AvK® STAMFORD®
DM110 Digital AVR

Available on LVI P80
           MVI P80
           HVI P80
           DSG
           DIG
And their marine equivalents

DESCRIPTION

Cummins Generator Technologies in conjunction with Basler Electric have developed a high powered, digital excitation control system, the DM110, The DM110 is produced by Basler for STAMFORD® – AvK® products

This environmentally rugged product is ideally suited for controlling the output of STAMFORD® and AvK® brushless synchronous generators up to 5MW. The DM110 has an impressive 7Adc output from a pulse width modulated power stage. The DM110 is perfect for machines that will be paralleled to other generators and/or to the utility system. It is ideal for distributed generation, co-generation and peak shaving applications. The DM110 is easy to use, and it has communications capability with a PC for the initial set up, adjustment and maintenance. The DM110 utilizes microprocessor technology and control algorithms pioneered by Basler Electric, for more than a decade.

The DM110 is a microprocessor-based regulation system designed to control the output of AvK® and STAMFORD® brushless, synchronous generators. The DM110 is perfect for paralleling applications where generator to generator and/or generator to utility paralleling occurs with VAR/PF control and Over- and Under-excitation Limiting. The DM110 offers high functionality communications and performance unique to the STAMFORD® - AvK® synchronous generators. The DM110 is very rugged and offers an extremely robust mechanical design that is cURus recognized, CE compliant, and DNV certified.

FEATURES

- Microprocessor based
- 0.5% Voltage Regulation on the generator
- 63Vdc @ 7Adc PWM output
- 0-3 x V/Hz limiting
- Soft Start capability
- 2 selectable motor start programs
- 20 standard stability selections and one customizable selection
- VAR/PF control
- Overexcitation limiting
- Underexcitation limiting
- Voltage Matching
- Manual Mode (Field current regulation)
- Paralleling input from 1 or 5A CT
- Five generator protection functions including Loss of Sensing transfer to manual
- Alarm Contact Output
- Accessory input
- LED Annunciation of operating conditions
- Setup via PC using BESTCOMS software (included)
- cURus recognition per UL 508 and CSA Standard   C22.2 No. 14
- WINDOWS® SOFTWARE
- Interface for setting and communicating with the
- DM110 digital AVR
- Bestcoms DM110 software included.

ADDITIONAL (DM110) FEATURES
- Inbuilt Remote Control interface 4-20mA
- An additional 'over excitation' limit for motor starting applications.
- Fail safe alarm on loss of power.
- Controlled recovery (dwell) from voltage dips to aid engine recovery.
- Designed with a horizontal footprint
  Size: W 135.6 x H 74.8 x D72.1

FEATURES/FUNCTIONS

PWM Power Stage
A 7.0Adc power stage provides fast response and great immunity to noise and sinewave distortion created by non-linear loads and makes the DM110 tolerant to many applications previously considered uncontrollable.

Sensing Input
The sensing input takes nominal voltage up to 600Vac without requiring expensive potential transformers. The adjustment range is capable of being controlled in 0.1Vac steps. This means that circulating current on paralleled generations, due to overly coarse adjustment steps, is no longer an issue.

Stability
20 standard stability ranges are provided, as well as one customizable stability range for customized performance. The PC BESTCOMS software provides PID selection software and a sophisticated response time program to facilitate verification of stability performance.

Front Panel Annunciation
The DM110 provides nine LEDs to indicate generator system and DM110 conditions without requiring connection to the communications device.

Protection
Five protection functions have the ability to be user programmed to shut down the DM110 and close the alarm contact. They are:
• Overexcitation shutdown
• Generator Overvoltage
• Loss of Generator sensing Voltage*
• Field Overvoltage
• Overexcitation Limiting
• Underexcitation Limiting
• VAR/PF mode active
• Manual mode active
• Excitation limiting
* Loss of sensing transfer is also selectable by the user in lieu of shutdown due to Loss of Sensing.

Overexcitation Limiting
This feature limits the output current of the DM110 to predetermined levels that are safe for the exciter/generator. There are adjustments for current threshold and time delays to customize the performance of the DM110 to meet the system's needs. The DM110 also provides two types of overexcitation limiting characteristics: Summing Point and Takeover.

Summing Point OEL. The summing point type of OEL will provide a smooth transition into and out of the limit condition. This is because it is controlled through the voltage regulator's main control algorithm. However, this type may be influenced by terminal voltage.

Takeover OEL. The takeover type provides direct control of the field current without being conditioned by the voltage regulator's main control algorithm. However, transitioning into and out of an actual limit condition may result in a more responsive characteristic.

Underexcitation Limiting
The minimum excitation limiter will adjust the amount of excitation supplied to the exciter field of the generator from dropping below an unsafe operating level. This prevents the machine from possibly slipping poles and from damaging the machine. This is accomplished by monitoring the Vars being absorbed by the generator based on user-defined settings.

Voltage Matching
This function allows the DM110 to match the generator voltage. This feature replaces the same function in the automatic synchronizer, thereby saving money by allowing the use of a less expensive synchronizing device.

Softstart
Softstart functions as a voltage limiter during generator build-up. It limits the generator voltage overshoot typically present when machines are initially started.

VAR/PF Control
Integrated VAR/PF controls save the user the cost of purchasing and installing remote devices that perform the same functions. This function is typically used on utility-paralleled generators that cannot control the grid voltage. Once set, the VAR or PF of the generator output will be regulated.

Dwell, Voltage Recovery
The dwell function introduces a time delay between the recovery of voltage and recovery of speed.
The purpose of the time delay is to reduce the generator kW below the available engine kW during the recovery period, thus allowing an improved speed recovery.

External Adjustments
The DM110 allows for multiple points and methods of external adjustment of the active regulation mode. There are four methods for adjustment: contact input, auxiliary voltage input or PC adjustment. The PC communication also allows operating modes and set points changes.

Communications
Dedicated PC (Windows® compatible) communications software is provided by Basler Electric with the DM110. The PC BESTCOMS program allows for total setup, control, and monitoring of all parameters of the DM110. The PC BESTCOMS software allows for custom PID selection and has a monitoring screen for viewing all of the generator parameters in actual machine levels. The communication interface uses the RS-232 DB9 connector located next to the DM110. The software package is provided with every DM110 on a single CD-ROM along with the instruction manual and product bulletin.