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Display of the power factor cos φ

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SIPROTEC 5 Application

Display of the power factor cos φ

APN-035, Edition 1

Content

1 Display of the power factor cos φ

1.1 Introduction

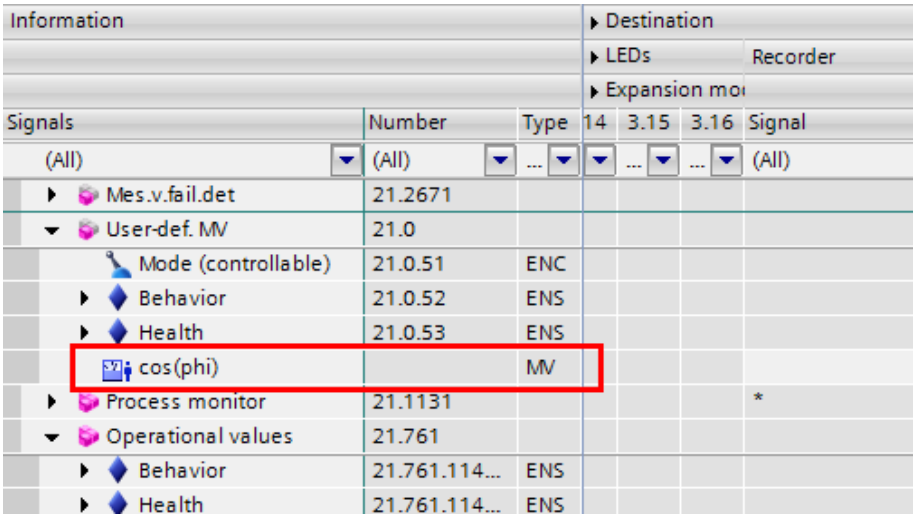
In SIPROTEC 5 the power factor λ is calculated acc. $\frac{|P|}{S}$, factor therefore between 0 and 1. In SIPROTEC 4 refer to cos φ = $\frac{P}{S}$, factor is between -1 and 1.

The application describes how the power factor cos φ can be calculated and visualized on the display with the help of CFC chart.

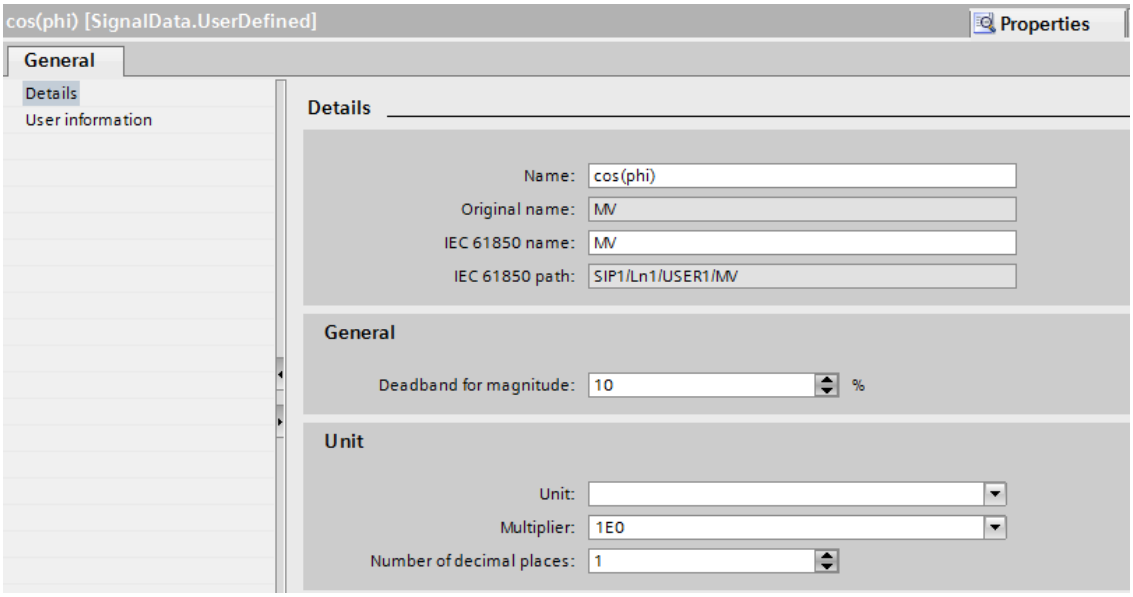
1.2 Implementation

1.2.1 New user defined measured value

Create a new user defined measured value „cos (phi)" in the information matrix:

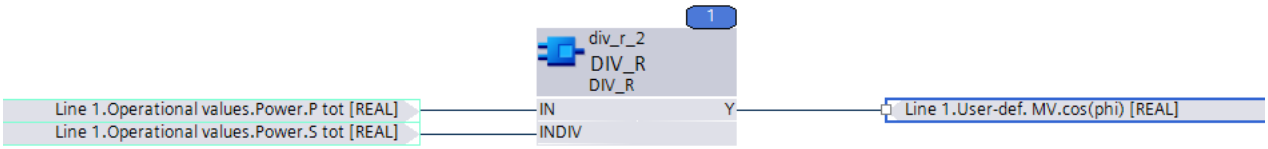


Set the number of decimal places in the properties of the Measured Value "cos(phi)" to 1:



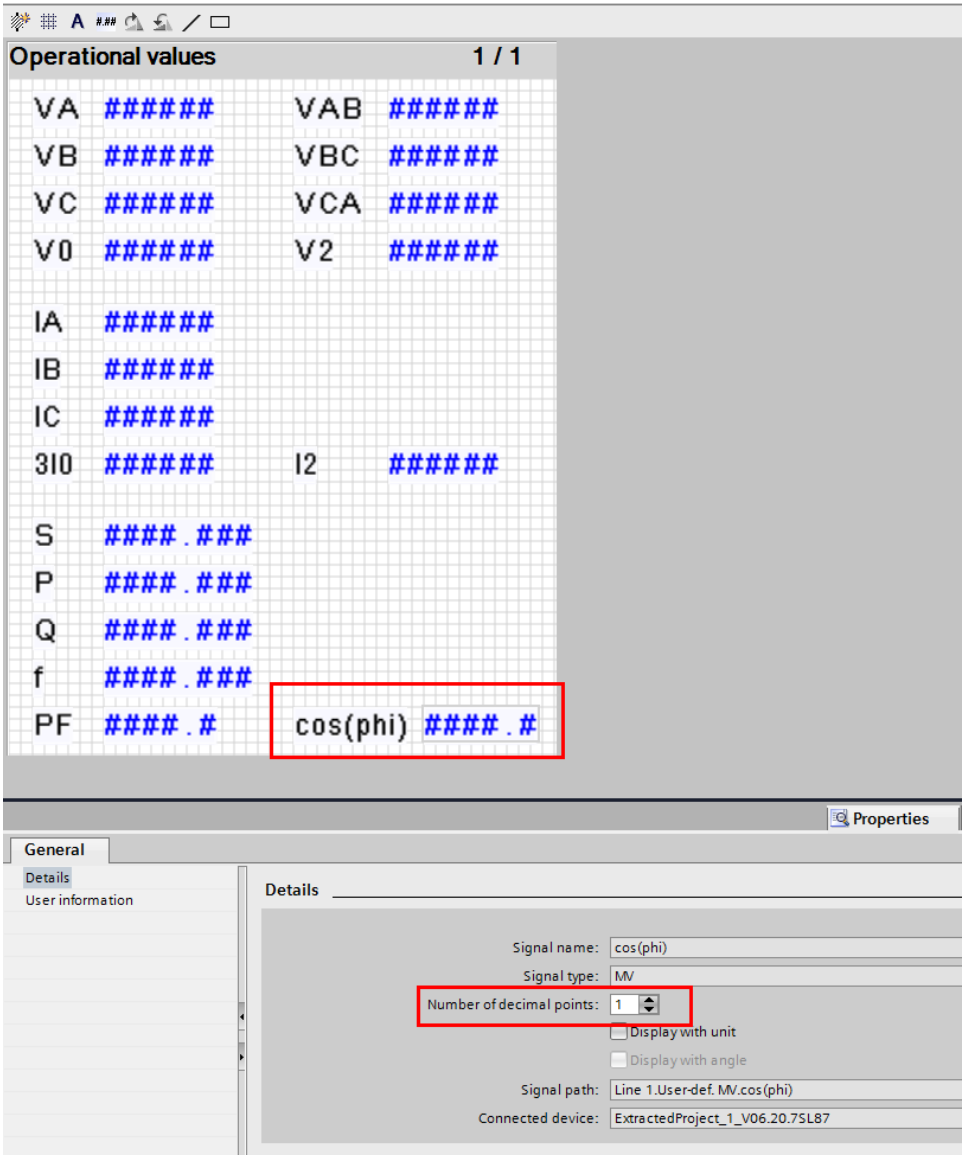
1.2.2 CFC Plan

Select function chart (CFC) task: Measurement and insert the chart DIV_R. The DIV_R block divides a floating-point number (numerator) = Input IN by a 2nd floating-point number (denominator) = Input INDIV.



1.2.3 Display

Assign the measured value to the desired display; e.g. to the measured values as follows:



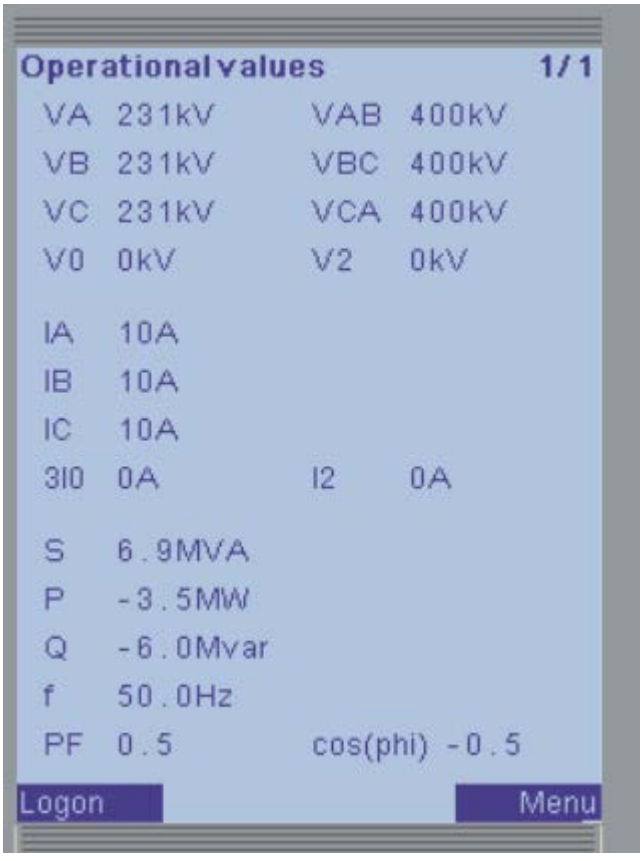
Set the number of decimal places in the properties of the Measured Value “cos (phi)” to 1.

1.2.4 Test

Load configuration to device and inject current and voltage.

Signals	All Internal		
Physical Meaning	03:02:23,461		
	Amplitude	Phase	Frequency
Analog Profile:	<User Defined>		
PhysU1	57,735 V	0,00 °	50,000 Hz
PhysU2	57,735 V	-120,00 °	50,000 Hz
PhysU3	57,735 V	120,00 °	50,000 Hz
PhysU4	100,000 V	30,00 °	50,000 Hz
PhysU5	0,000 V	0,00 °	50,000 Hz
PhysU6	0,000 V	0,00 °	50,000 Hz
PhysU7	0,000 V	0,00 °	50,000 Hz
PhysU8	0,000 V	0,00 °	50,000 Hz
PhysI1	10,000 mA	120,00 °	50,000 Hz
PhysI2	10,000 mA	0,00 °	50,000 Hz
PhysI3	10,000 mA	-120,00 °	50,000 Hz

The above injected current and voltage will have a negative cosφ. If desired the pre-configured power factor “PF” can be deleted from the display.



1.3 Summary

The calculation and display of the power factor differs between SIPROTEC 4 and SIPROTEC 5. Through the use of CFC charts the display of the power factor as cosφ value can be adjusted.

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