![Murphy by Enovation Controls logo]

PowerCore® MPC-10/TEC-10 Software Release

Enovation Controls continues to improve software for the Murphy PowerCore MPC-10 and TEC-10 controllers. The latest software release (**Application 02.09.10051.00; Configuration 2.9.20016; Bootloader 2.9.10015**) provides an enhanced user experience with many new features and changes.

Enovation Controls will continue to provide enhancements to the controllers' software periodically throughout their life cycle. In order to take advantage of the new features in this update on previously purchased units, please download the latest configuration tool **(2.9.21073),** and load the new firmware into your current controller. This may require additional Murphy equipment such as the MPC-10 USB programming harness or an ECOM communication dongle, which are available for purchase.

This software update provides new features and changes including:

- **Main Screen:**
    - **Engine Speed:** Updated the main screen to have a bolder and more visible font for the Engine Speed (RPM) gauge.
    - **Engine Oil Pressure:** Updated the main screen to now show Engine Oil Pressure.
    - **Engine Temperature:** Updated the main screen to now show Engine Temperature.
- **Updated USB Program Loading:** Updates to the controller's bootloader in the MPC-20-R2 allow for loading new software via USB in the menu. This new feature allows multiple files to be stored on the USB and named differently while allowing the operator to pick which file to install. When loading from Bootloader mode and not the menu the file name configurationFull.gcibin remains as a requirement.
- **Splash Screen:** Updated splash screen to incorporate newest Murphy logo.
- **Engine Support:**
    - **CAT/Perkins FT4:**
        - Updated LED and ICON frequency flashing per Engine Application Engineering Bulletins for Final Tier 4 engine models.
        - Updated after-treatment messaging per Engine Application Engineering Bulletins for Final Tier 4 engine models.
        - Added new Regeneration Screen for CAT & Perkins engines when 1) either manufacturer is selected, 2)Tier 4 is selected as the Engine Emission, and 3) Show Regen Screen is set to Yes.
    - **Deutz:**

- **Engine Throttling:** Updated software to support TSC1 engine throttling on all Deutz engine models.
- **FT4 Engine Support:** Updated software to support Final Tier 4 engines where parked regeneration is required per Deutz engine AEBs and Deutz application reviews.

o **Cummins:** Updated software to support Final Tier 4 engines per Cummins engine AEBs and Cummins application reviews.

o **Volvo:**
- **Tier 3 Sleep Mode:** Updated software to eliminate the ECU sleep mode for Tier 3 engines.
- **Loss of Speed Interrupt:** Updated software to allow engine cranking without loss of speed interrupt from controller. Cranking is completely controlled by ECU with a CAN request to start from the controller.
- **Torque Limiting:** Updated software to allow operators to set torque limit percentage of engine in the throttle settings menu when Volvo is selected as the engine manufacturer.

o **Scania:** Updated software to allow engine cranking without loss of speed interrupt from controller. Cranking is completely controlled by ECU with a CAN request to start from controller.

o **JCB:** Added JCB Final Tier 4 support to the controller for monochrome displays with ability to select JCB in the engine manufacturer list.

o **Yanmar:** Added Yanmar Final Tier 4 engine support. Yanmar was also added to the engine manufacturer list to support the engine selection.

o **Engine Manufacturer Menu Selection:** Updated software to include engine manufacturer selection menu when mechanical is chosen as engine type.

o **Kubota:** Updated software to split Kubota Diesel Engines from Kubota Gaseous (Spark Ignited) engines in the engine manufacturer list.

o **Engine Manufacturer Menu:** Updated engine manufacturer menu text to help reduce confusion on engine emission levels supported in the current version of software. The menu list will now look like the following. (M = Mechanical, T3 = Tier 3, T4i = Tier 4 Interim, T4F = Tier 4 Final)

- Caterpillar (M-T4F)
- Cummins (M-T4F)
- John Deere (M-T4F)
- Deutz (M-T4F)
- JCB (T4F)
- Volvo (T3-T4F)
- FPT (T4F)
- Isuzu (M)
- PSI (EControls ECU)
- Scania (T3-T4F)
- FORD (EControls ECU)
- Perkins (M-T4F)
- Other
- HATZ (M-T4F)
- GM (MEFI ECU)
- Yanmar (M & T4F)
- Kohler KDI
- Kubota (M-T4F, T4F DOC Only)
- Kubota (Gaseous)

- o **Controller Address Claim:** Updated software to select commonly known J1939 address claims for the controller when selecting the engine manufacturer. The ability to change the controller address remains in the menu if needed.

- **Local Start Button:** Updated software to only allow a start sequence when green start button is pressed to be accepted by controller when in the stopped state.
- **Running Loaded RPM:** Updated software to not allow running loaded RPM to pass the maximum engine speed setting if running loaded RPM is set higher than maximum engine speed setpoint.
- **Controlled Shutdown Restart:** Added selection in Digital Input Actions to allow selection of Shutdown, Controlled with Restart. This new action allows a controller shutdown to occur based on an active digital input. Once the shutdown has occurred and fault clears the controller will allow an auto start without the need of user acknowledgement of the shutdown from the user interface.
- **First-Out Indication on Shutdowns:** Updated software to allow first-out indication for shutdowns to operators. This will help decrease confusion by eliminating multiple shutdown faults when only one caused the shutdown.
- **ECU Shutdowns:** Updated software and added a menu in System Settings to allow the user to set whether they wish for the controller to initiate a shutdown of the engine on a fault from the ECU or only allow the ECU to initiate its own shutdown based on the engine faults.
- **Digital Inputs:**
  - o **Disable TSC1:**
    - ▪ Added a digital input which allows an operator to disable the TSC1 if there are other throttling methods in the application. This is critical for applications using one engine for multiple purposes due to TSC1 taking priority over other throttle methods when enabled.
    - ▪ Added internal warning fault to be present on controller when this input is active, alerting the operator TSC1 is disabled in the controller for throttling purposes.
  - o **Remote Throttle:**
    - ▪ **Remote INC/DEC:**
      - • **Remote Throttle INC:** Added input to allow an operator to manually increase the engine speed remotely like the throttle INC key does locally on the controller in manual mode of operation.
      - • **Remote Throttle DEC:** Added input to allow an operator to manually decrease the engine speed remotely like the throttle DEC key does locally on the controller in manual mode of operation.
    - ▪ **Remote Throttle Active (Auto):** Added input to enable or disable analog inputs 4-20mA Remote Throttle (Auto) and 0-5V Remote Throttle (Auto) functions.
- **Analog Inputs:**
  - o **Model 12:** Added Model 12 as an input selection for customers using this sensor for Ambient Air Temperature.
  - o **4-20mA Remote Throttle (Auto):** Added 4-20mA Remote Throttle input to allow this throttle method to take priority over local control auto throttle method when digital input Remote Throttle Active is active. This input will change the TSC1 message to the ECU from minimum speed to maximum speed linearly from 4mA to 20mA when active.
  - o **0-5V Remote Throttle (Auto):** Added 0-5V Remote Throttle input to allow this throttle method to take priority over local control auto throttle method when digital input Remote Throttle Active is

active. This input will change the TSC1 message to the ECU from minimum speed to maximum speed linearly from 0V to 5V when active.

- **Auto Mode Updates:**
  - **Temperature Transducer Start/Stop Settings:** Updated start/stop settings to allow tenths when setting as automatic start/stop type.
  - **New Auto Throttle Method:** Added auto throttle method of Running Loaded INC/DEC. This will allow automatically starting and stopping the engine with the ability to locally throttle the engine.
  - **Pressure Start/Stop Settings:**
    - **Pressure Type Menu:** Exposed the pressure type in the pressure transducer menu when Pressure Start/Stop type is selected. Menu item was currently only available if pressure transducer was selected as auto throttle method.
- **Alt Excite:**
  - **Steady/Pulse Menu:** Added new menu item in Alt Excite menu to allow the operator to set whether the output is on steady or pulse. When set to Steady the alt excite will not sense if the alternator has failed. Default remains as pulse.
  - **Pulse & Sensing:** Updated the software to improve pulse and sense of the alt excite circuit when pulse is selected for alternator excitation.
  - **Alt Excite with Alternator as Speed Input:** Updated software to allow Alt Excite output to turn on earlier in the start sequence allowing particular alternators to excite and provide pulses for the speed input.
- **Exercise Timer:** Updated menu text description in Start/Stop Timers menu from Exercise to Engine Exerciser.
- **Steady/Proportional:** Updated software to remove this setting from the menu to help reduce confusion.
- **Manual Throttle Method:**
  - **Throttling Rates:** Updated software to allow the Inc and Dec buttons to work faster in adjusting the engine target speed when a low RPM step size is set in the controller.
  - **Idle/Run Editor Menu:** Updated software to remove the text string "New Variable Editor" from the menu display.
- **Standby Screen:** Added a text ribbon to the screen to provide operator indication the controller is in Manual or Auto mode of operation without having to press a button to wake the controller out of its standby mode.
- **Modbus:**
  - **Register 40012, Modbus Start/Stop:** Updated to set bit back to 0 when the controller shuts down locally.
  - **Register 40208, Serial Number:** Opened this register and marked reserved in the Modbus map.
  - **Register 40247, Remote Alarm Acknowledge:** Added register to allow remote acknowledgement of a shutdown fault without the need of local operator intervention.
- **Proprietary CAN Map:**
  - **Parameter FFBA, Serial Number:** Removed functionality and reserved this parameter in the proprietary CAN map.
  - **Parameter FFBC, Remote Alarm Acknowledge:** Added parameter to allow remote acknowledgement of a shutdown fault without the need of local operator intervention.
- **Service Reminders Menu in PowerVision for Controllers:** Added the service reminders in the menu of the controller for users of the PC tool to assign security levels to the menu items.
- **Cold Cranking for Date Code N8 and Later:** Updated software to eliminate a controller reset with a weak battery during cold cranking the engine. Newer hardware manufactured from date code N8 (N = 2017; 8 =

August) and later have the possibility to not hold through the 0Vdc 50mS cold crank dip. This software release addresses the bug and corrects this behavior.

- **TEC-10 Stop Button Fault:** Added hardware functionality for new TEC-10 controllers manufactured after June 1st, 2017. This hardware allows this software release to have a fault popup on the screen if the stop button is pressed in.
- **NEW TEC-10 Ground Pin on IO Connector:** Added a new ground pin on the 31 position connector. This is location on pin 26 to allow sensor common grounds to be used on the 31 position connector when needed.

- **PowerVision Updates for Customers Utilizing PowerVision Studio:**
  - **PowerVision 2.8 to 2.9:**
    - Read release notes of PowerVision Studio 2.9 Patch 2 for full details of changes.
    - PowerVision Studio no longer allows switching between advanced and simplified tools in version 2.9. if a version of the simplified tool is needed once a custom configuration is created from a standard 2.9 template.
    - Menu Manager now allows the user of PowerVision Studio to make default changes within the menu manager without searching for the correct variable in programming.
    - Custom configurations from version 2.8 are not upgradable into version 2.9 due to potential software instability. The configuration will need to be recreated in version 2.9 to take advantage of the newly added features.
  - **TSC1:**
    - Updated application so that TSC1 is not sending from source address 3 for the first 3 seconds after power up when a different source address for the controller is selected.
    - Updated to allow multiple TSC1 messages to be sent from the controller within the application.
  - **PowerVision for Controllers:**
    - Configurations from version 2.8 will not be upgradable into version 2.9 due to potential software instability. In order to take advantage of the new features the default settings from past configurations will need to be entered into version 2.9.
    - New look and feel of PowerVision for Controllers. Version 2.9 compared to 2.8 or earlier versions.
      - Boot logo and Page Editor is now located under the Screens page.
      - The language tab is now located under the Strings page.
      - The Create, Load, Tools and Console tabs on the top left of version 2.8 have now been simplified into the Device page which allows the building and loading of software into the controller.
      - The Change log page is new in version 2.9. This page shows any differences in the menu, screens and strings from the standard template.
      - The setting for viewing the tool in alternative languages is now located in the bottom right of the tool under Editing Languages.

How to Purchase:

Part Number	Description
40-70-0494	PowerCore MPC-10 Controller
40-70-0495	TEC-10 Controller Panel

Literature:
MPC-10 Product Page
TEC-10 Product Page
ML1000-4X Product Page

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