

# User instructions



### 1. Introduction

CONTIS basic chargers are intended for industrial applications, mainly for charging and main-taining of station batteries in a charged state, DC power supply and back-up of technology systems, etc. With regard to the perfect electric parameters, they are suitable even for different types of batteries (e.g. maintenance-free batteries, gel batteries, AGM etc.).

### 2. Operational safety

- charger is intended for usage in well-ventilated interiors
- the charger can be connected only to the standard electric power mains
- it is necessary to avoid sparking and making a fire near the battery; explosion hazard during the process of charging
- the charger must not be operated without a cover, an electric shock hazard
- only batteries intended for charging with the parameters (voltage, capacity ranges) suitable for the specified type of charger can be charged
- during charging, it is dangerous to touch the supply leads to the battery poles
- the transport of the charger during the charging process is prohibited
- the supply leads to the battery must not be disconnected during the process of charging
- the charger can be operated only by a respectively qualified person

### 3. Characteristics of the equipment

The chargers are designed to be used in interiors with standard conditions (humidity, temperature, dustiness). When operated in a place with a higher level of dustiness, the interval of service inspections must be shortened. They should be connected to one-phase or three-phase power mains with a standard power supply cord with a three-pole or a four-pole connector. The suitable protection must be carried out in the installation of the charging station.

They are intended for permanent charging of station batteries and supplying power to the connected appliances, they can be operated continuously. Cooling is provided by fans placed inside the charger. The rated (maximum) power is according to the type from 1,8kW to 39kW. The standard output voltage is 12 – 600V. The respective types enable to set the output parameters in absolute values.

Chargers use the principles of high-frequency technology. They are based on power units operating in high switching frequency. The charging process is controlled by a microprocessor control system. Important statuses are indicated on display.

#### Specifications

Starting current	<I <sub>nom</sub>
Efficiency	Up to 95%
Output voltage stability	± 1%
Protection	IP20, optionally IP54
Protection class	I
Cooling	Forced ventilation
Working environment	-10 to +40 °C, max. rel. humidity 80%, non-condensing
Standards EMC, LVD	EN 61000-6-4, EN 61000-6-2, EN 60950-1

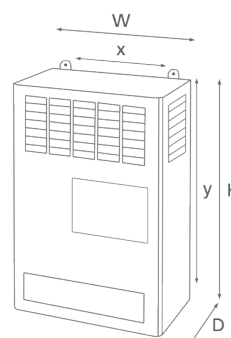
### Types of chargers

Battery voltage Unom (VDC)		Charger current I <sub>max</sub> (A)		Typ	Case	Charger voltage U <sub>max</sub> (VDC)	Input voltage (VAC)	Input current (A)	Mains protection (A)
12, 24	60			24E60	FF170	35	230	8,7	10
	100			24E100	FF170			14,1	16
	100			24D100	FF170		3x400	4,9	6
	200			24D200	FF250			9,8	10
48	50			48E50	FF170	70	230	14,1	16
	50			48D50	FF170			3x400	4,9
	100			48D100	FF170		8,0		10
	150			48D150	FF250		12,9		16
	200			48D200	FF250		16,0	20	
60	110	25	24	80E25	FF170	140	230	14,1	16
		25	24	80D25	FF170			3x400	4,9
		50	40	80D50	FF170		8,0		10
		75	65	80D75	FF250		12,9		16
		100	80	80D100	FF250		16,0		20
		125	100	80D125	FF330		20,9		25
		150	120	80D150	FF330		24,0		32
		175	140	80D175	FF550		28,9		32
		200	160	80D200	FF550		32,0		40
		225	180	80D225	FF720		36,9	40	
250	200	80D250	FF720	40,0	63				
220	22			220D24	FF170	300	3x400	8,0	10
	44			220D48	FF250			16,0	20
	66			220D72	FF330			24,0	32
	88			220D96	FF550			32,0	40
	110			220D120	FF720			40,0	63
	132			220D144	FF720			48,0	63
	154			220D168	ATYP			56,0	63
	176			220D192	ATYP			64,0	125
400	12			400D12	FF170	600	3x400	8,0	10
	24			400D24	FF250			16,0	20
	36			400D36	FF330			24,0	32
	48			400D48	FF550			32,0	40
	60			400D60	FF720			40,0	63
	72			400D72	FF720			48,0	63

- \* Recommended external circuit - breaker of the C or D characteristics
- \*\* Mains voltage tolerance +15%/-10%, 1f chargers +/- 15%  
Version up to 600VDC on request

Box colour is black as standard or arbitrary at customer's request.  
Other types (voltage, current) on request.

Case	Dimension (mm)			Fastening holes spacing (mm)	
	H	W	D	x	y
FF170	477	302	169	230	515
FF250	477	302	254	230	515
FF330	477	302	339	230	515
FF550	477	547	339	499	515
FF720	477	717	339	669	515



### 4. Charger installation

The box of the charger is intended to be hung on the wall (on a stand or on a bracket) in the vertical working position. However, the charger may be operated in the horizontal position, laid on its rear side, on a table or a base etc. To secure the correct functioning of the charger, it is necessary to keep the distance of at least 100 mm on both the sides of the charger as well as on the front side from other devices in order to provide sufficient ventilation. The slots for air suction must not be covered. With regard to the possibility of dust suction, the placement of the device on the floor or in a low position above the floor is not suitable.

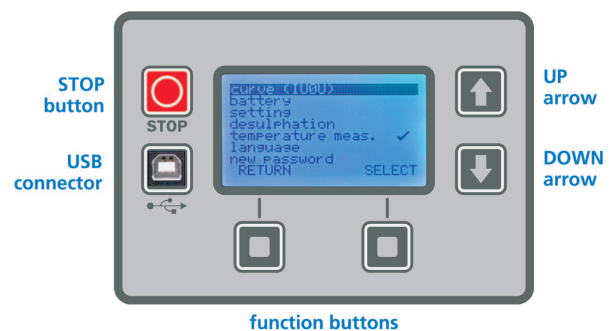
The charger cannot be used in an extremely dusty environment. The deterioration in cooling of internal parts could occur. The charger is equipped with a 5 wire cable 3N PE, in a one-phase design with a 3 wire cable 1 N PE ex-factory. The socket for the connection must be protected with a suitable circuit breaker. Output clamps for DC voltage can be found inside of the charger - claps are prepared for montage of external cables. Positive cable from the battery (usually red) fix to plus clamp, negative fix to minus clamp. For conducting DC cables into the charger, prepared grommets on the bottom of the charger can be used. Voltage dropping in the output cables during the charging should be taken into consideration - resistance of the cables should be set in the charger's menu.

### 5. Charger operation

#### 5.1 Charger setting and connection to the battery

- prior to connection to the battery put the charger to the mains and press STOP button
- open the setting menu by press of right shifts together for 5 seconds
- set the parameters (see menu bellow)
- leave the setting menu
- switch off the charger from the mains
- connect the battery and the load (control the battery voltage on display before you press START)
- connect to the mains and press START button

(run time for leave the menu is 1 min of inactivity; all changed parameters have to be saved by the SAVE button; parameters could be set during the operation, changed parameters are activated by leave the menu)



### 5.2 Menu structure

curve	1: IU	I1	set value
		U1	set value
	2: IU0U	I1	set value
		U1	set value
		I2	set value
		Um	set value
	U2	set value	
battery	number of cells		set value
setting	cable resistance		set value
	battery Umin		set value
	remote control		check if used
desulphation	current		set value
	duration		set value
	start		press for start
temperature meas.	temperature meas.		check if using
	compensation		set value
language	language setting		
new password	numeric code setting		

### 5.3 Special equipment

**AXI FF TC** - temperature probe; serves for signalling the increased temperature of the battery during the charging, and allows voltage compensations according to the battery temperature.

### 5.4 Charger functions and control

By station applications, the charger is usually an inseparable part of the system – it permanently supplies power to the load (with the exception of power supply failures) and maintains the battery in the charged state. Batteries are not disconnected. By putting into operation, or by subsequent manipulation (servicing, maintenance), it is necessary to observe the following sequence of operations:

- after the complex installation of the whole system, connect the charger to the power supply
- the charger comes into operation; the way of operation is signalled by the yellow display with displayed parameters
- if necessary, you can interrupt the operation by the STOP button, and subsequently disconnect the battery, the load etc.
- the charger can be put into operation again by pressing the START button
- if there is a power failure or charger failure, the load will be backed-up from the connected battery
- after the power supply is renewed, the charger automatically starts the power supply to the load and battery charging
- parameters could be set during the operation, changed parameters are activated by leave the menu

## 5.5 IU0U Charging Characteristics

Two modes (phases) are considered here – charging and maintaining. After the charger is switched on, the voltage will increase at a constant current up to the maximum of set voltage. Then the current decreases by constant voltage. If the output current comes to the set value  $I_2$ , the charger proceeds to the stage  $U_m$  (maintaining charging - 2.23-2.3V/cell. according to the battery type). If the load consumption in the  $U_m$  stage causes decrease of the voltage to the value  $U_2$ , the charger proceeds to the stage  $U_1$  with the  $I_1$  charging current.

Signal column and relay indication:

- LED 2 blinking + Relay 2 ON + Relay 1 OFF – phases  $I_1+U_1$
- LED 2 lighting + Relay 2 OFF + Relay 1 ON – phase  $U_m$
- LED 3 lighting – failure
- Relay 3 ON – operation
- Relay 3 OFF – failure
- LED 1 lighting – end of desulphation

## 5.6 IU Charging Characteristics

The charger supplies the constant current  $I_1$  (maximum) up to the set voltage  $U_1$  (2,23V/cell – 2,3V/cell – according to the battery type). This characteristic is suitable for common applications of the backed-up power supply of the load (there is no danger of damaging the power-supplied appliances by a higher level of voltage).

Signal column and relay indication:

- LED 2 blinking + Relay 2 ON + Relay 1 OFF – phase  $I_1$
- LED 2 lighting + Relay 2 OFF + Relay 1 ON – phase  $U_1$
- LED 3 lighting – failure
- Relay 3 ON – operation
- Relay 3 OFF – failure
- LED 1 lighting – end of desulphation

## 5.7 Battery desulphation

- open the menu
- choose Desulphation
- set values and press START (recommended values: respect the instructions of the battery producer)



**Manufacturer of the battery chargers AXIMA cannot be held responsible for damages or issues caused by incorrect charger setting. In the event of uncertainty over user settings, please contact your supplier.**

## 6. Storage and delivery

The charger is provided in a pre-assembled state and comes with an Instruction Manual. Each charger is pre-tested for operability.

Items are shipped wrapped in cardboard packaging. During transportation and storage it is crucial to heed information contained in appended labels: protection against extreme weather conditions (rain, snow); protection against knocks and falls; which way up the package must face.

During any kind of additional handling, the charger must be transported in appropriate packaging. The charger must be stored in a dry interior environment with temperatures ranging from  $-25^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$  with relative humidity not in excess of 80% (non-condensing).

## 7. Service and maintenance



### Caution!

The charger is an electrical device and should be handled with care!

Before any kind of handling of the charger (relocating, cover removal, disassembling components) the device must be disconnected from the battery and from the mains supply. Servicing must only be carried out by qualified personnel.

### Regular inspection

After ensuring reliable operations, the following regular inspection routines are recommended:

- check individual charger components (output modules, ventilators etc.) for excessive dust levels. If these are found, it is essential to remove this dust with compressed air. The output module should be cleaned in a direction away from the ventilator, placing the jet of the air pistol between the ventilator blades and blowing air in all directions
- check mains supply cable and connector
- check output cable and battery connector
- check temp. sensor, the connected cable and its satisfactory placement on the battery
- check hoses of aeration system
- charger cover

In the event that any kind of fault is discovered, which undermines the safety of the charger or results in potential erroneous battery charging, cease using the product and report the problem to maintenance personnel.



### Caution!

High-voltage insulation testing is not permitted on the charger. This may lead to the destruction of semiconductor components. Prior to undertaking wiring testing, the charger must be disconnected from the mains supply.

### Warranty

The charger is covered by a standard two year warranty from time of purchase.

In the event the product develops a fault, please contact your supplier.

Do not under any circumstances attempt to repair a faulty unit.

## 8. Failures

**F10** - power units with different voltage levels has been connected together

**F15** - voltage monitors of single modules connected in parallel vary more than 3% of Unom

**F32** - the charging current >120% of the desired value, charging is stopped

**F33** - the charging current >120% of the Inom – value, charging is stopped