

RAKU-RAKU

fertilizer control machine 3



CEMCO

By combining the automatic EC meter, the pH meter, and the quantitative pump as 1 unit, this enables the fertilizer concentration to be easily and automatically managed.

Integrating the pH meter and the EC meter as 1 unit, and in addition, integrating with the double quantitative pump enables the unit to become more compact.

Since the complicated wiring has been already connected to the pumps and the meters, all you have to do is just to plug it into the outlet. In addition, in the case of the sensors as well, it is possible to immediately carry out measurement control just by throwing the sensor into dilution tanks.

Installation can be carried out just by throwing the hose in.

All of the piping to the fertilizer tanks A and B and to the dilution tanks is of a hose connection type, which allows for easy installation. In addition, since the anti-siphon valve is attached at the tip, it is not necessary to choose the location of the tanks as either ground or underground, so installation without any limitations is possible.

Diaphragm dual type quantitative pump with very few malfunctions or breakdowns.

Although it is expensive at the moment, it uses a diaphragm dual type pump which, as the chemical injection pump, has the strongest resistance to dirt and has fewer malfunctions or breakdowns and has high degree of injection accuracy.

A mechanism to prevent excessive concentration is used.

In order to prevent the quantitative pump from working when the circulation pump stops and the culture solution therefore can not be stirred, it is equipped with an interlocking mechanism and a circulation pump in order to prevent the over concentration of EC in the dilution tank.

For power supply, it is possible to select 100 V or 200 V single phase.

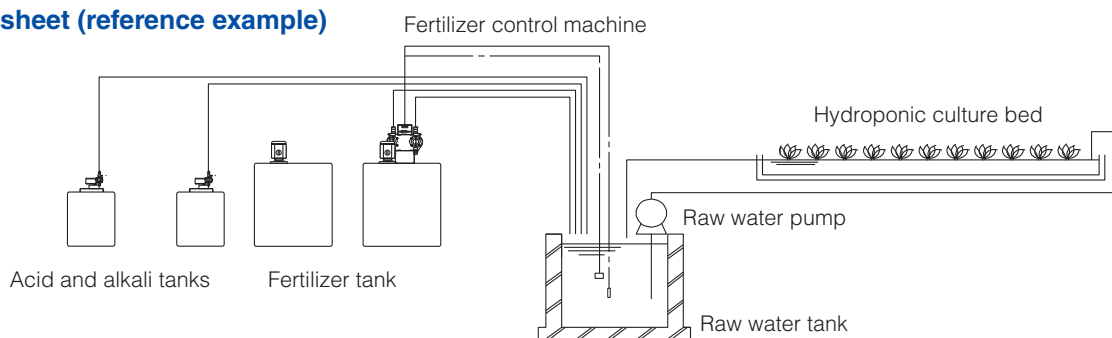
For power supply, it is possible to select 100 V or 200 V single phase in order to match the requirements of the local site. (Measuring instruments can use both 100 V and 200 V. However, for pumps, 100 V or 200 V single phase can be selected)

3 factors such as fertilizer, acid, and alkali are able to be controlled.

The RAKURAKU (easy) fertilizer control machine 3 can control both pH and EC. The standard type is equipped with a fertilizer pump. However the acid pump and alkali pump are easily installed by purchasing them as an option and simply connecting them to the instrument terminal block.



Flow sheet (reference example)

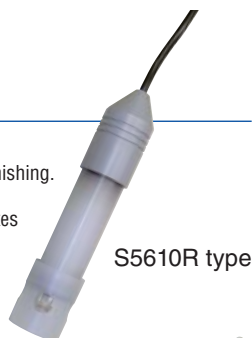


pH sensor (standard accessory)

Throw in type pH sensor

The pH sensor is a KCl throw in type that does not need replenishing. A lead cable of 10 m is attached as a standard feature. When 10 m or more is needed, dedicated cables and relay boxes are used.

- Sensor: S5610R



S5610R type

EC sensor (standard accessory)

Makes use of a 5 pole electrode method which is strongly dirt resistant

A 5 pole electrode method is used which is more dirt resistant in comparison to the 2 pole electrode method. In the case of a conventional 2 pole electrode method sensor, the measured values that are displayed are lower than the actual values in the case of high concentration (2 mS / cm or more). In addition it has a low dirt resistance, which means that it needs to be frequently cleaned. The 5 pole electrode method overcomes the weak points of the 2 pole method, and allows for consistently stable measuring even at high concentrations. A 10 m lead is attached as standard and when 10 m or more is needed, dedicated cables and relay boxes should be used. When optional adapters are attached, the nutrient solution in the flow-through state can be also measured.

- Sensor: CES-10



CES-10 type

Flow-through type pH sensor and holder (option)

The flow-through type pH sensor is a KCl type that does not need replenishing. A lead cable of 10 m is attached as a standard feature.

When 10 m or more is needed, dedicated cables and relay boxes should be used.

- Sensor: S200CY10, 10m
- Holder: FC75, PVC, pressure resistance 0.5 MPa

C200CY10type



EC75 type

■ Measuring instrument operation panel

- Measured values of pH, EC, and temperature and set values of pH and EC are displayed on the large liquid crystal display. This has enabled control to become very easy.
- Calibration of the pH meter can be carried out by a one touch calibration, which makes it even more convenient.
- An insulated transformer output of 4 to 20 mA DC which can be connected to recorders and computers is provided on the EC system as a standard feature. This has made it possible to allow the recording of test data in addition to computerized control.
- A backlit liquid crystal display which is easy to see both day and night
- For the fertilizer pump, as well as the acid and alkali pumps, the OFF time (stopping time) is configurable. This is an advantage when the stirring function is not operating well. This allows for slow adjustment.
- Touch switches which have a strong waterproof performance. All of the concentration setting buttons are also touch switches. So it is possible to touch safely even with wet hands.



■ Specifications

Name		RAKU-RAKU fertilizer control machine 3 (5 pole electrode method electrical conductivity adjuster)			
Model		PCETW-300-100W	PCETW-1000-100V	PCETW-300-200V	PCETW-1000-200V
Measuring part	Model	PCE-11H			
	Measuring range	0 to 10.0 mS / cm			
		0 to 14.00 pH			
		0 to 50°C			
	Display	LCD (with backlight)			
	Accuracy	± 4 % / F · S ± 1 degit			
	Setting	Control point configuration touch switch			
	Transformer output	EC, pH, 4 to 20 mA DC (maximum load resistance 500 Ω insulated) without temperature output			
	Temperature compensation	Range of temperature compensation 0 to 50°C			
		Range of temperature compensation 0 to 100°C			
	Function	OFF timer function (configurable up to a maximum of 599 sec.)			
		Control band function			
		EC / pH auto calibration			
		External control signal EC / pH simultaneous control (no-voltage and voltage 100 V / 200 V)			
	Ambient temperature	0 to 45°C			
	Power source	100 V AC / 200 V ± 10 % single phase 50/60Hz			
Fertilizer pump	Model	Diaphragm dual type quantitative pump			
	Discharge rate	0 to 300 ml/min (50 Hz) 0 to 360 ml/min (60 Hz)	0 to 1000 ml/min (50 Hz) 0 to 1260 ml/min (60 Hz)	0 to 300 ml/min (50 Hz) 0 to 360 ml/min (60 Hz)	0 to 1000 ml/min (50 Hz) 0 to 1260 ml/min (60 Hz)
	Pressure	0.5 MPa	0.3 MPa	0.5 MPa	0.3 MPa
	Material of connection part	PVC, Viton	PVC, Viton	PVC, Viton	PVC, Viton
	Motor	25 W 100 V	60 W 100 V	25 W 100 V	60 W 100 V
	Connection	Tetron blade hose φ6 × φ11 15 m or piping joint 16 A	Tetron blade hose φ8 × φ13.5 15 m or piping joint 16 A	Tetron blade hose φ6 × φ11 15 m or piping joint 16 A	Tetron blade hose φ8 × φ13.5 15 m or piping joint 16 A
EC sensor	Model	CES-10			
	Structure	Throw in type			
	Sample	0 to 40°C			
	Wetted part material	Electrode: Titanium, Case: PVC			
	Lead length	10 m (standard)			
pH sensor	Model	S5610R			
	Structure	Throw in type			
	Sample	0 to 50°C			
	Wetted part material	PVC, PP			
	Lead length	10 m (standard)			
Option	Acid and alkali pump	T30, T60, T150, T300, T500, T1000 100 V AC or 200 V single phase			
	Measuring instrument bracket	Panel fixture tool: NT-PN			
		Pole fixture tool: NT-LP			
	Flow-through type pH sensor	S200CY10: KCl type that does not need replenishing			
	Flow-through type holder	FC75, Bore diameter 20mm, Pressure resistance 0.5 MPa			

RAKURAKU fertilizer control machine 3 unit

RAKURAKU fertilizer control machine 3 + acid / alkali pumps + stirrer + tank Easy assembly of the unit has been realized.

● Easy to assemble. The assembly process is as follows.

- (1) Place RAKURAKU fertilizer control machine 3 on the cover and fasten the attached bolts.
- (2) Place the stirrer on the cover and fasten the attached bolts.
- (3) Place the acid pump or the alkali pump on the cover and fasten the bolts.
- (4) Connect the intake hose of the pump.
- (5) Connect the pH / EC sensors to the measuring instrument and throw it into the dilution tank.
- (6) Attach the anti-siphon valve on the hose to the discharge side of the pump and throw it into the dilution tank.
- (7) Connect the acid pump or the alkali pump to the measuring instrument and turn on the 100 V or 200 V power supply.
- (8) Connect the circulation pump signal to the measuring instrument.

That completes the assembly process.

※For more details, refer to the instruction manual.



PCETW-03RT20M2RT51
※A sun shade cover is attached as standard.

● Fertilizer control machine unit

Model	Amount of fertilizer injection	Amount of acid / alkali pumps	Fertilizer undiluted solution tank	Acid alkali tank	Fertilizer dissolution stirrer
PCETW-03RT20M0RT0	300 ml/min	Nil	Cylindrical type 200 L × 2 tanks	Nil	Nil
PCETW-03RT20M0RT51	300 ml/min	300 ml / min × 1 unit	Cylindrical type 200 L × 2 tanks	Cylindrical type 50 L × 1 tank	Nil
PCETW-03RT20M0ST52	300 ml/min	300 ml / min × 2 units	Cylindrical type 200 L × 2 tanks	Square type 50 L × 2 tanks	Nil
PCETW-03RT20M0RT101	300 ml/min	300 ml / min × 1 unit	Cylindrical type 200 L × 2 tanks	Cylindrical type 100 L × 1 tank	Nil
PCETW-03RT20M0ST102	300 ml/min	300 ml / min × 2 units	Cylindrical type 200 L × 2 tanks	Square type 100 L × 2 tanks	Nil
PCETW-03RT20M0RT201	300 ml/min	300 ml / min × 1 unit	Cylindrical type 200 L × 2 tanks	Cylindrical type 200 L × 1 tank	Nil
PCETW-03RT20M0RT202	300 ml/min	300 ml / min × 2 units	Cylindrical type 200 L × 2 tanks	Cylindrical type 200 L × 2 tanks	Nil
PCETW-03RT20M2ST0	300 ml/min	Nil	Cylindrical type 200 L × 2 tanks	Nil	45 W × 2 units
PCETW-03RT20M2RT51	300 ml/min	300 ml / min × 1 unit	Cylindrical type 200 L × 2 tanks	Cylindrical type 50 L × 1 tank	45 W × 2 units
PCETW-03RT20M2ST52	300 ml/min	300 ml / min × 2 units	Cylindrical type 200 L × 2 tanks	Square type 50 L × 2 tanks	45 W × 2 units
PCETW-03RT20M2RT101	300 ml/min	300 ml / min × 1 unit	Cylindrical type 200 L × 2 tanks	Cylindrical type 100 L × 1 tank	45 W × 2 units
PCETW-03RT20M2ST102	300 ml/min	300 ml / min × 2 units	Cylindrical type 200 L × 2 tanks	Square type 100 L × 2 tanks	45 W × 2 units
PCETW-03RT20M2RT201	300 ml/min	300 ml / min × 1 unit	Cylindrical type 200 L × 2 tanks	Cylindrical type 200 L × 1 tank	45 W × 2 units
PCETW-03RT20M2RT202	300 ml/min	300 ml / min × 2 units	Cylindrical type 200 L × 2 tanks	Cylindrical type 200 L × 2 tanks	45 W × 2 units
PCETW-10RT20M0RT0	1000 ml/min	Nil	Cylindrical type 200 L × 2 tanks	Nil	Nil
PCETW-10RT20M2RT201	1000 ml/min	300 ml / min × 1 unit	Cylindrical type 200 L × 2 tanks	Cylindrical type 200 L × 1 tank	45 W × 2 units
PCETW-10RT20M2RT202	1000 ml/min	300 ml / min × 2 units	Cylindrical type 200 L × 2 tanks	Cylindrical type 200 L × 2 tanks	45 W × 2 units

※ Please specify either 100 V or 200 V.

※ For special specifications and system products, please feel free to contact us.

For inquiry about products, call on direct dial +81-3-3946-3033.

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※ Specifications and appearance may change without prior notice due to improvements.

※ The actual color of the products may be slightly different from that shown in the brochure due to issues of color during printing.

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