



## Overview

The DECS-250N digital excitation control system offers high performance, high flexibility, and extreme reliability for brushless excited AC synchronous generators. The DECS-250N utilizes a 20-amp six-thyristor negative forcing output, providing exceptional system transient response. Multiple communication options and an optional integrated power system stabilizer make the DECS-250N a complete system solution in a reliable and cost effective package.

## Features

- Precise excitation control for synchronous generator or synchronous motor applications.
- True RMS sensing, single-phase or three-phase voltage and current
- Full generator metering capabilities
- Auto tuning feature with two PID stability groups
- Reactive load sharing over communication
- AVR, FCR, FVR, power factor and var modes of operation
- Integrated generator protection 25, 27, 32R, 40Q, 51F, 59, 59F, 810/U, EDM, Loss of PMG, and field short circuit
- Optional integrated power system stabilizer (PSS), IEEE Std. 421.5 type PSS2A/2B/2C
- Configurable protection
- Conformal coating is applied to certain internal circuitry for additional protection and reliability
- Overexcitation limiting (with temperature compensation)
- Underexcitation limiting
- Stator current limiting (with temperature compensation)
- Var limiting
- Underfrequency limiting or V/Hz limiting
- Exciter diode monitoring
- Trending, oscillography, and sequence of events recording
- Fourteen programmable contact inputs
- Eleven programmable contact outputs
- Rated for up to 420 Hz on the power input with derating capability (Contact Basler Electric for more information)
- I/O Expansion module compatibility:
  - AEM-2020 Analog Expansion Module
  - CEM-2020 Contact Expansion Module

## Benefits

- The Offline Simulator, provided in BESTlogic™ Plus, helps test and troubleshoot logic without the need for expensive hardware.
- Reduce setup time with Basler's intuitive BESTCOMSPPlus® software that simplifies complex setup with simple drag-and-drop programmable logic, visual real-time strip chart capabilities, and cutting edge auto PID selection capabilities.
- The revolutionary auto tuning function automatically establishes optimum PID and gain settings, taking the guesswork out of system setup, reducing commissioning time and cost while maximizing overall system performance.
- A powerful 20-amp rectifier bridge provides high positive and negative field forcing for exceptional system response. The negative field-forcing capabilities make it well suited to be paired with the optional Power System Stabilizer.
- Grid code settings provide compatibility with grid code compliant systems.

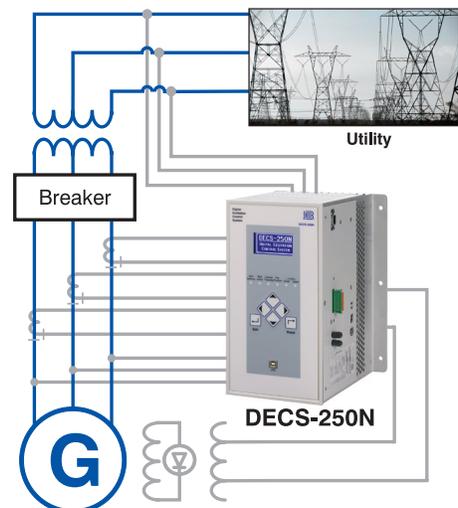


Figure 1 - DECS-250N Connection Diagram for a Typical Application

## Specifications

### Power Supply

Nominal:	Style LXXXXXX:	16 to 60 Vdc
	Style CXXXXXX:	90 to 150 Vdc, 82 to 132 Vac
Burden:		50 VA or 30 W

### AC Operating Power and DC Output Power

#### All Styles

Full Load Continuous Current:	20 Adc
10-Second Forcing:	40 Adc
120-Second Forcing:	30 Adc

#### 63 Vdc

Power Input Configuration:	1-phase or 3-phase
Nominal Input Voltage:	208 Vac for 1-phase 120 Vac for 3-phase

Full Load Continuous Voltage:	63 Vdc
Power Input Frequency:	50/60 Hz or 61-420 Hz
Minimum Field Resistance:	3.15 Ω

#### 125 Vdc

Power Input Configuration:	3-phase
Nominal Input Voltage:	240 Vac
Full Load Continuous Voltage:	125 Vdc
Power Input Frequency:	50/60 Hz or 61-420 Hz
Minimum Field Resistance:	6.25 Ω

#### 250 Vdc

Power Input Configuration:	3-phase
Nominal Input Voltage:	480 Vac
Full Load Continuous Voltage:	250 Vdc
Power Input Frequency:	50/60 Hz
Minimum Field Resistance:	12.5 Ω

### Generator Current Sensing

Configuration: 1-phase or 3-phase with separate CT input for cross-current compensation

Current Ranges:	1 Aac or 5 Aac nominal
Frequency Range:	50/60 Hz nominal
Burden with 1 Aac Sensing:	<5 VA
Burden with 5 Aac Sensing:	<10 VA

### Generator and Bus Voltage Sensing

Configuration:	1-phase or 3-phase (3-wire)
Voltage Ranges:	100/120 Vac ±10% 200/240 Vac ±10% 400/480 Vac ±10% 600 Vac ±10%
Frequency:	50/60 Hz nominal
Burden:	<1 VA per phase

### Inputs and Outputs

Contact Inputs:	14 programmable, dry contact
Auxiliary Inputs:	Connection available in 4 to 20 mA or ±10 Vdc input
Output Contacts:	11 programmable form A 1 watchdog form C
Rating:	Make, break, and carry 7 A resistive @ 24/48/125 Vdc (120/240 Vac).

### Communication

USB:	USB type B
RS-232:	RS-232, 9 pin, sub D for external autotracking
RS-485:	Modbus® RTU protocol
CAN Bus:	One port for ECU communications One port for expansion modules
Ethernet:	100baseT (standard), 100baseFX (optional), Modbus TCP protocol for unit-to-unit communication.
Expansion Port:	Optional Profibus protocol

### Agency/Certification

CSA certified, UL recognized, CE EMC and LVD compliant, EAC certified, Bureau Veritas (BV), Det Norske Veritas-Germanischer Lloyd (DNV•GL), and American Bureau of Shipping (ABS) recognized

### Environmental

Operating Temperature:	-40°C to 60°C (-40°F to 140°F)
Storage Temperature:	-40°C to 85°C (-40°F to 185°F)
Salt Fog:	Per MIL-STD 810E method 509.3
Shock:	15 G in three perpendicular planes
Vibration:	5 G from 18 to 2,000 Hz in three perpendicular planes

### Physical

Weight:	14.9 lb (6.75 kg)
Dimensions (WxHxD):	6.26 x 12.00 x 8.62 inches (159.0 x 304.8 x 219.0 mm)

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

### Visit the DECS-250N mobile site!

Use your smartphone and scan the QR code to gain quick access to our mobile-enabled site featuring the field support information you need.



[m.basler.com/qrs/DECS-250N](http://m.basler.com/qrs/DECS-250N)

## Related Products

### BE1-11g Generator Protection System

Combines with the DECS-250 to offer a complete generator control and protection system.

### ES Series Protection Relays

A wide range of cost-saving options to simplify industrial application protection.

### DGC-2020 Digital Genset Controller

An advanced genset control system with extensive functionality and flexibility.

### DGC-2020HD Digital Genset Controller

An advanced, but rugged genset control system designed for paralleling and complex load sharing schemes.

## Accessories

### MVC Manual Voltage Controllers

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

### IDP-801 Interactive Display Panel

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

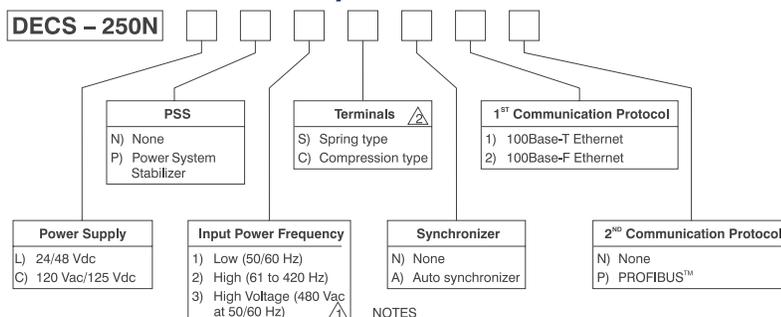
### CEM-2020 Contact Expansion Module

Provides additional contact I/O for large or complex logic schemes.

### AEM-2020 Analog Expansion Module

Provides additional metering and control with external peripherals through analog I/O.

## Style Chart



### NOTES

- △ A DECS-250N with style XX3XXXX accepts 480 Vac operating power at 50/60 Hz to provide a 250 Vdc nominal power output.
- △ Compression type terminals are available for the current sensing (CT) inputs, operating power input, and power output connections only.