
Title: STANDARD TIMER CONTACT

DESIGN OBJECTIVES FOR STANDARD TIMER CONTACT

1. SCOPE

1.1. CONTENT

This Design Objectives covers the performance requirements, tests and quality requirements for STANDARD TIMER CONTACT.

1.2. GENERAL CONDITIONS

All tests carried out with the contact system in this Design Objectives must satisfy the following requirements:

- Wire Range: see Table 2
- Operating temperature: -40 to 110°C
- Wire types: FLR DIN 72551 T.6; FLK DIN 72551 B1.2
- Crimp with specified TE crimping tools
- Crimp quality according TE specification
- Maximum voltage IEC 664/IEC 664A (DIN VDE 0110)
- Housing used as per TE specification

2. APPLICABLE DOCUMENTS

2.1. TE specification

114-18080, Application Specification for STANDARD TIMER CONTACT

2.2. Other standards

- | | |
|---------------------|--|
| A. DIN 1777/01.86 | Dimensions and permissible deviations |
| B. DIN 17666/12.83 | Low copper alloys |
| C. DIN 17670/06.69 | Technical delivery |
| D. DIN 41640 | Measuring methods and testing procedures for electromechanical components |
| E. DIN IEC 52/06.80 | Part 2: Solderless electrical connections |
| F. DIN 41639/03.76 | Part 1: (IEC 50 Part 581) Term and definitions for electromechanical components. |

I. IEC Regulations

2.3. Product Overview

Wire range, insulation type and strip & loose piece terminals are shown in table 2

3. REQUIREMENTS

3.1. Contact assembly (Fig. 3)

Design, construction and dimensions of the STANDARD TIMER CONTACT are shown in product drawings and meet the applicable documents and the TE quality guidelines.

The STANDARD TIMER CONTACT is a flat contact with four independent contact springs. It has a locking spring, which is used for locking in the contact housing. A short and wide connection between crimp contact and body and extensive contact points ensure low contact resistance.

A flat tab with standard dimensions of 6,3 x 0,8 mm, 5,8 x 0,8 mm and 4,8 x 0,8 mm is used as a counterpart.

The tab must be in accordance with DIN 46244 and free of burrs. Preferably, the edges are rounded in the tip of tab.

3.2. Materials

A. Base material: Cooper alloy according TE specifications
(CuSn 4; CuZn30; CuFe2)

B. Contact plating: Tin and tin heat-treated

C. Counterpart: It is a tab with same plating than STANDARD TIMER CONTACT made of low wrought cooper alloy.

A contact with heat treated tin surface must only be combined with a counterpart with not heat treated tin surface.

3.3. Performance data

Current Carrying capacity	25 A maximum
Maximum number of mating cycles	10 for tinned versions
Operating temperature	-40°C to 110°C for tinned versions

3.4. TEST REQUIREMENTS AND PROCEDURES

3.4.1. ELECTRICAL TESTS

TEST DESCRIPTION	REQUIREMENTS	TEST PROCEDURE
Contact resistance	$R \leq 2,5 \text{ m}\Omega$ for CuFe2 $R \leq 3,0 \text{ m}\Omega$ for CuZn30 $R \leq 3,5 \text{ m}\Omega$ for CuSn4	Open circuit output voltage $\leq 20 \text{ mV}$ Test current $< 100 \text{ mA}$ Measure contact resistance in new samples according to IEC 512-2 Test 2a / DIN 41640 T.4 (see table 1)
Crimp contact resistance	See table 1	Measure crimp contact resistance in contacts crimped according TE Connectivity application specification 114-18080. Test according to DIN IEC 352 part 2 / IEC 512-2, test 2a (see table 1)
Current carrying capacity depending on ambient temperature (Derating curve)	See diagram 2	Contact has to be tested inserted in housing, according IEC 512-3 / DIN 41640 part 3

3.4.2. MECHANICAL TESTS

TEST DESCRIPTION	REQUIREMENTS	TEST PROCEDURE
Insertion force	$F \leq 15 \text{ N}$	Measure mating and unmating force between flat contact and tab without plastic housing and without additional lubrication except remaining stamping oil (all wire ranges and contact platings). Test is performed at a 25 mm/min according DIN 41640 part 36.
Withdrawal force	$2 < F < 8 \text{ N}$	
Crimp tensile	See table 1	Test is performed at a 25 mm/min according DIN IEC 352 part 2.
Contact retention force in housing	Contact retention force in the cavity without second contact retention: $F1 > 100 \text{ N}$ Contact retention force of the second contact retention without locking lances. $F2 > 60 \text{ N}$	Measure the retention forces at a rate of 25mm/min. Contact retention force in plastic housing: see housing specification. Test is performed in a steel test chamber

3.4.3. BEHAVIOUR UNDER ENVIRONMENTAL CONDITIONS

TEST DESCRIPTION	REQUIREMENTS	TEST PROCEDURE
Thermal shock with current load	After test, total final contact resistance (crimp + contact) must be less than 200% of the initial values	Test conditions: Temperature: 20° C to 90° C (95% humidity) (see Diagram 1) Current during the warm phase and high temperature phase, see derating curve at 95 °C ambient temperature. Duration: 120 cycles per 2 hours.

TEST	WIRE CROSS SECTION AREA (mm ²)	MEASUREMENT
Crimp tensile	0,2	> 30 N
	0,35	> 50 N
	0,5	> 60 N
	1,0	> 100 N
	1,5	> 150 N
	2,5	> 200 N
Crimp contact resistance	0,2 to 0,5	< 1,0 mOhm
	0,5 to 1,0	< 0,8 mOhm
	> 1,0 to 2,5	< 0,5 mOhm

Table 1

PRODUCT OVERVIEW				STANDARD TIMER CONTACT	
DESIGNATION	INSULATION TYPE	WIRE RANGE AREA (mm ²)	INSULATION DIAMETER (mm)	ORDER NUMBER	
				STRIP PN	LOOSE PIECE PN
STANDARD TIMER CONTACT	FLK	1,0 – 2,5	2,4 – 3,7	826042	827808
	FLK	1,0 - 1,5	2,0 - 3,0	925575	925598
	FLK	1,0 – 2,5	2,4 – 3,7	925612	925613
	FLK	0,5 – 1,5	2,0 – 3,0	926005	926007
	FLK	1,0 – 2,5	2,4 – 3,7	926006	926008
	FLK	0,5 – 1,5	2,0 – 3,0	926965	927936
	FLK	1,0 – 2,5	3,0 – 4,3	926973	927937
	FLR	0,2 – 0,5	1,0 – 1,6	926984	926985
	FLR	0,5 – 1,0	1,4 – 2,3	927847	927848
	FLR	>1,0 – 2,5	2,1 – 3,1	927849	927850
	FLK	0,5 – 1,0	2,0 – 3,3	927865	927866
	FLK	>1,0 – 2,5	2,7 – 4,0	927879	927880
	FLR	0,5 – 1,0	1,4 – 2,3	928820	1241823
	FLR	0,5 – 1,0	1,4 – 2,3	964201	1241824
	FLK	1,5 – 2,5	2,4 – 3,7	964202	-
	FLK	0,5 – 1,5	2,0 – 3,0	969036	-
	FLR	0,2 – 0,5	1,0 – 1,6	1823562	-
	FLK	0,75 (X2)	2,4 (x2)	926940	-

Table 2

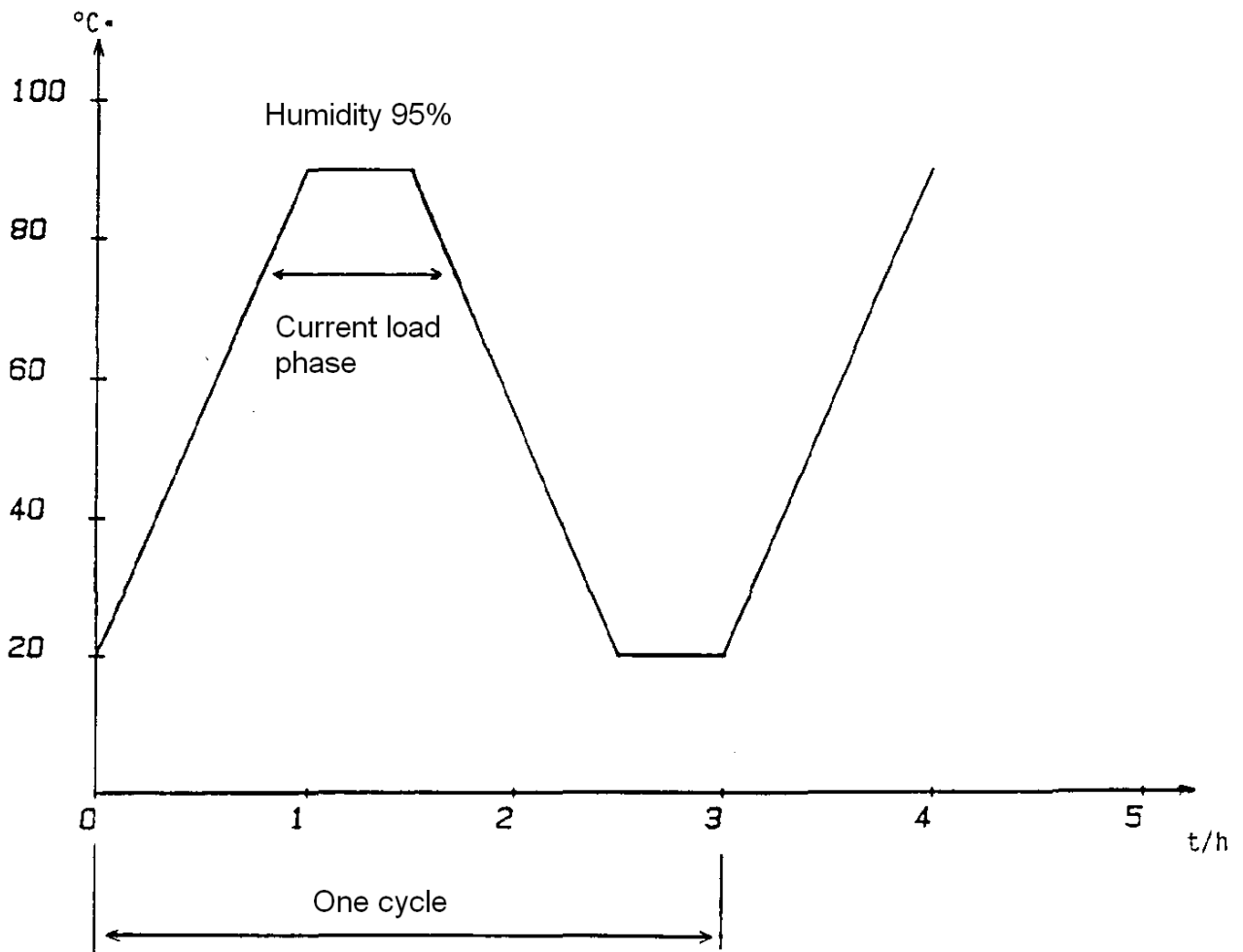


Diagram 1

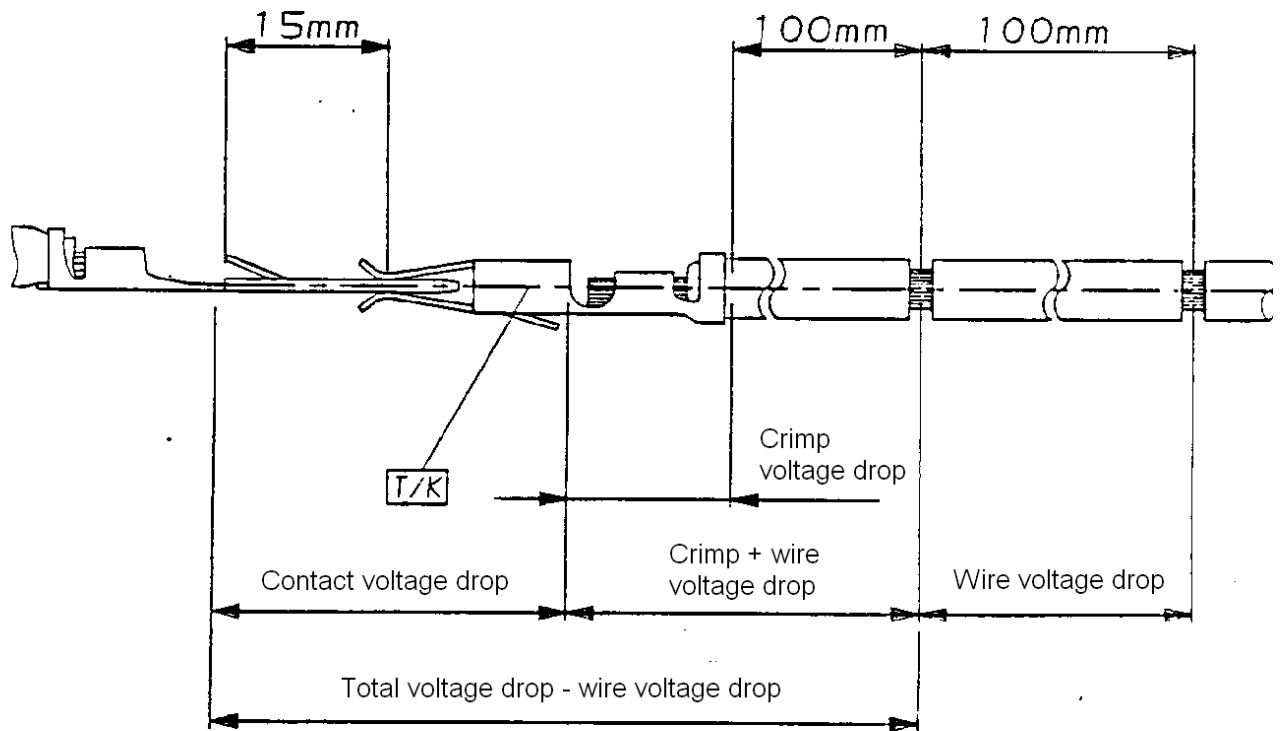


Figure 1

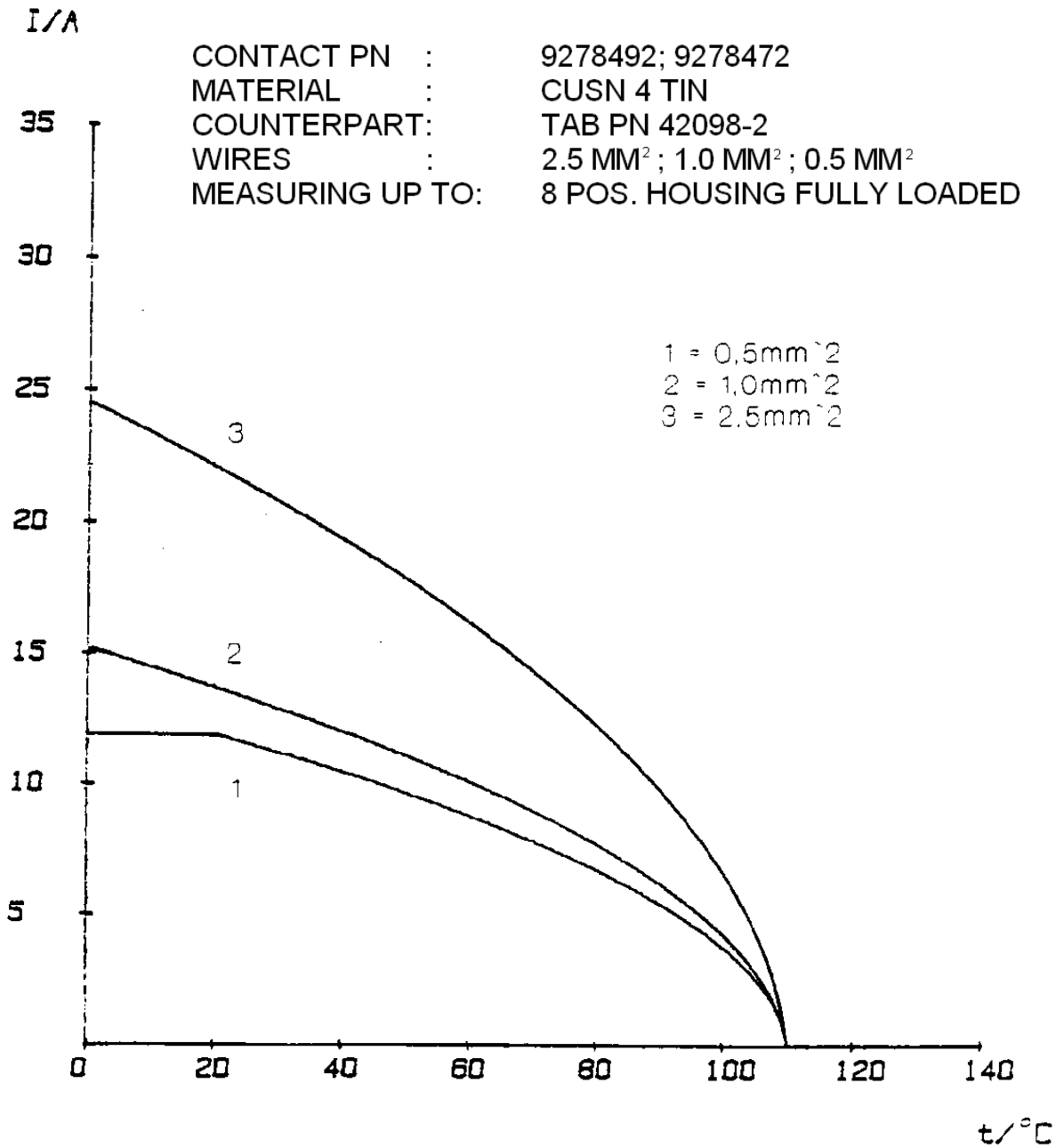


Diagram 2

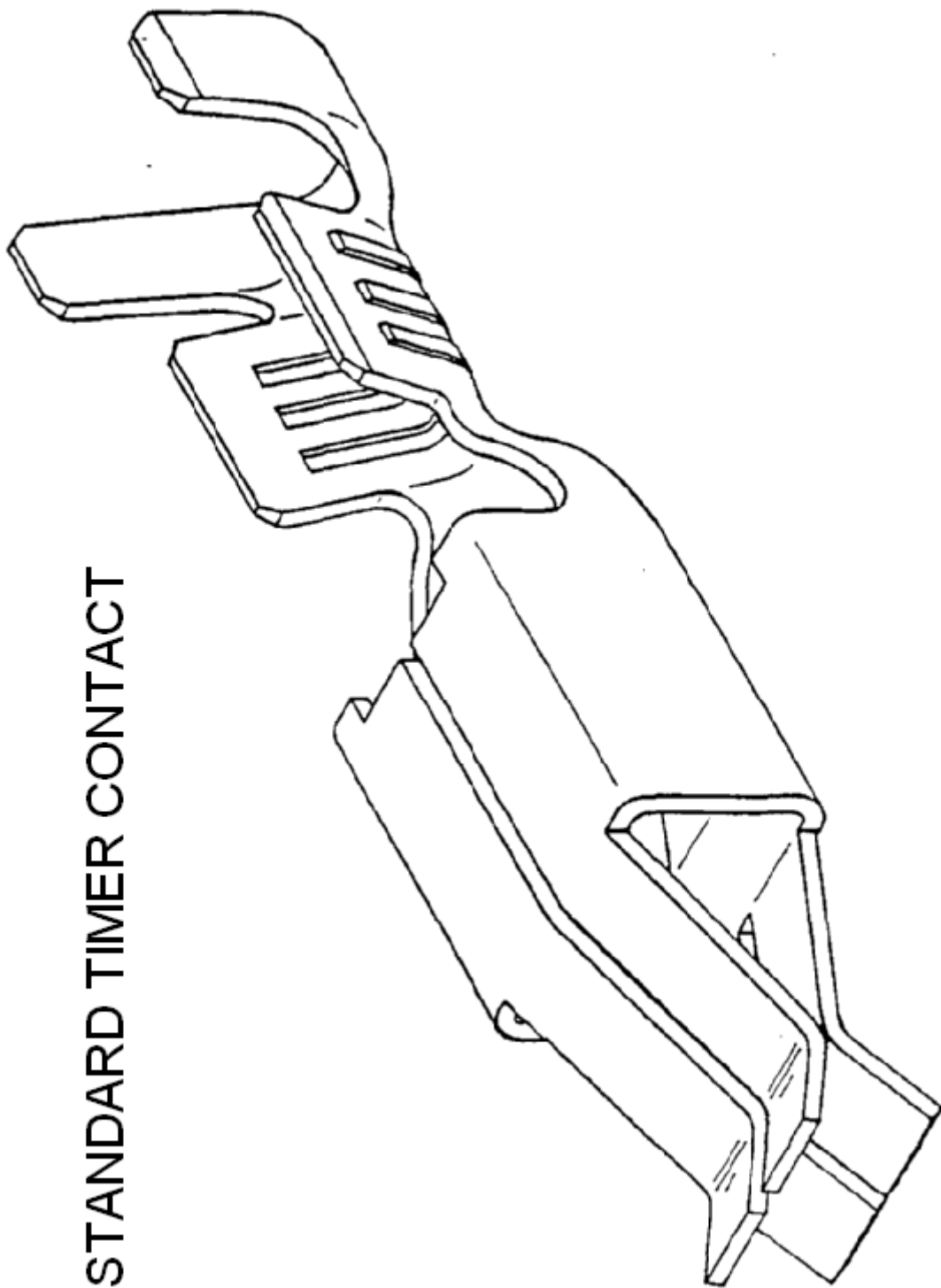


Figure 2