

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Multifunction Relay

with type designation(s)
Sepam Series 60 and 80 system

Issued to

Schneider Electric Industries SAS
GRENOBLE, France

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2017-12-31**.

Issued at **Høvik** on **2016-09-23**

DNV GL local station: **Le Havre**

Approval Engineer: **Marta Alonso Pontes**

for **DNV GL**

Trond Sjøvåg
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Product description

Electric metering, monitoring, control and protection relay.

Sepam series 60 and 80 and accessories with the following applications:

Applications		Sepam 60	Sepam 80	Sepam 80 Marine
S	Substations	S60 & S62	S80, S81, S82 & S84	S1M (Z81-08606-1) & S2M (Z81-08614-2)
B	Busbars	-	B80 & B83	B1M (Z83-08210-1) & B2M (Z81-08220-2)
T	Transformers	T60 & T62	T81, T82 & T87	T1M (Z81-08716-1), T2M (Z81-08724-2) & T3M (Z82-08743-3)
M	Motors	M61	M81, M87 & M88	M1M (Z81-08501-1) & M2M (Z81-08504-2)
C	Capacitors	C60	C86	-
G	Generators	G60 & G62	G82, G87 & G88	G1M (Z81-08415-1), G2M (Z81-08418-2) & G3M (Z82-08430-3)

Main protection functions available for Sepam Series 60^{*1)}, Series 80^{*2)} and Series 80 Marine^{*3)}:

ANSI Code	Protection Function
50/51	Phase overcurrent
51N/51N(G)	Earth fault (sensitive E/F)
50BF	Breaker failure
51C	Capacitor unbalance
50V/51V	Voltage-restrained overcurrent
48/51 LR	Excessive starting time, locked rotor
49RMS	Thermal overload
66	Starts per hour
40	Field loss (underimpedance)
46	Negative sequence / unbalance
21B	Underimpedance
67 / 67NC	Directional overcurrent
67N	Earth fault directional
64REF	Restricted earth fault
32P/Q	Directional active/reactive overpower

ANSI Code	Protection Function
37	Phase undercurrent current
12	Overspeed
14	Underspeed
27	Undervoltage
27D	Positive sequence undervoltage
27R	Remanent undervoltage
59	Overvoltage
59N	Neutral voltage displacement
81L	Underfrequency
81H	Overfrequency
81R	Rate of change of frequency
32P	Reverse active power
47	Negative sequence overvoltage
38/49T	Temperature monitoring
25	Syncro check

In addition, for Sepam Series 80^{*2)} and Series 80 Marine^{*3)}:

ANSI Code	Protection Function
87T	Transformer differential
87M	Machine differential
37P	Directional active underpower
64G	Third harmonic undervoltage / 100% stator winding
50/27	Inadvertent energization
24	Overfluxing (V/Hz)

^{*1)} Not all functions are available, depends of use. Complete list under Brochure "Sepam series 60".

^{*2)} Not all functions are available, depends of use. Complete list under "User's manual 2016".

^{*3)} Not all functions are available, depends of use. Complete list under catalogue "Sepam 80 Marine 2008"

Current and voltage transformer input values:

Rated current 10 A to 6250 A

CT: 1 A or 5 A

Rated voltage 220 V to 250 kV VT: 100 V to 240 V
Rated frequency: 50 or 60 Hz.
Ingress protection: IP52.

Application/Limitation

- The relay is regarded as a component.
- Installation of terminal is to be according to manufacturer's specifications.
Product certificate:
When the unit is used for protection purposes no product certificate is required. When the unit is used for other control purposes a product certificate acc. to DNV GL rules Pt.4 Ch.8 Sec.1 and Pt.4 Ch.9 Sec.1 will be required. Correct configuration and set up for each delivery to be tested during commissioning after installation.
- The Type Approval covers hardware and software for the terminal.
- The Type Approval does not cover application software.

Clause for software control:

All changes in system software are to be recorded. Major changes are to be forwarded to DNV GL for evaluation and approval. Major changes in the software are to be approved before installed in the computer. Approval Test of Software may be required.

Required protection (IP) according to the Rules to be provided upon installation on board.

Type Approval documentation

Tests carried out

Type tests in accordance with IEC 60255. Environmental tests in accordance with C.N 2.4: Temperature (A), Humidity (A), EMC (A)

Marking of product

Schneider Electric – Sepam Series 60 or Sepam Series 80 – Model number

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)



Job Id: **262.1-006519-5**
Certificate No: **TAE00001E1**

- Results from Routine tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Assessment to be performed at least every second year.

END OF CERTIFICATE