



## ELECTRONIC CONTROL SYSTEMS FOR PUMPS

C.S.F. Inox can supply inverters and electronic control systems for integration with its pumps. These systems are available for both rotary positive-displacement pumps, and centrifugal and self-priming pumps. Designed for power ratings of up to 22 kW (higher power ratings available on request).

### QLS - INVERTER LS



The standard LS inverter comes complete with: main power switch, emergency stop button, rotation direction selector, potentiometer for adjusting the operating frequency, and local/remote selector for controlling the pump with an external 4-20 mA analogue signal (4-pin Harting socket on the side of the inverter). There is also a display showing the working frequency and parameter settings.

**N.B.:** Thanks to its IP66 protection rating, the inverter can be washed with jets of water.



#### Optional and sensors available:

- Pump priming selector, if a flow switch is installed on pump suction;
- Remote control for Start/Stop, rotation direction reversal, and frequency adjustment functions;
- Safety pressure sensor to prevent over-pressure in the system;
- External signal management (on/off);
- Level sensor.

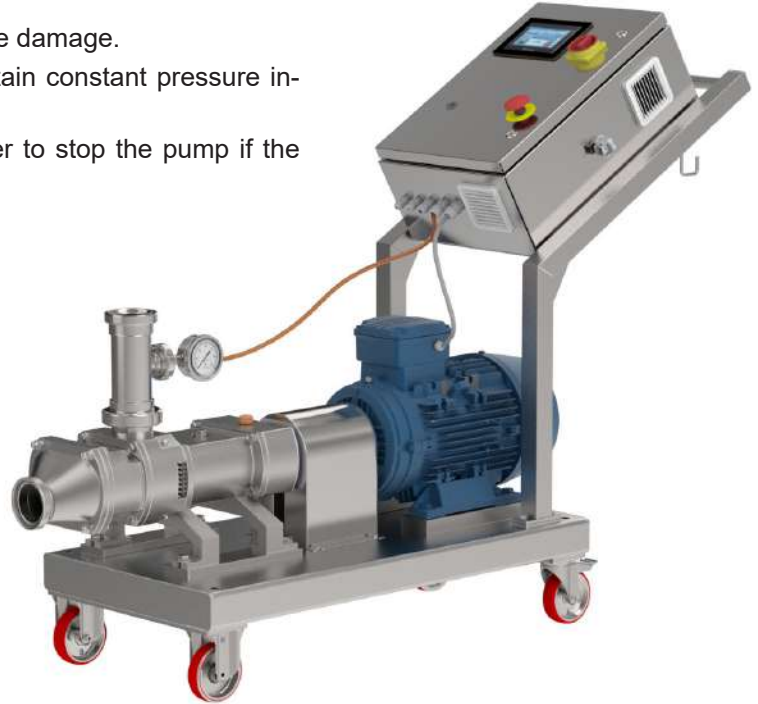


## QTW - ELECTRICAL PANEL IN STAINLESS STEEL HOUSING WITH HMI PANEL

Electrical panel in stainless steel housing complete with Toshiba inverter and HMI panel. The operator panel can be used to control pump operation, set some of the inverter parameters, and see the rotation speed, absorbed current, operating hours, and number of starts.

### Optional extras available:

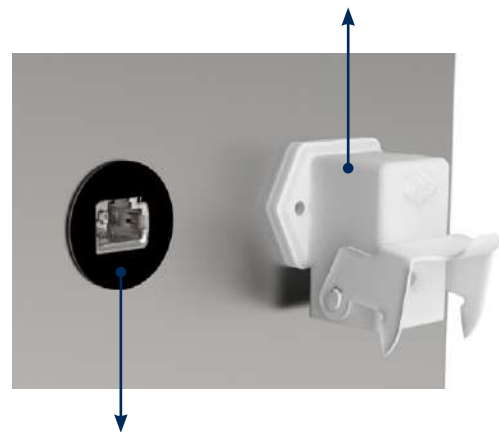
- Flow switch to prevent dry running of the pump.
- Safety pressure sensor to prevent pump overpressure damage.
- PID (proportional-integral-derivative) control to maintain constant pressure inside a tank (e.g. isobaric fillers);
- PT100 temperature probe with temperature controller to stop the pump if the temperature limit is exceeded;
- Level sensor;
- Remote assistance service (EasyAccess2.0).



### 7" touchscreen

- √ Intuitive reading and control of functions;
- √ Access to and acquisition of more detailed information;
- √ Data storage for predictive maintenance.

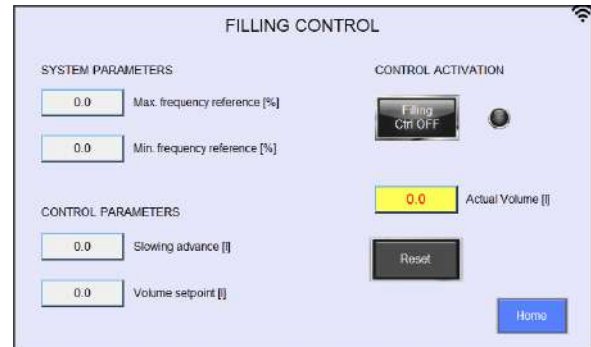
4-pin Harting socket for controlling pump operation via a remote analogue (4-20 mA) or digital (ON-OFF) signal.



The panel can be connected to an Ethernet network via an external RJ45 port.

## QNW - DECENTRALIZED NORD INVERTER WITH STAINLESS STEEL PANEL AND HMI

This setup features an electric motor with decentralized NORD inverter. The pump is controlled via the HMI panel installed on the stainless steel housing. The inverter is equipped with a soft PLC which, together with the sensors, manages the automatic control system.



HMI panel page dedicated to filling cycles

The automatic controls available are:

- Pressure control: to keep the pump's operating pressure constant even when system conditions vary (e.g. isobaric fillers);
- Flow control: to keep the flow rate delivered by the pump constant even when system conditions vary;
- Filling cycles: to execute repeat fillings of a set volume of product.

**N.B. : The controls can only be used individually.**

**N.B. : The safety function that stops the pump if the maximum pressure is reached is always active.**

The panel features a 4-pin Harting socket for managing both an analogue (4-20 mA) and digital (ON-OFF) remote signal. Furthermore, the panel can be connected to an Ethernet network via an external RJ45 port.

### Optional extras available:

- Remote assistance service (EasyAccess2.0).

### BASIC VERSION

This setup includes:

- Rotation direction selector
- Potentiometer installed directly on the inverter.

### Optional:

- Safety pressure switch



## SENSORS

All the sensors used in the automatic control systems are integrated with a communication protocol that allows them to be configured from a PC using a dedicated interface and the manufacturer's free software.



*FLOW SWITCH on the pump suction for dry-running protection.*



*PRESSURE SENSOR used for pressure control in PID (proportional-integral-derivative) regulation.*



*ENDRESS+HAUSER PICOMAG FLOW METER/TOTALIZER ELECTROMAGNETIC used for flow control with PID (proportional-integral-derivative) regulation or as a flow meter in filling cycles. Can also be configured using a free Bluetooth® app.*

*ELECTRONIC SAFETY PRESSURE GAUGE to prevent pump overpressure damage (hygienic design).*



*SAFETY PRESSURE SWITCH low-cost version.*



*ULTRASONIC LEVEL SENSOR used to control the flow rate delivered by the pump based on the product level in the hoppers.*



**C.S.F. Inox S.p.A.** Strada per Bibbiano, 7 - 42027 Montecchio E. (RE) - ITALY EU

Ph +39.0522.869911 r.a. - Fx +39.0522.865454 - italia@csf.it - www.csf.it

**Export Department • Commercial Étranger • Comercial Extranjero**

Ph +39.0522.869922 - Fx +39.0522.869841 - export@csf.it - www.csf.it



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