

Diagnostic Software

TITANUS *TOP-SENS*[®] LSNi

Step by Step Guide

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1 States Module

1.1 Device status

“Operating mode“indicator

The green operating mode indicator indicates the device's current operating states. The indicator can show two different operating states:

Indicator lights up continuously: Voltage supply (15 - 30 V=) present. Device in operation (stand-by mode).

Indicator flashes: Voltage supply (15 - 30 V=) present. Device in operation. Air flow initialisation active.

“Fault" indicator

The yellow fault indicator displays the device's current fault state. The indicator can show two different fault states:

Indicator does not light up: Device in idle state. No fault message active.

Indicator flashes: Air flow fault detected. Fault delay for air flow fault comes to an end.

Indicator lights up continuously: Fault message active (see “fault messages” tab) or saved (in “Fault latched: On” setting).

“LSN ready" indicator

The green “LSN ready” indicator signals the smoke extraction system's current stand-by state on the LSN loop / branch. The indicator can show two different stand-by states:

Indicator lights up continuously: Communication between smoke extraction system and fire detector control panel via LSN loop/branch present. Device ready for operation.

Indicator does not light up: Communication between smoke extraction system and fire detector control panel via LSN loop/branch is malfunctioning. Device is not transmitting any data to the fire detector control panel, cannot be parameterised and is not operational.

1.2 Air flow indicator

The air flow measurement reading from the detector module is shown as a bargraph and as a percentage. When operating a detector module without an air flow monitor, the indicator in the "Air flow" field is hidden.

The current air flow value is indicated by the blue marker in the bargraph. This value is also shown as a percentage below the bargraph. 0% equals the air flow at the time of adjustment. If the air flow value varies beyond the permitted range ($\pm 100\%$), an air flow fault is indicated. Depending on the preset air flow threshold, an indicated deviation of $\pm 100\%$ corresponds to an actual deviation of $\pm 10\%$ (low air flow threshold), $\pm 20\%$ (medium air flow threshold), $\pm 30\%$ (large air flow threshold), or $\pm 50\%$ (very large air flow threshold) from the initialised volume flow. The blue marker is then outside the permissible range, which is shown in yellow in the bargraph. Small deviations from the reference value are permitted. These may occur due to changes in temperature, pressure or the moisture content in the air compared to when the adjustment was made.

When there is a positive deviation, the air flow has increased. A strong increase in the air flow indicates there is damage to the pipeline (burst, crack, detached adhesive connection), or the suction openings have become detached or have expanded. A negative deviation indicates a diminished air flow. Possible causes behind a strong decrease in the air flow may be blocked suction openings, impurities in the pipe or a dirty air filter.

1.3 Detector state indicator (current air and detector pollution)

Contamination in the detector module or the in-coming air is shown as a bargraph and as a percentage.

Contamination currently present is indicated by the blue marker in the bargraph. This value is also shown as a percentage below the bargraph. 0% equals the detector module when new in clean ambient air. If the detector state varies beyond the permitted range ($\pm 100\%$), a detector fault is indicated. The blue marker is then outside the permissible range, which is shown in yellow on the bargraph. Small deviations in value are permitted. These may be caused by impurities such as dust in the air being sucked into smoke extraction system.

A positive deviation indicates contamination in the in-coming air. This can be rectified by using an air filter, or, if possible, by setting to a lower sensitivity. Deposits of light-coloured dirt particles inside the module may also lead to an increase in the reading.

A negative change is caused by a decreasing light power in the optic system inside the detector module. Reasons behind this could be dirt on the optic system or deposits of dark-coloured dirt particles inside the module.

2 Fault messages

2.1 Mainboard: Collective fault

To correct a fault the following steps must be taken in sequence:

Step	Possible Cause	Diagnosis	Measures
1	Potentiometer R3 setting for pressure-dependent air flow adjustment is incorrect	<ul style="list-style-type: none"> - Measure the voltage (DC) on the measuring points MP2 (+) and MP3 (-) of the base board with a multi-meter. <p>The voltage standard is 1.2 V. Variations might occur due to pressure-dependent adjustments of the air flow.</p> <p>If the measured voltage lies outside the range of 0.5V and 1.9V, the setting is incorrect.</p> <p><u>Note:</u> A fault occurs at voltages lower than 0.2V or higher than 2.2V.</p>	<p>Re-set the voltage between the two measuring points MP2 (+) and MP3 (-) with the potentiometer R3.</p> <ul style="list-style-type: none"> - Air pressure-independent adjustment: 1.2 V - Air pressure-dependent adjustment: according to manual (air pressure correction table in enclosure) <p>Further information see TITANUS TOP·SENS® LSNi manual.</p>
2	Base board is defective	<ul style="list-style-type: none"> - Make sure the device is current-free and then switch on again. <p>If the fault occurs right after switch-on, the base board is defective. If a fault registers at the earliest after 45 seconds of re-start, continue as follows.</p> <ul style="list-style-type: none"> - Make sure the device is current-free. - Disconnect ventilation cable from base board. - Switch on power and run device for 5 minutes. <p>If the fault persists, the base board is defective.</p> <p><u>Note:</u> When re-connecting the ventilator, make sure the polarity is correct (1– red, 2 – black).</p>	Replace base board
3	Ventilation connection is depolarized	<p>As the ventilator has stopped, a fault of the detector module “Air flow controller at its limit” and “Air flow too small” lights up.</p> <ul style="list-style-type: none"> - Make sure the device is current-free. - Disconnect ventilation cable from base board. - Switch on power and run device for 5 minutes. <p>If the collective fault does not recur, the connection to the ventilator is probably defective.</p>	Inspect ventilator connection to base board (red - cl. 1; black - cl. 2)

4	Ventilator faulty or blocked	<p>Diagnosis in step 3 points to a depolarisation of the ventilator connection. The connection itself is correct.</p> <p>- Measure the ventilator voltage (DC) of the connected ventilator with a multimeter.</p> <p>If the ventilator voltage lies outside the limits listed below, it must be assumed that the ventilator is defective.</p> <p>Set ventilator voltage 6.9 V: Max. 7.6 V Min. 6 V</p> <p>Set ventilator voltage 9 V : Max. 10V Min. 7.8 V</p>	The ventilator cannot be removed from the housing. Therefore, the complete housing must be replaced.
5	If the fault cannot be corrected after carrying out the above steps, save the latest diagnostic. Contact WAGNER , giving the fault description and diagnostic data.		

2.2 Mainboard: Wrong sensitivity detector module

To correct this fault, take the following steps in the indicated sequence order.

Step	Possible Cause	Diagnosis	Actions																	
1	Detector module with incorrect sensitivity in parameter-set.	<p>- Check label of detector module for correct type and check if the correct sensitivity was chosen in the parameter set of the attached fire alarm panel.</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Permissible sensitivity</th> </tr> </thead> <tbody> <tr> <td rowspan="2">DM-TT-80</td> <td>0.8 %/m</td> </tr> <tr> <td>1.6 %/m</td> </tr> <tr> <td rowspan="3">DM-TT-25</td> <td>0.25 %/m</td> </tr> <tr> <td>0.5 %/m</td> </tr> <tr> <td>1.0 %/m</td> </tr> <tr> <td rowspan="3">DM-TT-05</td> <td>2.0 %/m</td> </tr> <tr> <td>0.05 %/m</td> </tr> <tr> <td>0.1 %/m</td> </tr> <tr> <td></td> <td>0.2 %/m</td> </tr> <tr> <td></td> <td>0.4 %/m</td> </tr> </tbody> </table>	Type	Permissible sensitivity	DM-TT-80	0.8 %/m	1.6 %/m	DM-TT-25	0.25 %/m	0.5 %/m	1.0 %/m	DM-TT-05	2.0 %/m	0.05 %/m	0.1 %/m		0.2 %/m		0.4 %/m	Select the correct sensitivity for the detector module used in the parameter of the fire alarm detector control panel (see 3.2: "Detector module settings"). Then re-download the control program in order to transmit the modified setting to the detector module.
Type	Permissible sensitivity																			
DM-TT-80	0.8 %/m																			
	1.6 %/m																			
DM-TT-25	0.25 %/m																			
	0.5 %/m																			
	1.0 %/m																			
DM-TT-05	2.0 %/m																			
	0.05 %/m																			
	0.1 %/m																			
	0.2 %/m																			
	0.4 %/m																			
2	If the fault cannot be corrected by carrying out the step above, save the diagnostic data. Contact WAGNER Alarm- und Sicherungssysteme GmbH , giving the description of the fault and diagnostic data.																			

2.3 Mainboard: Communication error

Such an error occurs when the mainboard is communicating with at least one detector module.

To correct this fault, take the following steps in the indicated sequence order.

Step	Possible Cause	Diagnosis	Actions
1	Mainboard defective	<ul style="list-style-type: none"> - Disconnect power. - Unplug the detector module connecting cable from the mainboard. - Switch on supply voltage and let the device run for at least 5 minutes. <p>If the error persists, the mainboard is defective.</p> <p><u>Note:</u> If there is no detector module, the fault "Detector module: Communication error" (see 2.9) appears.</p>	Replace mainboard
2	Connection cable between mainboard and detector module defective	<ul style="list-style-type: none"> - Disconnect power. - Disconnect the detector module from the connection cable and connect the connection cable from the 1st detector module to the mainboard. - Re-connect power and let the device run for at least 5 minutes. <p>If the error persists, the connection cable between the mainboard and the detector module is defective (short circuit).</p> <p><u>Note:</u> If there is no detector module, the fault "Detector module: Communication error" (see 2.9) appears.</p> <p>When using two detector modules, repeat the process for the second connection cable.</p>	Replace connection cable
3	Detector module defective	<ul style="list-style-type: none"> - Disconnect power. - Connect 1st detector module to mainboard with a connecting cable - Re-connect power and let the device run for at least 5 minutes. <p>If the error persists, the detector module is defective.</p> <p><u>Note:</u> When operating with a defective detector module, the fault "Detector module: Communication error" (see 2.9) may also appear.</p> <p>When using two detector modules, repeat the process for the second module.</p>	Replace detector module
4	If the fault cannot be corrected by carrying out the steps above, save the diagnostic data. Contact WAGNER Alarm- und Sicherungssysteme GmbH , giving the description of the fault and diagnostic data.		

2.4 Mainboard: Wrong identifier detector module

To correct this fault, take the following steps in the indicated sequence order.

Step	Possible Cause	Diagnosis	Actions
1	Wrong detector module being used	<ul style="list-style-type: none"> - Check which module type is being used by looking at the type plate on the corresponding module and whether this type is acceptable for the basic device being used. The colour code on the type plate on the detector module and that on the label on the basic device must match. <p>Warning: Only detector module type DM-TT-xx-xx/a and a red type plate are acceptable.</p>	If the detector module is not a permitted model, exchange it for one which is acceptable for the TITANUS TOP·SENS® LSNi being used.
2	If the fault cannot be corrected by carrying out the steps above, save the diagnostic data. Contact WAGNER Alarm- und Sicherungssysteme GmbH , giving the description of the fault and diagnostic data.		

2.5 Detector module: Detector module defective

To correct the fault, the following steps must be taken in sequence:

Step	Possible Cause	Diagnosis	Measures
1	<p>Air flow speed is too low</p> <p><u>Note:</u> Occurs only when using a detector module with air flow monitor.</p>	<p>If a fault occurs together with the fault "Air flow controller at its limit" (see 2.9), first check whether the fault can be attributed to the pipe system or the device.</p> <ul style="list-style-type: none"> - To do this separate the pipe system from the device and connect a test pipe. - Only close off the 4.6mm opening in the test pipe and make the adjustment for the air flow. <p>If no fault registers, the defect lies in the pipe system or its design.</p> <p><u>Note:</u> The air flow speed in a sampling pipe with an outer diameter of 25mm must be at least 1m/sec. If necessary, the speed must be measured with a suitable measuring device.</p>	<p>Inspect the pipe system (especially for blockages).</p> <p>Check for blocked air filters or closed ball valves.</p> <p>Check the pipe system design.</p>
2	Detector module is defective	<p>If the fault occurs on its own, the detector module is defective.</p> <p>The detector module is also defective if the fault "Air flow controller at its limit" occurs while operating TITANUS TOP·SENS® LSNi with the test pipe.</p>	Replace detector module
3	If the fault cannot be corrected after carrying out the above steps, save the latest diagnostic. Contact WAGNER , giving the fault description and diagnostic data.		

2.6 Detector module: Program fault

To correct the fault, the following steps must be taken in sequence:

Step	Possible Cause	Diagnosis	Measures
1	Detector module defective	<ul style="list-style-type: none"> - Make sure the device is current-free. - Replace detector module. - Switch on power and run device for 5 minutes. <p>If the detector module was the cause of the fault, this is now corrected.</p>	Replace detector module
2	External adverse influences	<ul style="list-style-type: none"> - Check surroundings for adverse influences. - Operate the device for a time in different surroundings. If the fault does not recur, it can be assumed that external influences at the original location are to blame. 	If possible: Avoid external fault sources or instal device in a better location.
3	If the fault cannot be corrected after carrying out the above steps, save the latest diagnostic. Contact WAGNER , giving the fault description and diagnostic data.		

2.7 Detector module: Detector module dusty

To correct the fault, the following steps must be taken in sequence:

Step	Possible Cause	Diagnosis	Measures
1	Contamination of the surround air too heavy	<p>Detector module and sampled air are monitored for soiling/contamination.</p> <p>The bar-graph "Detector state" in the register "States module x" points to a greater contamination in the surround air or a soiled detector module. If the contamination is too heavy, the bar-graph exceeds the "max" (+100%) mark.</p> <ul style="list-style-type: none"> - To determine contaminated air as the cause, the module has to be tested temporarily in rooms with clean air. If this is not possible, the ventilator can be disconnected temporarily from the base board – no further dirt particles can now get to the detector module. <p><u>Attention:</u> A smoke detection within the supervision area of the device is not possible if the ventilator is disconnected!</p> <p>If the bar-graph begins to fall after a time, the fault is caused by the contaminated air.</p>	<p>By using an air filter in the pipe system, the burden on the detector module can be reduced.</p> <p>If possible: By switching to a lower sensitivity, the detector module can cope with greater contamination.</p>
2	Detector module soiled	If the fault persists after the measures taken in step 1, the module is soiled.	Replace the detector module
3	If the fault cannot be corrected after carrying out the above steps, save the latest diagnostic. Contact WAGNER , giving the fault description and diagnostic data.		

2.8 Detector module: Air pressure out of range / potentiometer

To correct the fault, the following steps must be taken in sequence:

Step	Possible Cause	Diagnosis	Measures
1	Potentiometer R3 setting for adjustment of pressure-dependent air flow is incorrect.	<p>A fault occurs together with the "Collective fault" of the base board. If two detector modules are used, the fault registers for both modules.</p> <ul style="list-style-type: none"> - Measure the voltage (DC) on the measuring points MP2 (+) and MP3 (-) with a multi meter. - The voltage standard is 1.2 V. Variations might occur due to pressure-dependent adjustments of the air flow. - If the measured voltage lies outside the range of 0.5V and 1.9V, the setting is incorrect. <p><u>Note:</u> Fault occurs at voltages lower than 0.2V or higher than 2.2V.</p>	<p>Re-set the voltage between the two measuring points MP2 (+) and MP3 (-) with the potentiometer R3.</p> <ul style="list-style-type: none"> - Air pressure-independent adjustment: 1.2 V - Air pressure-dependent adjustment: according to manual (air pressure correction table in enclosure) <p>Further information see TITANUS TOP·SENS® LSNi manual.</p>
2	Base board is defective	<p>The voltage cannot be adjusted in step 1:</p> <ul style="list-style-type: none"> - Make sure the device is current-free. - Pull off cable connecting detector module and base board. - Switch on power and run device for 5 minutes. <p>The base board is defective if the voltage on MP2 and MP3 cannot be properly adjusted with the potentiometer R3.</p> <p><u>Note:</u> If there is no detector module the fault indicator "Detector module: Communication error" (see 2.8) lights up.</p>	Replace base board
3	Connection cable defective	<ul style="list-style-type: none"> - Make sure the device is current-free. - Connect cable of 1st detector module with base board. Don't clip down the module. - Switch on power and run device for 5 minutes. <p>If the fault persists, the connecting cable between base board and detector module is defective.</p> <p><u>Note:</u> If there is no detector module the fault indicator "Detector module: Communication error" (see 2.8) lights up.</p> <p>If there are two detector modules repeat the procedure.</p>	Replace connection cable
4	Detector module defective	<ul style="list-style-type: none"> - Make sure the device is current-free. - Connect cable of 1st detector module with base board. Don't clip down the module. - Switch on power and run device for 5 minutes. <p>If the fault persists the detector module is defective.</p> <p><u>Note:</u> During operation with a defective detector module the fault "Detector module: Communication error" (see 2.8) might light up.</p> <p>If there are two detector modules repeat the procedure.</p>	Replace detector module
5	If the fault cannot be corrected after carrying out the above steps, save the latest diagnostic. Contact WAGNER , giving the fault description and diagnostic data.		

2.9 Detector module: Communication error

If the fault occurs in connection with other communication faults (base board, other detector modules) proceed as for “Base Board: Communication error” (see 2.1).

To correct the fault, the following steps must be taken in sequence:

Step	Possible cause	Diagnosis	Measures
1	Wrong detector module installed	Communication error activated: - Ensure that the correct detector module for TITANUS TOP·SENS® LSNi is installed.	The detector module for TITANUS TOP·SENS® LSNi must be exchanged.
2	Connection cable between base board and detector module is defective	Only one communication fault is activated: - Make sure device is current-free. - Replace connection cable. - Switch on power and run device for 5 minutes. If the fault does not recur, the connection cable was defective.	Replace defective connection cable
3	Detector module is defective	The fault persists after replacing the cable in step 2: - Make sure the device is current-free. - Replace detector module. - Switch on power and run device for 5 minutes. If the detector module was defective, the fault is corrected.	Replace defective detector module
4	If the fault cannot be corrected after carrying out the above steps, save the latest diagnostic. Contact WAGNER , giving the fault description and diagnostic data.		

2.10 Detector module: Air flow controller at its limit

This fault occurs only in detector modules with air flow monitor.

To correct it, the following steps must be taken in sequence:

Step	Possible Cause	Diagnosis	Measures
1	Air flow speed is too low	Check whether the fault is caused in the pipe system or the device: - Disconnect the pipe system from the device and attach a test pipe. - Close only the 4.6mm hole in the test pipe and make the adjustment for the air flow. Details are in the manual for TITANUS TOP·SENS® LSNi. If the fault does not recur, the pipe system and its design must be inspected. <u>Note:</u> The air flow speed in a sampling pipe with an outer diameter of 25mm must be at least 1m/sec. If necessary, the speed must be measured with a suitable measuring device.	Inspect the pipe system (especially for blockages). Also check for blocked air filters or closed ball valves. Check the pipe system design for correct use of air flow reducers.
2	Detector module is defective	If the fault persists in step 1 while connected to the test pipe, 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 , giving the fault description and diagnostic data.		

2.11 Detector module: Air flow too small

This fault occurs only in detector modules with air flow monitor.

To correct it, the following steps must be taken in sequence:

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 "States module" register of the relevant module. The blue marker in the air flow bar-graph lies below the yellow area during an active fault. Additionally, this fault shows on the detector module LED in flash code. If the LED flashes twice every two seconds, the air flow is too little.	The pipes and air sampling points must be checked for blockages and blown through, if necessary. Check for blocked air filters or closed ball valves. Check that the correct air flow reducers are being used and the TITANUS TOP·SENS® LSNi 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 , giving the fault description and diagnostic data.		

Saved Fault Signal:

Step	Possible Cause	Diagnosis	Measures
1	Setting for fault 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, adverse environmental influences can cause a temporary fall below the fault threshold.	Carry out the air pressure-dependent adjustment for high sensitivity of the air flow monitor (see manual TITANUS TOP·SENS® LSNi). During adjustment, the pipe system must be inspected thoroughly. 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 , giving the fault description and diagnostic data.		

2.12 Detector module: Air flow too large

This fault occurs only in detector modules with air flow monitor.

To correct it, the following steps must be taken in sequence:

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 "States module" register of the relevant module. The blue marker in the air flow bar-graph lies above the yellow area. Additionally, this fault shows on the detector module LED in flash code. If the LED flashes three times every two seconds, the air flow is too great.	The pipe system must be checked for damage (breaks, tears, glued connections). Check for damaged or loose aspiration-reducing film sheets.
2	Detector module is defective	If there is no fault in the pipe system, the detector module is the cause.	Replace detector module
3	If the fault cannot be corrected after carrying out the above steps, save the latest diagnostic. Contact WAGNER , giving the fault description and diagnostic data.		

Saved Fault Signal:

Step	Possible Cause	Diagnosis	Measures
1	Setting for fault 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, adverse environmental influences can cause a temporary rise above the fault threshold.	Carry out the air pressure-dependent adjustment for high sensitivity of the air flow monitor (see manual TITANUS TOP-SENS® LSNi). During adjustment, the pipe system must be inspected thoroughly. 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 , giving the fault description and diagnostic data.		

3 Settings module

3.1 Flash code diagnosis LED

The diagnosis LED on the detector module shows the actual condition of the module. It is an additional aid to the fault-finding data of diagnostic software. The table shows the flash code:

Flash Codes of Diagnostic LED on Detector Module	
Amount	Meaning
1 x flash	Airflow – Init active
2 x flashes	Airflow – too little (blockage)
3 x flashes	Airflow – too great (break)
4 x flashes	Software - Init
Constantly lit	Detector module defective

3.1 Detector module settings

The current settings for the corresponding detector module are found under the "Settings" tab. The detector module can only be set via the parameterisation software in the fire detection control panel.

The following table shows the possible settings. The standard setting is highlighted in grey.

	Setting options		
	DM-TT-05	DM-TT-25	DM-TT-80
Sensitivity (main alarm)	0.05 %/m	0.25 %/m	0.8 %/m
	0.1 %/m	0.05 %/m	1.6 %/m
	0.2 %/m	1.0 %/m	
	0.4 %/m	2.0 %/m	
Alarm delay	0 secs		
	10 secs		
	30 secs		
	60 secs		
Air flow range	low (+/- 10 %)		
	medium (+/- 20 %)		
	high (+/- 30 %)		
	very high (+/- 50 %)		
Fault delay	30 s		
	2 min		
	15 min		
	60 min		
Fault latched	On		
LOGIC·SENS®	Off		
	On		

Note: The setting "Fault latched" cannot be changed.