Company History

2013. 03  Hwajeonsandan Move
2010. 04  HERIANA R&D Center Founded.
2009. 04  Certified as “INNO-BIZ” company by Small and Medium Business Administration in Korea.
2009. 01  Selected as “Military service appointed company” by “Military manpower administration”
2007. 10  Selected as “A PROMISING COMPANY” by “Industrial bank of Korea”.
2006. 06  Selected as “Clean Factory” by “Minister of Labor”.
2005. 05  Selected as “Specialization Company of machinery and Materials” by “Minister of Knowledge Economy”.
2001. 05  Certified by “Ministry of Land, Transport and Maritime Affairs” for “Rudder Angle Indicator”.
2000. 06  HERIANA Co., Ltd. Founded

Manufacture Item

• ANEMOMETER & ANEMOSCOPE
• RUDDER ANGLE INDICATOR
• TEMPERATURE SENSOR
• TEMPERATURE TRANSMITTER
• THERMOMETER
• PISTON COOLING OIL DETECTOR
• WATER IN OIL SENSOR
• INDUCTIVE CONDUCTIVITY SENSOR

Cooperating with us
Resistance bulb offer excellent accuracy over a wide temperature range (from -200 to +850°C). Standard sensors are available from many manufacturers with various accuracy specifications and numerous packaging options to suit most applications. Unlike thermocouples, it is not necessary to use special cables to connect to the sensor. The principle of operation is to measure the resistance of a platinum element. The most common type (Pt100) has a resistance of 100 ohms at 0°C and 138.5 ohms at 100°C. The relationship between temperature and resistance is approximately linear over a small temperature range.

**HR101-H**
- **Application**
  - For measuring and regulating temperature at any point
  - Gaseous or liquid media
- **Features**
  - Measuring range: 0~600°C
  - Pt100 Resistance element
  - Standard length “L”: 80~300 mm

**HR101-P**
- **Application**
  - For measuring Generator engine
  - Jacket cooling fresh water
  - Fuel oil
  - Lubricating oil
- **Features**
  - Measuring range: 0~200°C
  - Pt100 Resistance element
  - Standard length “L”: 60~80 mm

**HR101**
- **Application**
  - For measuring Main engine
  - Jacket cooling fresh water
  - Piston cooling oil
  - Fuel oil
  - Lubricating oil
  - Scavenge Air
- **Features**
  - Measuring range: 0~200°C
  - Pt100 Resistance element
  - Standard length “L”: 80~300 mm
HC301-I/T/P
Application
▶ For measuring Inter shaft bearing, Thrust pad, Piston cooling oil
Features
▶ Measuring range : 0~200℃
▶ Pt100 Resistance element
▶ Standard length “L” : 80~200mm

HC301-C
Application
▶ For measuring Cam shaft bearing
Features
▶ Measuring range : 0~200℃
▶ Pt100 Resistance element
▶ Standard length “L1” : 4000~12000mm

HC301-S
Application
▶ For measuring Stern tube sensor
Features
▶ Measuring range : 0~150℃
▶ Pt100 Resistance element

Thermocouple consist of two wires of different metal alloys which are welded together. When heating the welded point, an thermo-electromotive force is obtained. This voltage will increase when the ambient temperature increases. In our company recommends this type where high temperature, combined with considerable stress from vibration are to be measured.
Thermocouple type is named Chromel-Alumel and is equal to type K. The thermoelectric voltage is approximately 40 μV/℃. Thermocouple is delivered with different amplifier which convert this μV-signal to 4to 20 mA. Between sensor and amplifier a compensation cable has to be used.
Compensation cable is a flexible cable with the same thermo-electrical characteristics as the element wires. The cable can be used in temperature up to 200℃. Thermocouple elements can be applied for temperature from 0℃ to 1000℃.
HT 201
Application
▶ For measuring Main engine exhaust gas stationary and marine
Features
▶ Type : K type thermocouple
▶ Measuring range : 0~600℃
▶ Standard length “L” : 80~300 mm

HT201-K-I
Application
▶ For measuring Generator engine exhaust gas
Features
▶ Type : K type thermocouple
▶ Measuring range : 0~600℃
▶ Standard length : L1=45~220 mm
L2=4000~12000 mm

DTS-K
Specification
▶ Power Source : DC24V
▶ Temperature Range : 0~600℃
▶ Consumption Current : 50mA
▶ Output Signal : 4~20mA
▶ Operating temperature : 0~120℃
▶ Permissible temperature error range (IEC60584)
  • 0~333℃ = ≤±2.5℃
  • 333~600℃ = ≤±0.0075 * T [℃]
▶ Maximum display : 699℃
▶ Temperature display : 3-digit

Characteristics
▶ Temperature display for Local position
▶ 4~20mA signal output
▶ Cold-junction compensation
▶ Isolated power
▶ Open thermocouple detection
▶ Resolution : ±0.1℃
▶ No need Compensating wire and Amplifier
▶ DNV Classification acquisition

Digital temperature sensor displays real time temperature. Also this sensor outputs from 4mA to 20mA current. The crew can observers actual temperature at local position. Digital temperature sensor is based on thermocouple K type.
TEMPERATURE TRANSMITTER

Specifications
- Power supply : 24 Vdc (loop powered)

Element
- 2-wire/3-wire/4-wire Pt100 at 0°C
- Thermocouple (K-type)

SOLAR TEMPERATURE SENSOR

Specifications
- Power supply : Solar cell for Display
- Power Supply Voltage : DC 24V (18V~30V) for Transmitter

ELECTRIC PANEL

Fresh Water Generator Panel
Auto Control Panel
Venting Control Panel
Heater Control Panel
Pump Control Panel
Air Cannon Control Panel
ANEMOMETER & ANEMOSCOPE

Anemometer equipment provides wind direction and speed signal simultaneously from a signal transmitter to
the remote indicator observation. Wind speed and direction communication signal is interfaced to VDR, ECDIS,
etc.
• Signal interface/input/output signal : NMEA0183(RS422) / 4-20mA / ±10V
• Interfaced equipment : VDR, ECDIS, etc.

TRANSMITTER

AT-200 [VANE TYPE]
» Start of wind direction axis : Wind speed more than 1.0㎧ at 90°
» Power source : AC110V / 220V 50㎐ or 60㎐ / DC24V
» Wind speed
  Starting wind speed : 1.0㎧ Maximum permissible wind speed : 70㎧
» Installation position : Radar mast

AT-130 [3-CUP TYPE]
» Start of wind direction axis : Wind speed more than 1.0㎧ at 90°
» Power source : AC110V / 220V 50㎐ or 60㎐ / DC24V
» Wind speed
  Starting wind speed : 1.0
Maximum permissible wind speed : 70㎧
» Installation position : Radar mast

AT-300 [ULTRA-SONIC TYPE]
Ultra-sonic type transmitter need not rotation-Part.
And Ultra-sonic is used navigation for the Polar regions.
» Start of wind direction axis : Wind speed more than 0.1㎧
» Power source : DC24V
» Wind speed
  Starting wind speed : 0.1
Maximum permissible wind speed : 70㎧
» Installation position : Radar mast

Anemometer & Anemoscope equipment provides wind direction and speed signal simultaneously from a signal
transmitter to the remote indicator observation. Anemometer & Anemoscope equipment is divided into
transmitter part and indicator part. Transmitter is installed on Radar mast and indicator is installed in Wheel
House. The measured Wind speed & Direction are not only displayed on indicator and ECDIS but also stored
in VDR. This time, analog signals are converted to NMEA0183/RS422 signal for display or store by Signal
converter. Alarm panel is adopted for Exxon-mobil 2010 rule.
**ALARM UNIT & INDICATOR**

### ALARM UNIT

**AC-WAS100**
- **Power Supply:** DC24V
- **Wind direction:** Screen (PORT 0-180°, STBD 0-180°)
- **Wind speed:** Screen (0-60kn or 0-115kn)
- **Installation position:** Cargo Control Room
- **Alarm:** Visual (Screen), Audible (Buzzer)
- **Relay Contact:** Two output (Power DC24V / 1.5A)
- **Recorder:** Paper (Printer) / Digital (Memory)
- **Accessories:** Electric Horn

**AC-D10**
- **Power Supply:** DC24V
- **Wind direction:** 7 Segment 3 Digits LED Lighting (PORT 0-180°, STBD 0-180°)
- **Wind speed:** 7 Segment 3 Digits (0-60kn or 0-115kn)
- **Installation position:** Wheel House Gauge Board

### INDICATOR

**AC-DF/DW 10**
- **Model:** AC-DF / DW 10
- **Description:** Analog and Digital Combined Type
- **Wind direction:** Synchro motor type (AC 110V / 220V 50㎐ or 60㎐ / DC 24V)
- **Wind speed:** Moving-coil voltmeter type (0-60kn or 0-115kn)
- **Installation position:** Wheel House Gauge Board

**AC-W/F [ANALOG TYPE]**
- **Model:** AC-W/F
- **Description:** Analog Type
- **Wind direction:** Synchro motor type (AC 110V / 220V 50㎐ or 60㎐ / PORT 0-180°, STBD 0-180°)
- **Wind speed:** Moving-coil voltmeter type (0-60kn or 0-115kn)
- **Installation position:** Wheel House Gauge Board
RUDDER ANGLE INDICATOR

The electric rudder angle indicating system make use for easily measuring and monitoring the actual angle of rudder-rotation easily. Actually, The rudder angle indicator system is composed of transmitter and indicator. Signal output of Rudder angle indicator is interfaced to VOR, CONNING DISPLAY, etc.

- Signal interface/output signal: NMEA0183/RS422 / 4-20mA / ±10V
- Interfaced equipment: VOR, ECDIS, CONNING DISPLAY.

RUDDER System is installed on ship's bottom-back. This equipment is adjusted the direction of the ship by moving from side to side. When move RUDDER, this moving is showed on a equipment that called RUDDER ANGLE INDICATOR. RUDDER ANGLE INDICATOR are installed on Wheel house, Bridge wing, Engine control room and Steering gear room, etc. By adjusting Autopilot's Wheel in Wheel house, the angle of RUDDER and Connection rod connected RUDDER are rotated. Then RUDDER ANGLE Transmitter also move. Each indicators are moving in these movement. The measured angle values are not only displayed on indicator and ECDIS but also stored in VDR. This time, analog signals are converted to NMEA0183/RS422 signal for display or store by signal converter.
### INDICATOR

#### FE/FL-150, 200 [FLUSH TYPE]
- **Power Source:** AC110V / 220V 60Hz or 50Hz / DC24V
- **Accessories:** Illumination Lamp, Dimmer S/W
- **Installation position:** Wheel House Gauge Board, Bridge Wing console

#### SD-200 [SURFACE TYPE]
- **Power Source:** AC110V / 220V 60Hz or 50Hz / DC24V
- **Accessories:** Illumination Lamp, Dimmer S/W
- **Installation position:** Bridge Wing, Steering Gear Room

### INDICATOR & SIGNAL CONVERTER

#### FL/FE-130 (FLUSH TYPE)
- **Power Source:** AC110V / 220V 60Hz or 50Hz / DC24V
- **Accessories:** Illumination Lamp, Dimmer S/W
- **Installation position:** Engine Control Room, etc.

#### SC-230 / SC-P230
- **Power Source:** AC110V / 220V 60Hz or 50Hz
- **Output Signal:** NMEA0183(RS422)
- **Installation position:** Wheel House Console

### TABLES

#### FE 200

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<th>MODEL</th>
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<tr>
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#### FL -130

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#### NOT INCLUDED DIMMER S/W

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<tr>
<td>FE-130</td>
<td>NOT INCLUDED DIMMER S/W 2.5Kg</td>
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</table>

#### INDICATOR & SIGNAL CONVERTER

- **Power Source:** AC110V / 220V 60Hz or 50Hz / DC24V
- **Accessories:** Illumination Lamp, Dimmer S/W
- **Installation position:** Engine Control Room, etc.
**DIGITAL INDICATOR**

**WIND SPEED & DIRECTION INDICATOR**

- **8 inch LCD Indicator**
  - Size: 230×195
  - LCD display: 8 inch
  - Power: DC24V/400mA

- **4.3 inch LCD Indicator**
  - Size: 170×122
  - LCD display: 4.3 inch
  - Power: DC24V/300mA

**RUDDER ANGLE INDICATOR**

- **8 inch LCD Indicator**
  - Size: 230×195
  - LCD display: 8 inch
  - Power: DC24V/400mA

- **4.3 inch LCD Indicator**
  - Size: 170×122
  - LCD display: 4.3 inch
  - Power: DC24V/300mA

- **7 inch Panorama LCD Indicator**
  - Size: 320×320×155
  - LCD display: 7 inch × 3
  - Power: DC24V/900mA

**OTHER MONITORING**

- **8 inch LCD Indicator**
  - Size: 230×195
  - LCD display: 8 inch
  - Power: DC24V/400mA

- **4.3 inch LCD Indicator**
  - Size: 300×257
  - LCD display: 12.1 inch
  - Power: DC24V/1A
ENGINE ORDER TELEGRAPH

Engine order telegraph provides a communication order for main engine driving among other positions.

PUSH BUTTON TYPE

**EP-040/041 (FLUSH TYPE)**
- Communication: One-way system (optional: Two-way)
- Input Source: DC 24V
- Output Signal: NMEA 0183(RS422)
- State Alarm Device: Buzzer
- Installation position: Wheel House Console / Engine Control Room

**EP-042 (WALL MOUNT TYPE)**
- Communication: One-way type system (optional: Two-way)
- Input Source: DC 24V
- Output Signal: NMEA 0183(RS422)
- State Alarm Device: Bell
- Installation position: Engine Machinery Side

Engine order telegraph is used in engine driving, provides a communication between Bridge and other control positions, ordering engine velocity and motions. Engine order telegraph does not directly drive engine but communicate orders for further operating engine. Engine order telegraph system can be divided in two parts, transmitter and receiver and has two way communication operated by changeover switches.
**FLOW & LEVEL SWITCH**

**HF-501**
Flow Switch
HF-501 can detect Piston Cooling Oil’s flow condition and level status. Capacitance will fluctuate with level condition.

**HF-502**
Combined Flow Switch & Temperature Sensor
HF-502 is integrated with Oil flow sensor and oil temperature sensor, can detect oil flow condition and level, also can transmit fluid state and level control signals to outside and display oil flow conditions as LED lights on the Junction Box.

**HF-503**
Flow Switch
HF-503 can detect Piston Cooling Oil’s flow condition and level status. Vibration will fluctuate with level condition.

**HF-504**
Level Switch
HF-504 can detect Lubrication Oil’s flow condition and level status. Capacitance will fluctuate with level condition.

**HF-505**
Floating type Level Switch

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**WATER IN OIL DETECTOR**

**INDUCTIVE CONDUCTIVITY SENSOR**

**Water In Oil Detector**
This Water In Oil (HW-2100) is the equipment to measure the Relative Content of Water in Fuel Oils and Lubricant Oils used in Maritime Engines. HW-2100 is installed at the outlet pipe of a purifier (separator) and measure relative content of water in purified oil. The measured relative content of water is displayed on the indicator in real time. HW-2100 is composed of a sensor module, an indicator and a cable assembly. The measured result by the sensor module is transferred to the indicator by RS485.

**Specification**
- Measuring Range : 0 ~ 1.60% (Relative Content of Water)
- Measuring Error : 2.5% Full Scale
- Display Resolution : 0.01%
- Response time : 5 sec.
- Output Signal : 4~20mA / Alarm (Dry-contact, COM-N0, 32V/1A) / RS485, RS422, CAN Communication (Option)
- Sensor Module Operating Temperature Range : 0℃ ~ 110℃
- Power Supply : DC 24V
- Alarm Limit : Default 0.3%, User-settable
- Operating Temperature : 0℃ ~ 110℃
- Ingress Protection : IP 65

**Inductive Conductivity Sensor**
This Inductive Conductivity Sensor is the equipment specially designed to measure the conductivity in the solution. Inductive Conductivity sensor measures conductivity of seawater flowed through the certain pipe. The result of measurement (Conductivity and Temperature) is indicated on the indicator. The indicator outputs conductivity and temperature as the Current of 4mA~20mA.

**Data Communication is using RS485(NMEA0183) between ICS-1000 sensor and ICS-1000 M indicator.**

**Specification**
- Measurement Range : 0 mS/cm ~ 100 mS/cm
- Measurement Error : ≤ 5% Max of measured value including Temperature Compensation
- Current Output Error : ≤ 2% of full measured range
- Repeatability : ≤ 1% of measurable full scale
- Arrival Time for Target Temp : ≤ 10 minutes
- Output Signal : Current 4mA ~ 20mA (Default) / RS485 Communication (Option)
- Operating Temperature : 0℃ ~ 70℃
- Operating Pressure range : 10 bar Max.
- Ingress Protection : IP 65
- Electromagnetic Compatibility : Satisfied EN61326 rule