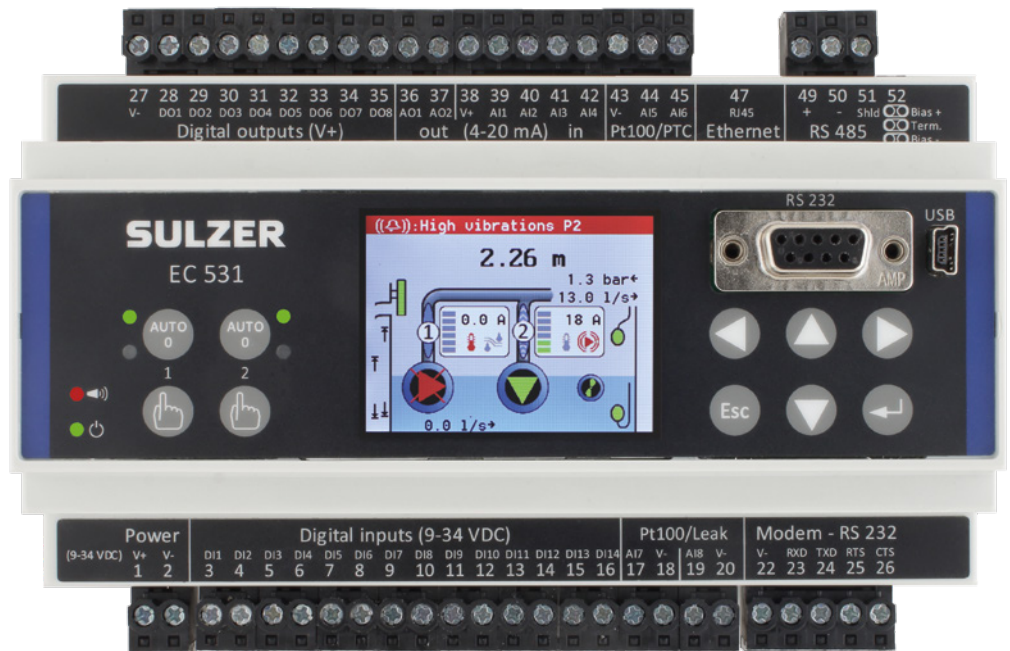# SULZER

Smart solutions

Equipment controller
EC 531

Years of operational pumping experience packed in one easy-to-use controller

There are many ways to improve the efficiency and reliability of your collection network – even without changing a single pump. The equipment controller EC 531 is an easy, all-in-one solution that can boost and safeguard a 2-pump station and collection network performance.

A versatile pump station control solution

All functionality you need, based on longtime experience, is built-in to the EC 531 equipment controller. Included are standard funtionality to help monitor the equipment condition as well as to optimize and reduce risk of overflow, reduce energy costs and cleaning costs etc. The controller is easy to use and configure with no need for any special code to be written.

Save time, effort and money

When you can see events in your network as they happen, you can make decisions in time to make a difference. The EC 531 offers possibilities for monitoring your collection system in real time, as well as the tools to control it.

The EC 531 gives you instant access to alarms, pump status, level information and trends – both on site and remotely. Added to this are functions that help to prevent downtime and flooding, as well as to reduce maintenance and energy costs. Pumps can be automatically started and/or stopped in many smart ways.

By taking full advantage of the EC 531, you can increase pumping station availability, minimize energy consumption and even reduce stress on the network downstream.

One easy-to-use solution

The EC 531 provides a smart and flexible control and monitoring in a single unit. Regardless if the control logic is based on a simple float technology or an advanced VFD control, the EC 531 offers a set of easily configured standard settings which gets you up and running in no time!

How you can benefit

Collection network managers
Reduced risk during peak loads
Reduced equipment and labor costs
Reduced tankering and energy costs

Collection network operators
Fewer emergency call-outs
Reduced service needs
Clear information for correct decisions

Technicians
Easy installation
Easy configuration

On sight operator
Easy fault tracking
Access to all settings
Easy access to run time data

Tackling your challenges with EC 531

Here are just a few examples of how you can use equipment controller EC 531 to increase availability while reducing maintenance, energy use and costs.

Saving energy
When there is less rain, there is less risk of a sudden rise in water level. With smart on/off controls, energy can be saved during dryer periods by setting higher start/stop levels, so that the pumps run less often. The built-in BEP (Best Efficiency Point) control feature is another smart, energy saving functionality that makes sure the pumps operate at peak efficiency.These options can be set via the operator panel or a PC using Sulzer's monitoring and configuration software, AquaProg.

Minimizing blockages
Using the asymmetric start function of the EC 531, one pump can be run for fewer hours than the other. This increases availability by reducing the risk of simultaneous breakdowns. Alternatively, a pump that frequently clogs due to flows within the pumping station can be run more frequently, which will help to keep it blockage-free.

Cutting electricity costs
With the EC 531, pumps can be assigned start/stop levels that differ by day and by night. This function can be used to empty the station during off-peak hours, when electricity costs lower. The same function can be used to temporarily lower the stop level and minimize sludge build-up, or to temporarily increase the difference between start and stop level for a pipe-flushing effect.
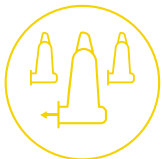
Avoiding water hammer and network choking
Using the EC 531 to set individual start and stop levels for pumps and pumping stations puts less pressure on hydraulic and electrical networks. Each pump starts at the optimal time, thereby avoiding water hammer and preventing flooding in the most efficient way.

Preventing clogging with individual pump exercise runs
The control functions of the EC 531 allow the pumps in a station to be run independently, with different start/stop levels and different start/stop delay times. If one pump is not used for a period of time, the controller can force an exercise run to prevent it from clogging due to lack of use.

Preventing flooding through intelligent level control
During heavy rainfall, the EC 531 can start and stop the pumps based on the speed of level change. If the water level rises more quickly than normal, pumping will begin before the set start point. If the water level drops more quickly than usual, pumping will halt before the stop point is reached. This function prevents peak stress in both the pumping station and the downstream network, because it spreads out the pumped volume over time.
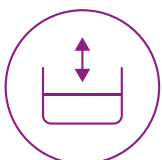
Detecting flow deviations between pumping stations
Leakages and overflows are not limited to pumping stations. Leakage can occur out of a pipeline, just as water can leak into a pipeline and add load downstream. Using the EC 531 to measure the outflow at one station and the inflow at the next, any problem in between can be quickly identified. If the pump energy consumption is also monitored, the actual pumping efficiency can be calculated as well.

The smart 2-pump monitoring and control unit

Main applications

The equipment controller EC 531 is an all-in-one unit for monitoring and control of one or two pumps. It is designated primarily for municipal pumping stations.

Key control parameters

- Level set-point, including time delays
- Speed of level change
- Random start levels
- Tariff control
- Maximum runtime
- VFD control logic, including flow calculation, day set points, night set-points and adjustable pump reversal speed
- BEP (Best Efficiency Point)

Data communication

- Communication via Modbus (RTU / TCP) protocol with other telemetry or SCADA systems
- I/O and register cross-reference tables for efficient communication setup
- Ethernet communication support

Operator panel

The built-in operator panel with graphical display and keypad ensures easy configuration and operation of the EC 531. It allows the operator to see pump status at a glance. Graphical symbols (high temperature, leakage, electric fault, vibration fault) will turn red when an alarm is activated. Detailed information about the behavior of the float controls is displayed in a separate view.

Data from the panel can be viewed or accessed in different formats: alphanumeric characters or animated graphical symbols.
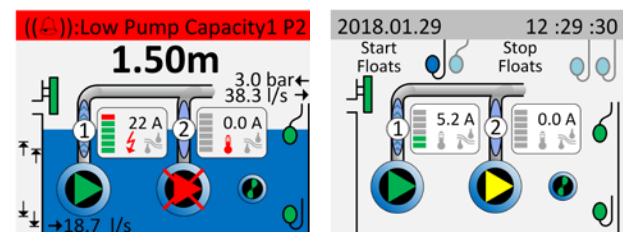
Main screen with a level sensor   Main screen with float control

| 1 | Graphical operator panel |
2	Digital outputs (8)
3	Analog outputs (2)
4	Analog inputs (4)
5	Temperature inputs PTC / Klixon / Pt 100 (2)
6	Com port for Modbus on TCP, RJ-45 Ethernet
7	Com port for Modbus on RS 485
8	Off - auto and forced start buttons
9	Power indicator
10	Alarm indicator
11	Service port for PC connection, RS 232 and USB
12	Com port for modem connection, RS 232
13	Leakage sensor inputs or temp. inputs Pt 100 (2)
14	Digital inputs (14)
15	Power connection 9-34 VD
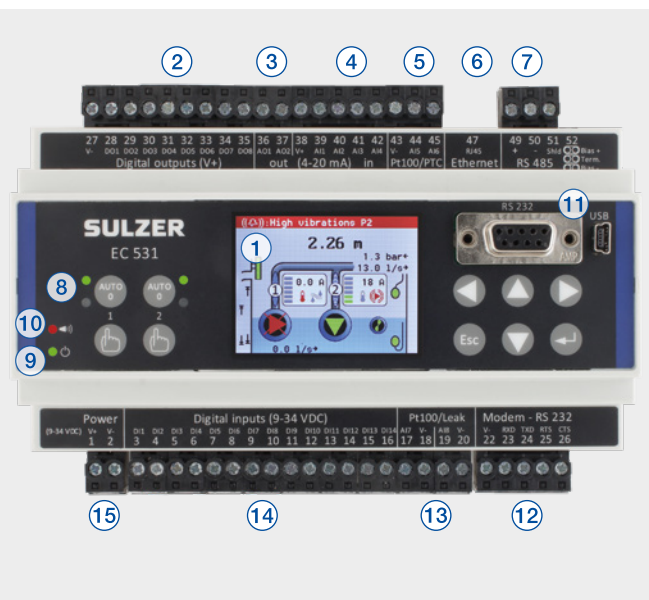
Always in control, wherever you are

The equipment controller EC 531 offers many ways to reduce maintenance, energy use and costs. You have easy access to all of them, whether on site or off.

Best Efficiency Point (BEP) control logic

The EC 531 is equipped with built-in BEP control logic, designed to optimize pump performance. The BEP represents the point at which the pump achieves peak efficiency—where flow enters and exits with minimal separation, turbulence, and losses.

Operating the pump closer to its BEP reduces stress and wear, increasing reliability and extending its lifespan. BEP control logic offers:
• Lower energy consumption
• Reduced hydraulic loads on mechanical components
• Minimized stress on bearings and shafts, resulting in fewer vibrations
• Quieter operation
• Less suction recirculation, which also lowers the risk of clogging
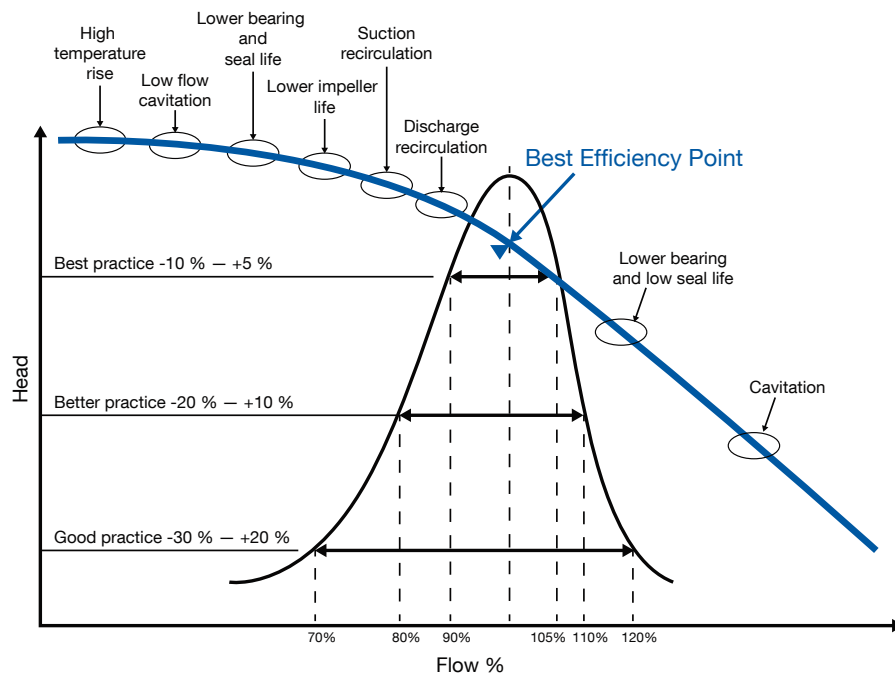

Monitoring and configuration software type ABS AquaProg

AquaProg is the PC software hub for configuring and working with every aspect of your EC 531 unit, either locally or remotely. Using AquaProg, you can view, transfer and restore all settings, status data and logged values, as well as perform firmware upgrades. You can even view trends online with a range of time frame options, allowing you to analyze and improve the performance of pumps and pumping stations.

AquaWeb makes it all accessible

AquaWeb is a web-based interface that offers access to all the most important information and EC 531 functionality. It provides a complete range of options for remote access. Online monitoring is available in one second intervals in a window up to 48 hours. Tools for viewing and analyzing the status of pumps and pumping stations, as well as operating trends, are also included.
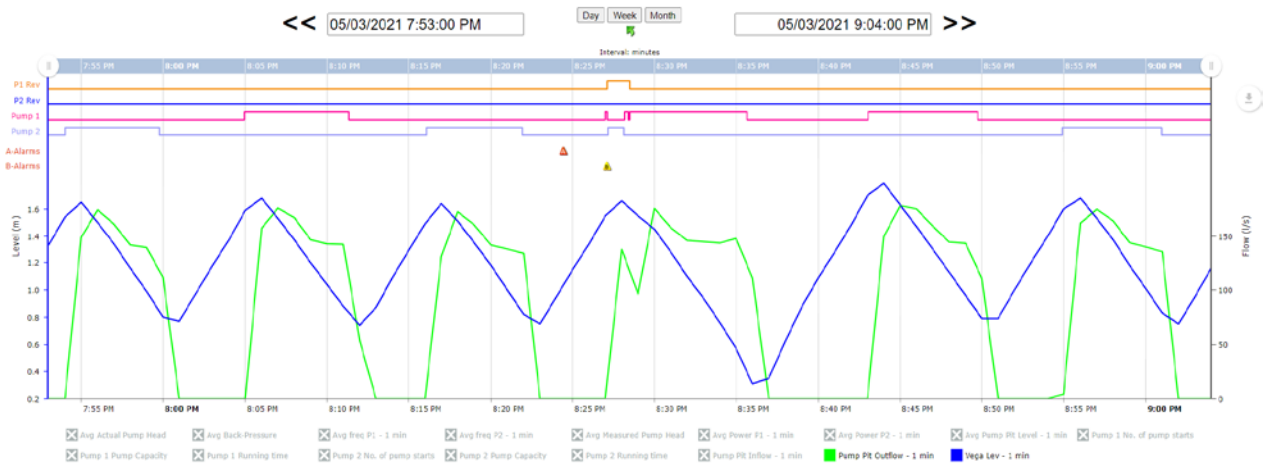

Alarms and trends for connected units with RS 485 Modbus communication

The EC 531 allows you to view alarms and status data from non-Sulzer devices, even if they lack web functionality. By connecting variable frequency drives (VFDs), soft starters, energy meters, or other devices to the EC 531, you can access their information just as easily as with Sulzer equipment.

Examples of remotely accessible VFD status data include:
• Run status
• Fault status
• Frequency (Hz)
• Speed (RPM)
• Torque (%)
• Torque (Nm)
• Motor voltage
• Motor current
• Motor power
• Station and pump efficiency (kWh/m^3 or kWh/Mgal) when pump capacity calculations are tied to energy parameters

VFD's
1-2

Soft starters
1-2

Energy meters
1-3
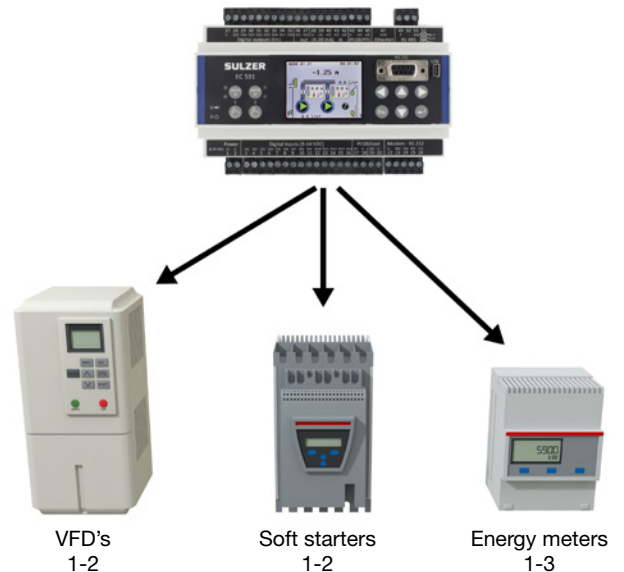
The Sulzer Flow division keeps your processes flowing. Wherever fluids are treated, pumped, or mixed, we deliver highly innovative and reliable solutions for the most demanding applications.

The Flow division specializes in pumping solutions specifically engineered for the processes of our customers. We provide pumps, agitators, compressors, grinders, screens and filters developed through intensive research and development in fluid dynamics and advanced materials. We are a market leader in pumping solutions for water, oil and gas, power, chemicals and most industrial segments.