

Functional Description

The input voltage is fed via an efficient input filter and a step-up converter (switching with 2×110 kHz) to the high-efficient DC-DC converter operating at a switching frequency of approximately 90 kHz. The built-in overvoltage limiter protects against input voltage surges.

The inrush current is limited by an electronic circuitry. A VDR resistor protects against external surges.

If there is no external circuit breaker, the converter can be ordered with built-in fuse (opt. F). This fuse is not accessible.

The circuitry to provide the interruption time (opt. M) is located after the input filter together with the reverse polarity protection formed by a FET.

The rectification on the secondary side is provided by synchronous rectifiers, in order to keep the losses as low as possible. The output voltage control logic is located on the secondary side and controls the FETs of the DC-DC converter via insulated drivers.

An auxiliary converter supplies all circuits with a stable bias voltage.

An output ORing FET is available (opt. Q) and allows for a redundant power supply system.

Opt. D encompasses an additional signal connector to allow for output voltage adjustment, active current sharing, primary shutdown, and an output voltage monitor activating a relay with change-over contact.

The converter is mounted onto a base plate which acts as cooling plate. An additional heatsink for natural convection cooling is available as accessory. A thermal protection on the input and output side prevents from overheating.

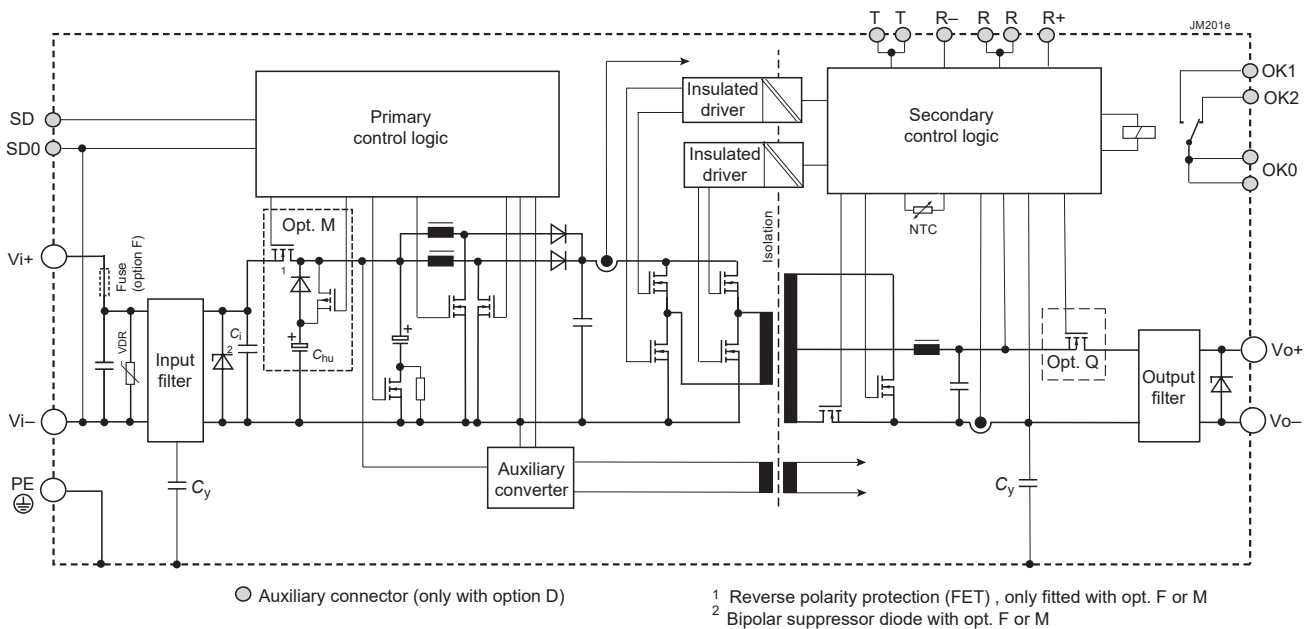


Fig. 1
Block diagram

Electrical Input Data

General conditions:
 - $T_A = 25\text{ }^\circ\text{C}$, unless specified.

Table 2a: Input data of RCM500 models

Model			72RCM500-24			110RCM500-24			Unit
Characteristics		Conditions	min	typ	max	min	typ	max	
V_i	Operating input voltage	$I_o = 0 - I_{o\max}$ $T_{A\min} - T_{A\max}$	50.4	(72)	90	77	(110)	137.5	V
V_{i2s}	for $\leq 2\text{ s}$	without shutdown	43.2		100.8	66		154	
$V_{i\text{nom}}$	Nominal input voltage			72			110		
$V_{i\text{abs}}$	Input voltage limits	3 s without damage	0		108	0		165	
I_i	Typical input current	$V_{i\text{nom}}, I_{o\text{nom}}$		7.3			4.8		A
P_{i0}	No-load input power	$V_{i\text{min}} - V_{i\text{max}}, I_o = 0$		2.5	4		2.5	4	W
$P_{i\text{SD}}$	Idle input power	$V_{i\text{min}} - V_{i\text{max}}, V_{\text{SD}} = 0\text{ V}$		2	3		2	3	
C_i	Input capacitance ¹			7			7		μF
R_i	Input resistance			14			14		m Ω
$I_{\text{inr p}}$	Peak inrush current	$V_i = V_{i\text{max}}, P_{o\text{nom}}$			20			20	A
$t_{\text{inr d}}$	Duration of inrush current				0.5			0.5	
t_{on}	Duration of inrush current	$0 \rightarrow V_{i\text{min}}, P_{o\text{nom}}$		300	500		300	500	ms
	Start-up time after removal of shutdown	$V_{i\text{min}}, P_{o\text{nom}}$ $V_{\text{SD}} = 0 \rightarrow 5\text{ V}$		300	500		300	500	

Table 2b: Input data of RCM1000 models

Model			72RCM1000-24			110RCM1000-24			Unit
Characteristics		Conditions	min	typ	max	min	typ	max	
V_i	Operating input voltage	$I_o = 0 - I_{o\max}$ $T_{A\min} - T_{A\max}$	50.4	(72)	90	77	(110)	137.5	V
V_{i2s}	for $\leq 2\text{ s}$	without shutdown	43.2		100.8	66		154	
$V_{i\text{nom}}$	Nominal input voltage			72			110		
$V_{i\text{abs}}$	Input voltage limits	3 s without damage	0		108	0		165	
I_i	Typical input current	$V_{i\text{nom}}, I_{o\text{nom}}$		15			9.5		A
P_{i0}	No-load input power	$V_{i\text{min}} - V_{i\text{max}}, I_o = 0$		3	4		3	4	W
$P_{i\text{SD}}$	Idle input power	$V_{i\text{min}} - V_{i\text{max}}, V_{\text{SD}} = 0\text{ V}$		2.5	3		2.5	3	
C_i	Input capacitance ¹			7			7		μF
R_i	Input resistance			14			14		m Ω
$I_{\text{inr p}}$	Peak inrush current	$V_i = V_{i\text{max}}, P_{o\text{nom}}$			40			40	A
$t_{\text{inr d}}$	Duration of inrush current				0.5			0.5	
t_{on}	Duration of inrush current	$0 \rightarrow V_{i\text{min}}, P_{o\text{nom}}$		300	500		300	500	ms
	Start-up time after removal of shutdown	$V_{i\text{min}}, P_{o\text{nom}}$ $V_{\text{SD}} = 0 \rightarrow 5\text{ V}$		300	500		300	500	

¹ Not smoothed by the inrush current limiter at start-up (for inrush current calculation)