Microprocessor-based circuitry provides ultimate reliability and versatility
Standard features meet or exceed requirements as defined by NFPA 110 Level 1 and CSA C282
Backlit LCD display screen with alpha-numeric readout for display and programming
Digital 3-phase voltage, 3-phase current, KVA and frequency metering for generator output
Up to 28 alarm/shutdown fault circuits utilizing analog and digital inputs
Standard RS422 remote communication serial port
Alarm/shutdown indications are displayed in plain English language
Optional expansion output module for individual fault output contacts
Password protected programming levels
Self diagnostic features continuously verify processing, I/O and memory circuits
Superior EMI/RFI noise immunity and surge performance features as per IEEE C62.41
Certified to UL #508 and CSA 22.2 #14 Industrial Control Equipment Standards

GENERAL DESCRIPTION

The Thomson Technology MEC 20 Microprocessor-based Engine/Generator Controller utilizes the latest advancements in microprocessor technology, printed circuit board assembly techniques and software development. This is the eighth generation of engine controllers from Thomson Technology, and reflects over 25 years of engine controller design experience, including a decade utilizing microprocessors. The result is an automatic engine/generator controller of superior design, providing a comprehensive array of operational, protection and display features. All functions of the MEC 20 are fully configurable from the front panel keypad, and are password protected. The LCD display screen prompts are in plain English, providing a user-friendly operator interface with many display options available. The microprocessor design provides high accuracy for all voltage monitoring, current monitoring and timing functions as well as providing many standard features which are commonly available only as expensive add-on optional features on competitors' products.
STANDARD FEATURES

- Alpha-Numeric Readout: Display and programming
- Digital AC Metering: 3 phase voltage (phase to phase and phase to neutral), 3 phase current, KVA, frequency
- Digital Engine Gauge Display: Oil pressure, Engine temperature, Battery Voltage, Hourmeter, Tachometer
- 28 Standard Fault Circuits:
  - Shutdowns
    - Over Crank
    - Under Voltage
    - Over Voltage
    - High Engine Temperature
    - Low Oil Pressure
    - Over Speed
    - Loss of Speed Signal
    - Emergency Stop
  - Alarms
    - Under Frequency
    - Over Frequency
    - Low Fuel Level
    - Weak Battery
    - Low Battery Voltage
    - High Battery Voltage
    - Battery Charger Fail
    - Emergency Stop

- Timers:
- Control Switches:
- Emergency Stop:
- LCD Display Menus:
- LED Indicators:
- AMF (Auto Mains Failure):
- Diagnostic LED Indicators:
- Audible Alarm Horn:
- Run & Crank Output Contacts:
- Common Fail Output Contact:
- 4 Programmable Output Contacts:
- Provision for Remote Contact Inputs:
- Engine Senders:
- COM:
- Engine Senders:

OPTIONAL FEATURES

- CIM Communication Interface Module with internal 14.4Kbaud modem, RS232/422/485 ports and Modbus™ protocol c/w 6’ communication cable. One CIM module provides communication interface for up to ten MEC 20 controllers with COM per system.
- EAP 110 Remote annunciator with data communication link. 20 light annunciator for NFPA 110 (Level 1) & CSA282-00 faults.
- EXP 16 point relay expansion module for individual fault output contacts on MEC 20. Specify number of expansion modules required (one module required for standard C282 or NFPA 110, two modules required for standard and optional fault circuits). Relay contacts are configurable (normally open or closed) and are rated 0.5A 120VAC, 1.0A 30Vdc resistive (maximum)
- MEC–O&M Additional Product Manual (one manual is included with each unit shipped)
- PRG Custom programming of features (provides up to 6 custom fault labels)
- VFD Vacuum fluorescent display for extended low temperature operation (-40°C)

NOTE: Customer to supply and install engine-mounted crank pilot relay, magnetic pickup and current transformers.
All of the following items are field programmable using the front panel keypad and LCD display. A password code restricts access.

**General Programming**
- Node address (1 - 255)
- System voltage (120 - 15000 volts)
- System frequency (50/60Hz)
- System phases (single or 3 phase)
- Voltage sensing ratio (1 - 208)
- Current sensing ratio (1 - 999)
- Engine temperature units (deg. F / C)
- Oil pressure units (PSI / KPA)
- Engine start delay (0 - 999 sec.)
- Crank time (0 - 99 sec.)
- Rest time (0 - 99 sec)
- Starter re-engage cycle time (0 - 99 sec.)
- Number of crank attempts (0 - 99)
- Oil bypass delay (0 - 99 sec)
- Cool down time (0 - 99 min.)
- Number of flywheel teeth (0-999 teeth)
- Nominal engine speed (0-4000 RPM)
- Crank disconnect set point (0 - 100%)
- Over speed set point (100 - 150%)
- Run output fail safe activated (yes/no)
- Loss of speed signal (alarm/shutdown)
- Common fail output for “not in auto” (yes/no)
- Programmable output #1, 2, 3, 4, 5, 6
- Post lube duration (0 - 999 min.)
- Cycle lube interval (1 - 9999 min.)
- Cycle lube duration (0 - 999 min.)
- Horn duration (0 = continuous, 1 - 999 sec)
- Display menu time-out (60 - 999 sec)

1 Programmable outputs #5 & #6 are available only with option EXP

**Digital/Analog Fault Input Programming (For Each Circuit)**
- Fault label description (choose from list)
- Level set point (analog fault)
- Shutdown or alarm
- Latched or non-latched alarm
- Always active or after bypass delay
- Transient delay (0 - 99 sec.)
- Fault contact open/close to fail (digital fault)

**Programmable Output Contact Functions**
(select only one function per output used)
- Energize to stop
- Idle control
- Pre-lube/post-lube/cycle-lube control
- Switch not in auto alarm
- Over current
- Preheat
- Ready alarm status
- Engine run alarm status
- Air flap
- Transfer switch load test
- Oil bypass delay expired
- Common alarm
- Common fail
- Ready to load

**Analog Calibration Programming**
- Analog zero
- Analog span

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**SPECIFICATIONS**

- **Power Supply:** 10 to 30Vdc, negative ground
- **Operating Temperature:** -15°C to +50°C
- **Environmental (Faceplate):** NEMA 12
- **Vibration:** 4g, 5-250Hz
- **Engine Gauge Display Accuracy:**
  - Analog Oil Pressure Measurement:
    - Range: 15 PSI – 150 PSI (maximum)
    - Pressure Accuracy:
      - Operating range 15 - 59 PSI = ± 6 PSI
      - Operating range 60 - 75 PSI = ± 2 PSI
      - Operating range 76 - 150 PSI = ± 7 PSI
  - Analog Engine Temperature Measurement:
    - Range: 0-200°C (maximum)
    - Temperature Accuracy:
      - Operating range 0 - 30°C = ± 8°C
      - Operating range 30 - 100°C = ± 2°C
      - Operating range 100 - 200°C = ± 8°C
- **Power Consumption:** 5 watts (max.)
- **Storage Temperature:** -20°C to +70°C
- **Humidity:** 5 to 95% non-condensing
- **Dimensions:** 10.75"W x 6.75"H x 2.0"D
- **AC Metering Accuracy:** ± 1.0%, @ 25°C Volts, Amps
  ± 2.0%, @ 25°C KVA
- **Inputs:**
  - Engine Speed Sensing: 100 - 10,000Hz, 3.0 - 20VAC, rms
  - AC Voltage: 120 - 600VAC (nominal), 0.1VA, 3 phase, 50/60Hz
  - AC Current: 0 - 5Aac (nominal), 1.5VA, 3 phase
  - Engine Parameters: Dedicated Senders (supplied loose)
  - Digital Fault Contacts: Open or Close to DC Negative
- **Output Contacts:**
  - Run, Crank: 10A/240VAC, 8A/24Vdc resistive, (3A inductive, 0.4pf) Form A
  - Programmable, Common Fail: 10A/240VAC, 8A/24Vdc resistive, (3A inductive, 0.4pf) Form C