Memo: Setup of the SDI-12 data decoder for Delta OHM HD3910.2
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To: OEM partners
Purpose: Describe how to setup the SDI-12 data decoder for using Delta OHM HD3910.2
References: DeltaOHM_HD3910_datasheet_ENG.pdf
SDI-12-setup-guide-v3.pdf

Preface

The Delta OHM HD3910.2 is a probe for soil volumetric water content which is compatible with the SDI-12 data decoder.

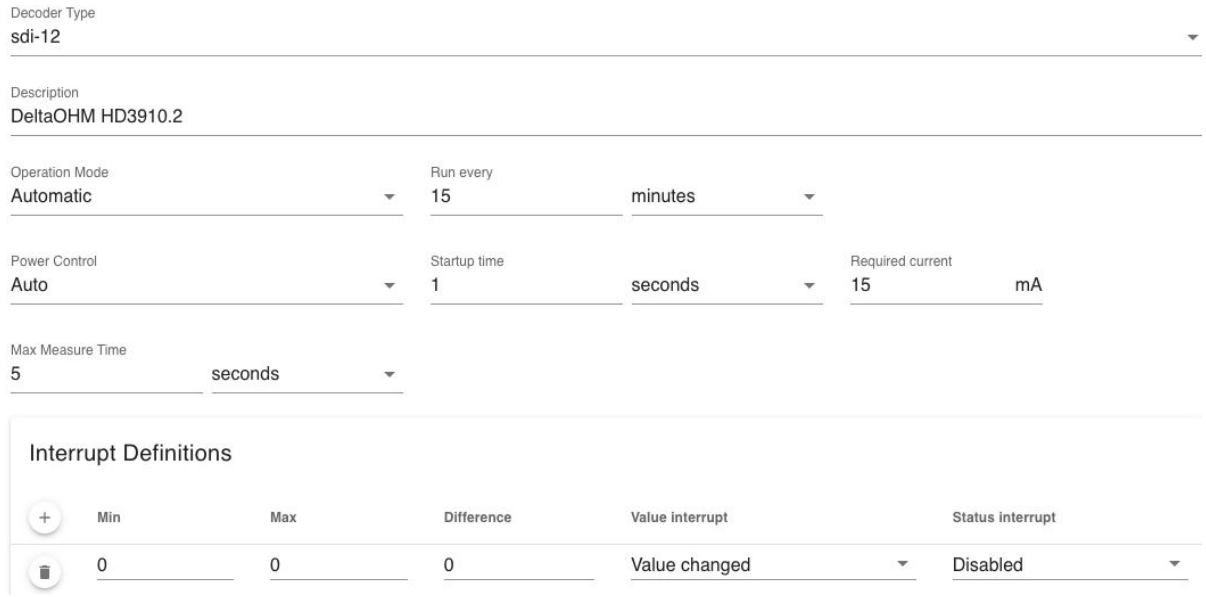
Setup of the sensor

In the datasheet page 7 we find the SDI-12 commands supported by the probe. It supports Arg!M and Arg!C. We use Arg!M.

Command	Probe reply	Description
Type M (start measurement) and type C (start concurrent measurement) commands		
VWC and temperature		
aM! **aC!**	atttn<CR><LF> with: ttt = number of seconds necessary for the instrument to make the measure available (3 characters) n = number of detected variables (1 character for aM!, 2 characters for aC!) Note: ttt = 000 means that datum is immediately available.	Request to execute the measurement.
aD0!	a+n+w...w+t...t<CR><LF> with: n = content of the status register w...w = volumetric water content (m^3/m^3) t...t = soil temperature in °C ⇒ Example of response: 0+0+0.325+17.6 probe address = 0 content of the status register = 0 volumetric water content = 0.325 (m^3/m^3) = 32.5% soil temperature = 17.6 °C	Reads the measurement.
Permittivity		
aM1! **aC1!**	atttn<CR><LF> with: ttt = number of seconds necessary for the instrument to make the measure available (3 characters) n = number of detected variables (1 character for aM1!, 2 characters for aC1!) Note: ttt = 000 means that datum is immediately available.	Request to execute the measurement.

Standard Arg (!M<n>):

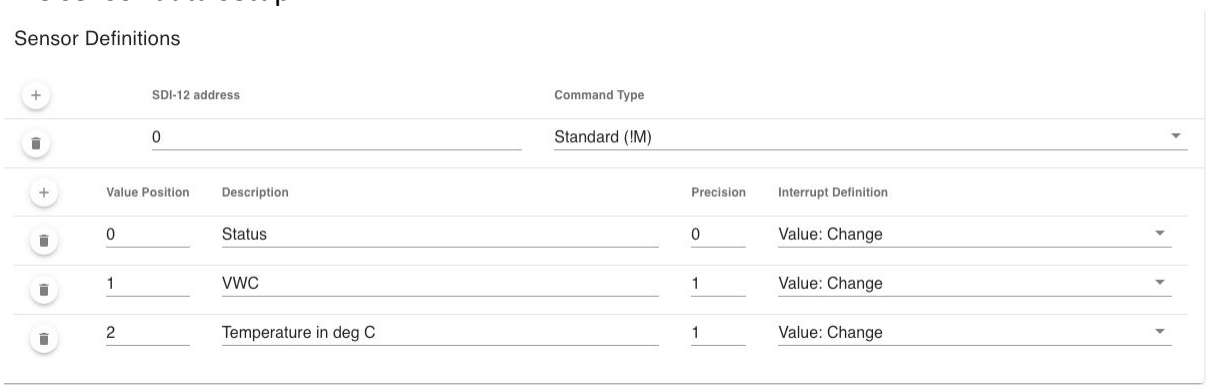
We configure the SDI-12 data decoder as:



The setup will update 15 seconds. It will power the sensor automatically and has a requirement of 15mA and reading time of 2 seconds. These parameters are defined on page 2 in the datasheet.

The interrupt is defined to interrupt on any changes.

The sensor data setup:



The setup is applied to the SDI-12 data decoder as described in the SDI-12-setup-guide-v2.pdf.

The IO page now looks like:

Description	Address	Index	Type	Configuration	Config state	Attention	Value (expr modified)
Status	680088646	1	SDI-12	Unknown	Unconfigured	1	0
VWC	680088646	2	SDI-12	To %	Configured	1	2.5
Temperature in deg C	680088646	3	SDI-12	Unknown	Unconfigured	1	22.30000114440918

All the descriptions from the “LU configuration” are carried over to the IO objects. The configuration and Config state relates to any IO configuration applied, see below. The

attention is for use via the API. The value column shows the value read from the sensor device.

The VWC from the sensor is in m^3/m^3; i.e. a fraction. The IO configuration above “To %” is a conversion to % just by multiplying with 100.