

Data Sheet 12.50/1

Safety measures

Classification

The module Safety measures is a part of the control system HiCOS. It contains all components that ensure the safety of the operators.

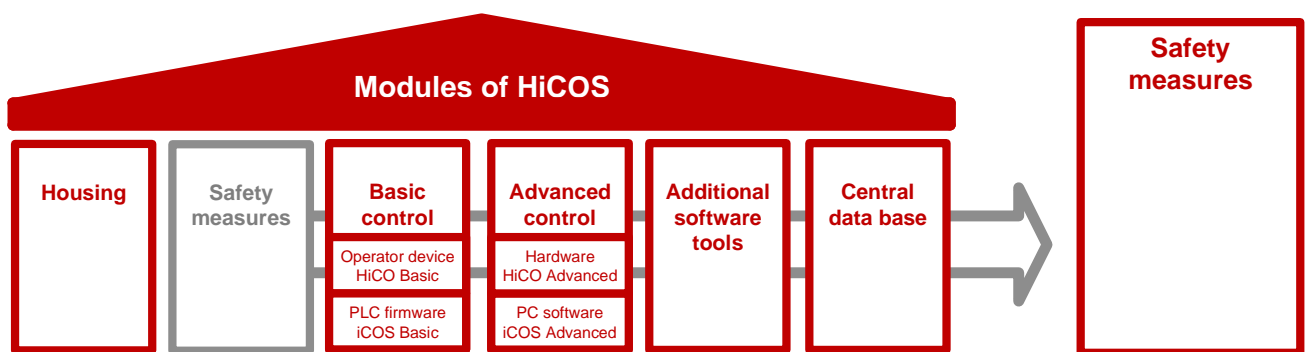


Figure 1: Overview of HiCOS modules – topic of this data sheet: Safety measures



The control system HiCOS is a collection of modules to control test systems and to record, manage, evaluate and report the measuring data. It is suitable for mobile and stationary test systems. The modular design of the control system HiCOS even allows further expansions of the functions.

Existing test systems from other manufacturers can be upgraded with HiCOS.

Description

Safety measures ensure the safety and health of the operators at work. The control of each HIGHVOLT test system includes the safety functions Emergency OFF and Safety loop that fulfill the requirements of the standard IEC 62061 (e.g. redundant safety loop). It is possible to include external emergency STOP buttons, door contacts and to interconnect several test systems. All safety measures from HIGHVOLT fulfill the latest requirements of international standards.

Table 1: Available components

Component	Description																
<p>Guard fences</p>  <p>Figure 2: Guard fence</p>	<ul style="list-style-type: none"> ▪ Movable barrier for the test area due to fence module with wheels ▪ Fulfills SIL CL 3 (according to IEC 62061) ▪ Several guard fences can be connected in series ▪ Dimensions (approx. L x W x H/mm): 2500 x 570 x 2000 <table border="1"> <thead> <tr> <th>Type</th> <th>Green and red signal lamp</th> <th>Door with two contacts</th> </tr> </thead> <tbody> <tr> <td>Guard fence</td> <td>-</td> <td>-</td> </tr> <tr> <td>Guard fence with signal lamps</td> <td>✓</td> <td>-</td> </tr> <tr> <td>Guard fence with door and signal lamps</td> <td>✓</td> <td>✓</td> </tr> </tbody> </table>	Type	Green and red signal lamp	Door with two contacts	Guard fence	-	-	Guard fence with signal lamps	✓	-	Guard fence with door and signal lamps	✓	✓				
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Guard fence	-	-															
Guard fence with signal lamps	✓	-															
Guard fence with door and signal lamps	✓	✓															
<p>Safety columns</p>  <p>Figure 3: Safety column</p>	<ul style="list-style-type: none"> ▪ Green and red signal lamps to indicate the operational status inside the test area ▪ Fulfills SIL CL 3 (according to IEC 62061) ▪ Dimensions (approx. L x W x H/mm): 380 x 380 x 1200 <table border="1"> <thead> <tr> <th>Type</th> <th>Emergency STOP button</th> <th>Horn</th> <th>Pushbutton for horn</th> </tr> </thead> <tbody> <tr> <td>Safety support with emergency STOP button</td> <td>✓</td> <td>-</td> <td>-</td> </tr> <tr> <td>Safety support with horn</td> <td>-</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>Safety support with emergency STOP button and horn</td> <td>✓</td> <td>✓</td> <td>-</td> </tr> </tbody> </table>	Type	Emergency STOP button	Horn	Pushbutton for horn	Safety support with emergency STOP button	✓	-	-	Safety support with horn	-	✓	✓	Safety support with emergency STOP button and horn	✓	✓	-
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<p>Safety circuit</p>	<p>Standard safety circuit consists of:</p> <ul style="list-style-type: none"> ▪ 8 safety columns with emergency STOP button, without horn ▪ 1 safety column with horn and pushbutton for horn ▪ Cables and chains (length = 5 m) between safety columns with warning signs 																

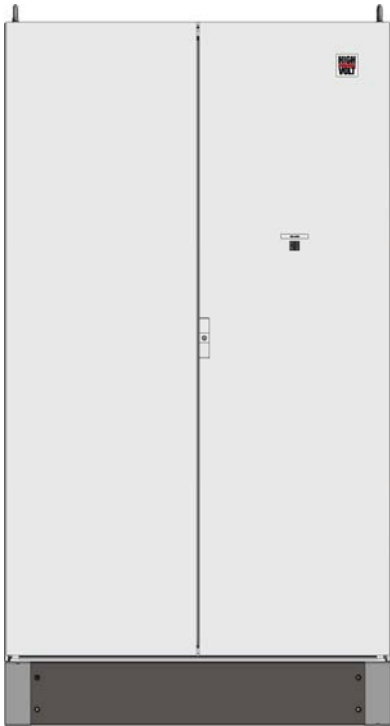
Component	Description
<p>Safety area configuration</p> 	<ul style="list-style-type: none"> ▪ Suitable for test fields with several test systems. ▪ Allows the flexible organization of the test field in different test areas. ▪ Door contacts and emergency STOP buttons can be allocated to a certain test area. ▪ To avoid EMC influences, it is possible to connect several safety boxes with fiber-optic cable (e.g. to save LV filter for safety-related signals between outside and inside the shielding). ▪ The safety box consists of: <ul style="list-style-type: none"> – Cabinet with safety equipment – Software ▪ Main parameters of the safety cabinet: <ul style="list-style-type: none"> – <u>Main components</u> fail-safe PLC, safety relays in 230V technology – <u>Design of the cabinet</u> stand-alone, made in metal sheet design, equipped with lifting lugs for installation by crane – <u>Data interface</u> (only for HIGHVOLT systems) optical ETHERNET connections to other safety boxes, test systems and to visualization panels – <u>Safety interface</u> 8 safety related inputs (used for safety loops and emergency STOP buttons) 8 safety related outputs / potential free (used for up to four test systems) terminals for connection of warning lamps, horn and interlock function – <u>Dimensions (approx.)</u> (L x W x H/mm): 600 x 1200 x 2200 – <u>Total weight (approx.)</u> 400 kg – <u>Power supply</u> 3NPE 230/400V 50/60 Hz, 3.5kVA – <u>Voltage of the safety loop</u> 230 V – <u>Safety level acc. to IEC 62061</u> SIL CL 3 ▪ Characteristics of the software: <ul style="list-style-type: none"> – The safety box software is well adapted to the local conditions (test bay design and connected test systems). – To create the logical safety program, a layout of the test bay with the location of emergency STOP buttons and doors has to be provided by the customer after purchase order.

Figure 4: Safety area configuration


Component	Description
<p>Test field visualization</p>  <p>Figure 5: Test field visualization</p>	<ul style="list-style-type: none"> ▪ Suitable for the safety area configuration ▪ Provides an easy way to configure the test bay arrangement ▪ The display shows the status of the connected doors and emergency STOP buttons ▪ The test field visualization consists of: <ul style="list-style-type: none"> – Panel PC with touch screen – Software – Wall mounting set – Fiber-optic cable (25 m) ▪ Characteristics of the software: <ul style="list-style-type: none"> – The visualization software is well adapted to the local conditions (test bay design and connected test systems). – To create the visualization, a layout of the test bay with the location of emergency STOP buttons and doors is required from customer after order. – <u>The visualization includes:</u> <ul style="list-style-type: none"> • Visualization of the status of all door contacts and all emergency STOP buttons that are connected to the safety boxes, allowing the easy localization of activated safety switches. • Visualization of information of the HIGHVOLT test systems, e.g. status of the main switches, current and voltage values. • On request visualization of additional test field equipment / parameters. ▪ Main parameters of the panel PC with touch screen: <ul style="list-style-type: none"> – <u>Touch screen size</u> 24 inch – <u>Interface</u> Fiber-optic Ethernet connection to the safety cabinet – <u>Total weight (approx.)</u> 18 kg – <u>Dimensions (approx.)</u> (L x W x H/mm): 150 x 700 x 500
<p>Extension unit for safety area configuration</p>	<ul style="list-style-type: none"> ▪ The unit extends the number of safety-related inputs used for safety loops, emergency STOP buttons OR the number of safety related outputs used for the connected test systems. The extension will be installed into the cubicle for the safety area configuration. ▪ <u>Safety interface:</u> 4 safety related inputs or outputs ▪ It is possible to include three extension units into one cubicle for the safety area configuration.

Table 1 continued: Available components

Component	Description
<p>Video monitoring / IP camera unit</p>	<ul style="list-style-type: none"> ▪ Recommended for complex test fields in which the operator cannot see the complete test area. ▪ Live view & control via internet browser possible. ▪ Video recording is possible with optional recording unit. ▪ The IP camera unit consists of: <ul style="list-style-type: none"> – Camera with connection box – Ethernet fiber-optic converter ▪ Main parameters of the camera with connection box: <ul style="list-style-type: none"> – <u>Dimensions (approx.)</u> (L x W x H/mm): 800 x 300 x 300 – <u>Total weight (approx.)</u> 10 kg
<p>Video monitoring / recording unit 8 channels</p>	<ul style="list-style-type: none"> ▪ Recording of the live view stream of the connected IP camera units possible ▪ Prepared to connect up to eight IP cameras via fiber-optic Ethernet (on request up to 32 channels available). ▪ The recording unit consists of: <ul style="list-style-type: none"> – Evaluation unit with PC and monitor (19" built-in unit) – Control and recording software