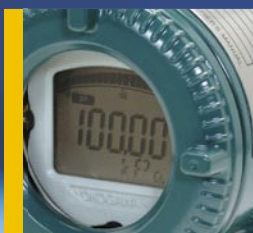


vigilantplant.®

Volume #1

Digital Sensing and Control with Broadband Plant Network



Bulletin 00A01A21-21E



SEE CLEARLY



KNOW IN ADVANCE



ACT WITH AGILITY

vigilantplant.®

The clear path to operational excellence

Envision a plant where people are watchful and attentive while your business responds to change quickly and efficiently. Now picture an operation that delivers non-stop production while confidently expanding your capabilities into the future. Imagine no further. This is the promise behind VigilantPlant, the new concept from Yokogawa.

Industry leaders striving for operational excellence will benefit from a new vigilant approach to plant automation. 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.

So what makes the vigilant approach essential to a leading edge plant? With the emerging capabilities of plant-wide digital networks, the future is nearer than you may think. VigilantPlant brings you to the forefront of the digital revolution, opening up rich new possibilities for a more integrated plant operation. Yokogawa helps you SEE, KNOW and ACT with greater confidence and ease while providing the tools and services to bring it all together. Choose Yokogawa as your partner for operational excellence.

Let us be vigilant about your business!



Digital plant network is here. Are you ready?

Volume #1:

“Digital Sensing and Control
with Broadband Plant Network”

**SEE
CLEARLY**

“Install and forget” digital field instruments deliver stable and accurate process measurement with low installed cost and near zero maintenance. Web enabled technology allows these intelligent devices to continuously upgrade their capabilities online while keeping you informed of the plant floor conditions with dynamic predictive intelligence.

More on pages 5-6

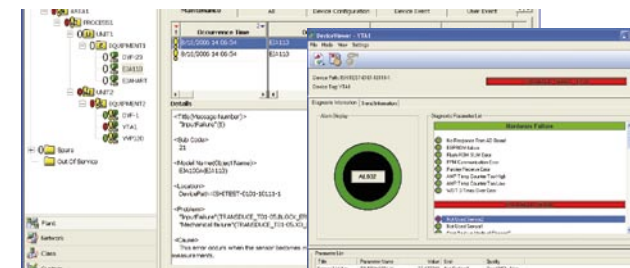
> **DPharp EJX series**
Digital pressure transmitters



**KNOW
IN ADVANCE**

“Watchful on your behalf” asset management software that leverages digital field information and keeps your production system in its best condition, integrating device information and device diagnostic applications across different protocols and multiple suppliers.

More on pages 7-8



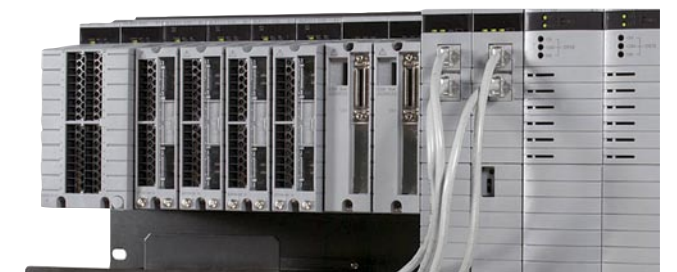
> **PRM**
Integrated plant
resource manager

**ACT
WITH AGILITY**

“Uptime only” broadband control system that can handle the wealth of bilateral digital field information with no performance bottlenecks, allowing smooth transition from a single node system to a one-million-tag super large system with field-proven scalable design.

More on pages 9-10

> **CENTUM VP**
Integrated production
control system



“ We know Yokogawa's products are reliable and robust as proven on the first phase of the project and I am sure that Yokogawa, as a strategic business partner, can meet our expectation for the second phase as well. ”
 Henk Niezen, Manager GLT and Land Projects Europe, NAM
 (Nederlandse Aardolie Maatschappij B.V.)

> Digital multi-sensing

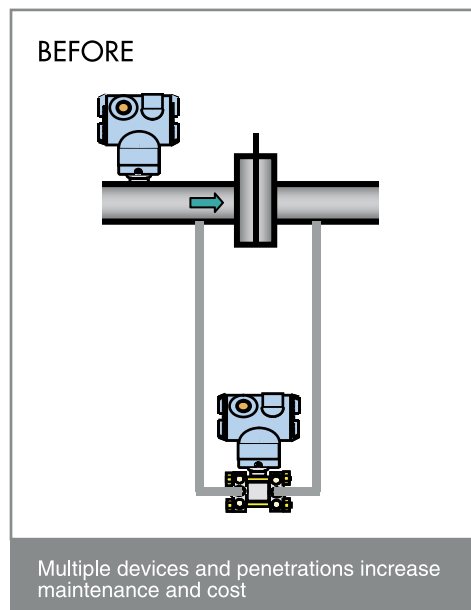
Streamline flow measurement by removing redundant equipment

A Typical Challenge...

The traditional method tends to require multiple transmitters for versatile flow measurements

Traditional flow measurement with DP Transmitter

- Requires an additional pressure transmitter to measure static pressure (SP)

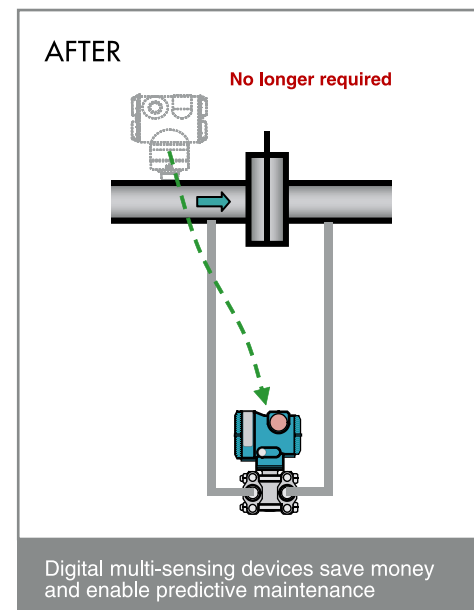


...and a Vigilant Solution

Digital multi-sensing simplifies flow measurement and reduces both capital and operational expenses

EJX Multi-Sensing Digital Transmitter

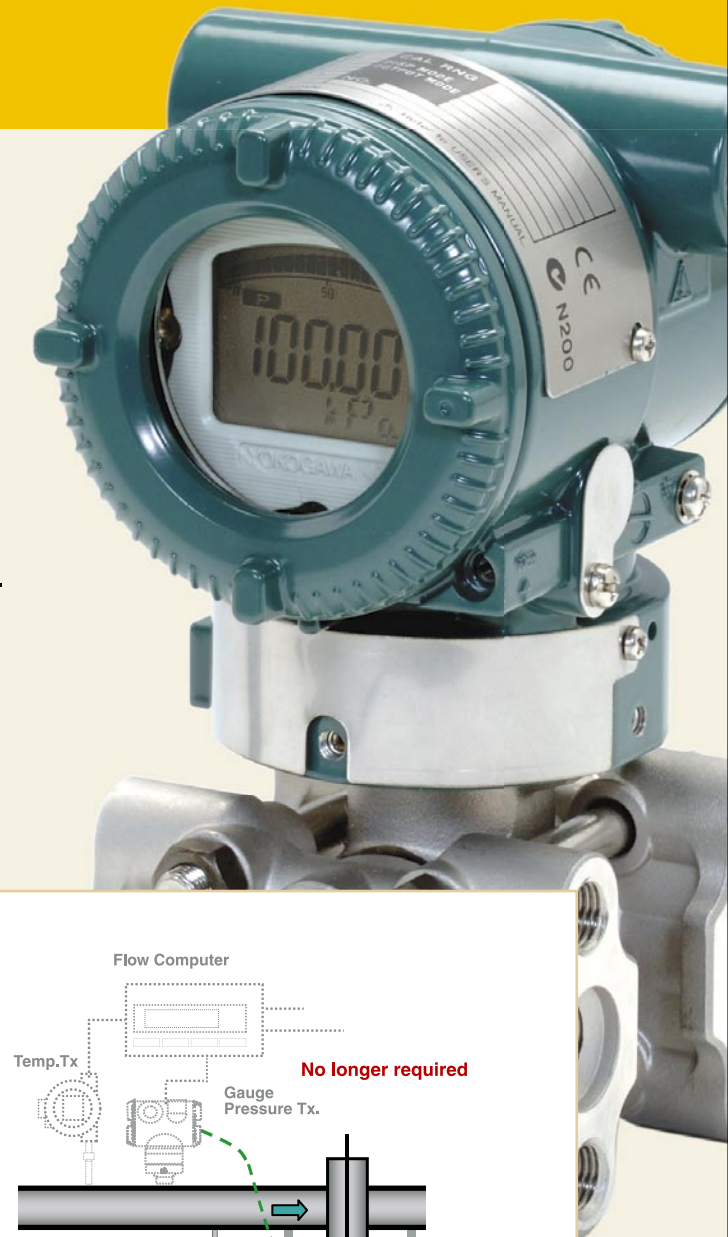
- **Multi-sensing:** One standard transmitter measures both static pressure (SP) and differential pressure (DP)



SEE CLEARLY

The SEE CLEARLY Advantage

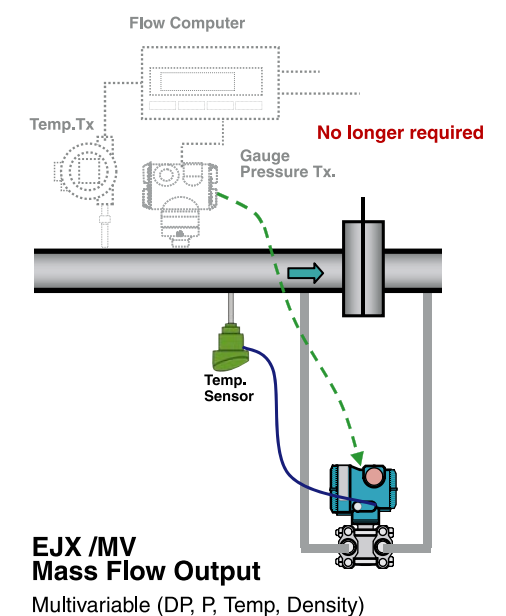
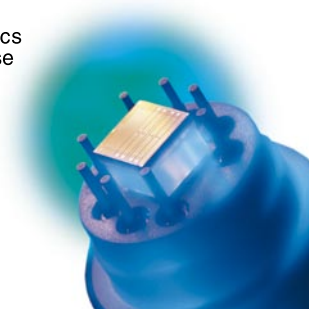
Digital multi-sensing enables you to see more accurate and richer field information with low installed cost and near zero maintenance. Advanced device diagnostics powers predictive maintenance while online software upgrade ensures non-stop evolution of your sensing capabilities.



Key Technologies:

DPharp silicon resonant sensor

- Digital integrity with no A/D conversion
- Stable measurement under all operating conditions
- Dual pressure output (P and DP) with a single sensor
- Temperature input and integrated flow calculations for measurement
- Advanced diagnostics (device health, impulse line clogging, steam trace)
- Online software upgrade



> Integrated device management

Predictive maintenance brings non-stop plant production

An Uphill Battle...

The conventional method tends to require frequent site checks and periodic shut-down maintenance

Conventional device management

- Requires frequent site checks and periodic shutdown maintenance to prevent device-failure-induced downtime
- Even the so-called smart devices typically require separate device databases for HART and FOUNDATION fieldbus



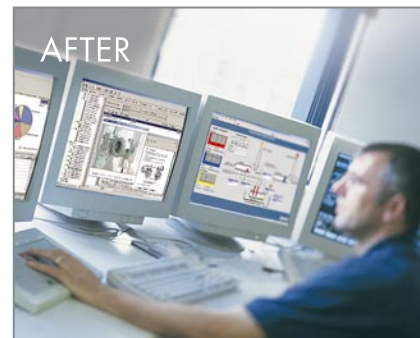
BEFORE
Repetitious maintenance and unwanted downtime occur

...and a Helping Hand

Integrated device management enables predictive maintenance and helps maximize plant uptime

PRM Integrated Plant Resource Manager

- **Integrated:** HART and FOUNDATION fieldbus devices managed in a single unified database
- **Open:** Diagnostics "plug-in" software cassettes integrate 3rd party diagnostic solutions, e.g. valve diagnostics for Masoneilan, Fisher, and Metso valves



AFTER
Predictive maintenance increases plant uptime

KNOW IN ADVANCE

The KNOW IN ADVANCE Advantage

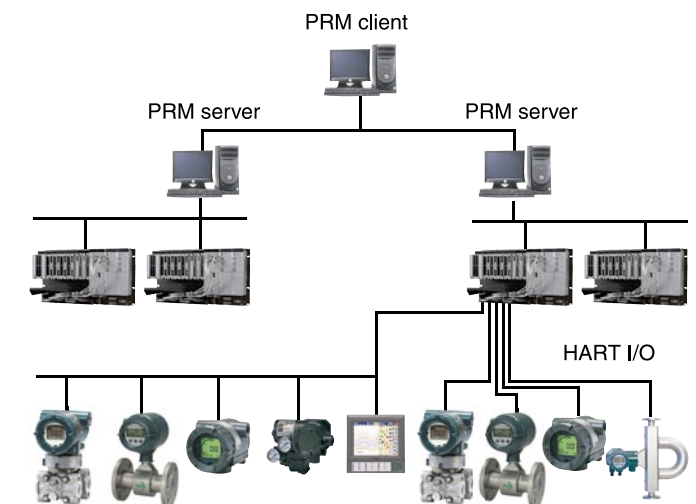
Integrated plant resource manager makes predictive maintenance a reality, freeing you up from the more costly preventive maintenance. A single-database open connectivity ensures unified device management across different digital fieldbus protocols and multiple device suppliers.



Key Technologies:

Multi-server and unified architecture

- Unified database for HART and FOUNDATION fieldbus
- PRM client can access multiple server database
- Robust scalability up to large-scale plant



> Broadband production control

Making performance bottlenecks a thing of the past

A Stumbling Block...

The typical hybrid system tends to develop performance bottlenecks as you scale up your operations

Typical hybrid system

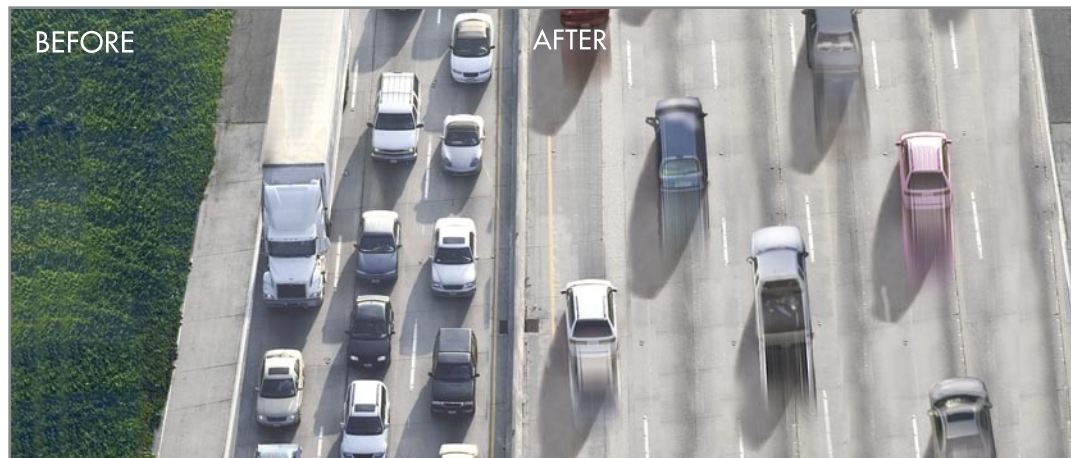
- As scale increases and operational complexity grows, demand on cross-component communications often turns into performance bottlenecks
- Keeping pace with growth requires the purchase of excessive number of small controllers and repeated software licenses

...and a Happy Resolution

Broadband production control architecture ensures bottleneck-free performance and super scalability

CENTUM VP Integrated Production Control System

- **Broadband:** Vnet and Vnet/IP secure broadband control network
- **Scalable:** Single architecture field-proven performance from one node to one million tags
- **Non-stop:** 99.9999% availability "pair & spare" controller



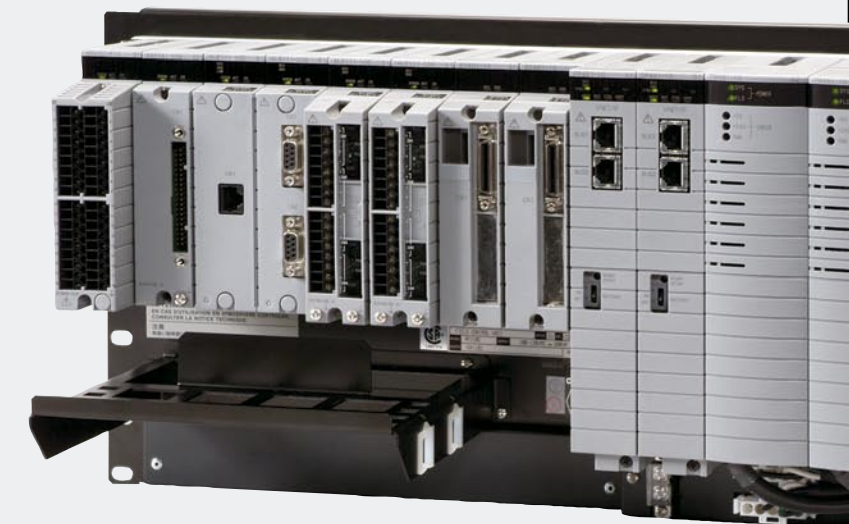
Hybrid systems troubled by bottlenecks prevent the full use of rich field information

Broadband systems ready to leverage digital field information easily scale as business grows

ACT WITH AGILITY

The ACT WITH AGILITY Advantage

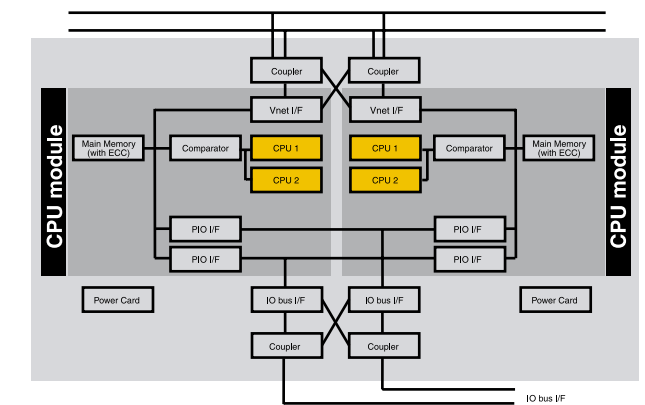
Broadband connection from the digital sensors through the control network secures high-speed bi-directional communications, making your plant ready to tap the unprecedented wealth of digital field information. Secure and open architecture connects the plant floor with the control room, the maintenance shop and the plant management, making fast intelligent decisions possible. As business success leads to plant growth, system expansion is painless and disruption-free with the super-scalable single-architecture.



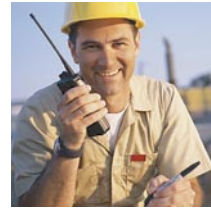
Key Technologies:

Pair & Spare fail-safe architecture

- Patented quadruple modular redundancy design
- Real-time validation eliminates transient errors that corrupt results, enabling safer and more reliable process control in modern plants.



VigilantPlant = *The clear path to operational excellence*



Revamp and Expansion

Online Expansion,
Hot Cutover



Maintenance and Upgrade

Asset Optimization,
Online Upgrade,
Lifecycle Solution Support

Plant-wide integration

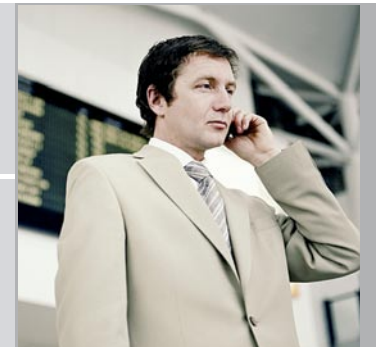
ERP
Optimize

Production Management

Plant Information Management,
Advanced Process Control

Asset Management and Operational Efficiency

Plant Resource Management,
Operational Efficiency Improvement



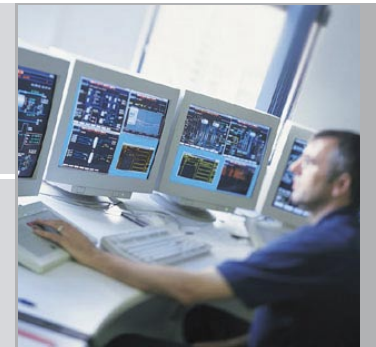
Control

Production Control and Safety Management

Production Control, Safety Management,
SCADA and Network-based Control

Data Acquisition and Logic Control

Recorders, Data Acquisition, IT Machine
Control, Single Loop Control



Measure

Analysis and Quality Control

Process Gas, Process Liquid, Stack Gas,
City Water, Waste Water Analysis

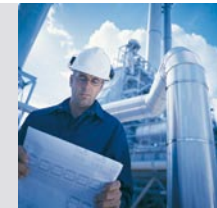
Sensing and Actuation

Pressure, Temperature, Flow, Level Measurement,
Final Control Elements,
Primary Elements and Auxiliaries



Design and Engineering

Front-End Engineering & Design (FEED), Main Instrumentation Vendor (MIV) Services



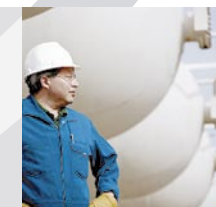
Installation and Commissioning

Site Engineering, Integration Tests, Turn-Key Services



Operation and Optimization

Optimization Consulting,
24/7 Operation Support,
Online Diagnosis Support



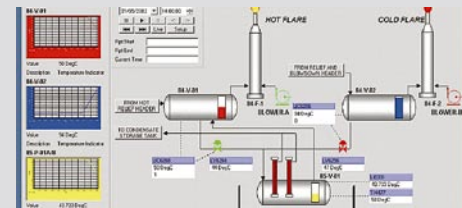
Life-cycle optimization

Enablers of operational excellence

Optimize

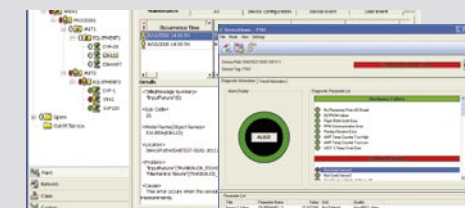
Production Management

- Plant Information Management
- Advanced Process Control



Asset Management and Operational Efficiency

- Integrated Plant Resource Management
- Operational Efficiency Improvement
- Advanced Alarm Administration



Control

Production Control and Safety Management

- Integrated Production Control
- Integrated Safety Management
- SCADA and Network-based Control



Data Acquisition and Logic Control

- Data Monitoring and Recording
- PC-based Data Acquisition
- IT Machine Control
- Single Loop Control



Measure

Analysis and Quality Control

- Process Gas Analysis
- Process Liquid Analysis
- Stack Gas Analysis
- City Water Analysis
- Waste Water Analysis



Sensing and Actuation

- Pressure Measurement
- Temperature Measurement
- Flow Measurement
- Level Measurement
- Final Control Elements
- Primary Elements and Auxiliaries



“The clear path to operational excellence”

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.

YOKOGAWA ELECTRIC CORPORATION

World Headquarters

9-32, Nakacho 2-chome, Musashino-shi, Tokyo 180-8750, Japan
<http://www.yokogawa.com/>

YOKOGAWA CORPORATION OF AMERICA

2 Dart Road, Newnan, Georgia 30265, USA
<http://www.yokogawa.com/us/>

YOKOGAWA EUROPE B.V.

Euroweg 2, 3825 HD Amersfoort, The Netherlands
<http://www.yokogawa.com/eu/>

YOKOGAWA ENGINEERING ASIA PTE. LTD.

5 Bedok South Road, Singapore 469270, Singapore
<http://www.yokogawa.com/sg/>

YOKOGAWA CHINA CO., LTD.

3F TowerD Cartelo Crocodile Building
No.568 West Tianshan Road, Shanghai 200335, China
<http://www.yokogawa.com/cn/>

YOKOGAWA MIDDLE EAST B.S.C.(c)

P.O. Box 10070, Manama
Building 577, Road 2516, Busaiteen 225, Muharraq, Bahrain
<http://www.yokogawa.com/bh/>

Represented by:

Trademarks

CENTUM, ProSafe and VigilantPlant are registered trademarks of Yokogawa Electric Corporation. **DPharp, Exaquantum, STARDOM and YEWFLO** are trademarks of Yokogawa Electric Corporation. “FOUNDATION” of “FOUNDATION fieldbus” is a registered trademark of Fieldbus Foundation.

Windows is a registered trademark of Microsoft. **Ethernet** is a registered trademark of XEROX Corporation.

Other company and product names in this bulletin are trademarks or registered trademarks of the respective companies.