

EMISSIONS EN 12015: 2004				
	Port	Frequency Range	Limits	Basic Standard
Radiated Emissions	Enclosure	30 MHz— 230 MHz 230 MHz— 1 GHz	40 dBuV/m (10m Measurement distance) 47 dBuV/m	EN55011 Note: for F<9kHz measurements up to 230 MHz need only be performed
Conducted Emissions Mains Input < 25A	AC Mains Power Ports	0.15 MHz— 0.5 MHz 0.5 MHz— 5 MHz 5 MHz— 30 MHz	79 dBuV QP / 66 dBuV Average 73 dBuV QP / 60 dBuV Average 73 dBuV QP / 60 dBuV Average	
Conducted Emissions Mains Input 25 - 100 A		0.15 MHz— 0.5 MHz 0.5 MHz— 5 MHz 5 MHz— 30 MHz	100 dBuV QP / 90 dBuV Average 86 dBuV QP / 76 dBuV Average 90 - 70 dBuV QP / 80 - 60 dBuV Average	
Conducted Emissions Mains Input < 100A		0.15 MHz— 0.5 MHz 0.5 MHz— 5 MHz 5 MHz— 30 MHz	130 dBuV QP / 120 dBuV Average 125 dBuV QP / 115 dBuV Average 115 dBuV QP / 105 dBuV Average	
Harmonic Distortion (3ph)		0 - 2 kHz	IEC/TR2 61000-3-4	
Conducted Emissions limits for output power ports	Output Power Ports	0.15 MHz— 0.5 MHz 0.5 MHz— 5 MHz 5 MHz— 30 MHz	80 dBuV QP / 70 dBuV Average 74 dBuV QP / 64 dBuV Average 74 dBuV QP / 64 dBuV Average	EN55011
Discontinuous Disturbance	Mains Terminal	148.5 kHz—30 MHz	Limit = 44dB for N<0.2 or 20 lg (30/N)dB for 0.2<N>30	

NOTES: Travelling cables or any other cables likely to be more than 5m long shall be represented by a sample of at least 5m.

Performance criterion for immunity testing is as follows:

- A. The apparatus / assembly of apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by its manufacturer, when the apparatus or assembly of apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer then either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus or assembly of apparatus if used as intended.
- B. The apparatus / assembly of apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by its manufacturer, when the apparatus or assembly of apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer then either of these may be derived from the product description and documentation and what the user may reasonable expect from the apparatus or assembly of apparatus is used as intended.
- C. Not used.
- D. The apparatus / assembly of apparatus and the associated safety component(s) shall continue to operate as intended. No degradation of performance or loss of function is allowed other than a failure into a safe mode.

IMMUNITY EN 12016: 2004 (ALL CIRCUITS)					
Item	Port	Phenomenon	Basic Standard	Test Value	Notes
1	Enclosure	Electrostatic discharge (ESD) EM Radiated Field	EN61000-4-2 EN61000-4-3	4 kV / 8 kV contact / air 80 MHz - 166 MHz 1 KHz 80% AM 10V/m 166 MHz - 1 GHz 1 KHz 80% AM 10V/m 1710 MHz - 1784 MHz 1 KHz 80% AM 10V/m 1880 MHz - 1960 MHz 1 KHz 80% AM 3V/m	B A A A A
2	Input and Output AC Power ports < 100 A	Burst Surge Conducted RF Voltage Dips	EN61000-4-4 EN61000-4-5 EN61000-4-6 EN61000-4-11	1.0 kV 2.0 kV Line to Earth 1.0 kV Line to Line 3 V rms 1 kHz 80% AM modulation 30% for 10 ms	B B B A A
2	Input and Output AC Power ports > 100 A	Burst Surge Conducted RF	EN61000-4-4 EN61000-4-5 EN61000-4-6	2.0 kV 2.0 kV Line to Earth 1.0 kV Line to Line 3 V rms 1 kHz 80% AM modulation	B B B A
3	DC Power < 100A	Burst Surge Conducted RF	EN61000-4-4 EN61000-4-5 EN61000-4-6	0.5 kV (General function and safety circuits) 0.5 kV Line to Earth , 0.5 kV Line to Line 3 Vrms 1 kHz 80% AM modulation	B B A
3	DC Power >100A	Burst Surge Conducted RF	EN61000-4-4 EN61000-4-5 EN61000-4-6	1.0 kV (General function and safety circuits) 1.0 kV Line to Earth , 0.5 kV Line to Line 3 Vrms 1 kHz 80% AM modulation	B B A
4	Signal and Control Ports	Burst Conducted RF	EN61000-4-4 EN61000-4-6	0.5 kV (safety circuits and ports > 3m) - Capacitive Clamp 0.15 - 80 MHz 3 V rms 1 kHz 80% AM modulation (ports > 3m)	B A
5	Monitoring and Remote Alarm Ports	Burst Surge Conducted RF	EN61000-4-4 EN61000-4-5 EN61000-4-6	1.0 kV (safety circuits and ports > 3m) - Capacitive Clamp 1.0 kV Line to Earth, 0.5 kV Line to Line 0.15 - 80 MHz 3 V rms 1 kHz 80% AM modulation (ports > 3m)	B B A

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****REFER TO STANDARD FOR CONDITIONS ****

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- C. Not used.
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IMMUNITY EN 12016: 2004 (SAFETY CIRCUITS)					
Item	Port	Phenomenon	Basic Standard	Test Value	Notes
1	Enclosure	Electrostatic discharge (ESD) EM Radiated Field	EN61000-4-2 EN61000-4-3	6 kV / 15 kV contact / air 80 MHz - 166 MHz 1 KHz 80% AM 10V/m 166 MHz - 1 GHz 1 KHz 80% AM 30V/m 1710 MHz - 1784 MHz 1 KHz 80% AM 30V/m 1880 MHz - 1960 MHz 1 KHz 80% AM 10V/m	D D D D D
2	Input and Output AC Power ports < 100 A	Burst Surge Conducted RF Voltage Dips Voltage Interruptions	EN61000-4-4 EN61000-4-5 EN61000-4-6 EN61000-4-11 EN61000-4-11	4.0 kV 2.0 kV Line to Earth 1.0 kV Line to Line 3 V rms 1 kHz 80% AM modulation 30% for 10—100 ms (10 ms steps), 60% for 200—1000 ms (100 ms steps), 100% for 5 s	D D D D D D
3	DC Power < 100A	Burst Surge Conducted RF	EN61000-4-4 EN61000-4-5 EN61000-4-6	4.0 kV (General function and safety circuits) 2.5 kV Line to Earth , 1.0 kV Line to Line 10 Vrms 1 kHz 80% AM modulation	D D D
4	Signal and Control Ports	Burst Surge Conducted RF	EN61000-4-4 EN61000-4-5 EN61000-4-6	2.0 kV (safety circuits and ports > 3m) - Capacitive Clamp 2.0 kV Line to Earth , 1.0 kV Line to Line 0.15 - 80 MHz 10 V rms 1 kHz 80% AM modulation (ports > 3m)	D D D
5	Monitoring and Remote Alarm Ports	Burst Surge	EN61000-4-4 EN61000-4-5	1.0 kV (safety circuits and ports > 3m) - Capacitive Clamp 1.0 kV Line to Earth, 0.5 kV Line to Line	B B

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Performance criterion for immunity testing is as follows:

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- C. Not used.
- D. The apparatus / assembly of apparatus and the associated safety component(s) shall continue to operate as intended. No degradation of performance or loss of function is allowed other than a failure into a safe mode.