

# SPECIFICATION SHEET



## Industrial pH Transmitter Industrial ORP Transmitter

HBM-160B  
HBM-162B



The HBM-160B/HBM-162B is a field installation type, 4-wire system (AC free-power supply) pH/ORP analyzer (transmitter) that is housed in a robust, die-cast aluminum enclosure. The unit features a dual transmission output (4 to 20mA DC) for pH/ORP and solution temperature and 2-point control alarm contact output (c-contacts, upper/lower alarm limits).

- Ten waterproof sheet keys in the front allow for all operations such as calibration without opening the front cover.
- The controller is equipped with an automatic single-action stability judgment function, which allows for accurate calibration using standard solutions and helps to eliminate operator errors. During calibration, the controller determines the status of the electrode by monitoring its characteristics and displays diagnostic information in the form of messages.

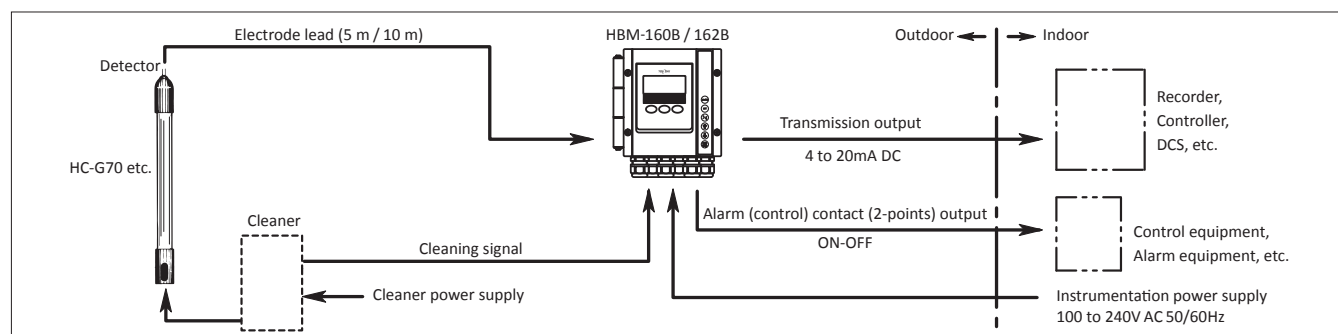


- Alarm (control) output has upper and lower limit operation (ON/OFF control) with adjustable sensitivity settings.
- Display is equipped with a backlight.
- The controller is certified with CE Marking according to EC Directives.

### Standard Specifications

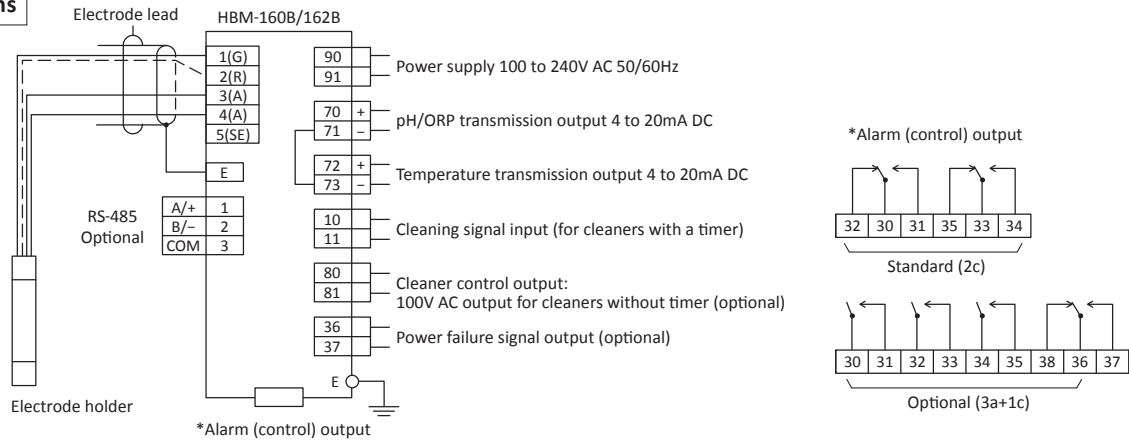
Product name	Industrial pH Transmitter (4-wire system transmitter)	Industrial ORP Transmitter (4-wire system transmitter)
Model	HBM-160B	HBM-162B
Measurement range	pH: -1.00 to 15.00 (Temperature: -5.0 to 100.0°C)	mV: -2000 to +2000 mV (Temperature: -5.0 to 100.0 °C)
Display type	Digital liquid crystal display instrument (equipped with LED backlight)	
Transmission output signal	4 to 20 mA DC isolated, max. load 650 Ω	
Transmission output range	pH: Adjustable in 0.1pH steps, with minimum width of 2pH Temperature: Adjustable in 0.1°C steps, with minimum width of 10°C.	mV: Adjustable in 1mV steps, with minimum width of 400mV
Alarm (control) contact output	Output points: 2 contacts (upper and lower limits can be set freely) c-contacts Contact capacity: 250V AC, 3A or less (resistive load) Contact function: selectable from upper and lower limit operation (ON/OFF control, adjustable sensitivity setting) and Under maintenance / Under cleaning / Failure alarm	
Performance	Linearity: ±0.03pH or less (using equivalent input)    Linearity: ±3mV or less (using equivalent input) Repeatability: ±0.02pH or less (using equivalent input)    Repeatability: ±3mV or less (using equivalent input) Response: 5 sec. for 90% response (factory setting)	
Power supply / Power consumption	100 to 240V AC ±10% 50/60Hz · approx. 6VA (100V AC)	
Ambient conditions	-20 to 55°C, 0 to 90%RH	
Dimensions / Weight	181 (W) × 180 (H) × 95 (D) mm · approx. 2.1kg	
Construction	Outdoor installation, dust/jet-proof type (IP65 · NEMA4X equivalent)	

### Configuration



Materials/Color	Main unit: Die cast aluminum alloy, Display etc.: Polyester resin/Metallic silver
Mounting	Mounted on a 50A pipe (optional: mounted on wall or rack)
Cable entry	G1/2 ×6 (Supplied with cable gland for Ø6 to 12)
Other functions	<p>Cleaning signal input: The unit can receive a “cleaning” signal from the chemical cleaner, pulse air jet cleaner, and other cleaners to hold output during the cleaning process.</p> <p>Temperature compensation for sample pH value: Coefficient setting range...±0.100/°C Standard conversion temperature...25°C</p> <p>Manual temperature compensation for glass electrode: Manual temperature compensation is carried out by specifying the sample solution temperature.</p> <p>pH/ORP value shift: Measured value can be shifted within the range of ±1.00pH/±100mV (temperature shift range: ± 9.9°C).</p> <p>Burnout: Output signal can be shifted to the upper or lower limit when there is an abnormality, such as an electrode abnormality or temperature sensor failure.</p> <p>Automatic return to measurement mode: The unit automatically switches back to measurement mode if it is left in maintenance (ST-BY) mode for a specified amount of time (1 to 999 min).</p>
Optional functions	<p>Alarm (control) output: 4 points (3a + 1c-contacts)</p> <p>Cleaner control output: The internal timer delivers 100V AC power to the chemical cleaner, brush cleaner, and other cleaners.</p> <p>Power cut-off output signal: Closed contact signal is outputted during power cut-off.</p> <p>RS-485 output: Modbus Communication Interface enables reading measured values and set values or cleaning command from outside.</p>

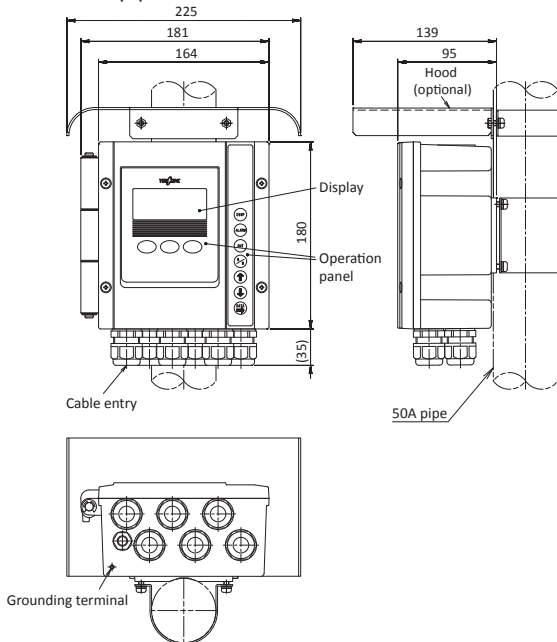
### Wiring diagrams



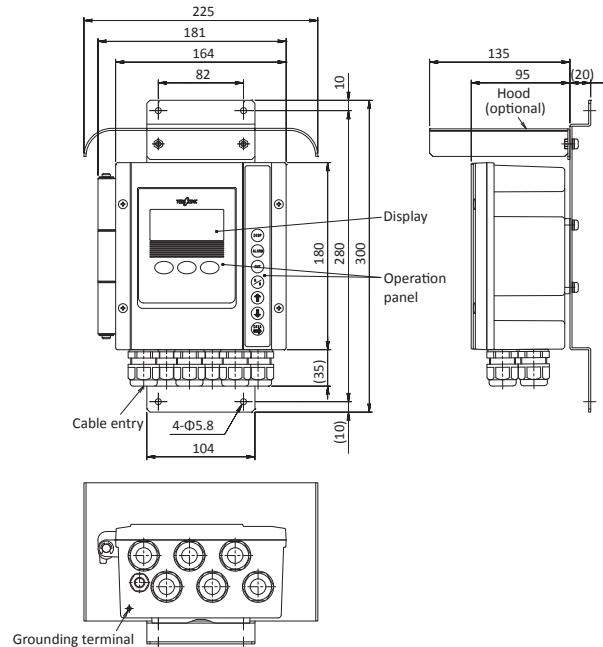
### Dimensions

Unit : mm

#### ● Mounted on a pipe



#### ● Mounted on wall or rack



## Product code HBM-160B Industrial pH Transmitter

HBM160B-1-									
									pH-value transmission output range (4 to 20mA DC)
A									pH 0 to 14
Y									Custom specifications *1
									Solution temperature transmission output range (4 to 20mA DC)
A									0 to 50°C
Y									Custom specifications *2
									Alarm (control) contact output
A									2 points (2 circuits c-contacts)
B									4 points (3 circuits a-contacts, 1 circuit c-contacts)
									Power cut-off signal contact output (contact closed when power is cut off)
0									N/A
1									Equipped (only when 2-point alarm contact is equipped)
									Cleaner control output 100 V AC *3
0									None
1									Equipped (when used together with JHC/PHC/RHC)
									Surface finish (coating) *4
A									Standard coating
B									Heavy-duty anticorrosion coating
									Arrester *5
0									N/A
1									Included
									Digital output RS-485 interface (Modbus)
0									N/A
1									Equipped
									Mounting bracket
A									50A pipe mount
B									Wall or rack mount
									Cable entry
A									Cable gland (conduit threads G1/2 when cable gland is removed)
B									NPT 1/2 supplied with adapters
									Hood (sunshade)
0									N/A
1									Equipped
									Markings
A									Japanese (Standard)
B									English

Custom spec. code;  
Numeric digit: 9  
Alphabet: Z

## HBM-162B Industrial ORP Transmitter

HBM162B-1-									
									mV-value transmission output range (4 to 20mA DC)
A									-700 to +700 mV
Y									Custom specifications *1
									Solution temperature transmission output range (4 to 20mA DC)
A									0 to 50°C
Y									Custom specifications *2
									Alarm (control) contact output
A									2 points (2 circuits c-contacts)
B									4 points (3 circuits a-contacts, 1 circuit c-contacts)
									Power cut-off signal contact output (contact closed when power is cut off)
0									N/A
1									Equipped (only when 2-point alarm contact is equipped)
									Cleaner control output 100V AC *3
0									N/A
1									Equipped (when used together with JHC/PHC/RHC)
									Surface finish (coating) *4
A									Standard coating
B									Heavy-duty anticorrosion coating
									Arrester *5
0									N/A
1									Included
									Digital output RS-485 interface (Modbus)
0									N/A
1									Equipped
									Mounting bracket
A									50A pipe mount
B									Wall or rack mount
									Cable entry
A									Cable gland (conduit threads G1/2 when cable gland is removed)
B									NPT 1/2 supplied with adapters
									Hood (sunshade)
0									N/A
1									Equipped
									Markings
A									Japanese (Standard)
B									English

Custom spec. code;  
Numeric digit: 9  
Alphabet: Z

\*1. Specify the pH measurement output range in 0.01pH increments, with a minimum width of 2pH and a range of -1.00 to 15.00pH.

\*1. Specify the mV measurement output range in 1mV increments, with a minimum width of 400mV and a range of -2000 to +2000mV.

### [common items]

\*2. Specify the solution temperature output range in 1°C increments, with a minimum width of 10°C and a range of -5 to 100°C.

\*3. The output is required to use the unit together with cleaners not equipped with a timer (JHC-7E, BHC-7E, RHC-7EC) or PHC-7D. (It is unnecessary for UHC type with ultrasonic cleaning, JHC/RHC-7C type equipped with a timer, etc.)

Since the cleaners run on a 100VAC power supply, only 100VAC is supplied to the HBM-160B/162B. To run the unit on a supply voltage greater than 100 VAC, the ZP-30 step-down transformer is required.

\*4. Standard coating: Melamine primer and topcoat. Average film thickness: Greater than 30 µm.

Heavy-duty anticorrosion coating: Epoxy primer and middle coat, polyurethane resin topcoat. Average film thickness: Greater than 100 µm.

\*5. A ceramic surge arrester (simplified) must be mounted on the power line and transmission line.

When the option is added, EC Directive shall not be applicable to the unit.

### Applicable detectors

There are two types of detectors (electrode holders) that can be connected to the HBM-160B / 162B type. One is chip exchangeable electrodes and the other is integrated (conventional) type electrodes.

Please select the detector such as immersion type or flow-through type, and materials of detector, that best suits for your measuring conditions.

#### ● Detectors for replaceable-tip electrodes

Classification		Application	Model	Wetted part material	pH electrode	ORP electrode
KCl Refillable	Immersion type	General use (below 60°C)	HC-G70	PVC	GSS-314B (general use) GSS-314A (high alkali resistant) GSS-314F (hydrofluoric acid resistant)	PSS-314B (Pt) ASS-314B (Au)
		High temperature (below 80°C)	HC-G70	PP		
	Flow-through type	General use, pressurized type (below 60°C)	HC-G80P	PVC		
		High temperature, pressurized type (below 80°C)	HC-G82P	PP SUS316		
	Micro flow rate type	For boiler and pure water	HC-G65	Acrylic	GSS-314P	—
KCl Replenish-Free	Immersion type	Effluent treatment (below 60°C)	HC-G70	PVC	GSS-304B (general use) GSS-304A (high alkali resistant) GSS-304F (hydrofluoric acid resistant)	PSS-304B (Pt) ASS-304B (Au)
		High temperature effluent treatment (below 80°C)	HC-G70	PP		
			HC-G72	SUS316		
		Effluent treatment, drop-in type	HC-G95	PVC SUS316		
	Flow-through type	Effluent treatment (below 60°C)	HC-G80	PVC		
		High temperature effluent treatment (below 80°C)	HC-G82	PP SUS316		

#### ● Detectors for integrated (conventional) KCl refillable type electrodes

Classification		Application	Model	Wetted part material	pH electrode	ORP electrode
Immersion type		General process/effluent treatment (below 60°C)	HC-703C	PVC	5600 (general use) 5605 (hydrofluoric acid resistant)	2600: Pt 2605: M
		High temperature process (below 80°C)	HC-763	PP	5601	2601: Pt
		High temperature process, chemical resistant	HC-703F	PVDF	5601	—
		High temperature process, organic solvent resistant	HC-703T	PFA PTFE	5602	—
Flow-through type		General process use/effluent treatment, insertion type, pressurized type	HC-880	PP or PVC	5610 (normal temperature) 5611 (high temperature)	2610: Pt
		General process use/effluent treatment, pressurized type, supplied with PP or PVC case	HC-882	PP or PVC		
		General process use/effluent treatment, pressurized type, supplied with SUS case	HC-883	PP or PVC SUS316		



**DKK-TOA CORPORATION**



**CAUTION**

Please read the operation manual carefully before using products.

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