AXPERT - i-Sime ACTIVE FRONT - END CONVERTER

Active Front-end Converter is an IGBT based AC to DC converter. It keeps supply side power factor to unity and supply current sinusoidal. AFC also regenerates the excessive power from DC link capacitor to grid side and so it is also popularly known as Regenerative Unit. A single unit of high capacity can also be used for multiple VFD (Variable Frequency Drive) of low capacity having common DC bus configuration.

Six pulse diode rectifier bridge is a basic building block of many products such as UPS, battery chargers, VFDs, DC drives etc., known as non-linear loads. They generate about 70...120 % current harmonic distortion at the input.

AFC reduces the current harmonic distortion level to < 5 %. It is a high quality product and meets the international power quality standards such as IEEE 519-2014.

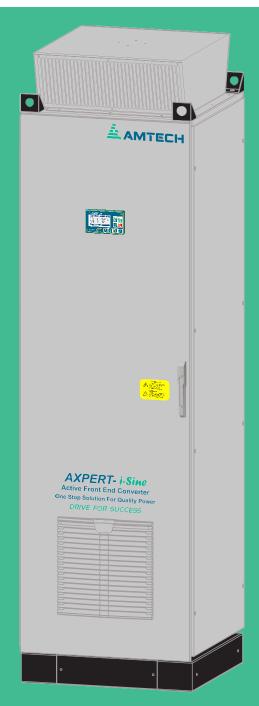
AFC Benefits

- Feeds back the excess power to grid from regenerative loads, connected at the VFD output
- Reduces total harmonic distortion to draw sine wave current from the utility
- Stabilizes output DC voltage against mains and load fluctuations
- Improves power factor to unity
- Compatible with any VFD, useful in common DC applications

Target Applications

- Centrifuges
- Cranes and hoists
- Un-winders
- Paper machines
- Regenerative application
- Roller tables
- Test jigs for dynamometers, gears and motor test benches





"Feeds back excess power with improved quality"

Standard Specifications

0.00, 610, 620, 660, 690, 720 VPC (according to input voltage), 1 c 2 is) AMATRAE/SAVEA	Electrical														
AMATICA CONTEST CONT	Input Voltage/ Frequency	380, 400	o, 415 , 4	40, 460,	480 VAC	(-10 %, +	5 %), 3-P	hase, 3-V	Vire, 50 I	∃z (60 Hz	optional	l) (+5 %)			
Conventer capacity (WA) 50 61 83 101 122 144 176 219 273 341 388 438 492 54	Output Voltage	600, 610), 620 , 60	60, 690, 7	720 VDC (accordin	g to inpu	t voltage), (+2 %)						
Max. Continuous Rates Current (A) 70 85 115 140 170 200 245 305 380 475 540 610 685 767 648 732 822 794 736 645 750 646 732 822 794 736 745	AMT-AFC-XXX-4	045	055	075	090	110	132	160	200	250	315	355	400	450	50
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### AFC Current for 60 Second (A) ### 84 102 138 168 204 240 240 294 366 456 570 648 732 822 91 ### Applicable MPZ Departing (A) 45 55 75 90 10 132 160 200 250 315 355 400 450 50 ### Control Functions** Control mode imended Injust current distortion (9; THI) Less than 5 % (at 100 % load) ### Linguity power factor (P) (410 % load) 194 100 % load of mories than 30 % ### Ass. Switching Frequency 196 140 % load of mories than 30 % ### Ass. Switching Frequency 196 140 % load of mories than 30 % ### Ass. Switching Frequency 29 (41 % load) 194 140 % load of mories than 30 % ### Programmable sequence outputs, sink / source and Active Close / Active Open selectable ### Programmable sequence outputs, sink / source and Active Close / Active Open selectable ### Programmable sequence outputs, sink / source and Active Close / Active Open selectable ### Programmable sequence outputs, sink / source and Active Close / Active Open selectable ### Programmable sequence outputs, sink / source and Active Close / Active Open selectable ### Programmable sequence outputs, sink / source and Active Close / Active Open selectable ### Programmable sequence outputs, sink / source and Active Close / Active Open selectable ### Programmable sequence outputs, sink / source and Active Close / Active Open selectable ### Programmable sequence outputs, sink / source and Active Close / Active Open selectable ### Programmable sequence outputs, sink / source and Active Close / Active Open selectable ### Programmable sequence outputs, sink / source and Active Close / Active Open selectable ### Programmable sequence outputs, sink / source and Active Close / Active Open selectable ### Programmable sequence outputs, sink / source and Active Close / Active Open selectable ### Programmable sequence outputs, sink / source and Active Close / Active Open selectable ### Programmable sequence outputs, sink / source and Active Close / Active Ope		70	85	115	140	170	200	245	305	380	475	540	610	685	76
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Constant Voltage & thysteresis current control hypitus ower factor (a. Less than 5 % (at 10 % tools) Injust current distortion is THID) Less than 5 % (at 10 % tools de nominal voltage), better than 0.95 (at load of more than 30 %) Researce tools mode Ass. Workching Frequency Approx. 98 % Operation Specifications Upital Binusts SProgrammable sequence inputs, sink / source and active Clisse / Active Open selectable Digital outputs SProgrammable sequence outputs, open collector type Jeptial Binusts SProgrammable sequence outputs, open collector byte Programmable analog outputs SProgrammable sequence outputs, open collector byte Programmable analog outputs SProgrammable analog outputs Soft-charge Through resistor within 3 sec. Programmable analog outputs Soft-charge Through resistor within 3 sec. Yes, APC can start at power ON condition in local and serial mode. Through resistor within 3 sec. Yes, APC can start at power ON condition in local and serial mode. Display Indications Display Indications Display and Keypad module Display and Keypad module Display and Keypad module Display and Keypad module Through resistor within 3 sec. Display indications Display and Keypad module Display and Keypad module Through resistor within 3 sec. Display and Keypad module Display and Keypad module Through resistor within 3 sec. Display indications Display and Keypad module Display and Keypad module Through resistor within 3 sec. Display indications Display and Keypad module Through resistor within 3 sec. Display indications Display and Keypad module Display and Keypad module Through resistor within 3 sec. Through resistor within 3 sec. Display indications Display and Keypad module Through resistor within 3 sec. Display and Keypad module Through resistor within 3 sec. Display and Keypad module Through resistor within 3 sec. Display and Keypad module Through resistor within 3 sec. Through resistor within 3 sec. Display and Keypad module Through resistor within 3 sec. Th	Control Euroctions*	73	33	75	70	110	132	100	200	230	313	333	400	730	50
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Altitude (above sea level) Model derating with temperature Relative humidity Mechanical Specifications Color Protection class Dimensions in mm [inch] (13.2 x 14.2 x 35.4] Weight in kg [lb] Meglation Wall mounting Wall mounting Floor mounting 1000 m (3300 ft) without derating, derate 1 % per 100 m (330 ft) above 1000 m (3300 ft) Merentation (13.8 °F) Maximum up to 55 °C (131 °F) temperature Above 45 °C (113 °F), derate the output current by 3 % /1 °C (1.8 °F) Maximum up to 55 °C (131 °F) temperature Above 45 °C (113 °F), derate the output current by 3 % /1 °C (1.8 °F) Maximum up to 55 °C (131 °F) temperature Above 45 °C (113 °F), derate the output current by 3 % /1 °C (1.8 °F) Maximum up to 55 °C (131 °F) temperature Above 45 °C (113 °F), derate the output current by 3 % /1 °C (1.8 °F) Maximum up to 55 °C (131 °F) temperature Above 45 °C (113 °F), derate the output current by 3 % /1 °C (1.8 °F) Maximum up to 55 °C (131 °F) temperature Above 45 °C (113 °F), derate the output current by 3 % /1 °C (1.8 °F) Maximum up to 55 °C (131 °F) temperature Above 45 °C (113 °F), derate the output current by 3 % /1 °C (1.8 °F) Maximum up to 55 °C (131 °F) temperature Above 45 °C (113 °F) temperature Above 45 °C (113 °F), derate the output current by 3 % /1 °C (1.8 °F) Maximum up to 55 °C (131 °F) temperature Above 45 °C (131 °F) temperature Above 45 °C (113 °F), derate the output current by 3 % /1 °C (1.8 °F) Maximum up to 55 °C (131 °F) temperature Above 45 °C (131 °F) temperature Above 45 °C (131 °F), derate the output current by 3 % /1 °C (1.8 °F) Maximum up to 55 °C (131 °F) temperature Above 45 °	Communication Network connectivity Protective Specifications Protective Function Fault History Electronic Thermal Overload Environment Installation location Type of cooling Ambient temperature	and Fau V _{LL} , THD for each RS-485 ft (Device) Over cur Adjustab Timed ov DC bus of Last 20 ft 120 % O Indoor Forced A -1545	ilt; Real , THD,, Li n phase or PC intel let, Profib rent le over cu rer current over volta aults with verload f	Time Clo	h Modbus- ave), CANo	RTU protoppen, Ethopen, Ethopen, Over	ocol and vernet, Colus under temperate loss	Wi-Fi conn ntrolNet a voltage ure	nectivity a	as standar	d. Extern Chargi	net, kVA, al fault ng fault	kVAR, So	urce side (
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Relative humidity 095 % max non condensing Mechanical Specifications Color RAL7035 Protection class IP 00 IP 31 Dimensions in mm [inch] (W X D X H) 310 X 360 X 900 [12.2 X 14.2 X 35.4] 600 X 600 X 1995 [23.6 X 23.6 X 78.6] Consult Factory Weight in kg [lb] 60 65 [132.2] [143.3] [430] [463] [463] [496] [551] [661] [738.5] [793.7] [903.9] Consult Factory Installation Wall mounting Floor mounting Reference standard Harmonic IEEE 519-2014, G5/4-1, GB/T 14549-93, IEC 61000-3-2, IEC 61000-3-4, IEC 61000-3-12	Communication Network connectivity Protective Specifications Protective Function Fault History Electronic Thermal Overload Environment Installation location Type of cooling Ambient temperature Storage temperature Audible noise	and Fau V _{LL} , THD for each RS-485 ft (Device) Over cur Adjustab Timed ov DC bus of 120 % O Indoor Forced A -1545 -2070 < 72 db	ilt; Real , THD,, Li n phase or PC intellet, Profib rent le over current over volta aults with verload f Air Coolin °C (51 °C (-4 @ 1.0 m (Time Clo	h Modbus- ave), CANo	RTU protiopen, Ethopen, Ethope	ocol and vernet, Co us under temperate e loss nd fault stored in	Wi-Fi conn ntrolNet a voltage ure	nectivity are option	as standar al)	Extern Chargi EEPRC	net, kVA, al fault ng fault	kVAR, So	urce side (
Mechanical Specifications Color RAL7035 Protection class IP 00 IP 31 Dimensions in mm [inch] (W X D X H) 310 X 360 X 900 [12.2 X 14.2 X 35.4] 600 X 600 X 1995 [23.6 X 23.6 X 78.6] Consult Factory Weight in kg [lb] 60	Communication Network connectivity Protective Specifications Protective Function Fault History Electronic Thermal Overload Environment Installation location Type of cooling Ambient temperature Storage temperature Audible noise Altitude (above sea level)	and Fau V _{LL} , THD for each RS-485 ft (Device) Over cur Adjustab Timed ov DC bus of 120 % O Indoor Forced A -1545 -2070 < 72 db 1000 m	ilt; Real , THD,, Li n phase or PC inte let, Profib rent le over cu ver current over volta aults with verload f `C (51 `C (-4 @ 1.0 m ((3300 ft)	Time Clo	h Modbus- ave), CANo	RTU proticipen, Ethiopen,	ocol and vernet, Co us under temperate e loss nd fault stored in	Wi-Fi connected with the work of the work	nectivity are option	as standar al)	d. Extern Chargi EEPRC	net, kVA, al fault ng fault DM fault			
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Weight in kg [lb] 60 65 [132.2] [143.3] [430] [463] [496] [551] [661] [738.5] [793.7] [903.9] Consult Factory Installation Wall mounting Floor mounting Reference standard Harmonic IEEE 519-2014, G5/4-1, GB/T 14549-93, IEC 61000-3-2, IEC 61000-3-4, IEC 61000-3-12	Communication Network connectivity Protective Specifications Protective Function Fault History Electronic Thermal Overload Environment Installation location Type of cooling Ambient temperature Storage temperature Audible noise Altitude (above sea level) Model derating with temperature Relative humidity Mechanical Specifications Color Protection class	and Fau V _{LL} , THD for each RS-485 ft (Device) Over cur Adjustab Timed ov DC bus of 120 % O Indoor Forced A -1545 -2070 < 72 db 1000 m Above 4 095 % RAL703 IP 00	ilt; Real , THD,, Li n phase or PC inte let, Profib rent le over cu rer current over volta aults with verload f \(^{\cup}C(51)^{\cup}C(-4)^{\cup}(3300 ft) 5 \(^{\cup}C(113)^{\	Time Clo	h Modbus- ave), CANo	RTU protionen, Ethiopen, E	ocol and vernet, Co us under temperate e loss nd fault stored in	Wi-Fi conntrolNet a voltage ure memory 0 m (330 % /1 °C (ft) above	as standar al)	d. Extern Chargi EEPRC	net, kVA, al fault ng fault DM fault			
[132.2] [143.3] [430] [463] [496] [551] [661] [738.5] [793.7] [903.9]	Communication Network connectivity Protective Specifications Protective Function Fault History Electronic Thermal Overload Environment Installation location Type of cooling Ambient temperature Storage temperature Audible noise Altitude (above sea level) Model derating with temperature Relative humidity Mechanical Specifications Color Protection class Dimensions in mm [inch]	and Fau V _{LL} , THD for each RS-485 ft (Device) Over cur Adjustab Timed ov DC bus of 120 % O Indoor Forced A -1545 -2070 < 72 db 1000 m Above 4 095 % RAL703 IP 00	ilt; Real , THD,, Li n phase or PC inte let, Profib rent le over cu rer current over volta aults with verload f \(^{\cup}C(51)^{\cup}C(-4)^{\cup}(3300 ft) 5 \(^{\cup}C(113)^{\	Time Clo	h Modbus- ave), CANo	RTU protionen, Ethiopen, E	ocol and vernet, Co us under temperate loss nd fault stored in % per 10 rent by 3	Wi-Fi conntrolNet a voltage ure memory 0 m (330 % /1 °C (ft) above	as standar al)	d. Extern Chargi EEPRC	net, kVA, al fault ng fault DM fault) tempera	ature	
[132.2] [143.3] [430] [463] [496] [551] [661] [738.5] [793.7] [903.9]	Communication Network connectivity Protective Specifications Protective Function Fault History Electronic Thermal Overload Environment Installation location	and Fau V _{LL} , THD for each RS-485 ft (Device) Over cur Adjustab Timed ov DC bus of Last 20 ft 120 % O Indoor Forced A -1545 -2070 < 72 db 1000 m Above 4 095 % RAL703 IP 00 310 X 36	ilt; Real , THD,, Li n phase or PC inte let, Profib rent le over curer current over volta aults with verload f \$\tilde{C} (51\) \$\tilde{C} (-4\) (3300 ft) \$\tilde{S} \tilde{C} (113 max non) \$\tilde{S} \tilde{C} (3300 x 900)	Time Clo	h Modbus- ave), CANo	RTU protionen, Ethiopen, E	ocol and vernet, Co us under temperate loss nd fault stored in % per 10 rent by 3	Wi-Fi conntrolNet a voltage ure memory 0 m (330 % /1 °C (ft) above	as standar al)	d. Extern Chargi EEPRC	net, kVA, al fault ng fault DM fault) tempera	ature	
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Harmonic IEEE 519-2014, G5/4-1, GB/T 14549-93, IEC 61000-3-2, IEC 61000-3-4, IEC 61000-3-12	Communication Network connectivity Protective Specifications Protective Function Fault History Electronic Thermal Overload Environment Installation location Type of cooling Ambient temperature Storage temperature Audible noise Altitude (above sea level) Model derating with temperature Relative humidity Mechanical Specifications Color Protection class Dimensions in mm [inch] (W X D X H)	and Fau VLL, THD for each RS-485 ft (Device) Over cur Adjustab Timed ov DC bus of Last 20 ft 120 % O Indoor Forced A -1545 -2070 < 72 db 1000 m Above 4 095 % RAL703 IP 00 310 X 36 [12.2 X 14 60 [132.2]	it; Real , THD,, Li n phase or PC intel let, Profib rent le over current ver current ver volta aults with verload f °C (51 °C (-4 @ 1.0 m ((3300 ft) 5 °C (113 max non 5 65 [143.3]	rrent to status at or 60 Sec 13 °F), dera condension IP 31	h Modbus- ave), CANd time fault conds	RTU protoppen, Eth DC b Over Phase Grou occurred derate 1 ittput curr	ocol and vernet, Co us under temperate loss nd fault stored in % per 10 rent by 3	Wi-Fi connected with the control of	ft) above	e 1000 m (aximum u	Extern Chargi EEPRC	net, kVA, al fault ng fault DM fault) tempera	ature	
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^{*} All performance specifications are valid at nominal ratings. Consult AMTECH for high power rating and line supply voltages 575 V or 690 V.

