ENERGY AUTOMATION PRODUCTS

High Speed Busbar Transfer Device

siemens.com/7VU85

High speed busbar transfer devices

The SIPROTEC 7VU85 high speed busbar transfer (HBST) device is a compact multifunction device, which is based on the well-known and established SIPROTEC 5 series for very fast power supply transfer of busbar which is installed with big inductive motors. The HSBT device continuously supervises the voltage at main incomer, the motor busbar, and the alternative incomer power source. The function automatically disconnects a faulty incomer and transfers the busbar load to alternative power source. This ensures an optimal transfer with a small impact on the manufacturing processes and no risk of damaging equipment. This functionality avoids expensive and unplanned shutdowns.

High speed busbar transfer device is typically required where electrical supply for motors operating critical parts of a manufacturing process is secured by connecting an alternative incomer on standby. This is often the case in the petrochemical, pharmaceuticals, data centers, hospitals, and semiconductor manufacturing industry with continuous processes, as well as in electrical power generation plants.

The SIPROTEC 7VU85 accommodates the primary diagram of single busbar and sectionalized single busbar and double busbars with multiple incomers. The SIPROTEC 5 architecture offers full flexibility in hard and software for complex applications with up to 20 circuit breakers.

The pre-defined application templates provide a compact and cost-efficient solution in hard and software, which is designed for typical industrial and power plant applications:

- Single busbar with 2 incomers
- Sectionalized single busbar with 2 incomers
- Single busbar with 3 incomers
- Double busbar with 2 incomers
- Sectionalized double busbar with 3 incomers

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It has incorporated the traditional HSBT philosophy. Additionally, the unique Real Time Fast Transfer mode helps to improve the efficiency. The improved algorithm in the SIPROTEC 7VU85 realizes ultra-fast switching time of up to 10 ms.

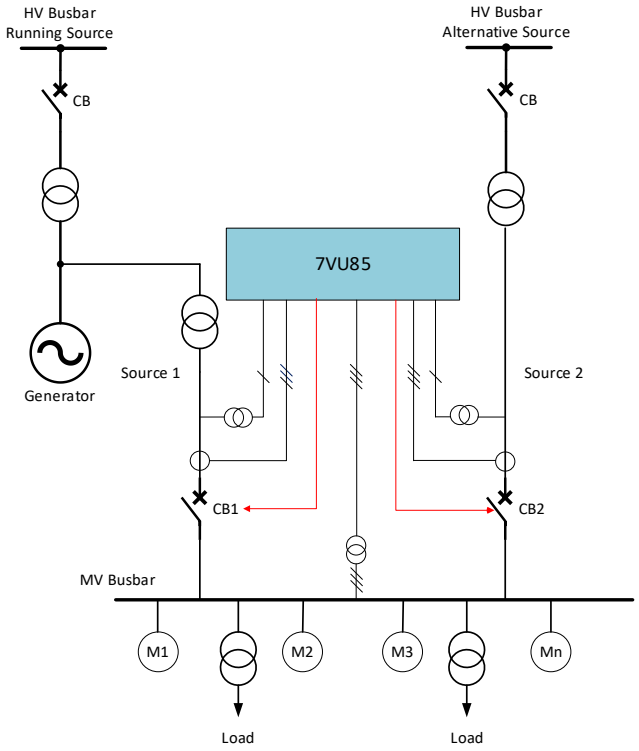
Features

Permanent availability of electricity is essential for reliable production of a great number of processes in power stations and industrial plants where lots of inductive motor are installed. To achieve this, a busbar is normally equipped with two or more independent in-coming power sources to provide the possibility to switch to standby source in case of main source interruption or failure.

The power supply interruption with tens of millisecond has small impact to rotating loads. Thus, the High Speed Busbar Transfer (HSBT) device helps to control and monitor the progress to ensure the fast but reliable transfer of the power sources. It can be initiated manually or automatically.

Based on the existing world-wide used SIPROTEC 5 platform, the reliability, stability, and efficiency of HSBT SIPROTEC 7VU85 are guaranteed. Thanks to its powerful and flexible performance, multi functions are integrated into one system, e.g, power supply transfer, relay protection and supervision.

The SIPROTEC 7VU85 provides easy configuration with DIGSI 5 in case of complex application and scenarios. The SIPROTEC 5 architecture provides the necessary control functions and function blocks.



When selecting a device, use one of the 4 predefined hardware variants or assemble your desired device from the hardware catalog and add the required functionality:

- 4 pre-defined standard variants match to the applications templates with
  - **AV1: 1/2, 19 BI, 15 BO, 8I, 8V**
  - **AV2: 4/6, 27 BI, 21 BO, 12I, 8V**
  - **AV3: 5/6, 35 BI, 27 BO, 16I, 12V**
  - **AV4: 5/6, 31 BI, 25 BO, 20I, 12V**

or configure optional SIPROTEC 7VU85 from the modular hardware catalog to suit your needs.

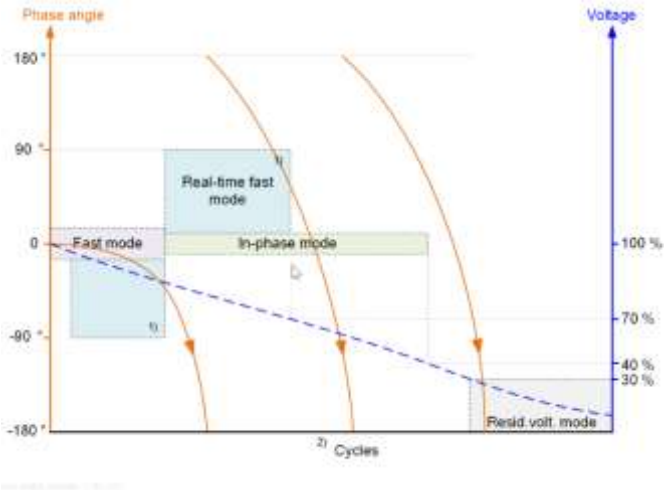
- Max. 443 binary inputs, 225 binary outputs and 64 analog inputs
- Load the required functions from the extensive SIPROTEC 5 function library into the device configuration simply by dragging and dropping them with the powerful DIGSI 5 configuration tool
- The range of functions that can be used in the device is determined by the specified function class
- If required, simply extend the function point class in a few minutes via the new SIPROTEC Function Point Manager application

Functions

High speed busbar transfer function

- Multiple start conditions
  - Electrical fault start
  - Non-electrical fault start
  - CB inadvertent open start
  - under-voltage start
  - under-frequency start
  - manual start
  - additional user start criteria
- Settable transfer sequences
  - Sequential transfer
  - Simultaneous transfer
  - Parallel transfer
- Fast & Safe algorithm for closing
  - FAST mode
  - REAL-TIME FAST mode
  - IN-PHASE mode
  - RESIDUAL-VOLTAGE mode
  - LONG-TIME mode
  - Synchro-Check for parallel transfer

- Flexible configuration of transfer directions and transfer priorities for multiple standby incomers can be defined by user
- Transfer direction related fault recording (only the active transfer direction will be recorded)



SIPROTEC 7VU85 additional functions and features:

- High speed binary output contacts with approx.1ms for fast closing times
- Flexible load-shedding function
- Circuit breaker de-coupling when OPEN failed
- Transfer start locally or remotely
- Manual CB opening to block HSBT
- ON/OFF HSBT function can be set locally or remotely
- HSBT test mode supported
- Standard protection functions
- Supervision function
- Control function
- Synchron/Asynchron with balancing cmd.
- Paralleling function (1.5- and 2-channel) synchronization function) with balancing cmd.
- Communication protocols
- Flexible recording functions
- Merging Unit functionality

Benefits

- Compact and inexpensive high speed busbar device for a wide variety of all industrial applications
- Safety thanks to powerful as well as tried-and-tested control and protection functions
- Easy to use thanks to the graphic display with single-line representation
- Intuitive device operation using web UI
- Cybersecurity in accordance with NERC CIP and BDEW white paper requirements is available as standard
- Full compatibility between IEC 61850 Editions 1, 2.0 and 2.1
- Optional, pluggable communication modules, usable
  for different and redundant protocols (IEC 61850-8-1,
  IEC 61850-9-2 Client, IEC 61850-9-2 Merging Unit, IEC 60870-5-103, IEC 60870-5-104, Modbus TCP, DNP3 serial and TCP, PROFINET IO, PROFINET IO S2 redundancy)

Our tip:

Register in the Industry Mall, create an account and benefit fully from our SIPROTEC 5 configurator.

Advantages/benefits for users registered and logged in to the Industry Mall:

- Personal product list, with automatic storage of the last 50 configurations
- Insertion of comments (e. g. naming of a branch name for the configured device)
- Automatic saving of the function point calculation
- Visibility of regional list prices (non-logged-in users get the message: Price on request) Automatic saving of the function point.

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