

# Switch Mode Power Supplies ..Chargers.. for DIN RAIL Mounting



- REGULATED OUTPUT
- PARALLEL OPERATION
- CURRENT LIMITED
- BATTERY CHARGE
- ADJUSTABLE
- HIGH EFFICIENCY
- WIDE INPUT RANGE
- TRANSIENT PROTECTED
- HOLD-UP > 20mSec



## Description:

The EMT 2400/6000/12500/25000 Series are a compact line of wide Input Switch Mode Power Supplies for DIN Rail mounting, and can be delivered with different Output Voltages, to supply any Electronic or Electromechanical Load.

All of the EMT units are fully voltage regulated with current limit, and stand a short, with no internal losses and no time limit. Units can be connected in parallel or in series, to fit into any present or future applications. This feature gives you the possibility to reduce service- and stock expenses.

The wide Input voltage range and the Hold-up time > 20 mSec. together with transient protection and low P/S capacitance, will make your Process Electronics more

resistant to external noise sources, and reduce the chance of "Process Dropout".

All units are supplied with a voltage adjust for any adaptation, and the possibility to charge Lead Acid Batteries with 2,3V/cell.

The EMT 2400 Series are mounted in a fully Isolated plastic Housing with fixed Screw Terminals.

The EMT 6000/12500/25000 Series are mounted in a solid Aluminium housing with Aludine surface, and supplied with Screw Terminal Connectors for easy installation/service.

## EMT 2400 Series

### GENERAL

INPUT VOLTAGE	85-265 VAC 120-375 VDC
INPUT POWER	< 40 VA
INPUT FREQ.	45 - 65 Hz
FILTER	HIGH EFFICIENCY COMMON MODE FILTER
FUSE	T 1A NOT SERVICEABLE
INRUSH	< 20A
PROTECTION	275 VAC VARISTOR
EFFICIENCY	79 - 86 %
FREQUENCY	100 - 250 KHz
P/S CAPACITY	< 1,2 nF PRIM/SEC

ISOLATION	PRIM/SEC 3750 V
CREEPAGE	8 mm
HOLD-UP TIME	> 20 mSec.
MTBF	> 650.000 Hours (HRD4)
EMC	EN 55022 - VDE 0871
SAFETY	IEC950, EN 60950
OUTLINE	84 x 79 x 25 mm
WEIGHT	APPR. 150 g
OPERATING TEMP.	0 - 55°C See Curve FIG.2
STORAGE TEMP.	-40 - +85°C
PREFUSING	MAX 30 A
START	45 VAC

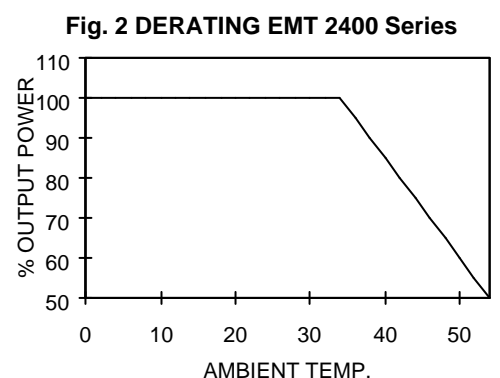
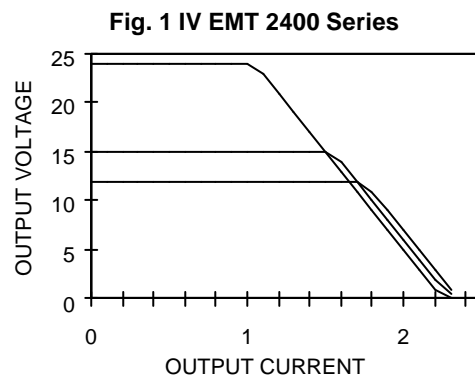
### OUTPUT

	EMT 2424	EMT 2415	EMT 2412	EMT 24D12
VOLTAGE	+24 VDC	+15 VDC	+12 VDC	+/- 12 VDC
POWER	24 W MAX	20 W MAX	18 W MAX	18 W MAX
CURRENT LIMIT	1 A See Curve FIG.1	1,3 A See Curve FIG.1	1,5 A See Curve FIG.1	+/- 0,75 A
ADJUST RANGE	23,5 - 27,6 VDC	14,5 - 17,0 VDC	11,8 - 13,8 VDC	+/- 11,8 - 13,8 VDC
RIPPLE	< 0,4 %	< 0,8 %	< 1,0 %	< 1,0 %
LOAD REG.	< 0,7 %	< 1,0 %	< 1,5 %	< 1,5 %
LINE REG.	< 0,1 %	< 0,1 %	< 0,1 %	< 0,1 %
PARALLEL OPR.	95 % POWER SHARE	90 % POWER SHARE	85 % POWER SHARE	85 % POWER SHARE
FACTORY ADJ.	24,05 VDC +/-0,01V @ NO LOAD	15,10 VDC +/-0,01V @ NO LOAD	12,10 VDC +/-0,01V @ NO LOAD	+/- 12,05 VDC +/-0,01V @ NO LOAD

Note: Output Power and Current Limit decreases with low Input Voltage (Min. Input = Appr. 80 % - See Fig.6)

### Current Limit:

As in Fig. 1, Curves show the Current Limit Points for the different Output Voltages, and unit will decrease Input Power in Current Limit, so that unit can be under constant short, without any Powerlosses.



# EMT 6000 / 12500 Series

## GENERAL

INPUT VOLTAGE		85-265 VAC 120-375 VDC
FUSE	EMT 6000 EMT 12500	T 2,0 A 5 x 20mm T 3,1 A 5 x 20mm
INPUT POWER	EMT 6000 EMT 12500	< 110 VA < 245 VA
INRUSH PROTECTION		< 20A
INPUT FREQ. FILTER		275 VAC VARISTOR 45 - 65 Hz HIGH EFFICIENCY COMMON MODE FILTER
PREFUSING EFFICIENCY		< 30 A
FREQUENCY		79 - 86 % 100 - 250 KHz

HOLD-UP TIME		> 20 mSec.
MTBF		> 450.000 Hours (HRD4)
WEIGHT	EMT 6000 EMT 12500	370 g 525 g
OUTLINE	EMT 6000 EMT 12500	100 x 100 x 43 mm 100 x 100 x 68 mm
DERATING		0 - 50°C NONE See Fig: 5
P/S CAPACITY		< 1,2 nF PRIM/SEC
ISOLATION		PRIM/SEC 3750 V
CREEPAGE		8 mm
EMC		EN 55022 - VDE 0871
SAFETY		IEC950, EN 60950
OPERATING TEMP.		0 - 55°C See Curve FIG.2
STORAGE TEMP.		-40 - +85°C

## OUTPUT 6000 / 12500 SERIES

	EMT 6012	EMT 6024	EMT 6048	EMT 12512	EMT 12524	EMT 12548
VOLTAGE	+12 VDC	+24 VDC	+48 VDC	+12 VDC	+24 VDC	+48 VDC
POWER	50 W MAX	60 W MAX	60 W MAX	100 W MAX	125 W MAX	125 W MAX
CURRENT LIMIT	5,0 A See Curve FIG.3	2,6 A See Curve FIG.3	1,3 A See Curve FIG.3	8,0 A See Curve FIG.4	5,2 A See Curve FIG.4	2,5 A See Curve FIG.4
ADJUST RANGE	11,8 - 13,8 VDC	23,5 - 27,6 VDC	47,0 - 55,2 VDC	11,8 - 13,8 VDC	23,5 - 27,6 VDC	47,0 - 55,2 VDC
RIPPLE	< 1,0 %	< 0,8 %	< 0,8 %	< 1,0 %	< 0,8 %	< 0,8 %
LOAD REG.	< 1,5 %	< 1,0 %	< 0,8 %	< 1,5 %	< 1,0 %	< 0,8 %
LINE REG.	< 0,1 %	< 0,1 %	< 0,1 %	< 0,1 %	< 0,1 %	< 0,1 %
PARALLEL OPR.	80 % POWER SHARE	90 % POWER SHARE	90 % POWER SHARE	80 % POWER SHARE	90 % POWER SHARE	90 % POWER SHARE
FACTORY ADJ.	12,10 VDC +/-0,01V @ 0 A	24,10 VDC +/-0,01V @ 0 A	48,10 VDC +/-0,01V @ 0 A	12,10 VDC +/-0,01V @ 0 A	24,10 VDC +/-0,01V @ 0 A	48,10 VDC +/-0,01V @ 0 A

Note: Output Power and Current Limit decreases with low Input Voltage (Min. Input = Appr.80 % - See Fig.6)

### Current Limit:

Looking at Fig. 3 & 4 a typical Current Limit is shown together with Toggle Mode point. This point is at 40 - 60 % of rated Output Voltage on all units.

When unit reaches its Toggle Mode point, unit will stop, and with its Automatic restart within seconds, unit will in this mode stand a constant short with no damage or internal powerlosses.

Fig. 3 IV EMT 6000 Series

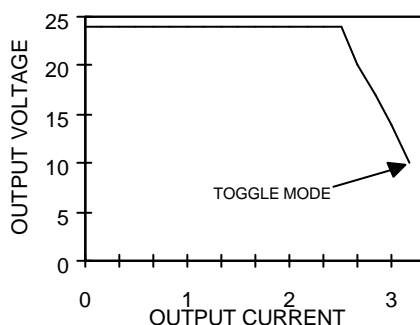


Fig. 4 IV EMT 12500 Series

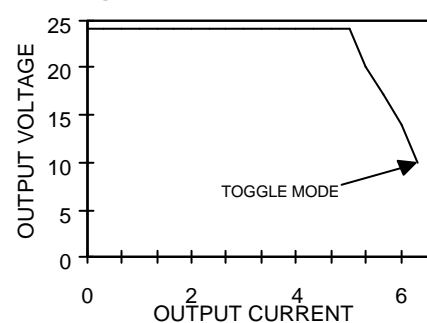


Fig. 5 DERATING

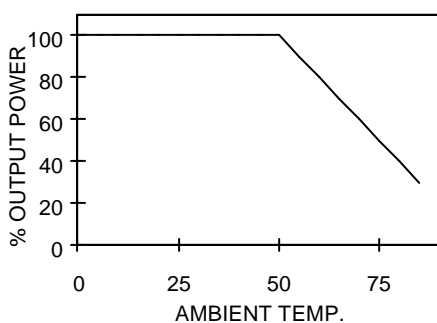
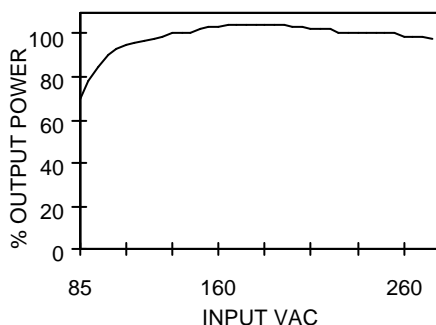


Fig. 6 INPUT/OUTPUT



### Low AC/DC Input:

Observe Fig. 6, when running all Series with a low Input AC or DC Voltage. Power Out / Current Limit will decrease and in the 90 - 130 VAC range, unit will deliver appr. 80% of rated Outputpower. Units will run from a lower Input Voltage, but a highly decreased Output Power.

# EMT 25000 Series

## GENERAL

INPUT VOLTAGE type X	180 - 265 VAC	EFFICIENCY	Appr. 90 %
INPUT VOLTAGE type Y	250 - 375 VDC	FREQUENCY	70 KHz
INPUT POWER	90 - 135 VAC	HOLD-UP TIME	> 20 mSec.
FILTER	< 350 VA	ISOLATION	PRIM/SEC 3000 V
FUSE type X	HIGH EFFICIENCY	P/S CAPACITY	< 2,5 nF PRIM/SEC
FUSE type Y	COMMON MODE FILTER	CREEPAGE	6 mm
INPUT FREQ.	T 3,15 A - 5 x 20 mm	EMC	EN 55022, VDE 0871
INRUSH	T 5,0 A - 5 x 20 mm	SAFETY	IEC950, EN 60950
PROTECTION type X	45 - 65 Hz	MTBF	> 375.000 Hours (HRD4)
PROTECTION type Y	< 30 A	OUTLINE	110 x 100 x 100 mm
PREFUSING	275 VAC VARISTOR	WEIGHT	APPR. 850 g
	150 VAC VARISTOR	OPERATING TEMP.	0 - 55°C See Curve FIG.2
	MAX 30 A	STORAGE TEMP.	-40 - +85°C

## OUTPUT

	EMT 25012	EMT 25024	EMT 25048
VOLTAGE	+12 VDC	+24 VDC	+48 VDC
POWER	235 W MAX	265 W MAX	280 W MAX
CURRENT LIMIT	> 17,0 A (Fig.7)	> 10,0 A (Fig.8)	> 5,0 A (Fig.9)
ADJUST RANGE	11,5 - 13,8 VDC	23,5 - 27,5 VDC	47,0 - 56,0 VDC
RIPPLE	< 0,9 %	< 0,9 %	< 0,6 %
LOAD REG.	< 0,5 %	< 0,3 %	< 0,2 %
LINE REG	< 0,4 %	< 0,4 %	< 0,4 %
PARALLEL OPR. <sup>(1)</sup>	100 % POWER SHARE	100 % POWER SHARE	100 % POWER SHARE
OVP <sup>(2)</sup>	15,5 VDC	31,0 VDC	59,0 VDC
FACTORY ADJ.	12,0 VDC	24,0 VDC	48,0 VDC
	+/-0,01V @ NO LOAD	+/-0,01V @ NO LOAD	+/-0,01V @ NO LOAD

Note <sup>(1)</sup> : In parallel operation, max. 10 units with active power share connected.

Note <sup>(2)</sup> : In case of OVP circuit activated - disconnect Input for appr. 1minute - unit will restart.

### INDICATORS:

**ON LED:** Power Supply is running

**REG LED:** Power Supply is in voltage regulation, in current limit this LED will be OFF.  
In parallel operation, this LED will indicate that this unit is voltage regulating.

**LIMIT LED:** Power Supply is in current limit, the REG LED will be OFF

Fig. 7 IV EMT 25012

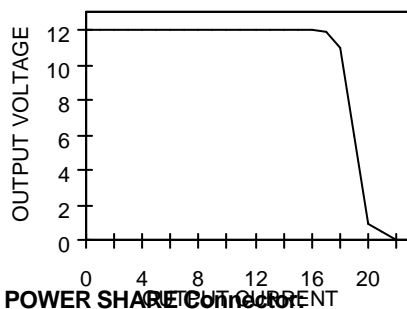


Fig. 8 IV EMT 25024

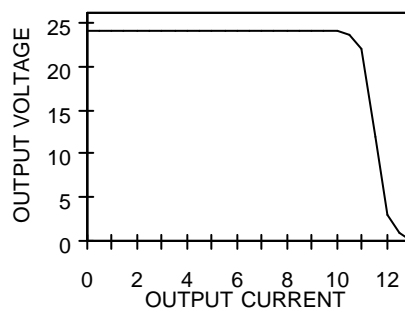
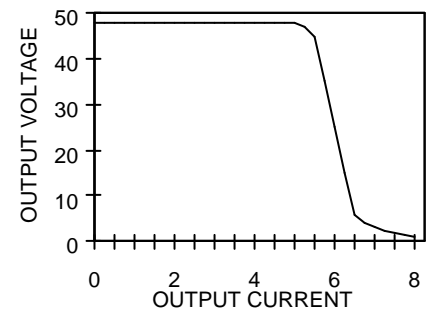


Fig. 9 IV EMT 25048



Used in Parallel Operation, - connect 1 to 1 and 2 to 2 between all operating units (max. 10 units). This will ensure correct regulation and Power Share between units. The unit that is adjusted for the highest Output Voltage will be the regulating unit (REG LED on).

**NOTE:** Any Output voltage from 5 - 48 VDC max. 20 A , on request.

The EMT 25000 Series will be available with PFC (Power Factor Correction)

EMT 25012, EMT 25024, EMT 25048

# GENERAL GUIDELINES:

## Parallel Operation:

*EMT 2400/6000/12500 Series:*

Units are factory adjusted to above voltages - - - if changed, readjust unit to wanted Output voltage (+/- 10 mV) with no load for each unit, before connecting in parallel.

*EMT 25000 Series:*

Used in parallel operation, - connect 1 to 1 and 2 to 2 between all operating units (max. 10 units). Unit that is adjusted for the highest Output voltage, will be the unit regulating all other units in parallel operation. This can be observed by the REG LED is ON.

*Note:*

Do not connect Power Share Connector 1 & 2 unless unit is paralleled with other units on the power terminals. If Power Share is connected and terminals are not connected to other units, unit will go in Over Voltage Protection (OVP) mode and shut down.

*All Series:*

When connecting wires to units in parallel, make these wires from units to common tie point of the same length, to ensure that Power Supplies see the Load with the same Impedance, especially when units are of the high current type.

Above mentioned, will obtain the best Powershare and Control under parallel operation.

## Battery Charging:

By charging Lead Acid Batteries, adjust unit to shown charge voltage with no load connected.

This will keep your Battery charged to Appr. 90% under normal temp. conditions, in normal standby operation.

Or contact your local Battery Supplier, for technical information around Charge Voltage in Standby Operation and readjust unit to desired voltage, with no Load.

Battery	Charge Voltage
12 V	13,8
24 V	27,6
48 V	55,2

## Mounting:

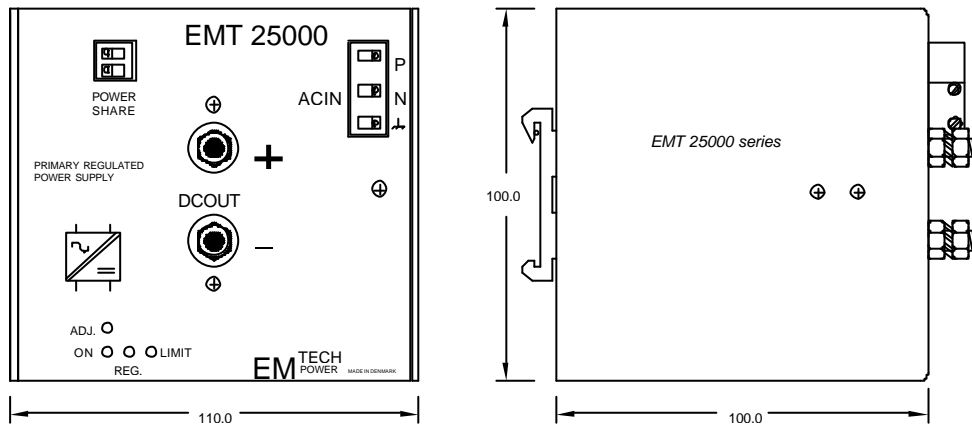
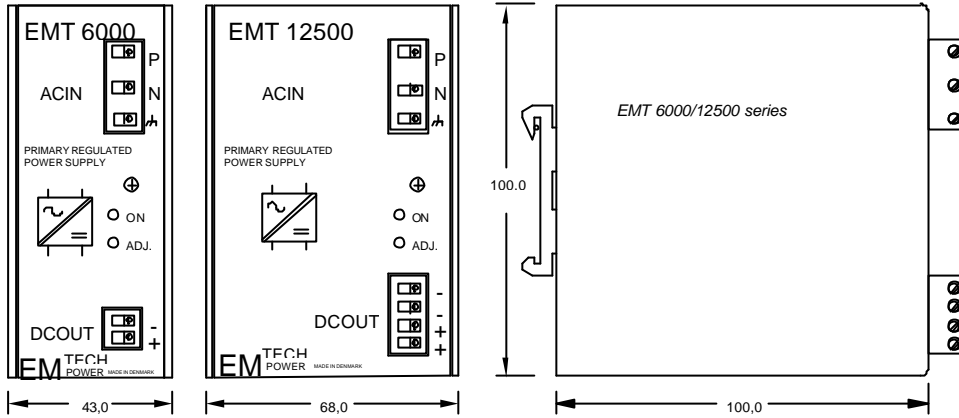
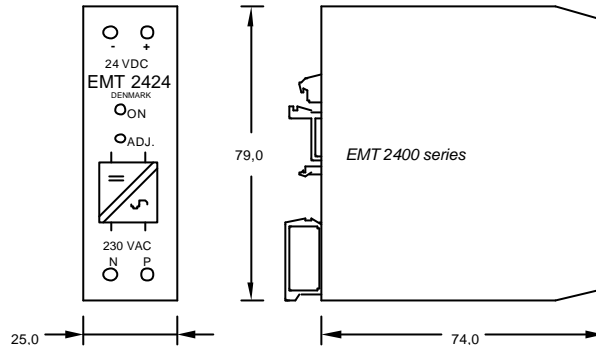
When mounting two or more units side by side, please use below table to determine Horizontal clearance between units, or to other units on the Rail.

Keep wires, mechanicals or any part away from the Top/Bottom stated in table below as Top/Bottom clearance, and do not mount unit in no other than the upright position, to ensure proper airflow.

Series	EMT 2400	EMT 6000	EMT 12500	EMT25000
Horizontal clearance	> 5 mm	> 7 mm	> 7 mm	> 10 mm
Top clearance	> 10 mm	> 20 mm	> 22 mm	> 28 mm
Bottom clearance	> 8 mm	> 18 mm	> 20 mm	> 25 mm

Above will allow maximum performance and lifetime, for units running with maximum Output Power for a longer period of time.

**Dimensions:**  
All in mm



NOTE 1: All data is measured at 25 °C and mounted in free Air.

NOTE 2: We reserve us the right to change these specifications, units is under continuous development

Contact your Local Representative or EMTECH Power A/S for more technical information.

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