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IPF ELECTRONIC INFO

No. 67

TRADE FAIR DATES

You can find the latest trade fair dates on our website at: **dates.ipf-electronic.com**

MORE THAN JUST MEASURING PRESSURE

With the **DW5x-series**, ipf electronic presents the next generation of pressure sensors that fulfill a wide range of very different requirements and can be used in a wide variety of applications for liquid or gaseous media such as hydraulic and pneumatic applications.

The device series covers a wide pressure range from -1 to +600 bar. The sensors with digital full stainless steel measuring cell and integrated processor not only provide the pressure, but also, for example, a relative temperature value of the medium to be monitored if required. The sensors are available in three different measuring cell versions:
¼" outside thread, ¼" inside thread and ½" outside thread with front-flush diaphragm.

The pressure sensors are set or parameterized via three diffuse-reflection sensors integrated in the housing with plain text menu navigation on the display. Alternatively, the sensors can be parameterized via IO-Link. An integrated, easy-to-read TFT color display enables intuitive operation of the sensors.

read more

DW5X-SERIES

TECHNICAL HIGHLIGHTS

☑ **Intuitive TFT color display**:
Easy to read, with versatile display modes, e.g. plain text display, trend display and colored visualization of switching points.

☑ **Simple operation**:
Three diffuse-reflection sensors integrated into the housing with plain text menu navigation enable quick and intuitive parameterization.

☑ **IO-Link interface**:
Alternative parameterization and diagnostics (maximum and minimum values for pressure and temperature, overpressure duration, switching cycles for output 1 as well as operating hours and device status) directly via the digital interface.

☑ **Flexible outputs**:
One switching output plus a second variable output, individually configurable as switching, analog or alarm output.

☑ **Variable units**:
Pressure display in bar, psi or MPa,
analog output optionally current (0...20mA, 4...20mA) or voltage (0...5V, 0...10V).

☑ **Offline test function**:
Checking all sensor functions without pressurization - ideal for start-up and maintenance..

☑ **Rotatable display and housing**:
The display can be continuously rotated through 360° in 90° increments so that the display is easy to read in any installation position. (bb)

PERFECT READABILITY

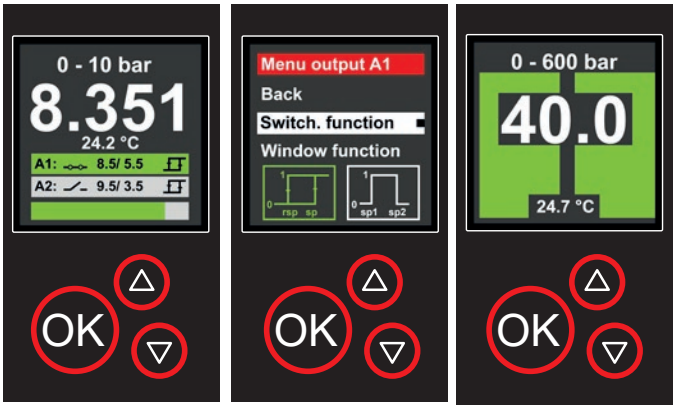
DW50xxxx		
¼“ inch outside thread	Article number	Pressure range
	DW50310S	-1...9 bar
	DW50310D	0...10 bar
	DW50310T	0...60 bar
	DW503104	0...100 bar
	DW503105	0...250 bar
	DW503106	0...400 bar
	DW503107	0...600 bar

DW51xxxx		
¼“ inch internal thread	Article number	Pressure range
	DW51310U	-1...9 bar
	DW51310K	-1...10 bar
	DW51310D	0...10 bar
	DW51310T	0...60 bar
	DW513104	0...100 bar
	DW513105	0...250 bar
	DW503106	0...400 bar
	DW513107	0...600 bar

DW52xxxx		
½“ inch outside thread*	Article number	Pressure range
	DW52310K	-1...10 bar
	DW52310D	0...10 bar
	DW52310T	0...60 bar
	DW523104	0...100 bar
	DW523105	0...250 bar
	DW523106	0...400 bar
	DW523107	0...600 bar

*with front-flush membrane

Intuitive plain text menu navigation on the display



IO-Link

EY000002

SIGNALS NON-STOP

LED RGB MULTIFUNCTIONAL SYSTEM WITH IO-LINK FROM IPF

Individually signal the status of machines, systems, processes or operating ranges?
This is now particularly easy, clear and intuitive with a flexible platform from IPF: the LED RGB multifunctional system **EY000002**, **EY000003** and **EY000004** in combination with the control box **VY000009**.

The focus is on addressable RGB LED strips and robust LED signal lights that can be conveniently adapted to various applications via IO-Link with the **VY000009** control box.

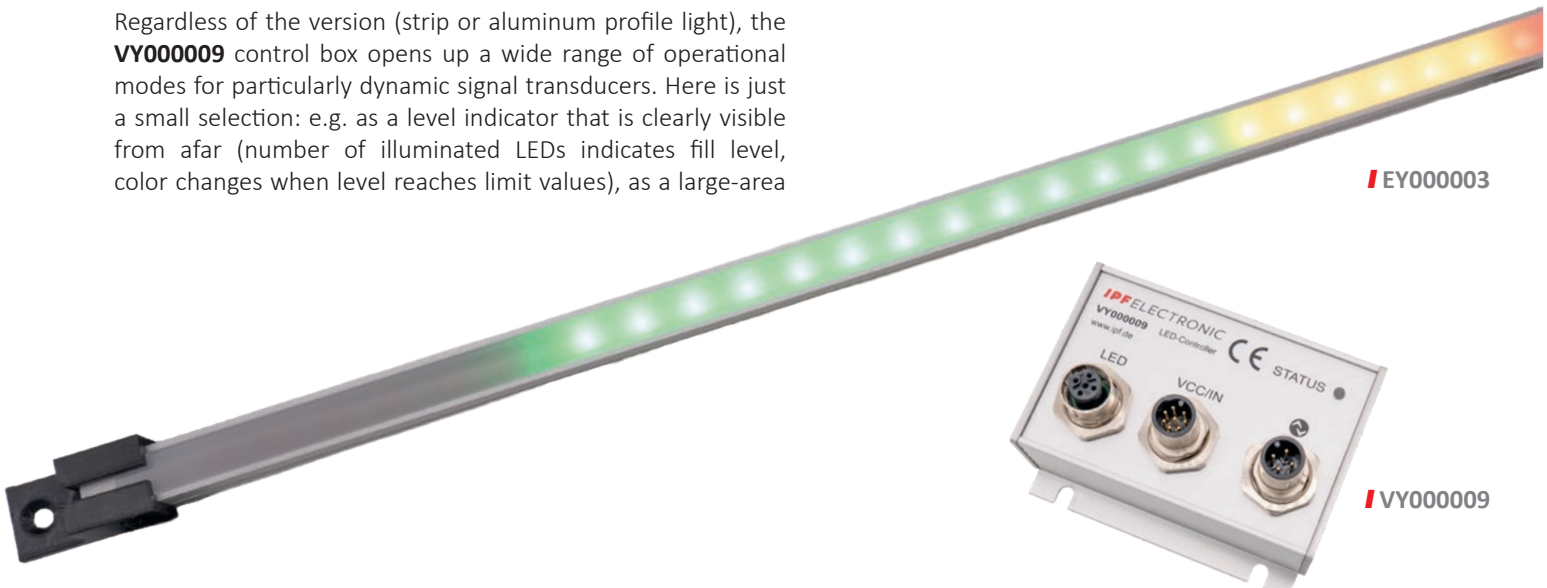
The 2.5m long and 10mm wide RGB LED strip **EY000002** with 150 individually controllable LEDs can be simply glued to a surface or mounted in aluminum profile systems (8-10mm groove width) using a silicone profile. Depending on the application, the strip can be shortened in a grid of 17mm, significantly increasing its flexibility of use. The LED strip (19.2W output) is equipped with an M12-connector for easy connection to the **VY000009** control box.

Along with the LED strip, the robust **EY000003** and **EY000004** RGB LED signal lights are available in an aluminum housing. The **EY000003** with 28 LEDs (length 504mm) and **EY000004** with 58 LEDs (length 1004mm) cover different installation situations, for example for compact machine areas or longer visible distances. Both versions with M12-connector plugs have a diffuse front screen for homogeneous light distribution and a large aperture angle of 180°.

Regardless of the version (strip or aluminum profile light), the **VY000009** control box opens up a wide range of operational modes for particularly dynamic signal transducers. Here is just a small selection: e.g. as a level indicator that is clearly visible from afar (number of illuminated LEDs indicates fill level, color changes when level reaches limit values), as a large-area signal light on machines (3 to 5 individually controllable status segments) or for displaying remaining running times for systems and processes (countdown) or as a large-format signal light for access control in operating ranges with freely selectable colors and flashing/flashing functions.

At the heart of the RGB LED multifunctional system from IPF is the **VY000009** control box with IO-Link interface, as it enables intelligent parameterization and control of the LED strips and signal lights. Five digital inputs and a switchable analog channel (4...20mA or 0...10V) are available for "conventional" operation. Alternatively, all functions and operational modes can be controlled directly by the machine control (unit) via IO-Link. Regardless of the control concept, the various operational modes provide clear, highly visible, application-specific signals. The "Demo" operational mode also visualizes the possible signal options before use.

In practice, this means simple wiring, individual signal transducers with clear visualization wherever required and the ability to change all relevant parameters at any time via IO-Link without having to intervene mechanically. The consistent and flexible LED signal concept from IPF is therefore suitable for both new systems and retrofits. (he)



EY000003

VY000009

WITH HIGH PRECISION

The **PT330570** and **PT330070** optical, high-precision laser diffuse-reflection sensors from ipf electronic are characterized by their compact design and versatile application options. Both models belong to the latest generation of laser sensors from ipf electronic and are ideal for the contactless detection of objects in industrial automation processes.

The sensors work according to the principle of optical triangulation. The maximum sensing range is 250mm. Both models have a push-pull switching output that can operate both as normally closed nc and normally open. The **PT330070** also offers an analog output (0-10V). The laser diode works with a wavelength of 656nm, whereby laser class 1 ensures that there is no health risk to the eyes.

Operation of the sensors is particularly simple: the setting is made via a tamper proof teach-in function. The switching range is "taught in" directly on the device using a ferromagnetic tool or via the white core of the M8 plug connection (optional on the **PT330570**). With the **PT330070**, the measuring range of the analog output can also be adapted to the conditions. Three LEDs support this as a clear status display, as they show at a glance whether the sensor is in operation (green), whether teaching is possible (blue) and whether an object is reliably detected (yellow). Both devices also offer the option of making these and other settings via IO-Link, which simplifies integration into modern control systems.
Thanks to their compact dimensions, the sensors (degree of protection IP67) can even be used in confined installation spaces

PT330570

PT330070

and are suitable for ambient temperatures from -10°C to +60°C (**PT330570**) or -25°C to +60°C (**PT330070**). The standardized M8 plug connection facilitates integration into existing systems, while the optional mounting accessories support flexible alignment.

In practice, the sensors show their true strengths in numerous applications, e.g. in the positioning of workpieces, monitoring filling levels or safety checks in automated systems. Background suppression enables high-precision detection and prevents interfering influences from the background. The mutual interference of several sensors installed close to each other is also suppressed.

With high precision: **PT330570** and **PT330070** are modern, reliable and easy-to-operate laser diffuse-reflection sensors that combine maximum precision and flexibility. They are ideal for industrial automation applications and impress with their robust design and simple start-up. (he)

CAPACITIVE M8 SENSORS - UPGRADE FOR THE LITTLE ONES

The smallest of their kind are getting an upgrade. We are talking about the capacitive sensors in the M8x1 threaded design, which score points with various technical changes in their latest expansion stage.

In future, all devices will have a housing length of 49mm. This will increase the length of the cable devices by 7mm, while the connector devices will be around 5mm shorter, which will also affect the length of the thread. As with the previous devices, the potentiometer for setting the sensitivity is located in the area of the thread.

The switching output is now a push-pull version. When connected to a PNP control unit (NO), it operates as normally open (NO); when connected to an NPN control unit (NC), it operates as normally closed (NC). The fact that the electronics have been upgraded to the latest state of the art is reflected in the possible switching distances. For the flush-mounted versions, the nominal switching distance is now 3 mm, which is twice as large as the previous sensors. The nominal switching distance of the non-flush versions has increased by 1mm to 4mm, further expanding the range of applications for this highly successful series. (gr)

The capacitive M8 sensors are available under the following article numbers:

Flush mounting, cable connection:	**KB080500**
Flush mounting, M8 plug connection:	**KB080570**
Non-flush installation, cable connection:	**KN080500**
Non-flush mounting, M8 plug connection:	**KN080570**

KB080570

KB080500

KN080570

KN080500

4-PORT ETHERNET IO-LINK MASTER

FOR GATEWAY BY000002

The IIoT gateway **BY000002** from ipf electronic forms the basis for powerful energy monitoring and solutions for recording and evaluating relevant production and process data. It can be implemented without complex system conversions and without high initial investments. As a result, energy consumption can be sustainably reduced and, if required, the actual capacity utilization of machines and systems can be transparently determined and condition monitoring can be implemented.

The gateway collects, centralizes and visualizes data from a wide variety of systems and processes. This information is processed via an individually configurable dashboard (web client) so that potential savings and optimization opportunities can be specifically identified.

IO-LINK MASTER – PARAMETERIZATION DEVICE FOR IPF IIOT-GATEWAY

The IO link master acts as a straight link between intelligent sensors and actuators in the field and the higher-level automation level, for example a PLC (programmable logic controller) or a control system. The **VY000010** has four IO-Link ports for connecting IO-Link-capable field devices.

It records process and diagnostic data from the connected devices and transmits this bundled data to the gateway via common Industrial Ethernet protocols (Ethernet TCP). This enables continuous, transparent data communication from the field to the IT level. (sta)

BY000002

VY000010

WF210020

EXAMPLE:

- ☑ Vibration analysis and temperature monitoring with the **WF210020** sensor (v-RMS, a-RMA, g-Peak, °C).
  - **v-RMS (fatigue)** RMS value of the vibration velocity, recognizes component fatigue.
  - **a-RMS (friction)** Effective value of acceleration, recognizes mechanical friction.
  - **a-Peak (impact)** Maximum value of acceleration, recognizes mechanical impacts.
  - **°C (temperature)** Monitoring of temperature increases caused by excessive friction or other effects (e.g. reduced cooling).
- ☑ Pressure and temperature monitoring with a pressure sensor from the DW5x-series
- ☑ Level detection with ultrasonic probes from the UT-series e.g. **UT309023**
- ☑ Flow and flow rate control with the **SS500020** flow sensor

FURTHER FEATURES:

- Standardized JSON mapping for easy integration of sensor technology
- Protection class IP67 for reliable use in industrial environments

LOOKING FOR EVEN HIGHER ACCURACY?

In the last issue of INFO (No. 66), we presented the latest sensors in the **OTQ8-series**. Small diffuse-reflection sensors with great performance. However, if there are applications for which the small light spot or narrow line is still too large, the **PTQ80470** or **PTQ80475** could be the right devices.

Both sensors work according to the principle of background suppression by triangulation. The setting of the sensing distance is carried out via the familiar, simple teach procedure, in which the rear panel is touched with a ferromagnetic tool. A laser diode of laser protection class 1 with visible red light is installed as the light source in each case.

The **PTQ80470** has a point-shaped light beam. At the focal point, at a distance of 40mm, the diameter of the light spot is only 0.25mm; at the maximum adjustable sensing range of 120mm, it is 4mm. This means that not only can very small objects be detected, but they can also be detected quickly thanks to the short response time of 0.5ms.

The **PTQ80475** has a fine laser line. The focal point is at a sensing range of 60mm, whereby the line is then 28mm long and 0.5mm wide. At the maximum adjustable sensing range of 120mm, the length is 60mm and the width is 2mm. With this sensor, an object can be recognized regardless of its position as long as it is within the detection range of the line and reflects enough light at the appropriate bracket. The **PTQ80475** is particularly useful for detecting round objects such as wire or objects with an uneven surface. The response time is slightly longer at 2ms, as the processor has to perform more iterations to precisely activate the switching output due to the larger optical measuring range of the line.

The electrical connection is made via a 4-pin M8 cable connector, one PNP switching output each works on PIN 4 (black core) as normally open and on PIN 2 (white core) as normally closed (nc).

The sensors also have a special feature with regard to mechanical installation, as the sturdy metal inserts in the mounting holes are equipped with an M3 thread. Together with the optionally available brackets (e.g. **AO000580**) or the universal mounting **AY000116**, this makes installation much easier. (gr)

NO HAND FREE? NO PROBLEM.

The **RT210900** is a contactless diffuse-reflection radar sensor for automatic doors that combines convenience and hygiene. It reacts reliably to a hand movement in the direction of the sensor and therefore eliminates the need for direct physical contact with a conventional push button, which is particularly advantageous in heavily frequented or sensitive areas.

The sensor works with radar technology in the 24GHz range and specifically recognizes hand movements in front of the front surface. The detection range can be set between around 10 and 60cm so that the diffuse-reflection sensor triggers exactly where it should or where it is intuitive for the user. Typical applications include automatic door systems in entrance areas, in logistics, in the healthcare sector or wherever doors need to be operated hygienically and without contact.

It is triggered by a simple hand movement towards the sensor, supported by a clearly visible LED display that signals the switching state. The range, output mode and color logic of the LED can be adapted to the respective application via potentiometers and DIP switches.
For example, it is possible to set whether the LED lights up on detection or at rest, giving the user clear visual feedback. The **RT210900** is operated with 12-24V AC or 12-24V DC and has a potential-free relay changeover contact with a switching current of up to 1A. The power consumption is around 1.5W, allowing the sensor to be easily integrated into existing door control systems. With a compact housing of around 80 x 80 x 21mm made of robust PC plastic and a degree of protection of IP54, it is also suitable for use in demanding environments.

Installation in existing flush-mounted boxes is simple, and a suitable housing is available as an accessory for surface mounting (**AR000008**). Thanks to the silicone seal and the sophisticated front panel, the diffuse-reflection sensor is visually unobtrusive and blends harmoniously into door and wall surfaces. In everyday use, the **RT210900** therefore makes door management noticeably more convenient and at the same time safer - a small component with a big impact in everyday life. (he)

RETROFIT - PROFESSIONALS

SENSORS AND MACHINE LIGHTS FROM IPF:

IDEAL FOR RETROFITTING AND OPTIMIZATIONS

When modernizing existing machines and systems (retrofitting) or generally optimizing industrial processes, the sensors and machine lights from ipf electronic offer a wide range of options for increasing efficiency, safety and sustainability.

EXAMPLE MACHINE LIGHTING:

The modernization of illumination inside machining centers places special demands on the resistance and functionality of a solution. The **EM70-series** LED machine lights are available in 230V AC and 24V DC versions. With a diameter of 70mm, they can often be integrated into on-site mounting systems without much mechanical effort. With bright, homogeneous, flicker-free and glare-free illumination of the entire machine interior, the lights provide ideal light, e.g. during set-up or for better observation of machining processes.

The LED lights with housings made of anodized aluminum, single-pane safety glass and Viton seals are characterized by high durability against common coolants and lubricants. In addition, the connection with ... or M12-connector minimizes the risk of moisture penetrating the inside of the housing. Thanks to their robust design, the lights up are also resistant to impacts, vibrations and flying chips.

When it comes to the focused illumination of tools and workpieces, the flexibly adjustable **EM650120** spotlight is the perfect choice. The angle of emitted beam of 30° ensures intensive point-shaped illumination and minimizes stray light, giving the machine operator a precise, fatigue-free view of the machining process.

EM70

EM650120

EXAMPLE OF OPTICAL SENSOR TECHNOLOGY:

The optical sensors in the 33 and 45-series from ipf electronic, such as the **OT330571** and **OT450521**, are ideal for modernizing and retrofitting existing systems. The diffuse-reflection sensors with background suppression for high-precision object detection are available with either a standard light spot or a highly focused light spot.

Along with devices in the form of diffuse-refletion or retro-reflective sensors, ipf electronic also offers the **ON450522**, an auto-reflective system that has been specially developed for the reliable recognition of transparent objects. Tamper proof teaching using a ferromagnetic tool also eliminates the need for mechanical components such as potentiometers or buttons. (mo)

OT330571

OT45052x

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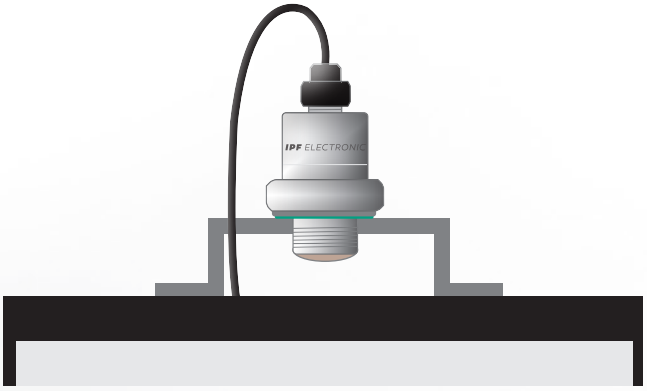
FILLING LEVEL SENSOR FOR TRICKY CASES

FOCUSED RADAR DIFFUSE-REFLECTION SENSOR

Since its market launch two years ago, the **FR900020** diffuse-reflection sensor with focused radar signal has proven itself as a versatile problem solver for difficult applications. The device, which can be used for ambient and media temperatures of up to 85°C, is parameterized via the standardized IO-Link interface, but can also be evaluated conventionally via the analog output and/or digital switching output, making it ideal for optimizing or retrofitting existing systems.

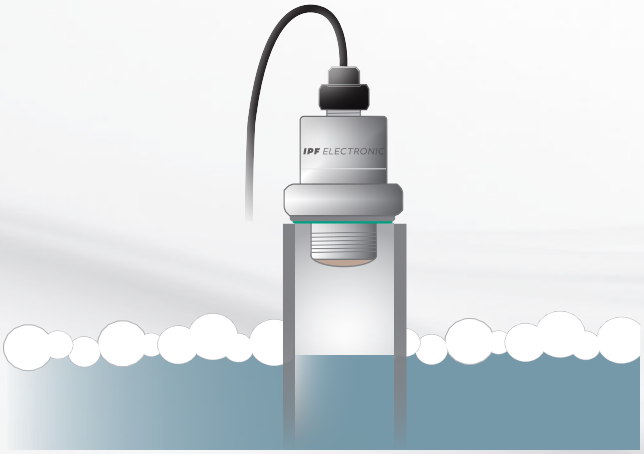
APPLICATION EXAMPLE 1:

The filling level of an aggressive liquid must be checked. As the radar signal easily penetrates even straight plastic covers of several centimetres, it is possible to install and measure the fill level through container walls without coming into contact with the medium.



APPLICATION EXAMPLE 2:

The filling level of a liquid with heavy foaming is to be monitored. By screwing the sensor into a metal tube (1/2" process connection) via the complete detection range, the filling level of the liquid in a container can be detected despite the formation of foam on the surface.



APPLICATION EXAMPLE 3:

In a filling level application where the container or medium is heated, optical sensors (fogging) or ultrasonic sensors (excessive measurement error) are not suitable.

With the **FR900020** radar sensor, however, reliable distance measurement at ambient temperatures of up to +85°C is possible without any problems. (mo)