METAL WORK NEW FLOWMETERS SERIES FLUX WIRELESS

Photo 1: *ad inizio articolo mettere una Photo d’assieme di* FLUX 0-1-2

Metal Work SpA, a leading Italian manufacturer of electro-pneumatic automation components, offers a range of flowmeters capable of measuring flow rates of up to 4,000 Nl/min!

These devices are increasingly in demand in industrial applications and are used to measure the flow rate of compressed air in various areas of a pneumatic system. Flowmeters can be used to check a single element or the whole system, as well as for monitoring leaks or metering a precise volume of air or inert gases.

The FLUX series includes the miniaturised FLUX 0 version, which comes in two models, for flow rates up to 50 Nl/min. and up to 200 Nl/min. These models are typically mounted in various areas of the machine or system and are used to detect small leaks (or their deviation over time), rather than to accurately meter small amounts of fluid. The FLUX 0 is equipped with a three-colour display for viewing and setting numerous functions. It has two digital outputs and one analogue output, each of which can be freely set to measure instantaneous flow rate, cumulative flow rate or pressure, so they can act as a flowmeter, flow switch, pressure gauge or pressure switch.

Large-size flowmeters measure flow rates up to 2,000 Nl/min. (FLUX 1) and 4,000 Nl/min (FLUX 2). These devices, which are typically mounted on system downpipes or at machine inlets, consist of a robust anodised aluminium casing with G ½" (FLUX 1) and G 1" (FLUX2) inlet and outlet threads, on which the electronics for metering and checking are mounted. At the inlet, a flow linearisation device is mounted to guaranteeing optimal measurement accuracy; they can be fitted regardless of orientation, and the screen can be rotated by 90° 180° and 270° making data reading convenient at all times. FLUX 1 and 2 flowmeters can be used individually or incorporated into a Syntesi Series air handling unit.

Photo 2: FLUX Series flowmeter with and without display

Versions with or without display are available with an M12 connector for power supply and signal control. The devices can be powered with variable voltage ranging from 12 VDC (-10%) and 24 VDC (+30%). The versions with display also come with a pressure and temperature transducer which, due to the algorithm implemented in the device software, helps minimise measurement error within the temperature range indicated in the catalogue. All versions are rated IP65.

Flow rate, pressure and temperature values as well as charts of instantaneous and cumulative measurements are shown on the display. The value of electric power used to produce the measured flow rate is also calculated and displayed.

On the communication side, a PNP digital output - configurable on flow rate, pressure or total consumption values - and an analogue output that can be set in voltage (0-10 VDC) or current (4-20 mA) are provided. IO-Link interface versions with similar characteristics are also available. FLUX 1 and 2 can therefore also be used as a flowmeter, flow switch, pressure gauge or pressure switch. The new sizes are also suitable for use with compressed air or inert gases.

Photo 3: Flowmeter Series FLUX Wireless

The major novelty regarding the FLUX Series, sizes 1 and 2, concerns the release of Wireless versions, which can communicate with Ethernet networks (using the MQTT communication protocol) and mobile devices such as smartphones and tablets with Bluetooth® connection via a dedicated APP developed by Metal Work. In addition to displaying the measured quantities, the APP can be used to modify all the flowmeter settings and display the measured values in real time. This means that our FLUX flowmeters can be configured and monitored without the need for a physical connection.

Indeed, the Metal Work FluxUp APP can be connected to Metal Work flowmeters in the FLUX 1 and 2 series featuring a wireless interface from a smartphone via Bluetooth®. Using Metal Work FluxUp, all the data measured by FLUX can be viewed in real time and all the operating parameters can be set.

Photo 4: Metal Work FluxUp App

The Charts function is also available for displaying the graphs of saved flow and pressure values: this means that the data measured over the last 24 hours can be displayed at 2-minute intervals.

Photo 5: Chart function

The Wireless versions of FLUX 1 and 2 provide connection to a Wi-Fi® Ethernet network via an Access point or Gateway to monitor and acquire all measured quantities of the gas under test. To this end, use is made of the MQTT communication protocol, a widely known standard for this type of application. Our FLUX series are therefore compatible with all advanced diagnostic and predictive data collection and processing systems.

Photo 6: Link configuration to an MQTT Broker via an Access Point

A predictive diagnosis of the system can be made by collecting data from the field: this makes it possible to keep operating parameters under control at all times and optimise the operation of machines and the pneumatic system; it helps identify losses in view of saving energy. The software can be implemented with analysis functions to check machine efficiency as well as consumption trends and long-term forecasts (plant improvement assessment).

Photo 7: Monitoring system progress with FLUX Wireless

After setting the application parameters, each individual FLUX will be able to monitor the specific section of the system in which it is installed, sending energy consumption data to the system operator as well as any excess alarms due to leakage or breakage.

Photo 8: Example of FLUX Wireless application in an operating unit

Remote connection makes it possible to perform both ongoing checks and periodic inspections, and provides the great advantage of facilitating connection even to hard-to-reach places such as plant downpipes or areas inside complex machines, even during operations.

In addition, installing several devices in a company's pneumatic system, it will be possible to set up a network of check points and, with the help of specific AI algorithms, monitor the status of the plant and plan maintenance work on machines and piping. In this regard, Metal Work is also developing predictive algorithms based on Machine Learning techniques integrated with field experience and tested in our laboratories.