HAT-Series



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INSTRUCTION MANUAL

HAT-Series



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- Product overview The HAT-Series is a transducer that connects to the Tank Level Gauge (HLT-1000 Series) and converts mechanical signals into electrical signals. The level can be adjusted and instructed by converting the level of the measurement to DC 4-20 mA and outputting the output, and the built-in micro switch outputs the contact point at the desired location to alert or adjust the level.
- **Features** There is an explosion proof structure. (Ex Version)
 - Contact point and DC 4-20 mA output are possible.
 - The structure is sturdy and reliable.

OperatingThe HAT Series is used in conjunction with Tank Level Gauge (HLT-1000 Series) Head asprincipleshown below. When the tank gauge needle instructs the change in the water level insideandthe tank, the gear within the gauge rotates and sends the output signal to the HAT-SeriesProductattached behind the gauge head. The HAT-Series outputs signals from the gauge to DC 4-appearance20 mA or Micro Switch contacts (alarm signals).



Specifications HAT-1000 Series

Model	HAT-1000	HAT-1000-Ex	
Enclosure	Weather-Proof(IP66)	Ex-Proof(Ex d IIC T4, IP66)	
Ambient Temp.	-20°C ~ +60°C		
Power	DC 24V		
Output	DC 4~20mA (2~wire)		
	Opt. 2-SPDT (HAT-1002, HAT-1000-Ex)		
Contact Rating	Std. None		
	AC 250V, 15A, DC 125V, 0.5A		
Housing	AL		
Cable Entry	PF3/4"(F), Adaptor(PF1/2", NPT3/4")		
Combination Gauge	HLT-1000 Series		

HAT-5000 Series

Model	HAT-5004	HAT-5004-Ex
Enclosure	Weather-Proof(IP66)	Ex-Proof(Ex d IIC T4, IP66)
Ambient Temp.	-20°C ~ +60°C	
Switch Type	MICRO	
Contact Form	Max. 4-SPDT	
Contact Rating	AC 250V, 15A, DC 125V, 0.5A	
Housing	AL	
Cable Entry	PF3/4"(F), Adaptor(PF1/2", NPT3/4")	
Combination Gauge	HLT-1000 Series	

Amplifier Specification (HAT-1000 Series)

Item	Specification
Microprocessor	16Bit Microprocessor
Supply Voltage	+17V ~ +40V@Typ.+24V
Operating Voltage	+3.3V
Current Consumption	2.5 mA or less @Sensor 1KΩ
Status Indicator	Bi-Color LED (Green/Red/Orange)
Zero / Span Set	Tact Switch
Wire Connection	One-Touch Connector
Ambient Temperature	-20°C ~ +60°C
Dimension	80mm x 65mm x 20mm
Weight	54g
Current Loop Interface	2-Wire Loop Current
Output Current Range (Accuracy)	4 mA to less than 20 mA @±0.2%
Output Current Offset	Adjustment
Measurement Sensor Range	30KΩ[15M)@Sensor 10Ω
	Min. : 200Ω[100mm] / Max. : 50ΚΩ[25M)@Sensor 20Ω
Output Current Definite	ТР

Product dimensions

< WEATHER-PROOF >



HAT-1000 (5004)

< Ex - PROOF >



HAT-1000 (5004)-Ex

Wiring



M-100R

- + -: DC 24V(DC 4~20mA Loop)
- T: Output Test Point
- H, C, L: Variable resistance and M-100R connection line
- Be careful not to change the polarity of the + when connecting to the power You have to.
- The applied power must be greater than or equal to +17 V and not greater than or equal to +40 V.
- No connection should be made with power applied.

Operation <HAT-1000 Series>

method Initial Set



- ▷ The order of Step 2 and Step 3 can be changed.
- ▷ Only Zero (0%) is set in the order of Step 1. Step 2. Step 4.
- ▷ When setting, only Span (100%) is done in the order of Step1. Step3. Step4.



CAUTION: During incorrect setting, the yellow LED will turn off the · and output

Offset

a 3.6 mA current.

Fine-tune the level and adjust the measuring instrument in the event of



> Offset adjustment is possible regardless of the

Simulation Current Out

When it is necessary to check the normal output current (4-20 mA) between M-100R and PLC





 \triangleright Return to the actual sensing state of the float after 5 seconds.

<HAT-5000 Series>

How to operate

The cam does not have a device to change the direction of rotation, so check the direction according to the field conditions and set it up, and note the direction of rotation of the cam when the water level rises along with the setting value in the device for convenience during maintenance.

The cam rotates about 330 degrees per administration (*different products)

The switch can also be set mechanically to the point where the roller is in its original state and then



The bolt assembled to the cam can be released using the special tool provided as shown in the above picture. Float is located at the level where you want to see the desired contact. Loosen the bolt enough to adjust the cam angle, then adjust the desired cam angle and tighten again. The Cam angle is determined first whether the desired point is used as contact A or B, and then the angle is adjusted based on the starting



(However, POINT parts of 10M or more should start based on B contact point..- It is difficult to maintain the alarm for contact A.) As shown in the picture above, the angle can be adjusted from 180 degrees to

Maintenance ■ product inspection method HAT-Series is not a direct installation to physical fluids, but its structure is simple, so special inspection is required I don't need it. Check the appearance of the product visually for damage_etc_and check the module or mice

Check the appearance of the product visually for damage, etc., and check the module or micro switch once a year We recommend that you check it.

<Check Module>

You can check the output current with the Digital Multimeter at the terminals T and - of the M-100R. X You can check the output current with the Test Point without the wire opening of the output current.





Precaution

of separation

- The water level and the presence or absence of measurements in the tank must be checked before separation.
- The product may overheat and burn, so it should be separated using gloves or the like.
- Do not open the COVER of the product if there is an explosive gas atmosphere.
- Demolition work is done with the power off.
- Be careful not to damage the O-Ring or Gasket when opening and closing the COVER of the product.

Precautions for Special care should be taken to prevent impact when transporting or assembling the device. The impact of the device can be a direct cause of the failure.
 and assembly Care must be taken to avoid damage to the assembly packaging when carrying or

Care must be taken to avoid damage to the assembly packaging when carrying or assembling equipment by attaching it to the tank or in between.



When moving and transporting the product, do not make a big impact on the product.

Precaution for Installation The user must enter a washer between Bolt and Nut to prevent loosening.

- It should be installed in consideration of ambient temperature.
- The user shall determine whether the relevant product is an explosion proof area and install the appropriate product.

■ The power is applied after the installation is completed and the COVER of the product is



Do not damage the shaft or open gaps in the bonding surface during installation.

Precaution

for

Ground Connection ■ The position of the external ground shall be as follows and the size of the ground wire shall be 4 mm² (4 mmSQ) when connected to the external ground.

When disconnecting the terminal lug to the ground terminal and reconnecting it, the washer must be used

Safety and	Precautions during use
the	- When fastening a product, use tools, etc. to fasten it as much as possible You have to.
Environmental	- The lock must not be lost during use and must be fastened.
	- It should not have a big impact on the product.
	Precautions for product run-off
	- The connection shall be made to the appropriate terminal for the location of the contact.
	(See Line Method)
	- The power voltage of the instrument must be connected after checking the specifications
	checking, and then turning it on.
	- Incorrect power supply voltage can cause damage or failure to the device.
	- There is a risk of an electric shock, so you have to be careful about your safety.
	■ disposal of products

 AMP and body in the product housing when disposing of the product because it is impossible to use it Separate and discard the part. There are no accessories that affect the environment You don't need to be careful. (e.g. mercury switch)

Display of Show product awareness

productsThe product recognition mark is attached to the housing and displays the model
name, serial number, temperature of use, pressure of use, output, etc. of the product.
Serial numbers are manufacturing specific to distinguish products

• HITROL CO., LTD. •	$^{\circ}$ (HTROL CO., LTD. $^{\circ}$
MODEL HAT- TAG NO. SER NO	MODEL HAT- -Ex TAG NO. SER. NO. RANGE POWER AMBIENT TEMP. -20 ~ +60°C OUTOUT POWER AMBIENT TEMP. -20 ~ +60°C SPDT.
RANGE POWER O	CABLE ENTRY YEAR BUILT
	EXPLOSION PROOF Ex d IIC T4.IP66
AMBIENT TEMP. 0 °C ENCLOSURE 0	KOSHA 10-AV2BO-0281X
• www.hitrol.com Made in Korea •	www.hitrol.com Made In Korea

<General>



User training Be aware of the above, and the ambient temperature of the housing should not exceed -20 to +60°C. Explosion proof products are pressure proof products, so never open the COVER of the product while in use.



Quality Assurance and contacts

Quality Assurance and Services

The warranty period for this product is two years after the product is shipped, and in case of failure in normal use, free service is available. If the product is not broken, requesting service may result in charges regardless of the warranty period. You can apply for aftersales service through the website or the headquarters.

■ Contact information of headquarters, factories, and research institutes

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