

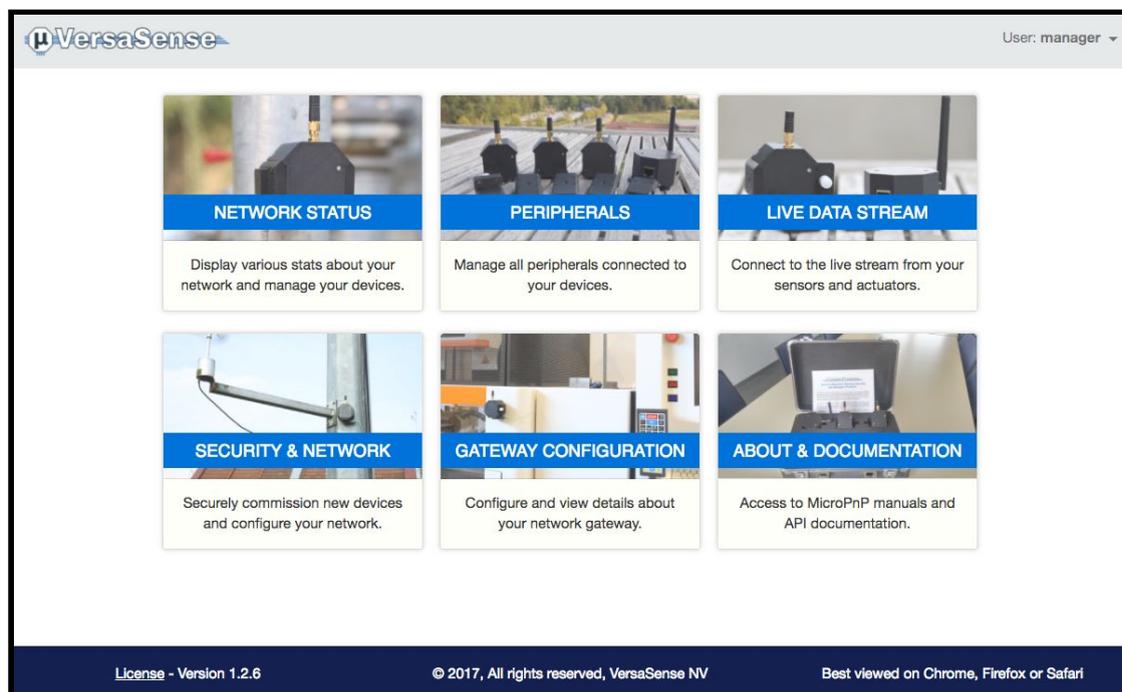
## Creating Custom Measurement and Conversion Rules

This guide illustrates how users can create custom measurement and conversion rules and apply them on MicroPnP sensor interfaces.

*Note: this feature is only supported from gateway software version 1.0.2.16 onwards (release date 2017-09-12). Please contact [support@versasense.com](mailto:support@versasense.com) for the latest software updates.*

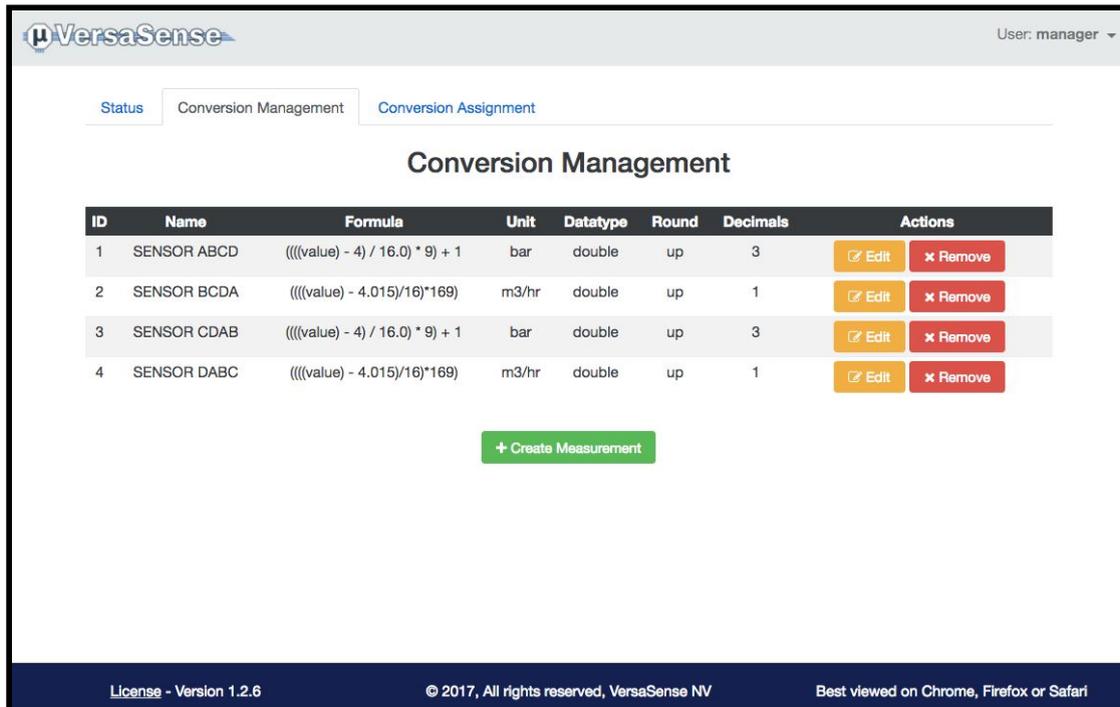
### 1. Accessing the measurements and conversion rules webpage

The custom measurement and conversion rules web page can be accessed on the gateway under the **Peripherals** panel.



## 2. Creating a custom measurement and conversion rule

The peripherals web page allows to create custom conversion rules and apply those on existing sensor interfaces.



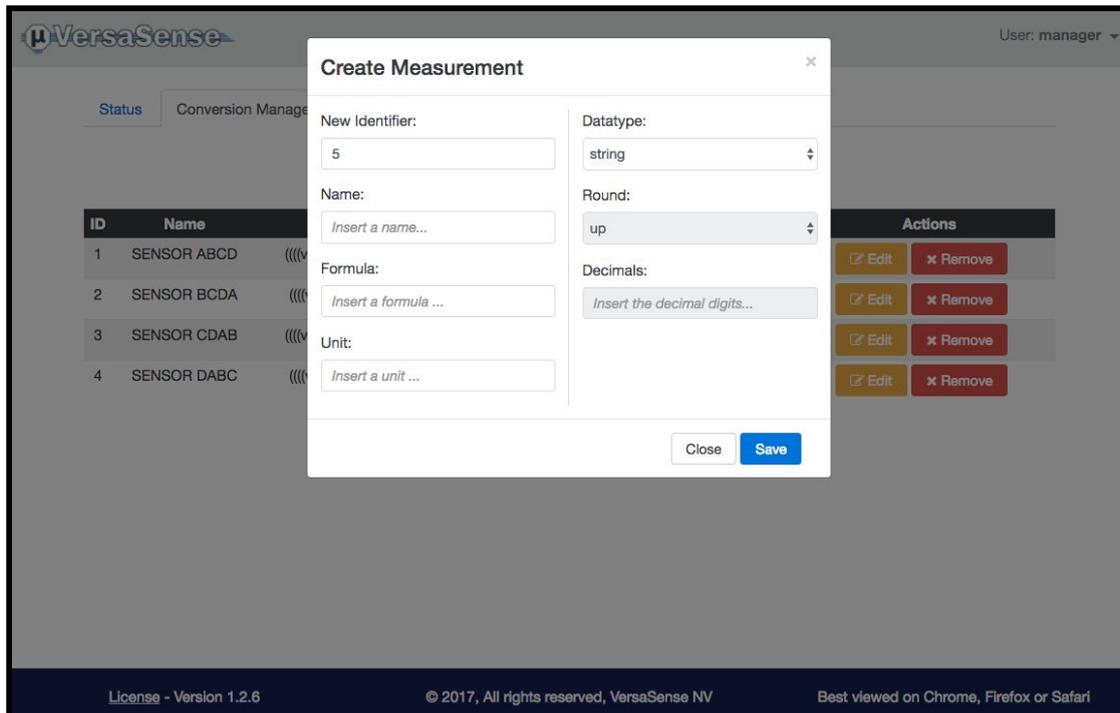
The screenshot shows the VersaSense web interface. At the top, there is a header with the VersaSense logo and the user name 'User: manager'. Below the header, there are three tabs: 'Status', 'Conversion Management', and 'Conversion Assignment'. The 'Conversion Management' tab is active, and the page title is 'Conversion Management'. The main content is a table with the following data:

ID	Name	Formula	Unit	Datatype	Round	Decimals	Actions
1	SENSOR ABCD	$(((((value) - 4) / 16.0) * 9) + 1)$	bar	double	up	3	<a href="#">Edit</a> <a href="#">Remove</a>
2	SENSOR BCDA	$(((((value) - 4.015) / 16) * 169))$	m3/hr	double	up	1	<a href="#">Edit</a> <a href="#">Remove</a>
3	SENSOR CDAB	$(((((value) - 4) / 16.0) * 9) + 1)$	bar	double	up	3	<a href="#">Edit</a> <a href="#">Remove</a>
4	SENSOR DABC	$(((((value) - 4.015) / 16) * 169))$	m3/hr	double	up	1	<a href="#">Edit</a> <a href="#">Remove</a>

Below the table, there is a green button labeled '+ Create Measurement'. At the bottom of the page, there is a footer with the following text: 'License - Version 1.2.6', '© 2017, All rights reserved, VersaSense NV', and 'Best viewed on Chrome, Firefox or Safari'.

### Overview of conversion rules registered on the Network Gateway

Creating a new measurement and conversion rule is easy and requires one to only fill in a few elements (see figure below).



## Defining a new custom conversion rule

- **Identifier:** auto-generated identifier used for bookkeeping purposes.
- **Name:** a user-defined name for this custom measurement.
- **Formula:** a valid mathematical or string expression, based on the data type chosen and following JavaScript conventions. Note: you can use the variable **(value)** between parentheses to access the standard value automatically provided by the underlying sensor interface.

Examples of valid formulas are:

- $((\text{value}) + 3) / 16.0$
- $(\text{Math.pow}(\text{value}, 2))$
- **Unit:** the SI unit outcome of the conversion rule
- **Data type:** the result of the final cast, valid data types are INTEGER, DOUBLE or STRING
- **Round:** in case of INTEGER or DOUBLE data types, determines whether the outcome should be rounded UP or DOWN after the formula has been applied.
- **Decimals:** the number of decimals to preserve after the rounding in case the DOUBLE data type has been chosen.

### 3. Applying a conversion rule to a sensor interface

Finally, the conversion rule needs to be assigned to a specific sensor interface (see figure below)

By default, the web page shows all assignments registered in the Network gateway. For every sensor interface currently present in the network, the standard output of the sensor interface is labeled as [System], followed by all user-defined conversion rules applied to this interface.

Assigning a conversion rule to a sensor interface can be done by selecting the peripheral identifier on the left, and applying the selected conversion rule on the right.

The screenshot displays the VersaSense web interface for managing conversion assignments. The page title is "Conversion Assignment". It features a navigation bar with "Status", "Conversion Management", and "Conversion Assignment" tabs. The main content area is titled "Conversion Assignment" and contains three sections: "Peripheral Identifiers" with a dropdown menu showing "1000/3001/cdf2", "Measurements" with a dropdown menu showing "1 - \"SENSOR ABCD\" - \"(((value))", and "Actions" with "Add" and "Remove" buttons. Below these sections is a table with two columns: "Peripheral ID" and "Measurements". The table contains two rows of data.

Peripheral ID	Measurements
1000/3001/cdef	[System]-"Current loop", 1-"SENSOR ABCD"
1000/3001/cdf2	[System]-"Current loop", 2-"SENSOR BCDA"

The footer of the page includes "License - Version 1.2.6", "© 2017, All rights reserved, VersaSense NV", and "Best viewed on Chrome, Firefox or Safari".

### Applying conversion rules to sensor interfaces