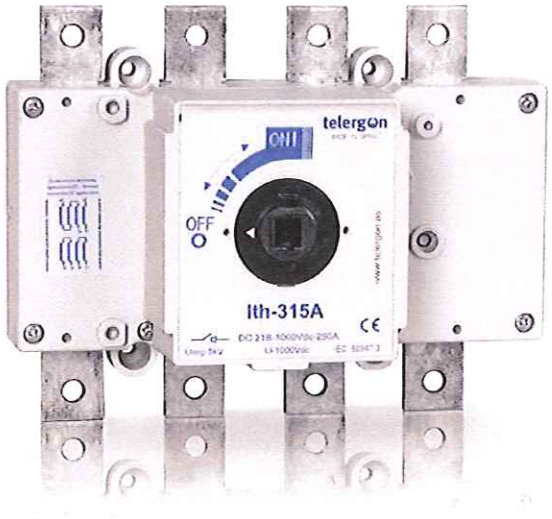
Telergón, S.A.U.
Ctra. Castellón (Pol. La Cartuja)
50720 La Cartuja Baja
Zaragoza - España

Tel.: +34 976 50 08 76
Fax: +34 976 50 03 14
comercial@telergon.es
www.telergon.es

Data sheet:
DC-Load break switch
Model S5000 – 250A 1000V DC21B



Electrical data (according to IEC 60947-3)

Thermal current Ith (-30 to 50 °C)	**315A**
Thermal current Ith (50 to 55 °C)	315A
Thermal current Ith (55 to 60 °C)	315A
Thermal current Ith (60 to 70 °C)	240A
Thermal current Ith (70 to 80 °C)	200A
Rated insulation voltage Ui (V)	1000
Rated impulse withstand voltage Uimp (kV)	8

DC Rated operational current Ie (A)

Voltage (DC)	Category of operation	I_e
400 V	DC21B	315
600 V	DC21B	315
800 V	DC21B	280
900 V	DC21B	260
1000 V	DC21B	250

Standards. IEC 60947-1&3

Quality Telergon, S.A.U.

ISO 9001 & 14001	TÜVRheinland®

Testing as per IEC 60947-3

Arsenal Research	arsenal research Ein Unternehmen der Austrian Research Centers

Short-circuit behaviour

Short-circuit making capacity (peak value)	I_{cm}	20kA
Short-time withstand current (1 sec) (rms)	I_{cw}	12kA
Conditional short-circuit current (rms value)		100kA
Maximum cut-off current (peak value)		33kA

Connection capacity

Bar (Thickness / Width) (mm)	7/25
Rigid cable (mm^2)	185
Max. Connecting copper bar (mm)	25
Tightening torque (N·m)	18

Mechanical data

Minimum number of operations (as per standard) without load	20000
Maximum weight (4 pole molded case) (kg)	1,9

Codes

Case size (A)	Poles	Code	Code for direct handle
Size 1	4P	S5-03154PR0	DS-EI11

Accessories: Panel handle - DS-EN11
Bridging links - DS-PI11
Protective plate - DS-CU12
Auxiliary contact - D5LAU01

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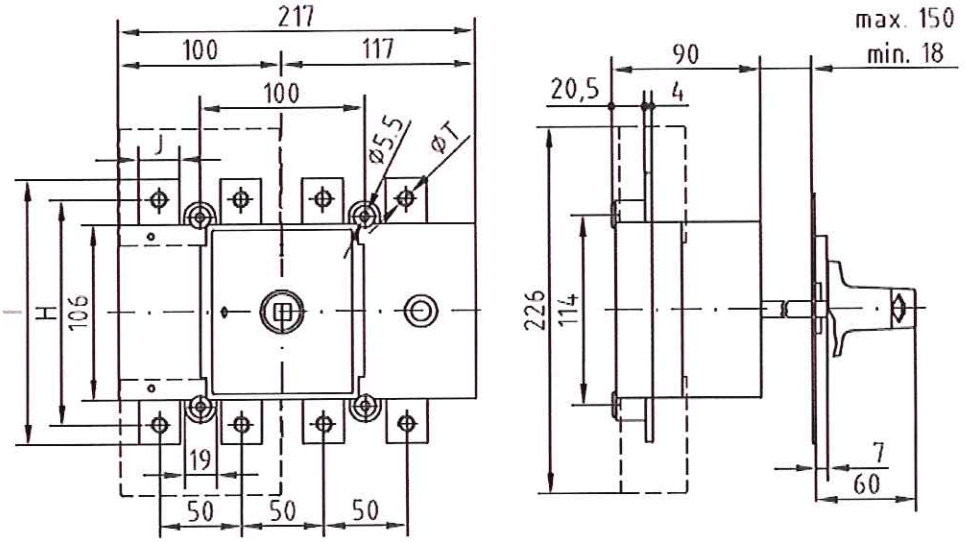
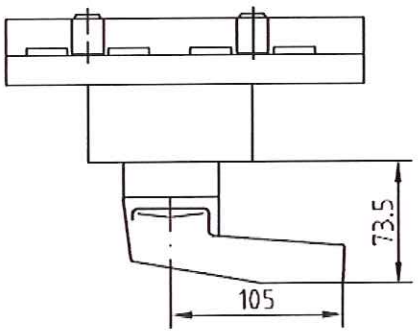
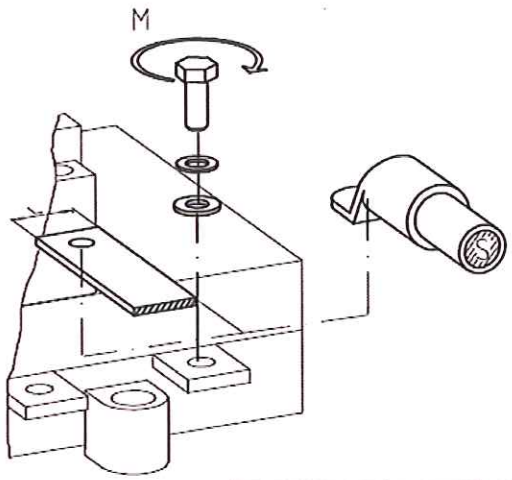
Dimensions







S5000	I_{th}	H	I	J	øT	M N×m	S max. (Cu) mm²	H max. (Cu) mm	L max. (Cu) mm
1	315A	143	167	25	M10	18	185	7	25

Accredited by BMWA with GZ: 92714/237-IV/9/00 as test- and inspection body
and with BGBl. II Nr. 244//2005 as certification body for personnel

Test Report

Project Designation

PERFORMANCE OF TESTS
ACCORDING TO
IEC/EN 60947-1 AND IEC/EN 60947-3
AT SWITCH-DISCONNECTORS
TYPE S5-03154P...

Client

TELERGÓN S.A.
Ctra. Castellón (Pol. La Cartuja)
E-50720 La Cartuja Baja (Zaragoza)
SPAIN

Order from / No. 12/2009 / NP07824

Project Number 2.03.02059.1.0/S5-03154P

Test Engineer Ing.J.Ainetter

Date of issue	10.02.2010
Total number of issues / No.	1 / 1
Number of pages	7
Annex: Number of pages	---

AUSTRIAN INSTITUTE OF TECHNOLOGY

Test item

Identification:

Switch-disconnectors type S5-03154P…

Manufacturer:	TELERGÓN S.A.
Trademark:	telergon
Rated thermal current:	315A
Number of poles:	4
Size:	1

Testing location, Period of testing

Testing location:

Österreichisches Forschungs- und Prüfzentrum Arsenal Ges.m.b.H.
Business Unit Electric Energy Systems
Power Service Center
A-1210 Vienna, Giefinggasse 2
AUSTRIA

Period of testing:

01 …02/2010

Test(s)

Test(s) performed:

Test of dielectric properties
Test of making and breaking capacity with direct current (all poles in series)
Test of operational performance capability with direct current (all poles in series)

Test standard(s):

IEC 60947-1:2007 (5th Edition) and IEC 60947-3:2008 (3rd Edition)
EN 60947-1:2007 and EN 60947-3:2009

Test procedure(s):

CB Scheme and CCA Scheme

Possible test case verdicts:

P (Pass): Test object does meet the requirement
F (Fail): Test object does not meet the requirement

Result

See page 4

Detailed test values

See pages 5 to 7

Test Engineer

Ing.J.Ainetter

Österreichisches Forschungs- und Prüfzentrum Arsenal Ges.m.b.H.

Project Engineer,
technical responsibility

Ing.K.Farthofer

Testing laboratory

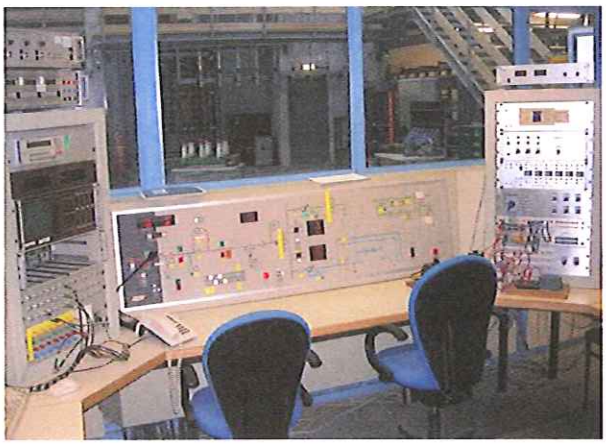
ACCREDITED
according to
EN ISO/IEC 17025
No. BMWA-92.714/0504-I/12/2007

CERTIFICATED
according to
ISO 9001
Reg. No. 12769

RECOGNIZED
CB TESTING LABORATORY
under the responsibility of OVE
as the National Certification Body

POWER SERVICE CENTER:

Control station for tests up to 15kA



Control station for tests above 15kA

Summary of test results

Dielectric properties:	▪ **Test passed successfully at Ui = 1000V**
Making and breaking capacity:	▪ **Test passed successfully at DC-21A at 1000V/250A (all poles in series)**
Operational performance capability:	▪ **Test passed successfully at DC-21A at 1000V/200A (all poles in series)** ▪ **Test passed successfully at DC-21B at 1000V/250A (all poles in series)**

IEC / EN 60947-3			
Clause	Requirement - Test	Result - Remark	Verdict
8.3.3	TEST SEQUENCE I: GENERAL PERFORMANCE CHARACTERISTICS **Connection: (+) → pole 1 → pole 2→ pole 3 → Load → pole 4 → (-)**		P
8.3.3.2	Test of dielectric properties		P
	Rated insulation voltage Ui (V) ..... :	1000	—
	Test voltage for 5 sec. (V)..... :	2200	P
	If suitable for isolation, leakage current ≤ 0,5 mA		—
	Test voltage 1,1 Ue (V)..... :	1100	P
	Measured leakage current (mA) ..... :	< 0,2	P
8.3.3.3	Making and breaking capacity		P
	- utilization category..... :	DC-21A	—
	- rated operational voltage Ue (V)..... :	1000	—
	- rated operational current Ie (A)..... :	250	—
	Conditions for make/break operations:		P
	- test voltage, U = 1,05 Ue (V) ..... :	1054	—
	- test current, I = 1,5 x Ie (A)..... :	378	—
	- time constant (ms) ..... :	1,08	—
	Number of make/break operations ..... :	5	P
	Recovery voltage duration (≥ 50 ms)..... :	Permanent	P
	Current duration (ms)..... :	380	—
	Time interval between operations (s)..... :	30	P
8.3.3.3.5	Behaviour of the equipment during making and breaking capacity tests		P
8.3.3.3.6	Condition of the equipment after making and breaking capacity tests		P
8.3.3.4	Dielectric verification		P
	Test voltage 2 Ue with 1000V~ minimum (V) ..... :	2000	—
	No flashover or breakdown		P
8.3.3.5	Leakage current		P
	Test voltage 1,1 Ue (V)..... :	1100	—
	Leakage current ≤ 2 mA / pole (mA)..... :	< 1	P
8.3.3.6	Temperature-rise verification		P
	Test current Ie (A)..... :	250	—
	Cable/busbar cross-section (mm^2)/(mmxmm) ..... :	120mm²	—
	Temperature of main circuit terminals ≤ 80 K (K)..... :	< 55	P

IEC / EN 60947-3			
Clause	Requirement - Test	Result - Remark	Verdict
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY **Connection: (+) → pole 1 → pole 2→ pole 3 → Load → pole 4 → (-)**		P
8.3.4.1	Operational performance capability test		P
	- utilization category.....:	DC-21A	—
	- rated operational voltage Ue (V).....:	1000	—
	- rated operational current Ie (A).....:	200	—
	Test conditions for electrical operation cycles:		P
	- test voltage (V).....:	1005	—
	- test current (A).....:	203	—
	- time constant (ms).....:	1,03	—
	Number of cycles with current .....:	1000	P
	Number of cycles without current .....:	7000	P
	First test sequence (with/without current).....:	With	—
	Second test sequence (with/without current).....:	Without	—
	Time interval between first and second test sequence.....:	One week	—
	Recovery voltage duration (≥ 50 ms).....:	Permanent	P
	Current duration (ms).....:	360	—
	Time interval between operations (s).....:	30	P
8.3.4.1.5	Behaviour of the equipment during the operational performance test		P
8.3.4.1.6	Condition of the equipment after the operational performance test		P
8.3.4.2	Dielectric verification		P
	Test voltage 2 Ue with 1000V~ minimum (V) .....:	2000	—
	No flashover or breakdown		P
8.3.4.3	Leakage current		P
	Test voltage 1,1 Ue (V).....:	1100	—
	Leakage current ≤ 2 mA / pole (mA).....:	< 1	P
8.3.4.4	Temperature-rise verification		P
	Test current Ie (A).....:	200	—
	Cable/busbar cross-section (mm^2)/(mmxmm) .....:	95mm²	—
	Temperature of main circuit terminals ≤ 80 K (K).....:	< 55	P

IEC / EN 60947-3			
Clause	Requirement - Test	Result - Remark	Verdict
8.3.4	TEST SEQUENCE II: OPERATIONAL PERFORMANCE CAPABILITY **Connection: (+) → pole 1 → pole 2→ pole 3 → Load → pole 4 → (-)**		P
8.3.4.1	Operational performance capability test		P
	- utilization category.....:	DC-21B	—
	- rated operational voltage Ue (V).....:	1000	—
	- rated operational current Ie (A).....:	250	—
	Test conditions for electrical operation cycles:		P
	- test voltage (V).....:	1005	—
	- test current (A).....:	254	—
	- time constant (ms).....:	1,07	—
	Number of cycles with current .....:	200	P
	Number of cycles without current .....:	1400	P
	First test sequence (with/without current).....:	With	—
	Second test sequence (with/without current).....:	Without	—
	Time interval between first and second test sequence.....:	One week	—
	Recovery voltage duration (≥ 50 ms).....:	Permanent	P
	Current duration (ms).....:	360	—
	Time interval between operations (s).....:	30	P
8.3.4.1.5	Behaviour of the equipment during the operational performance test		P
8.3.4.1.6	Condition of the equipment after the operational performance test		P
8.3.4.2	Dielectric verification		P
	Test voltage 2 Ue with 1000V~ minimum (V) .....:	2000	—
	No flashover or breakdown		P
8.3.4.3	Leakage current		P
	Test voltage 1,1 Ue (V).....:	1100	—
	Leakage current ≤ 2 mA / pole (mA).....:	< 1	P
8.3.4.4	Temperature-rise verification		P
	Test current Ie (A).....:	250	—
	Cable/busbar cross-section (mm^2)/(mmxmm) .....:	120mm²	—
	Temperature of main circuit terminals ≤ 80 K (K).....:	< 55	P