Properties

Quality Control and beyond

During ingest (spaces.awi.de/x/VSIUEg) several elaborated plausibility and quality checks (`autoQC`, see spaces.awi.de/x/22WjEw) are applied to the incoming data. This is done for various purposes: These tests shall ensure that each observation is properly flagged when it enters the database. In our opinion estimates about quality, plausibility, and integrity of the data play a significant role in the metadata. Estimates on data quality help the user to evaluate her/his input data as well as possible data products.

Some tests of `autoQC` are more or less self-propelling, such as device or timestamp identification, since it is data-inherent information which is used by these tests. But in order to offer near-real time quality controlled data some **assistance by the sensor's editor** is required.

registry.awi.de offers a wide range of properties. In parts, they can be set per whole item as well as per parameter. Thus, if for example a lower and upper threshold like `operation range` is available for a whole device, it should be set per item. If the property is valid for a specific parameter exclusively, set the measurement property per parameter.

Available properties

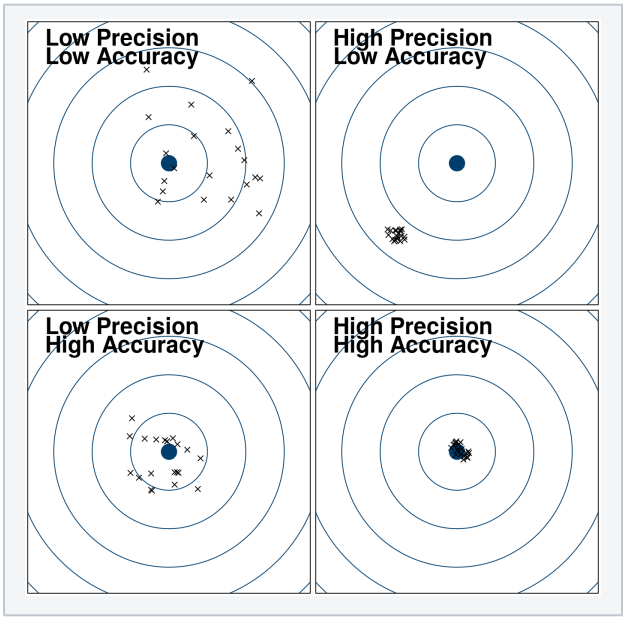
systemName	id	description	uuid
Gradient_Threshold	402	a threshold supplied to the `Gradient Test` as part of the `autoQC` routine at AWI	bf962581-627e-48b5-a85d-d03a3aedddc5
Manufacturer_Range	208	the manufacturer's suggested/proclaimed minimum and maximum value to be measured, below/above accuracy and precision is not guaranteed	29943ecd-2d9a-4db5-9202-949360ca0fbd
Measurement_Accuracy	310	gives the accuracy of the sensor's measurements in units	c25a833f-d46b-4a4f-a1f9-3b7ce3acd418
Measurement_Depth	20	The depth of a measurement	21f470c9-0d58-4822-ae76-9021e6220883
Measurement_Drift	185	describes the stability of a sensor's measurements in units over time	84e8d781-cb9c-463c-abd1-35517beb3f52
Measurement_Frequency	19	is the declared repetition of measurements in units	6dab7c89-e745-4394-9d9a-13f1740b0e14
Measurement_Precision	18	states the expected precision of the sensor's measurements in units	412b712a-1ace-47b3-9ab2-51df20d837f0
Measurement_Resolution	178	The resolution of a measurement	7ba1a063-b831-4e0d-b766-eeb32d1dcb84
Operation_Range	32	Operation Range	fc5f18e6-0ed4-429a-b21c-022f29ded578
Operation_Temperature	21	gives the minimum and maximum tolerable environment temperature of the sensor to be operated	271d0474-9a2b-4228-90b4-d83f45b58b85
Spike_Threshold	403	a threshold supplied to the `Spike Test` as part of the `autoQC` routine at AWI	a2f788a8-3b56-4067-8755-c1dcdc58471d

Most of the tests in `autoQC` are derived from or inspired by Wong et al. (2021) and its implementation in O2A is described in Silva et al. (2020) and Silva et al. (2019). Some details can be found at spaces.awi.de/x/22WjEw as well.

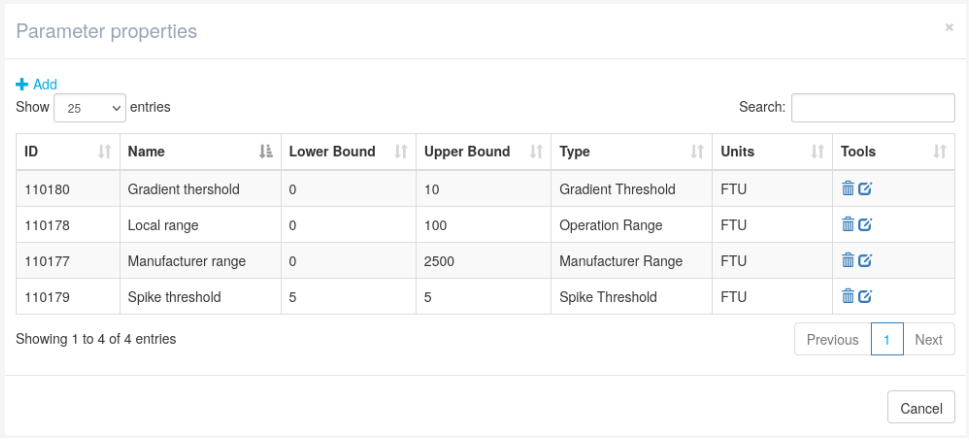
This feature is implemented to serve in a very generic way. It might be that not all properties (and the resulting tests) apply for your specific parameter or item.

Beyond the above mentioned tests as part of `autoQC` during ingest (spaces.awi.de/x/VSIUEg) some more tests are applied:

- consecutive date test
- duplicate date test
- empty file test



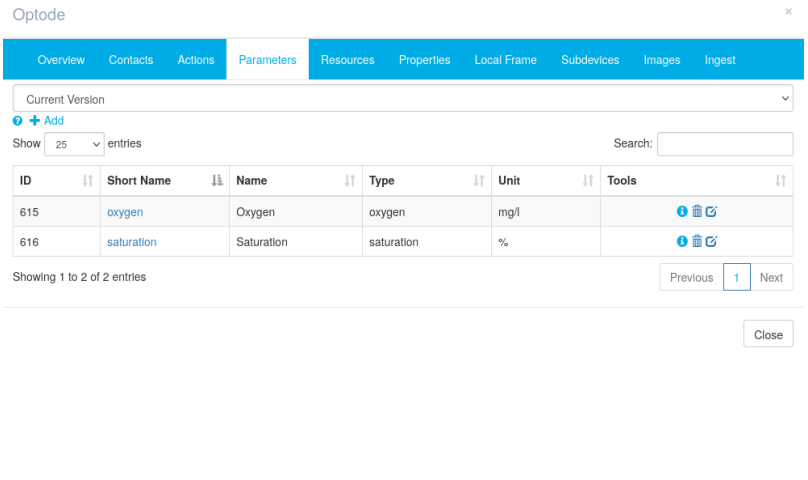
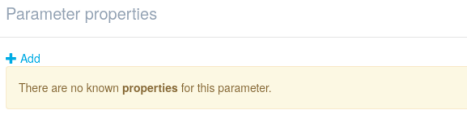
Reminder: precision vs. accuracy

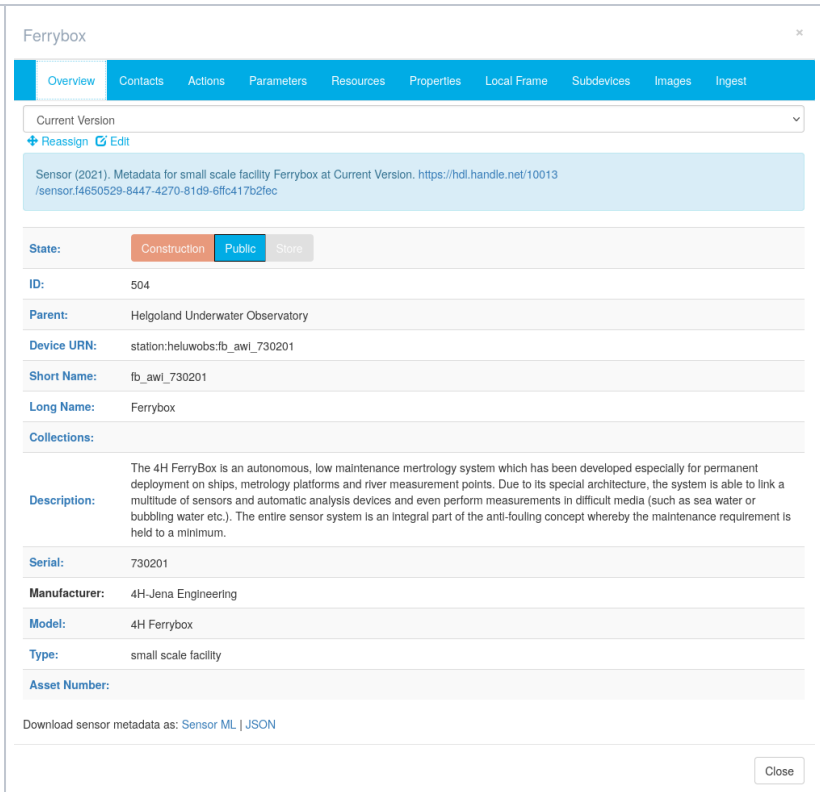
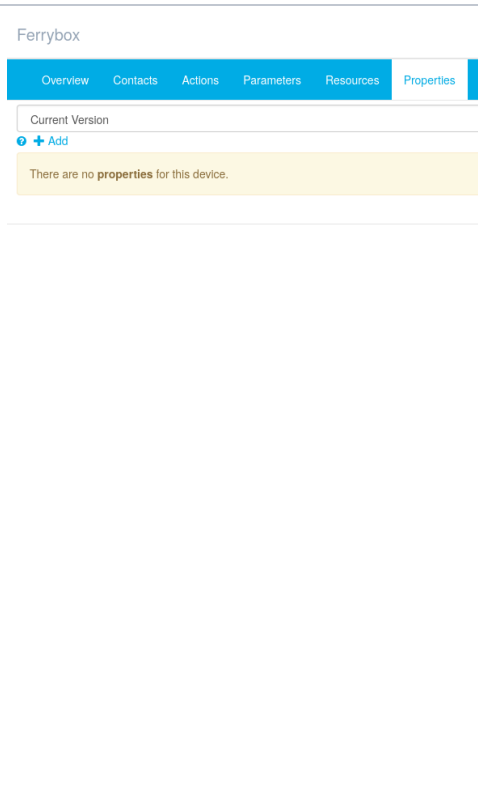


example of fully set properties of Turbidity Sensor 12912 Seapoint at Svalbard Underwater Node 2

Setting Properties

Adding new properties works literally identical for both per parameter and per item.

parameter		
	At 'Parameters' under 'Tools' the properties can be displayed	and if missing, they can be added.

item		
		
	At the tab 'Properties' the properties can be displayed	and if missing, they can be added.

- Silva, Brenner, Najmeh Kaffashzadeh, Erik Nixdorf, Sebastian Immoor, Philipp Fischer, Norbert Anselm, Peter Gerchow, Angela Schäfer, and Roland Koppe. 2020. “Automatic Quality Control and Quality Control Schema in the Observation to Archive.” EGU2020-15961. Copernicus Meetings. https://doi.org/https://doi.org/10.5194/egusphere-egu2020-15961.
- Silva, Brenner, Roland Koppe, Antonie Haas, Christian Schäfer-Neth, Philipp Fischer, Sebastian Immoor, Peter Gerchow, Bernadette Fritzsch, and Stephan Frickenhaus. 2019. “Automatic Data Quality Control for Understanding Extreme Climate Event.” In *EPIC32nd International REKLIM Conference, Berlin, 2019-09-23-2019-09-26Bremerhaven, Germany, REKLIM - Helmholtz Climate Initiative*. Bremerhaven, Germany: REKLIM - Helmholtz Climate Initiative. https://www.reklim-conference-2019.de/.
- Wong, Annie, Robert Keeley, Thierry Carval, and Argo Data Management Team. 2021. “Argo Quality Control Manual for CTD and Trajectory Data,” May. https://archimer.ifremer.fr/doc/00228/33951/.