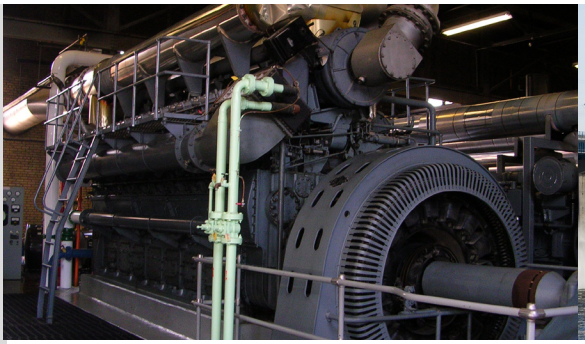
DECS-250N Digital Excitation Control System



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, 81O/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 BESTCOMS*Plus*® 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.
- Easy user-configurable settings for synchronous motor or generator modes of operation.

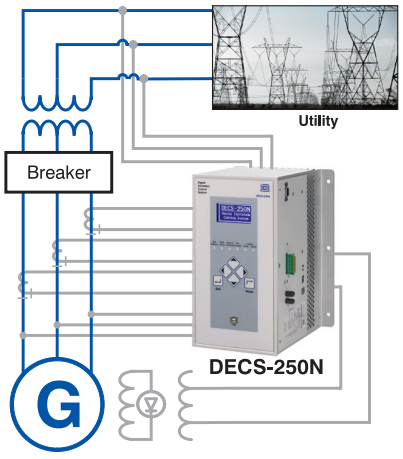


Figure 1 - DECS-250N Connection Diagram for a Typical Application

DECS-250N Digital Excitation Control System

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: <1 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 6200:2019 recognized, UKCA, CE EMC and LVD compliant, Bureau Veritas (BV), Det Norske Veritas (DNV), and American Bureau of Shipping (ABS) recognized, China RoHS compliant

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)

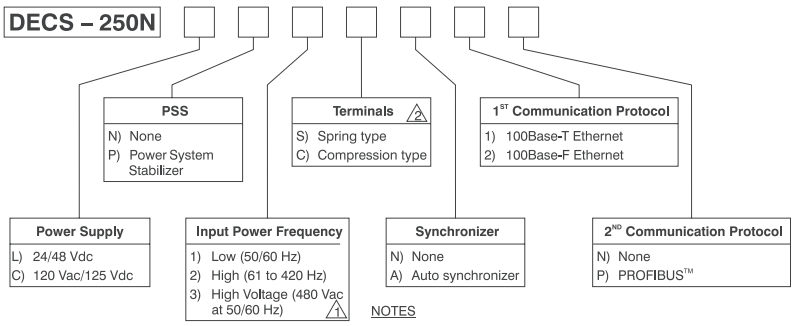
For complete specifications, download the instruction manual at www.basler.com.

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

Style Chart



NOTES

1 A DECS-250N with style XX3XXXX accepts 480 Vac operating power at 50/60 Hz to provide a 250 Vdc nominal power output.

2 Compression type terminals are available for the current sensing (CT) inputs, operating power input, and power output connections only.

Related Products

BE1-FLEX Protection, Automation and Control System
Designed to be configurable for nearly any Power System Application.

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.

Basler Electric®

Highland, Illinois USA
Tel +1 618.654.2341
Fax +1 618.654.2351
email: info@basler.com

Suzhou, P.R.China
Tel +86.512.8227.2888
Fax +86.512.8227.2887
e-mail: chinainfo@basler.com