

Flex Kraft Water-Cooled Rectifiers, Dual Output 2 x 250 – 3000A



The sealed cabinet of the water-cooled Flex Kraft is designed for industrial applications in harsh environments.

Sealed Water-Cooled Cabinet

All power modules are built-in in a sealed water-cooled cabinet – this keeps Flex Kraft unaffected in plating environments. The IP54 protection class allows Flex Kraft to be used under very harsh conditions.

Extended Scope

By combining modules and stacks, Flex Kraft rectifiers for up to 120 V DC or 30 kA can be delivered.

Easy Maintenance

Thanks to the modular design of Flex Kraft it is easy to access the unit for module repair or replacement.

New Mark II Hardware with amazing uptime

The water-cooled Flex Kraft is the first product with our upgraded hardware Mark II incorporated. The new Mark II assures excellent reliability and availability

Flexible placement

There is no longer any need to worry about the air flow since the system is completely closed. Save power and energy by placing the Flex Kraft close to the process.



ISO 9001



The **Flex Kraft** water cooled rectifier is designed to give the best electrical performance as well as withstanding harsh industrial environments. The design is based on primary switching technology. The rectifiers consist of 1-10 power modules, which together with a control module form a complete unit.

PLANT CONTROL SYSTEM

Standard control interface:

Digital Display and Keypad integrated into unit
Modbus RTU/RS-485
Profibus DP/RS-485

Process control parameters:

Input to unit

Set current
Set voltage
On / Off
Start / Stop
Stand by / Run
Amp hours
Run time
Clear counters

Output from unit

Actual current
Actual voltage
On signal
Run signal
Actual Amp hours
Actual run time
Alarm (general alarm)
Alarm status (cause of alarm)
End of process

TECHNICAL DATA

Supply voltage:

3 x 380–480 V ± 10%, 50–60 Hz,
3 x 200–240 V ± 10%, 50–60 Hz
for maximum output of 14 VDC

EMC conformity:

According to EN 61000-6-4, Emissions,
and EN 61000-6-2, Immunity

LVD conformity:

According to EN 50178

Protection class

IP 54

Power factor

≥ 0.93 @ rated load

Efficiency:

Typically 0.9 @ rated output

Ambient temp:

Max. 50 °C

Cooling:

Water cooling

Weight:

Approx. 25 kg per module

Control precision:

Voltage/current < ± 1%

DC ripple:

< 1% of rated output current at constant current mode in the entire range of regulation

Regulation range:

Stepless at constant voltage or current 0–100%

Duty ratio:

Designed for continuous operation at rated loads up to 1000 m altitude

Protection

Over-current
Over-voltage
Over-temperature
Short circuit
Open circuit
Module failure

OUTPUT SPECIFICATION / STANDARD RANGE

Number of power modules →

V/A	1	2	3	4	5	6	7	8	9	10
0-12 V	2x 300	2x 600	2x 900	2x 1200	2x 1500	2x 1800	2x 2100	2x 2400	2x 2700	2x 3000
0-15 V	2x 250	2x 500	2x 750	2x 1000	2x 1250	2x 1500	2x 1750	2x 2000	2x 2250	2x 2500

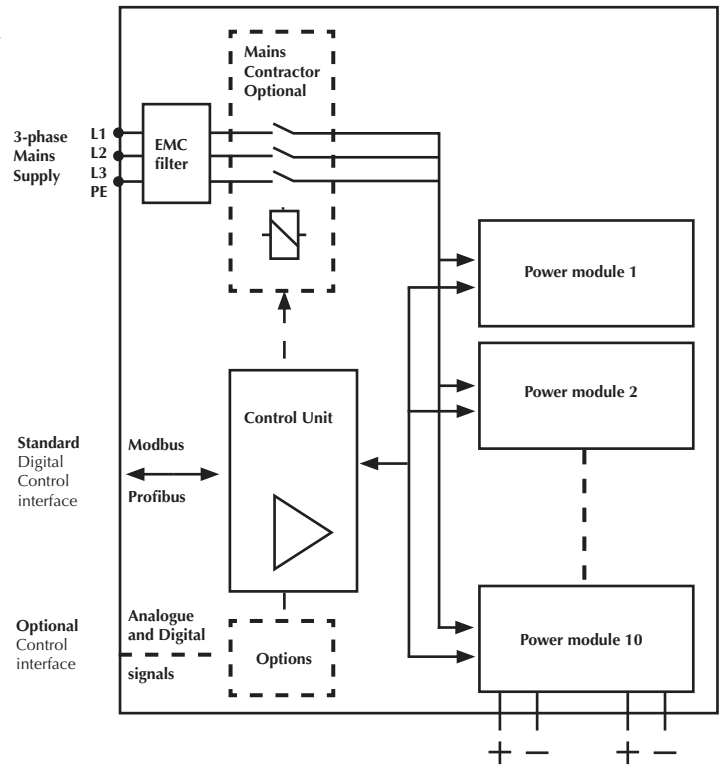
Height (mm)	450	590	730	870	1010	1150	1290	1570	1710	1850
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Footprint of cabinets: Width = 500 mm, Depth = 610 mm inclusive busbars on the rear side.

Volume Flow Rate, Liter Per Minute

l/min	1,5	3,0	4,5	6,0	7,5	9,5	10,5	12	13,5	15
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BLOCK SCHEMATIC DIAGRAM S 107.038 GB



OPTIONS

- Remote control box "basic version" with analogue or digital instruments, potentiometers etc.
- RS-232C interface for control of one rectifier.
- Analogue/Digital I/O interface. Two control, and two status signals 0–10 VDC and two control and two status signals 24 VDC. Standard configuration: Iset, Uset, Iact and Uact: 0–10 VDC. On/Off, BLock/Run, Power On and Alarm as digital signals: 24 VDC.
- Analogue I/O interface with four inputs and four outputs galvanically isolated. Control and status signals 0/4–20 mA. Standard configuration: Iset, Uset, Iact and Uact: 4–20 mA
- Digital I/O interface with four inputs and four outputs. Control signals 24 VDC. Status signals via voltage free relay contacts; contact data 24 VDC or 24 VAC. Standard configuration: On/Off, Block/Run, Power On and Alarm.
- Raise / Lower function.
- Software for pulse plating and process sequence control.
- External reference shunt and process sequence control.
- Main Contactor
- External reference shunt, 60 mV.
- Custom-designed rectifiers.
- Water inlet temperature: min ambient, but max 35°C
- Water outlet temperature rise: 10°C
- Water pressure: 1–6 bar
- Pole reversing units