## System Controller SC-201-6M INT

## Installation Manual

Potential dangers from accidents during installation and use are divided into the following two categories. Closely observe these warnings, they are critical to your safety.

Denotes content that may result in fire, serious bodily injury and even death when ignored.
Denotes content that may result in bodily injury and physical damage when ignored.

#### Requests to Installers

WARNING In order to use this product safely, read this installation manual carefully and follow the installation instructions.

Failures and damage caused by erroneous work or work not as instructed in this manual are not covered by the warranty.

Refer to installation manual attached to the appliance as well.

Check that installation was done in accordance with this Installation Manual upon completion.

After completion of installation, be sure to hand this Installation Manual to the customer.

**1.Included Accessories** The following accessories are included with this product. Check for missing items before installing.

Part	Shape	Q'ty	Part	Shape	Q'ty
Installation Manual (This document)		1	Tapping Screw 4 x 8		3
System Controller Mounting Plate	000	1	*1 Vinyl Tie		3
Cord Bushing		1			

\*1 Use the vinyl ties for loose electrical wiring inside the unit.





#### System Select Connectors If this system will be installed with a recirculation system, a storage system, or with a filtration system, plug the selecter in to the connector that corresponds to that type of system. 0 \*If none of these circulating systems are used, do not connect the selecter. $\bigcirc$ (1) If the units will be installed in a $\bigcirc$ Warning Light recirculation system: \$ Warning Light Connect the selecter to the connector Operation $\langle \mathcal{F} \rangle$ Relay labeled "Recirculation System" (1). Operation Relay Fan (2) If the units will be installed with a Fan storage tank: $\langle \boldsymbol{e} \rangle$ Pump1 · Connect the selecter to the connector $\langle \rangle$ Pump1 labeled "Storage System" (2). $\bigcirc$ Pump2 **.**@| Pump2 · (3) If the units will be installed with a water MA 100W filtration system: Connect the selecter to the connector labeled "Filtration System" (3). Recirculation System Selecter Filtration System Storage System (3) (2)(1)П



**Circulation Pump Terminals** 

- Use these terminals to control the pump in any circulating system.
- Connected this way, the system controller will control the function of the pump.
- Use a normally open relay to supply power to the pump. Use a thermal relay if necessary.

#### (1) When operating with 1 circulation pump



\*If there is only one pump, connect to "Pump 1" terminals.

(2) If two circulating pumps will be used:

Connect as below if two circulating pumps will be used. The two pumps can be set to alternate with a dipswitch change. (Refer to the "Dipswitch Settings" section.)



\*Do not connect both Pump 1 and Pump 2 to the same terminal block. \*After connecting as shown above, set dipswitch 3 to "OFF". (Refer to the "Dipswitch Settings" section.)

• Piping diagram for parallel pipe installation



Adjust the pump flow with the flow control valves.

If multiple pumps are used, control the flow of each pump with separate valves.

#### Exhaust Fan Terminal

- These terminals will close when any of the units are heating or when the fan on any of the units is blowing. These terminals can be used to control an exhaust fan or damper in this way.
- Use a relay to provide power to the fan or damper. Use an additional thermal relay if necessary.





## Multi-System







# 2.Gas Piping

Follow the instructions from the gas supplier.

<ul> <li>Gas Connection</li> <li>Gas flex lines are not recommended unless they are sized for the maximum input</li> </ul>	Gas Valve Install a gas shutoff valve for every unit installed.	
<ul> <li>kW (Btu/h·MJ) of each unit.</li> <li>Do not use piping with a diameter smaller than the size of the gas inlet to each unit.</li> <li>After installation, check the gas line for any leaks before using.</li> </ul>	<b>Gas Meter</b> Select a gas meter capable of supplying the entire kW (Btu/h·MJ) demand of all gas appliances that the meter serves. Size the gas line for the entire kW (Btu/h·MJ) demand also.	

# **3.Water Piping** Ask a qualified plumber to perform the installation. Observe all applicable codes.

- The plumbing should be installed by a qualified plumbing contractor according to all applicable codes and regulations.
- Insulate or apply heating materials to the supply and hot water piping to prevent freezing during cold weather and to prevent heat loss through the piping.
- Use a union coupling or flexible pipe for connecting the units to ease service and maintenance.
- Refer to the system diagrams for supply and hot water pipe sizing. Do not install piping that is smaller than the inlet or outlet water connections on the units.
- If using an expansion tank, make sure it is correctly sized for the system.
- Use only copper or stainless steel pipe for all plumbing.
- Keep the plumbing as simple as possible.
- Avoid using pipes in which air can accumulate.
- \* Use only approved materials, and have the installation inspected upon completion.

#### 4. Electrical Wiring Do not connect electrical power to the unit until all electrical wiring has been completed. NOTICE If the remote controller is not connected to the system, the unit will default to a 60 °C (140 °F) temperature setting. N-132M(-ASME), N-1321M-ASME, NC380-SV-ASME (1)When installing the system controller, take care not to damage the internal electrical components in the unit and tie off loose electrical cords with the included vinvl ties.\*\* (2)Remove the connector from the circuit board to the remote controller terminal block in the unit. Connect this disconnected connector labeled 90 from the circuit board to the connector labeled 90 from the system controller. (3)Connect the connector from the remote controller terminal block to the connector from the system controller labeled "To remote controller terminal." (4)Connect the B5 connector from the system controller to the B5 connector of the unit. (5)Use the remote controller cords and the cords included with the system controller to connect the system controller to the other units. **Unit 1** (The unit with the System Controller) \* The remote controller cord can be extended up to 100m (300 ft.). System Controller Connect to the connector No.90 of the unit. Fix with accessory screw Ground Wire Connect to the connector PCB Connect with B5 of the unit. accessory screw Connector color: red "SYSTEM CONTROLLER" tag B5 B5 "Disconnect for system controller" tag Slide system contoroller into the bracken in the back of the case. Disconnect this Connector ᄕᅳᆕ Disconnect this connector on units 2-6 also. "To remote controller terminal ' Connector color: red tag "To Gas Water Heater for Multi" tag Clame Remote Controller Cord No 2→To No 2 Appliance \* Remote Controller cord (To a remote controller) No.6→To No.6 Appliance \*\*Note:If remote controller RC-7647M or RC-7650M ( °C temperature display) is being used, an adjustment to all water heaters connected to the system controller will be necessary. Make this adjustment prior to making the electrical connections to the system controller. Refer to page 14 for instructions. Units 2-6 (Connect each unit to corresponding wires labeled 2-6 from the system controller) Remote Controller Cord No.2→To Unit 2 No.6→To Unit 6 Clamp When installing 2 or more units Install one remote controller cord for every unit connected to the system controller. Wire each unit

independently to the system controller keeping the overall length of the remote controller cord less

than 15m(45 ft.).

### N-084M(-DV)(-ASME), KM3211WH, (L)WH(X)56

- (1)When installing the system controller, take care not to damage the internal electrical components in the unit and tie off loose electrical cords with the included vinyl ties.\*\*
- (2)Remove the connector from the circuit board to the remote controller terminal block in the unit. Connect this disconnected connector labeled 90 from the circuit board to the connector labeled 90 from the system controller.
- (3)Connect the connector from the remote controller terminal block to the connector from the system controller labeled "To remote controller terminal ".
- (4)Connect the B5 connector from the system controller to the B5 connector of the unit.
- (5)Use the remote controller cords and the cords included with the system controller to connect the other units to the system controller.

#### Unit 1 (The Unit with the System Controller)

- \* The remote controller cord length When using one remote controller = Maximum length 100m (300ft.). When using two remote controllers = within 50m (150ft.) each (KM3211WH only). When using three remote controllers = within 20m (65ft.) each (KM3211WH only).
- \* Please refer to the installation manual of the unit about version and quantity of remote controllers that can be connected.



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#### Units 2-6 (Connect each unit to corresponding wires labeled 2-6 from the system controller)



### When installing 2 or more units

Install one remote controller cord for every unit connected to the system controller. Wire each unit independently to the system controller keeping the overall length of the remote controller cord less than 15m(45 ft.).

- (1)When installing the system controller, take care not to damage the internal electrical components in the unit and tie off loose electrical cords with the included vinyl ties.\*\*
- (2)Remove the connector from the circuit board to the remote controller terminal block in the unit. Connect this disconnected connector labeled 90 from the circuit board to the connector labeled 90 from the system controller.
- (3)Connect the connector from the remote controller terminal block to the connector from the system controller labeled "To remote controller terminal ".
- (4)Connect the B5 connector from the system controller to the B5 connector of the unit.
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#### Unit 1 (The Unit with the System Controller)

- \* The remote controller cord length When using one remote controller = Maximum length 100m (300ft.). When using two remote controllers = within 50m (150ft.) each (BC3200RA only). When using three remote controllers = within 20m (65ft.) each (BC3200RA only).
- \* Please refer to the installation manual of the unit about version and quantity of remote controllers that can be connected.



\*\*Note:If remote controller RC-7647M or RC-7650M ( °C temperature display) is being used, an adjustment to all water heaters connected to the system controller will be necessary. Make this adjustment prior to making the electrical connections to the system controller. Refer to page 14 for instructions.

#### Units 2-6 (Connect each unit to corresponding wires labeled 2-6 from the system controller)



\* The location of the terminals will either be inside the unit or external to the unit.

#### When installing 2 or more units

Install one remote controller cord for every unit connected to the system controller. Wire each unit independently to the system controller keeping the overall length of the remote controller cord less than 15m(45 ft.).

5. Trial Operation

The installer should test operate the system, explain to the customer how to use the units, and give the owner the Installation and Operation Manual before leaving the installation.

- (1)Connect electrical power to each of the units.
- (2)Open the gas shutoff valve, the main water valve, and the water shutoff valves on all of the units. (3)Turn the power ON with the remote controller. (The Operation Lamp will light up.)
- (4)Slowly open a hot water fixture and confirm that the units ignite in sequence and that the Burner On Lamp on the remote controller lights.
- If an "11" or "12" error code flashes on the remote controller, there may be air in the gas line. Hit the Power Button ON and OFF a few times and then open the fixture again to try igniting the unit again.
- If this fixture does not cause all of the units to ignite, test the rest of the units by switching which is the primary unit by pressing either the Maximum or Minimum Manifold Pressure Set Button on the circuit board of the unit.
- Operate all of the units and confirm that the water temperature corresponds to the temperature set on the remote controller. Set the remote to the lowest temperature to maximize water flow. If the water temperature is hotter than the set temperature, check to make sure that the remote is connected to the system controller, and that the system controller is connected to the other units.
- If the units do not operate properly, refer to the Troubleshooting section of the Owner's Manual.
- \* After the test operation, clean any debris off of the filter on the water inlet.

### Checking Water Flow (Maintenance Monitors) Necessary only for recirculation systems

N-084M(-DV)(-ASME), N-132M(-ASME), N-1321M-ASME, NC380-SV-ASME, N-0931M(-DV, -OD)(-ASME), NC250-SV(-DV)-ASME, N-0841MC(-DV), NCC199-SV(-DV), N-0842MC(-DV)

- (1)Turn the Power button "ON".
- (2)Press the temperature up and down buttons △ and ▽ simultaneously for more than 2 seconds.
- (The remote control will display the maintenance monitors.) \* "Unit No.", "Data No." and "Data" are displayed on the remote
- controller temperature display.(3)Press the "FLOW METER ALARM SET" button to change which unit's information in being displayed.
- (The combustion lamp of the selected unit will flash twice.) \* When switching "Unit No.", the display will change from
- "5C→01→Data No."→"01→02→Data No."→"02→03 → Data No."•••"(Last Unit)No.→5C→OFF" when the "FLOW METER ALARM SET" button is pressed. If the "FLOW METER ALARM SET" button is not pushed to change the Unit No., the Data No. for that Unit will then be
- displayed on the remote controller.
- (5)Repeat (2) (3) for all water heaters. Adjust so that the total water flow of all devices is 2 GPM or more.
- (6)Press the temperature up and down buttons (and () simultaneously for over 2 sec. to return to the temperature display.

Temperature switch (Changing the Data No.) Temperature display (Device No., Data No., Data) (Device No., Data No., Data) (Device No., Data No., Data) Power Button Flow Meter Alarm Set Button (Device No.)

### Checking Water Flow (Maintenance Monitors) Necessary only for recirculation systems

(L)WH(X)56, (L)WHC56, KM3211WH, BC3200RA

	Power On/Off Button	Display No. and Unit No.				
ON/OFF	Tower On/On Button	Display Unit No				
Display		5C SC-201				
	Selection Button					
Set Button						
Speaker		06 Unit 6				
<ul> <li>The Power On/Off Button can be set to either "ON" or "OFF" unit operation will not be affected by this setting. However, be sure to set the Power On/Off Button to "ON" after turning on the power.</li> <li><display procedure=""></display></li> <li>(1) Press and hold both the up [▲] and down [▼] select buttons simultaneously for more than five seconds.</li> <li>(2) "Maintenance Monitor" display will appear along with the data no. and data.</li> <li>(3) Displaying data and switching data no.</li> <li>a) Press the up [▲] select button to switch display to the next item no. Press the down [▼] set button to switch display to the previous data no.</li> <li>b) Press the set button to switch to the mode for changing the ten's digit. Use the select buttons [▲] and [▼] in the same manner as 1) to make changes.</li> <li>c) When pressing the setting button again:</li> <li>If the data no. is 03, the microcomputer name of the remote controller is displayed. When the set button is pressed again, the unit will return to the mode of 1).</li> <li>If the data no. is other than 03, the unit will return to the mode of 1).</li> <li>During maintenance monitors are displaying, the hot water temperature and other settings cannot be adjusted.</li> <li>(4) Press the temperature up or down buttons [▲] or [▼] to select Data No.14. The water flow through that heater will be displayed.</li> <li>(5) Repeat (3) - (4) for all water heaters. Adjust (so that) the total water flow of all devices is 8L/min. or more.</li> <li><returning mode="" normal="" to=""></returning></li> </ul>						
than two seconds, or leave it alone for more water Heater Dipswitch Settings (Whether Heater Dipswitch Setting))) (Whethe	re than 10 minutes.					
Water Heater Dipswitch Settings (Wi	ien using remote controller					
N-084M(-DV)(-ASME), N-132M(-ASME), NC3 NC250-SV(-DV)-ASME, N-0841MC(-DV),NC0	380-SV-ASME, N-1321M-ASME, C199-SV(-DV), N-0842MC(-DV),	N-0931M(-DV,-OD)(-ASME), NC199-OD(-DVC)				
<ul> <li>When using remote controller RC-7647M or RC-7650M (°C temperature display), a dipswitch change will be necessary on all water heaters connected to the system controller. Refer to the below instructions to make the adjustment. A remote controller will need to be connected to the water heater being adjusted.</li> <li>(1) Connect electrical power to the water heater and wait 10 seconds before proceeding to step 2.</li> <li>(2) Within the first ten minutes of connecting electrical power, before turning on the operation button, hit the [▲] or [▼] button on the remote controller and hold until the display blinks "99". If "99" does not blink on the remote controller, unplug the water heater and try again.</li> <li>(3) Use the [▲] or [▼] button on the remote controller to scroll to the appropriate dipswitch number as indicated below.</li> <li>(4) Press the "FLOW METER ALARM SET" button for 0.5 sec to change the setting ON/OFF:</li> </ul>						
<ul> <li>ON: "priority" lamp flashes. OFF: "priority" lamp goes off.</li> <li>(5) For models N-084M(-DV)(-ASME), N-132M(-ASME), N-1321M-ASME, NC380-SV-ASME: Change "A8" from OFF to ON. Do not adjust any other dipswitches! For models N-0931M(-DV,-OD)(-ASME), N-0841MC(-DV), NC250-SV(-DV)-ASME, NCC199-SV(-DV), NC199-OD(-DVC): Change "2F" from OFF to ON. Do not adjust any other dipswitches!</li> <li>(6) When the dipswitch has been adjusted, confirm the setting by pressing and holding both the [▲] and [▼] buttons on the remote controller until the controller emits a beeping noise. The new setting will be lost if this is not done.</li> <li>(7) Repeat this entire procedure for every water heater that will be connected to the system controller.</li> </ul>						

### **Dipswitch Settings**



### **Dipswitch Settings**

#### (L)WH(X)56, (L)WHC56, KM3211WH, BC3200RA P . Disconnect the power to the units before changing the dipswitches. (Otherwise, settings will not take effect.) •: ON O: OFF Dipswitch SW1 SW2 SW3 SW4 SW5 SW6 SW7 SW8 60 °C recovery Power Button Pump Pump works with abnormality during hightemperature rotation circulation detection setting No $60^{\circ}C$ Yes Interlock No Yes Set temperature Independence \* All dipswitches are set to ON from the factory. SW2:Pump abnormality detection Set to OFF if the pump will not be connected to the system controller, but instead the pump will be controlled by an external control device. SW3:Pump rotation Set to OFF if using 2 pumps. SW4: The setting temperature which the Power Button is turned ON, and OFF when the setting is high temperature. When the setting temperature is changed above 60°C, turn the Power Button OFF once, then 60°C is displayed when turning the Power Button ON again. (When the dipswitch is ON.) When the dipswitch is switched to OFF, the temperature will remain at the previous setting. (before the Power Button is turned to ON.) SW5:Behavior when turning on the Power Button with remote controller or external operation terminal. When the dipswitch is set to ON, the Power Button and the circulation switch are turned ON at the same time. When the dipswitch is turned to OFF, only the Power Button is turned to ON. \* Do not change any other dipswitches. OFF 1 2 3 4 5678 ON