NEO 3000
SYSTEM

SCU 810 with IEC 61850 - System Communication Unit

THE FAMILY OF EQUIPMENT DEDICATED FOR POWER UTILITIES

Energy Sector

Iskra®

SCU 810 with IEC 61850 -
System Communication Unit

Description

The SCU 810 module is a complex communication device intended for the interconnection of any intelligent electronic device (IED) of Iskra Sistemi's NEO 3000 (NEO 2000) Substation Control and Protection System and of any third-party vendors. IED is considered as numerical protection relay, bay computer, intelligent RTU, energy counter and alike, that is used within the substation. The SCU 810 device covers communication functions needed within substation and functions of data handling, world time synchronization and substation automation. It can serve also as interconnection gateway between hierarchically different control system levels from substation to utility dispatching centers, where data from geographically spread substations are grouped into a single database that forms an integrated supervision system of a wider area power system. SCU 810 is a multi-protocol device that enables simultaneous communication with different IEDs connected on separate communication ports using any listed protocols. Hardware extension of communication ports is possible by using ECU 032 extension unit that provides up to 64 ports. For communication with devices over IEC 61850 there can be use optical network with star or ring configuration. SCU 810 also supports number of inevitable automatic functions when it is used as a master automation controller in Distribution Automation System.

Features

- Basic communication node to communication between IEDs and control centers of different manufacturers
- Support of backup communication paths
- Support of communication protocols supported by different manufacturers
- Remote control, monitoring and configuration of IEDs
- Support of internal and external GPS or DCF clock or over NTP time synchronization
- PLC functions (acc. to IEC 61131)
- Non-volatile memory (for drives, application data, etc.)
- Set point facility
- Self-supervision and watch dog
- Integrated diagnostic software

Application

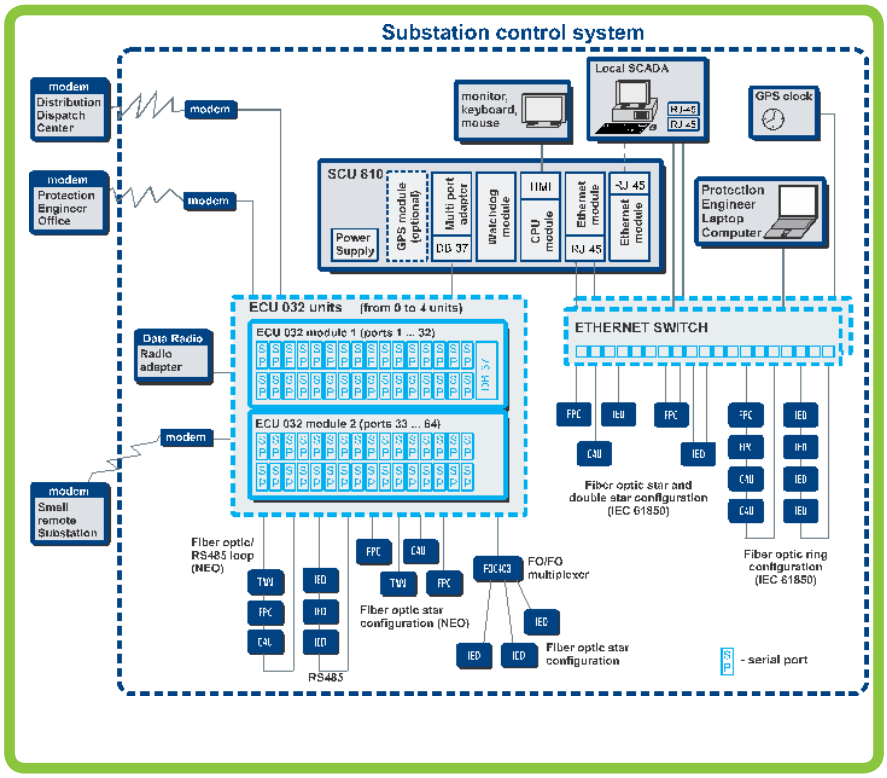
The SCU 810 device can be implemented anywhere where the basic function of a communication gateway is needed and/or integration of IEDs is required. The typical applications are:

- Central communication device in HV and MV substations and for Distribution Automation Systems
- The communication interface in either a control or maintenance center
- Integration of IEDs into substation or central SCADA systems
- Communication gateway for Protection Management Systems (PMS)
- Protocol conversion in all communication directions

SCU 810 with IEC 61850 -
System Communication Unit

Physical Interfaces

Selection of an appropriate type of physical interface depends on requirements of the individual application. The SCU 810 is based on modular platform that enables device layouts with different amount and physical layout of serial and Ethernet interfaces. For smaller applications up to 4 serial interfaces can be integrated inside SCU810 housing. Using additional external serial port multiplicator units ECU 032, up to 64 serial interfaces can be comprised within single SCU 810. External serial port multiplicator unit ECU 032 is a modular unit for extension of physical serial ports. Each ECU 032 can hold up to 32 serial ports with physical layouts adapted to specific application. For larger applications up to two ECU 032 units can be connected to single SCU 810 unit. Detailed information about ECU 032 can be found in Extended Communication Unit ECU 032 leaflet. Due to harsh electromagnetic environment inside substations, communication media inside substation has to be electromagnetically resistant. Communication between IEDs and SCU 810 is therefore applied by fiber optic cables or electromagnetic resistant RS485 connection. For communication inside substation control room RS232 or Ethernet connection is used.



Gateway Function

The SCU 810 is designed for interconnection of the Iskra Sistemi's control and protection IEDs, third- party IEDs and control centers:

- NEO 3000 IEDs (FPC 680, CAU 380)
- NEO 2000 IEDs (CAU 300 series, FPC 500 series, DAU 200 series)
- Any IEDs of different manufactures which support IEC 61850
- Any IEDs of third production by using internationally recognized communication protocols (see list on the last page)
- Station or dispatching control centers (NEO 3000 Control Center and others)
- Local SCADA MCE 940 for substation level control

Protocol converter function

SCU810 can also be used as protocol converter in smaller applications without external serial port multiplicator unit ECU 032. Beside smaller amount of serial interfaces and inability to host internal GPS clock it provides all functionalities of normal sized SCU810.

Protocol converter function

- Time synchronization (via protocol, GPS clock, DCF clock, NTP/SNTP)
- Collection and transmission of energy metering from IEDs
- Collection and transmission of condition of individual IEDs
- Collection and transmission of high resolution events (1 ms time resolution)

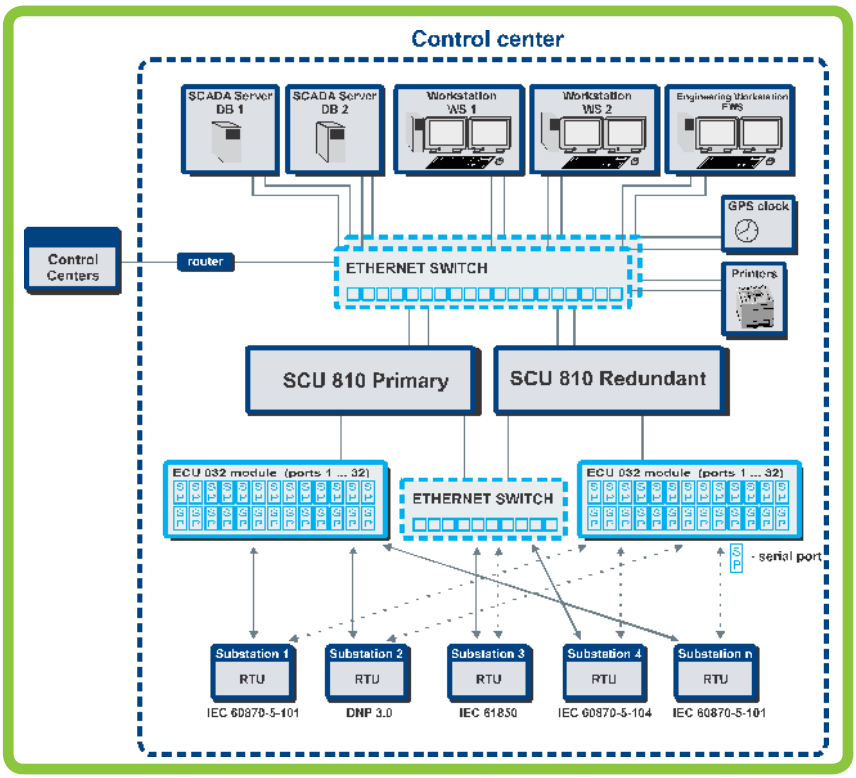
Remote configuration of IED

The SCU 810 offers the unique function of remote configuration and remote service access to IEDs. That enables service access to the settings of the device and fault recording from any point in the communication network that SCU 810 is connected to.Using that function in larger scale permits utility company to establish Protection Management System (PMS) for integral control of numerical protection relays and other IEDs. The function is not limited by IED vendor as SCU 810 uses standard serial communication interfaces.

SCU 810 with IEC 61850 -
System Communication Unit

SCU810 as FEP in control center

SCU 810 can be used as front end processor in control center. In this case one SCU 810 operates as primary and the other as redundant. SCU 810 communicates with substations over external serial port multiplicator or redundant Ethernet network. If there is only one serial communication channel from substation CMU 100 device can be used to connect both SCU 810 on same communication line. SCU 810 also supports redundancy on Ethernet for communication with SCADA.



Technical data

OPERATING CONDITIONS	
Power supply nominal voltage	9 - 36 VDC (e.g. +24 V @ 5 A)
Power consumption:	40 W
Storage temperature:	-20 – 80°C
Operating temperature:	-10 – 55°C
Humidity:	95% non-condensing
System Design:	Fanless with no internal cooling, SSD
MECHANICAL SYSTEM	
Dimensions (W, H, D):	195 x 238 x 177 mm
Weight:	5,0 kg
Mounting:	Wallmount, Stand, Panel
Monitor connection:	Dual DVI-D independent
I/O INTERFACE:	(Up to 1 x PCIe, 3 x PCI slots)
LAN:	2 x 10/100/1000 Base-Tx RJ45 ports-integrated
Serial Ports:	2 × RS-232 with DB9 connectors-integrated
USB Ports:	4 x USB 2.0 - integrated

Additional communication interface (via card slots)

- up to 6 Ethernet ports
- up to 4 serial ports
- up to 64 serial ports (using ECU 032 units)

Protocols

NEO (IEC 60870-5)	Iskra	CC
IEC 60870-5-101		CC
IEC 60870-5-104		CC
DNP 3.0		CC
NEO (IEC 60870-5)	Iskra	IED
IEC 61850		IED
IEC 60870-5-101		IED
IEC 60870-5-102		IED
IEC 60870-5-103		IED
Courier (IEC 60870-5)	SEG	IED
DPU2000 ASCII	Iskra Emeco	IED
RS485 Pro	Elcontrol	IED
STOM	Electrex	IED
Modbus ASCII	Elcontrol	IED
Modbus RTU Kilometer	GE	IED
Modbus RTU, ASCII	Universal	IED
GE Protocol	SEL	IED
Procome	Team Ateche	IED
SEL	ABB	IED
Empros		IED
SPA		IED
GPS ASCII		TS
DCF ASCII		TS
NTP/SNTP		TS

Published by Iskra d. d. ▪ Version 2.1, Aug 2015

Iskra®
Iskra, d. d.
Stegne 21
SI-1000 Ljubljana, Slovenia
Phone: +386 (0) 1 51 31 000
Fax: +386 (0) 1 51 11 532
www.iskra.eu