



Hermes Traction Inverter Permanent Magnet and Induction Motor Control

Liquid Cooled

375 kW (700 V_{IN}) and 490 kW (1000 V_{IN}) Versions

600 A_{PK-RMS}

100+ Programable Parameters

ATS Part # A300835, A300847, A300848 (800V 600A)
A300832 (1100V 600A)
(See your Sales Rep for other input voltages)



Applications

- Heavy duty trucks
- City buses
- Mining Vehicles
- Marine Vessels
- Utility trucks
- All-terrain vehicles
- Motor test stands
- Motor sport

Features

- Permanent Magnet or Induction motor control
- Adaptive Torque Control — No look-up tables required
- Torque and Speed Control Modes
- Generator Mode with programmable cranking and idle speeds
- Automated Resolver Offset Calibration Mode
- DC Capacitor Discharge Feature
- Up to 1,400 Hz output frequency
- Continuously Variable Switching Frequency—Increases with motor RPM and reduces losses (2 to 14 kHz — Double-edge PWM)
- Discontinuous Pulse Width Modulation (DPWM)
- Smart OV, UV, and Temperature Power Limiting
- Four-quadrant operation
- Validated on motors with up to 40 poles
- Up to 15 inverters on one CAN control bus
- IP67 aluminum enclosure
- Built-in DC bus voltage pre-charge circuitry (Optional)
- Embedded Y-Capacitor
- Motor Select parameter for easy setup
- 150+ programmable parameters via CAN for advanced users
- 10 slot fault log with time stamp information

Specifications

	Part #	Description	Minimum	Nominal	Maximum
DC Bus Voltage (V)	A300835	Hermes with 8 glands	-	700	800
	A300847	Hermes for ACIM	-	700	800
	A300848	Hermes for PMAC	-	700	800
	A300832	1100V Hermes	-	1000	1100
Output Voltage (V _{RMS})	0 - 0.7 x DC Bus Voltage				
Continuous Output Current (A _{RMS})	A300835	Hermes with 8 glands	-	600 @ f _{sw} = 2 kHz	-
	A300847	Hermes for ACIM	-	400 @ f _{sw} = 14 kHz	-
	A300848	Hermes for PMAC	-	400 @ f _{sw} = 14 kHz	-
	A300832	1100V Hermes	-	550 @ f _{sw} = 2 kHz 350 @ f _{sw} = 14 kHz	-
Peak Output Current (A _{RMS})	600				
Continuous Output Power (kW)	A300835	Hermes with 8 glands	-	375	-
	A300847	Hermes for ACIM	-	375	-
	A300848	Hermes for PMAC	-	375	-
	A300832	1100V Hermes	-	490	-
DC Control Volts			22	24	28
Control Supply Current (A)			2	-	-
Logic Input Supply Voltage (V)			6	12	26
Ambient Operating Temperature (°C)			-20	-	60
Inlet Cooling Temperature (°C)			-40	-	50
Coolant Type			-	50/50 WEG	-
Coolant Flow (gal/min) [l/min]			3 [11.3]	-	-
Coolant Pressure Drop (psig @ 3 gal/min) [bar]			-	0.6 [0.04]	-
Weight	38.5kg (85 lbs)				
Dimensions (H x W x L)	207mm (8.2") x 583mm (23") x 434mm (17")				

The values above are typical and are dependent on the motor and application

Hermes Traction Inverter

Product Description

The Traction Inverter is designed to control permanent magnet or AC induction motors and is suitable for propulsion and auxiliary motor applications.

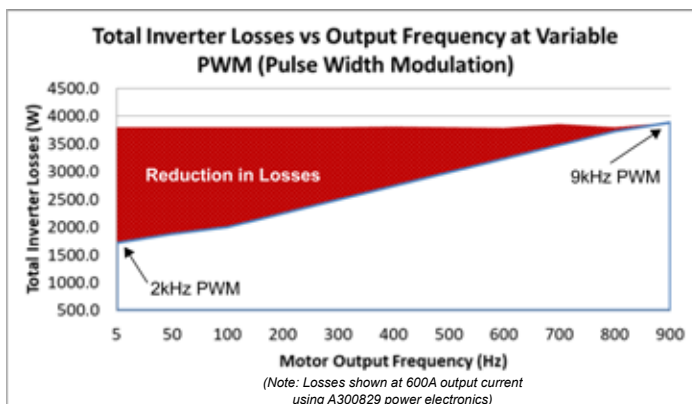
Adaptive Torque Control

The motor control algorithm, Adaptive Torque Control (ATC) is a more accurate Field-Oriented Control (FOC) capable of operating in a wide range of power factors. ATC optimizes performance (torque and power) by accounting for a varying supply voltage, motor inductances, motor resistances, motor temperature, motor speed, and slip. In induction motors, this enables operation at or near the breakdown torque of the motor and in PM motors, it utilizes the synchronous reluctance effect to maximize torque.

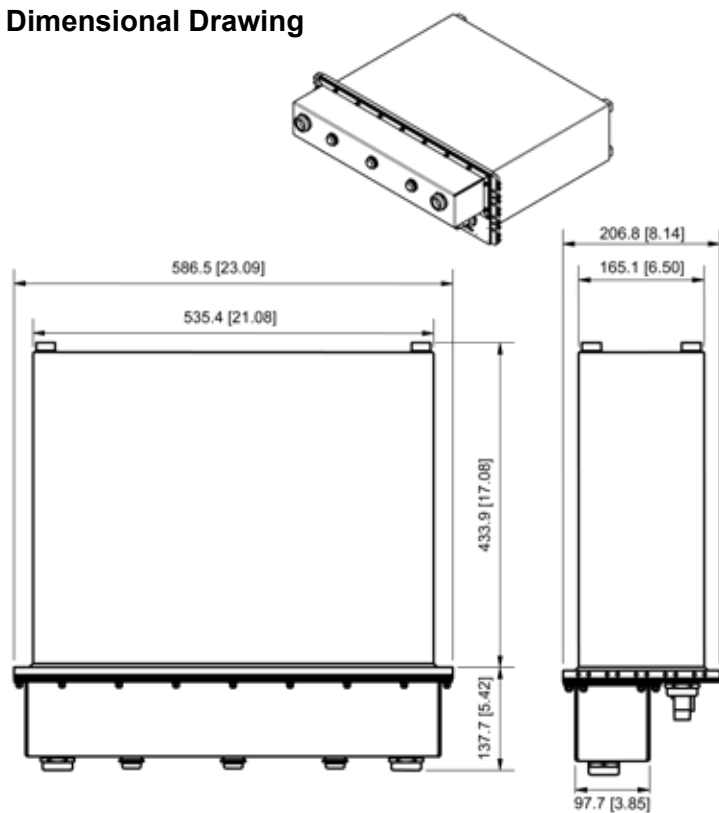
ATC uses models based on the physics of the motor — not lookup tables. With 150+ programmable parameters for setup and tuning, the inverter can operate many different motors.

Variable Switching Frequency

By continuously varying the switching frequency proportional to speed, the inverter achieves an optimal balance of switching losses in the inverter and current ripples in the motor. Particularly at lower speeds, the reduced PWM frequency yields improved efficiency as shown in the red area of the following chart.



Dimensional Drawing



Hardware Description

- Double isolation between power components and control interface
- 12V emergency stop input
- 1 NTC input
- 2 RTD inputs
- 2 12V analog inputs
- 8 logic inputs
- Normally open/closed fault outputs
- RS-232 serial interface for programming and debugging
- Resolver and 5/15V encoder feedback
- CAN-bus control and diagnostics

