



HIRSCHMANN

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Controls

Consoles

SLIs

Sensors

Service

iVISOR PSV 3/1

Programmable Switching Amplifier



iVISOR PSV 3/1 win is a fully programmable system used for overload protection on cranes and other lifting equipment. It is also suitable for a number of other applications in rugged conditions, including construction and harbour equipment.

iVISOR PSV 3/1 is configured on the PC in a very simple way, thanks to the Windows® "Configuration Manager". Special programming skills are not necessary. The configuration data are loaded into iVISOR PSV 3/1 through a USB interface and then defines its function. Configuration data can be sent by e-mail and then implemented or extended on the other side of the world.

iVISOR PSV 3/1 fulfils its safety function by activating or shutting down crane functions via relays. It can be linked directly to the crane controls and other systems by means of a Profibus-DP-interface. Furthermore, it offers the possibility of recording important data with a data logger and analysing them on a PC as an EXCEL® file.

Programmable overload protection for

- ▶ Bridge cranes, container cranes
- ▶ Harbour cranes, straddle carriers
- ▶ for general applications in harbour and construction industries
- ▶ Security systems in compliance with Category II, EN 954-1
- ▶ Profibus DP interface for communication with crane-SPS (e.g. S7) (optional)
- ▶ Configurable data recorder to log necessary data in Excel-format (optional)

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PROGRAMMABLE SWITCHING AMPLIFIER iVISOR PSV 3/1

Typical applications



Overload security for bridge cranes, container lifters, straddle carriers, RTGs, and EOTs:

Force sensors measure load data from the crane using the iVISOR PSV 3/1 programmable software modules to determine critical load conditions (overload, unbalanced loads, slack cables, snagload condition, etc.) As soon as the pre-determined limits are reached, the crane is shut down through internal relays after prewarning is given. Exact weight determinations for complex applications are made by multiple mathematical operations to correct values. Load values and other parameters can be made visible via the internal display or other external analog and digital display devices available in the PAT-Group product line. The load-dependent length of use is established based on FEM guidelines managed by a programmable load-data recording feature.



Load moment limiter for cranes with a boom (e.g. harbour cranes):

Using a signal from a force sensor and an angle sensor, iVISOR PSV 3/1 calculates the load moment and compares it with the maximum permissible load specified for the crane while considering the preset programmed status. An overload is preceded by an advance warning or automatic shut-down. A combination of iVISOR PSV 3/1 and a KRÜGER harbour crane display offer a convenient system for monitoring load, radius, loadmoment, and wind speed.



Operating range delimiters for excavating equipment:

In this example, iVISOR PSV 3/1 is programmed to determine the shovel position using the slew angle, the boom angles and the boom geometry. If the shovel extends outside of the predefined operating range, machine operation is halted. Oriented to the excavator's dynamics, shut-down can be activated when the machinery is rapidly approaching a predefined limit.

These and many more applications can be realized with iVISOR PSV 3/1. The type of sensors and the configuration allow iVISOR PSV 3/1 to accomplish a variety of tasks.

CUSTOMIZING iVISOR PSV 3/1

for use on machinery in 3 steps

iVISOR PSV 3/1 controls machinery (e.g. harbour cranes) by activating/deactivating functions via relay switches. iVISOR PSV 3/1 can also control machinery through analog outputs or standard iVISOR PSV 3/1 interfaces.

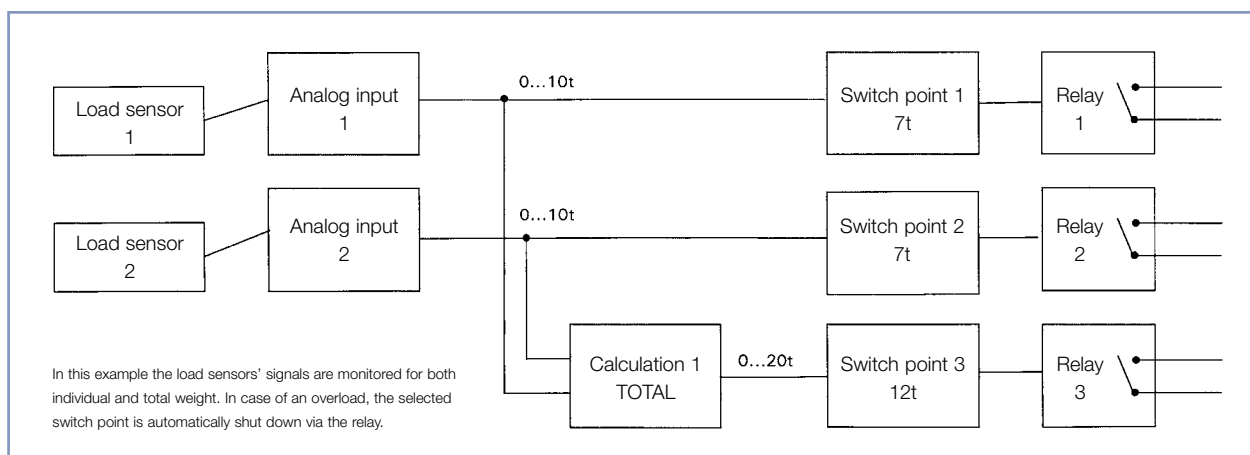
1 Preparing the necessary system on the machine

- ▶ Which functions shall be system controlled?
- ▶ Which functions shall be system controlled?
- ▶ Which other parameters need to be processed by iVISOR PSV 3/1?
- ▶ Which data shall be displayed?

Sensors carrying signals to be processed for the desired operations are connected to the iVISOR PSV 3/1 analog inputs. These operations are specified in the programming. The iVISOR PSV 3/1 processes the signals in the

software modules. These have specific functions including calculation, switching point determination, display unit output and interface, curve processing, and much more. The type of modules and networking are determined in the user programming. It is therefore recommended to plan the application by means of block diagrams prior to implementation in the iVISOR PSV 3/1 configuration manager. Many modules can be controlled via iVISOR PSV 3/1 digital inputs. This makes it possible to adjust functions and operations to the machinery's operating conditions.

2 Setting up a block diagram (example of simple overload prevention)



3 Programming and calibration with the „Configuration Manager“

Programming is accomplished on a PC with our Windows® compatible Configuration Manager. No prior programming experience is necessary. Adjustment by potentiometer, etc. is not required. The data is password protected and can be archived on the PC's hard disk. Programs can be expanded or modified in a matter of minutes. Programs are set up offline from a separate office PC, or on-site, with the iVISOR PSV 3/1 connected to a laptop PC. Program data can also be sent worldwide via email for easier servicing. Sensor calibration (to the extent required) is carried out on the machine directly.

After the iVISOR PSV 3/1 is disconnected from the PC it is ready for operation. All data is saved in non-volatile memory.





Accessories:



Configuration Manager:

High-Performance kit for programming the iVISOR PSV 3/1. Includes CD-ROM, Hardlock (USB or parallel) and connecting cable. Runs on Windows® 95, 98, 2000, NT.



Large Display:

41/2 character LED display for weight / load. Digit height: 100 mm. Readable from up to 40 m away.



ST 9 Console:

To display data processed by the iVISOR PSV 3/1. Ideal for installation in the operator cabins. 140 x 180 mm. 2 x 20 alphanumeric characters. Character height: 8 mm. Tare function.



Harbour Crane Display:

Analog display of load moment, digital display for load and radius limit. Warning light for load moment alert and shutdown. Tare function. Optional wind speed display with warning light. Housing (h x w) 220 x 140 mm. Wind speed indicator display: 140 x 140 mm.



Sensors:

The extensive PAT-Group product line includes sensors for virtually all applications.

Technical Specifications:

Features:

- ▶ All configurations and predefined limits can be programmed via PC (per Windows® program)
- ▶ All standard sensors (load, pressure, angle, length, all – purpose) can be used
- ▶ Registration of measured values
- ▶ Mathematic data processing (+, -, *, /, min., max.)
- ▶ Self-check of sensors and input data
- ▶ Non-linear data processing (CURVE module)
- ▶ Open adaptation of display indicators

Options:

- ▶ Power supply 12, 24_{VDC}; 48, 115, 230_{VAC}
- ▶ Up to 4 counters for hours in operation
- ▶ Extra card with 8 additional relays
- ▶ Crane-specific pre-programming
- ▶ Profibus DP-interface
- ▶ Configurable data recorder

Dimensions (mm):

