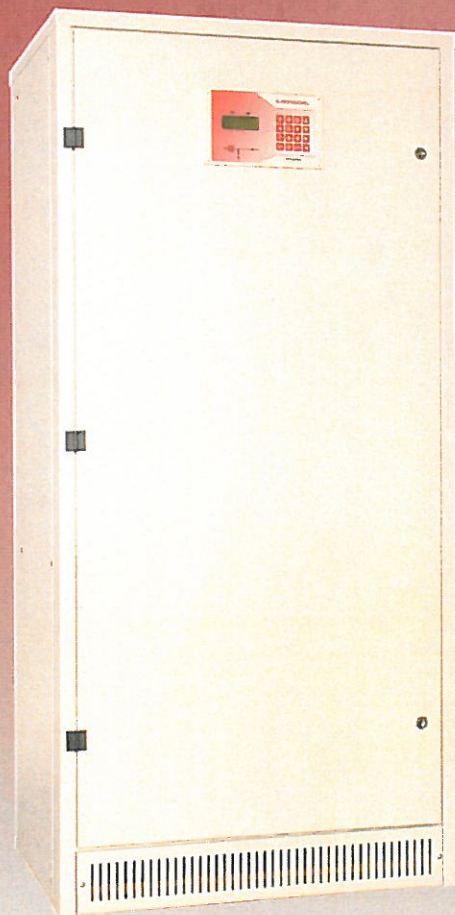
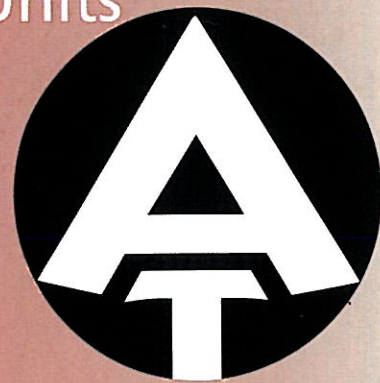


Akku Gesellschaft

Charging and Power Supply Units



IU-PROFESSIONELL und IU-CONTROL

Performance range

24 V - 220 V 205 A - 800 A



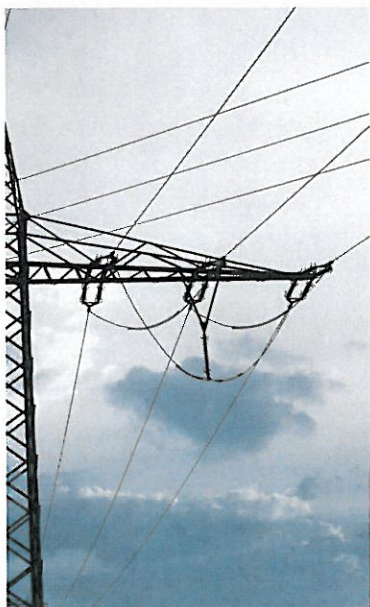
Made in Germany



General

Secured direct voltage supply is always necessary when important electrical loads have to be supplied during power cuts with continuous load power.

Our units consist of the components load rectifier, battery and distributor. They are always to be found in the case of loads where safety is an important issue. Examples of this are protective relaying, process control, instrumentation and process control, drive and control technology – in the following fields:



- Power plants
- Transformer stations
- Telecommunications networks
- Chemicals industry
- Steel industry
- Refineries
- Hospitals
- Public transport and railways
- Oil and gas supply
- Shipbuilding

Selecting components

The **IU-CONTROL** and **IU-PROFESSIONELL** load rectifiers and the battery can be selected to match the unit's special parameters:

- load voltage
- permitted +/- voltage tolerance
- maximum permitted residual ripple
- load current
- stored energy time
- type of battery (lead-acid, sealed or closed, nickel-cadmium)
- number of cells
- battery recharging time

In the case of low tolerances in the load voltage the **IU-CONTROL** and **IU-PROFESSIONELL** must be fitted with suitable auxiliary devices, as shown in the "Options and special models" section of this brochure.

Standard model

The **IU-CONTROL** and **IU-PROFESSIONELL** unit ranges consist essentially of the following modules:

- mains fuse
- input transformer
- thyristor power module
- controller
- transfer switch CVCC – CVCC-CV
- processor control and monitor unit
- RS 232 & RS 485
- clamps for mains, battery and load

The following functions are incorporated in **IU-CONTROL** and **IU-PROFESSIONELL**:

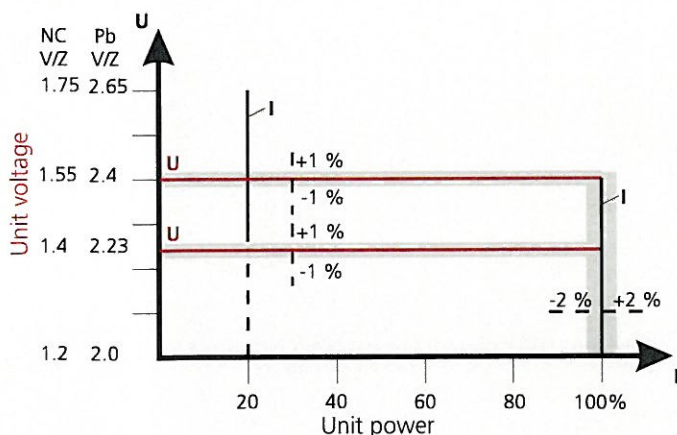
- ON/OFF
- MEASURED VALUE SIGNALS
- REPORTS
- CAPACITY TEST
- AUTOMATIC CHARGING
- MANUAL BOOST CHARGE
- LED TEST

The **IU-CONTROL** and **IU-PROFESSIONELL** perform all necessary monitoring automatically. The relevant measured values, operating state and error reports are shown in clear text on the four-line display and signalled to LEDs or reported via the relay outputs.

Operating mode and function

The charging device and the battery work in continuous power supply mode in line with DIN EN 50272-2. This ensures that a high degree of operating safety and reliability is attained, with excellent economic efficiency.

In the case of a power cut the battery provides continuous load power over the projected time – and with complete reliability. After the resumption of power supply the charging device automatically supplies the loads while simultaneously recharging the battery.



The **IU-CONTROL** and **IU-PROFESSIONELL** load rectifiers work to the CVCC curve in accordance with DIN 41773.



Monitoring devices (Excerpt)

Current-dependent unit monitoring

The monitoring unit records the malfunctions "DC voltage too high" and "DC voltage too low" as against the unit's nominal current. When "voltage too high" is reported, the mains contactor is disconnected. "Voltage too low" is only reported when the unit's nominal current is <80%. The reports are made via potential-free contacts according to the coded function.

Battery circuit monitoring

The monitoring unit checks the proper operating state of the battery in connection with the associated charging device. It recognises the following malfunctions:

- Battery fuse
One or both battery fuses are defective
- Charging leads
One or both charging leads are disconnected
- Battery voltage imbalance
Defective cells and high-resistance or disconnected intercell connectors are recognised and reported

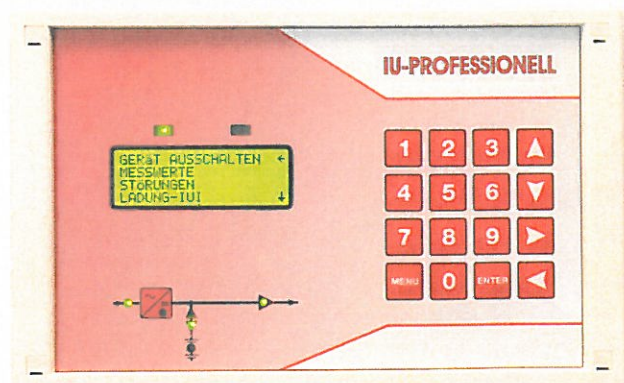
DC earth-fault monitoring

The earth-fault monitoring measures the resistance between earth and positive pole and between earth and negative pole. If there is a shortfall in the settable response value (ca. 1000 ohms/volts), "DC earth fault" is reported.

Battery capacity test

During a capacity test the charging unit voltage is reduced to below the nominal voltage. The present load current is now taken from the battery. The result of the capacity test is calculated, and then displayed, on the basis of a setpoint/actual value comparison between given battery voltage and test duration. In the case of the **IU-PROFESSIONELL** the capacity is entered and evaluated as an additional parameter.

If the battery voltage falls too far during the test, the power supply to the load is assured by the load rectifier and the test is automatically broken off. A corresponding report is made.



Display **IU-PROFESSIONELL**

All malfunctions are reported via the display.



Display **IU-CONTROL**

Short circuit

In the case of a short circuit the unit voltage falls to below 1.6 V/cell. The unit's power is limited to ca. 1Nen. This makes the unit resistant to a sustained short circuit. "Short circuit" is displayed.

Monitoring of decoupling diode

Decoupling diodes are often used in parallel units. The two possible diode errors – disconnection or fused junction – are recognised and reported by means of suitable measured value recording and special evaluating logic in the **IU-PROFESSIONELL**.



Features

	IU-CONTROL	IU-PROFESSIONELL		IU-CONTROL	IU-PROFESSIONELL
Measured values displayed			LED displays		
Unit voltage	x	x	Unit ON	x	x
Unit current	x	x	Capacity test ON	x	x
Load voltage	x	x	Malfunction "urgent"	x	x
Load voltage 2		x	Malfunction	x	x
Load current	x	x	Functional mimic diagram		x
Battery voltage	x	x	Unit malfunction		x
Charging/ discharging current	x	x	Output voltage malfunction		x
Capacity	x	x	Battery charging		x
Test result (voltage, ampere-hour, current intensity, duration)	x	x	Battery discharging		x
Test result (voltage, ampere-hour, current intensity, duration, date, time)		x	Battery symmetry malfunction		x
Event memory für 4000 events		x			
Storage of maximum load current		x	Potential-free signal contacts		
Storage of 20 capacity test results		x	Malfunction "urgent"	x	x
Malfunctions reported			Malfunction	x	x
Mains failure	x	x	Mains failure	x	x
Unit malfunction	x	x	Battery operation (default/ freely configurable)	x	x
Battery voltage too low	x	x	Battery circuit malfunction (default/ freely configurable)	x	x
Battery voltage too high	x	x	4 further relays freely configurable	optional	x
Exhaustive battery discharge	x	x			
Battery circuit malfunction (1 battery phase)	x	x	Design features		
Battery circuit malfunction (3 battery phases)		x	Display 4x20 characters / 4 buttons	x	
Battery not available		x	Display 4x20 characters / 16 buttons		x
Earth fault plus / minus	x	x	All languages configurable in ASCII characters with laptop	x	x
Earth fault plus		x	Battery availability test (cyclical)		x
Earth fault minus		x	Battery availability check (continuous)	x	x
Capacity test negative	x	x	Password protection for system values		x
Short circuit	x	x	Integration of external signals	x	x
Power restriction		x	Thermostat-controlled charging voltage		x
Block diode monitoring		x	Soft start	x	x
Excess temperature		x	Safety shutdown with boost charge after 4-16 h (default 11 h)	x	x
External fan malfunction	x	x	Manual boost charge settable 1-240 mins	x	
Options			Manual boost charge settable 1min - 72 h		x
Parallel units		x	Connection for 2 external displays		x
Battery availability (cyclical)		x			
Automatic counter cell (1-stage)	x	x			
Automatic counter cell (1-4 stage)		x			
Rotary field monitoring		x			
IT system or earthing of plus and minus	x	x			
Transformer temperatur monitoring (current intensity reduction)		x			
System time management via external DCF 77 signal		x			



Technical data

Mains voltage	230 or 3 x 400 V +/- 10%
Frequency	50 Hz +/- 5%
Nominal direct voltage	see table of models
Nominal direct current	see table of models A +/- 2%, current limited
Charging characteristic	CVCC / CVCC-CV to DIN 41773
Continuous charging voltage	2.23-2.27/1.43 (Pb/NiCd) V/ cell +/- 1%
Boost charge voltage	2.40/1.55 (Pb/NiCd) V/ cell +/- 1%
Equalising charge voltage	2.70/1.70 (Pb/NiCd) V/ cell +/- 1%
Degree of radio interference	"A" as per EN 55011
Residual ripple	≤ 5% without battery
Noise level	max. 60 dB (A) up to 300 A: natural convection over 300 A: actuator with controlled fan
Cooling	
Ambient temperature	0 to 40°C
Relative humidity	max. 75%
Humidity rating	F as per DIN 40040
Type of protection	IP 20
Paint	RAL 7035

Options and special models

- Extra smoothing 2% 24/60V 1/2mV
- DC special voltages
- Mains voltage 400 V without neutral conductor
- Mains voltage 3x320 V, 3x500 V, 3x660 V
- Special frequency 60 Hz
- Degree of radio interference "B"
- Automatic counter cell (1-4 stage)
- Main and end-cell technology
- Decoupling diode
- Fuse monitoring
- Ripple monitoring
- Exhaustive discharge protection
- Battery and load fuses D01, D02, LV-HRC
- Automatic circuit breakers
- Fuse switch disconnecter(s)
- Test load terminal
- Temperature-dependent charging voltage by means of external sensor
- Integrated test load resistance
- Protection type IP21, IP31, IP40, IP41
- RAL special paint
- Combined casing with battery compartment
- Battery cupboards
- Fan(s)
- Air-discharge ducts
- Oil sumps
- Step plates
- Heated cupboards

Further options available on request – please ask!

Casing types

Casing type	Height (mm)	Width (mm)	Depth (mm)
GSW 006	400	350	195
GSW 007	525	415	255
GSW 008	605	415	255
GSW 009	690	500	330
GSW 015	750	550	420
GSA 122	1200	600	400
GSB 162	1600	600	600
GSB 182	1800	600	600
GSB 184	1800	850	600
GSB 186	1800	950	600
GSB 188	1800	1100	600
GSB 202	2000	600	600
GSB 204	2000	850	600
GSB 206	2000	950	600
GSB 208	2000	1100	600
GSC 184	1800	850	800
GSC 186	1800	950	800
GSC 204	2000	850	800
GSC 206	8000	950	800
GSC 208	2000	1100	800

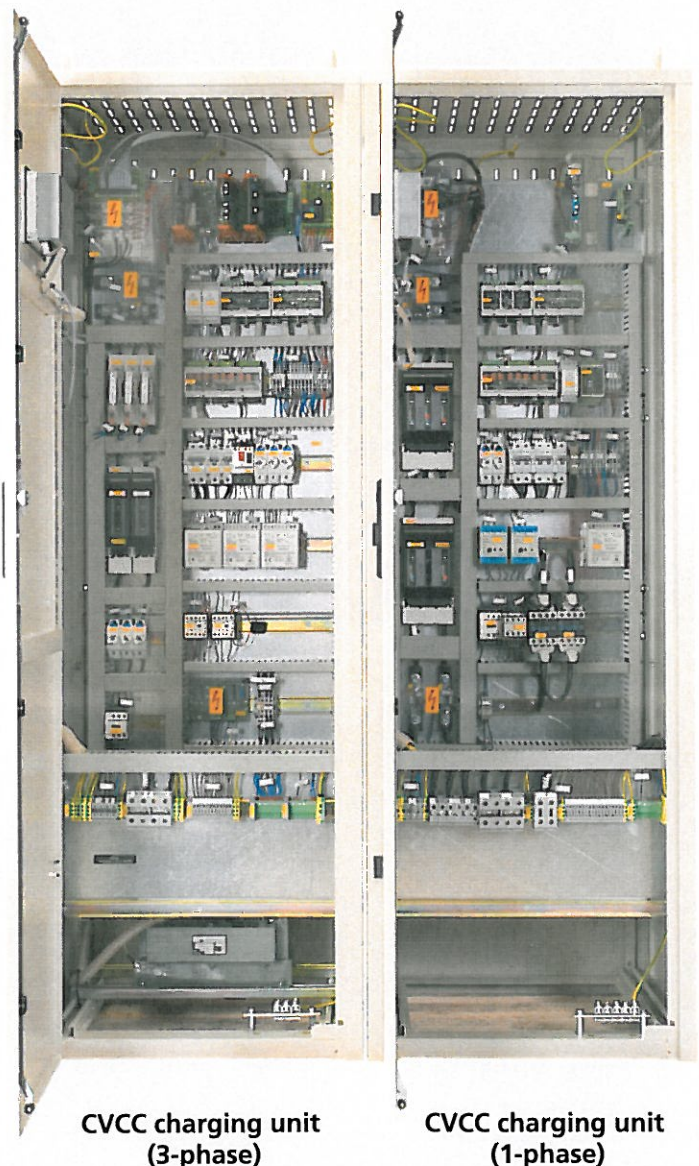




Table of types

Nominal direct voltage	Nominal current (A)	Mains (V)	Current input	Casing type	Weight (kg)	
24 / 26 V	20	230	4,8	GSW 008	35	
	30	230	7,2	GSW 009	40	
	40	230	9,2	GSW 009	45	
	50	230	12,0	GSW 015	55	
	60	230	13,6	GSW 015	70	
	80	230	16,6	GSA 122	80	
	100	230	21,9	GSA 122	100	
	30	3 x 400	2,0	GSW 009	45	
	40	3 x 400	2,7	GSW 009	55	
	50	3 x 400	3,4	GSW 015	60	
	60	3 x 400	4,0	GSA 122	80	
	80	3 x 400	5,4	GSA 122	89	
	100	3 x 400	6,7	GSB 162	150	
	125	3 x 400	8,4	GSB 162	180	
	150	3 x 400	10,1	GSB 162	230	
	200	3 x 400	13,4	GSB 162	290	
	250	3 x 400	16,8	GSB 162	310	
	300	3 x 400	20,2	GSB 182	380	
	350	3 x 400	23,5	GSB 184	420	
	400	3 x 400	26,9	GSB 184	510	
500	3 x 400	33,6	GSB 184	670		
600	3 x 400	40,3	GSB 184	790		
800	3 x 400	53,7	GSB 186	960		
48 V	15	230	7,2	GSW 009	50	
	20	230	9,6	GSW 009	55	
	25	230	12,0	GSW 015	65	
	30	230	14,4	GSW 015	70	
	40	230	18,0	GSA 122	95	
	50	230	24,0	GSA 122	110	
	40	3 x 400	5,4	GSA 122	120	
	50	3 x 400	6,7	GSA 122	125	
	60	3 x 400	8,5	GSA 122	140	
	80	3 x 400	10,8	GSB 162	170	
	100	3 x 400	13,4	GSB 162	190	
	125	3 x 400	16,8	GSB 162	200	
	150	3 x 400	20,2	GSB 182	250	
	200	3 x 400	26,9	GSB 182	290	
	250	3 x 400	33,6	GSB 184	340	
	300	3 x 400	40,3	GSB 184	420	
	350	3 x 400	47,1	GSB 186	500	
	400	3 x 400	53,8	GSB 186	550	
	500	3 x 400	67,2	GSB 186	770	
	600	3 x 400	80,7	GSC 186	950	
800	3 x 400	107,6	GSC 186	1180		
60 V	10	230	6,0	GSW 009	55	
	15	230	9,0	GSW 009	60	
	20	230	12,0	GSW 009	65	
	25	230	15,0	GSW 015	84	
	30	230	18,0	GSW 015	100	
	40	230	24,3	GSB 122	115	
	50	230	29,9	GSB 122	120	
	40	3 x 400	6,7	GSB 122	125	
	50	3 x 400	7,4	GSB 162	135	
	60	3 x 400	9,1	GSB 162	145	
	80	3 x 400	13,4	GSB 162	185	
	60 V (continuation)	100	3 x 400	16,8	GSB 162	210
		125	3 x 400	18,0	GSB 162	225
150		3 x 400	22,2	GSB 162	265	
200		3 x 400	27,6	GSB 182	320	
250		3 x 400	39,7	GSB 182	350	
300		3 x 400	43,4	GSB 184	450	
350		3 x 400	48,5	GSB 186	530	
400		3 x 400	56,3	GSB 186	580	
500		3 x 400	33,6	GSB 186	750	
600		3 x 400	40,3	GSB 186	980	
800		3 x 400	53,7	GSC 188	1200	
108 / 110 V		2,5	230	2,7	GSW 008	30
		5	230	5,5	GSW 009	55
	10	230	11,0	GSW 009	68	
	15	230	15,1	GSW 015	75	
	20	230	19,9	GSW 015	85	
	25	230	26,0	GSB 122	100	
	30	230	32,9	GSB 122	115	
	40	230	43,9	GSB 122	140	
	30	3 x 400	8,2	GSB 122	145	
	40	3 x 400	11,0	GSB 162	160	
	50	3 x 400	13,8	GSB 162	220	
	60	3 x 400	15,5	GSB 162	250	
	80	3 x 400	20,7	GSB 162	320	
	100	3 x 400	25,8	GSB 182	400	
	125	3 x 400	32,5	GSB 182	430	
	150	3 x 400	41,0	GSB 184	470	
	200	3 x 400	52,6	GSB 184	540	
250	3 x 400	67,4	GSC 186	610		
300	3 x 400	78,3	GSC 186	850		
350	3 x 400	94,1	GSC 186	950		
400	3 x 400	105,6	GSC 204	1100		
500	3 x 400	132,0	GSC 206	1300		
600	3 x 400	158,0	GSC 206	1510		
216 / 220 V	2,5	230	5,5	GSW 008	45	
	5	230	8,0	GSW 009	63	
	10	230	15,9	GSA 122	85	
	15	230	23,0	GSA 122	135	
	15	3 x 400	8,3	GSA 122	150	
	20	3 x 400	10,6	GSB 122	180	
	25	3 x 400	13,0	GSB 162	195	
	30	3 x 400	15,6	GSB 162	250	
	40	3 x 400	21,7	GSB 162	300	
	50	3 x 400	26,3	GSB 162	400	
	60	3 x 400	31,0	GSB 164	430	
	80	3 x 400	35,3	GSB 164	470	
	100	3 x 400	49,6	GSB 186	510	
	125	3 x 400	62,0	GSB 186	600	
	150	3 x 400	76,4	GSC 206	750	
	200	3 x 400	98,7	GSC 206	840	
	300	3 x 400	151,0	GSC 208	950	
400	3 x 400	196,0	GSC 208	1050		
500	3 x 400	248,0	GSC 208	1180		
600	3 x 400	300,0	GSC 208	1490		