



SCR's
Controlled
INDUSTRIAL
RECTIFIER/
BATTERY
CHARGER

*meets DNP3 &
61850
Protocols for
the Utility
Power
Network
Monitor*



Input: **Single phase**
110 / 220 / 230 / 240 VAC

Three phase
380 / 400 / 415 VAC

Output:

24 VDC; 25 – 1000 A

48 VDC; 25 – 1000 A

125 VDC; 25 – 1000 A

220 VDC; 25 – 500 A

Advance insights

The ***iK Plus Charger*** is a **Microprocessor Controlled Rectifier** that assures a permanent availability of all your industrial applications. It is able to provide a multitude of deep data points to inform grid operators for system planning and customer behavior.

It is Compatible with the Smart Grid

MEI Power Solutions



Features & Benefits

IK Battery Charger Is ideal for all the power needs in all the applications in the utility power generations such as oil, gas & petrochemical

The **IK Series** has been designed to provide **high reliability power**, with charging capability and with the facility to *log all the events occurred in the utility AC.*

This System is a SCR's Thyristor-Controlled Rectifier for charging nickel-cadmium, lead acid or others type of batteries while supplying DC power to the loads.

It has a powerful Micro processor Control with the feature to have in one touch screen Panel all the information of the Grid.

This rectifier is ideal to operate in the Smart Grids

- Heavy duty design
- Microprocessor-controlled thyristor technology
- High MTBF and low MTTR
- Built-in Protections
- Digital processing and setting of all parameters
- ***Monitor of all Rectifier parameters and the Utility Network logging events locally via front Touch screen Display or remotely through DNP3 & 61850 Protocols***
- Built-in intelligent battery management
- Temperature-compensated charge voltage regulation
- Manual or automatic Equalizing charge rate
- Parallel operation
- ***Alarm- and events logger, with a date and time-stamped event log memory***
- Ease of installation, start-up & maintenance
- International service support



Electrical Specifications

INPUT

Nominal input voltage	Single phase 220V, 230 V or 240 V \pm 10 % (+15 % – 20 % functional) Three phase (208, 240, 380, 400 V or 415 V \pm 10 % (+15 % – 20 % functional)
Frequency	50 Hz or 60 Hz, \pm 6 %
Power factor	Single phase system \sim 0.67 Three phase system \sim 0.81

OUTPUT

Nominal Voltage (V DC)	24, 48, 110, 125 or 220 VDC
DC voltage settings range	Floating charge from 75 % to 125 % of VDC nominal at full load and nominal mains (\pm 10 %)
High-rate charge	From 75 % to 135 % of VDC nominal at full load and nominal mains voltage (0 / +10 %)
Commissioning charge	From 75 % to 140 % of VDC nominal at half load and nominal mains voltage (0 / +10 %)
Static voltage regulation	\pm 0.5 % at float voltage, at 5 – 100 % DC load variations, input nominal voltage \pm 10 %, frequency \pm 6 %, temp. range 0 °C to +40 °C
Dynamic voltage regulation	From 10 to 100 %, From 100 % to 10 % load step – deviation 5 %
DC ripple voltage	<2 % rms of VDC nominal with battery connected (standard battery capacity 5 x nominal current) 2.5 % Vrms typically (max 5 %) of VDC nominal battery not connected (battery capacity 5 x nominal current)
DC current According to range	Current settings range 0 – 100 %
DC current regulation	0 / + 2 % of current limit
Long-term stability	0.15 % per 1000 hrs
Temperature coefficient	<0.02 % per °C
Charging characteristic	Constant current / constant voltage (I/U as per IEC 478 1) during float charge
Insulation resistance	>200 MW / 500 V DC
Input / output isolation	2,500 V AC between input / output and electrical earth



Specifications

MECHANICAL

Degree of protection	NEMA 1 IP21 according to IEC 60529 available in other optional NEMA Types
Equipment color	Slate Gray, powder coated, textured paint
Dimensions & weight	According to the Output Range(see table)
Acoustic noise	@ 1 m: 45 – 65 dB(A)
Connections	Top, Bottom or Customized Cable Access.

ENVIRONMENTAL

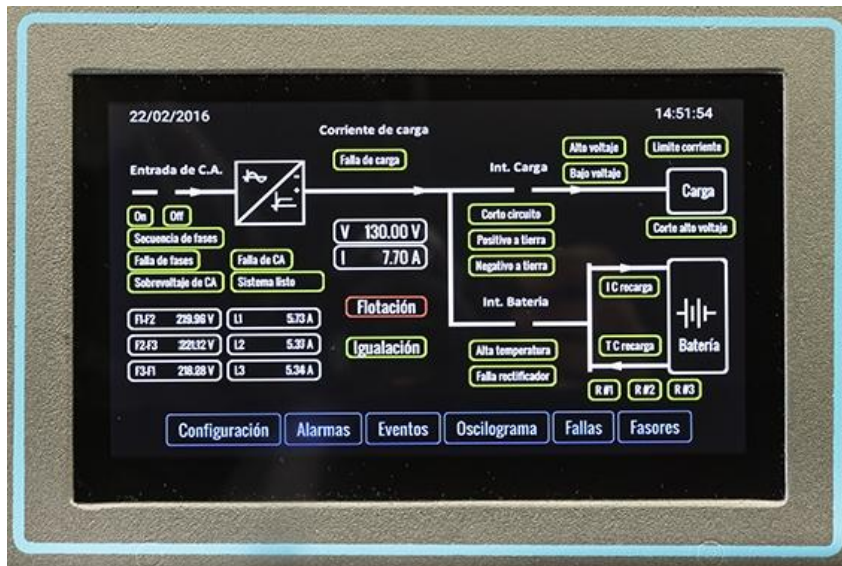
Type of cooling	Natural convection up to 100 A / 220 VDC and optional top forced air ventilation with cooling with redundant n+1 fans
Operating temperature	0 °C to +40 °C with a de-rating of 1.25 % / °C between 40 °C and 55 °C
Storage temperature	-25 °C to +70 °C
Operating Humidity	10 % to 95 % R H N-C
Installation height	0 to 3,000 m – De-rating @ 1 % per 100 m above 3,000 m up to 3,500 m
Seismic	BELLCORE GR-63-CORE issue 1 for Zone 1, Zone 2, Zone 3 and Zone 4 (systems max 500 kg)

STANDARDS

Safety	IEC / EN 62040-1-2
EMC IEC / EN	61000-6-2,-4 , IEC / EN 62040-1-2
Performance IEC / EN	62040-1-2, IEC 601146-1-1
Approvals & Certification	CE-Label, NFC 58-311



Control & Monitor Touch Screen Display



Control keeps more than 128,000 **Alarm events** in memory, with a date and time stamp. Each alarm is displayed on Frontal Screen and through dry Relay Contacts each:

- *Rectifier failure*
- *High and Low AC Volts and AC Fail per Phase*
- *High AC volts shut down*
- *Low & High Frequency alarm and shutdown*
- *High and Low DC volts*
- *Positive and Negative ground fault*
- *End of discharge*
- *High DC volts shutdown*
- *Equalization Modes*
- *High Temperature alarm Shutdown*
- *Limit Current Condition (Without Relay Contact)*
- *User Alarms (Three)*
- *Recharge Interruption Cycle*

OPTIONAL ALARMS :

- *Battery monitor alarm*
- *PC Board with dry Relay Contacts terminals*



Control & Monitor Touch Screen Display

Display Parameters

(Single or three Phase):

AC VOLTAGE (Input Ph to N)

AC INPUT CURRENTS *

INPUT FREQUENCY (Hz) *

OUTPUT DC VOLTAGE

OUTPUT DC CURRENT

*Optional

Equalize Modes:

Manual, Timed

from 1 to 200 Hrs

*Periodical or Automatic by
recharge current*

Monitoring Protocols:

- *DNP3*
- *MODBUS*
- *MODBUS RTU*
- **IEC 61850** *

Communication Ports:

- *RS232*
- *RS485*
- *Ethernet*

(*Optional)



Control & Monitoring Touch Screen Display



Single Phase Basic Models

IK Series digital controlled SCR battery charger

**Output
Amps**

**Output
12 Volts**

	Input Range	Basic Model	Cabinet Type	Weight (Kg)	Mounting
3	110/220	3/12	A	18	Rack 19", 23" or Floor
6	110/220	6/12	A	20	Rack 19", 23" or Floor
12	110/220	12/12	A	24	Rack 19", 23" or Floor
20	110/220	20/12	B	27	Rack 19", 23" or Floor
25	110/220	25/12	B	28	Rack 19", 23" or Floor
30	110/220	30/12	B	29	Rack 19", 23" or Floor
50	110/220	50/12	C	51	Rack 19", 23" or Floor
60	110/220	60/12	C	59	Rack 19", 23" or Floor
75	110/220	75/12	C	66	Rack 19", 23" or Floor
100	110/220	100/12	C	75	Rack 19", 23" or Floor

**Output
Amps**

**Output
24 Volts**

	Input Range	Basic Model	Cabinet Type	Weight Kg	Mounting
3	110/220	3/25	A	20	Rack 19", 23" or Floor
6	110/220	6/25	A	23	Rack 19", 23" or Floor
12	110/220	12/25	A	27	Rack 19", 23" or Floor
20	110/220	20/25	B	43	Rack 19", 23" or Floor
25	110/220	25/25	B	46	Rack 19", 23" or Floor
30	110/220	30/25	B	50	Rack 19", 23" or Floor
35	110/220	35/25	B	52	Rack 19", 23" or Floor
40	110/220	40/25	C	55	Rack 19", 23" or Floor
50	110/220	50/25	C	65	Rack 19", 23" or Floor
60	110/220	60/25	D	73	Rack 23" or Floor
75	220	75/25	D	81	Rack 23" or Floor
100	220	100/25	D	100	Rack 23" or Floor



Single Phase

IK Series digital controlled SCR battery charger

Output Amps	Input Range	Output 48 Volts Basic Model	Cabinet Type	Weight (Kg)	Mounting
3	110/220	3/50	A	22	Rack 19", 23" or Floor
6	110/220	6/50	A	26	Rack 19", 23" or Floor
12	110/220	12/50	A	34	Rack 19", 23" or Floor
20	110/220	20/50	B	47	Rack 19", 23" or Floor
30	110/220	30/50	C	62	Rack 19", 23" or Floor
50	220	50/50	D	91	Rack 23" or Floor
75	220	75/50	D	105	Rack 23" or Floor

Output Amps	Input Range	Output 130 Volts Basic Model	Cabinet Type	Weight (Kg)	Mounting
6	110/220	6/130	C	42	Rack 19", 23" or Floor
12	110/220	12/130	C	48	Rack 19", 23" or Floor
20	220	20/130	C	65	Rack 19", 23" or Floor
25	220	25/130	C	79	Rack 19", 23" or Floor
30	220	30/130	D	91	Rack 23" or Floor
40	220	40/130	D	100	Rack 23" or Floor
50	220	50/130	D	120	Rack 23" or Floor



Three Phase

IK Series digital controlled SCR battery charger

Output Amps

Input Ranges

50	220/440	240/480
75	220/440	240/480
100	220/440	240/480
125	220/440	240/480
150	220/440	240/480
200	220/440	240/480
250	220/440	240/480
300	220/440	240/480
400	220/440	240/480

Output 24 Volts

Basic Model

50/24
75/24
100/24
125/24
150/24
200/24
250/24
300/24
400/24

Cabinet Type

B
B
C
H
H
E
F
F
G

Weight Kg

65
75
100
120
150
175
200
250
330

Mounting

Rack 23" or Floor
Rack 23" or Floor
Rack 23"
Floor
Floor
Floor
Floor
Floor
Floor

Output Amps

Input Range

30	220/440	240/480
50	220/440	240/480
60	220/440	240/480
75	220/440	240/480
100	220/440	240/480
125	220/440	240/480
150	220/440	240/480
175	220/440	240/480
200	220/440	240/480
250	220/440	240/480
300	220/440	240/480
400	220/440	240/480
600 FC	220/440	240/480
1000 FC	220/440	240/480

Output 48 volts

Basic Model

30/48
50/48
60/48
75/48
100/48
125/48
150/48
175/48
200/48
250/48
300/48
400/48
600/48
600/48

Cabinet Type

A
B
B
C
C
H
H
E
E
F
F
G
G
G

Weight Kg

70
80
100
110
120
135
200
255
300
350
400
455
555
555

Mounting

Rack 23" or Floor
Rack 23" or Floor
Rack 23" or Floor
Rack 23"
Rack 23"
Floor
Floor
Floor
Floor
Floor
Floor
Floor
Floor
Floor

FC (Fan Cool)



Three Phase

130 volts

iK Series digital controlled SCR battery charger

Output Amps	Input Ranges		Basic Model	Cabinet Type	Weight (Kg)		Mounting
12	220/440	240/480	12/125	A	65	Rack 23" or Floor	
15	220/440	240/480	15/125	B	70	Rack 23" or Floor	
25	220/440	240/480	25/125	D	90	Floor	
30	220/440	240/480	30/125	D	100	Floor	
35	220/440	240/480	35/125	D	110	Floor	
40	220/440	240/480	40/125	D	125	Floor	
50	220/440	240/480	50/125	D	155	Floor	
60	220/440	240/480	60/125	H	170	Floor	
70	220/440	240/480	70/125	H	200	Floor	
75	220/440	240/480	75/125	E	274	Floor	
100	220/440	240/480	100/125	E	305	Floor	
125	220/440	240/480	125/125	E	350	Floor	
150	220/440	240/480	150/125	F	417	Floor	
175	220/440	240/480	175/125	F	470	Floor	
200	220/440	240/480	200/125	F	500	Floor	
250	220/440	240/480	250/125	F	700	Floor	
300	220/440	240/480	300/125	F	800	Floor	
400	220/440	240/480	300/125	F	800	Floor	
600 & 1000 FC	220/440	240/480	300/125	F	800	Floor	
FC (Fan Cool)							



Standard Configuration and Options

Standard system

Commonly built-in Standard features. These Systems are available with standard drawings and standard user documentation.

- **Rectifier input Breaker** (Intve Capacity XXX KA)
- **rectifier bridge with input isolation transformer**
- 4-pulse (Single Ph) and 6-Pulse (three Ph)
- iK Digital control card DCG; iKP Touch Screen Control Card
- Output filter L1-C1 ripple voltage <5 % RMS without battery
- Rectifier Output Circuit Breaker and Output Current Battery Shunt

OPTIONS

- A Blocking diode V21
- B Multi-functional LCD with 2 LEDs indicate the system status
- C Tropicalized control electronics boards
- D Common fault remote alarm
- E Floor mounted cabinet with external IP21 protection and IP20 with open doors
- F Cabinet colour RAL 7035
- G Power and control cable marking
- H Detailed 3-D layout and component marking presented on rear door
- I Door able to open to 180° with three key locks
- J Bottom cable entry
- K Input / battery / output terminals X1, X2 and X3



Single Phase Standard Models

12 V

VOLTAJE	CORRIENTE EN AMPS. DE C.D.	MODELO	FIGURA
12 VCD	6	iKCR 6-12	A
	12	iKCR 12-12	A
	25	iKCR 25-12	A
	50	iKCR 50-12	A

24 V

VOLTAJE	CORRIENTE EN AMPS. DE C.D.	MODELO	FIGURA
24 VCD	6	iKCR 6-24	A
	12	iKCR 12-24	A
	25	iKCR 25-24	A
	50	iKCR 50-24	A

48 V

VOLTAJE	CORRIENTE EN AMPS. DE C.D.	MODELO	FIGURA
48 VCD	6	iKCR 6-50	A
	12	iKCR 12-50	A
	25	iKCR 25-50	A
	50	iKCR 50-50	A

125 V

VOLTAJE	CORRIENTE EN AMPS. DE C.D.	MODELO	FIGURA
125 VCD	6	iKFR 6-130	A
	12	iKFR 12-130	A
	25	iKFR 25-130	A
	50	iKFR 50-130	B



Three Phase Standard Models

125 V

VOLTAJE	CORRIENTE EN AMPS. DE C.D.	MODELO	FIGURA
125 VCD	6	iKFV 6-130	A
	12	iKFV 12-130	A
	25	iKFV 25-130	B
	50	iKFV 50-130	B
	75	iKFV 75-130	B
	100	iKFV 100-130	C
	150	iKFV 150-130	C
	175	iKFV 175-130	C
	200	iKFV 200-130	C
	250	iKFV 250-130	C
	300	iKFV 300-130	D
	400	iKFV 400-130	D

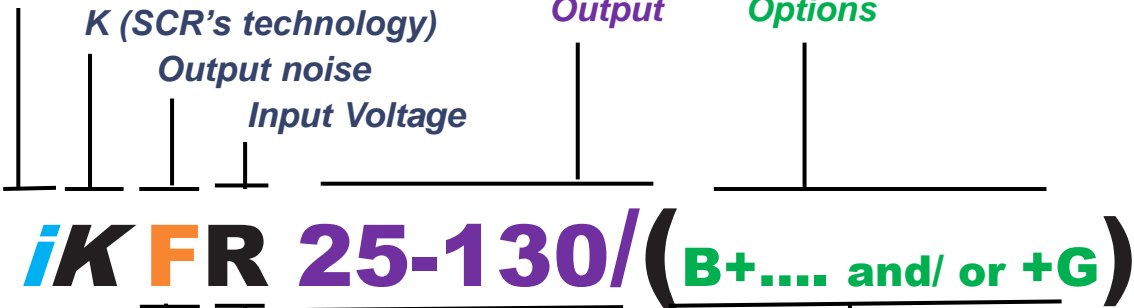
250 V

VOLTAJE	CORRIENTE EN AMPS. DE C.D.	MODELO	FIGURA
250 VCD	6	iKFV 6-260	B
	12	iKFV 12-260	B
	25	iKFV 25-260	B
	50	iKFV 50-260	B
	75	iKFV 75-260	C
	100	iKFV 100-260	C
	150	iKFV 150-260	C
	175	iKFV 175-260	D
	200	iKFV 200-260	D
	250	iKFV 250-260	D
	300	iKFV 300-260	D



HOW TO Configure the Model Number:

i (Micro Processor Control)



C Electric noise is less than 1mV (32 dBrrnC) in models of 24 VDC or 48VDC or less

F Electric Noise less than 100 mV rmc in models of 110 VDC or 220 VDC. when is connected to a battery bank which it's capacity is at least four times the rectifier capacity in Amperes-Hour

G Customized Output Filter.

Amperes / Voltage (Basic Model)

B Floor cabling access,

C Output Circuit Breaker

D Input Current transformers

E Analogue Output Meters

F Battery monitor alarm

G PC Board with dry Relay Contacts terminals

Single Phase

Input Voltage

S 127 VAC ±10% 1F 60 Hz

I 208 VAC ±10% 1F 60 Hz

R 110/220 VAC ±10% 1F 60 Hz

J Customized VOLTS /Hz

Three Phase

T 220 VAC ±10% 3F 60 H

U 208 VAC ±10% 3F 60 Hz

V 480 VAC ±10% 3F 60 Hz

W Customized VOLTS/Hz