



# Schaeffler SmartCheck

Electric circuits with multiple SmartCheck devices

## Imprint

Schaeffler Monitoring Services GmbH  
Kaiserstraße 100  
52134 Herzogenrath  
Germany  
Telephone: +49 (0) 2407 9149 66  
Fax: +49 (0) 2407 9149 59  
Email: [industrial-services@schaeffler.com](mailto:industrial-services@schaeffler.com)  
Webside: [www.schaeffler.com/services](http://www.schaeffler.com/services)

All rights reserved.

No part of the documentation or software may be reproduced in any form or processed, duplicated or distributed using electronic systems without our written consent. We would like to point out that the designations and brand names of the various companies used in the documentation are generally protected by trademark, brand and patent laws.

Microsoft, Windows and Microsoft Edge are brands or registered trademarks of the Microsoft Corporation in the USA and/or in other countries. Google Chrome™ is a trademark of Google. Loctite is a trademark of Henkel AG.

Version 1.2

Translation of the original user guide.

© 19/12/2019 - Schaeffler Monitoring Services GmbH

# Contents

<b>1</b>	<b>General .....</b>	<b>4</b>
<b>2</b>	<b>Speed signal.....</b>	<b>4</b>
2.1	One PNP-tachometer probe to multiple FAG SmartCheck devices .....	4
2.2	One NPN-tachometer probe to multiple FAG SmartCheck devices .....	5
<b>3</b>	<b>Analogue Input.....</b>	<b>6</b>
3.1	One voltage signal to multiple FAG SmartCheck devices .....	6
3.2	One FAG SmartCheck output to multiple FAG SmartCheck devices.....	6
3.3	One current signal to multiple FAG SmartCheck devices.....	7

# 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

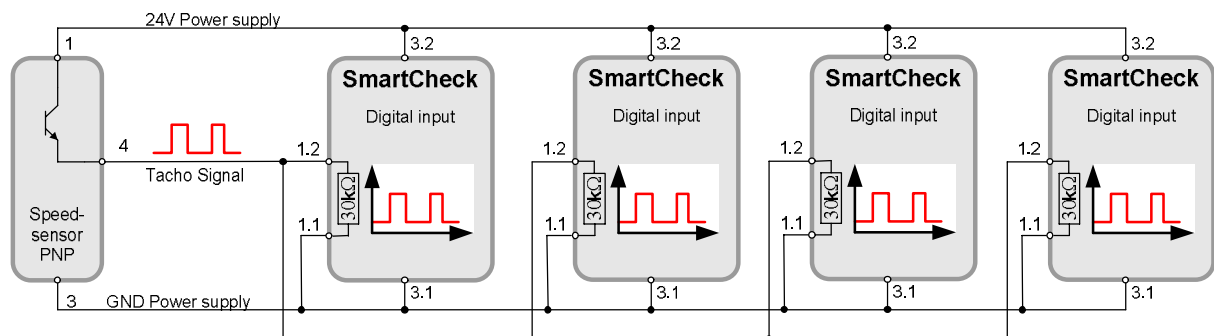
### 2.1 One PNP-tachometer probe to multiple FAG SmartCheck devices

#### Components:

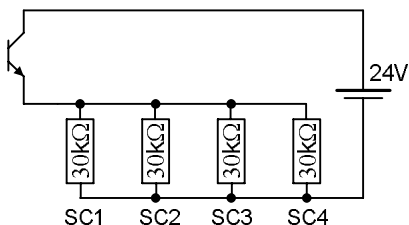
4 \* FAG SmartCheck devices

1 \* standard FAG inductive or optical tachometer probe

#### Connection principle:



#### Equivalent circuit diagram for 4 FAG SmartCheck devices:



## Tip

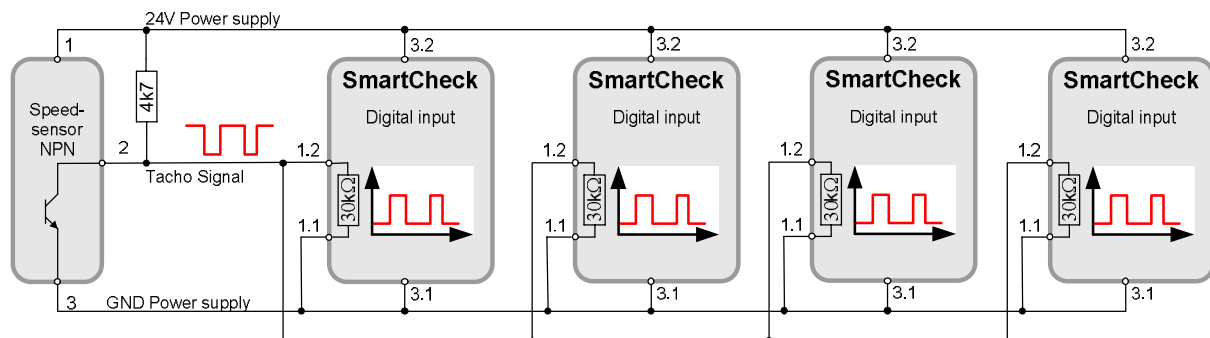
This way you can connect more than 4 FAG SmartCheck devices.

## 2.2 One NPN-tachometer probe to multiple FAG SmartCheck devices

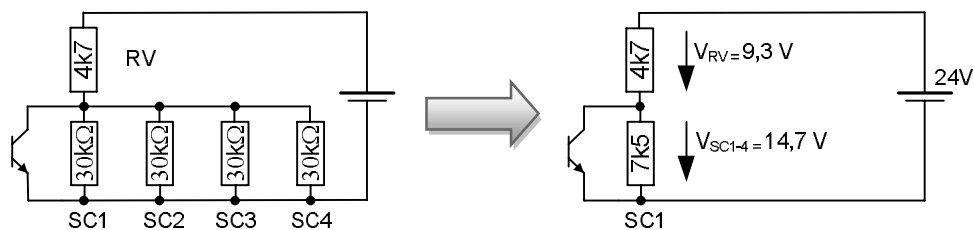
### Components:

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

### Connection principle:

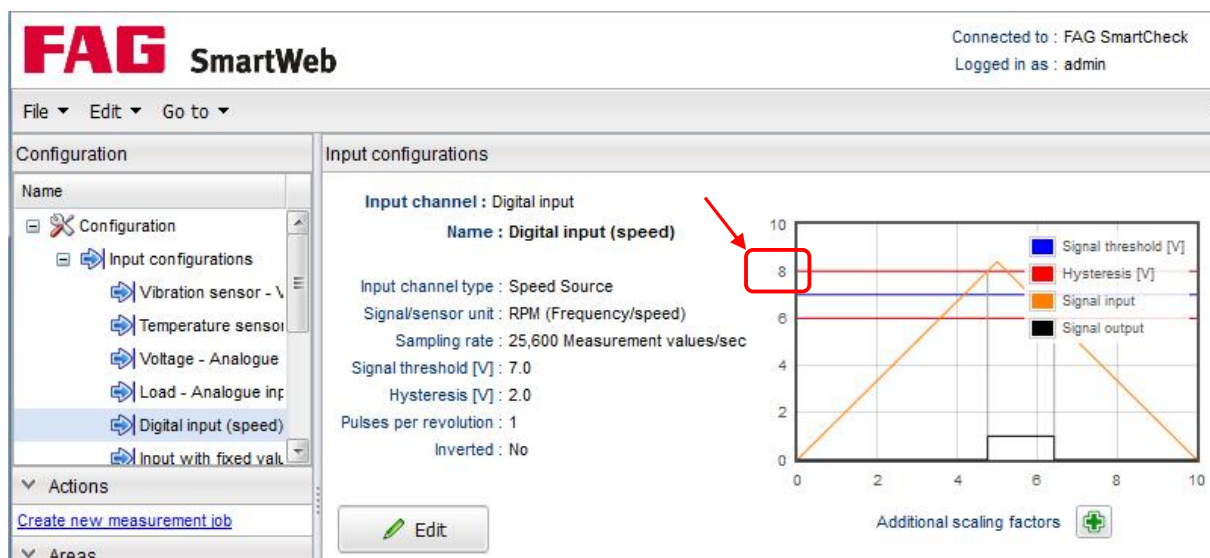


### Equivalent circuit diagram for 4 FAG SmartCheck devices:



### Caution!

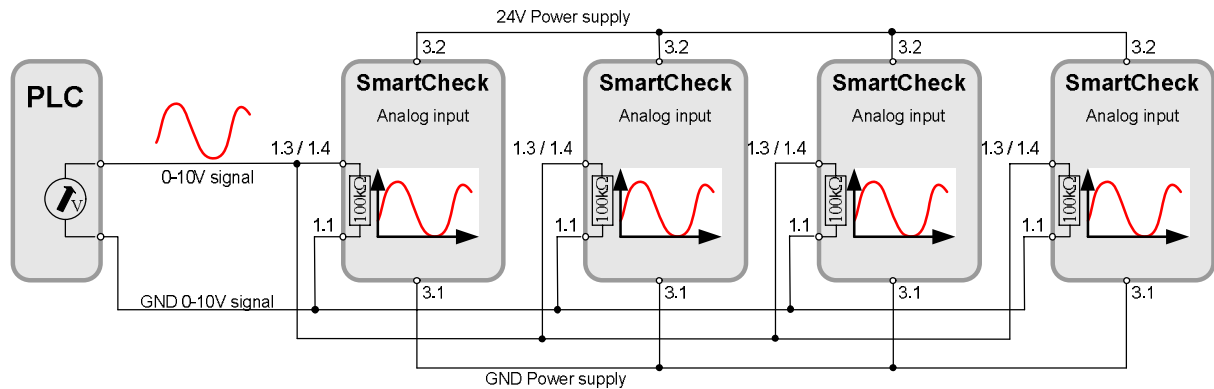
You create a voltage divider of the pull-up resistor and the inner resistors of the FAG SmartCheck device. Check the configured signal threshold and hysteresis of the digital input in the FAG SmartWeb software (default setting is 8V). If you use a power supply of 24V and a pull-up resistor of 4,7 kΩ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



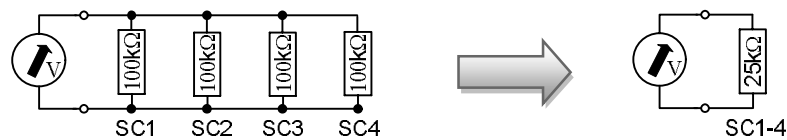
## 3 Analogue Input

### 3.1 One voltage signal to multiple FAG SmartCheck devices

Connection principle:



Equivalent circuit diagram for 4 FAG SmartCheck devices:

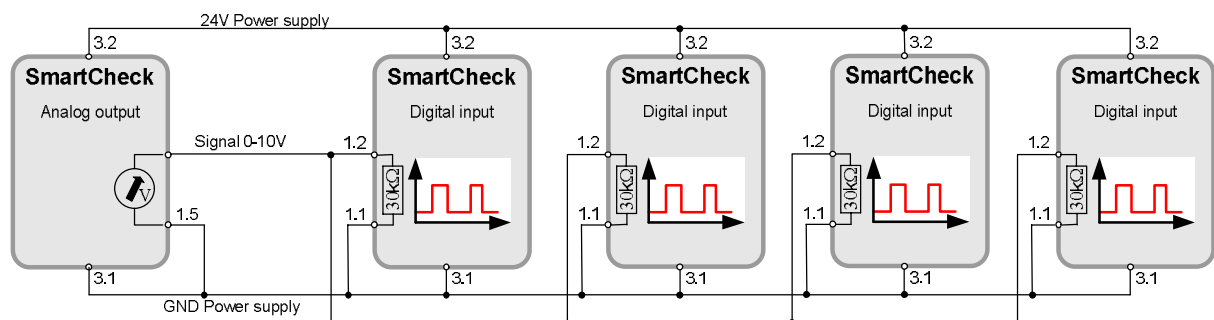


**Tip**

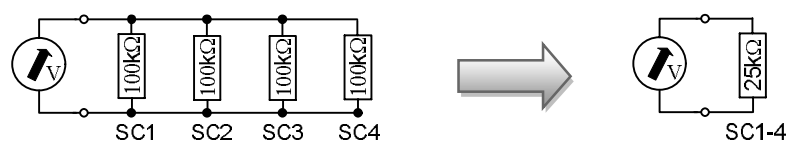
This way you can connect more than 4 FAG SmartCheck devices.

### 3.2 One FAG SmartCheck output to multiple FAG SmartCheck devices

Connection principle:



Equivalent circuit diagram for 4 FAG SmartCheck devices:

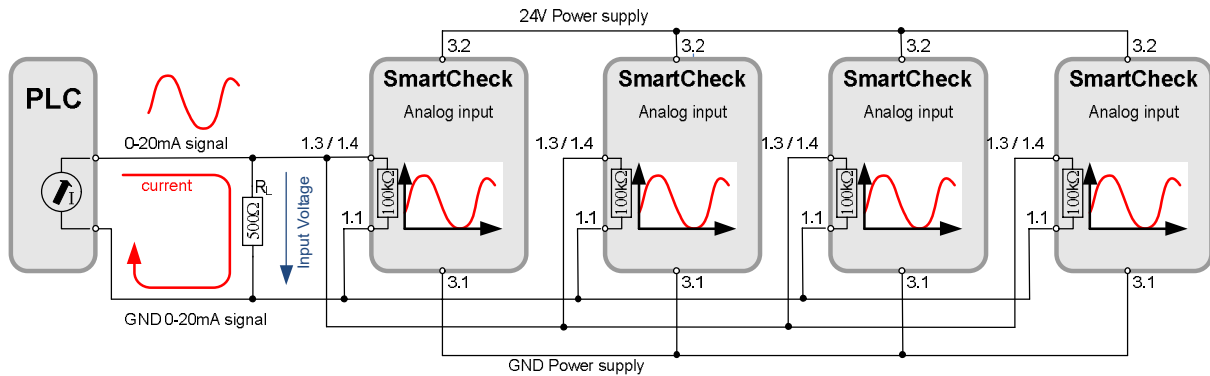
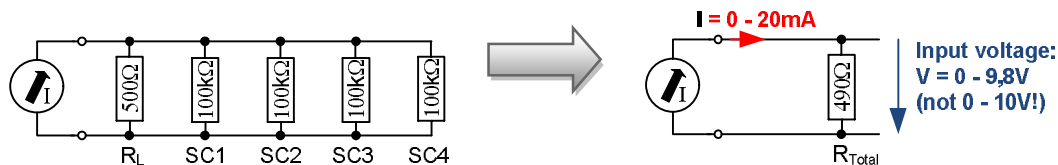


**Tip**

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<sub>L</sub>' 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 <sub>total</sub> in Ω	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

Edit input configuration

**FAG SmartWeb**

Name : Speed

Unit group : Frequency/speed Signal/sensor unit : RPM

Sampling rate : 1,280.0 Measurement values/sec

Input type : 0 to 10 V

Max : 3,060.0

Scaling : 306.0

Min : 0.0

OK Cancel

### 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

Edit input configuration

**FAG SmartWeb**

Name : Speed

Unit group : Frequency/speed Signal/sensor unit : RPM

Sampling rate : 1,280.0 Measurement values/sec

Input type : 0 to 10 V

Max : 3,060.0

Scaling : 382.5

Min : -765.0

OK Cancel