Analog Inputs

The IEM-2020 provides a 0 to 10 Vdc voltage input and a 4 to 20 mAdc current input. Each analog input has under/over thresholds that can be configured as status only, alarm, or pre-alarm. When enabled, an out of range alarm alerts the user of an open or damages analog input wire. The label text of each analog input is customizable. Analog inputs can be incorporated into a BESTLogic*Plus* programmable logic scheme.

Additional analog inputs can be accommodated with an optional AEM-2020 (Analog Expansion Module). Contact Basler Electric for ordering information.

Communication

Standard IEM-2020 communication features include a standard USB port and SAE J1939 interface. Optional communication features include a dial-out modem and RS-485 communication port. BESTCOMS*Plus* can communicate with the IEM-2020 through Ethernet via an optional LSM-2020 (Load Share Module). Contact Basler Electric for ordering information.

USB Port

A USB communication port can be used with BESTCOMS*Plus* software to quickly configure an IEM-2020 with the desired settings or retrieve metering values and event log records.

CANbus Interface

A CANbus interface provides high-speed communication between the IEM-2020 and the engine control unit (ECU) on an electronically controlled engine. This interface provides access to oil pressure, coolant temperature, and engine speed data by reading these parameters directly from the ECU. When available, engine diagnostic data can also be accessed. The CANbus interface supports the following protocols:

- SAE J1939 Protocol - Oil pressure, coolant temperature, and engine speed data are received from the ECU. In addition, DTCs (Diagnostic Trouble Codes) help diagnose any engine or related failures. The engine DTCs are displayed on the front panel of the IEM-2020 and may be obtained using BESTCOMS*Plus* software.
- MTU Protocol - An IEM-2020 connected to an engine equipped with an MTU engine ECU receives Oil pressure, coolant temperature, and engine speed data from the engine controller, along with various alarms and pre-alarms that are MTU specific. In addition, the IEM-2020 tracks and displays the active fault codes issued by the MTU engine ECU.

Dial-Out Modem

The optional dial-out modem enables remote control, monitoring, and setting of the IEM-2020. When an alarm or pre-alarm condition occurs, the IEM-2020 can dial up to four telephone numbers, in sequence, until an answer is received and the condition is annunciated.

RS-485 Port

An optional RS-485 communication port uses the Modbus™ communication protocol and enables remote control and monitoring of the IEM-2020 over a polled network.

AEM-2020 (Analog Expansion Module)

The optional AEM-2020 provides eight remote analog inputs, eight remote RTD inputs, two remote thermocouple inputs, and four remote analog outputs to the IEM-2020. The AEM-2020 communicates with the IEM-2020 through a CANbus interface. Refer to Section 11, *AEM-2020 (Analog Expansion Module),* for more information.

CEM-2020 (Contact Expansion Module)

The optional CEM-2020 provides 10 additional contact inputs and 18 or 24 additional output contacts (depending on module type) to the IEM-2020. The CEM-2020 communicates with the IEM-2020 through a CANbus interface. Refer to Section 10, *CEM-2020 (Contact Expansion Module),* for more information.