SERVICE BULLETIN

Original Issue Date: **11/99**
Model: **135–2000 kW 4-Cycle DDC-Powered Models**
Market: **Industrial**
Subject: **DDEC Interface Circuit Board**

Microprocessor generator set controllers on models equipped with DDC Series 60 or Series 2000/4000 engines and Detroit Diesel engine controllers (DDEC) contain a DDEC interface circuit board (DIB) that allows the generator set controller to obtain engine information from the DDEC rather than from additional sensors/switches on the engine. See Figure 1. The DIB connects between the DDEC and the microprocessor controller main circuit board. See Figure 2.

Check the DIB and its connections for damage and correct seating when troubleshooting its operation rather than the following additional switches or sensors that are not present on generator set controls equipped with a DIB.

- Low oil pressure switch.
- High engine (coolant) temperature switch.
- High engine (coolant) temperature warning switch.
- Engine speed sensor.

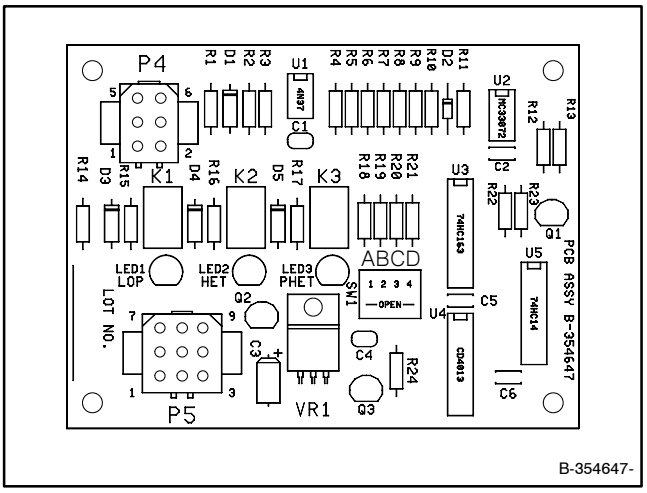

Figure 1 DDEC Interface Circuit Board (DIB)

Circuit Operation

Three relays K1 (LOP), K2 (HET), K3 (PHET), and other circuitry on the interface circuit board isolate the digital warning/fault outputs of the DDEC and convert them to a signal level used by the generator set controller. LED1 (LOP), LED2 (HET), and LED3 (PHET) light and the corresponding relay coil energizes when the corresponding input to the generator set controller signals an engine problem.

The K1 (LOP) relay coil energizes and its contact closes from the low oil pressure (LOP) switch output to ground when the DDEC sends a ground signal to the circuit board on the LOP input. K1 is not used on Series 60 engines.

The K2 (HET) relay coil energizes and its contact closes from the high engine (coolant) temperature (HET) switch output to ground when the DDEC sends a ground signal to the circuit board on the HET input.

The K3 (PHET) relay coil energizes and its contact closes from the high engine (coolant) temperature warning switch output to ground when the DDEC sends a +24 VDC battery signal to the circuit board on the pre-high engine (coolant) temperature (PHET) input.

The DDEC provides a 12 pulse/revolution engine speed signal. The interface circuit board converts this signal to a 2 pulse/revolution engine speed signal that is used by the generator set controller. The DIP switch SW1 on the interface circuit board must have the following settings.

DIP Switch SW1	
ID	**Setting**
A	Open
B	Closed
C	Open
D	Closed

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If the engine RPM reading is incorrect or when there are problems with disconnect or overspeed functions, check the SW1 switch setting.

P27 DDEC ECM	
Pin	**Description**
A1	Output to DIB P4-1, low oil pressure (LOP) signal input, wire 988 (not used on Series 60 engines)
A2	Output to DIB P4-5, pre-high engine temperature (PHET) signal input, wire 555
F3	Output to DIB P4-3, high engine temperature (HET) signal input, wire 499
K1	Output to DIB P4-6, speed sensor input (12 pulses per revolution), wire 505

P4 DDEC Interface Circuit Board (DIB)	
Pin	**Description**
1	Input from DDEC P27-A1, LOP, wire 988
2	Input from generator set controller P1-7, engine run (battery +), wire 70
3	Input from DDEC P27-F3, HET, wire 499
4	Shield, engine speed sensor, wire S1
5	Input from DDEC P27-A2, PHET, wire 555
6	Input from DDEC P27-K1, engine speed, wire 505

P5 DDEC Interface Circuit Board (DIB)	
Pin	**Description**
1	Not used
2	Output to generator set controller P1-9, speed sensor input (2 pulses per revolution), wire 16
3	Ground from generator set controller P1-2, speed sensor ground, wire 2
4	Not used
5	Not used
6	Battery positive from generator set controller P1-8, speed sensor battery positive, wire 24
7	Output to generator set controller P1-22, low oil pressure switch input, wire 13
8	Output to generator set controller P1-21, high engine (coolant) temperature switch input, wire 34
9	Output to generator set controller P1-16,high engine (coolant) temperature warning switch input, wire 40A

P1 Generator Set Controller Main Circuit Board	
Pin	**Description**
2	Ground to DIB P5-3, speed sensor ground, wire 2
7	Output to DIB P4-2, engine run (battery +), wire 70
8	Output to DIB P5-6, speed sensor battery positive, wire 24
9	Input from DIB P5-2, engine speed sensor input, wire 16
16	Input from DIB P5-9, high engine (coolant) temperature switch input, wire 40A
21	Input from DIB P5-8, high engine (coolant) temperature switch input, wire 34
22	Input from DIB P5-7, low oil pressure switch input, wire 13

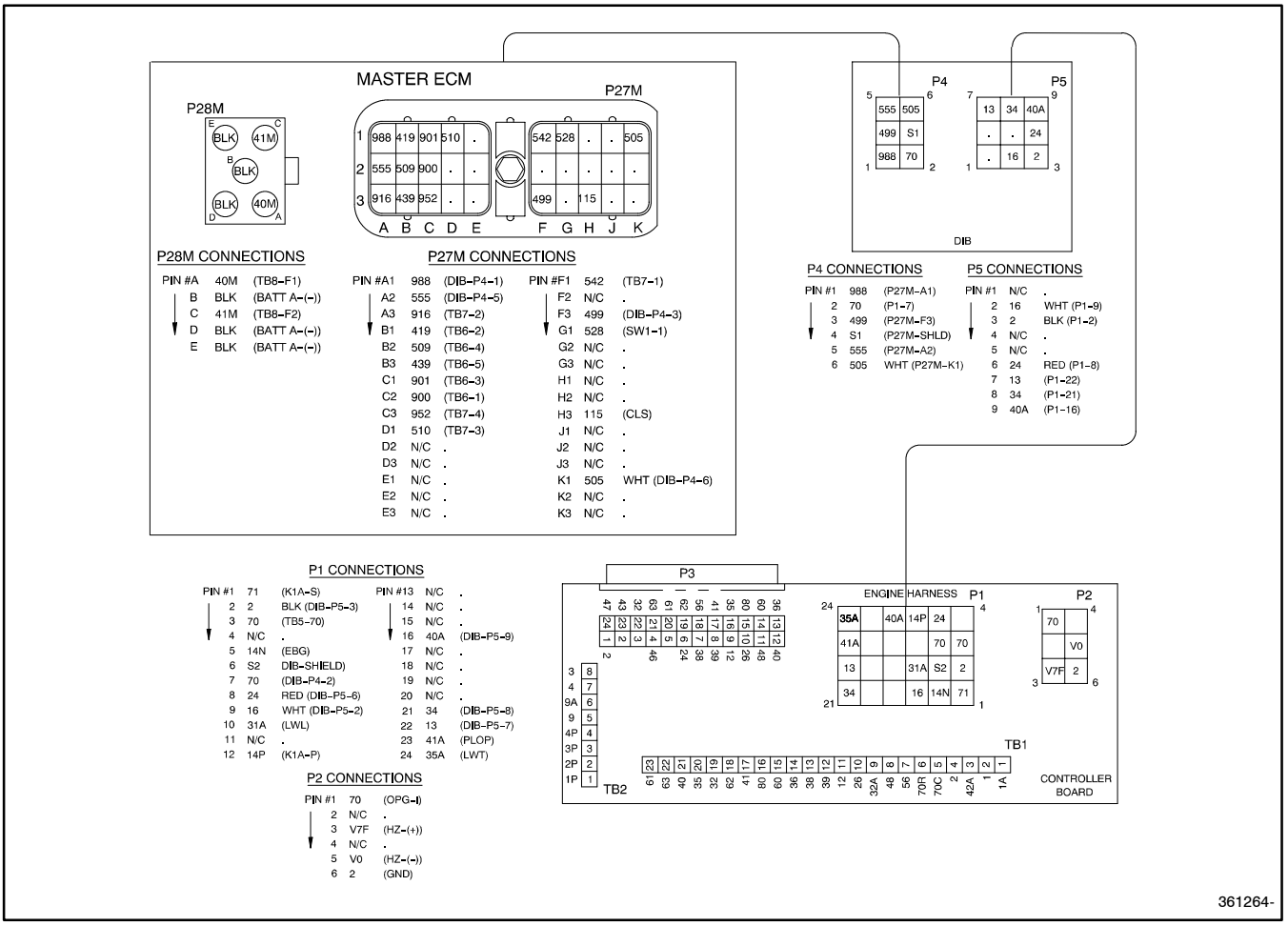

Figure 2 DDEC Interface Circuit Board Connections