



Introduction

Power system stabiliser functionality is included within the latest BRUSH excitation controllers, however the T20 provides this functionality in a separate unit suitable to be used with simpler excitation controllers.

The PRISMIC® T20 is a microprocessor based dual-input power system stabiliser according to the IEEE 421.5 PSS2C model.

The stabiliser monitors generator terminal volts and current, from which the operating variables of speed and electrical power are derived.

The output of the T20 provides a bias to the reference signal in the AVR. This provides damping of power system oscillations by adjusting the generator field current.

The T20 is a compact unit with a steel enclosure designed for securing to a cubicle mounting plate. It can be used as a retrofit unit as well as being incorporated into new systems.

The T20 is suitable for connection to most automatic voltage regulators for synchronous generators, with either brushless or static excitation systems.

It offers easy connection to any analogue or digital AVR that has the capability to accept a bipolar DC signal from a PSS.

It is also possible to transfer the bias signal of the PSS to an AVR via a CAN-bus interface.

The user friendly, Windows based human machine interface (HMI) software, accessed via an RS232 port, ensures the T20 can be fully commissioned in any location.

Power System Instability

Power system oscillations typically range from 0.1 to 3.0 Hz in frequency and are commonly characterised as inter-area, inter-unit or local modes of oscillation.

Power fluctuations are directly related to the rotor angle oscillations of a synchronous generator.

Power system stabilisers act on the excitation controller or AVR to adjust the generator excitation to help reduce these rotor angle oscillations.

PRISMIC® T20 Power System Stabiliser

Power system studies and many utility regulations require additional excitation system control functionality to ensure that generators contribute to power system stability.

Key Features

- Digital design
- Uses integral of accelerating power
- Based upon IEEE 421.5 PSS2C model
- Signal conditioning to minimise erroneous bias signal to the AVR
- Uses frequency behind generator reactance as speed signal
- Configurable gain setting
- Contains 3 lead/lag stages
- Isolated PSS output with clamp for protection
- Contains diagnostic and monitoring circuits – indications
- Available remotely via HMI, and locally via LEDs on the unit
- Analogue output port and CAN-bus interface to AVR
- PSS can be disabled via hardware and software
- Windows HMI commissioning software
- Data recording facility with automatic and manual triggers
- 50 and 60 Hz operation
- cCSAus certified
- Suitable for brushless and static excitation systems

Interfacing to the T20

- 1- RS232 port for connecting the commissioning PC.
- 2- CAN ports, for the optional transfer of the T20 output value to the AVR and for auxiliary communications.
- 2- Phoenix COMBICON connectors for power supply, digital and analogue
- IO, CT and VT connections. Spring connectors provide increased reliability and lower maintenance as compared with traditional screw terminals

Data Logging

The T20 has several forms of data logging:

- Saving presets to file
- Saving holding registers to file
- Event Logs
- Analogue data recording – allows selection of data including automatic or manual triggers for data recording. Recorded data can be saved to disk on commissioning PC

Monitoring Circuit

The monitoring circuit in the T20 disables the unit under the following conditions:

- Frequency outside acceptable limits
- T20 output exceeds a pre-set level for a given time
- Generator breaker is open
- Power outside acceptable limits

Specifications

Power supply

24V (18 to 30V dc)

Voltage sensing inputs

3x 100V ac (90-120V ac) <0.5VA burden

Current sensing inputs

2x 5A or 1A (selectable) <0.5VA burden

Testing input

1x $\pm 10V$

Digital inputs

4x 24V

Digital outputs

4x 24-125V

Analogue output

1x $\pm 10V$

Communication ports

1x RS232, 2x CAN ports

Enclosure protection

IP20

Dimensions :

Width 272mm (10.70")

Height 153mm (6.02")

Depth 48mm (1.88")

Weight 1.32kg (2.91lb)

Fixing

Cubicle mounting plate

Operating ambient temperature

-25°C to +55°C

Storage ambient temperature

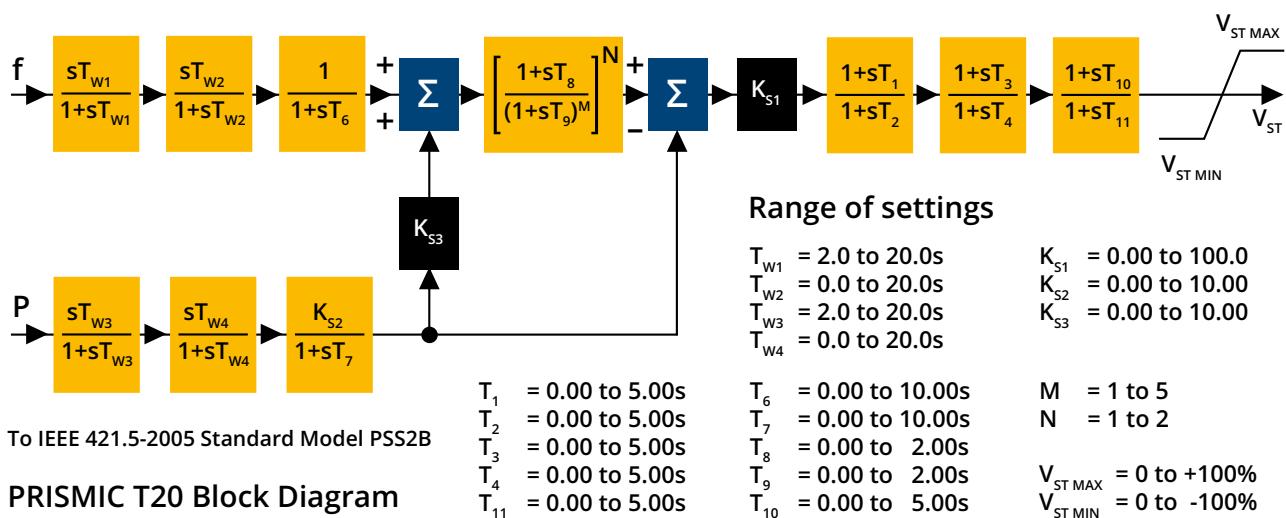
-40°C to +85°C

Analogue to digital converter

12 bit ADC, 24 samples per cycle

Electromagnetic Compatibility

- EN61000-4-2 (electrostatic discharge) level 3, category B
- EN61000-4-3 (radiated electromagnetic field) level 3, category A
- EN61000-4-4 (burst immunity test) level 3, category A
- EN61000-4-5 (surge immunity) level 3, category B
- EN55011 (conducted noise) class A



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