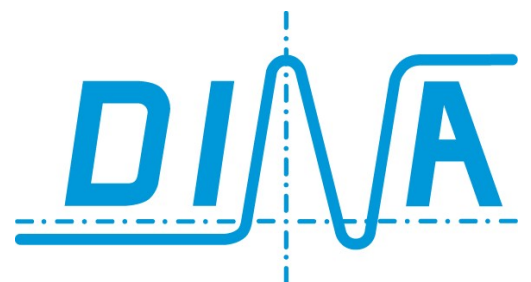
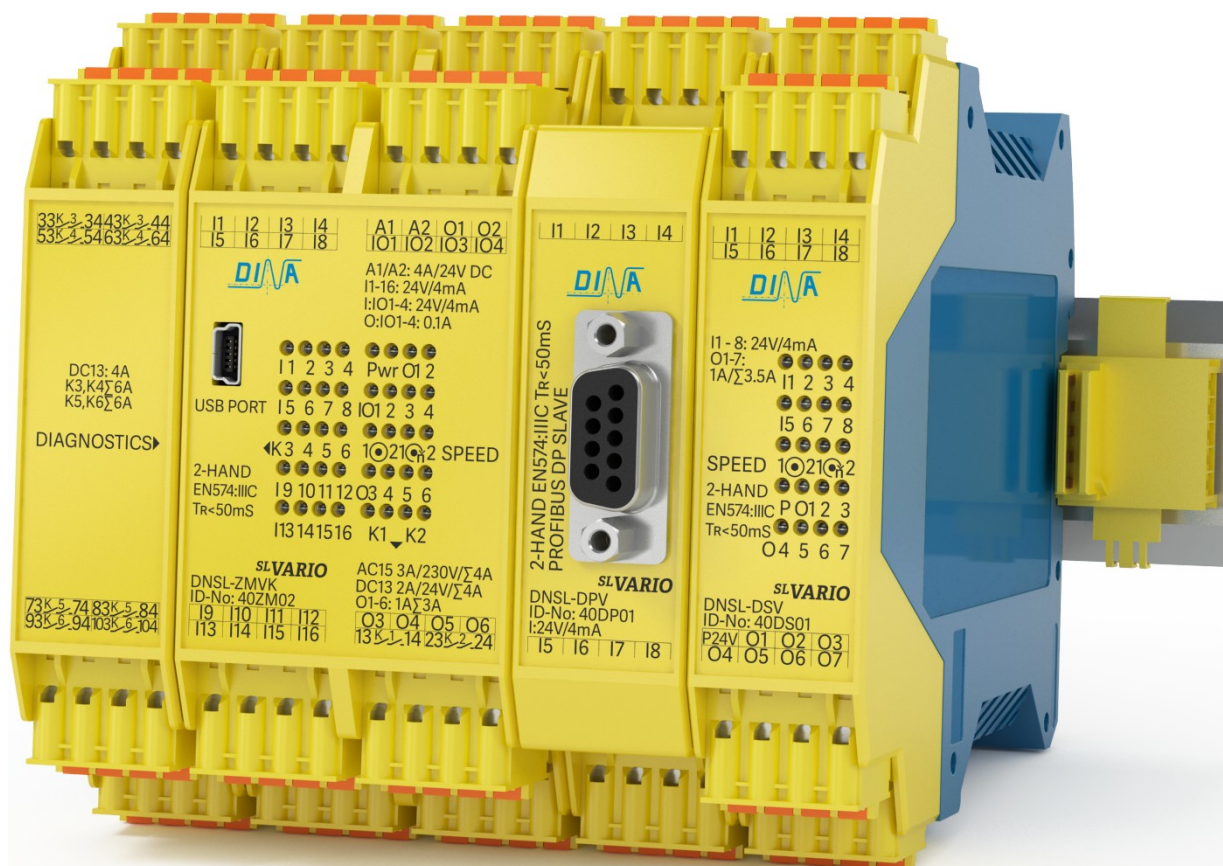


SLVARIO

Brief description



we are safety.

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SL VARIO

A safety system for all requirements in the machine and plant engineering and construction

Multifunctional and compact

- SL VARIO is a multi-functional, modular, expandable and configurable safety system.
- Up to 38 axles can be monitored in different function modes.
- The central module has 20 safe inputs, 6 safe semi-conductor outputs and 2 respectively 6 safe contact outputs
- The function modules have 8 safe inputs and 4 to 7 safe semi-conductor outputs
- The field bus modules have 8 safe inputs
- With different function modules a flexible extension is easy possible.
- The standstill and speed monitoring is available with incremental, resolver and serial measuring system
- A graphical parameterising software enables a very easily configuration and offer a nearly unlimited possibility.

Usage fields

The SL VARIO is multiple usable and helps you to have functional safety economical in the hardware and implementation.

The field of application is for machines for

- Metal working
- Wood machining
- Packaging
- Filling
- Food production
as well as
- Conveyor belts
- Escalator system
- Elevator for mining and passengers and so on
- Play arena and more.

ADVANTAGE

We master every Safety challenge.

SL VARIO is an all-rounder and combines various of safety functions.

- Easy configuration using the software SL VARIO Designer
- Wide diagnostics possibilities
- A lot of field bus connections
- Networking up to 8 applications in a plant
- Cascading up to 15 modules of an application
- 9 different function modules for individual expansion
- Application up to performance level e (DGUV Test: ET 17079)
- Spring load terminals, pluggable
- Expansible up to 15 modules
- Display for all switching status
- Safe digital and analogue inputs
- Safe semi-conductor and contact outputs

FUNKTIONALITY

Our solutions are not only flexible but rather economical in the hardware and implementation.





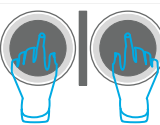

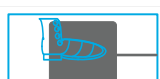





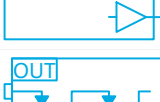
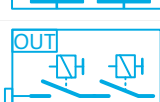


SL VARIO is individual adaptable for your application.

- Flexible selection of the hardware modules
- Wide selection of the software functions
- There is not „it doesn't go“. We design for you the individual function device for your application.

Symbol description

	<p>Terminal input</p>		<p>Terminal output</p>
	<p>signal input</p>		<p>Signal output</p>
	<p>Signal input negated</p>		<p>Signal output negated</p>
	<p>Terminal in, output semi-conductor</p>		<p>Terminal output semi-conductor</p>
			<p>Terminal output contact</p>
	<p>Drive standstill</p>		<p>Drive speed</p>

SL VARIO safety functions

Functions	Central modules	I/O module INV	I/O module IOV	Contact module RMV	Speed monitoring modules	Motion module SIV	Network module NIV	Field bus modules	Symbols
Emergency Stop	8	8	4	4	4	4	4	4	
Safety door	8	8	4	4	4	4	4	4	
Permission key	8	8	4	4	4	4	4	4	
Protective grid	8	8	4	4	4	4	4	4	
Two-hand function	2	1	1	1	1	-	-	1	
Function mode selection switch	2	-	-	-	-	-	-	-	
shut down mats, switch rails, bumpers	8	-	-	-	-	-	-	-	
Standstill and speed Monitoring	10	-	-	-	2	-	-	-	
Digital input	16	12	8	8	8	8	8	8	
In-, output	4	4	-	-	-	-	-	-	
Analogue input	8	-	-	-	-	-	-	-	
Analogue output	8	-	-	-	-	-	-	-	
Semi-conductor output	6	4	7	-	7	4	4	-	
Contact output	10	-	-	2	-	-	-	-	
Data* input	-	-	-	-	-	-	7x32	32	
Data output	-	-	-	-	-	-	7x32	128	

*) Negated output at the field bus only

Safety function using hardware inputs

Function description	Symbol	Function description	Symbol
<p>Safe digital input central module: up to 48 DNSL-INV: 12 other modules: 8</p>		<p>Emergency stop function central module: up to 16 DNSL-INV: up to 8 other modules: up to 4</p>	
<p>Safe analogue input central module: 8</p>		<p>Permission function central module: up to 16 DNSL-INV: up to 8 other modules: up to 4</p>	
<p>Safe input for shut down mats, switch rails, bumpers central module: 8</p>		<p>Safe cover function central module: up to 16 DNSL-INV: up to 8 other modules: up to 4</p>	
<p>Safe digital in-, output central module: 4 DNSL-INV: 4</p>		<p>Two-hand function central module: 2 DNSL-INV: 1 other modules: 1</p>	

Safe semi-conductor outputs		Safe contact outputs	
Function description	Symbol	Function description	Symbol
<p>Safe semi-conductor outputs central module: up to 10 DNSL-INV: up to 4 other modules: 4 to 7</p>		<p>Safe contact outputs Central module: 2</p>	
<p>Clock output According to need configurable</p>		<p>Safe contact outputs Central module: 4 DNSL-RMV: 2</p>	

Software devices for safety functions

Logical devices

Number	Function description	Symbol	Number	Function description	Symbol
16	Inverter				
52	AND/ NAND 2 inputs		52	OR/ NOR 2 inputs	
10	AND/ NAND 3 inputs				
26	AND/ NAND 4 inputs 1 input invertible		26	OR/ NOR 4 inputs 2 inputs invertible	
2	XGATE with internal linkage		16	XOR / XNOR	
8	D-Flip-Flop		8	RS-Flip-Flop	

Transmit- and control devices

Number	Function description	Symbol	Number	Function description	Symbol
100	Input marker to receive signals application internal		100	output marker to transmit signals application internal	
4	Starter device		16	Feedback device	
2	Watchdog-Trigger		1	System in function (SLOK)	
1	+V Signal (virtual +24V)		8	Impulse former time configurable	

Function mode selection switch

Number	Function description	Symbol	Number	Function description	Symbol
2	Function mode selection switch 4 function modes are selectable		1	Function mode selection switch with time delayed switching over of the function modes and enabling input	

Digital devices

Number	Function description	Symbol	Number	Function description	Symbol
1	Frequency generator adjustable impulse and pause in 100ms steps		4	Up down counter 1 to 30000	
2	Binary codierer converts decimal numbers 1 to 15 in binary numbers		2	Binary decodierer converts binary numbers in decimal numbers 1 to 15	
4	Selection 1 of N depending of the signals at 1 to 8 the outputs Q1 to Q3 change their switching status		8	Switch over 1 of 2	

Special function device

Number	Function description	Symbol	Number	Function description	Symbol
2	Two men control to use during work process with very high danger		2	Scanner The outputs V1 to V4 switch on depending of the speeds of the drives movement	
2	BWS The device is to control a contactless operated protective device		1	Version INFO compares the stated version-No. (1-255) with the version information of the field bus	
16	Door device For the logical order to enable the safety door and to control a door lamp		1	Synchronal comparator between 2 drive speeds Tolerance and switch off delay are configurable to avoid unwanted switch off	
16	Zone control Application areas can be controlled with this device. IN1 to IN4 are to define the coordinates.		16	Zone enabling The coordinate can be define using cams of DNSL-SIV. The Is-value happens using the SSI measuring system at DNSL-SIV	
8	Brake control Brake of heavy load as example vertical axles can be controlled. The test starts at the begin of the work process and can be repeated during the process.				

DNSL-SIV functions

64	Cams to define the work areas		2 2	SSI-clams Switch on Encoder voltage setting of Reference points	
1	SSI-clam for Encoder diagnostics, clams diagnostics and Synchronism diagnostics		2	SSI-clam Diagnostics for Encoder 1 and 2	

Analogue signals functions

Number	Function description	Symbol	Number	Function description	Symbol
8	Analogue input 4 to 20mA/ 0 to 10V		4 4	Analogue output 4 to 20mA Analogue output 0 to 10V	
1	Analogue OK Diagnostics for the 8 analogue inputs at the central modules		4	Analogue step switch For every output a value can be dedicated. The output has high signal if there is exceeding.	
4	Analogue input comparator The output level is depending of the value identity of two analogue sources, respectively if the value sum of both sources is < 1000.		2	Threshold value switch Every device can be configured up to 8 different threshold value pairs (L1, L2)	
8	Normalizer The device converts an input current value to example weight or pressure.		2	Copier the device copies and saves analogue input signals	
1	Debounce time filter for analogue inputs		1	Conversion factor converts a value with a factor as example 1 to 10	
8	Adder Addition of analogue values. The output level is depending of the sum of the registered value pair.		4	Subtractor Subtraction of analogue value The output level is depending on the difference of the registered value pair.	
4	Absolute subtractor Subtraction with absolute value				

Voltage and current monitoring

Number	Function description	Symbol	Number	Function description	Symbol
1	Power supply monitoring inside of the allowed tolerance action happens using an undelayed and delayed output		2	Current monitoring The device compare the current values via O1 and O2 at the central module with the registered values and switches the output depending on them.	

Timer

Number	Function description	Symbol	Number	Function description	Symbol
15	4 OFF-delayed timer activated using the 4 inputs		or 30	Single OFF-delayed timer	
15	4 ON-delayed timer activated using the 4 inputs		or 30	Single ON-delayed timer	
2	Prooftest After Pwr on the outputs switch off after a configurable time T1, T2. Reset: Time reset Disable: time stop/ start				

Device to reset safety functions

Number	Function description	Symbol	Number	Function description	Symbol
1	Power on reset		1	Safety circuit	
1	shut down mats, switch rails, bumpers		1	Standstill and speed monitoring	
1	Enabling network Input information		1	analogue inputs and Analogue input comparator	
1	Field bus outputs non-safety function				

Standstill and speed monitoring

Number	Function description	Symbol	Number	Function description	Symbol
4 or 2	Standstill and speed monitoring using hardware inputs (one channel) safe standstill and speed monitoring using hardware inputs (two channel) at the central module		or 2	safe standstill, speed, direction and brake monitoring using HTL measuring system via Hardware inputs at the central module	
4 or 8 2	Safe standstill, speed, direction and brake monitoring using SIN/COS or TTL measuring system DNSL-ZMVD DNSL-DSV, DNSL-DSV2		2 2	Safe standstill, speed and direction monitoring using resolver measuring system DNSL-DRV Safe standstill, speed and direction monitoring using SSI Interface measuring system DNSL-SIV	
1 1	DNSL-DSIV Standstill, speed, direction and brake SSI Interface measuring system Standstill, speed, direction and brake SIN/ COS or TTL measuring system			MT: Non monitored automatic function mode F13: Automatic function mode F12: Semi-automatic function mode F11: setting function mode	

Additional functions for standstill and speed monitoring

Number	Function description	Symbol	Number	Function description	Symbol
1	DSCHK Validation device for standstill and speed monitoring with reducing the monitored speed with %-value		2	DNCO Multiplexer selection up to 15 speed in different function modes to level the speed to the used tool or machined work piece.	

Functionality of the safe standstill and speed monitoring

Function description	Symbol	Function description	Symbol
<p>Safe Stop 1 Stop category q according to DIN EN 60204-1</p>		<p>Safe Stop 2 Stop category 2 according to DIN EN 60204-1</p>	
<p>Safe Operating Stop Safe monitored operating stop</p>		<p>Safe Limited Speed Safe monitored maximal speed</p>	
<p>Safe Minimal Speed Safe monitored minimal speed</p>		<p>Safe Speed Range Safe monitored minimal and maximal speed</p>	
<p>Safe Speed Monitor Safe monitored reduced speed</p>		<p>Safe Brake Control Safe monitored brake function</p>	
<p>Safe Cam Safe monitored cam</p>		<p>Safe Limited Position Safe monitored limited position</p>	
<p>Safe Direction Safe monitored movement direction</p>		<p>Safe Torque Off Safe monitored torque off</p>	
<p>Safe Motor Temperature Safe monitored motor temperature</p>			



DINA Elektronik GmbH
Esslinger Str. 84
D72649 Wolfschlugen
Phone +49 7022 95170
Fax +49 7022 9517700
info@dina.de
www.dina.de