IWAKI

WALCHEM

Walchem Controllers Product Guide

WALCHEM is a brand of controllers from IWAKI Co., Ltd.

The Heart of Industry

Addresses All Water Treatment Applications
A Wide Variety of Water Treatment Controllers

Walchem offers a wide variety of water treatment controllers, each able to use many types of sensors with flexible selection of control strategies, and some also capable of online access through Ethernet.
Walchem controllers address a variety of water treatment applications, including cooling towers, boilers, wastewater, swimming pools, and food & beverage.

P100

W100

P100, W100

Economical water treatment controller

These models feature multi-language display and excellent operability. Their versatile control configurations cover a wide variety of applications.

Intuition-6

Advanced water treatment controller comparable to higher models

With a multi-language display and remote operation, the model features a large touch-screen that allows operations to be intuitive.

Intuition-9

Industry's highest level water treatment controller

A versatile input/output interface enables users to integrate the management of water treatment devices. This interface is easily accessible at any time required. It is highly reliable even when on business trips or when out of the office.

Walchem Fluent monitor screen

Walchem Fluent, a new cloud-based water treatment management software tool that enhances the value of Walchem controllers with internet access

Easy to set up and use, Walchem Fluent incorporates IoT, process automation, remote monitoring and control, and data graphing capabilities to harness your capabilities efficiently and effectively. Walchem Fluent will be one of the most valuable resources for managing water treatment services. Compatible models: Intuition-6, Intuition-9

Cloud service

No special software required

No monthly fee

Fluent uses https to provide information. Since https encrypts and provides data so that it cannot be viewed or tampered with by a third party, users can view the data with peace of mind.

WALCHEM Fluent

Fluent specifications

Supported browsers	Edge, Chrome, Firefox, etc. Browsers supported by the manufacturer
Data storage location	Cloud, controller
Features on the browser	• View the latest / past data • Alarm confirmation • Graph • Dashboard NEW • Alarm escalation NEW
Live connect	○ Same as existing screen / function
Compatible with smartphones	○ Layout that fits the screen size
Security	○

Customer + facility management

- The customer and the facility completely manage, you can quickly access as possible to the required information.
- Flag your preferred customers and facilities for immediate access. Useful for planning the next week.

Process monitoring + control

- To the customer's real-time data, you can access from anywhere.
- Live Connect of existing functionality is alive and well, and connect directly to the controller, you can change the settings.

Team management

- Administrator, Technician, View only
  Create a role
- Custom settings for permissions to show only customers who need access

Data management + visualization

- Evaluate key parameters at a glance with a customizable dashboard
- Easy access to alarms organized by priority level with confirmation function
- Bookmark customers, facilities and controllers for a customized dashboard experience
- Visualize recent and historical data trends with easy-to-read interactive graphs
- Compare graphs across multiple controller channels
- Access historical data and convert graphs to PDF and CSV files to suit your reporting needs.

Alarm + custom alarm notification

- Manage workflow by notifying workers of alarms
- Customize the escalation process with the first notified group
- Notify two special user groups
- Manage alarm settings with controller channel
- Set alarm levels to quickly identify the most important issues
- Overview of the alarm mail

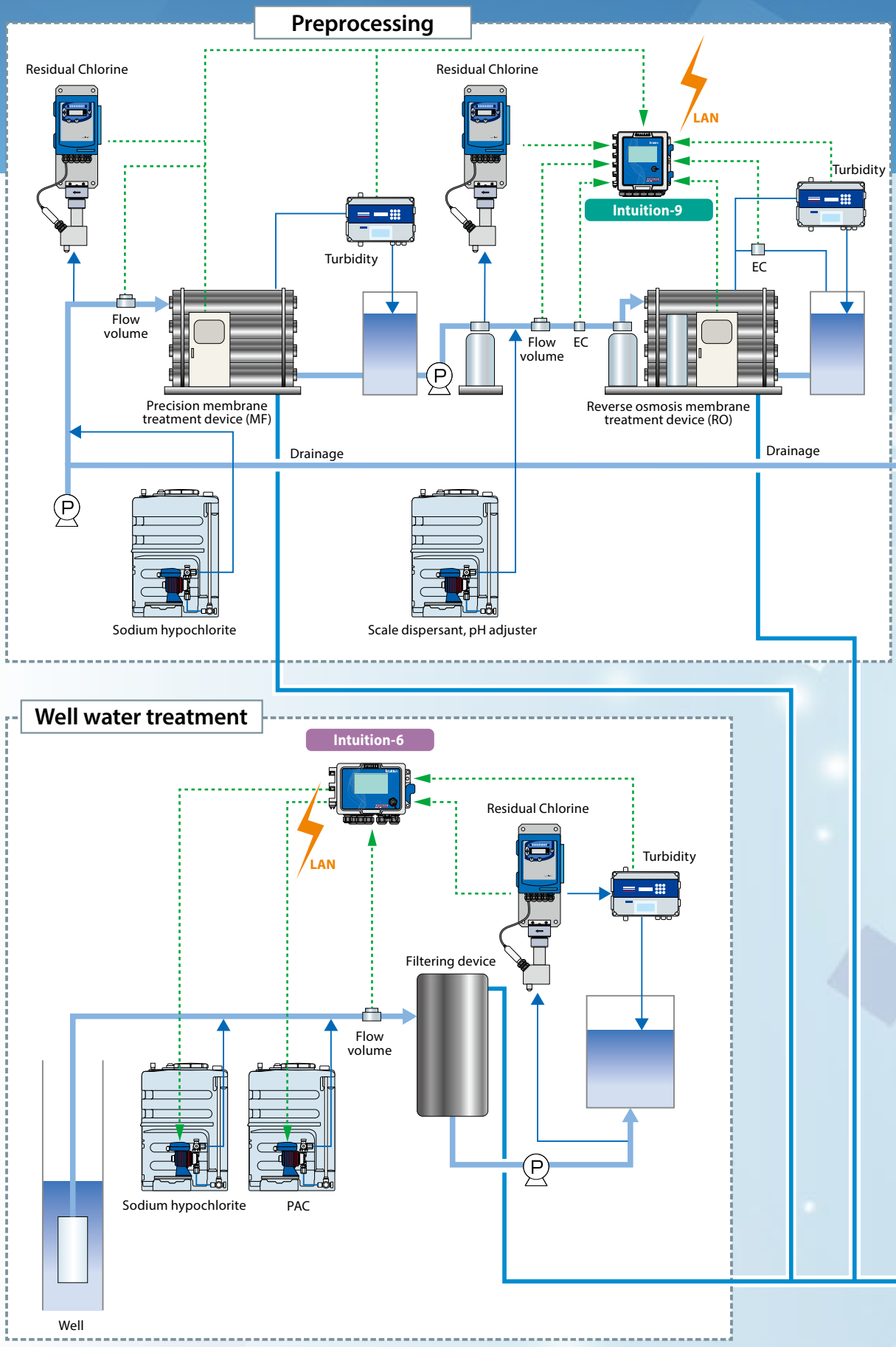
Dashboard

The dashboard is a function that extracts and displays the customers, facilities, and their parameters that are being watched. For the alarm, you can select the display of "All / Confirmed / Confirmed". Also easily can be monitored with a ☆ to customers and facilities required monitoring.

Escalation

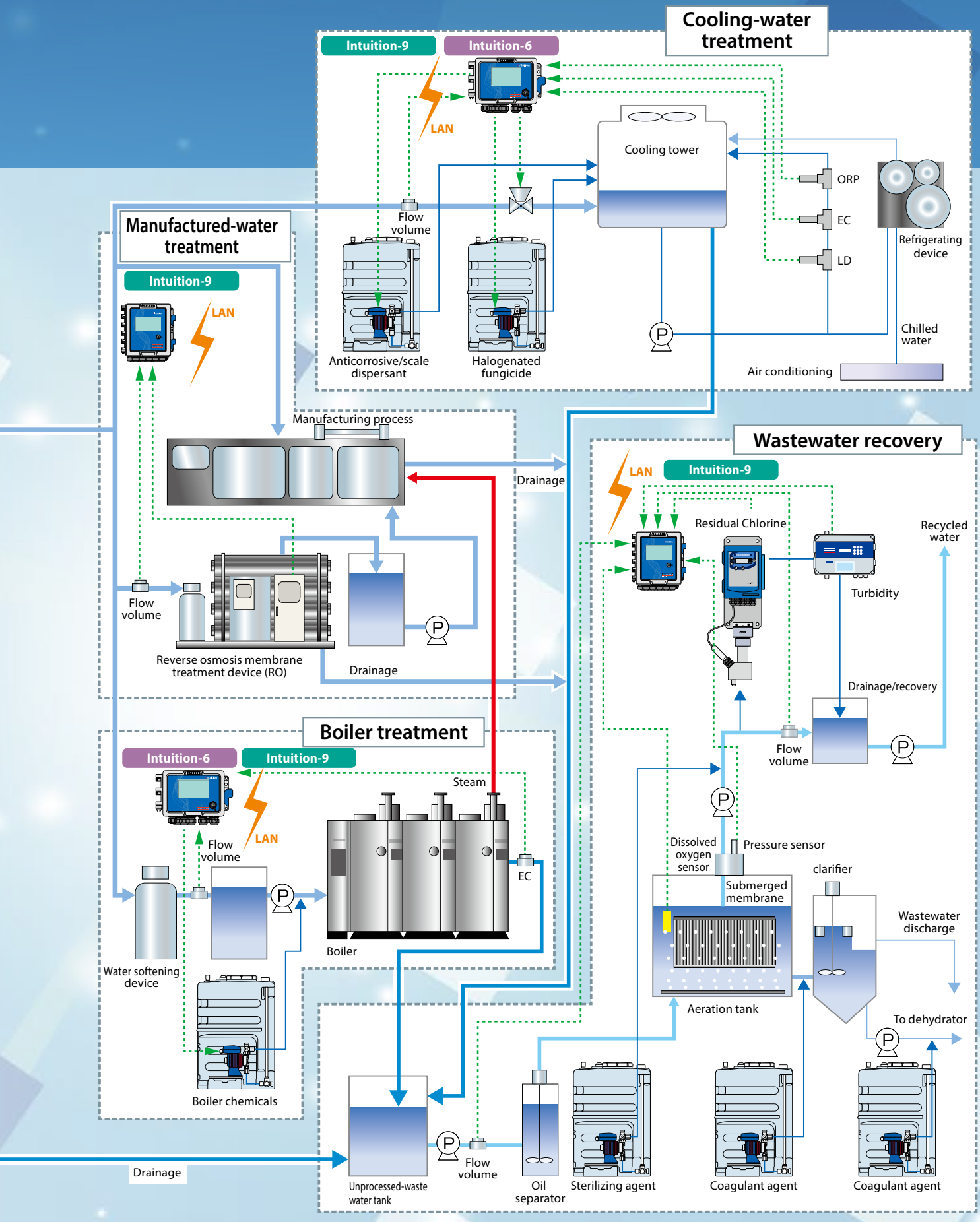
Escalation is a function that notifies alarm notifications (emails) to groups that are divided in stages by email. Prevents unprocessed troubles.

Addresses All Water Treatment Applications
A Wide Variety of Water Treatment Controllers



Applications

Wastewater neutralization & disinfection, Food and Beverage disinfection, Potable water treatment, Swimming pools & spas, Cooling tower biocide control, Metal finishing & printed circuit board, Irrigation & fertigation, RO Systems ...



P100, W100

Superior Operability & Ample Control Configuration Economical Water Treatment Controller

The P100 & W100 series provide an economical and reliable way to keep your water treatment program under control.

P100

W100

Application example: Simple pH neutralization control (P100), small-scale cooling tower control with one-component control (W100), etc.

The P100 / W100 series is a water treatment controller that has a multilingual display function and excellent operability. Although it is an economical entry model, it can be widely used at all water treatment sites such as cooling towers, hydroponic cultivation, and pools with abundant control settings. The large display and easy-to-read icons make it easy to set up.

- **Large display with icon based programming makes setup easy**
- **Compact ¼ DIN panel mount enclosure (P100)**
- **Since the wall-mount type, economical, easy to install (W100)**
- **Multiple language support allows simple setup no matter where your business takes you**
- **4 points (3 points)[Note] of control output can be assigned according to the application and can be flexibly handled.**

  Note : P100=4 points W100=3 points

Intuition-6

High Reliability and Flexibility Highly Economical Water Treatment Controller

The Intuition-6 series provides reliable, flexible and powerful control for your water treatment program.

Application example: Water quality management of plant factories and remote data log acquisition for each cultivation shelf, etc.

The Intuition-6 series of economical water treatment controllers is not only datalogging-enabled but also able to send alarm messages via email. The series is comparable with higher models in terms of high reliability and superb flexibility regarding the functions of relays. This device is also designed to allow users to easily and intuitively conduct operations, with its easy-to-setup large touch screen display incorporating the use of icons. With multiple language support, including English, users can also easily access and review the status and change the configuration of their system from anywhere if the user is online, even when abroad or on business trips. The Intuition-6 series offers a reliable way to keep your water treatment program such as for cooling towers and boilers, under control.

- **Large touchscreen display with icon based programming makes setup easy**
- **Universal sensor input provides extraordinary flexibility; the same controller can be used with almost any type of sensor needed**
- **Combination with sensor Input and Analog Input board that adds even more flexibility**
- **Optional dual analog (4-20 mA) input for fluorometers (Little Dipper 2) or nearly any other process value**
- **Multiple language support allows simple setup no matter where your business takes you**
- **Six control outputs allow the controller to be used in more applications**
- **Economical wall-mount package for easy installation**
- **On-screen and web page graphing of sensor values and control output status**
- **Data logging**
- **Emailing Alarm messages, Datalog reports or System Summary reports (only with supported models)**
- **Ethernet option for remote access via the internet (Fluent), LAN (only with supported models)**

Intuition-9

Solve water treatment issues with outstanding control
Reliable and flexible water treatment controller

Application example: Centralized management of independent equipment and remote data logging, etc.

Intuition-9 is a controller for cooling towers and boilers that integrates high-performance sensor functions, measuring instruments, liquid processing, and various data communication technologies into one unit. Its reliable performance is one of the highest in the water treatment industry. The system configuration is easy because the settings are easy to understand and intuitive. The system configuration is easy because the settings are easy to understand and intuitive. The system can be configured to manage a wide variety of cooling towers, boilers, closed loop systems, and water treatment related processes in general. Various and direct sensor input, corrosion, level, temperature, based on the measured input values from the other device to measure the pressure, etc., do the monitoring and management. 24 hours a day, 365 days a year, always running, even to the staff you are not in the field as well as field personnel to notify the performance status of the system. In addition, if you use W900 for water treatment, comprehensive management can be realized with high reliability.

- **Large touchscreen display with icon based programming makes setup easy**
- **Universal sensor input provides extraordinary flexibility; the same controller can be used with almost any type of sensor needed**
- **Combination with sensor Input and Analog Input board that adds even more flexibility**
- **Optional dual analog (4-20 mA) input for fluorometers (Little Dipper 2) or nearly any other process value**
- **Multiple language support allows simple setup no matter where your business takes you**
- **Eight control outputs allow the controller to be used in more applications**
- **Economical wall-mount package for easy installation**
- **On-screen and web page graphing of sensor values and control output status**
- **Data logging**
- **Combination control is also possible with virtual output**
- **Emailing Alarm messages, Data log reports or System Summary reports (only with supported models)**
- **Ethernet option for remote access via the internet (Fluent), LAN**

Sensors, Accessories

pH • ORP sensor

8000 series

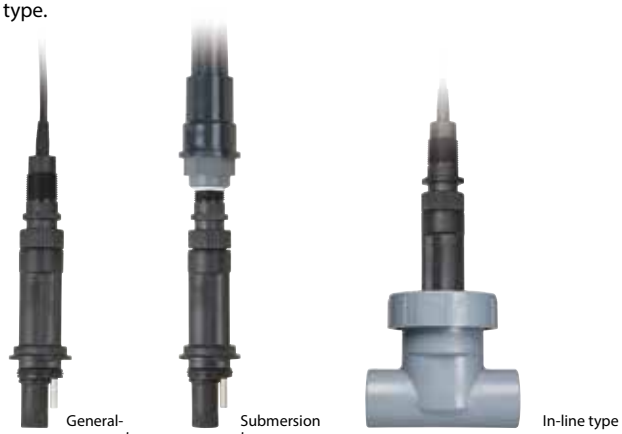
P100 W100 Intuition-6 Intuition-9

Excellent corrosion resistance and temperature resistance due to the use of PPS resin. Also, less leakage of internal liquid for internal liquid non-replenishment, reducing contamination of the test liquid. Since the electrode part is connected to the TNC connector, replacement and maintenance are extremely easy. The problem of noise is reduced by adding a signal conversion adapter with a built-in amplifier (option). There are three types of electrode structures: general, immersion, and distribution, and common electrodes can be used for each type.

Note : A pH / ORP preamplifier is required for use with the Intuition-6 and Intuition-9 series. In addition, the sensor cable, please select a BNC connector type.

Model (Electrode)	S8000CD	S8000CD-ORP
Type	General-purpose/submersion/in-line	
Measurement target	pH	ORP
Measurement range	0 - 14pH Note1	±1999mV Note2
Electrode structure	Composite electrode	
Electrode shape	Flat surface (without liquid supply into the KCl)	
Operating temperature	10 - 60°C	
Liquid conductivity	10 mS/m or above	
Wet-end material	Electrode: Glass, body: PPS, O-ring: FKM, liquid junction: PE	
Operating pressure	0 - 0.3MPa	
Temperature compensation	Embedded: Pt 1,000 Ω/ None	None

Note1: The measuring range is 0 to 12.3 pH, with sodium ion in the measured liquid.
Note2: With a signal conversion adapter, the measuring range is –1,000 mV to +1,000 mV.
Note3: A pH/ORP preamplifier is required to use the model with the Intuition-6 series.
Choose a BNC connector type for the sensor cable.
• EA899/EA899TC adapters have a temperature protection cylinder, made of SUS316.
• Please contact us for details about the 8000 series.



General-purpose type　Submersion type　In-line type

SH/SR series

P100 W100 Intuition-6 Intuition-9

Internal liquid replenishment type. Strongly to dirt compared to the internal liquid replenishment-free type, it is ideal for process applications such as waste water treatment and surface treatment. pH sensor lineup three types of standard resistance and hydrofluoric acid and high alkali. KCl internal liquid replenishment type, with less clogging at the liquid junction and long life. ORP sensors are two types of platinum and gold.

Note : A pH / ORP preamplifier is required for use with the Intuition-6 and Intuition-9 series. In addition, the sensor cable, please select a BNC connector type.

Model Note1	SH-200A-06☐	SH-2000-06☐	SH-H600A-06☐	SH-H6000-06☐	SH-8200A-06☐	SH-82000-06☐	SR-P000-06☐	SR-A000-06☐
Measurement target	pH						ORP	
	Standard		Hydrofluoric acid resistant		High alkali			
Measurement range	0 - 14pH		1 - 12pH Note2		0 - 14pH Note3		+1999mV	
Electrode structure	Composite electrode							
Electrode shape	Bulb (with liquid supply into the KCl)						Flat surface (with liquid supply into the KCl)	
Operating temperature	0 - 60°C		5 - 60°C				0 - 60°C	
Wet-end material	Glass/EPDM		PVC (transparent) / EPDM		Glass/EPDM		Platinum/glass/EPDM	Gold/glass/EPDM
Operating pressure	Lower than the liquid level pressure in the KCL							
Temperature compensation	Embedded: Pt 1,000 Ω/None	None	Embedded: Pt 1,000 Ω/None	None	Embedded: Pt 1,000 Ω/None	None	None	

Note1 : ☐=Cable terminal, Y : Y-type crimp terminal S : Soldering B : BNC connector
Note2 : 2 to 10 pH is recommended.
Note3 : The measuring range is 0 to 12.3 pH, with sodium ion in the measured liquid.

Throw-in pH Sensor

This sensor type can be used simply by throwing it inside the tank.

Model Note1	SH-SNB-06☐	SR-PSNB-06☐	SR-ASNB-06☐
Measurement target	pH	ORP	
Measurement range	0 - 14pH Note2	±2000mV	
Electrode structure	Composite electrode	Composite electrode	
Operating temperature	0 - 40°C Note3	0 - 40°C Note3	
Storage temperature range	0 - 40°C Note3, 4	0 - 40°C Note3, 4	
Working pressure range	0.05MPa or less	0.05MPa or less	
Wet-end material	Glass	Platinum/Glass	Gold/Glass
Temperature compensation	Pt 1,000 Ω/None	None	

Note1 : ☐=Cable terminal, Y : Y-type crimp terminal S : Soldering B : BNC connector
Note2 : The measuring range is 0 to 12.3 pH, with sodium ion in the measured liquid.
Note3 : No freezing.
Note4 : The recommended storage temperature range is 0 to 30 ° C.
Storage at temperatures above 30 ° C will significantly shorten the life of the electrodes.

SH / SR series accessories

Holder for the SH/SR Series (Support Pipe)
Length: 500/1,000/1,500 mm
Wetted material: PP (body), EPDM (gasket)
Liquid temperature supported: 0 to 60ºC

Inner Liquid for the SH/SR Series

WEL series

Intuition-6 Intuition-9

WEL series is a pH / ORP sensor for high cost-performance industrial applications. pH / ORP electrode can be quickly and easily connected and disconnected without tools. In the housing has a built-in battery-less preamplifier, can be directly connected to the Intuition-6 · Intuition-9.

General-purpose type

In-line type

	pH electrode cartridge		ORP electrode cartridge	
Model	WEL-PHF-NN	WEL-PHB-NN	WEL-MVF-NN	WEL-MVR-NN
Measurement principle	Glass electrode method		Metal electrode method	
Measurement range	0 - 14pH Note1		±1999mV	
Electrode shape	Flat surface	Bulb	Flat surface	Rod
Electrode structure	Composite electrode		Composite electrode	
Electrode internal structure	Internal liquid unsupplied type		Internal liquid unsupplied type	
Operating temperature	10 - 60°C Note2		10 - 60°C Note2	
Operating pressure	0 - 0.3MPa		0 - 0.3MPa	
Measurement liquid conductivity	10mS / m or more		10mS / m or more	
Wet end materials	Electrode : Glass, Body : CPVC, O ring : FKM, Entanglement part : PE		Electrode : Platinum, Body : CPVC, O ring : FKM, Entanglement part : PE	

Note1 : The measuring range is 0 to 12.3 pH, with sodium ion in the measured liquid.
Note2 : Electrode life when used temperature exceeds 50 °C. is significantly reduced.

	Preamplifier built housing	
Model	191653-20	191652-20
Temperature compensation	Pt1000	None
Operating temperature	10 - 60°C	
Operating pressure	0 - 0.3MPa	
Wet end materials	Body : CPVC, O ring : FKM, Grand rod : Titanium	
Cable	6-core cable, 6m	4-core cable, 6m
Connection diameter	NPT1 Note	
Power supply	±5VDC Max. 5mA	
Controllers	Intuition-6, Intuition-9	

Note : The housing cannot be used in immersion applications as it is. Please separately attached instructions tube to NPT1 threaded end of the housing. Seal the threads to prevent the measurement fluid from coming into contact with the housing cable.

	Distribution type holder
Constitution	Nuts, Inline cheese, O rings
Operating temperature	10 - 60°C
Operating pressure	0 - 0.3MPa
Wet end materials	Body : GFRPP, O ring : FKM
Wetting diameter	NPT3/4

Note : Use flat electrodes for distribution holders.

pH · ORP sensor common accessories

Junction Box: HT-3
Used to connect an extension cable.

Metal Fitting: MF-1
Used to attach a submersion sensor to the inside of the tank.

pH Standard Solution
Solutions of pH4, pH7, and pH9 are available (500 mL). Powdered products are also available for pH4, pH7, and pH9 (12 cases).

Quinhydrone powder 10 bags for 500cc
It determines whether the ORP measurement is normal.

Extension Cables
- Y-S510/520/530
  10/20/30m×5-core, One side Y type crimp terminal One side soldering
- Y-Y510/520/530
  10/20/30m×5-core, Y-shaped terminals on both ends

This cable is used to connect the controller and the junction BOX "HT-3".The sensor is made by Sensorex or Bell Science.

Note : Only P100 and W100 series can be used.

- In the case of no temperature compensation, please use to cut the unnecessary line.

pH/ORP Checker: C110-8000(S)
The device allows you to check the functionality of your controller, cables, and sensors with ease.
- The device does not support the calibration of pH meters. Please contact us for details.

pH / ORP preamplifier (ultra-compact type)
An ultra-compact type that can be stored in the Intuition-6 / Intuition-9 case.Since it comes with a cable, no twisted pair cable is required.

pH / ORP preamplifier (case type)
Used to extend the pH / ORP sensor.
- The sensor is connected to the BNC connector.

Twisted pair cable
10/20/30m×5-core
A cable that connects and extends the Intuition-6 / Intuition-9 series and pH/ORP preamplifiers (case type).The sensor is made by Sensorex or Bell Science.

Since the WEL series has a built-in preamplifier, a pH / ORP preamplifier and twisted pair cable are not required.

Sensors, Accessories

pH • ORP sensor

pH / ORP sensor comparison table

	8000		SH/SR			WEL	
Series							
Model	S8000CD	S8000CD-ORP	SH	SH-SNB	SR	WEL-PHF/B	WEL-MVF/R
Measurement target	pH	ORP	pH		ORP	pH	ORP
Internal liquid structure	Non-replenishment		Replenishment	Non-replenishment	Replenishment	Non-replenishment	
Operating temperature range	10 - 60°C		0 - 60°C Note	0 - 40°C	0 - 60°C	10 - 60°C	
Installation method	General-purpose / Submersion / In-line		Submersion	Throw-in	Submersion	General-purpose / In-line	
Feature comparison	Optional amplifier can be retrofitted. Cartridge type for easy replacement.		Strong for measuring dirty water. Electrode life is long because it replenish internal liquid.		Strong for measuring dirty water. Electrode life is long because it replenish internal liquid.	Built-in amplifier and resistant to noise. Cartridge type for easy replacement.	
Applications	Clean water • Sterilized water (slightly acidic water) • Water after well water treatment • Plating related		Water with low conductivity (equivalent to tap water), Dirty water (wastewater)	A place where you are using shallow tank	Water with low conductivity (equivalent to tap water), Dirty water (wastewater)	Clean water • Sterilized water (slightly acidic water) • Water after well water treatment • Plating related	
Accessories	• Extension Cables • Junction Box: HT-3 • pH / ORP preamplifier • Metal Fitting: MF-1		• Extension Cables • Junction Box: HT-3 • Holder (Support Pipe) • Inner Liquid	• Extension Cables • Junction Box: HT-3	• Extension Cables • Junction Box: HT-3 • Holder (Support Pipe) • Inner Liquid	• Extension Cables • Junction Box: HT-3 • Flow cell	
Applicable controllers	P100 W100 Intuition-6 Intuition-9		P100 W100 Intuition-6 Intuition-9			Intuition-6 Intuition-9	

Note : Standard type only. Hydrofluoric acid resistant and highly alkaline type is 5 to 60 °C.

pH / ORP sensor identification

8000 series

• Electrode identification

S8000CD - HF
1 2

1 Series name
S8000CD

2 Electrode type
No mark : Standard
HF : For hydrofluoric acid

• Sensor identification

IS8 - SFP T P - 150
1 2 3 4 5

1 Series name
IS8

2 Installation method
SFP : Submersion (Support pipe)
MFP : In-line
GFP : Submersion (General)

3 Temperature compensation
No mark : No temperature compensation
T : With temperature compensation

4 Terminal
P : Y-type crimp terminal
PS : Soldering

5 Special symbol
150 : Support tube length 150 cm (example)

SH/SR series

• SH series (Including SH-SNB)

SH - 200 0 - 06 Y
1 2 3 4 5

1 Series name
SH

2 Electrode type
200 : Standard
H600 : For hydrofluoric acid
8200 : For alkali
SNB : Throw-in

3 Temperature compensation
0 : No temperature compensation
A : With temperature compensation

4 Cable length
06 : 6m (Standard)

5 Terminal
Y : Y-type crimp terminal
S : Soldering
B : BNC connector

• SR series

SR - P000 - 06 Y
1 2 3 4

1 Series name
SR

2 Electrode type
P000 : Platinum
A000 : Gold

3 Cable length
06 : 6m (Standard)

4 Terminal
Y : Y-type crimp terminal
S : Soldering
B : BNC connector

WEL series

• Electrode identification

WEL - PHF - NN
1 2 3

1 Series name
WEL

2 Electrode type
PHF : pH flat surface
PHB : pH Bulb

3 Without housing

• Sensor identification

WEL - PHF - 7 1
1 2 3 4

1 Series name
WEL

2 Electrode type
PHF : pH flat surface
PHB : pH Bulb

3 Temperature compensation
7 : With temperature compensation
8 : No temperature compensation

4 Installation method
1 : Submersion (General)
2 : In-line

Conductivity sensor

Electrode type

P100 W100 Intuition-6 Intuition-9

In-line and throw-in type (convertible)

Model[Note1]	ESB-101-06S/Y	ESB-102-06S/Y	ESB-103-06S/Y
Cell constant	1	0.1	0.01
Measurement range[Note2]	0.0 - 3000.0 mS/m	0.00 - 300.00 mS/m	0.000 - 30. 000 mS/m
Application	Tap water, Well water, Medium water	Cooling tower, Boiler, sewage	Chemical liq-uid, Detergent
Operating temperature	5 - 45°C		
Temperature sensor	Pt1000Ω		
Wet-end material	POM, PEEK, SUS		
Cable length	6m		

• When a sensor with a cell constant of 1 is in an in-line mode, multiply the constant by 1.17.
Note1: The models for the P100 are suffixed with a "Y".
Note2: Indicates the range when used with the W100 series or Intuition-6 series; these are not the performance of a stand-alone sensor itself.

Accessories

Holder for the In-line Type ESB-RH
Used to install sensors into piping lines.
Material: PVC

Note : There is also an extension cable and a relay box.

Electromagnetic type

P100 W100 Intuition-6 Intuition-9

Model	MCS-PP06NP
Structure	Throw-in or in-line (with a dedicated holder)
Measurement range	0 - 200 S/m
Temperature sensor	Pt1000Ω
Wet-end material	PP[Note1]
Operating temperature	0 - 60°C[Note2]
Cable length	6m

Note1: As for the throw-in sensor, the wetted material of the cables will be of PVC, nylon-66, and EPDM.
Note2: This varies depending on the types and concentrations of liquid used.

Accessories

Throw-in Holder MCH-PPTH
Used with a throw-in sensor.
Material: PP

In-line Holder MCH-PPIS
Used to install sensors into piping lines.
Material: SUS304
Flange of JIS 10K 25A

In-line Holder MCH-PPIV
Used to install sensors into piping lines.
Material: PVC
Flange of JIS 10K 25A
(Example of Installation onto a Sensor)

Note : There is also an extension cable and a relay box.

Model	MCS-PK06NP
Structure	Flange, ferrule, in-line (with a dedicated holder)
Measurement range	0 - 200 S/m
Temperature sensor	Pt1000Ω
Wet-end material	PEEK
Operating temperature	0 - 120°C[Note]
Cable length	6m

Note: This varies depending on the types and concentrations of liquid used. The value is for the detector part.

Accessories

In-line Holder MCH-PKIS
Used to install sensors into piping lines.
Material: SUS304
Flange of JIS 10K 25A

In-line Holder MCH-PKHS[Note]
Used to install sensors into piping lines.
Material: SUS316
2S Ferrule

Flange Holder MCH-PKFV
Used to install sensors into piping lines.
Material: PVC
Flange of JIS 10K 50A

Flange Holder MCH-PKFS
Used to install sensors into piping lines.
Material: SUS316
Flange of JIS 10K 50A

• The pictures show some examples of such installation.
• There is also an extension cable and a relay box.
Note: The MCH-PKHS does NOT include ferrule clamps, gaskets for ferrules, or a 2S ferrule tee. These need to be procured separately.

Fluorometers

Intuition-6 Intuition-9

Inline fluorometers Little Dipper 2

Little Dipper 2 is a transmitter for inline fluorescent dye sensors that can be directly connected with a pipe. With its ability to output analog signals proportional to concentration, Little Dipper 2 can be combined with Intuition-9 to provide for the measurement and management of fluorescent dye concentration in cooling towers.

Measurement range	1 - 300 ppb
Linearity	0.99 r2
Power consumption	0.8W (DC12V)
Power voltage	8 - 30 VDC
Output signal	4 - 20 mA
Start-up time	5 seconds
Operating temperature	0 - 50°C
Material	PVC

Handheld Little Dipper Fluorometer

Linear Range	0 - 200 ppb
Sensitivity	1 ppb
Operating temperature	0 - 40°C
Start-up time	5 seconds
Waterproof	IP65
Power	Two AA batteries
Light source	LED
Mass	120g

Specifications

P100

W	PHN	P	1	20	A	-	
1	2	3	4	5	6		7

1 Series name
W series

2 Application
PHN : pH controller
CN : Conductivity controller

3 Installation method
P : Panel mount type

4 Model
1 : 100 type

5 Relay specification
10 [Note] : 4 No voltage relay
20 : 2 No voltage relay, 2 Semiconductor relay
Note : Conductivity only

6 Analog output
A : Analog output

7 Special specification

W100

W	PHN	W	1	20H	A	-	N
1	2	3	4	5	6		7

1 Series name
W series

2 Application
PHN : pH controller
CN : Conductivity controller

3 Installation method
W : Wall mount type

4 Model
1 : 100 type

5 Relay specification
20H : 1 No voltage relay, 2 Semiconductor relay

6 Analog output
A : Analog output

7 Sensor
N : No sensor

Model		P100 WPHNP120A	W100 WJPHNW120HA-N	P100 WCNP110A/120A	W100 WJCNW120HA-N
Application		For the pH Sensor and ORP Sensor without amplifier		For the General-purpose Conductivity Sensor	
Operation modes		Automatic, Manual OFF			
Measurement	pH	Measuring range: 0.00 to 14.00 pH (Display range: –2.00 to 16.00 pH)		Two-electrode conductivity	Measuring range: 0.000 to 30.000 mS/m (cell constant: 0.01), 0.00 to 300.00 mS/m (cell constant: 0.1), 0.0 to 3,000.0 mS/m (cell constant: 1), 0 to 30,000 mS/m (cell constant: 10)
		Resolution: 0.01 pH			Resolution: 0.001 mS/m, 0.01 mS/m, 0.1 mS/m, 1 mS/m
		Repeatability: ±0.05 pH (per controller)			Linearity: F.S±1% (per controller)
	ORP	Measuring range: ±1,500.0 mV		Electro-magnetic conductivity	Measuring range: 50.0 to 1,200.0 mS/m, 300.0 to 4,000.0 mS/m, 1,000 to 15,000 mS/m, 5,000 to 50,000 mS/m, 20,000 to 200,000 mS/m (freely selectable) (Display range: 0 to 1,600.0/5,332.0/19,995/66,650/266,600 mS/m)
		Resolution: 0.1 m			Resolution: 0.1 mS/m, 1 mS/m
		Repeatability: ±5 mV (per controller)			Linearity: F.S±1% (per controller)
	Temperature	Measuring range: 0.0 – 120.0°C (Display range: –5.0 – 260.0°C) Resolution: 0.1°C, Linearity: F.S±1% (per controller)			
	Cumulative flow into a low-speed flowmeter	Max frequency: 10 Hz, Cumulative range: 0 to 1,000,000,000, Meter factor: 0 to 100,000 lit, gal, m^3, Unit: lit, gal, m^3			
	Cumulative flow into a high-speed flowmeter	Max frequency: 500 Hz, Cumulative range: 0 to 1,000,000,000, Pulse constant: 0.00 to 100,000.00 pulse/lit, gal, m^3, Unit: lit, gal, m^3			
	Instant flow into a high-speed flowmeter	Max frequency: 500 Hz, Display range: 0.00 to 21,474,836.47, Pulse constant: 0.00 to 100,000.00 pulse/lit, gal, m^3, Flow unit: lit, gal, m^3 Time unit: /sec, /min, /hour, /day			
Operational method		Key switches			
Display(Dot matrix LCD with backlights)		LED×4	LED×3	LED×4	LED×3
Input		pH input: Glass film electrode (without amplifier)		2-electrode conductivity input: 2-electrode conductivity sensor, cell constants: 0.01, 0.1, 1, 10	
		ORP input: ORP electrode (without amplifier)		Electromagnetic conductivity input: Electromagnetic conductivity sensor	
	Temperature	Pt 100, Pt 1,000, 10-k thermistor, 100-k thermistor (freely selectable), automatic temperature compensation			
	Contact	No voltage contact signal[Note1]×1	No voltage contact signal[Note1]×2	No voltage contact signal[Note1]×1	No voltage contact signal[Note1]×2
		Interlock, low-speed flowmeter, high-speed flowmeter (freely selectable)			
Communication port		USB host for flash memory			
Output	Relay	- No voltage contact x 2 1a 250 VAC 8A (resistance load) - Semiconductor contact x 2 1a 48 VAC/DC 0.5A for the pulse control of pumps	- No voltage contact x 1 1a 250 VAC 6A (resistance load) - Semiconductor contact x 2 1a 40 VAC/DC 0.2A for the pulse control of pumps	Relay specification No.10 - No voltage contact x 4 1a 250 VAC 8 A (resistance load) Relay specification No.20 - No voltage contact x 2 1a 250 VAC 8 A (resistance load) - Semiconductor contact x 2 1a 48 VAC/DC 0.5 A, for the pulse control of pumps	- No voltage contact x 1 1a 250 VAC 6A (resistance load) - Semiconductor contact x 2 1a 40 VAC/DC 0.2A for the pulse control of pumps
	Transmission	- DC4 to 20 mA against the measured value (freely selectable) Load resistance: 600Ω or lower, isolated - Accuracy: F.S±1%			
Calibration		pH calibration: One-, two-, or three-point calibration (automatic/manual)		Calibration for 2-electrode conductivity: One-point calibration (freely selectable)	
		ORP calibration: One- or two-point calibration (freely selectable)		Calibration for electromagnetic conductivity: One- or two-point calibration (freely selectable)	
	Temperature	One-point calibration (freely selectable)			
Power supply voltage[Note2]		AC100 to 240V, 50/60Hz			
Control features		ON/OFF control (forward/backward), 2 point setting control (output within/out of range), time proportional control (forward/backward), pulse proportional control (forward/backward), pulse PID control, flow rate control, synchronous/manual, interval-based control, timer-based control, sensor cleaning			
Alarm		Integrated alarm, high alarm (measurement values or temperature), low alarm (measurement values or temperature), digital alarm, relay alarm			
Case		Polycarbonate			

Note1: The max applied voltage is DC 9 V, and the max applied current is 2.3 mA to the contact. Use a component of the min applied load of 1 mA or lower as a contact component, such as a relay.
Note2: Do not apply any voltage that is outside the specifications; doing so may cause failure. Note that the allowable voltage ranges from AC 90 to 264 V.
• Ambient temperature: 0 to 45˚C
• Ambient Humidity: 35% to 85% RH; with no condensation in the controller
• Storage temperature: –20 to 80˚C
• Installation conditions: No exposure to direct or reflected sunlight

Intuition-6

W	CT	6	100H	AA	A	N	-	NNNNN
1	2	3	4	5	6	7		8

1 Series name
- **W** series

2 Application
- **CT** : Cooling controller
- **PH** : pH controller
- **CN** : Conductivity controller

3 Model
- **6** : Intuition-6

4 Relay specification
- **000H** : 6 voltage
- **100H** : 2 voltage 4 No voltage relay
- **200H** : 2 semiconductor 4 No voltage relay
- **400H** : 4 semiconductor 2 No voltage relay

5 Sensor input card
- **AA** : 2 sensor input
- **AB** : 1 sensor input 2 analog input
- **CN** : 1 sensor input 1 analog input
- **AC** : 2 sensor input 1 analog input
- **CC** : 2 sensor input 2 analog input
- **BB** : 4 analog input

E-COND cannot be connected to the C sensor input.

6 Analog output card
- **A** : 2 analog output
- **N** : No analog output

7 Network card
- **N** : No network card
- **E** : Ethernet card
- **M** : Ethernet+Modbus/TCP and BACnet

8 Sensor
- **NNNNN** : Optional sensor

Model	WJCT6100H□□□□-NNNNN		Cooling controller
	WJPH6400H □□□□-NNNNN		pH/ORP controller
	WJCN6□00H□□□□-NNNNN		Conductivity controller
Applicable sensor (Not attached)	Electrode type conductivity sensor Model ESB (Cell constant1.0, 0.1, 0.01)		
	Electromagnetic type conductivity sensor Model MCS (Only to Conductivity controller)		
	pH sensor Model WEL (The IS8 series and SH series require an additional preamplifier.)		
	ORP sensor Model WEL (The IS8 series and SH series require an additional preamplifier.)		
Measurement	Two-electrode conductivity	Measuring range: 0.000 to 30.000 mS/m (cell constant: 0.01), 0.00 to 300.00 mS/m (cell constant: 0.1), 0.0 to 3,000.0 mS/m (cell constant: 1), 0 to 30,000 mS/m (cell constant: 10)	
		Resolution: 0.001 mS/m, 0.01 mS/m, 0.1 mS/m, 1 mS/m	
		Linearity: F.S±1% (per controller)	
	Electro- magnetic conductivity (Measurement range selection)	Measuring range: 50.0 to 1,200.0 mS/m, 300.0 to 4,000.0 mS/m, 1,000 to 15,000 mS/m, 5,000 to 50,000 mS/m, 20,000 to 200,000 mS/m (freely selectable) (Display range: 0 to 1,600.0/5,332.0/19,995/66,650/266,600 mS/m)	
		Resolution: 0.1 mS/m, 1 mS/m	
		Linearity: F.S±1% (per controller)	
	pH	Measuring range: 0.00 to 14.00 pH (Display range: –2.00 to 16.00 pH)	
		Resolution: 0.01 pH	
		Repeatability: ±0.05 pH (per controller)	
	ORP	Measuring range: ±1,500.0 mV	
		Resolution: 0.1 mV	
		Repeatability: ±5 mV (per controller)	
	Temperature	Measuring range: –5.0 – 260.0°C Resolution: 0.1°C Linearity: F.S±1% (per controller) Unit: °C, °F	
	Cumulative flow into a low-speed flowmeter	Max frequency: 20 Hz, minimum 25msec Cumulative range: 0 to 2,000,000,000, Meter factor: 0 to 100,000 unit: lit, gal, m^3	

Measurement	Cumulative flow, Instant flow into a high-speed flowmeter	Max frequency: 500 Hz, minimum pulse width 1.00msec Cumulative range: 0 to 2,000,000,000, Pulse constant: 0.01 to 100,000.00 pulse/lit, gal, m^3 Flow unit: lit, gal, m^3 Time unit: /sec, /min, /hour, /day
	Cumulative flow, Instant flow into a flow checker	Cumulative range: 0 to 1,000,000, Meter factor: 0.001 to 1000.000 Unit: mL Fixed, Flow unit: lit, gal, m^3 Time unit: /min, /hour, /day
Display	Touch panel LCD	5 inch color LCD (800 x 480)
Input	Sensor	Electrode/Electromagnetic type conductivity sensor, pH/ORP sensor
	Analog	DC4-20mA Max. ×4 (Depends on input specification symbol), Input resistance CH1: 130Ω, CH2: 280Ω (Combo card) Sensor power supply DC24V built-in, total 2W
	External	×6, No-voltage contact input, 9V 2.3mA Digital input Response within 2 seconds Contact type flow sensor 0 - 20Hz low-speed spec of 25msec Paddle type flow sensor 0 - 500Hz minimum 1.25msec
Output	Relay	×6, (The contact type depends on the relay specification symbol) Voltage contact Power supply voltage output, Total current with fuse less than 6A No voltage contact 6A (Resistive load) 93W Semiconductor contact (Pulse output) Maximum load DC40V
	DC4 to 20 mA	x 2 Load resistance: 600Ω or lower, isolated
Power supply voltage		AC100 to 240V, 50/60Hz, 7A
Ambient temperature		0 – 50°C
Storage temperature		-20 – 80°C
Communication port		USB host for flash memory RJ45 Ethernet (With Ethernet card)
Case		Polycarbonate, NEMA4X

Intuition-9

W	CT	9	2000	H	AADF	W	M	L	-	NNNNNN
1	2	3	4	5	6	7	8	9		10

Fixed relay board (relay customization is limited)

8	ABC
4 -a	4 -b

Flexible relay board (relays can be customized)

1 Series name
- **W** series

2 Application
- **CT** : Cooling controller
- **IN** : pH/ORP, Conductivity

3 Model
- **9** : Intuition-9

4 Fixed relay board

	Voltage relay	No voltage relay	Semiconductor relay
0000	8	—	—
1000	7	1	—
2000	—	6	2
3000	4	4	—
4000	—	4	4
5000	4	—	4
6000	6	—	2
7000	—	8	—

4 -a Relay board
- **8** : 3 relay slots, 15A
- **9** : 3 relay slots, 20A

4 -b Relay module #1 to 3 specification code
Note : #1-3 are arranged in alphabetical order

	Voltage relay	No voltage relay	Semiconductor relay
A	4	—	—
B	—	4	—
C	—	—	4
D	2	2	—
E	2	—	2
F	—	2	2
G	3PDT (3 Form C) No Voltage Relay		
N	Without relay module		

5 Power cord symbol
- **H** : Hard wired (no power cord)

6 I/O modules 1-4 (in alphabetical order)
- **N** : No input / output
- **A** : 2 sensor input
- **B** : 2 analog input
- **C** : 4 analog input
- **D** : 6 analog input
- **E** : 2 analog input + 4 analog output
- **F** : 2 analog output
- **G** : 4 analog output

7 Wi-Fi card
- **N** : No Wi-Fi card
- **W** : Wi-Fi single (Wi-Fi only)
- **D** : Wi-Fi dual (Wi-Fi + Ethernet)

8 Communication protocol
- **N** : No communication protocol
- **M** : Modbus/TCP, BACnet

9 Auxiliary power
- **N** : No auxiliary power
- **L** : DC12V auxiliary power board
- **H** : DC24V auxiliary power board

10 Sensor sold separately
- **NNNNNN** : No sensor sold separately

Model	WCT93000HAACGNNN-NNNNNN		For cooling
	WIN94000HAACGNNN-NNNNNN		For general control
	WIN97000HDDDDNNN-NNNNNN		For monitoring
Applicable sensor (sold separately)	Electrode type conductivity sensor ESB type (cell constant 1.0, 0.1, 0.01)		
	Electromagnetic conductivity sensor MCS type (for cooling and general control only)		
	pH sensor WEL type (IS8 type and SH type require a separate preamplifier)		
	ORP sensor WEL type (IS8 type and SR type require a separate preamplifier)		
Measurement	Two-electrode conductivity	Measurement range: 0.000 to 30.000 mS / m (cell constant 0.01), 0.00 to 300.00 mS / m (cell constant 0.1), 0.0 to 3000.0 mS / m (cell constant 1), 0 to 30000 mSm (cell constant 10)	
		Resolution: 0.001 mS/m, 0.01 mS/m, 0.1 mS/m, 1 mS/m	
		Linearity: F.S±1% (per controller)	
	Electro- magnetic conductivity (Measurement range selection)	Measurement range: 50.0 to 1200.0 mS / m, 300.0 to 4000.0 mS / m, 1000 to 15000 mS / m, 5000 to 50000 mS / m, 20000 to 200,000 mS / m (optional) (Displayable range is 0 to 1600.0, 5332.0, 19995, 66650, 266600mS / m)	
		Resolution: 0.1 mS/m, 1 mS/m	
		Linearity: F.S±1% (per controller)	
	pH	Measuring range: 0.00 to 14.00 pH (Display range: –2.00 to 16.00 pH)	
		Resolution: 0.01 pH	
		Repeatability: ±0.05 pH (per controller)	
	ORP	Measuring range: ±1,500.0 mV	
		Resolution: 0.1 mV	
		Repeatability: ±5 mV (per controller)	
	Temperature	Measuring range: –5.0 – 260.0°C Resolution: 0.1°C Linearity: F.S±1% (per controller) Unit: °C, °F	
	Cumulative flow into a low-speed flowmeter	Maximum frequency: 20Hz, minimum 25msec Integration range: 0-2000000000 Meter coefficient: 1 to 100000 units / 1 pulse Unit: lit, gal, m^3	

Measurement	Cumulative flow, Instant flow into a high-speed flowmeter	Max frequency: 500 Hz, minimum pulse width 1.00msec Cumulative range: 0 to 2,000,000,000, Pulse constant: 0.01 to 100,000.00 pulse/lit, gal, m^3 Flow unit: lit, gal, m^3 Time unit: /sec, /min, /hour, /day
	Cumulative flow, Instant flow into a flow checker	Cumulative range: 0 to 1,000,000,000, Meter factor: 0.001 to 1000.000 Unit: mL Fixed, Flow unit: lit, gal, m^3 Time unit: /min, /hour, /day
Display	Touch panel LCD	7 inch color LCD (1024 x 600)
Input	Sensor[Note1]	Electrode/Electromagnetic type conductivity sensor, pH/ORP sensor
	Analog[Note1]	DC4-20mA maximum 24 points (depending on the input specification symbol), input resistance CH1: 130Ω, CH2 to 6: 280Ω DC24V built-in, total 1.5W
	External	×12, No-voltage contact input, 12V 2.3mA Digital input: Response within 2 seconds Contact type flow sensor 0 - 20Hz, minimum 25msec Baddle type flow sensor 0-500Hz, minimum 1.00msec
Output	Relay[Note2]	×8 or 12, (contact type depends on relay specification symbol) Voltageed contacts Power supply voltage output, with fuse Total current less than 6A Non-voltage contact 6A (Resistive load) 93W Semiconductor contact (Pulse output) Maximum load DC40V, 0.2A
	DC4-20mA[Note1]	Maximum 16 points, isolated type, maximum load resistance 600Ω
Power supply voltage		100-240 VAC, 50 or 60Hz, 15A (20A)
Ambient temperature		0 – 50°C
Storage temperature		-20 – 80°C
Communication port		USB host for flash memory RJ45 Ethernet hub
Case		Polycarbonate, NEMA4X

Note1 : The number of input points depends on the I / O module specification symbol.
Note2 : The number of output points depends on the I / O module specification symbol.
• An English instruction manual is not attached to the Intuition-9 main unit.
Please download it from our website if necessary.

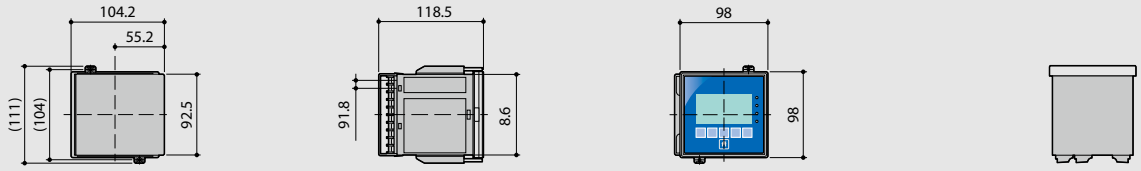
Specification list

Item		Details	P100	W100	Intuition-6	Intuition-9
						
Input	Sensor	pH	(1)[Note1]	(1)[Note1]	(●) (2/1/0)	(●) (8/6/4/2/0)
		ORP				
		Electrode type conductivity	(1)[Note1]	(1)[Note1]		
		Electromagnetic conductivity (ECOND)				
		2 Corrosion degree input	—	—	—	●
		Temperature	●	●	(●)	(●)
	Low speed flow meter	Integrated flow rate	●	●	●	●
	High speed flow meter	Integrated flow rate	●	●	●	●
		Instantaneous flow rate	●	●	●	●
	Transmission	DC4-20mA	—	—	(●) (0/1/2/3/4)	● (0 - 24)
	External	Interlock Low-speed / high-speed flowmeter, etc.	● (1)	● (2)	● (6)	● (12)
	Virtual input		—	—	● (16)	● (16)
Output	Relay	Voltage relay, No voltage relay, Semiconductor relay	● (4)	● (3)	● (6)	● (8)
	Transmission	4-20mA (freely selectable)	● (1)	● (1)	(●) (2/0)	(●) (0 - 16)
Control function	Relay output	Manual control	●	●	●	●
		Pulse Proportional Control (Forward / reverse direction)	●	●	●	●
		Flow rate proportional control	●	●	●	●
		Pulse PID Control	●	●	●	●
		ON/OFF control (Forward / reverse direction)	●	●	●	●
		2 point setting control (Output within range / Out of range output)	●	●	●	●
		Time Proportional Control (Forward / reverse direction)	●	●	●	●
		Flow control	●	●	●	●
		Percent timer control	●	●	●	●
		Timer control	●	●	●	●
		Spike control	—	—	●	●
		Probe wash control	●	●	●	●
		Lag output	—	—	●	●
		Alarm output	●	●	●	●
		Sampling control	—	—	●	●
		Blow synchronization control	—	—	●	●
		Blow% control	—	—	●	●
		Biotimer control	—	—	●	●
	Analog output	Manual control	●	●	●	●
		Retransmit output	●	●	●	●
		Proportional output (Forward / reverse direction)	●	●	●	●
		Flow rate proportional control	●	●	●	●
		PID control	●	●	●	●
		Lag output	—	—	●	●
	Virtual output		—	—	● (6)	● (16)
	Other control [Note2]		—	—	—	●
Display	Dot matrix LCD with backlights		●	●	—	—
	5 inch color LCD		—	—	●	—
	7 inch color LCD		—	—	—	●
Operational method	Key switches		●	●	—	—
	Touch panel		—	—	●	●
Communication	USB	USB2.0	●	●	●	●
	Remote monitoring	Ethernet	—	—	(●)	●
		Wi-Fi	—	—	—	(●)
	Modbus/TCP and BACnet		—	—	(●)	(●)
Language	Multilingual		●	●	●	●

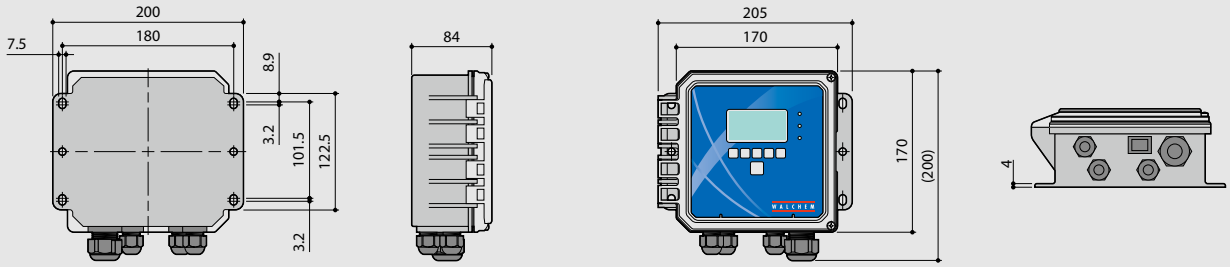
( ) depends on what specification is selected.
Note1: Choose either "pH/ORP sensor" or "Conductivity sensor."
Note2: Intuition-9 offers many other controls. Please contact us for details.

Dimensions in mm

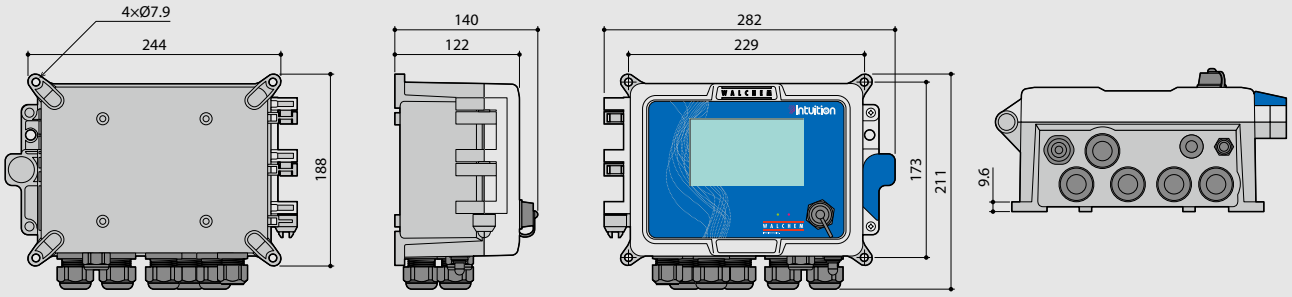
P100



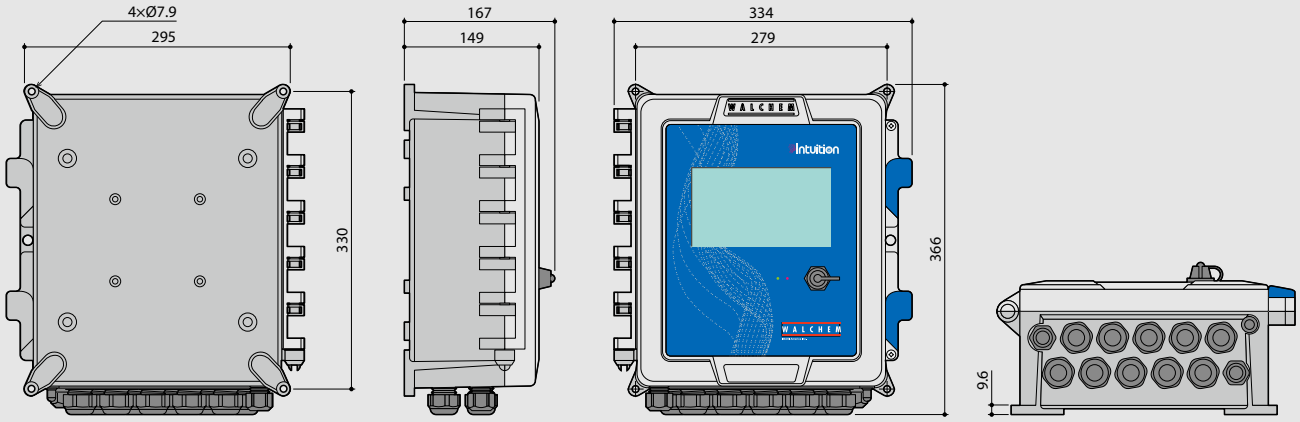
W100



Intuition-6



Intuition-9



Common specifications

Safety standard	UL 61010-1:2012, 3rd Edition CSA C22.2 No.61010-1:2012, 3rd Edition IEC 61010-1:2010 3rd Editiont EN 61010-1:2010 3rd Edition
EMC standard	IEC 61326-1:2012 EN 61326-1:2013

• EN61000-4-6 and EN61000-4-3 meet Performance Standard B suitable for industrial products.

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Malaysia	: IWAKIm Sdn. Bhd.	TEL: (60)3 7803 8807	FAX: 3 7803 4800
Australia	: IWAKI Pumps Australia Pty Ltd.	TEL: (61)2 9899 2411	FAX: 2 9899 2421
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Korea	: IWAKI Korea Co.,Ltd.	TEL: (82)2 2630 4800	FAX: 2 2630 4801
Taiwan	: IWAKI Pumps Taiwan Co., Ltd.	TEL: (886)2 8227 6900	FAX: 2 8227 6818
Thailand	: IWAKI (Thailand) Co.,Ltd.	TEL: (66)2 322 2471	FAX: 2 322 2477
European Headquarter	: IWAKI Europe GmbH	TEL: (49)2154 9254 0	FAX: 2154 9254 48
Germany	: IWAKI Europe GmbH	TEL: (49)2154 9254 50	FAX: 2154 9254 55
The Netherlands	: IWAKI Europe GmbH (Netherlands Branch)	TEL: (31)74 2420011	FAX: (49)2154 925448
Italy	: IWAKI Europe GmbH (Italy Branch)	TEL: (39)0444 371115	FAX: 0444 335350
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Belgium	: IWAKI Belgium N.V.	TEL: (32)13 67 02 00	FAX: 13 67 20 30
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Finland	: IWAKI Suomi Oy	TEL: (358)9 2745810	FAX: 9 2742715
France	: IWAKI France S.A.	TEL: (33)1 69 63 33 70	FAX: 1 64 49 92 73
Norway	: IWAKI Norge AS	TEL: (47)23 38 49 00	FAX: 23 38 49 01
Sweden	: IWAKI Sverige AB	TEL: (46)8 511 72900	FAX: 8 511 72922
U.S.A.	: IWAKI America Inc.	TEL: (1)508 429 1440	FAX: 508 429 1386
Argentina	: IWAKI America Inc. (Argentina Branch)	TEL: (54)11 4745 4116	
Brazil	: IWAKI Do Brazil Comercio De Bombas Hidraulicas LTDA.	TEL: (55)19 3244 5900	FAX: 19 3244 5900

( )Country codes

Manufacturing Locations

Iwaki's production system, namely quality assurance system

Saitama Plant

Miharu plant

Thorough quality-control measures and constant pursuit of efficiency have helped IWAKI establish a superior production system.

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IWAKI has global net work.
Please find your distributor location at **www.iwakipumps.jp**

⚠ Caution for safety use:
Before use of pump, read instruction manual carefully to use the product correctly.

Actual pumps may differ from the photos. Specifications and dimensions are subject to change without prior notice.
For further details please contact us.

⚠ Legal attention related to export.

Our products and/or parts of products fall in the category of goods contained in control list of international regime for export control.
Please be reminded that export license could be required when products are exported due to export control regulations of countries.