



**Industrie Elektronik Brilon**  
Energy Systems

## Quick Guide Filon FUTURE charger

### Purpose of the operating instructions

The operating instructions are intended to explain the functions, safety regulations and displays of the charger.

Further information can be found at [www.ieb.de](http://www.ieb.de).

To ensure the safe handling of the charger, the operating instructions must in any case be read by each person using the charger.

### Intended use

The charger is intended exclusively for charging rechargeable batteries.

The battery data (voltage, capacity and type) for these chargers are stated on the name plate.

The charger is not suitable for non-rechargeable batteries.

The charger is short-circuit-proof and protected against inverse polarity.

### Warranty

This product is covered by the implied warranty within the framework of our general terms and conditions. Prerequisite for the allowance of warranty claims is in any case the intended use of the charger.

## Safety advices

### Requirements on the place of use

The charger must only be used in closed, frost-free and dry rooms. The ambient temperatures at the place of use must not fall below 0°C/32°F and not exceed 40°C/104°F.

The place of use must not be exposed to excessive dust. The occurrence of electro conductive dusts (salt, soot, metals) must be excluded.

The place of use must be adequately ventilated so that the resulting charging gases can be distributed or diluted and the occurrence of explosive gas mixtures is prevented.

The place of use must be chosen in such a way that the ventilation openings are not covered and the cooling air flow is not blocked. Do not place the charger near radiators or other heat sources. Heat accumulation at the charger, e. g. by blocking the ventilation openings, must be excluded.

The distance to explosion- and explosion-hazardous areas must be at least 5m/16ft.

If the charger is designed as a stationary unit, it must be placed on the housing stand.

### Personnel qualification

The charger may be used by children from 8 years of age and older as well as by persons with reduced physical, sensory or mental abilities or lack of experience and knowledge.

This applies as long as they have been supervised or instructed in the safe use of the charger and have understood the related dangers.

Children are not allowed to play with the charger.

The charger (including the charging cable) must not be opened, replaced or manipulated.

If the charger's power cord is damaged, it must be replaced by the customer service or a similarly qualified person. The same applies to the replacement of fuses.

### General safety advices

Connect the charger only to a properly installed earthed socket.

The charger must not be connected to the mains supply in case of a defect or must be disconnected immediately by pulling the mains plug.

Unplug the unit when not in use.

## Functioning

### **Start charging process**

To start charging, connect the charger to the battery and then to the mains.

The charger automatically starts the charging process and executes the charge independently.

### **Equalizing charge**

Filon FUTURE chargers use the patented Filon FUTURE charging characteristic to charge flooded batteries. This charge profile consists of a main charging phase followed by a dynamic pulse charge phase with a dynamic  $dU/dt$  switch-off that does not require additional equalization.

### **Stop charging process**

When the battery is 100% charged, the charger automatically stops the charging process and the green LED "100%" lights up.

To disconnect the fully charged battery from the charger, first disconnect the charger from the power supply and then disconnect the battery from the charger.

The fully charged battery can now be used again.

### **Charge retention**

If the battery is not disconnected from the charger after the charging process has been completed, the charger switches to charge retention. In this state, self-discharge is prevented so that the battery's state of charge is kept.













### **Note**

A prerequisite for a fully charged battery is an uninterrupted charging process. Any interruption of the charging process may result in capacity loss and premature failure of the battery.

## Display and operating unit

The charger is equipped with five light elements (one is a red/white dual LED) and a graphical touch display (optional). The LEDs indicate the state of charge and an error code in the event of an error. The meaning of the LED display is described below.

### LED display

operating status during charging process	LED indication					note
	 100%	 >80%	 <80%	 AIR	 X 	
No battery					X (white)	
Battery connected / Charging preparation					O (white)	
Deep-discharge start			O			
Main charge			X			
Backup charge		X				incl. equalizing charge
End of charge/Charge retention	X					
Pause mode	O		O			alternate flashing
Cool Down Indication "CDI"	O			X		optional
Fast charge		X	X			optional
Desulfation		O				
Electrolyte Circulation (EC)		(X) (O)	(X)	X		charging phase LED lights up additionally
operating status in the event of an error	 100%	 >80%	 <80%	 AIR	 X 	
Battery error					X (red)	
Time or capacity error			X		X (red)	
System error		X	X		X (red)	
Communication error		X			X (red)	
Temperature error	X				X (red)	
warnings	optional					charging continues
Temperature sensor of the battery defect or not connected	(X)	(X)	(X)		O (red)	charging phase LED lights up additionally
EC pressure loss	(X)	(X)	(X)	O		charging phase LED lights up additionally
X = permanent light, O = flashing light						