

# Technical Specifications

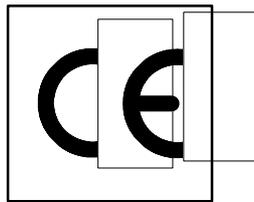
## Electromagnetic Compatibility

The equipment complies with the safety requirements provided for in the normative EN 60950.

The equipment is in "CLASS1" against electric shock.

The equipment may house optical units fitted with class 1 and class 3A laser components: it complies with the safety requirements provided for in the directives EN 60825-1 Ed.94 and EN 60825-2 Ed.95. See also "Safety Rules and Operating Precautions".

The equipment, when installed according to the composition and installation procedures specified in this handbook, is in compliance with the directive 89/336/CEE.



## Environmental Condition

The minimal classes of environmental conditions, their severities and general definition are specified according to ETSI ETS 300-019-1-0.

### **Storage Endurance**

Storage endurance minimal requirements are according to ETSI ETS 300-019-1-1 Class 1.2 "Not temperature controlled storage locations".

The climatic environmental limits for normal storage conditions are:  
temperature: from -25 to +55 °C, relative humidity: from 10% to 100%.

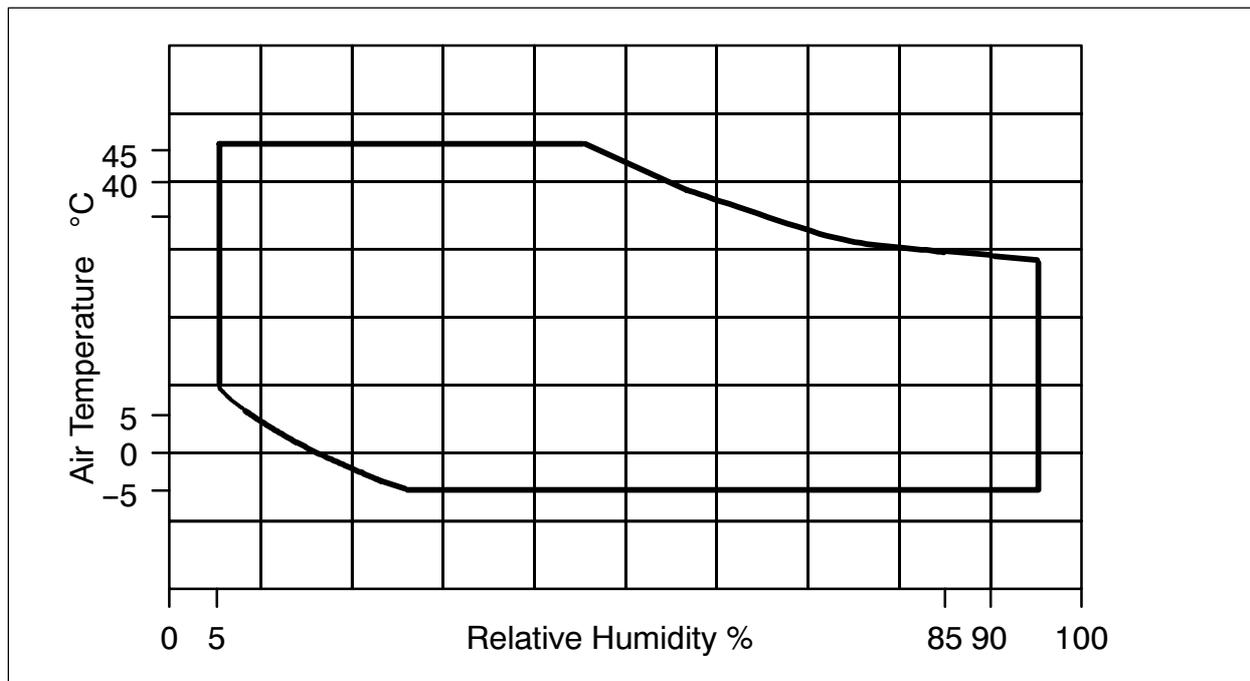
### **Transport Endurance**

Storage endurance minimal requirements are according to ETSI ETS 300-019-1-2 Class 2.3 "Public transportation".

The climatic environmental limits for normal transport conditions are:  
temperature: from -40 to +70 °C, relative humidity: up to 95%.

## Environmental Endurance for Indoor Operation

Weather-protected stationary use endurance minimal requirements are according to ETSI ETS 300-019-1-3 Class 3.2 "Partly temperature controlled locations". The climatic environmental limits for normal operating conditions, applied to enclosed locations in the worst case of still air, are:  
temperature: from -5 to +45 °C, relative humidity: from 5% to 95% (see Fig. 1.5-1).



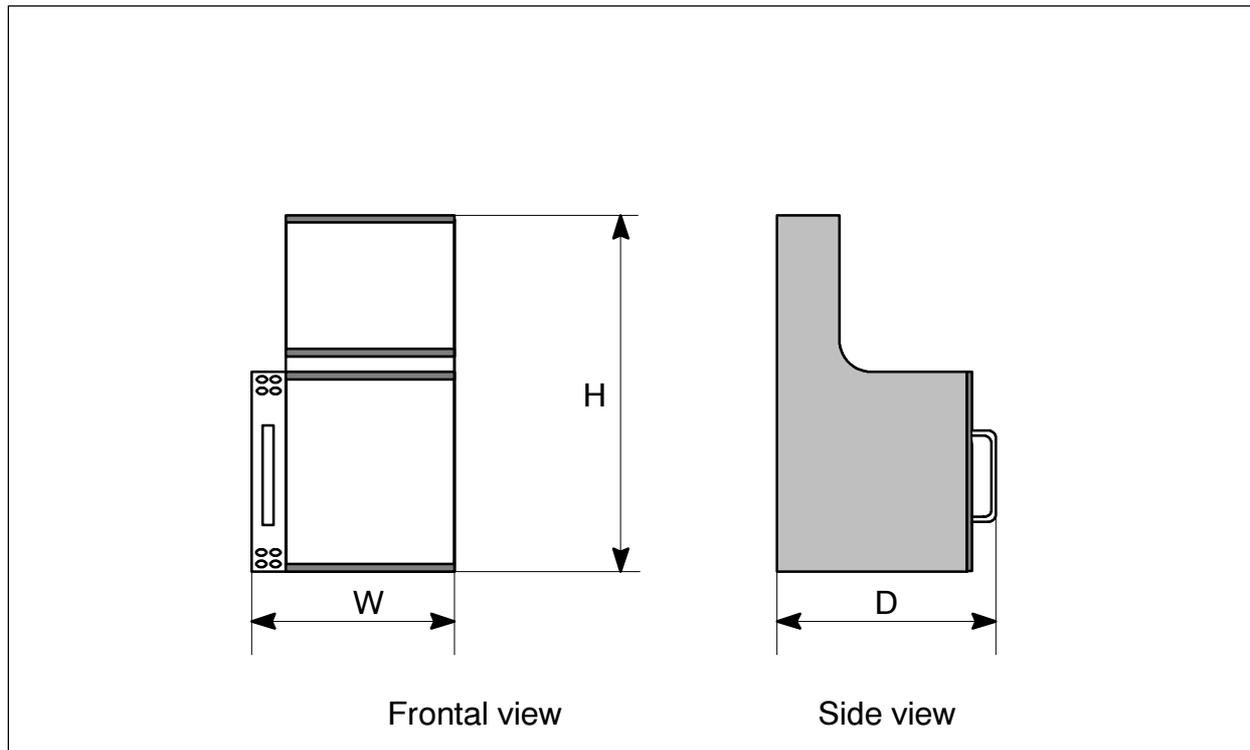
*Fig. 1.5-1 Environmental conditions for indoor operations*

# Mechanical Features and Power Consumption

## Subrack

Name	D (H x W x D) (mm)	Weight (empty) (kg)
Subrack	450 x 219.5 x 245 (*)	5

*NOTE (\*) In the case of MOST Units with optical line interfaces, the depth is of 280mm*

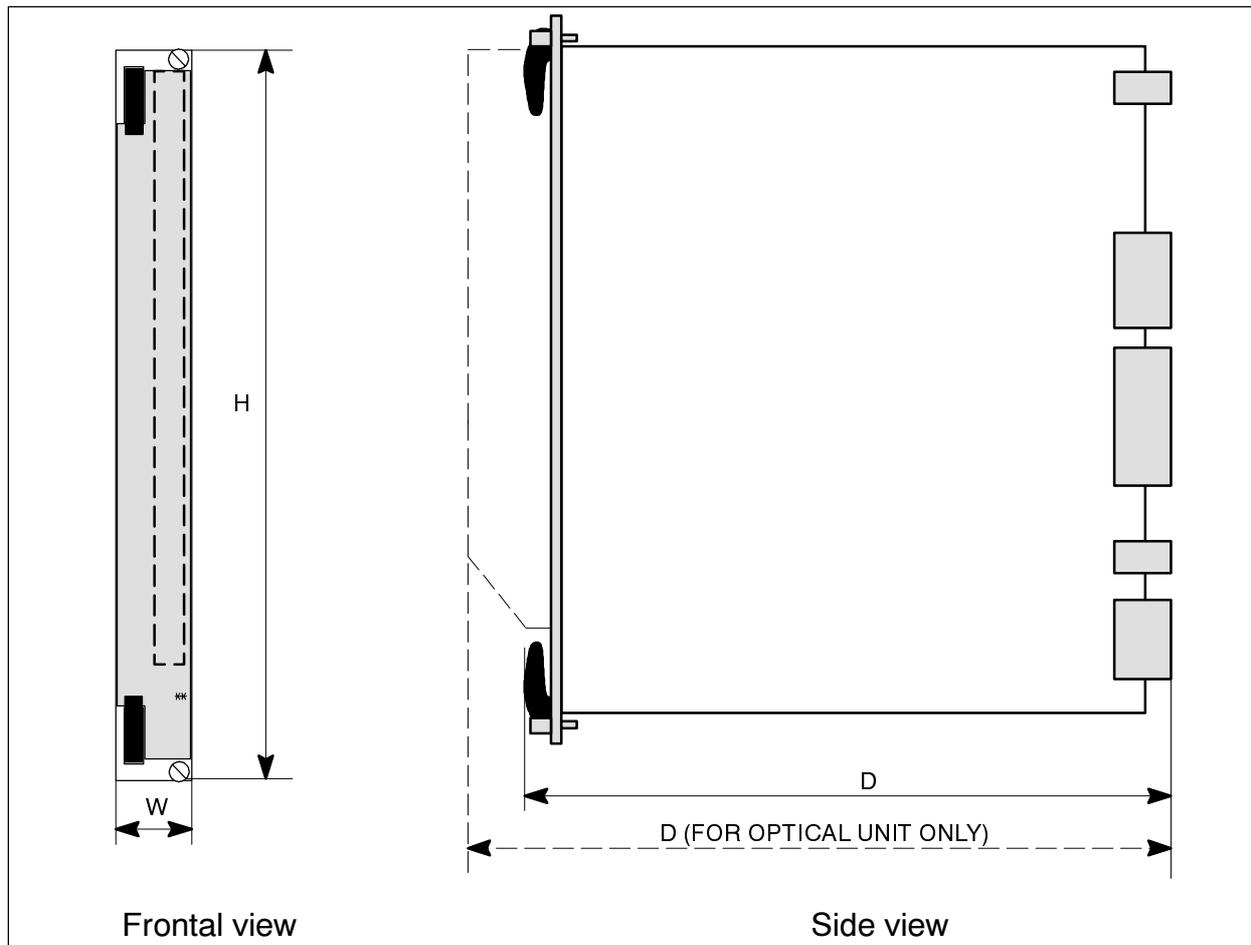


*Fig. 1.5-2 Dimensions of subrack*

## Units

Part number	Name	D(H x W x D)(mm)	Weight (g)	Power (W)
	MOST Unit	262 x 37.4 x 238 (*)	960	45 (max) 20
131-8924/01	Communication Unit	262 x 27.24 x 238	600	8
131-8690/01	Auxiliary Unit Type 1	262 x 27.4 x 238	450	9
131-8682/xx	STM-1 Optical/Mux Unit	262 x 27.4 x 238	500	10.2
131-8683/04	STM-1 G.703 Electrical/Mux Unit	262 x 27.4 x 238	420	10
131-8977/01	63x1.5/2Mbit/s G.703 Tributary Unit	262 x 27.4 x 238	890	13.6
131-8685/01	3x34Mbit/s Tributary Unit	262 x 27.4 x 238	890	11
131-9251/01	3x45Mbit/s Tributary Unit	262 x 27.4 x 238	890	11
131-8977/02	32x1.5/2Mbit/s G.703 Tributary Unit	262 x 27.4 x 238	465	13
131-9310/11	1x140Mbit/s / STM-1 (with VC-12 handling) G.703 Tributary Unit	262 x 27.4 x 238	465	11

**NOTE (\*)** In the case of a MOST Unit with optical line interfaces the depth will be of 270mm



**Fig. 1.5-3** Dimensions of units

## Power Supply

*Secondary voltage supply  
(in duplicated from battery)*

-48V( $\pm 20\%$ ) or  
-60V( $\pm 20\%$ )

*Distribution of voltage  
supplies to circuits of  
Equipment*

in duplicate with diode  
coupling and DC/DC  
conversion within each  
unit

In the following the voltage and fuses are listed.

Unit	Voltage (V)	Fuse (A)
MOST Unit	+3, +5, +15, -5	2
Communication Unit	+5, +12	3
Auxiliary Unit	+5, -5.2, +12	1.5
STM-1 Optical/Mux Unit	+5, -5.2, +12, +3.3	1.5
STM-1 G.703 Electrical/Mux Unit	+5, -5.2	1
63x1.5/2Mbit/s G.703 Tributary Unit	+5, -5.2, +12, +3.3	1.5
3x34Mbit/s Tributary Unit	+5, -5.2	1.5
3x45Mbit/s Tributary Unit	+5, -5.2	1.5
32x1.5/2Mbit/s G.703 Tributary Unit	+5, -5.2, +12, +3.3	1.5
1x140Mbit/s / STM-1 (with VC-12 handling) G.703 Tributary Unit	+3, +5, -5.2, +9, -9	0.5

## Equipment Power Consumption

<i>Terminal</i>	$\leq 70.2W$
<i>Add/drop</i>	$\leq 97.2W$
<i>Double Regenerator</i>	$\leq 110.6W$

## Frame Structure and Multiplexing Methods

The transmitted synchronous streams have a frame structure complying with the criteria specified in ITU-T Recommendation G707 and is obtained by applying the multiplexing methods specified in ITU-T G783.

The characteristics of the STM-1 frame and the multiplexing structures are described in detail in Appendix SH "SDH Principles" attached to this Section.

# Physical/Electrical Characteristics of Hierarchical Digital Interfaces

All the electrical characteristics are listed in the Appendix TS – Technical Specifications for Physical/Electrical Interfaces attached to this Description.

## Ground Contact and Two-wire Characteristics

Relay and electronic ground contacts are issued by the equipment. Fig. 1.5-5 shows their distribution in the 37-pin connector of the subrack, while their electrical characteristics are listed as follows:

### **Output Relay Ground Contact and Two-wire**

Max switching current	0.3A	0.5A	1A
Max switching voltage	110V dc	125V ac	30V dc
Max switching capacity	62.5VA, 30W		
Contact resistance	1Ω max		
Operate frequency	3000 ops/hour		
Breakdown voltage	200V		
Mechanical life	1 x 10 <sup>7</sup> operations		

### **Output Electronic Ground Contact**

Max current in the ON condition	500mA dc
Max transient voltage	-100V
Max operating voltage	-76V dc
Max Δ voltage in the ON condition	2V dc
Total power dissipation	1W

# Input Electronic Ground Contact

Min current in the ON condition

1mA dc

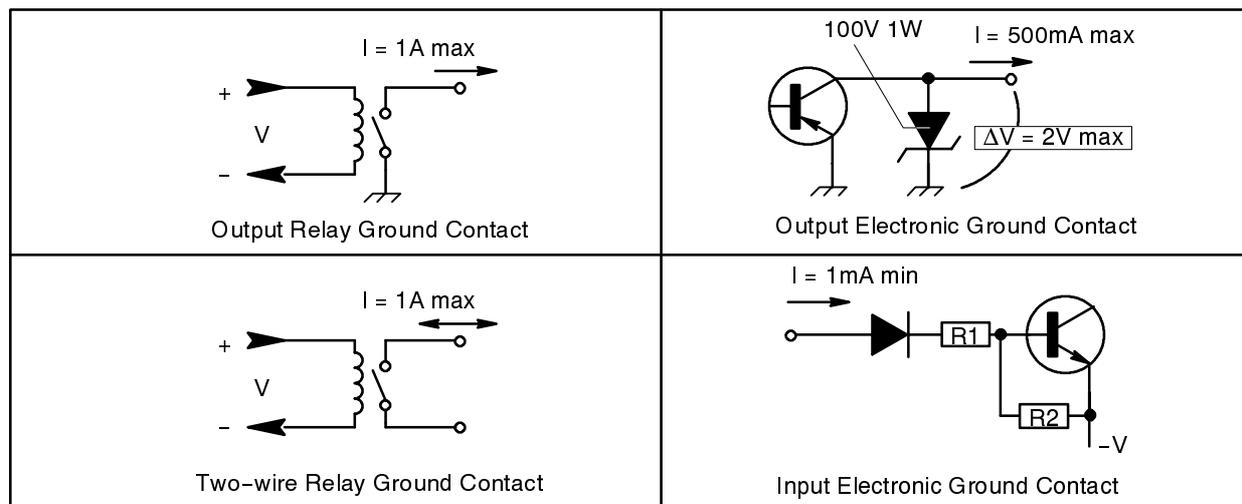


Fig. 1.5-4 Ground contact and two-wire characteristics

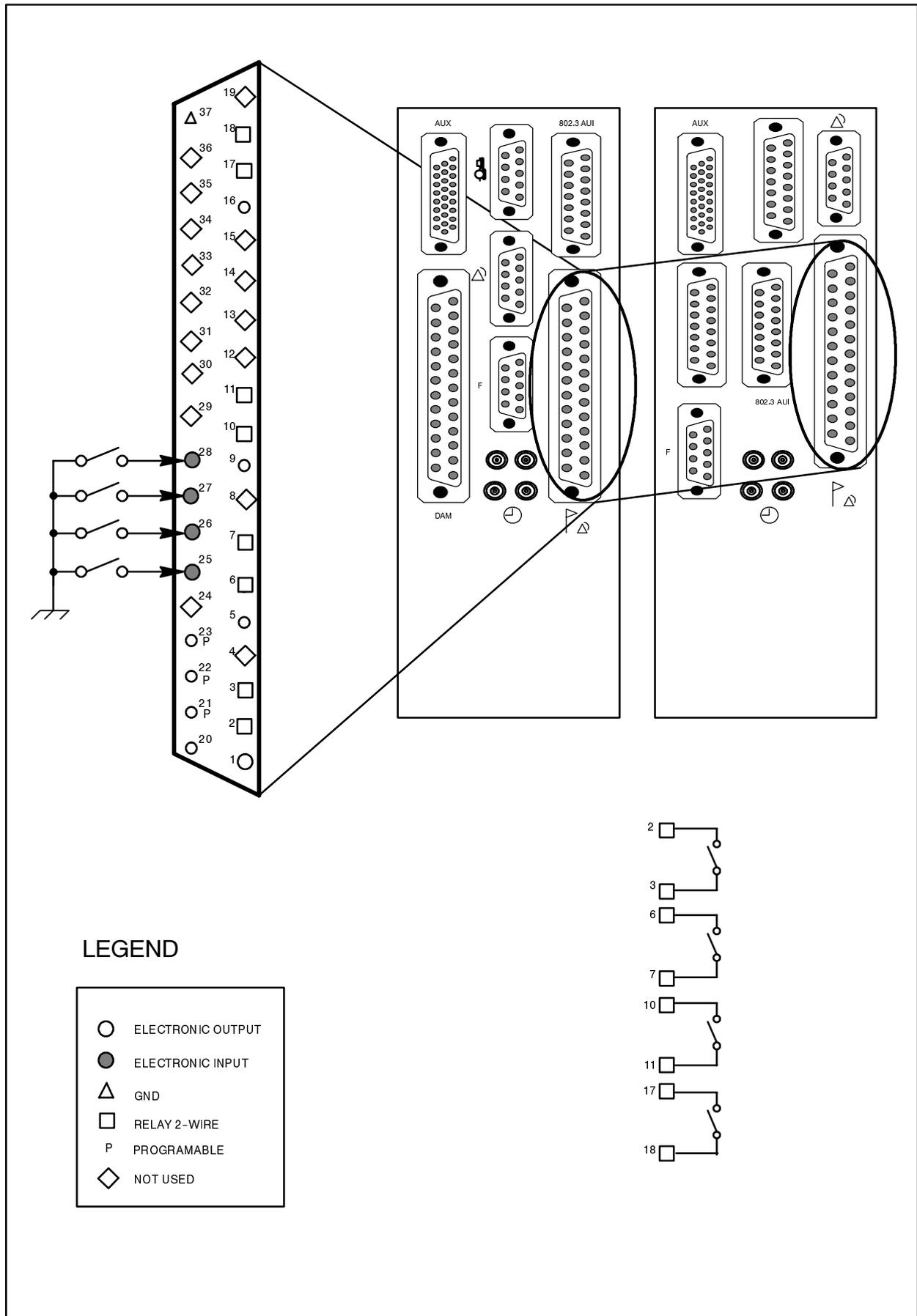


Fig. 1.5-5 Ground contact and two-wire distribution in the 37-pin subrack connector

# Equipment Electrical Characteristics

The on-board DC/DC converter circuits of the equipment are designed to stand the overvoltage value as shown in Fig. 1.5-6, furthermore the ratio of the instantaneous surge current  $I_t$  to maximum current  $I_m$ , under any switching operations, does not exceed the limits shown in Fig. 1.5-7.

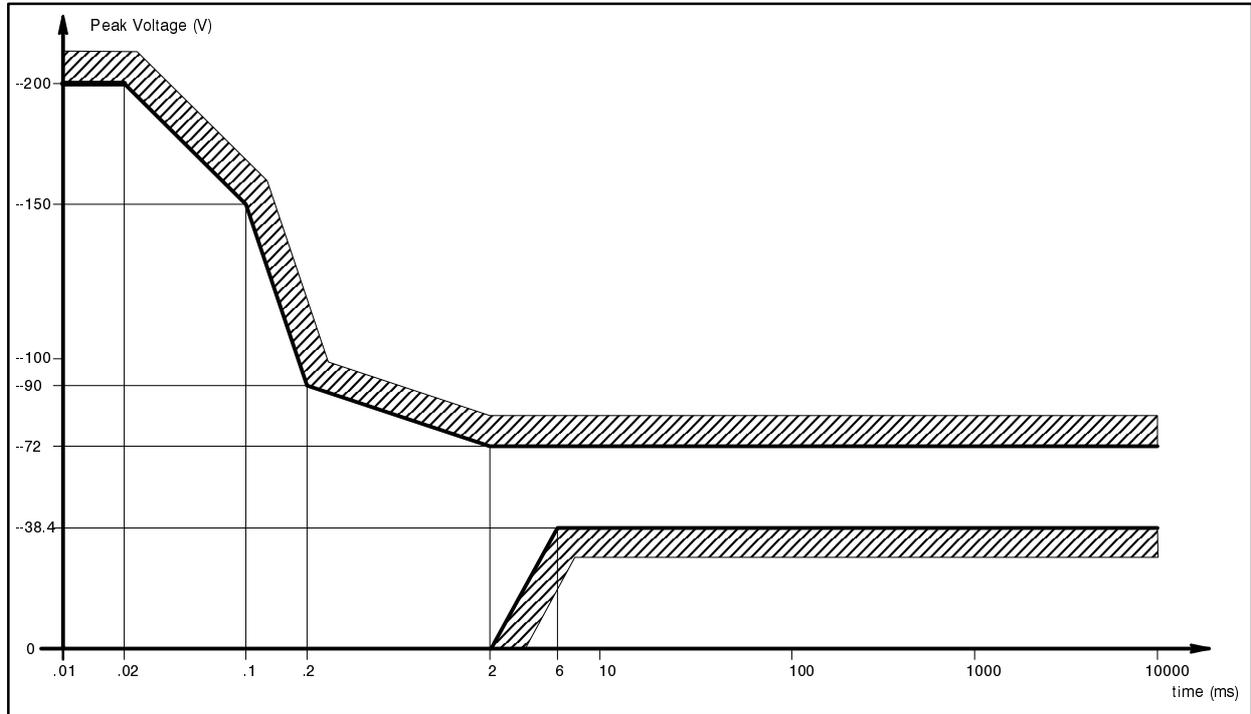


Fig. 1.5-6 Limiting values for transient voltages

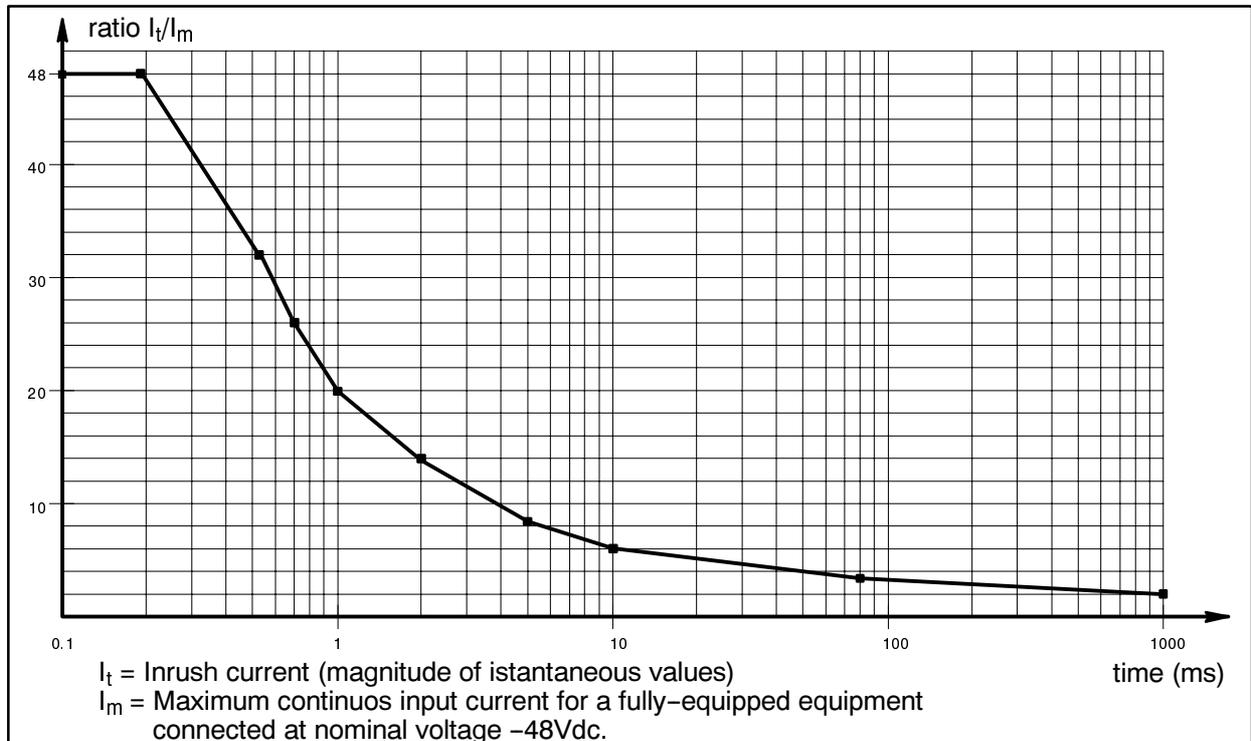


Fig. 1.5-7 Limiting values for inrush currents at nominal voltage and maximum load

# Optical Performances

	unit	values			
DIGITAL SIGNAL Nominal bit rate	kbit/s	STM-1 (According to G.707 and G.958): 155 520			
<i>Application code</i>		I-1	S-1.1	L-1.1	L-1.2/L-1.3
<i>Operating wavelength range</i>	nm	(*)	1280/1335	1280/1335	1530/1570
<b>TRANSMITTER AT REFERENCE POINT S</b>					
<i>Source type</i>		(*)	FP-LD	FP-LD	DFB-LD
<i>Spectral characteristics</i>					
- <i>Maximum RMS width (<math>\sigma</math>)</i>	nm	(*)	3.5	4	-
- <i>Maximum -20dB width</i>	nm	(*)	-	-	1
- <i>Minimum side mode suppression ratio</i>	dB	(*)	-	-	30
<i>Mean launched power</i>					
- <i>Maximum</i>	dBm	(*)	- 8	0	0
- <i>Minimum</i>	dBm	(*)	- 15	- 5	- 5
- <i>Typical</i>	dBm	(*)	- 12	- 2.7	- 2.7
<i>Minimum extinction ratio</i>	dB	(*)	8.2	10	10
<b>RECEIVER AT REFERENCE POINT R</b>					
<i>Minimum sensitivity</i>	dBm	(*)	-34	-34	-34
<i>Minimum overload</i>	dBm	(*)	-8	-8	-8
<i>Maximum optical path penalty</i>	dB	(*)	1	1	1
<i>Maximum reflectance of receiver, measured at R</i>	dB	(*)	NA	NA	-25
<b>OPTICAL PATH BETWEEN S AND R</b>					
<i>Minimum optical return loss of cable plant at S</i>	dB	(*)	NA	20	20
<i>Maximum discrete reflectance between S and R</i>	dB	(*)	NA	-27	-27
<i>Maximum dispersion</i>	ps/nm	(*)	150	185	1900
<i>Attenuation range</i>	dB	(*)	0- 18	8 - 28	8- 28

Notes: NA = Not Applicable

NOTE (\*) Optical performances of I-1 interface are made available using the S-1.1 interface.