

Locomotive DC Propulsion

ATS Part # Various
(See your Sales Rep for specific ordering information)

Power Conversion Equipment

The ATS power conversion equipment is based upon a set of compact liquid-cooled Insulated Gate Bipolar Transistor (IGBT) modules operating from a common DC bus. The modules are designed to fit the entire propulsion system into extremely tight quarters. Modules are sold individually, or an entire system can be mounted and wired on racks or in lockers at our factory. Over 1,200 modules are in daily operation in Marine, Locomotive, Off-road, and Military applications.

The same power module is used for DC to DC Choppers or DC to AC Inverters. The function of the power module is determined by the application-specific control module installed into the power module.

All modules are bi-directional. They can absorb power from or deliver power to the DC bus.

Module Descriptions

A300641 Armature Module (Series Field) and A300791 Armature Module (Separate Field)

ATS armature modules are used to control the armature of a DC traction motor. They also receive speed feedback from the axle that it is driving and continuously compares the measure axle speed with a reference input derived from a non-driven axle. To see more on wheel slip control, see page 32.

- Series Field armatures are used for locomotives that require only slow speeds such as switching locomotives.
- Separate Field armatures allow for faster speeds as required by freight locomotives.

A300677 Field Controller and A310106 Bi-Directional Field Controller

The field controller regulates the current in the field winding of a separately-excited DC motor. The bi-directional field controller achieves fully-electronic bi-directional control of current to the field eliminating reversing contactors.



ATS Power Module
(front and back with side panel removed)

Typical Module Dimensions

Height	864mm (34")
Width	127mm (5")
Depth	447mm (17.6")
Weight	46.7kg (103 lbs)

Specifications for Armature Modules and Field Controllers

Part Number	Armature Module Series Field		Armature Module Separate Field		Field Controller		Bi-Directional Field Controller	
	A300641		A300791		A300677		A310106	
	Input	Output	Input	Output	Input	Output	Input	Output
Rated Power @Rated Volts	750kW	747kW	750kW	747kW	152kW	150kW	750kW @ 1000V DC	748kW
Frequency range	DC	DC	DC	DC	DC	DC	DC	DC
Voltage Range**	600 - 750V	0 - Input	600 - 750V DC	0 - Input	600 - 750V	0 - Input	450 - 1150VDC	0 - Input
Amps @ Rated Power	1000A	1000A	1000A	1000A	1000A	1000A	750A	750A
Ambient Operating Temperature Range	-20°C to 60°C		-20°C to 60°C		-20°C to 60°C		-20°C to 60°C	
Coolant Temperature Range	-40°C to 70°C		-40°C to 70°C		-40°C to 70°C		-40°C to 70°C	
Control Supply Voltage	22 to 28V DC		22 to 28V DC		22 to 28V DC		22 to 28V DC	
Control Supply Current	1.5A DC		1.5A DC		1.5A DC		1.5A DC	
Minimum Coolant Flow	3 gal/min (11.25 l/min)		3 gal/min (11.25 l/min)		3 gal/min (11.25 l/min)		3 gal/min (11.25 l/min)	
Maximum Coolant Pressure	50 psig (3.5 bar)		50 psig (3.5 bar)		50 psig (3.5 bar)		50 psig (3.5 bar)	

**Other voltages are available. Contact ATS representative for more information.

