

SYMAP[®]

SYMAP[®] - Advanced Feeder Protection



SYMAP® - Advanced Feeder Protection relay

SYMAP® F is designed for land and marine applications for protection, control, measurement and monitoring of low and medium voltages power systems. **All protection functions in SYMAP® F can be activated simultaneously, and there are no limits to using all of them at the same time.** Hence follows, that SYMAP® F can be used in different switchgear and network applications.

SWICHGEAR Control and Interlocking

- single busbar
- double busbar
- duplex systems;
- interlocking at feeder level;
- interlocking at station level



NETWORKS

- isolated networks,
- resonant-earthed networks and
- solidly, and partially earthed networks



Product Sheet

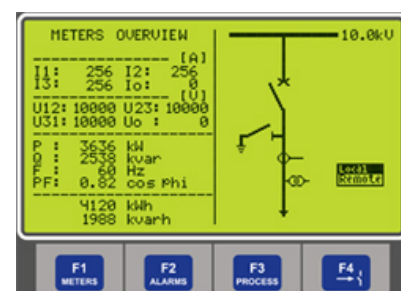
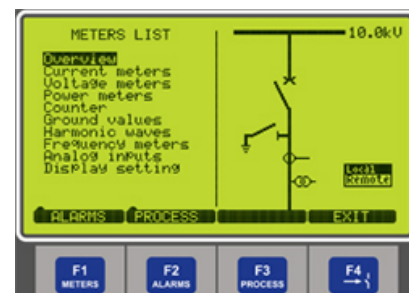
PROTECTION APPLICATIONS

24	Overexcitation protection
25/A	Synchrocheck
27	Undervoltage, instantaneous, definite time
27 B	BUS undervoltage, definite time
32	Overload relay
46	Reverse phase current
47	Phase sequence voltage
49	Thermal overload protection
50 BF	Breaker failure
50	Overcurrent, instantaneous
50 G/N	Current earth fault, instantaneous
51	AC time overcurrent, definite time, IDMT
51 G/N	AC ground overcurrent, definite time, IDMT
59	Overvoltage relay, instantaneous, definite time, normal inverse
59 B	BUS overvoltage relay, definite time
59 N	Residual overvoltage
64	Ground overvoltage
67 AC	AC directional overcurrent, definite time, IDMT
67GS/GD	directional earth fault, definite time
78	Vector surge supervision
79	Auto reclosing
81	Frequency supervision
81 B	BUS frequency supervision
86	Electrical lock out
94	Trip circuit supervision
95 i	Inrush blocking
-- FF	Fuse failure (voltages)
-- FL	Fault locator

Product Sheet

MONITORING AND MEASUREMENT FUNCTIONS

- 3 × phase-to-phase and line voltages of feeder and BUS1
- 3 × phase feeder current (average/max. value)
- Frequencies of all systems (min./max. value)
- Ground current and voltage (max. value)
- Active and reactive power of each phase
- Active and reactive ground power
- Power factor of each phase
- Active and reactive power counter (reverse and forward, constant and temporary)
 - Operating hours
 - Breaker cycles (life time)
 - Harmonic waves of feeder current and voltage (up to 5th harmonic wave)
- Circuit-breaker wear monitoring
- Trip circuit supervision (94)
- Fuse failure monitor
- 5 oscillographic fault records



COMMUNICATION INTERFACES

- 1 RS232 programming on front or rear
- 1 CANBUS interlocking, CB control, power management system...
- RS422/RS485 port
- Fiber optic
- RJ45

PROTOCOLS

- PROFIBUS DP
- MODBUS
- IEC60870-5-103
- IEC61850

Product Sheet

PLC - powerful PLC function

Powerful PLC function. A large number of PLC functions and blocks, user programmable inputs and outputs, large numbers of predefined logical results as event numbers allows user powerful control and automation functions.

CONTROLS

- programmable inputs and outputs
- programmable interlocking
- five CB control
- programmable PMS functions

Hardware:

Housing: : small, special design from steel and aluminium (suitable for aggressive environment)

Terminals: pluggable

Display : large graphical LCDisplay

ANALOG INPUTS FOR MEASURING AND PROTECTION

- 3 × CT for feeder current
- 1 × CT for ground current or sensitive ground current
- 3 × PT for feeder voltage
- 3 × PT for BUS1 voltage
- 1 × PT for ground voltage

Option:

- 3 × PT for BUS2 voltage

Analog I/O 0-20mA

- 2 x Analog outputs 4-20 mA (optional and hardware depending)
- 2 x Analog outputs 4-20 mA (optional and hardware depending)

Product Sheet

Binary I/O

Configurable binary inputs

- 14(20) binary inputs(basic unit)

Configurable binary outputs (output relays)

- 8 binary outputs
- 1 lock out relay
- 1 synchro on relay
- 2 shunts
- 4 binary outputs optional in basic card

Other functions:

ALARMS

- 80 configurable alarms
- 20 configurable groups

Two rows text description for each Alarm/Trip in chronological order.

Annunciator Page:

- 16 or 32 graphical states with user defined text description

Product Sheet

Event History

SYMAP® automatically collects and stores all activated events indicating their number, title, coming/going status, and time stamp. A **maximum of 5.000 events can be stored**. In case of overflow, data overwriting operates according to the first-in-first-out (FIFO) principle.

Detailed Protection Function History

SYMAP® F automatically collects and stores all activated events related to protection functions with a time stamp.

- Event number
- Event title
- Time stamp
- Pickup or trip value (with fault phase indication)
- Setting value
- Trip time
- 3-line voltage and current pickup, synchronized with the trip event

A maximum of 1.000 protection function events can be stored. In case of overflow, the oldest data will be recorded over.

Data Recorder (Option)

- Number of samples (6 - 72)
- Recording period (5 - 60 sec)
- Pre-trigger (0 - 100%)
- Trigger event (stop for recorder)

Diagnostics and Monitoring

SYMAP® F has three microprocessors that supervise each other, providing a watchdog system. Important functions are laid out in a double redundancy combination, operating independently with the second processor. Connected separately, an optional unit for short circuit protection operates parallel to the SYMAP® F device and will do so even if the entire voltage fails.

Product Sheet

SYMAP® F provides various diagnostic and monitoring functions as follows:

- All memories (ROMs, RAMs, EEPROMs)
- All analog reference voltages
- Automated test sequences
- Control power ON/OFF of SYMAP® F
- Binary input and output for control logic

The following supervising systems are offered by SYMAP® F:

- Self diagnostics of SYMAP® F
- The inputs of analog data (auxiliary circuit)
- The status and position of switching device and motor's on-off status
- Supervising supply of trip coil
- Gas pressure
- Temperature inside panel
- Each operating life of breaker (hours)

Extended Boards (special applications)

- extra binary inputs and outputs: yes
- PT100: yes

Software and accessory:

- Parameter Tool
- Recorder Tool
- Modbus Tool
- History Tool
- "SYMAP Parameter Tool (SPT)" (NEW software, license is required)
- Firmware Tool
- • Communication cable

Firmware and SPT software:

- Multilingual