



# Safety-Related Application Conditions (SRACs)

Supplement to the HIMax *Safety Manual for Railway Applications* HI 800 327 E, Rev. 11.00.00

## 1 HIMax System

Requirements	Reference	Responsible
1. To ensure safety-related operation, approved fail-safe hardware and software components must be used. Approved HIMA components are listed in the HIMax version list. The latest versions can be found in the version list, which is maintained together with the test authority.	HIMax safety manual for railway applications Chapter 3.3.1	Engineering, maintenance
2. The operating requirements specified in this safety manual about EMC, mechanical, chemical and climatic influences must be observed.		
3. The HIMax systems are designed in accordance with the de-energize to trip principle. Thus, if faults occur, the de-energized state is adopted as the safe state for inputs and outputs.	HIMax safety manual for railway applications Chapter 2.1.1	Engineering
4. The HIMax systems can also be used in applications operating in accordance with the energize to trip principle. This must be implemented in the application.	HIMax safety manual for railway applications Chapter 2.1.2	
5. Only devices that are safely separated from the power supply may be connected to the system.	HIMax safety manual for railway applications Chapter 3.3.2	
6. The operating requirements detailed in the system manual, particularly those concerning supply voltage and ventilation, must be observed.		
7. In safety-relevant applications, ensure that the safety-relevant system parameters are properly configured.	HIMax safety manual for railway applications Chapter 3.3.3	
8. In particular, this applies to the system configuration, maximum cycle time and safety time.		

Requirements	Reference	Responsible
9. SILworX must be used for programming.	HIMax safety manual for railway applications Chapter 3.3.4	Engineering, maintenance
10. Once the application has been created, the program must be compiled twice and the two resulting CRCs must be compared to ensure that the program was compiled properly.		
11. The proper implementation of the application specifications must be validated, verified and documented. A complete test of the logic must be performed by trial.		
12. The system response to faults in fail-safe input and output modules must be defined in the user program in accordance with the system-specific safety-related conditions.	HIMax safety manual for railway applications Chapter 3.3.5	Engineering
13. When implementing safety-related communications between various devices, ensure that the overall response time of the system does not exceed the permitted worst case response time.		
14. Data transmission in Category 1 and Category 2 transmission systems in accordance with EN 50159 is possible with no additional measures.		
15. Transmission systems (Category 3) in accordance with EN 50159 may be used, if additional measures are taken to guarantee that the transmission channel is secure (e.g., firewalls or encryption).		
16. Never use the standard protocols to transfer safety-related data.		
17. To comply with the protective provisions for electrical safety and grounding, the manufacturer of the specific application must ensure that proper measures are implemented for separating the indoor and outdoor equipment in accordance with EN 50122. This must protect the HIMax systems against influences from the outdoor equipment in the overhead contact line zone or the pantograph zone, as well as against traction return currents.		
18. The process safety time (in accordance with IEC 61508-4, Chapter. 3.6.20), which is controlled by the HIMax system, must be greater than the worst case response time of the safety function.	HIMax safety manual for railway applications Chapter 3.2 et seqq.	Engineering
19. The SILworX programming tool is provided with a feature that, after the user program or system configuration has changed, only displays the performed changes. The analysis of the changes (change impact analysis IA) must define the required test scope. This impact analysis must take the expected changes based on the performed modifications, the result of the SILworX comparison feature and the required regression tests into account.	HIMax safety manual for railway applications Chapter 3.3.4	
20. The HIMax systems must be installed in enclosures to ensure protection against the environmental influences of classes 4C3 (chemical), 4B1 (biological) and 4S2 (mechanical).	HIMax safety manual for railway applications Chapter 3.6.5	

## 2 Operating Requirements

Requirement	Reference	Responsible
1. The power supply must be designed in accordance with the HIMax safety manual for railway applications.	HIMax safety manual for railway applications Chapter 3.6.6	Planning Engineering, Maintenance
2. The climatic conditions must be met in accordance with the HIMax safety manual for railway applications.	HIMax safety manual for railway applications Chapter 3.6.2	
3. The mechanical requirements must be met in accordance with the HIMax safety manual for railway applications.	HIMax safety manual for railway applications Chapter 3.6.3	
4. The EMC requirements must be met in accordance with the HIMax safety manual for railway applications.	HIMax safety manual for railway applications Chapter 3.6.4	
5. The ESD protective measures must be met in accordance with the HIMax safety manual for railway applications.	HIMax safety manual for railway applications Chapter 2.4	
6. With respect to the installation height, the classes must be met in accordance with the HIMax safety manual for railway applications.	HIMax safety manual for railway applications Chapter 3.6.1	