DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **E-11196**

This is to certify that the
Circuit Breaker

with type designation(s)
Sesol

Manufactured by
LSIS Co., Ltd. (Cheongju Factory)
CHEONG JU, Republic of Korea

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

Application

Rated Voltage (V)	**500/750 (see specification)**
Rated Current (A)	**16-800**
Frequency (Hz)	**50-60**

Busan, 2011-07-17
for **Det Norske Veritas AS**

Svein Helge Juell
Head of Section

DNV local office:
Seoul

This Certificate is valid until
2014-12-31

Byoung So Lee
Surveyor

Product description

Moulded case circuit breaker with the following data:

	TD100E	TD100N	TD100S	TD100H	TD100P	TD100L
Rated insulation voltage AC (V)	750	750	750	750	750	750
Rated operational voltage AC(V)	500	500	500	500	500	500
Rated Current (A)	16-100	16-100	16-100	16-100	16-100	16-100
Rated Frequency Hz	50/60	50/60	50/60	50/60	50/60	50/60
Rated Breaking Capacity Ics = 100% Icu (KA)						
480/ 500V	18	30	42	50	60	65
440/ 460V	35	50	65	70	100	130
380/ 415V	35	50	65	85	130	150
220/ 240V	65	65	85	100	150	200
Utilization category	A	A	A	A	A	A

	TD160E	TD160N	TD160S	TD160H	TD160P	TD160L
Rated insulation voltage AC (V)	750	750	750	750	750	750
Rated operational voltage AC(V)	500	500	500	500	500	500
Rated Current (A)	16-160	16-160	16-160	16-160	16-160	16-160
Rated Frequency Hz	50/60	50/60	50/60	50/60	50/60	50/60
Rated Breaking Capacity Ics = 100% Icu (KA)						
480/ 500V	18	30	42	50	60	65
440/ 460V	35	50	65	70	100	130
380/ 415V	35	50	65	85	130	150
220/ 240V	65	65	85	100	150	200
Utilization category	A	A	A	A	A	A

	TS100E/ TS100E ETS	TS100N/ TS100N ETS	TS100S/ TS100S ETS	TS100H/ TS100H ETS	TS100P/ TS100P ETS	TS100L/ TS100L ETS
Rated insulation voltage AC (V)	750	750	750	750	750	750
Rated operational voltage AC(V)	500	500	500	500	500	500
Rated Current (A)	40-100	40-100	40-100	40-100	40-100	40-100
Rated Frequency Hz	50/60	50/60	50/60	50/60	50/60	50/60
Rated Breaking Capacity Ics = 100% Icu (KA)						
480/ 500V	25	42	50	65	70	85
440/ 460V	42	50	65	70	100	130
380/ 415V	42	50	65	85	130	150
220/ 240V	85	100	120	120	150	200
Utilization category	A	A	A	A	A	A

	TS160E/ TS160E ETS	TS160N/ TS160N ETS	TS160S/ TS160S ETS	TS160H/ TS160H ETS	TS160P/ TS160P ETS	TS160L/ TS160L ETS
Rated insulation voltage AC (V)	750	750	750	750	750	750
Rated operational voltage AC(V)	500	500	500	500	500	500
Rated Current (A)	40-160	40-160	40-160	40-160	40-160	40-160
Rated Frequency Hz	50/60	50/60	50/60	50/60	50/60	50/60
Rated Breaking Capacity Ics = 100% Icu (KA)						
480/ 500V	25	42	50	65	70	85
440/ 460V	42	50	65	70	100	130
380/ 415V	42	50	65	85	130	150
220/ 240V	85	100	120	120	150	200
Utilization category	A	A	A	A	A	A

	TS250E/ TS250E ETS	TS250N/ TS250N ETS	TS250S/ TS250S ETS	TS250H/ TS250H ETS	TS250P/ TS250P ETS	TS250L/ TS250L ETS
Rated insulation voltage AC (V)	750	750	750	750	750	750
Rated operational voltage AC(V)	500	500	500	500	500	500
Rated Current (A)	40-250	40-250	40-250	40-250	40-250	40-250
Rated Frequency Hz	50/60	50/60	50/60	50/60	50/60	50/60
Rated Breaking Capacity Ics = 100% Icu (KA)						
480/ 500V	25	42	50	65	70	85
440/ 460V	42	50	65	70	100	130
380/ 415V	42	50	65	85	130	150
220/ 240V	85	100	120	120	150	200
Utilization category	A	A	A	A	A	A

	TS400E/ TS400E ETS&ETM	TS400N/ TS400N ETS&ETM	TS400S/ TS400S ETS&ETM	TS400H/ TS400H ETS&ETM	TS400P/ TS400P ETS&ETM	TS400L/ TS400L ETS&ETM
Rated insulation voltage AC (V)	750	750	750	750	750	750
Rated operational voltage AC(V)	500	500	500	500	500	500
Rated Current (A)	160-400	160-400	160-400	160-400	160-400	160-400
Rated Frequency Hz	50/60	50/60	50/60	50/60	50/60	50/60
Rated Breaking Capacity Ics = 100% Icu (KA)						
480/ 500V	35	42	50	65	70	85
440/ 460V	50	65	70	85	100	130
380/ 415V	50	65	70	85	130	150
220/ 240V	85	100	120	120	150	200
Utilization category	A	A	A	A	A	A

	TS630E/ TS630E ETS&ETM	TS630N/ TS630N ETS&ETM	TS630S/ TS630S ETS&ETM	TS630H/ TS630H ETS&ETM	TS630P/ TS630P ETS&ETM	TS630L/ TS630L ETS&ETM
Rated insulation voltage AC (V)	750	750	750	750	750	750
Rated operational voltage AC(V)	500	500	500	500	500	500
Rated Current (A)	160-630	160-630	160-630	160-630	160-630	160-630
Rated Frequency Hz	50/60	50/60	50/60	50/60	50/60	50/60
Rated Breaking Capacity Ics = 100% Icu (KA)						
480/ 500V	35	42	50	65	70	85
440/ 460V	50	65	70	85	100	130
380/ 415V	50	65	70	85	130	150
220/ 240V	85	100	120	120	150	200
Utilization category	A	A	A	A	A	A

	TS800E/ TS800E ETS&ETM	TS800N/ TS800N ETS&ETM	TS800S/ TS800S ETS&ETM	TS800H/ TS800H ETS&ETM	TS800P/ TS800P ETS&ETM	TS800L/ TS800L ETS&ETM
Rated insulation voltage AC (V)	750	750	750	750	750	750
Rated operational voltage AC(V)	500	500	500	500	500	500
Rated Current (A)	630-800	630-800	630-800	630-800	630-800	630-800
Rated Frequency Hz	50/60	50/60	50/60	50/60	50/60	50/60
Rated Breaking Capacity Ics = 100% Icu (KA)						
480/ 500V	42	50	65	85	85	100
440/ 460V	50	65	85	100	120	130
380/ 415V	50	65	85	100	130	150
220/ 240V	85	100	120	120	150	200
Utilization category	A	A	A	A	A	A

Application/Limitation

Shall be installed and tested according to Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards.

The manufacturer's instructions to be observed.

Suitable for use in an IT system with a capacity of 1.2 times the maximum trip current at 500 V AC.

Type Approval documentation

Technical info:

1.2 Summary of rating. (Part of documentation for DNV type approval).
2.1 – 2.7 Documentation checklist- General/functional description of the product. (Part of documentation for DNV type approval).

Test reports:

KEMA test reports nos.: 2086029.50, 2086029.51, 2086029.52, 2086029.53, 2086029.54 2086029.54 & 2086029.56 issued 2005-12-12, reissued 2006-03-23. 2087087-QUA/EMC 05-4965 issued 2005-10-27. PT&T test reports nos. R36-0770, R36-0771, R36-0772 & R36-0773 issued 2006-09-26, R36-0774 R36-0775 R36-0776 & R36-0777 issued 2006-08-11.

Tests carried out

Type tests in accordance with IEC 60947-2. Inclination-, vibration -, dry heat-, damp heat & EMC immunity-test.

Marking of product

Manufacturer name - Model name / Rating (type designation)

Certificate Retention Survey

The scope of the retention/renewal survey is to verify that the conditions stipulated for the type approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the survey to be dealt with:

- Ensure that type approved documentation is available.
- Ensure that materials used comply with type approved documents and/or referenced material specifications.
- Review design, materials, performance and production process with respect to possible changes, in order to ensure compliance with the type approved documentation and/or referenced material specifications.
- Ensure traceability between manufacturer's product marking and the DNV Type Approval Certificate.

Survey to be performed at least every second year.

END OF CERTIFICATE