

### PRODUCT SPECIFICATION

#### Introduction

The PRISMIC® A30 excitation controller is designed to control the excitation of a brushless generator.

Incorporating a wide range of features, the A30 is housed in a 19" rack assembly requiring only external instruments and control switches to provide the complete excitation system as shown in Fig. 1 below.

For commissioning of the A30, a PC is required. PC based software and two serial communications cables are provided.

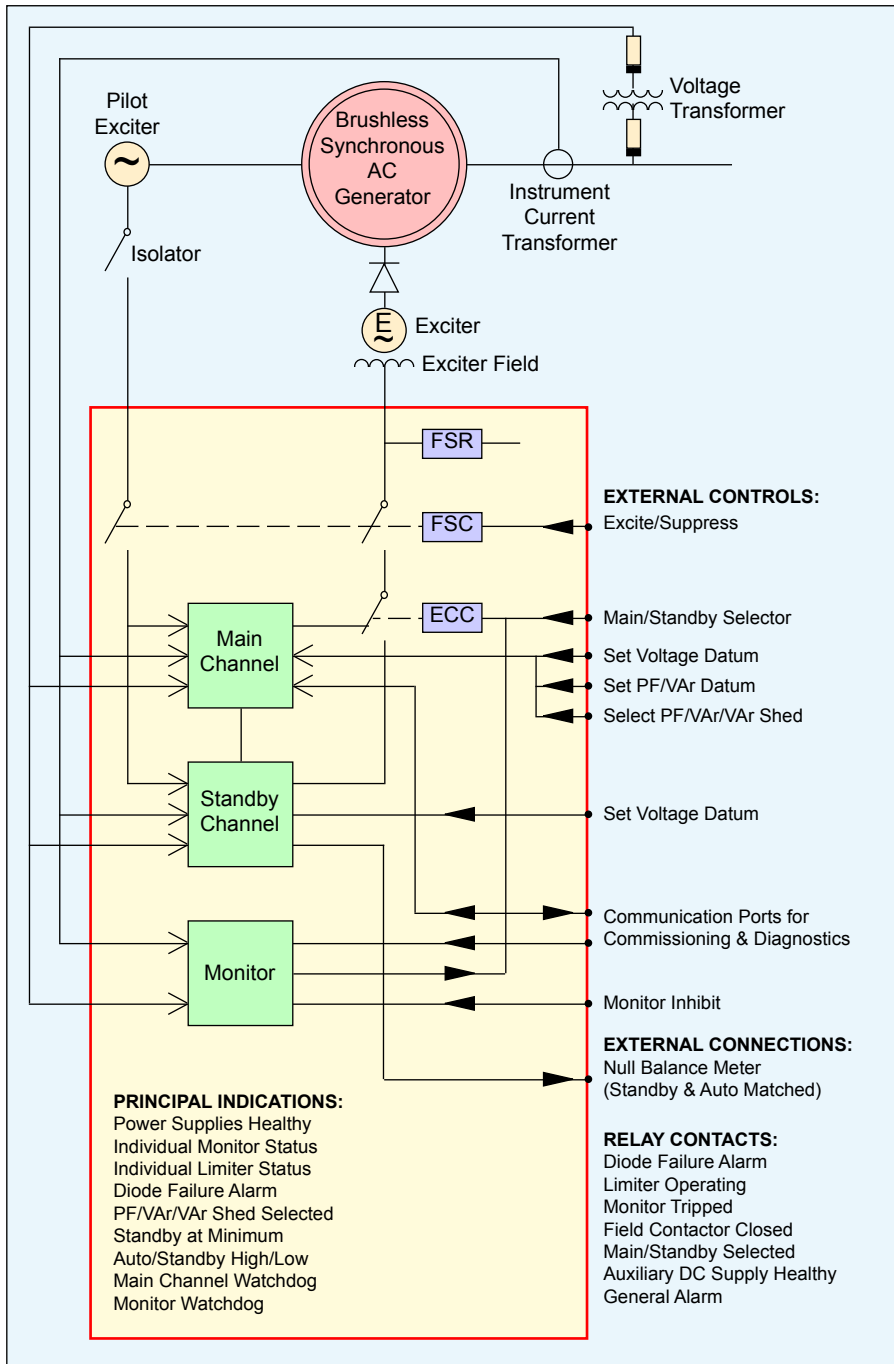


Fig 1. A30 Excitation Controller Scheme

#### Features

**Complete System Housed in a Single 19" 6U rack.**

The rack incorporates:

- Power supply transformers
- Power semiconductors
- Control circuits
- Excitation changeover contactor
- Field suppression contactor and resistor

**Independent Main and Hot Standby Excitation Channels.**

The unit contains two power semiconductor circuits, one acting as a hot standby to the other. Each circuit is controlled by an independent control card with automatic tracking to enable smooth transfer from one to the other.

Transfer to the standby system is initiated by a separate monitor module in the following circumstances:

- Voltage monitoring (over/under voltage on generator terminals)
- Excitation monitoring (over/under excitation with time delays)

The settings for the monitor module are selected to enable the normal limiter settings to operate first.

(see Fig.2, Generator Capability Diagram, overleaf).

**PC-based Setup and Maintenance Software.**

The unit is provided with PC based setup and maintenance software and cable for connection to a standard PC 9-pin COM port. A PC is required to set up the A30.

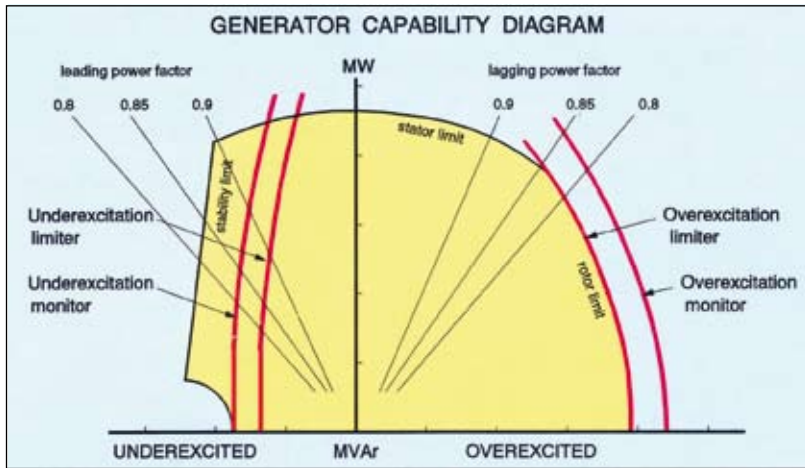


Fig. 2 Generator Capability Diagram

**Features (continued)**

**Communication Port #1 for Setup and Maintenance.**

Provided for connection to an RS232 port on a standard PC for commissioning.

**Communication Port #2 for SCADA Communications.**

Provided to allow plant supervision computers to adjust setpoints and inspect generator and excitation system data. Implemented using Modbus protocol.

**Choice of Setpoint Adjustment Method.**

Either external raise/lower contacts or SCADA communications may be used.

**Operating Modes  
Line Voltage Control**

In line voltage control mode, line voltage is controlled to a constant adjustable setpoint. In this mode, parallel running capability is provided using quadrature current compensation (QCC) with an adjustable droop setting.

**Power Factor Control**

Available when parallel running.

**VAr Control**

Available when parallel running. Also incorporates VAr shed facility.

**Soft Start Facility**

Under normal operation, as the generator approaches rated speed, the line voltage is increased at an adjustable, controlled rate to the required setpoint.

**Fast Acting Field Current Limiter**

Limits excitation current to prevent excessive line current during power system faults.

**Over Excitation Limiter**

Using inverse time delay and temperature compensation if required, this facility is provided to prevent overheating of the generator rotor.

**Under Excitation Limiter**

This facility enables operation of the generator at maximum capability with a leading power factor whilst avoiding the risk of the rotor pole slipping.

**Over Flux Limiter**

Excitation is controlled to ensure that, with low frequency, generator line voltage is limited to a preset adjustable voltage/frequency ratio to avoid over fluxing of the generator.

**Selectable Standby System Control Mode**

The standby system may be set up to operate in either generator voltage or exciter field current control mode.

**Rotating Diode Failure Alarm**

Detection of a failed rotating diode or fuse is achieved by monitoring the exciter field current.

**Adjustable Step Response**

This facility enables an adjustable step change in setpoint to be applied to evaluate the stability settings of the excitation system. The PID parameters of the excitation controller may then be adjusted accordingly. The rise time and overshoot values are recorded to help with commissioning.

**Event Recorder**

A log of major events, such as limiter operations, field suppression and transfers, is maintained within the unit. The events may be displayed using a PC connected to the commissioning port.

**Ratings**

Maximum continuous output current	20A
Maximum 10 second output current	30A
Excitation supply voltage	Single phase 110V to 330V
Excitation supply frequency	50Hz to 480Hz
Nominal sensing voltage	100V to 120V selectable in 5V steps
Control power supply	24V dc, alternatively 110V dc
Voltage sensing phases	Three phase with single phase option
Nominal generator frequency	50Hz or 60Hz
Current transformer input nominal	5A or 1A selectable
Current transformer input burden	Less than 1VA
Load taken by sensing inputs	Less than 2VA
Maximum field voltage for forcing	75% of the available single phase rms supply voltage
Voltage adjustment range	Selectable from +/-10% to +/-25%
Accuracy of control	+/- 0.5%
Operating temperature range	0°C to +55°C
Storage temperature range	-40°C to +100°C
Dimensions	Width 483mm, height 266mm, depth 400mm
Weight	14.5kg



Certificate No 21024



Certificate No 21025



Certificate No 936683



Certificate No 00282



Certificate No 00066

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