AMTECH

RoHS

CE cUL

AXPERT - A900

Advanced Vector Control AC Drive

AN ISO 9001 : 2008 COMPANY

AMTECH

The Complete Motor Control Solution

with powers for a wide range of applications

Gravitational Handling Equipment
| Crane, Elevator

Metal Processing Machine
| Press, Lathes

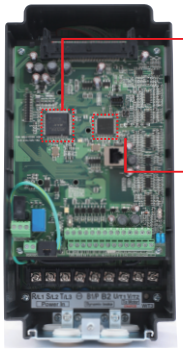
Plastics/Rubber Processing Machine
| Extruder, Injection Molding Machine

Tension Control Equipment
| Printing Machine, Reeling Machine

Textile Machine
| Dyeing and Finishing Machine

Wire/Cable Making Machine
| Wire Drawing Machine

DUAL CORE PROCESSORS



ASIC

Prevents inrush current damage to IGBT module. Enhances the reliability and life expectancy of motor drive.

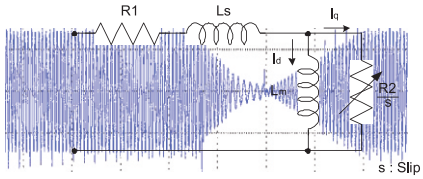
32Bit MCU

Mass computing capability for advanced current vector control technology. Minimizes the internal loop time for higher control response.

Enhanced Performance & Reliability!

ADVANCED MOTOR AUTO-TUNE FUNCTION

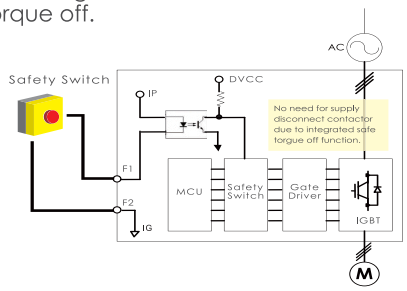
Multiple Auto-tune Modes	
Rotational auto-tune mode	Rotary-type auto-tune for higher performance for precise control.
Static auto-tune mode	The motor shaft will be locked in static auto-tune mode.
Stator resistance measurement	Auto measure the resistor within cable and compensate accordingly.



Motor Equivalent Circuit

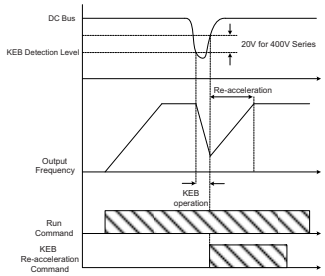
HARDWARE SAFE TORQUE OFF FUNCTION

- Built-in high reliable hardware circuit for safe torque off.



KEB FUNCTION

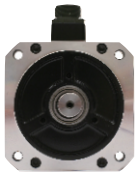
- When DC voltage is lower than the set value this function will start decelerating the output frequency to avoid the tripping during power dip.



HIGH EFFICIENCY PM MOTOR DRIVING

- Simple parameter settings for easy switching between induction and permanent magnet motors.
- High performance current vector control for induction and permanent magnet motors.

Induction Motor (IM)
-Cost Effective
-Mechanical Robust

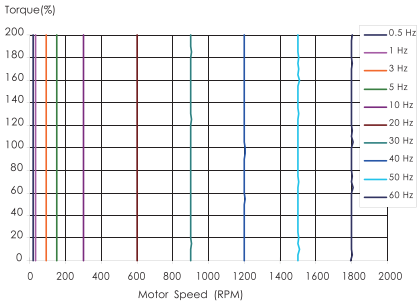


Surface Permanent Magnet Motor (SPM)
-Highly Efficient
-Compact Size
-Low Cogging Torque

Interior Permanent Magnet Motor (IPM)
-Highly Efficient
-Compact Size
-With Reluctance Torque

200% 0.5Hz STARTING TORQUE

- SensorLess Vector (SLV) control mode achieves incredible 200% torque performance at extreme low speed 0.5Hz. Provides stable control experience for wide range of applications.

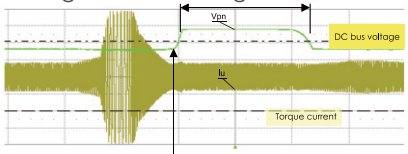


Sensor Vector Mode (SV) can output 200% holding torque.

INTELLIGENT OVER VOLTAGE SUPPRESSION

- Supress over voltage caused by regenerative loads and redirect regenerative energy back to the load. Intelligent overvoltage suppression will not only protect the drive but also removes the need for costly braking units.

Intelligent Overvoltage Suppression



Regenerative energy

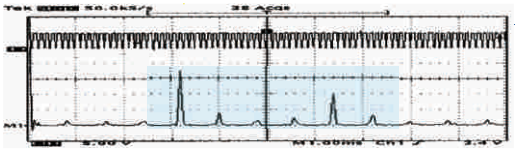
BUILT-IN PLC FUNCTION WITH LADDER

- The ladder program can be downloaded through drive link software.

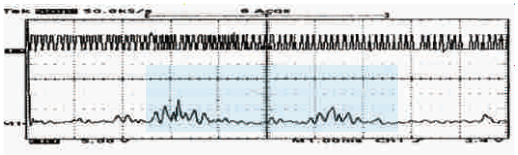
	⊏	⩘	⩗	P	⊣⊢	⊣/⊢	NO / NC
Input command					I	i	I1~I8 / i1~i8
Output command	Q	Q	Q	Q	Q	q	Q1~Q2 / q1~q2
Auxiliary command	M	M	M	M	M	m	M1~MF / m1~mf
Special buffer							V1~V7
Counter command	C				C	c	C1~C8 / c1~c8
Timer command	T				T	t	T1~T8 / t1~t8
Analog comparison command	G				G	g	G1~G8 / g1~g8
Operation control command	F				F	f	F1~F8 / f1~f8
Addition and subtraction command	AS						AS1~4
Multiplication and division command	MD						MD1~4

ULTRA LOW MOTOR NOISE

Traditional PWM modulation method



Soft PWM modulation method



Unique Soft PWM modulation technology lowers the audible motor noise for quieter industrial environment

FUNCTIONS

- Output energy (kWH)
- Dedicate application block
- PID control
- Position control
- Frequency traversing
- Automatic energy optimizer

SELECTION GUIDE

AMT – A900	–	7P5	–	H	–	1
AXPERT-A900 Series		AC Drive Rating 1P5 : 1.5kW ⌇ 7P5 : 7.5kW ⌇ 037 : 37kW		Series H: 400V Series		Type 1 : Standard (LED operator) 2 : LCD operator

SPECIFICATIONS

400V Series

AC Drive capacity (kW)			1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	30	37
Output Rating	ND	Rated Output Capacity (KVA)	3.1	4.1	5.3	8.5	13.3	17.5	23.6	29.0	33.5	44.2	54.9
		Rated Output Current (A)	4.1	5.4	6.9	11.1	17.5	23	31	38	44	58	72
		Maximum Applicable Motor *1 kW (Hp)	1.5 (2)	2.2 (3)	3.7 (5)	5.5 (7.5)	7.5 (10)	11 (15)	15 (20)	18.5 (25)	22 (30)	30 (40)	37 (50)
	HD	Rated Output Capacity (KVA)	2.6	3.2	4.2	7	11.3	13.7	18.3	23.6	29.7	34.3	45.7
		Rated Output Current (A)	3.4	4.2	5.5	9.2	14.8	18	24	31	39	45	60
		Maximum Applicable Motor *1 kW (Hp)	0.75 (1)	1.5 (2)	2.2 (3)	4 (5)	5.5 (7.5)	7.5 (10)	11 (15)	15 (20)	18.5 (25)	22 (30)	30 (40)
	Maximum Output Voltage (V)		Three Phase, 380V to 480V										
	Maximum Output Frequency (Hz)*2		Based on parameter setting 0.1~400.0Hz										
	Carrier Frequency (kHz)*2		Settable between 2 to 16kHz										
Input Power	Rated Voltage, Frequency		Three Phase, 380V to 480V, 50/60Hz										
	Allowable Voltage Fluctuation		-15% ~ +10%										
	Allowable Frequency Fluctuation		±5%										
Braking Transistor			Built-in										Option
Frame Size			1			2		3		4			5

Notes:

*1. For standard induction motors selected AC Drive must have an output current rating higher than the motor.

*2. Refer instruction manual for more details.

GENERAL SPECIFICATIONS

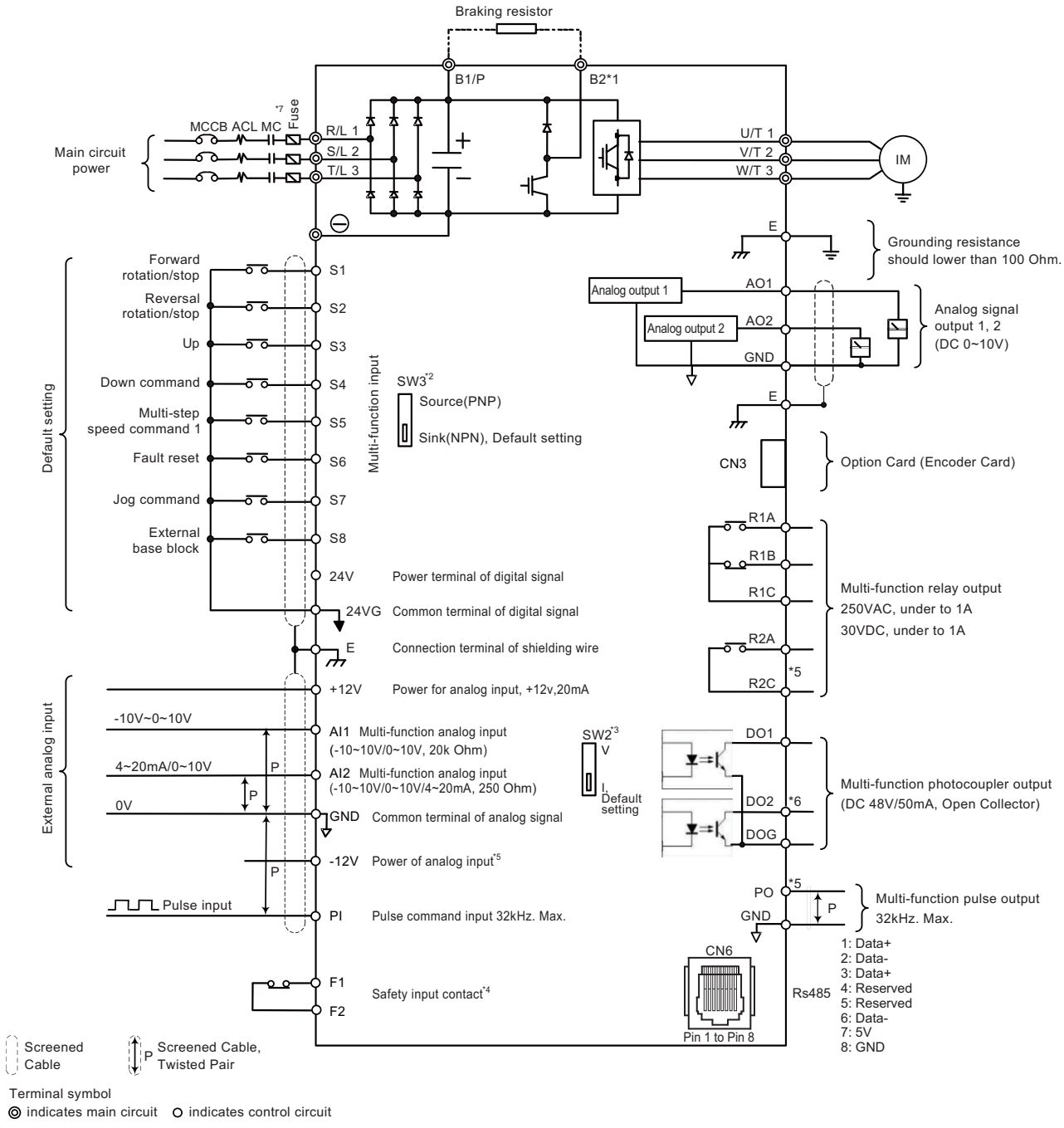
Control Characteristics	Display		LED digital operator with 5-digits seven-segment display (LCD digital operator option)
	Control Modes		V/F, V/F+PG, Sensor less vector (SLV), Sensor vector (SV), PMSV, PMSLV *1 (SVPWM Modulation)
	Output Frequency		0.1Hz~400.0Hz
	Frequency Accuracy		Digital references: ±0.01%, Analog references: ±0.1%
	Speed Control Accuracy		±0.1% (Sensor Vector Control Mode, SV) , ±0.5% (Sensorless Vector Control Mode, SLV)
	Frequency Setting Resolution		Digital References: 0.01Hz, Analog References: 0.06Hz at 60Hz
	Output Frequency Resolution		0.01Hz
	Overload Tolerance		Normal Duty Mode (ND) : 120% rated current for 60sec (Factory default) Heavy Duty Mode (HD) : 150% rated current for 60sec, 200% rated current for 2 sec .
	Frequency Setting Signal		0 to +10V, 4 to 20mA, -10V to +10V or pulse train input
	Acceleration / Deceleration Time		0.0~6000.0 sec (separately set acceleration and deceleration time)
	Voltage / Frequency Characteristics		15 fixed and one customized v/f pattern
	Braking Torque		Approximate 20%
	Main Control Functions		Auto Tuning, Zero Servo, Torque Control, Position Control, Droop, Soft-PWM, Over-Voltage Protection, Dynamic Braking, Speed Search, Frequency Traversing, Momentary Power Loss Restart, PID Control, Automatic Torque Compensation, Slip Compensation, RS-485 Communication, Close Loop Control with PG,Simple PLC Function, Two Analog Output, Safety Input Contact
	Other Functions		Records of Power ON and Operation Time, Four Fault History Records and Latest Fault State Record, Energy-Saving Function, Phase Loss Protection, DC Braking, Dwell, S Curve Acceleration and Deceleration, Up / Down Operation, MODBUS Communication Protocol, Output of Pulse Multiple, Display of Engineering Unit, Local / Remote Switching, SINK / SOURCE Selection, Automatic Voltage Regulation
Protection Functions	Stall Prevention		Current level can be adjusted (In acceleration or constant speed, it can be set separately. In deceleration, it can be set with or without stall protection)
	Over Current (OC) and Output Short-Circuit (SC) Protection		It stops when the current exceeds 200% of the AC Drive rated current.
	AC Drive Overload Protection (OL2)		AC Drive will be stopped when the output is higher than below conditions. Normal Duty Mode (ND) : 120% rated current for 60sec, (Factory default) Heavy Duty Mode (HD) : 150% rated current for 60sec, 200% rated current for 2 sec.
	Motor Overload Protection (OL1)		Electrical overload protection curve
	Over Voltage Protection (OV)		If the main circuit DC voltage is over 820V, the motor stops running.
	Under Voltage (UV)		If the main circuit DC voltage is under a 380V, the motor stops running.
	Momentary Power Loss Restart		Power loss exceeds 15ms You can set the function of momentary power loss restart up to 2 sec
	Overheat Protection (OH)		Thermistor sensor on heatsink
	Ground Fault Protection (GF)		Protection by current detection circuit
	Charge Indicator		When main circuit DC voltage ≥50V, the CHARGE LED is on.
	Output Phase Loss Protection (OPL)		If the OPL function acts, the motor stops rotation automatically
	Location		Indoor (Protected from corrosive gases and dust)
Environment Specification	Ambient Temperature		-10 to +50 °C, its maximum operation temperature is 60 °C with de-rating
	Storage Temperature		-20~+70°C
	Humidity		95%RH or less (no condensation)
	Altitude and Vibration		Altitude of 1000 meters or lower, less than 5.9m/s2 (0.6G)
	Enclosure		IP00, IP20, NEMA1
General Specification	Communication Function		Built-in RS-485 as standard (MODBUS protocol with standard RJ45)
	PLC Function		Built-in
	Electromagnetic Interference (EMI)		Meets EN61800-3 standard, 55kW or below can be built-in.
	Electromagnetic Compatibility (EMS)		Meets EN61800-3 standard
	Power Factor		0.9 with 3% ACL
	Efficiency		> 98% at full load
	Certification	CE	Meets EN61800-3 (CE & RE) and EN61800-5-1 (LVD)
		UL	UL508C

Remark:

*1. PM sensor less control mode require specific software.

*2. Consult AMTECH for ratings/specification other than specified in catalog.

WIRING DIAGRAM



Remark:

*1: Only the main circuit of 1.5kW~30kW (included) or models of lower capacity with built-in braking resistor provide terminal B2. The braking resistor can be connected directly between B1 and B2.

*2: The multi-function digital input terminals S1~S8 can be set to Source (PNP) or Sink (NPN) mode by SW3.

*3: Multi-function analog input 2 (AI2) can be set to the voltage command input (0~10/-10~10V) or the current command input (4~20mA) by SW2.

*4: When integrated safety function is NOT used, connect a link across terminals F1 & F2 for the AC Drive output to function. External safety circuits can be interfaced with AC Drive using terminals F1 and F2.

*5: Terminals -12V, R2A-R2C and PO-GND are provided for 5.5 kW ratings and above.

*6: Terminal DO2 is provided for 3.7 kW ratings and below.

*7: Circuit breaker (MCCB), Line reactor (ACL), Magnetic contactor (MC) and Fuse are optional and not in the standard scope of supply.

DIMENSIONS

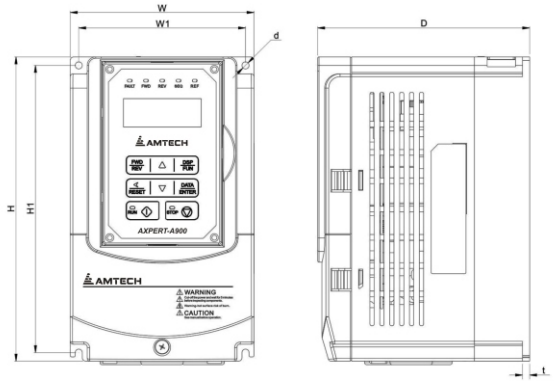


Figure A

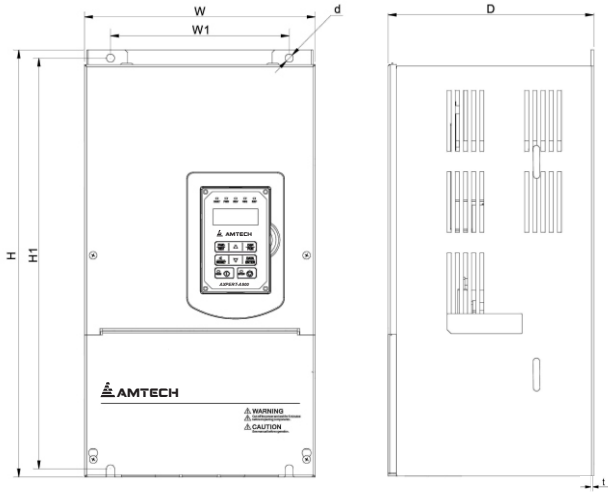
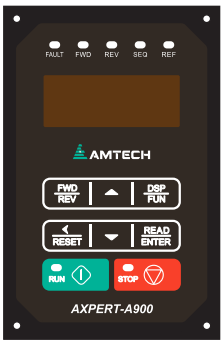


Figure B

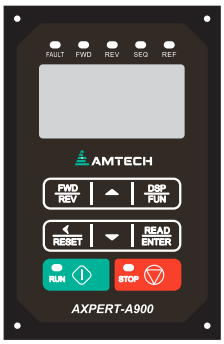
Models	Dimensions (mm)										
	W	H	D	W1	H1	t	d	Weight (kg)	Frame	Figure	Enclosure
AMT-A900-1P5H-1	130	215	150	118	203	5	M5	2.2	1	A	IP20/ NEMA1
AMT-A900-2P2H-1											
AMT-A900-3P7H-1											
AMT-A900-5P5H-1	140	279	177	122	267	7	M5	3.8	2		
AMT-A900-7P5H-1											
AMT-A900-011H-1	210	300	215	192	286	1.6	M6	6.2	3		
AMT-A900-015H-1											
AMT-A900-018H-1	265	360	225	245	340	1.6	M6	10	4		
AMT-A900-022H-1											
AMT-A900-030H-1											
AMT-A900-037H-1	284	525	252	220	505	1.6	M8	30	5	B	

OPTIONS

Sr. no.	Part no.	Usage
1	AA9-PG-O	Encoder feedback card - Open collector type
2	AA9-PG-L	Encoder feedback card - Line driver type
3	AA9-PG-PM	Encoder feedback card - Synchronous motor line driver type
4	AA9-OP-A01	LED digital operator
5	AA9-OP-A02	LCD digital operator
6	AA9-CU	COPY unit
7	AA9-EP-16	Analog operator
8	AA9-CM-PDP	PROFIBUS communication interface module
9	AA9-CM-DNET	DEVICENET communication interface module
10	AA9-CM-CAN	CAN open communication interface module
11	AA9-CM-TCPIP	TCP-IP communication interface module
12	AA9-CM-USB	USB-RJ45 communication interface module
13	AXPERT-DLS	Drive link software for PC communication



LED digital operator



LCD digital operator

OUR OTHER OFFERINGS

MOTION CONTROL

"DRIVE FOR SUCCESS"

We provide complete motion control system solutions or individual system components to address industry specific requirements and optimize your process.

Our solutions are simple, compatible and environment friendly, resulting in efficient production, cost optimization and minimizing human intervention. It even leads to energy conservation especially in typical Fan, Blower applications.

Flagship Solutions

- AXPERT-EAZY AC Drive (400, 500 & 600V Series)
- AXPERT-VT240S AC Drive (200 & 400V Series)
- AXPERT-HIVERT Medium Voltage Drive (3.3kV, 4.16kV, 6.6kV & 11kV)
- AXPERT-OPTI torque Soft Starter (200, 400, 500 & 600V Series)
- AXPERT-EAZY HF-High Frequency Drive

Applications

- Fans, Blowers, pumps
- Compressors, Centrifuges
- Agitators & Conveyors
- Oil & Gas
- Mining

AUTOMATION

"AUTOMATION. MADE EASY"

"Automation made Easy" is our philosophy to simplify the increasing complexity of modern production systems through our AMTECH JETTER PROCESS PLC Technology platform.

We simplify the contradictory imperatives in modern automation to provide simplistic but cost effective customized solutions.

Flagship Solutions

NANO, JET CONTROL, JETWEB, JETVIEW, HMI & SCADA, SERVO & AXES CONTROL SYSTEM

Applications

- Paper Machine Automation
- Textiles Manufacturing
- Packaging
- Winder Machine
- Crane & Material Handling Equipment
- CNC Machines
- Semiconductor Assembly line
- Retrofit solutions

POWER QUALITY

"ONE STOP SOLUTION TO QUALITY POWER"

Amtech's Power Quality Solutions offer you the synergy of multiple benefits - energy conservation, enhanced operational efficiency and reliability through a dedicated range of products and services.

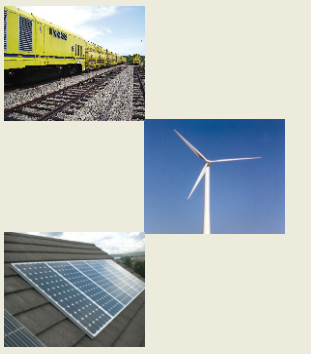
Products

- Passive Harmonic Filter
- Active Harmonic Filter
- Harmonic Reactor
- Static Harmonic Converter
- EMI/RFI Filter
- Sinus Filter
- Active Front end Converter

Services

- Harmonic Audit and Solutions to comply with IEEE-519 standard
- System design, optimization & pay-back analysis
- Consultancy for Power Quality improvement
- Training on Power Quality Management
- Energy Audit and solutions by experienced BEE certified professionals

INDUSTRIAL ELECTRONICS



"YOUR TECHNOLOGY PARTNER"

We offer technology solutions to independent R&D labs as well as industrial segments, like Traction, Renewable Energy sources (Wind, Solar etc.) thereby zeroing your lead time to commercialization.

Products

- Traction Drive
- High Voltage Power Supply
- Battery back-up drive & systems for critical loads
- Wind Power Converter
- Solar Inverter

Services

- Retrofit Solutions
- Customized solutions for industry specific applications
- Solution for Oil, Gas & Mining
- Power Electronics Technology outsourcing

CAT.NO. : AEIL/A900/11-12

AMTECH ELECTRONICS (INDIA) LTD.

E-6, GIDC Electronics Zone, Gandhinagar-382 028, Gujarat, India.
Phone : +91-79-23289101, 23289102, 23289103
Fax : +91-79-23289111 E-mail : info@amtechelectronics.com
Website : www.amtechelectronics.com

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