



Original instructions

Operating manual

WirelessGT

Glove tester



SKAN Deutschland GmbH / Görlitz / Germany

www.skan.ch

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1 Service and information address

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 CH-4123 Allschwil

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2 Information for your safety

2.1 Residual risks

The devices of Skan are designed, built and tested according to the latest state of the art, in compliance with the applicable standards and regulations and offer high operational safety and reliability. Nevertheless, improper transportation, assembly, operation, maintenance, disassembly and removal of the systems can pose hazards for persons and property.

Warning and safety messages in the instruction handbook, as well as warning signs and instruction labels on the system, informs about hazards that cannot be eliminated through design measures (residual risks).

1. Read and observe the instruction handbook that is relevant to you and your job.
2. For your safety, observe all safety messages and warnings in the instruction handbook specific for the device.
3. Observe all warning signs and instruction labels on the device.

2.2 Minimum qualifications for machine operators, maintenance and service personnel

Errors during operation, maintenance and installation work can lead to unforeseeable hazards and risks.

- ▶ The devices of Skan may only be operated, serviced and repaired by trained persons who have been instructed in the operation and maintenance of Skan devices.

2.3 Regular maintenance of the device

The operational safety and reliability of the device depends on trouble-free functioning of all protective equipment.

- ▶ Perform maintenance work and inspections at the intervals specified in the maintenance plan.

2.4 Operating and maintenance work on device components of other manufacturers

Components or devices may be built into the devices of Skan that are not constructed and marketed by Skan. Information pertaining to safety as well as information on the operating, maintenance and service these components can be found in the document at hand as well as in the original operating manuals of the component manufacturer.

- ▶ Also observe the original operating manual of the component manufacturers during operation and all maintenance work.

2.5 Troubleshooting

Rectifying malfunction of the device can be dangerous. Improper rectifications of malfunctions of the device (troubleshooting) can lead to impairment of the device functionality as well as unforeseeable hazards.

1. Only conduct troubleshooting measures if you have the appropriate specialised knowledge.
2. If you are unsure, please contact the Service department of Skan.

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2.6 Maintenance work on live device components

When maintenance work is being performed on or close to live system components, there is risk of damage to the device.

1. Always switch off device and disconnect battery charger before beginning your maintenance work.
2. Unplug slide fuse on the main printed circuit board and lay it down to a known place.
3. Use a bipolar measuring device to check that the device component is de-energised before beginning with your maintenance work.

2.7 System modifications, add-ons and conversions

Modifications, add-ons and conversions to the device can cause malfunctions and impairment of the device output with unforeseeable hazards.

- ▶ Before making technical modifications or expanding the device, the controller or the control programs, obtain written permission from Skan.

2.8 Protecting against electrostatic discharge

Static electricity can harm delicate components inside your system!

- ▶ Discharge static electricity (ESD) from your body before you touch any of the electronic components, such as the microprocessor, to prevent static damage! You can do so by periodically touching the electrical grounding.

2.9 Exchanging device components

Replacing device components with spare parts of a different type or from a different manufacturer can lead to system malfunctions and impairment of the device output with unforeseeable hazards.

- ▶ Only use spare parts with identical specifications (identical type and manufacturer) delivered by Skan.

2.10 Revision mode / Revision operation (manual modification of function parameters)

In revision mode, the device's function parameters (settings of the device components, process parameters) can be manipulated and changed without monitoring by protective equipment. If function parameters are changed with skan resp. maintenance level, these function changes thereafter also apply for the regular device operation. If the function parameters are changed, the device cannot be reliably operated.

1. Modify the function parameters only in a controlled manner and observe the appropriate safety measures.
2. Do not modify any function parameters if you are logged on to the system with skan resp. maintenance level.

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2.11 Using cleaning and disinfection agents

Cleaning and disinfection agents can have substances that are hazardous to health, are highly flammable and can form explosive mixtures.

1. Observe the safety instructions and safety data sheets of the cleaning and disinfection agents used.
2. During cleaning and disinfection tasks, adhere to the applicable output rates for the cleaning and disinfection agents used (50 ml/m² acc. to BGR (occupational health regulations of the employers' liability insurance association in Germany)).
3. Observe the additional information on cleaning and disinfection agents. → [Chapter 26 'Cleaning and disinfection agents' on page 100.](#)

2.12 Disposal and recycling

Improper disposal of the device or device components can cause hazards to humans and the environment.

1. Dispose of the device or device components in compliance with the pertinent laws, regulations and directives.
2. Used batteries and electronics have to be collected and sent to a recycling collection point in compliance with the pertinent laws, regulations and directives.



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3 Device conformity

3.1 Conformity statement Skan



The originals of the declarations, reports can be provided at request.

Conformity was proved against following standards and directives:

- IEC 61010-1:2010
- IEC 61010-1:2010/AMD1:2016
- IEC 61010-2-081:2015
- EN 60529
- EN 300 328 V2.2.2:2019
- EN 300 330 V2.1.1:2017-02-07
- EN 301 489-1 V2.2.3:2019-11
- EN 301 489-17 V3.2.2:2019-12 (Draft)
- IEC 62368-1:2014
- EC directive 2014/53/EU

For more detail please see attached declaration of conformity to your delivery.

3.2 Conformity statement concerning included radio system



The originals of the declarations, reports can be provided at request.

3.2.1 FCC (Federal Communications Commission; USA)

3.2.1.1 FCC Compliance statement

- FCC ID: 2AXZXSKANWGTX2
- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

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3.2.1.2 Information to user

This equipment has been tested and found to comply with limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generate, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver (Connect the equipment to a circuit different from that to which the receiver is connected).
- Consult the dealer or an experienced radio/TV technician for help.

3.2.1.3 RF Exposure statement

The equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

This device and its antenna must not be co-located or operation in conjunction with any other antenna or transmitter.

3.2.1.4 Do not

Any changes or modifications to the equipment not expressly approved by the party responsible for compliance could void user's authority to operate the equipment.

3.2.2 ISED (Innovation, Science and Economic Development; Canada)

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- This device may not cause interference.
- This device must accept any interference, including interference that may cause undesired operation of the device.

3.2.3 CE (Conformity European; EC)

CE1177

- EN 60950-1
- ETSI EN 301 489-1
- ETSI EN 301 489-17
- ETSI EN 300 328
- EMC DIRECTIVE 1999/5/EC

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4 Scope of delivery

- Glove tester, suitable for your test object
- USB Stick for wireless communication
- AC/DC adapter
- Case or transportation trolley (optional)
- Networking extender (optional)
- Instruction handbook
- Additional RFID tags/transponder for your system (optional)

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5 Transport and installation information

5.1 Packaging – transportation to delivery site – unloading

The responsibility for packaging and transportation to the delivery site depends on the contractual stipulations. Usually, delivery conditions based on Incoterms 2000 are used.

For deliveries that are performed according to Incoterms 2010 DDU destination, the following rules apply:

- **Packaging**
Skan delivers the system and/or system parts in packaging suitable for the type of transportation.
- **Transportation**
Skan bears the costs and risks for the transportation of the system to the agreed destination.
- **Unloading**
Unloading of the system from the transportation equipment is to be organised by the customer. Costs and risk during unloading are borne by the customer.



Inspect the system upon arrival for completeness and damage.

5.2 Storage and preservation

Observe the following points to maintain an unused system over a longer period of time:

- The storage space must be dry;
- The system must not be subject to extreme heat or cold;
- The system must be stored on a level, stable surface;
- The storage surface must be capable of bearing the weight of the system;
- The system must be thoroughly cleaned before storage;
- The system is to be protected from dust and dirt with a cover.

For battery storage: ➔ [Chapter 13.3 'Battery storage' on page 31](#).

6 Device identification

The device is identified by the device's nameplate. The nameplate is mounted on the technical unit of the device.

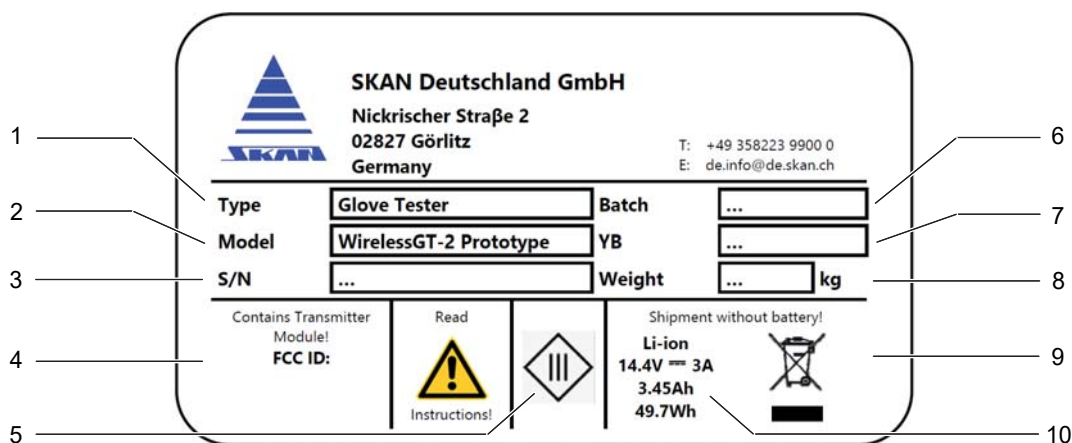


Fig. 1: Nameplate

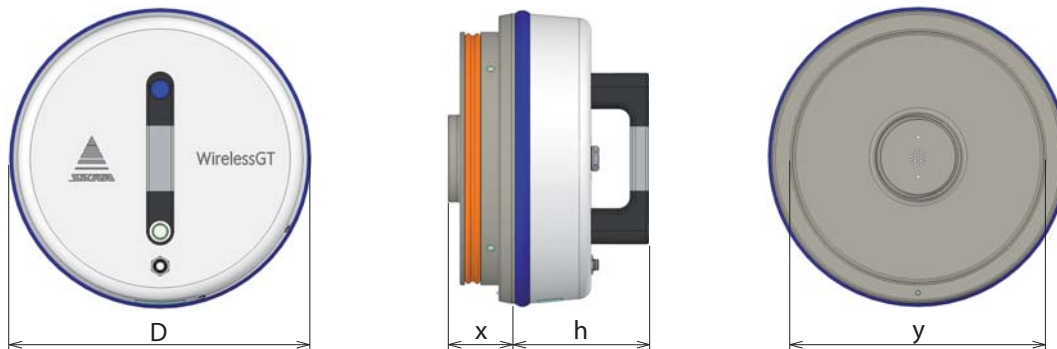
- 1 Type designation of the device
- 2 Model designation, possibly variant of the device
- 3 Serial number
- 4 Conformity code / number of the integrated radio module
- 5 IEC protection class => appliance class III.
- 6 Production batch number - Skan internal number
- 7 Year of construction
- 8 Weight of the device in "kg"
- 9 Symbol for indicating "separate collection" acc. directive 2006/66/EC annex II. and acc. directive 2002/96/EC annex IV.
- 10 Specification of battery capacity acc. directive 2006/66/EG article 21
- 11 IP code acc. EN 60529 (work in progress ...)



The "Release notes" show that the present manual corresponds to the software used
[→ Chapter 17.2 'Information about the application' on page 46.](#)

7 Technical data

7.1 Dimensions and weight



Identification	Value
Dimensions	D = 307 mm "x" and "y" depends on the test disc (glove port) h = 155 mm
Weight	approx. 3 kg (depends on the used test disc)

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7.2 Electrical connection and consumption values (AC/DC adapter)

Identification		Value
Part ID Skan		1304167
AC inlet		3 pole AC inlet IEC320-C14, Class I power unit
INPUT	Voltage range	90 ~ 264V AC 127 ~ 370V DC
	Frequency range	47 - 63 Hz
	AC current (type)	1.3A / 115V AC 0.6A / 230V AC
OUTPUT	Rated power	90 W
	Rated current	3.75 A
	DC voltage	24 V DC
Type		GST90A24-P1M
Manufacturer		Mean Well



For more details see <http://www.meanwell.com> or data sheet / specification of the manufacturer!



Use only with corresponding detachable cord to power socket!

7.3 Sound pressure level

Identification	Value
Sound pressure level	< 65 db(A)

7.4 Environmental conditions

Normal environmental conditions assumed.

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Identification	Value
Volume of a glove-sleeve (gauntlet) combination	≤ 25 l
Temperature (indoor)	5 - 40 °C
Relative humidity (indoor)	< 80 % rF at temperature to 31 °C; linear declining to 50 % rF at 40 °C
Location of use	Inside use only! Use only in dry spaces! Do not use the WirelessGT in medical technology areas!
Altitude	0 - 2000 m above sea level

7.5 OS requirements

- Windows 7 (32 and 64Bit)
- Windows 8 (32 and 64Bit)
- Windows 10 (32 and 64Bit)
- Requires DOT.NET version 4.5.2 or newer (32 and 64Bit)
- "OPC Core Components Redistributable" version 3.0.105.1 or newer (32 or 64Bit)
- DOT.NET version 3.5 or newer (for the OPC Core Components Redistributable)
- DOT.NET version 4.5.2 or newer (for the actual OPC Server)
- "OPC UA local-discovery-server" version 1.3 or newer

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7.6 Other specifications

Identification	Value
Frequency band	ISM-band 2400.0 MHz – 2483.5 MHz
Maximum RF output power	10dBm (EIRP)
Connection to MAINS supply	None / Battery operated
Overvoltage category	None
Pollution degree	2
Means of protection	Class III
Environmental conditions	Normal
For use in wet locations	No
Equipment mobility	Hand-held
Operating conditions	Continuous
Marked degree of protection to IEC 60529	IP 54
Standard pressure sensor measurement range	0 - 30 PSI; 0 - 2068 mbar
Low pressure sensor measurement range	0 - 0,8 PSI; 0 - 55,16 mbar

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8 Information on device use

8.1 Intended use

The device is suitable for periodic/routinely testing of the physical integrity of glove-sleeve (gauntlet) combinations of isolator systems.

8.2 Overview of the measuring process

With the WirelessGT the physical integrity of the tested glove is determined by its air tightness respectively by its ability to hold the pressure. To do this, the pressure change method is used (e.g. described in ISO 10648-2).

The physical integrity test with the WirelessGT is totally automated and it is possible to test several independent glove simultaneously. Integrity of the glove is determined by the air tightness respectively by the ability to hold the pressure.

During the test the operator can display a graph with pressure history of each glove(-system)¹ within a popup window. Additionally indicates the pressure in the test cover seal and the pressure of the glove(-system)¹. A list of completed tests with test results can be displayed.

A process report and a configuration report will be saved in PDF format.



¹ glove(-system) - Phrase is used in the instruction handbook meaning of a specimen either the system is one-piece like gauntlets or combinations of sleeve with glove.

8.3 Prohibited applications



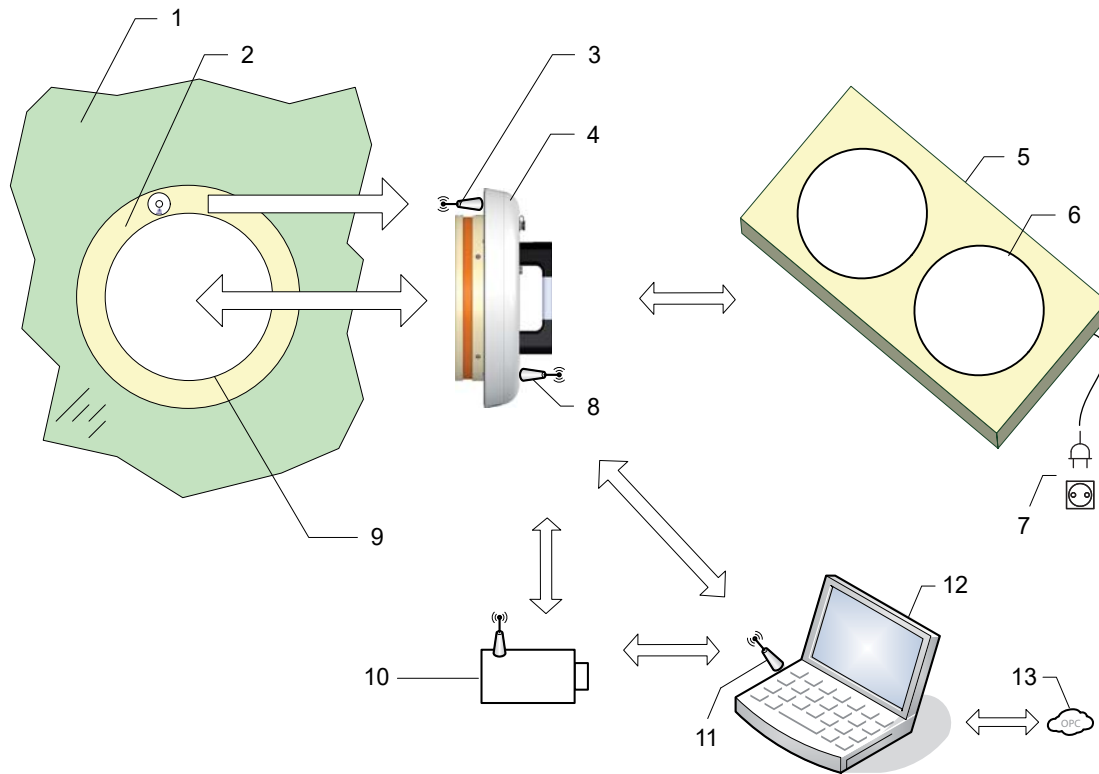
Be aware, by impermissible use the protection of the device may be impaired!

The device **is not suitable**:

- For operation in potentially explosive areas pursuant to 1999/92/EC Appendix 1;
- The WirelessGT cannot be used for testing for freedom from holes of single use medical gloves (EN 455-1);
- The use of the WirelessGT to test the tightness of test specimens in the overpressure test on isolators that are in production is prohibited. In the event of leaks in the test specimen, this can lead to undesired contamination within the isolator.

9 Layout

9.1 Device interfaces



No.	Main interfaces
1	Glas pane of the containment
2	Glove port with port identification (RFID Transponder)
3	RFID reader module for port identification - read only
4	WirelessGT
5	Trolley with storage / charge places
6	Storage / charge place for WirelessGT
7	Main power supply
8	Communication module to monitoring / control system
9	Glove system
10	Network extender (option)
11	USB-stick for communication to a network of WirelessGT
12	Laptop with monitoring / control application
13	OPC

9.2 Glove tester

The following diagram shows the main elements of the glove tester.

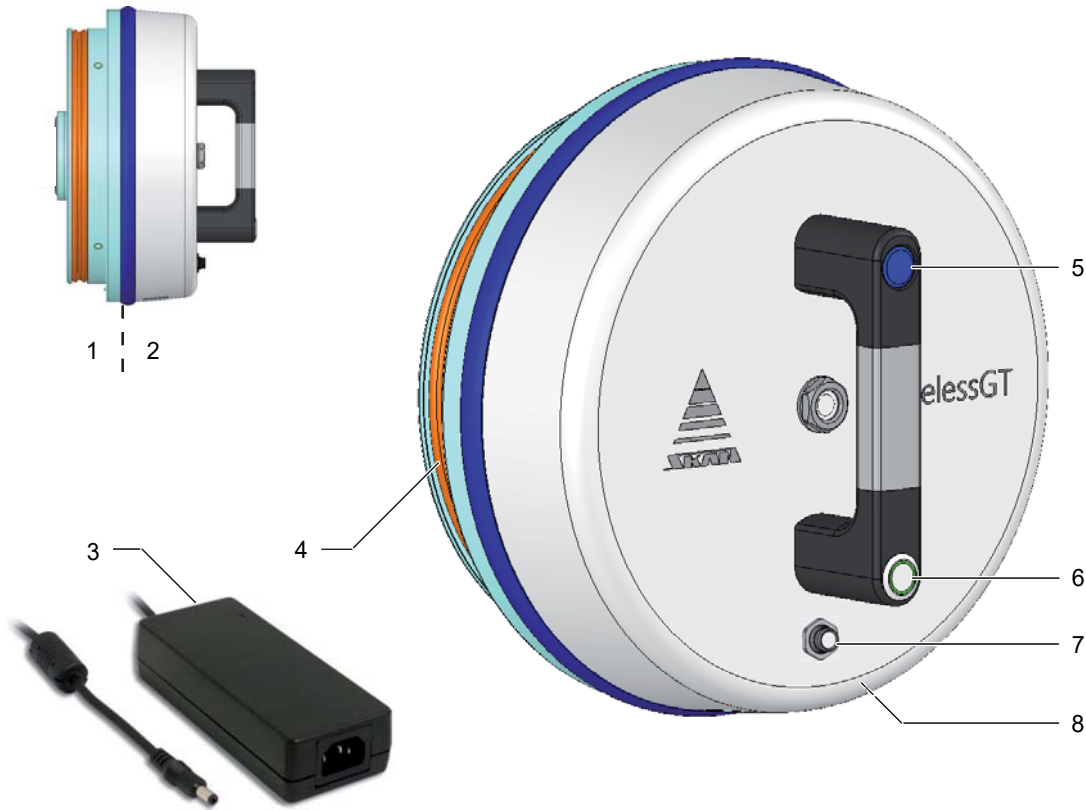


Fig. 2: Operating and display elements

- 1 Test disc
- 2 Technical unit
- 3 Battery charger
- 4 Pneumatic gasket
- 5 Deflating the pneumatic gasket button
- 6 On / Off button with three colour LED for signalization
- 7 Battery charger port
- 8 Service hatch; Access to the battery pack and calibration quick connections

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10 System overview

- RFID Tag
- Electronic
 - RFID reader
 - Microcontroller
 - Sensors
 - Wireless data interface
- Pneumatic
 - Miniature radial blower
 - Minicompressor
- User interface
- Battery pack
- AC/DC adapter
- Access control
 - Internal security (Operator, Admin, Skan)
 - Windows security (Guest, Operator, Admin, Service, Supervisor, Calibration, Skan)
- Wireless data interface
 - Data acquisition
 - Data control
 - WirelessGT control
- Data display
- Printer interface
- pdf storage

10.1 Wireless data interface / Identification of glove ports

The communication and control of the glove tester (GT) is realized with a PC based application via a radio-module within a USB Stick with antenna using the ZigBee-communication.

The so called Radio Frequency Identification (RFID) technology is integrated for identification of glove ports. The RFID System consists of two elements. One element is a so called passive Transponder or Tag with integrated chip directly installed on the glove port for an automatic identification. The second element is a so called Reader system (in the WirelessGT). The activated microchip on the transponder, exposed in the magnetic field of the reader, decodes the transmitted instruction from the reader and transmit his answer with his unchangeable serial number to the reader.



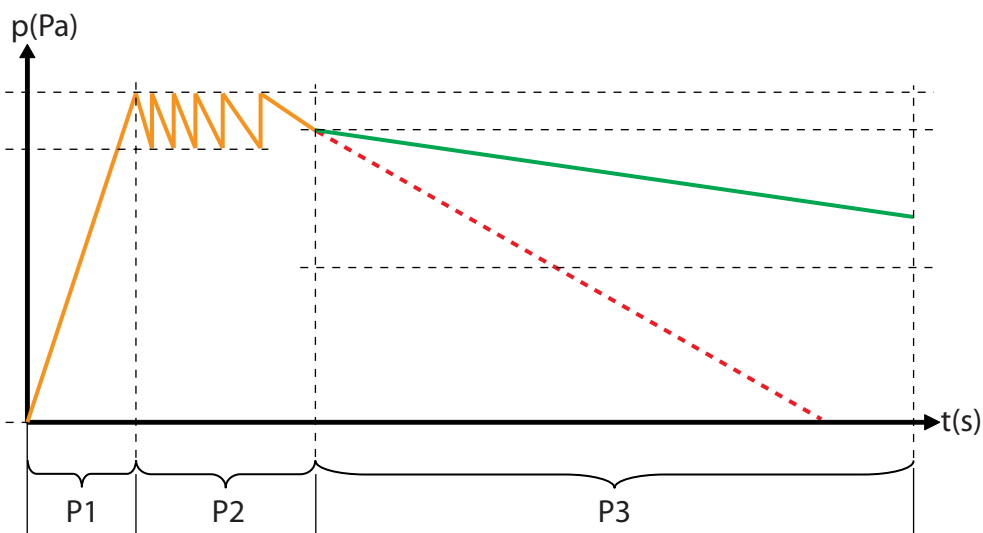
11 Operational concept

The physical integrity test with the WirelessGT is totally automated and it is possible to test several independent glove simultaneously. Integrity of the glove is determined by the air tightness respectively by the ability to hold the pressure. Principle of measurement is the "pressure change method" (e.g. described in ISO 10648-2).

The method consists of measuring the pressure decay per unit time after isolating the glove at a positive pressure. Based on the resulting pressure decay per time and the requirements defined by the user, the tested glove will be released for further processes.

11.1 Measurement process

The main function is split in three phases:

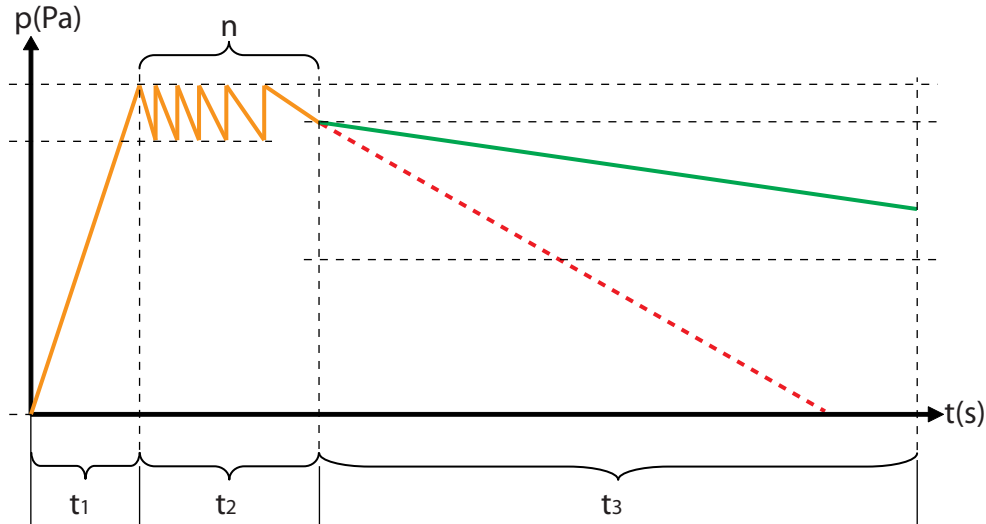


Phase	Description
Prephase	Inflation of the test cover seal.
Phase 1 (P1)	Inflation phase: In this phase the glove(-system) will be inflated to target pressure level. After set value is reached the stabilization phase starts.
Phase 2 (P2)	Stabilization phase: In this phase the glove will be regenerated and stabilized by controlling the pressure within a defined time. After phase time is elapsed the measurement phase starts.
Phase 3 (P3)	Measurement phase: In this phase the pressure decay per unit time of the glove is measured over the defined measurement time.
Postphase	Documentation of test results with a test corresponding report.



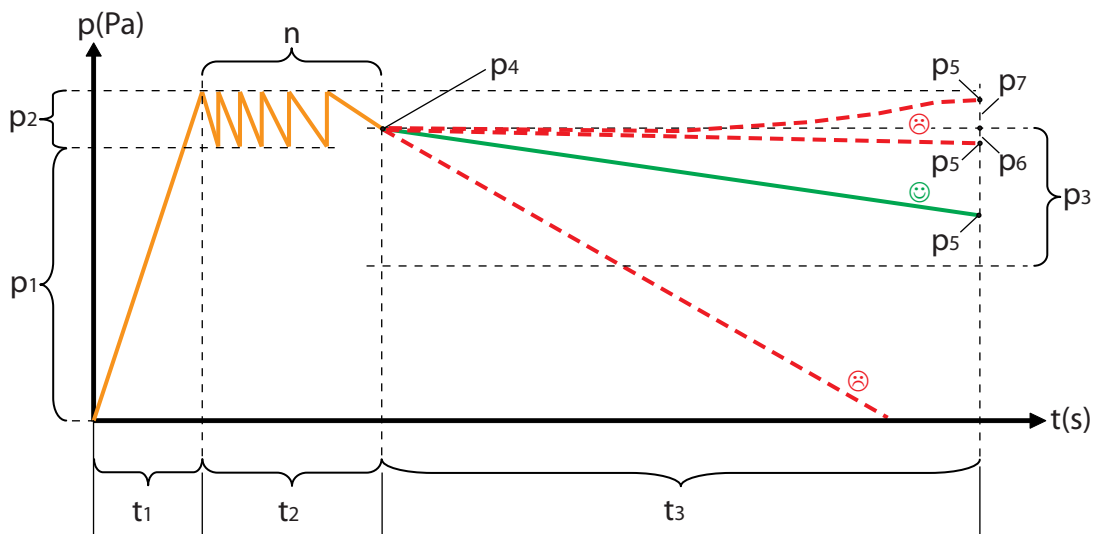
11.2 Process diagram

The diagrams as follows show schematically the process of the WirelessGT with the help of physical values: the differential pressure [Pa] (ordinate) during different phases to phase times [sec.].



Parameter	Description	Impact
t_0	Inflating time to bring test cover seal to set pressure.	Sealing/closing of test volume to environment. Relevant for correct end position of test cover within glove port.
t_1	Inflating time to bring glove(-system) to set pressure.	Parameter for initial and controlled test pressure of the specimen (parameter is specific to specimen material).
t_2	Stabilization time to maintain stable condition of specimen. Duration stabilization phase.	Parameter with direct impact to the coordinated stretching/elongation of the glove(-system). Compensation of thermal ingress, stress-deformation behaviour of the glove(-system).
t_3	Acceptance criteria [sec.] for defined glove(-system). Duration measurement phase.	Parameter with direct impact to the statement tight or not tight glove.

Parameter	Description	Impact
n	Max. number of pulses during the stabilization time	Parameter with direct impact to the coordinated stretching/elongation of the glove(-system). Compensation of thermal ingress, stress-deformation behaviour of the glove(-system).



Parameter	Description	Impact
p_1	Test/ start pressure [Pa] (pressure control level during stabilization phase).	Parameter with direct impact to the coordinated stretching/elongation of the glove(-system).
p_2	Hysteresis value for the two-level controller during stabilization phase.	Parameter for correct function of pressure controller. Limitation to minimum hysteresis.
p_3	Acceptance criteria [Pa] for defined glove(-system). Pressure decay per time unit (parameter t_3).	Parameter with direct impact to the statement tight or not tight glove. In best case, based on the recommendation of Skan.
p_4	Start pressure at start measurement phase.	Value with direct impact to the statement tight or not tight glove. Recorded in system for comparison to acceptance criteria [p_3].
p_5	End pressure at the end of measurement phase	Value with direct impact to the statement tight or not tight glove. Recorded in system for comparison to acceptance criteria [p_3].
p_6	Minimum pressure loss at the end of measurement phase	Value with direct impact to the statement tight or not tight glove.

Parameter	Description	Impact
p ₇	Maximum pressure rise at the end of measurement phase	Value with direct impact to the statement tight or not tight glove.

The pressure decay ($p_5 - p_4$) per unit time (t_3) will be monitored during the measurement phase.

😊 - good glove (tight),

😞 - bad glove (leaky)

- The pressure decay ($p_5 - p_4$) is less than the pressure drop limit (p_3)
- The pressure decay ($p_5 - p_4$) is higher than the minimum pressure loss (p_6)
- The pressure rise ($p_5 - p_4$) is less than the maximum pressure rise (p_7)

11.3 Monitored deflation (overpressure)

Deflating is done passively by opening a valve and letting the air flow (acc. differential pressure) out through the not running blower. The valve will be closed as soon as the pressure (inside glove) has dropped below a certain limit and a timeout. Due the relaxation¹ of the glove material, the pressure could rise again after the valve has been closed. As soon as the pressure exceeds the defined hysteresis, the valve is opened again to release air (repeats deflation).

¹ shrinking of the glove

Parameter	Description	Impact
lower end	Pressure after deflation of the specimen volume (after test procedure); so called neutral pressure	Stand by pressure for specimen still equipped with tester.
control level	Hysteresis of neutral pressure level controller	-
timeout for opening valve	-	-



All parameters are fixed within microcontroller and are not configurable!

11.4 Hole theory resp. investigations

Many test series executed by the Skan ¹ together with customers showed, that the critical pinhole size must have a relevance to any microbiological contamination risk of the containment. The result was, that a pinhole size smaller than 0.4mm (depending material) is not relevant for the microbiological safety of containments. Skan postulates, when we use this as a critical hole size with few positives at a high bioload a safe detectable hole size should be at 0.1 to 0.15mm. This corresponds to a safety factor of app. 2.5 or 4 (quotient from $0.4/0.15 = 2.667$). A standard reference leak which is traceable to international measurement standard is available at Skan AG!

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¹ *PDA Journal of Pharmaceutical Science and Technology Vol.65, No.3 Mai-June 2011*
“How risky are pinholes in gloves? A Rational Appeal for the Integrity of Gloves for Isolators”

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12 Commissioning

Commissioning the device may only be done by SKAN or by technicians trained and authorised by SKAN.

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13 Battery pack charger / AC/DC adapter

13.1 Visual signalling of the status of the battery pack charger / AC/DC adapter

The battery pack charger / AC/DC adapter has a power LED light. If the adapter is connected to the mains, the power LED lights up.

The charging status of the battery pack is indicated by the built-in LED light on the handle of the WirelessGT.

13.2 Charging of battery

CAUTION

Fire hazard due to wrong or defective battery pack charger!

Fire hazard !

- Only use the original battery pack charger / AC/DC adapter type "GST90A24-P1M" manufactured by MEAN WELL ENTERPRISES CO., LTD.!



In order to avoid the risk of fire and/or electric shock, the adapter must be protected against high humidity and water.

Do not plug in the adapter if there are any signs of damage to the housing, mains pins cables or connectors. In case of a defect please return to an authorised service centre.

1. Connect the adapter to the mains. With the delivered primary plug, detachable cord and the electronic power supply the adapter is ready for use.
 - ➡ The power indicator light at the adapter lights up.
2. Connect the WirelessGT to the adapter.
 - ➡ The charging process starts after about 15 seconds.
 1. The blue LED at the handle of the WirelessGT is flashing slow: It indicates that the charging process is in progress.
 2. The blue LED at the handle of the WirelessGT lights high steady: The battery pack is fully charged.
 3. The blue LED at the handle of the WirelessGT is flashing fast: Battery error. The battery pack is faulty.
 4. The blue LED at the handle of the WirelessGT lights low steady: Battery is not charged.
3. The WirelessGT can be removed at this time or left connected to keep conservation status of the battery until use.

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13.3 Battery storage



Store batterys you don't need for a short time in cool (room temperature), dry spaces.

Recharging:

- Charge the battery every half year if you don't use it longer.
 - ➡ That way you avoid the deep discharge or damage of the battery.
- With regular recharges is a storage for 1½ years possible.

14 Trolley

14.1 Basic design

The trolley is used for storage and charging of WirelessGTs.

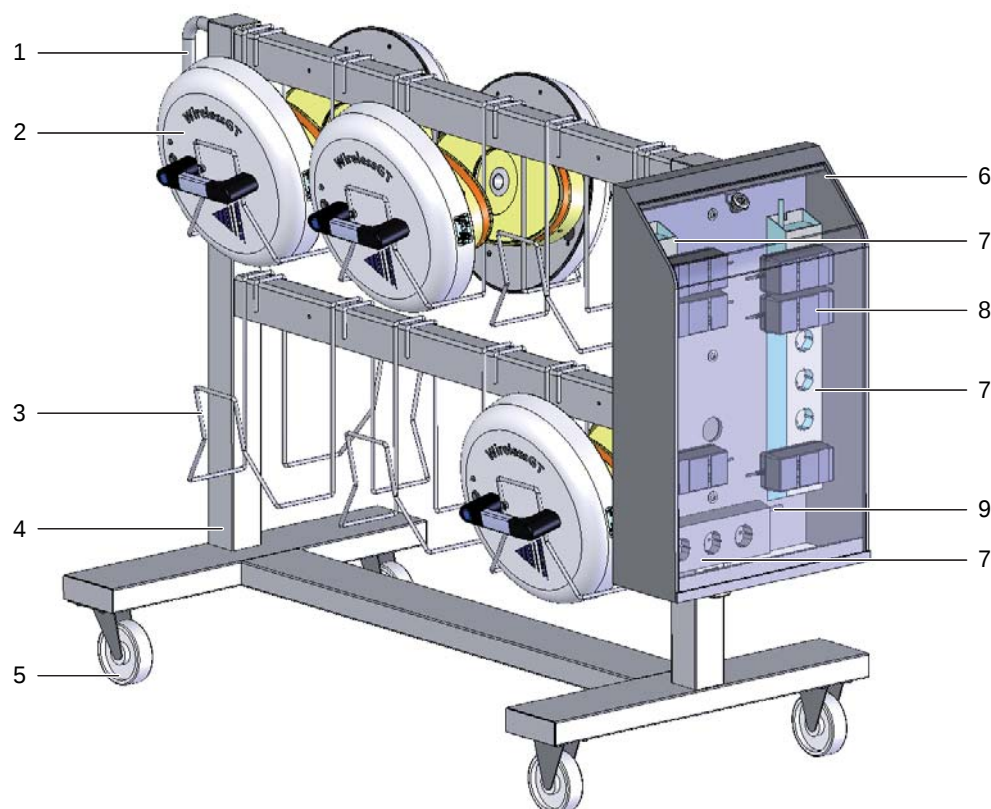


Fig. 3: Trolley

- 1 Handle
- 2 WirelessGTs on trolley
- 3 Hook
- 4 Base frame
- 5 Wheels
- 6 Electrical cabinet
- 7 Multiple sockets
- 8 WirelessGT(s) battery charger(s)
- 9 Power supply of the trolleys electrical cabinet

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14.2 Warning messages

DANGER

Energised parts!

Danger to life and death by electrocution!

- ▶ Avoid contacting of energised parts!
- ▶ Before you open the electronic cabinet, the trolley has to be disconnected from the main power supply!
- ▶ Use only a faultless trolley!
- ▶ Only conduct troubleshooting measures if you have the appropriate specialised knowledge!
- ▶ If you are unsure, please contact the Service department of Skan!

Also observe the following notes:

- Only operate with alternate current (AC)!
- Only use the trolley in dry interior rooms! Humidity can cause short-circuits!
- Do not modify or alter the trolley and any of its parts or accessories!
- Do not use trolleys with damaged parts or damaged WirelessGTs!
- Do not use this product for other equipment or devices than the WirelessGT!

14.3 Operating

The trolley is locked against rolling away using the breaks at two wheels.

1. Plug the WirelessGT(s) battery charger(s) into the multiple socket(s) of the trolleys electrical cabinet. The battery charger is part of the WirelessGT package.
2. Connect the power supply of the trolleys electrical cabinet to the main power supply.
3. Hang up the WirelessGT(s) on the trolley.
4. Plug in the charging connector(s) into the WirelessGT(s) battery charger port.
 - ➡ The WirelessGT(s) battery(s) is going to be charged.



Charging time is about 2 hours.

5. If the WirelessGT(s) battery(s) was charged:
 - Plug out the charging connector(s) from the WirelessGT(s) battery charger port.
6. Disconnect the power supply of the trolleys electrical cabinet from the main power supply.



15 Network extender

15.1 Basic design

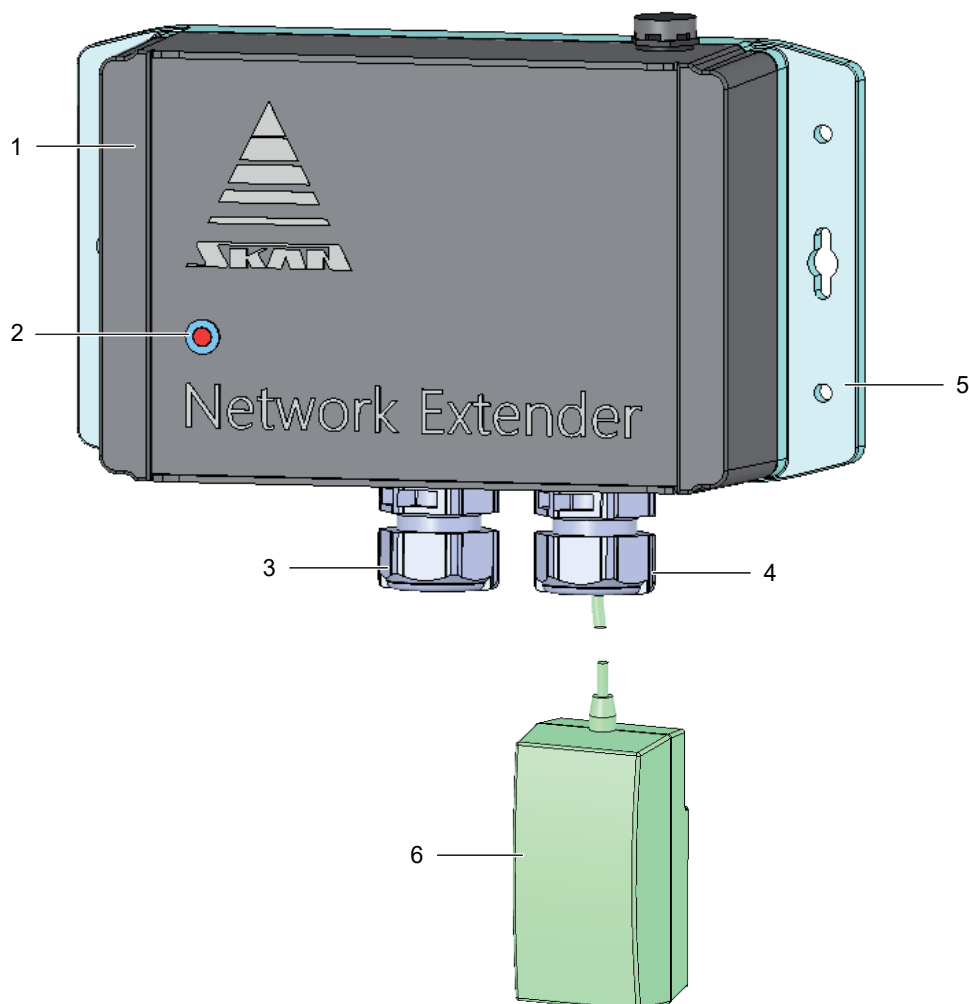


Fig. 4: Basic design of the network extender

- 1 Housing
- 2 Indicator lamp
- 3 Gland for ethernet connection cable
- 4 Gland for power supply cable
- 5 Mounting flange
- 6 Power supply

15.2 WirelessGT network

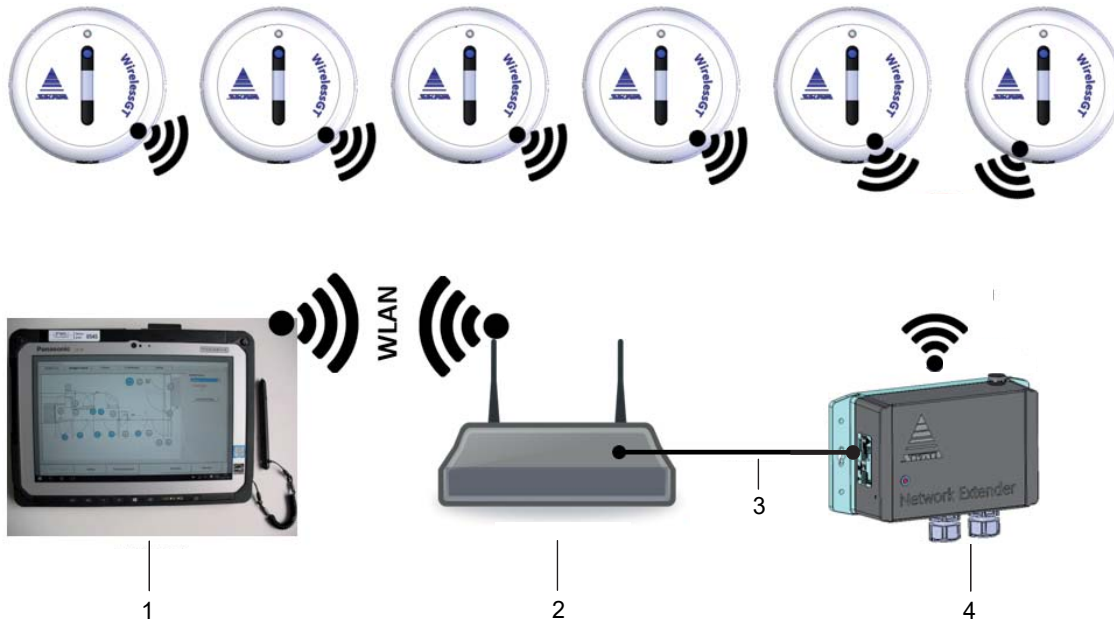


Fig. 5: WirelessGT network

- 1 Skan tablet
- 2 Router (operator company)
- 3 LAN (operator company)
- 4 Network extender

15.3 Physical installation

1. Check the optimal signal strength for your application by simulation of device positions.
2. Define the mounting position of the network extender.



Do not install the network extender in switch gear cabinets as this will affect the radio signals. If possible, it should be installed outside the plant with the antenna facing the plant.

3. Install the electrical respectively communication connections to the defined mounting position.
4. Connect the network extender → [Chapter 15.4 'Electrical installation' on page 36](#)
5. Fix the network extender.



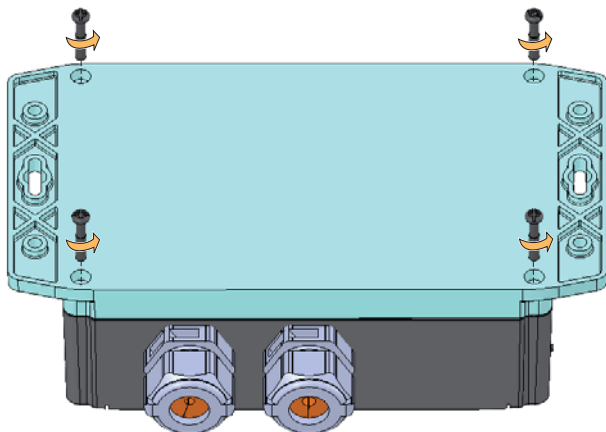
15.4 Electrical installation

✓ as Router: communication via ZigBee

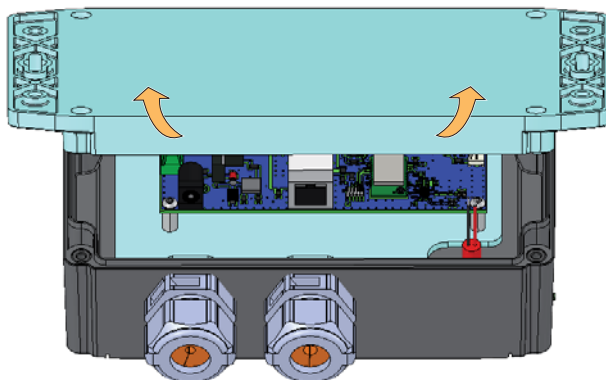
✓ as ethernet: communication via LAN

The electrical respectively communication connections are installed.

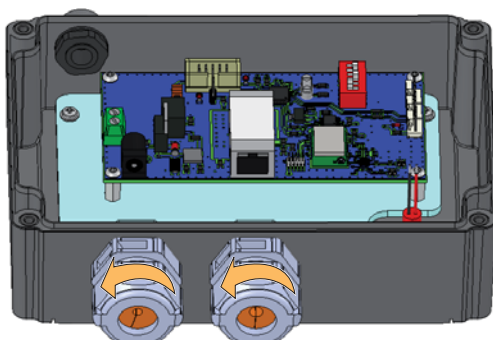
1. Unscrew recessed countersunk flat head screws (4x) on the network extenders housing.



2. Open the device housing.

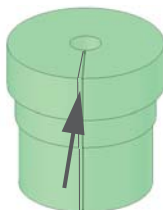


3. Unscrew pressure screw of the splittable cable gland and extract the splittable insert.

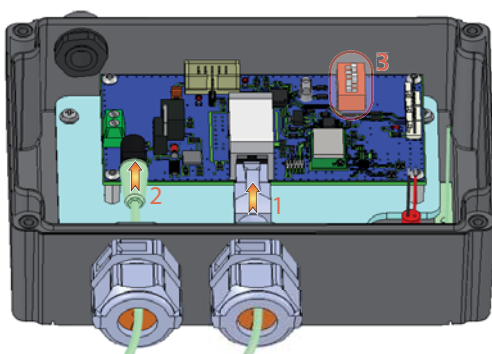


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4. Push cables through the splittable cable glands.



5. Insert the cable gland into the cable gland body.
6. Connect the power supply cable to the PCB terminal block (pos.2). The supply should be 24V and at least 1A (e.g. a standard wall-mount power supply).

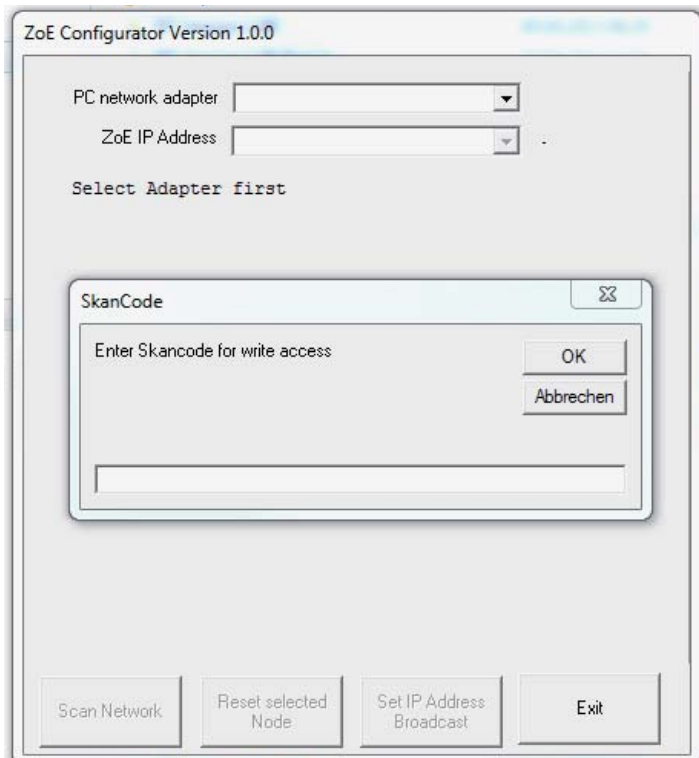


7. **Ethernet installation:**
Connect the Ethernet cable to the Ethernet port (pos.1).
8. **Router installation:**
Set the DIP switches on the pcb same as the network selection in the PC application (pos.3).
9. Close the device housing by use of the countersunk flat head screw by gently pulling on the cables (ethernet and power supply cable).
10. Tighten the cable glands by use of the pressure screws.
 - ➡ Install the device at the determined position by use of an adequate fixation solution (the fixation material is not included with the assembly due to different wall/ceiling situations).

15.5 Configuration

1. Starting the **Find Ethernet Module** program.

➡ The following window will be displayed:



*The **Find Ethernet Module** program supports two modes of operation:*

- *User mode, where the IP address of the Ethernet module can be read/set.*
- *Full mode which allows Firmware updates, reloading of default settings, recovering the Ethernet module if the IP configuration does not correspond to the attached network.*

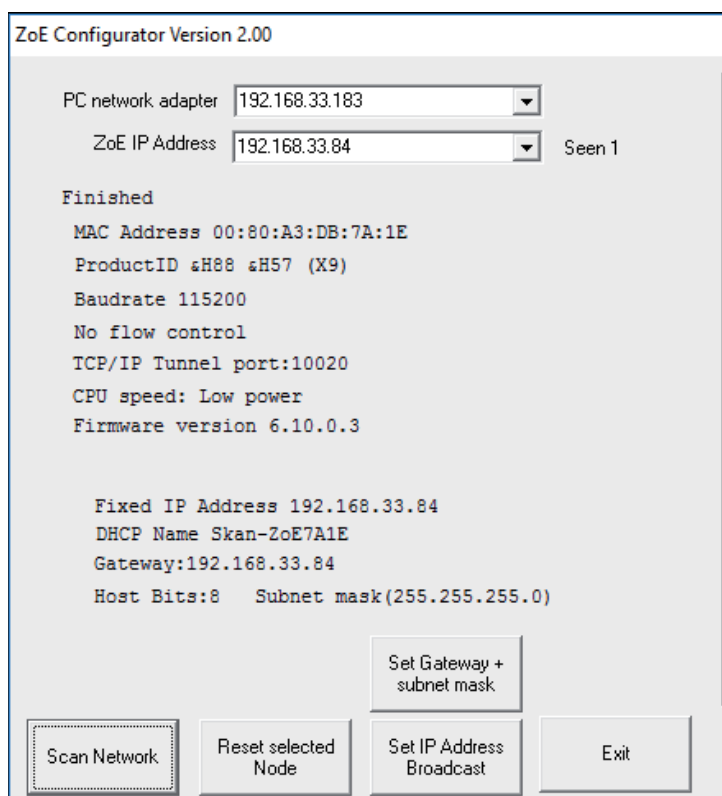
2. Simply click on OK to start in User Mode.
3. Select the PC network adapter.



If the PC has multiple Ethernet interfaces / IP Addresses, select the interface where the Network extender is attached.

4. Click on the button "Scan network"

- ➔ The program scans the selected network for all Network extenders. After a few seconds the program will update the list "ZoE IP Address". If only one Network extender is found, it will be automatically selected.



5. Select the needed Network extender.



Configuration of two (2) Network Extender in parallel:

If two Network Extender are used, every device gets their own IP and the installation must be done as with one single Network Extender. Both IP must be set in the general configuration slide "Ethernet" at single and at activated "Dual Ethernet" section
 ➔ [Chapter 19.1.6 'Ethernet' on page 60.](#)



- The IP Address/Port defined here should be used/configured in the WirelessGT main application in the Ethernet bridge configuration options (Setup screen - Ethernet input field). The default value for Port is 10020.
- Contact your IT department if has questions or you're not sure what values to use.

- If the Ethernet module is configured for a fixed IP address (not DHCP) an extra button [Set Gateway+subnet mask] will appear. Clicking on the button [Set Gateway+subnet mask], the program will request the IP address of the Gateway and number of host bits for the subnet mask. For example a host bits of 8 corresponds to a subnet mask of 255.255.255.0.

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Please contact your IT support for help with setting the correct values!

- Clicking on the button “Reset Selected Node” will reboot the selected Network Extender
- Clicking on the button “Set IP Address Broadcast” will display a question box asking if the Ethernet Module should be set to DHCP mode:
 - ▶ If you answer YES the module will be configured to use DHCP to obtain the IP address configuration from a DHCP server in the network.
 - ▶ If you answer NO the program will display a input box requesting the IP address to use. This IP address must correspond to the network configuration for the PC network and should be a valid IP4 address (A.B.C.D).
- Clicking on Exit will end the program.

16 Access control and user administration

16.1 Internal security system

The WirelessGT has three user levels:

- **Operator:** No pin access required. Possible to start tests, view completed tests and print reports;
- **Administrator:** Pin access required. Please find default pin in the documents supplied with the device. Rights as operator plus configure process parameters and modify software configuration;
- **Skanservice:** Special Pin required. Code changes on a daily basis. Rights as administrator plus enter Revision mode and sensor adjustment;

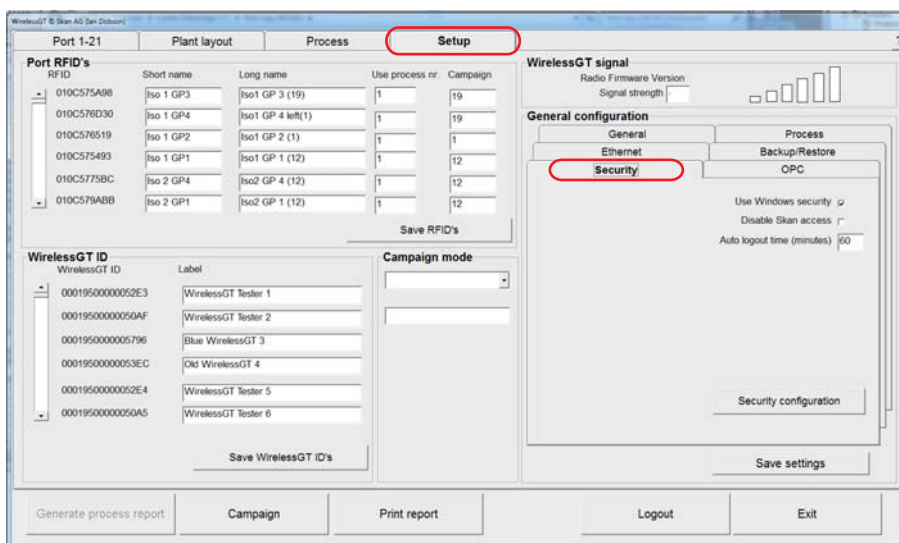
16.2 Windows security system

The application has its own, internal security system described above but you can also use the Windows security system of the connected network.

For this operation you have to be logged in with Administrator rights.

1. Click the [Setup] tab on the screen.

➔ The "Setup" screen appears:



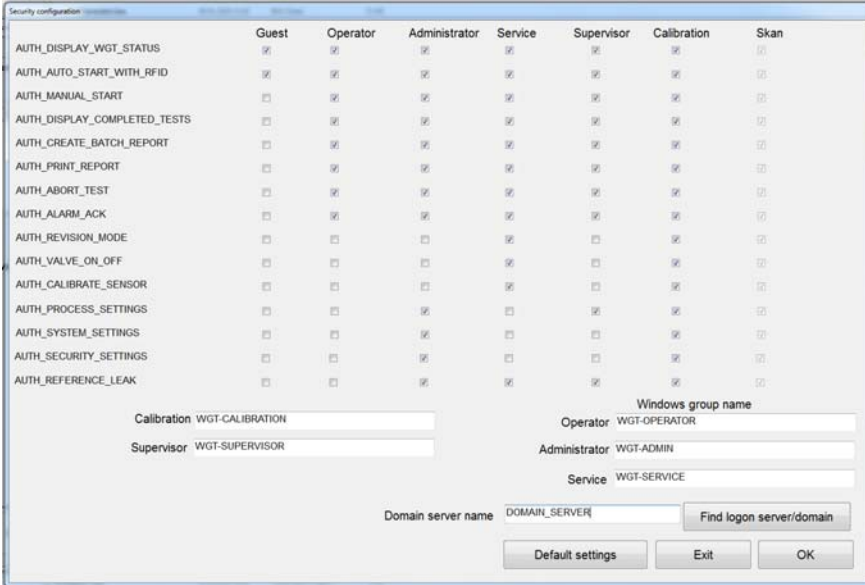
2. Set the option **Use Windows security** in the "General configuration" area.

➔ The application will use the Windows security system for checking login names and passwords as well as the security area for the logged in user.

The [Security configuration] button is enabled.

3. Click the [Security configuration] button in the "General configuration" area.

➡ The "Security configuration" window appears:



	Guest	Operator	Administrator	Service	Supervisor	Calibration	Skan
AUTH_DISPLAY_WGT_STATUS	☒	☒	☒	☒	☒	☒	☒
AUTH_AUTO_START_WITH_RFID	☒	☒	☒	☒	☒	☒	☒
AUTH_MANUAL_START	☒	☒	☒	☒	☒	☒	☒
AUTH_DISPLAY_COMPLETED_TESTS	☒	☒	☒	☒	☒	☒	☒
AUTH_CREATE_BATCH_REPORT	☒	☒	☒	☒	☒	☒	☒
AUTH_PRINT_REPORT	☒	☒	☒	☒	☒	☒	☒
AUTH_ABORT_TEST	☒	☒	☒	☒	☒	☒	☒
AUTH_ALARM_ACK	☒	☒	☒	☒	☒	☒	☒
AUTH_REVISION_MODE	☒	☒	☒	☒	☒	☒	☒
AUTH_VALVE_ON_OFF	☒	☒	☒	☒	☒	☒	☒
AUTH_CALIBRATE_SENSOR	☒	☒	☒	☒	☒	☒	☒
AUTH_PROCESS_SETTINGS	☒	☒	☒	☒	☒	☒	☒
AUTH_SYSTEM_SETTINGS	☒	☒	☒	☒	☒	☒	☒
AUTH_SECURITY_SETTINGS	☒	☒	☒	☒	☒	☒	☒
AUTH_REFERENCE_LEAK	☒	☒	☒	☒	☒	☒	☒

Calibration: WGT-CALIBRATION
 Supervisor: WGT-SUPERVISOR
 Windows group name:
 Operator: WGT-OPERATOR
 Administrator: WGT-ADMIN
 Service: WGT-SERVICE
 Domain server name: DOMAIN_SERVER [Find logon server/domain]
 [Default settings] [Exit] [OK]

- Windows security group name for Operators (default WGT-OPERATOR)
- Windows security group name for Administrators (default WGT-ADMINISTRATOR)
- Windows security group name for Service (default WGT-SERVICE)
- Windows security group name for Supervisor (default WGT-SUPERVISOR)
- Windows security group name for Calibration (WGT-CALIBRATION)



- "Guest" is default user, if no one is logged in.
- "Skan" is not part of "Windows security". This access level is reserved for Skan engineers. These security areas cannot be edited.



If the field "**Domain server name**" is left blank, the WirelessGT application will use the local computer for checking login names and passwords as well as the access level (Operator, Admin, Service, ...). If the field "**Domain server name**" is set to anything other than "Empty", the WirelessGT application will attempt to use the defined domain for checking login names and passwords as well as the access level (Operator, Admin, Service, ...).

The computer running the WirelessGT application needs to be in the domain / have access rights to check the security on the domain.

4. If the field "**Domain server name**" is left blank or not correct:

Click the [Find logon server/domain] button.

➡ The WirelessGT application will attempt to find the Windows domain responsible for logging into the local computer.

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5. If you would like to reset the default options for the security areas:

Click the [Default settings] button .

- ➔ The default options for the security areas will be loaded.



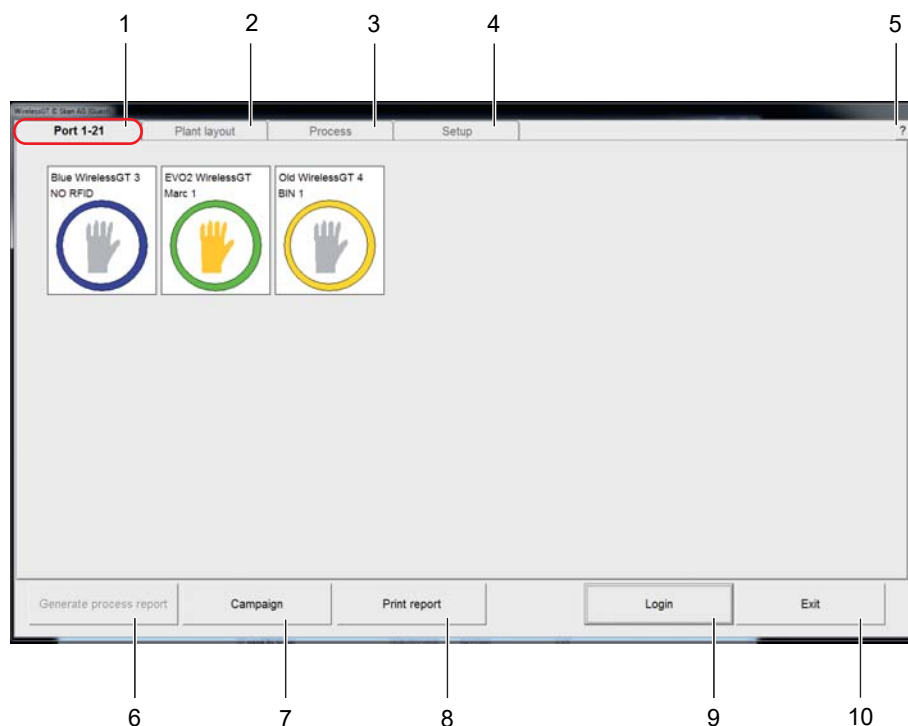
Access rights to "SECURITY SETTINGS" are required for settings.

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17 Data display

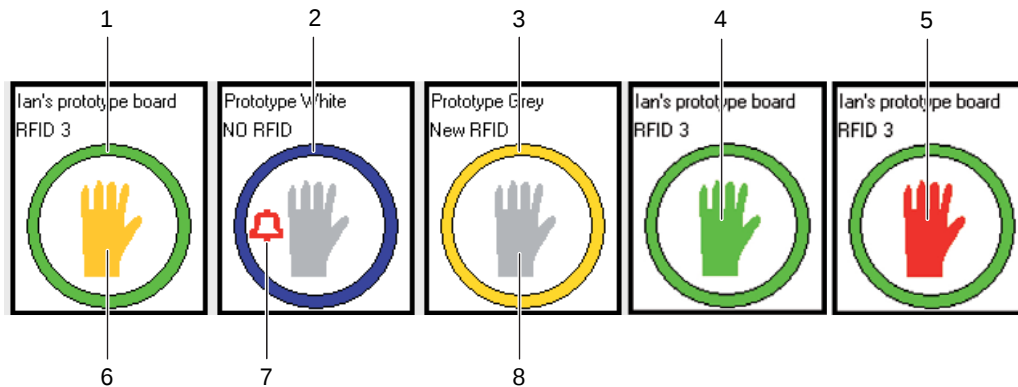
The WirelessGT icons for the used ports are displayed on the main screen.

17.1 Main screen



No.	Button / Display / Function
1	Active WirelessGT list
2	Option: Graphical campaign mode; Illustration of the plant with WirelessGT icons corresponding to the selected campaign
3	Process configuration screen
4	WirelessGT / RFID Setup screen
5	" ? " (Information about the application)
6	Generate process report for completed test
7	Open "Test list" window: overview of test performed (Campaign mode disabled) Open "Campaign mode" window: overview ports belonging to a campaign (Campaign mode enabled) More to campaign mode: ➔ Chapter 19 'Settings and configuration' on page 52
8	Print generated reports
9	Login / Logout, PIN authorisation to login
10	End program

17.1.1 WirelessGT icons

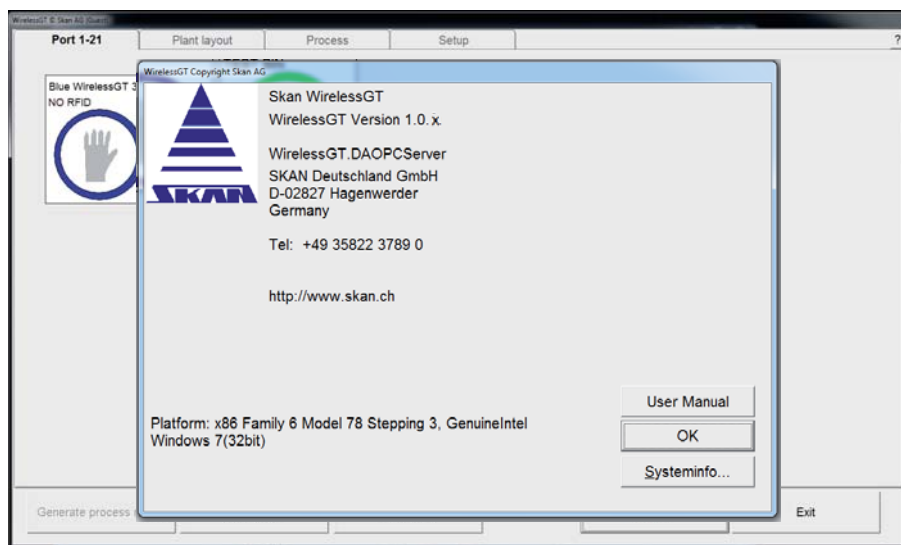


No.	Button / Display / Function
1	Seal inflated (green = ok)
2	Seal deflated (blue = inactive)
3	Seal is being inflated (orange = active)
4	Glove (-system) is good (green = ok)
5	Glove (-system) is bad (red = bad)
6	Glove (-system) is being inflated / tested (orange = active)
7	Alarm active for this glove port
8	WirelessGT is inactive (grey = unknown)

17.2 Information about the application

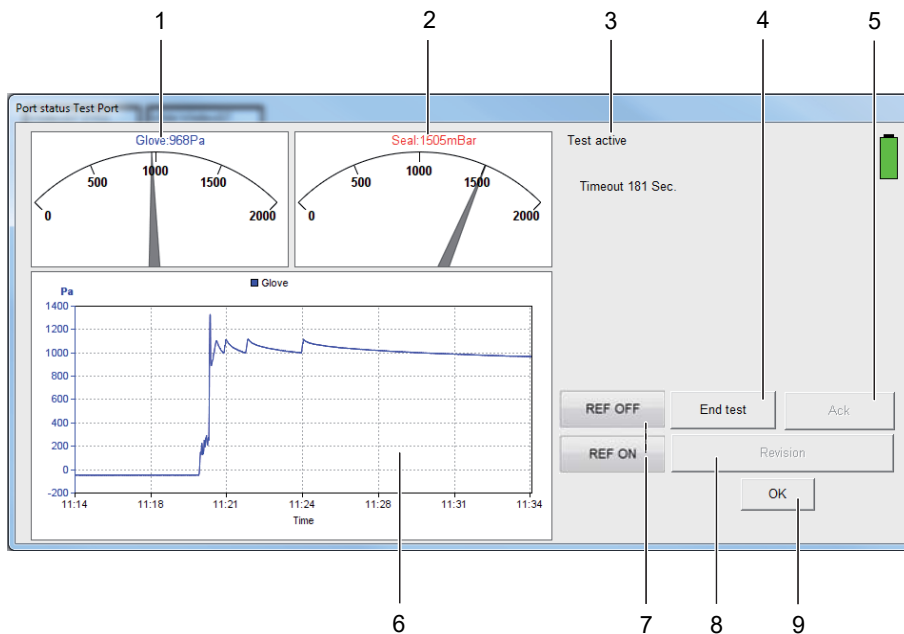
Clicking the [?] button, you can find the Skan address, information about the software version and other system information. Clicking the [User manual] button you can display this operating manual on the screen.

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17.3 Status window

You can see the port status by clicking on the WirelessGT icon.



No.	Button / Display / Function
1	Pressure inside the tested glove
2	Pressure of the test cover pneumatic gasket.
3	Status and result of the glove test / Alarm messages.
4	"Start test / End test / Retest" button (if no "Auto start test" option is set in the "Setup" screen)
5	Acknowledge of alarm messages
6	Pressure processing chart inside glove
7	Reference leak on/off buttons (option)
8	Revision mode button (active for user with adequate access level)
9	OK: Close window, switch back to the main screen.

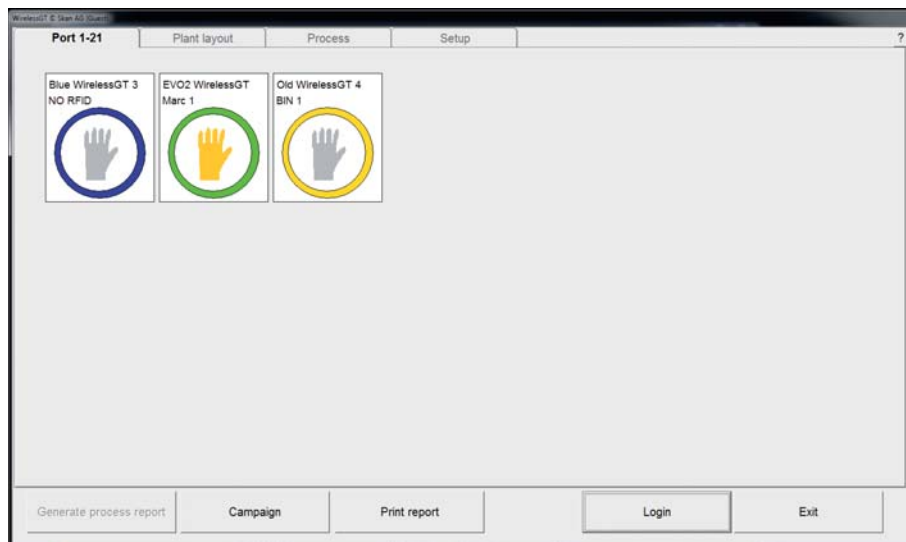
17.4 Process report

Each time you click [Generate process report] button on the main screen, process screen or setup screen, the system generates a process report as pdf file.

The process reports are saved in a configured directory. You can have only a limited number of files in this directory. If the defined account (max. number of files) reached, an error message appears on the "Port status" screen and the application get closed. Empty periodical the directory for the process reports → [Chapter 20 'Data storage' on page 62](#) respectively move them in another directory!

If the option "Include process comment" is set on the "Setup/Process" screen, the user needs to type in a comment before the system will generate a process report. This comment is included on each page of the process report.

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The process report will be saved in PDF format.

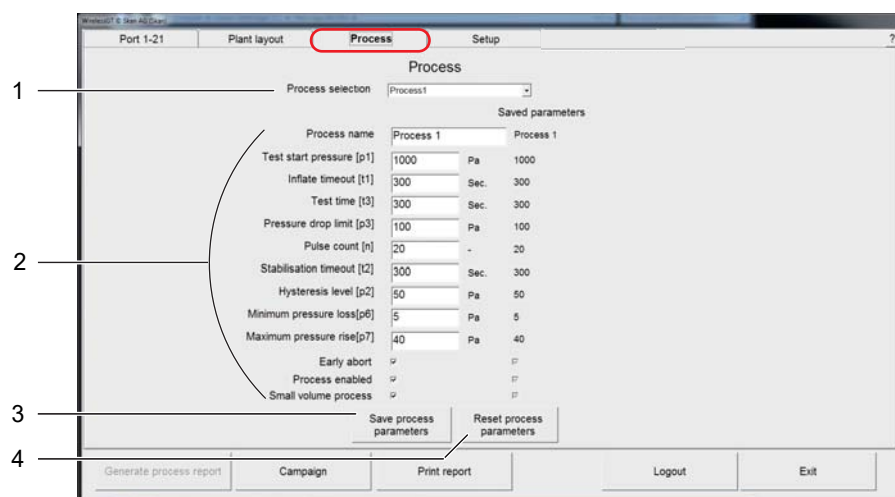
The file name for the report is testXXXX-YYYYMMDD.pdf where XXXX is the process number and YYYYMMDD is the date (YYYY – Year, MM – Month, DD – Day of Month). The process number is automatically incremented by the system each time a process stops (automatically or when a user aborts the process).

You have the possibility to print the generated process report using the [Print report] - button. ➔ [Chapter 22.12 'Print files' on page 89](#)

18 Database for test parameters

Parameter and settings for tests are stored in so-called processes. Select the required process respectively set parameters for the current test in the "Process" screen.

Administrator user level is required!



No.	Button / Display / Function
1	Process selection. Max 9 processes are stored.
2	Process parameters
3	Save changes to configuration file For change any parameters you have to log in as administrator.
4	Reload the saved process parameters, losing any changes you have made.



For explanations to the individual process parameter used:

➔ [Chapter 11 'Operational concept' on page 24](#)

➔ [Chapter 24 'Exemplary process parameters' on page 93](#)

CAUTION

Bursting of gloves due to high test pressure.

Risk of injury!

► Do not set the "Test start pressure (p1)" higher than 4000 Pa!

18.1 Configuration report

Each time you click [Save process parameters] button on the "Process" screen, the system generates a configuration report as pdf file.

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The file name for the report is confXXXX-YYYYMMDD.pdf where XXXX is the configuration number and YYYYMMDD is the date (YYYY – Year, MM – Month, DD – Day of Month).

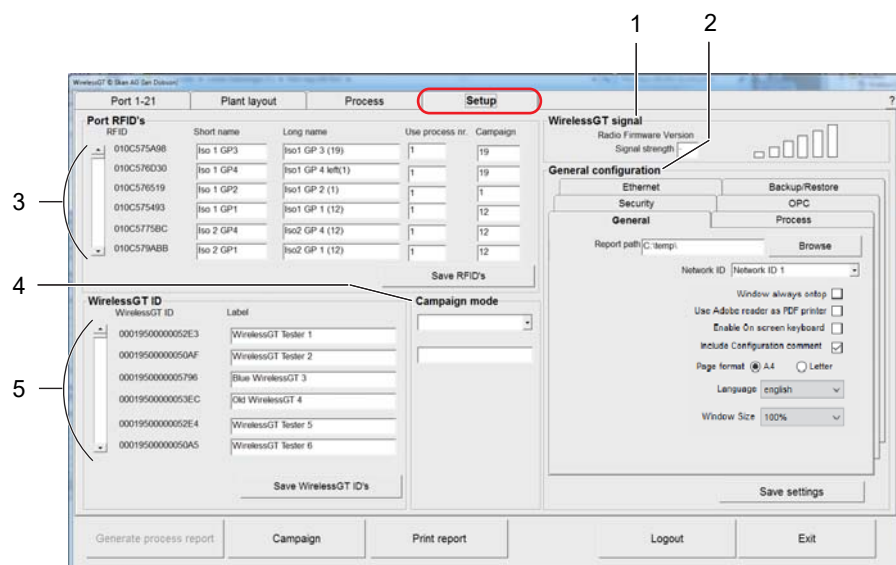
You have the possibility to print the generated configuration report using the [Print report] - button.

➔ [Chapter 22.12 'Print files' on page 89](#)

19 Settings and configuration

General software configuration respectively particular settings like glove port identification and WirelessGT identification can you do / change in the "Setup" screen.

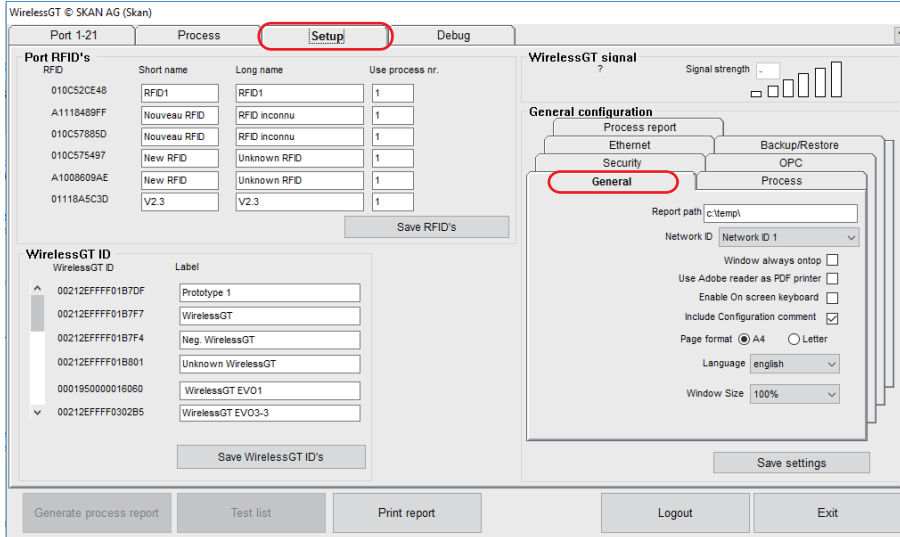
Administrator user level is required!



No.	Button / Display / Function
1	WirelessGT Signal: In this box the signal strength from the last message from a WirelessGT is displayed. The more bars that are green the stronger the signal.
2	General configuration: see next chapter.
3	Port RFID's: This list holds the RFID for each port. The "Short name" of the port is used in the WirelessGT on the main screen. The "Long name" is used on the process report. The "Use process nr." indicates the process should be used for this glove port / RFID. The "Campaign" number indicates the campaign whereby the glove port should be tested.
4	Campaign mode: The campaign holds all the RFIDs / glove ports should be tested successively. There is possible to define up to 5 campaigns.
5	WirelessGT ID: This list holds the unique ID number of each WirelessGT. The "Label" is a description of the WirelessGT, for example internal asset number of the WirelessGT. This information is included in the process report.

19.1 Setup - General configuration

19.1.1 General

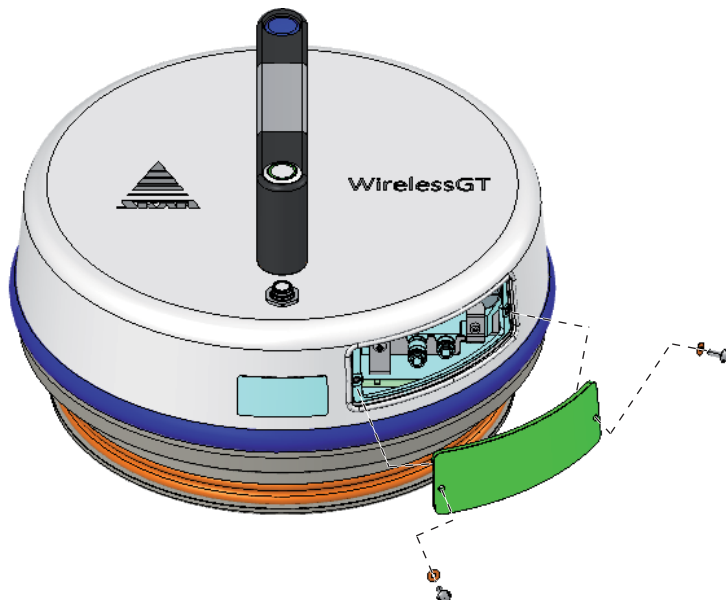


- **Report path:** This option defines where the process and configuration reports are saved.
- **Network ID:** The WirelessGT system support 8 different network configurations. WirelessGT's can only connect to the PC software when the Network ID on the WirelessGT and PC software are the same. With this option it is possible to have 8 plants close to each other, each with their own PC and WirelessGT's but keep the process data separate. The default Network ID is 0. Changing this option on the PC will mean that the configuration on the WirelessGT (through DIP switches) will also have to be changed. Hardware settings concerning network ID configuration see below.
- **Window always ontop:** When this option is set, the WirelessGT application remains on screen, in front of other programs even if the application loses focus. This option is mainly used when the WirelessGT application runs on a SCADA or monitoring PC where the user does not have the rights to task switch.
- **Use Adobe reader as PDF printer:** On some systems the internal printer driver is unable to configure the printer driver correctly. The system prints out blank pages. If this option is set, the Adobe PDF Reader is used to print the reports.
- **Enable on screen keyboard:** When this option is set, the [On screen keyboard] button will be displayed at the top right of the screen. When the user clicks this button, the Windows Standard "On-screen keyboard" will start.
- **Include Configuration comment:** If this option is set, the user needs to type in a comment (min 10 characters) before the system will generate a configuration report. This comment is included on the first page of the report.
- **Page format:** With this option it is possible to select letter or A4 page size for all reports generated.
- **Language:** The language can be selected with this option.
- **Window size:** On systems with a high resolution display, the window / elements are quite small when set to 100%. With this option the user can define how large the windows in the WirelessGT application should be. The windows can be enlarged to 100%, 115%, 120%, 150% or 175%.

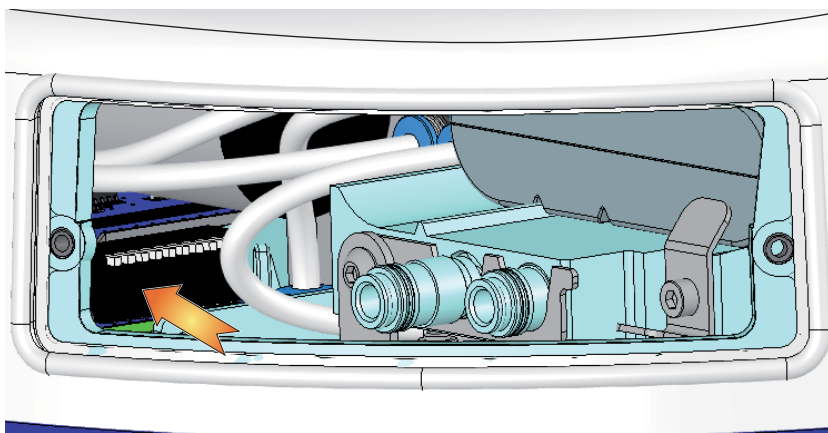


19.1.1.1 Hardware settings concerning network ID configuration

1 Open the service hatch of the dedicated WirelessGT.



2 Make settings on the switch strip shown below:



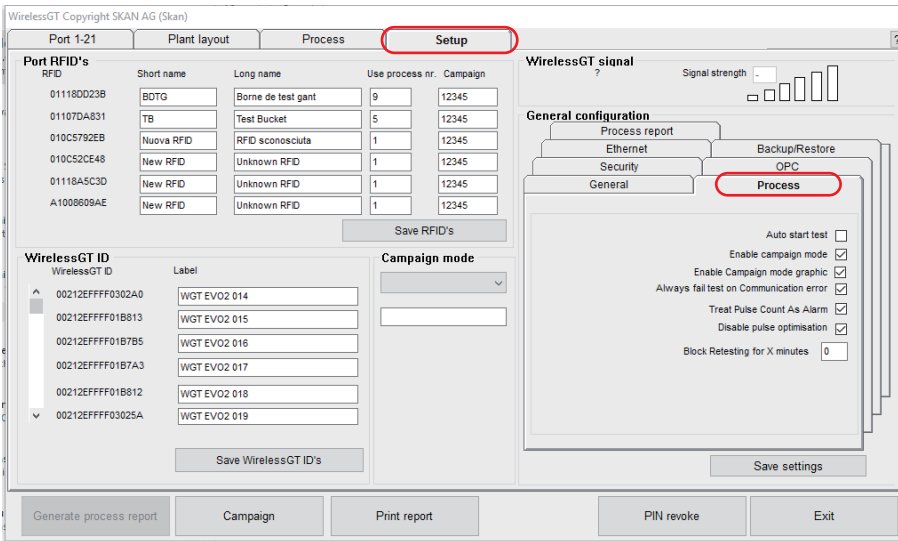
- Switch position above means - 0 - OFF
- Switch position below means - 1 - ON

The switch with the No.1 is located on the left.

Switch No. at the switch strip	Alias name
1	Network ID 00x
2	Network ID 0x0
3	Network ID x00

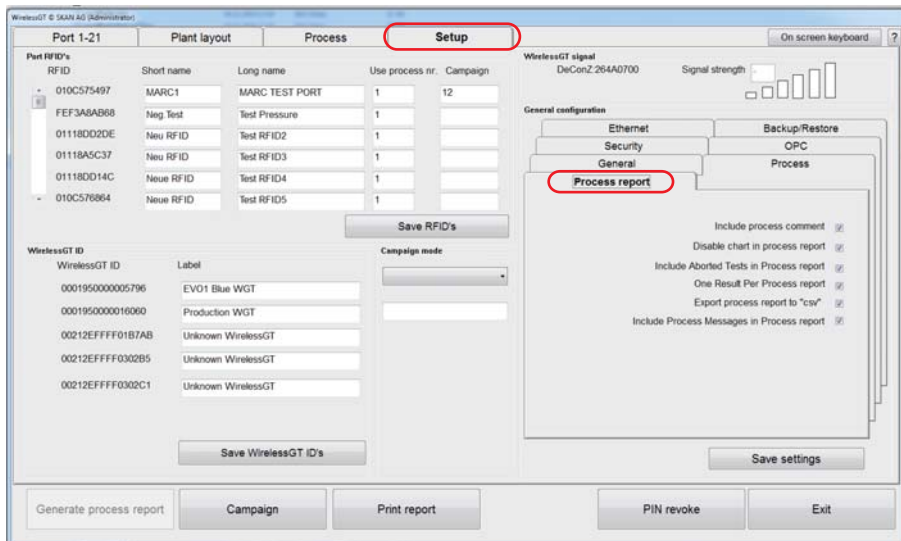
Network ID 00x	Network ID 0x0	Network ID x00	Network ID definition within application
0	0	0	0
1	0	0	1
0	1	0	2
1	1	0	3
0	0	1	4
1	0	1	5
0	1	1	6
1	1	1	7

19.1.2 Process



- **Auto start test:** If this option is set the system will automatically start a test (Using the process number defined in Port RFID's) once the pneumatic gasket of the test cover is inflated. If this option is not set, the user has to manually start the test by clicking on the WirelessGT icon and clicking on start test.
- **Enable campaign mode:** If this option is set, the administrator can define up to 5 campaigns and link RFID's/Ports to the campaigns. An operator can then select a campaign and see which ports should be tested and which ports have been tested. (e.g. if an operator has to test all ports on the Isolator "Loading", they open the campaign form, select the campaign "Loading" as see what ports need to be tested.)
- **Enable campaign mode graphic:** If this option is set, a new TAB appears in the WirelessGT main screen: "Plant layout". Here you can represent the plant with WirelessGT icons corresponding to the selected campaign for a better process overview.
- **Always fail test on Communication error:** If this option is set, the test result will always be marked as fail if there is a communication error during the test. A communication error effects the result on the process report → [Chapter 22.12 'Print files' on page 89](#). Once the cause of error has been eliminated, you have to start test again.
- **Treat pulse count as alarm:** If this option is set, the application will abort the process if the number of pulses (n) in the stabilisation phase (t2) reaches the limit defined in the process parameters → [Chapter 18 'Database for test parameters' on page 50](#).
- **Disable pulse optimisation:** If the duration between the last two pulses is shorter than the remaining time of the stabilization phase, the glove tester will jump into the measurement phase once the test pressure (p1) is reached → [Chapter 11 'Operational concept' on page 24](#). This option has been implemented to avoid having a pulse right before entering the measurement phase or entering the measurement phase during pulsing. This could lead to a slightly shorter stabilization time than configured.
- **Block retesting for X minutes:** If this value is larger than 0 the application will block starting a glove test for the same port for the indicated time (X minutes) → [Chapter 24 'Exemplary process parameters' on page 93](#). This delay should give a glove sufficient time to recover from being tested/stretched. If this value is 0, the option is disabled / inactive.

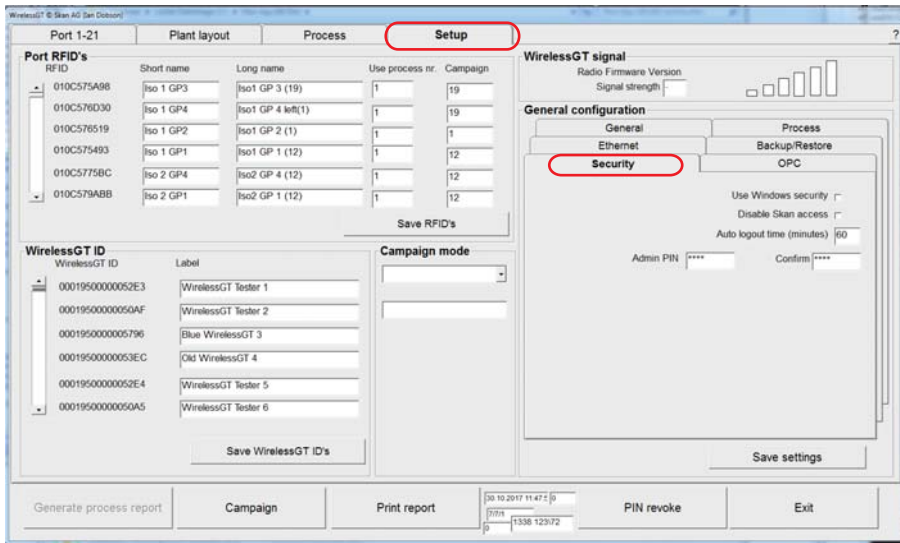
19.1.3 Process report



The screenshot shows the 'Setup' window of the WirelessGT application. The 'Process report' tab is selected, showing various configuration options for the process report. The 'General configuration' section includes checkboxes for 'Include process comment', 'Disable chart in process report', 'Include Aborted Tests in Process report', 'One Result Per Process report', 'Export process report to "csv"', and 'Include Process Messages in Process report'. The 'Process' section includes 'Backup/Restore' and 'OPC' tabs. The 'Save settings' button is at the bottom right. The 'Generate process report' button is at the bottom left.

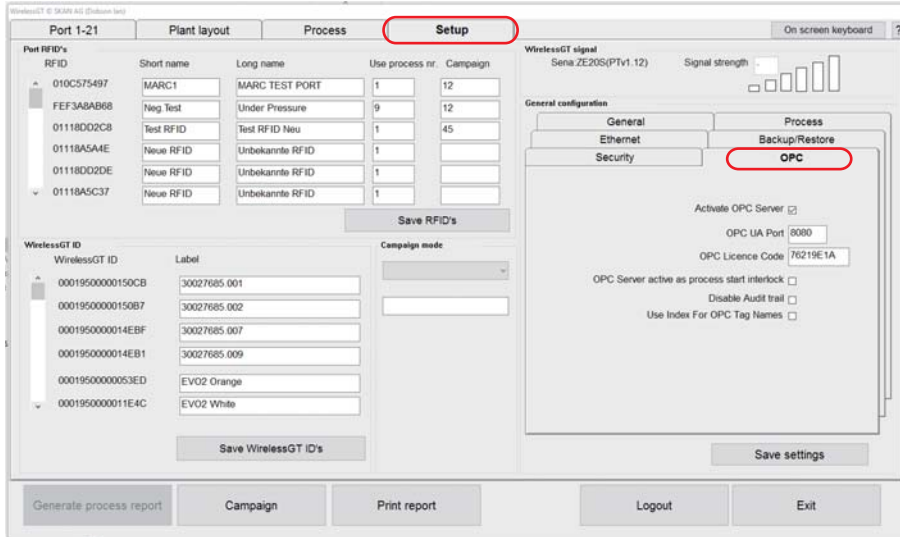
- **Include process comment:** If this option is set, the user needs to type in a comment (min 10 characters) before the system will generate a process report. This comment is included on each page of the process report.
- **Disable chart in process report:** If this option is set, then the trend is not added to the process report.
- **Include aborted tests in process report:** If this option is set, the (WirelessGT) application will include aborted tests (manually aborted tests or alarms in the glove inflate / stabilisation phase) in the process report.
- **One result per process report :** If this option is set, the application will create one PDF file, with a unique process number per test.
- **Export process report to "csv":** When this option is set, the application will generate a CSV file in the same directory as the process report. This CSV file contains the same information as recorded in the process report (Process number, Configuration number, User, Process parameters and test results).
- **Include process messages in process report:** If this option is set, process messages that occurred during the tests listed in the process report are attached to the process report.

19.1.4 Security



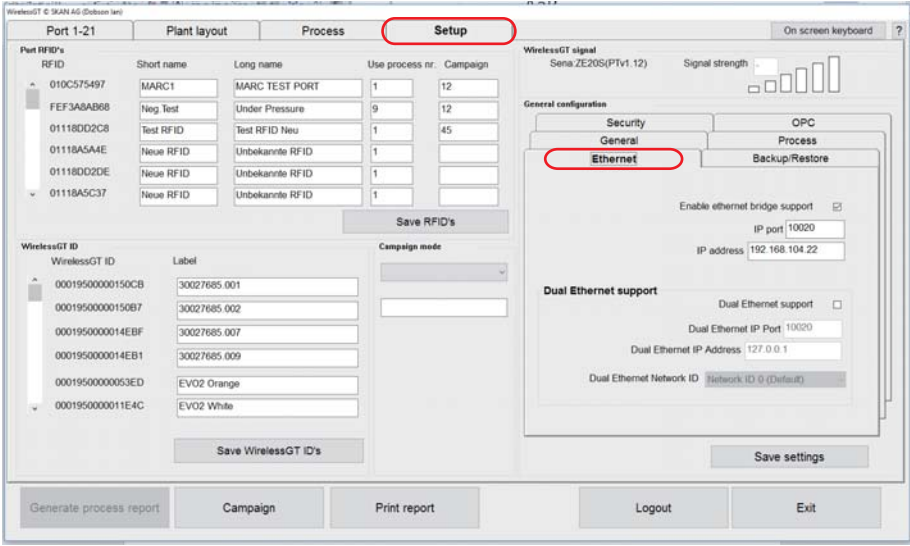
- **Use Windows Security:** If this option is set, the application will use the Windows security system for checking login names and passwords as well as the security area for the logged in user.
- **Disable Skan access:** If this option is set, the access to the software with the Skan Daily Password (Skan-Code) is disabled.
If the user forgets their password, it is almost impossible to regain access to the system! The only option available is to send the configuration files to Skan, where the option can be manually reset.
- **Auto logout time (minutes):** If this option is set to a value larger than 0, the user will be automatically logged out after the defined value of minutes without any user interaction (not clicking on any field). Maximum value: 60 minutes.
- **Security configuration:** This button is active only if the option "Use Windows Security" is enabled! Clicking on this button, you have access to the definition of the user groups and user administration. Read more in chap. "Access control" → [Chapter 16.2 'Windows security system' on page 41](#).
- **Admin Pin:** This area is only visible if the option "Use Windows Security" is disabled! Access to the Setup screen is protected by this code. The code has to be entered twice.

19.1.5 OPC



- **Activate OPC server:** This TAB is only enabled when the OPC server is installed on the PC! The WirelessGT software supports an OPC server as an optional software package. This server supports the so-called classic interfaces: data acquisition, alarm and events as well as the newer UA (universal access) interface. This option is used to configure the OPC server. If this option is set, the OPC server interface is enabled.
- The option **OPC UA Port** defines which TCP/IP port the OPC server should use for communication with clients using the UA protocol. Setting this value to 0 disables the UA communication.
- **OPC licence code:** The OPC server needs a license code before it can be activated. This code is based on the ID of the PC's Zigbee Radio Module. If the License code is incorrect the system displays an error message, and after the user has contacted Skan they will get a valid License code.
- If the option **OPC Server as process start interlock** is set, the system will not allow a user to start a glove test as long as the communication to the OPC Server/Clients is not active.
The OPC server is considered active when an OPC classic DA&AE is connected to the server or an OPC UA DA client is connected to the server and the OPC Tag UA AuditWatchdog is changed (written to by the DA client) every second or so.
- If the option **Disable audit trail** is set, the system does not create audit messages. This option should only be used if the OPC client does not support audit messages.
- If the option **Use index for OPC Tag names** is set, the OPC server create WirelessGT and RFID tags using an incrementing number (001 – 999) rather than the MAC address of WirelessGT's or the UUID of RFID.
Note: The first WirelessGT/RFID seen by the system will have Index 001, the next 002 and this order cannot be edited.

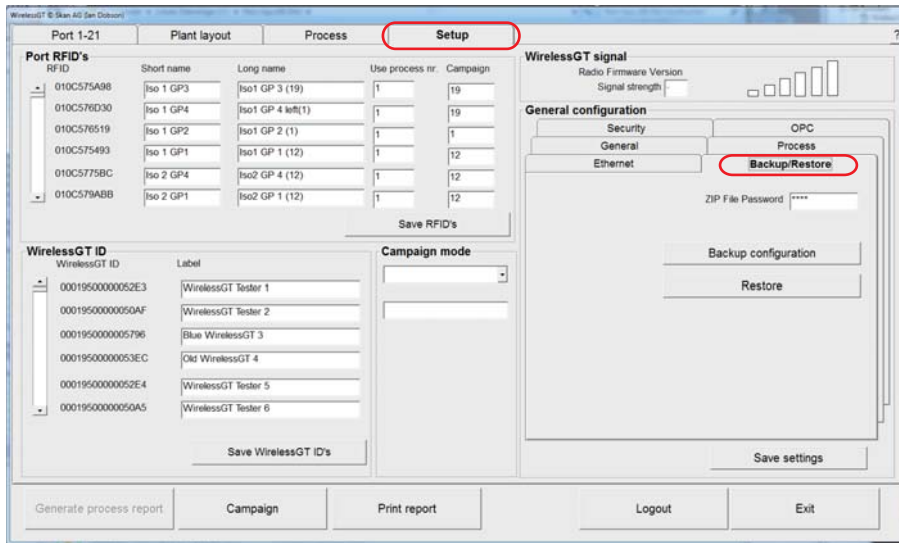
19.1.6 Ethernet



- **Enable ethernet bridge support:** When the option "Enable ethernet bridge support" is selected and the correct IP Address / IP Port are entered in the two input fields, the software will connect to the WirelessGT Radio Network through the Skan Network Extender, rather than using the USB Radio Module.
- **Dual Ethernet Network ID:** Dual Ethernet support allows the use of two Ethernet extenders. Both extenders need to be configured correctly (IP port, IP address, Network ID).

Note: It is not possible to use the same Network ID for both network extenders. This option allows the number of active WirelessGT's to be almost doubled.

19.1.7 Backup / Restore



- **ZIP file password:** The software uses the password defined in this field when creating backups. This password is required when restoring the files.
- Clicking on the **[Backup configuration]** button, it will display a file save and a backup of the configuration as ZIP file is created in the selected directory.
- Clicking on the **[Restore]** button, it will display a text box asking for the ZIP password. After the password check a file option dialog box appears, where the user can select the file to be restored. The software checks the contents of the ZIP file and restore them. After restoring the files the WirelessGT software needs to be restarted.

19.2 Configuration report

Each time you click [Save RFID], [Save WirelessGT ID's] or [Save settings] button on the "Setup" screen, the system generates a configuration report as pdf file.

The configuration report will be saved in pdf format.

The file name for the report is confXXXX-YYYYMMDD.pdf where XXXX is the configuration number and YYYYMMDD is the date (YYYY – Year, MM – Month, DD – Day of Month).

You have the possibility to print the generated configuration report using the [Print report] - button.

→ [Chapter 22.12 'Print files' on page 89](#)

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20 Data storage

System configuration is saved in "CommAppdata", to make it available to all users. Reports are saved in the directory configured. The configuration can be backed up using the [Backup configuration] button in the "Setup" screen.

You will find the "CommAppdata" folder under:

- C:\ProgramData\

If the folder ProgramData is invisible on your screen in the Windows Explorer, please change settings to display hidden files. The settings are different for each operating system.

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		Revision Date 29.04.2021 / schwla1

21 Start-up

21.1 Start-up software

- ✓ Be sure that the installed operating system (on your notebook or PC) is at least Windows 7. The WirelessGT software does not support Windows XP or Windows Vista!
- ✓ Be sure that you have administrator rights on your OS (notebook or PC)
- ✓ The USB-Stick (CONBEE II) is not inserted to an USB port at your OS.
- ✓ Windows security requires DOT.NET 4.5.2 installed.

1. Close all applications.
2. Windows should automatically find and install the correct driver for the CONBEE II USB Stick (If not contact Skan support).
3. Start **application installation** by double click execute file named "WirelessGT....msi" - icon on your desktop.
4. Follow installation instructions.
 - ➡ Installation is completed.
5. Restart your OS.
6. Default password: "wgt"

21.1.1 USB Radio module

1. Check Zigbee USB driver by inserting of USB-Stick in a free USB-port.
 - ➡ The system responds with "new hardware detected"; "new hardware can be used" (depending on the installed Windows software version).
2. Start application by doubleclick on the new icon on your desktop named WirelessGT (green ring with yellow glove).
 - ➡ The splash screen scanning of USB-port is visible.
 - USB-Stick is detected.
 - WirelessGT application is running.
 - Access to the first register named "Port 1-21" is free.

21.1.2 Network extender

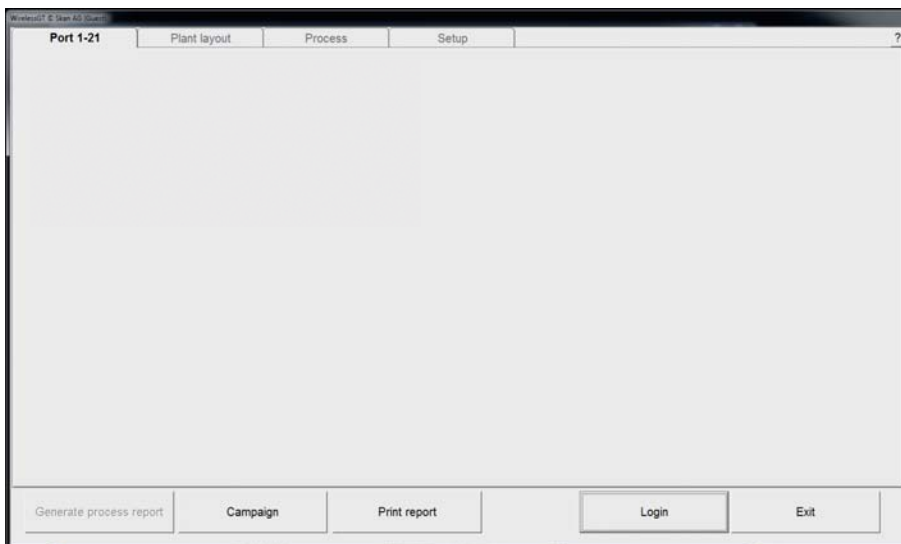
1. Attach extender to network.
2. Login as administrator to WirelessGT software.
3. Enable "Ethernet bridge support" and enter IP/Port address of network extender in the "Setup" screen (ethernet communication).

21.2 Start-up WirelessGT

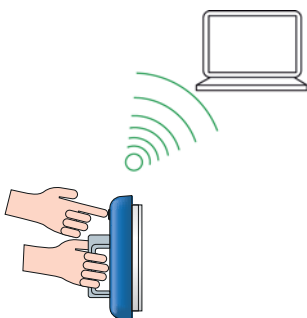
- ✓ The shape and size of the used test disc of the WirelessGT fits in the tested glove port.
- ✓ The battery pack is charged.
- ✓ The RFID-transponder with unique identification code is installed in the right position on the glove port.
- ✓ The software on the PC is installed.
- ✓ USB-Stick or network extender for wireless communication is installed.
- ✓ You have at least administrator rights.

1. Make sure that the glove is stretched in the work chamber as good as possible.
2. Start the application (Software).

➡ The main screen appears:



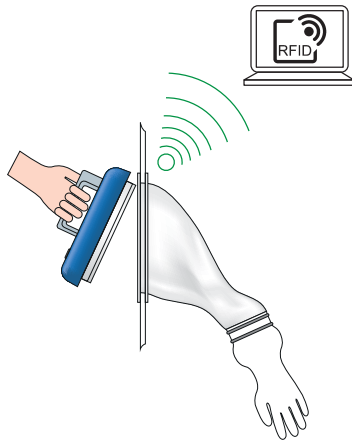
3. Switch on the WirelessGT with the On / Off button at the test cover.



➡ The LED at the test cover lights red a short time for initialisation of the WirelessGT.

The LED at the test cover is flashing green slow once the wireless communication PC - test cover is established.

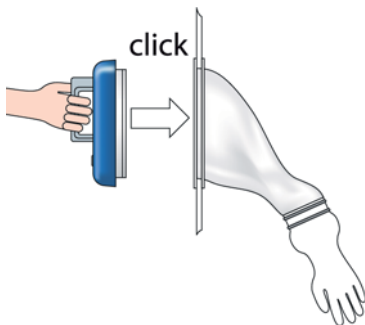
4. Detect the RFID tag at the glove port.



- ➔ RFID technology recognizes the WirelessGT / glove port.

The LED at the test cover is flashing orange.

5. Put the test cover in the right position at the corresponding glove port. Keep it in position!



➔ **⚠ CAUTION**

Fall out of device due to insufficient fixation!

Risk of injury!

- ▶ Keep the test cover in position until the pneumatic gasket is inflated respectively the LED lights orange steady!

The pneumatic gasket of the test cover will be inflated automatically.

The LED at the test cover is flashing orange slow until the min. seal pressure is reached.

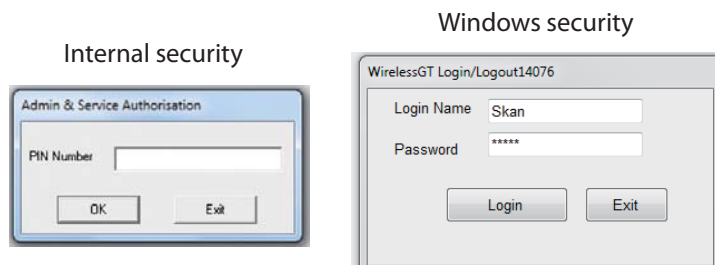
The LED at the test cover lights orange steady, you have not to keep longer the test cover in position.

The LED at the test cover lights green steady as soon as the pneumatic gasket of the test cover is inflated completely.

The LED at the test cover is flashing red if the defined timeout for inflating the pneumatic gasket is reached.

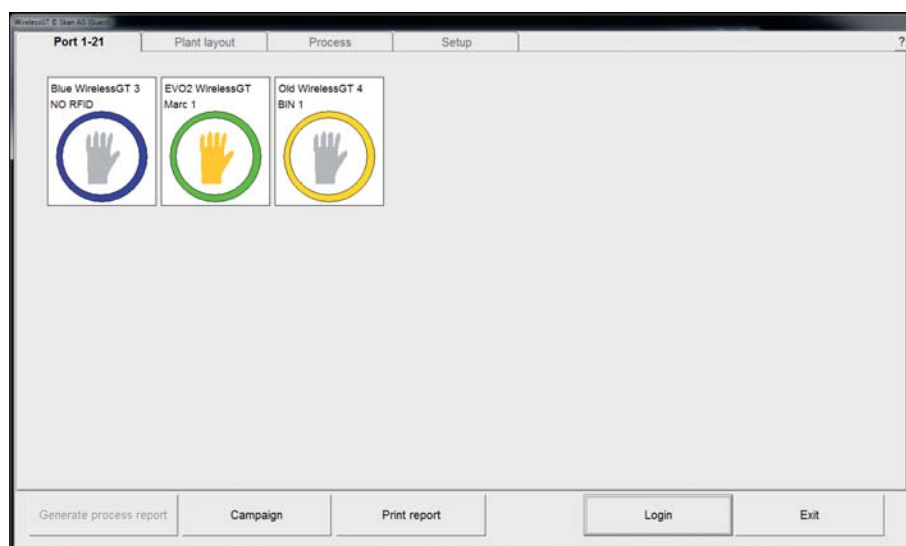
- Click the [PIN Authorisation] / [Login] button.

➡ The "Login" screen appears:



- Login with administrator rights.

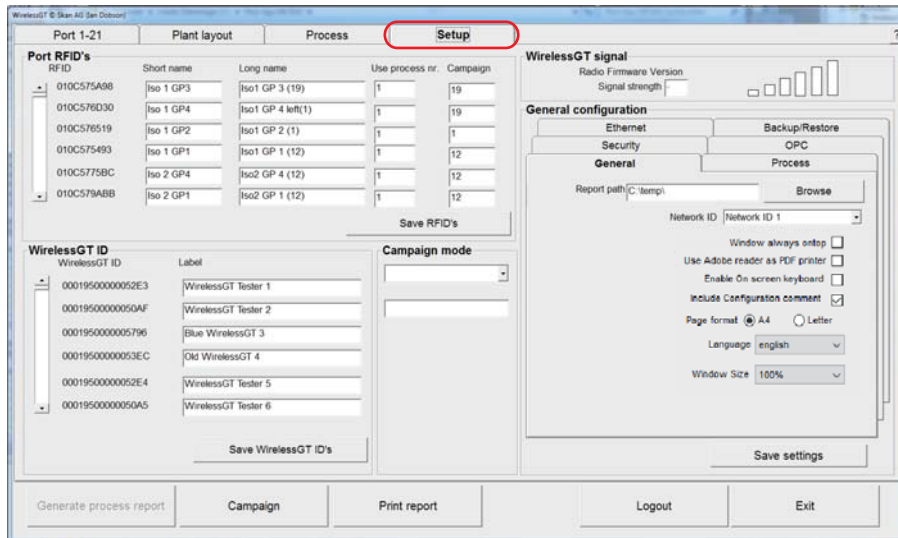
➡ The main screen appears:



21.2.1 General configuration

- Click the [Setup] tab on the screen.

➡ The "Setup" screen appears.

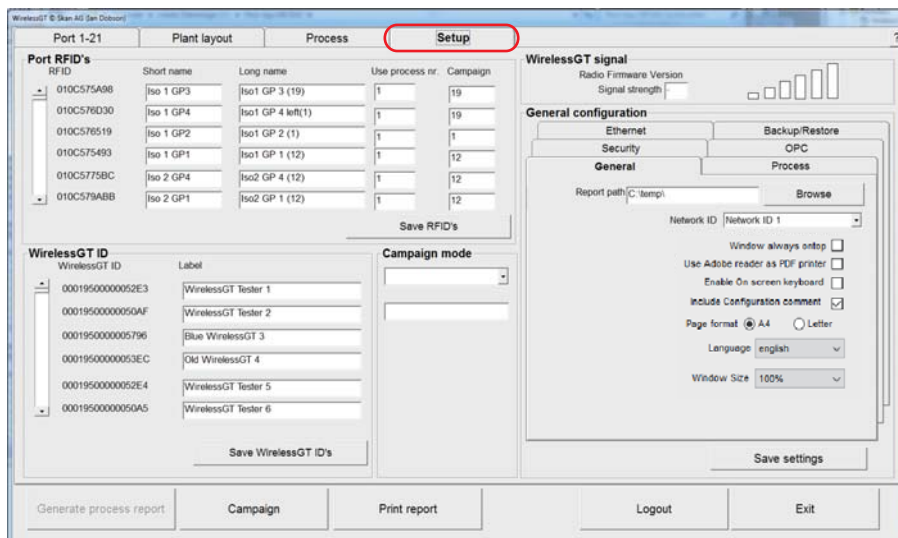


2. Make settings for your tests in the "General configuration" area.
3. Save settings.

21.2.2 New WirelessGT

New detected WirelessGT will automatically added to the "WirelessGT ID" list in the "Setup" screen.

1. Click the [Setup] tab on the screen.
 - ➡ The "Setup" screen appears.

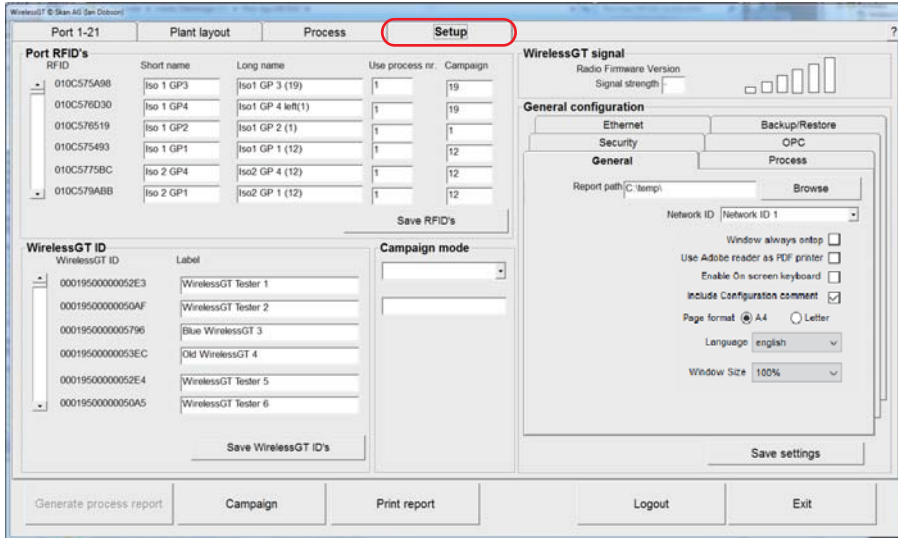


2. Rename the new WirelessGT ID, e.g. Label: WirelessGT 1,
3. Save the WirelessGT ID's.

21.2.3 New RFID's / glove ports

New detected RFID's / glove ports will automatically added to the "Port RFID's" list in the "Setup" screen.

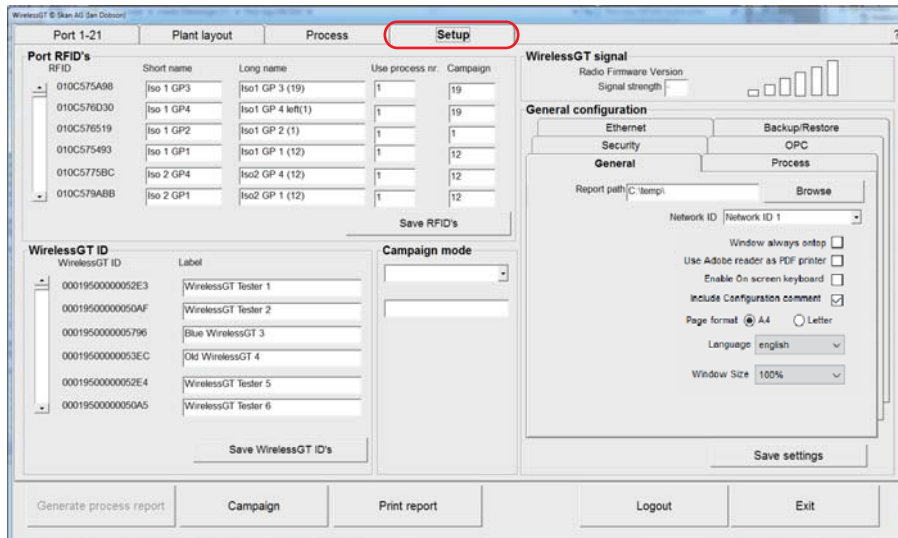
1. Click the [Setup] tab on the screen.
➡ The "Setup" screen appears.



2. Rename the new RFID's, e.g. Short name: Port 1, Long name: Glove port left
3. Allocate the required process number (Input field "Use process nr.").
4. Allocate campaign(s) if required. The already available campaigns you can find in the area "Campaign mode" of the "Setup" screen.
5. Save the RFID's.

21.2.4 Delete WirelessGT's or RFID's

1. Click the [Setup] tab on the screen.
➡ The "Setup" screen appears.



- Set the columns **Port RFID's** "Long name" respectively the **WirelessGT ID** "Label" to **DELETE** (written in capital letters).
- Save RFID's respectively save WirelessGT ID's.

➡ Devices marked with DELETE will be deleted.

The pop-up message "System shutting down ..." appears:



- Confirm the shutdown of the application.

➡ The application shuts down.

A configurations report is generated with RFID resp. WirelessGT deleted marked with **DELETE**.

If the OPC server option is enabled ➡ [Chapter 19.1.5 'OPC' on page 59](#) the OPC server will also shut-down.



It is recommended to restart the PC after deleting RFID's or WirelessGT's!

If the OPC option is enabled, a PC restart is necessary to restart the OPC server with the changed configuration!



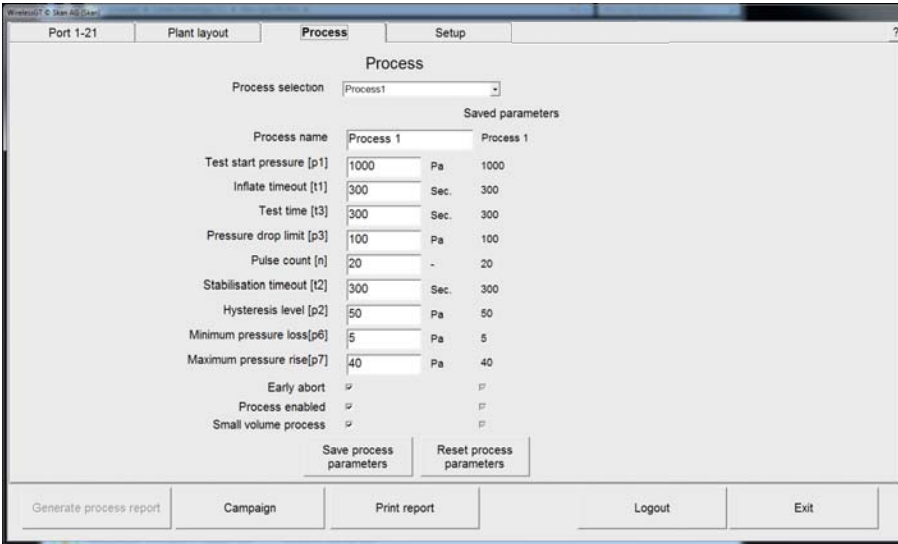
In the next generation of configuration report, deleted RFID's will not be visible!

21.2.5 Process settings

✓ No WirelessGT is active. Test cover(s) removed from the glove port(s).

1. Click the [Process] tab on the screen.

➡ The "Process" screen appears.



CAUTION

Bursting of gloves due to high test pressure.

Risk of injury!

► Do not set the "Test start pressure (p1)" higher than 4000 Pa!

2. Set process parameters.



Early abort - The test is stopped immediately if the "Minimum pressure loss" is less than [p6] or the Maximum pressure rise is higher (due to a temperature increase for example) than [p7]. If this option is not set in the "Process" screen, the test will be finished

3. Save process parameters.

21.2.5.1 Early abort

If the pressure evolution in the glove during the test is not in the defined range, you have the option to stop test immediately. Otherwise the test will be finished in usual time (Test failed).

✓ The option "Early abort" is set in the "Process" screen.

► Start testing.

➡ The test is stopped immediately if the "Minimum pressure loss" is less than [p6] or the Maximum pressure rise is higher (due to a temperature increase for example) than [p7].

The LED at the test cover lights red steady.

21.2.5.2 Process enabled

You can store max 9 processes. If you don't need a process for a short time, you can disabled it on this field to avoid tests by mistake.

- The option "Process enabled" is set in the "Process" screen.

You can use for tests only enabled processes. Otherwise an alarm message is displayed - test failed.

21.2.5.3 Small volume process

To check the self-tightness of the WirelessGT, the option "small volume process" has to be enabled. This special process allows to build up the pressure more slowly, in order not to overshoot too much.

- ✓ The option "Small volume process" is set in the "Process" screen.

► Start testing.

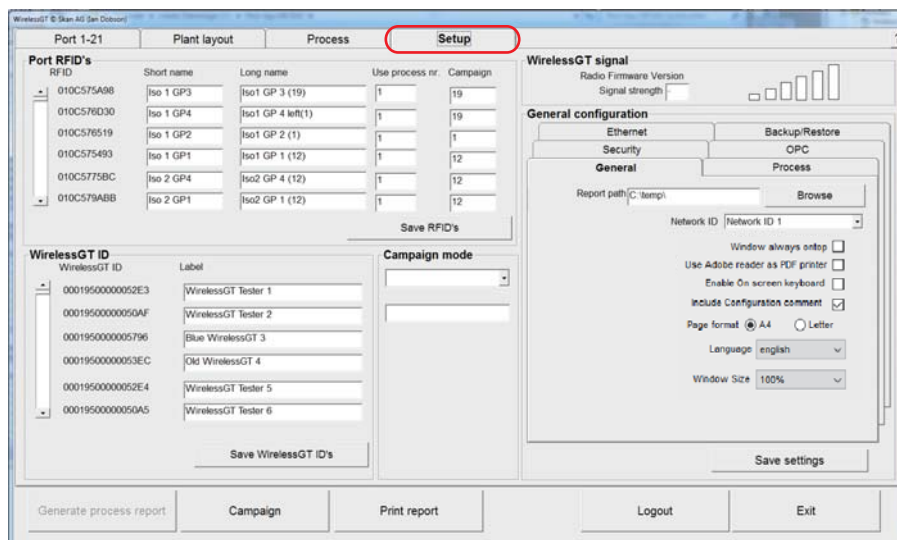
➡ The test flow is the same like by testing gloves.

21.2.6 Campaign mode

- ✓ The option "Enable campaign mode" is set in the "General configuration / Process" area of the "Setup" screen.

1. Click the [Setup] tab on the screen.

➡ The "Setup" screen appears:



2. Click in the next free "Campaign mode" input field and assign the new campaign name.
3. Save settings.
4. Enter the campaign number into the "Campaign" input field of each RFID you have to test within the campaign.
5. Save RFID's.

21.2.7 Graphical campaign mode

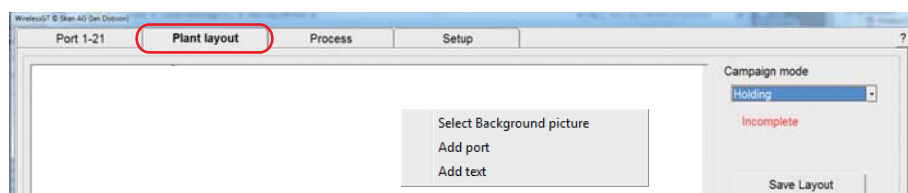
- ✓ The option "Enable campaign mode" is set in the "General configuration / Process" area of the "Setup" screen.
- ✓ The option "Enable campaign mode graphic" is set in the "General configuration / Process" area of the "Setup" screen.
- ✓ The campaign is defined and the corresponding RFID's are linked to the campaign → [Chapter 21.2.6 'Campaign mode' on page 71](#).

If the option "Enable campaign mode graphic" is set in the "General configuration / Process" area of the "Setup" screen, the "Plant layout" tab appears on the main screen.

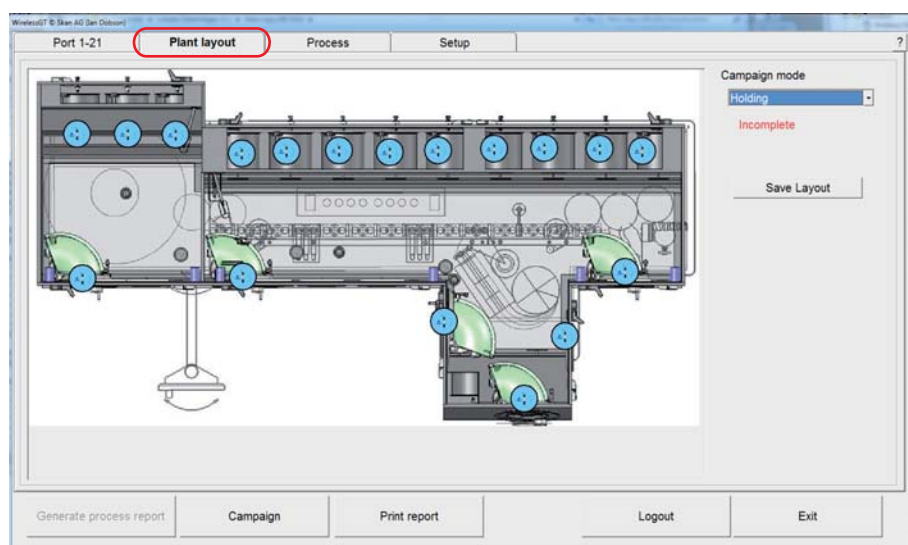
- Click the [Plant layout] tab on the main screen.
 - ➡ The "Plant layout" screen appears.

21.2.7.1 Load background picture

1. Click right on the background picture.
 - ➡ A popup menu will display where the user can select a new picture or add a new port:



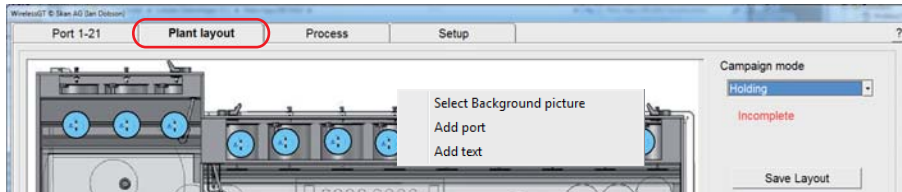
2. Click on "Select background picture".
 - ➡ A file open dialog box appears, where the user can select the picture to use (only JPG files).
3. Select the appropriate picture to your campaign.
 - ➡ The "Plant layout" screen with the appropriate picture to the selected campaign appears:



21.2.7.2 WirelessGT icons

1. Click right on the background picture.

➔ A popup menu will display where the user can select a new picture or add a new port:



2. Click on "Add port":

➔ A new port is added to the picture.



The colour of the ICONS indicate the status of the port linked to the ICON.

- White - ICON not linked to a port
- Orange - ICON linked to a port and **Test active**
- Red - ICON linked to a port and **Test failed**
- Blue - ICON linked to a port but **Not tested**
- Green - ICON linked to a port, **Tested and passed**

3. If an ICON is red or orange

Click right on the ICON

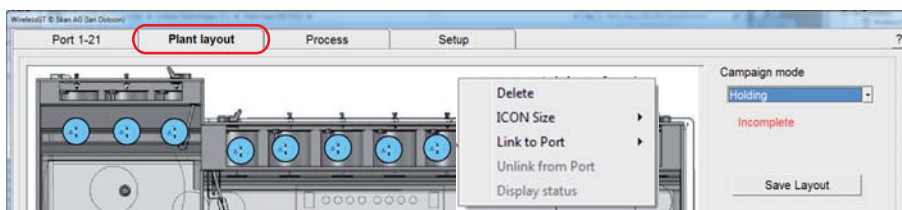
➔ A popup menu with the option to display the status of the WirelessGT appears.

4. **Position:**

Move the new port ICON to the required position by dragging the ICON.

5. **Size and link:**

Click right on the ICON:



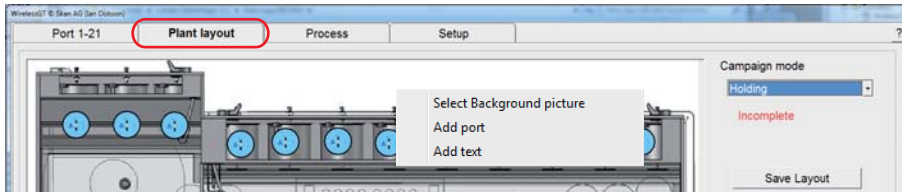
➔ A popup menu appears where the user can:

- delete the ICON
- select the ICON size (small, medium or large)
- link the ICON to a port (RFID's that are actually in the campaign)

21.2.7.3 Comments on the graphic

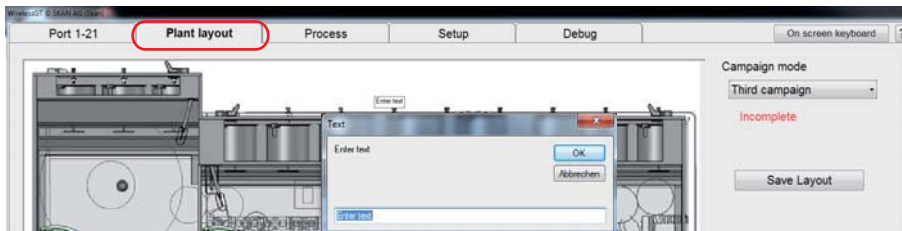
1. Click right on the background picture.

➡ A popup menu will display where the user can select a new picture or add a new port or text:



2. Click on "Add text":

➡ A popup window to enter text appears.



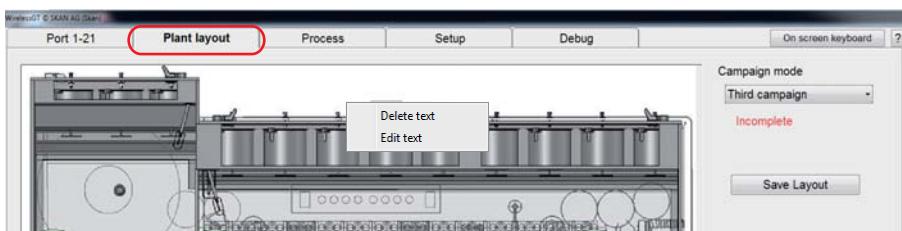
3. Enter your comment or other information you need.

4. If you need to change something on this information:

Click right on the text.

➡ A popup menu appears where the user can:

- delete text, or
- edit text



21.2.8 Test bucket

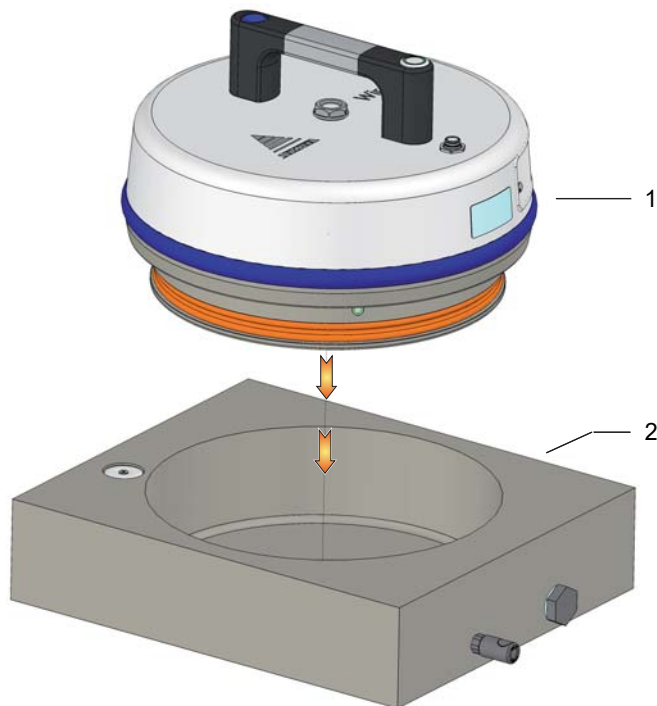
The test bucket is used for regular checking of the device tightness / intrinsic tightness of the WirelessGT (self-test).

The WirelessGT has a factory tightness. This is checked in the initial commissioning IQ / OQ and the subsequent services. In regular operation of the WirelessGT, it is recommended to carry out the device leak test before each series of measurements.

If possible, device leak test should happen with the glove process parameters. The device leak test with the glove process parameters serves to prove the device tightness and intended to show the proportion of pressure loss from the WirelessGT (intrinsic leakage test).

This chapter does not deal with the question of absolute tightness and the definition of meaningful leakage criterias! However, the WirelessGT can be regarded as a so-called measuring device that is subject to regular checking and calibration (e.g. ISO 9001 Measurement traceability).

- Perform a test with the test bucket in the same way as with the glove described at the beginning of this chapter.



- ➡ 1 - WirelessGT
- 2 - Test bucket

22 Glove test using the WirelessGT

22.1 Preparation

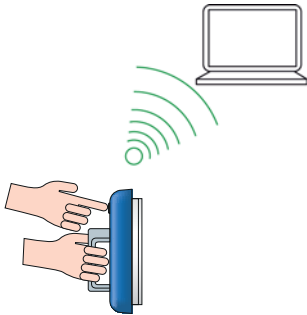
- ✓ The shape and size of the used test disc of the WirelessGT fits in the tested glove port.
- ✓ The battery pack is charged.
- ✓ The RFID-transponders with unique identification code are installed and placed in the right position on the glove ports.
- ✓ The software on the PC is installed.
- ✓ USB-Stick or network extender for wireless communication is installed.
- ✓ Start-up of the system was performed → [Chapter 21 'Start-up' on page 63](#).

1. Make sure that the glove is stretched in the work chamber as good as possible.



- *Ensure constant environmental conditions! Draft, temperature fluctuation, direct sun irradiation etc. have a negative effect on the test result!*
- *No glove testing during running decontamination cycle!*

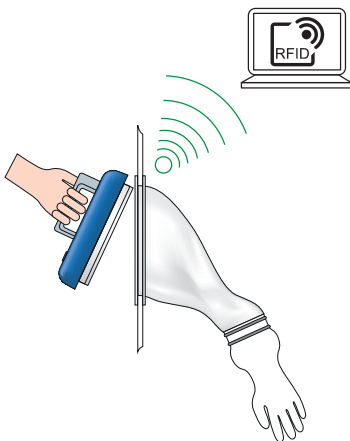
2. Switch on the WirelessGT with the On / Off button at the test cover.



- ➡ The LED at the test cover lights red a short time for initialisation of the WirelessGT.

The LED at the test cover is flashing green slow once the wireless communication PC - test cover is established.

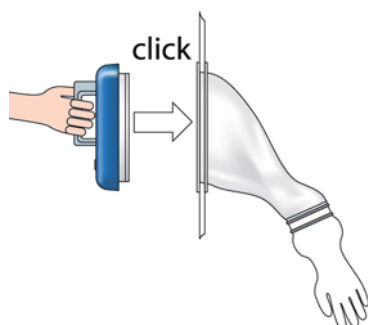
3. Detect the RFID tag at the glove port.



- ➡ RFID technology recognizes the glove port.

The LED at the test cover is flashing orange.

4. Put the test cover in the right position at the corresponding glove port. Keep it in position!



CAUTION

Fall out of device due to insufficient fixation!

Risk of injury!

- Keep the test cover in position until the pneumatic gasket is inflated respectively the LED lights orange steady!

The pneumatic gasket of the test cover will be inflated automatically.

The LED at the test cover is flashing orange slow until the min. seal pressure is reached.

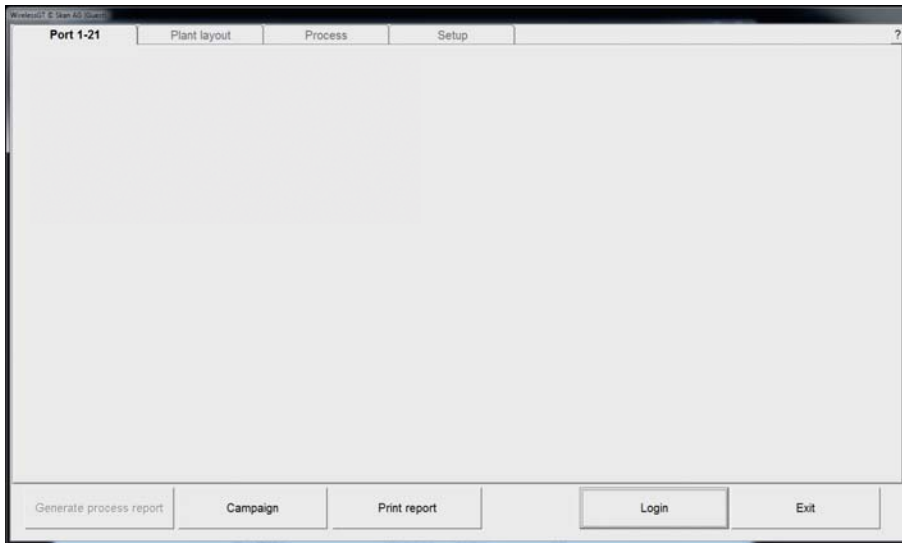
The LED at the test cover lights orange steady, you have not to keep longer the test cover in position.

The LED at the test cover lights green steady as soon as the pneumatic gasket of the test cover is inflated completely.

The LED at the test cover is flashing red if the defined timeout for inflating the pneumatic gasket is reached.

22.2 Login

1. Start the application (Software).
 - ➔ The "Start screen" appears.

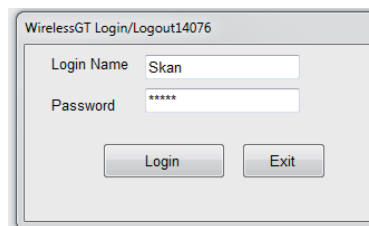
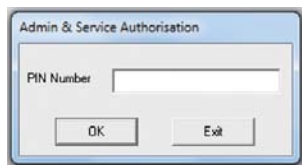


- Click the [PIN authorisation] (internal security) or [Login] (windows security) button.

➡ A login pop-up window appears:

Windows security

Internal security



- Enter your login details and click "OK" / "Login".

➡ If windows security used: The application checks the configured Windows computer (Local or Domain) if the Login Name / Password is correct. If yes the app checks which group the user belongs to (Operator, Administrator, Service or Supervisor) and logs the user into the main application setting the Login Name and access level.

If windows security used: If a domain server is defined, but the server is not accessible (network down), the system checks the local user cache (within the WirelessGT application) and if the cache entry corresponds to the entered Login Name / Password and the cache entry is less than 14 days old, the system logs the user on using the cached information.

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22.3 Test with "Auto start"

The test parameters will be transmitted automatically.

You can set the option "Auto start test" in the "General configuration area" of the "Setup" screen. → [Chapter 19 'Settings and configuration' on page 52](#)

If "Auto start" is active:

- ▶ The WirelessGT starts automatically the test as soon as the pneumatic gasket of the test cover is inflated.



The test consists of three phases. See → [Chapter 11 'Operational concept' on page 24.](#)

If the test is correct performed and the glove is tight, the LED at the test cover lights green steady.

If the test is correct performed and the glove is not tight, the LED at the test cover lights red steady.

If the test is stopped (pushing the "End Test" button on the "Port status" screen), the LED at the test cover lights red steady.

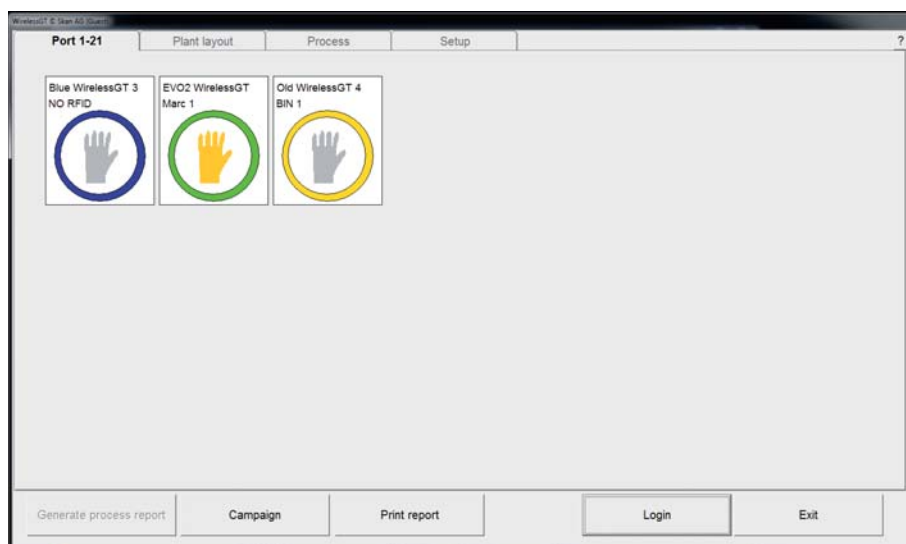
22.4 Test without "Auto start"

The test parameters will be transmitted automatically.

You can set the option "Auto start test" in the "General configuration area" of the "Setup" screen. → [Chapter 19 'Settings and configuration' on page 52](#)

If the "Auto start" is inactive:

1. Click the icon for the used port on the main screen.

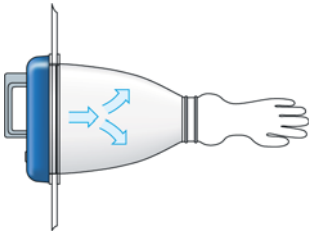


➡ The "Port status" screen appears:



2. Click the [Start test] button on the "Port status" screen.

- ➡ The LED at the test cover lights orange steady and the system start test.
An integrated blower builds up the pressure in the glove.



The test consists of three phases. See ➡ [Chapter 11 'Operational concept' on page 24.](#)

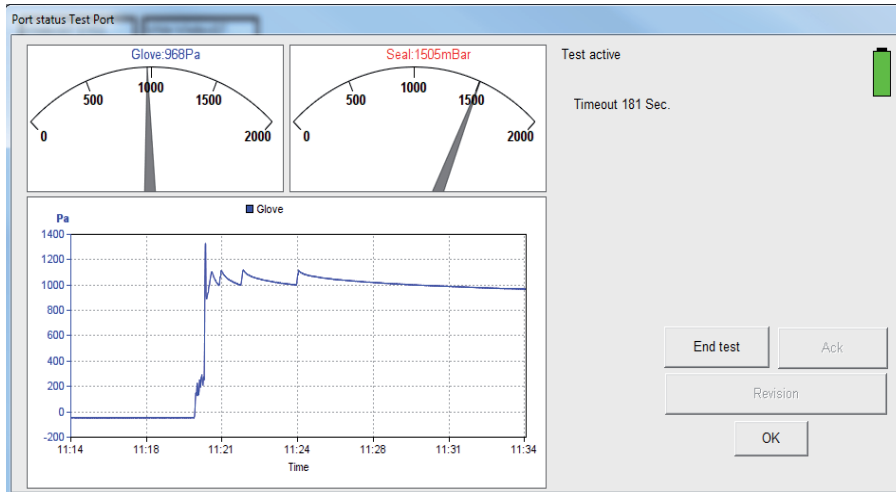
If the test is correct performed and the glove is tight, the LED at the test cover lights green steady.

If the test is correct performed and the glove is not tight, the LED at the test cover lights red steady.

If the test is stopped (pushing the "End Test" button on the "Port status" screen), the LED at the test cover lights red steady.

22.5 Stop test manually

1. Click the [End test] button in the "Port status" screen.



➔ The test is aborted.

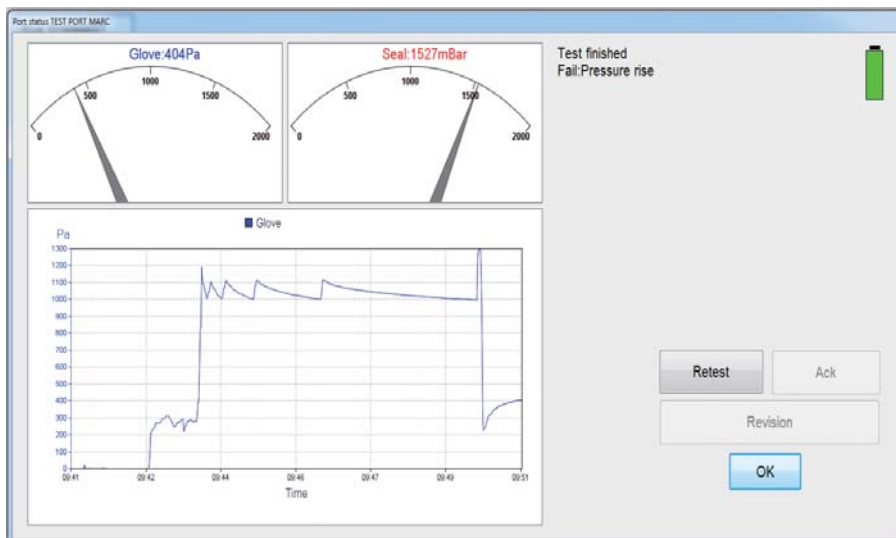
The LED at the test cover lights red steady.

A correspondent status message is generated.

2. Finish test as described in [Chapter 22.7 'Finish test on the current glove port' on page 83](#)

22.6 Retest glove port

1. If you would like to test the glove port again:
Click the [Retest] button in the "Port status" screen.



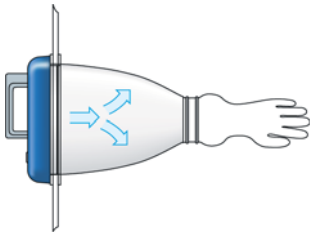
- ➡ The LED at the test cover lights green steady and the system is ready to start test.
- 2. If the option “Block retesting for X minutes” Is not set in the Process / Setup menu or the time since the last test is longer that the delay time defined in the “Block retesting for X minutes” option:

Click the [Start test] button on the "Port status" screen.

- ➡ The LED at the test cover lights orange steady and the system start test.

An integrated blower builds up the pressure in the glove.

If the time since the last test is less that the delay time defined in the “Block retesting for X minutes” option, the system will display an error message and not start a test.



The test consists of three phases. See ➡ [Chapter 11 'Operational concept' on page 24.](#)

If the test is correct performed and the glove is tight, the LED at the test cover lights green steady.

If the test is correct performed and the glove is not tight, the LED at the test cover lights red steady.

If the test is stopped (pushing the "End Test" button on the "Port status" screen), the LED at the test cover lights red steady.

22.7 Finish test on the current glove port

- Click the [Generate process report] button
 - ➔ The process report for the tested RFID / glove port will be saved.

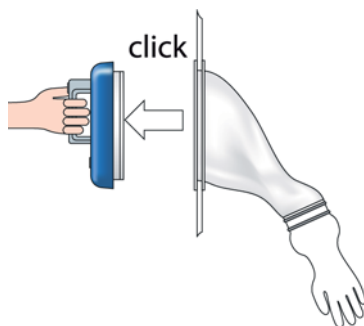
CAUTION

Pressurised system!

There is an injury hazard due to an impact to your wrist respectively arm!

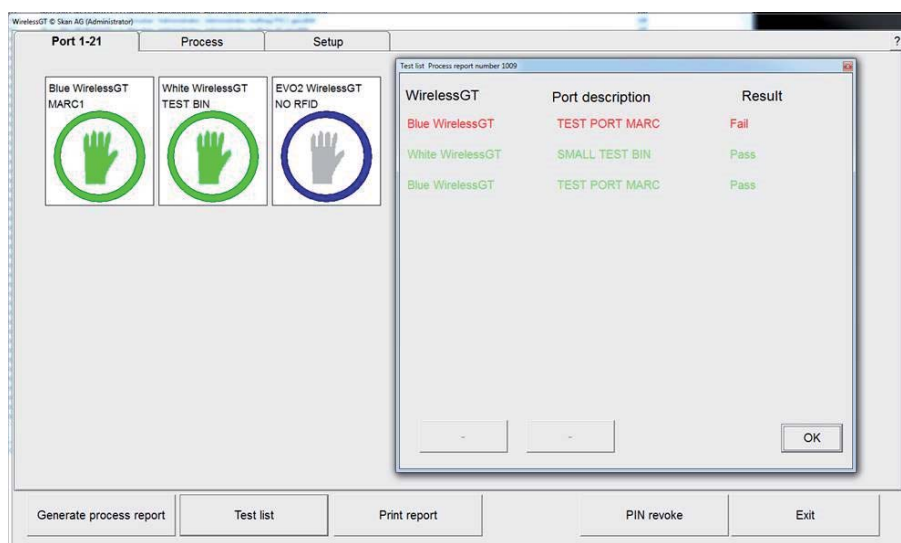
- ▶ **Do not press** the "Deflate pneumatic gasket" button during running process!
- ▶ Await end of process! The glove system will be automatically deflated as soon as the measurement process is finished.

- Deflate the pneumatic gasket of the test cover with the button at the handle and remove the test cover.
 - ➔ The LED at the test cover is flashing green slow.
- Remove the test cover.



22.8 Test list

- ✓ The option "Enable campaign mode" is **not set** in the "General configuration" area of the "Setup" screen.
- Click the [Test List] button.
 - ➔ The pop-up window "Test List" appears.



The test list contains identification specifications of the WirelessGT and glove ports (RFID) resp. the test results. If the test on the respective glove port is passed, the test registration in the list is green. If the test on the respective glove port is failed, the test registration in the list is red.

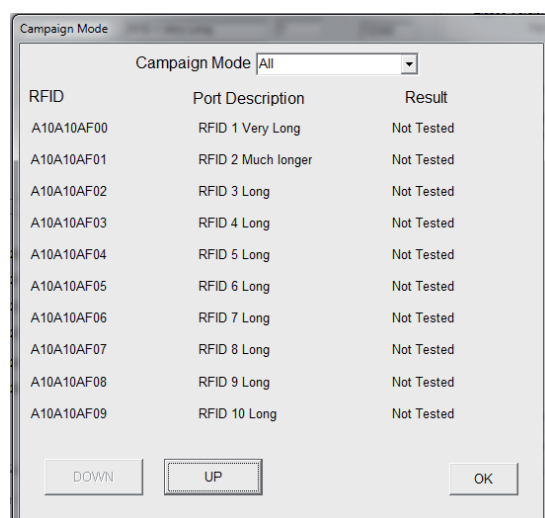
- Click [OK] to close the pop-up window "Test List".

22.9 Glove test in campaign

- ✓ The option "Enable campaign mode" **is set** in the "General configuration / Process" area of the "Setup" screen.
- ✓ The campaign is defined and the corresponding glove ports are assigned! → [Chapter 21.2 'Start-up WirelessGT' on page 64](#)

- Click the [Campaign] button.

➡ The "Campaign mode" screen appears:



- Select the required campaign.

➡ A list with all glove ports belonging to the selected campaign appears. An operator can see which ports should be tested and which ports have been tested.

- RFID of the glove ports
- Port description / number
- Test result

- Click [OK] to return to the "Setup" screen.

22.9.1 Graphical campaign mode

In this mode, the operator has an overview of the plant with all of ports have to be tested within a campaign.

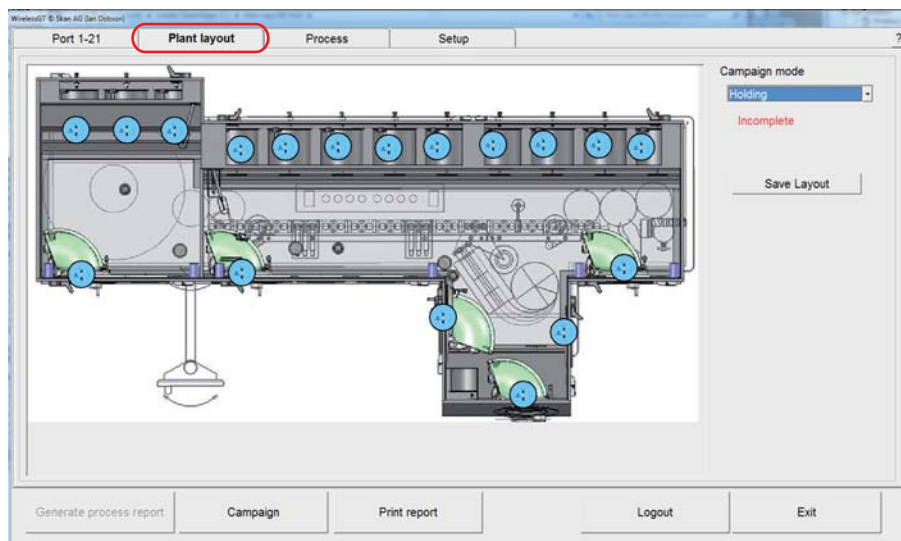


The colour of the ICONS indicate the status of the port linked to the ICON.

- White - ICON not linked to a port
- Orange - ICON linked to a port and **Test active**
- Red - ICON linked to a port and **Test failed**
- Blue - ICON linked to a port but **Not tested**
- Green - ICON linked to a port, **Tested and passed**

✓ The option "Enable campaign mode graphic" is **set** in the "General configuration / Process" area of the "Setup" screen.

1. Click the [Plant layout] tab on the main screen.
➡ The "Plant layout" screen appears.
2. Select the required campaign in the "Campaign mode" area, at the right side of the of the "Plant layout" screen.
➡ The "Plant layout" screen of the selected campaign appears:



This "Plant layout" screen is only for your information. You cannot start test and operate the WirelessGT there!

22.10 End of tests

If no further test will be performed:

1. Switch off the WirelessGT with the On / Off button at the test cover.
2. Deposit the test cover at the storage / charge place.

22.11 Negative pressure device (option)

In some cases it is not possible to stretch the gloves into the inside of the working chamber and perform the glove test with overpressure. By using a test cylinder installed on the glove port, the test can be performed in negative pressure.

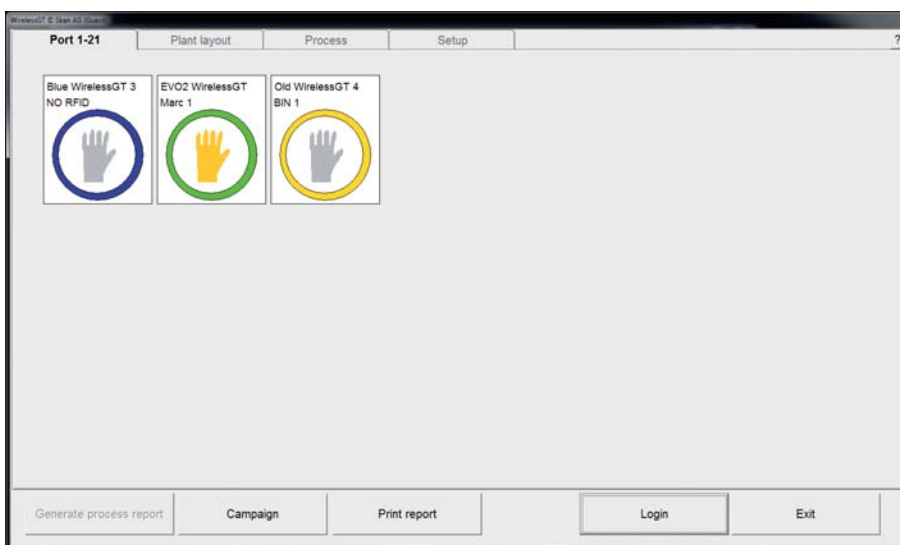


To be able to perform a test in negative pressure, hardware adaptations on the WirelessGT are necessary! Furthermore you need a measuring cylinder suitable for the glove port. If necessary, consult Skan AG's service department to check whether your existing equipment is suitable for glove tests with negative pressure.

The test parameters will be transmitted automatically.

You can set the option "Auto start test" in the "General configuration area" of the "Setup" screen. ➔ [Chapter 19 'Settings and configuration' on page 52](#)

1. Check that the measuring cylinder fits to the glove port.
2. Mount the measuring cylinder.
3. Set the test pressure (p1) in the "Process" screen and save the process parameter.
4. Return to the main screen:



5. Click the icon for the used port on the main screen.

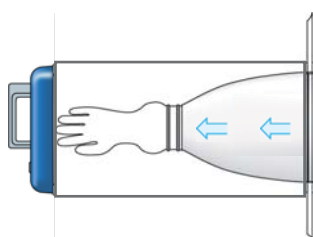
➡ The "Port status" screen appears:



6. Click the [Start test] button on the "Port status" screen.

➡ The LED at the test cover lights orange steady and the system start test.

An integrated vacuum pump builds up the negative pressure in the measuring cylinder respectively around the glove.



The test consists of three phases. See ➡ [Chapter 11 'Operational concept' on page 24.](#)

If the test is correct performed and the glove is tight, the LED at the test cover lights green steady.

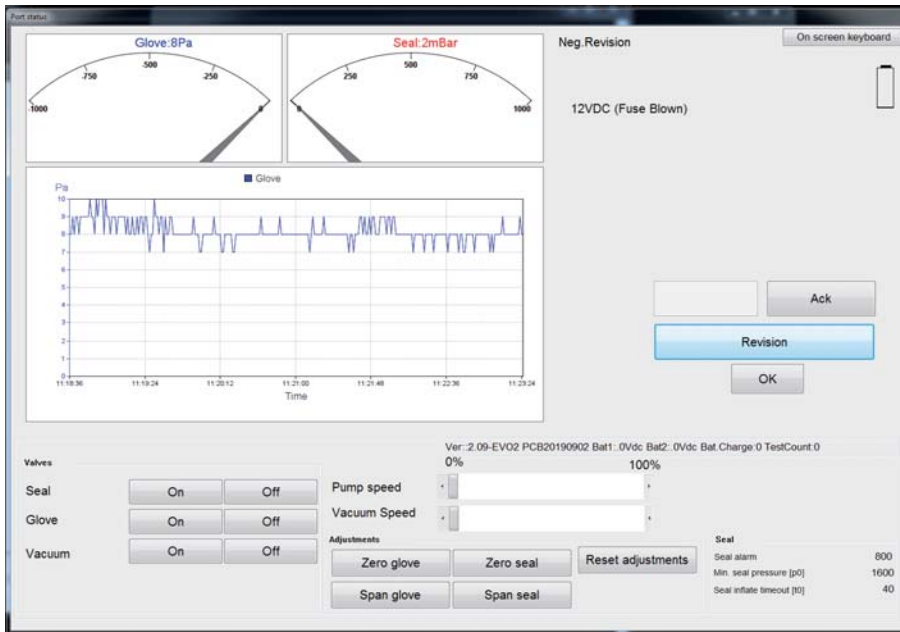
If the test is correct performed and the glove is not tight, the LED at the test cover lights red steady.

If the test is stopped (pushing the "End Test" button on the "Port status" screen), the LED at the test cover lights red steady.

7. For maintenance activities and settings:

Click the [Revision] button.

- ➡ The extended "Port status" screen of the selected specific port appears.



With the extended screen all actors of the specific test cover can be switched via remote control.

Additionally, sensor adjustment can be performed, parameter of the pneumatic gasket can be set and status information about the battery can be read out.

In addition to the settings in the overpressure mode, you can adjust the pump speed continuously using a slider.

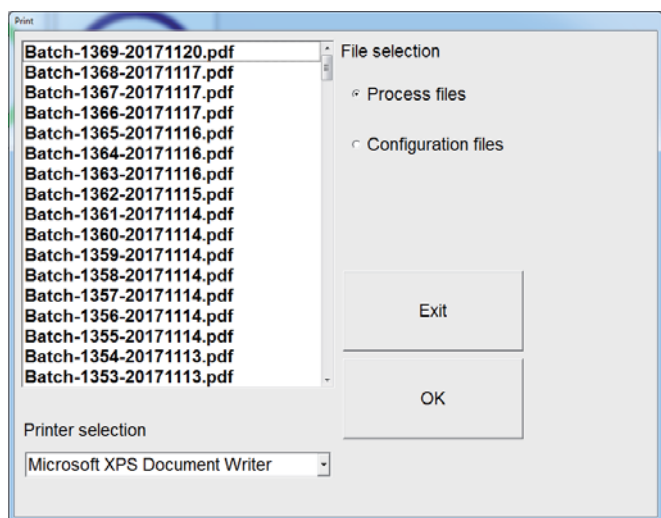
22.12 Print files

Each time you click [Generate process report] button on the main screen, process screen or setup screen, the system generates a **process report** as pdf file.

Each time you click [Save ...] button on the process screen or setup screen, the system generates a **configuration report** as pdf file.

1. Click the [Print report] button.

➡ The "Print" screen appears.



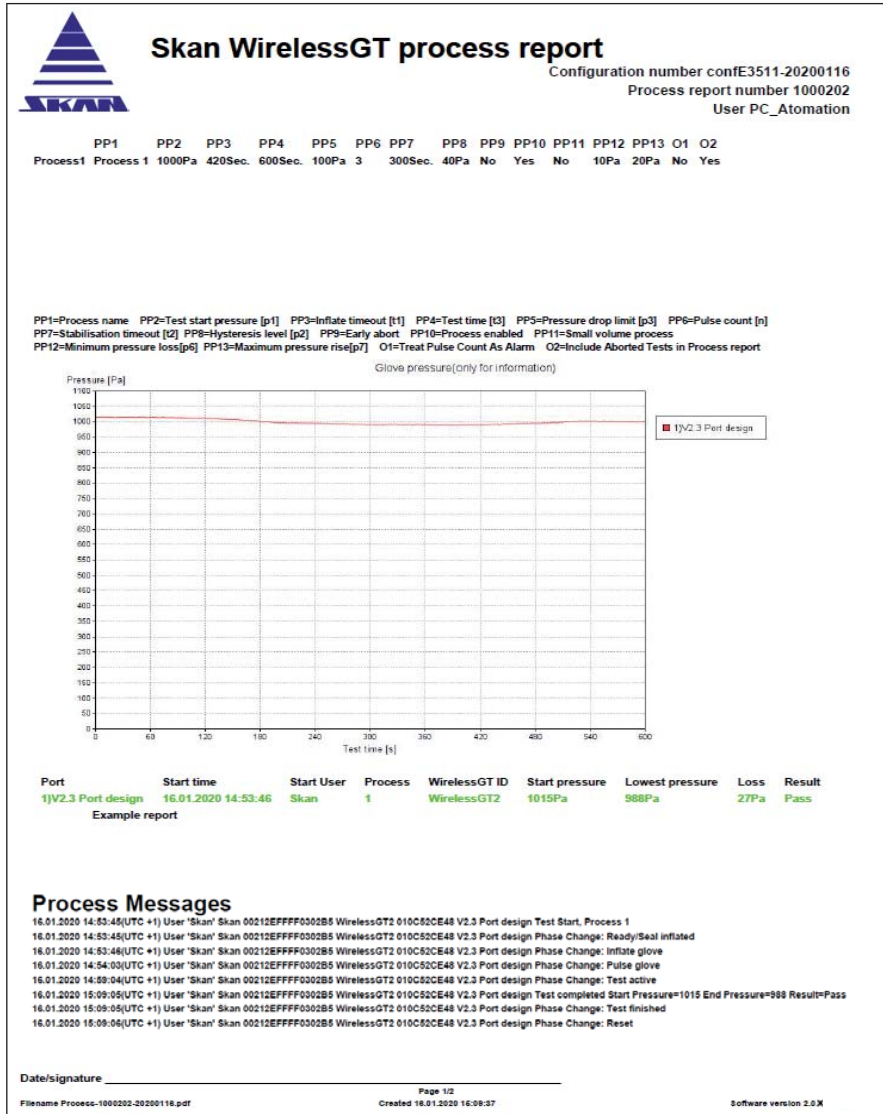
2. Select which file types should be displayed: Process files or configuration files

➡ The list will be refreshed, only the selected file types will be listed.

Files are listed newest first.

3. Select the required files.
4. Select the printer should be used to print files.

5. Click [OK] to start print.





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SKAN WirelessGT configuration report

Configuration number confE3511-20200116
User PC_Atomation

Process

	PP1	PP2	PP3	PP4	PP5	PP6	PP7	PP8	PP9	PP10	PP11	PP12	PP13	O1	O2
Process1	Process 1	1000Pa	420Sec.	600Sec.	100Pa	3	300Sec.	40Pa	No	Yes	No	10Pa	20Pa	No	Yes
Process2	Process 2	1000Pa	300Sec.	600Sec.	100Pa	25	420Sec.	100Pa	No	No	No	5Pa	100Pa	No	Yes
Process3	Process 3	1000Pa	300Sec.	600Sec.	100Pa	25	420Sec.	100Pa	No	No	No	5Pa	100Pa	No	Yes
Process4	Process 4	1000Pa	300Sec.	600Sec.	100Pa	25	420Sec.	100Pa	No	No	No	5Pa	100Pa	No	Yes
Process5	Process 5	1000Pa	300Sec.	600Sec.	100Pa	25	420Sec.	100Pa	No	No	No	5Pa	100Pa	No	Yes
Process6	Process 6	1000Pa	300Sec.	600Sec.	100Pa	25	420Sec.	100Pa	No	No	No	5Pa	100Pa	No	Yes
Process7	Process 7	1000Pa	300Sec.	600Sec.	100Pa	25	420Sec.	100Pa	No	No	No	5Pa	100Pa	No	Yes
Process8	Process 8	1000Pa	300Sec.	600Sec.	100Pa	25	420Sec.	100Pa	No	No	No	5Pa	100Pa	No	Yes
Process9	Process 9	3000Pa	600Sec.	600Sec.	100Pa	25	420Sec.	100Pa	Yes	Yes	Yes	0Pa	700Pa	No	Yes

PP1=Process name PP2=Test start pressure [p1] PP3=Inflate timeout [t1] PP4=Test time [t3] PP5=Pressure drop limit [p3] PP6=Pulse count [n]
PP7=Stabilisation timeout [t2] PP8=Hysteresis level [p2] PP9=Early abort PP10=Process enabled PP11=Small volume process
PP12=Minimum pressure loss [p6] PP13=Maximum pressure rise [p7] O1=Treat Pulse Count As Alarm O2=Include Aborted Tests in Process report

System parameters

Network ID	7	Security	Auto logout time (minutes)	0
Report path	C:\templ	Disable Skan access		No
Use Adobe reader as PDF printer	No	Use Windows security		No
Page format	A4			
Window Size	150%	PROCESS		
Enable On screen keyboard	Yes	Export process report to ".csv"		Yes
Ethernet bridge support	No	Include process comment		Yes
Dual Ethernet support	No	Auto start test		Yes
Window always on top	No	Always fail test on Communication error		Yes
Enable campaign mode	Yes	Disable chart in process report		No
Enable Campaign mode graphic	Yes	Include aborted tests in process report		Yes
Campaign title		One Result Per Process report		Yes
Campaign 1	Both Ports	Treat Pulse Count As Alarm		No
Campaign 2	-	Block Retesting for X minutes		0
Campaign 3	-	Include Process Messages in Process report		Yes
Campaign 4	-			
Campaign 5	-			
Campaign 6	-			
Campaign 7	-			
Campaign 8	-			
Campaign 9	-			
Activate OPC Server	No			

RFID	Short name	Long name	Process	Campaign	WirelessGT ID	Label
010C676487	MARC1	MARC TEST PORT	1	12	0001860000006788	EVO1 Blue WGT
FEF3A8AB88	Neq.Test	Test Pressure	1		0001860000016080	Production WGT
01118DD2DE	Neu RFID	Test RFID2	1		00212EFFFF01B7AB	WirelessGT3
01118A6C37	Neu RFID	Test RFID3	1		00212EFFFF0302B6	WirelessGT2
01118DD14C	Neue RFID	Test RFID4	1		00212EFFFF0302C1	WirelessGT1
010C676864	Neue RFID	Test RFID6	1			
010C629716	Neue RFID	Test RFID6	1			
010609F990	Neue RFID	Test RFID7	1			
01107DAA6A	TestX	TestX	8			
010C62CE48	V2.3 Port	V2.3 Port design	1	12346		
A1008808AE	New RFID	RFID Inonnu	1			
06C0A0FF00	New RFID	Unknown RFID	1			

Date/signature _____

Filename confE3511-20200116.pdf

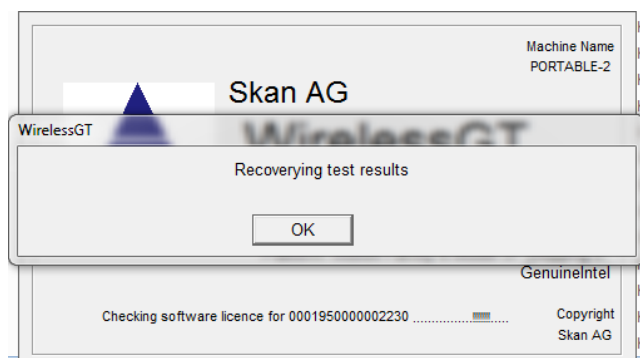
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Created 16.01.2020 14:53:17

Software version 2.0X

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23 Data recovery

If for some reason the WirelessGT application ends (Program crash, Windows crash) without creating a process report, the next time the application starts it will load all completed test results. After the new start-up, the "Data recovery" window appears:



Tests that were started before the crash and end after the crash will be added to the list when the test is finished. Some process data will be missing, so part of the trend before the crash and the test start time is set to the time that the application is restarted. The Start/End/Loss pressures and Pass/Fail will be set correctly as this information is stored on the WirelessGT microprocessor.

24 Exemplary process parameters

The parameters for a glove test depends on the glove material, the glove size and the glove system (one piece / two piece glove system). For the test of a particular glove in a defined environment and expected hole size, you need to find first the test parameters. The determined parameters have to be validate by an operation qualification.



If something has changed in the test conditions, you have to define the parameters again and to perform a new operation qualification.

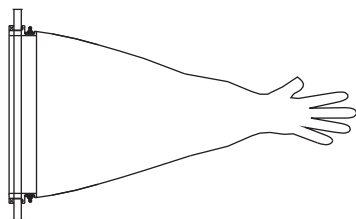
If you have any questions about finding new parameters and qualification of them, please contact the Skan service hotline.

24.1 One piece glove system



The parameters given should be viewed as proposed values. They are purely an example.

► You will find explanations for the parameters used here: → [Chapter 11 'Operational concept'](#) on page 24



One piece glove system

Glove type	Manufacturer:	Piercan
	Material:	CSM
Adapter type	Manufacturer:	Skan
	Material:	PP

Parameter

t ₁ [sec]	t ₂ [sec]	t ₃ [sec]	n	p ₁ [Pa]	p ₂ [Pa]	p ₃ [Pa]
175	1500	480	100	2000	50	100

¹Total test duration: app.37 [min]

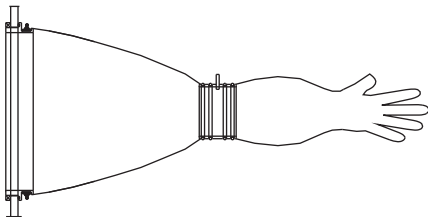
¹Total test duration: time includes time to inflate test cover seal (t₀), assumed with t(0)=60 sec and inflation time (t₁) assumed with t(1)=175 sec. This plus t(2) and t(3) results to t_{total}= app.2 215 sec. = app.37 min.

24.2 Two piece glove system



The parameters given should be viewed as proposed values. They are purely an example.

► You will find explanations for the parameters used here: → [Chapter 11 'Operational concept' on page 24](#)



Two piece glove system

Glove type	Manufacturer:	Piercan
	Material:	CSM
Sleeve type	Manufacturer:	Piercan
	Material:	PVC
Adapter type	Manufacturer:	Skan
	Material:	PP

Parameter

t ₁ [sec]	t ₂ [sec]	t ₃ [sec]	n	p ₁ [Pa]	p ₂ [Pa]	p ₃ [Pa]
150	1200	480	100	3000	50	145

¹Total test duration: app.31.5 [min]

¹Total test duration: time includes time to inflate test cover seal (t₀), assumed with t(0)=60 sec and inflation time (t₁) assumed with t(1)=150 sec. This plus t(2) and t(3) results to t_{total}= app.1 890 sec. = app.31.5 min.

24.3 Relaxation time

- Glove material
- Test pressure
- History of the glove
- Age of the glove



Too short waiting time / relaxation time has negative influence on the reproducibility of the measurement!

25 Messages

25.1 Visual signalling of malfunctions and status of the glove tester

The response of the device is only visual and realized with different colours, steady and flashing light of a signalization lamp respectively indicator:

LED light color	Mode	Meaning
Blue LED	Slow flashing	Charging battery pack / Charging in progress. 15 seconds after connecting to the charger, starts charging and flashing the blue LED.
	Fast flashing	Battery error. The battery pack is faulty.
	Steady low	Battery pack is not charged.
	Steady high	Charging is finished. The battery pack is fully charged.
Red LED	Steady	- During start up procedure app. 2Sec. → setup of wireless communication to monitoring - Glove(-system) is untight (according process parameters settings). - Bootloader startup
	Slow flashing	- Seal Inflate Timeout - Glove(-system) Inflate Timeout - Alarm to acknowledge
	Fast flashing	Wireless Network can't be established (no coordinator found).
Green LED	Steady	- During start up procedure app. 5 sec. → setup of wireless communication to monitoring - Right end position detected → Seal tight → ready for test (Auto start disabled!) - Glove(-system) is tight (according process parameters settings) → Test cover can be detached. Test correct performed.
	Slow flashing	ZigBee Network established → Ready to start test.
Orange LED	Steady	- During start up procedure app. 1 sec. → setup of wireless communication to monitoring - Test active (Prephase, Inflation; Stabilization; Measurement, Post-phase). - Bootloader active
	Fast flashing	During seal inflate phase (Minimum set pressure of seal not reached). Switches to steady when min. set pressure reached.
Green and red LED	Alternate flashing	Revision mode active.

25.2 Status messages in the popup screen

Displayed status message	Meaning
ready	Device switched on and ready to start inflating seal.
inflate seal	The seal is being inflated.
ready	Test device in position and ready to start test. Relevant by using option "auto start off".
inflate glove	Glove (-system) is currently being inflated.
pulse glove	The glove has been inflated to set pressure, pressure level will be held for X seconds with pulsating to set value + hysteresis level or until the timeout is reached.
re-inflate seal	Ensure / maintain set pressure of the seal.
test active	The actual pressure decay test is active.
test completed	The pressure decay test is finished and the device is waiting for the confirmation from the PC that the data has been accepted.
Reset	Between two measurements the software will be reset automatically.
REVISION	Manual / Revision mode where the actors can be manually controlled. Adjustment of the pressure sensors.



Status messages for negative pressure tests are denoted with "neg"!

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25.3 Alarm messages in the popup screen

25.3.1 Alarm list

Displayed alarm message	red LED flashing	Meaning	Measure
Radio Module	fast	Establishing of communication to the coordinator failed.	Test of ZigBee-communication by placement of device near ZigBee coordinator (USB-Stick with antenna).
Pressure sensor Glove	fast	Sensor error	Check response in revision mode. Replace pressure sensor glove.
Pressure sensor Seal	fast	Sensor error	Check response in revision mode. Replace pressure sensor seal.
Fuse Blown	fast	Blade fuse inside device blown (circuit protection)	First of all identification of the cause of the over-current. After rectification of the defect replacement with same type and rating of fuse (this for continued protection against risk of fire).
Timeout seal inflate	slow	The pneumatic seal couldn't be inflated within the specified time.	Change / extend parameter [t0]. Second measure: Check integrity of the affected pneumatic seal.
Timeout glove inflate	slow	The glove couldn't be inflated within the specified time.	Change / extend parameter [t1]. Second measure: Check visually the integrity of the affected glove.
Battery charge too low	slow	Capacity of device battery too low!	Charge device battery.
Process parameters invalid/disabled	slow	Stop of test because transferring process to end device failed!	Check communication with end device located directly near monitoring system (coordinator).
Default settings loaded	slow	self-explanatory	na
Pulse pressure too low	slow	Hold pressure can't be established!	Check visually the integrity of the affected glove.
Seal pressure too low	slow	Threshold limit [p00] of the seal reached	Check of integrity of seal respectively pneumatic support circuit.

Displayed alarm message	red LED flashing	Meaning	Measure
Battery management error	fast	Communication error with the battery management system	Charge device battery. Contact the Skan service hotline.
RFID Changed during seal inflate	slow	The RFID seen during seal inflate changed	Acknowledge alarm message and start test at the right glove port.
Glove pressure to high	fast	Glove pressure is higher than 5000 Pa. The pump continues to run uncontrolled	Acknowledge alarm message and check WirelseeGT Contact the Skan service hotline.
Pulse count exceeded	slow	Option "Treat pulse count as an alarm" (Menu Settings / Process) is active and the number of pulses in stabilisation has reached the in process defined pulse count.	Glove not tight Insufficient pulses (n) for the process defined (Menu: Process) Check / set pulse count (n) in the "Process" window. Acknowledge alarm message and retest glove.
12 Volt too low	fast	12 Volt supply for the pump, blower and valves too low	Charge battery. If the alarm is still active after charging the battery, contact the Skan service hotline.

25.3.2 Alarms and interlocks

Phase	ALARM0=Radio module	ALARM1=Pressure sensor Glove	ALARM2=Pressure sensor Seal	ALARM3=Fuse Blown	ALARM4=Timeout seal inflate	ALARM5=Timeout glove inflate	ALARM6=Battery charge too low	ALARM7=Process parameters invalid/ disabled	ALARM8=Default settings loaded	ALARM9=Pulse pressure too low	ALARM10=Seal pressure too low	ALARM11=Battery management error	ALARM12=RFID Changed during seal inflate	ALARM13=Glove pressure to high	ALARM14=Pulse count exceeded	ALARM15=12Volt too low
READY (3)	1	1	1	1	0	0	1	0	0	0	0	1	0	1	0	1
Seal inflate	1	2	2	2	2	0	1	0	0	0	0	1	2	2	0	2
Ready/Seal inflated (3)	1	1	1	1	0	0	1	1	0	0	0	1	0	1	0	1
Inflate glove	1	2	2	2	0	2	1	0	0	0	2	1	0	2	0	2
Pulse glove	1	2	2	2	0	0	1	0	0	2	2	1	0	2	2	2
Seal inflate	1	2	2	2	0	0	1	0	0	0	2	1	0	2	0	2
Test active	1	2	2	2	0	0	1	0	0	0	2	1	0	2	0	1
Test finished	1	1	1	1	0	0	1	0	0	0	0	1	0	1	0	1
Reset	1	1	1	1	0	0	1	0	0	0	0	1	0	1	0	1
Revision	1	1	1	1	0	0	1	0	1	0	0	1	0	1	0	1

Legend:

0 - no Alarm

1 - Alarm enabled, no interlock

2 - Alarm enabled, Interlock

3 - Any active alarm disables the RFID reader or blocks starting a process

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26 Cleaning and disinfection agents

26.1 Information for your safety

CAUTION

Cleaning and disinfection agents with highly flammable properties!

Danger of explosion and burns.

- ▶ Abstain from using alcoholic cleaning and disinfection agents in the work chamber or other neighbouring rooms of the machine if there are potential ignition sources. Potential ignition sources may be for example: Light arcs or sparks in electrical devices, hot surfaces of integrated heat sources, electrostatic charging of components that are not grounded.
- ▶ Adhere to the applicable output rates for cleaning and disinfection agents.
- ▶ Observe the warning messages on the packaging of the cleaning and disinfection agents used.
- ▶ Observe the safety data sheets of the cleaning and disinfection agents.

CAUTION

Cleaning and disinfection agents with properties that are hazardous to health!

Irritation to skin and eyes. Poisoning.

- ▶ Observe the warning messages on the packaging of the cleaning and disinfection agents used.
- ▶ Observe the safety data sheets of the cleaning and disinfection agents.
- ▶ Wear appropriate personal protective equipment (PPE) when cleaning and disinfecting.

26.2 Notes on material and component-specific compatibility

! NOTICE

Cleaning agents containing hypochlorite and cleaning agents with strong acids and highly concentrated halogenated solutions attack stainless steel surfaces!

Corrosion and oxidation of stainless steel surfaces.

- ▶ Do not use cleaning agents containing hypochlorite for stainless steel surfaces.
- ▶ Do not use cleaning agents with strong acids for stainless steel surfaces.
- ▶ Do not use highly concentrated halogenated solutions as cleaning agents for stainless steel surfaces.

Tab. 1: Material and component-specific compatibility towards cleaning agents

Assembly group / Component	Suitable cleaning agents	Important information
Acrylic and plexiglass surfaces	Plastic cleaners for acrylic and plexi-glass products 70% propanol solution	Do not use any cleaning agents that contain other alcohol, acetone, chloramine or carbon tetrachloride.
EPDM seals	Sterile low-particle silicone wiping cloths (e.g. Klerwipe™ - CR made by Shield Medicare)	
Stainless steel surfaces	Soapy water 70% ethanol solution 70% propanol solution Clean room wiping cloths Chromium steel cleaner	Do not use cleaning agents containing hypochloride, cleaning agents containing strong acids or highly concentrated halogenated solutions.
Plastic surfaces as long as not acrylic and plexiglass panes	Soapy water 70% ethanol solution 70% propanol solution Clean room wiping cloths Plastic cleaners	

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Tab. 2: The table does not give any information about the effective spectrums of the listed disinfection agents.

Assembly group / Component	Suitable disinfection agents
Acrylic and plexiglass surfaces	70% propanol solution
EPDM seals	70% ethanol solution 70% propanol solution 35% formaldehyde solution Bacillo® plus (Bode Chemie Hamburg) Mikrozid AF Lliquid (Schülke & Mayr GmbH Deutschland)
Stainless steel surfaces	70% ethanol solution 70% propanol solution 35% formaldehyde solution Bacillo® plus (Bode Chemie Hamburg) Mikrozid AF Lliquid (Schülke & Mayr GmbH Deutschland)
Plastic surfaces as long as not acrylic and plexiglass pane	70% ethanol solution 70% propanol solution 35% formaldehyde solution Bacillo® plus (Bode Chemie Hamburg) Mikrozid AF Lliquid (Schülke & Mayr GmbH Deutschland)

27 Maintenance plan



Maintenance activities which may be carried out only by the component manufacturer or by firms authorised by the component manufacturer are indicated as such. All other maintenance activities must be carried out exclusively by trained maintenance personnel with appropriate specialist knowledge!

Component	Maintenance activity	Maintenance interval	Further information
Pneumatic gasket	Visual control for damage and dirt. Cleaning	monthly	→ Chapter 26 'Cleaning and disinfection agents' on page 100
Test disc	Visual control for damage and dirt	1/4-yearly	
LED - Signalization and indicator lamp	Functional control	1/4-yearly	
Battery	Charge battery	1/4-yearly	when not regularly charged.
Pressure sensors	Adjustment	yearly	only Skan service
Sterile outlet filter	Replace with a new part.	(yearly)	depends on definition of customer (e.g. campaign change)
Handle	Visual control for damage and dirt. Functional control. Mechanical test of fastenings and firmness of fit.	yearly	
Test disc	Mechanical test of fastenings and firmness of fit.	yearly	

28 Maintenance activities

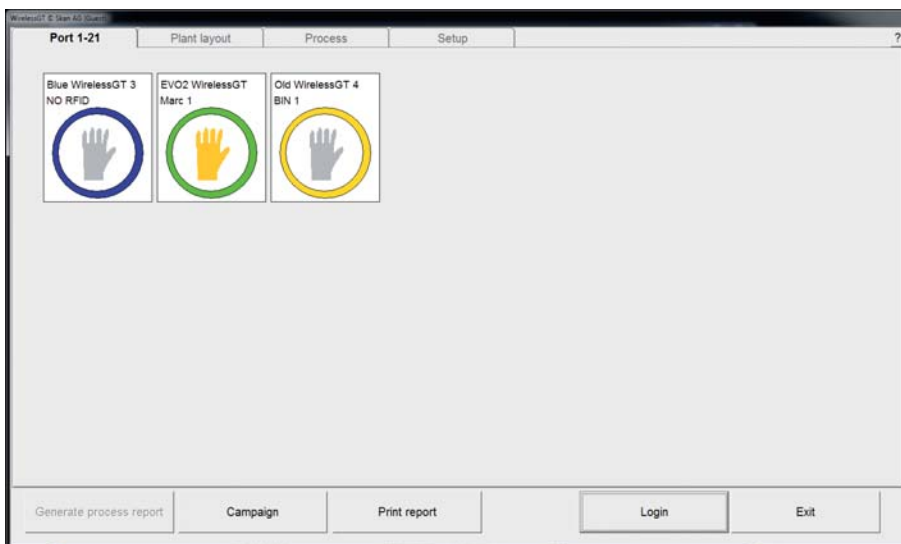
28.1 Reference leak (option)

The "Reference leak" option is used to check the proper function of a WirelessGT. The WirelessGT is tested on a glove port on which a checked, faultless glove is installed. The glove test is performed once with reference leak and once without reference leak. Without reference leak the glove must be leak tight. The test with reference leaks must not be successful; this means that the test device is working properly.

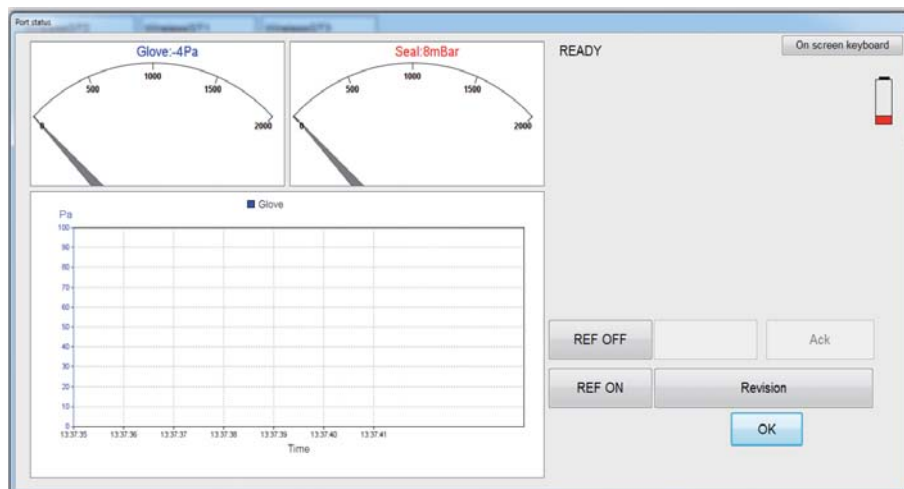
The reference leak option simulates a hole in the glove (e.g. configurable to 100-150µm). The process report shows the pressure drop of the respective test. From the reference leak and the value of the pressure loss indicated by the test with reference leak, it is possible to get further information about the precision of the measurements of the test device.



To be able to perform a test with reference leak, hardware adaptations on the WirelessGT are necessary! Additionally it should be considered which test disc will be used by the reference leak tests. If necessary, consult Skan AG's service department to check whether your existing equipment is suitable for glove tests with reference leak.



1. Click the specific icon for the used port on the main screen.
 - ➡ The "Port status" screen of the selected specific port appears:



2. Click the [REF ON] respectively [REF OFF] button, to perform the test with or without reference leak.
 3. Click the [OK] button to confirm your entry.
 - ➡ The setting is saved and the [Start test] button on the "Port status" screen is activated.
- You are free to start tests.

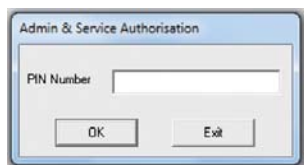
28.2 Revision mode



Read the safety information concerning "Revision mode" → Chapter 2.10 'Revision mode / Revision operation (manual modification of function parameters)' on page 9

1. Contact Skan service hotline to get actual code for Skan service login.
2. Click the [PIN Authorisation] / [Login] button.
 - ➔ The "Login" screen appears:

Internal security

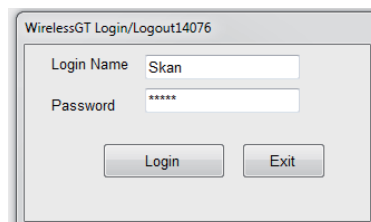


Admin & Service Authorisation

PIN Number

OK Exit

Windows security



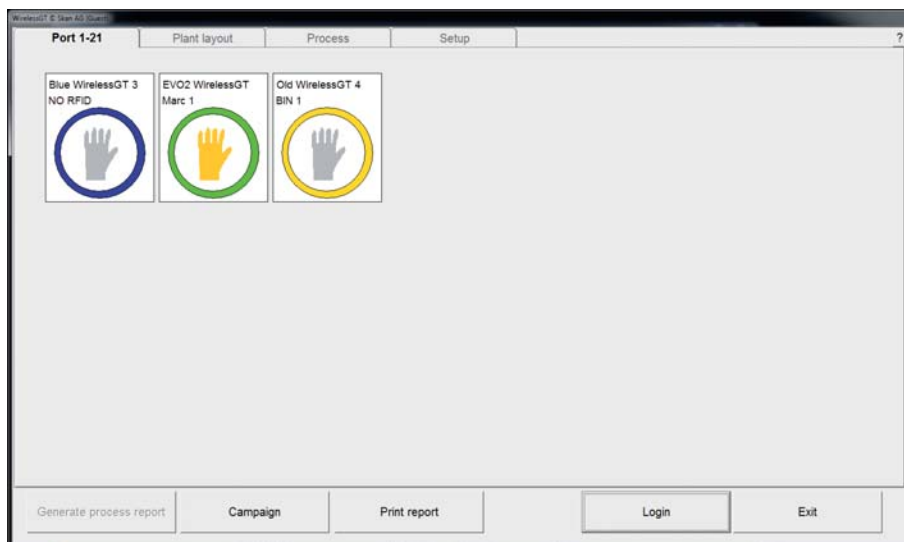
WirelessGT Login/Logout14076

Login Name

Password

Login Exit

3. Login with the received Skan code.
 - ➔ Full access is now activated for one day!
- The "Port status" screen appears:



Port 1-21 Plant layout Process Setup ?

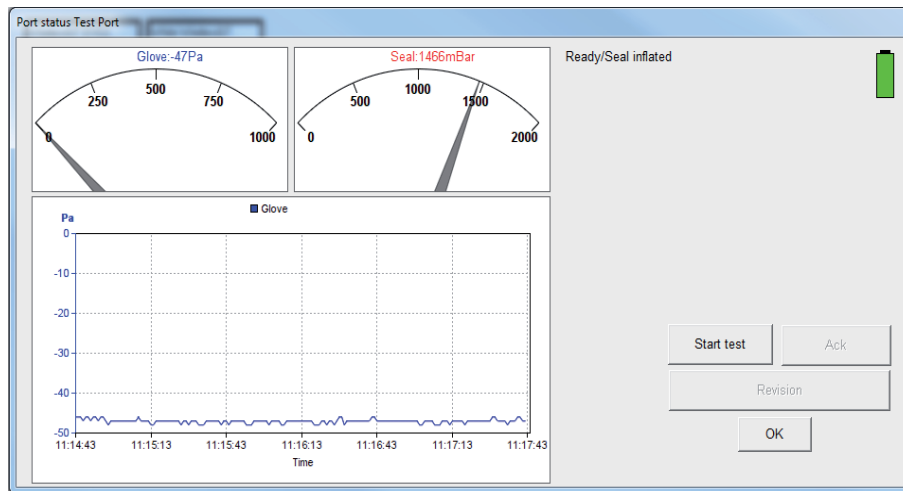
Blue WirelessGT 3 NO RFID

EVO2 WirelessGT Marc 1

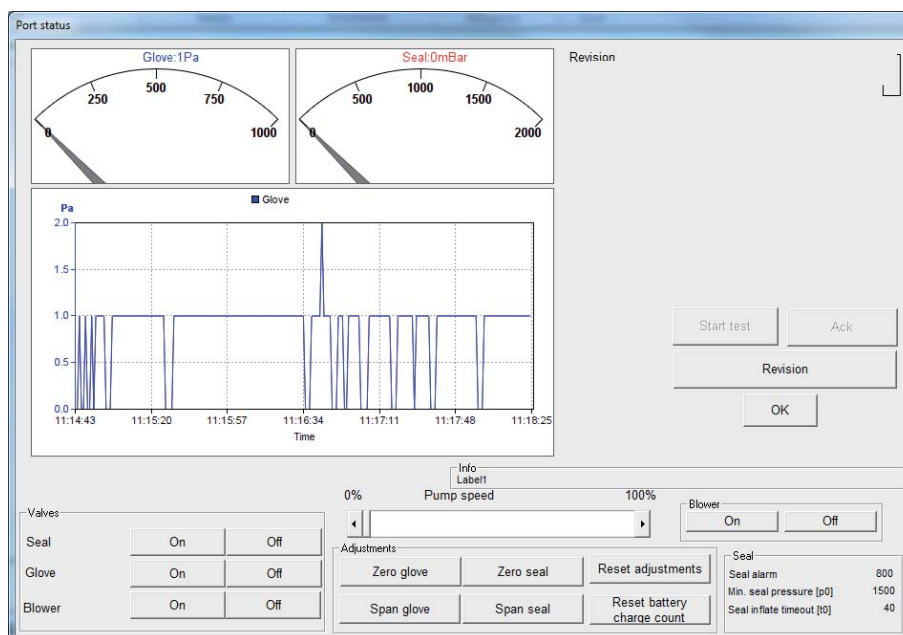
Old WirelessGT 4 BIN 1

Generate process report Campaign Print report Login Exit

4. Click the specific icon for the used port on the main screen.
 - ➔ The "Port status" screen of the selected specific port appears.



5. Click the [Revision] button.
 - ➔ The extended "Port status" screen of the selected specific port appears.



With the extended screen all actors of the specific test cover can be switched via remote control.

Additionally, sensor adjustment can be performed, parameter of the pneumatic gasket can be set and status information about the battery can be read out.

28.3 Sensor adjustment

To perform a sensor adjustment, access to "Revision mode" is necessary. → [Chapter 28.2 'Revision mode' on page 106](#)

For detailed instruction please contact Skan service hotline!

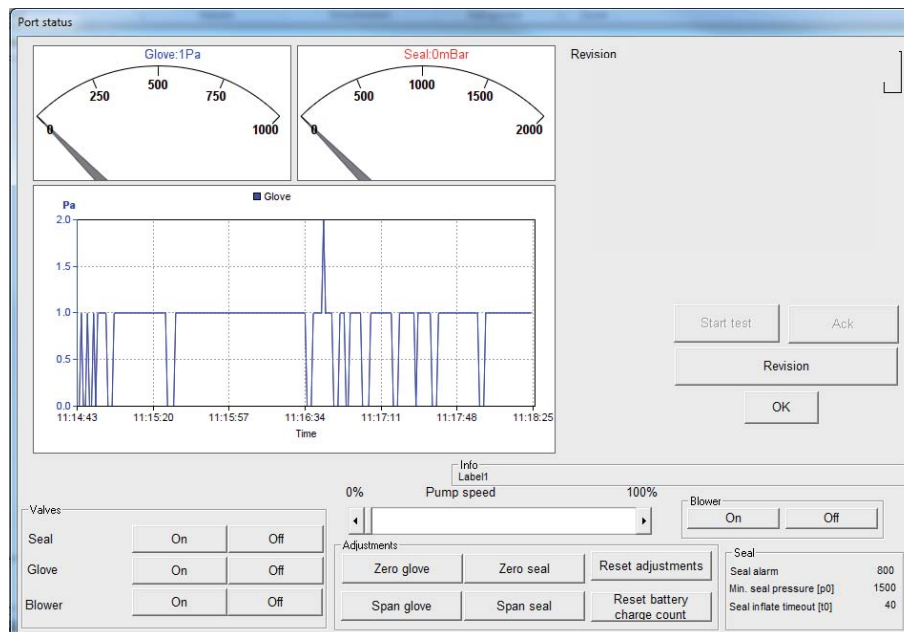
- Skan service login was performed.
- Calibration equipment is available.

28.3.1 Preparations

Tool:

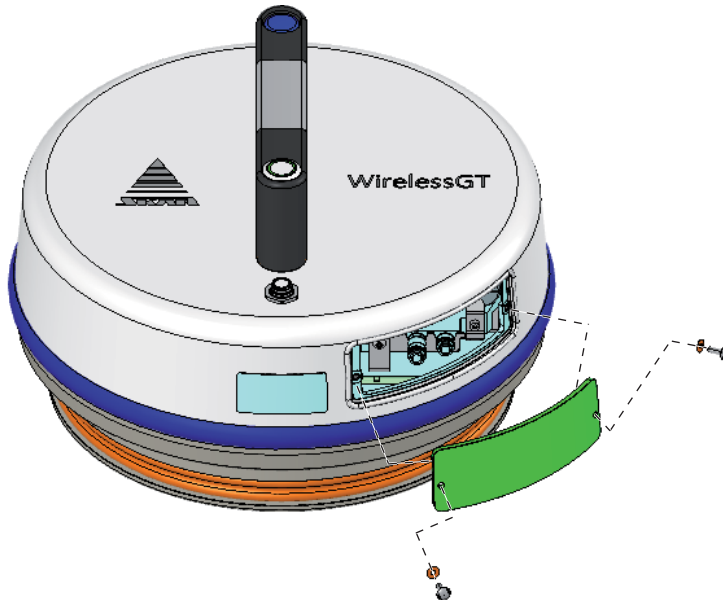
- Calibrated pressure gauge
- Counterpart - calibration connectors
- Hoses to the used pressure calibrator

1. Activate "Revision mode" of the selected specific port.
 - ➡ The extended "Port status" screen of the selected specific port appears.

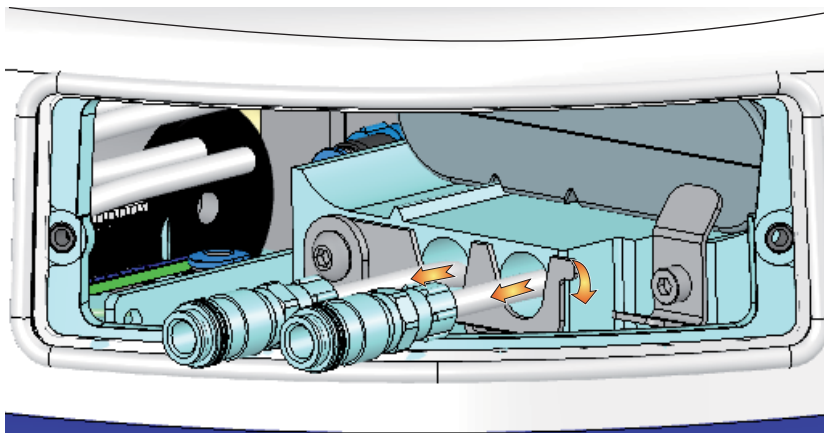




2. Open the service hatch of the dedicated WirelessGT and find the quick connections for the pneumatic seal respectively for the glove system.

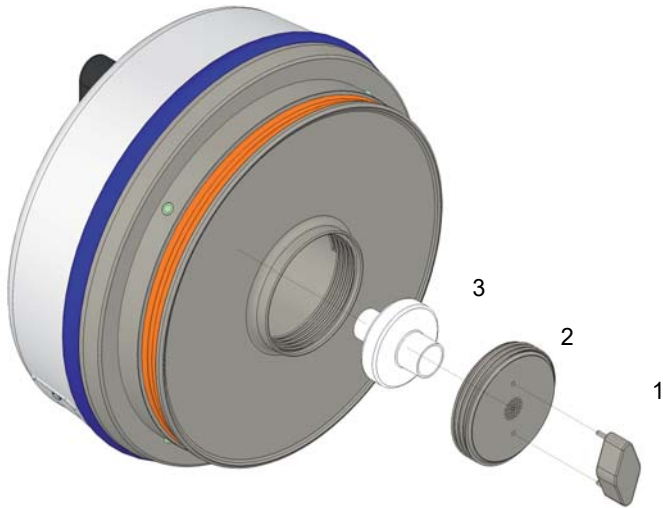


3. Pull the connectors holder down to lock the air flow between the sensor and pneumatic seal. Only the tubing between the calibration connection and sensor remains open.

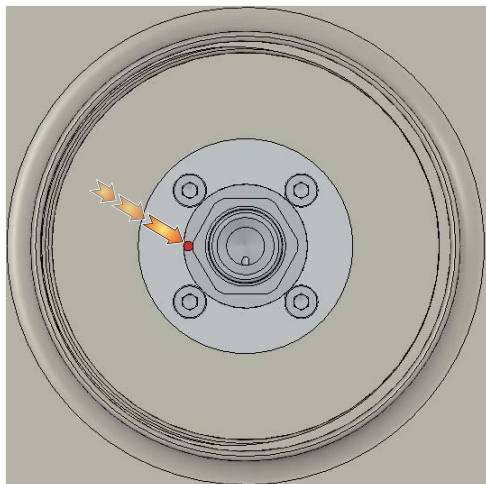


4. Pull the calibration connectors carefully (as long as the hose connections allow it) from the WirelessGT housing.
5. Connect the calibrated pressure gauge to the corresponding quick connection of the pneumatic seal respectively glove system.
6. Open the filter cover (2) of the WirelessGT by means of the delivered tool (1).

7. Remove the breathing filter (3).



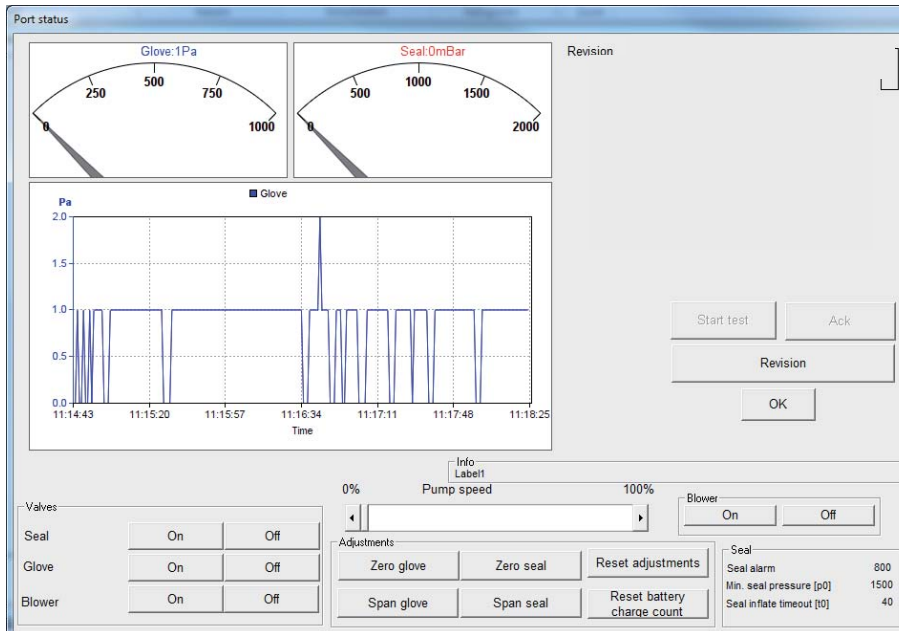
8. Close the reference hole with the provided plug.



28.3.2 Zero point



Zero the sensor of the pneumatic seal respectively the sensor for the glove system not altogether, but one after another.

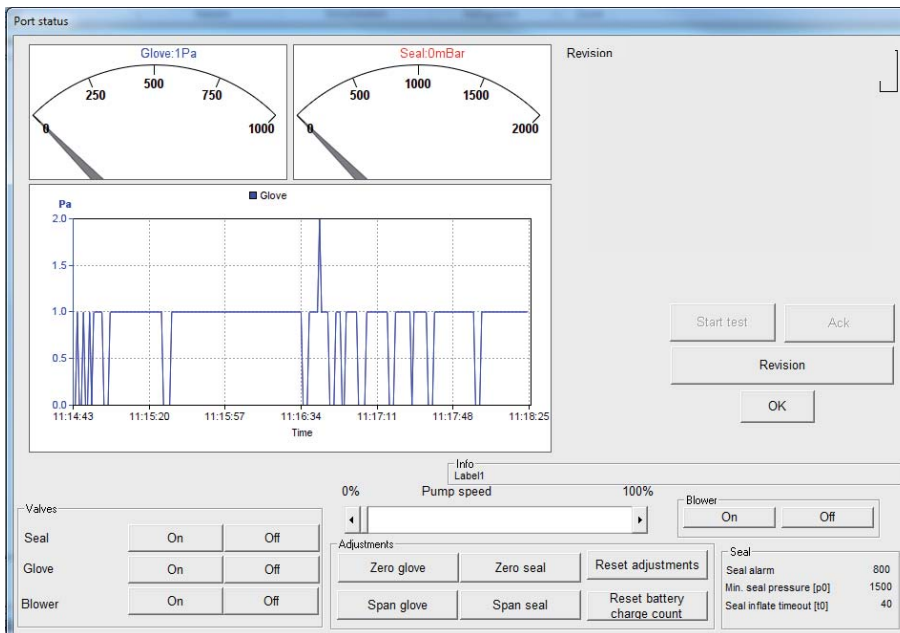


1. Aerate the glove system using the buttons Glove [Off].
2. Deflate the pneumatic seal using the buttons Seal [Off].
3. Measure the pressure in the pneumatic seal respectively in the glove system using the connected pressure gauges.
4. Zero both sensors using the [Zero Glove] and [Zero Seal] buttons respectively when the value displayed on the connected external pressure gauges are 0.

28.3.3 Span



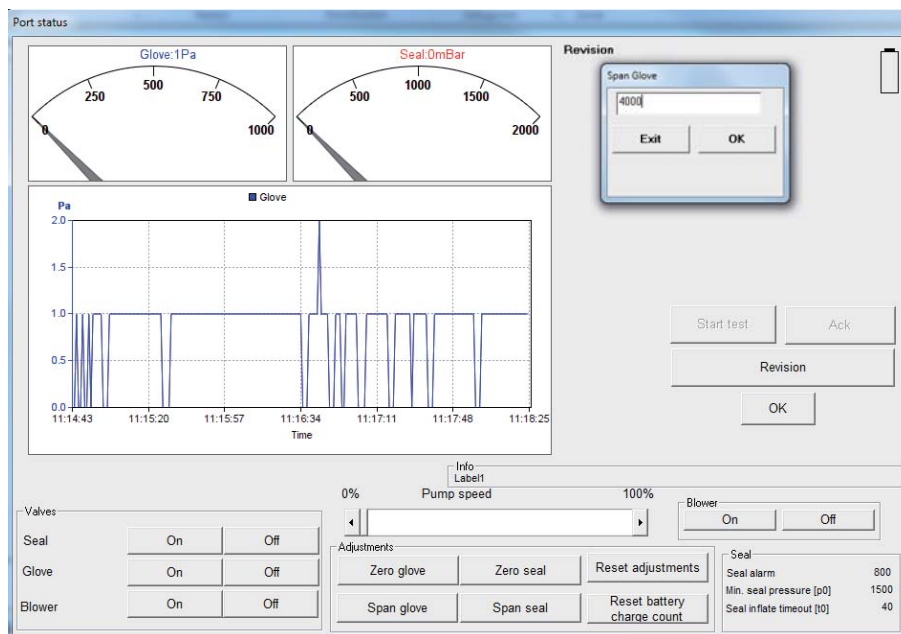
Set span for the pneumatic seal respectively for the glove system not altogether, but one after another.



1. Inflate partially the pneumatic seal (max. 1.5 bar) respectively blow up partially the glove system (max. 4000 Pa).
2. Measure the pressure in the pneumatic seal respectively in the glove system using the connected pressure gauges.

- Click the [Span Seal] respectively [Span Glove] button in the extended "Port status" screen to set the measured pressure in the previous step.

➔ The "Span..." popup window appears:



- Input the measured pressure with the external pressure gauges using the keypad.
- Click the [OK] button to confirm your entry.
- Close the "Span window" using the [Exit] button.

28.3.4 Assembly

- Disconnect the calibrated pressure gauge from the corresponding quick connections of the pneumatic seal respectively glove system.
- Close the service hatch of the WirelessGT.
- Open the reference hole by removing the plug.
- Insert the breathing filter.
- Close the filter cover of the WirelessGT by means of the delivered tool.
- Exit "Revision mode" of the selected specific port.

➔ The simply "Port status" screen of the selected port appears.



28.4 Exchange of battery pack

Tool:

- Battery pack: Skan part ID 1292595
- Hexagon socket wrench

CAUTION

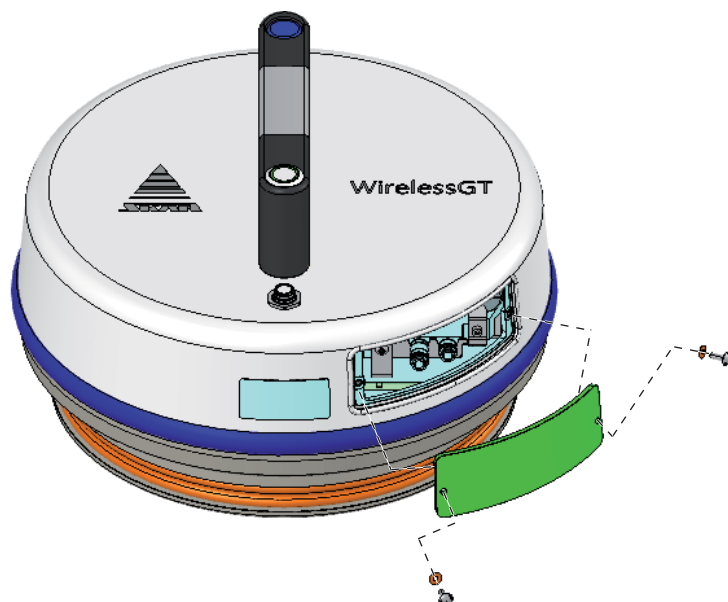
Fire hazard due to wrong or defective battery!

Fire hazard!

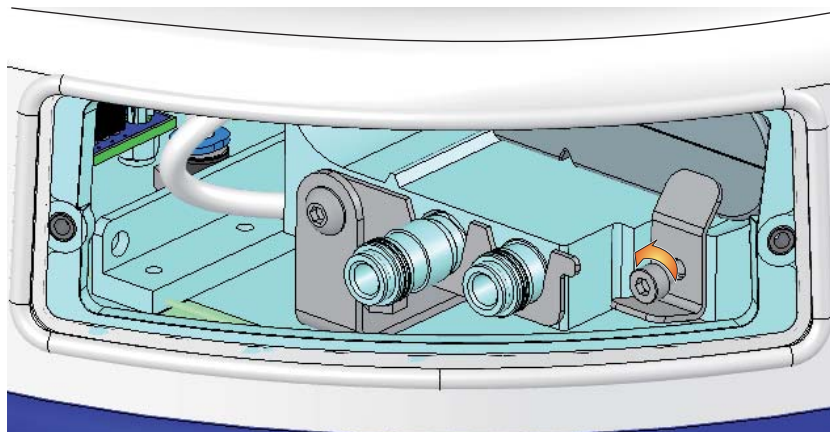
- Use only tested and original batteries!

28.4.1 Removal

1. Open the service hatch of the dedicated WirelessGT.

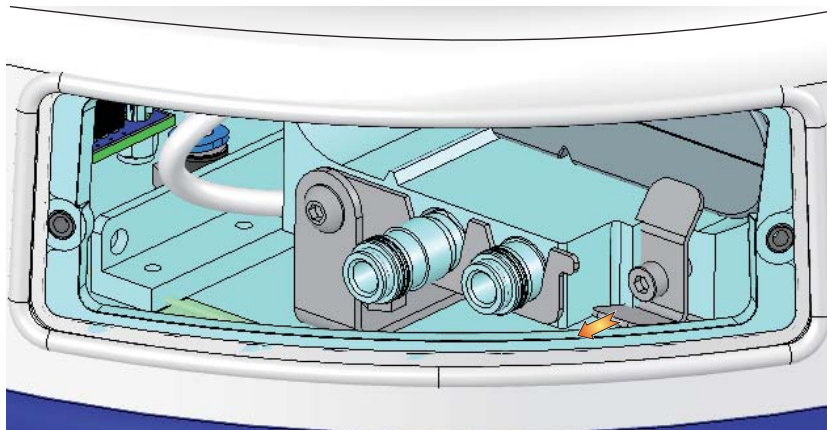


2. Release but don't remove the clamping nut of the battery's fixing plate.

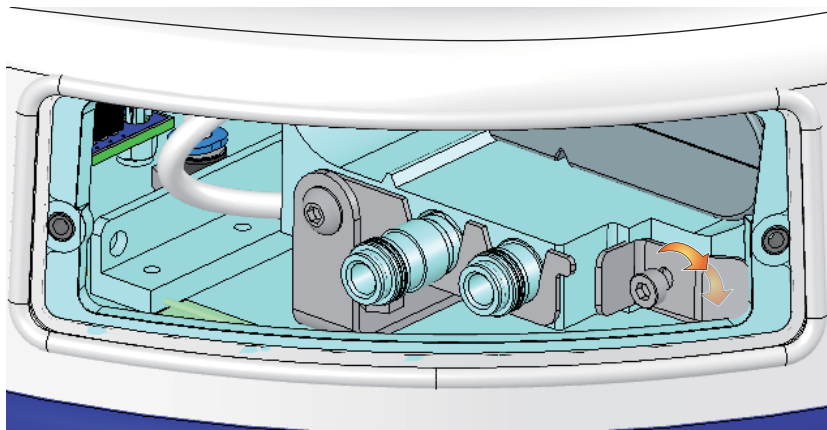




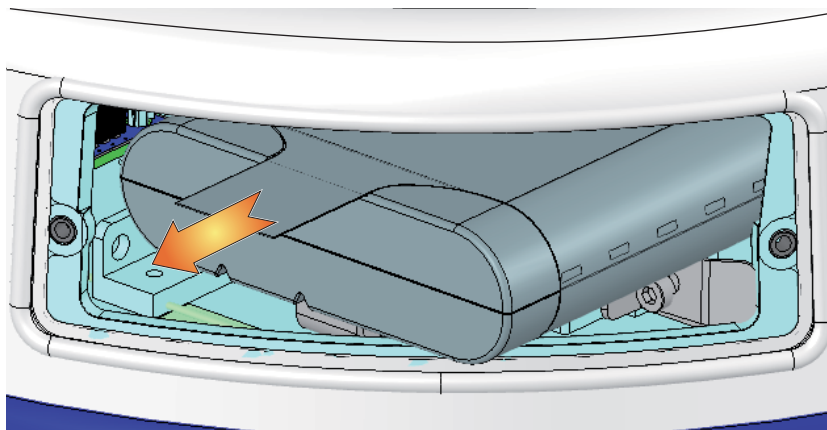
3. Pull the fixing plate forward until it can turn around the clamping nut.



4. Unlock the battery: Turn the battery's fixing plate 90° clockwise.



5. Remove the battery through the service opening.



Read the safety information concerning "Disposal and recycling" → [Chapter 2.12 'Disposal and recycling'](#) on page 10

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28.4.2 Installation

1. Replace the removed battery pack with a new one of the same type.
2. Lock the battery: Turn the battery's fixing plate 90° anticlockwise.
3. Push the fixing plate back and secure it with the clamping nut.
4. Close the service hatch of the dedicated WirelessGT.
5. Charge the battery and check the function of the WirelessGT.
6. For detailed instruction please contact Skan service hotline!

28.5 Exchange of blade fuse

Tool: Skan part ID 1301347



Fire hazard due to insert of wrong blade fuse!

Fire hazard!

- Only use type of blade fuse specified from the Skan!



Before exchange the blade fuse, identify and eliminate the cause of over-current!

- For detailed instruction please contact Skan service hotline!

28.6 Exchange of the breathing filter (HEPA)

28.6.1 Sterile unpacking of the filter

Storage according to the regulations (not on the floor, no contact with liquids etc.) and with regular checking of the expiry date.

The enclosed sterile-packed breathing filter can be inserted in its original packaging into the Grade C with the given, prescribed disinfection measures (e.g. wiping disinfection of the packaging). The unpacking and installation could be done in the grade C with the protective equipment provided there.

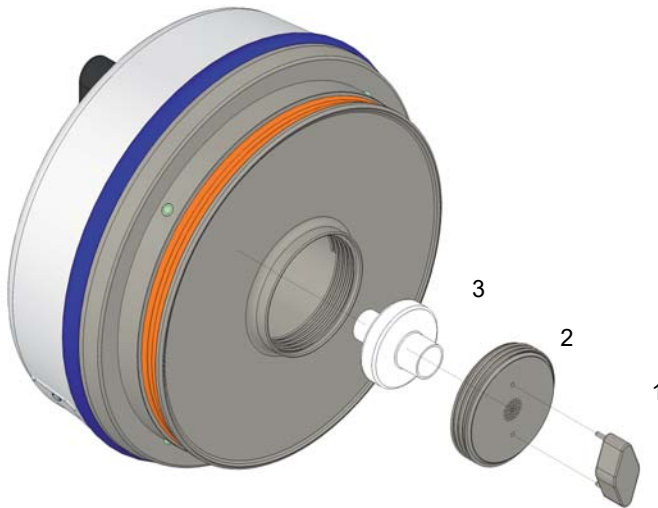
1. Open the packaging at the designated tabs without touching the contents by one person.
2. Extract the packaging content by another person. Carefully remove by touching only on the outside.

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28.6.2 Removal

Tool: Tool for turning the filter cover

1. Open the filter cover (2) of the dedicated WirelessGT by means of the delivered tool (1).
2. Remove the breathing filter (3).



3. For detailed instruction please contact Skan service hotline!



Read the safety information concerning "Disposal and recycling" → [Chapter 2.12 'Disposal and recycling'](#) on page 10

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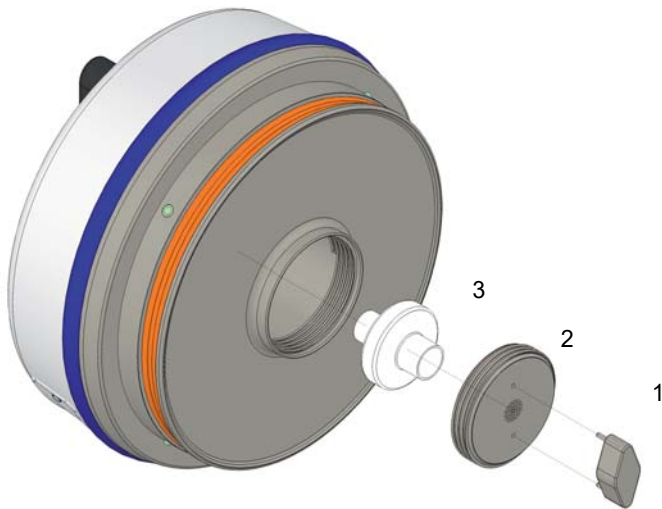
28.6.3 Installation

Tool:

Breathing filter: Skan part ID 1288920

Tool for turning the filter cover

1. Place the WirelessGT on a horizontal surface with the filter opening upwards.
2. Disinfect the conical contact surface between the filter and device.
3. Replace the removed breathing filter (3) with a new one of the same type. Touch the new filter only on the outside!



4. For detailed instruction please contact Skan service hotline!
5. Close the filter cover (2) of the WirelessGT by means of the delivered tool (1).

29 Trouble shooting



Maintenance activities which may be carried out only by the component manufacturer or by firms authorised by the component manufacturer are indicated as such. All other maintenance activities must be carried out exclusively by trained maintenance personnel with appropriate specialist knowledge!

Error	Measure
Glove tester LED - Signalization and indicator lamp does not work.	• Switch on the glove tester. • Charge the battery of the glove tester.
Test disc sits loosely in the glove port even though the test disc seal is inflated.	• Check the sizes of the test disc and the test item ring. • Check the pneumatic seal for leaks.
Pneumatic seal of the test disc cannot be inflated.	• Check the pneumatic seal for leaks.
The set pressure for testing the test items is not reached.	• Check the pneumatic seal for leaks. • Test the function fan by means of a simple short process without attached test items. • Check process sequence, especially running fan. If the fan is not running, access to "Revision mode" is necessary for further troubleshooting. Please contact Skan service hotline! • Check process sequence, especially switching / opening of valves. The valves switching is audible with filling of specimen volume. For further troubleshooting access to "Revision mode" is necessary. Please contact Skan service hotline!



For displayed alarm messages in the popup screen: ➔ [Chapter 25.3 'Alarm messages in the popup screen' on page 97!](#)

If questions or uncertainties arise during troubleshooting or rectifying malfunctions, please contact the Skan service hotline.

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