



RELIABILITY EVALUATION STATEMENT

- [1]
- [2] **Safety functions in equipment, systems or components**
- [3] Statement Number: **EPTI 19 RASS 0364 issue 1**
- [4] Equipment: **Modular relay with forcibly guided contacts**
Model: **7S.12 - 7S.14 - 7S.16 - 7S.23 - 7S.32 - 7S.34 - 7S.36 - 7S.P3**
- [5] Manufacturer: **FINDER S.P.A.**
- [6] Address: **Via Drubiaglio, 14 – 10040 Almese (TO) Italy**
- [7] This equipment and any acceptable variation thereto are specified in the annex to this Statement and the documents reported in it.
- [8] EUROFINS PRODUCT TESTING ITALY S.r.l. performed a reliability assessment of the technical documentation provided by the manufacturer and found the apparatus in compliance with the Safety Integrated Levels hereinafter indicated.
- The evaluation details are recorded in the assessment report n. EPT.19.REL.01/1916001
- [9] Reference Standards: **IEC 61508 Series:2010**
- [10] Apparatus identification and reliability parameters:

Type A device

Device	7S.12	7S.14	7S.16	7S.23
	7S.32	7S.34	7S.36	7S.P3
Type of Load	AC1, AC15, DC1, DC13			
Route	1H			
Architecture	1001			
Diagnostic coverage	90%			
Loads and ratings	See next page			
Probability of failure	See next page			

SIL 2 Capable

- [11] This statement relates only to the assessment of the design and reliability tests of the specific device; the factory production control is not object of this document
- [12] **Turin, 2019-08-01**

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This Statement has 5 pages and it is reproducible only in its entirety. Conditions of validity are reported below.

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ANNEX

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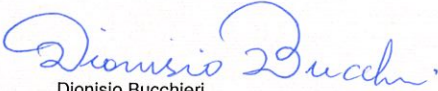
Results of the assessment

MDULAR RELAY WITH FORCIBLY GUIDED CONTACTS	LOAD	Vn (V)	In (A)	B10 _d	PFH _d
7S.12/32...5110 7S.12/32...5110T	AC1	250VAC	6	220000	5,21E-08
			4	350000	4,88E-08
	DC13	24VDC	1	210000	2,02E-08
	AC15	250VAC	1	250000	3,29E-08
			2	160000	7,51E-08
			3	85000	1,42E-07
7S.14/7S.34...4220 7S.14/7S.34...4310 7S.14/7S.34...4220T 7S.14/7S.34...4310T	DC13	24DC	3	450000	8,00E-07
			1	2000000	6,00E-07
			0,75	2000000	6,00E-07
	AC15	250VAC	3	400000	1,50E-07
			0,1	10000000	1,20E-07
	AC1	250VAC	6	500000	1,20E-07
			4	600000	1,00E-07
			2	1000000	1,20E-07
7S.16/7S.36...5420 7S.16/7S.36...5510 7S.16/7S.36...5420T 7S.16/7S.36...5510T	DC13	24VDC	3	300000	4,00E-07
			2	2000000	6,00E-07
			1	7000000	1,71E-07
	AC15	250VAC	3	230000	5,22E-07
			1	380000	3,16E-07
	AC1	250VAC	6	500000	2,40E-07
			4	860000	1,40E-07
			2	1300000	9,23E-07
7S.23/7S.P3...0210	DC13	24VDC	5	600000	2,00E-07
7S.23/7S.P3...0210T	AC15	230VAC	5	900000	1,33E-07

The diagnostic coverage due to the presence of the NC feed back contact has been prudently assumed to 90% and a SIL 2 can be assigned in all the cases above listed

The PFH_d value has been calculated considering Hop = 24 h/day and Dop 365 day/year

For railway applications the code of modular relays with forcibly guided contacts changes with the addition of the letter "T" at the end of the code.


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[15] System Description

The relays with forced contacts 7S.12 – 7S.14 – 7S.16 – 7S.23 – 7S.32 – 7S.34 – 7S.36 – 7S.P3 are modular devices made of a single relay with forced contacts connected as below described:

The coils of the relay is connected between A1(positive) e A2 (negative) poles of the device.

At least a NC feed back contact to be used to monitor the correct operation of the relay (by means of and external device that verifies the consistence with the state of the other contacts) is present

At least a NO contact to be used as safety contact to break the through pass energy when the coil is powered down

All the following codes are included in this certificate.

- SERIES 7S.12.9.XXX.5110 (T) (spring terminals)

- SERIES 7S.32.9.XXX.5110 (T) (screw terminals)

XXX: 012 – 024 – 048 – 110 Vdc

1 NO (safety) contact

1 NC (feed back) contact

- SERIES 7S.12.8.XXX.5110 (T) (spring terminals)

- SERIES 7S.32.8.XXX.5110 (T) (screw terminals)

XXX: 12, 24, 48, 110...125, 230...240 V AC)

1 NO (safety) contact

1 NC (feed back) contact

- SERIES 7S.14.9.XXX.4YY0 (T) (spring terminals)

- SERIES 7S.34.9.XXX.4YY0 (T) (screw terminals)

XXX: 012 – 024 – 048 - 110 Vdc

YY: 22 (2NO+2NC) – 31 (3NO+1NC)

- SERIES 7S.14.8.XXX.4YY0 (T) (spring terminals)

- SERIES 7S.34.8.XXX.4YY0 (T) (screw terminals)

XXX: 012 – 024 – 048 - 110...125 – 230...240 Vac

YY: 22 (2NO+2NC) – 31 (3NO+1NC)

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- SERIES 7S.16.9.XXX.5YY0 (T) (spring terminals)
- SERIES 7S.36.9.XXX.5YY0 (T) (screw terminals)

XXX: 012 – 024 – 048 – 110 Vdc

YY: 42 (4NO+2NC) – 51 (5NO+1NC)

- SERIES 7S.16.8.XXX.5YY0 (T) (spring terminals)
- SERIES 7S.36.9.XXX.5YY0 (T) (screw terminals)

XXX: 012 – 024 – 048 – 110...125 – 230...240 Vac

YY: 42 (4NO+2NC) – 51 (5NO+1NC)

- SERIES 7S.23.9.XXX.5210 (T) (spring terminals)
- SERIES 7S.P3.9.XXX.5210 (T) (screw terminals)

XXX: 012 – 024 – 048 – 110 Vdc

2 NO (safety) contact

1 NC (feed back) contact

Assessment Report n° EPT.19.REL.01/1916001

This Statement is released after the positive result of the conformity assessment to the technical standard above listed performed by Eurofins Product Testing Italy S.r.l., and reported in the Assessment Report above cited.

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[17] **Other assumptions for the evaluation:**

Proof test time T1:8760 h (One Year)

Mean Time To Recover MTTR: 8 h

Mean Time to Repair MTR: 0,5 h

Conversion from B_{10d} to λ_d in accordance with IEC 62061:2005

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[13] **ANNEX**
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[18] **Descriptive documents**

The equipment objects of this Statement is described by the following documents.

Type of document	Identification	Revision/date
Instruction manual	IB7S00001	05/2019
Technical note	Presentazione ed obiettivi	1/31-07-2019

[20] **Terms and conditions**

The product liability rests with the Manufacturer, his representative or, in the absence of a representative, with the importer, in accordance with the General Product Safety Directive 2001/95/CE.

The following conditions may render this Statement invalid:

- changes in the design or construction of the product
- changes or amendments to the Standards.

[21] **Statement History**

This statement is at its first issue.

History

Issue number	Date	Changes
0	2019-05-07	First emission
1	2019/08/01	- Correction of typing errors in the identification of the model - Removing of 5 A rating line in 7S16 and 7S14 - Reduced rating of 7S14 AC1 from 8 to 6 A - Addition of the date in all pages of the certificate


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End of Statement

