

FAG SmartCheck

[Supported device types and versions](#)
[Configuration of communication](#)
[Literature](#)
[Document revisions](#)

The SmartCheck from Schaeffler is a compact, innovative, modular online measuring system for continuous monitoring of machinery and process parameters on a decentralized basis. It can be used on assemblies where such monitoring was previously too costly.

The SmartCheck is suitable for early detection of rolling bearing damage, imbalances and misalignments on:

- Electric and geared motors
- Vacuum and fluid pumps
- Ventilators and fans
- Gearboxes and compressors
- Spindles and machine tools



Supported device types and versions

The communication with the FAG SmartCheck device has been tested on a several devices with the following parameters:

- Build date: 20170502_164020 / 20171207_094937
- Build number: 395886 / 395947
- Firmware: 1.12.2 / 1.12.30

The protocol for communication with the FAG SmartCheck vibrometer is implemented as a Java server event in D2000.

If the FAG SmartCheck is connected to the local network, it is possible to connect to it using its IP address. Java event communicates with the device by using XML Soap (Simple Object Access Protocol) via http requests. Several types of requests can be sent to the device, D2000 implementation of FAG SmartCheck protocol uses three types of requests:

- Load device configuration, where configuration contains basic information about sensors measuring values.
- Based on configuration, the device is followed by querying "live" data from the device. These data are collected by device in real-time, such as vibration, temperature, voltage, load, and the rotational speed of the device (rotational speed requires connecting external sensor).
- The last type of request is to query alarm data from the device. This data is the result of individual signals within "jobs" triggered periodically (e.g. once per minute).

Communication with the FAG SmartCheck is established using the IP address of device, by following procedure:

- Based on the username and password to access the device, the above-mentioned requests are continuously generated as needed and sent to the device.
- The device sends responses to the requests with different information depending on the request.
- The device sends responses related to values - vibration, temperature, voltage, load and speed, as well as responses related to alarms for individual signals within "jobs" - AlarmType, PreAlarmLevel, MainAlarmLevel, PreAlarmCount (number of pre-alarms), MainAlarmCount (number of high alarms).

Configuration of communication

The structured variable **SV.FAG.SmartCheck.Parameters** is used to configure communication. This structure has to be resized to as many rows as there are devices. The meaning of each column is as follows:

- **DeviceName** - Device name defined by user (not used in communication).
- **IP** - IP address of the device. Example: *172.16.1.128*
- **User** - Username to login to the device.
- **Password** - Password to login to the device.
- **PeriodValues** - The period (in seconds) at which measured values is read from the device.
- **Active** - Determines whether the communication is active or not.
 - True - The communication is active.
 - False - The communication is disabled (e.g. if it is necessary to access the device's web interface for configuration).

Output from the communication is written to the structured variable **SV.FAG.SmartCheck.Values**, which has as many rows, as there are devices (if needed, it is automatically resized). The meaning of each column is as follows:

- **Vibration** - Device vibrations (g)
- **Temperature** - Device temperature (°C or °F depending on configuration of the device)
- **Voltage** - Device voltage (V)
- **Load** - Device load (%)
- **DigitalInput** - Device rotational speed (rpm)
- **Status** - State of communication. It can take on the following values:
 - 0 - Connected - Connected to the device.
 - 1 - Disconnected - Disconnected from the device.
 - 2 - Connection error - Could not connect to device (e.g. the device is not connected to the network, or the machine's IP address is invalid)
 - 3- Login error - Username or password is incorrect

Using D2000, it is possible to watch alarm data of jobs with several signals configured via the web interface. For this purpose, the structure variable **SV.FAG.SmartCheck.Alarms** was intended. The meaning of each columns is as follows:

- **FAG_ID** - ID of FAG device, which corresponds with row index of device in **SV.FAG.SmartCheck.Parameters** structure.
- **JobName** - Name of the job according to the configuration in the web interface.
- **Signal** - Name of the signal within the job according to the configuration in the web interface.
- **CurrentValue** - Measured signal value at the last measurement.
- **AlarmType** - Alarm type for the signal.
 - No-Alarm - No alarm.
 - Pre-Alarm - Pre-Alarm.
 - Main-Alarm - High Alarm.
- **PreAlarmLevel** - The value at which the Pre-Alarm is triggered. This value can be configured using the web interface.
- **MainAlarmLevel** - The value at which the Main-Alarm is triggered. This value can be configured using the web interface.
- **PreAlarmCount** - Number of Pre-Alarms for the signal.
- **MainAlarmCount** - Number of Main-Alarms for the signal.

Web interface - Job configuration:

Measurement job

Name : Base measurement job

Time trigger : Start date 2019-08-27 13:19:00,
Repetition every 1 minute(s)

Edit Delete Create

Characteristic value configuration

- Base measurement job 1
 - ISO10816-1 (2Hz - 1kHz) - Velocity
 - Peak2peak - Acceleration (High vibration values)
 - RMS broad band - Acceleration (Overall status)
 - RMS broad band - Demodulation (Overall status)
 - Temperature 2

3 ↑

Name: Temperature

Unit: °C (Temperature)

Save settings: every 1 hour(s)

Reset alarms: Automatically

Main alarm: 36.0 °C 4

Measurement template used: Base configuration

Characteristic value type: DC

Alarm limit overruns: 10

Use learning mode: No

Signal always larger than: 0.0 °C

Pre-alarm: 30.0 °C 5

Alarm settings

SV.FAG.SmartCheck.Alarms structure:

Prezeranie štruktúrovanej premennej - [modifikácia nepovolená]

SV.FAG.SmartCheck.Alarms - Štruktúra pre konfiguráciu a hodnoty FAG SmartCheck jobov a alarmov

FAG_ID	JobName	Signal	CurrentValue	AlarmType	PreAlarmLevel	MainAlarmLevel	PreAlarmCount	MainAlarmCount	
1	2	Base measurement job	ISO10816-1 (2Hz - 1kHz) - Velocity	0,1019336757019	No-Alarm	2,8	7,1	0	0
2	2	Base measurement job	RMS broad band - Demodulation (Overall status)	0,00029836278317	Pre-Alarm	0	1	10	0
3	2	Base measurement job	Temperature 2	41	Main-Alarm	30	36	10	10

1/1 Editovať Export ... Zrušiť zmeny Návrat

3 ↑

If interested in this protocol, please contact the D2000 development department.

Literature

Blog

You can read blog about FAG SmartCheck protocol:

- [Communication with FAG SmartCheck device](#)

Document revisions

- Ver. 1.0 - August 6th, 2019 - Document creation.
- Ver. 1.1 - August 28th, 2019 - Extension of functionality by obtaining alarm values for signals within jobs.



Related pages:

[Communication protocols](#)