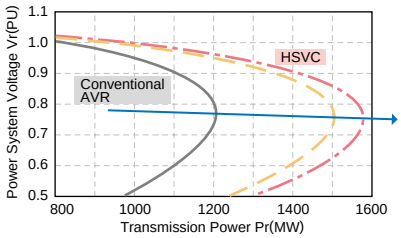
Changes for the Better

MITSUBISHI ELECTRIC

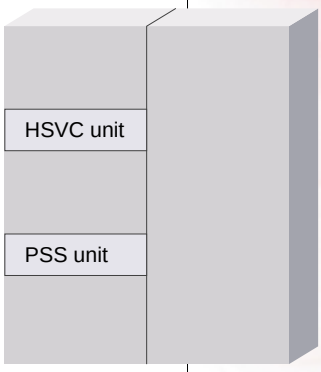
Self-Contained Type HSVC (High Side Voltage Control) or PSS (Power System Stabilizer)

HSVC



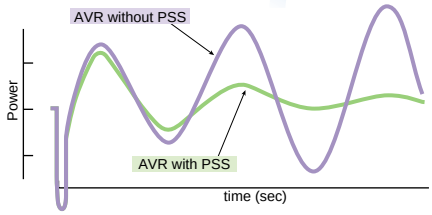
Self-Contained Type HSVC or PSS unit

Easy Installation



Existing Excitation Panel

PSS



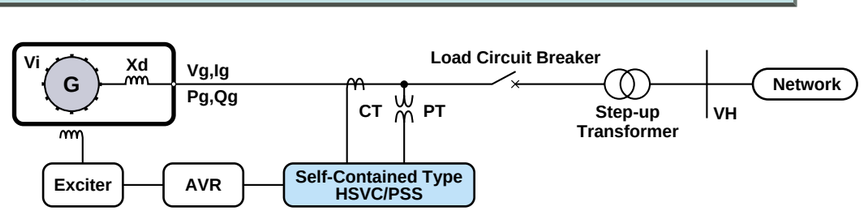
MITSUBISHI Self-Contained Type HSVC or PSS for Improving the Performance of Existing Excitation System

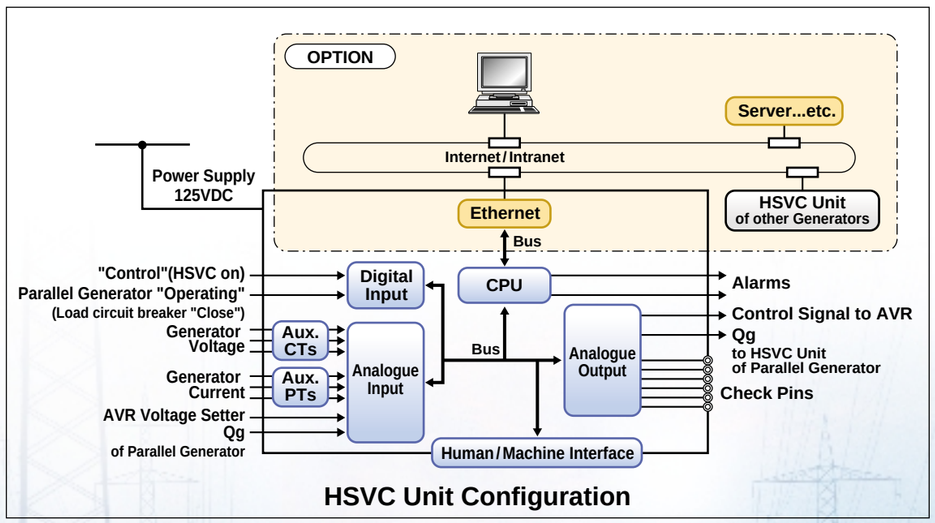
Features of Self-Contained Type HSVC or PSS

- 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

Configuration of HSVC or PSS Unit





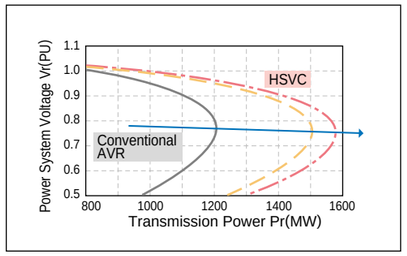
HSVC Unit Configuration

Improving 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.

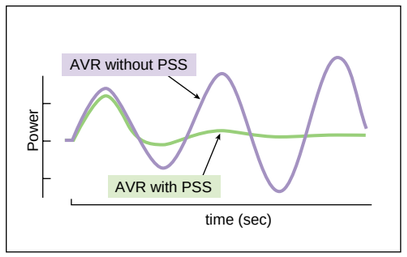
For details, please refer to MITSUBISHI brochure SE-D735-A

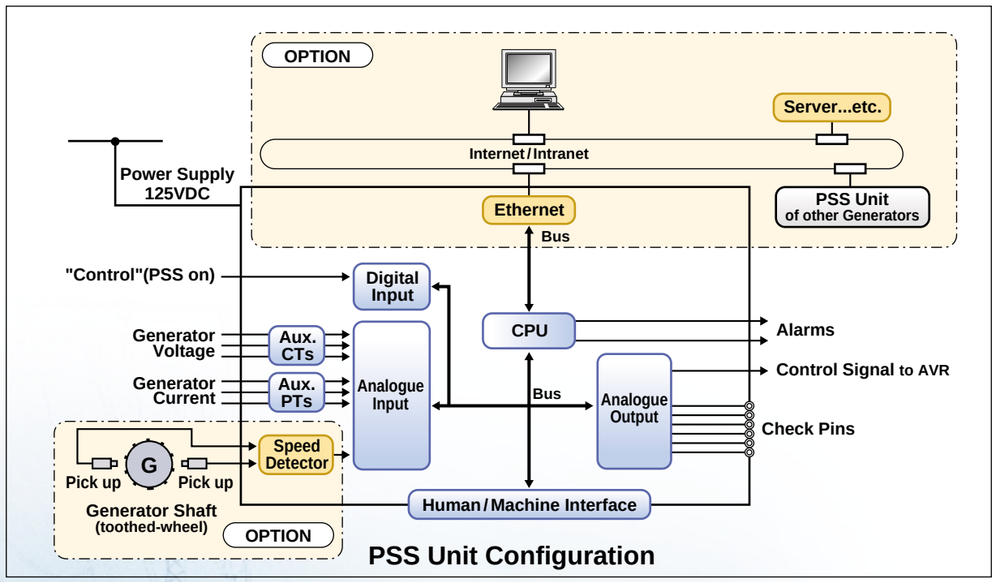


PSS

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

For details, please refer to MITSUBISHI brochure SE-D779

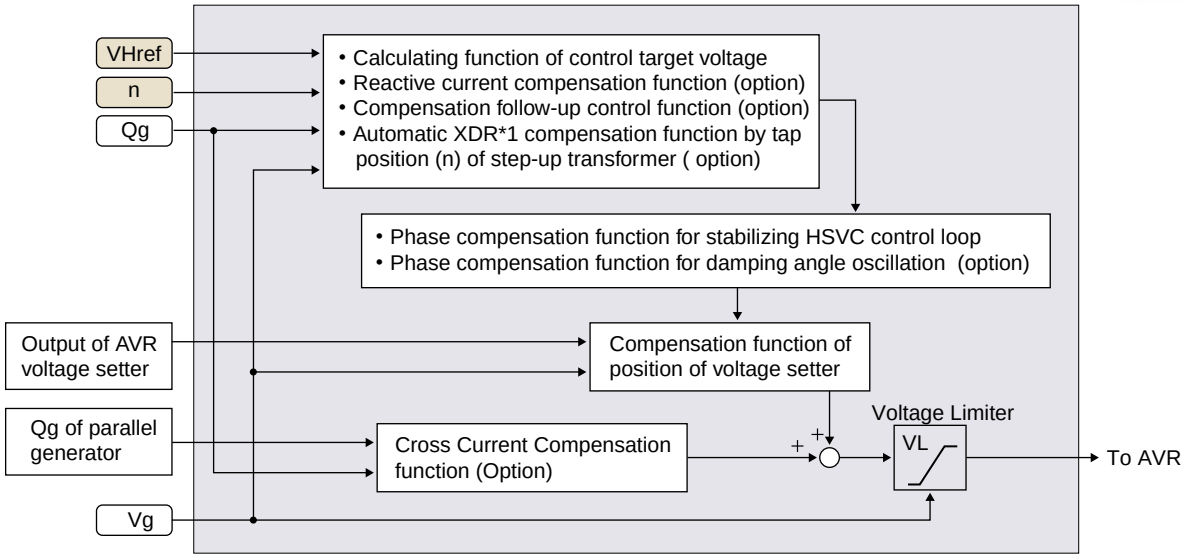




PSS Unit Configuration

Function of HSVC

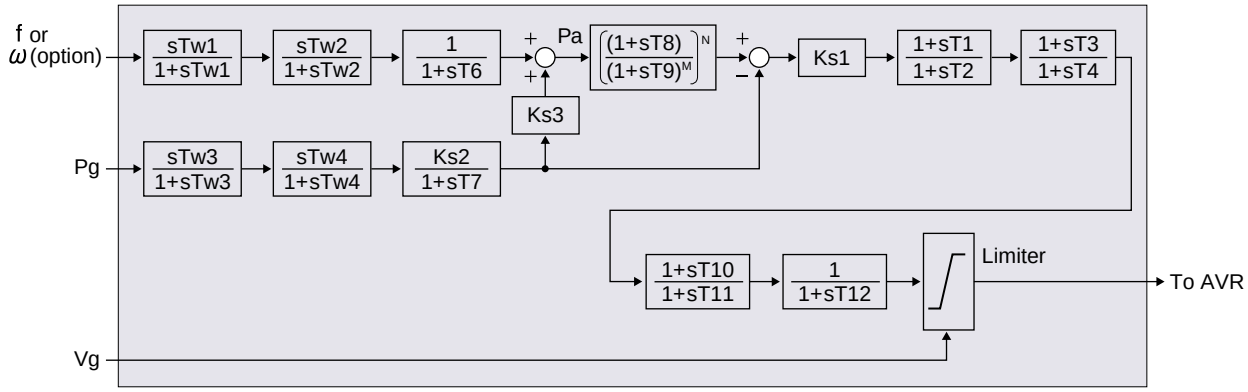
HSVC has many optional functions and these functions will be installed according to the customer



HSVC function diagram

*1: Voltage Droop Rate for stable parallel operation

Function of PSS



Function diagram for accelerating power type (IEEE PSS2A model)

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 (Vi=Vg + xd Ig) --- (option)
(3) Actual rotor speed --- required speed detector (option)

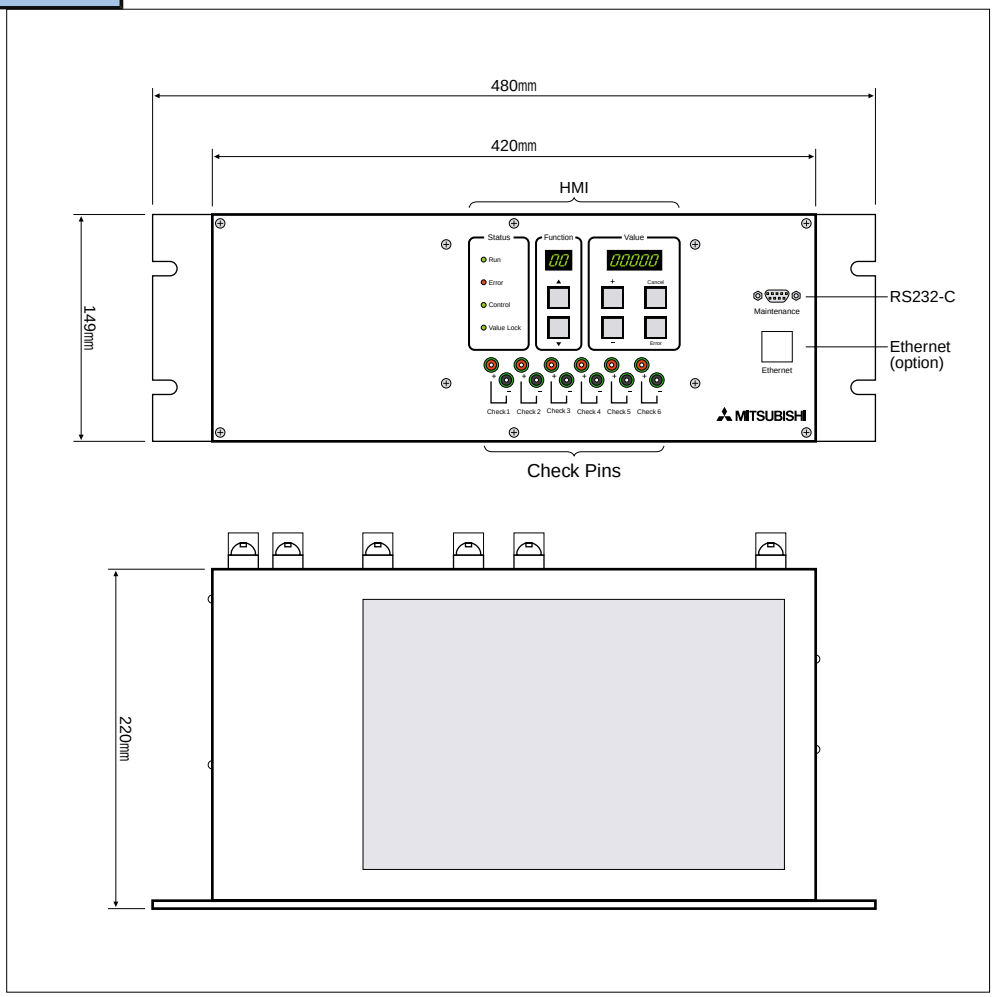
Specification of Hardware

ITEM		HSVC unit	PSS unit
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 Qg • Generator Voltage Vg	• Active Power Pg • Generator Voltage Vg • Frequency f
	Application of Other Analogue Input	• Output signal of AVR voltage setter • Qg 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 • Qg 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)	
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	For speed signal input
	PC & Network	Remote operation	
	SCADA Server	Data logger, Trend graph etc.	
	Web Server	Connection to Internet	

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

Scale of HSVC or PSS Unit

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.



MITSUBISHI ELECTRIC CORPORATION
HEAD OFFICE: MITSUBISHI DENKI BLDG., MARUNOUCHI, TOKYO 100-8310. TELEX: J24532 CABLE: MELCO TOKYO

Improper use of products can cause severe injury or death,
and may result in damage to product and other property.
Please read instruction manual before installing or using product.

SE-D778-A(0202-1.0)MDOC

New Publication, effective Sep. 2001.
Specifications subject to change without notice.