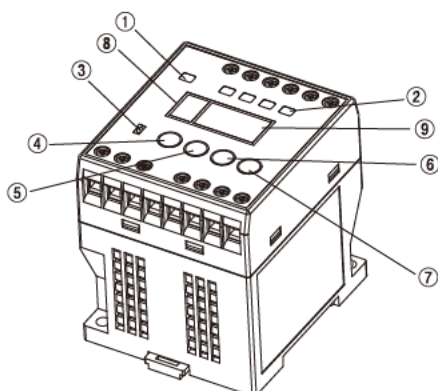
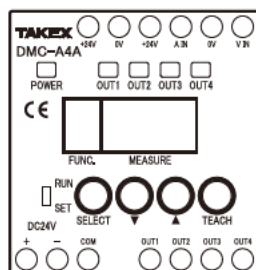


1 PANEL DESCRIPTION



DMC-A4A is an analog comparator which compares analog input with a threshold and generates an open collector output according to a preset logic. Threshold and hysteresis are freely set for each of the four outputs.

No.	Name	Functions/Operations
①	POWER Power indicator	Turns on when the power is supplied.
②	OUT1~OUT4 Operation indicator	Turns on when the output is ON.
③	RUN/SET Mode switch	Selects between RUN and SET modes.
④	SELECT Select button	Selects setting mode and menu.
⑤	▼ Scroll down button	Changes the selected menu items.
⑥	▲ Scroll up button	Changes the selected menu items.
⑦	TEACH Teaching button	Sets the threshold.
⑧	FUNC. Display (7 segments red)	Indicates the setting menu or output No.
⑨	MEASURE Display (7 segments green)	Indicates the threshold (SET mode) or the input level (RUN mode).



Terminal names	Functions
+24V	Power outlet for sensor
0V	Ground for sensor
V IN	Voltage input
A IN	Current input
DC24V +	Power supply
-	Ground
OUT1~OUT4	NPN open collector outputs
COM	Output common

2 SAFETY PRECAUTIONS

To ensure safety, be sure to follow the precautions below.

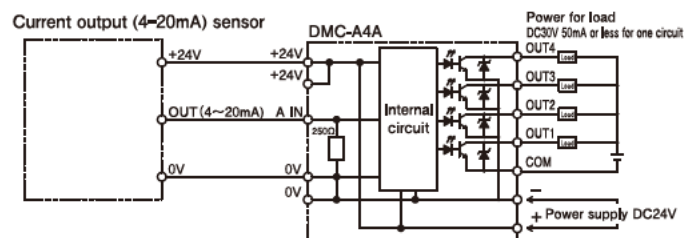
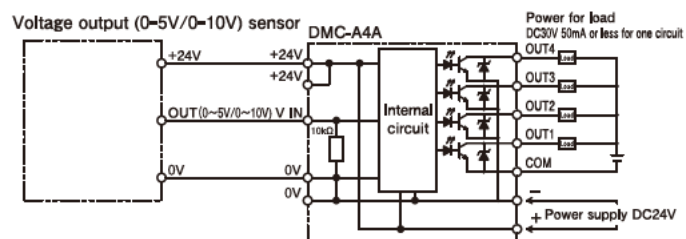
- Do not use this product for life or safety critical applications.
- Do not use this product when its housing or cable is damaged.
- Do not attempt to disassemble, repair, or modify this product.
- Do not use this product in an environment containing flammable, explosive or corrosive gas.
- Do not use this product in an environment exposed to chemicals or oils.
- Do not use this product in an environment exposed to water including outdoors or under the water.
- Use this product within the product rating and specification.
- Do not expose this product to direct sunlight.
- Do not use this product in an environment exposed to vibration or shock.
- Do not use organic solvent including alcohol and thinner to clean this product.
- Perform a daily operation check, weekly periodical inspections, and prescribed maintenance procedures to ensure correct operation.
- This product should be disposed of as an industrial waste.

3 PRECAUTIONS DURING USE

- Be sure to route the sensor cables separate from any power transmission or high voltage line, or else use shielded cables. Use the same conduit or duct as high voltage or power lines will cause malfunction or damage because of electromagnetic induction.
- When using a switching regulator, be sure to ground the frame ground (FG) terminal.
- The sensor starts operation approx. 3 seconds after power is supplied. Always power on the sensor prior to loads.
- Turn off the power of the load first as this product may generate an output pulse when the power is turned off.
- Avoid turning the power on and off consecutively.
- Use conductors of 0.3mm² cross-sectional area or more for wiring and check the voltage drop.
- Limit the current of the power supply to 2A.

4 CONNECTION

Input/Output circuit



Note

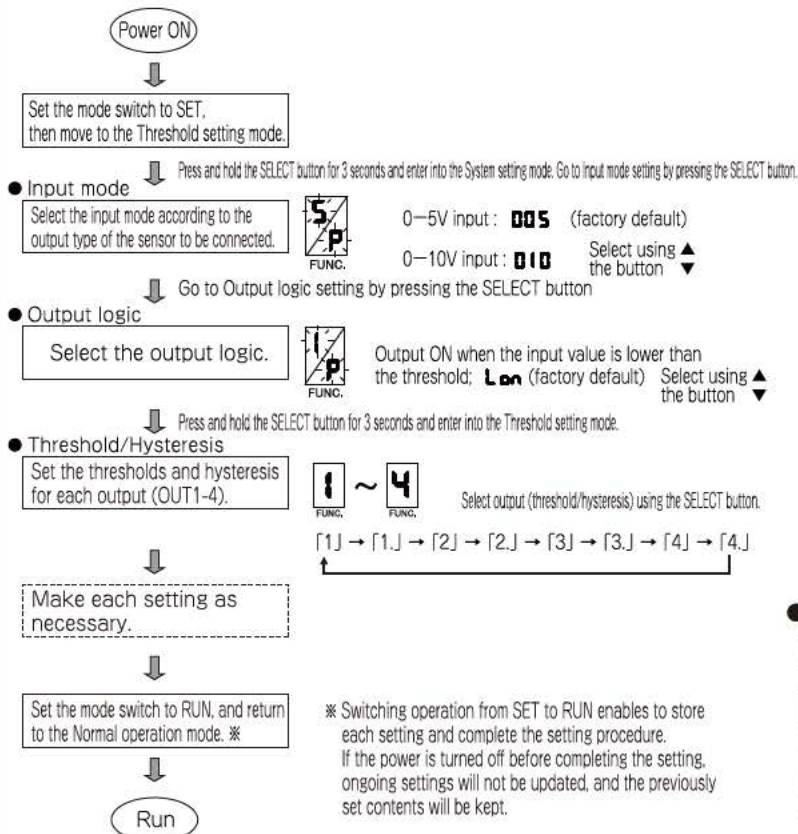
For wiring connection, tighten the terminal screw with a torque of 0.3N·m with a screwdriver of $\phi 5.5$ mm or less.

※ Do not use an electric screwdriver, as it may damage the screw.

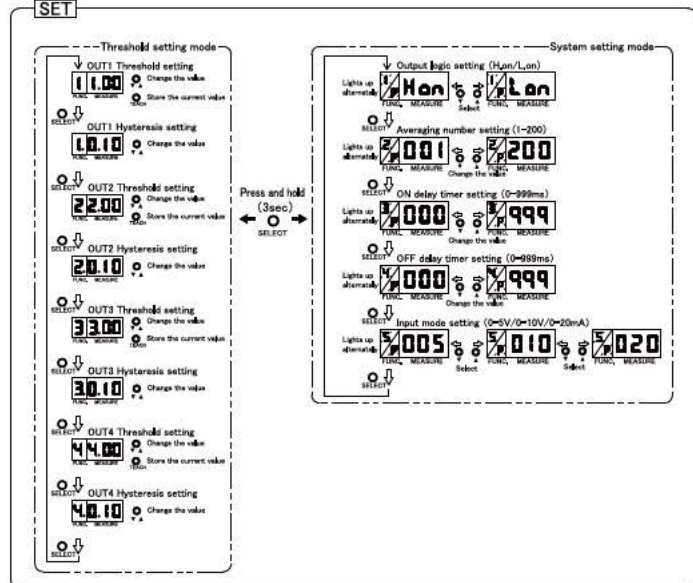
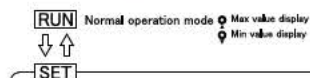


5 SETTING AND OPERATION

Initial setting



Functions list



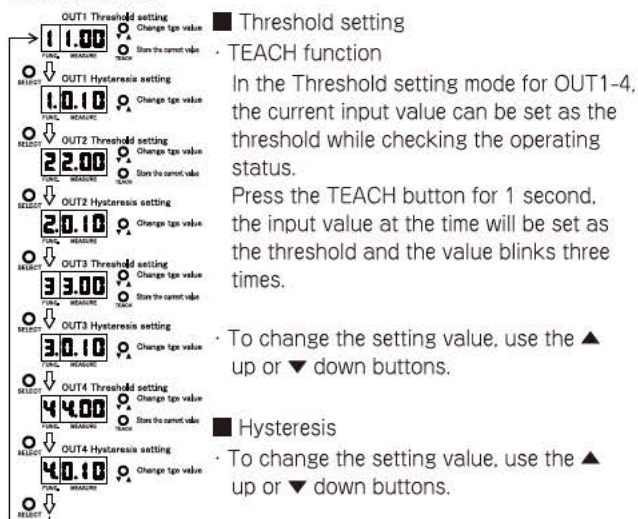
Operation in the Normal operation mode

- To check the MAX and MIN values
- In the state of the input value being displayed.
- The maximum input value is indicated while the ▲ UP button is pressed.
- The minimum input value is indicated while the ▼ DOWN button is pressed.
- (The indicated value (max/min value) is updated while the button is pressed.

- When the input value exceeds the measurement range, "uuu" is indicated, and each output state is kept.

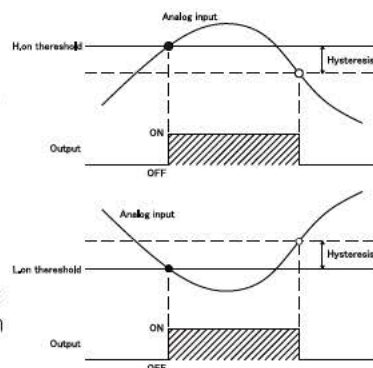
Operation in the Threshold setting mode

- To check and set the threshold value and hysteresis.
- Indicate (select) the item you want to check/change using the SELECT button.



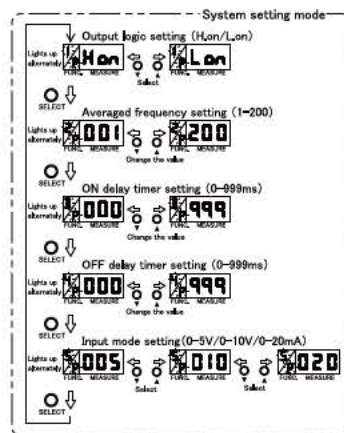
Hysteresis

Shows the difference in the input value between operation (ON) and recovery (OFF). You can input the hysteresis value for a threshold freely. A hysteresis that is too small may result in chattering, and one that is too large may result in trouble with recovery.



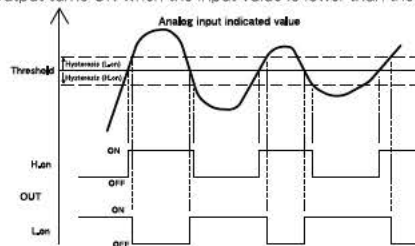
Operation in the System setting mode

(Each item will be commonly set to all outputs. Different settings cannot be conducted for individual output.)



Output logic setting

- Han** : Output turns ON when the input value is higher than the threshold.
- Lan** : Output turns ON when the input value is lower than the threshold.



In **Han** mode, hysteresis subtracted from the threshold (ON point) will be the OFF point.
(ex. Threshold (ON point) **300** - Hysteresis **0.50** = OFF point 2.50)
In **Lan** mode, hysteresis plus the threshold (ON point) will be the OFF point.
(ex. Threshold (ON point) **300** + Hysteresis **0.50** = OFF point 3.50)

● Averaging number

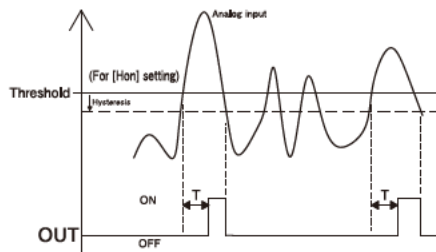


Averaging the input signal that includes varying noise can provide smooth indication and stable control. Set the value between 1 and 200.

● On delay timer



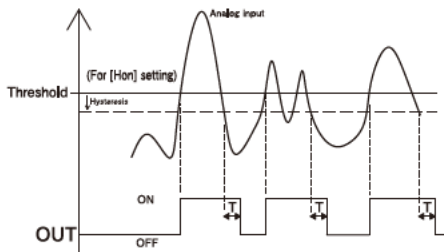
Set the value between 1 and 999ms. Disables a detection of a short time width.



● Off delay timer



Set the optional between 1 and 999ms. Extends the output signal by the set period of time.



● Input mode setting

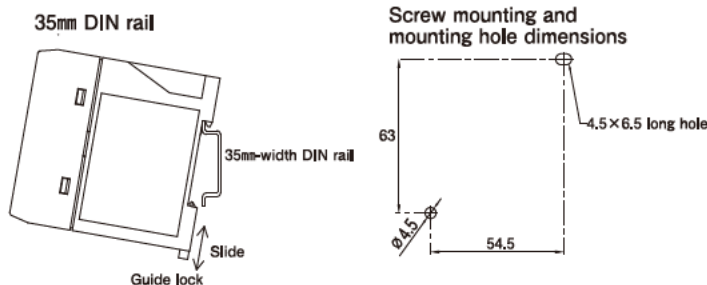


Select the input mode among 0-5V, 0-10V or 0-20mA.
When the input voltage is 5V or less; **005** : 0-5V input mode
When the input voltage is 10V or less; **010** : 0-10V input mode
When the input current is 20mA or less; **020** : 0-20mA input mode

- In the Threshold or System setting mode (when the mode switch is set to SET), all outputs are OFF.
- In either the Threshold or System setting mode, set the mode switch to RUN to move to the Normal operation mode.
- If there are outputs that will not be used, the operation indicator will not be ON/OFF by the following operations.

When the output logic setting is **Hon**, set the threshold value of the output that will not be used to the upper limit "99.9 or 99.9". ("99.9" for the input mode setting 0-5V/0-10V, "99.9" for 0-20mA)
When the output logic setting is **Lon**, set the threshold value of the output that will not be used to the lower limit "0.00 or 00.0". ("0.00" for the input mode setting 0-5V/0-10V, "00.0" for 0-20mA)

6 MOUNTING



- To attach the unit to the DIN rail, slide the guide lock to the inside, and hang the upper part of the unit on the rail. Press the unit until a clicking sound is heard.
- To detach the unit from the rail, pull the guide lock until a clicking sound is heard, and pull the unit diagonally.

7 SPECIFICATION



Model	DMC-A4A
Power supply	DC24V±10%
Current consumption	40mA or less
A/D conversion method	Sequential comparison system 10bit (1024)
Measurement range (input mode)	DC 0 to 5V/0 to 10V/0 to 20mA (selectable)
Display resolution	DC 0 to 5V : 0.01V/0 to 10V : 0.01V/0 to 20mA : 0.1mA
Output mode	NPN open collector output, Rating: 50mA (DC30V) or less, 4 outputs
Sensor power supply	DC24V (200mA or less) ※1
Indication method	3 digits, 0 to 5V : 0.00 to 5.50/0 to 10V : 0.00 to 11.0/0 to 20mA : 0.00 to 22.0
Indication size	7 segments, Red×1, Green×3, Font size: 8×4 mm
Sampling speed	2000 times/sec
Averaging	1 to 200 counts (selectable)
Output delay	On delay/Off delay (1 to 999msec, selectable)
Operation mode	HI ON (Hon) / LO ON (Lon) (selectable)
Connection	Terminal block, Tightening torque: 0.3N·m or less
Material	Case: PPE Panel: PET
Mounting method	DIN rail (35 mm) and screw tightening method
Weight	Approx. 130g
Accessories	Instruction manual

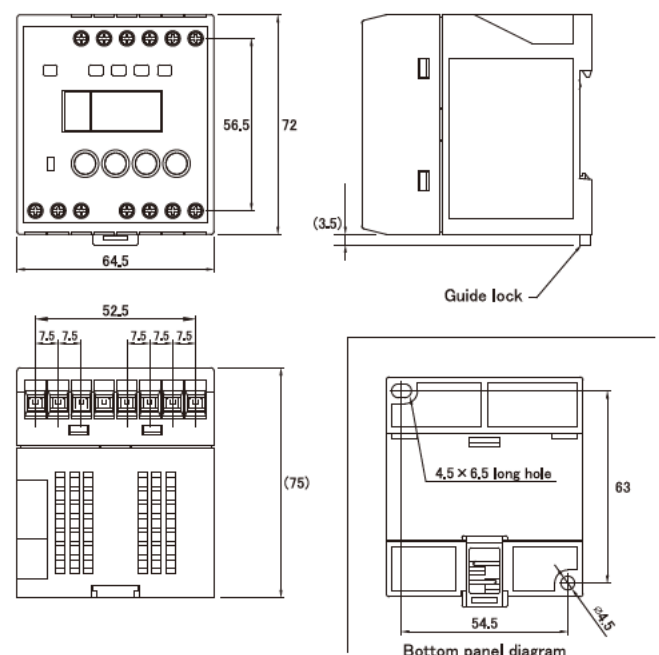
※1 Power supply directly connected

ENVIRONMENTAL SPECIFICATION

Ambient temperature	-10 to +55°C (non-freezing)
Ambient humidity	35 to 85%RH (non-condensing)
Vibration	When mounting directly: 10 to 55Hz when tested with double amplitude of 0.75mm in X, Y, and Z directions, 2 hours for each direction ※2 When mounting to DIN
Shock	When mounting directly: 500m/s ² when tested in X, Y, and Z directions, 3 times for each direction When mounting to DIN: 300m/s ² when tested in X, Y, and Z directions, 3 times for each direction
Dielectric tolerance	1000VAC for 1 minute between whole live part and case
Insulation resistance	20MΩ or more when tested with 500VDC megger

※2 When mounting to the DIN rail, attach the stopper (end unit) to the product.
End unit (option) model : FA7EU

8 DIMENSIONS (Unit : mm)



9 WARRANTY

The product is covered by a warranty based on the Quality Regulations of Takenaka Electronic Industrial Co., LTD. (Takenaka). Regarding the warranty, please feel free to ask any questions to Takenaka, Takex sales office or authorized distributors.

1 《Warranty period》

The warranty period is one (1) year after delivery to a designated location. This warranty does not apply to expendable supplies like batteries or relays, and products of other manufacturers which Takenaka markets.

2 《Scope of warranty》

If any defect is found during the warranty period. Takenaka will, at its option, repair or replace the defective product at the location of delivery. This warranty is void and of no effect if the product is subject to improper use or handling, improper maintenance, modification, repair made by persons not authorized by Takenaka or a lack of reasonable care. The warranty does not cover defects caused by the other product, reason including fire, flood, earthquake, lighting surge and other natural disasters.

- ① If the product is used inappropriately or used under inappropriate conditions that are not described in the instruction manual or specifications.
- ② If the defect is caused by improper maintenance, including a failure to replace consumable or periodical parts as described in the instruction manual or specifications.
- ③ If the defect is not directly caused by the warranted product.
- ④ If the products is modified or repaired by persons not authorized by Takenaka.
- ⑤ If the defect is caused by rough handling, dropping, or collision after the product is delivered.
- ⑥ If the defect could not be predicted from a technical viewpoint at the time Takenaka made the agreement for, manufactured, or installed the product.
- ⑦ If the defect is caused by a natural disaster such as a fire, flood, earthquake, lightning (including a lightning surge) and so on, or an accident such as an abnormal voltage that Takenaka is not responsible for.

The warranty provided here is only for the Takenaka product and does not cover any secondary damage caused by problems related to the product.

3 《Target of Warranty》

- (1) In case that the product is used in combination with other products or as a part of a system, Buyer should confirm the compatibility of the product to the application by relevant laws, decrees, standards and regulations.
- (2) This product is designed and manufactured for use in general industries. This warranty does not cover the application of the product to:
 - ① Nuclear power facilities including power station, incineration plant, public utilities including railway, vehicle and airway facilities, medical devices, amusement machines, safety devices and facilities that are governed by regulation of government or industrial organization.
 - ② Facilities that may cause danger or serious effects on human life and assets.
 - ③ Utilities like electricity, gas or water facilities. Facilities that are required 24 hour continuous operation.
 - ④ Outdoor use or use in improper conditions or environment.
 - ⑤ Other facilities which requires broad and detail consideration concerning safety and reliability equivalent to the above.

This warranty may cover these application in case that Takenaka is notified about the application of the product before sale and Buyer approves the compatibility and the specifications of the product by written agreement and / or by providing required safety measures.

10 DISCLAIMER

- This product is designed to detect a presence or passage of an object. This product does not have any function to prevent accidents, death or injuries.
Takenaka will assume no responsibility for damages or losses resulting from accidents or disasters caused by a failure of the product, complete wiring or installation or any act that does not follow the instruction manual.
- Earthquakes, lightning (including lightning surges), fires that we are not responsible for, acts or incidents caused by third parties, intentional or accidental misuse, or usage under other abnormal conditions.
- Any secondary damage caused by the usage, faulty operation, or malfunction of the product like spend operation or malfunction of a connected device or system, damage to a device, loss of profit, interruption of business, corruption or loss of memory contents, cost of restoration, etc.
- Misuse, failure related to maintenance, installation or deinstallation, or failure to follow the contents of the instruction manual.
- Any malfunction (including false alarm or lost alarm) caused by the combination with a connected device or software over that we have no control.
- The responsibility of Takenaka is limited to the extent of repair or replacement of the product. The expenses we are liable for will not exceed the original product cost.