POWERING POTENTIAL

TAUTRONIC™ High Performance Controller AC-X1-I with Isolated Logic

Product Information

Controller for AC Induction & Synchronous Motors

SME inverters provide advanced control of AC induction and Synchronous motors for traction or pump functions of any electrical vehicle working with speed or torque control algorithms.

Mobile Machine Management

Tautronic™ is an integrated controller which can manage multi-function and fully configurable I/O pins for any I/O functions like digital & analogue inputs and outputs, capable of driving fans, relays' and hydraulic valves' coils, contactors, negative brakes and many others inductive/resistive loads.

Vehicle Application Development

Users develop AC-X1 applications with the TAU™ System:
All features are offered as standard ("one fits all" philosophy). Virtually everything can be changed with one click in an intuitive graphical tuning environment called SmartView™. The clone file technology allows uploads, downloads and modifications of your configuration. With TAU™ system, a first run for a wired vehicle can be made in minutes (not days).

SME S.p.A.

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SME is a Member of Dana Incorporated

AC-X1-I

Features

- AC, PM, SR & SRIPM motor control features:
  - Indirect Field Oriented Control (IFOC) with unsurpassed dynamic and performance in full speed range by decoupling and regulating flux and torque vectors of stator current components
  - advanced Space Vector Modulation (SVM) technique for high system efficiency reducing motor harmonics and losses
  - accurate Rotor Flux Model and Fully Developed Field Weakening technique for high motor efficiency and dynamic across full speed range
  - motor model fully compatible with IEEE Standard in order to get the parameters of motor's equivalent circuit from no-load and blocked rotor tests; it can work with all AC motors of all manufactures
  - quick and easy selection between Torque Control and Speed Control
  - auto setup of PI control parameters based on actual motor characteristic permits the safe and immediate tuning of motor's behavior
- Fully configurable through supplied GUI TAU™ called "SmartView™", which reduces abruptly the time to market start-up of the system
- Flexible configuration of I/O in order to couple them to any provided functions
- Standard and same firmware for all inverter series (easily extendable to future models)
- Robust, safe and self-diagnostic (both for hardware and software fault conditions)
- Isolated CAN Open and serial interfaces
- Powerful logging of all sensible working variables
- The very good ratio between size and supplied performance of current/power makes this inverter really suitable for applications where size and weight are particularly important.
- Fulfils automotive EMC standard ECE R10-05, Annex 7-8-9-10
- Logic supply isolated from power supply, 12/24 VDC, with
  - Protection Load Dump Test 5A
  - Integrated Pre-charge circuit

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TAUTRONIC™
AC-X1-I

Technical Data

Power Section

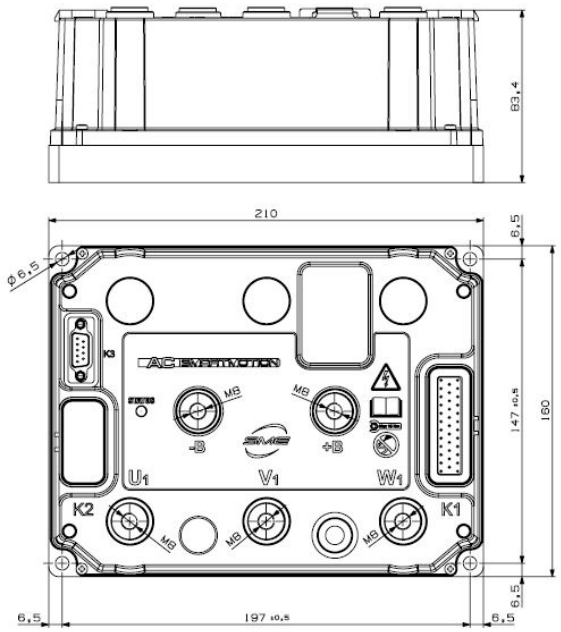
Type:	AC-X1-I				
Nom. voltage [Vdc]	80 - 100				120 - 144
Input voltage range [Vdc]	45…133				73…184
Cont. current [Arms]	125	187	250	375	250
Nom. current S2 - 2 min [Arms]	250	375	500	750	500
Boost current 10 sec. [Arms]	350	450	600	850	600
Output voltage [VAC]	3 x 0…53 (@80 VDC) 3 x 0…66 (@100 VDC)				3 x 0…80 (@120 VDC) 3 x 0…93 (@140 VDC)
Logic supply voltage [Vdc]	12 – 24 Nom./ 8 … 32 Range				
Dimen-sions W	210 mm [8.27 in]				
Dimen-sions H	160 mm [6.30 in]				
Dimen-sions D	85 mm [3.35 in]				
Power terminals	M8				
Weight	3,5 kg [7.7 lb]				

Interface

	Number
Digital input	9
Analog input unipolar 0…12V	5
Digital output	2
Analog output unipolar 0…10V	1
PWM output	4
Motor temperature sensor	1
Incremental encoder (Hi-Speed Quad. Encoder)	1*
Hi Speed Sin/Cos Position sensor	1*
Resolver interface	1
5V sensor power supply	1
12V sensor power supply	1
CAN interface (isolated)	1
Serial Interface RS232	1
LIN Bus	1

*Alternatively, use same interface pins

Dimensions in millimeters



Caution:

Tautronic devices are not field serviceable.
Opening the device housing will void the warranty.

Others

Switching frequency	9 kHz
Efficiency	>95%
Output frequency	0…300 Hz
Ambient temperature range	-40°C … 55°C [-40°F…131°F]
Maximum heat-sink temp.: **@ full current** **@ linear de-rated current (down to 50%)** **@ 50% current**	 80°C [176°F] 80°C [176°F]– 95°C [203°F] 95°C [203°F]– 100°C [212°F]
Signal line connectors	AMPSEAL 35 pins, Sub-D 9 pins
IP protection	IP65
EMC	EN12895 / ECE R10-05, Annex 7-8-9-10
Safety	EN 1175-1
Vibration IEC 60068-2-6 **Shock IEC 60068-2-27** **Bump IEC 60068-2-29**	5g, 10 – 500 Hz, 3 axes +/-30g +/-10g
UL	Designed to meet UL583

Product Part Number

AC-X1 80/100V 250 I SWS	Plate-Type Heat Sink*	ACX1S25000I00
AC-X1 80/100V 375 I SWS	Plate-Type Heat Sink*	ACX1S37000I00
AC-X1 80/100V 500A I SWS	Plate-Type Heat Sink*	ACX1S50000I00
AC-X1 80/100V 750A I SWS	Plate-Type Heat Sink*	ACX1S75000I00
AC-X1 120/144V 500A I SWS	Plate-Type Heat Sink*	ACX1T50000000

For other heat sink types please contact SME

Related Products Part Number

AMPSEAL 35 pin Mating Connector Bag	900KC00000013
Fuse 500A	744EFCNL500
Fuse 700A	744EFCNN700
Thermal Pad AC-X1	768VR454A00

Comprehensive technical information is included in the TAU™ SmartView™
Further information regarding SME Group and products online at: www.sme-group.com