Self-Contained Type HSVC (High Side Voltage Control) or PSS (Power System Stabilizer)

- HSVC
- PSS

Self-Contained Type HSVC or PSS unit

Easy Installation

Existing Excitation Panel

Changes for the Better
MITSUBISHI Self-Contained Type HSVC or PSS
for Improving the Performance of Existing Excitation System

Features of Self-Contained Type HSVC or PSS

- HSVC function and PSS function self-contained in independent units
- HSVC function and/or PSS function easily added to existing AVR (excitation panel)
- Optional features for increased functionality and remote operation
- Digital controllers for high performance and reliability
- Improved system stability and collapse prevention
- Low cost and easy installation
- Low operation and maintenance cost

Improved Effect on Power System Stability & Features

**HSVC**
- Improved transient stability and voltage stability by controlling high side voltage and more efficient use of the reactive power supplying capability of each generator
- High side voltage measurement not needed—only terminal voltage and current measurement (advanced line drop compensation)
- High control response of high side voltage within several seconds.

For details, please refer to MITSUBISHI brochure SE-D735-A

**PSS**
- Improved power system stability—damping power system oscillations
- Integral of accelerating power type PSS

For details, please refer to MITSUBISHI brochure SE-D779
**Function of HSVC**

HSVC has many optional functions and these functions will be installed according to the customer.

- Calculating function of control target voltage
- Reactive current compensation function (option)
- Compensation follow-up control function (option)
- Automatic XDR*1 compensation function by tap position (n) of step-up transformer (option)
- Phase compensation function for stabilizing HSVC control loop
- Phase compensation function for damping angle oscillation (option)

![Function Diagram of HSVC](image)

*1: Voltage Droop Rate for stable parallel operation

**Function of PSS**

In addition to integral of accelerating power type PSS, the following types of PSS are also available.

1. Active Power and Speed (frequency) type
2. Active Power type
3. Speed (frequency) type

*1: Kinds of Speed signal

1. Frequency of terminal voltage --- only terminal voltage
2. Frequency of internal voltage calculated from terminal voltage and current (V=Vg + xd Ig) --- (option)
3. Actual rotor speed --- required speed detector (option)
# Specification of Hardware

## Power Source
- **125Vdc (77 to 144Vdc) / 60W (burden)**

## CT/PT (burden)
- **CT (1 or 5A)**: less than 0.2VA
- **PT (100 to 120V)**: less than 0.1VA

## Analogue Input
- **General**
  - Signal level: +/- 10V
  - Accuracy: +/- 0.5%

- **Application of 3 Phase Analogue Input**
  - Reactive Power: $Q_g$
  - Generator Voltage: $V_g$
  - Active Power: $P_g$
  - Generator Voltage: $V_g$
  - Frequency: $f$

- **Application of Other Analogue Input**
  - Output signal of AVR voltage setter
  - $Q_g$ from a parallel generator
  - Speed signal (Option)

## Analogue Output
- **General**
  - Signal level: +/- 10V (External load resistance 5kOHM or greater)
  - Accuracy: +/- 0.5%

- **Application**
  - HSVC output to AVR
  - $Q_g$ output to a HSVC unit of a parallel generator
  - Check Pins (For measurement)
  - PSS output signal to AVR
  - Check Pins (For measurement)

## Digital Input
- **General**
  - 24Vdc / 10mA Power supply for relay contacts

- **Application**
  - Change signal of "Control" (HSVC "on")
  - A signal of parallel generator "operating" (Load circuit breaker "close")
  - None

## Digital Output
- **General**
  - Contact rating: 200Vdc / 0.15A (Semiconductor relay)

- **Application**
  - Alarm: Power supply failure / Electrical failure (Self-diagnosis)
  - Setting of parameters

## Human-Machine Interface (HMI)
- Setting of parameters

## Working Temperature
- 0 to +50 °C

## Working Humidity
- 10 to 90 %RH (without dewing)

## Optional System & Application
- Speed detector & Pick up: None
- PC & Network: Remote operation
- SCADA Server: Data logger, Trend graph etc.
- Web Server: Connection to Internet
MITSUBISHI Self-Contained Type HSVC or PSS is respectively offered as 1 module. This module is compact so that the user can built it into existing excitation cubicles. The HSVC or PSS application is for improving transient stability and voltage stability of the power system.