3F industrial automation

About Us

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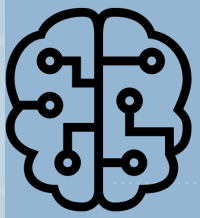
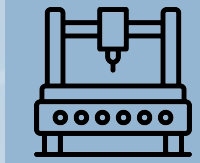
3F was founded in 2019 and now is a research and production enterprise engaged in the development and production of automation systems for technological processes and metrological equipment. Per 5 years of development in our products, there is almost everything that is necessary for the successful solution of the problem of automation of technological processes. All measuring production are included in State Register of Singapore and have the necessary permits. Reliably functioning on the company's quality management system ensures high reliability and long service life of devices. Every year, 3F launches several projects on modernization of serial and development of new devices designed to best meet the growing demands of our customers.



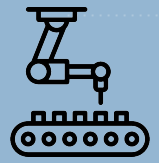
Absolute, gauge, differential pressure sensors

devices for measuring the flow of liquids and gaseous media, implemented on their basis



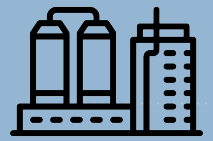
Measuring indicators

devices for calculation and indication of temperature or other physical quantities converted into a unified DC signal 4...20 mA



Temperature sensors

devices for calculation and indication of temperature or other physical quantities converted into a unified DC signal 4...20 mA



Various metrological equipment

Used in as a reference measuring instrument for verification of working measuring

Our Competences

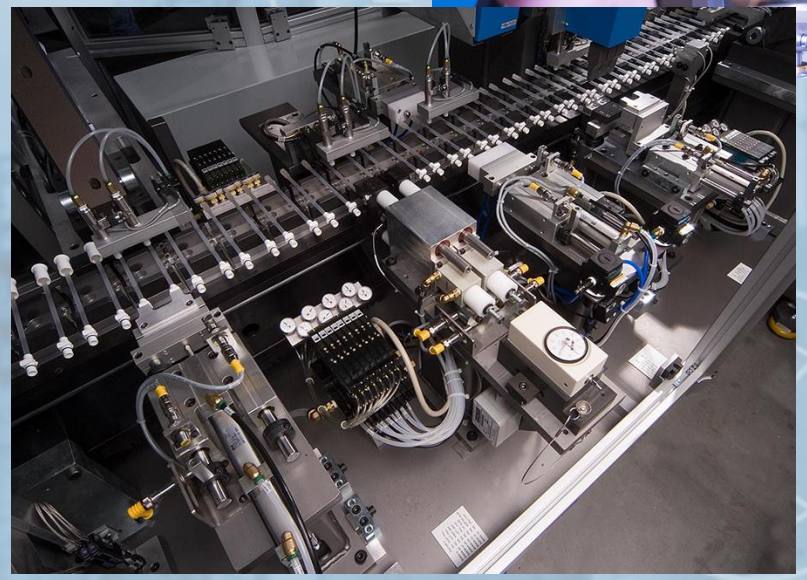
Measurement equipment

Our company offers complete solutions for demanding industrial and modern measurement tasks. Our solutions achieve maximum reliability in measurements. In our portfolio you will find measuring instruments to determine and analyze the quality of various scientific and industrial applications.

3F offers preventive solutions that detect possible deviations directly during the manufacturing process, reducing costs and time.

The HMI operator panels (Human Machine Interface) are a great support in process visualization.

They are specially designed to operate and observe processes in the industry. No matter which type of communication you require (fieldbus, Ethernet,



Measurement equipment

3F relies on specialized engineers and technicians who develop and manufacture custom solutions. The close cooperation with the customer allows to achieve coordinated solutions and to guarantee that the measuring instruments not only meet the expectations but even exceed them. Our services include maintenance, calibration and, if necessary, repair of our equipment.

PCE Instruments offers some manufacturing monitoring solutions like measurement data collection, transmission, storage, visualization / monitoring and control and regulation of manufacturing processes for your machines. For all the work, it is no longer necessary for a person to be on site, next to the machine or plant. Our industrial remote maintenance allows you to

Our Products

Electrocontact pressure gauges

Electrocontact pressure gauges

MEP14

Main characteristics:

- Upper measurement limits:
  - absolute pressure (choke TA H) — 1 kPa…16 MPa;
  - excess pressure (choke TG , TGH , flanged CG) - 0.025 kPa…60 MPa;
  - overpressure-vacuum (in-line TGV , flanged CGV) - ± 0.025 kPa…(−0.1…+2.5) MPa;
  - differential pressure (flanged CD , CDV) - 0.025 kPa…10 MPa;
  - hydrostatic pressure (flanged C L) - 1 kPa…250 kPa;
- Depth of reconfiguration of ranges — 100:1;
- Sensor Sensors – strain gauge sensors with high overload capacity;
- Output signal - 4 ... 20; 0…5; 4…20/0…5 mA (according to choice); 0.8…3.2; 0.5…4.5; 1…5 AT; ON RT , Foundation fieldbus ;
- Configuration - keyboard (internal or external), HART protocol; on Foundation Protocol fieldbus ;
- Square root function;
- Accuracy - from ± 0.075%;
- Climatic modifications - C 3 (−25…+70 °C), C 2 (−40…+80 °C), C 2 (−50…+70 °C), C 2 (−55…+70 °C), D3 (−50…+80 °C), T3 (−25…+80 °C), UHL 3.1 (−50…+70 °C);

- Indication - LCD indicator with backlight and graphic scale;
- Indicator rotation by 90°, 180°, 270°;
- Housing rotation by ±135°;
- Signaling and regulation devices:
  - 2 setpoints and 2 opto-relays (~250 AT × 80 mA);
  - 2 settings and 2 electromagnetic bi-stable (polarized) relays (~250 AT × 3 BUT);
- Electromagnetic compatibility (EMC) - IV - A ;

Electrocontact pressure gauges

MEP10

Main characteristics

- Upper measurement limits:
  - absolute pressure (DA) - 4 kPa ... 2.5 MPa;
  - overpressure (DI) - 0.25 kPa ... 100 MPa;;
  - overpressure-vacuum (DIV) — ±0.5 kPa...(−0.1...+2.4) MPa;
  - differential pressure (DD) - 0.25 kPa ... 2.5 MPa;
- Corrosion-resistant housing for operation in aggressive environments;
- Range reconfiguration depth — 1:40;
- Output signal — 4...20 mA;
- Configuration - microswitches, software;
- Square root function;
- Accuracy — from ±0.1%;
- Climatic modifications - UHL1 (-60 ... +70 °C), C 2 (-60 ... +70 °C), T3 (-25 ... +80 °C), TV4 (-25 ... +80 °C), UHL3. 1(−25...+70 °C);
- Dust and moisture protection - IP65, IP67;
- Execution options - general industrial, " Ex " (ExiaIICT 6 X), " Exd " (1 ExdIICT 6);
- Electromagnetic compatibility (EMC) - III - A , IV - B ;
- Warranty period - 24 months (from moment of entry into operation) or 36 months (from time of shipment), extended warranty period - on agreement*.

Electrocontact pressure gauges

MEP8

Main characteristics

- Size range - DN 25...Du 300;
- Medium temperature — -50...+350 °C;
- Medium pressure - 2.5 ... 20 MPa;
- Relative error: gas - ± 0.9%; ±1.0%; ±1.5%; liquid - ± 0.5%; ±0.7%; ±1.0%;
- Measurement range: gas, steam — 4.5...847800 m 3 /h; liquid — 0.5...107390 m 3 /h;
- Output signals – pulse, frequency, current (4...20 mA), relay;
- Digital protocol HART (v .7), Modbus RTU ;
- Supply voltage - = 24 V; ~220 V 50 Hz
- OLED indicator - graphic (resolution 128×64);
- Dust and moisture protection - IP 67, IP 68 (for the primary converter);
- Climatic modification — -60...+70 °C (UHL1);
- Maximum interconnect cable length for separate version - 500 meters (signal transmission is carried out by digital protocol Modbus RTU).

- Execution options - general industrial, " Ex " (ExiaIICT 6 X), " Exd " (1 ExdIICT 6);
- Electromagnetic compatibility (EMC) - III - A , IV - B ;
- Warranty period - 24 months (from moment of entry into operation) or 36 months (from time of shipment), extended warranty period - on agreement*.

Reliability indicators

Reliability indicators

MAP series

- MTBF — not less than 150,000 hours;
- The average service life is at least 15 years;
- Calibration interval - 4 years;
- Warranty period - 24 months (from moment of entry into operation) or 36 months (from time of shipment), extended warranty period - on agreement*.

Pressure Sensor Series	MAP18-11	MAP18-12	MAP18-13	MAP18-21	MAP18-22	MAP18-3	MAP18-4	MAP18-5	MAP18-61	MAP18-62
Minimum differential pressure measurement range, kPa	0.4			0.063		0.04	0.16	0.02	ten	
Maximum pressure drop measurement range, MPa	2.5			16					2.5	
Reconfiguration depth	1:25							1:60	1:4	
Number of ranges	eight							ten	four	
Measurement error, %	0.1; 0.2; 0.5					0.15; 0.25; 0.5		0.1; 0.2; 0.5	0.25; 0.4; 0.6	
Versions	general industrial, Ex, Exd		general industrial, Ex, Exd, NPP		general industrial, Ex, NPP	general industrial, Ex, Exd	general industry, NPP	general industrial, Ex, Exd, NPP	general industrial, Ex, Exd	
Maximum working static pressure P_{stat}, MPa	16			16, 25, 40					16	
Overload capacity	ΔP×10			hold unilateral overload = P_{stat}					ΔP×10	
Wetted parts materials - flange (fitting)	stainless steel 316L			stainless steel 316 L , Hastelloy-C		stainless steel 316 L , Hastelloy-C, stainless steel 12X18H10 T			stainless steel 316L	
Wetted Parts Materials - Diaphragm	stainless steel 316L			stainless steel 316 L , tantalum, Hastelloy-C, alloy 36NKhTYu					stainless steel 316L	
Process attachment	choke; M20×1.5			flanged; L_{axial} = 54 mm					choke; M20×1.5	
Climatic performance	–25...+70 °C			–40...+70 °C				–50...+70 °C	–25...+70 °C	
Output signals	4...20 mA	4...20 mA / HART	4...20 mA	0...5 / 4...20 mA, 4...20 mA	Modbus RTU	4...20 mA / HART, 0...5 mA / 4...20 mA		4...20 mA / HART , 0...5 mA / 4...20 mA / 2 opto relay / 2 EM relay	4...20 mA / 2 opto-relays	0...5 mA, 0...20 mA, 4...20 mA / 2 EM relay
Degree of protection against dust and moisture	IP65									

Indicators-meters

Indicators-meters

MIR2

- For calculation and indication of temperature or other physical quantities converted into a unified DC signal 4...20 mA

Main characteristics:

- Number of analog input channels - 4;
- Universal measuring input (resistance thermometers (TS), thermocouples (TP), current, voltage, resistance);
- Number of settings for each input channel - 2;
- Number of relays - 8 (free operation logic);
- Built-in power supply =24 V (load current - before 22 mA);
- Two LED indicators, single relay status LEDs and operating modes;
- Setting up the device - using a PC;
- Interfaces - RS-232 and RS-485;
- Resistance to electromagnetic interference (EMC) - III - A , IV - B ;
- Execution options — general industrial, Ex ([Exia] IIC);
- Calibration interval - 4 years;
- Warranty period - 24 months (from moment of entry into operation) or 36 months (from time of shipment), extended warranty period - on agreement*.

Indicators-meters

MIR5

Main characteristics:

- Touch screen - 10 or 15 inches;
- Cutout in the shield - 138 × 202 mm;
- Operating system - Linux;
- Universal input channels with galvanic isolation - up to 24;
- Number of discrete inputs - up to 60;
- Number of frequency inputs - up to 12;
- Number of relay outputs - up to 16;
- Number of active current outputs - up to 12;
- The number of solid-state relays - up to 24;
- Regulation by PI-, PD-, PID laws;
- Setting control profiles - up to 20;
- Math functions;
- The polling rate of all analog signals is 0.1 seconds;
- The maximum registration speed to the built-in memory is 0.1 seconds;

- The amount of built-in memory for registration - 3 GB (enough for storing values of 24 channels with frequency 1 once a second in within 2 months)
- Interfaces (protocols) — 2 × RS-485 (Modbus RTU Master/Slave), Ethernet (Modbus TCP), USB;
- Connection of external devices via RS -485 interface (Modbus RTU) in Master mode ;
- The main reduced error is from ±0.1%;
- Versions - general industrial, explosion-proof Ex ([Ex ia Ga] IIC x);
- Calibration interval - up to 4 years;
- Warranty period - 24 months (from moment of entry into operation) or 36

Level gauges

Electrocontact pressure gauges

MUR series

- Instruments for measurement, control and continuous conversion of liquid level values, into including aggressive environments

Modification	MUR2 1L	MUR2 2	MUR2 3	MUR2 1	MUR2 2	MUR2 3	MUR2 4	MUR2 5	MUR2 06	MUR2 10
Level gauge type	float potentiometric			radar contactless					ultrasonic non-contact	
Versions	general industrial, Exd		general industrial, Ex, Exd	general industrial, Exd					general industrial, Ex, Exm	
Controlled environment	liquid with density 600...1200 kg / m ^{3}			liquid / bulk materials						
Mounting part length L , mm	400...6000			—						
Measurement range, mm	—			500...20000					up to 6000 mm	up to 10000 mm
Limiting pressure of the controlled environment	up to 2.5 MPa			up to 1.6 MPa					up to 0.3 MPa	
Medium temperature range	-30...+85 °C			-40...+60 °C		-40...+90 °C			-40...+70 °C	
Supply voltage	=24 V	=24 V		=24 V		36 V			~220 V, 50 Hz	
Output signal	4...20 mA	4...20 mA (HART)		4...20 mA, Modbus RTU					4...20 mA, 0...10 V, Modbus RTU	
Display options	LED indication	—LCD or LED display		—						
Discreteness of installation of reed switches	5 / 10 mm			—						
Error	±(5 + 2 × 10 $^{-3}$ × N) mm ±(10 + 2 × 10 $^{-3}$ × H) mm			±3 mm				±0.25%, ±0.5%		
Ambient temperature range	-55...+70 °C			-40...+70 °C						
Process attachment	G1”, flanges			flanges, M30×2				G1”, flanges	G1 1/2”, flanges	

Metrological equipment

Metrological equipment

MER series

Uses in as a reference measuring instrument for verification of working measuring instruments

Built-in precision measuring device

- 4 universal measuring channels I , U , Ω;
- Support for NSH TS and TP, thermal converters with unified output signal;
- Support for digital HART protocol;
- Built-in power supplies 24 V.

Main characteristics:

- Embedded computer with touch screen - ease of operation, automatic work on program set by the operator, obtaining complete information about device status;
- Possibility to connect external reference thermometers via TCE-005/M3;
- Temperature reproduction range — -54...+150 °C;
- Isothermal zone - 60 mm;
- Limit of permissible basic absolute error of temperature reproduction — from ±0.02 °C;
- Instability of maintaining the temperature for 30 minutes — ±0.01 °C;
- The unit of the least significant digit of the indicator — 0.001 °C;
- Number of channels (standard version for ELEMER-KT-150K/M1(I)) — 7;
- Immersion depth - 180 mm;
- USB port for control with PC (external software);
- Calibration interval - 1 year for class A, 2 years for class B ;
- Warranty period of operation of the device - one year

Temperature sensors

Temperature sensors

MET series

A turnkey solution for measuring temperature with an error of no more than 0.2 °C with a unified current output of 4 ... 20 mA and / or HART protocol

Main characteristics:

- Thermal converters have executions:
  - general industrial;
  - explosion-proof with type of explosion protection "intrinsically safe electrical circuit" (Ex);
  - explosion-proof with type of protection "flameproof enclosure" (Exd);
- Power supply parameters - nominal value of DC voltage 24 In or 36 AT;
- Power consumption - not over 0.6 W (at voltage 24 V) or 0.8 W (at tension 36 AT)
- The length of the mounting part of thermal converters — 60...25000 mm;
- IP overall dimensions - not over: 122×200×120 mm;
- Weight (depending on thermal converter version) — 0.9...10.0 kg;
- Ambient temperature:
  - -40...+70 °C;
  - -40...+85 °C;
  - -50...+70 °C;

Contact us

Contact

Phone: +