



## Overview

The DECS-400 is a versatile digital excitation control system for synchronous generators and motors. It has the flexibility to be utilized for either exciter field applications or static exciter applications up to 2,500 Adc, which is ideal for new and retrofit applications. Basler Electric offers customized and standard solutions engineered to meet a wide variety of applications, specific requirements, and redundancy needs.

## Features

- Five control modes with autotracking between modes:
  - AVR (automatic voltage regulation)
  - FCR (field current regulation)
  - PF (power factor)
  - FVR (field voltage regulation)
  - Var control
- Two preposition set points for each mode
- Various redundancy options, including dual controllers, are available
- Flexible remote set point control
- 0.20% regulation accuracy
- Optional integral power system stabilizer (PSS): Dual input, integral of accelerating power (IEEE Std. 421.5 PSS2A/2B/2C)
- Conformal coating is applied to certain internal circuitry for additional protection and reliability
- Customizable stability setting with two PID setting groups
- Reactive droop, line drop compensation
- Generator voltage soft-start during buildup
- Real time monitoring graphically displays any 2 of 10 selectable generator parameters
- Voltage matching
- Autotracking with optional redundant DECS-400
- Built-in limiting functions
- Built-in protection functions
- Suite of reports includes sequence of events, data logging and trending
- Time synchronization using IRIG or NTP over Ethernet
- Soft start

## Benefits

- With its high levels of flexibility and reliability, the DECS-400 is suitable for virtually any synchronous machine.
- Entering settings with confidence is easy with BESTCOMS™. Software provides programmable logic and intuitive settings with graphs, built-in error checking, and summary screens.
- Avoid costly generator damage and improve overall system stability with an optional integrated PSS that utilizes the “integral of accelerating power” to safely dampen local mode, inter-area, and inter-unit power oscillations.
- In-house engineering, fabrication, manufacturing, and test capabilities provide maximum control of processes and product design, resulting in the highest quality and maximum reliability while offering shorter lead times.

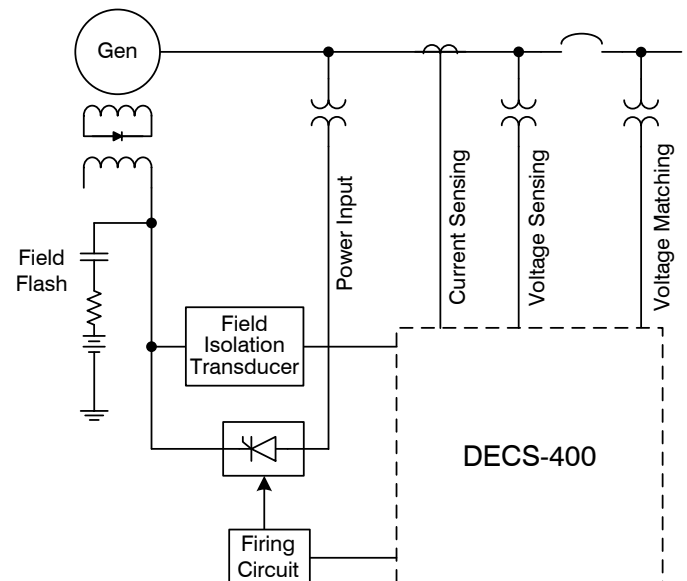


Figure 1 - DECS-400 One-Line Diagram for a Typical Application

## Specifications

### Excitation Current

Up to 2,500 Aac in various configuration schemes.

### Power Supply

DC Input: 24, 48, 125, 250 Vdc  
 AC Input: 120, 240 Vac  
 Burden: 50 VA, 30 W

### Generator and Bus Voltage Sensing

Configuration: 1-phase or 3-phase  
 Nominal: 120 V or 240 V  
 Burden: <1 VA  
 50 Hz Range 1: 85 to 127 Vac  
 50 Hz Range 2: 170 to 254 Vac  
 60 Hz Range 1: 94 to 153 Vac  
 60 Hz Range 2: 187 to 305 Vac

### Generator Current Sensing

Configuration: 2-phase or 3-phase  
 Sensing Ranges: 2 (Up to 400% of nominal)  
 Nominal: 1 Aac or 5 Aac  
 Burden: <1 VA

### Metering

2 programmable outputs  
 Output Range: 4 to 20 mAac  
 Accuracy:  
 Generator and Bus Voltage:  $\pm 1.0\%$   
 Frequency:  $\pm 0.1$  Hz  
 Generator Line Current:  $\pm 1.0\%$   
 Generator Power:  $\pm 2.0\%$  (VA, W, var)  
 Power Factor:  $\pm 0.02\%$  PF  
 Field Current and Voltage:  $\pm 2.0\%$

### Regulation

Accuracy:  
 AVR Mode:  $\pm 0.2\%$   
 FCR and FVR Mode:  $\pm 1.0\%$   
 Var Control Mode:  $\pm 2.0\%$   
 PF Control Mode:  $\pm 0.02\%$   
 Redundancy Option: Dual controller

### Rectifier Bridge

Positive Forcing Only Option: Three SCRs  
 Positive/Negative Forcing: Six SCRs  
 Redundancy Option: Dual rectifier bridges

### Power System Stabilizer (Optional)

Operating Mode: Generator or Motor, ABC or ACB phase seq.  
 Sensing Configuration: Power Speed / Speed only  
 Power Measurement: 2- or 3-wattmeter method  
 Frequency Range:  
 Responds to power oscillations from 0.1 to 5 Hz.  
 Low-pass and high-pass filtering prevents unwanted PSS action outside this range.

### Communication

Com 0: RS-232, 9 pin, sub D, ASCII  
 Com 1: RS-485, ASCII  
 Com 2: RS-485, Modbus® RTU or TCP/IP  
 Com 3: 10Base-T Ethernet, RJ-45, Modbus TCP/IP, BESTCOMS™  
 J1: Rear panel RJ-11, FCC part 68 approved modem

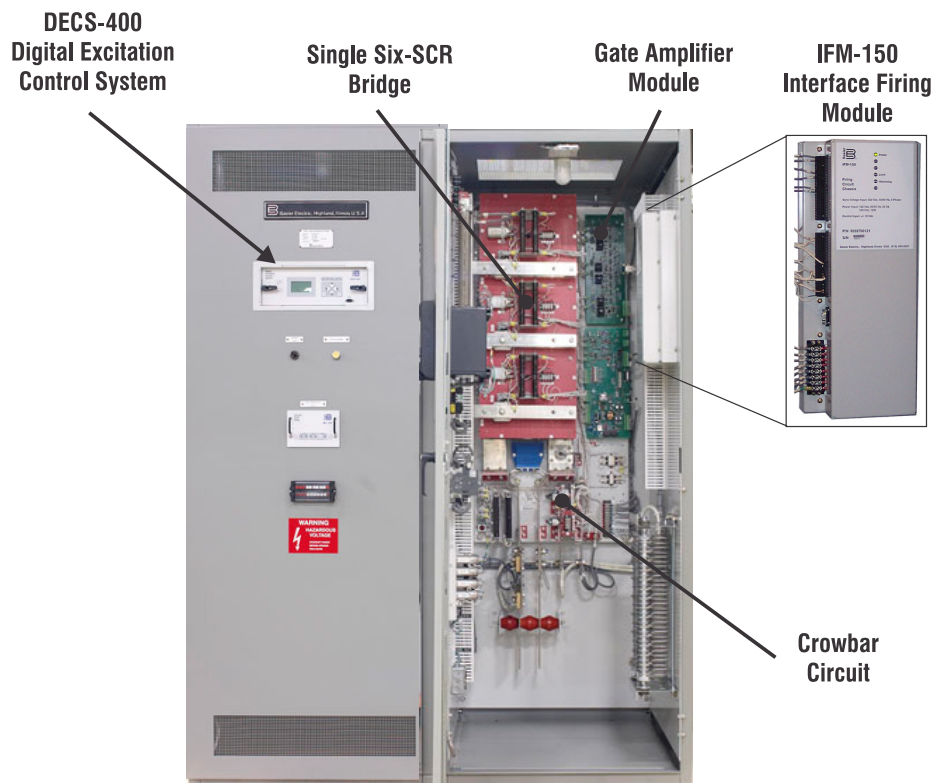


Figure 2 - Typical DECS-400 with Single Rectifier Bridge

## Custom Solutions

The specifications listed above are for a typical application, however, DECS-400 Digital Excitation Control Systems are extremely versatile. Contact Basler Electric to begin designing a DECS-400 excitation system to meet the requirements of your specific application.

## Related Products

### BE1-11g Generator Protection System

Offers a complete generator control and protection system.

### DECS-2100 Digital Excitation Control System

An extremely powerful and flexible excitation system that precisely controls, protects, and monitors synchronous generators and motors.

### DECS-250 Digital Excitation Control System

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

### Large Power Transformers (10 kVA to 2,800 kVA)

Custom dry-type designs in a variety of UL-approved insulation systems through 2,500 kVA (convection cooled) or 2,800 kVA (forced-air cooled).

### SGC-250 Synchronous Generator Controller

A prepackaged solution for applications requiring single or dual DECS-250 Digital Excitation Control Systems.

## Accessories

### IDP-801 Interactive Display Panel

A 7.5" (190.5 mm) Human Machine Interface to view generator system parameters locally or remotely.