

Diagnostic software **TITANUS RACK-SENS[®]**

Step by Step Guide

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Version: 08/07
Replaces: -/-

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1 Conditions of the basic unit

1.1 Air flow

The air flow that is measured by the detection unit will be displayed as a bar graph and as a percentage. Furthermore, the temperature and the speed of the air flow that is measured inside of the detection unit is displayed at the bottom left of the bar graph.

The current air flow value is marked by the blue marker in the bar graph. In addition, this value is indicated as a percentage below the bar graph. If 0% is displayed, then this corresponds to the air flow at the time of alignment. If the air flow value exceeds or falls below the permissible value of the air flow range ($\pm 10\%$ to $\pm 95\%$), then an air flow malfunction occurs. The blue marker is then positioned outside of the permitted area, which has been marked in yellow on the bar graph. Small deviations from the nominal value are permitted. These can occur due to changes in the temperature, the pressure or the humidity of the air, in comparison to the point in time at which the alignment was carried out.

In the event of a positive deviation, the air flow has increased. A strong increase of the air flow indicates that the pipe has been damaged (rupture, cracks, loosened glue connections), or that the intake openings have loosened or expanded. A negative deviation indicates a decreased air flow. Possible causes for a strong reduction of the air flow could be stopped up intake openings, dirt in the pipe or a clogged air filter.

2 Smoke measurement

2.1 Condition of the detector (current air and detector contamination)

The contamination of the detector module, or of the air that is sucked in, is described as a bar graph and as a percentage.

The current contamination value is marked by the blue marker in the bar graph. In addition, this value is indicated as a percentage below the bar graph. The display of 0% corresponds to a completely new detector module in clean ambient air. A detector malfunction occurs, if the detector indication exceeds the permitted range ($\pm 100\%$). The blue marker is then positioned outside of the permitted area, which has been marked in yellow on the bar graph. Smaller deviations are permitted. These can for instance be due to contaminations (for instance dust) of the air, which is sucked in by the smoke intake system.

A positive deviation indicates contamination of the air that has been sucked in. This can be counteracted by utilising an air filter, or, if possible, by switching to a lower sensitivity. Furthermore, deposits of light-coloured dirt particles on the inside of the module can lead to an increase of this value.

A negative change is due to a decreasing luminous power of the optics on the inside of the detector module. The reasons for this can be dirtying of the optics, or deposits of dark-coloured dirt particles on the inside of the module.

3 Mainboard messages

3.1 System blocked

This message is displayed, if the doors of the installation that is to be monitored are provided with door contact switches. The opening of doors of the installation causes the TITANUS RACK·SENS® to block, extinguishing in case of an alarm. If such a message is generated with closed doors, then you should proceed to take the steps that are described below.

Step	Possible cause	Diagnosis	Measures
1	Door contact for securing cabinet doors was not activated.	<ul style="list-style-type: none"> - Examine the connected door contact switch for a correct operation, by manually activating each individual switch. <p>If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.</p>	<ul style="list-style-type: none"> - Re-adjust the door contact switch, so that an optimal activation of the switch is assured.
2	Connection of the door contact to TITANUS RACK·SENS® is interrupted.	<ul style="list-style-type: none"> - Test the door contact input on the TITANUS RACK·SENS®, by bridging the contacts of the door with the connector X3 at the backside of TITANUS RACK·SENS®. <p>If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.</p>	<ul style="list-style-type: none"> - Test the connection of the door contact switch to TITANUS RACK·SENS®, by making sure that the cable is not interrupted and/or that the screw or clamp connections are tight.
3	Defective door contact switch	<ul style="list-style-type: none"> - Test the door contact switch of the TITANUS RACK·SENS® for proper operation, by operating the switch manually, while testing the contacts with a continuity checker. A contact connected to TITANUS RACK·SENS® must be closed in an activated state. <p>If the contact is not closed in an activated state, then you should check whether the connections in the switch were properly made.</p>	<ul style="list-style-type: none"> - Exchange the door contact switch
4	Connecting circuit board defective.	<ul style="list-style-type: none"> - Test the door contact input on the TITANUS RACK·SENS®, by bridging the contacts of the door with the connector X3 at the backside of TITANUS RACK·SENS®. <p>If the alarm message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.</p>	<ul style="list-style-type: none"> - Replace the connector circuit board. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
5	<p>If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.</p>		

3.2 System isolated

This message is displayed when the key switch of the system, which is located at the front of the TITANUS RACK · SENS®, is switched to the position "Service". The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	The key switch at the front of the TITANUS RACK · SENS® has been switched to the "Service" position.	<ul style="list-style-type: none"> - Inspect the switch position of the key switch. If the key switch is in the position "Service", then please carry out the following measure.	<ul style="list-style-type: none"> - Make sure that there are no active fire alarms, that the indicator "Triggered" (Ausgelöst) does not blink or burn permanently, and subsequently turn the key switch into the position "ON".
2	Key switch circuit board is defective; connector circuit board is defective, or connecting cable is defective.	<ul style="list-style-type: none"> - When the key switch is in the "ON" position and the system continues to be isolated, then it is possible that the circuit board of the switch or the connector, or the cable connecting these two components is defective. For a more precise determination of the cause, test the functionality by individually replacing the switch circuit board, the connector circuit board and the connecting cable. For carrying out this error diagnosis, please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Replace defective components. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
3	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

3.3 Input voltage too low

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	For a TITANUS RACK·SENS®, which is supplied with 24 V, the distribution voltage is smaller than the minimum operating voltage of 15 V.	- Measure the distribution voltage at the 24 V interface unit. If the distribution voltage does not lie in a range of between 15 V and 30 V, then you should take the following measure.	Please make sure that the distribution voltage at the terminals lies in the operating voltage range between 15 V and 30 V.
2	In the case of TITANUS RACK·SENS® units, which are supplied with 230 V, the internal power adapter is defective.	Measure the output voltage of the internal power adapter. If the output voltage does not lie in a range between 27.6 V and 27.9 V, then you should take the following measure.	Exchange the power supply adapter. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
3	The connector circuit board is defective.	Measure the input voltage at the terminal strip X9 of the connector circuit board. If the value lies above 15 V, then the connector circuit board is defective	Exchange the connector circuit board of the TITANUS RACK·SENS®. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
4	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

3.4 Fault programm and memory

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	The TITANUS RACK·SENS® equipment was switched off and on again within a very short period of time.	After 5 seconds uptime, this malfunction disappears. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Let the equipment run for at least 5 seconds, after it has been switched on and before switching it off again.
2	Excessively large electromagnetic noise fields are occurring.	Position the TITANUS RACK·SENS® equipment at a location, where you know that no unusual electromagnetic disturbances exist, and test operations of TITANUS RACK·SENS® at that location. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Filter the supply voltage of the TITANUS RACK·SENS® equipment with an additional ferrite core, immediately before the input pin of the supply voltage.
3	The connector circuit board is defective.	The malfunction does not disappear after 5 seconds uptime, or it recurs at the regular intervals, without the presence of unusual electromagnetic noise fields at the installation location.	Exchange the connector circuit board of the TITANUS RACK·SENS®. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
4	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

3.5 Fan fault

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	Defective connecting cable.	Check that the connecting cable of the detector unit is seated correctly on the connecting circuit board. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Exchange the connecting cable from the detector unit to the connecting circuit board. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
2	Defective ventilator	Disconnect the ventilator and replace it with an equivalent resistance (33 Ohm / 4 W). If the malfunction disappears, then the ventilator is defective. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Replace the ventilator. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
3	Defective connecting circuit board or detection unit.	Disconnect the ventilator and replace it with an equivalent resistance (33 Ohm / 4 W). If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Replace the connecting circuit board or detection unit. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
4	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

3.6 Fault NTC temperature measurement

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	One or more temperature sensors are defective.	Use of the diagnostic software DIAG 3 to look for temperature sensors in the register "Status", where the indicator field has a yellow background colour. Test the resistance of these sensors with an ohmmeter. Depending on the temperature, it must lie in a range of approximately 500 Ohm to 40 k Ohm If this is not the case, then please carry out the following measure.	Replace the temperature sensor with a new one.
2	Connecting circuit board defective.	Change the temperature sensors against equivalent resistances (10 k Ohm, 0.5 W). If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Exchange the connecting circuit board. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
3	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

3.7 Line fault manual release

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	The cable to the manual trigger switch is interrupted or short-circuited.	Measure the manual release circuit with an ohmmeter. The cable to the manual trigger switch may not be interrupted or short-circuited. If this is not the case, then please carry out the following measure.	Repair the cable/remove the short-circuit
2	Cable to the manual trigger switch is too long	Measure the interconnection cable with an ohmmeter. If the measured resistance exceeds the tolerance that has been set in the diagnostic software, then carry out the following measure.	Add the resistances of the cable in a standby and an alarm condition, and input these new values in the advanced settings.
3	Improper settings.	Measure the resistances of the manual release circuit in a standby and alarm condition, and compared these values with the values set in the diagnostic software. If the measured values deviate from the set values, then carry out the following measure.	Enter the measured values in the advanced settings of the diagnostic software.
4	The tolerance setting for the resistance is insufficient.	Measure the standby and alarm resistances on the manual release circuit with an ohmmeter. If these resistances are comparable to the sets values, then it is possible that the resistance tolerance has been set at a too low value. If this is the case, then please carry out the following measure.	Increase the resistance tolerance in the advanced settings. The minimum value should not be below 5%. Maximum value = $100 - (Ra / Rn) * 100$ Ra = Alarm resistance Rn = standby resistance
5	Connecting circuit board defective.	Measure the manual release circuit with an ohmmeter. If the resistance conforms to the settings, then the connecting a circuit board is defective. If this is the case, then please carry out the following measure.	Exchange the connecting circuit board. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
6	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

3.8 Too many exting.-/ shutdown modules

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	More than 10 extinguishing and shutdown modules are connected.	Count the number of connected modules and take into account that a TITANUS RACK-SENS® 2 HE unit already contains an internal module. If more than the 10 permitted extinguishing or shutdown modules are attached, then you must carry out the following measure.	Disconnect the excess extinguishing and shutdown modules.
2	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

3.9 Fault in exting.-/ shutdown module

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	The connected extinguishing or shutdown module is malfunctioning.	Examine the connected extinguishing and shutdown models on the registers "Bus elements A" and "Bus elements B". If messages are displayed in the corresponding registers, then you should carry out the following measure.	see Chapter 5, Messages - Bus element
2	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

3.10 Pressure loss

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	An attached extinguishing module reports a loss of extinguishing agent.	Examine the connected extinguishing and shutdown modules on the registers "Bus elements A" and "Bus elements B". If messages are displayed in the corresponding registers, then you should carry out the following measure.	see Chapter 5.5, Pressure loss
2	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

3.11 Coms fault exting.-/ shutdown module

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	The data cable to the extinguishing and shutdown modules is interrupted, short-circuited or is connected to earth.	Inspect the interconnection cables to the extinguishing and shutdown modules, for possible interruption, short circuits and connection to earth. If one of these errors is detected, then you must carry out the following measure.	Replace the interconnection cables.
2	The data cable to the extinguishing and shutdown modules is not a twisted pair.	Check that the data cable to the extinguishing and shutdown modules has been carried out as a twisted pair. If this is not the case, then please carry out the following measure.	His replace the interconnection cables with a twisted pair version.
3	The data cable to the extinguishing and shutdown modules is not shielded.	Check whether the data cables to the extinguishing and shutdown modules are shielded, and whether the protective shielding is properly earthed. If this is not the case, then please carry out the following measure.	Use a cable with protective shielding and earth the shield.
4	The extinguishing and shutdown modules have different potential to earth.	Check whether the connection to ground (terminal 0 V on the connector plug X3 of the detector plug-in unit) is continuously connected to all 0 V terminals on all of the connected extinguishing and shutdown modules, and then measure the potential differences between the equipment pieces. The potential difference may not exceed ± 2 V. If this is not the case, then please carry out the following measure.	Increase the cross-section of the mass cable; possibly install several wires in parallel.
5	The connected extinguishing or shutdown module is defective.	Disconnect the extinguishing and shutdown modules one after the other, and save the reduced configuration in the service mode, by pushing of the switch "Config" at the front of the TITANUS RACK·SENS® for approximately 3 seconds. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Replaced defective extinguishing or shutdown modules
6	The connector circuit board is defective.	Test by temporarily replacing the connector circuit board. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Exchange the connecting circuit board. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
7	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

3.12 Coms fault network

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	The cable connection between the two circuit boards is defective.	<p>Check the cables for firm seating.</p> <p>Replace the cable connection temporarily as a test.</p> <p>If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.</p>	Replace the connecting cable.
2	The connecting or network circuit board is defective.	<p>As a test, separately replace the network circuit board and the connecting circuit board.</p> <p>For carrying out to this error diagnosis, please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office.</p> <p>If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.</p>	Replace the defective circuit boards Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
3	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

3.13 Coms fault Detector 1

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	The cable connection between the detector module and the connecting circuit board is defective.	Check the cable for firm seating. Replace the cable connection temporarily as a test. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Replace the connecting cable.
2	The connecting or detector module is defective.	The connections on the connecting circuit board can be exchanged with equipment that is provided with two detector modules, so as to test whether the detector module or the connecting circuit board is defective. For carrying out to this error diagnosis, please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Replace defective subassembly. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
3	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

3.14 Coms fault Detector 2

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	The cable connection between the detector module and the connecting circuit board is defective.	Check the cables for firm seating. Replace the cable connection temporarily as a test. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Replace the connecting cable.
2	The connecting or detector module is defective.	The connections on the connecting circuit board can be exchanged with equipment that is provided with two detector modules, so as to test whether the detector module or the connecting circuit board is defective. For carrying out to this error diagnosis, please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Replace defective subassembly. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
3	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

3.15 Battery fault

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	The batteries of the TITANUS RACK·SENS® are defective.	Test by temporarily exchanging batteries. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Replace the batteries.
2	The connecting cable between the connecting circuit board and the charging control device is defective.	Check the connecting cable for damages and a firm connection. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Replace the connecting cable.
3	Battery Charger is defective.	Test by temporarily replacing the charging control device. For carrying out to this error diagnosis, please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Replace the battery charger. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
4	Connecting circuit board defective.	Test by temporarily replacing the connecting circuit board. For carrying out to this error diagnosis, please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Replace the connecting circuit board. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
5	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

3.16 Mains fault

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	The input supply voltage (230 V) is too low at the mains input module.	Measure the supply voltage at the mains input module. The voltage must lie between 100 and 240 V. If this is not the case, then please carry out the following measure.	Check the mains voltage.
2	The connecting cable between the power supply adapter and the battery charger is defective.	Measure the supply voltage at the charging control device. The input voltage must amount to 27.8 V \pm 0.5 V. If this is not the case, then please carry out the following measure.	Replace the connecting cable.
3	The connecting cable between the connecting circuit board and the battery charger is defective.	Check the connecting cable for damages and a firm connection. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Replace the connecting cable.
4	Power supply adapter is defective.	Measure the output voltage of the power supply adapter. The output voltage must amount to 27.8 V \pm 0.5 V. If this is not the case, then please carry out the following measure.	Replace the power supply adapter. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
5	Battery charger is defective.	As a test, replace battery charger. For carrying out to this error diagnosis, please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Replace the charging control device. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
6	Connecting circuit board defective.	Test by temporarily replacing the connecting circuit board. For carrying out to this error diagnosis, please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Replace the connecting circuit board. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
7	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

4 Detector module messages

4.1 Detector fault

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	Excessively large electromagnetic noise fields are occurring at the installed location.	Position the TITANUS RACK·SENS® equipment at a location, of which you know that no unusual electromagnetic disturbances exist, and test operations of TITANUS RACK·SENS® at that location. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Filter the supply voltage of the TITANUS RACK·SENS® equipment with an additional ferrite core, immediately before the input terminals of the supply voltage.
2	Defective detector module.	Exchange the detector module for testing purposes. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Replace the detector module. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
3	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

4.2 Detector module dusty

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	High contamination of ambient air.	The "Detector state" bar graph in the "Conditions" register indicates a high contamination of ambient air. If too large contaminations occur, these are deposited in the detector module, whereby the bar graph exceeds the yellow "Max." marking (+100%). If this is the case, then please carry out the following measure.	Replace the detection unit. Note: The installation of an air filter in the piping system makes it possible to reduce contamination of the detection unit.
2	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

4.3 Air flow init aborted

The following sequence of steps must be carried out to remedy this error.

Active fault signal:

Step	Possible cause	Diagnosis	Measures
1	Equipment settings have changed.	The initialisation of the air flow was aborted, since the settings for the equipment were changed in the "Settings" register and transmitted to the equipment, during the air flow initialisation process. If this is the case, then please carry out the following measure.	Examine the equipment settings and restart air flow initialisation.
2	Air flow initialisation impossible.	It was not possible to complete the initialisation of the air flow during the entire initialisation process (max. duration 120 minutes). If the air flow cannot be initialised, this may be due to the following causes: - Unstable air flow - Unstable air flow temperature If this is the case, then please carry out the following measure.	Make sure that no fluctuations in air flow and/or the pressure conditions in the piping system (for instance through blowers) can occur during air flow initialisation, and also that no temperature fluctuations occur in the surveillance area.
3	Detector unit malfunction.	If this malfunction occurs in combination with the message "Detector module malfunctioning" (see 4.1), then it can be assumed that the error is due to the detection unit. If this is the case, then please carry out the following measure.	Replace the detector module. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
4	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

Saved fault signal:

Step	Possible cause	Diagnosis	Measures
1	Air flow initialisation was restarted during an initialisation procedure.	The air flow initialization was restarted, during an initialization procedure (for instance by first using this switch at the front of the TITANUS RACK·SENS® and immediately thereafter via the diagnostic tool), and successfully completed.	No measure is required.
2	Air flow initialisation was aborted and then restarted.	After aborting the air flow initialisation, the procedure was restarted and successfully completed.	No measure is required.
3	Air flow initialisation was aborted and the equipment was subsequently switched off.	After successfully aborting the air flow initialisation procedure, the equipment was shut off. If this is the case, then please carry out the following measure.	Examine the equipment settings and restart air flow initialisation.
4	Delete to be stored malfunction message, by pushing the "Delete" button in the register "Malfunction messages".		

4.4 Airflow fault

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	Clogged up air filter.	Remove the filter insert from the internal air filter of the TITANUS RACK·SENS®. If the malfunction message is no longer displayed, then the filter is stopped up. If this is the case, then please carry out the following measure.	Replace the filter.
2	Air flow speed is too low.	First check, whether the error can be traced back to the piping system or the equipment. - Disconnect of the piping system from the equipment and attach a test pipe. - Close off the 4.6 cm drilled hole in the test pipe. - Carry out an adjustment of the air flow. If the malfunction no longer occurs, then the error lies in the piping system or in its design. If this is the case, then please carry out the following measure.	Inspect the piping system (especially for obstructions). Also pay attention for possibly clogged air filters or closed ball taps / valves. Examine the design of the piping system.
3	Intake ventilator is defective	Separate the piping system from the equipment and check whether air is sucked in. If no air is sucked in, then the intake ventilator is defective. If this is the case, then please carry out the following measure.	Replace the intake ventilator. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
4		If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.	

4.5 Air flow too low (statistic evaluation)

The following steps have to be carried out in the mentioned order.

Active fault signal:

Step	Possible Cause	Diagnosis	Measures
1	Blockages in the pipe system	The air flow has fallen below the bottom fault threshold. This is indicated on the „Status“ register. The blue marker in the air flow bargraph lies below the yellow area during an active fault.	The pipes and air sampling points must be checked for blockages and blown through, if necessary. Also check for blocked air filters or closed ball valves. Check if the correct air flow reducers are being used and the TITANUS MICRO-SENS® ventilator blows air through freely.
2	Detector module is defective	If the fault persists after cleaning the pipe system, the detector module is the cause.	Replace the detector module
3	If the fault cannot be corrected after carrying out the above steps, save the latest diagnostic. Contact WAGNER Alarm- und Sicherungssysteme GmbH , giving the fault description and diagnostic data.		

Saved fault signal:

Step	Possible Cause	Diagnosis	Measures
1	Settings for airflow threshold or fault delay	External influences (e. g. air pressure variations, temperature or humidity) may lead to changes in the air flow. If the sensitivity of the air flow monitor is too high, unfavourable external influences can lead to a temporary fall below the threshold.	Carry out the air pressure dependent adjustment for high sensitivity of the air flow monitor (see technical manual TITANUS MICRO-SENS®, chapter 7.3). Before the adjustment the pipe system must be inspected thoroughly in any case. If possible: select a lower sensitivity of the air flow monitor or longer fault delay.
2	If the fault cannot be corrected after carrying out the above steps, save the latest diagnostic. Contact WAGNER Alarm- und Sicherungssysteme GmbH , giving the fault description and diagnostic data.		

4.6 Air flow too high (statistic evaluation)

The following steps have to be carried out in the mentioned order.

Active fault signal:

Step	Possible Cause	Diagnosis	Measures
1	Break of a pipe or loose aspiration reducing film sheet	The air flow has exceeded the upper fault threshold. This is indicated on the „Status“ register. The blue marker in the air flow bargraph is above the yellow area.	The pipe system must be checked for damage (breaks, tears, glued connections). Also check for damaged or loose aspiration reducing film sheets. If there is no fault in the pipe system, the air flow sensor of the detector unit has to be checked with the test pipe. (see technical manual TITANUS MICRO·SENS®, chapter 7.7.1).
2	Detector module is defective	If there is no fault in the pipe system and/or does the air flow sensor of the detection unit not work flawlessly, the detector module is defective.	Replace detector module
3	If the fault cannot be corrected after carrying out the above steps, save the latest diagnostic. Contact WAGNER Alarm- und Sicherungssysteme GmbH , giving the fault description and diagnostic data.		

Saved fault signal:

Step	Possible Cause	Diagnosis	Measures
1	Setting for airflow threshold or fault delay	External influences (e. g. air pressure variations, temperature or humidity) may lead to changes in the air flow. If the sensitivity of the air flow monitor is too high, unfavourable external influences can lead to a temporary exceed of the fault threshold.	Carry out the air pressure dependent adjustment for high sensitivity of the air flow monitor (see technical manual TITANUS MICRO·SENS®, chapter 7.3). Before the adjustment the pipe system must be inspected thoroughly in any case. If possible: select a lower sensitivity of the air flow monitor or longer fault delay.
2	If the fault cannot be corrected after carrying out the above steps, save the latest diagnostic. Contact WAGNER Alarm- und Sicherungssysteme GmbH , giving the fault description and diagnostic data.		

5 Messages - Bus element

5.1 Common fault

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	A termination resistor is missing.	If only the general malfunction message is active, then this concerns a malfunction of the extinguishing ventilator. Check whether unused ventilator connections have been terminated with an equivalent resistance. If this is not the case, then please carry out the following measure.	Connect an termination resistor (7.5 Ohm, 1 W) to the unused ventilator connections.
2	Ventilator connected reversed polarity.	If only the general malfunction message is active, then this concerns a malfunction of the extinguishing ventilator. Check, whether the connections of the ventilator have been attached to the wrong terminal (Terminal 1 = + pole / Terminal 2 = - pole). If this is the case, then please carry out the following measure.	Connect the ventilator correctly.
3	Ventilator connection defective.	If only the collective fault is active, then this concerns a malfunction of the extinguishing ventilator. Check the cable connection of the ventilator for a short circuit, interruption or earthing. If this is the case, then please carry out the following measure.	Replace the connecting cable.
4	Extinguishing/shutdown module defective	If only the general malfunction message is active, then this concerns a malfunction of the extinguishing ventilator. Terminate both ventilator connections with an termination resistor of 7.5 k Ohm. If the general malfunction message remains, then the extinguishing / shutdown module is defective. If this is the case, then please carry out the following measure.	Extinguishing/shutdown module defective
5	Other malfunction.	If a different malfunction message is also active, besides the general malfunction message, then the reason for the malfunction must be looked for there.	
6	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

5.2 Program error

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	Excessively large electromagnetic noise fields are occurring at the installed location.	Position the TITANUS RACK·SENS® equipment, or the extinguishing is/shutdown module at a location, where you are sure that no unusual electromagnetic disturbances exist, and then test the functionality of TITANUS RACK·SENS®, or the extinguishing /shutdown module at that location. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Filter the supply voltage of the TITANUS RACK·SENS® equipment, or of the extinguishing/shutdown module, with an additional ferrite core, directly of the input pin of the supply voltage line.
2	Extinguishing/shutdown module is defective	If no electromagnetic noise fields occur, then the extinguishing/shutdown module is defective. If this is the case, then please carry out the following measure.	Extinguishing/shutdown module must be replaced.
3	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

5.3 Supply voltage too low

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	Operating voltage lies below 15 V or above 30 V.	Measure the operating voltage of the extinguishing/shutdown module directly at the terminal rail X11. If the operating voltage does not lie within the range of 15 - 30 V, then you must take the following measure.	Please make sure that the supply voltage at the terminals lies in the operating voltage range of between 15 V and 30 V.
2	Extinguishing/shutdown module is defective	The operating voltage of the extinguishing/shutdown module lies within the permitted range of 15 - 30 V, directly at the terminal rail X11. If this is the case, then please carry out the following measure.	Replace the extinguishing/shutdown module, or replace the connecting circuit board in TITANUS RACK·SENS®. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
3	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

5.4 Line fault manual release

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	The cable to the manual trigger switch is interrupted or short-circuited.	Measure the manual release circuit with an ohmmeter. If the cable is interrupted or a short circuit is detected, then you must carry out the following measure.	Repair the cable/remove the short-circuit
2	Cable to the manual trigger switch is too long	Measure the manual release circuit with an ohmmeter. If the measured resistance exceeds the tolerance that has been set in the diagnostic software, then carry out the following measure.	Add up the resistances of the cable in a standby and an alarm condition, and input these new values in the advanced settings.
3	Improper settings.	Measure the standby and alarm resistances of the manual release circuit with an ohmmeter. If the measured values deviate from the set values, then carry out the following measure.	Enter the measured values in the advanced settings of the diagnostic software.
4	The tolerance setting for the resistance is insufficient.	Measure the standby and alarm resistances of the manual release circuit with an ohmmeter. If these resistances are comply with the set values, then it is possible that the resistance tolerance has been set at a too low value. If this is the case, then please carry out the following measure.	Increase the resistance tolerance in the advanced settings. The minimum value should not be below 5%. Maximum value = $100 - (Ra / Rs) * 100$ Ra = Alarm resistance Rs = standby resistance
5	Extinguishing module defective	Measure the manual release circuit with an ohmmeter. If the resistance conforms to the settings, then the extinguishing module is defective. If this is the case, then please carry out the following measure.	Replace the extinguishing/shutdown module, or replace the connecting circuit board in TITANUS RACK · SENS®. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
6	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

5.5 Pressure loss

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	The connecting cable from the pressure switch is defective	Detach the connecting cable from the pressure switch and examine it. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Replace the connecting cable.
2	Screws on the pressure switch are loose.	Check that all screw connections have been tightened properly. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Tighten any loose screws.
3	Extinguishing module defective	Link the terminals 5 and 8 on the terminal rail X10 of the extinguishing module circuit board E674.2. The alarm message "Pressure loss" should no longer be displayed. If this is not the case, then please carry out the following measure.	Exchange the extinguishing/shutdown module.
4	Pressure switch is defective.	Measure the resistance of the pressure switch. If the pressure switch cannot be activated, then either the pressure in the bottle is too low or the pressure switch is defective If this is the case, then please carry out the following measure.	Exchange pressure switch
5	The pressure in one of the bottles with extinguishing agent is too low.	As a test, use an extinguishing cylinder that has been newly filled with extinguishing agent. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Refill the bottle of extinguishing agent. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
6	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

5.6 Discharge actuator voltage too low

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	The connecting cable from the extinguishing module is defective	Check the connecting cable for damages and a firm connection. If the message is no longer displayed, while this error diagnosis is being carried out, then the following measure should be taken.	Replace the connecting cable.
2	Extinguishing module defective	The operating voltage of the extinguishing/shutdown module lies within the permitted range of 15 - 30 V, directly at the terminal rail X11. If this is the case, then please carry out the following measure.	Exchange the extinguishing module.
3	The connecting circuit board of the TITANUS RACK·SENS® is defective.	The operating voltage of the extinguishing module lies within the permitted range of 15 - 30 V, directly at the terminal rail X11. If this is the case, then please carry out the following measure.	Replace the connecting circuit board. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
4	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

5.7 Fault ignition line

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	Wire jumper for 2 nd pyrotechnical device is missing	If only one pyrotechnical valve is attached, then the unused connection for the second pyrotechnical valve must be bridged with a wire. If this is not the case, then please carry out the following measure.	Bridge the unused connector with a wire.
2	Pyrotechnical device is defective.	Disconnect the pyrotechnical trigger from the extinguishing module and replace it with a bridge. If the error message is no longer displayed, then the pyrotechnical trigger is defective. If this is the case, then please carry out the following measure.	Replace the pyrotechnical trigger. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
3	Extinguishing module defective	If, despite bridging, the malfunction continues, then the extinguishing module is defective. If this is the case, then please carry out the following measure.	Exchange the extinguishing module. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
4	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

 WARNING	A direct control of the pyrotechnical triggers with a measuring device is not permitted.
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5.8 Fault shutdown

The following sequence of steps must be carried out to remedy this error.

Step	Possible cause	Diagnosis	Measures
1	Termination resistor is missing.	Check whether unused relay connections have been provided with a termination resistor. If this is not the case, then please carry out the following measure.	Connect to the unused relay connections with a termination resistor of 900 Ohm.
2	Relay connection defective	Check the cable connection of the shutdown relay for a short circuit, interruption or earthing. If this is the case, then please carry out the following measure.	Replace the connecting cable.
3	Extinguishing/shutdown module is defective	Instead of the shutdown relay, connect an equivalent resistance of 900 Ohm. If the malfunction message continues to be displayed, then the extinguishing or the shutdown module is defective. If this is the case, then please carry out the following measure.	Replace the extinguishing module or the shutdown module. Please take up contact with your nearest WAGNER Alarm- und Sicherungssysteme GmbH branch office for this purpose.
4	If carrying out the above steps does not make a remediation of errors that have occurred possible, then you should save your current diagnosis data. Then take up contact with WAGNER Alarm- und Sicherungssysteme GmbH and have a detailed error description and the saved diagnosis data at hand.		

6 Settings

6.1 Settings of the mainboard

The “Settings” register contains actual settings for the corresponding detector module. The following table lists the possible settings. A gray background in fields indicates standard settings.

	Setting options			
	TR1-10	TR1-50	TR2-10-xx	TR2-50-xx
Alarm delay	Adjustable from 0 to 60 seconds			
	10 sec			
Air flow range	Adjustable between 10 and 95 %			
	30 %			
Malfunction delay	Adjustable between 30 sec and 60 min			
	1 min 40 sec			
Advance warning	Adjustable from 0 to 60 seconds			
	10 sec			
Buzzer	On			
	Off			
Fault latched	On			
	Off			
Dynamic air flow	On			
	Off			

6.2 Settings for detector module 1

	Setting options			
	TR1-10	TR1-50	TR2-10-xx	TR2-50-xx
Sensitivity (main alarm)	0.1 %/m	0.5 %/m	0.1 %/m	0.5 %/m
	Adjustable from 0.5 %/m to 2 %/m		Adjustable from 0.1 %/m to 2 %/m	
Advance alarm threshold	Adjustable between 10 and 80% of the main alarm level			
	60 %			
LOGIC·SENS®	Off			
	On			

6.3 Settings for detector module 2

	Setting options			
	TR1-10	TR1-50	TR2-10-xx	TR2-50-xx
Sensitivity (main alarm)	0.1 %/m	0.5 %/m	0.1 %/m	0.5 %/m
	Adjustable from 0.5 %/m to 2 %/m		Adjustable from 0.1 %/m to 2 %/m	
Advance alarm threshold	Adjustable between 10 and 80% of the main alarm level			
	60 %			
LOGIC·SENS®	Off			
	On			

6.4 Settings for air flow initialisation

	Setting options			
	TR1-10	TR1-50	TR2-10-xx	TR2-50-xx
Height above NN	Adjustable between 0 and 9.000 m			
	0 m			
Air pressure	Adjustable between 700 and 1400 hPa			
	1013 hPa			
Ventilator voltage	Adjustable between 9.0 V and 13.5 V			
	9.0 V			