

# BE2000E Digital Voltage Regulator



## Overview

The BE2000E is an environmentally rugged product designed to control the output of brushless excited synchronous generators equipped with single-phase PMGs (permanent magnet generators). Enjoy the benefit of Basler Electric's years of experience and support of excitation control systems when choosing the BE2000E as an ideal DVR® replacement voltage regulator.

## Features

- Four control modes: Automatic Voltage Regulation (AVR), Manual or Field Current Regulation (FCR), Power Factor (PF) Regulation, and Reactive Power (Var) Regulation
- Programmable stability settings
- Soft start control with an adjustable time setting in AVR Control Mode
- Overexcitation limiting (OEL) in AVR, Var, and PF Control Modes
- Underfrequency (Volts/Hertz) compensation or engine unloading feature
- Crowbar circuitry provides field protection
- Overtemperature protection
- Three-phase or single-phase generator voltage (RMS) sensing in AVR Mode
- Field current and field voltage sensing
- Four contact sensing inputs for system interface
- One common output relay for alarm indication and trip functions
- Six protection functions: overexcitation shutdown, generator overvoltage shutdown, BE2000E overtemperature shutdown, loss of generator sensing shutdown, overexcitation limiting, and crowbar shutdown
- Generator paralleling with reactive droop compensation and reactive differential compensation
- Front-panel human-machine interface (HMI) indicates system and BE2000E status and offers the ability to adjust settings at the front panel.
- Rear RS-232 communication port for personal computer communication using BESTCOMS™ - BE2000E Windows® based software for fast, user-friendly, setup and control

## Benefits

- Microprocessor-based design, high functionality, and performance for precise control over the generator excitation and output.
- THD (Total Harmonic Distortion)-tolerant design provides reliable operation in the presence of high harmonic distortion caused by nonlinear loads.
- Rugged 3-amp pulse-width-modulated (PWM) power stage for reliable regulation, which can help reduce expensive service calls and down time.
- Plug-and-play replacement for Marathon® Electric generators equipped with DVR®2000E or DVR®2000EC voltage regulators allows for quick and easy retrofitting.

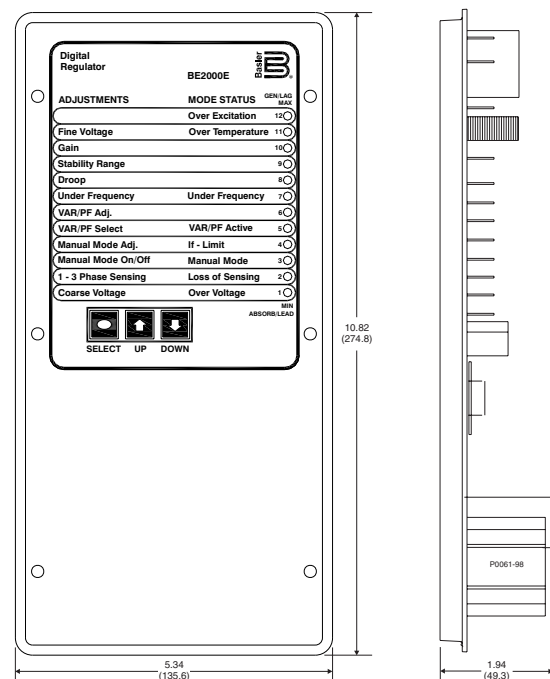


Figure 1 - BE2000E Dimensions in Inches (Millimeters)

## Specifications

### Field Output

Continuous: 75 Vdc at 3.0 Adc  
 10-second Forcing: 150 Vdc at 7.5 Adc  
 (with 200 Vdc input)  
 Field Resistance: 18  $\Omega$  minimum

### Input Power\*

1-Phase: 180 to 240 Vac  
 Frequency Range: 120 to 300 Hz  
 Burden: 330 VA

### Voltage Sensing

Configuration: 1-phase or 3-phase, 50/60 Hz  
 Voltage Ranges: 120 Vac (100 to 140 Vac)  
 240 Vac (200 to 280 Vac)  
 480 Vac (400 to 560 Vac)  
 600 Vac

Burden: < 1 VA per phase

\* The operating power input is designed to work with a Marathon Electric PMG with a 7.5  $\mu$ F, 370 Vac rated capacitor installed across the terminals.

### Current Sensing

Configuration: 1-phase (B $\emptyset$ ), 50/60 Hz  
 Rating: 5 Aac maximum continuous  
 Burden: < 0.1 VA

### Inputs and Outputs

Type: Dry Contact  
 Interrogation Voltage: 13 Vdc  
 Terminals:  
   Unit/Parallel Control: 52L, 52M  
   Raise: 6U, 7  
   Lower: 6D, 7  
   Var/PF Enable: 52J, 52K

### Communication

Interface: Full Duplex RS-232  
 Connection: DB-9 connector on rear panel  
 Baud: 4800  
 Data Bits: 8  
 Parity: None  
 Stop Bit: 1

### Agency/Certification

UL recognized (evaluated to UL 6200), CSA certified, CE, UKCA, LVD, EMC, RoHS, and China RoHS compliant, maritime recognitions by BV, DNV, and ABS

### Environmental

Operating Temp: -40°C to 70°C (-40°F to 158°F)  
 Storage Temp: -40°C to 85°C (-40°F to 185°F)  
 Shock: 20 G in three perpendicular planes  
 Salt Fog: Tested per MIL-STD 810E  
 Vibration:  
   5 to 26 Hz: 1 G  
   27 to 52 Hz: 0.036" double amplitude  
   53 to 500 Hz: 5 G

### Physical

Weight: 1.52 lb (0.69 kg)  
 Dimensions (W x H x D):  
   5.34" x 10.82" x 1.94"  
   (135.6 mm x 274.8 mm x 49.3 mm)

For complete specifications, download the instruction manual at [www.basler.com](http://www.basler.com).

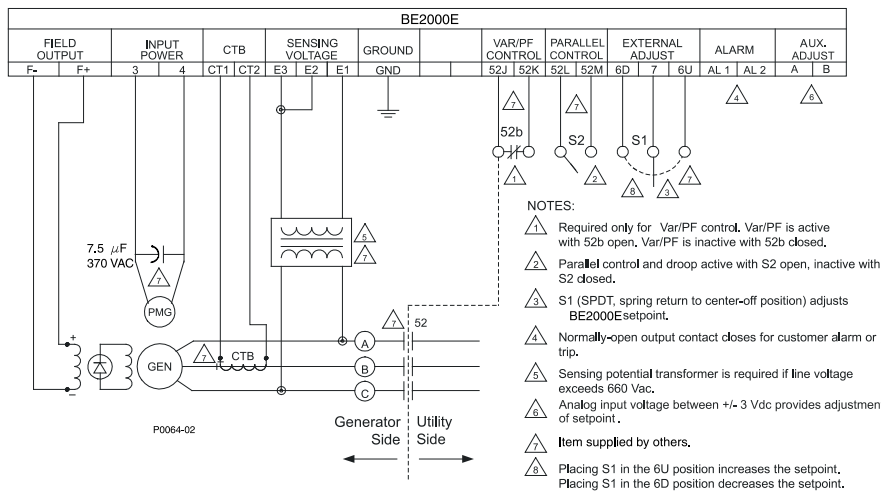


Figure 2 - BE2000E Typical Connections with 3-Phase Sensing

## Related Products

### BE1-FLEX Protection, Automation and Control System

Designed to be configurable for nearly any Power System Application.

### ES Series Protection Relays

Provide a wide variety of cost-saving options to simplify industrial application protection.

### DECS-150 Digital Excitation Control System

Provides precise voltage regulation, exceptional system response, and valuable protection of the generator and excitation system.

### DECS-250 Digital Excitation Control System

Provides precise voltage, var and Power Factor regulation, and exceptional system response, plus generator protection.

### DGC-2020 Digital Genset Controller

An advanced genset control system with extensive functionality and flexibility for your emergency, standalone, and paralleled generator set applications.

### DGC-2020ES Digital Genset Controller

The total system solution for emergency and standalone generator set applications.

### DGC-2020HD Digital Genset Controller

A highly advanced integrated genset control system for your emergency, stand-alone, and paralleled generator set applications.

## Accessories

### MVC Manual Voltage Controllers

Provides backup manual source for excitation in the event of AVR failure.