

**WE410, WE420, WE430, WE440  
WET CHEMISTRY ANALYZER  
Safety Precautions and Protection of Environment**

IM 12Y18A00-01EN

---

This Start-up Manual explains mainly the installation and wiring of WE410, WE420, WE430 and WE440.  
For detailed information and other information, the User's Manual of WE410, WE420, WE430 and WE440 should be referred to.

# ◆ Introduction

Thank you for purchasing WE410, WE420, WE430 and WE440 WET CHEMISTRY ANALYZER. This Instructor's Manual contains all essential information for the user to make full use of WE410, WE420, WE430 and WE440.

Please read the following respective documents before installing and using WE410, WE420, WE430 and WE440.

The related documents are listed as follows.

## General Specifications

Contents	Document number	Note
Model WE410 Silica Analyzer	<a href="#">GS 12Y18A01-01EN</a>	Online
Model WE420 Sodium Analyzer	<a href="#">GS 12Y18A02-01EN</a>	Online
Model WE430 Hydrazine Analyzer	<a href="#">GS 12Y18A03-01EN</a>	Online
Model WE440 Phosphate Analyzer	<a href="#">GS 12Y18A04-01EN</a>	Online

"EN" in the document number is the language code.

## User's Manual

Contents	Document number	Note
WE410, WE420, WE430, WE440 WET CHEMISTRY ANALYZER Safety Precautions and Protection of Environment	<a href="#">IM 12Y18A00-01EN</a>	Attached to the product (printed manual) (This manual)
Model WE410 Silica Analyzer	<a href="#">IM 12Y18A01-01EN</a>	Online manual
Model WE420 Sodium Analyzer	<a href="#">IM 12Y18A02-01EN</a>	Online manual
Model WE430 Hydrazine Analyzer	<a href="#">IM 12Y18A03-01EN</a>	Online manual
Model WE440 Phosphate Analyzer	<a href="#">IM 12Y18A04-01EN</a>	Online manual

"EN" in the document number is the language code.

An exclusive User's Manual might be attached to the products whose suffix codes or option codes contain the code "Z" (made to customers' specifications). Please read it along with this manual.

You can download the latest documents from our website. Scan QR code.

<https://www.yokogawa.com/an/wet-chemistry-analyzers/download/>



## ■ Drawing Conventions

Some drawings may be partially emphasized, simplified, or omitted, for the convenience of description.

Some screen images depicted in the user's manual may have different display positions or character types (e.g., the upper / lower case). Also note that some of the images contained in this user's manual are display examples.

---

## ■ Notes on Handling User's Manuals

- Please provide the user's manuals to your end users so that they can keep the user's manuals for convenient reference.
- Please read the information thoroughly before using the product.
- The purpose of these user's manuals is not to warrant that the product is well suited to any particular purpose but rather to describe the functional details of the product.
- No part of the user's manuals may be transferred or reproduced without prior written consent from YOKOGAWA.
- YOKOGAWA reserves the right to make improvements in the user's manuals and product at any time, without notice or obligation.
- If you have any questions, or you find mistakes or omissions in the user's manuals, please contact our sales representative or your local distributor.

## ■ Trademark Acknowledgments

- All other company and product names mentioned in this user's manual are trademarks or registered trademarks of their respective companies.
- We do not use TM or ® mark to indicate those trademarks or registered trademarks in this user's manual.

## ■ Product Disposal

The instrument should be disposed of in accordance with local and national legislation/regulations.

## ■ Warranty and service

Yokogawa products and parts are guaranteed free from defects in workmanship and material under normal use and service for a period of (typically) 12 months from the date of shipment from the manufacturer.

Individual sales organizations can deviate from the typical warranty period, and the conditions of sale relating to the original purchase order should be consulted. Damage caused by wear and tear, inadequate maintenance, corrosion, or by the effects of chemical processes are excluded from this warranty coverage.

Warranty claims should be contact service department of the relevant sales organization for replacement (at Yokogawa discretion). The following information must be included.

- Part number, model code and serial number
- Original purchase order and date
- Length of time in service and a description of the process
- Description of the fault, and the circumstances of failure
- Process/environmental conditions that may be related to the failure of the device.
- A statement whether warranty or non-warranty service is requested
- The name and phone number of a contact person who can be reached for further information.

# ◆ Safety Precautions

## **WARNING**

### **Installation and wiring**

WE410, WE420, WE430 and WE440 should only be used with equipment that meets the relevant IEC, American or Canadian standards.

Yokogawa accepts no responsibility for the misuse of this unit.

Do not use an abrasive or organic solvent in cleaning the instrument.

### **Electrostatic discharge**

WE410, WE420, WE430 and WE440 contain devices that can be damaged by electrostatic discharge. When servicing this equipment, please observe proper procedures to prevent such damage. Replacement components should be shipped in conductive packaging. Repair work should be done at grounded workstations using grounded soldering irons and wrist straps to avoid electrostatic discharge.

## **CAUTION**

The Instrument is packed carefully with shock absorbing materials, nevertheless, the instrument may be damaged or broken if subjected to strong shock, such as if the instrument is dropped. Handle with care.

This instrument is a Class A product, and it is designed for use in the industrial environment. Please use this instrument in the industrial environment only.

## ■ Safety, Protection, and Modification of the Product

- In order to protect the system controlled by the product and the product itself and ensure safe operation, observe the safety precautions described in this user's manual. We assume no liability for safety if users fail to observe these instructions when operating the product.
- If this instrument is used in a manner not specified in this user's manual, the protection provided by this instrument may be impaired.
- If any protection or safety circuit is required for the system controlled by the product or for the product itself, prepare it separately.
- Be sure to use the spare parts approved by Yokogawa Electric Corporation (hereafter simply referred to as YOKOGAWA) when replacing parts or consumables.
- Modification of the product is strictly prohibited.
- The following safety symbols are used on the product as well as in this manual.

## **WARNING**

This symbol indicates that an operator must follow the instructions laid out in this manual in order to avoid the risks, for the human body, of injury, electric shock, or fatalities. The manual describes what special care the operator must take to avoid such risks.



## CAUTION

This symbol indicates that the operator must refer to the instructions in this manual in order to prevent the instrument (hardware) or software from being damaged, or a system failure from occurring.

## CAUTION

This symbol gives information essential for understanding the operations and functions.

## NOTE

This symbol indicates information that complements the present topic.



This symbol indicates Protective Ground Terminal.

## ■ Warning and Disclaimer

The product is provided on an “as is” basis. YOKOGAWA shall have neither liability nor responsibility to any person or entity with respect to any direct or indirect loss or damage arising from using the product or any defect of the product that YOKOGAWA can not predict in advance.

## ◆ CE marking products

### ■ Authorized Representative in EEA

The Authorized Representative for this product in EEA is Yokogawa Europe B.V. (Euroweg 2, 3825 HD Amersfoort, The Netherlands).

### ■ Identification Tag

This manual and the identification tag attached on packing box are essential parts of the product. Keep them together in a safe place for future reference.

### ■ Users

This product is designed to be used by a person with specialized knowledge.

### ■ How to dispose the batteries:

This is an explanation about the EU Battery Directive. This directive is only valid in the EU.

Batteries are included in this product. Batteries incorporated into this product cannot be removed by yourself. Dispose them together with this product.

Battery type: Manganese dioxide lithium battery



Notice: The symbol (see above) means they shall be sorted out and collected as ordained in the EU Battery Directive.

### ■ Information of the WEEE Directive

This product is purposely designed to be used in a large scale fixed installations only and, therefore, is out of scope of the WEEE Directive. The WEEE Directive does not apply. This product should be disposed in accordance with local and national legislation/regulations. The WEEE Directive is only valid in the EU.



# Compliant Standards

## Model WE410, WE440

Safety: EN 61010-1

CAN/CSA-C22.2 No. 61010-1

CAN/CSA-C22.2 No. 61010-2-081

UL Std No. 61010-1

UL Std No. 61010-2-081

Installation altitude: 2000 m or less

Category based on IEC 61010-1: II (Note 1)

Pollution degree based on IEC 61010-1:2 (Note 2)

Note 1: Installation category, so called overvoltage category, specifies impulse withstanding voltage. Category II is for electrical equipment.

Note 2: Pollution degree indicates the degree of existence of solid, liquid, gas or other inclusions which may reduce dielectric strength. Degree 2 indicates the normal indoor environment.

EMC: EN 61326-1 Class A, Table 2

EN 61326-2-3

EN 61000-3-2

EN 61000-3-3

RCM: EN 61326-1 Class A, Table 2

Korea Electromagnetic Conformity Standard Class A

RoHS: EN IEC 63000

## Model WE420, WE430

Safety: EN 61010-1

CAN/CSA-C22.2 No. 61010-1

UL Std No. 61010-1

Installation altitude: 2000 m or less

Category based on IEC 61010-1: II (Note 1)

Pollution degree based on IEC 61010-1:2 (Note 2)

Note 1: Installation category, so called overvoltage category, specifies impulse withstanding voltage. Category II is for electrical equipment.

Note 2: Pollution degree indicates the degree of existence of solid, liquid, gas or other inclusions which may reduce dielectric strength. Degree 2 indicates the normal indoor environment.

EMC: EN 61326-1 Class A, Table 2

EN 61326-2-3

EN 61000-3-2

EN 61000-3-3

RCM: EN 61326-1 Class A, Table 2

Korea Electromagnetic Conformity Standard Class A

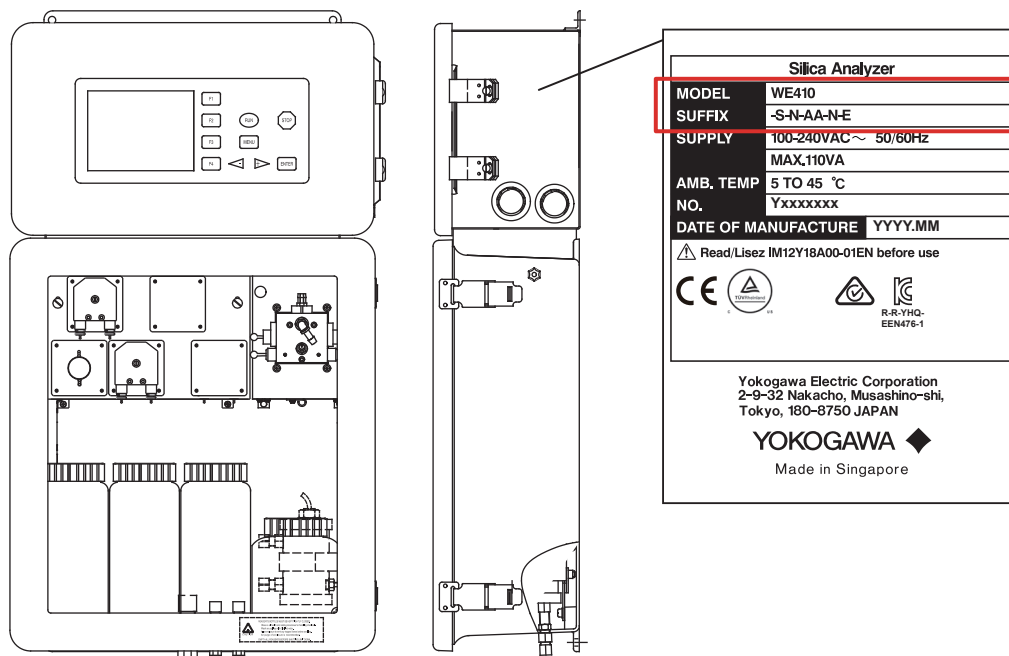
RoHS: EN IEC 63000

# 1. Instrument Check

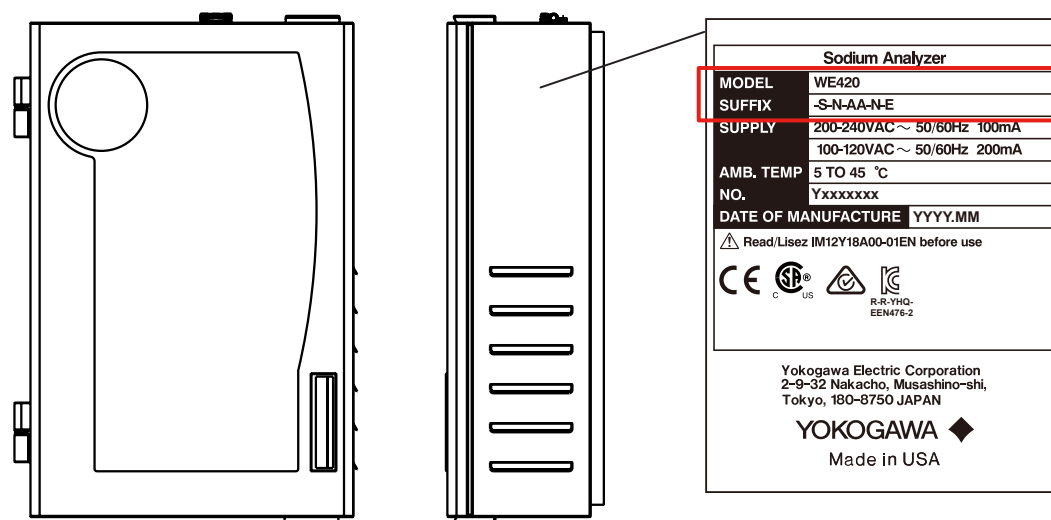
Upon delivery, unpack the instrument carefully and inspect it to ensure that it was not damaged during shipment. If damage is found, retain the original packing materials (including the outer box) and then immediately notify the carrier and the relevant Yokogawa sales office.

## ■ Checking the model and suffix code

Make sure the model and suffix code on the nameplate affixed to the left side of the housing.



WE410, WE440



WE420, WE430



## ● Model and suffix code

Model	Suffix code	Option code	Description
<b>WE410</b>	.....	.....	Silica Analyzer
Range	<b>-S</b>	.....	Standard range 0 - 5000 ppb
Housing	<b>-N</b>	.....	Always -N
Type	<b>-AA</b>	.....	General purpose
Spare	<b>-N</b>	.....	Always -N
Language	<b>-E</b>	.....	Always -E

Model	Suffix code	Option code	Description
<b>WE420</b>	.....	.....	Sodium Analyzer
Range	<b>-S</b>	.....	0.30 ppb - 200 ppm or 0.10 ppb - 10 ppm Reagent selection dependent
Housing	<b>-N</b>	.....	Always -N
Type	<b>-AA</b>	.....	General purpose
Spare	<b>-N</b>	.....	Always -N
Language	<b>-E</b>	.....	Always -E

Model	Suffix code	Option code	Description
<b>WE430</b>	.....	.....	Hydrazine Analyzer
Range	<b>-S</b>	.....	Standard range 0 ppb - 200 ppb
Housing	<b>-N</b>	.....	Always -N
Type	<b>-AA</b>	.....	General purpose
Spare	<b>-N</b>	.....	Always -N
Language	<b>-E</b>	.....	Always -E

Model	Suffix code	Option code	Description
<b>WE440</b>	.....	.....	Phosphate Analyzer
Range	<b>-S</b>	.....	Standard range 0.2 - 50 ppm
Housing	<b>-N</b>	.....	Always -N
Type	<b>-AA</b>	.....	General purpose
Spare	<b>-N</b>	.....	Always -N
Language	<b>-E</b>	.....	Always -E

## ■ Checking accessories

The instrument is shipped with standard accessories. Optional accessories are sold separately if necessary. Make sure the accessories in Table 1 are included.

**Table 1 Standard accessories**

	Product Name	Quantity	Remark
WE410	Filter	1pcs	250 Filter Strainer
WE420	Sodium sensing electrode	1 set	Parts No K9705CC
	Reference electrode	1 set	Parts No K9705CD
WE430	Iodide sensing electrode	1 set	Parts No K9705CG
	Reference electrode	1 set	Parts No K9705CH
WE440	Filter	1pcs	250 Filter Strainer

## 2. Wiring and Installation

For details, refer to the User's Manual.

### 2.1 Installation site

WE410, WE420, WE430 and WE440 can be installed inside only.

Select an installation site where the ambient temperature and humidity are within the limits of the instrument specifications as below.

Ambient Operating Temperature: 5 to 45 °C (41 to 113°F)

Storage Temperature: -20 to 60 °C (-4 to 140 °F)

Humidity: 10 to 90% at 40°C (104 °F) (Non-condensing)

Select an installation site that meets the following conditions.

- Mechanical vibrations and shocks are negligible
- No relay switch and power switch are installed close to the converter
- There is space for cable connection beneath the cable glands
- Not exposed to direct sunlight or severe weather conditions
- Maintenance is possible
- No corrosive atmosphere

For dimensional information please refer to the User's Manual.

## 2.2 Wiring

### 2.2.1 Preparation

Power supply and relay contact should be connected first. Next, connect the others. For details, refer to the User's Manual. Read it carefully before wiring. This manual describes how to use WE410, WE420, WE430 and WE440 with Yokogawa's or other companies' sensors. Please read carefully this manual and the instruction manuals relevant to those sensors you use before using this instrument.



#### **WARNING**

- Cables that withstand temperatures of at least 75 °C should be used for wiring.
- Use cables that comply with UL2556VW-1 or equivalent.
- Do not operate with the electronics enclosure door open.

### 2.2.2 Cables, Terminals, glands and conduit adapter

WE410, WE420, WE430 and WE440 are supplied with terminals suitable for the connection of finished wires in the size range of 0.13 to 2.5 sq.mm. (26 to 14 AWG).

For details, refer to the User's Manual.

### 2.2.3 Wiring the power supply

#### **CAUTION**

Make sure the power supply is switched off. Power rating must comply with WE410, WE420, WE430 and WE440 specifications. Power voltage must match with the one indicated on the name plate.

## **WARNING**

- Do not apply electrical power to visibly damaged components, as injury or further equipment damage may occur.
- You must install external power supply switch or circuit breaker for power supply.
- The external power supply switch or a circuit breaker must comply with a current rating of 5A or IEC60947-1 or IEC60947-3
- Yokogawa recommend installing the external power supply switch, circuit breaker and WE410, WE420, WE430 and WE440 converters all in the same location.
- Install the external power supply switch or circuit breaker to the place where operators access easily. To alert users, put a label on the external power switch.
- Wire cables of power supply, contact output securely with cable rack, conduit and vinyl band. Unplugged cables are dangerous and may cause an electric shock.

You should check local safety regulation to see if you shall install external circuit breaker. Follow the local regulation and install if necessary.

WE410, WE420, WE430 and WE440 are protected by fuse which provides overcurrent protection of inner circuit.

Specific current and voltage ratings of fuse vary depending on power system. Use always a time-delay fuse for 250 VAC fuse in accordance with IEC60127.

## **WARNING**

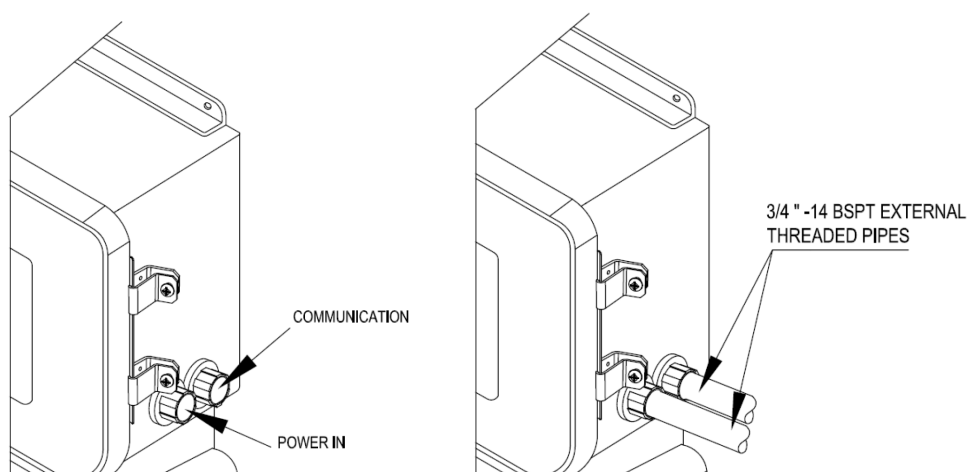
Fuse replacement should be performed only by a qualified service personnel.

### ● **Power supply terminals**

Connect power supply to the power supply terminals.

For details, refer to the User's Manual.

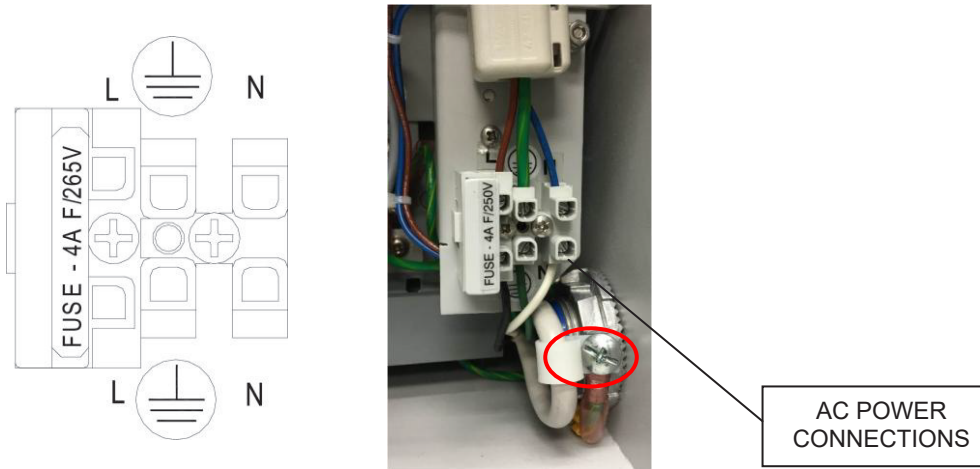
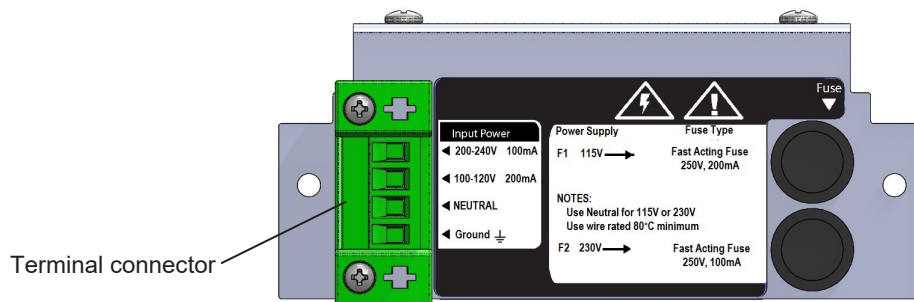
**<WE410, WE440>**



**WE410, WE440 Electrical wiring ports**

**WE410, WE440 AC power terminal wire connections**

Analyzer Terminal Destination	North America Wire Color	European Wire Color
HOT or L ( Line)	black	brown
Protective Earth Ground (PG)	green	green with yellow tracer
Neutral (n)	white	blue

**WE410, WE440 AC power connections****<WE420, WE430>****WE420, WE430 AC Power Connection**

## **WARNING**

The minimum cross sectional area of the protective grounding wire should be 0.75 mm<sup>2</sup>. For CSA safety standard, use cables with a cross section of 0.75 - 2.1 mm<sup>2</sup>.

## 3. Maintenance

### ■ Periodic maintenance

If the window becomes soiled, clean it using a soft damp cloth or soft tissue.

To deal with more stubborn stains, a neutral detergent may be used.



### CAUTION

Never use harsh chemicals or solvents. In the event that the window does become heavily stained or scratched, refer to the parts list for replacement part numbers.

### ● Battery

WE410, WE420, WE430 and WE440 contain a lithium cell (battery) to support the clock function when the power is switched off. The cell has an expected working life of 10 years. Should this cell need to be replaced, contact your nearest Yokogawa service center.

### ● Fuse

There is a circuit board mounted fuse protecting the instrument. If a fuse blows soon after the change, contact your nearest Yokogawa service center.

# Revision record

## 2021/09 2nd Edition

Revised RoHS conformity standards. (p.6)  
Deleted “◆ Control of Pollution Caused by the Product”.

## 2019/07 1st Edition

Newly released.

---

Yokogawa Electric Corporation  
2-9-32 Nakacho, Musashino-shi, Tokyo 180-8750, JAPAN  
<http://www.yokogawa.com/>

---