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Application Note

Easy Migration from DECS-15 to DECS-250

DECS-125-15 DECS-250

For many years, Basler Electric manufactured the DECS-32-15, DECS-63-15, and DECS-125-15 Digital Excitation Controllers, collectively referred to as the DECS-15. It was a leading edge product and served our customers well. Eventually, the DECS-15 was discontinued in 2013 and replaced by Basler products with higher functionality.

There is no immediate need to replace an in-service DECS-15. However, upgrades are available from Basler Electric. The recommended DECS-15 replacement is the DECS-250 Digital Excitation Control System which offers greater performance, extreme flexibility, more sophisticated features, and state-of-the-art communications options. The following information provides brief descriptions of the DECS-250's advanced features, connection cross references, and mounting considerations.

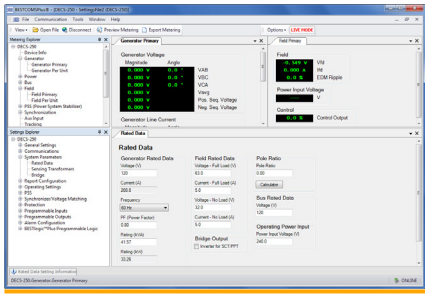
DECS-250 Features

The following paragraphs describe some of the many available features when upgrading to a DECS-250.

Power System Stabilizer: The optional integrated power system stabilizer eases concerns about grid code compliance issues with its advanced power system performance and reliability, eliminating the need for external devices and wiring.

Load Sharing: Network load sharing provides easy implementation in complex paralleled systems by eliminating the wiring and contacts associated with cross-current compensation while allowing for a zero voltage droop system to reliably share reactive power.

BESTCOMS*Plus*® Software: Reduce your setup and commissioning time with Basler's intuitive BESTCOMS*Plus* Windows®-based PC software. It simplifies complex setup with simple drag-and-drop programmable logic, visual real-time strip chart capabilities, and cutting edge auto PID selection capabilities. BESTCOMS*Plus* presents a user-friendly, graphical user interface (GUI) which provides a point-and-click means to set, monitor, and configure DECS-250 controllers quickly and efficiently. Settings files can be created offline, saved, and uploaded to the DECS-250 at your convenience. BESTlogic™*Plus*, with its drag-and-drop programming style, is used to manage the input, output, protection, control, monitoring, and reporting capabilities of the DECS-250. Complex logic schemes are simplified with automatic error checking. It is easy to use but extremely powerful and allows you to adapt the DECS-250 to virtually any application.



Typical BESTCOMS*Plus* Interface

Language Support: Multilingual user interface simplifies and helps eliminate potential errors during DECS-250 setup.

Auto Tuning: 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.

Power Stage: A powerful and flexible 15-ampere pulse-width-modulated (PWM) power stage provides exceptional system response to load transients and is easily adaptable to any system: shunt, auxiliary winding, permanent magnet, or dc fed.

Communication: The DECS-250 contains an extensive array of communication options which allow for easy integration into a wide variety of control systems.

- USB for local communication with a PC
- RS-232 for communication with a second DECS
- Modbus® protocol over Ethernet or RS-485
- Two CAN bus ports for communication with an ECU and Basler proprietary expansion modules
- Profibus protocol (optional)

Reporting and Analysis: Get the information you need for system analysis with Trending, Oscillography, and Sequence of Events recording. The trend log records the activity of up to six parameters over a period of up to 720 hours. Up to six time- and date-stamped oscillography records, in COMTRADE format, are stored in nonvolatile memory. Each record contains up to 1,200 data points for up to six parameters. The Sequence of Events recorder monitors the status of the DECS-250 by scanning internal and external events at four-millisecond intervals and storing up to 1,023 time- and date-stamped events per record.

Regulation Modes: Maintain total control with Automatic Voltage Regulation, Field Current Regulation, Field Voltage Regulation, Power Factor, and var modes of operation.

Protection: The DECS-250 contains a full suite of generator and motor protection features for accurate fault detection and clearing, eliminating dangerous and damaging conditions to the generator or motor [Generator Protection (27/59, 81O/U, 32R, 40Q), EDM, 59F, 51F, Loss of PMG, Field Short Circuit, and 25 Sync Check]. Configurable protection elements supplement this protection with user-defined system parameters and multiple pickup thresholds per parameter. Most protection functions have Primary and Secondary groups of settings which enable independent protection coordination that is selectable in BESTlogic*Plus*.

Connections

The DECS-15 and DECS-250 share many of the same connections. Table 1 provides a cross reference.

Table 1. Terminal Cross Reference

Description	DECS-15 Terminal	DECS-250 Terminal
Alarm[1]	ALRM +	RLY3 (57)
	ALRM –	RLY3 (58)
Field Output	F+	F+ (93)
	F–	F– (94)
Operating Power	A (Power Module)	A (88)
	B (Power Module)	B (89)
	C (Power Module)	C (90)
Chassis Ground	n/a	GND (91)
Parallel/Droop/OEL Enable (52L/M)	52M	IN8 (19)
	52L	COM B (20)
Single-phase Current Sensing[2]	CTB 1	CTB+ (77)
	CTB 2	CTB– (78)
Auxiliary Inputs[3]	A	V+ (49)
	B	V– (48)
Raise/Lower	6U	IN3 (9)
	6D	IN4 (11)
	7	COM A (10,12)
Var/PF/Voltage Matching Enable (52J/K)	52J	IN9 (21)
	52K	COM B (22)
Single-phase A-C Bus Voltage Sensing	BUS 1	B1 (41)
	BUS 3	B3 (43)
Three-phase Generator Voltage Sensing	E1	E1 (37)
	E2	E2 (38)
	E3	E3 (39)
Auxiliary Power Supply[4]	n/a	L (84)
	n/a	N (85)
	n/a	BATT + (86)
	n/a	BATT – (87)
Start/Stop[5]	n/a	START (1)
	n/a	COM A (2)
	n/a	STOP (3)
Cross-Current Compensation[6]	CTB 1	CCCT + (81)
	CTB 2	CCCT – (82)

Notes

1. Eleven programmable output relays are available in the DECS-250.
2. Three-phase current sensing is available in the DECS-250. If only one CT is used, connect it to the B phase.
3. ±10 Vdc control signal
   The DECS-250 also accepts a 4-20 mA control signal.
4. An auxiliary power supply is required for the DECS-250.
5. A Start/Stop signal is required for the DECS-250.
6. A dedicated CT is required for the DECS-250.

Figures 1 and 2 illustrate typical DECS-15 and DECS-250 connections for shunt-powered applications, respectively.

Note

These connection diagrams are provided for easy comparison. They are not intended to be used for wiring units as important notes have been omitted for clarity.

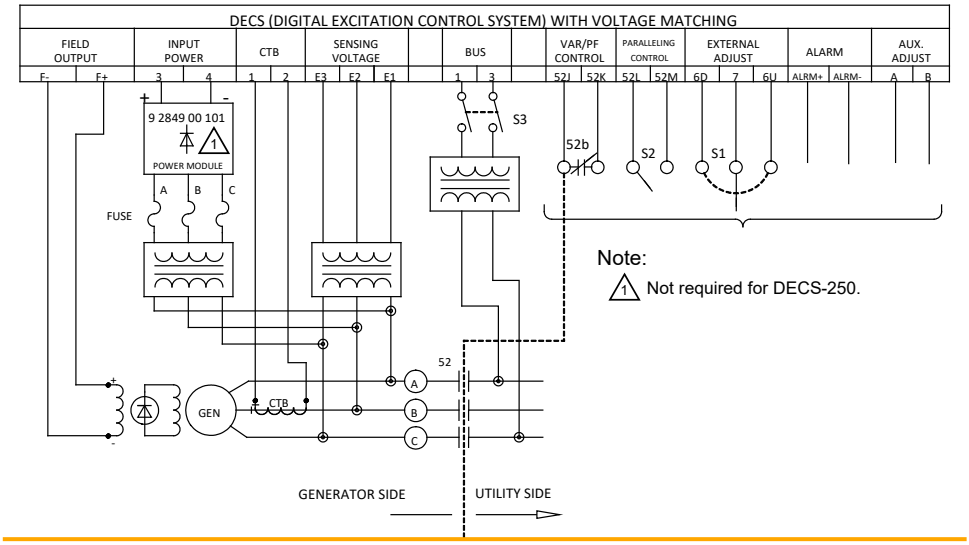


Figure 1. Typical DECS-15 Connections for Shunt-Powered Applications

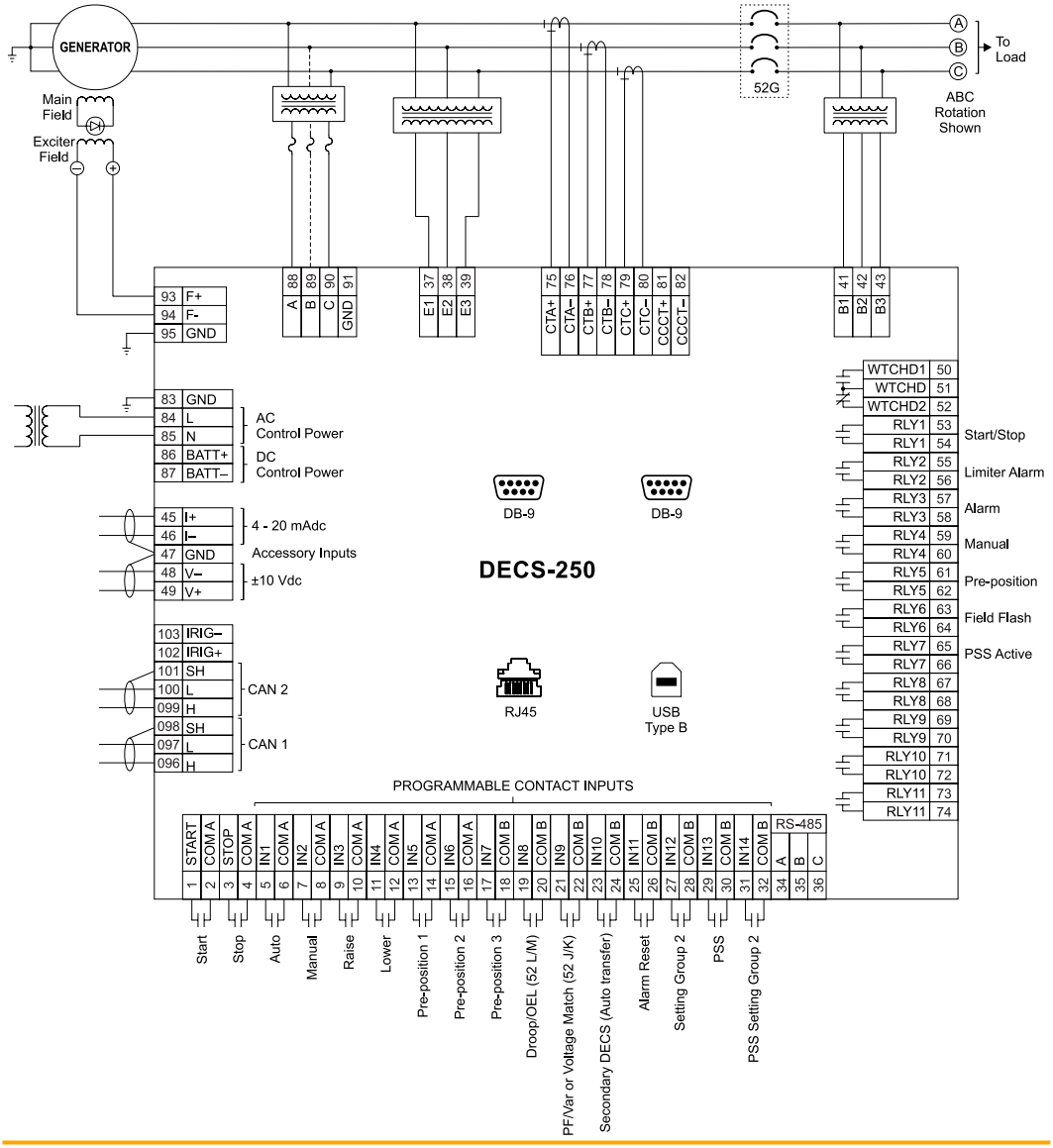


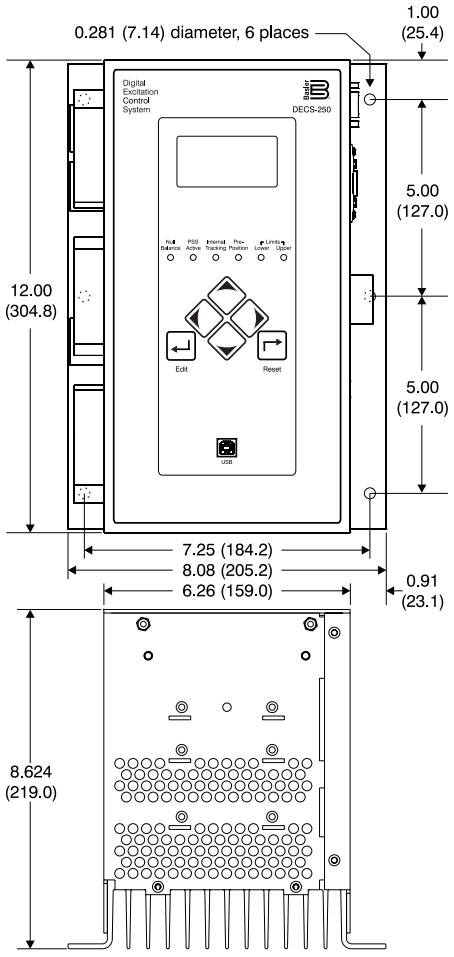
Figure 2. Typical DECS-250 Connections for Shunt-Powered Applications

Mounting

The DECS-250 may be mounted in two ways: projection or front panel. See Figure 3 for DECS-250 projection mounting and Figure 4 for DECS-250 front panel mounting.

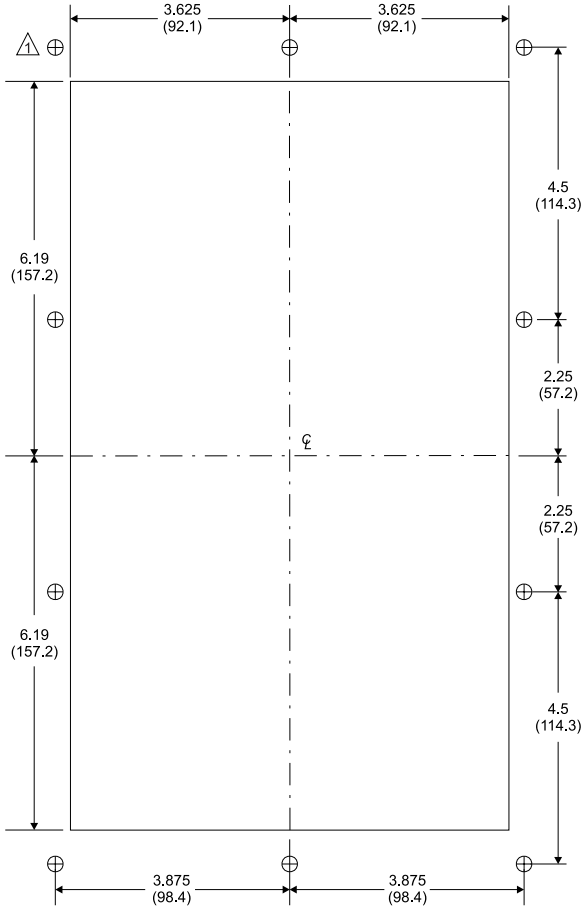
Escutcheon Kit: Front panel mounting requires an escutcheon kit. Request part number 9440311101. The DECS-250 is larger in size than the DECS-15, thus panel drilling and cutting is required.

Adapter Bracket: The 9440301048 adapter bracket enables easy updates, providing access for projection mounting the DECS-250 to existing DECS-15 mounting hole locations. See Figure 5 for the bracket outline.



Note: All dimensions are in inches (millimeters).

Figure 3. DECS-250 Projection Mounting



1 Mounting holes (10 places) are 0.218 (5.54) diameter.
2 Use provided hardware when attaching escutcheon plate to DECS-250.
3 All dimensions are in inches (millimeters).

Figure 4. DECS-250 Front Panel Mounting

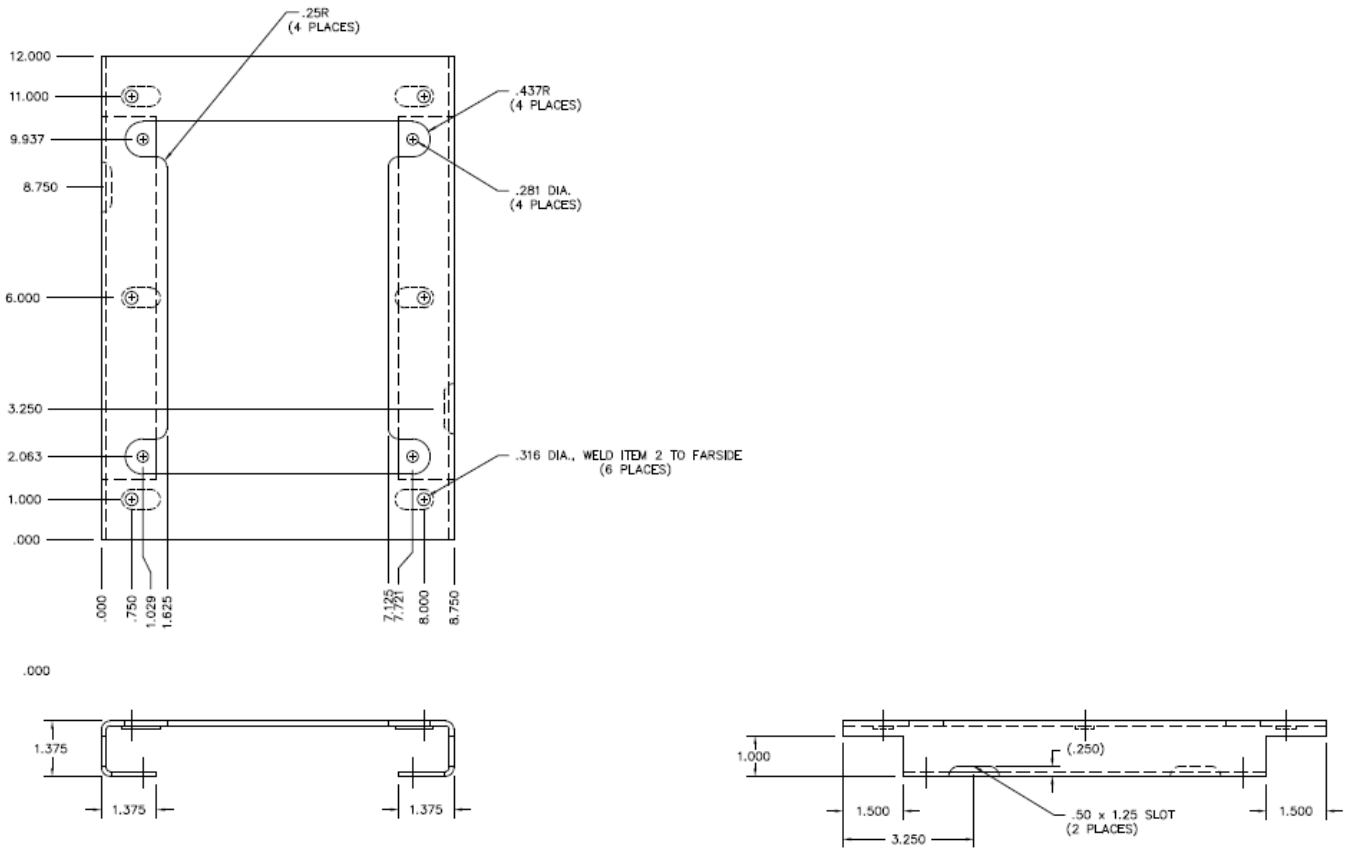


Figure 5. Adaptor Bracket

For more information

For more information on the DECS-250, download the product bulletin or instruction manual at www.basler.com. For assistance with product orders or questions, visit www.basler.com/Support/, contact your Application Engineer, or contact Technical Support at +1 618.654.2341.

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