

## Battery Power Pack iBA12-14 for intrinsically safe installations

### Ordering Data

Designation	Type	Item no.
Battery power pack 12 V <sub>DC</sub> / 14 Ah	iBA 12-14	375 003 20 AX
Holder for iBA 12-14		375 003 50 AX



- **Battery for non-mains supply of power to firedamp-proof intrinsically safe installations and apparatus with 12 V<sub>DC</sub> voltage**
- **Small dimensions**
- **High capacity (14 Ah)**
- **Plug connection (10-contact jack)**
- **Battery holder for rapid changeover**
- **Charge- / remaining capacity indicator**
- **Monitoring contact**
- **Deep discharge protection**
- **Explosion protection mode I M 2 EEx ib I**

### Use

This intrinsically safe Battery Power Pack iBA12-14 is intended as a non-mains power supply for electrical apparatus in intrinsically safe systems within hazardous areas of coal mines. It comes with explosion protection mode EExb I, corresponding to Category IM2.

The output voltage is 12 V<sub>DC</sub>, the rated current 1.0 A and the capacity 14 Ah. The output current on short-circuit is limited to a maximum of 1.1 A.

Charging of the discharged battery can be carried out within the hazardous area with the aid of one or two approved power supply packs. The use of two power supply packs means that charging is possible within approximately 18 h.

### Design and construction

The intrinsically safe Battery Power Pack iBA12-14 is housed in a sheet stainless steel case. It is provided with protection type IP54. A holder for

accommodation of the battery power pack is available as an accessory.

The charging electronics and accumulator block are situated in separate chambers and are separately sealed. The accumulator block consists of two blocks connected in parallel, each comprising 12 NiCd cells, and with a capacity of 7 Ah each.

All electrical connections for charging inputs, discharging output, activation and monitoring contact are effected via a plug connection (10 contact jack) on the outside. A suitable connection plug which engages with the jack is available as an accessory.

Beneath the steel case cover are also located contacts for de-activation of the end-of-charge cut-off and for measuring the voltage of the accumulator block, as well as the LEDs of the charge indicator, which are visible from the outside through a sight glass pane.

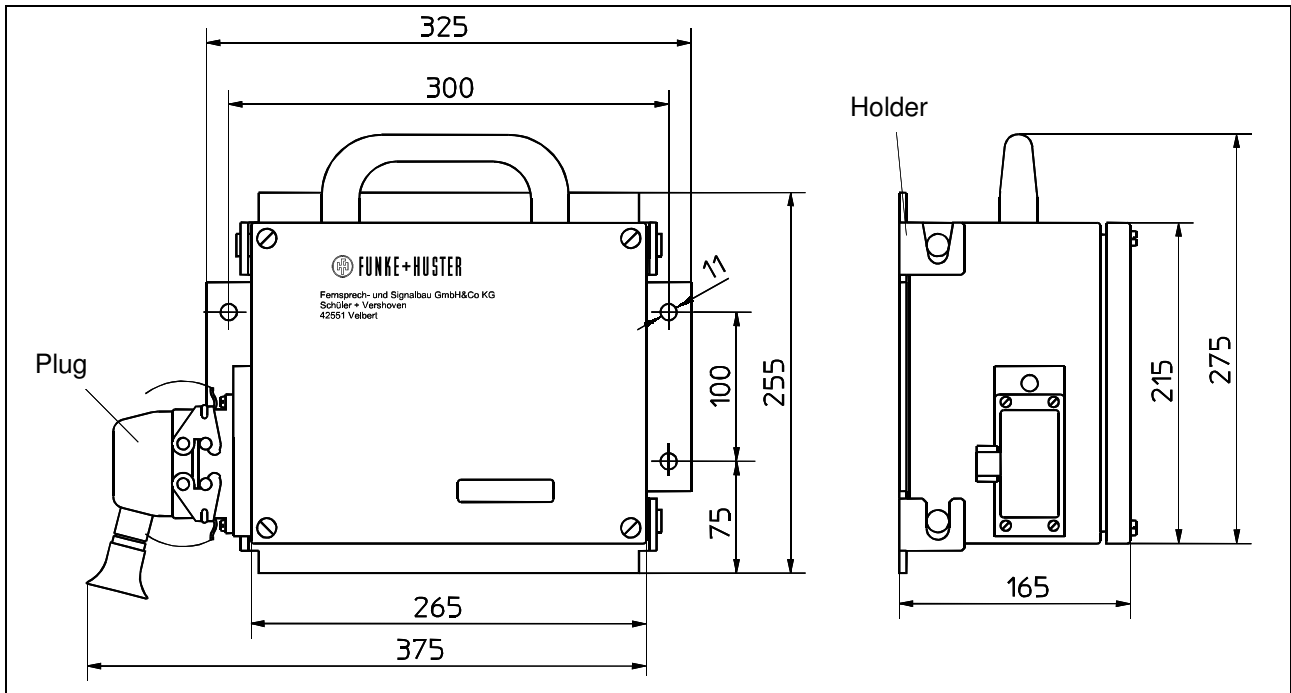
**How it works**

The intrinsically safe iBA12-14 Battery Power Pack has two charging inputs. Via these it can be charged in a hazardous area by the connection of one or two approved power supply packs with intrinsically safe output circuits. When charging is carried out with two such power supply packs the charging process takes approximately 18 h; when only one power supply pack is used it takes approximately 30 h. The inputs are protected by means of diodes against reverse polarity. From the 12V input voltage a DC/DC converter produces the charging current necessary for the accumulator block. A monitoring circuit switches off the DC/DC converter if its output voltage exceeds 19V. This is indicated by the LED "Charging Error". The amount of input and output currents of the accumulator block are counted by the current balance circuitry to determine the charge level,

which is indicated on the LED display in steps of 20%. During the charging process the "charging" LED is illuminated. As soon as the charge level of 100% is reached, the DC/DC converter is switched down to trickle charge and the "full" LED lights up. If during the discharging process the charge level falls to "Battery empty", the corresponding LED flashes and the parallel connected optocoupler – monitoring output is switched off (high impedance). The LED display and optocoupler – monitoring output are only active during charging and discharging operations. In standby condition (storage) they are switched off. The changeover from stand – by to discharging operation is effected via an activation input, whereby the accumulator block is connected via a voltage monitoring circuit and two Low-Dropout voltage / current regulating circuits to the supply

output. The activation input is applied to contacts of the plug-in socket, so that for practical purposes activation is automatically effected by contact to the plug of the consumer load. The voltage monitoring circuit serves as a deep discharge protection, and at an under-voltage of around 10% isolates the accumulator block from the supply output. The Low-Dropout voltage / current regulating circuits regulate the output voltage to 12 V and limit the output current to 1.0 A rated current (1.1 A on short circuit). A monitoring circuit monitors the function of the first voltage / current regulating circuit. In the event of a fault the output voltage is switched off and the "Error" LED is illuminated.

**Dimension sheet iBA12-14**



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