THOMSON TECHNOLOGY®
POWER & CONTROL

GENSET CONTROLLER

MEC 310 CONTROLLER

- Superior control & monitoring features for today's electronically controlled engines.

- Flexible design allows use on most common diesel and gas engine generator set applications.

- Programmable Engine Sensor Curves for Oil Pressure, Temperature and Fuel monitoring.

- Standard On board event logging with Real Time Clock.

- RS485 Remote communication port is available with Modbus™ protocol for flexible interface to PC's, PLC's & SCADA systems.

- CANbus Communication Port is available which supports various electronic engine protocols including J1939 and MTU/DDEC

- Graphical Display with alpha-numeric & graphics readout for display and programming. Programmable for Multiple Languages or Icon Symbols. High visibility.

- Digital 3-phase Power Metering including kW, kVAR, kVA, Power Factor and kWHr, for generator supply.

- Self diagnostic features continuously verify processing, I/O and memory circuits.

- Available with optional EAP 300 Remote Annunciator.

- Meets NFPA 110 requirements.

- UL listed to UL 508 and certified to CSA 22.2 #14 Industrial Control Equipment Standards.

GENERAL DESCRIPTION

The **MEC 310** is an integrated **Genset Controller**, which is Thomson Technology's fourth generation of generator set products. The **MEC 310 Microprocessor-based Genset Controller** provides the latest advancements in design technology for the control and monitoring of today's electronically controlled engine-generator sets. The **MEC 310** has an optional engine communication interface CANbus port which supports multiple J1939 engine protocols. The **MEC 310** is factory configured to control all the operational functions and display features of the engine-generator. Standard and optional control features of the **MEC 310** are programmable from the front panel LCD display and are security password protected. The LCD display screen prompts are available in multiple languages, providing a user-friendly operator interface with many display screens available. The microprocessor design provides high accuracy for all voltage monitoring, current monitoring and timing functions as well as providing many standard features which were previously only available as optional features. All data is available through Modbus™ communications for remote/SCADA monitoring. The **MEC 310** also supports Expansion Inputs and Outputs using industry standard CANopen I/O Protocol. Translation function of the TPS 300 software makes it possible to change all texts used in the unit. The **MEC 310** is available with fully integrated Automatic Mains Failure (AMF) monitoring and control features that allow for interfacing with an external generator and utility power switching mechanism.

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ISO 9001

MEC 310 STANDARD MONITORING AND CONTROL FEATURES

Operator Interface: The **MEC 310** utilizes a Super Twisted Nematic (STN) graphical display with black lettering on white background that offers a wide viewing angle and excellent visibility. The display can be programmed in multiple languages including English and Spanish. Multiple front mounted push-buttons provide easy programming navigation as well as a selection of required operating modes. High intensity LED indicator lights are also provided for critical operating mode statuses.

Engine Control & Monitoring: The **MEC 310** is provided with the following engine control features:

- **Auto Start Control:** Cycle cranking with integral speed sensor from engine mounted magnetic pick-up for crank disconnect and over speed protection
- **6 Programmable Binary Fault Alarms/Shutdown Inputs:** Alarms/shutdowns to meet/exceed requirements of NFPA 99, 110 & CSA 282
- **Engine Parameter Display:** Digital display of oil pressure, coolant temp, battery voltage, RPM, and fuel level
- **5 Programmable Outputs** (when AMF option is utilized, 2 outputs are dedicated for AMF control): programmable functions such as common alarm and shutdown contacts for remote indication
- **2 Dedicated Output Contacts:** 6A, normally open Crank, Fuel (Run)
- **Configurable Set Points/Time Delays:** Password protected access to set time delays (engine start, crank, rest, cool down, oil bypass etc)
- **Event Logging:** Standard 150 event logs with time/date stamp capability utilizing on board real-time clock with battery back-up
- **Configurable Views**
- **3/2/1 – Phase generator monitoring**

Power Metering: The **MEC 310** provides digital display of single or three phase power metering data for the generator via the LCD operator interface display. Generator power metering data provided includes kW, kWhr, kVAR kVA, Power Factor as well as 3-phase RMS voltage, current and AC frequency. Utility metering (AMF Option) data provided includes 3-phase RMS voltage and AC frequency.

Protective Relaying: The **MEC 310** provides configurable protective relaying functions for the Generator supply via the LCD operator interface display. Generator protective relaying includes IEEE/ANSI (27/59) Over/under voltage, (81 o/u) over/under frequency, (32) Reverse Power and (51) time-overcurrent protection. When AMF feature is supplied, mains (utility) protection includes (27/59) over / under voltage, (81 o/u) over/under frequency, (60) voltage balance and phase sequence protection.

Communication Interface Ports: The **MEC 310** is provided standard with two communication ports as follows:

- CANbus communication port for interface with a remote annunciator (EAP 300) and CANopen port for I/O Expansion modules (EXP).

- Service RJ11 port for interface to remote PCs. To utilize this port for programming and remote monitoring, an external Service Set-up Port module (SSP) with an RS232 port is required.

MEC 310 OPTIONAL FEATURES

The **MEC 310** is available with the following optional features:

- **J1939 –** (Option J) CANbus engine communication port which supports various electronic engine protocols: e.g. J1939 Volvo, John Deere, MTU/DDEC, Cummins, etc. Please specify at time of order. For other protocol types, consult factory

- **MODBUS™ –** (Option M) RS485 Serial Port with MODBUS™ RTU Protocol

- **AMF –** (Option A) Automatic Mains Failure control and monitoring feature. Includes 3 phase mains (utility) supply voltage monitoring/ display and control, generator and mains power switching mechanism control outputs and front faceplate mounted control pushbuttons with mimic bus indications

- **EAP 300 –** Remote Annunciator with CANbus communication capability to remotely monitor up to 16 Genset alarms or shutdowns. Compliant with NFPA 110 Level 1 & 2 requirements

- **SSP –** Service Setup Port provides an RS232 communication port that interfaces with the MEC 310 service RJ11 port for remote monitoring and program configuration uploading/ downloading via PC.

- **EXP –** Expansion CANOpen Input and Output modules.

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ORDERING INFORMATION

Specify the following 9 digit MEC 310 MODEL CODE as per the features and applications shown below:

1	2	3	4	5	6	7	8	9
M	E	C	3	1	0			

7 - Controller Type
S – Standard Engine Controller
A – Engine Controller with Auto Mains Failure

8 - Engine COM Option
X – None
J – CANbus Port with J1939 Protocol

9 - Modbus™ Protocol Option
X - None
M – RS485 Serial Port with Modbus™ Protocol

SAFETY/PERFORMANCE STANDARDS

Listed to UL 508 Industrial Control Equipment & Certified to CSA C22.2 #14 Industrial Control Equipment
NFPA 110 Level 1 & 2 National Fire Protection Agency-Emergency & Standby Power Systems
NFPA 99 National Fire Protection Agency-Health Care Facilities
CSA C282 Emergency Electrical Power Supply for Buildings

SPECIFICATIONS

Power Supply Input Voltage	7.5– 32.7Vdc (8W Max)
Temperature Range	-25°C to 50°C (-13F to 122F) Operating, -40°C to 70°C (-40F to 158F) Storage
Relative Humidity	95% Non-condensing
Environmental Rating	NEMA 4, IP65 (when installed in Panel)
Vibration	100Hz, 0.7G
LCD Display	Graphical & Text STN (128 x 64 pixels)

HARDWARE INPUTS

Voltage and Current Sensing

3 - Voltage Inputs - Generator	50-480V RMS line-to-line (Nominal), Class 2
3 - Voltage Inputs - Mains (Utility) AMF Option	50-480V RMS line-to-line (Nominal), Class 2
3 - Current Transformer Inputs - Generator	1A or 5Aac (Nominal) 0.5VA/Phase Burden, Class 2
Operating System Frequency	30-70Hz, Class 2

Multifunction Inputs (3- Inputs Programmable)

3 Engine Sender Inputs	Fuel Level	0-180 Ohms/0-100%	0-180 Ohm Min/Max
(programmable data points)	Oil Press	0-180 Ohms/ 0-10BAR, 0-145 PSI	0-240 Ohm Min/Max
	Engine Temp	480-18 Ohms/50-150C, 104-302F,	0-2500 Ohm Min/Max

3 Binary Inputs (programmable) with cable supervision — Normally open or closed contact sense (6-36Vdc)
3 Analog Inputs (programmable) — 0-20mA or 4-20mA

Binary Inputs

Emergency Stop	Normally closed contact sense (6-36Vdc)
6 Binary Inputs (programmable)	Normally open or closed contact sense (6-36Vdc)

Engine Speed Sensing Inputs

Magnetic Pickup Voltage Input	10 - 10,000Hz, 2.0 - 70Vac RMS
Alternator W- Terminal or NPN/PNP Transistor	12V/24V with external excitation resistor

HARDWARE OUTPUTS

Isolated Contact Outputs

Crank, Run - Form A	30Vdc, 6A (resistive) UL/C-UL
2 Programmable Outputs - Form A	230VAC/30Vdc, 1A (resistive) UL/C-UL
Status - Form A	30Vdc, 1A (resistive) UL/C-UL

Powered Output Contacts

3 Programmable Outputs	DC System Voltage (12/24V Nominal), 1A (resistive) UL/C-UL

COMMUNICATION PORTS

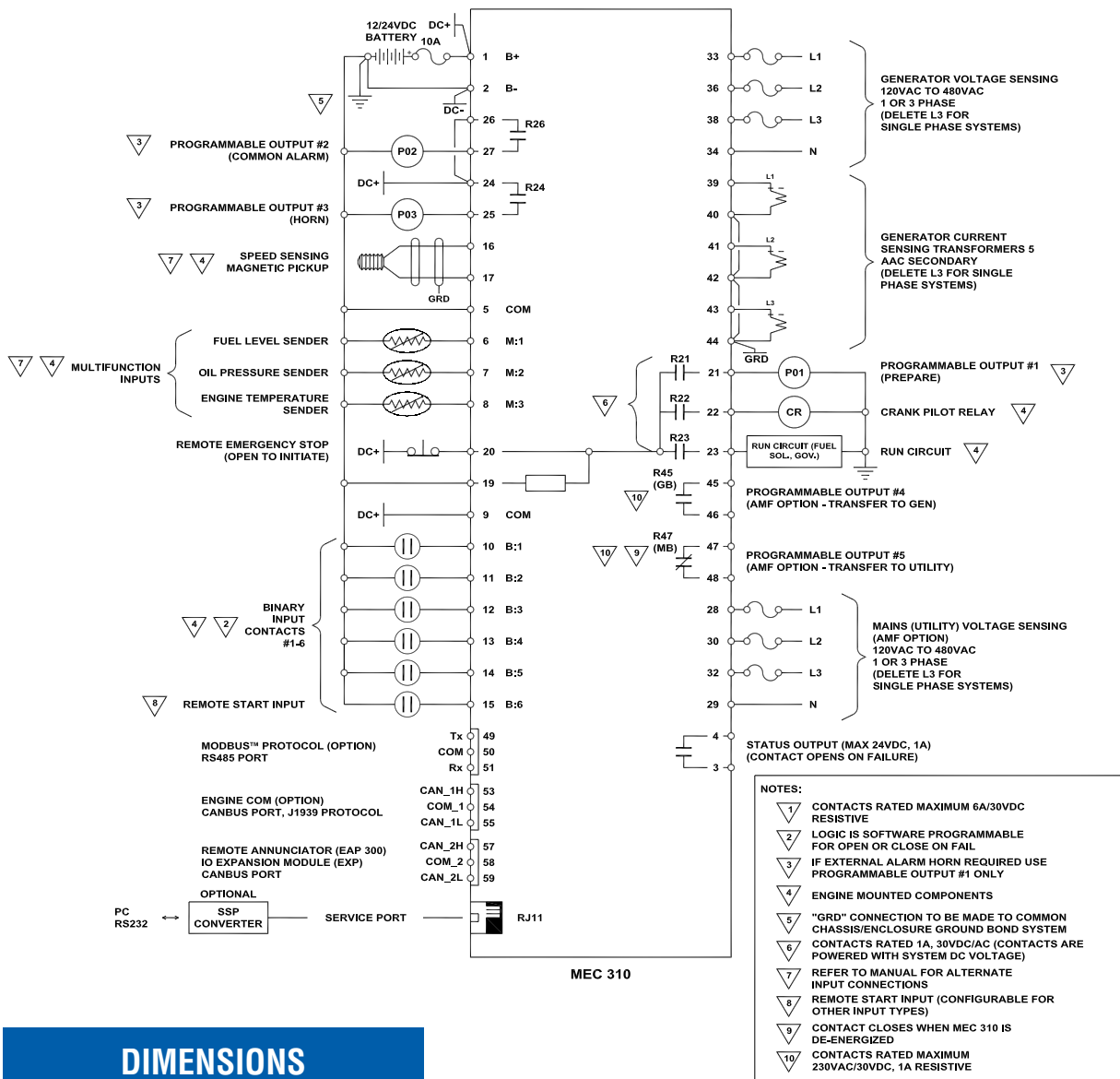|	
Service Port	RJ11 Port for SSP Module (for RS232 Interface)
Remote Annunciator and EXP Port	CANbus Port 2 for EAP 300 and Expansion I/O modules
Engine COM Port (Optional)	CANbus Port 1-J1939 Protocol
Modbus™ Protocol (Optional)	Serial RS485 Modbus™ RTU Protocol

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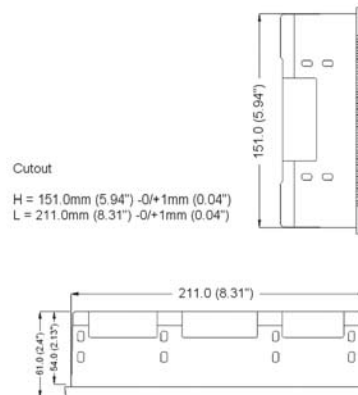
TYPICAL MEC 310 CONNECTION DIAGRAM

MEC 310

NOTES:

1. CONTACTS RATED MAXIMUM 6A/30VDC RESISTIVE
2. LOGIC IS SOFTWARE PROGRAMMABLE FOR OPEN OR CLOSE ON FAIL
3. IF EXTERNAL ALARM HORN REQUIRED USE PROGRAMMABLE OUTPUT #1 ONLY
4. ENGINE MOUNTED COMPONENTS
5. "GRD" CONNECTION TO BE MADE TO COMMON CHASSIS/ENCLOSURE GROUND BOND SYSTEM
6. CONTACTS RATED 1A, 30VDC/AC (CONTACTS ARE POWERED WITH SYSTEM DC VOLTAGE)
7. REFER TO MANUAL FOR ALTERNATE INPUT CONNECTIONS
8. REMOTE START INPUT (CONFIGURABLE FOR OTHER INPUT TYPES)
9. CONTACT CLOSES WHEN MEC 310 IS DE-ENERGIZED
10. CONTACTS RATED MAXIMUM 230VAC/30VDC, 1A RESISTIVE

DIMENSIONS

Cutout

H = 151.0mm (5.94") -0/+1mm (0.04")
L = 211.0mm (8.31") -0/+1mm (0.04")

151.0 (5.94")

211.0 (8.31")