

## AHD-SAS 15

### Data station for 15 inputs for analog and binary sensors

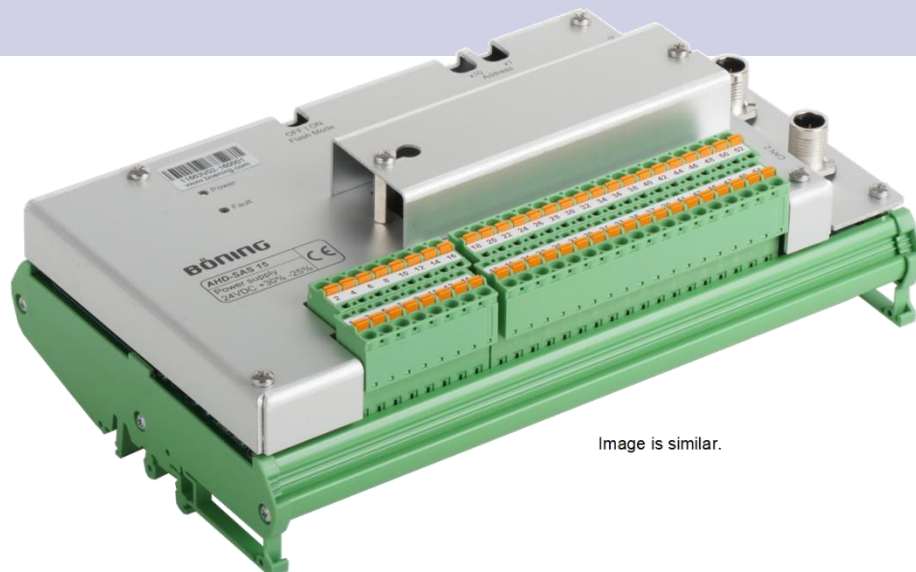


Image is similar.

- **Flexible acquisition of measured values and adaptation of the most common sensor types with freely combinable plug-in modules**
- **Processing of non-linear sensors and tank curves with configurable characteristic curves**
- **Safe, on request redundant, CAN bus communication allows the decentralized installation close to the sensor**
- **Useable as a stand-alone system**

The data station AHD-SAS 15 is used in decentralized alarm and monitoring systems on ships and in industrial installations for acquiring, monitoring and processing binary and analog sensors. All common types of sensors can be directly connected and monitored.

AHD-SAS 15 is usually connected over the CAN bus to other components of an AMS/AMCS system to which the acquired data are sent for further processing or visualization. Two CAN busses are available for redundant communication.

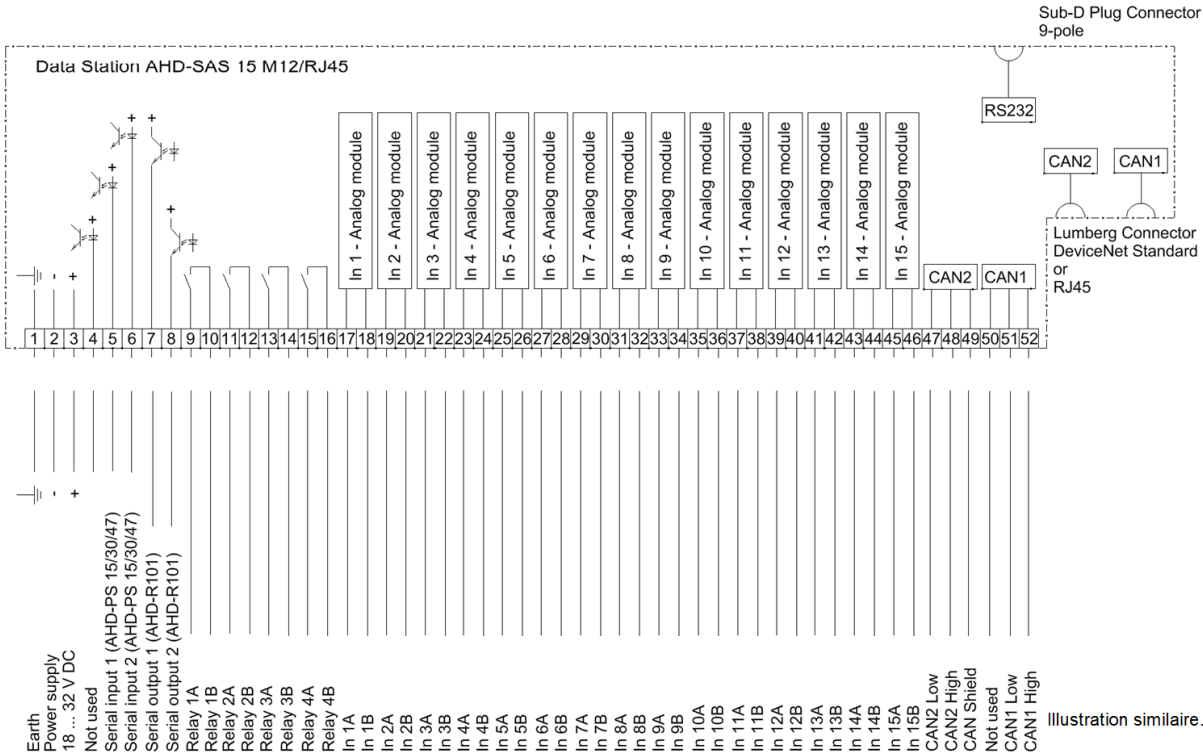
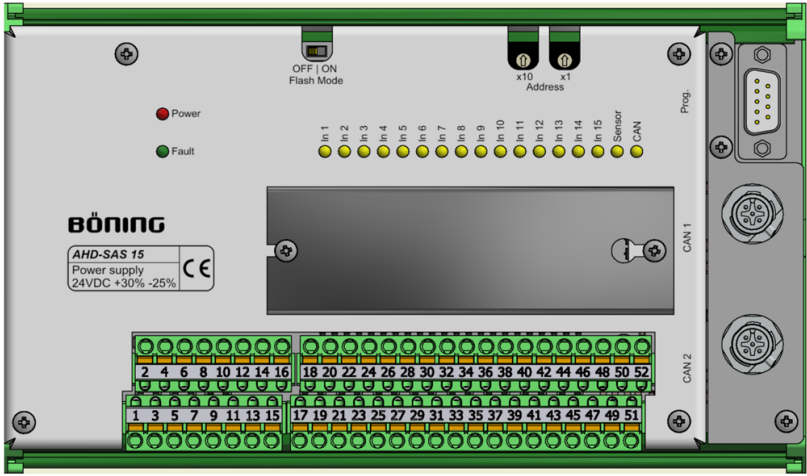
For the acquisition of the various measurement types, 15 pluggable input modules are available, which are installed according to the project-specific configuration in slots provided for this purpose, see the table below. Therefore, AHD-SAS 15 can be integrated very flexibly into a customer-specified or existing sensor system.

Wide-ranging parameterization options allow the use of any characteristic curve, so that applications with tank content measurements or other non-linear systems can be set up successfully.

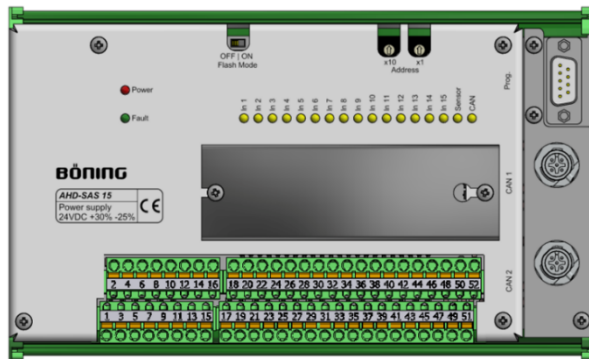
The following operating modes can be configured:

- **Passive Mode:**  
In passive mode, AHD-SAS 15 operates without a configuration stored in itself and sends only raw sensor values to the system over the CAN bus. This mode should be preferred for all projects that include a data station AHD-DPU 9, a Panel PC or a Compact Display.  
In this case, the raw data are processed by the higher-level data stations. From the raw data physical measured values are calculated, configured limit values are monitored and alarms are generated if the limits are exceeded. In addition, freely configurable events can be processed with logical functions, which makes it easy to set up complex PLC controls.
- **Active Mode:**  
In active mode, AHD-SAS 15 operates as a stand-alone device. This application is only useful for smaller monitoring systems implemented without an AHD-DPU 9, Panel PC or Compact Display. In this case, serial devices (e.g. AHD-PS 15, AHD-R101-2 or AHD-SW I/II) can be connected directly to AHD-SAS 15 as extensions.

Wiring Diagram



## Images and Dimensions



Dimensions in mm

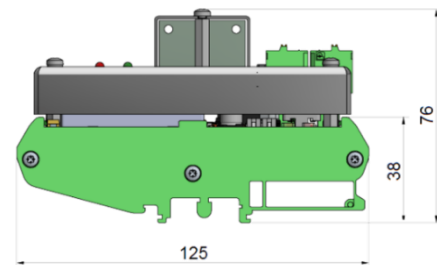
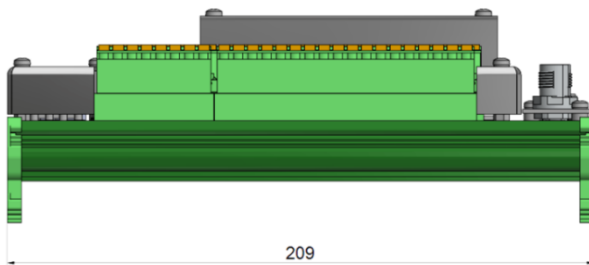


Image is similar.

**Table of Input Module Types (I)**

| Code <sup>1)</sup>  | Selection (DeviceConfig)                                        | Application                                                | Result <sup>9)</sup>               | Remark                                                                      |
|---------------------|-----------------------------------------------------------------|------------------------------------------------------------|------------------------------------|-----------------------------------------------------------------------------|
| B                   | B Module "4...20mA" (1...40mA, 2pole)                           | Sensor with current output (2-pole)                        | Current [mA]                       | Sensor is supplied via AHD-SAS 15                                           |
| C                   | C Module "4...20mA" (1...40mA, 4pole)                           | Sensor with current output (4-pole)                        | Current [mA]                       | Sensor is supplied via separate wires                                       |
| E                   | E Module "Binary" (Contact Plus Switched) <sup>3)</sup>         | Sensor with switch contact or push button (plus signal)    | Binary value [0 or 1]              | Switched plus (same potential as system)                                    |
| F                   | F Module "Binary" (Contact Potential Free) <sup>3)</sup>        | Sensor with switch contact or push button (potential-free) | Binary value [0 or 1]              | Potential-free contact, switched minus (same potential as system)           |
| G (a)               | G Module "PT100" (-80...+220°C) <sup>4)</sup>                   | PT100 temperature sensor (max. 220°C / 2-pole)             | Temperature [°C]                   | Without sensor-fault monitoring                                             |
| G (b) <sup>2)</sup> | G Modul Type2 "PT100" (-80...+220°C incl. SF) <sup>4) 5)</sup>  | PT100 temperature sensor (max. 220°C / 2-pole)             | Temperature [°C]                   | With sensor-fault monitoring                                                |
| G (c) <sup>2)</sup> | G Modul Type3 "Resistor" (68...183 Ohm)                         | Common resistance sensor (max. 183 Ohm)                    | Resistance [Ohm]                   | Specify characteristic curve                                                |
| H (a)               | H Module "PT1000" (-80...+220°C) <sup>4)</sup>                  | PT1000 temperature sensor (max. 220°C / 2-pole)            | Temperature [°C]                   | Without sensor-fault monitoring                                             |
| H (b) <sup>2)</sup> | H Modul Type2 "PT1000" (-80...+220°C incl. SF) <sup>4) 5)</sup> | PT1000 temperature sensor (max. 220°C / 2-pole)            | Temperature [°C]                   | With sensor-fault monitoring                                                |
| H (c) <sup>2)</sup> | H Modul Type3 "Resistor" (680...1830 Ohm)                       | Common resistance sensor (max. 1830 Ohm)                   | Resistance [Ohm]                   | Specify „Characteristic Curve“                                              |
| I                   | I Module "NiCrNi" (0...950°C) <sup>4)</sup>                     | NiCrNi temperature sensor (max. 950°C)                     | Temperature [°C]                   | Define channel for compensation of ambient temperature!                     |
| J                   | J Module "0...5V" (0...6V)                                      | Voltage measurement (max. 6 volts)                         | Voltage [V]                        | Measurement against system ground                                           |
| K                   | K Module "0...10V" (0...12V)                                    | Voltage measurement (max. 12 volts)                        | Voltage [V]                        | Measurement against system ground                                           |
| L                   | L Module "0...30V" (0...36V)                                    | Voltage measurement (max. 36 volts)                        | Voltage [V]                        | (replaced by T-module in new systems)                                       |
| M                   | M Module "Racor/Parker" (10...100kOhm)                          | Resistance sensor (Manufact. Racor / Parker)               | Raw Value <sup>6)</sup> [0...4095] | Water detection (recommended settings, "Limit AL min" = 2000) <sup>7)</sup> |
| N                   | N Module "Frequency" (0...8000Hz)                               | Sensor with Frequency signal (max. 8000 Hz)                | Frequency [Hz]                     | Galvanically isolated input (e.g. Speed Pick-Up)                            |
| O                   | O Module "Blank" (No function)                                  | Place holder (no sensor)                                   | Raw Value <sup>6)</sup> [0...4095] | Without function                                                            |
| P                   | P Module "4...20mA" (1...40mA, 2pol., galv. Isol.)              | Sensor with current output (2-pole)                        | Current [mA]                       | Galvanically isolated input                                                 |

**Table of Input Module Types (II)**

| Code <sup>1)</sup>  | Selection (DeviceConfig)                                           | Application                                                  | Result <sup>9)</sup> | Remark                                                                      |
|---------------------|--------------------------------------------------------------------|--------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------|
| R (a)               | R Module "PT100"<br>(-80...+650°C) <sup>4)</sup>                   | PT100 temperature sensor<br>(max. 650°C / 2-pole)            | Temperature [°C]     | Without sensor-fault monitoring                                             |
| R (b) <sup>2)</sup> | R Modul Type2 "PT100"<br>(-80...+650°C incl. SF) <sup>4) 5)</sup>  | PT100 temperature sensor<br>(max. 650°C / 2-pole)            | Temperature [°C]     | With sensor-fault monitoring                                                |
| R (c) <sup>2)</sup> | R Modul Type3 "Resistor"<br>(68...330 Ohm)                         | Resistance sensor with free<br>characteristic (max. 330 Ohm) | Resistance [Ohm]     | Specify characteristic curve                                                |
| S (a)               | S Module "PT1000"<br>(-80...+650°C) <sup>4)</sup>                  | PT1000 temperature sensor<br>(max. 650°C / 2-pole)           | Temperature [°C]     | Without sensor-fault monitoring                                             |
| S (b) <sup>2)</sup> | S Modul Type2 "PT1000"<br>(-80...+650°C incl. SF) <sup>4) 5)</sup> | PT1000 temperature sensor<br>(max. 650°C / 2-pole)           | Temperature [°C]     | With sensor-fault monitoring                                                |
| S (c) <sup>2)</sup> | S Modul Type3 "Resistor" (680...3300<br>Ohm)                       | Resistance sensor via free<br>characteristic (max. 3300Ohm)  | Resistance [Ohm]     | Specify characteristic curve                                                |
| T                   | T Module "0..44V"<br>(0..44.9V)                                    | Voltage measurement<br>(max. 44.9 Volts)                     | Voltage [V]          | Measurement to system ground<br>(50 mA fuse recommended)                    |
| U                   | U Module "15..200 Ohm"<br>(0..400Ohm galv. isol.)                  | General resistance sensor (max.<br>400 Ohm)                  | Resistance [Ohm]     | Galvanically isolated input<br>(specified from 15 to 200 Ohm) <sup>8)</sup> |
| U1                  | U1 Module "0..100 mV"<br>(0-100mV, 2pol, galv. isol.)              | Voltage measurement<br>(max. 100 mVolt)                      | Voltage [mV]         | Galvanically isolated input <sup>8)</sup>                                   |
| U2                  | U1 Module "0..600 mV"<br>(0-600mV, 2pol, galv. isol.)              | Voltage measurement<br>(max. 600 mVolt)                      | Voltage [mV]         | Galvanically isolated input <sup>8)</sup>                                   |
| U3                  | U1 Module "0..2000 mV"<br>(0-2000mV, 2pol, galv. isol.)            | Voltage measurement<br>(max. 2000 mVolt)                     | Voltage [mV]         | Galvanically isolated input <sup>8)</sup>                                   |
| V                   | V Module "8..44V"<br>(7..44.9V galv. isol.)                        | Voltage measurement<br>(max. 44.9 Volts)                     | Voltage [V]          | Galvanically isolated input<br>(min. voltage = 7 Volt)                      |

<sup>1)</sup> A differentiation is made between the physical detection range, which can be detected by the module and evaluated sensibly by the devices (AHD-DPU 9 or AHD-SAS 15). The typical sensor or measuring range is always indicated. In combination with AHD-DPU 9 the modules "G", "H", "R" or "S" can be operated in three modes (a)...(c). The setting in DeviceConfig ("Channel Sources - Input Module" table) tells the system how the associated measured value is to be evaluated.

The following applies to the modules U1...U3: If the evaluation takes place within the AHD-SAS 15 (in its active mode), the raw value output must be taken into account. Here, the upper measuring range corresponds to the raw value "4000".

<sup>2)</sup> Module / selection only possible in combination with data processing unit AHD-DPU 9.

<sup>3)</sup> Function without wire break detection. If error monitoring is required, the channel must be acquired in analog mode (e.g. by voltage or resistance measurement).

<sup>4)</sup> The temperature value is calculated automatically using internally stored characteristic curves, additional configuration under "Characteristic Curve" is not required.

<sup>5)</sup> Function with sensor fault detection (wire break and short circuit)

<sup>6)</sup> Output = internal raw value in mV

<sup>7)</sup> Limit value comparison with raw value: alarm on water contact (Rsens < 45 kOhm at Uref = 24V).

<sup>8)</sup> Measuring range and sensitivity can be modified at the factory (special version).

<sup>9)</sup> Output value and unit depend on the selected input module. All further processing steps are based on this.

## Technical Data

### Mechanical Data

Dimension W x H x D 209 x 125 x 76 mm

Min. Installation height 116 mm  
for CAN cable (M12)

Weight Appr. 0.7 kg

### Environmental Data

Operating temperature -30°C ... +70°C

Storage temperature -50°C ... +85°C

Degree of protection IP 20

Required distance to  
compass Standard magnetic compass: 0.40 m  
Steering magnetic compass: 0.50 m

### Electrical Data

Power supply 24 V DC (+30% / -25%)

Current consumption Max. 700 mA (24 V DC)

**Interfaces** 2 x CAN-Bus on terminal strip  
with DeviceNet connector (M12)  
1 x RS232 (Sub-D9), internal use only

### Inputs

15 x slot for binary and analog inputs,  
free and individually configurable with  
input modules according to project-  
specific configuration  
2 x serial (opto-coupler) from binary  
data stations AHD-PS 15/30/47

### Outputs

4 x potential-free relay contact,  
30 V DC / 2 A max: (freely  
configurable)  
2 x serial (opto-coupler) for  
relay station AHD-R101-2 or  
Spill warning AHD-SW I/I

### Installation

Module carrier Installation directly on DIN rails  
housing TS 32 oder TS 35

### Approvals

Classification societies ABS, CRS, DNV, LR, RINA

### Item Number

11663V02