

ATB CSA Series Integral Throttle Body Actuators

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OVERVIEW

The CSA ATB Series integral throttle body electric actuators are designed to control the flow rate of the air/ fuel mixture in gaseous-fueled engines. The ATB Series incorporates fast response and proven reliability to allow for efficient and precise control.

Certified Class 1, Division 2, Groups A, B, C, D [Class 1, Zone 2, Group IIC], the ATB Series actuator directly drives the throttle plate with an internal return spring, ensuring that the throttle plate returns to the minimum fuel position when the actuator is de-energized.

- Cost Effective, Maintenance Free, Compact Design
- Precise Engine Speed Control
- Rapid Response to Transient Load Condition
- Easy Installation
- Various Bore Sizes Available (25 95 mm)
- Available Throttle Position Feedback Sensor
- Mounts in Any Position, No Mechanical Linkage, No Mounting Brackets







Read the entire installation manual before installing the actuator.

Note all warning and caution notices to ensure your safety and the safety of the equipment.

CATEGORY	PART NUMBER	VOLTAGE / BORE / FEEDBACK SENSOR
CSA ATB T1 Series Actuator Throttle Body -	ATB25T1N-CSA	12 or 24 V DC / 25 mm
25 to 35 mm / Military Connector without Mating	ATB30T1N-CSA	12 or 24 V DC / 30 mm
Connector (Same Applies to reedback Sensor)	ATB35T1N-CSA	12 or 24 V DC / 35 mm
All Sealed to 1.5 bar and High Temperature	ATB25T1F-CSA	12 or 24 V DC / 25 mm / Position Feedback Sensor
	ATB30T1F-CSA	12 or 24 V DC / 30 mm / Position Feedback Sensor
	ATB35T1F-CSA	12 or 24 V DC / 35 mm / Position Feedback Sensor
CSA ATB T2 Series Actuator Throttle Body,	ATB40T2N-CSA	12 or 24 V DC / 40 mm
40 to 55 mm / Military Connector without Mating	ATB45T2N-CSA	12 or 24 V DC / 45 mm
Connector (Same Applies to recuback Sensor)	ATB55T2N-CSA	12 or 24 V DC / 55 mm
All Sealed to 1.5 bar and High Temperature	ATB40T2F-CSA	12 or 24 V DC / 40 mm / Position Feedback Sensor (AB)
(221 F [105 C] Ambient)	ATB45T2F-CSA	12 or 24 V DC / 45 mm / Position Feedback Sensor (AB)
	ATB55T2F-CSA	12 or 24 V DC / 55 mm / Position Feedback Sensor (AB)
CSA ATB T4 Series Actuator Throttle Body,	ATB65T4N-CSA	12 or 24 V DC / 65 mm
65 to 95 mm / Military Connector without Mating	ATB75T4N-CSA	24 V DC / 75mm
Connector (Same Applies to reedback Sensor)	ATB85T4N-CSA	24 V DC / 85 mm
All Sealed to 1.5 bar and High Temperature	ATB95T4N-CSA	24 V DC / 95 mm
	ATB65T4F-CSA	12 or 24 V DC / 65 mm / Position Feedback Sensor
	ATB75T4F-CSA	24 V DC / 75 mm / Position Feedback Sensor
	ATB85T4F-CSA	24 V DC / 85 mm / Position Feedback Sensor
	ATB95T4F-CSA	24 V DC / 95 mm / Position Feedback Sensor
Actuator Mating Connectors (not included)	EC1000	Military Style Actuator Mating Connector Kit Straight 6 Terminal
	EC1010	Military Style Actuator Mating Connector Kit 90° 6 Terminal
	EC1515	ATB T2-F (AB Position Sensor) Actuator Mating Connector Kit 6 Terminal
	EC1523	ATB T1/T4-F (Position Sensor) Actuator Mating Connector Kit 3 Terminal
Viton O-Ring Seals (included) SE014-xxxV	ATBxxT1xx-CSA	25 mm - 024V, 30 mm - 027V, 35 mm - 029V
	ATBxxT2xx-CSA	40 mm - 031V, 45 mm - 033V, 55 mm - 036V
	ATBxxT4xx-CSA	65 mm - 039V, 75 mm - 042V, 85 mm - 043V, 95 mm - 045V

WARNINGS AND NOTICES

The manual uses the following symbols to emphasize specific information. This information is important and must be observed.



Caution - Identifies an instruction which, if not followed, may cause moderate physical injury or severe product or engine/prime mover damage.

Attention - Identifies an instruction which, if not followed, may cause some physical damage to engine/prime mover, or will void warranty.

NOTE - Indicates supplementary information which may be needed to fully complete or understand an instruction. NOTE



Do not connect or disconnect electrical connectors unless power has been switched off or the area is known to be non-hazardous. Keep connector tight while energized.

Substitution of components may impair suitability for Class I, Division 2.

Keep connector tight while energized.



Ne pas ni raccorder / débrancher les prises électriques, sans vous en assurez auparavant que le système a bien été mis hors tension; ou que vous vous situez bien dans une zone non explosive. Maintenir le connecteur bien serre sous tension.

La substitution de composants peut rendre ce matériel inacceptable pour les emplacements de Classe I, Division 2.

Maintainer le connecteur sien serrre sous tension.



The engine/prime mover should be equipped with an overspeed shutdown device to protect against loss of speed control or damage to the prime mover with possible personal injury, loss of life, or property damage.

Overspeed/ Overtemperature



Safety

- The overspeed shutdown device must be totally independent of the control system. An over temperature or overpressure shutdown device may also be needed for safety, as appropriate
- All local safety and site rules and requirements must be followed during installation and use of this equipment.

General

- To prevent damage to a control system that uses an alternator or battery-charging device, make sure the charging device is turned off before disconnecting the battery from the system. Do not operate in ambient temperatures above those indicated on the product.
- External fire protection is not provided in the scope of this product. It is the responsibility of the user to satisfy any applicable local requirements for their system.
- This unit is intended for use in stationary or material handling industrial equipment only.
- This unit is an extra-low-voltage (Class 2), general-purpose (non-safety), continuous operation, modulating valve assembly, intended for use only with natural gas, manufactured gas, and liquefied or vapor state petroleum gases.
- This unit is not intended as a shutoff valve.
- This unit contains no user-serviceable parts. No inspection or repair should be undertaken of the unit. Under no circumstances should any modification or alteration be made to the actuator. Components are not field replaceable.





General

Precautions

- Read this entire manual and all related guides before installing or operating this equipment.
- Follow all local safety instructions and practices. Failure to follow all safety instructions may cause personal or property damage.
- Installation, safety review, configuration, and commissioning, should be carried out by qualified personnel.
- This manual may have been updated since this copy was produced. For the latest revision please see or publications web page at governors-america.com or contact your GAC representative. GAC reserves the right to update documentation at any time. Information is believed to be reliable and correct, however no responsibility is assumed by Governors America Corp. unless otherwise expressly undertaken.



- Eye Protection, Hearing Protection
 - Hard Hat, Safety Boots, Gloves Always read the proper Material Safety Data Sheet (MSDS) before using any fluid(s) and comply with recommended safety

Personal Safety

NOTE

equipment.

The products described in this publication may present risks that could lead to personal injury, loss of life, or property damage. Always wear the appropriate personal protective equipment (PPE) for the job at hand. Equipment includes but is not limited to:



This manual provides the necessary background information for applying the ATB-CSA Series actuator on a reciprocating engine. The manual includes information on mechanical installation, electrical wiring, and troubleshooting. This manual does not contain instructions for operation of the complete engine system.



	PERFOR	MANCE					
Maximum Pressure, All Units are S	Sealed		1.5 bar				
Throttle Plate Rotation			65° ±1°				
Response Time			10 - 90 % <35 ms				
T1 POWER INPUT FOR 25	5 MM TO 35 MM BORE SIZE	T2 POWER INPUT FOR 40 MM TO 55 MM BORE SIZE					
Operating Voltage	12 or 24 V DC	Operating Voltage	12 or 24 V DC				
Normal Operating Current	3.0 A at 12 V DC 1.5 A at 24 V DC	Normal Operating Current	6.0 A at 12 V DC 3.0 A at 24 V DC				
Maximum Current	6.0 A at 12 V DC 3.0 A at 24 V DC	Maximum Current	9.0 A at 12 V DC 4.5 A at 24 V DC				
Coil Resistance +/- 10 %	See Section 12, Troubleshooting - Coil Resistance table	Coil Resistance +/- 10 %	See Section 12, Troubleshooting - Coil Resistance table				
Wiring to Ground MAX	5 MΩ	Wiring to Ground MAX	5 MΩ				
Position Feedback Sensor Current	15 mA	Position Feedback Sensor Current	6 mA				
	T4 POWER INPUT FOR 6	5 MM TO 95 MM BORE SIZE					
	Operating Voltage	24 V DC					
	Normal Operating Current	6.5 A					
	Maximum Current	10.0 A					
	Coil Resistance +/- 10 %	See Section 12, Troubleshooting - Coil Resistance table					
	Wiring to Ground MAX	5 ΜΩ					
	Position Feedback Sensor Current	15 mA					
ENVIRO	DNMENT	AGENCY COMPLIANCE					
Ambient Temperature Range	-40 to +221 °F [-40 to +105 °C]	CE Compliant	Stationary or material handling				
Temp Code	T1, T2: 135 °C T4: 160 °C		industrial equipment.				
Relative Humidity	SAEJ1455	CSA Certified	Class 1 Div 2 Groups A,B,C,D [Class 1, Zone 2 Group IIC]				
Salt Spray			ASTMB117-97, 96 hours				
All Surface Finished			Fungus & Corrosion Resistant				
RELIA	BILITY	PHYSICAL					
Vibration	±4g, 25 to 100 Hz	Dimensions	See Section 6, Outline Diagrams				
Shock	20g, 11 ms	Approximate Weight (T1)	3.7 lbf [1.68 kgf]				
Testing	100 % Functionality Tested	(T2)	10.5 lbf [4.76 kgf]				
Rated Life	>40 Million Cycles	(T4)	17.3 lbf [7.80 kgf]				

4 INTENDED APPLICATIONS

The ATB CSA Series actuator is intended to be mounted on-engine for use in stationary or material handling industrial equipment applications, including but not limited to:

- generator sets
- gas compressors
- · gasoline or diesel reciprocating engines
- forklifts and other material handling equipment

The actuator accepts a desired position signal from a speed controller and moves to that position. Intended environmental conditions must not exceed industrial operating temperatures and related requirements as detailed in the "SPECIFICATIONS" on page 3 of this manual.

The ATB CSA actuators are:

- · For use in stationary or material handling industrial equipment only.
- Open-Type Equipment that must be installed in suitable end-use enclosures meeting the requirements of Division 2 wiring practices according to the CEC (Canadian Electric Code) and NEC (National Electric Code) respectively.
- Proportionally controlled actuators with PWM input, may be used with a closed loop analogue or digital controller suitable for Class
 I, Division 2 applications.
- Extra-low voltage (Class 2) general purpose (non-safety), continuous operation, modulating valve assembly, intended for use only with natural gas, manufactured gas, and liquefied or vapor state petroleum gases.
- Intended for use with gaseous fueled engines.
- Not intended for use as a shutoff valve.
- Not field serviceable.

Governors America Corp. declines all liability in the event of:

- Use of the device in violation of local safety rules.
- Incorrect installation, disregard, or incorrect application of the instructions provided on the product label and in this instruction manual.
- Any modifications to an ATB unit. Units are **NOT** field serviceable.

5 ATB SIZING MATRIX

The following matrix matches the Engine size and rpm to the ATB bore size. This chart is for reference only and were derived from averaging maximum velocity method and capacity index method at 75 % butterfly travel position. Final sizing may differ depending on application. See your GAC representative for more information.

INDUSTRIAL ENGINE APPLICATIONS / 4 CYCLE / NATURAL GAS / STOICHIOMETRIC FA MIXTURE

ATB Sizing Matrix

Industrial Engine Applications/ 4 Cycle / Natural Gas / Stoichiometric FA Mixture

	ENGINE SIZE (LITERS)																														
rpm	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10	11	12	13	14	15	16	17	18	19	20	21	22
600					25	25	25	25	30	30	30	30	30	30	35	35	35	35	35	40	40	40	40	45	45	45	55	55	55	55	55
800				25	25	25	30	30	30	30	35	35	35	35	35	40	40	40	40	45	45	55	55	55	55	55	55	55	65	65	65
1000			25	25	30	30	30	30	35	35	35	35	40	40	40	40	45	45	45	55	55	55	55	55	65	65	65	65	65	65	75
1200		25	25	30	30	30	30	35	35	40	40	40	40	45	45	45	55	55	55	55	55	65	65	65	65	65	75	75	75	75	75
1400		25	30	30	35	35	35	35	40	40	40	40	45	45	45	55	55	55	55	55	65	65	65	65	75	75	75	75	85	85	85
1500		25	30	30	35	35	35	40	40	40	40	45	45	55	55	55	55	55	55	65	65	65	65	65	75	75	75	85	85	85	85
1600		25	30	35	35	35	40	40	40	45	45	45	45	55	55	55	55	55	65	65	65	75	75	75	75	75	85	85	85	85	85
1800		25	30	35	40	40	40	40	40	45	45	45	55	55	55	55	65	65	65	65	75	75	75	75	75	85	85	85	95	95	95
2000		25	35	35	40	40	40	45	45	45	45	55	55	55	65	65	65	65	65	75	75	75	85	85	85	85	85	95	95	95	95
2200	25	30	35	40	40	40	45	45	45	55	55	55	55	65	65	65	65	65	75	75	75	85	85	85	85	95	95	95	95		
2400	25	30	35	40	45	45	45	55	55	55	55	55	55	65	65	65	75	75	75	75	85	85	85	85	95	95	95				
2600	25	30	35	40	45	45	55	55	55	55	55	55	65	65	65	75	75	75	75	75	85	85	95	95	95	95					
2800	30	30	40	45	45	45	55	55	55	55	65	65	65	65	75	75	75	75	75	85	85	85	95	95	95						
3000	30	30	40	45	45	55	55	55	55	65	65	65	65	75	75	75	75	75	85	85	85	95	95	95							
3200	30	30	40	45	55	55	55	65	55	65	65	65	65	75	75	75	85	85	85	85	95	95									
3400	30	30	40	45	55	55	55	65	65	65	65	65	75	75	75	85	85	85	85	95	95	95									
3600	30	30	45	55	55	55	65	65	65	65	65	75	75	75	85	85	85	85	85	95	95										

rpm	23	24	24	25	25	26	26	27	27	28	28	29	29	30	30
600	55	55	55	55	65	65	65	65	65	65	65	65	65	75	75
800	65	75	75	75	75	75	75	75	75	75	75	75	75	85	85
1000	75	75	75	85	85	85	85	85	85	85	85	85	85	85	85
1200	85	85	85	95	95	95	95	95	95	95	95	95	95	95	95
1400	95	95	95	95	95	95	95	95	95						
1500	95	95	95	95											
1600	95	95	95	95											

ATB sizing in MM inside diameter

These charts are for reference use only and were derived from averaging maximum velocity method and capacity index method at 75 % butterfly travel position. Final sizing may differ depending on application.

CSA ATB T1 NON-FEEDBACK









(mm) inch

CSA ATB T1 FEEDBACK









CSA ATB T2 NON-FEEDBACK









CSA ATB T2 FEEDBACK DIMENSIONS







Γ

CSA ATB T4 NON-FEEDBACK







CSA ATB T4 FEEDBACK





WARNINGS

TO AVOID EXPLOSION:

• Warning - explosion hazard – substitution of components may impair suitability for Class 1, Division 2. Make sure the supply voltage is within the products' voltage rating.



Avertissement - risque d'explosion - la substitutiond e composantsp eutr endre ce materiel inacceptable pour les emplacements de classe i, division 1, classe ii, division 1.

Explosion hazard- do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous

• Avertissement - risque d'explosion - avant de deconnecter l'equipement, couper le courant ou s'assurer que l'emplacement est designe non dangereux

OTHER HAZARDS

- All gaseous fueled engines require a positive fuel lockout. Gaseous fueled engines will retain unburnt fuel internally.
- · Throttle bodies will operate without electrical power.



The engine/prime mover should be equipped with an overspeed shutdown device, independent of the governor system, to protect against loss of speed control or damage to the engine, which may cause personal engine or personal injury.

- The overspeed shutdown device must be totally independent of the engine control system. An over-temperature or overpressure shutdown device may also be needed for safety, as appropriate.
- · Do not operate in ambient temperatures above those indicated on the product.
- External fire protection is not provided in the scope of this product. It is the responsibility of the user to satisfy any applicable local requirements for their system.

UNPACKING

When unpacking the actuator check the unit for signs of damage including bent or dented panels, scratches, and loose or broken parts. Notify the shipper and GAC if damage is found.

DETERMINING MOUNTING LOCATION

Mount the actuator rigidly between the engine's intake manifold and the gas mixer. Normal vibration from the engine will not effect the operation of the actuator.

The ATB Series is designed to provide an exact fit to various manifolds and flanges. Section 6, Outline Diagrams, shows proper sizing of the ATB to the engine for envelope consideration. The following diagram shows example placement locations. When determining the location:

- Do not route the harness next to the ignition system or its wiring.
- Locate the unit away from extreme radiant heat such as exhaust manifolds and turbochargers.
- Ensure the mounting location can support the weight of the unit.
- The ATB must be mounted after the turbo charger.

Naturally Aspirated Engines

Turbocharged-Intercooled Engines





7 INSTALLATION (CONTINUED)

INSTALLING THE ACTUATOR ON THE ENGINE MANIFOLD

The ATB is mounted between the fuel source and the engine manifold. Determine the desired air flow direction. Additional products such as air/fuel mixers, carburetors, and air filters may be required for your application and are mounted between the fuel source and the ATB.

T1 ORIENTATION

When mounting an ATB T1, ensure the ATB bolt holes align fully with the manifold. The bolt hole flanges connect to the manifold either directly or using a adapter plate.



T2 AND T3 ORIENTATION

When mounting an ATB T2 or an ATB T4, use the arrow indicating air flow direction located on the side of the actuator housing to determine orientation. The bolt hole flanges connect to the manifold either directly or using an adapter plate.



ATB T1, T2, T4 PLACEMENT

- 1. Determine the desired air flow direction of the system.
- 2. Dry fit the ATB actuator to the engine manifold. If additional mounting hardware is required, determine the fit at this time.
- 3. Using the viton o-ring mounting seals included with the ATB, place the actuator in the desired location ensuring the seals are not pinched or misplaced. Service replacement seals are available. See page 1 for part numbers.
- 4. Using the existing engine mounting hardware, and following your engines torque requirements, mount the ATB and torque hardware in place.
- 5. Air/fuel mixers, carburetors, air filters, or similar devices will are bolted to the air intake side of the ATB. Follow the directions for installation of these products, including torque requirements, following the selected product installation documents.

SAMPLE MOUNTING IMPLEMENTATIONS

The following are two sample mounting implementations. Yours will vary based on engine and application.

ATB with air-fuel mixer mounted directly on intake manifold.



ATB with additional adapter plate mounted on intake manifold.



8 WIRING



The electrical installation should be completed in accordance with local and national regulations. Wiring to or from this device must utilize wiring methods suitable for Class I, Division 2 and Zone 2 Hazardous Locations, as appropriate for the installation.



Prior to connecting the actuator cable, twist the cable to add about one complete twist per inch along the entire length of the cable. This substantially reduces EMI effects on the control system. For applications where EMI is still a concern, use shielded cable.

ATB T4 series are 24 volt only.

NOTE This unit is a proportional actuator; the connection to the speed control unit does not have a polarity.

WIRING CONNECTIONS

ATB throttle body actuators harness wiring differs for 12 or 24 V DC system. Available wiring harnesses and mating connectors can be ordered separately from GAC using the following table.

Wirin	g Connections	Part Numbers and Descriptions					
T1, T2, T4	Actuator Mating Connectors	EC1000 - straight connector EC1010 - 90° connector					
T1, T4	Feedback Sensor Mating Connector or Harness	EC1523 - Mating Connector, 3-pin CH1243 - ATB T1/T4-F position sensor, 6 ft [1.8 m] shielded harness with EC1523 /3 terminal					
T2	Feedback Sensor Mating Connector or Harness	EC1515 - Mating connector AB sensor CH1515 - ATBT2-F AB position sensor, 6 ft [1.8 m] shielded harness with EC1515 /6 terminal					

Prior to connecting the actuator cable, twist it so that there is about one complete twist per 1.0 in [25.4 mm] along the entire length of the cable. This will substantially reduce EMI effects on the control system. For applications where EMI is still a concern, shielded cable for the actuator is recommended.

MIL CONNECTORS

12 VOLT to Actuator Terminal on Speed Control Unit on Speed Control Unit to Actuator Terminal on Speed Control Unit

For 12 V DC connect four wires as shown, one to each of the coils. Recommended wire size is at least 16 AWG [1.3 $\rm mm^2].$



For T1 and T2 24 V DC applications, jumper pins B and C at the mating half connector. Pins A and D can be extended to the required length. Recommended wire size is at least 18 AWG [1.0 mm^2].

For T4 24 V DC recommended wire size is at least 16 AWG $[1.3 \text{ mm}^2]$.

9 THROTTLE ADJUSTMENT

Use the adjustable idle stop set screw (minimum throttle adjustment) to set a fixed fuel opening if the speed controller does not have an idle feature. The figure below represents where to generally find the adjustment screws on an ATB.

Typically idle speed should be set by unplugging the actuator power to the governor or by turning off the governor power once the engine is running and then setting the engine speed to the desired setting.

IDLE STOP ADJUSTMENT 1. Using a small Phillips head screwdriver, remove the sealing screw. This gives you access to the inner Idle set screw. 2. Using a 2.5 mm hex wrench, at the Idle set screw, turn the wrench clockwise to increase the fixed throttle opening. 2. After a fixed increase the like set screw increase the screw.

3. After adjusting the Idle set screw, insert the sealing screw and tighten to snug plus 1/4 turn.



10 T2 POSITION FEEDBACK SENSORS

If the ATB includes the position feedback sensor, the sensor is installed and preset at no fuel (0 %) at 1.0 V output. Max opening (100 %) at 65° is 3.8 V.









11 T1 AND T4 POSITION FEEDBACK SENSORS

The position feedback sensor is installed and preset at no fuel (0 %) and 1.0 V output. Maximum opening (100 %) is 65° and 3.8 V DC output.

(ATB T1 & T4)	T1 & T4 Position Feedback Sensor Wiring								
	Pin	Signal	Sensor Wiring						
	А	+5 V Supply	Green						
АВС	В	GND	Brown						
Mating Connector EC1523	С	OUT	White						



12 TROUBLESHOOTING

If the governor system fails to operate, perform the following tests at the actuator. If the actuator passes these tests, the problem is likely elsewhere in the governor or fuel system. Confirm all wiring and connector terminations. Reference your speed controller's troubleshooting information.

1. With the engine shut down, at room temperature (73 °F [23 °C]) perform the following. Disconnect the wiring harness from the ATB.

2.	At the ATB, measure resistance between terminals pins on	Coil Resistance (±10 %) at 72 °F [23 °C]						
	the connector as noted in this coil resistance table and steps 3-6.	Measure resistance between ATB connector terminals						
		T1	A - B	4.3 Ω				
	the actuator is defective.	T1	C - D	4.3 Ω				
	Contact your GAC representative.	T2	A - B	2.8 Ω				
		T2	C - D	2.8 Ω				
		T4	A - D	2.5 Ω				

- 3. Measure the resistance between one lead of the actuator and the housing of the actuator. It should be infinity.
- 4. Check the ATB butterfly valve to ensure it moves freely using your finger. If not then there is probably dirt or grime in the bore.
- 5. Energize the actuator to full throttle by momentarily connecting it to the battery supply or by placing a jumper at the speed control unit. The throttle plate should move to the open position. If not then the actuator is defective.
- 6. Check the Idle and Maximum throttle adjustments to make sure they are set correctly.

SERVICE AND MAINTENANCE

The CSA ATB Series are NOT serviceable units.



Under no circumstances should it be modified, opened, or altered. Do not attempt to repair or replace components on the ATB. This will void warranty. Do not remove covers. The unit contains no user-serviceable parts. Warranty is void if covers or any part of the unit is removed.

Contact GAC for support at:

Email GAC@governors-america.com

Phone +1.413.233.1888

Mail Governors America Corp. 720 Silver Street Agawam, MA 01001, USA

European Compliance for CE Marking:

These listings apply to stationary or material handling industrial equipment only and are limited only to those units bearing the CE Marking.

EMC Directive: Declared to 2004/108/EC COUNCIL DIRECTIVE of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and all applicable amendments.

North American Compliance:

These listings are limited only to those units bearing the CSA identification Class 1 Div 2 Groups A, B, C, D [Class 1, Zone 2 Group IIC] for use in Canada and the United States. Certificate details are available upon request.

This product is certified as a component for use in other equipment. The final combination is subject to acceptance by the authority having jurisdiction or local inspection.

Wiring must be in accordance with North American Class I, Division 2, or European Zone 2, Category 3 wiring methods, as applicable, and in accordance with the authority having jurisdiction