Technical data

Hardware
Standard ABB IPC (Pentium or compatible).

Number of communication links to PMUs: up to 16 via TCP/IP or up to 6 via RS232

Communication minimum requirements
- The required minimum data rate is 64 kbps per PMU link.
- The required maximum data latency is <0.1s from physical measurement to data received in PS828.
- The required minimum reliability is 99.8%. This is required to achieve a total reliability of PSGuard similar to existing SCADA systems.

TCP/IP support
Connections are supported towards PMUs.
Communication protocol to PMUs
Optional: Communication protocol to SCADA/EMS.
PSG 850 Interface Manager with the following protocols:
- IEC60870-5-101, including NUC
- IEC60870-5-104, including NUC
- DNP 3.0
- RS570, RSP
- ADLP180
- Teleconnect B T5000
- DPC
- Siemens Sinaut ST1

System description of the ABB IPC
The basic version of the system consists of the following assemblies and components:

Mechanical/electrical
- 19" enclosure with 4-high units (178 mm)
- Peripherals connector
- Appliance connectors for main inputs
- Cooling air fans

Hardware Components
- Slot CPU board
- serial/parallel/mouse I/O onboard
- ≥2 GB RAM memory
- Intel P4 3.06 GHz (or better)
- Slot Passive Backplane PCB with
- temperature monitoring
- Power supply PS/2 type
- Front fan (120mm)
- Top I/O card retainer
- Rear I/O card retainer
Mass storage cabinet contains:
- Hard disk: ≥120 GB
- Optional XXGB Flash-ROM
- CD/DVD-RW drive
- 3 1/2” Floppy drive 1.44MB

ABB IPC Standard accessories
ABB IPC is supplied with the following standard accessories:
- Slot CPU-board User Manual
- DVD-RW-Software

Connectors
At the rear of the system there are the following connectors:
- Mouse-/Keyboard connector PS/2 Typ
- parallel I/O-port (25-pin D-type connector)
- serial I/O-port 1 & 2
- Optional: extension to 6 serial inputs PS232
- VGA-connector
- Ethernet-connector, RJ45
- USB 2.0
- Dual Ethernet Card, PCI
- Modern 56k

Dimensions
Height: 4-high units (178mm)
Width: 84 pitch units (447/484mm)
Depth: approx. 450 mm
Weight: approx. 17.5 kg

Power supply values
Power consumption in the off condition: approx. 5 W
Voltage: 100-240 V AC autoswitching
Frequency: 50-60 Hz
Power consumption: max. 300 Watt

Ambient conditions
Operating temperature: 5° - 45°C
Storage temperature: -10° - 80°C
Humidity: Service: 20%–80%
Storage: 10%–95%
non-condensing in each case

Resistance to vibration and impact
Operation: 0.5 G vibration 5–200 Hz
(2 G without hard disk)
5 G impact
(8 G without hard disk)
Non-operation: 20 G impact

General
Equipment design:
In accordance with CE standard
Deviations from all values are possible, depending on the equipment version and components fitted

General safety
Approved by TÜV, UL, CSA, NEMKO, IEC
Universal and flexible. The PSG828 high-performance wide area phasor data concentrator and computing platform.

PSG828 supports a wide range of phasor measurement units and is easy to upgrade to further PSGuard WAM applications.

**Applications**
The PSG828 system incorporates the latest technologies applied to identify instabilities in power systems and evaluate the most effective measures against wide area disturbances. The PSG828 has been designed in order to satisfy the market requirements related to wide area protection and control. The PSG828 system utilizes phasors, which are measured by high accuracy (< 1µs) GPS synchronized phasor measurement units (PMU).

PMUs are placed in selected substations. Measured phasor data is sent via dedicated communication links to the PSG828 system, either located locally in the substation or in a control center. PSG828 is the central computational unit where the collected measurement data from the PMUs are synchronized and sorted, yielding snapshots of the state of the transmission corridor.

**Benefits**
Due to the continuous wide area phasor data recording and archiving function, system behaviour during and after wide area disturbances can be analyzed offline and used to optimize protection settings and system defence strategies. The recorded information could also be used for operator training and network simulation. When online, the platform can run decentralized WAM applications such as Phase Angle Monitoring (PAM) or Line Thermal Monitoring (LTM) to better supervise critical assets and optimize dynamic line ratings. See data sheet PSG850 LTM for detailed information.

**Features**

**Connectivity**
The connectivity package is based on OPC Server and can be equipped with data viewer for displaying phasor data.

- Phasor data acquisition from PMUs in IEEE 1344-1995 and IEEE PC37.118 format
- Achieve GPS synchronization with an accuracy of ≤ 1 µs
- Checking the validity of acquired data
- Optional: SCADA/EMS interface based on RTU protocols

**Data storage and export**
The data storage and export module allows important data to be saved.

- Data processing and storage
- Navigation through historical data
- Trending facility
- Offline export function i.e. via CSV files to Office applications like Excel

**Basic monitoring**
Provides state-of-the-art WAM platform enabling integration of future PSGuard software packages.

- 800xA process portal based system
- Monitoring of the communication links to PMUs
- Monitoring of the GPS synchronization
- Early warning and alarm list
- GUI enabling process-oriented navigation
- Synchronized phasor display

**Optional Extensions:**
- Capability to extend into Wide Area Monitoring and Wide Area Control and Protection
- The following PSG850 applications are available:
  - Phase Angle Monitoring (PAM)
  - Line Thermal Monitoring (LTM)
  - Event Driven Data Archiving (EDDA)