

MEASURE  
CONTROL  
INFORMATION

YOKOGAWA MIDDLE EAST

Training  
Courses

2009/2010



## Yokogawa Corporate Vision

"To be a socially responsible and profitable regional center of excellence, achieving customer satisfaction by adding value through quality products and services and continuous improvement."

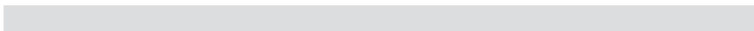
## Mission Statement of the Yokogawa Middle East Training Centers

To provide customers with the required skills and knowledge for their significant enhancement of on-the-job productivity, through effective usage of Industrial Automation & Control Technology.



## Contents

Introduction	6
Training Center Policies and Guidelines	7
<b>CENTUM VP</b>	
Fundamentals For Operation	8
Fundamentals For Engineering	8
Engineering	9
Maintenance	9
<b>CENTUM CS3000</b>	
Fundamentals For Operation	10
Fundamentals For Engineering	10
Engineering	11
Maintenance	11
<b>FIELDBUS</b>	
Fieldbus Orientation	12
Fieldbus Engineering	12
Plant Resource Manager	13
<b>ProSafe-RS</b>	
ProSafe-RS Engineering	14
ProSafe-RS Maintenance	14
ProSafe-RS Engineering and Maintenance	15
<b>STARDOM</b>	
STARDOM - Engineering	16
STARDOM - Maintenance	16
Fast / Tools Engineering	17
<b>PROCESS INFORMATION MANAGEMENT SYSTEM</b>	
Exaquantum Desktop Data Access	18
Exaquantum System Administrator	18



## Contents

### ADVANCED TOPICS

Introduction to Asset Guard with Exapilot	19
---	----

### GAS CHROMATOGRAPH

Gas Chromatograph GC1000 Mark-II	19
----------------------------------	----

### OPTIONAL COURSES

#### CENTUM CS

Fundamentals For Operation	20
Fundamentals For Engineering	20
Engineering	21
Maintenance	21

#### ProSafe-PLC 4

ProSafe-PLC Set (4-Mation)	22
ProSafe-PLC Maintenance	22
ProSafe-Mulcom Course	23

### PROCESS INFORMATION MANAGEMENT SYSTEM

Exaquantum Installation & Commissioning	24
Exaquantum Application Developer	24
Exaquantum Version Upgrade	25
Exaquantum Technical Overview Seminar	25
Exaquantum Data Access from Third Party Package	26
Exaquantum Explorer Overview	26
Exaquantum Web Development	27

### ADVANCED TOPICS

PID & Base Layer Control Improvement	28
Introduction to Advanced Process Control Techniques	28
Multivariable Control Techniques	28
Introduction to Advanced Alarm Management	28

### REPRESENTATIVES



## Introduction

Yokogawa Middle East (YME) Bahrain established its training center in 1993. YME training center is designed to meet the customer's demand for a cost effective training program, that enhances the skills and know-how of the participants. This is achieved through instructors with rich and extensive experience. YME offers a complete range of training courses on Yokogawa Distributed Control Systems, Industrial Safety Systems, Field Instrumentation and Management Information Systems.

Since its inception, our training center has promoted an active learning environment in the field of Instrumentation and Process Control. To date, we have trained more than 7000 participants from the Middle East territory. YME continuously strives to improve the existing training courses and develop new courses to meet customers training needs.

In order for us to strengthen our commitment to our valued customers, we also set-up training centers in the Kingdom of Saudi Arabia, Sultanate of Oman, United Arab Emirates and Iran. This expansion allows us further to be flexible to the needs of our customers in these regions.

## Training Center Policies and Guidelines

### Registration

You may register for a course by filling up the Registration Form and sending it to YME or any YME representative offices in the region.

YME shall acknowledge the registration based on the availability. This acknowledgement shall be directly or through YME representatives.

### Pricing

You may contact either YME or any YME representative within the Region for the Course Fees. Course Fees include tuition and one set of approved textbooks. The Training Center reserves the right to change all pricing without notice, but confirmed reservations will be honored at the price quoted and ordered at the time of confirmation.

### Additional Charges

When customized training classes are requested, additional expenses for course development may be applied.

Pricing for on-site courses will include expenses related to shipment of equipment (if required) and instructor travel and lodging expenses plus travel fee.

### No. of Trainees

A minimum number of trainees is required for each type of course being conducted at Yokogawa Middle East Training Center to conduct a course. The Training Center reserves the right to cancel courses at least two weeks prior to the scheduled start date. In case of cancellation, any advance payment received from customer will be refunded and our liability is limited to the value of the course fee.

### Payment

Please complete the required enrollment form and choose your method of payment. We accept pre-payment or Purchase Orders. Purchase orders are to be placed 3 weeks before the training at the latest, and the payment to be made prior to the commencement of the training.

### Cancellations

There will be no charge for cancellations received 3 or more weeks before the scheduled start date of the class. No shows or cancellations received less than 2 weeks before the scheduled start date for the training will be charged at 50% of the full course fee.

### Travel Arrangements

Trainees are responsible for making their own travel and living arrangements, and YME will be glad to assist the customer in such arrangements. Visas to Bahrain, Saudi Arabia and United Arab Emirates can be arranged through YME and its representatives. All cost for the same will be on customer's expense.

### Course Timing

All our courses are designed to begin at 8:30 a.m. and finish at approximately 3:30 p.m. unless indicated otherwise on YME confirmation letter to the customer. Please plan to arrive at Yokogawa training center no later than 8:15 a.m. When traveling from outside the area, please make appropriate travel arrangements that will allow you to attend the entire class.

### Attire

Casual business attire is preferred. It is our intent to conduct courses in a relaxed, informal atmosphere.

### Language

All courses are conducted in English. Arabic might be used, if required.

### Smoking Policy

Yokogawa is a non-smoking facility.

## CENTUM VP Fundamentals For Operation

### Objective

This course is designed to give participants the fundamental knowledge of operation and functions of the CENTUM VP system.

### Duration

Five (5) days

### Participants

Mainly CENTUM VP operators and plant operation personnel who are required to operate the CENTUM VP system.

### Prerequisite

Participants should preferably have some basic knowledge on process measurement and control.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** CENTUM VP system overview and configuration, description of hardware.

**Day 2** Window Panel Operation Part 1

- User security
- Basic tag features & security
- Standard operation panel

**Day 3** Regulatory Control Functions.  
Sequence Control Function.

**Day 4** Window Panel Operation Part 2

- System Status Display
- Process / Historical Report

**Day 5** Laboratory Work for Operators

#### Afternoon 13:30 to 15:30

Laboratory Work:  
Familiarization on CENTUM VP different components

Laboratory Work:  
Operation exercise on operation panels part 1

Laboratory Work:  
Operation exercise on feedback and sequence control operations.

Laboratory Work:  
Operation exercise on operation panels part 2.

Laboratory Work for Operators.

## CENTUM VP Fundamentals For Engineering

### Objective

This course is designed to give participants the fundamental knowledge of operation and functions of the CENTUM VP system.

### Duration

Three (3) days

### Participants

Plant operation specialists, Engineers and Maintenance personnel who are required to operate the CENTUM VP system.

### Prerequisite

Participants should preferably have some basic knowledge on process measurement and control.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** CENTUM VP system overview and description of hardware

Window Panel Operation Part1

- User security
- Basic tag features & security
- Standard operation panel

**Day 2** Regulatory Control Functions  
Sequential Control Function

**Day 3** Window Panel Operation Part 2

- System status display
- Process / Historical Report

#### Afternoon 13:30 to 15:30

Laboratory Work:  
Operation exercise on operation panels part 1

Laboratory Work:  
Operation exercise on feedback and Sequence control operations.

Laboratory Work:  
Operation exercise on operation panels part 2

Training Module Code : VPEG

Training Module Code : VPMT

## CENTUM VP Engineering

### Objective

This course empowers participants to perform generation of CENTUM VP regulatory control functions, sequence control function, and Human Interface Station (HIS).

### Duration

Five (5) days

### Participants

Engineers and Technicians involved in software generation or modification on CENTUM VP system.

### Prerequisite

Participants should have attended the CENTUM VP Fundamental course.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** CENTUM VP system specifications, project creation, attribute utilities and project common definition.

**Day 2** FCS configuration, I/O module configuration, software switches configuration, message definition Control Drawing builder, regulatory control function definition.

**Day 3** Test function Sequence control definition.

**Day 4** HIS configuration Windows configuration.

**Day 5** Graphics builder

#### Afternoon 13:30 to 15:30

Laboratory Work  
Project creation and project common definition.

Laboratory Work  
FCS configuration, I/O module definition, and regulatory control generation.

Laboratory Work  
Sequence exercises.

Laboratory Work  
HIS builder definition

Laboratory Work  
Graphics generations

## CENTUM VP Maintenance

### Objective

This course is designed to provide participants with an overall understanding of CENTUM VP hardware, maintenance procedure, software installation, backup procedures and maintenance tools.

### Duration

Three (3) days

### Participants

Engineers and Technicians who are responsible for daily maintenance of CENTUM VP system

### Prerequisite

Participants should preferably be familiar with the CENTUM VP Fundamentals or Engineering.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** CENTUM VP system configuration, HIS hardware & software, daily checking of HIS hardware & software and system maintenance function.

**Day 2** FCS hardware configuration.  
Daily checking on FCS.

**Day 3** Troubleshooting

#### Afternoon 13:30 to 15:30

Laboratory Work:  
HIS Components check-up.  
Replacement of HIS components.

Laboratory Work:  
FCS Component Check-up  
Replacement of FCS Components.

Laboratory Work

## CS3000 Fundamentals For Operation

### Objective

This course is designed to give participants the fundamental knowledge of operation and functions of the CENTUM CS3000 system.

### Duration

Five (5) days

### Participants

Mainly CENTUM CS3000 operators and plant operation personnel who are required to operate the CENTUM CS3000 system

### Prerequisite

Participants should preferably have some basic knowledge on process measurements and control.

### Minimum Class Size

4 trainees

### Maximum Class Size

6 trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** CENTUM CS3000 system overview and configuration, description of hardware.

**Day 2** Window Panel Operation Part 1

- User security.
- Basic tag features & security.
- Standard operation panel.

**Day 3** Regulatory Control Function. Sequence Control Function.

**Day 4** Window Panel Operation Part 2

- System Status Display.
- Process / Historical Reports.

**Day 5** Laboratory Work for Operators.

#### Afternoon 13:30 to 15:30

Laboratory Work: Familiarization on CENTUM CS3000 different components.

Laboratory Work: Operation Exercise on operation panels part 1.

Laboratory Work: Operation Exercise on feedback and sequence control operations.

Operation exercise on operation panels part 2.

Laboratory Work for Operators

## CS3000 Fundamentals For Engineering

### Objective

This course is designed to give participants the fundamental knowledge of operation and functions of the CENTUM CS3000 system.

### Duration

Three (3) days

### Participants

Plant operation specialists, Engineers and Maintenance personnel who are required to operate the CENTUM CS3000 system.

### Prerequisite

Participants should preferably have some basic knowledge on process measurements and control.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** CENTUM CS3000 system overview and description of hardware. Window Panel Operation Part 1

- User security.
- Basic tag features & security.
- Standard operation panel.

**Day 2** Regulatory sequence Control functions.

**Day 3** Window Panel Operation Part 2

- System Status Display.
- Process / Historical Reports.

#### Afternoon 13:30 to 15:30

Laboratory Work: Operation exercise on operation panels part 1.

Laboratory Work: Operation exercise on feedback and sequence control operations.

Laboratory Work: Operation exercise on operation panels part 2.

## CS3000 Engineering

### Objective

This course empowers participants to perform generation of CENTUM CS3000 regulatory control functions, sequence control function, and Human Interface Station (HIS).

### Duration

Five (5) days

### Participants

Engineers and Technicians involved in software generation or modification on CENTUM CS3000 system.

### Prerequisite

Participants should have attended the CENTUM CS3000 Fundamental course.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** CENTUM CS3000 system specifications, project creation, attribute utilities and project common definition.

**Day 2** FCS configuration, I/O module configuration, software switches configuration, message definition, Control Drawing builder and regulatory control function definition.

**Day 3** Test function. Sequence control definition.

**Day 4** HIS configuration. Windows configuration.

**Day 5** Graphic Builder.

#### Afternoon 13:30 to 15:30

Laboratory Work: Project creation and project common definition.

Laboratory Work: FCS configuration, I/O module definition and regulatory control generation

Laboratory Work: Sequence exercise.

Laboratory Work: HIS builder definition.

Laboratory Work Graphic generations.

## CS3000 Maintenance

### Objective

This course is designed to provide participants with an overall understanding of CENTUM CS3000 hardware, maintenance procedure, software installation, backup procedures and maintenance tools.

### Duration

Three (3) days

### Participants

Engineers and Technicians who are responsible for daily maintenance of CENTUM CS3000 system.

### Prerequisite

Participants should preferably be familiar with the CENTUM CS3000 Fundamentals or Engineering.

### Minimum Class Size

4 trainees.

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** CENTUM CS3000 system configuration, HIS hardware & software, daily checking of HIS hardware & software and system maintenance function.

**Day 2** FCS hardware configuration. Daily checking on FCS.

**Day 3** Troubleshooting.

#### Afternoon 13:30 to 15:30

Laboratory Work: HIS components check-up. Replacement of HIS components.

Laboratory Work: FCS component check-up. Replacement of FCS components

Laboratory Work

Training Module Code : FBOR

Training Module Code : FBEG

## Fieldbus Orientation

### Objective

This course is designed to provide participants with an overall understanding of Fieldbus concept, software installation and Fieldbus Engineering tools.

### Duration

Two (2) days

### Participants

Engineers and Technicians who are responsible for Fieldbus Engineering configuration and modification of Fieldbus device parameters.

### Prerequisite

Participants should preferably be familiar with the CENTUM VP or CS3000 Fundamentals and Engineering.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** Overview Fieldbus concepts, Fieldbus Tool installation and overview of Fieldbus Engineering Tool

**Day 2** Overview of device Management tool.

#### Afternoon 13:30 to 15:30

Laboratory Work:  
Fieldbus configuration for some devices.

Laboratory Work:  
Using device Management tool - Examples.

## Fieldbus Engineering

### Objective

This course is designed to provide participants with an overall understanding of Fieldbus concepts, software installation and Fieldbus Engineering Tool.

### Duration

Five (5) days

### Participants

Engineers and Technicians who are responsible for Fieldbus Engineering configuration and modification of Fieldbus device parameters.

### Prerequisite

Participants should preferably be familiar with the CENTUM VP or CS3000 Fundamentals and Engineering and Field instruments knowledge.

Note: This course can be customized for STARDOM user. Please call for details.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** Overview Fieldbus concepts, Fieldbus system hardware and Fieldbus communication.

**Day 2** Segment design considerations Fieldbus devices.

**Day 3** Fieldbus Engineering concepts. CENTUM Fieldbus block engineering.

**Day 4** Fieldbus device management tool, NI Tool and Yokogawa Device Management Tool.

**Day 5** Fieldbus Startup procedures. Fieldbus device replacement procedure.

#### Afternoon 13:30 to 15:30

Fieldbus function blocks Device Management. Fieldbus wiring.

Fieldbus devices – Continued.

Laboratory Work:  
Fieldbus devices engineering.

Laboratory Work:  
Fieldbus tools.

Laboratory Work:  
Fieldbus device replacement procedures

Training Module Code : PRMF

## Plant Resource Manager

### Objective

This course is designed to provide participants with an overall understanding of the concepts of Plant Resource Manager.

### Duration

Two (2) days

### Participants

Engineers and Technicians who are responsible for field device maintenance and modification of field device parameters.

### Prerequisite

Participants should preferably be familiar with any of CENTUM VP, CS3000, STARDOM or ProSafe-RS and Foundation Fieldbus concepts.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

---

#### Morning 08:30 to 12:30

**Day 1** Overview Plant Resource Manager.  
PRM System configuration.  
PRM Function specification.

**Day 2** PRM Installation procedure.

#### Afternoon 13:30 to 15:30

PRM operation procedure.  
Laboratory exercise –  
Device parameters changes from PRM.

Laboratory exercise -  
PRM Installation.

---

Training Module Code : RSEG

Training Module Code : RSMT

## ProSafe - RS Engineering

### Objective

This course empowers participants to perform generation of ProSafe-RS programs, functional block diagrams, ladder logic and CENTUM VP or CS3000 integration

### Duration

Four (4) days

### Participants

Engineers and Technicians involved in design, software generation or modifications of ProSafe-RS system.

### Prerequisite

Participants should preferably be familiar with MS Windows environment and basic knowledge of logic functions. CENTUM VP or CS3000 Fundamentals or Engineering knowledge is advantage.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** Introduction to Safety and Safety Integrity Levels "SIL".  
ProSafe-RS hardware.

**Day 2** Project creation, design function blocks, Simulation and debug.  
Project Downloading.

**Day 3** Instances and typical. User-defined function blocks

**Day 4** ProSafe-RS and CENTUM VP or CS3000 integration.  
Inter-SCS communication.

#### Afternoon 13:30 to 15:30

Laboratory Work:  
SCS Manager (Workbench) software.

Laboratory Work:  
Creation of application logic.  
Application development.

Laboratory Work:  
Creation of function blocks.

Laboratory Work:  
Exercise ESD and DCS integration.

## ProSafe-RS Maintenance

### Objective

This course is designed to provide participants with an overall understanding of ProSafe-RS hardware, maintenance procedures, software installation, backup procedures and Maintenance Support Tools.

### Duration

Three (3) days.

### Participants

Engineers and Technicians who are responsible for the daily maintenance of ProSafe-RS system.

### Prerequisite

Participants should preferably be familiar with MS Windows environment.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** Introduction to Safety and Safety Integrity Levels "SIL".  
ProSAFE-RS hardware.

**Day 2** SCS Maintenance Support Tools

**Day 3** Version Control Tool procedures.  
Database Validity Check Tool.  
Sequence Of Events Recorder.

#### Afternoon 13:30 to 15:30

SCS-FCS integration

Laboratory Work:  
CPU module replacement.  
I/O module replacement.

Laboratory Work:  
Security and Password Protection.  
SCS Reports

Training Module Code : RSEM

## ProSafe-RS Engineering and Maintenance

### Objective

This course empowers participants to perform generation of ProSafe-RS programs, hardware and software maintenance and CENTUM VP or CS3000 integration.

### Duration

Five (5) days.

### Participants

Engineers and Technicians involved in software generation or modification and daily maintenance of ProSafe-RS.

### Prerequisite

Participants should preferably be familiar with MS Windows environment and basic knowledge of logic functions. CENTUM VP or CS3000 Fundamentals or Engineering knowledge is advantage.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** Introduction to Safety and Safety Integrity Levels "SIL".  
ProSafe-RS hardware.

**Day 2** Project creation, design function blocks, Simulation and debug.  
Project Downloading.

**Day 3** Instances and typical. User-defined function blocks.

**Day 4** ProSafe-RS and CENTUM VP or CS3000 integration. Inter-SCS communication.

**Day 5** Version Control Tool procedures.  
Database Validity Check Tool.  
Sequence of Events Recorder.

#### Afternoon 13:30 to 15:30

SCS Manager (Workbench) software.

Laboratory Work:  
Creation of application logic.  
Application development.

Laboratory Work:  
Creation of function blocks

Laboratory Work:  
CPU module replacement.  
I/O module replacement.

Laboratory Work:  
Security and Password Protection.  
SCS Reports.

Training Module Code : STEG

Training Module Code : STMT

## STARDOM Engineering

### Objective

This course empowers participants to perform system configuration of STARDOM and use of programming tools and YOKOGAWA function blocks available in the STARDOM controller.

### Duration

Four (4) days

### Participants

Engineers or Technicians involved in design, software generation or modifications of STARDOM system.

### Prerequisite

Participants should preferably be familiar with MS Windows environment and some basic knowledge on process measurements and control.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** Introduction to STARDOM system configuration.  
Hardware configuration and Licenses.  
FCX introduction.  
FCX configuration.  
Resource Configurator

**Day 2** I/O Configuration.  
Logic Designer overview.  
Program organization.  
Project creation.  
Generation of control application.

**Day 3** Data and variables.  
Introduction to IEC 61131 programming.  
Structured text. FBD.  
Ladder Diagrams.  
PAS POU function blocks.

**Day 4** Debug tools  
STARDOM maintenance using web browser.  
Upgrading firmware.

#### Afternoon 13:30 to 15:30

Laboratory Work:  
Creating a Project.  
Using the Recourse Configurator

Laboratory Work:  
Creating a project in Logic Designer.  
Downloading the logic in STARDOM controller.

Laboratory Work:  
Creating an IEC 61131 program. PAS POU.  
Function blocks details.  
Inter-FCX communication

Laboratory Work:  
Changing STARDOM controller IP address.  
Using debug tools.  
function blocks

## STARDOM Maintenance

### Objective

This course enables participants to learn to use the Maintenance browser page, use maintenance tools and perform backup, revision upgrade and step to perform before a battery change operation.

### Duration

One (1) day.

### Participants

Engineers or Technicians involved in routine maintenance of the STARDOM system

### Prerequisite

Participants must be familiar with the STARDOM system.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** Basic of Maintenance page.  
Change System date/ time.  
Change communication parameters.  
Retain data save.  
Maintenance tools.

#### Afternoon 13:30 to 15:30

Laboratory Work:  
Backup tools.  
Restoration tools.  
Firm ware revision upgrade.  
Battery change operation.

## FAST/TOOLS Engineering

### Objective

This course empowers participants to be able to recognise the different functions within a FAST/TOOLS system (HMI) and to be able to configure them.

### Duration

Five (5) days.

### Participants

Personnel involved in engineering or modification and maintenance of the FAST/TOOLS software.

### Prerequisite

Participants should preferably be familiar with MS Windows environment.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

#### Afternoon 13:30 to 15:30

**Day 1** General introduction, Introduction to FAST/TOOLS. I/O processing, station definition, alarm requirements  
Item definition.

Laboratory Work:  
Use HMI.

**Day 2** Processing (classes + objects) , Process control language, Creating objects for multiple use.

Laboratory Work:  
Create classes, objects

**Day 3** Reporting, Historisation, Authorisation.

Laboratory Work:  
Create reports, groups for storing history.

**Day 4** Visualisation. Building displays and symbols.

Laboratory Work:  
Create Graphics and link to items.

**Day 5** FAST/Start  
Advanced usage.

## Exaquantum Desktop Data Access

### Objective

This course provides an overview of the Exaquantum system as a whole and then provides hands on training in the client access tools such as the Exaquantum/Explorer Excel Add-In and Exaquantum / Explorer itself.

### Duration

Three (3) days.

### Participants

Anyone in an organisation who needs access to data stored in Exaquantum.

### Prerequisite

A working knowledge of the Microsoft Windows desktop environment, MS-Excel.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** Introduction to Exaquantum.

**Day 2** Overview of the Exaquantum / Explorer Excel Add-In. The Exaquantum OLE DB interface.

**Day 3** Exaquantum / Explorer Positioning and Benefits. Exaquantum / Explorer Terminology and User Interface. Preconfigured Examples and Templates.

#### Afternoon 13:30 to 15:30

Laboratory Work: Features and Benefits. Multiple choice questions.

Laboratory Work: The Exaquantum Web Frame Work. Exercises and Multiple choice questions on the concepts covered.

Laboratory Work: Creating Documents and Configuring Controls. Overview of Advanced Exaquantum / Explorer Features. Exercises and Multiple choice questions on the concepts covered.

## Exaquantum System Administrator

### Objective

This course covers all the tasks necessary to administer an Exaquantum System. The aim of the course is to demonstrate the post installation configuration of an ExaQuantum System, perform all necessary steps to get the system up and running and then monitor it for performance etc.

### Duration

Four (4) days.

### Participants

This course is essential for those people responsible for the Administration of an ExaQuantum System.

### Prerequisite

A working knowledge of the Microsoft Windows Desktop environment.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** Introduction to Exaquantum Administration. System-Wide Configuration.

**Day 2** Tag Editor. Tag Generation.

**Day 3** Role Based Name Space Configuration. Miscellaneous Administration Topics.

**Day 4** Database Maintenance. First Line Troubleshooting.

#### Afternoon 13:30 to 15:30

Laboratory Work: Template Configuration. Exercises and Multiple choice questions on the concepts covered.

Laboratory Work: Exercises and Multiple choice questions on the concepts covered.

Laboratory Work: Exercises and Multiple choice questions on the concepts covered.

Laboratory Work: Exercises and Multiple choice questions on the concepts covered.

## Introduction to Asset Guard with Exapilot

### Objective

This course is designed to provide a thorough introduction to the Yokogawa Exapilot Asset Guard package. It provides focus on how Exapilot can help automate plant operation efficiency in steady, unsteady, abnormal states, enhance DCS function, and guard plant operation assets & resources.

### Duration

Three (3) days

### Participants

Process, Operations, Maintenance, Control Engineers and Console Operators, from chemical, petrochemical, and other process-related industries who are:

- Responsible for plant operation efficiency and safety improvement;
- Responsible for plant operational procedure optimization;
- Responsible for operational cost reduction;
- Responsible for plant operation quality control;
- Responsible for optimized plant maintenance.

### Prerequisite

Participants should preferably have experience using Exapilot package and has knowledge in operation and control.

### Minimum Class Size

6 Trainees

### Maximum Class Size

12 Trainees

## GC1000 Mark-II Operation and Maintenance

### Objective

This course is designed to provide participants with overall understanding of GC1000 Mark-II hardware, maintenance procedure, varicose software installation, backup procedure and troubleshooting.

### Duration

Three (3) days

### Participants

Plant instrument Engineers and Maintenance Technicians involved in operation and maintenance of gas chromatograph.

### Prerequisite

Participants should preferably have some knowledge on process instrumentation. However, prior exposure to GC1000 Mark-II or any other gas chromatograph/analyzer will be an advantage.

### Minimum Class Size

2 Trainees

### Maximum Class Size

4 Trainees

### Course Contents

#### Morning 08:30 to 12:30

#### Afternoon 13:30 to 15:30

**Day 1** Overview & principle of GC1000 Mark-II.

Overview of GC1000 Mark-II operational data.

**Day 2** Practical training on GC1000 Mark-II (LCD and GCMT).

Practical GC1000 Mark-II calibration (LCD and GCMT)

**Day 3** Troubleshooting on GC1000 Mark-II.

Question and Answer.

# Optional Courses

Training Module Code : CSOF

## CENTUM CS Fundamentals for Operation

### Objective

This course is designed to give participants the fundamental knowledge of operation and functions of the CENTUM CS system.

### Duration

Five (5) days

### Participants

Mainly CENTUM CS operators and plant operation personnel who are required to operate the CENTUM CS system.

### Prerequisite

Participants should preferably have some basic knowledge on process measurements and control.

### Minimum Class Size

2 Trainees

### Maximum Class Size

4 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** CENTUM CS system overview and configuration, description of hardware.

**Day 2** Description of standard display panels

**Day 3** Regulatory Control Function. Sequence Control Function.

**Day 4** System maintenance, reports and utilities function.

**Day 5** Laboratory Work for Operators.

#### Afternoon 13:30 to 15:30

Laboratory Work: Familiarization on CENTUM CS different components.

Laboratory Work: Operation exercise on the ICS.

Laboratory Work: Operation exercise on the ICS.

Laboratory Work: Operation exercise on the ICS.

Laboratory Work for Operators.

Training Module Code : CSEF

## CENTUM CS Fundamentals for Engineering

### Objective

This course is designed to give participants the fundamental knowledge of operation and functions of the CENTUM CS system.

### Duration

Three (3) days.

### Participants

Plant operation specialists, Engineers and Maintenance personnel who are required to operate the CENTUM CS system.

### Prerequisite

Participants should preferably have some basic knowledge on process measurements and control.

### Minimum Class Size

2 Trainees

### Maximum Class Size

4 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** CENTUM CS system configuration, description of hardware and description of standard display panels.

**Day 2** Regulatory Control Function. Sequence Control Function.

**Day 3** System maintenance, reports and utility functions.

#### Afternoon 13:30 to 15:30

Laboratory Work: Operation exercise on the ICS.

Laboratory Work: Operation exercise on the ICS.

Laboratory Work: Operation exercise on the ICS.

Training Module Code : CSEG

## CENTUM CS Engineering

### Objective

This course empowers participants to perform generation of CENTUM CS regulatory control functions, sequence control function, and Instrument Command Station (ICS).

### Duration

Five (5) days.

### Participants

Engineers and Technicians involved in software generation or modification on CENTUM CS system.

### Prerequisite

Participants should have attended the CENTUM CS Fundamental course.

### Minimum Class Size

2 Trainees

### Maximum Class Size

4 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** WS installation, start-up and shutdown procedures, Window operations procedures and System Definition Builder Function.

**Day 2** FCS Builder Functions - Generation of Regulatory Control Function.

**Day 3** FCS Builder Functions - Generation of Sequence Control Function.

**Day 4** ICS Builder Functions - Generation of ICS Display Functions.

**Day 5** Graphic Builder Functions.

#### Afternoon 13:30 to 15:30

Laboratory Work: WS installation, start-up and shutdown procedures. Window Operations. System Definition Exercise.

Laboratory Work: FCS Builder and Generation of Regulatory Control Functions.

Laboratory Work: ICS Builder Function. Exercise on Generation of Sequence Control Function.

Laboratory Work: ICS Builder Function. Exercise on Generation of ICS Display Functions.

Exercise on Generation of Graphic Builder Functions.

Training Module Code : CSMT

## CENTUM CS Maintenance

### Objective

This course is designed to provide participants with an overall understanding of CENTUM CS hardware, maintenance procedure, software installation, backup procedures and maintenance tools.

### Duration

Three (3) days.

### Participants

Engineers and Technicians who are responsible for daily maintenance of CENTUM CS system.

### Prerequisite

Participants should preferably be familiar with the CENTUM CS Fundamentals or Engineering

### Minimum Class Size

2 Trainees

### Maximum Class Size

4 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** CENTUM CS system configuration, ICS hardware & software, daily checking of ICS hardware & software and system maintenance function.

**Day 2** FCS hardware configuration. Daily checking on FCS.

**Day 3** Troubleshooting.

#### Afternoon 13:30 to 15:30

Laboratory Work: ICS components check-up. Replacement of HIS components

Laboratory Work: FCS Components check-up. Replacement of FCS components.

Troubleshooting.

## ProSafe-PLC Set (4 – Mation)

### Objective

Enable ProSafe-PLC system user to operate, maintain and modify the system. The course will outline the system's safety features and provide the opportunity to configure the system.

### Duration

Four (4) days.

### Participants

Process Engineers, Process Control Engineers, Maintenance, Technicians and Technical Support personnel.

### Prerequisite

Participants should preferably have some basic knowledge of computers, electronics and Boolean logic.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** Welcome and course introduction.  
ProSafe-PLC hardware.  
Introduction to PLC SET

**Day 2** Concepts of PLC SET configuration hierarchy.  
Creating a ProSafe-PLC configuration.

**Day 3** PLC SET features (menu).  
ProSafe-PLC default configuration.  
Compare, Select, Logic and Alarm blocks.  
Timers and counters.

**Day 4** Ladder Logic.  
Move & communication function blocks.

#### Afternoon 13:30 to 15:30

Laboratory Work:  
ProSafe-PLC hardware familiarization.  
Off-line system module tree configuration.

Laboratory Work:  
PLC SET tour.  
Creating a configuration.

Laboratory Work:  
Using the features of PLC SET. Times and counters.

Laboratory Work:  
Ladder Logic configuration.  
Move & communication function block configuration

## ProSafe-PLC Maintenance

### Objective

Familiarize personnel with the maintenance aspects of safeguarding system with emphasis on regular breakdown maintenance

### Duration

Three (3) days.

### Participants

Maintenance or service personnel who will be responsible for the daily operation and the first line maintenance activities of a safeguarding system in compliance with safety regulations and the IEC61508 standard.

### Prerequisite

Participants should preferably have some basic knowledge of computers, electronics, Boolean logic and attended ProSafe -PLC 4-mation course.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** Welcome and course introduction.  
ProSafe-PLC hardware.  
Hardware construction of a Node-to-Node system.

**Day 2** Downloading an application.  
Navigating through the application.

**Day 3** Diagnostic Logger.

#### Afternoon 13:30 to 15:30

Laboratory Work:  
Creation of a module tree.  
Fault finding, searching, display real time values, force signals and transfer.

Database Compare.  
Online modification & replacement of hardware.  
Laboratory Work:  
Troubleshooting.

Laboratory Work:  
Fault finding using the error log and D-logger.

Training Module Code : PLCC

## ProSafe-MULCOM

### Objective

To give the participant an understanding of ProSafe-MULCOM acting as a data channel between Safety Systems and CENTUM or other computer systems. To enable ProSafe-MULCOM system users to operate, maintain and modify the system.

### Duration

One (1) day.

### Participants

Process Engineers, Process Control Engineers, Maintenance and Technical Support personnel.

### Prerequisite

None

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** Welcome and course introduction. Introduction to ProSafe-MULCOM. ProSafe-MULCOM Hardware Overview. Concepts of ProSafe-MULCOM Software. Communicating with ProSafe-PLC. Communicating with ProSafe-DSP SLS. Communicating with ProSafe-DSP PLS. Communicating via V-net.

#### Afternoon 13:30 to 15:30

Laboratory Work:  
ProSafe-MULCOM Software Tour.  
Creating a ProSafe-MULCOM Configuration.  
Creating a Configuration.  
ProSafe-MULCOM Maintenance Features.

## Exaquantum Installation & Commissioning

### Objective

This course is designed for those persons who will be installing Exaquantum systems. The course follows a much less formal, more workshop based approach.

### Duration

Four (4) days.

### Participants

Systems Engineers who will be installing and commissioning Exaquantum systems.

### Prerequisite

A very good working knowledge of Microsoft Windows administration is required.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** Hardware and Software overview and system sizing. Installing the Exaquantum Software and System Prerequisites.

**Day 2** Other Post Installation Tasks. Understanding the Microsoft Windows Security Paradigm.

**Day 3** Introduction to Exaquantum Administration. System-Wide Configuration.

**Day 4** Tag Editor. Tag Generation.

#### Afternoon 13:30 to 15:30

Laboratory Work: Mandatory Post Installation Tasks. Exercises and Multiple choice questions on the concepts covered.

Laboratory Work: Troubleshooting the Installation. Exercises and Multiple choice questions on the concepts covered..

Laboratory Work: Template Configuration Exercises and Multiple choice questions on the concepts covered.

Laboratory Work: Role Based Name Space Configuration. Exercises and Multiple choice questions on the concepts covered.

## Exaquantum Application Developer

### Objective

This course is designed to provide users with the ability to develop applications by either using Exaquantum / Explorer or a third party package

### Duration

Five (5) days.

### Participants

This is designed for those people who are developing applications to read or write data to an Exaquantum Server.

### Prerequisite

Participant should have High level of Visual Basic skills. Exaquantum Explorer Overview Course.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** The Exaquantum / Explorer User Interface. Advanced configuration of ActiveX Controls.

**Day 2** Configuring data bound properties using the Property Binder. Configuring script bound properties and event handlers.

**Day 3** Creating Exaquantum / Explorer Document Templates. Review of Data Storage Concepts and Terminology.

**Day 4** Single-Server API. Accessing Data using OLEDB from User Written Code

**Day 5** Coding On Demand Aggregations. Configuring Exaquantum Event Handling Applications.

#### Afternoon 13:30 to 15:30

Laboratory Work: Configuring the runtime user environment using Workbooks. Exercises and Multiple choice questions on the concepts covered.

Laboratory Work: Writing data back to the server including use of the Data Entry Grid Control.

Laboratory Work: Multi-Server API. Exercises and Multiple choice questions on the concepts covered.

Laboratory Work: Reading Alarm and Event Data using the API. Exercises and Multiple choice questions on the concepts covered.

Laboratory Work: Exercises and Multiple choice questions on the concepts covered.

Training Module Code : EQVU

Training Module Code : EQTS

## Exaquantum Version Upgrade

### Objective

This course will include reference to all the new and changed features of the Admin tools, System Tools, Explorer and the Web Interface.

### Duration

Three (3) days.

### Participants

This is aimed at those people who have attended Exaquantum training prior to the current version and need to update their knowledge to include the new features in later releases.

### Prerequisite

This course assumes that the attendee has already attended the Exaquantum training for an earlier Release of Exaquantum.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** Introduction to latest release of Exaquantum  
New hardware, operating system and third party software support.

**Day 2** Upgrading to Latest Release.  
Changes the Administration Tools.

**Day 3** Changes to the Client Tools.  
Changes to the Support Tools.

#### Afternoon 13:30 to 15:30

Laboratory Work:  
Exercises and Multiple choice questions on the concepts covered.

Laboratory Work:  
Exercises and Multiple choice questions on the concepts covered.

Laboratory Work:  
Exercises and Multiple choice questions on the concepts covered.

## Exaquantum Technical Overview Seminar

### Objective

This is a not a formal course but a presentation and demonstration of the features of Exaquantum. It describes the features and benefits of both Exaquantum server and the various client interfaces.

### Duration

One (1) day.

### Participants

Anyone who wishes to have an overview of the features of Exaquantum will benefit from this seminar.

### Prerequisite

None.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** Introduction to Exaquantum  
Features and Benefits

#### Afternoon 13:30 to 15:30

Features and Benefits continued  
Addressing customer specific Issues.

Training Module Code : EQDA

## Exaquantum Data Access from Third Party Package

### Objective

Introduces the user to the Exaquantum tools to access data from third party clients like Microsoft Excel and Internet Explorer 6

### Duration

One (1) day.

### Participants

Anyone in an organisation who needs access to data stored in Exaquantum would benefit from attending this course.

### Prerequisite

A working knowledge of the Microsoft Windows desktop environment.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** Exaquantum Data Handling Overview. Overview of the Exaquantum / Explorer Excel Add-In. The Exaquantum OLE DB interface.

#### Afternoon 13:30 to 15:30

The Exaquantum Web Frame Work. Exercises and Multiple choice questions on the concepts covered.

Training Module Code : EQEO

## Exaquantum Explorer Overview

### Objective

Introduce the user to the Features and Benefits of Exaquantum / Explorer.

### Duration

One (1) day.

### Participants

Anyone in an organisation who needs access to data stored in Exaquantum using Exaquantum / Explorer.

### Prerequisite

A user level knowledge of the Windows Desktop Environment.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

#### Morning 08:30 to 12:30

**Day 1** Exaquantum / Explorer Positioning and Benefits. Exaquantum / Explorer Terminology and User Interface. Preconfigured Examples and Templates.

#### Afternoon 13:30 to 15:30

Creating Documents and Configuring Controls. Overview of Advanced Exaquantum/Explorer Features. Exercises and Multiple choice questions on the concepts covered.

Training Module Code : EQWD

## Exaquantum Web Development

### Objective

Developing Exaquantum applications for deployment over a company's intranet.

### Duration

Two (2) days.

### Participants

Web developers who need to develop Exaquantum applications for deployment via an intranet.

### Prerequisite

Knowledge of VBScript and Microsoft FrontPage.

### Minimum Class Size

4 Trainees

### Maximum Class Size

6 Trainees

### Course Contents

---

#### Morning 08:30 to 12:30

**Day 1** Introduction to Web development. Creating Graphics and Process Mimics

**Day 2** Creating Preconfigured Trends and Alarm and Event Summaries. Other Web Development Techniques and Topics.

#### Afternoon 13:30 to 15:30

Laboratory Work: Exercises and Multiple choice questions on the concepts covered.

Laboratory Work: Exercises and Multiple choice questions on the concepts covered.

Training Module Code : PPID

## PID & Base Layer Control Improvement

### Objective

This course will focus on both the theoretical and practical aspect of PID control and based layer control strategies, reinforced by exercises and hands on tuning practice on simulated process using CENTUM DCS.

### Duration

Three (3) days.

### Participants

Control, Process and Instrument Engineers who are responsible for tuning the control loops and ensuring higher level of process performance.

### Prerequisite

Participants should preferably be familiar with the CENTUM DCS Fundamentals or Engineering.

### Minimum Class Size

6 Trainees

### Maximum Class Size

12 Trainees

Training Module Code : PACA

## Multivariable Control Techniques

### Objective

This course is designed to provide a thorough insight into Yokogawa's APC Software suite. It enables the participants to determine and express dynamic plant behavior in a multivariable sense and to design and test MVC using SMOC<sup>PRO</sup> MVC. It also details on the development of Inferred Measurements using the RQE<sup>PRO</sup> tool.

### Duration

Five (5) days.

### Participants

Process, Operations, Instrument, Control Engineers and Console Operators who are:

- Responsible for leading and monitoring the MVC Implementation in their Process Unit.
- Responsible for maintaining SMOC<sup>PRO</sup> Controllers and RQEPRO Estimators and ensure higher up-times.
- Responsible for making the utmost use of SMOC<sup>PRO</sup> & RQE<sup>PRO</sup> to consistently exploit their capabilities.

### Prerequisite

Participants should have attended the Introduction of APC Techniques course.

### Minimum Class Size

6 Trainees

### Maximum Class Size

12 Trainees

Training Module Code : PACB

## Introduction to Advanced Process Control Techniques

### Objective

This course is designed to provide a introduction to the conventional Advanced Process Control Techniques. It provides focus on how to put the theory into practice and to enable identify APC areas and to quantify the derivable benefits derivable upon implementation.

### Duration

Three (3) days.

### Participants

Process, Operations, Instrument, Control Engineers and Console Operators who are:

- Responsible for efficiently running the process units
- Responsible for maintaining process controls and ensure a stable control performance
- Responsible for translating the intended objectives in to performance

### Prerequisite

Participants should preferably have some basic knowledge on process control.

### Minimum Class Size

6 Trainees

### Maximum Class Size

12 Trainees

Training Module Code : PAAM

## Introduction to Advanced Alarm Management

### Objective

This course is designed to provide a thorough introduction to Yokogawa Advanced Alarm Management philosophy. It provides focus on how Yokogawa tools & Technology helps maintain & optimize alarm management system based on EEMUA No. 191 guideline

### Duration

Three (3) days.

### Participants

Personnel, as part of alarm system team, are recommended to take this course:

- Operators and supervisors
- Instrument engineers
- Alarm processing system engineers
- Process/mechanical/maintenance engineers

### Prerequisite

Participants should preferably have some basic knowledge on process measurement and control or being part of the alarm system team.

### Minimum Class Size

6 Trainees

### Maximum Class Size

12 Trainees



## Representatives

### **United Arab Emirates**

United Technical Services  
P.O. Box 277  
100 Tescos Bldg., 1st Floor, Shaikh Zayed 2nd Street  
Abu Dhabi, UAE  
Tel: +9712-6774400  
Fax: +9712-6722012

### **State of Qatar**

Al-Deebal Energy Company W.L.L.  
Al Hilal Ring C, Building 163  
P.O. Box 24281  
Doha, Qatar  
Tel: +974-4351998  
Fax: +974-4311737

### **Sultanate of Oman**

HI-TECH Services & Supplies L.L.C.  
P.O. Box 2992, Postal Code 112, Ruwi  
Muscat, Oman  
Tel: +968-7710575  
Fax: +968-7710287

### **State of Kuwait**

Thuwainy Trading Company S.A.K.  
P.O. Box 171  
13002 Safat, Kuwait  
Tel: +965-2460550  
Fax: +965-2428868

### **Syria, Jordan, Lebanon**

Al-Seraj General Distributors Company  
Al Shareef Nasser Bin Jameel St.  
Qarman Building No. 7, Flat 7, 3rd Floor  
P.O. Box 5226, Amman 11183, Jordan  
Tel: +962-64641607  
Fax: +962-64642547

### **Egypt**

GIZA System Engineering  
17 Teeba St. Mohandeseen  
P.O. Box 317 Dokki  
Cairo  
12311, Egypt  
Tel: +202-3490140  
Fax: +202-3385799



## Yokogawa Middle East Training Centers

### Kingdom of Bahrain

Yokogawa Middle East B.S.C.(c)  
P.O. Box 10070, Manama  
Bldg. 577, Road 2516 Muharraq 225  
Tel: +973-17-358100  
Fax: +973-17-336343

### Kingdom of Saudi Arabia

Yokogawa Services Saudi Arabia Company  
P.O. Box 10318, Jubail  
31961, Saudi Arabia  
Block 8 & 9 Road 144, Royal Commission,  
Jubail Industrial Support Area - 1  
Tel: +9663-3407111  
Fax: +9663-3407222

### United Arab Emirates

Yokogawa Middle East  
P.O. Box 277, Abu Dhabi, UAE  
4th Floor, Abdulla Bin Darwish Bldg., (RBS Bank)  
Salam St. & Hamdan St. Corner, Abu Dhabi  
Tel: +9712-6766526  
Fax: +9712-6787307

### State of Qatar

Yokogawa Middle East  
C/O Al Deebal Energy Co. W.L.L.  
Al Hilal Ring C, Building 163  
P.O. Box 24281  
Doha, Qatar  
Tel: +974-4351998  
Fax: +974-4311737

### Sultanate of Oman

Yokogawa Middle East  
HI-TECH Services & Supplies L.L.C.  
P.O. Box 2992, Postal Code 112, Ruwi  
Muscat, Oman  
Tel: +968-24815462  
Fax: +968-24815463

### State of Kuwait

Thuwainy Trading Company S.A.K.  
P.O. Box 171  
13002 Safat, Kuwait  
Tel: +965-2460550  
Fax: +965-2428868

### Iran

Yokogawa Middle East  
No. 4 Alvand Street  
Argentin Square  
Tehran, Iran  
Tel: +9821-88794656  
Fax: +9821-88792807