



X-S8-F-PM		Hydrostatic Fill Level Measurement System	Product Group 10
KNX IP20/54/65		Document: 3701_ex_X-S8-F-PM.pdf	Article No.
	<p>The LevelJET hydrostatic sensor from ProJET measures and regulates the level of water tanks of different designs with KNX connection.</p> <p>Minimal and maximal levels can be set on site. The bus coupling unit enables to use the values in the KNX-Bus.</p> <p>Protection class: none</p> <p>Additional supply 9 .. 12 VDC / 35 mA                      Wall power supply included in delivery.                      Data cable: 1,5m</p> <p>Connection cable length Sensor head                      Typ: PM10 10m                      Typ: PM25 25m</p> <p>There are two different housing variants to choose from.</p>		
	SK01-S8-F-PM10  SK01-S8-F-PM25	Plastic housing: ( 72 x 64 x 40 ) mm IP54/65  Measuring range: <b>5m</b> Connection cable length Sensor: 10m  Measuring range: <b>5m</b> Connection cable length Sensor: 25m	30807021  30807031
	REG-S8-F-PM10  REG-S8-F-PM25	DIN Rail mounted housing 2 units width ( 35 mm ) IP20  Measuring range: <b>5m</b> Connection cable length Sensor: 10m  Measuring range: <b>5m</b> Connection cable length Sensor: 25m	30807022  30807032

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## 7.1 Application Description

### Operating Principles and Areas of Application

The production series S8 uses sensors and controllers for a number of physical and chemical measurements for indoor and outdoor areas.

The measurement system **X-S8-F-PM** uses a hydrostatic sensor LevelJET from the manufacturer ProJET to measure the filling levels of water cisterns of different designs.

The measurement of the filling and water levels is based on a pressure measurement of the water column.

When the controller is used, there are 2-point controllers with a switched or pulsed 1-bit output available.

KNX sensors are set up using the ETS ( Tool Software ) with the associated application program.

The device is delivered unprogrammed.

All functions are parameterized and programmed by ETS.

The controller can be switched on or off by activation or locking via the KNX bus.

### Functions

hydrostatic fill level with

- Two position controller with switch and pulse 1-bit output
- Measured Value can be periodically displayed or when value changes
- Monitoring in liters or volume
- Adjustable release and lock with both controllers ( parameterized )
- Threshold alarm for upper and lower thresholds
- Auxiliary quantity of set value or threshold via the bus

## 7.2 KNX Parameter

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**7.2.1 General Settings**

Parameter	Setting
Period measured value send periodical	1 min
Actuating value send cycle period	60
use clock timer	yes
timer until	0
timer from	24

**General Settings - X-S8-F-PM**

Parameter	Setting	Description
Measured value send cycle period	1 .. 120 minutes	The transmission period of the measurement values that are to be sent cyclically.  In the parameter set „Measured value x“ you can determine if the measurement values are sent periodically.
Actuating value send cycle period ( Seconds )	10 .. 250	The transmission period of the correcting variables of the controller that are to be sent cyclically.  In the parameter set „Controller x“ you can determine if the measurement values are sent periodically.
Use clock timer	<ul style="list-style-type: none"> <li>• No</li> <li>• Yes</li> </ul>	When the timer is used, two additional parameters ( timer from / to ) and the objects 58 „device time“ and 59 „device date“ are available.
Timer from Timer until	0 .. 24 hour	The controller output can be locked depending on the time of day. The time in which the controller is unlocked must be entered here.  In the parameter set „Controller x“ you can determine if the timer function is to be used for a specified controller.

## 7.2.2 Volume Fill Level

General settings	Volume fill level
Volume fill level	
Controller volume fill level	
Level	Measured value send periodical <input type="text" value="no"/>
Controller level	Measured value send by change <input type="text" value="no"/>
Distance	Unit volume fill level <input type="text" value="Liter (l)"/>
Controller distance	Type datapoint <input type="text" value="2byte unsigned"/>
Volume fill level in %	Auxiliary object is <input type="text" value="Setpoint"/>
Controller volume fill level in %	Auxiliary value store by change <input type="text" value="no"/>
Output 1	Lower limit <input type="text" value="1"/>
Output 2	Unit lower limit <input type="text" value="Liter (l)"/>
	Upper limit <input type="text" value="1"/>
	Unit upper limit <input type="text" value="Liter (l)"/>
	Differential gaps send/limits <input type="text" value="1"/>
	Unit differential gaps send/limits <input type="text" value="Liter (l)"/>

## Volume Fill Level - X-S8-F-PM

Parameter	Setting	Description
Measured value send periodical	<ul style="list-style-type: none"> <li>No</li> <li>Yes</li> </ul>	The transmission period can be parameterized in the parameter set „General Settings“.
Measured value send by change	<ul style="list-style-type: none"> <li>No</li> <li>Yes</li> </ul>	The necessary change can be set in the parameter „Differential gap send / limits“.
Unit volume fill level	<ul style="list-style-type: none"> <li>Liter (l)</li> <li>Cubic metre (m<sup>3</sup>)</li> </ul>	Unit specification of the volume to be measured
Type datapoint	<ul style="list-style-type: none"> <li>2-Byte unsigned</li> <li>4-Byte unsigned</li> <li>2-Byte float</li> <li>4-Byte float</li> </ul>	Measured Data Output and Auxiliary Data are defined concurrently.
Auxiliary object is	<ul style="list-style-type: none"> <li>Setpoint</li> <li>Upper limit</li> <li>Lower limit</li> </ul>	Every controller has an auxiliary object which can control either the set point of the controller or the limit values.
Auxiliary value store by change	<ul style="list-style-type: none"> <li>No</li> <li>Yes</li> </ul>	When the auxiliary data is changed the new value is carried over to EEPROM and saved in case of a bus voltage breakdown. This should be used only when the data is not frequently changed as EEPROM has only a limited memory cycle.
Lower limit	-32000 .. 32000	If the measured value corresponds with the preset value, the object 5 „Output, Lower Limit volume fill level“ will be set.

**Volume Fill Level - X-S8-F-PM ( continue )**

Parameter	Setting	Description
Unit Lower limit	<ul style="list-style-type: none"> <li>• Liter (l)</li> <li>• Cubic metre (m<sup>3</sup>)</li> </ul>	Unit specification for the lower limit.
Upper limit	-32000 .. 32000	If the measured value corresponds with the preset value, the object 4 „Output, Upper Limit volume fill level“ will be set.
Unit Upper limit	<ul style="list-style-type: none"> <li>• Liter (l)</li> <li>• Kubikmeter (m<sup>3</sup>)</li> </ul>	Unit specification for the upper limit.
Differential gap send / limits	-32000 .. 32000	In order to limit the busload when the values change and to avoid multiple switching within the range of the limits, an appropriate hysteresis value should be applied.
Unit Differential gap send / limits	<ul style="list-style-type: none"> <li>• Liter (l)</li> <li>• Cubic metre (m<sup>3</sup>)</li> </ul>	Unit specification for the „Differential gap send / limits“.



**7.2.3 Controller Volume Fill Level**

General settings

Volume fill level

**Controller volume fill level**

Level

Controller level

Distance

Controller distance

Volume fill level in %

Controller volume fill level in %

Output 1

Output 2

**Controller volume fill level**

Locking object:

Actuating variable at rising actual value:

Controller:

Setpoint:

Unit Setpoint:

Differential gap Controller:

Unit differential gap Controller:

Actuating variable send periodical:

use clock timer:

**Controller Volume Fill Level - X-S8-F-PM**

Parameter	Setting	Description
Locking object	<ul style="list-style-type: none"> <li>• locked if 1</li> <li>• locked if 0</li> </ul>	When using the Locking object 7 „Input, enable / lock volume fill level“ the controller output is deactivated. The lock function can be set up for „release“ or „lock“.
Actuating value by ascending actual value	<ul style="list-style-type: none"> <li>• increasing</li> <li>• decreasing</li> </ul>	The actuating direction of the controller can be adapted to the characteristics of the controlled system.

## Controller Volume Fill Level - X-S8-F-PM ( continue )

Parameter	Setting	Description
Controller	<ul style="list-style-type: none"> <li>• Two-Position Controller</li> <li>• Two-Position Controller Pulsed</li> </ul>	The different controller types and the corresponding parameters are described in chapter 7.4 Notes .
Setpoint	-32000 .. 32000	Setpoint setting
Unit Setpoint	<ul style="list-style-type: none"> <li>• Liter (l)</li> <li>• Cubic metre (m<sup>3</sup>)</li> </ul>	Unit specification for the Setpoint.
Differential gap Cotroller	-32000 .. 32000	Specification for the ( hysteresis ).  see chapter 7.4 Notes - Two-Positon Control
Unit Differential gap Cotroller	<ul style="list-style-type: none"> <li>• Liter (l)</li> <li>• Cubic metre (m<sup>3</sup>)</li> </ul>	Unit specification for the „Differential gap Cotroller“ ( hysteresis ).
Actuating value send cyclical	<ul style="list-style-type: none"> <li>• No</li> <li>• Yes</li> </ul>	The cycle period is set in „General Settings“.
Duty cycle in %	0 .. 50	duty cycle = pulse duration / cycle duration x 100  see chapter 7.4 Notes - Two-Positon Control with Pulsed Output
Cycle duration in seconds	0 .. 65535	Total time of On and Off state.
Use clock timer	<ul style="list-style-type: none"> <li>• No</li> <li>• Yes</li> </ul>	The use of the clock timer can be enable / disable for each channel separately.

7.2.4 Level

General settings	Level
Volume fill level	Measured value send periodical: no
Controller volume fill level	Measured value send by change: no
<b>Level</b>	Level unit: m
Controller level	Type datapoint: 2byte unsigned
Distance	Auxiliary object is: Setpoint
Controller distance	Auxiliary value store by change: no
Volume fill level in %	Lower limit: 1
Controller volume fill level in %	Unit lower limit: m
Output 1	Upper limit: 1
Output 2	Unit upper limit: m
	Differential gaps send/limits: 1
	Unit differential gaps send/limits: m

Level - X-S8-F-PM

Parameter	Setting	Description
Measured value send cyclical	<ul style="list-style-type: none"> <li>No</li> <li>Yes</li> </ul>	The transmission period can be parameterized in the parameter set „General Settings“.
Measured value send by change	<ul style="list-style-type: none"> <li>No</li> <li>Yes</li> </ul>	The necessary change can be set in the parameter „Differential gap send / limits“ and „Unit Differential gap send / limits“
Level unit	<ul style="list-style-type: none"> <li>m</li> <li>dm</li> <li>cm</li> <li>mm</li> </ul>	Unit specification for the level.
Type datapoint	<ul style="list-style-type: none"> <li>2-Byte unsigned</li> <li>4-Byte unsigned</li> <li>2-Byte float</li> <li>4-Byte float</li> </ul>	Measured Data Output and Auxiliary Data are defined concurrently.
Auxiliary object is	<ul style="list-style-type: none"> <li>Setpoint</li> <li>Upper limit</li> <li>Lower limit</li> </ul>	Every controller has an auxiliary object which can control either the set point of the controller or the limit values.
Auxiliary value store by change	<ul style="list-style-type: none"> <li>No</li> <li>Yes</li> </ul>	When the auxiliary data is changed the new value is carried over to EEPROM and saved in case of a bus voltage breakdown. This should be used only when the data is not frequently changed as EEPROM has only a limited memory cycle.

## Level - X-S8-F-PM ( continue )

Parameter	Setting	Description
Lower limit	-32000 .. 32000	If the measured value corresponds with the preset value, the object 12 „Output, Lower Limit level“ will be set.
Unit Lower limit	<ul style="list-style-type: none"> <li>• m</li> <li>• dm</li> <li>• cm</li> <li>• mm</li> </ul>	Unit specification for the lower limit.
Upper limit	-32000 .. 32000	If the measured value corresponds with the preset value, the object 11 „Output, Upper Limit level“ will be set.
Unit Upper limit	<ul style="list-style-type: none"> <li>• m</li> <li>• dm</li> <li>• cm</li> <li>• mm</li> </ul>	Unit specification for the upper limit.
Differential gap send / limits	-32000 .. 32000	In order to limit the busload when the values change and to avoid multiple switching within the range of the limits, an appropriate hysteresis value should be applied.
Unit Differential gap send / limits	<ul style="list-style-type: none"> <li>• m</li> <li>• dm</li> <li>• cm</li> <li>• mm</li> </ul>	Unit specification for the „Differential gap send / limits“.

## 7.2.5 Controller Level

General settings	Controller level
Volume fill level	
Controller volume fill level	
Level	
<b>Controller level</b>	
Distance	
Controller distance	
Volume fill level in %	
Controller volume fill level in %	
Output 1	
Output 2	
	Locking object: locked if 1
	Actuating variable at rising actual value: increasing
	Controller: Two-level controller
	Setpoint: 1
	Unit setpoint: m
	Differential gap Controller: 1
	Unit differential gap Controller: m
	Actuating variable send periodical: no
	use clock timer: no



**Controller Level - X-S8-F-PM**

Parameter	Setting	Description
Locking object	<ul style="list-style-type: none"> <li>• locked if 1</li> <li>• locked if 0</li> </ul>	When using the Locking object 14 „Input, enable / lock level“ the controller output is deactivated. The lock function can be set up for „release“ or „lock“.
Actuating value by ascending actual value	<ul style="list-style-type: none"> <li>• increasing</li> <li>• decreasing</li> </ul>	The actuating direction of the controller can be adapted to the characteristics of the controlled system.
Controller	<ul style="list-style-type: none"> <li>• Two-Position Controller</li> <li>• Two-Position Controller Pulsed</li> </ul>	The different controller types and the corresponding parameters are described in chapter 7.4 Notes
Setpoint	-32000 .. 32000	Setpoint setting
Unit Setpoint	<ul style="list-style-type: none"> <li>• m</li> <li>• dm</li> <li>• cm</li> <li>• mm</li> </ul>	Unit specification for the Setpoint.
Differential gap controller	-32000 .. 32000	Specification for the ( hysteresis ).  see chapter 7.4 Notes - Two-Positon Control
Unit Differential gap controller	<ul style="list-style-type: none"> <li>• m</li> <li>• dm</li> <li>• cm</li> <li>• mm</li> </ul>	Unit specification for the „Differential gap Cotroller“ ( hysteresis ).
Actuating value send cyclical	<ul style="list-style-type: none"> <li>• No</li> <li>• Yes</li> </ul>	The cycle period is set in „General Settings“.
Duty cycle in %	0 .. 50	duty cycle = pulse duration / cycle duration x 100  see chapter 7.4 Notes - Two-Positon Control with Pulsed Output
Cycle duration in seconds	0 .. 65535	Total time of On and Off state.
Use clock timer	<ul style="list-style-type: none"> <li>• No</li> <li>• Yes</li> </ul>	The use of the clock timer can be enable / disable for each channel separately.

## 7.2.6 Distance

General settings	Distance
Volume fill level	Measured value send periodical <input type="text" value="no"/>
Controller volume fill level	Measured value send by change <input type="text" value="no"/>
Level	Distance unit <input type="text" value="m"/>
Controller level	Type datapoint <input type="text" value="2byte unsigned"/>
Distance	Auxiliary object is <input type="text" value="Setpoint"/>
Controller distance	Auxiliary value store by change <input type="text" value="no"/>
Volume fill level in %	Lower limit <input type="text" value="1"/>
Controller volume fill level in %	Unit lower limit <input type="text" value="m"/>
Output 1	Upper limit <input type="text" value="1"/>
Output 2	Unit upper limit <input type="text" value="m"/>
	Differential gaps send/limits <input type="text" value="1"/>
	Unit Differential gaps send/limits <input type="text" value="m"/>

## Distance - X-S8-F-PM

Parameter	Setting	Description
Measured value send cyclical	<ul style="list-style-type: none"> <li>No</li> <li>Yes</li> </ul>	The transmission period can be parameterized in the parameter set „General Settings“.
Measured value send by change	<ul style="list-style-type: none"> <li>No</li> <li>Yes</li> </ul>	The necessary change can be set in the parameter „Differential gap send / limits“.
Distance unit	<ul style="list-style-type: none"> <li>m</li> <li>dm</li> <li>cm</li> <li>mm</li> </ul>	Unit specification of the distance to be measured.
Type datapoint	<ul style="list-style-type: none"> <li>2-Byte unsigned</li> <li>4-Byte unsigned</li> <li>2-Byte float</li> <li>4-Byte float</li> </ul>	Measured Data Output and Auxiliary Data are defined concurrently.
Auxiliary object is	<ul style="list-style-type: none"> <li>Setpoint</li> <li>Upper limit</li> <li>Lower limit</li> </ul>	Every controller has an auxiliary object which can control either the set point of the controller or the limit values.
Auxiliary value store by change	<ul style="list-style-type: none"> <li>No</li> <li>Yes</li> </ul>	When the auxiliary data is changed the new value is carried over to EEPROM and saved in case of a bus voltage breakdown. This should be used only when the data is not frequently changed as EEPROM has only a limited memory cycle.
Lower limit	-32000 .. 32000	If the measured value corresponds with the preset value, the object 19 „Output, Lower Limit distance“ will be set.

**Distance - X-S8-F-PM ( continue )**

Parameter	Setting	Description
Unit Lower limit	<ul style="list-style-type: none"> <li>• m</li> <li>• dm</li> <li>• cm</li> <li>• mm</li> </ul>	Unit specification for the lower limit.
Upper limit	-32000 .. 32000	If the measured value corresponds with the preset value, the object 18 „Output, Upper Limit distance“ will be set.
Unit Upper limit	<ul style="list-style-type: none"> <li>• m</li> <li>• dm</li> <li>• cm</li> <li>• mm</li> </ul>	Unit specification for the upper limit.
Differential gap send / limits	-32000 .. 32000	In order to limit the busload when the values change and to avoid multiple switching within the range of the limits, an appropriate hysteresis value should be applied.
Unit Differential gap send / limits	<ul style="list-style-type: none"> <li>• m</li> <li>• dm</li> <li>• cm</li> <li>• mm</li> </ul>	Unit specification for the „Differential gap send / limits“.



**7.2.7 Controller Distance**

General settings

Volume fill level

Controller volume fill level

Level

Controller level

Distance

Controller distance

Volume fill level in %

Controller volume fill level in %

Output 1

Output 2

**Controller distance**

Locking object	<input type="text" value="locked if 1"/>
Actuating variable at rising actual value	<input type="text" value="increasing"/>
Controller	<input type="text" value="Two-level controller"/>
Setpoint	<input style="width: 80%;" type="text" value="1"/>
Unit Setpoint	<input type="text" value="m"/>
Differential gap Controller	<input style="width: 80%;" type="text" value="1"/>
Unit differential gap Controller	<input type="text" value="m"/>
Actuating variable send periodical	<input type="text" value="no"/>
use clock timer	<input type="text" value="no"/>

## Controller Distance - X-S8-F-PM

Parameter	Setting	Description
Locking object	<ul style="list-style-type: none"> <li>• locked if 1</li> <li>• locked if 0</li> </ul>	When using the Locking object 14 „Input, enable / lock level“ the controller output is deactivated. The lock function can be set up for „release“ or „lock“.
Actuating value by ascending actual value	<ul style="list-style-type: none"> <li>• increasing</li> <li>• decreasing</li> </ul>	The actuating direction of the controller can be adapted to the characteristics of the controlled system.
Controller	<ul style="list-style-type: none"> <li>• Two-Position Controller</li> <li>• Two-Position Controller Pulsed</li> </ul>	The different controller types and the corresponding parameters are described in chapter 7.4 Notes
Setpoint	-32000 .. 32000	Setpoint setting
Unit Setpoint	<ul style="list-style-type: none"> <li>• m</li> <li>• dm</li> <li>• cm</li> <li>• mm</li> </ul>	Unit specification for the Setpoint.
Differential gap controller	-32000 .. 32000	Specification for the ( hysteresis ).  see chapter 7.4 Notes - Two-Positon Control
Unit Differential gap controller	<ul style="list-style-type: none"> <li>• m</li> <li>• dm</li> <li>• cm</li> <li>• mm</li> </ul>	Unit specification for the „Differential gap Cotroller“ ( hysteresis ).
Actuating value send cyclical	<ul style="list-style-type: none"> <li>• No</li> <li>• Yes</li> </ul>	The cycle period is set in „General Settings“.
Duty cycle in %	0 .. 50	duty cycle = pulse duration / cycle duration x 100  see chapter 7.4 Notes - Two-Positon Control with Pulsed Output
Cycle duration in seconds	0 .. 65535	Total time of On and Off state.
Use clock timer	<ul style="list-style-type: none"> <li>• No</li> <li>• Yes</li> </ul>	The use of the clock timer can be enable / disable for each channel separately.

7.2.8 Volume Fill Level in %

Volume Fill Level in % - X-S8-F-PM

Parameter	Setting	Description
Measured value send cyclical	<ul style="list-style-type: none"> <li>No</li> <li>Yes</li> </ul>	The transmission period can be parameterized in the parameter set „General Settings“.
Measured value send by change	<ul style="list-style-type: none"> <li>No</li> <li>Yes</li> </ul>	The necessary change can be set in the parameter „Differential gap send / limits“
Range	• 0 bis 255 % (DP 5.004)	The setting 0 .. 255 % means that the range of values 0 .. 100 can be set in 255 steps. 1 step equals 0.392 % of the final value.
	• 0 bis 100 % (DP 5.001)	The setting 0 .. 100 % means that the range of values 0 .. 100 can be set in 100 steps.
Auxiliary object is	<ul style="list-style-type: none"> <li>Setpoint</li> <li>Upper limit</li> <li>Lower limit</li> </ul>	Every controller has an auxiliary object which can control either the set point of the controller or the limit values.
Auxiliary value store by change	<ul style="list-style-type: none"> <li>No</li> <li>Yes</li> </ul>	When the auxiliary data is changed the new value is carried over to EEPROM and saved in case of a bus voltage breakdown. This should be used only when the data is not frequently changed as EEPROM has only a limited memory cycle.
Lower limit	0 .. 255	If the measured value corresponds with the preset value, the object 26 „Output, Lower Limit fill level“ will be set.  Please pay attention to the preset in the parameter „Range“.
Upper limit	0 .. 255	If the measured value corresponds with the preset value, the object 25 „Output, Lower Limit fill level“ will be set.  Please pay attention to the preset in the parameter „Range“.

Volume Fill Level in % - X-S8-F-PM ( continue )

Parameter	Setting	Description
Differential gap send / limits	-32000 .. 32000	In order to limit the busload when the values change and to avoid multiple switching within the range of the limits, an appropriate hysteresis value should be applied.

7.2.9 Controller Volume Fill Level in %

Controller Volume Fill Level in % - X-S8-F-PM

Parameter	Setting	Description
Locking object	<ul style="list-style-type: none"> <li>locked if 1</li> <li>locked if 0</li> </ul>	When using the Locking object 28 „Input, enable / lock volume fill level %“ the controller output is deactivated. The lock function can be set up for „release“ or „lock“.
Actuating value by ascending actual value	<ul style="list-style-type: none"> <li>increasing</li> <li>decreasing</li> </ul>	The actuating direction of the controller can be adapted to the characteristics of the controlled system.
Controller	<ul style="list-style-type: none"> <li>Two-Position Controller</li> <li>Two-Position Controller Pulsed</li> </ul>	The different controller types and the corresponding parameters are described in chapter 7.4 Notes
Setpoint	-32000 .. 32000	Setpoint setting
Differential gap controller	-32000 .. 32000	Specification for the ( hysteresis ). see chapter 7.4 Notes - Two-Positon Control
Actuating value send cyclical	<ul style="list-style-type: none"> <li>No</li> <li>Yes</li> </ul>	The cycle period is set in „General Settings“.

**Controller Volume Fill Level in % - X-S8-F-PM ( continue )**

Parameter	Setting	Description
Duty cycle in %	0 .. 50	duty cycle = pulse duration / cycle duration x 100 see chapter 7.4 Notes - Two-Positon Control with Pulsed Output
Cycle duration in seconds	0 .. 65535	Total time of On and Off state.
Use clock timer	<ul style="list-style-type: none"> <li>• No</li> <li>• Yes</li> </ul>	The use of the clock timer can be enable / disable for each channel separately.



**7.2.10 Output 1**

General settings

Volume fill level

Controller volume fill level

Level

Controller level

Distance

Controller distance

Volume fill level in %

Controller volume fill level in %

Output 1

Output 2

**Output 1**

Measured value send periodical no ▼

Measured value send by change no ▼

**Output 1 - X-S8-F-PM**

Parameter	Setting	Description
Measured value send cyclical	<ul style="list-style-type: none"> <li>• No</li> <li>• Yes</li> </ul>	The transmission period can be parameterized in the parameter set „General Settings“.
Measured value send by change	<ul style="list-style-type: none"> <li>• No</li> <li>• Yes</li> </ul>	A change of the switching input 1 will ( not ) be transmitted.

**7.2.11 Output 2**

General settings

Volume fill level

Controller volume fill level

Level

Controller level

Distance

Controller distance

Volume fill level in %

Controller volume fill level in %

Output 1

Output 2

**Output 2**

Measured value send periodical no ▼

Measured value send by change no ▼

use clock timer no ▼

## X-S8-F-PM Output 2

Parameter	Setting	Description
Measured value send cyclical	<ul style="list-style-type: none"><li>• No</li><li>• Yes</li></ul>	The transmission period can be parameterized in the parameter set „General Settings“.
Measured value send by change	<ul style="list-style-type: none"><li>• No</li><li>• Yes</li></ul>	A change of the switching input 2 will ( not ) be transmitted.
Use clock timer	<ul style="list-style-type: none"><li>• No</li><li>• Yes</li></ul>	The use of the clock timer can be enable / disable for each channel separately.



## 7.3 KNX Objects

### Objects - X-S8-F-PM

No.	Label	Data Point Type	Function
2	Output, measured volume fill level	DPT 4 Byte	Measured value
3	Input, auxiliary volume fill level	DPT 4 Byte	Auxiliary value
4	Output, upper limit volume fill level	DPT 1.002 Bool 1 Bit	Limit
5	Output, lower limit volume fill level	DPT 1.002 Bool 1 Bit	Limit
6	Output, controller volume fill level	DPT	Actuating value
7	Input, enable/lock volume fill level	DPT 1.001 Switch 1 Bit	Enable/lock
8	Output, status volume fill level	DPT 1 Byte	Channel status
9	Output, measured level	DPT	Measured value
10	Input, auxiliary object level	DPT	Auxiliary value
11	Output, upper limit level	DPT 1.002 Bool 1 Bit	Limit
12	Output, lower limit level	DPT 1.002 Bool 1 Bit	Limit
13	Output, controller level	DPT	Actuating value
14	Input, enable/lock level	DPT 1.001 Switch 1 Bit	Enable/lock
15	Output, status level	DPT 1 Byte	Channel status
16	Output, measured distance	DPT	Measured value
17	Input, auxiliary object distance	DPT	Auxiliary value
18	Output, upper limit distance	DPT 1.002 Bool 1 Bit	Limit
19	Output, lower limit distance	DPT 1.002 Bool 1 Bit	Limit
20	Output, controller distance	DPT	Actuating value
21	Input, enable/lock distance	DPT 1.001 Switch 1 Bit	Enable/lock
22	Output, status distance	DPT 1 Byte	Channel status
23	Output, measured volume fill level %	DPT 4 Byte	Measured value
24	Input, auxiliary object volume fill level %	DPT 4 Byte	Auxiliary value
25	Output, upper limit volume fill level %	DPT 1.002 Bool 1 Bit	Limit
26	Output, lower limit volume fill level %	DPT 1.002 Bool 1 Bit	Limit
27	Output, controller volume fill level %	DPT	Actuating value

Subject to change

**Objects - X-S8-F-PM ( continue )**

No.	Label	Data Point Type	Function
28	Input, enable/lock volume fill level %	DPT 1.001 Switch 1 Bit	Enable/lock
29	Output, status volume fill level %	DPT 1 Byte	Channel status
30	Output, measured output 1	DPT 1.001 Switch 1 Bit	Measured value
37	Output, measured output 2	DPT 1.001 Switch 1 Bit	Measured value
58	Equipment time	DPT 10.001 Time of day 3 Byte	Time
59	Equipment date	DPT 11.001 day of month 3 Byte	Date

**X-S8-F-PM Object Description**

No.	Label	Description																												
8	Output, status volume fill level	The values of the individual bits are added and transmitted to the bus. The status functions monitor the controller status for purposes of reporting and troubleshooting.																												
15	Output, status level																													
22	Output, status distance																													
29	Output, status volume fill level %																													
		<table border="1"> <thead> <tr> <th>Status:</th> <th>Bit-No.</th> <th>Hexadecimal</th> <th>Decimal</th> </tr> </thead> <tbody> <tr> <td>upper limit too large</td> <td>0</td> <td>0x01</td> <td>1</td> </tr> <tr> <td>lower limit underrun</td> <td>1</td> <td>0x02</td> <td>2</td> </tr> <tr> <td>setpoint not equal to zero</td> <td>2</td> <td>0x04</td> <td>4</td> </tr> <tr> <td>lock activ</td> <td>3</td> <td>0x08</td> <td>8</td> </tr> <tr> <td>auxiliary is stored</td> <td>4</td> <td>0x10</td> <td>16</td> </tr> <tr> <td>timer activ</td> <td>5</td> <td>0x20</td> <td>32</td> </tr> </tbody> </table>	Status:	Bit-No.	Hexadecimal	Decimal	upper limit too large	0	0x01	1	lower limit underrun	1	0x02	2	setpoint not equal to zero	2	0x04	4	lock activ	3	0x08	8	auxiliary is stored	4	0x10	16	timer activ	5	0x20	32
Status:	Bit-No.	Hexadecimal	Decimal																											
upper limit too large	0	0x01	1																											
lower limit underrun	1	0x02	2																											
setpoint not equal to zero	2	0x04	4																											
lock activ	3	0x08	8																											
auxiliary is stored	4	0x10	16																											
timer activ	5	0x20	32																											

## 7.4 Notes

Controller models available are the PI controller or a two-position controller. Both controllers are equipped with pulsed output. The pulsed two-position controller works with constant duty cycle, which like the cycle duration is parameterized. The duty cycle of the pulsed PI controller is variable and depends on the control variable ( pulse-width modulation ).

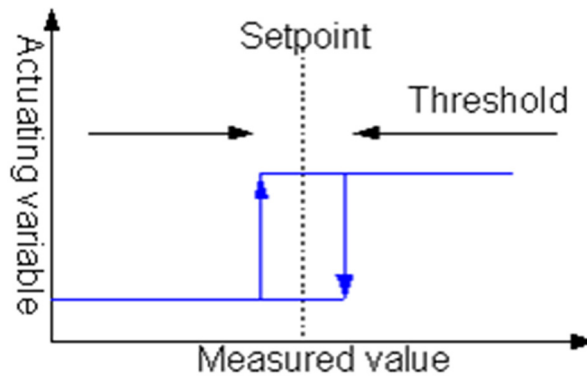
### Two-Position Control

Two-position control is a very simple way of controlling.

Once the actual value (  $\pm$  half the switching difference ) exceeds or falls below the set point a switch-on or switch-off command is sent to the bus.

Set the differential gap large enough to keep bus load to a minimum and configure the differential gap small enough to avoid extreme actual value fluctuations.

The two-position controller is parameterized using the set point and the switching threshold.

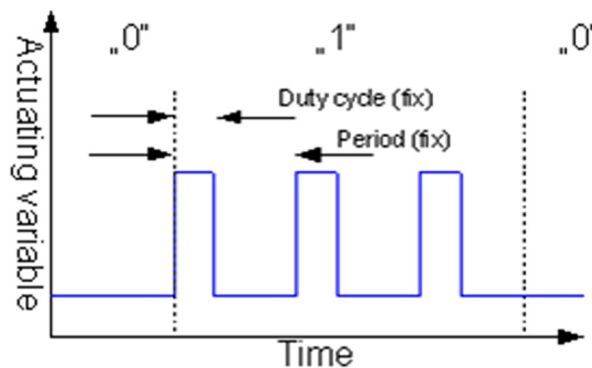


### Two-Position Control with Pulsed Output

The controller works analogous to the two-position controller.

The actuating variable emits pulses with fixed duty cycle.

When the control variable reaches 40% in a cycle time of 10 minutes it will repeatedly turned on for 4 minutes and turned off for 6 minutes.



## 7.5 Product Page

The ultrasonic level sensor system LevelJET from ProJET evaluates the levels in reservoirs of many construction types. Minimal and maximal levels can be set on site. The bus coupling unit enables to use the values in the KNX-Bus.

The device has an integrated KNX bus coupler and required, depending on the measurement electronics and configure, an additional voltage between 9 .. 12VDC / 35mA.

In the application software a separate controller ( 2-position or 2-position with continuous or pulsed output ) is available for every channel.

Other functions include maximum and minimum thresholds and a help key where the set point and thresholds can be switched.

The sensor is configured with ETS ( Tool Software ) and the application program. Controlling functions such as signal threshold and diverse adjustments are set using ETS.



## Areas of Application

- Surveillance and control of fill levels in water cisterns.
- Different container designs can be parameterized

<p><b>Applicable Sensors</b> Hydrostatic LevelJET</p> <p>Meas. Range X-S8-F-PM: 5m Resolution: ± 5cm Operating Voltage: 9 .. 12 VDC / 35mA</p> <p>KNX coupling unit SK01/REG: Operating Voltage: 21 .. 32 VDC Power Consumption: approx. 240mW ( bei 24VDC ) Operating Temperature: -20 .. + 55 °C Storage Temperature: -20 .. + 85 °C</p> <p>Protection Class Casing SK01: IP54/65 Protection Class Casing REG: IP20 Protection Class Casing LevelJET: none</p>	
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## 7.6 Technical Data

### Technical Data - X-S8-F-PM

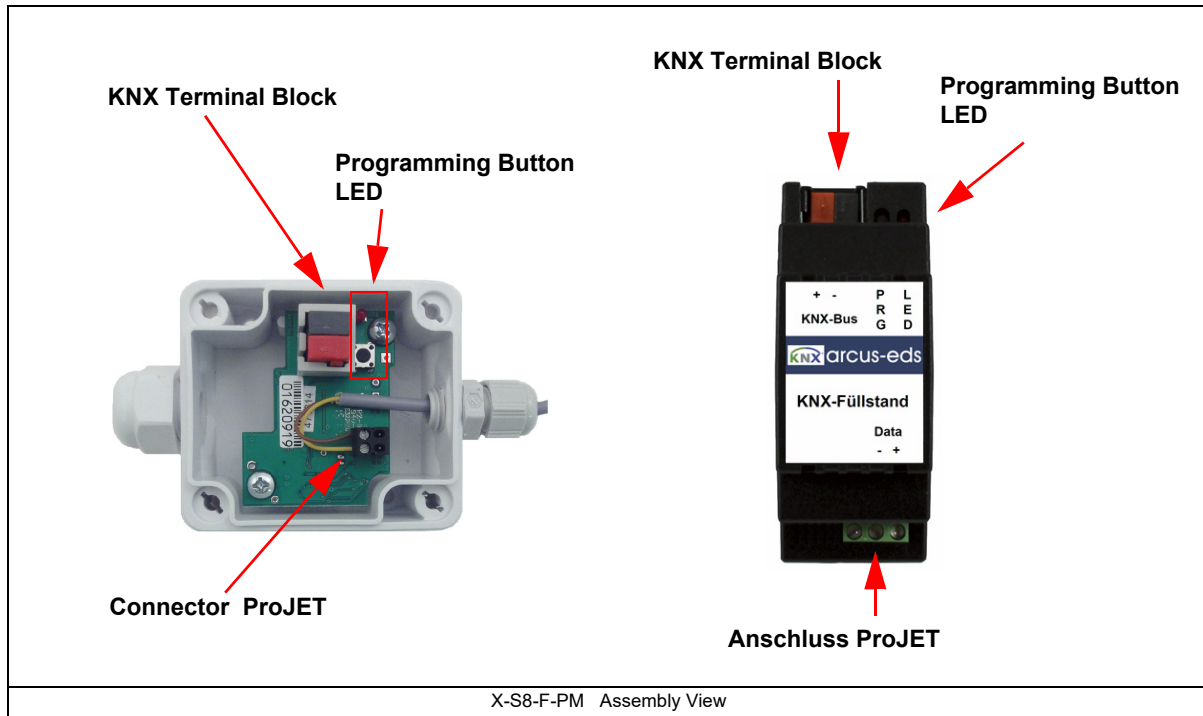
Measured Data	Volume fill level in liter or cubic meters Level Distance Volume fill level in %
Sending Options	no sending, cyclical sending when change occurs
Parameter	Periodic sending with variable cycle duration, sending when change occurs with variable hysteresis
Controller Modi	Two-Position controller Two-Position controller Pulsed
Parameter Two-Position controller	Setpoint, differential gap, controller mode
Parameter Two-Position controller Pulsed	Setpoint, differential gap, controller mode , cycle duration, duty cycle
Lock Function	All controller parameterizable as enable or lock
Controller Variables Output	depends on Controller Modi 1-Byte unsigned, 1-Bit Switch
Setpoint value send cyclical	None or 10-250 seconds, parameterizable
Limits	Lower limit, Upper limit
Auxiliary value	Setpoint, Upper limit or Lower limit
Bus power failure	Saving changed auxiliary quantities, parameterizable
Measured value shift	none
Ambient Temperature Electronic Measuring Equipment Casing	Operation: -20 .. +55°C Storage: -20 .. +85°C
Ambient Humidity	0 .. 95% rH not condensating

## Technical Data - X-S8-F-PM ( continue )

Measuring range	5 m
Resolution fill level	± 5cm
Operating Voltage	KNX bus voltage 21 .. 32VDC
Power Consumption	approx. 240mW ( at 24VDC )
Auxiliary Supply	9 .. 12VDC / 35mA
Bus Coupler	integrated
Start-up with ETS	<b>ARC_S8.VD2 Product: S8-F</b>
Curcuit Points	2-pole clamps ( red / black )
Protection Class SK01	IP54/65
Assembly Type Transducer SK01	Assembly with 2 screws finery
Casing Transducer SK01	Plastic grey
Casing Dimensions SK01	( 72 x 64 x 40 ) mm ( L x W x H )
Article number SK01	308070x1
Protection Class REG	IP20
Casing Dimensions REG	2TE ( 35mm )
Article number REG	308070x2

## 7.7 Startup

The KNX Sensor is set up using the ETS ( Tool Software ) and the applicable application program.  
The sensor is delivered unprogrammed.  
All functions are programmed and parameterized with ETS.  
Please read the ETS instructions.



The settings of the hydrostatic sensor from ProJET can be found in the manufacturer's manual.  
[https://www.arcus-eds.de/fileadmin/arcus/Doku/30\\_Doku\\_S8/LevelJet\\_PM\\_manual\\_de.pdf](https://www.arcus-eds.de/fileadmin/arcus/Doku/30_Doku_S8/LevelJet_PM_manual_de.pdf)

## 7.8 Assembly

The Sensor REG-S8-F-PM is for indoor areas. It fulfills protection class IP20.

The Sensor SK01-S8-F-PM is for outdoor and indoor areas. It fulfills protection class IP54/65.

The sensor is attached to the wall with two screws

The transducer lid is opened by loosening the screws.

In order to fulfil IP65 protection class the gasket ring must be carefully placed in the lid.

Be careful not to damage the electronics with tools and cable heads.

### In Case of Bus Voltage Recurrence

All changes made using the help key for the KNX bus are saved if the device has been correctly parameterized. The controller and outputs start with their current values and the ETS parameter settings are saved.

### Discharge Program and Reset Sensor

In order to delete the programming ( projecting ) and to reset the module back to delivery status, it must be switched to zero potential ( disconnect the KNX bus coupler ).

Press and hold the programming button while reconnecting the KNX bus coupler and wait until the programming LED lights up ( approx. 5-10 seconds ).

Now you can release the programming button.

The module is ready for renewed projecting.

If you release the programming button too early, repeat the aforementioned procedure.



## Imprint

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