SERVICE BULLETIN

Original Issue Date: **3/04**
Model: **20–2000 kW with 16-Light Microprocessor Controller**
Market: **Industrial and Marine**
Subject: **Main Circuit Board GM28725 with DIP Switches and Communication Connections**

This bulletin addresses a recent change to the 16-light microprocessor controller circuit board. The new circuit board GM28725 is different in appearance and has additional functions but is a **direct replacement for earlier version circuit boards including A-336415**. Identify the new circuit board using the following items:

- Red circuit board as the previous versions are green.
- Terminal strips (TB1, TB2, and TB3)
- DIP switches (8 switches)
- Communication connector P21 for Modbus® or remote serial annunciator RS-485 communication
- Communication connector P22 for CAN (engine) communication
- Downloading new application software

Note: After setting DIP switches to the generator set application, be sure to *power down* and then *power up* the controller (disconnect the battery and then reconnect the battery of the generator set) or use the prime power switch, if equipped. The controller will NOT acknowledge the DIP switch change until after generator set controller is *powered up*.

Features

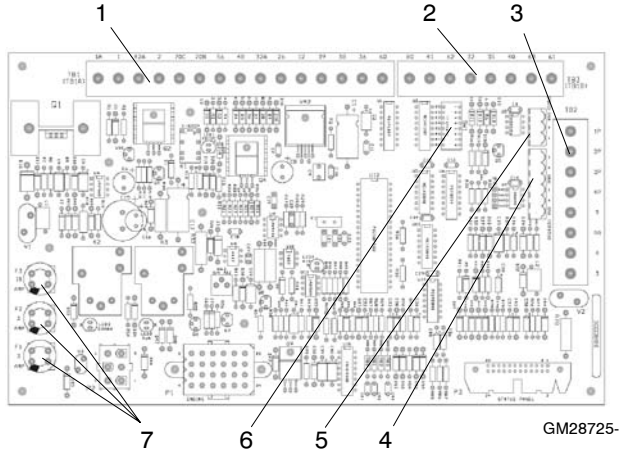
The following information summarizes the features of the new circuit board. Additional information is available in the controller operation manual TP-6161 or MP-6161.

Terminal Strips and Connections

The terminal strips are mounted on the controller circuit board. See Figure 1 and Figure 2.

Terminal Strip	Description
TB1/TB3	Terminal strip for connecting generator set accessories such as an emergency stop switch, a remote start/stop switch, audiovisual alarms, etc. Refer to the wiring diagrams for information on connecting accessories to the TB1 terminal strip.
TB2	Terminal strip for selecting the remote start/stop switch inputs and prime power mode.
P22	CAN (engine) communication connection.
P21	RS-485 communication connection for Modbus® to download new application program software or for connecting the remote serial annunciator.

Figure 1 Controller Terminal Strips/Connections



1. TB1 (TB1A) terminal strip
2. TB3 (TB1B) terminal strip
3. TB2 terminal strip
4. P21 for Modbus® RS-485 communication connection
5. P22 for CAN (engine) communication connection
6. Sw1 DIP switch (8 positions)
7. Fuses

Figure 2 Controller Circuit Board with DIP Switches

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DIP Switches

The controller circuit board contains eight DIP switches, see Figure 2 and Figure 3.

Push down the end of the DIP switch near the OPEN label to open the switch, or push down the other end to close it. See Figure 4.

Typically, the factory default settings have all the DIP switches in the closed position except the crank mode selection switch SW3 which is open for cyclic cranking. The overspeed selection switch SW1 is open on 50 Hz. units. Be sure to select the correct DIP switch configuration for each generator set application.

Overspeed Frequency (DIP Switch 1). The generator set overspeed frequency is set using DIP switch 1. Select 70 Hz for 60 Hz voltages and 60 Hz for 50 Hz voltages.

Temperature Cooldown (DIP Switch 2). The generator set will continue to run during a five-minute cooldown cycle or shut down immediately. The choice is made using DIP switch 2.

Engine Cranking (DIP Switch 3). The controller is factory-set for cyclic cranking. To change to the continuous cranking mode, use DIP switch 3.

Engine Configuration (DIP Switches 4 and 5). See Figure 3 for the DIP switch positions based on engine configurations regarding ECM, MDEC, and J1939 engine communication selections.

Modbus® Address (DIP Switches 6-8). Each Modbus® device requires a unique address. Address numbers are created using a binary number system with DIP switches 6-8. Figure 5 shows the DIP switch position for each address number.

Application Software Upgrade

Should a software upgrade be needed, use the KOHLER*net* to request program loader and application program software and download them on your PC *as directed during troubleshooting and/or when adding specific accessories*.

Go to www.KohlerNet.com and use your SecurID® to access the KOHLER*net* and click on the TechTools, Industrial, Software to request the files to download.

If KOHLER*net* is not available, send an e-mail request to PowerSystemsTechTools@Kohler.com. The e-mail subject line must include text indicating Program Loader and Application Program Software.

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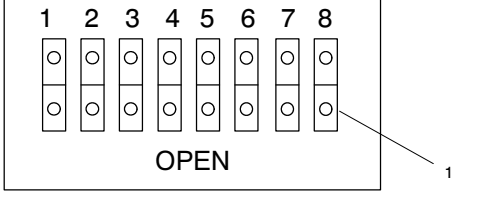
Dip Switch	Description	Switch Position	
		Open	Closed
1	Overspeed selection	60 Hz	70 Hz
2	Temperature Cooldown Enable	Cooldown Disabled	Cooldown Functional
3	Crank Mode Selection	Cyclic	Continuous
4	Engine Comm. Setting	See selections for DIP switch 4 and DIP switch 5 below	
5	Engine Comm. Setting		
6	Modbus® Address Bit 0	Value = 0	Value = 2
7	Modbus® Address Bit 1	Value = 0	Value = 4
8	Modbus® Address Bit 2	Value = 0	Value = 8
4	No ECM	Open	
5		Open	
4	MDEC Comm.	Closed	
5	Isochronous	Open	
4	J1939 Communication	Open	
5		Closed	
4	MDEC Comm.	Closed	
5	Governor (VSG)	Closed	

Figure 3 DIP Switch Functions



1. Push this side down to open circuit.

Figure 4 DIP Switch Open Position

Modbus® Address	DIP Switches		
	6	7	8
	Value = 2	Value = 4	Value = 8
1	Open	Open	Open
3	Closed	Open	Open
5	Open	Closed	Open
7	Closed	Closed	Open
9	Open	Open	Closed
11	Closed	Open	Closed
13	Open	Closed	Closed
15	Closed	Closed	Closed

Figure 5 Modbus® Device Address