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Compact Safety Network Controllers

- STI NE1A Series helps to reduce wiring within a safety network and delivers a high degree of flexibility.
- NE1A-SCPU01-V1 provides 16 built-in safety inputs and 8 built-in safety outputs.
- NE1A-SCPU02 provides 40 built-in safety inputs and 8 built-in safety outputs.
- For lines with various levels of distributed safety devices up to 64 controllers can be connected to the network.
- Complicated safety systems are greatly simplified with 23 safety-certified function blocks and easy Drag and drop hardware configuration.
- Monitor the safety system from standard controllers across the network.
- EN 954-1/ISO13849-1 CAT4 and IEC 61508 SIL3 certification.
- A Rapid Delivery Product: Select models are available for shipment today or within 3 to 5 days



Specifications

Certified Standards

Certification body	Standard
TÜV Rheinland	NFPA 79-2002
	ISO13849-1: 1999
	IEC61508 part1-7/12.98-05.00
	IEC61131-2: 2003
	EN ISO13849-2: 2003
	EN954-1: 1996
	EN61000-6-4: 2007
	EN61000-6-2: 2005
	EN60204-1: 2006
	EN418: 1992
UL	ANSI RIA15.06-1999 (R2009)
	ANSI B11.19-2010
	UL508
UL	UL1604
	UL1998
	NFPA79
	IEC61508
	CSA22.2 No. 142
	CSA22.2 No. 213

Specifications

Item	NE1A-SCPU01-V1	NE1A-SCPU02
Communications power supply voltage	11 to 25 VDC supplied via communications connector	
Internal circuit power supply voltage (V0) *	20.4 to 26.4 VDC (24 VDC -15%/+10%)	
I/O power supply voltage (V1, V2) *		
Current consumption	Communications power supply	24 VDC, 15 mA
	Internal circuit power supply	24 VDC, 230 mA
		24 VDC, 280 mA
Overvoltage category	II	
Noise immunity	Conforms to IEC61131-2.	
Vibration resistance	10 to 57 Hz: 0.35 mm, 57 to 150 Hz: 50 m/s ²	
Shock resistance	150 m/s ² ; 11 ms	
Mounting method	DIN Track (IEC 60715 TH35-7.5/TH35-15)	
Ambient operating temperature	-10 to 55°C	
Ambient operating humidity	10% to 95% (with no condensation)	
Ambient storage temperature	-40 to 70°C	
Degree of protection	IP20	
Serial interface	USB version 1.1	
Weight	460 g max.	690 g max.

* V0-G0: Internal control circuit

V1-G1 (G): For external input device, test output

V2-G2 (G): For external output device

The two ground terminals on the NE1A-SCPU02 are internally connected.

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Specifications (continued)

Safety Input Specifications

Input type	Sinking inputs (PNP)
ON voltage	11 VDC min. between each terminal and ground
OFF voltage	5 VDC min. between each terminal and ground
OFF current	1 mA max.
Input current	4.5 mA

Safety Output Specifications

Output type	Sourcing outputs (PNP)
Rated output current	0.5 A max./output
ON residual voltage	1.2 V max. between each output terminal and V2
Leakage current	0.1 mA max.

Test Output Specifications

Output type	Sourcing outputs (PNP)
Rated output current	0.7 A max./output *
ON residual voltage	1.2 V max. between each output terminal and V1
Leakage current	0.1 mA max.

*The maximum current for simultaneously ON outputs is 1.4 A.
(T0 to T3: NE1A-SCPU01-V1, T0 to T7: NE1A-SCPU02)
A 15 to 400-mA, 24-VDC external indicator can be connected to T3 and T7.

DeviceNet Communications Specifications

Communications protocol	DeviceNet compliant																	
Connection form	Multi-drop system and T-branch system can be combined (for trunk line and branch lines)																	
Communications speed	500/250/125 kbps																	
Communications media	Special cable, 5 conductors (2 for communications, 2 for power supply, 1 for shielding)																	
Communications distance	<table><thead><tr><th>Communications speed</th><th>Max. network length</th><th>Branch length</th><th>Total branch length</th></tr></thead><tbody><tr><td>500 kbps</td><td>100 m max. (100 m max.)</td><td rowspan="3">6 m max.</td><td>39 m max.</td></tr><tr><td>250 kbps</td><td>250 m max. (100 m max.)</td><td>78 m max.</td></tr><tr><td>125 kbps</td><td>500 m max. (100 m max.)</td><td>156 m max.</td></tr></tbody></table>				Communications speed	Max. network length	Branch length	Total branch length	500 kbps	100 m max. (100 m max.)	6 m max.	39 m max.	250 kbps	250 m max. (100 m max.)	78 m max.	125 kbps	500 m max. (100 m max.)	156 m max.
	Communications speed	Max. network length	Branch length	Total branch length														
	500 kbps	100 m max. (100 m max.)	6 m max.	39 m max.														
	250 kbps	250 m max. (100 m max.)		78 m max.														
	125 kbps	500 m max. (100 m max.)		156 m max.														
	Note: Figures in parentheses () indicate values when a thin cable is used.																	
Communications power supply	11 to 25 VDC																	
No. of connectable nodes	63																	
Safety I/O communications (unit version 1.0 or later)	Safety Master function • Max. no. of connections: 32 • Max. data size: Input 16 bytes or output 16 bytes (per connection) • Connection type: Single-cast, multi-cast Safety Slave function • Max. no. of connections: 4 • Max. data size: Input 16 bytes or output 16 bytes (per connection) • Connection type: Single-cast, multi-cast																	
Standard I/O communications (all unit versions)	Standard Slave function • Max. no. of connections: 2 • Max. data size: Input 16 bytes or output 16 bytes (per connection) • Connection type: Poll, bit-strobe, CQS, cyclic																	
Message communications	Max. message length: 552 bytes																	

Function Blocks

NE1A-SCPU-series Controller support the following logic functions and function blocks. Support depends on the unit version.

Logic Functions

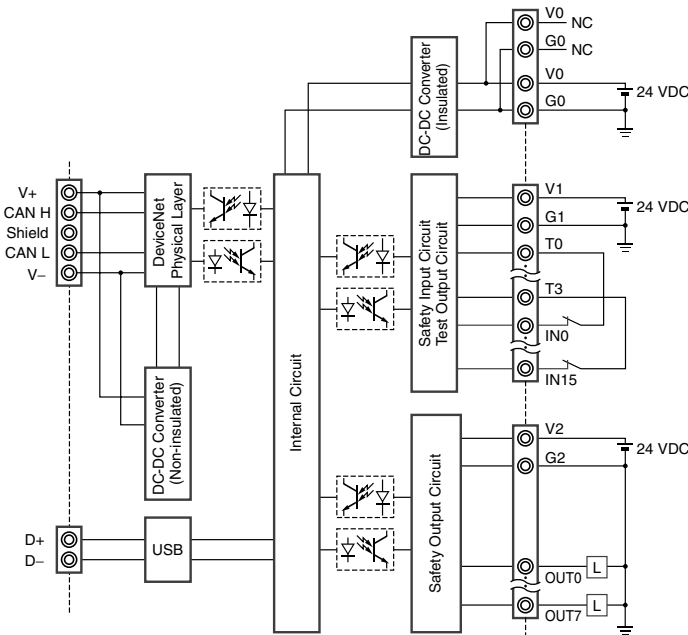
Name	Function list entry	Supporting unit versions
NOT	NOT	All
AND	AND	
OR	OR	
Exclusive OR	EXOR	
Exclusive NOR	EXNOR	
RS Flip-flop	RS-FF	1.0 or later
Comparator	Comparator	

Function Blocks

Name	Function list entry	Supporting unit versions
Reset	Reset	All
Restart	Restart	
Emergency Stop Monitoring	E-STOP	
Light Curtain Monitoring	Light Curtain Monitoring	
Safety Gate Monitoring	Safety Gate Monitoring	
Two-hand Controller	Two Hand Controller	
Off-Delay Timer	Off-Delay Timer	
On-Delay Timer	On-Delay Timer	
User Mode Switch Monitoring	User Mode Switch	
External Device Monitoring	EDM	
Routing	Routing	
Muting	Muting	1.0 or later
Enable Switch Monitoring	Enable Switch	
Pulse Generator	Pulse Generator	
Counter	Counter	
Multiconnector	Multi Connector	

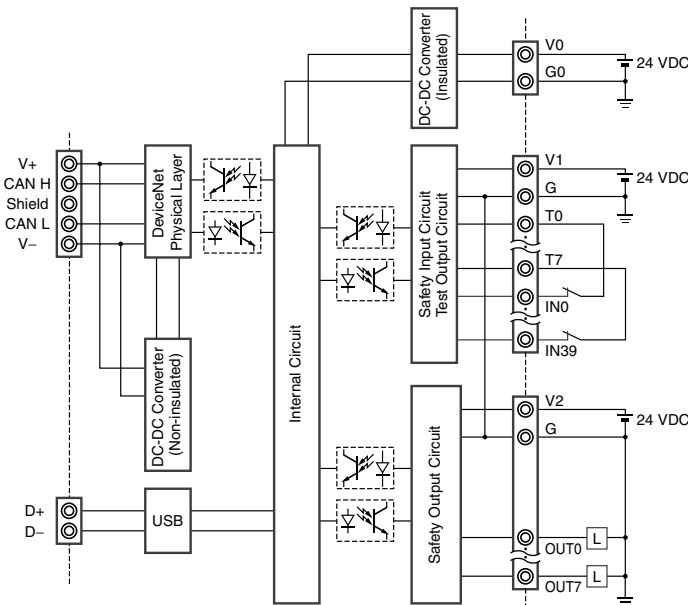
Wiring

NE1A-SCPU01-V1



Terminal name	Description
V0	Power supply terminal for internal circuit The two V0 terminals are internally connected.
G0	Power supply terminal for internal circuit The two G0 terminals are internally connected.
V1	Power supply terminal for external input device and test output
G1	Power supply terminal for external input device and test output
V2	Power supply terminal for external output device
G2	Power supply terminal for external output device
IN0 to IN15	Safety input terminal
T0 to T3	Test output terminal Connected to IN0 to IN15 safety inputs. Each test output terminal outputs a different test pulse pattern. Terminal T3 also supports a current monitoring function for the output signal. Example: Muting lamp
OUT0 to OUT7	Safety output terminals

NE1A-SCPU02



Terminal name	Description
V0	Power supply terminal for internal circuit The two V0 terminals are internally connected.
G0	Power supply terminal for internal circuit The two G0 terminals are internally connected.
V1	Power supply terminal for external input device and test output
G	Power supply terminal for external input device and test output
V2	Power supply terminal for external output device
G	Power supply terminal for external output device
IN0 to IN39	Safety input terminal
T0 to T3	Test output terminal Connected to IN0 to IN19 safety inputs. Each test output terminal outputs a different test pulse pattern. Terminal T3 also supports a current monitoring function for the output signal. Example: Muting lamp
T4 to T7	Test output terminal Connected to IN20 to IN39 safety inputs. Each test output terminal outputs a different test pulse pattern. Terminal T7 also supports a current monitoring function for the output signal. Example: Muting lamp
OUT0 to OUT7	Safety output terminals

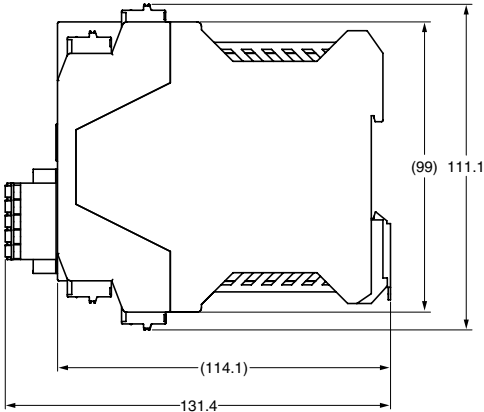
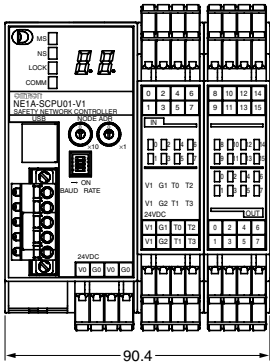
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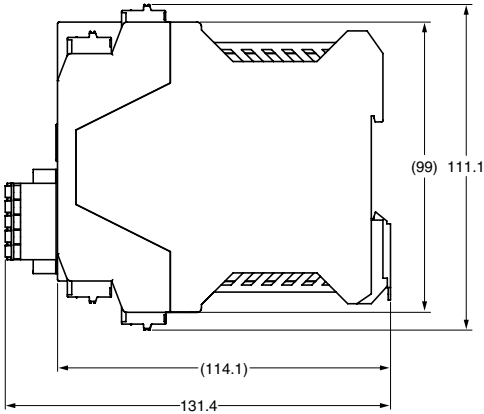
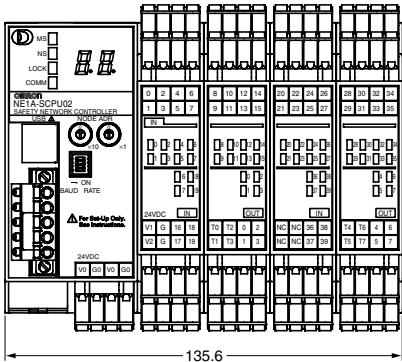
Dimensions

(mm)

NE1A-SCPU01-V1



NE1A-SCPU02



Ordering

K

Name	No. of I/O points			Model	Unit version
	Safety inputs	Test outputs	Safety outputs		
Safety Network Controllers	16	4	8	NE1A-SCPU01-V1	2.0
	40	8	8	NE1A-SCPU02	2.0

Note: The standard NE1A Controllers are equipped with spring-cage terminal blocks, but screw terminal blocks are available if desired, e.g., to replace previous terminals.



For information on accessories, see page K35.



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