PRODUCT SPECIFICATION
STANDARD TIMER CONNECTOR,
RAST 5mm, 2-12 POSITIONS

1. GENERAL:

1.2 Purpose and Scope:

This specification describes the structure, properties, design types as well as quality requirements for the standard timer connector, pitch 5 mm, single-rowed, with interior or exterior locking, which are listed under point 3.

1.2 General Testing Requirements:

All tests that are done on the testing samples, must comply with the guidelines.

- Amount of testing samples: unless otherwise specified min. 5 pcs.
- Testing samples should not have any visible damages
- Testing samples must be compliant with the latest drawing version
- For testing purposes, only parts from production are to be used

2. APPLICABLE SPECIFICATIONS:

The below mentioned regulations are part of this specification, as far as they are mentioned in detail. Should there be any discrepancies between specification and the named regulations, the specifications should be given priority.

2.1 DIN Regulations: DIN 17670 DIN 41640

2.2 VDE Regulations: VDE 0627 VDE 0110

2.3 AMP Specifications:

Product Specification RAST 5 tab array:	108-18050
Product Specification 6.3x0.8 FASTIN-FASTON tab connector:	108-18075
Product Specification STANDARD TIMER contact:	108-18054
Product Specification STANDARD POWER TIMER contact:	108-18025
Qualification Test Report:	501-18003
AMP Specification:	109-50

2.4 Other Specifications:

RAST 5 documents of the ZVEI

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LTR	REVISION RECORD	APP	DATE
-	-	-	-
-	-	-	-
-	-	-	-
A3	Added 3.4.5 section	RR	2.12.16-
A2	Add special locking strength version	RR	10.6.15
A1	New PN's added to item 3.3	Munz	21.02.07
A	See ECN EG00 2357 99	TRAEGER	1.12.99
0	New Product Spec.	B, SCHN.	18.2.93

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NO **108-18049-1** | REV **A3** | LOC **AI**

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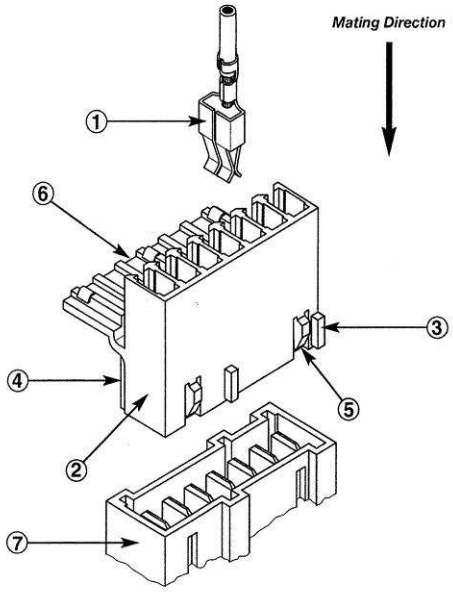
TITLE **STANDARD TIMER CONNECTOR RASTER 5mm, 2-12 POSITIONS**

3. DESCRIPTION OF PRODUCT:

3.1 Product Exposure (Basic Sketch)

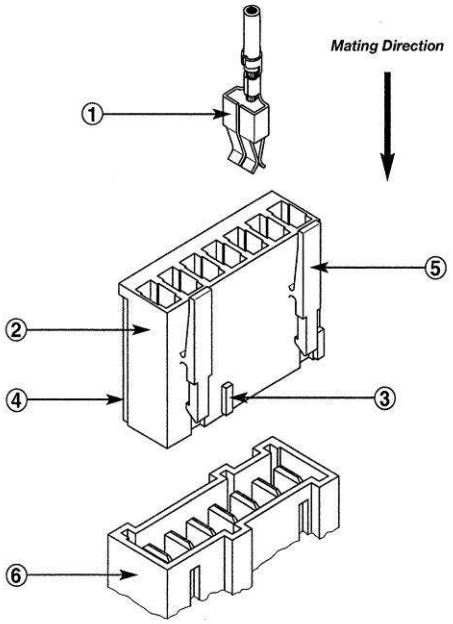
Interior Locking
Connection to the Components
according RAST 5 Standard

1 Connected Timer Contact
2 Standard Timer Housing with Interior Locking
3 Keying
4 Polarisation
5 Locking Latch
6 Cover (Secondary Locking)
7 RAST 5 Tab Array



Exterior Locking
Connection to the Components
according RAST 5 Standard

1 Connected Timer Contact
2 Standard Timer Housing with Exterior Locking
3 Keying
4 Polarisation
5 Locking Latch
6 RAST 5 Tab Array



3.2 System characteristics:

The standard timer housings are used to accommodate the crimp contacts of standard timers and standard power timers. The housings are built up single rowed. The housings are available with either interior or exterior locking.

The housings with interior locking are fitted with an additional safety for contacts (Cover).
For polarisation and keying purposes, keying ribs have been added to the part, which will then fit into the respective keying groove of the opposing connector.

The locking of the mating connectors results out of the locking latch and snap-window on the mating part, or due to a keying rib and a snap-latch on the mating part (only for housings with interior locking).

3.3 Overview of Product:

3.3.1 Variations of Housings:

The specification concerns the following housings:

a.) Standard Timer Housing with Exterior Locking

All 2-12 position housings with the AMP Part-No. (PN):

X-928 247-Y	X-964 983-Y	X-969 484-Y
X-964 702-Y	X-1241980-Y	X-1241817-Y
X-1241965-Y		X-1241961-Y
		X-1241983-Y
		X-1241959-Y

X and Y stand for 0, 1, 2, … 9; pos. number, keying, colour see drawing.

Material: PA 6.6, unfilled

b.) Standard Timer Housing with Interior Locking

All 2-12 position housings with the AMP Part-No. (PN):

X-927 740-Y	X-928 343-Y	X-928 268-Y
X-928 151-Y	X-928 344-Y	X-964 386-Y
X-928 154-Y	X-928 345-Y	X-964 768-Y
X-928 423-Y	X-964 951-Y	X-1241981-Y
X-1703059-Y	X-1241964-Y	X-1703060-Y

X and Y stand for 0, 1, 2, … 9; pos. number, keying, colour see drawing.

Material: PA 6.6, unfilled

3.3.2 Types of Contacts:

The specification concerns the following contacts:

a.) Standard Timer Contacts

925575-1	926005-1	926965-1	928820-1
925575-2	926005-2	926965-2	928820-2
925612-1	926006-1	926973-1	964201-1
925612-2	926006-2	926973-2	964201-2
964202-1			
964202-2			

Material: -1 Brass, tin plated
-2 Bronze, tin plated

b.) Standard Power Timer Contacts

927833-1*	927837-1	964203-1	964204-1
		964203-5	964204-5

*Only to be used in connection with the following housings no. : X-928247-Y, X-928343-Y, X-928344-Y and X-928345-Y.

Material: Contact body is made of copper iron, tin plated
Cover spring of steel

3.4 Usable mating parts:

3.4.1 General:

The Standard Timer Housings are mated with special designed tabheaders. The geometrical dimensions and the design are specified according to RAST 5.

3.4.2 Direct Connection of Components:

The tabheader is integrated with a component e.g. level switch.

3.4.3 Coupling Connectors:

The specification concerns the following Tab Mating Connectors:

a.) 6.3x0.8 FASTIN-FASTON Tab Connector, RAST 5mm

927742	928121	928157	964492
928309	928122		964493
928230			
928149			

b.) Positive Mate Tab Connector

928257	928363

3.4.4 Indirect PCB Connection with Tabheader

For the indirect PCB connection the tabheader with following number is used: 928492 in connection with the following contacts 964016-2 and 964017-2.

3.4.5 Indirect PCB Connection with Selective- loaded Tabheader (Improved housing locking strength version)

The application of the improved housing locking strength version needs to be evaluated by TE Connectivity engineer when mate with the selective-loaded tab header version. And below the related PNs of the improved housing locking strength version:

3-1241965-5	3-1241965-7	4-1241965-7	1-1241965-4
8-1241965-2	2-1241965-4	3-1241965-4	5-1241965-5
5-1241965-7			
1-1241961-9	7-1241961-7	5-1241961-7	

4. Requirements:

4.1 Product Design and Dimensions:

Parts being used for following tests must correspond in form and dimension with the drawing.

4.2 Output Values:

4.2.1 Current Voltage:

Max. 250 V or comply with the allocation of air- and creeping stretch according to VDE 0110.

4.2.2 Max. Current Rating:

The maximal current ratings per contact for connectors loaded with standard timer or standard power timer contacts are dependant on ambient temperature, conductor cross section, pos. number etc… The operating temperature must be adhered to during the usage of the connector.
The maximal current rating for certain connector combinations can be derived from the diagrams 1 to 3.

4.2.3 Temperature Range:

-40° C to +105° C including current warming

4.3 Characteristics and Test Descriptions:

4.3.1 Testing Conditions: unless specified otherwise, all tests are to be executed under following conditions:

Temperature: +23° C +/-5° C
Relative Humidity: 45 to 75%
Atmospheric Pressure: 860 to 1070 mbar

4.3.2 Preparation of Samples:

The testing samples must be prepared in such a way that, function and form cannot be influenced in any way.

4.3.3 Electrical Properties and Testing Condition:

All tests that are featured below must be accomplished with 6.3x0.8 FASTIN-FASTON tab connectors and AMP RAST 5 tabheaders.

Test Description	Requirement	Procedure
Dimensional- and Visual Examination	The connector combination must comply with the latest drawing version.	Optical, dimensional and functional examination
ELECTRICAL INSPECTIONS		
Measuring of Resistance in Contact Area	New part <= 1.5 mΩ A resistance increase of more than 50% or <= 5 mΩ compared to the new part is not allowed. The respectively greater value has to be accepted.	Measurement according to DIN 41460 part 5, Test 2b with current according to DIN / VDE 0627 Measuring points, see annexe 6.1

Test Description	Requirement	Procedure
Voltage Proof	>= 2000 V	DIN 41640 Part 8 Test 4a
Insulation Resistance	>= 5 MΩ	DIN 41640 Part 7, Test 3a Voltage for testing = 250VDC After storing in a relative humidity of 91-95% and 20 – 30° C without dew for 48 h
Current Temperature Capability (Derating Curve)	Category temperature = +105° C Nominal Current = 4A, 6A, 10A, 16A	DIN 41640 Part 3 Test 5b, (Diagram 1-3)
Temperature Rise Test	The upper category temperature of the testing sample not to be exceeded.	Testing samples are to be pinned on a testing length of 250 +/- 25mm. Test acc. to DIN VDE 0627
MECHANICAL INSPECTIONS		
Engaging- and Separating Forces	See AMP Specification 108-18054 or 108-18025	
Contact Retention during usage	Min. 30 N	DIN 41640 Part 39, Test 15a
Tensile Strength of Crimp Connection	Min. tensile strength acc. to DIN / IEC 352 Part 2 (Figure 5)	DIN 41640 Part 63, Test 16d
Housing Locking Strength mating Connectors	Min. 10 N (Interior Locking) Min. 30 N (Exterior Locking)	AMP Specification 109-50 (EIA-364-98-1997(R2009))
Housing Locking Strength mating with RAST 5 Tab header (Only for 3-1241965-5, 3-1241965-7, 4-1241965-7, 1-1241965-4, 8-1241965-2, 2-1241965-4, 3-1241965-4, 5-1241965-5, 5-1241965-7, 1-1241961-9 7-1241961-7, 5-1241961-7)	Min. 50 N / Per latch	
CLIMATIC INSPECTIONS		
Dry Heat	No visible defects or deviations, no cracks on the isolating parts	For the mating area acc. to DIN VDE 0627 Inspect. Temp.: upper category temp. of sample +105° C Duration of Inspection: 168 h Testing samples are mated.
Cold	No visible defects or deviations, no cracks on the isolating parts	For the mating area acc. to DIN VDE 0627 Temperature: -40° C

Saturated Atmosphere in the presence of sulphur dioxide	Visual check acc. to DIN 41640 Part 2, Test 1b. No visible defects detectable with the naked eye	DIN 50018, KFW 0.2L S 1 Cycle Testing samples are to be mated.

4.4 Qualification Run:

Description	Test Group								
	1	2	3	4	5	6	7	8	
	Test Sequence								
Dimensional- and Visual Examination	1	1	1	1	1	1	1	1	
Measuring of Resistance in Contact Area						2/4	2/4	2/6	
Voltage Proof							5	7	
Insulation Resistance					2				
Current Temperature Capability				2			3		
Temperature Rise								4	
Engaging- and Separating Forces						3			
Contact Retention during usage	2								
Tensile Strength of the crimp Connection		2							
Housing Locking Strength mating Connectors			2						
Dry Heat								4	
Cold								3	
Saturated Atmosphere								5	

5. Quality assurance provisions

5.1 Qualification testing:

The testing samples must comply with the production drawing and be chosen in a representative order from the running production.

Amount of testing samples: Test group 1 to 5: 5 housings of arbitrary pos. No. each
Test group 6 to 8: 20 turns (contacts) each

All tests must be accomplished according to table 4.4. (qualification run).

5.2 Re-qualification testing:

If any significant changes regarding to the stipulated properties are made the product eng. team will coordinate the necessary steps for a re-qualification test. This test should contain one part or the complete test series, depending on the determination of the product eng. team respectively quality assurance department.

5.3 Acceptance:

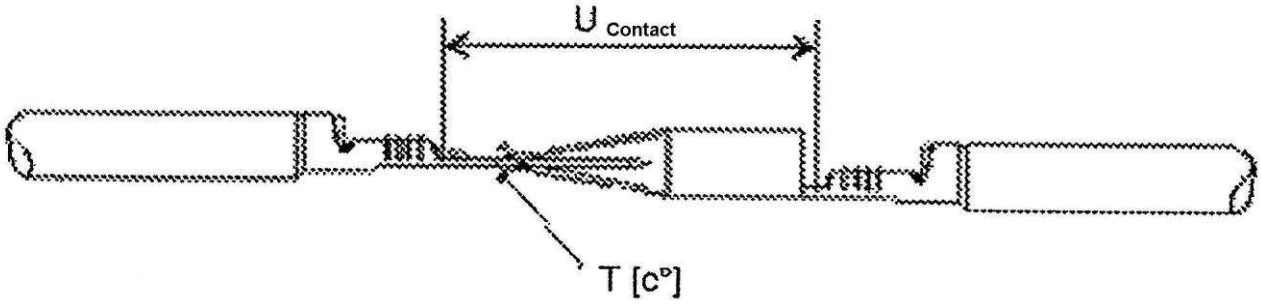
The acceptance is based on verification that the product meets the requirements. Failures attributed to equipment, test set-up or operator deficiencies shall not disqualify the product. When product failures occur, corrective actions shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

5.4 Quality conformance inspection:

The applicable quality inspection plan will specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.

6. Annexe:

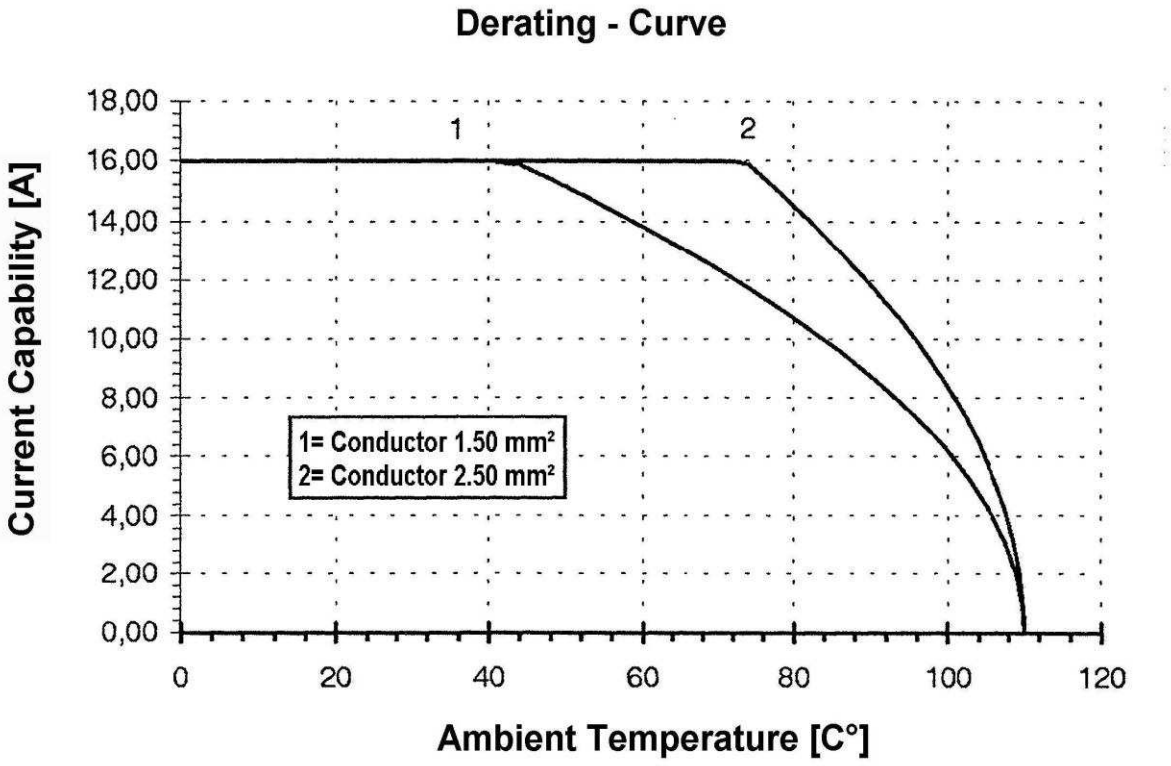
6.1 Figure 1



6.2 Diagram 1:

Standard Power Timer

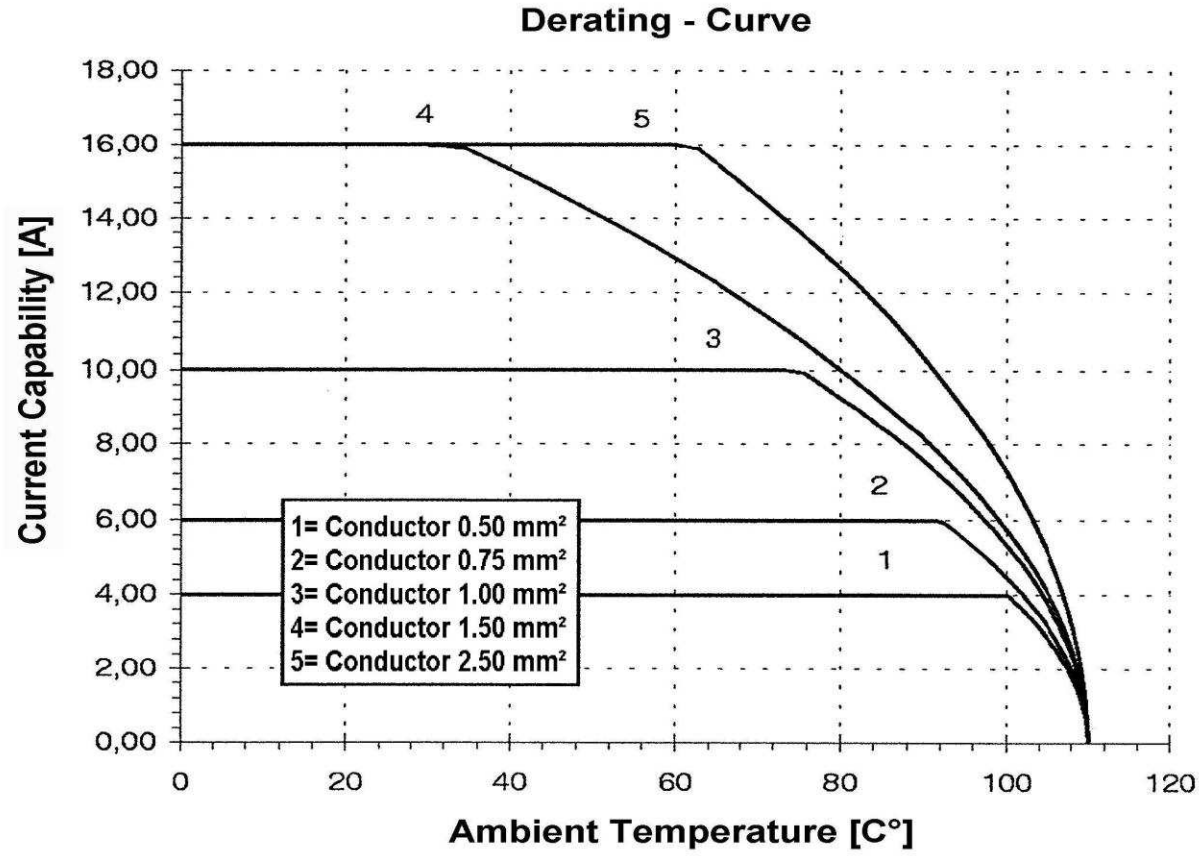
Socket (PN)	:	PN's see item 3.3.2.b
Material	:	CuFe tinned
Conductor Cross Section (mm²)	:	1.5/2.5
Application tooling	:	
Tab	:	Faston Tab 6.3x0.8 (964 016-2 / 964 017-2)
Material	:	CuZn tinned
Conductor Cross Section (mm²)	:	soldered on printed circuit board (PCB)
Housing	:	12-pos.
Measurement Set-up	:	Housing fully loaded with contacts



6.3 Diagram 2:

Standard Timer

Socket (PN)	:	PN's see item 3.3.2.a
Material	:	CuZn and CuSn tinned
Conductor Cross Section (mm²)	:	0.5/0.75/1.0/1.5/2.5
Application tooling	:	
Tab	:	Fastin-Faston Tab (60294-2/42098-2)
Material	:	CuZn tinned
Conductor Cross Section (mm²)	:	0.5/0.75/1.0/1.5/2.5
Housing	:	8-pos.
Measurement Set-up	:	Housing fully loaded with contacts



6.4 Diagram 3:

Standard Timer

Socket (PN)	:	PN's see item 3.3.2.a
Material	:	CuZn and CuSn tinned
Conductor Cross Section (mm²)	:	0.5/0.75/1.0/1.5/2.5
Application tooling	:	
Tab	:	Faston Tab 6.3x0.8 (964 016-2 / 964 017-2)
Material	:	CuZn tinned
Conductor Cross Section (mm²)	:	soldered onto printed circuit board (PCB)
Housing	:	12-pos.
Measurement Set-up	:	Housing fully loaded with contacts