FAG



FAG SmartCheck

Electric circuits with multiple FAG SmartCheck devices

SCHAEFFLER

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Imprint

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Original user guide.
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1 General

This short manual may help our customers to choose the correct electrical connectivity when several FAG SmartCheck devices are in use. In the following we introduce general principles which have to be adapted to the customer-specific application. Please read the detailed user documentation for the FAG SmartCheck thoroughly, where you can find further information and a detailed guide to setting up and commissioning of the measurement system.

Important
When setting up components with the FAG SmartCheck device, knowledge in electronics is required.

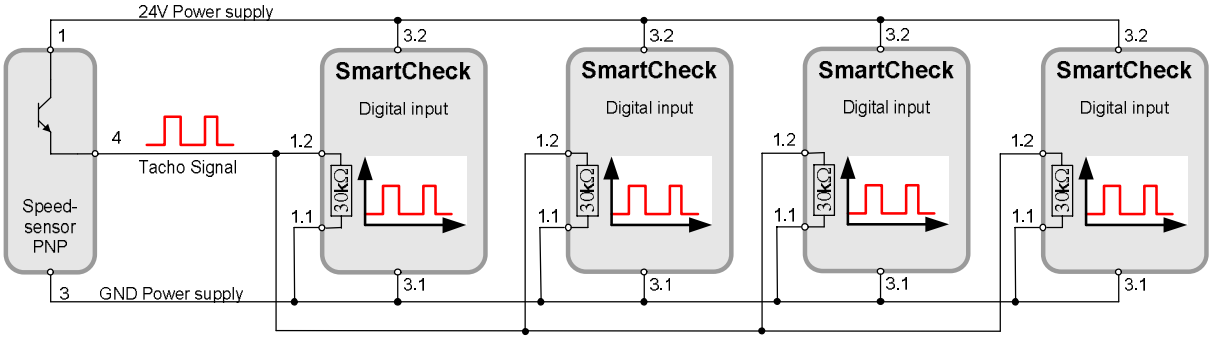
2 Speed signal

2.1 One PNP-tachometer probe to multiple FAG SmartCheck devices

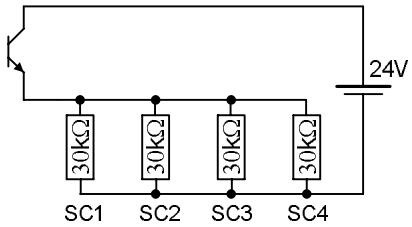
Components:

4 * FAG SmartCheck devices
1 * standard FAG inductive or optical tachometer probe

Connection principle:



Equivalent circuit diagram for 4 FAG SmartCheck devices:



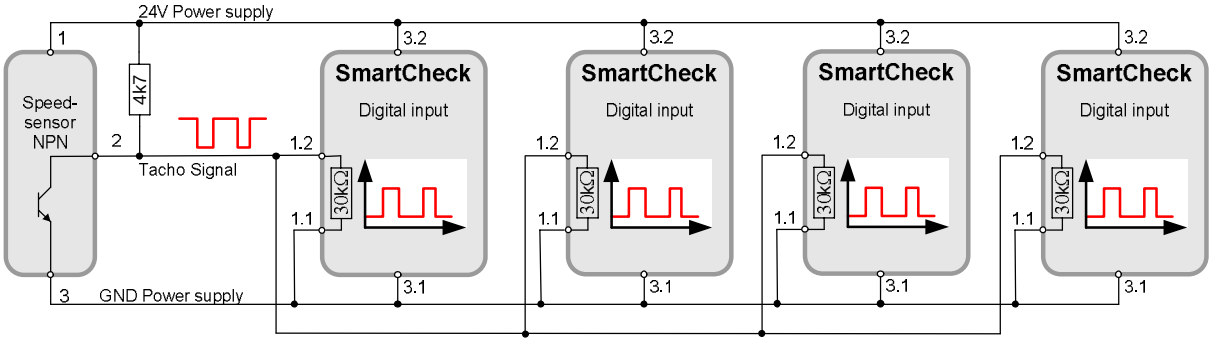
Tip
This way you can connect more than 4 FAG SmartCheck devices.

2.2 One NPN-tachometer probe to multiple FAG SmartCheck devices

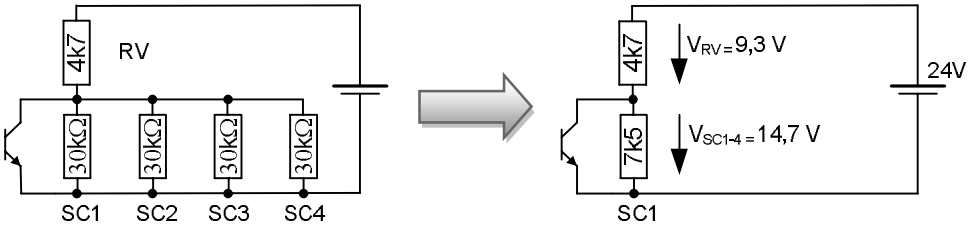
Components:

4 * FAG SmartCheck device
1 * standard FAG optical tachometer probe (e.g. balancing sensor)

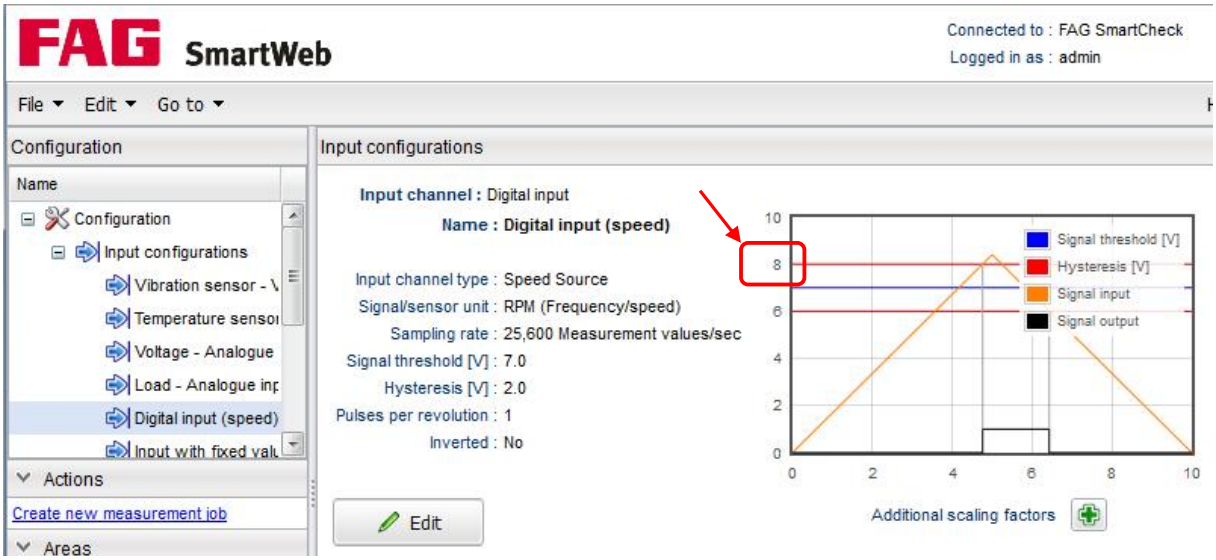
Connection principle:



Equivalent circuit diagram for 4 FAG SmartCheck devices:



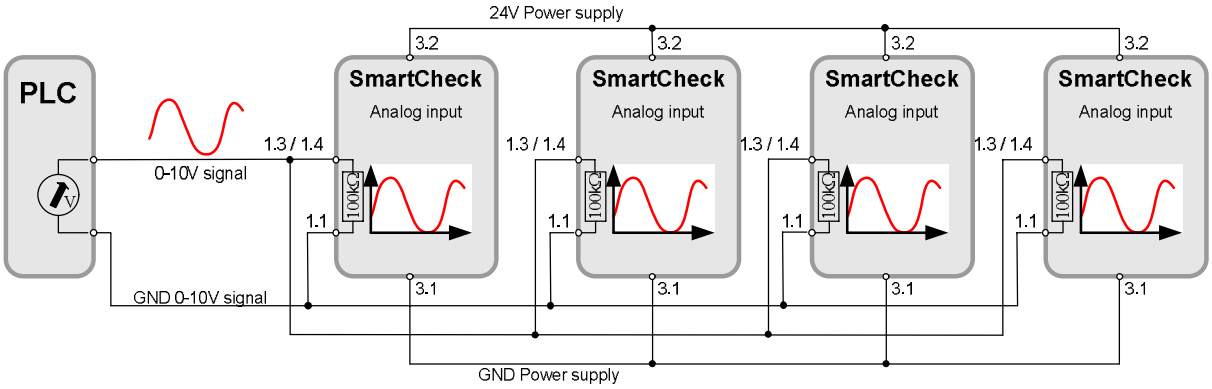
Caution!
You create a voltage divider of the pull-up resistor and the inner resistors of the FAG SmartCheck device. Check the configured signal threshold and hysteresis of the digital input in the FAG SmartWeb software (default setting is 8V). If you use a power supply of 24V and a pull-up resistor of 4,7 kΩ you can connect a maximum of 10 FAG SmartCheck devices by using the default setting. Otherwise you have to decrease the signal threshold.



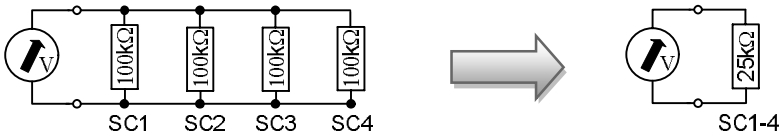
3 Analogue Input

3.1 One voltage signal to multiple FAG SmartCheck devices

Connection principle:



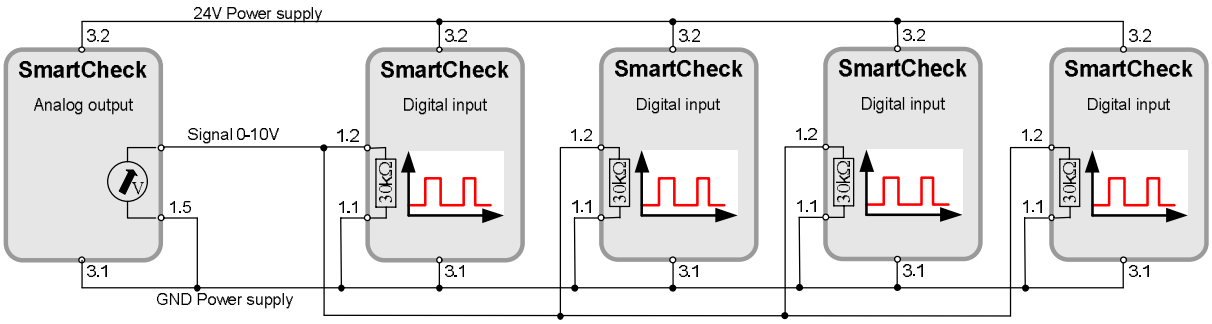
Equivalent circuit diagram for 4 FAG SmartCheck devices:



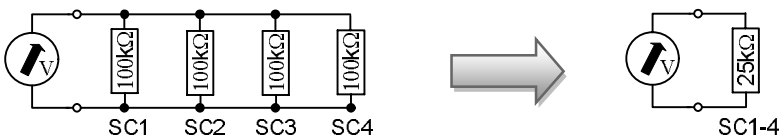
Tip
This way you can connect more than 4 FAG SmartCheck devices.

3.2 One FAG SmartCheck output to multiple FAG SmartCheck devices

Connection principle:



Equivalent circuit diagram for 4 FAG SmartCheck devices:

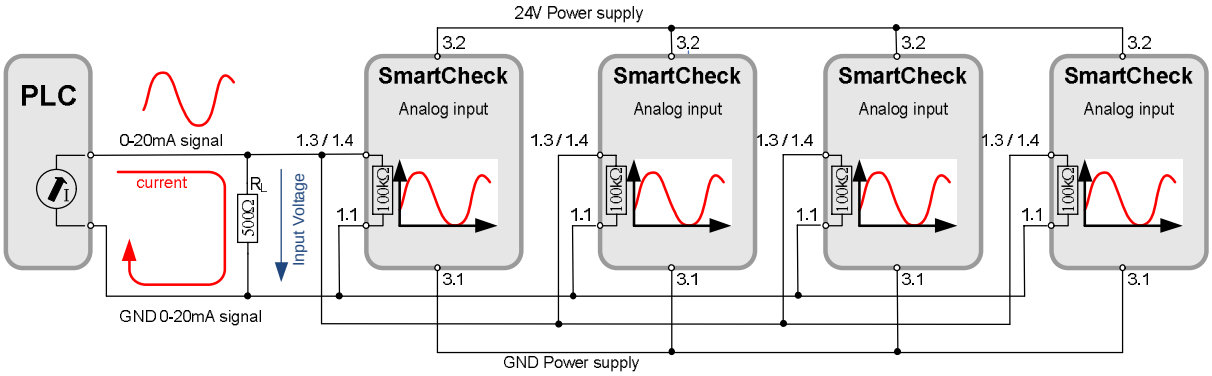


Tip
This way you can connect more than 4 FAG SmartCheck devices.

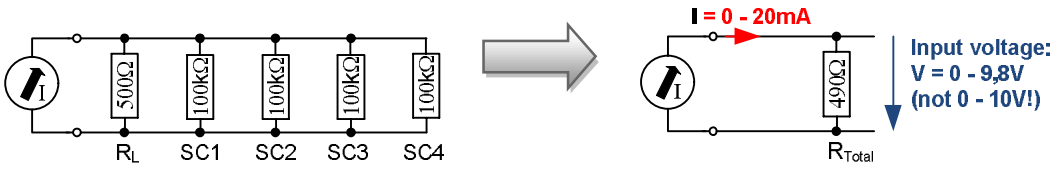
3.3 One current signal to multiple FAG SmartCheck devices

It is possible to convert a current signal of a PLC to a voltage signal by using a resistor. This functionality is not usual and only should be applied if there is no better signal available.

Connection principle:



Equivalent circuit diagram for 4 FAG SmartCheck devices:



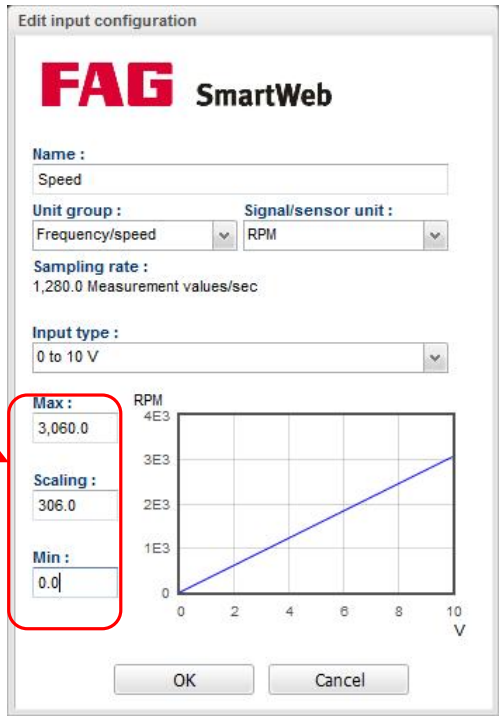
Caution!
With the resistor 'R_L' you convert the current signal into a voltage signal. When this voltage signal is connected in parallel to several FAG SmartCheck devices a parallel circuit of resistors is created. In this case you decrease the total resistance. This causes a reduction of the input voltage at the FAG SmartCheck devices which will a wrong input signal. The table shows the behaviour.

Amount of SmartCheck	Input Speed min [RPM]	Input Speed max [RPM]	Related Input Current min	Related Input Current max	$R_{total\ in\ \Omega}$	Related Input Voltage min	Related Input Voltage max	Input Speed min [RPM]	Input Speed max [RPM]
1	0,00	3000	0,00 mA	20,00 mA	497,51	0,00 V	9,95 V	0,00	2985,06
2	0,00	3000	0,00 mA	20,00 mA	495,04	0,00 V	9,90 V	0,00	2970,24
3	0,00	3000	0,00 mA	20,00 mA	492,54	0,00 V	9,85 V	0,00	2955,24
4	0,00	3000	0,00 mA	20,00 mA	490,20	0,00 V	9,80 V	0,00	2941,20

To correct the signal you have to choose different factors in the Input Configuration of the FAG SmartWeb.

Signal: 0-20mA

Amount of SmartCheck	Min	Max	Scaling:
1	0,0	3015,0	301,5
2	0,0	3030,1	303,0
3	0,0	3045,4	304,5
4	0,0	3060,0	306,0



Signal: 4-20mA

Amount of SmartCheck	Min	Max	Scaling:
1	-753,8	3015,0	376,9
2	-757,5	3030,1	378,8
3	-761,4	3045,4	380,7
4	-765,0	3060,0	382,5

