AHD-PS 15, AHD-PS 30, AHD-PS 47
Binary data stations

Logging 15, 30, 47 binary signals

Serial output signal

Compact and lightweight

Pluggable terminal blocks

LED displays for `POWER´, serial data output `S´ and input `IN´

TEST button for short to ground/earth detection and simulated input signal

Introduction

The data station is an electronic device which can be installed in switch cabinets, dashboards, etc. It is used for the decentral acquisition of binary signals (contacts, transistors, proximity switches, etc.) and serial transmissions to a receiver. An important feature is the optimized wiring, from 94 down to just 3 wires, including the power supply. Furthermore the device enables each input to be easily checked for short to ground/short to earth.

The data station functions across a broad voltage range between 18 and 32 V DC. Working with a wire diameter of at least 0.5 mm^2 the distance from receiver can be up to 1,000m.

Design

The binary data station comprises an electronic unit housed in a plastic casing suitable for rail mounting (TS 32 und TS 35). Electrical connections are by means of pluggable terminal blocks with spring terminals. An LED display is assigned to power supply, each input and the 3 serial outputs.

Function

The power supply is to be connected to + and - respectively. The U+ and U- terminals transmit the power supply to other substations. All inputs and outputs are electrically isolated by optocouplers. The LED display for the input lights up when the respective contact is closed. This is due to the current, e.g. for acquiring a contact, being led directly via the LED. By virtue of the fact that the inputs are sensitive to current rather than voltage, the effect of potential drifts within the electrical system can be largely avoided.

In order to optimize the serial connection to the various receivers the serial output signal is supplied via optocouplers in the 3 following versions:

S1 bipolar electrically isolated

S2 plus activating emitter output

S3 minus activating open-collector output

The data are transmitted at 1,200 Baud, formatted as follows:

1 start bit (optocoupler activated), 15 (30 / 47) data bits corresponding to inputs 1 to 15 (30 / 47) optocoupler activated when switch at input is closed, 16 (33 / 80) bit pause (optocoupler deactivated). Thus one cycle comprises 32 (64 / 128) bit, resulting in a total of 37.5 (18.75 / 9.375) protocols per second.

Short to ground/short to earth

The inputs are sensitive to current. They are dimensioned in such a way that even the smallest current of under 0.1 mA (e.g. 500 kΩ to minus) will cause the respective LED display to light up. So that an input is treated as "closed" a minimum current of 1.5 mA must be attained (equating to a resistance of 2 kΩ). This makes it possible to detect short to ground/short to earth early.

For the device to function smoothly, all currents from the P terminals must return via the N terminals.

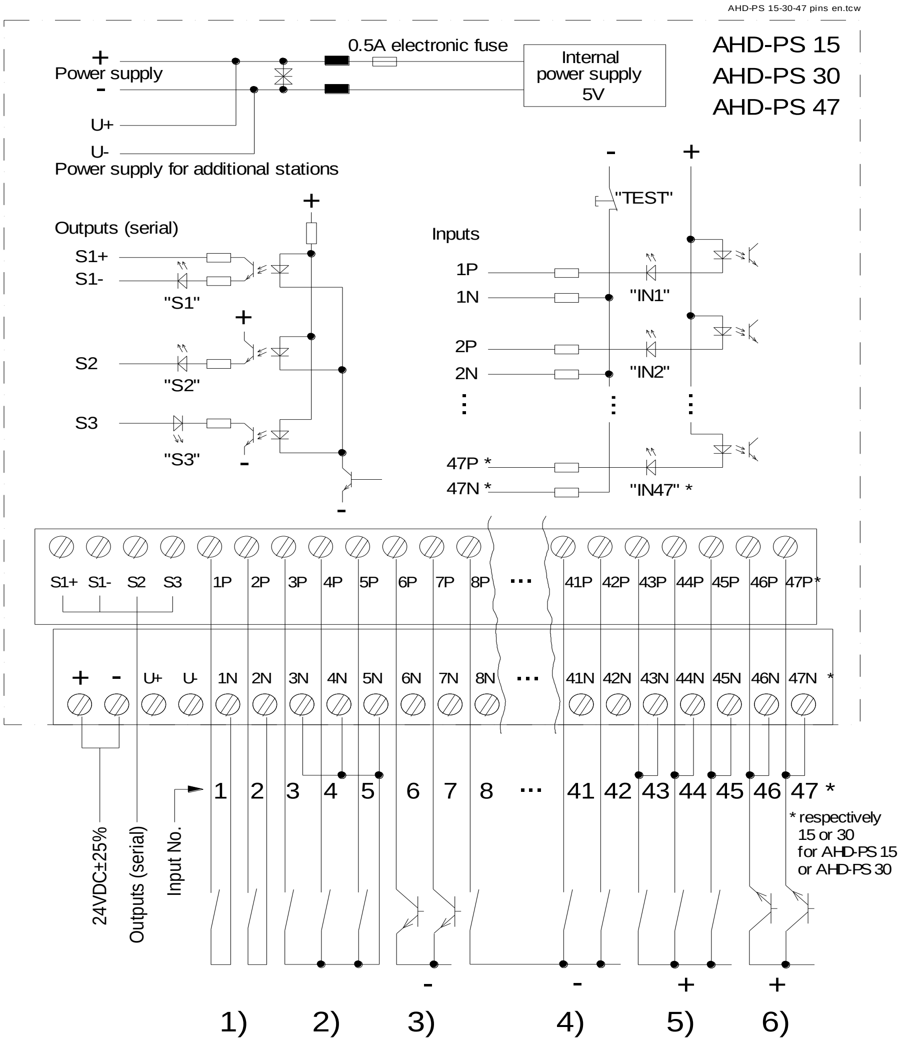
When the test button is pressed the entire returning current is interrupted and none of the LEDs should light up. In the event that a LED should light up, the current must have gone by a deviant path (earth, ground).

In the case of applications which do not require a returning current, the respective contact must be opened and the corresponding input LED should not light up.

Application in alarm systems

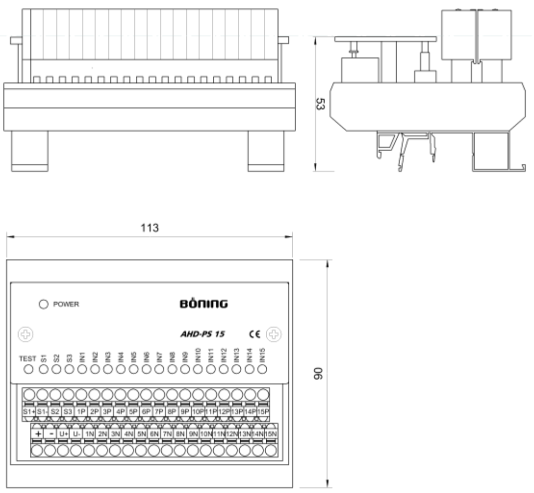
Alarm systems normally incorporate break contacts, i.e. an opened contact will trigger an alarm or a status signal. In the normal case, all the status LEDs will light up - always assuming that the respective inputs are in use.

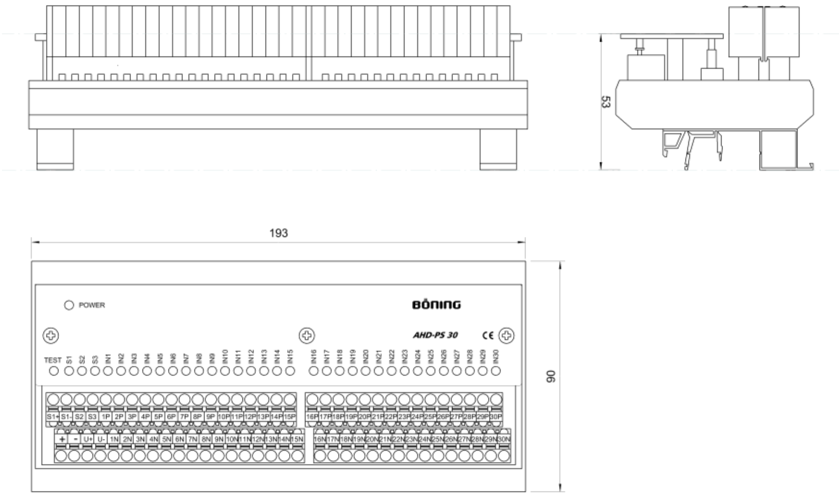
When the test button is pressed all the alarm / status signals are activated. This assumes that all the criteria listed in the above description of short to ground/short to earth are adhered to.

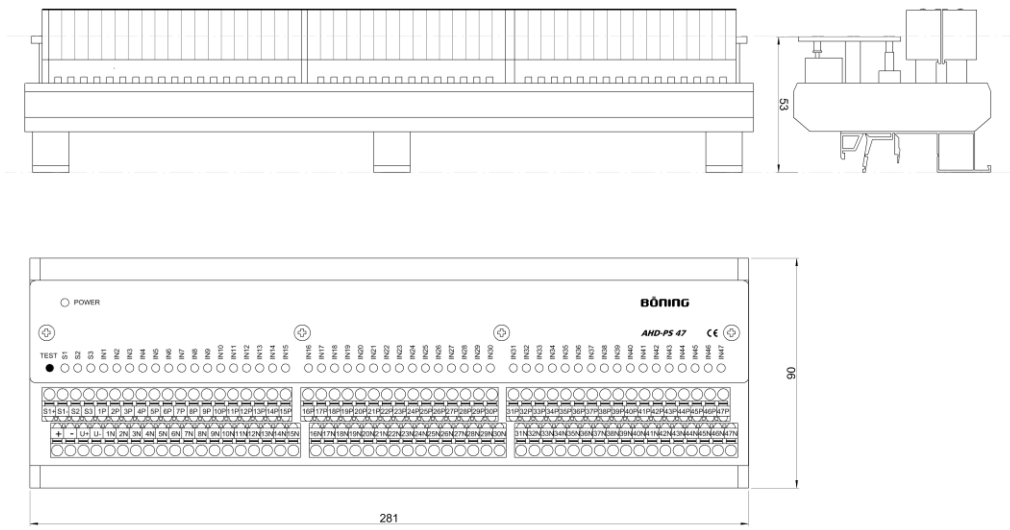


Example 1)	Acquisition of 2 binary contacts with 2-pole connection
Example 2)	Acquisition of 3 binary contacts with mutual refeeding
Example 3)	Acquisition of 2 transistors with mutual minus-connection (such sensors are wired like contacts). Every second terminal of one input remains idle
Example 4)	Acquisition of 3 binary contacts with mutual minus-connection. Every second terminal of one input remains idle
Example 5)	Acquisition of 3 binary contacts with mutual plus-connection. Here, the inputs are bypassed in order to cause a potential alteration at switching of the contacts in the binary data station
Example 6)	Acquisition of 2 transistors with mutual plus-connection (such sensors are wired like contacts). Here, the inputs are bypassed in order to cause a potential alteration at switching of the transistors in the binary data station

Dimensions







Technical Data

Binary data stations AHD-PS 15, AHD-PS 30, AHD-PS 47

Power supply:	24 V DC ±25%
Power consumption:	Max. 25 / 30 / 50 mA
Operating temperature:	0°C...70°C
Storage temperature:	0°C...85°C
Weight:	0.2 / 0.4 / 0.6 kg
Degree of protection:	IP 10
External dimensions:	113 / 193 / 281 x 90 x 53 mm
Inputs:	15 / 30 / 47 optocoupler inputs
Outputs:	3 x serial with optocouplers: switching to minus, switching to plus, potential-free
Assembly:	On rail TS 32 and TS 35
Approvals:	DNV, CRS, LR, RS
Required distance to compass AHD-PS 15/47:	Standard magnetic compass: 0.70 m Steering magnetic compass: 0.40 m
Required distance to compass: AHD-PS 30:	Standard magnetic compass: 0.60 m Steering magnetic compass: 0.50 m
Item Numbers:	AHD-PS 15: 10882V02 AHD-PS 30: 10375V02 AHD-PS 47: 10864V02