



HVIP

HANNING & KAHL
Vital Interlocking Processor



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H-Vital Interlocking Processor

Safe Transportation All Along the Line.

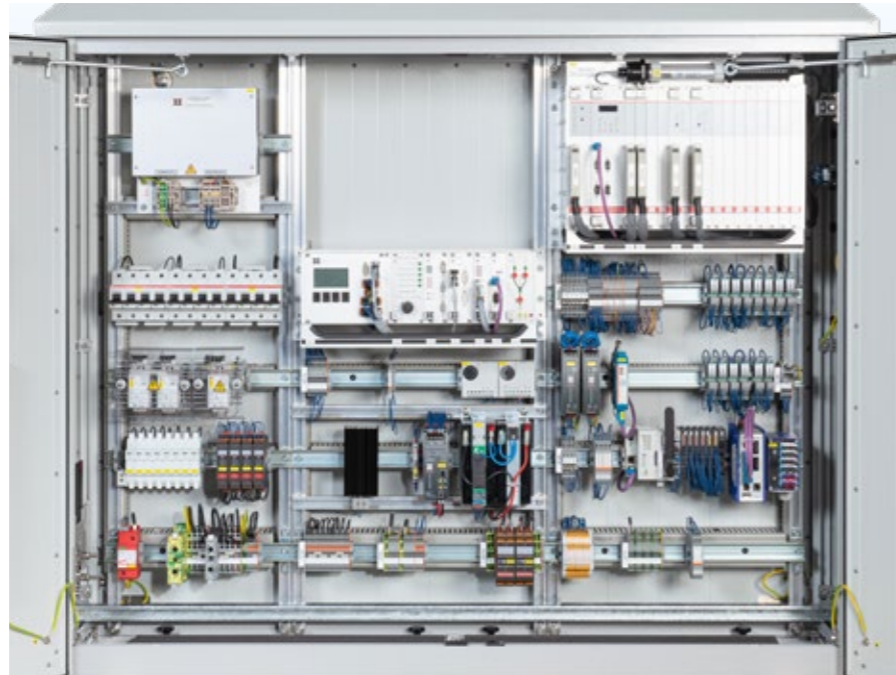
HVIP

Safe Transportation All Along the Line.

Today's complex requirements of the vital processor system as a core component in control and safety equipment call for new technical solutions. The HVIP (HANNING & KAHL Vital Interlocking Processor) is a modular and networkable two-channel SIL4 processor system for deployment in typical rail applications with integrated monitoring for light signals. It can be adapted to the scope of the control task and thus scaled to the installations.

The HVIP has special operating modes for commissioning and also for uninterrupted operation in case of controllable hardware failures. The HVIP serves as a universal technology platform for all HANNING & KAHL applications and can be widely used in typical applications for BOStrab and secondary and branch lines as well as in point controllers, signalling installations, depot and shunting facilities.

Complex installations are simplified by division into local control segments with high availability. Vehicle detection systems, track circuit, mass detection and blocking circuits of the HN-P can be connected to the HVIP via safe communication. Existing equipment can also be added or replaced step by step via HVIP safe communication.



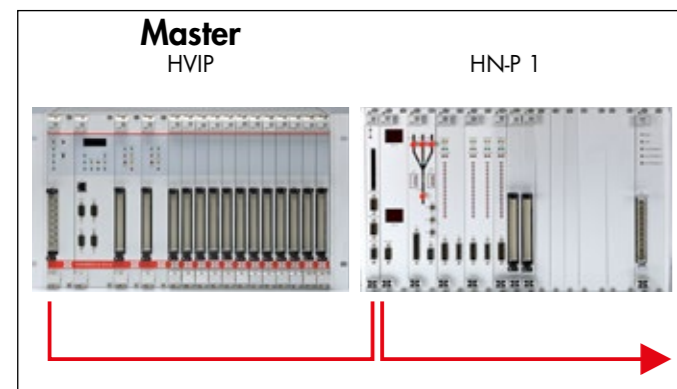
Single point controller HVIP



SBC blocking circuit

The most important advantages at a glance:

- Safety functions per SIL4
- Reliable vehicle detection with blocking circuits
- max. 288 digital safety-relevant inputs per rack
- max. 86 digital safety-relevant outputs with integrated current monitoring in supply and feedback lines (voltage 16.8V...57.6V, SDO current 10mA...800mA, SDOH current 50mA...2500mA) per rack
- Safety-relevant communication via Ethernet
- Suitable for railway environment, -40°C to +70°C, EMC, insulation, climate, shock, vibration, impact in line with prevailing rail norms
- Extended operating modes to avoid central failures (online, online restricted [individual safety functions can be deactivated for greater system availability], offline, failsafe)
- SD card for data recorder (one channel)
- Integrated voltage monitoring
- Integrated temperature monitoring
- Serial interfaces (RS232, RS485) for coupling of components in the control cabinet
- Decentral system structure for high availability and short cable paths
- Separation of safety-relevant and non safety-relevant functions for better system maintainability
- Integrated remote telecontrol interfaces (remote monitoring, clock synchronisation, remote operation)
- Functional diagnosis with all advantages of ConnAct®:
 - unit-specific configuration and views
 - formation of function groups and function objects
 - overview maps, line networks
 - integrated operating surface with HVIP diagnosis, Operate & Observe, depot management, Event Viewer



Networking of HVIP and HN-P



Barriered level crossing

Detecting vehicles, determining positions, securing routes – HANNING & KAHL systems for vehicle detection give you safe control of these processes. Depending on project requirements, HANNING & KAHL deploys various own systems for passive detection of rail vehicles and to secure routes.

SBC blocking circuit

The blocking circuit passively detects entrance of a rail vehicle through the wheel shunt (< 1 Ohm, max. 5uH) produced, and an exiting vehicle by the decreasing vehicle mass. The blocking circuit functions without insulating joints, its effective range is limited by short-circuit connectors. Standard length can be 3 to 20 metres. The SBC fulfils the requirements of CENELEC norms per SIL 4.

Axle counters

Wheel detectors before and behind the area to be secured count the axles of a train when it is entering and departing. This ensures that one train has left before the next vehicle can enter. Point setting at the wrong time or an incorrectly set drive signal are ruled out.



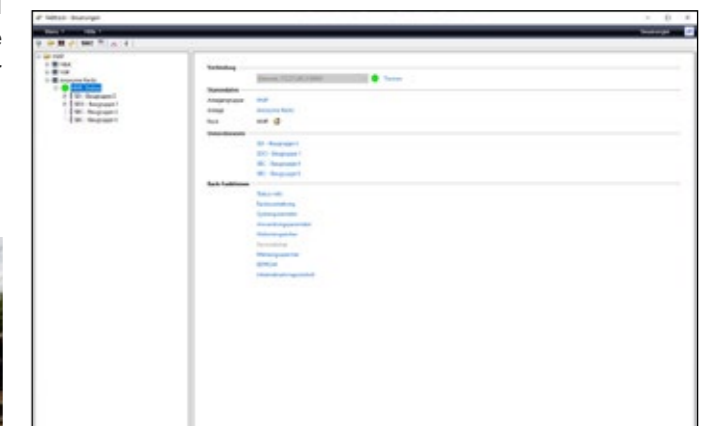
Axle counters

Automatic train control

In areas where driving at sight is not possible, for example in tunnels or at speeds higher than 70 km/h (BOStrab § 49 Section. 2.2), it is necessary to technically monitor the driving trains and intervene if there are any dangerous deviations. A compulsory brake is to be triggered automatically in the event of a driving error. For this purpose, inductive or magnetic immobilisers are installed on the level of the Drive/Stop signals to act accordingly on the vehicle if a STOP signal is passed.

Diagnosis with ConnAct®

Continuous real-time monitoring (online monitoring) of infrastructure takes malfunction management in maintenance fields to a completely new quality level. It enables you to increase system availability and reduce costs.



Online monitoring



HVIP



Hanning & Kahl GmbH & Co. KG
Rudolf-Diesel-Straße 6 | 33813 Oerlinghausen | Germany
Telefon +49 5202 707-600 | Fax +49 5202 707-629
info@hanning-kahl.com | www.hanning-kahl.com

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