

DEUTSCH* EEC-325X4 Electronic Enclosure System IP67, IP6K9K

1. INTRODUCTION

1.1. Purpose

Testing was performed on DEUTSCH EEC-325X4 electronic enclosure system to determine conformance to IP67 and IP6K9K. Test procedures are given in DIN EN 60529, dated 2000-09, ISO 20653, dated 2006-08 and DIN 40050-9, dated 1993-05.

1.2. Scope

This report covers the environmental sealing performance of the EEC-325X4 electronic enclosure system. Testing was performed at TZO Laboratory, Leipzig Germany in 2012 and 2013. The test file numbers for this testing are listed in Figure 1. This documentation is on file at, and available from Product Engineering, Industrial Commercial Transportation (ICT) Laboratory.

Test Group	Test Report
1	175_12-REPORT 132_13-REPORT
2	132_13-REPORT
3	175_12-REPORT 132_13-REPORT

Figure 1

1.3. Conclusion

The DEUTSCH EEC-325X4 electronic enclosure system conformed to the environmental sealing performance requirements for IP67 and IP6K9K when tested per the sequences shown in Figure 3 of this document.

1.4. Test Specimens

Test specimens were representative of normal production lots. Specimens identified with the part numbers given in Figure 2 were used for testing.

DEUTSCH PART NUMBER	DESCRIPTION	TEST GROUP
DTM13-12PA-12PB-R008	24pin, Receptacle, Header, Key AB	1,2,3
DTM06-12SA	12pin, Plug, Key A	1,2,3
DTM06-12SB	12pin, Plug, Key B	1,2,3
EEC-325X4B	Electronic Enclosure w/o Vent Hole	1,2,3
0413-216-2005	Sealing Plug, Size 20	1,2,3
1028-015-1205	12pin, Backshell, Straight	1,3

Figure 2

1.5. Environmental Conditions

Unless otherwise stated, the following environmental conditions prevailed during testing:

Temperature: 15° to 35°C

Relative humidity: 25 to 75%

1.6. Qualification Test Sequences

TEST OR EXAMINATION	TEST GROUP (a)		
	1	2	3
	TEST SEQUENCE (b)		
Visual Examination	1,3	1,3	1,3
Protection Against Dust (IP6KX / IP6X)	2		
Protection Against Water (IPX7)		2	
Protection Against High Pressure/Steam Jet Cleaning (IPX9K)			2

(a) Specimens were prepared in accordance production drawings and were selected at random from current production.

- Groups 1 specimens consisted of
 - 24 position Header, qty 5
 - 12 position Plug, qty 10
 - EEC box, qty 5
 - Sealing plugs, qty 120
- Groups 2 specimens consisted of
 - 24 position Header, qty 2
 - 12 position Plug, qty 4
 - EEC box, qty 2
 - Sealing plugs, qty 48
- Groups 3 specimens consisted of
 - 24 position Header, qty 5
 - 12 position Plug, qty 10
 - EEC box, qty 5
 - Sealing plugs, qty 120
 - Backshell, qty 10

(b) Numbers indicate sequence that tests were performed.

Figure 3

2. SUMMARY OF TESTING

2.1. Visual Examination (Groups 1-3)

- A. Procedure: Not Applicable
- B. Method: The visual examination should be performed prior to testing, noting in detail any manufacturing or material defects such as cracks, tarnishing, deformities, etc.
- C. Requirement: No physical defects detrimental to product performance.
- D. Result: **PASSED.**



2.2. Protection Against Dust (IP6KX / IP6X) (Groups 1)

- A. Procedure: DIN 40050, Part 9 (IP6KX), ISO 20653 (IP6KX), DIN EN 60529 (IP6X)
- B. Method: The mated assemblies were placed in a dust chamber at room ambient temperature with $<35\% \pm 5$ RH and exposed to 20 cycles. Each cycle consists of an air-blast for 6 seconds, creating dust/ air movement in the dust chamber, then followed by a 15-minute pause of the air-blast.
The chamber size is 14.3 cubic ft. (36"x24"x23"H) which required 8.8 lbs. of dust to meet the dispersion rate below. Blast of air is produced by one nozzle at 58 psi downward toward the dust pile creating an upward or vertical plume of dust which then settles down onto the test samples. The dust does not circulate. Type of dust used was Arizona Fine Dust. The dispersion or suspensions rate of dust was approximately 0.25 grams/m².
- C. Requirement: No dust visible inside connector or box.
- D. Result: **PASSED.**



2.3. Protection Against Water (IPX7) (Group 2)

- A. Procedure: DIN EN 60529
- B. Method: Test samples were first subject to thermal shock then submersed in ambient water to a depth of 1 meter for 30 minutes.
- C. Requirement: No water visible inside connector or box.
- D. Result: **PASSED.**



2.4. Protection Against High Pressure/Steam Jet Cleaning (IPX9K) (Group 3)

A. Procedure: DIN 40050, Part 9 and ISO 20653

B. Method: Mated assemblies were attached to a rotating table. The rotation speed of the table was set at 5 ± 1 RPM. The sample was sprayed with a flat fan type nozzle for 30 seconds from approximately 5 inches (127 mm) while rotating. The water temperature was approximately $80^{\circ}\text{C} \pm 5^{\circ}\text{C}$. The spray nozzle was positioned at an angle of 0° to the test sample. This procedure was repeated three more times with the spray nozzle repositioned each time to spray at an angle of 30° , 60° , and 90° to the test sample. The water flow rate was measured at approximately 14.5 LPM, and the water pressure measured at approximately 8274 KPa (1200 psi).

C. Requirement: No water visible inside connector or box.

D. Result: **PASSED.**



3. REVISION HISTORY

Rev Ltr	Brief Description of Change	Date	Dwn	Apvd
A	Initial Release	05-Jun-2020	DM	DM