

vigilantplant.®

The clear path to operational excellence

Excellence in Process Measurement



Preempt bottlenecks
Network ready



Avoid surprises
Advanced diagnostics



Reduce blind spots
Multivariable measurement



Bulletin 01A04A04-E-E

YOKOGAWA 

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.



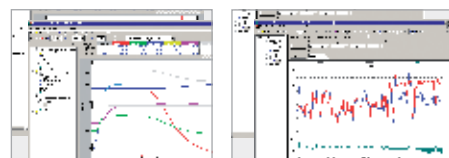
Optimize

Production Management

Plant Information Management



Advanced Process Control



Control

Production Control and Safety Management

Integrated Production Control



Integrated Safety Management



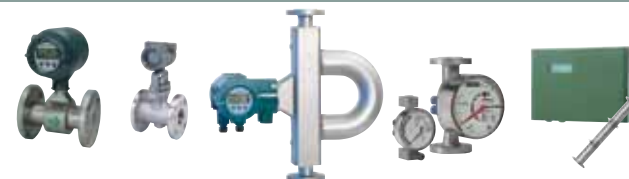
SCADA and Network-based Control



Measure

Sensing and Actuation

Flow



Pressure



Technical Partner's Products

Flow Primary Elements



Transmitter Manifolds



Remote Seals



Communications

FDT/DTM FieldMate



Terminals



Converters & Field Indicators



ISA 100Wireless

B BRAIN

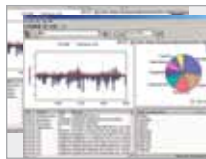
HART
FIELD COMMUNICATIONS PROTOCOL

Fieldbus
Foundation

PROFI
BUS

Asset Management and Operational Efficiency

Operation Efficiency Improvement



Integrated Plant Resource Management



Data Acquisition and Logic Control

Logic Controller



Paper and Paperless Recorder



Data Acquisition Equipment



Controller and Conditioner



Liquid and Gas Analysers

Multivariable



Temperature



Valve Positioner



Liquid Analyzer



Gas Analyzer



Advanced Analyzer



Temperature Sensors



Control Valves



Analysis and Quality Control



Sampling Systems



Measuring Instruments

Recording & Analysis Solutions



Portable Data Logger



Flow



Coriolis Mass Flowmeter ROTAMASS 3 Series

- High accuracy true mass measurement
- OIML R117-1 report for MI-005 custody transfer measurement
- High performance, unaffected by pipe stress and/or vibration
- High temperature capability; -200°C to +350°C
- Measures (liquid or gas) mass flow, density, concentration and temperature
- Self draining and venting when installed in vertical pipes
- 3A and EHEDG sanitary approvals
- Digital Communication through HART®, FOUNDATION™, FIELDBUS



2-Wire Magnetic Flowmeter ADMAG AXR Series

- No extra AC power supply
- Power saving: 1 to 4% of typical 4-wire magmeters
- Stable measurement under harsh flow conditions by dual frequency excitation
- High accuracy (0.5% of rate)
- Concise indications on full dot-matrix LCD
- Magnet switch operation without opening cover
- Direction change of the electrical connection
- Digital communication through HART® or BRAIN



Magnetic Flowmeter ADMAG AXF Series

Predictive diagnostics

- Electrode adhesion detection reduced process downtime
- Replaceable electrode construction (option)
- Error messages and diagnostic instructions

User-oriented functionality

- Multi-line, large, backlit and full dot-matrix LCD
- Easy parameter set by infra-red switches
- Easy-to-install rotatable primary (converter)
- Digital Communication through HART®, BRAIN, FOUNDATION™, Fieldbus or Profibus

High performance

- Enhanced dual frequency excitation
- 1 µS/cm conductivity minimum
- 0.2 % reading accuracy (optional)
- High-Speed Pulse Output (up to 10,000 pps)

Enhanced Product Lineup

- PFA, Ceramic, Polyurethane liners
- Wide range of electrode materials
- From 2.5 mm to 2600mm
- 3A and sanitary connections are available



Magnetic Flowmeter RXF Series

- Sizes from 15mm to 2000mm diameter (1/2" to 80")
- Accuracy 0.5% of Flowrate
- Hard rubber liner (PTFE on request)
- Robust, IP67 or IP68 (submersible version)
- Up to PN100
- Potable water approved
- Digital communication through HART®, BRAIN, FOUNDATION™, Fieldbus or PROFIBUS



Vortex Flowmeter digital YEWFLOW

- Universal flowmeter for liquids, gas and steam
- Best "in-situ" performance available today; ±0.75% of flowrate
- Superior low flow stability through Spectral Signal Processing
- Highest temperature capability available today; -196°C to +450°C
- Optional temperature sensor embedded in shedder bar inferring (saturated) steam flow
- Digital communication through HART®, BRAIN or FOUNDATION™, Fieldbus
- SIL assesment by FMEDA report

Field Communication



FieldMate Versatile Device Management Wizard

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



Orifice Plate

- ISO-compliant design for measuring various fluids
- Orifice types; Concentric square edged orifices, quadrant edged orifices, eccentric orifices, segmental orifices, and so on
- Nominal size; 15 to 3,000 mm (0.5 to 120 inches)
- Material; 304SS, 316SS, 316L SS, Monel, Hastelloy B, Hastelloy C, or Titanium available
- High fluid temperature version up to 500°C available



Hand-held Terminal for BRAIN or HART® Communication (BT200 or YHC4150)

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



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



Multivariable Transmitter DPharp EJX910A

- Multivariable transmitter to measure differential pressure, static pressure, temperature 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
- Digital communication through HART®, BRAIN, FOUNDATION™, Fieldbus



Variable Area Flowmeter ROTAMETER™

- Rugged and durable, all 316SS and glass designs
- Low friction, hysteresis free local indication
- Linearised current output with float blocking detection
- Remote configuration using the HART® protocol
- Suitable for use in Zone 1 and 2 hazardous locations
- Digital communication through HART® or PROFIBUS PA
- SIL assesment by FMEDA report



Averaging Pitot Tube

- Senses and averages the natural differential pressure created by the velocity profile
- Measures gas, liquid and steam, and measures volumetric flow with EJA/EJX DP transmitter and mass flow with EJX910A multivariable transmitter
- Improved accuracy and tumdown, superior signal stability
- Eliminates clogging of sensor ports
- Lower drag force and increased structural strength
- Lower energy costs



Segment Indication for Foundation™ Fieldbus FVX110

- 2 wire segment powered indicator
- Displays up to 16 process values
- Link master capability & Software download function
- Easy access to target display (back lighted)
- Variety of function blocks supported



Compact Orifice System

- Volume or mass flow measurements with EJA and EJX transmitters for gas, steam and liquid
- Modular and proven concept
- No moving parts, extremely rugged and stable
- Easy to install without impulse piping
- Available from 1/2" to 4" (standard), other sizes on request
- Conformance to ISO 5167
- Integrated temperature sensor for mass flow



Smart HART® Loop Interface and Monitor

- "Break Out" up to three analog signals proportional to a HART®
- High/Low process and loop diagnostic alarms
- Sets up as a primary or secondary master, or in "Listen" mode
- Large, 5-digit display
- Isolated output channels

Pressure & Level



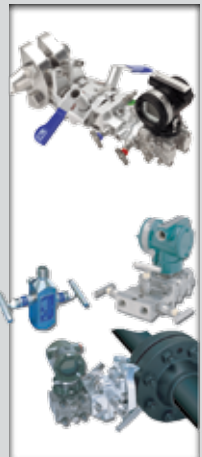
Pressure & Differential Pressure Transmitter DPharp EJA Series

- DPharp digital sensor technology
- 100 to 1 turndown
- Proven track record throughout the world
- Excellent long term stability slashes maintenance costs
- Explosion-protected type available
- Digital communication through HART®, BRAIN, Foundation™ Fieldbus or PROFIBUS PA
- SIL assessment by FMEDA report
- Custody transfer approved



Differential Pressure Transmitter DPharp EJX Series

- Ultra-high performance, 0.04% (optional 0.025%) accuracy
- Multi-sensing (Differential pressure and Static pressure)
- Fast response 90 ms
- Multi-functional indicator (optional)
- Alarm output for measured- and static pressure (optional)
- Digital communication through HART®, BRAIN, Foundation™ Fieldbus
- SIL2 certified by TÜV IT
- Custody transfer approved
- ISA100 wireless models available



Manifold and Direct Mounted Manifold

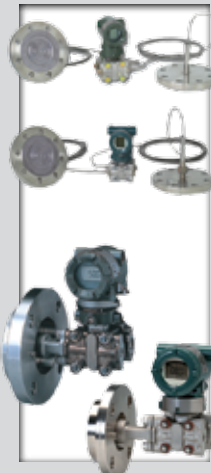
- 3, 5-Valve manifolds for differential pressure and 2-valve in-line manifolds for gauge pressure
- Low profile for the bottom connection available
- Compact design with fewer potential leak points
- Ease of installation and large number of options
- Direct mounted manifolds are connected and supported at the differential pressure taps
- Hook-up for Enclosure solutions, heat tracing

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HART® is a trademark of the HART® Foundation.

FOUNDATION™ Fieldbus is a trademark of Fieldbus-Foundation.

PROFIBUS PA is a trademark of PROFIBUS PA.



Diaphragm Seals for Differential Pressure and Gauge Pressure Transmitter

- 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

Level Transmitter DPharp EJA/EJX Series

- Flange-mounting, compact differential pressure transmitter
- Direct mounting to a tank
- Small flange size model also available

Temperature



Temperature Transmitter YTA110, YTA310, and YTA 320

- A highly accurate temperature transmitter with BRAIN, HART® or FOUNDATION™ Fieldbus
- Sensor type is selectable from 12 Thermocouples, 6 RTDs, ohms, or DC millivolts
- Dual compartment housing for harsh environments
- Dual input bumpless change over
- Integral indicator with both a digital readout and percent bargraph
- SIL2 certified by TÜV NORD
- Custody transfer approved
- ISA100 wireless models available



Temperature Transmitter YTA50, YTA70 & YTA80

- A head mount temperature transmitter with with BRAIN, HART® or FOUNDATION™ Fieldbus
- Dimension conforming to DIN form B standard
- Sensor type is selectable from 12 Thermocouples, 2 RTDs, ohms, or DC millivolts
- Isolated Input/Output signals
- SIL assessment by FMEDA report (YTA70)



Industrial Temperature Assemblies

- Pt100 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
- Complete quality assurance program of NDT's (Diepenetrant inspection, X-ray and Ultrasonic testing)
- Single or duplex sensor configurations available
- YTA series can be installed onto the industrial assembly or within the termination head
- Unique explosive environment approvals allow transmitters installation on-site



Temperature Multi-Input

- 8-channel universal temperature interface for T/C, RTD volts and resistance via FOUNDATION™ Fieldbus
- Universal mounting, approval covers mounting in Zone 1 and Zone 2
- Wide range of mounting options available
- Sensor diagnosis
- Suitable for FISCO and Entity installations

Valve Positioners & Connectors



Valve Positioner YVP110

- High performance FOUNDATION™ 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 ValveNavi utility software greatly facilitates the process of setting up, tuning, and maintaining the YVP110



I/P Converter PK200

- Actuates diaphragm operated valves, air cylinder operated valves, power cylinders
- Uses as signal converter

I/P Valve Positioner VP200

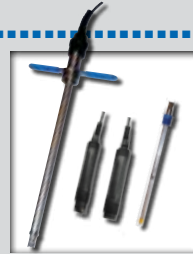
- Convert 4-20 mA dc or 10-50 mA dc to a pneumatic Signal for valve actuation control

Liquid Analyzer



pH/ORP/Conductivity/Inductive Conductivity EXA450 series Transmitter

- Unique HMI(Human Machine Interface) with menu structure and high resolution graphical display with touch screen
- Process data trending up to 2 weeks
- Interactive display with choice out of 6 languages
- 4-wire transmitter



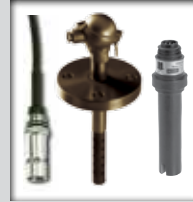
pH/ORP Electrodes and Fittings

- FU20 4-in-1 electrode for pH/ORP/rH and temperature
- SC24V differential pH control sensor with virtual no maintenance
- PR10 retractable fitting, one model for pH, Conductivity, Inductive Conductivity and Dissolved Oxygen
- Wide range of installation options and construction materials



pH/ORP/Conductivity/Inductive module Transmitter Conductivity/ Dissolved Oxygen FLXA21

- 2-wire transmitter
- Menu structure and graphical display with touch screen
- Redundant system configuration is possible with connecting two sensors.
- One or two sensor modules can be installed.
- Digital communication through HART®



Conductivity Sensors and Fittings

- SC4A conductivity sensor for low conductivity and Pharma applications
- SX42 high temperature (up to 250°C) and high pressure (up to 40 bar) conductivity sensor
- SC42 electrode with 2- and 4-electrode design with a wide range of sensors to suit most applications
- Easy mounting, servicing and installation by using a wide range of installation options and materials



pH/ORP/Conductivity/Inductive Conductivity/Dissolved Oxygen EXA202 series Transmitter

- 2-wire transmitter
- HART®, FOUNDATION™ Fieldbus and PROFIBUS PA
- Event logbook in software
- ATEX Intrinsically safe version



Inductive Conductivity Sensors and Fittings

- Inductive Conductivity technique for elimination of fouling and polarization errors.
- Installation flexibility using a wide range of holders and construction materials
- ISC40 PFA sensor for applications in Hydrofluoric Acid, and oxidizing concentrated acids (Nitric acid, Sulfuric acid, Oleum)
- Wide bore sensors for long term stability



pH72 / pH82 Pocket Meters

- "One-touch" auto-calibration
- Long term reliability
- Auto power off function
- Water resistant and durable
- Easy cleaning
- Manual or automatic temperature compensation



Dissolved Oxygen Sensors and Fittings

- Visiferm Optical SMART DO measurement in a PG13,5 12mm design making installation in existing armatures very easy
- DO30G sensor designed for use in water treatments plants with a good long term stability and fast response time
- PB30 floating ball holder ensures minimum user maintenance by constant moving of the ball with the action of the waves
- The Oxyferm and Oxygold ppm and ppb DO sensors ruggedized design guarantees stability even after numerous sterilization cycles

Gas Analyzer



Tunable Diode Laser Spectroscopy Analyzer TruePeak TDLS 200

- In situ analysis
- Interference free
- Rapid measurement (As fast as 2 seconds)
- Process pressure up to 2 MPa
- Process temperature up to 1500 °C
- Optical measurement – 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, high-reliability Zirconia sensor
- LCD touch-screen for ease of operation
- The integrated type integrates both probe and converter, to reduce wiring, piping, and installation costs
- Explosionproof approval
- Remote maintenance using HART® communication



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
- Easy to operate and maintain



OXYGEN ANALYZER Averaging Converter 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

Analyzer Systems



Gas Chromatograph GC1000 MarkII Process Gas Chromatograph

- Broad range of application
- Stability and Reliability
- Highly sensitive TC detector
- Easy operation via Local display or network



Near-Infrared Spectrometer NR800 Fourier Transform Near-Infrared Analyzer

- Designed from the ground up as a rugged process analyser
- True stand-alone configuration (no supervisory PC required)
- Fully Certified for use in ATEX Zone 1 environments
- Up to 4 Fully independent measuring channels & 16 streams
- Easy to use software, and straightforward commissioning & maintenance.
- remote mounting of cells/probes up to 300m via. Fiber optics.



Ethernet Analyzer Bus System Comprehensive and Centrally located remote maintenance of Analyzers

- Maximal 254 analyzers on one network
- Connection to FCS; direct by Modbus TCP, modbus RTU, OPC
- Centralized; analyzer operation, view and maintenance
- Storage of Analyzer results
- Interface Unit; reduce wiring of Third party analyzers to control room

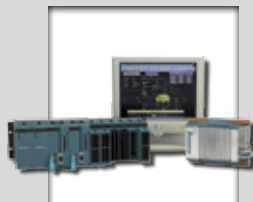


Analyzer Systems

- Providing consultation and innovative solutions for upgrading, modifications or new installation of Analyzer Systems
- Engineering of turnkey systems (incl. third party analyzers)
- Full life-cycle support

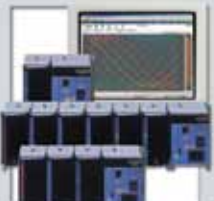
HART® is a registered trademark of the HART Communication Foundation.
FOUNDATION™ Fieldbus is a trademark of Fieldbus Foundation.

Network Control System Stardom



- Dual-redundant-configurable hybrid PLC / Intelligent RTU
- Reliable hardware & low power consumption controller
- Wide support of field networks e.g TCP/IP, FOUNDATION™, Fieldbus, Hart, ModBus and DNP3
- Efficiency Engineering by IEC61131-3 programming languages and libraries
- Seamless integration with FAST/TOOLS Web based SCADA solutions
- Autonomous Functions for monitoring and operation, notification via e-mail & data storage.

Data Acquisition



PC-based Real Time Data Acquisition System MX100

- Acquisition data from up to 1200 channels.300ch/100msec (When using Yokogawa's proprietary software "MXLOGGER")
- High –speed measurement of 24ch/10ms or 60ch/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.

Monitoring Software



MCPS

- Complete software studio for data acquisition and evaluation
- A wide variety of monitoring displays such as trend displays, numerical displays, alarm overviews and custom displays
- Supporting various Yokogawa data acquisition equipment and controllers
- Powerful mathematical functions
- Advanced Reporting
- FDA 21 CFR part 11 compliance

Paperless Recorder



Paperless Videographic Recorder Daqstation DX1000/DX2000

- Up to 12 or 48 Universal input channels
- Connects to DAQMASTER MW100 via Modbus/TCP for up to 240 external channels
- Standard-equipped with an Ethernet port
- Sends a variety of informative e-mail messages
- Compliant with FDA 21 CFR Part 11: login function/audit trail/electronic signature function (/AS1 option)



Control and Measurement Station Daqstation CX1000/CX2000

- All-in-one controller that integrates monitoring and recording functions
- Supports various types of screens for control monitoring
- Up to 2 embedded PID loops (CX1000), up to 6 embedded PID loops (CX2000)
- Powerful program control for each loop
- Applied for a variety of heat treat applications



Paperless Videographic Recorder FX100

- Up to 12 universal input channels
- 5.5" TFT Colour LCD Display with wide viewing angle
- Network functions: E-mail, FTP, web service
- Dust-proof and water-proof front panel (IP65)
- Standard PC software for configuration and historical data viewing

Paper Recorder



Chart Recorder Intelligent Industrial Recorders μR10000/μR20000

- 100 mm high reliable recorder with 1, 2, 3, 4-pen and 6-dot models (μR10000)
- 180 mm high reliable recorder with 1, 2, 3, 4-pen and 6, 12, 18, 24-dot models (μR20000)
- Large, VFD full dot matrix display (μR10000:101 μ 16, μR20000: 181 μ 16)
- Displays a variety of screens for site monitoring

Logic Controller (PLC)



IT Machine Controller FA-M3R

- Ultra-fast Processing Speed
20,000 steps of ladder program scanned per 1ms and minimum scan time of 200μs
- Postcard-size Controller
- Compact 147(W) 100(H) 88(D)mm size handles 192 I/O points
- Universal I/O Range Achievable with One PLC
Controls up to 8,192 points and contain devices of up to 344K words per system

Data Acquisition



Web-enabled Data Acquisition System MW100

- Stand alone type data logger equipment.
- Supports Compact Flash(CF) card for local data storage.
- Continuous data acquisition is possible on 60 channels at 100ms for approximately ten days with a 2-GB card, or for three months on 60 channels at 1s.
- Web server function for remote monitoring.
- Wide operating temperature range: -20 to 60 °C

Power Monitoring Products



Power and Energy Meter Powercert PR300

- Easy-to-read large triple display
- Multifunctional power measurement with up to 21 parameters
- The demand alarm and network access make your power monitoring even more efficient
- Ethernet capability offers a highly scalable system
- Universal wiring and universal panel cut-out

Controller & Conditioner



Single-loop Process Controller YS1000 Series

- Uses a full dot matrix color LCD display
- Designed with a lightweight, compact case
- Graphical programming tool 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

- Advanced Control
PID Control — 8 built-in Control Functions / Algorithms
Ladder Sequence Control
- Simplicity
Bright & Easy to read Active Color LCD Display
Multiple language support
- Networking
Ethernet (Modbus / TCP), RS485
- Reliability
IP56, 3 year warranty



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



Chart Recorder SR10000

- Compact and reliable 100mm chart recorder
- Up to 4-pen and 6-dot models
- Configurable inputs
- Large digital display
- Supports Ethernet and RS422/485 comm. interface

vigilantplant.[®]

The clear path to operational excellence

SEE
CLEARLY

KNOW
IN ADVANCE

ACT
WITH AGILITY

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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