

Measured values scale

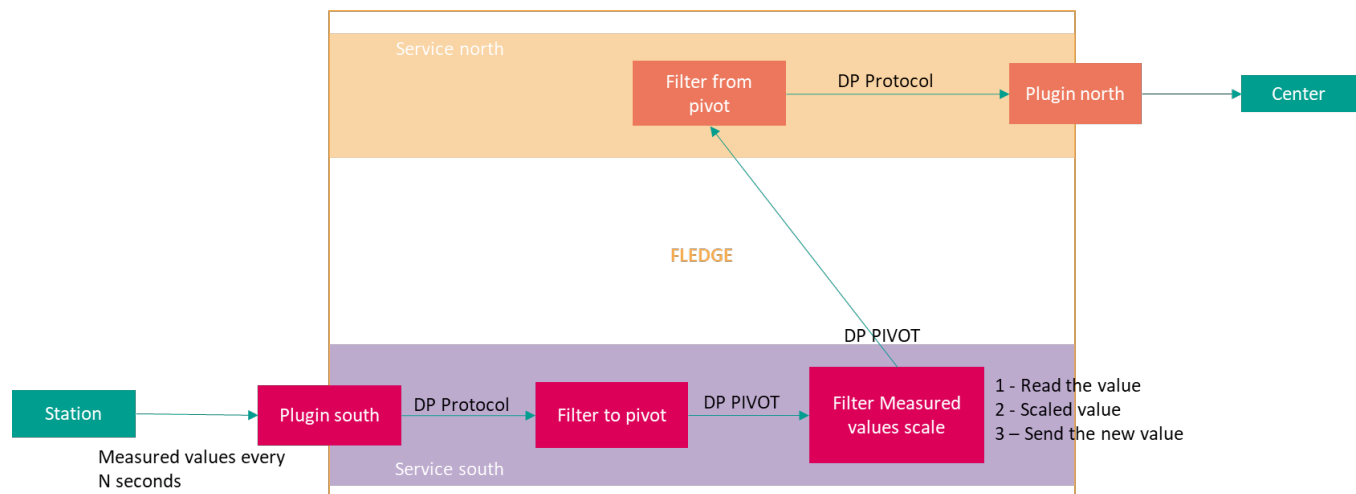
Module description

A transformation function can be applied to measured values. The function is applied for each received measured value.

List of applicable functions :

tfid	Range 0 / Deadband	math function
normal	[-bm...bm]	$y=a*x+b$
square_root	[-bm...bm]	$y=a*\sqrt{x}+b$
quadratic	[-bm...bm]	$y=\sqrt{a*x+b}$
transparent	[-bm...bm]	$y=x$

The value $a=0$ is always replaced by $a=1$.



Configuration

The following attributes are read from the [Exchanged data configuration](#):

- Math function id
- Array of parameters (a, b, ...)
- The dead band (min and max), band of input values where the output is zero

Filtering rules

R1 : transformation function is performed only for measured values configured in the Exchanged data configuration.

R2 : transformation function is performed only if a valid tfid, array of parameters and dead band are configured.

R3 : (quality check) if *PIVOT.GTIM.MvTyp.q.Validity* is different from "good" or if one of the attributes of *PIVOT.MvTyp.q.DetailQuality* is set to "true" the module sets *PIVOT.GTIM.MvTyp.q.Validity* to "invalid" and the output *PIVOT.GTIM.MvTyp.mag.f* to 0 (deletion of the *PIVOT.GTIM.MvTyp.mag.i* if it exists)

R4 : (calculation error check) If the square root parameter has a negative value, the output result is set to 0 bad quality and the "inconsistent" bit is set to 1.

R5 : (calculation error check) If the result of the calculation does not correspond to the internal format of the variable (outside the functional type float32...), the output result is set to 0 bad quality and value the overflow to active. The calculation is therefore stored in a double format before being converted to float32.

Data processing

Input

This filter plugin expects readings to be a pivot model measured values datapoints.

The module uses the identification (Attribute *PIVOT.GTIM.Identifier*) of the data to determine if the measured value is part of the information to be processed.

The data read from the pivots format are :

- *PIVOT.GTIM.MvTyp.mag.i* => input value in INT32 format
- *PIVOT.GTIM.MvTyp.mag.f* => input value FLOAT32
- *PIVOT.GTIM.MvTyp.q.Validity* and *PIVOT.MvTyp.q.DetailQuality* => quality control

Output

The module performs the configured transformation function to the measured value before forwarding it to other services.

The data in the generated pivot format is :

- *PIVOT.GTIM.MvTyp.q.DetailQuality.inconsistent* is set to "true" => if calculation check fails
- *PIVOT.GTIM.MvTyp.q.DetailQuality.overflow* is set to "true" => if calculated value exceeds FLOAT32 format
- *PIVOT.GTIM.MvTyp.q.DetailQuality.inaccurate* is set to "true" => if input value is in the dead band
- *PIVOT.GTIM.MvTyp.mag.f* => Calculated output value (*PIVOT.GTIM.MvTyp.mag.i* is not used).
- Validity:
 - If overflow : *PIVOT.GTIM.MvTyp.q.Validity* is set to "invalid"
 - If inconsistent or inaccurate: *PIVOT.GTIM.MvTyp.q.Validity* is set to "questionable"
- If the transformation function is not transparent : *PIVOT.GTIM.MvTyp.q.Source* is set to "substituted"
- if the quality checks fails :
 - *PIVOT.GTIM.MvTyp.q.Validity* is set to "invalid"
 - *PIVOT.GTIM.MvTyp.mag.f* is set to 0 (*PIVOT.GTIM.MvTyp.mag.i* is not used).