Product Manual

Generator Monitoring Module



Part Number: XCAN-AC
Revision: 1.2

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Introduction

1.1 The XCAN-AC is a sealed microprocessor-based generator measurement module

1.2 It is designed to be used in conjunction the Controls, Inc. G series control panels.

1.3 The product is packaged with a sealed polycarbonate enclosure for maximum durability.

1.4 The controller is plug & play with two sealed bulkhead connectors incorporated into the case. One for the intermediate harness and one for the generator connections.

1.5 Operating temp to –45C to +85C and the storage temp to –55C to +95C.

1.6 The unit monitors generator output with connections to each phase for voltage, current and frequency.

1.7 Generator information is transmitted on the CAN Bus in J1939 format.

Enclosure

1. Sealed DT series connectors
2. Polycarbonate case with mounting holes
3. Vented Gortex membrane for breathability



Generator Control Installation Kits

Installation kits are available which include the following

1) Control panel, P/N G3-2500
2) Generator monitor, P/N XCAN-AC
3) Current transformers, size and quantity depend on installation
4) Generator wiring harnesses, P/N 70-0670-5 (5 Foot)
5) Intermediate Harness, P/N 70-0671-5 (5 Foot)



PART NUMBER BREAKDOWN

Model → **G3 2500 803 K** ← "Kit" Includes Harnesses and XCAN-AC Module Five Foot Standard

2500: Enclosure Package

803: CT Size (800:5) And QTY (3)

Connections

The XCAN-AC module has two twelve-pin sockets that are keyed and color-coded to make identification easy and prevent miswiring. The right socket (black) is the engine-side connection and the left socket (gray) is the generator-side connection.

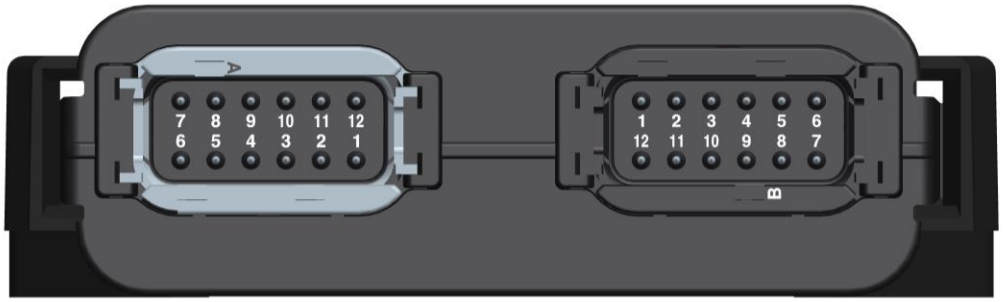
Pin Assignments

Generator Socket: [GREY]

Pin #	Assignment
1	CT Phase A Return
2	CT Phase B Return
3	CT Phase C Return
4	Generator Neutral
5	Not Used
6	Not Used
7	Generator Phase B
8	Generator Phase C
9	Generator Phase A
10	CT Phase C
11	CT Phase B
12	CT Phase A

Engine Socket: [BLACK]

Pin #	Assignment
1	V Battery + (12-24)
2	Not Used
3	Not Used
4	Not Used
5	CAN L
6	Ground (V-)
7	Ground (V-)
8	CAN H
9	Not Used
10	Not Used
11	Not Used
12	V Battery +



Neutral Isolation

The XCAN generator neutral is isolated from battery ground. Up to 3kV of potential difference may be tolerated. Connecting the neutral to battery ground is optional and will not affect the generator readings either way.

Phase A Required

Phase A voltage and CT inputs must be connected in order for the XCAN to determine frequency and phase angle. In the event of Phase A loss in a three-phase wye connection, the voltages and currents on the other two phases will still be reported, but the frequency will be reported as zero, and the KVar and KW readings will be based on a power factor of 1.0.

All CT Returns Required

The XCAN-AC generator socket has six pins assigned to the Current Transformers. Each CT return wire must be routed back to the correct pin on the connector. Mixing return connections, or combining returns into a single wire will result in bad readings.

Field-Settable CT Ratios

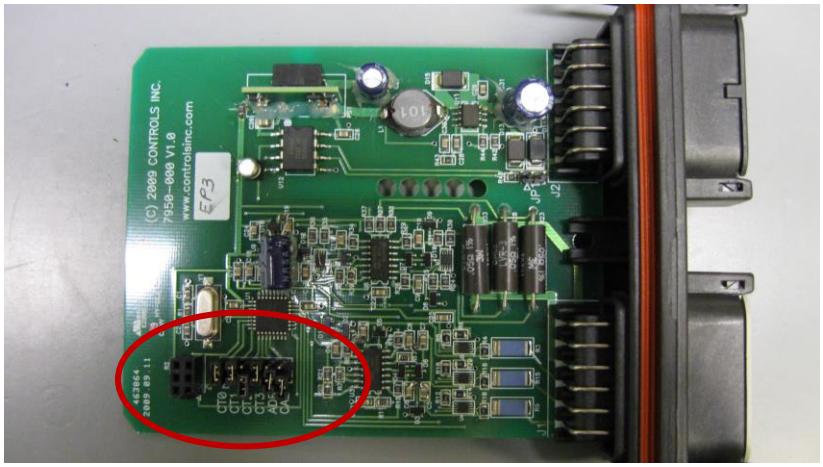
Field-settable jumper blocks permit a wide range of CT ratios to be configured. In all cases, the CT secondary full-scale must be 5 Amps.

To change the CT ratio setting, do the following:

1. Disconnect the XCAN-AC from field wiring.
2. Open the unit by depressing the side tabs of the end cap and sliding the end cap/PBC assembly out of the shell.
3. With the end cap down, locate the group of header pins in the upper left corner of the PCB.
4. Configure jumpers on the header pins per the table below (J=jumper, O=Open) :

CT Primary Amps	CT0	CT1	CT2	CT3
50	J	J	J	J
75	O	J	J	J
100	J	O	J	J
200	O	O	J	J
250	J	J	O	J
300	O	J	O	J
400	J	O	O	J
500	O	O	O	J
600	J	J	J	O
800	O	J	J	O
1000	J	O	J	O
1200	O	O	J	O
1500	J	J	O	O
2000	O	J	O	O
2500	J	O	O	O
3000	O	O	O	O

5. Slide the PCB back into the shell, making sure the PCB goes into the side grooves, the end cap seats securely, and the side tabs snap into the locked position.



Unused Inputs

Unused voltage inputs should be tied to neutral (except when using Delta connection, see below). Unused CT inputs should be tied to their respective return.

Delta Connection Instructions

To use the XCAN-AC with Delta-wired generators, follow these steps:

1. Open the unit by depressing the side tabs of the end cap and sliding the end cap/PBC assembly out of the shell.
2. With the end cap down, locate the group of header pins in the upper left corner of the PCB.
3. Install a jumper block on the header pins to the right of the legend “Y/Delta”.
4. Slide the PCB back into the shell, making sure the PCB goes into the side grooves, the end cap seats securely, and the side tabs snap into the locked position.
5. Connect the voltage inputs as follows:

Generator Lead	XCAN-AC Input
Phase A	Phase A
Phase B	Neutral
Phase C	Phase C

The CTs connect the same as for wye wiring.

Alternate CAN Address*

The XCAN-AC is pre-configured to source address 44. In the unlikely event that another device on the bus already had this address, a jumper a provided to change the address to 51. To change the address, follow these steps:

1. Open the unit by depressing the side tabs of the end cap and sliding the end cap/PBC assembly out of the shell.
2. With the end cap down, locate the group of header pins in the upper left corner of the PCB.
3. Install a jumper block on the header pins to the right of the legend “ADR”.
4. Slide the PCB back into the shell, making sure the PCB goes into the side grooves, the end cap seats securely, and the side tabs snap into the locked position.

*XCAN-AC-06 uses SA 51 as the default and SA 52 for the alternate.

Measured Parameter – When used with a display such as the G3-100, the XCAN-AC will provide the following information about the generator.

- **Phase A Voltage**
- **Phase A Current**
- **Phase B Voltage**
- **Phase B Current**
- **Phase C Voltage**
- **Phase C Current**
- **Frequency**
- **Generated Power (Total kW)**
- **Total Reactive Power**
- **Power Factor**
- **Total Apparent Power**
- **Power Factor Phase (Lead or Lag)**
- **Generated Power (Total kWH)**



10) Warranty

CONTROLS, INC. is herein called "Seller". The person, firm or corporation to whom or which the sale is made is herein called "Buyer". Seller warrants to the Buyer that all products furnished under this order will conform to Seller's specification, drawings as described in its current catalog or quotation and will be free from defects in materials and workmanship. Seller must approve other special requirements asked for by the Buyer in its purchase order in writing. Parts replaced or repaired in the warranty period shall carry the unexpired portion of the original warranty. The foregoing is subject to the provisions that in no case will the total warranty period extend beyond twelve (12) months from date seller ships equipment from point of sale.

The Liability of Seller hereunder is limited to replacing or repairing at Seller's factory any part or parts which have been returned to the Seller and which are proved by buyer as defective or not conforming to Seller's specifications, drawings or other written descriptions, accepted by Seller, provided that such part or parts are returned by the buyer within thirty (30) days after such defect is discovered. All items returned to Seller for repair or replacement must be sent freight prepaid to its factory. Buyer must obtain Seller's Return Merchandise Authorization # prior to returning items. The above conditions must be met if warranty is valid. Seller will not be liable for any damage done by unauthorized repair work, or unauthorized misapplication in non-suitable environment.

In no event shall the Seller be liable for loss, damage, or expense directly or indirectly arising from the use of the units, or from any other cause, except as expressly stated in the warranty. Seller makes no warranties, express or implied, including any warranty as to merchantability of fitness for a particular purpose or use. Seller is not liable for and buyer waives any right or action it has or may have against seller for any consequential or special damages arising out of any breach of warranty, and for any damages buyer may claim for damage to any property or injury or death to any person arising out of its purchase or the use, operation or maintenance of the product. Seller will not be liable for any labor subcontracted or performed by buyer for preparation of warranted item for return to Seller's factory or for preparation work for field repair or replacement. The Seller will not consider invoicing of Seller for labor either performed or subcontracted by buyer as a liability. This warranty shall be exclusive of any and all other warranties express or implied and may be modified only by a writing signed by an officer of the Seller. With respect to accessories supplied by Seller, but manufactured by others, there is no warranty of any kind, express or implied, and specifically there is no warranty of merchantability or fitness, except as may be set forth in any warranty the manufactures have made to Seller and which can be passed to the Buyer.