maintenance action	Type	Description
16912 d / 40 10 h	Device temperature over-run – Clear source of heat	Warning	Internal device temperature exceeds the limit of 85 ° C
16928 d / 40 20 h	Device temperature under-run – Insulate Device	Warning	Internal device temperature falls below the limit of -25 ° C
20480 d / 50 00 h	Device hardware fault - Device exchange	Error	Error in the hardware of the device
20752 d / 51 10 h	Primary supply voltage over-run – Check tolerance	Warning	The supply voltage exceeds the limit of 30.0 volts
20753 d / 51 11 h	Primary supply voltage under-run – Check tolerance	Warning	The supply voltage falls below the limit of 18.0 volts
30480 d / 77 10 h	Short circuit – Check installation	Error	Short circuit on outputs Pin 4 or/and Pin 5
35841 d / 8C 01 h	Simulation active – Check operational mode	Warning	The internal flow or/and Pins 2, 4 or 5 simulation of the device is active
35856 d / 8C 10 h	Process variable range over-run – Process Data uncertain	Warning	The flow exceeds the permissible value
35872 d / 8C 20 h	Measurement range exceeded – Check application	Error	The flow exceeds absolute maximum permissible value. The instrument could be destroyed!
36350 d / 8D FE h	Test Event 1	Error	Event appears when index 252 is set to the value 0 Event disappears when index 252 is set to the value 1
36351 d / 8D FF h	Test Event 2	Error	Event appears when index 252 is set to the value 2 Event disappears when index 252 is set to the value 3

## 7 Error Codes

Code	Name
32768 d / 80 00 h	Device Application Error no details
32785 d / 80 11 h	Index not available
32786 d / 80 12 h	Subindex not available
32800 d / 80 20 h	Service temporarily not available
32801 d / 80 21 h	Service temporarily not available local control
32802 d / 80 22 h	Service temporarily not available device control
32803 d / 80 23 h	Write access denied
32816 d / 80 30 h	Parameter value out of range
32817 d / 80 31 h	Parameter value above limit
32818 d / 80 32 h	Parameter value below limit
32819 d / 80 33 h	Parameter length overrun
32820 d / 80 34 h	Parameter length underrun
32821 d / 80 35 h	Function not available
32822 d / 80 36 h	Function temporarily not available
32832 d / 80 40 h	Invalid Parameter set
32833 d / 80 41 h	Inconsistent Parameter set
32898 d / 80 82 h	Application not ready