

# DC/DC Converter

75 W

75 FDB 750 M24 □ □ □

$V_{I\text{ nom}} = 600 V_{DC}, 750 V_{DC}$      $V_{O\text{ nom}} = 24 V$      $I_O = 3.2 A$

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
<b>INPUT</b>						
$V_I$	Input voltage range	Continuously	400		900	$V_{DC}$
	Input voltage range: dynamic	Short time @ EN 50163	950		1269	$V_{DC}$
$V_{I\text{ min}}$	Converter shutdown		350		390	$V_{DC}$
$V_{I\text{ max}}$	Converter shutdown			1150		$V_{DC}$
	Input transients	2 kV / transient pulses	for $t \leq 1 \text{ ms} / \geq 10^6$ pulses			
$I_I$	Input current	No load Nominal load Nomonal load	$V_I = 950 V, I_O = 0 A$ $V_I = 750 V, I_O = 3.2 A$ $V_I = 400 V, I_O = 3.2 A$		7 0.12 0.3	$\text{mA}$ $A$ $A$
	Input current integral		$V_I = 950 V, 0 A \leq I_O \leq 3.2 A$		5	$A^2s$
$I_{I\text{ max}}$	Max. input switch on current $V_I \geq V_{I\text{ min}}$		$I_O = 3.2 A$ $\Delta t \leq 100 \text{ ms}$	on request		
	Input fuse		2 A			
$C_I$	Converter input capacity		on request			
	External line inductance		on request			

## OUTPUT: Power Unit

$400 V \leq V_I \leq 900 V$

$P_{O\text{ nom}}$	Output power			75		W
$V_{O\text{ nom}}$	Output voltage adjustment, factory set		23.9	24.0	2423	$V_{DC}$
$\Delta V_O$	Regulation	$0 A \leq I_O \leq 3.2 A$ $T_A = -40^\circ C \dots +70^\circ C$ $T_A = -40^\circ C \dots +85^\circ C$	$\leq 3\% V_{O\text{ nom}}$ $\leq 4\% V_{O\text{ nom}}$			V V
$\Delta V_{O\text{ dyn.}}$	Load regulation dynamic	Load: 20 - 80 - 20 % x $I_{O\text{ nom}}$			200	mV
$t_{\text{dyn}}$	Response time	Load: 20 - 80 - 20 % x $I_{O\text{ nom}}$		2	3	ms
$V_{O\text{ rms}}$	Ripple	Nom. load BW 300 kHz		150	250	mVrms
$V_{O\text{ pp}}$	Noise	Nom. load BW 20 MHz		150	500	$V_{pp}$
$t_{\text{on}}$	Turn on time $V_O$	$0 A \leq I_O \leq 3.2 A$ Resistive load	20		200	ms
$t_h$	Hold up time	$0 A \leq I_O \leq 3.2 A$	-	-	-	ms
	Overvoltage shutdown $V_O$	$0 A \leq I_O \leq 3.2 A$	converter Off: $V_O \leq 32,4 V$			$V_{DC}$
$I_O$	Output current			3.2		A
	Output current limitation of $I_O$	$400 V \leq V_I \leq 950 V$	3.3		4.3	A
	Output short circuit current	Short circuit between + $V_O$ and - $V_O$ $400 V \leq V_I \leq 950 V$			5.0	A
$C_O$	Output capacity			10		mF

## OUTPUT: Signals

PF	Option: Power Fail Open Collector Transistor $V_{CE\text{ max}} \leq 70 V, I_{CE\text{ max}} \leq -20\text{mA}^*$ Reference: - $V_O$ Option: Relais	Transistor on: PF= low, $V_O < V_{O\text{ min}}$ Transistor off: PF= high, $V_O \geq V_{O\text{ min}}$  Signal defined for $V_O \geq 0.6 \times V_{O\text{ nom}}$	$V_O < 0.95 \times V_{O\text{ nom}} \pm 2\%$ $V_O \geq 0.95 \times V_{O\text{ nom}} \pm 2\%$ 22.8V $\pm 2\%$	V V
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## GENERAL SPECIFICATIONS

f	Switching frequency	$V_I = 750 V, I_O = 3.2 A$		22		kHz
$\eta$	Efficiency	$P_O \geq 0.7 \times P_{O\text{ nom}}$	84	87		%
	MTBF (SN 29500)	$V_I = 750 V, I_O = 3.2 A, T_A = +40^\circ C$		400 000		h
	No load, short circuit proof		continuously			

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
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**SAFETY / DIMENSIONS**

	Creepage / clearance distances PD2, OV3 Base isolation PCB : FR4, V0, TG = +140 °C acc. to EN 50124 - 1	Input – Output Input – Baseplate Output – Baseplate	8.0 6.0 2.0			mm mm mm
	Dielectric strength test, piece test ramp function: 2s – 3s – 2s type test: 1 minute values * √2	Input – Output Input – Baseplate Output – Baseplate			3'000 2'100 500	V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub>
	Connectors	Input: + V <sub>I</sub> and – V <sub>I</sub> Output: + V <sub>O</sub> and – V <sub>O</sub> Option: Power fail Option: Relais	IP00: each one Faston 6.3 x 0.8 mm IP20: screw terminal 3 x Faston 6.3 x 0.8 mm			
	Protection class, protection system	Depends on model	I, IP 00 or IP 20			
	Dimensions w x h x d	Din rail - or wall mounting IP20 Wall mounting IP00	266 x 240 x 70 236 x 167 x 61			mm mm
	Assembling	Wall mounting with screws	4 x M5			
	Weight	Depends on model	1.1		2.2	kg

**ENVIROMENTAL CONDITIONS**

T <sub>A</sub>	Operating temperature range	Continuously for 10 min. EN 50155 Class Tx	- 40 - 40		+ 70 + 85	°C °C
T <sub>Storage</sub>	Storage Temperature		- 40		+ 85	°C
	Cooling		free air convection			
	Humidity	EN 50155, IEC 60571	75% averaged year, 95% 30 days			
	Vibration / shock	IEC 61373, IEC 68-2-27, BN 411002 Cat. I 3 shocks per axis	50 m / s <sup>2</sup> , 30 ms			

**EMC**

	Emission	Line conducted and radiated	EN 50121 - 3 - 2: 2001			
	Transient withstand	V <sub>I</sub> = 950 V ... 1269 V 2 kV 3 kV	for t ≤ 20 ms for t ≤ 1 ms / ≥ 10 <sup>6</sup> pulses for t ≤ 0,2 ms			

**STANDARDS**

Applied standards:	EN 50155: 2006	BN 411 002	EN 50124 - 1: 2006	EN 50121 - 3 - 2: 2006	IEC 60571
	SN 29500	EN 50121 - 1	EN 50125 - 1	EN 60068 - 2 - 6, 2...27	EN 61000 - 4 - 2...6
	IEC 571	IEC 61373: 1999	EN 60721 - 3 - 5	EN 61373 : 1999	EN 60529
	EN 50163 :1996				

Technical specifications valid for: - 40° C ≤ T<sub>A</sub> ≤ + 70° C, 400 V ≤ V<sub>I</sub> ≤ 900 V, unless otherwise noted.

**Dimensions (in mm) and Pin assignment**

Wall mounting, open frame: e.g.: 75 FDB 750 M24 W00

Din rail mounting, metall housing: e.g.: 75 FDB 750 M24 H11

**Open frame model, IP00: ATTENTION: Heatsink is not grounded – risk of electrical shock!**

Order code: 75 FDB 750 M24 □ □ □ *select*

- 1 = Input transient filter
- 2 = Input transient filter, Relais
- 3 = Input transient filter, Power fail open collector
- 0 = Open frame
- 1 = Metall housing
- W = Wall mounting
- H = Din rail mounting TS35