

# TM4 Tautronic™ AC-X1-I with Isolated Logic High Performance Low-Voltage Inverters

## Controller for AC Motors

Dana TM4 inverters provide advanced control of AC induction & synchronous motors for traction or pump functions of any electrical vehicle working with speed or torque control algorithms.

## Mobile Machine Management

Tautronic AC-X1-I is an integrated controller which can manage multi-function and fully configurable I/O pin 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-I applications with the TM4 TAU™ Software: 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. The clone file technology allows uploads, downloads and modifications of your configuration. With TM4 TAU system, a first run for a wired vehicle can be made in minutes (not days).



Ideal for Off-Highway Applications.



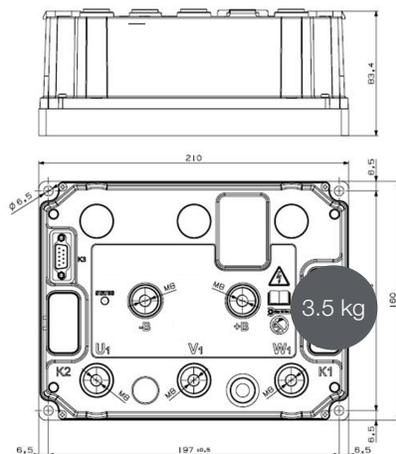
# TM4 Tautronic™ AC-X1-I Low-Voltage Inverter

## 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

## General features

- Fully configurable through supplied GUI TM4 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)
- CAN Open and serial interfaces
- Powerful logging of all sensible working variables
- Fulfills automotive EMC standard ECE R10-05, Annex 7-8-9-10



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...47 (@80 VDC) 3 x 0...53 (@100 VDC)			3 x 0...80 (@120 VDC) 3 x 0...93 (@140 VDC)	
Logic supply voltage [Vdc]	12 - 24 Nom./ 8 ... 32 Range				
Power terminals	M8				

Specifications	
Switching frequency	9 kHz
Efficiency	>95%
Output frequency	0-300 Hz
Ambient temperature range	-40°C to 55°C
Maximum heat-sin temp @ Full current @ linear de-rated current (down to 50%) @ 50% current	80°C 80°C- 95°C 95°C- 100°C
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

Interface	Number	Product part number
Digital input	9	AC-X1 80/100V 250 I SWS ACX1S25000I00
Analog input unipolar 0...12V	5	AC-X1 80/100V 375 I SWS ACX1S37000I00
Digital output	2	AC-X1 80/100V 500A I SWS ACX1S50000I00
Analog output unipolar 0...10V	1	AC-X1 80/100V 750A I SWS ACX1S75000I00
PWM output	4	AC-X1 120/144V 500A ISWS ACX1T50000000
Motor temperature sensor	1	
Incremental encoder (Hi-Speed Quad. Encoder)	1*	Plate-Type Heat Sink. For other heat sink type please contact us
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	

Related product part number	
AMPSEAL 35 pin Mat-ting Connector Bag	900KC00000013
Fuse 500A	744EFCNL500
Fuse 700A	744EFCNN700
Thermal Pad AC-X1	768VR454A00

\*Alternatively, use same interface pins

## Dana.com/TM4

### Application Policy

Capacity ratings, features, and specifications vary depending upon the model and type of service. Application approvals must be obtained from Dana TM4; contact your representative for application approval. We reserve the right to change or modify our product specifications, configurations, or dimensions at any time without notice.

