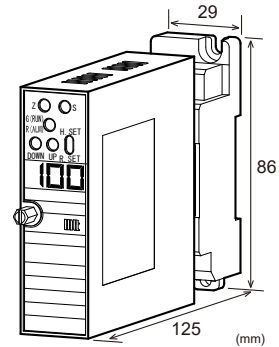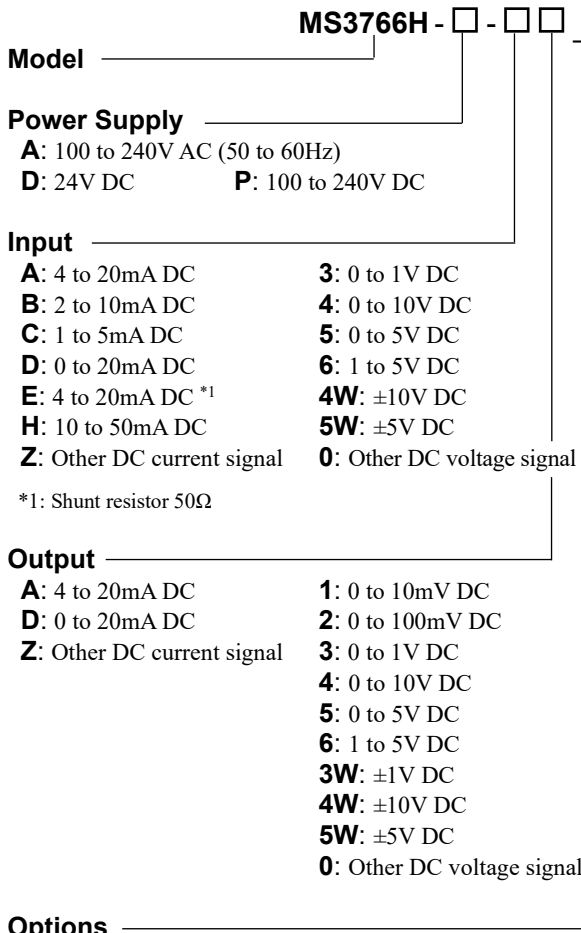## DESCRIPTION

The MS3766H is a slim, plug-in analog memory that holds an output signal using external hold input and provides an isolated single output.

ORDERING CODE

MS3766H - ☐ - ☐☐

Model

Power Supply
A: 100 to 240V AC (50 to 60Hz)
D: 24V DC   **P**: 100 to 240V DC

Input
A: 4 to 20mA DC	**3**: 0 to 1V DC
B: 2 to 10mA DC	**4**: 0 to 10V DC
C: 1 to 5mA DC	**5**: 0 to 5V DC
D: 0 to 20mA DC	**6**: 1 to 5V DC
E: 4 to 20mA DC *1	**4W**: ±10V DC
H: 10 to 50mA DC	**5W**: ±5V DC
Z: Other DC current signal	**0**: Other DC voltage signal

*1: Shunt resistor 50Ω

Output
A: 4 to 20mA DC	**1**: 0 to 10mV DC
D: 0 to 20mA DC	**2**: 0 to 100mV DC
Z: Other DC current signal	**3**: 0 to 1V DC
	4: 0 to 10V DC
	5: 0 to 5V DC
	6: 1 to 5V DC
	3W: ±1V DC
	4W: ±10V DC
	5W: ±5V DC
	0: Other DC voltage signal

Options
No code: None
/X: Special order
* For non-standard options, ask MTT for availability.

ORDERING INFORMATION

To place an order, please use the ordering code format as shown above.
 (e.g.) MS3766H-A-6A

Other Ordering Examples:
For an input code of "Z": MS3766H-A-ZA (Input: 8 to 20mA)
For an output code of "0": MS3766H-A-A0 (Output:2 to 5V)

29
86
125
(mm)

SPECIFICATIONS

●POWER SECTION

Power Requirements	100 to 240V AC: 85 to 264V AC (47 to 63Hz) 24V DC: 24V DC±10% 100 to 240V DC: 85 to 264V DC
Power Sensitivity	Better than ±0.1% of span for each power supply range.
Power Line Fuse	160mA fuse is installed (standard).

Power Consumption

Power	100-240V AC	24V DC	100-240V DC
	6.5VA max	1.8W max	7.2W max

●INPUT SECTION

Input Resistance

Voltage Input (DC)	With or without power: 1MΩ min.	
Current Input (DC)	4 to 20mA (std.)	250Ω
	2 to 10mA	250Ω
	1 to 5mA	100Ω
	0 to 20mA	250Ω
	10 to 50mA	10Ω

Allowable Input Voltage

Voltage Input Model	30V DC max., continuous (Standard for a span up to 10V)
Current Input Model	40mA DC max., continuous (Standard for 4 to 20mA)

Ranges Available

	Current Signal	Voltage Signal
Input Range (DC)	-100 to 100mA	-300 to 300V
Input Span (DC)	100μA*1 to 200mA	200mV*2 to 600V
Input Bias	-100 to 100%	-100 to 100%

Note: For any input range including negative input signals, the input spans for current and voltage signals range from (*1)200μA to 200mA and (*2)400mV to 600V, respectively.

Input Spec. Ex. 1: For 3 to 8V input, the input span is 5V and the bias +60%.

Input Spec. Ex. 2: For -5 to 0V input, the input span is 5V and the bias -100%.

Control Input

Dry contact; Internal pull-up 24V DC @ 20mA

Hold Signal	When terminals #7 and #8 are closed: Normal operation (Output is proportional to input.) When terminals #7 and #8 are open: Hold operation (Holding an output value)
UP Signal	Increases output by closing terminals #11 and #8.
DOWN Signal	Decreases output by closing terminals #6 and #8.

●OUTPUT SECTION

Allowable Output Load

Voltage Output (DC)	1V span and up	2mA max.
	10mV	10kΩ min.
	100mV	100kΩ min.
Current Output (DC)		750Ω max.

Zero Adjustment	Approx. ±5% of span. (Adjustable by the front-accessible trimmer.)
Span Adjustment	Approx. ±5% of span. (Adjustable by the front-accessible trimmer.)

Ranges Available

	Current Signal	Voltage Signal
Output Range (DC)	0 to 20mA	-10 to 10V
Output Span (DC)	4 to 20mA	10mV to 20V
Output Bias	0 to 100%	-100 to 100%

* For current output signals, the accuracy of any current output smaller than 0.1mA is not guaranteed.

Output Spec. Ex. 1: For 4 to 20mA output, the output span is 16mA and the bias +25%.

Output Spec. Ex. 2: For -1 to 4V output, the output span is 5V and the bias -20%.

Output Range	0 to 100% Note: Any input under 0% will result in 0% output, while any input over 100% will result in 100% output.

●PERFORMANCE

Accuracy Rating	Better than ±0.2% of span (at 25°C±5°C).
Temperature Effect	Better than ±0.2% of span per 10°C change in ambient.
Response Time	400ms max. (0 to 90%) with a step input at 100%.
Output Delay	Under normal operation, output delay can be set in steps of 1s within the range of 0 to 30s. When it is set to 0, the response time will be 400ms max.
Memory Backup Function	Hold commands allow held values to be saved in the built-in flash memory.
Held Value Control Function	In Hold operation mode, each push of the UP/DOWN Switch or input of control signal (UP/DOWN) to the terminal block changes the held value by 5% within the range of 0% to 100% output. Note: Pressing and holding the UP/DOWN Switch changes the value from 0% to 100% in 20 seconds.

|	
CMRR	100dB min. (500V AC, 50/60Hz)
Isolation	5-way isolation between input, [HOLD input, UP terminal, DOWN terminal], output, power, and ground.
Insulation Resistance	100MΩ min. (@ 500V DC) between input, [HOLD input, UP terminal, DOWN terminal], output, power, and ground.
Dielectric Strength	Input / [Output, HOLD input, UP terminal, DOWN terminal] / [Power, Ground]: 2000V AC for 1 minute (Cutoff current: 0.5mA) Power / Ground: 2000V AC for 1 minute (Cutoff current: 5mA) Output / [HOLD input, Up terminal, DOWN terminal]: 500V AC for 1 minute (Cutoff current: 0.5mA)
Surge Withstand Capability	Tested as per ANSI/IEEE C37.90.1-1989.
Operating Environment	Ambient temperature: -5 to 55°C Humidity: 5 to 90% RH (non-condensing)
Storage Temperature	-10 to 60°C

●PHYSICAL

Installation	Wall/DIN rail mounting
Wiring	M3.5 screw terminal connection (with a power terminal block cover & drop-proof screws)
Screwing Torque	0.8 to 1.0 [Nm] * Recommended
External Dimensions	W29 × H86 × D125mm (including the mounting screw and socket)
Weight	Main unit: 130g max. Socket: 80g max.

●MATERIALS

Housing	ABS resin (UL 94V-0)
Terminal Block	PBT resin (UL 94V-0)
Terminal Block Cover	PC resin (UL 94V-2)
DIN Rail Stopper	PP resin (UL 94HB)
Screw Terminal	Nickel-plated steel
Contacts Material and Finish	Brass with 0.2μm gold plating
Printed Circuit Board	Glass fabric epoxy resin (FR-4: UL 94V-0)
Conformal Coating	HumiSeal® 1A27NS (Polyurethane)

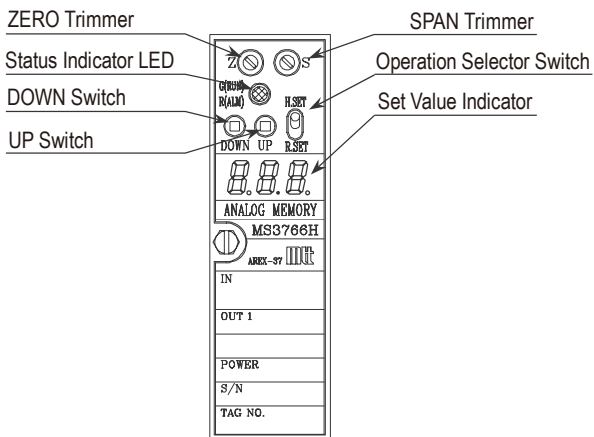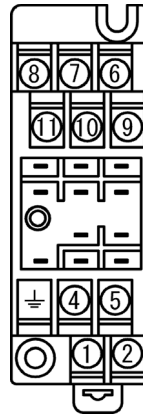* HumiSeal® is a registered trademark of Chase Corporation.

BLOCK DIAGRAM
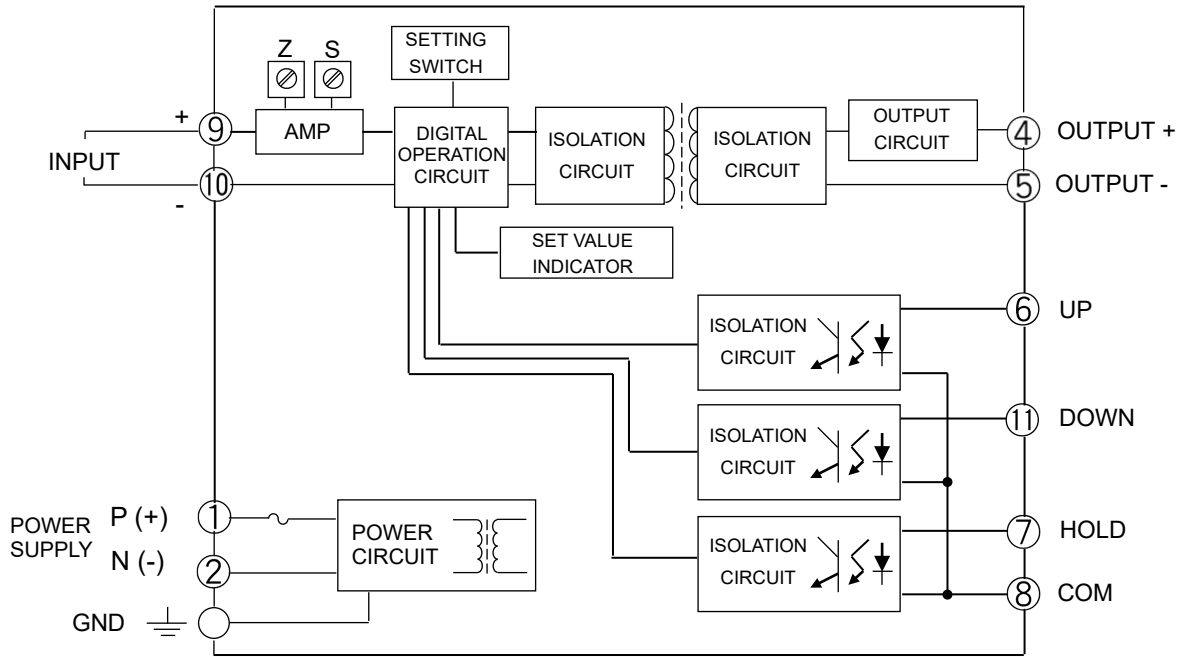
Notes:
1. Closing the terminals #11 and #8 is equivalent to pushing the UP Switch.
2. Closing the terminals #6 and #8 is equivalent to pushing the DOWN Switch.
3. Avoid continuing to closing the terminals #11 and #8 and the terminals #6 and #8 simultaneously.

FRONT VIEW

ZERO Trimmer
Status Indicator LED
DOWN Switch
UP Switch
SPAN Trimmer
Operation Selector Switch
Set Value Indicator

TERMINAL ASSIGNMENT

①	P (+)	POWER
②	N (-)	
⏚	GND	
④	+ OUTPUT	
⑤	- OUTPUT	
⑥	DOWN	
⑦	+ HOLD	
⑧	COM	
⑨	+ INPUT	
⑩	- INPUT	
⑪	UP	

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SETTING

●OPERATION SELECTOR SWITCH

When the Operation Selector Switch is set to the "H. Set" position, the Hold operation mode is activated. Pushing the UP/DOWN Switch changes the held value in steps of 0.5% of span. Additionally, pressing and holding the UP/DOWN Switch changes the value from 0% to 100% in approx. 20 seconds.

When the Operation Selector Switch is set to the "R. Set" position, the Set Value Indicator shows the current output delay. This delay can be changed to a desired value by pressing the UP/DOWN Switch.

●UP/DOWN SWITCH

The UP and DOWN Switches are of a push button type. Pressing and holding the switch increases the speed at which the value changes. Simultaneous pushing of the two switches keeps the value from being changed.

●INDICATOR

The Set Value Indicator lights green under normal operation and blinks green in the Hold operation mode. It goes off if no switch is operated for about one minute, but lights again when any of the switches is operated.

HOLD STATUS SETTING WITHOUT POWER

●HOLD STATUS SETTING WITHOUT POWER

Setting Hold status without power requires the following steps:

1. Turn on the power while pressing the DOWN Switch.
2. The Status Indicator LED will blink alternately red and green with the Set Value Indicator off. Then, release the DOWN Switch within five seconds.
3. Either 0 or 1 will appear only in the middle digit of the Set Value Indicator except for the following cases. In such cases, you should try again from the beginning.
   - The Status Indicator LED did not blink alternately red and green after the power is turned on.
   - The DOWN Switch was pressed and held for more than five seconds.
4. The middle-digit number represents the current Hold status setting. Use the UP or DOWN Switch to change the Hold status setting. The indicator values and corresponding Hold status settings are as shown below.

Indicator Value	Hold Status Setting
0	Hold mode: Hold a value before power goes off.
1	Release mode: Output 0%

5. After setting the Hold status, set the Operation Selector Switch to the opposite position to where it is located, and the Hold status setting will be saved in the unit.
   Note: Failure to do this will prevent the updated value from being saved.
   Immediately after the Operation Selector Switch is operated, the Set Value Indicator will be off for approx. 0.5 second.
6. Turn the power off and on again, and the unit will start its operation according to the updated Hold status setting.

DEFAULT SETTINGS

The factory default settings are as follows:
Operation Selector Switch: R. Set
Output Delay: 0
Hold Status without Power: Hold

If you specify values for these parameters when ordering, your product will be preconfigured to your specification and shipped. The following example shows how to specify parameter values.
(Example)
Operation Selector Switch: H. Set
Output Delay: 10 s
Hold Status without Power: Release

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LED STATUS INDICATOR

●INDICATOR PATTERNS

No.	Event	Set Value Indicator (7-segment LED)	Status Indicator LED	Output	Recovery Operation
1	Power ON or switch operation	Blinks 3 times (1 s ON - 0.5 s OFF cycle).	Green LED turns ON for 1 second, and then red LED turns ON for 0.5 second. This cycle is repeated 3 times.	Normal	–
2	Normal operation	OFF	Green LED is ON.	Normal	–
3	Output delay setting	Set value	Green LED is ON.	Normal	–
4	Hold operation	OFF	Green LED blinks at 1 second intervals.	Held value	–
5	DAC error	Error code: 1	Red LED blinks at 1 second intervals.	Typically 0% or less, but may vary.	None
6	Error in internal compensated value	Error code: 2	Red LED blinks at 1 second intervals.	0% or less	None
7	Hold operation mode error	Error code: 4	Red LED blinks at 1 second intervals.	0% or less	Reconfiguration
8	Held value recording error	Error code: 6	Red LED blinks at 1 second intervals.	0% or less	Cancel the hold mode.
9	Output delay recording error	Error code: 8	Red LED blinks at 1 second intervals.	0% or less	Reconfiguration
10	System error	Not defined.	Red LED is ON; Green LED is not defined.	0% or less	None

Notes:
No. 1: When the Set Value Indicator is ON, a 3-digit number "888" with dots is displayed.
No. 10: The red LED sometimes fails to light up.