

# FLEXIS

# **MULTIFUNCTIONAL BATTERY CHARGER**

Programmable, high-frequency modular traction batteries charger

## www.axima - power.com



## **INTELIGENT CHARGING**

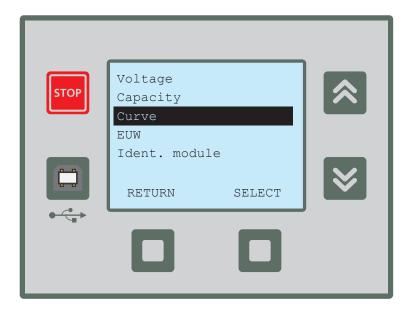




#### **MAIN FEATURES:**

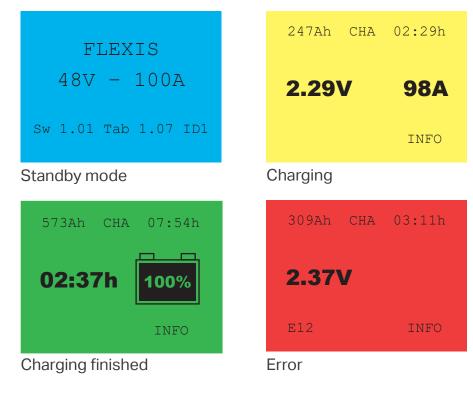
- OPPORTUNITY CHARGING
- TIME-SCHEDULED CHARGING
- AUTOMATIC BATTERY VOLTAGE AND CAPACITY RECOGNITION
- DEDICATED CHARGING CURVES FOR LITHIUM BATTERIES
- ESTIMATED TIME-TO-END-OF-CHARGING CYCLE
- LOW OPERATING COSTS
- MODULAR SYSTEM
- USER-FRIENDLY INTERFACE
- SETTINGS VIA OPERATING PANEL OR PC
- Efficiency up to 95%, power factor  $\cos \phi \sim 1$
- Active PFC and soft-start
- Verification of connected battery
- Possibility to use one charger for more different batteries
- Possibility to set up preset and custom charging curves
- High resistance to mains disturbances
- Galvanic separated output mains
- Memory for 2.000 charging cycles
- Regeneration charging desulphation and equalization

FLEXIS is a fully programmable, high-frequency traction battery charger. FLEXIS optimizes charging technology prolongs the working life of the battery, accelerates charging and saves energy. FLEXIS charger meets the hard requirements of three-shift service in industrial areas.



Operating panel allows to set parameters of charging – charging is adjusted to the values of battery.

- Operating conditions are signalized by change of colour of the display important values are displayed
- Display is big and bright, all charging stages are visible from long distance and different angles
- Display shows estimated duration of the charging cycle



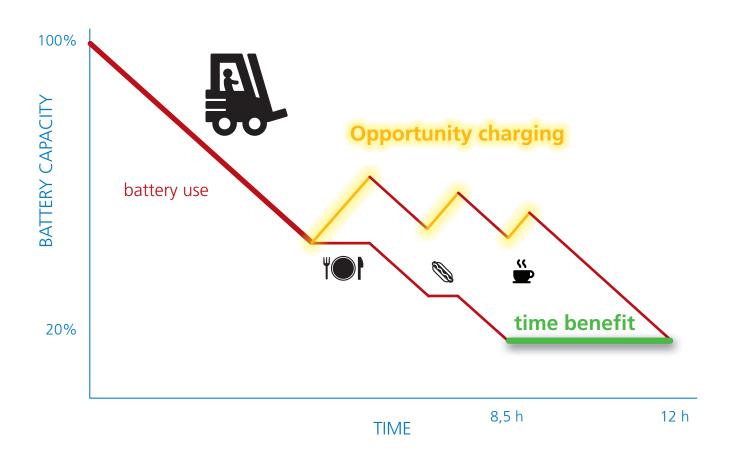


## **CONFIGURATION SOFTWARE**

- User friendly and intuitive configuration programme
- Fully adjustable charging current and voltage
- Possibility to use one charger for plenty of different batteries by manual selection
- Setting opportunity charging
- Time schedule of charging

	5 48-100							-
oper   Battery   Charging curves   Charging   Control and signalize	tion   Frontpanel of charger   Archive	Events   Charging trend   C	unulative data					
Start of charging	Temperature and electrolyt	e state	Time - sch	edule	of charg	ging		
Manual start of charging     Start charging in the case of IM-failure	Use temperature sensor     Reduce current when sensor for     or when is reached Tbat max o	skued 80 %	Day		Opp.	From	То	Charging curve
Postponed charging     Start charging at	Stop charging at failure of ter	riperature sensor	Monday	Г		00.00 +	00.00 ÷	UT1 Lead acid IUa OPF
,			Tuesday	Г		00.00 ÷	00.00 ÷	UT1 Lead acid IUa OPF
Equalization 20 ordes	Water refilling		Wednesday	Г	Г	00.00 ÷	00.00 ÷	UT1 Lead acid IUa OPF
After charging of deep discharged battery	According to electrolyt		Thursday	_	Г	00.00 +	00.00 +	UT1 Lead acid IUa OPF >
weskend Saturday v Sunday v	C Cycles for water relilier	· · · ·		_				
From 12:00 - To 22:00 -	C Only at weekend equa	alization	Friday	E	1	00.00 +	00.00 ±	UT1 Lead acid IU a OPF
Desulphation	Water refilling duration 24,36V	01:30 <u></u> m.o	Saturday	Г	Г	00.00	00.00	UT1 Lead acid IUa OPF
Desulphation current 1.3 A/1004h Dusation of desulphation for time v 72 h	Water refiling duration 48V Water refiling duration 72,80,98V	03.00 ÷ ma	Sunday	Г		00.00 ÷	00.00 ÷	UT1 Lead acid IUa OPF
Permit automatical start of desulphation	water terming duration 72,00,004	form - are						
iii file hancioni is activated, batery parameters in IM must be earner. If M is mine tol? exemption were, damaged corrected; and la POSTPONED CHARGING Charging classification are constrained and the constraints. Callo La Calloni equalization be performed at the end of each in cycle in values and the LSV/cell (in FP battery) at the stat, expan- weekend equalization be performed in time schedule from - To parameters accounding to devide curve of battery).	iction is activated, parameters from opti	ion "BATTERY-chaiging of on	cause demage th is type of battery"	e batter will be i	y. .med for c	harging		
DESULPHATION permit automatical start of desuphation - process desulphation will TEMPERATURE AND ELECTROLYTE STATE	y or IM is used with temperature measure re set value	tement			g ballery			
Use temperature sensor - temperature sensor is installed on batter failture temperature sensor is possible limit charging curent I1 on 8 at low level of electrolyte charging doesn't start, disconnect batter								
failure temperature sensor is possible limit charging curent 11 on ti	a hours of duration equalization when ou			skmark '	'Control a	and signalizati	on" is necessa	y set "Water valve" in used

**Opportunity charging** is a way of fast battery charging by higher current than common charging. During a few short and intensive charging cycles, the time of battery service is significantly longer. Working breaks are used for opportunity charging to substantially prolong the forklift worktime without a battery exchange. This way of charging minimizes downtime in operation and increases your material handling fleet effectiveness.



Back **analysis** of charging archive optimises operating costs, helps to save electrical energy and prolongs working life of battery

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harger   Ba	Battery (	Charging curv	es Charc	aing Control a	and signa	lization   Fr	ontpanel o	f charger 🗎 /	Archive	Events	Charging trend	d Cumulat	ive data Ì								
able of ch				.10	2			- 1													
able of ch	narging c	urves:	1 1	.10																	
	Curve	Battery	Cell	Curve	Umin	11	t l1 max		U1	t U1 min		t U1 max		12	dU/dt	dU/dt EUW	Charging		t 12 min	Max. time	t 12 max
n	number	type	voltage V		V/cell	A/100Ah	h:m	after t l1 max	V/cell	h:m	function period U1	h:m	after t U1 max	A/100Ah	m	m	factor	factor EUW	h:m	function period 12	h:m
	T1	Lead acid	2.00	ULIOU dU	1,30	16.0	9:00	E×	2,40	0:00	801 - 81	12:00	E»	5,0	35	20	1.00	1.00	0:00	-	6:00
	T2	Lead acid	2,00	IUIa dU	1,30	16,0	9:00	E×	2,40	0:00	1U1 - 11	12:00	E»	5,0	35	20	1,00	1,00	0:00		6:00
	T3	Lead acid	2,00	IUIOU cf	1,30	16,0	9:00	E×	2,40	0:00	tU1 - tl1	12:00	E»	5,0	0	0	1,18	1,09	0:00		6:00
	Τ4	Lead acid	2,00	IUIa cf	1,30	16,0	9:00	E×	2,40	0:00	tU1 - tl1	12:00	E»	5,0	0	0	1,18	1,09	0:00		6:00
	T5	Lead acid	2,00	IUOU	1,30	16,0	9:00	E×	2,40	0:00		4:00	×	1,3	0	0	1,00	1,00	0:00		0:00
	T6	Lead acid	2,00	IUIOU dU D	0,10	8,0	20:00	E×	2,40	0:00	•	5:00	E»	5,0	40	20	1,00	1,00	0:00		6:00
	T7	Gel	2,00	IUI0U 265	1,30	16,0	9:00	E×	2,35	0:00	tU1 - tI1	12:00	E×	1,3	0	0	1,00	1,00	0:00	-	4:00
	T8	Gel	2,00	IUI0U 280	1,30	16,0	9:00	E×	2,35	0:00	tU1 - tI1	12:00	E×	1,3	0	0	1,00	1,00	0:00	•	4:00
	T9	Gel	2,00	IUIOU Ex	1,30	15,0	9:00	E×	2,35	0:00	tU1 - tI1	12:00	E×	1,3	0	0	1,00	1,00	1:00	tl1 + tU1	4:00
-	T10	AGM/Gel	2,00	IUOU	1,30	16,0	9:00	E×	2,40	0:00	•	4:00	×	1,3	0	0	1,00	1,00	0:00	•	0:00
-	T11	Gel	2,00	IUIa 265	1,30	16,0	9:00	E×	2,35	0:00	tU1 - tl1	12:00	E×	1,3	0	0	1,00	1,00	0:00	-	4:00
-	T12 UT1	Gel Lead acid	2,00 2.00	IUIa Ex IUa OPP	1,30	15,0	9:00 6:00	E× E×	2,35 2,40	0:00	tU1 - tl1	12:00 4:00	E×	1,3	0	0	1,00	1,00 1,00	1:00 0:00	tl1 + tU1	4:00 0:00
	UT2	Lead acid	2,00	IUOU OPP	1,30 1,30	30,0 30,0	6:00	E× E×	2,40	0:00		4:00	×	3,0 3,0	0	0	1,00 1,00	1,00	0:00		0:00
	012	Lead acid	2,00	1000 0FF	1,30	30,0	6:00	E×	2,40	0.00	•	4.00	×	3,0	0	U	1,00	1,00	0.00		0.00

- Precise setting of the charging parameters ensures an optimal care of the battery
- Selection from the preset charging curves
- Possibility to modify extra charging curves to suit every type of battery
- Periodical regeneration makes care of batteries easier

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Charger Battery Charging curves Charging Control and signalization Frontpanel of	charger Archive Events Charging trend Cumulative data	
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Battery type 🕝 Traction		
└─ Way of identification of batteries	Charging curve diagram	- I
charging of one type of battery	T1 - IUIOU dU - Lead acid	
	I [A/100Ah] 16 A/100Ah	
Traction battery parameters	2,4 V/cell	
Nominal battery voltage	2,4 V/ceii	
Battery capacity 100 Ah		
Charging curve T1 Lead acid IUIOU dU		
Charging current I1 16,0 A/100Ah		
Use aeration		
	5 A/100Ah	
	4 A/100Ah	
	2,8 V/cell	
	2,23 7700	
Aeration pump setting	U [V/cell]	
	A	,
If it is not possible to open "Aeration pump setting", it is necessary to choose type of ch	narger with EUW in folder Charger	
CHARGING OF ONE TYPE OF BATTERY - standard charging of one battery		
AUTOMATIC RECOGNITION of BATTERY - allows automatic charging any type of Pb battery with liquid electrolyte		
CHARGING OF LITHIUM BATTERY		
- allows charging lithium battery and set the parameters	~	,
	AX	

POWER

## **OPTIONAL EQUIPMENT**

#### Air electrolyte circulation

- reduces charging time
- reduces power and water consumption
- prolongs working life of batteries

#### Automatic water refilling

- keeps electrolyte level
- saves cost for servicing

#### **Battery identification module AXIM**

- one charger for more batteries



#### **Temperature sensor**

- compensation of charging voltage according to battery temperature





#### **External signaling**

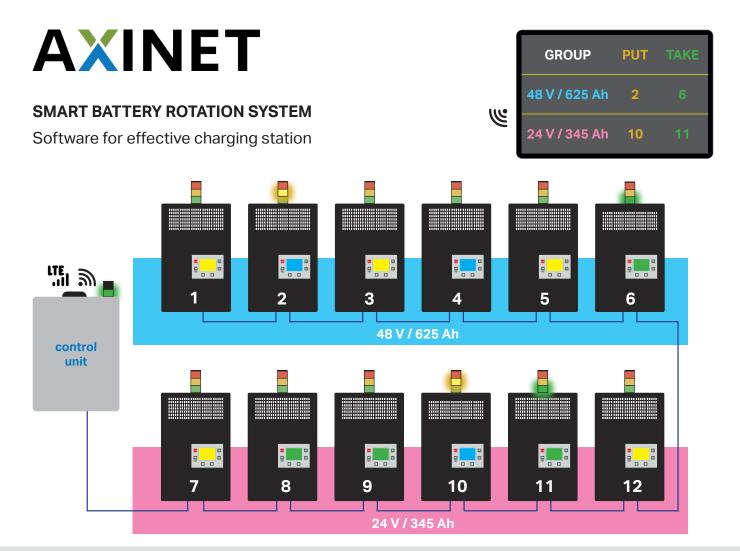
- outputs for signal column
- 3 potential-free contacts for signaling

#### **Remote control**

- 2 digital inputs for remote control

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AXINET is a system that optimizes the operation of charging stations using chargers from the FLEXIS series. The system connects individual chargers into groups according to their batteries and evaluates their condition. The AXINET system increases usability of batteries and chargers, thus reducing operating costs to the minimum. The AXINET data network system can connect up to 255 FLEXIS chargers and thereby acquire an overview of the condition and utilization of the operation.



- Smart web app
- Battery return place assignment, charged battery indication
- Identification of batteries, personnel and forklifts
- Automatic reports via e-mail
- Clear visualization of individual charging points
- Archive of charging cycles
- Statistics for battery usage and operations
- Remote access via 4G

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## **CHARGER TYPES**

Nominal output voltage (V)	Output current (A)	Model Nr.	Case	Weight (Ib)	Recommended circuit braker (A)	Input current at rated voltage 480V(A)
	100	FLEXIS 24U100	FF170	49	6	4,2
24	200	FLEXIS 24U200	FF250	73	10	8,4
	300	FLEXIS 24U300	FF330	97	16	12,6
	100	FLEXIS 48U100	FF170	49	10	6,8
36/48	200	FLEXIS 48U200	FF250	73	16	13,6
	300	FLEXIS 48U300	FF330	97	25	20,4
	50	FLEXIS 80U50	FF170	49	10	6,8
80	100	FLEXIS 80U100	FF250	73	16	13,6
	150	FLEXIS 80U150	FF330	97	25	20,4

Technical parameters	see product label
Supply voltage	3~480V +15% / -15% 50/60Hz
Input fuse	3 pole Type C or D circuit breaker
Efficiency	up to 95%
Appliance class	I
Pollution degree	2
Charger protection / after opening	IP20 / IP00

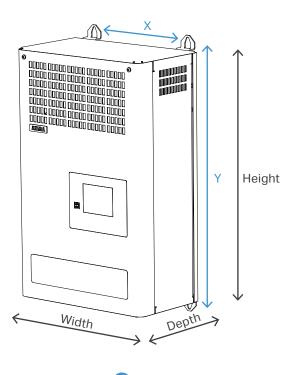
Isolation voltage in - ouput	4,2 kV DC
Output voltage tolerance	±1%
Output current tolerance	±1%
Safety	UL 1564 C22.2. No. 107.201 EN 60950-1
Electromagnetic compatibi- lity (EMC)	FCC PART 15, CLASS A ICES-003 CLASS A
Operating environment	14°F to 104°F, max.rel.humidity 80%, non-condensing
Storage	in dry conditions -13°F to +176°F max. rel. humidity 80%, non-condensing

## Dimensions for mounting on a vertical surface

Case	Width	Height	Depth	Х	Y
FF170	11.9	18.8	6.7	9.1	19.9
FF250	11.9	18.8	10.0	9.1	19.9
FF330	11.9	18.8	13.4	9.1	19.9

Dimensions in inches

X and Y are positions of mounting holes



index: 02/2020