

# UNITROL® F Technical Data

## Input values

### Power supply for control electronics:

From AC voltage with external transformer	
Rated voltage 1	115 V <sub>AC</sub>
Voltage range	93 to 127 V <sub>AC</sub>
or	
Rated voltage 2	230 V <sub>AC</sub>
Voltage range	185 to 260 V <sub>AC</sub>
Rated frequency f <sub>n</sub>	50 to 600 Hz
Frequency range	
continuous	80 to 120 % f <sub>n</sub>
dynamically	< 150 % f <sub>n</sub>
Power consumption	≤ 70 VA

### From DC voltage for back-up purpose

Battery voltage range U <sub>B</sub>	24 to 48 V <sub>DC</sub> or 110 to 250 V <sub>DC</sub>
Tolerance range	± 25 % U <sub>B</sub>
Power consumption	≤ 50 W

### Measuring inputs:

Rated voltage U <sub>n</sub>	1 or 3 × 100 to 120 V <sub>AC</sub>
Max. continuous voltage	1.3 × U <sub>n</sub>
Short-time overvoltage	
during 1 s	1.7 × U <sub>n</sub>
during 1 ms	2.75 × √2 × U <sub>n</sub>
Rated frequency f <sub>n</sub>	50/60 Hz
Frequency range	
continuous	80 to 120 % f <sub>n</sub>
dynamically	< 150 % f <sub>n</sub>
Power consumption per phase	≤ 0.5 VA
Rated current I <sub>n</sub>	1 × 1 A or 5 A
Overcurrent continuous	1.5 × I <sub>n</sub>
Overcurrent dyn. 1 second	25 × I <sub>n</sub> ; < 75 A
Rated frequency f <sub>n</sub>	50/60 Hz
Frequency range	80 to 120 % f <sub>n</sub>
Power consumption per measuring circuit	≤ 0.5 VA

### Analog inputs:

Rated input voltage	-10 to +10 V
Rated input current	-20 to +20 mA

### Digital inputs:

Rated input voltage	24 V <sub>DC</sub>
Rated input current	5 to 10 mA

## Output values

### Power converter:

Output current	
AVR	see tables on the rear
SES	see tables on the rear
Maximum output voltage	
AVR using IGBT (Chopper)	330 V <sub>DC</sub>
AVR using thyristors	650 V <sub>DC</sub>
SES with 500 V <sub>AC</sub> supply	650 V <sub>DC</sub>

### Signalization contacts:

Max. switching voltage AC/DC	250 V
Max. switching current	2 A
Max. switching power	
with ≤ 250 V <sub>AC</sub>	500 VA
with 250 V <sub>DC</sub>	50 W

## Miscellaneous data

### Test voltages:

Power supply for control electronics and measuring circuits against ground or electronic circuits	2.0 kV <sub>AC</sub> , 1 min
DC control circuits	1.5 kV <sub>AC</sub> , 1 min
Power circuits AVR	2.0 kV <sub>AC</sub> , 1 min
Power circuits SES	2,5 kV <sub>AC</sub> , 1 min
Surge voltage	
acc. to IEC 801-5	1.2/50 μs, 1.8 kV

### Electromagnetic compatibility:

Radiated Interference Immunity	10 mV/m
acc. to IEC 801-3	27 to 1000 MHz
Fast Transient Immunity	500 V <sub>peak</sub>
acc. to IEC 801-4	

### Ambient values:

Continuous permissible ambient temperature	0 to +55 °C
Derating for output current with ambient temperature	> 45 °C
Permissible ambient temperature for storage	-25 to +55 °C
Climatic withstand capability	
acc. to IEC 68, class	25/055/21

Quality assurance system acc. ISO 9001  
UNITROL F systems fully comply with the CE regulations.

# UNITROL® F Excitation Systems

## Voltage Regulating Systems (AVR) – Standard Design

UNITROL F type	Maximum supply voltage	Rated excitation current	Continuous current limit	Ceiling current 160%, 10s	Dimensions B x H x T [mm]	Weight [kg]
<b>AVR with IGBT</b> [SFE/AFT]-O/C5P0-F25 [SFE/AFT]-O/C5P1-F25 [SFE/AFT]-O/C5P3-F25	330 V= 240 V~, 1ph upto 600 Hz 240 V~, 3ph upto 400 Hz	} <b>22 A</b>	25 A	35 A	799 x 2096 x 802	[S] 380 [A] 430
<b>AVR with thyristors</b> [SFE/AFT]-O/C1N1-F45 [SFE/AFT]-O/C1N3-F45	500 V~, 1ph 50/60 Hz 500 V~, 3ph 50/60 Hz		<b>31 A</b> <b>40 A</b>	35 A 44 A		50 A 64 A

[SFE], [S]: Single channel system [AFT], [A]: Dual channel system

## Static Excitation Systems (SES) – Standard Design with C2 power converter(s)

UNITROL F type	Maximum supply voltage	Rated excitation current	Continuous current limit	Ceiling current 160%, 10s	Dimensions B x H x T [mm]	Weight [kg]
[SFE/AFT]-O/C211-A250	500 V~, 3ph 50/60 Hz	<b>205 A</b>	225 A	328 A	[S] 1198 x 2096 x 802 [A] 1398 x 2096 x 802	[S] 730 [A] 810
[SFE/AFT]-O/C211-A370	500 V~, 3ph 50/60 Hz	<b>290 A</b>	319 A	464 A		
[SFE/AFT]-O/C211-A630	500 V~, 3ph 50/60 Hz	<b>463 A</b>	510 A	741 A		
[SFE/AFT]-O/C211-A630	500 V~, 3ph 50/60 Hz	<b>565 A</b>	622 A	904 A		
[SFE/AFT]-O/C211-A800	500 V~, 3ph 50/60 Hz	<b>624 A</b>	687 A	1000 A		

Further systems with higher supply voltage and/or higher output power on demand.

## Design characteristics for AVR systems

Cubicle system  
Standard cubicle color  
Standard protection class

RITTAL  
RAL 7035  
IP21/IP31

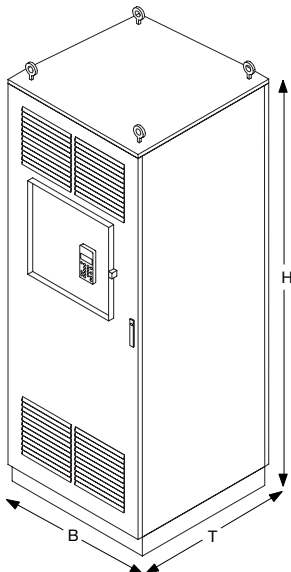


Fig. 1  
Complete cubicle with  
voltage regulator

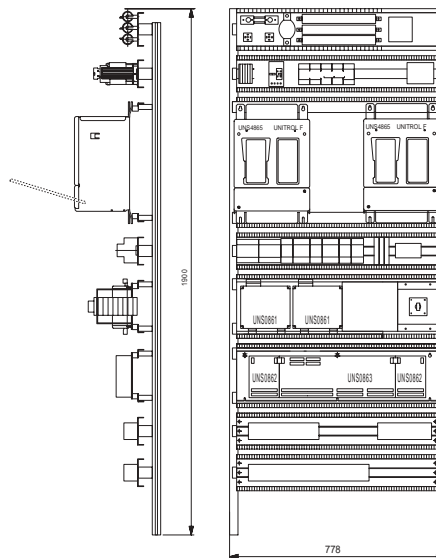


Fig. 2  
All components are  
mounted on a "Lütze"  
frame. The complete  
frame can also be  
ordered without cubicle