Technical Data Sheet

IA750-I-X RANGE
450…750W / DC/AC SINE WAVE INVERTER

FEATURES

- Sine Wave Output Voltage Fully
- Selectable Output Frequency: 50/60Hz
- Remote Inhibit
- High Input-Output Isolation 3000Vrms
- Railway Version EN50155, RIA12 (optional)
- Fire and Smoke: EN45545-2 Approved
- Input and Output Alarm



APPLICATIONS



SAFETY & EMC

RoHS² compliant 10 from 10 | Reach compliant | CE

DESCRIPTION

The IA750-I-X RANGE is a single-phase pure sinewave DC-AC inverter with galvanic isolation between input and output.
The following items can be set on the unit:

- The output frequency can be set through the dip-switch 1
- The unit can be remotely activated or deactivated through the remote inhibit input

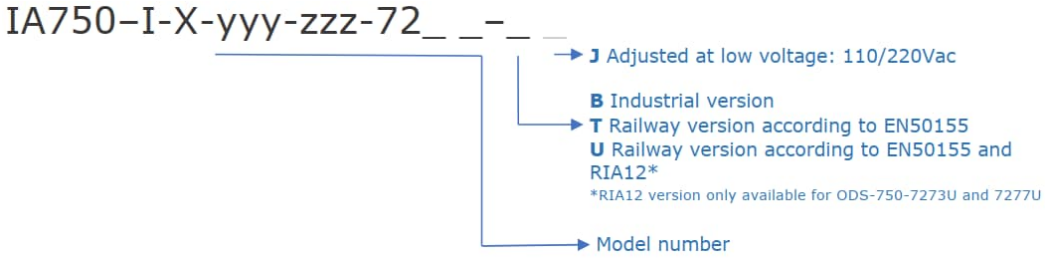
Protections of the IAC750-I-X RANGE:

- Reverse polarity protection of the input by fuse
- Input under voltage: The input shutdown when the input voltage is below its limit (see the limits on the models table)
- Overloads protection: The output has protection of maximum average power and maximum peak current. The unit shutdowns when the operation curve limit is exceeded for more than one second. Every 2 seconds after shutdown, the unit tries to restart up to 3 times. If the overload persists, the unit remains shutdown until an input reconnection.

MODELS

	12VDC 9.5…15V	24VDC 16.8…30V	36VDC 25.2…45V	48VDC 33.6…60V	72VDC 50.4…90V	110VDC 77…138V
120VAC	IA750-I-X-12-120-7281 450W	IA750-I-X-24-120-7283 750W	IA750-I-X-36-120-7284* 750W	IA750-I-X-48-120-7285 750W	IA750-I-X-72-120-7286 750W	IA750-I-X-110-120-7287 750W
230VAC	IA750-I-X-12-230-7271 450W	IA750-I-X-24-230-7273 750W	IA750-I-X-36-230-7274* 750W	IA750-I-X-48-230-7275 750W	IA750-I-X-72-230-7276 750W	IA750-I-X-110-230-7277 750W

*References subject to special MOQs and lead times.



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IA750-I-X RANGE
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BASIC CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.
Input				
Input Voltage Range	See Table			
Maximum Input Ripple	Vrms, 100Hz		5% Vin nom	
Output				
Output Voltage	Sinusoidal	120VAC		230VAC
Output Voltage Adjustment Range	120 / 230VAC Default 110 / 220VAC Option J		110…120/ 220…230VAC	
Output Frequency			50/60Hz ±0.25Hz	
Output Wave Distortion THD	16 Samples Average		<2%	
Output Voltage HF Ripple			<20Vpp	
Line Regulation	ΔVin -20…+25%		0.4%	
	ΔVin -30…+25%		10%	
	ΔVin -10…+25% for 12Vin Models		1%	
	ΔVin -20…+25% for 12Vin Models		10%	
Load Regulation			4%	

ENVIRONMENTAL

Parameter	Conditions	Value
Operating Temperature	Full Load	-25°C to +55°C (-40°C to+55°C) (2)
	50% Load	-25°C to +70°C (-40°C to 70°C) (2)
Storage Temperature		-40°C to +85°C
Operating Temperature (62.5% Load)		-40°C to +70°C
Cooling	Variable Speed Internal Fan	
MTBF (MIL-HDBK-217-E; Gb, 25°C)		160.000 h

SAFETY AND CERTIFICATION

Certification (Type)	Standard
Safety According	EN60950
Dielectric Strength: Input/Output	3000Vrms/50Hz/1min
Dielectric Strength: Output/Earth	1500Vrms/50Hz/1min
Dielectric Strength: Input/Earth	1500Vrms/50Hz/1min
Fire and Smoke	EN45545 Approved

EMC

	Conditions	Value
Immunity According		EN61000-6-2, EN50121-3-2
Emission According		EN61000-6-3, EN50121-3-2

PROTECTIONS

Parameter	Type	Value
Against Input Over-Currents		Internal Fuse for 36, 48, 72 and 110V Input Models
Against Output Overloads < 10A		Linear
Against Output Overloads > 10A		Triggered
Against Over-Temperature		Shutdown with Automatic Recovery

CONTROL

Type	Description
Remote Inhibit Input	OFF: 4…24VDC, Impedance >3k3Ω
Input and Output Alarm	Isolated Contact Relay Open when Alarm (<0.1A at 150Vcc)

Note(2): The unit can start up and work at an ambient temperature of -40°C with the following restriction: DO NOT ACTUATE OVER THE CONNECTORS BELOW -25°C

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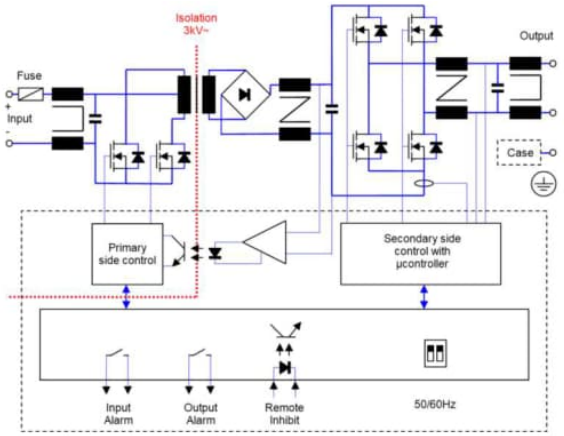
IA750-I-X RANGE
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ORDERING CODES

Model	DC Input						AC Output					
	Voltage				Current		Voltage	Current		Power		Efficiency
	Nom. [V]	Min. [V]	Max. [V]	Max. RIA12 [V]	No Load [A]	Max. [A]	Default [V]	Cont. [A]	10 ms [A]	Active [W]	Appar. [VA]	Full Load [%]
IA750-I-X-12-230-7271	12	9.5(1)	15	-	0.80	55.7	230	2.0	10	450	750	85
IA750-I-X-24-230-7273	24	16.8	30	33.6	0.46	51.9	230	3.26	10	750	750	86
IA750-I-X-36-230-7274	36	25.0	45	50.4	0.36	34.5	230	3.26	10	750	750	87
IA750-I-X-48-230-7275	48	33.6	60	67.2	0.27	25.4	230	3.26	10	750	750	88
IA750-I-X-72-230-7276	72	50.4	90	100.8	0.17	16.9	230	3.26	10	750	750	88
IA750-I-X-110-230-7277	110	77.0	138	154	0.12	11.1	230	3.26	10	750	750	89
IA750-I-X-12-120-7281	12	9.5(1)	15	-	0.80	56.4	120	3.75	16	450	750	84
IA750-I-X-24-120-7283	24	16.8	30	33.6	0.46	51.9	120	6.26	16	750	750	86
IA750-I-X-36-120-7284*	36	25.0	45	50.4	0.36	34.5	120	6.26	16	750	750	87
IA750-I-X-48-120-7285	48	33.6	60	67.2	0.27	25.4	120	6.26	16	750	750	87
IA750-I-X-72-120-7286	72	50.4	90	100.8	0.17	16.9	120	6.26	16	750	750	87
IA750-I-X-110-120-7287	110	77.0	138	154	0.12	11.1	120	6.26	16	750	750	88

*References subject to special MOQs and lead times
Note (1): Start-Up voltage ≤10.2V. Undervoltage Shutdown <9.5V.

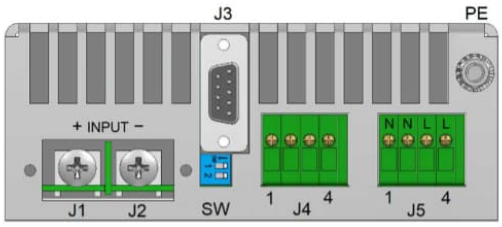
BLOCK DIAGRAM



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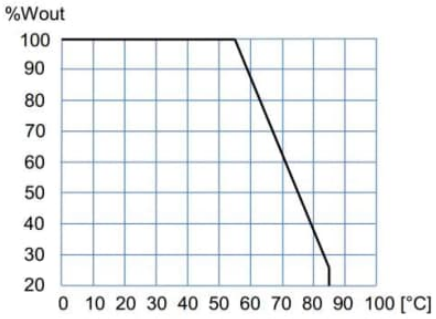
CONNECTIONS



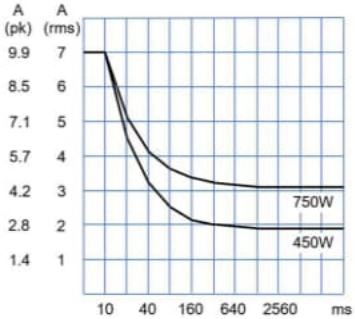
CONNECTIONS

Connector	Terminal	Note
J1	+Vin	Terminals M5
J2	-Vin	Rec. Torque 4 Nm
J5-1, 2	N Output	Cables Up to 2.5mm²
J5-3, 4	L Output	
J4-1	+Inhibit	
J4-2	-Inhibit	
J4-3, 4	N/C	
J3-1	Input Alarm	DB9
J3-2	Input Alarm	
J3-4	Output Alarm	
J3-5	Output Alarm	
SW-1		On 60 Hz, Off 50 Hz
SW-2		N/A
PE		Stud M5 Rec. Torque 3.8 Nm

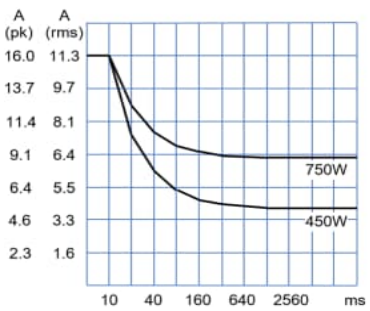
POWER DERATING vs AMBIENT TEMPERATURE



OPERATION CURVE LIMIT



Models of 230V Output



Models of 120V Output

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INSTALLATION

- The device includes 10 M3 threaded holes that allows different mounting positions. For other mounting solutions see the accessories.
- Make connections as shown in the table
- The default output frequency is 50Hz. For 60Hz simply actuate the dip-switch as indicated in the figure
- The inverter includes active overload protection against prolonged reactive overload conditions. Therefore, the maximum power output (VA) should not be exceeded
- The EMC output filter is connected to the case, which causes a leakage current lower than 1mA. In order to prevent any touch current, connect the case to earth by means of any mounting hole

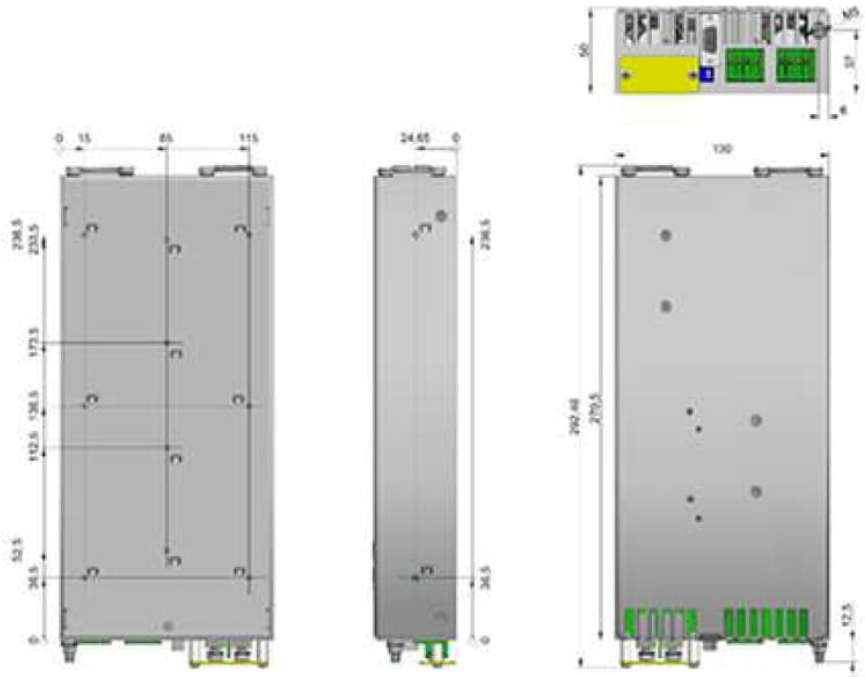
For safety reasons, the following requirements must be met:

- Provide the equipment with some kind of protective enclosure that complies with the electrical safety directives in effect within the country where the equipment is installed
- Add an external fuse of 60A and 50A for the models of input voltage 12V and 24V respectively
- Use cables of adequate cross-section to connect inputs and outputs. The following table lists the maximum currents and the minimum cross-section for the cables used for each power connection

	Input 12Vcc	Input 24Vcc	Input 36Vcc	Input 48Vcc	Input 72Vcc	Input 110Vcc	Output 120Vca	Output 230Vca
Max. Current	60A	50A	33A	25A	17A	12A	6.7A	3.5A
Cable Cross-Section	10mm²	10mm²	6mm²	2.5mm²	2.5mm²	1.5mm²	1mm²	0.75mm²

DIMENSION & PHYSICAL CHARACTERISTICS

Parameter	Type	Value
Weight		1950g
Dimensions		130 x 270 x 50 mm



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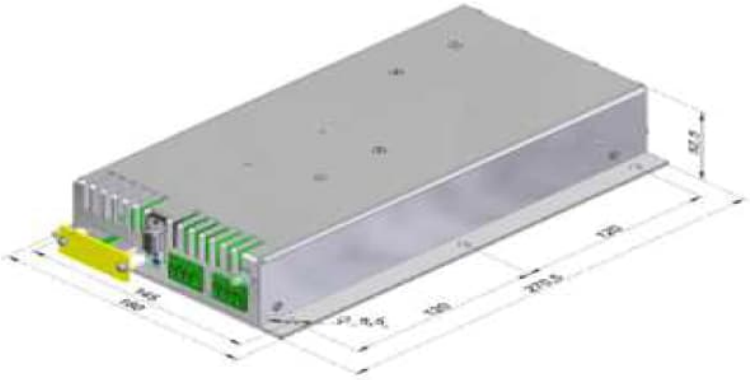
ACCESSORIES

Description	Notes	Code
DIN RAIL CLIP	Screws Included. Order 2 Units per Inverter	NP-9135
Mounting Base	Screws Included	NP-9265
Mechanical Interface for Subrack of 6U 11Te	Screws Included	NP-9366

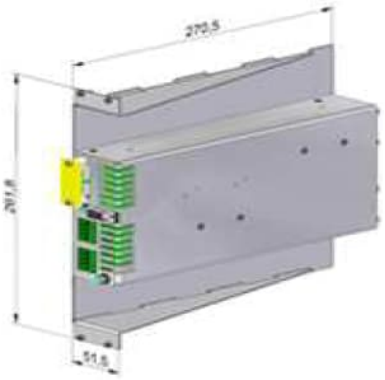
NP-9135

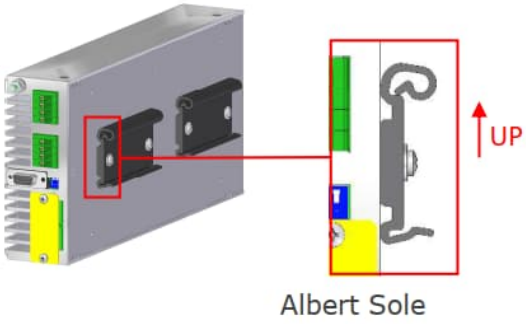


NP-9265

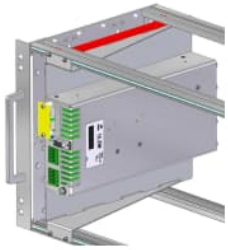


NP- 9366





Albert Sole



APPLICABLE VALUE FOR THE DIFFERENT SECTIONS OF THE NORM RIA12

	Type of Disturbance	Voltage Level	Duration	Source Impedance
5.2	Supply Related Surge	3.5 x Vin nom	20ms	0.2Ω
		1.5 x Vin nom	1s	0.2Ω
5.3	Direct Transient	800V	100µs	5Ω
		1500V	50µs	5Ω
		3000V	5µs	100Ω
		4000V	1µs	100Ω
		7000V	0.1µs	100Ω
5.4	Indirect Coupled Transient	1500V	50µs	100Ω
		3000V	5µs	100Ω
		4000V	1µs	100Ω
		7000V	0.1µs	100Ω

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ANNEXE

Applicable values for the different sections of the norm EN50155: 2017

4.3.1	Working Altitude	Up to 1800m
4.3.2	Ambient Temperature	Class OT1 (-25 to 55°C): load < 100% Class OT2 (-40 to 55°C): load < 100% (Without connectors handling) Class OT3 (-25 to 70°C): load <50% Class OT4 (-40 to 70°C): load <50% (Without Connectors handling)
4.3.3	Switch-On Extended Operating Temp.	ST1
4.3.4	Rapid Temperature Variation	H1
4.3.5	Shocks And Vibrations	According EN61373:2010 Category 1 class B
4.3.6	EMC Electromagnetic Compatibility EN50121-3-2:2016	

Test	Norm	Port	Frequency	Limits
Radiated Emissions	IEC55016	Case	30MHz…230MHz	40dB(µV/m) Qpk at 10m
			230MHz…1GHz	47dB(µV/m) Qpk at 10m
			1…3GHz	Do not apply
			3…6GHz	Internal freq. < 108MHz
Conducted Emissions	IEC55016	Input	150kHz…500kHz	99dB(µV) Qpk
			500kHz…30MHz	93dB(µV) Qpk

Test	Norm	Port	Severity	Conditions	P
Electrostatic Discharge	IEC61000-4-2	Case	±8kV	Air (isolated parts)	B
			±8kV	Contact (conductive parts)	
Radiated High Frequency	IEC61000-4-3	X/Y/Z Axis	20V/m	0.08…1.0GHz M. 80% 1kHz	A
			10V/m	1.4…2.1GHz M. 80% 1kHz	
			5V/m	2.1…2.5GHz M. 80% 1kHz	
			3V/m	5.1…6Ghz M. 80% 1kHz	
Fast Transients	IEC61000-4-4	Input	±2kV	Tr/Th: 5/50 ns	A
		Output	±2kV		
		Signal	±2kV		
		PE	±1kV		
Surge	IEC61000-4-5	Input L to L	±1kV	Tr/Th: 1.2/50µs	B
		Input L to PE	±2kV		
Conducted RF	IEC61000-4-6	Input	10V	0.15...80MHz M. 80% 1kHz	A
		Output	10V		
		Signal	10V		
		PE	10V		
Magnetic field	IEC61000-4-8	X/Y/Z Axis	300A/m	0Hz, 16.7Hz, 50/60Hz	A
Pulse magnetic field	IEC61000-4-9	X/Y/Z Axis	300A/m	Tr/Th: 6.4/16µs	B

P= Performance criteria, L= Line, PE= Protective Earth

4.3.7	Relative Humidity	Up to 95%
5.1.1.2	DC Power Supply Range	From 0.70 to 1.25 Un continuous
5.1.1.3	Temporary DC Power Supply Fluctuation	From 0.60 to 1.40 Un 0.1s From 1.25 to 1.40 Un 1s without damage
5.1.1.4	Interruptions of Voltage Supply	Class S1 (without interruptions)
5.1.1.6	Input Ripple Factor	10% peak to peak with a DC Ripple Factor of 5 %
5.1.3	Supply Change-Over	0,6 Un duration 100 ms (without interruptions). Performance criterion A
7.2.7	Input Reverse Polarity Protection	By serial diode in the input
10.7	Protective Coating For PCB Assemblies	Class PC2

13.3	Tests List	1 Visual Inspection	Routine
		2 Performance test	Routine
		3 Power supply test	Routine
		4 Insulation test	Routine
		5 Low temperature storage test	-
		6 Low temperature start-up test	Type
		7 Dry heat test	Type
		8 Cyclic damp heat test	Type
		9 Salt mist test	-
		10 Enclosure protection test (IP code)	-
		11 EMC test	Type
		12 Shocks and vibrations test	Type
		13 Equipment stress screening test	Routine: 24h at 40°C and load 100%
		14 Rapid Temperature variation test	Type

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