Excellence in Process Measurement

- Preempt bottlenecks
- Network ready

- Avoid surprises
  - Advanced diagnostics

- Reduce blind spots
  - Multivariable measurement

Yokogawa VigilantPlant solutions help you to measure, control, and optimize your processes, ensuring plant-wide integration. A worldwide network of committed experts supports your operations 24/7 for life-cycle optimization.

Your Single-Source Partner for Operational Excellence

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Yokogawa VigilantPlant
The clear path to operational excellence
Your Single-Source Partner for Operational Excellence

Industry leaders striving for operational excellence will benefit from a new vigilant approach to plant automation. Yokogawa VigilantPlant solutions help you to Measure, Control, and Optimize your processes, ensuring plant-wide integration. A worldwide network of committed experts supports your operations 24/7 for life-cycle optimization.

**Production Management**
- Plant Information Management
- Advanced Process Control

**Asset Management and Operational Efficiency**
- Operation Efficiency Improvement
- Integrated Plant Asset Management

**Production and Safety Control**
- Integrated Production Control
- Integrated Safety Control
- SCADA and Hybrid PLC/RTU

**Data Acquisition and Logic Control**
- PLC/PAC
- Paper and Paperless Recorder
- Data Acquisition Equipment
- Controller and Conditioner

**Sensing and Actuation**
- Flow
- Multivariable
- Pressure
- Level
- Temperature
- Wireless
- Valve Products/Others

**Analysis and Quality Control**
- Analyzer

**Technical Partners’ Products**
- Flow
- Multivariable
- Pressure
- Level
- Temperature
- Valve Products
- Field Accessories
Flow

4-wire Magnetic Flowmeter ADMAF AFX and AXW

- Easy maintenance
  - Diagnostic function to detect the adhesion level on the electrodes
  - Replaceable electrodes structure realizes easy maintenance
  - Error messages and diagnostic instructions simplify and optimize maintenance

User-oriented functionality

- Clear and versatile indications
- Infra-red switches for parameters setting without opening cover
- Flexible electrical connection direction
- Multiple status alarms

High performance

- Achieves stable measurement of fluids involving high concentration slurries or low conductivity by "Enhanced Dual Frequency Excitation"
- Low conductivity (1μS/cm)
- High accuracy (0.3% of rate)
- High speed pulse output (up to 10,000 pulses per second)

Expansion of Product Lineup

- Large size magnetic flowmeter for stable water measurement (Up to 1800mm)
- Wide range of liners and electrode materials
- A variety of process connections (incl. sanitary)

2-wire Magnetic Flowmeter ADMAF AXR

- No extra AC power supply
- Power saving (1 to 4% of typical 4-wire magnetic flowmeter)
- Achieves stable measurement, zero stability and quick response times by "Dual Frequency Excitation"
- High accuracy (0.5% of rate)
- Magnetic switches for parameters setting without opening covers
- SIL2 Safety Integrity Level (IEC 61508) certified

Vortex Flowmeter digitalYEWFLO

- Universal flowmeter for Liquids, Gas and Steam
- High accuracy (±0.75% of rate)
- Stable measurement of low flow by "Spectral Signal Processing"
- Many options, such as High Process Temperature Version(450°C), Cryogenic Version(-196°C), Reduced Bore Type, and Stainless Steel Housing

Differential Pressure Transmitter DPharp EJX/EJA-E Series with Orifice Plate

- A field proven, best-selling differential pressure transmitter series featuring silicon resonant sensor
- ISO-compliant (JIS 28762) orifice design for measuring various fluids
- The variety of orifice type and materials are available
- Nominal size: 15 to 3,000 mm (0.5 to 120 inches)

Ultrasonic Flowmeter US300 Series Fixed or Portable Type with Clamp-on Transducers

- Quick and easy setup with matched-pair flow calibrated no-zero-offset transducers
- High accuracy realized by our patented digital signal processing technology
- High tolerance against the measurement under air bubbles or entrained solids in the fluid

Coriolis Mass Flowmeter ROTAMASS 3 Series

- High accuracy mass flow and density meter SIL2 certified
- Measures (liquid or gas) mass flow, density, concentration and temperature
- Flow ranges between 10.5 g/h up to 600 t/h
- Insensitive to entrained gas up to 50% and more
- High performance, unaffected by pipe stress and/or vibration due to unique box in box design
- Largest wall thickness of measuring tubes in the market
- Stainless Tubes no welding for pressure rates up to 440 bar
- Self draining in vertical installation
- Wide temp. range: -200°C to +350°C with optional insulation

Variable Area Flowmeter ROTAMETER™

- Rugged and durable, all 316LSS and glass designs silicone and Teflon
e - Special material, Hastelloy, Monel, Titanium, PTFE Lining
- Easy to install and maintain
- Local indicator, no power required, limit switches
- Patented blocked float indication system
- HART® and Profibus PA communication
- Various hazardous area approvals, SIL2
- High temperature capability -200°C to +370°C
- High pressure versions up to 700 bar

Averaging Pitot Tube Verabar [Product of Veris, Inc.]

- Verabar senses and averages the natural differential pressure created by the velocity profile
- Verabar measures gas, liquid and steam, and measures volumetric flow with EJAC/EJX DP transmitter and mass flow with EJX31GA multivariable transmitter
- Improved accuracy and turndown, superior signal stability
- Eliminates clogging of sensor ports
- Lower drag force and increased structural strength
- Lower energy costs

Dresser Gauge Pressure Transmitter

- Small flange tank mounting pressure transmitters
- Ideal for use in corrosive, hot and shock loading environments
- Media Converter YFGW610
- Management Station YFGW410
- Modbus/TCP&RTU, OPC communication, 3-1/2 digit readout with alarms
- 12VDC, 24VAC power supply
- 1/4", 1/2", 3/4" NPT, 1", 1-1/4", 1-1/2", 2", 2-1/2", 3", 4" (standard), available on request
- Conformance to ISO 5167

Instrument Connection Systems [Product of Cameron International Corporation (TBV)]

- Pre-engineered, pre-tested, pre-fabricated modular instrument installation with EJA and EJX differential pressure and pressure transmitters
- The optimum measurement technology with proven mounting practices (close coupling) and hardware integration
- Eliminate hydrostatic error and reduce installed costs

Multivariable Transmitter DPharp EJX910A

- Multivariable transmitter to measure differential pressure, static pressure and temperature and to calculate dynamically compensated mass flow
- 1.0% mass flow rate accuracy
- Dual output capability: analog 4-20 mA and pulse
- PC-based FSA120 EJX-MV Configuration DTM supports the configuration for calculating mass flow

Fieldbus Segment Indicator FVX110

- Field indicator for Fieldbus™ Fieldbus™ devices with output up to 16 indicated values
- 32 lines x 84 columns full dot-matrix LCD with LED backlight
- Easy to scroll display with scroll knob on side of amplifier case
- High visualization with bar graph and scroll bar

HART® is a registered trademark of the HART Communication Foundation.
Fieldbus™ is a trademark of Fieldbus Foundation.
**Flow**

- Replaceable Fixed or Portable Type with Clamp-on EJX/EJA-E Series with Orifice Plate
- Easy maintenance Ultrasonic Flowmeter US300 Series
- User-oriented functionality 4-wire Magnetic Flowmeter ADMAG AXF and AXW
- Measures (liquid 15)
- • HART • Patented blocked float to Hastelloy, Monel, Titanium, durable, and draining vertical to ranges
- • High • ISO-compliant (JIS Z8762) orifice • A field proven, best-selling accuracy (±0.75% rate)

**Pressure and Temperature Transmitter**

**Pressure Transmitter**

- **DPharp EJX Series**
  - Ultra-high performance pressure transmitter, the flagship model of DPharp family
  - Fast response 90 ms
  - Contact output which can be used for pressure alarm (Optional)
  - SIL2 certified by TÜV
  - Light and compact design fits to direct mount
  - Multi-sensing (Differential pressure and Static pressure)
  - Multi-functional indicator (optional)

- **DPharp EJA-E Series**
  - The newest line-up of DPharp pressure transmitter family
  - A strong successor of field-proven, best-selling EJA series pressure transmitters
  - High accuracy and excellent long term stability
  - Easy-to-use compact design
  - Fast response expands the variety of application
  - SIL2 certified

**Rugged Pressure Transmitter**

- [Product of GP:50 Ltd.]
  - 80-5 Through 0-100,000 PSI ranges in PSISG, PSIA, Vacuum options with 5:1 ranging
  - NEMA 4X 316 SS enclosure
  - Factory sealed, conduit seal not required
  - FM and CSA approved explosion proof with Class I, II, III, Division I, II, Groups A, B, C, D, E, F & G

**Level Transmitter**

- **DPharp EJA/EJX Series**
  - Flange-mounting, compact differential pressure transmitter
  - Direct mounting to a tank
  - Small flange size model also available

**Differential Pressure and Pressure Transmitter**

- [Product of WIKA Alexander Wiegand GmbH & Co. KG]
  - Diaphragm seal to combine with EJA and EJX series pressure and differential pressure transmitters
  - Intended for corrosive, contaminated, hot or viscous pressure media
  - Various process connections, wetted materials and pressure ranges are available

**Wireless**

- **Field Wireless System (ISA100.11a protocol)**
  - Pressure Transmitter DPharp EJX B Series
  - Temperature Transmitter YTA510
  - Multi-input Temperature Transmitter YTMX580
  - Integrated Gateway YFGW710
  - Management Station YFGW410
  - Media Converter YFGWS610
  - Access Point YFGWS10

**Flow**

- **Valve Positioner YVP110**
  - High performance Fieldbus-enabled digital valve positioner improves valve characteristics and response
  - A wealth of functions such as auto-tuning to effectively use the combined valve
  - Employs a unique non-contact position sensor to achieve high precision and high reliability
  - Available for both single and double acting cylinder
  - The ValveNav utility software greatly facilitates the process of setting up, tuning, and maintaining the YVP110

**Diagnostic and Automation**

- **Dresser**
  - Provides solutions for the process industry with a focus on innovation and customer service.
  - MEASUREX Application and field service specialists.
  - Electro-pneumatic actuators, valve positioners, and digital valve positioners.
  - EJXAX series of pressure transmitters.

**Future**

- **IP6X-based wireless protocol for expandability of existing plant network architecture in the future**
- **Upper communication : Modbus/TCP&RTU, OPC**

**Temperature Transmitter**

- **YTA110, YTA310, and YTA 320**
  - A highly accurate temperature transmitter with HART communication protocol
  - Dimension conforming to DIN form B standard
  - Sensor type is selectable from 12 thermocouples, 2 RTDs, ohms, or DC millivolts
  - Dual compartment housing for harsh environments
  - Dual input bungalow change over
  - Integral indicator provides both a digital readout and percent bargraph
  - SIL2 certified by TÜV NORD

**FieldConnex Temperature Multi-Input**

- [Product of Pepperl+Fuchs GmbH]
  - 8-channel for 1°C, RTD, resistance and millivolt signals via Fieldbus H1
  - For signals in any hazardous area
  - Intrinsically safe, FISCO or Entelli
  - Pre-engineered enclosure solutions, pre-wired, certified, ready for installation
  - Wire and sensor diagnostics

**Thermocouple and Resistance Temperature Detector**

- **CM/CH/CP/C/S/CN/RM/RH/RS/RN Series**
  - The sensor type and measurement range can be set according to the purpose
  - Superb reliability and proven track record
  - Fully compliant with IEC and JIS
  - Variety of mounting hardware available

**Industrial Temperature Assemblies**

- [Product of WIKA Instruments Ltd.]
  - P100 RTD: 3-, 4-wire, single or dual configuration
  - Thermocouple: Type J, K, E, T, 2-(dual), 4-(single) wire with single or dual configuration
  - Thermowell style: tapered, straight or stepped
  - YTA series can be installed onto the industrial assembly or within the termination head
  - Unique explosive environment approvals allow transmitters installation on-site

**Level**

- **Differential Pressure Transmitter with Remote Diaphragm Seal**
  - DPharp EJX/EJA-E Series
  - Ideal for measuring the levels and densities of corrosive and high temperature fluids
  - Small flange size model also available

**Remote Seals for Differential Pressure and Gauge Pressure Transmitter**

- [Product of WIKA Alexander Wiegand GmbH & Co. KG]
  - Diaphragm seal to combine with EJA and EJX series pressure and differential pressure transmitters
  - Intended for corrosive, contaminated, hot or viscous pressure media
  - Various process connections, wetted materials and pressure ranges are available

**Valve Components**

- **Valve Positioner YVP110**
  - High performance Fieldbus-enabled digital valve positioner improves valve characteristics and response
  - A wealth of functions such as auto-tuning to effectively use the combined valve
  - Employs a unique non-contact position sensor to achieve high precision and high reliability
  - Available for both single and double acting cylinder
  - The ValveNav utility software greatly facilitates the process of setting up, tuning, and maintaining the YVP110

**GE Masoneilan**

- Masoneilan provides customers with the highest quality products and services through unmatched creativity and commitment to excellence.
- Masoneilan products include process control valves, regulators, actuators, instruments, and associated software solutions.
- Products and services are provided globally with manufacturing plants and sales offices located worldwide.

**FLOWSERVE’s VALTEK CONTROL VALVES**

- Flowserve provides the industry’s broadest portfolio of rotary and linear control valves for both general service and severe service applications, backed by the industry’s largest network of company-owned service and repair centers to provide fast, on-time, and high quality support.
- First in the industry with digital technology and predictive diagnostics.
- The market leader in engineered-to-order control valve solutions for complex and difficult applications.
**Analyzer**

- Metos’s Valve products
  - Wide range of Neles, Jamesbury and Mapag® control, on/off and ESD valves and valve related services.
  - Neles NDE2000™ intelligent valve controller for control applications.
  - Neles ValveGuard™ for intelligent ESD-valve partial stroke testing applications.
  - Neles SwitchGuard™ for intelligent high cycle on-off applications.
  - Available in HART®, FOUNDATION™ Fieldbus and PROFIBUS PA.
  - On-line diagnostics and predictive maintenance capabilities.

- SAMSON flow control solutions
  - Sliding stem and rotary control valves, actuators, regulators and steam conditioning solutions.
  - Smart Series 373x positioners and ESD-valve partial stroke testing solutions.
  - Smart on/off valve controllers with integrated partial stroke testing.
  - Limit switches, solenoid valves and accessories.
  - HART®, FOUNDATION™ Fieldbus and PROFIBUS communications.
  - Integrated On-Line diagnostics for life cycle predictive maintenance and monitoring.

**Field Accessories**

- FieldConnex® Compact Power Hub (Product of Pepperl+Fuchs GmbH)
  - 8-segment, redundant FOUNDATION™ Fieldbus H1 power supply, also available with 4 segments.
  - Redundant connectors (ALF111) with high availablity and low-cost spares holding.
  - Completely engineered, pre-wired cabinet installation.
  - Advanced physical layer diagnostics for automated commissioning, online monitoring and troubleshooting.
  - Experts system support, integrated into PRM.

- FieldConnex® Fieldbus Junction Boxes (Product of Pepperl+Fuchs GmbH)
  - Delivered installation including accessories ready with short lead times.
  - Connections and explosion protection for all hazardous areas. Junction box certified as an unit.
  - Intelligent fieldbus diagnostics-enabled device couplers for superior plant availability.
  - Segment Protectors for ensuring continual segment availability even on field device short-circuit.
  - Can have contact bounce protection and feature protection integrated.
  - keypad® to interface FISCO and Emity FOUNDATION™ Fieldbus field devices mounted in hazardous areas.
  - Measurement of physical layer parameters on each individual spur possible. This includes contact bounce and jitter protection.
  - Enclosure leakage sensor and surge protectors with integrated diagnosis connectable.

- Optical Fiber Sensing
  - Distributed Temperature Sensor DTX2000
    - Monitoring temperature on Optical fiber up to 96m.
    - Easy to integrate in process control system.
    - Best Outdoor solution (Wide Operating Temperature: -45 to +65 deg.C) (Compact and Low power consumption: 10W) (Outdoor housing with Solar Panels/Batteries/Wireless communication is applicable).

- FieldMate Versatile Device Management Wizard
  - PC-based field device management tool.
  - Multi-vendor, multi protocol support BRAIN, FOUNDATION™ Fieldbus H1, HART®, PROFIBUS and ISA100.11a.
  - Automatic device data acquisition upon connection to a device or a segment (Segment Viewer).
  - Easy acquisition and diagnostics of device status (Device Viewer).
  - Categorization, sorting and filtering (History).
  - Multi-parameter set-up (Parameter Manager).

- Hand-held Terminal for BRAIN Communication BT200
  - Easy to use for setting, changing, displaying, and polling out parameters.
  - A large display (21 characters by 8 lines) eases setup and alteration procedures.
  - Self-diagnosis function ensures proper operation of the instruments.
  - Other features include security code protection, low battery voltage alarm, and automatic power-off.

**Liquid Analyzer FLXA21**

- pH/ORP/Conductivity/Inductive Conductivity/Dissolved Oxygen
  - 2-wire transmitter.
  - Menu structure and graphical display with touch screen and 12 languages.
  - Redundant system configuration is possible with connecting two sensors.
  - One or two sensor modules can be installed.
  - HART communication.

**Conductivity/Dissolved Oxygen EXA4050 Series PH450G / SC450G / ISC450G**

- 4-wire converter.
- Event logbook in software.
- Four configurable contact outputs.

**Near Infrared Spectrometer**

- Real-time monitoring of multi-components.
- High resolution.
- Up to 4 multi-stream channels with no wearing parts.
- Stability and Reliability.

**Gas Chromatograph GC8000 Process Gas Chromatograph**

- High-speed analysis with multi-oven structure.
- Improved operation with a large touch panel display.
- Broad range of application.
- Stability and Reliability.
- Highly sensitive TC detector.
- Easy operation via Local display or network.

**Tunable Diode Laser Spectroscopy Analyzer TruePeak TDL5 200**

- In situ analysis.
- Interface-free.
- Rapid measurement (As fast as 2 seconds).
- Process pressure up to 2 MPa.
- Process temperature up to 1500 °C.
- Optical monitoring – no sensor contact with process.
- Flexible installation options.
- Aggressive applications – high particulate, corrosives, and more.

**Oxygen Analyzer Direct In Situ Zirconia Oxygen Analyzer ZR402G / ZR22G, S / ZR202G, S**

- Long-life and high-reliability Zirconia sensor.
- LCD touch-screen for ease of operation.
- The integrated type consisted of probe and converter, to reduce wiring, piping, and installation costs.
- Explosion-proof approval.
- Remote maintenance using HART® communication.

**Oxygen Analyzer**

- Degasging Controller AV550G
  - Handles input of up to 8 oxygen detectors.
  - “Hot swap” of channel cards so the analyzer remains on line while maintenance is performed.
  - Full color touch screen for ease of operation.
  - Multiple display modes shows average data, single detector or all detector gas concentrations.
  - Remote maintenance using HART® or FOUNDATION™ Fieldbus communications.
Infrared Gas Analyzer IR200 / IR400
• Measurement of NOx, SOx, CO, CH4, and O2
• Simultaneous measurement of up to 5 components including O2
• Maximum range ratio of 1:25
• Modbus interface
• Easy to operate and maintain

Gas Density Meter GD402/GD40
• Resistant to external vibrations
• Outstanding stability against sudden changes in gas temperature
• The multi-mode self-oscillation circuit minimizes drift caused by oil mist, dust, moisture, etc. sticking to the sensor
• Explosion-proof approval
• Easy to operate and maintain

PLC/PAC

Paper and Paperless Recorder

Data Acquisition Equipment

Controller and Conditioner

Single-loop Process Controller YS1000 Series
• Uses a full dot matrix color TFT-LCD display
• Designed with a lightweight, compact case
• Graphical programming tool with program conversion function from PLC/YS100 for reduction of engineering costs
• Dual CPU and hard manual control as the control output backup function
• Ethernet (Modbus/TCP), Modbus, expansion I/O, and peer-to-peer communication

UTAdvanced Digital Indicating Controllers
UT55A/UT52A/UT75A
• Advanced Control
• PID Control — 8 built-in Control Functions / Algorithms
• Ladder Sequence Control
• 2 loop control (UT75A)
• CP calculation (option) for (UT75A)
• Simplicity
• Bright & Easy to read Active Color LCD Display
• Multiple language support
• Networking Ethernet (Modbus / TCP), RS485
• PROFIBUS-DP, DeviceNet, CC-Link
• Reliability
• IP56, 3 year warranty

UTAdvanced Program Controllers
UP55A/UP35A
• Max Pattern Number 300/UP55A, 4/UP35A
• Total Segments Number 300/UP55A, 40/UP35A
• Advanced Control
• PID Control — 8 built-in Control Functions / Algorithms (Only UP55A)
• Ladder Sequence Control
• Simplicity
• Bright & Easy to read Active Color LCD Display
• Multiple Language support
• Networking Ethernet (Modbus / TCP), RS485
• PROFIBUS-DP, DeviceNet, CC-Link
• Reliability
• IP56, 3 year warranty

Data Acquisition & Monitoring Software

MX100
• PC-based Real Time Data Acquisition System
• Acquisition data from up to 1200 channels, 300k/100msec (When using Yokogawa’s proprietary software “MXLOGGER”)
• High-speed measurement of 24kHz/10ms or 60kHz/100ms
• Mixed use of three types of measurement intervals is enabled within the system.
• High withstand voltage: 3700Vrms for one minute or 600Vrms/VDC continuous.

Compact Signal Conditioner JUXTA VJ Series
• Compact design for space saving
• Universal input to accept either a thermocouple, RTD or mV signal
• Second isolated current or voltage (pulse) output available
• Modbus (RS-485) communication along with analog output signal from a single unit.
• PC-based parameters setting tool available

Solar Tracking Controller - SolStation (TM) HXS10
• Built-in Solar Power Algorithm
• Excellent Environmental Performance
• Flexible, Customizable Program
• Built to Order
• High Quality and Reliable Support
Making critical plant information fully visible is just the beginning of the vigilant cycle

Seeing clearly gives you the knowledge necessary to anticipate the changes required in your process.
Knowing in advance brings you the speed and flexibility to optimize your plant in real time.
And by acting with agility, you are able to adapt to the ups and downs of your business environment.

VigilantPlant excels at bringing out the best in your plant and your people - keeping them fully aware, well informed, and ready to face the next challenge.

VigilantPlant is Yokogawa’s automation concept for safe, reliable, and profitable plant operations. VigilantPlant aims to enable an ongoing state of Operational Excellence where plant personnel are watchful and attentive, well-informed, and ready to take actions that optimize plant and business performance.

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