Diagnostic Software

TITANUS *MICRO·SENS*®

Step by Step Guide

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Content

1 Status

1.1 Air flow indicator

The air flow measuring value of the detector module is shown by a bargraph and as percentage value. In addition the temperature and the speed of the air flow measured within the detector module is shown on the left beside the bargraph.

The current air flow value is indicated by the blue marker on the bargraph. Below this graph the value is shown in percentages. 0% is the air flow at the time of adjustment. If the air flow value exeeds or falls below the set, allowed air flow range (±10% to ±50%), an air flow fault occurs. The blue marker then is outside the allowed range, which is marked yellow in the bargraph. Small deviations from the rated value are allowed. These may occur due to changes of the temperature, the pressure or the humidity compared to the moment of adjustment.

If the discrepancy is positive the air flow has increased. A high increase of the air flow indicates a damage of the pipe (break, rupture, detached glued connections) or detached respectively enlarged sampling points. A negative discrepancy indicates a decreased air flow. Possible causes for a high decrease of the air flow are blocked sampling points, soil in the pipe or a polluted air filter.

1.2 Detector state indicator (current air and detector pollution)

The indicator shows the pollution of the detector module respectively the pollution of the sampled air, and is shown in a bargraph and as percentages. The value 0% is the „new“ condition in clean ambient air. The blue marker shows the current detector condition. If it leaves the yellow area (discrepancy at least ±100%) a fault is indicated.

A positive discrepancy indicates pollution (e. g. dust) in the sampled air. This can be remedied with an air filter or, if possible, by switching to a lower sensitivity. Pale soil deposits inside the module also raise the value.

A negative discrepancy is caused by diminishing light from the optic inside the detector module. Reasons for this can be pollution of the optic or deposits of dark soil inside the module.

2 Fault messages

2.1 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 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, 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.		

2.2 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 aif 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 trough 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	Setting for fault threshold or fault delay	External influences (e. g. air pressure variations, temperature or humidity) ma 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 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.		

2.3 Air flow init aborted

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

Active fault signal:

Step	Possible Cause	Diagnosis	Measures
1	Changed device settings	The air flow initialisation has been stopped, as the device settings in the register “Settings” have been changed and sent to the device during the air flow initialisation.	Check device settings and restart the air flow initialisation.
2	Air flow initialisation not possible	The initialisation of the air flow could not be finished during the whole initialisation process (duration max. 120 min.). If the air flow can not be initialised the following may be the causes: - Air flow not stable - Air flow temperature not stable	Make sure that there are no varying air flow and/or air pressure conditions along the pipe system (e. g. the ventilator) as well as temperature variations within the monitored areas during the air flow initialisation.
3	Ventilator switched (only at devices with ROOM·IDENT or Redundancy ventilator)	The air flow initialisation has been stopped, as the ventilator of the detection unit has been switched. - If this fault occurs alone, the detection unit has switched to blow-free ventilator operation during the initialisation process. - If this fault occurs together with the fault “Redundancy fan active” (see 2.9) the device has switched to redundancy ventilator operation.	For devices with ROOM·IDENT the option „ROOM·IDENT“ on the tab „Settings“ has to be deactivated for the duration of the air flow initialisation respectively the sensitivity of the detection unit has to be reduced to avoid a main alarm. For devices with redundancy ventilator please carry out the steps of 2.9.
4	Detection unit defective	If this fault occurs together with the fault „detector module fault“ (see 2.7) the fault is caused by the detection unit.	Replace detection unit
5	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	Air flow initialisation has been restarted during an initialisation process.	The air flow initialisation has been restarted during an initialisation process (e. g. first by Jumper X4 and then by diagnostic tool) and successfully been finished.	No measure required
2	Air flow initialisation has been restarted after abort	Air flow initialisation has been restarted after abort and successfully been finished.	No measure required
3	Air flow initialisation stopped and device then switched off.	The device has been switched off after an abort of the air flow initialisation.	Check the device settings and restart air flow initialisation.
4	Delete the saved fault signals by pressing the button “Delete” in the register tab “Fault signals”		

2.4 Air flow has risen (dynamic evaluation)

This fault can only arise if the option “Dynamic air flow” has been activated in the register „Settings“.

To correct this, the following steps have to be carried out in the mentioned order.

Active fault signal:

Step	Possible Cause	Diagnosis	Measures
1	Slight damage of the pipe system or abruptly damaged/detached air flow reduction film sheet/s	The air flow has increased by >2,5% within a short time. However the statistic fault threshold has not been exceeded. This can be seen in the register tab „Status“. The blue marker in the bargraph “Air flow” is within the yellow area.	The pipe system needs to be checked for slight damages (e. g. break or rupture at the end of the pipe). Also check for damaged or detached air flow reduction film sheets.
2	Turbulences along the pipe system (e. g. caused by switching on ventilators)		If possible: Decrease the influences of changes in the air flow along the pipe system (e. g. by removing the air sampling points), chose a larger fault delay or deactivate the dynamic air flow sensor.
3	Break in the pipe system or detached air flow reduction film sheets	If the fault occurs together with the fault “Air flow too high (statistic evaluation)” (see 2.1), the air flow has increased by >2,5% within a short time and has then exceeded the statistic fault threshold. This can be seen in the register tab „Status“. The blue marker in the bargraph “Air flow” is above the yellow area.	Check the pipe system for damages (break, rupture, glued connections). Also check for detached air flow reduction film sheets.
4	Detection unit defective	If no fault is found, the fault is caused by the detection unit.	Replace the detection unit
5	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	Remove air sampling points for a time	The air flow has increased by >2,5% within a short time and then went back to normal.	Make sure that the air sampling points are not removed from the pipe system.
2	Momentary turbulences along the pipe system (e. g. caused by switching on ventilators for a time)		If possible: Decrease the influences of changes of the air flow along the pipe system (e. g. by moving the air sampling points), chose a larger fault delay or deactivate the dynamic air flow sensor.
3	Setting: Dynamic air flow or fault threshold	Due to fast variations in the air flow and turbulences along the pipe system (e. g. by switching on ventilators for a time) corresponding fast changes in the air flow may also occur in the pipe system.	
4	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.		

2.5 Air flow has fallen (dynamic evaluation)

This fault can only arise if the option “Dynamic air flow” has been activated in the register „Settings“.

To correct this, the following steps have to be carried out in the mentioned order.

Active fault signal:

Step	Possible Cause	Diagnosis	Measures
1	Air sampling point/s abruptly blocked	The air flow has decreased by >2,5% within a short time. However the statistic fault threshold has not been unterschritten. This can be seen in the register tab “Status”. The blue marker in the bargraph “Air flow” is within the yellow area.	Check the pipe system for blocked air sampling points (e. g. by sealing the air sampling points).
2	Turbulences along the pipe sysytem (e. g. by switching off ventilators)		If possible: Decrease the influences of changes in the air flow along the pipe system (e. g. by moving the air sampling points), chose a larger fault delay or deactivate the dynamic air flow sensor.
3	Blockage in the pipe system	If the fault occurs in combination with the fault “Air flow too low (statistic evaluation)“ (see 2.2), the air flow has decreased by >2,5% within a short time and has then exceeded the statistic fault threshold. This can be seen in the register tab “Status”. The blue marker in the bargrap “air flow” is below the yellow area.	Check the pipe system and the air sampling points for blockage and clean it if necessary. Also check for soiled air filters or shut valves. Furthermore check if the correct air sampling reductions have been used and if the ventilator of the TITANUS *MICRO·SENS*® can blow free.
4	Detection unit defective	If the fault persists after cleaning the pipe system, the detection unit is the cause.	Replace detection unit
5	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	Air sampling point/s blocked for a time	The air flow has decreased by >2,5% within a short time and then went back to normal.	Make sure that the air sampling points of the pipe system are not blocked.
2	Momentary turbulences along the pipe system (e. g. caused by switching off ventilators for a time)		If possible: Decrease the influences of changes of the air flow along the pipe system (e. g. by moving the air sampling points), chose a larger fault delay or deactivate the dynamic air flow sensor.
3	Settings: Dynamic air flow or fault delay	Due to fast variations in the air flow and turbulences along the pipe system (e. g. by switching off ventilators for a time) corresponding fast changes in the air flow may also occur in the pipe system.	
4	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.		

2.6 Detector module dusty

To correct this, the following steps have to be carried out in the mentioned order.

Step	Possible Cause	Diagnosis	Measures
1	To much soil in the ambient air	The bargrah „detector state“ in the register tab „status“ is an indication for too much soiling in the ambient air. In this case the bargraph exceeds the yellow marking „Max.“ (+100%). - To find out if the soil in the air is the cause, the detection unit needs to be operated in another room with clean ambient air for a time. If this is not possible, the air flow needs to be blocked completely for a longer period(e. g. by using the ball valve). Hereby no further soil particles can get into the detection unit. Attention: If the air flow is blocked no smoke detection is possible in the monitored area of the device! If the bargrah of the detection unit state is not sinking within a short time, the soiling of the ambient air is the cause of the fault.	By using an air filter in the pipe system the soiling of the detection unit can be reduced. If possible: By switching to a lower sensitivity the detection unit can compensate larger soiling.
2	Detection unit soiled	If the bargraph is not sinking after carrying out step 1, the detection unit is soiled.	Replace detection unit Note: By using an air filter in the pipe system the soiling of the detection unit can be reduced.
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.		

2.7 Detector module fault

To correct this fault, the following steps have to be carried out in the mentioned order.

Step	Possible Cause	Diagnosis	Measures
1	Speed of the air flow too low	First of all check if the fault is caused by the pipe system or the device. - Disconnect the pipe system from the device and connect a test pipe to the device. - Seal the 4,6 mm hole at the test pipe. - Carry out the adjustment of the air flow. If the fault does not occur now, the fault is caused by the pipe system or respectively the project planning of the pipe system.	Check the pipe system (especially for blockage). Also check for blocked air filters or closed valves. Check the project planning of the pipe system.
2	Detection unit defective	If the fault “detector module fault” occurs when using the TITANUS *MICRO·SENS*® on the test pipe, the detection unit is defective.	Replace detection unit
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.		

2.8 Program fault

To correct this fault, the following steps have to be carried out in the mentioned order.

Step	Possible Cause	Diagnosis	Measures
1	Detection unit defective	- Make sure the device is current-free. - Replace the detection unit by a new unit of the same type. - Switch on power. If the detection unit was the cause of the fault, this is now corrected..	Replace detection unit
2	External adverse influences (EMV)	- 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 install device in a better location..
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.		

2.9 Redundancy fan active

This fault only occurs if the device is equipped with a redundancy ventilator.
To correct this fault, the following steps have to be carried out in the mentioned order.

Step	Possible Cause	Diagnosis	Measures
1	Air flow too low	The air flow has decreased to <25% of the initialised air flow rated value.	Check the pipe system and the air sampling points for blockage and blow free if necessary. Also check for soiled air filters or shut valves. Furthermore check if the correct air sampling reductions have been used and if the ventilator of the TITANUS *MICRO·SENS*® can blow free.
2	Detection unit defective	If the fault remains after cleaning the pipe system or if the fault occurs together with the fault “detector module fault” (see 2.7), the fault is caused by the detection unit.	Replace detection unit
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.		

3 ROOM·IDENT function (for “I” pipe systems only)

3.1 Blow out time (for 13,5 V blow out ventilator voltage)

During the blow out time (device switches over to blow out operation), the air samples aspirated by the TITANUS *MICRO·SENS*® -System are blown out of the pipe system via the air sampling points.

The blow out time of devices with a serial number higher than 187000 has to be calculated with the following formula:

$$t_{Free} = t_{An\,max.} * 1{,}1$$

T_{Free} = required blow out time

$T_{An.\ max.}$ = max. determined aspiration time

Example:

$t_{An\,max.} = 66s$

$t_{Free} = 66s * 1{,}1$

$t_{Free} = 72{,}6s$ rounded $t_{Free} = 73s$

The calculated blow out time has to be rounded up to the nearest seconds. The received value has to be entered at „blow out time“.

The blow out time for devices with a serial number less than 187000 has to be selected according to the following chart (round in between values to nearest fixed value). 1 s has to be added to the corresponding blow out time for each existing elbow pipe or 90° elbow angle.

Pipe length [m]	Blow out time [s]
10	80
15	97
20	113
25	130
30	147
35	163
40	180

3.2 Blow out ventilator

We recommend to leave the voltage of the blow out ventilator at 13,5 V (default) to achieve the shortest possible and therefore optimal blow out time.

It could make sense to reduce the voltage of the blow out ventilator in installations where the power supply has reached it's limits and/or voltage occurs due to very long supply cables.

Note:
Reduction of the blow out ventilator voltage only makes sense as long as the voltage of the intake ventilator is smaller or equal than the voltage of the blow out ventilator.

The voltage of the blow out ventilator can be reduced as follows to reduce the power input of the air sampling smoke detection system during the blow out process:

Application	**Blow out ventilator [V]**
For an optimal blow out time	13,5
For less power input and respectively for less voltage loss during the blow out process	9 – 13,4

3.3 Intake ventilator

During the fire localization, the intake ventilator has to be operated if possible by another voltage than during normal operation.

The operating voltage of the intake ventilator has to be selected in such a way that during fire localization a time delay of 2 s is guaranteed between two consecutive air sampling points. Because air flow speed in symmetric pipe systems is highest between air sampling points A and B, the shortest transport times will occur here as well.

The following table shows some standard values for adjusting the intake ventilator voltage during localization:

Distance air sampling point A – B [m]	**Voltage intake ventilator [V]**
3	9,0
4	9,8
5	10,7
6	11,5
7	12,4
ab 8	13,2

3.4 Determination of transport times

The ROOM·IDENT function (fire localization) is only active if it has been enabled in the register „settings“.

To make use of the ROOM·IDENT function, you have to determine first the transport times of the installed pipe system (only I pipe systems) connected to the TITANUS *MICRO·SENS*®. To do this, open the register „ROOM·IDENT“and then proceed as follows:

1. Press the button „Learn“.
2. Please enter the number of the installed air sampling points (max. 5) at „number of the air sampling points“,
3. If necessary, modify at „blow out ventilator“the supply voltage for the blow out ventilator (see 3.1).
4. Please enter the supply voltage of the intake ventilator required for safe operation of the localization procedure (see 3.2) at „intake ventilator“.
5. Make notes of the “smoke level “ (value 1-10, here background contamination level) displayed by the bargraph of TITANUS *MICRO·SENS*®
6. Please mark the air sampling point to determine it’s corresponding transport time.
7. Fill in the value for „Pre selection time“, which is the time the system requires to detect smoke applied to the previously marked sampling point.
8. Please press the start button at „Establish transport time“. The device switches now from air sampling operation to blow out operation. The air samples aspirated by the air sampling smoke detection device are now blown out of the air sampling pipe system via the air sampling points. The LEDs „training mode active“und „measuring active“are flashing.
9. Go to the marked air sampling point and apply smoke before the selected pre selection time is expired.

   Attention:
   Make absolutely sure that you apply test smoke only to the air sampling point that is marked in the diagnostic tool. Otherwise, a wrong transport time will be assigned to the marked air sampling point and a correct fire localization can no longer be ensured.
10. Once the applied test smoke is aspirated by the sampling hole, please continue to do so for another ca. 5 sec. Then please stop applying smoke to the aspiration hole.
11. The transport time that is determined for the marked air sampling point is now shown in the diagnostic program. If the determined value is marked green, please continue as described starting again at step 6 with the next air sampling point whose transport time is not yet identified.

    Attention:

    If the „smoke level“value indicated by the bargraph is above the background contamination level (deviation > +1) according to step 5 above , please wait until the value corresponds approximately to the recorded background contamination level (deviation max. +1) before pressing the button „start“. Otherwise, the correct fire localization can no longer be ensured.

    If the determined value is marked yellow, the transport time of the corresponding air sampling point could not be identified clearly.

Possible reasons for a transport time that is not identified clearly:

- the localization was aborted automatically, because the air sampling point could not be located within a fixed time period (air sampling point was not applied with test smoke in time or not at all). In this case, a value of 0,0 s is indicated.
- The determined transport time does not fit in with already established transport times of further air sampling points of the same air sampling pipe system (e.g. the transport time of air sampling point A is higher than the transport time of air sampling point B).

Note:

The transport times of air sampling points that are further away from the air sampling smoke detection system always have to be higher than the transport times of the air sampling points that are closer to the air sampling smoke detection system.

Therefore, the following basic rule is always valid:

Transport time A < transport time B < transport time C < transport time D < transport time E

If the determined transport time is marked yellow, please check if the transport time has been determined in time at the correct air sampling point that is marked in the diagnostic tool. Also check if the the transport times of all further air sampling points of the air sampling smoke detection system that were already determined correlate to each other..

If the transport time has not been determined at the marked air sampling point or if the corresponding air sampling point has not been applied with test smoke in time, please repeat the instructions above starting at step 8.

If the transport time has been determined correctly at the marked air sampling point but does fit in with the transport times of further air sampling points of the air sampling smoke detection system, first of all check if all transport times already determined correlate to each other. Transport times of air sampling points whose determined value is not correlating to times of all other air sampling points of the same pipe systems have to be re-established again as described in step 8.

If the transport times of all existing air sampling points have been determined correctly, please calculate and enter the smallest required blow out time according to chapter 3.1.

12. Press the button „assume“to transfer the determined times and the effected settings to the device.