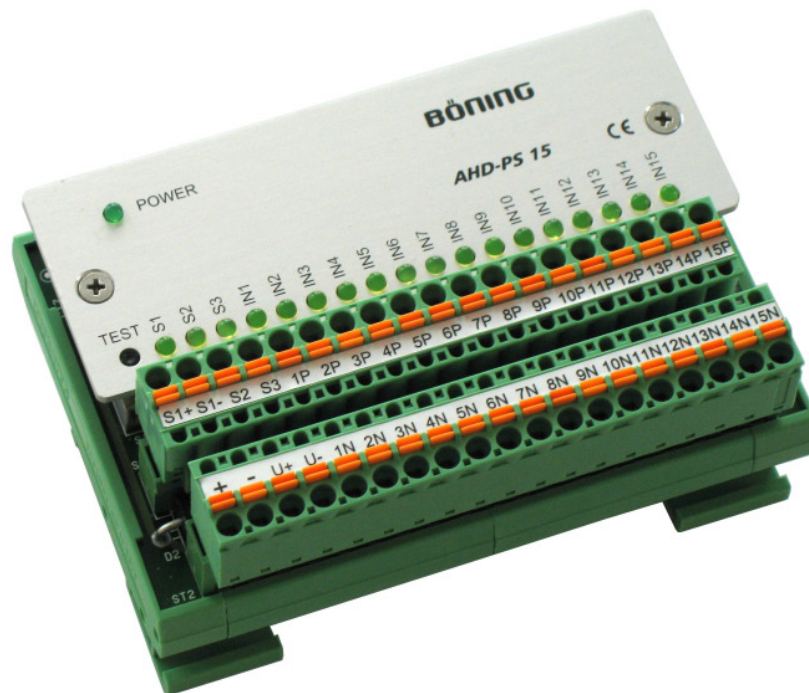


Binary data stations AHD-PS 15, AHD-PS 30, AHD-PS 47



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 logging of binary signals (contacts, transistors, proximity switches, etc.) and serial transmission to a receiver. An important feature is that the wiring is optimised, from 94 down to just 3 wires, including 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 17 and 32 VDC. Working with a wire diameter of at least 0,5mm² the distance from receiver can be up to 1,000m.

Design

The binary data station comprises an electronic unit which is 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 clamps. A 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- clamps transmit the power supply to other substations. All inputs and outputs are electrically isolated by means of optocouplers. The LED display for the input lights up when the respective contact is closed. This is due to the current, e.g. for logging 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 optimise 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 is 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 0.1mA (e.g. 500k to minus) will cause the respective LED display to light up. So that an input is treated as "closed" a minimum current of 1.5mA must be attained (equating to a resistance of 2k). This enables early detection of short to ground/short to earth.

In order for the device to function smoothly, all currents from the P clamps must return via the N clamps.

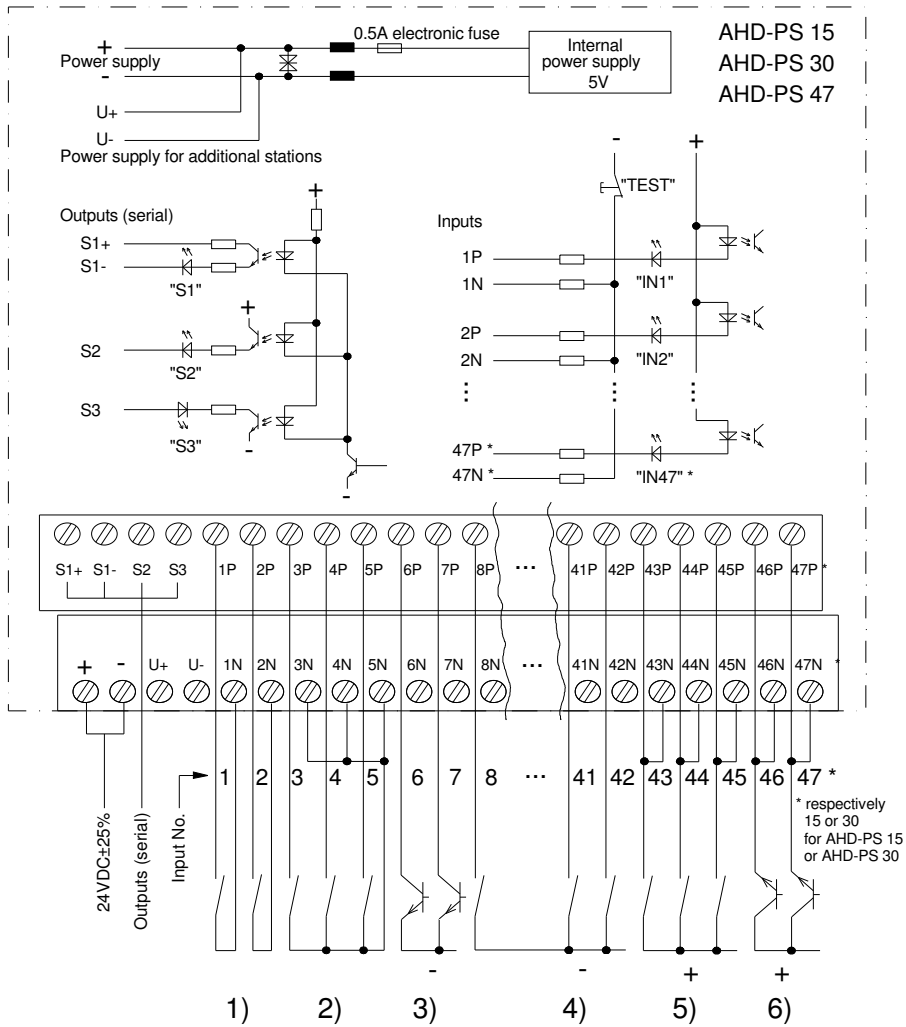
When the test button is pressed the entire returning current is interrupted and none of the LEDs should light up. In the event that a LED should light up, the current must have been carried by a deviant path (earth, ground).

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

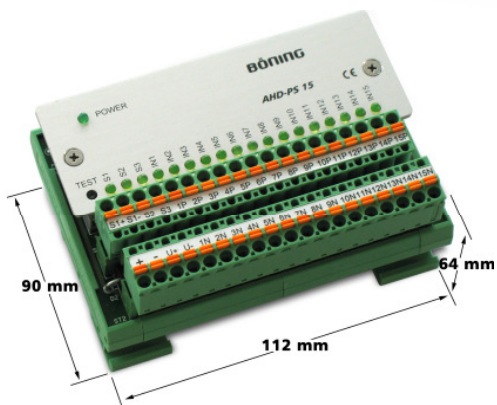
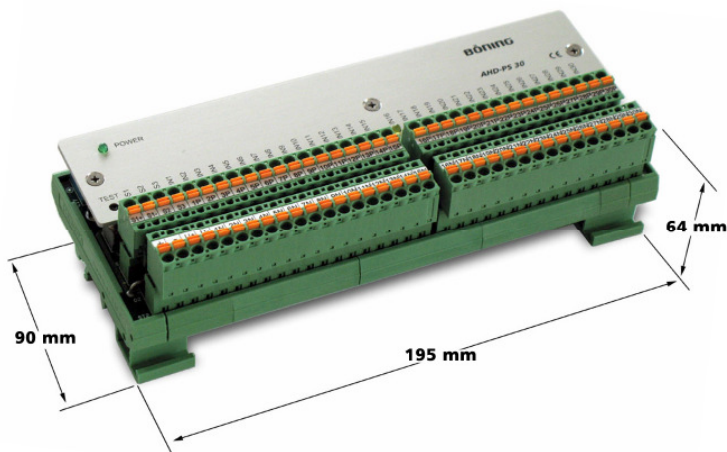
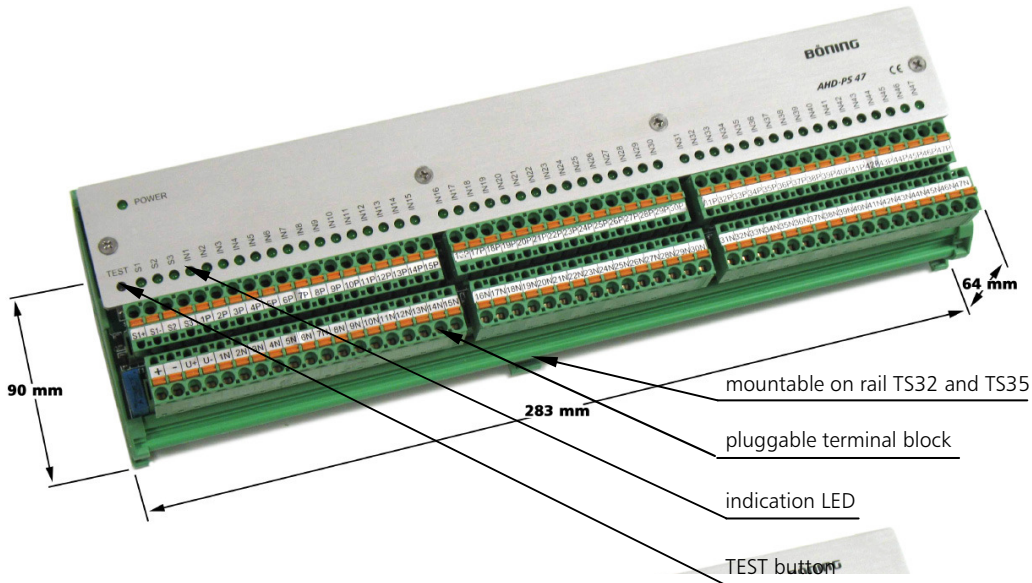
Alarm systems normally incorporate break contacts, i.e. an opened contact will trigger an alarm or a status signal. In the normal case, all the status LEDs will light up - always assuming that the respective inputs are in use.

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) Registration of 2 binary contacts with 2-pole connection
- Example 2) Registration of 3 binary contacts with mutual refeeding
- Example 3) Registration of 2 transistors with mutual minus-connection (such sensors are wired like contacts). Every second terminal of one input remains idle
- Example 4) Registration of 3 binary contacts with mutual minus-connection. Every second terminal of one input remains idle
- Example 5) Registration 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) Registration 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 station AHD-PS 15, AHD-PS 30, AHD-PS 47

Power supply:	24 VDC \pm 25%
Power consumption:	max. 100 / 280 / 380 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:	90 x 64 x 112 / 195 / 283 mm
Inputs:	15 / 30 / 47 optocoupler inputs
Outputs:	3 x serial with optocouplers: switching to minus, sw. to plus, pot. free
Assembly:	on rail TS 32 and TS 35