

DC/DC Converter

Data Sheet

250 W

250 IFDB 750 M24 □□□

$V_{I\text{ nom}} = 600 V_{DC}, 750 V_{DC}$ $V_{O\text{ nom}} = 24 V$ $I_O = 10 A$

| SYMBOL | PARAMETER | TEST CONDITIONS | MIN | TYP | MAX | UNITS |
|--------------------|---|---|-----|------------|-----|--|
| INPUT | | | | | | |
| V_I | Input voltage range suited for direct connection to overhead line | Continuously | 400 | | 900 | V_{DC} |
| | | $t \leq 5$ minutes @ EN 50153 | 900 | | 950 | V_{DC} |
| $V_{I\text{ min}}$ | Converter shutdown | | | | 390 | V_{DC} |
| $V_{I\text{ max}}$ | Converter shutdown | | | 1150 | | V_{DC} |
| | Input transients | 2 kV / transient pulses | | | | for $t \leq 1$ ms / $\geq 10^6$ pulses |
| I_I | Input current | No load $V_I = 950 V, I_O = 0 A$ Nominal load $V_I = 750 V, I_O = 10 A$ Nominal load $V_I = 400 V, I_O = 10 A$ | | 0.45 | 15 | mA A A |
| | Input current integral | $V_I = 950 V, 0 A \leq I_O \leq 10 A$ | | | 5 | A ² s |
| $I_{I\text{ max}}$ | Max. input switch on current $V_I \geq V_{I\text{ min}}$ | $I_O = 10 A$ $\Delta t \leq 100$ ms | | on request | | |
| | Input fuse | | | 2 A | | |
| C_I | Converter input capacity | | | on request | | |

| OUTPUT: Power unit | | $400 V_{DC} \leq V_I \leq 900 V_{DC}$ | | | | |
|---------------------------|--|--|------|--|------|-------------------|
| $P_{O\text{ nom}}$ | Output power | | | 250 | | W |
| $V_{O\text{ nom}}$ | Output voltage adjustment, factory set | | 23.9 | 24.0 | 24.2 | V_{DC} |
| ΔV_O | Regulation | $0 A \leq I_O \leq 10 A$ $T_A = -40^\circ C \dots +70^\circ C$ $T_A = -40^\circ C \dots +85^\circ C$ | | $\leq 3\% V_{O\text{ nom}}$ $\leq 4\% V_{O\text{ nom}}$ | | V V |
| $\Delta V_{O\text{ dyn}}$ | Load regulation dynamic | Load: 20 - 80 - 20 % $\times I_{O\text{ nom}}$ | | | 500 | mV |
| t_{dyn} | Response time | Load: 20 - 80 - 20 % $\times I_{O\text{ nom}}$ | | 1 | 2 | ms |
| $V_{O\text{ rms}}$ | Ripple | Nom. load BW 300 kHz | | 150 | 250 | mV _{rms} |
| $V_{O\text{ pp}}$ | Noise | Nom. load BW 20 MHz | | | 500 | mV _{pp} |
| t_{on} | Turn on time V_O | $0 A \leq I_O \leq 10 A$ Resistive load | | | 200 | ms |
| t_h | Hold up time | $0 A \leq I_O \leq 10 A$ | - | - | - | ms |
| | Overvoltage shutdown V_O | $0 A \leq I_O \leq 10 A$ | | converter off: $V_O \leq 32,4 V$ | | V_{DC} |
| I_O | Output current | | | 10 | | A |
| | Output current limitation of I_O | | 10.1 | | | A |
| | Output short circuit current | Short circuit between + V_O and - V_O $400 V \leq V_I \leq 1000 V$ | | | 14 | A |
| C_O | Output capacity | | | 12 | | 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 $V_O \geq 0.6 \times V_{O\text{ nom}}$ | $V_O < 0.95 \times V_{O\text{ nom}} \pm 2\%$ $V_O \geq 0.95 \times V_{O\text{ nom}} \pm 2\%$ | V V |

| GENERAL SPECIFICATIONS | | | | | | |
|-------------------------------|------------------------------|--|----|--------------|--|-----|
| f | Switching frequency | $V_I = 750 V, I_O = 10 A$ | | 100 | | kHz |
| η | Efficiency | $P_O \geq 0.7 \times P_{O\text{ nom}}$ | 82 | 85 | | % |
| | MTBF (SN 29500) | $V_I = 750 V, I_O = 10 A, T_A = +40^\circ C$ | | 450 000 | | h |
| | No load, short circuit proof | | | Continuously | | |

* - sign: sink current

250 IFDB 750 M24□□□

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|--------|-----------|-----------------|-----|-----|-----|-------|
|--------|-----------|-----------------|-----|-----|-----|-------|

SAFETY / DIMENSIONS

| | | | | | | |
|--|--|--|--|--|-----------------------|---|
| | Creepage / clearance distances PD2, OV3 Basis isolation acc. to EN 50124-1 PCB FR4 V0 TG = + 140°C | Input – output Input – chassis Output – chassis | 8.0 6.0 2.0 | | | mm mm mm |
| | Dielectric strength test, single unit tests ramp function 2 s – 3 s – 3 s Type tests: 1 minute values * √2 | Input – output Input – chassis Output – chassis | | | 3'000 2'100 500 | V _{DC} V _{DC} V _{DC} |
| | Partial discharge measurement | | EN 50207: 2000 | | | |
| | Connectors | Input: + V _I and – V _I Output: + V _O and – V _O Option: Power Fail Option: Relay | 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 <i>see drawing</i> | Din rail mounting Wall mounting | 266 x 210 x 70 236 x 163 x 60.5 | | | mm mm |
| | Assembling | Wall mounting with screws | 4 x M5 | | | |
| | Weight | Depends on model | 1.1 | | 2.2 | kg |

ENVIROMENTAL CONDITIONS

| | | | | | | |
|----------------------|---|---|-----------------------------------|--|------|----|
| T _A | Operating temperature range | Continuously EN 50155 Class Tx | - 40 | | + 70 | °C |
| T _{Storage} | Storage Temperature | | - 40 | | + 85 | °C |
| | Cooling | | free air convection | | | |
| | Humidity | EN 50155, IEC 60571 | 75% averaged year, 95% 30 days | | | |
| | Vibration / shock (not tested for Din rail mounting) | IEC 61373, IEC 68-2-27, BN 411002 Cat. I 3 shocks per axis | 50 m / s ² , 30 ms | | | |

EMC

| | | | | | | |
|--|---------------------|--|--|--|--|--|
| | Emission | Line conducted and radiated | EN 50121 - 3 - 2: 2006 | | | |
| | Transient withstand | V _I = 1000 V ... 1269 V 2 kV 3 kV | for t ≤ 20 ms for t ≤ 1 ms / ≥ 10 ⁶ pulses for t ≤ 0,2 ms | | | |

STANDARDS

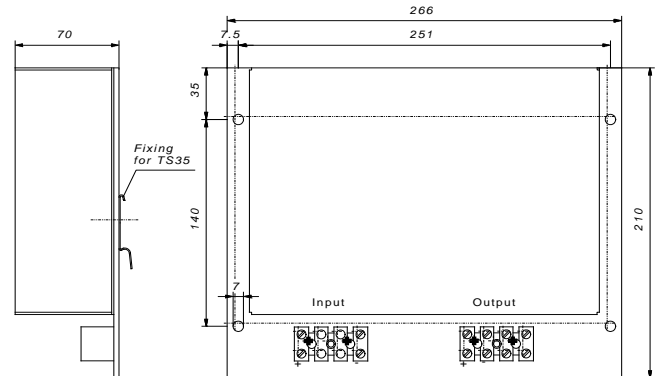
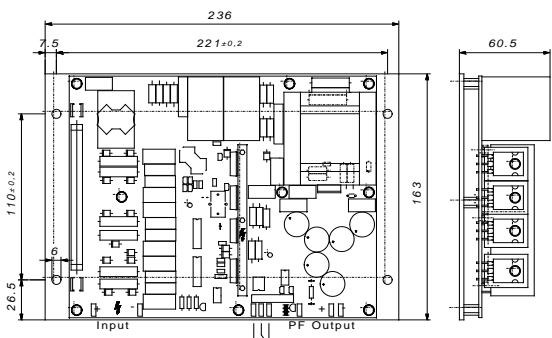
| | | | | | | |
|--|--------------------|----------------|-----------------|--------------------|--------------------------|----------------------|
| | Applied standards: | EN 50155: 2006 | BN 411 002 | EN 50124 - 1: 2006 | EN 50121 - 3 - 2: 2006 | IEC 60571 |
| | | SN 29500 | prEN 50121 - 1 | prEN 50125 - 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 |
| | | IEC 1287-1 | EN 50207: 2000 | EN 50163 | | |

Technical specifications valid for: - 40° C ≤ T_A ≤ + 70° C, 400 V_{DC} ≤ V_I ≤ 900 V_{DC}, unless otherwise noted.

Dimensions (in mm) and Pin assignment

Wall mounting, open frame: e.g.: 250 IFDB 750 M24 W00

Din rail mounting, metall housing: e.g.: 250 IFDB 750 M24 H11



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

Order code: 250 IFDB 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