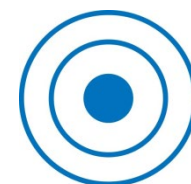




enVigil-FMS

Differential pressure control



**AQUA
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Regulatory requirements

Guidelines EU GMP states:

4.14 – “...Adjacent rooms of different grades should have an air pressure difference of a minimum of 10 Pascals...”

4.16 – “...Air pressure differences identified as critical should be continuously monitored and recorded. A warning system should be in place to instantly indicate and warn operators of any failure in the air supply or reduction of air pressure differences...”



Differential pressure monitoring

- Differential pressure is measured between adjacent rooms or zones, as well as to control the contamination of HEPA filters.
- Differential pressure monitoring is an important part of the proper functioning of cleanrooms.
- The guarantee of this point is reliable and durable sensors.



Differential pressure sensors

In our projects, we use the "P-sensor" with diaphragm transmitters.

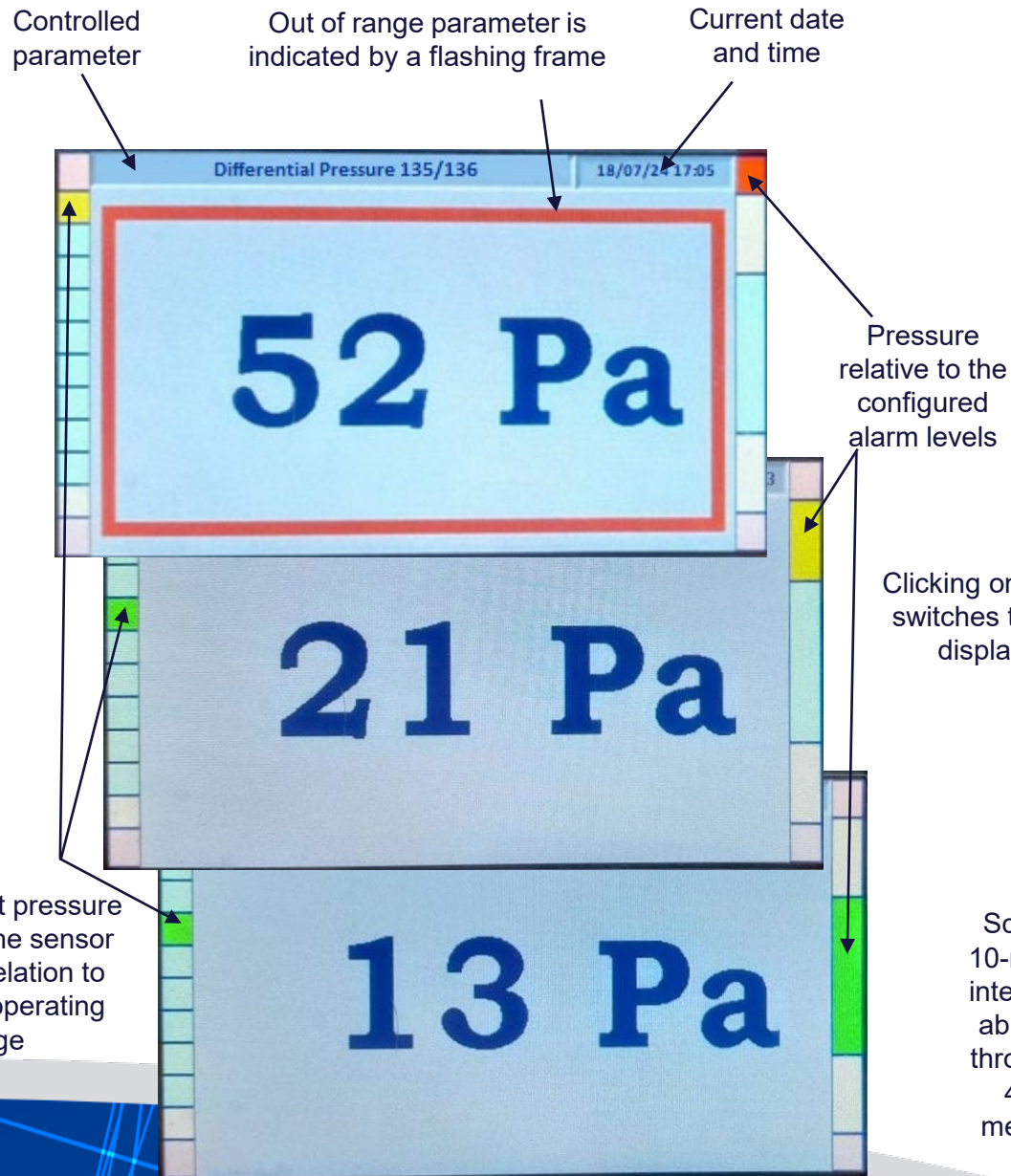
- Ultra-low pressure measurement, minimum range 0-10Pa
- High accuracy and repeatability
 - hysteresis/repeatability - 0.1% of full scale
 - linearity (accuracy) - 0.25 Pa at full scale
 - zero drift - 0.05% K (10-50°C)
- Auto-zero correction and overload protection
- Calibration certificate
- ModBus RTU connection
- 40 years field application experience



- For ease of maintenance and calibration, all DP sensors are housed in data acquisition cabinets.
- Pressure sample points are usually located on the ceilings of the controlled premises and are connected to the sensors by flexible tubes.
- Differential pressure monitoring and indication can be performed using the cascade principle or relative to a single reference point.
- Sensors can be equipped with remote displays that are placed in front of the entrance to clean rooms.



Local display of sensor readings

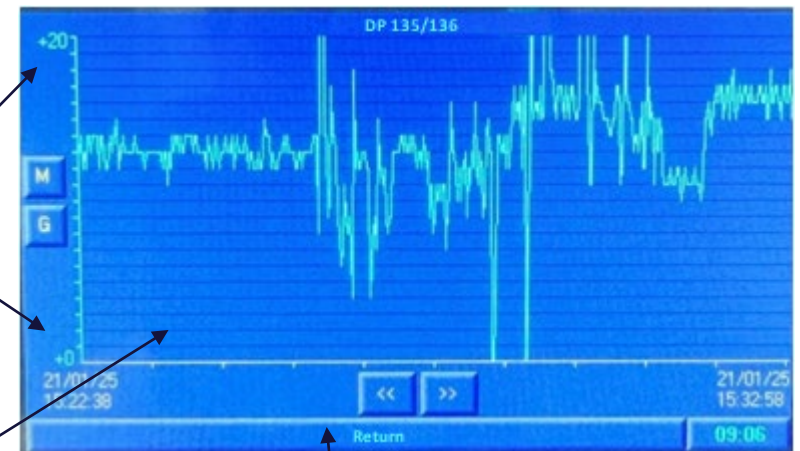


- Full-color touch screens can be placed before the entrance to the cleanroom to display differential pressure.
- The firmware is uniquely configured for each controller, taking into account: the location and measuring range of the respective sensor, alarm levels settings.
- It has the function of recording the last 4 hours with the ability to view the trend locally.

Clicking on the screen switches to the trend display mode

Trend display range

Screen of the 10-minute trend interval with the ability to scroll through the last 4 hours of measurement

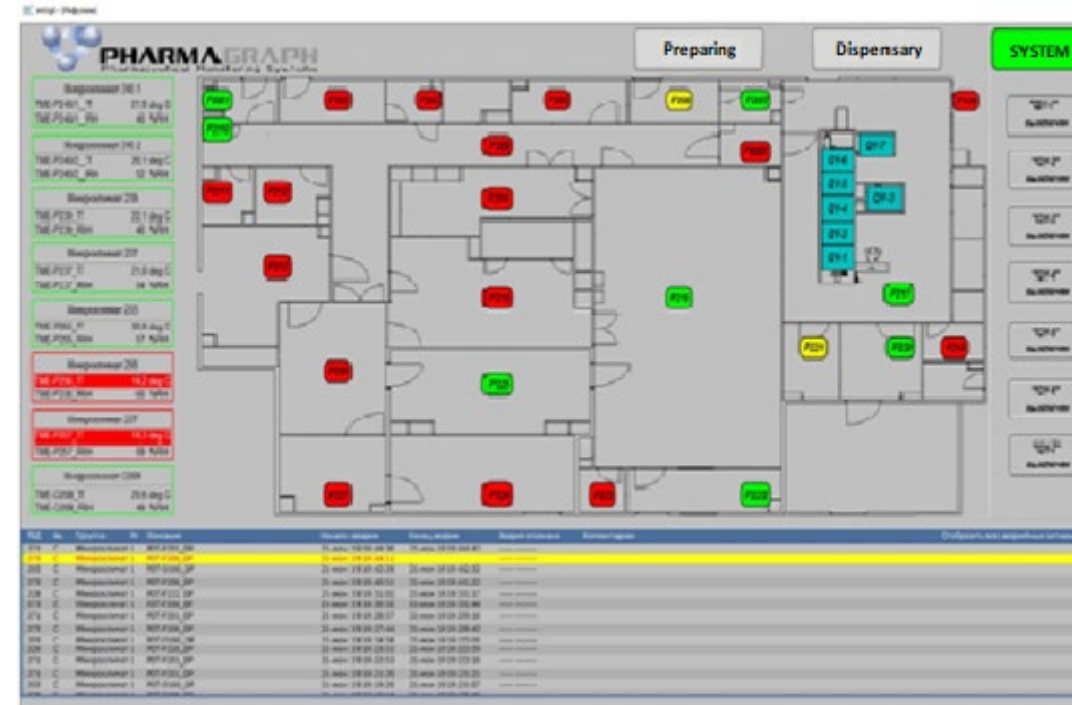


Return to the main screen
(Executes automatically after 10 minutes of inactivity)



Operator interface

- Mimic screens - diagrams with images of the real layout and arrangement of equipment.
- Screen-to-screen transitions to display different production areas.
- Color indication of object status depending on the condition.
- Real-Time alarm window for all monitored objects with the possibility of data filtering.



Alarm Indicator colours

- Green indicates no alarm presents
- Red indicates present of alarm
- Yellow indicates a warning signal
- Blinking indicates the presence of unacknowledged alarms.
- Cyan indicates that equipment is disabled
- Magenta indicates hardware errors



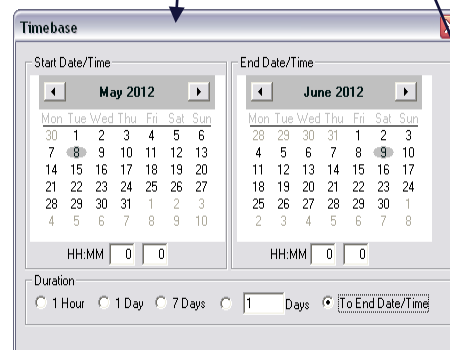
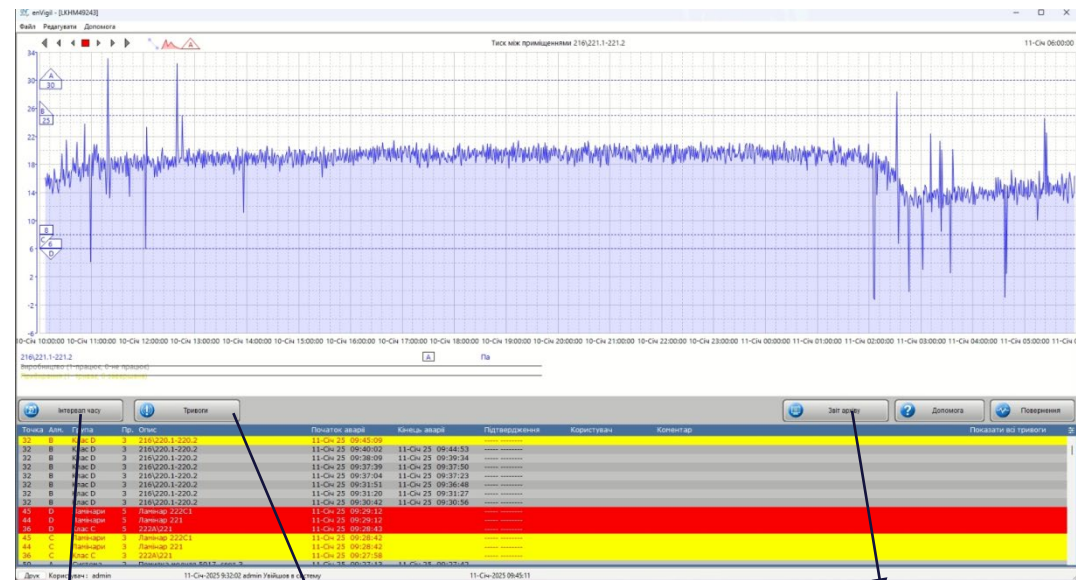
Data display

Clicking on the mnemonic object allows you to get information about the sensor

- Real-time and historical trends.
- Alarm reports
- Historical reports

The audit log is available to users with manager rights

All report forms can be printed out



File: E011.tbl											
Tagset	CP033-1	CP033 Freeze Error				Start Time: 26-Oct-2018 10:05:04	End Time: 26-Oct-2018 11:05:04	CP033-2	CP033-3	CP033-4	CP033-5
Timestamp	CP033 5.50 n/s/s	CP033 5.50 n/s/s	CP033 5.50 n/s/s	CP033 5.50 n/s/s	CP033 5.50 n/s/s	CP033 5.50 n/s/s	CP033 5.50 n/s/s	CP033 Status	CP033 Call Entry Data	CP033	CP033-1
Time	n/s/s	n/s/s	n/s/s	n/s/s	n/s/s	n/s/s	n/s/s			Time	
26-Oct/18 10:35:00	Error	Error	Error	Error	Error	Error	256	Stopped		26-Oct/18 10:35:00	31
26-Oct/18 10:37:00	Error	Error	Error	Error	Error	Error	256	Stopped		26-Oct/18 10:37:00	31
26-Oct/18 10:39:00	0	0	0	0	0	0	14	0	21	26-Oct/18 10:39:00	31
26-Oct/18 10:40:00	69	0	0	2463	14	0	0	0	21	26-Oct/18 10:40:00	31
26-Oct/18 10:41:00	69	0	0	2463	14	0	0	0	21	26-Oct/18 10:41:00	31
26-Oct/18 10:42:00	69	0	0	2463	14	0	0	0	21	26-Oct/18 10:42:00	31
26-Oct/18 10:43:00	69	0	0	2463	14	0	0	0	21	26-Oct/18 10:43:00	31
26-Oct/18 10:44:00	69	0	0	2463	14	0	0	0	21	26-Oct/18 10:44:00	31
26-Oct/18 10:45:00	69	0	0	2463	14	0	0	0	21	26-Oct/18 10:45:00	31
26-Oct/18 10:46:00	69	0	0	2463	14	0	0	0	21	26-Oct/18 10:46:00	31
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26-Oct/18 11:01:00	69	0	0	2463	14	0	0	0	21	26-Oct/18 11:01:00	31
26-Oct/18 11:02:00	69	0	0	2463	14	0	0	0	21	26-Oct/18 11:02:00	31
Mean	69	0	0	2463	14	0	0	0	21	Mean	69
Median	69	0	0	2463	14	0	0	0	21	Median	69
Max	69	0	0	2463	14	0	0	0	21	Max	69
Var	69	0	0	2463	14	0	0	0	21	Var	69
StdDev	69	0	0	2463	14	0	0	0	21	StdDev	69

[illegible]

Access levels of enVigil

No
authorisation

Operator

Supervisor

Manager

View mimics, trends, alarm and historical reports

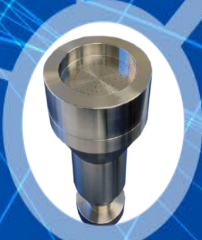
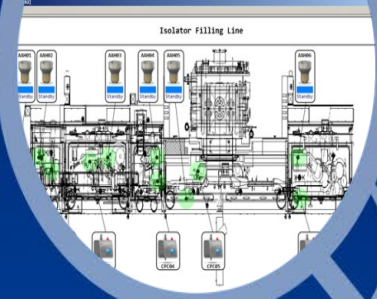
Print reports, alarm acknowledgement

Batch start/stop, equipment control

User management, audit log viewing

Increasing privileges

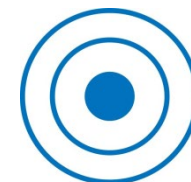




Thank you for your attention

Any questions?

info@aquaanalytic.eu



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