



Features

- Compact design
- Rack mountable
- High voltage rating
- High power handling capability
- Realistic testing of downhole tools
- Characteristics that match real cable



Product Description

The NSE High Power Cable simulator is designed to replicate the characteristics of real-world wireline cables. A specially developed circuitry design allows us to shape the attenuation and resistance characteristics of most wirelines and coiled tubing setups in use.

Testing with a realistic cable profile will give better tests and more accurate verifications of the system behavior. This creates more confidence and reliable operations. The high power and voltage rating means that most tools can be tested at full power through the simulator.

Easy connection with banana safety connectors at both front and rear panel. **230Vac mains inlet for fan operation.**

Contact NSE for custom cable characteristics.

Content

1	SAFETY NOTES.....	3
2	PRODUCT SPECIFICATION.....	4
2.1	NSE-5014-11 (1N32PTZ – 9144M/30KFT.).....	4
2.1.1	Electrical Specifications.....	4
2.1.2	Cable characteristics	5
2.2	NSE-5014-12 (SLB ACTIVE COIL, 8.7KM/28.5KFT.).....	6
2.2.1	Electrical Specifications.....	6
2.2.2	Polarity and AC voltage.....	6
2.2.3	Cable characteristics	7
2.3	NSE-5014-13 (SLB ACTIVE COIL, 5.6KM/18.4KFT.).....	8
2.3.1	Electrical Specifications.....	8
2.3.2	Polarity and AC voltage.....	8
2.3.3	Cable characteristics	8
2.4	NSE-5014-14 (DRAKA CABLE 18AWG, 4.3KM/14.1KFT.)	10
2.4.1	Electrical Specifications.....	10
2.4.2	Polarity and AC voltage.....	10
2.4.3	Cable characteristics	11
3	CONNECTIONS	12
3.1	MODEL: NSE-5014-11.....	12
3.1.1	Front panel connections.....	12
3.1.2	Rear panel connections	13
3.2	MODEL: NSE-5014-12/-13/-14.....	13
3.2.1	Front panel connections.....	13
3.2.2	Rear panel connections	14
4	MECHANICAL DIMENSIONS	15
5	DATASHEET REVISION HISTORY	15
6	ORDERING	16
6.1	ORDER CODE.....	16
6.2	WHERE TO BUY	16

1 Safety notes

- **The cable simulator is designed for DC Voltage ONLY!**
However, it will handle AC voltages and noise ripple from telemetry systems and/or motor controllers connected, but it should not be fed with an AC power supply.
- **MAINS supply (AC input) must always be connected** when using the cable simulator. The mains supply are powering the cooling fans which is crucial to ensure that the unit is not being overheated.
- The **IN+** and **OUT+** terminals of the simulator can be connected to either positive or negative DC voltage sources.
- The simulator is bi-directional. Current can flow from IN+ to OUT+ or in the opposite direction.
- The cable simulator is a laboratory/test instrument. It is not CE-approved.
- Cable simulator must only be operated by qualified personnel.
- Note the maximum current rating for the specific model. Ensure to limit the current through the simulator to avoid over-current that will damage the unit.

2 Product Specification

2.1 NSE-5014-11 (1N32PTZ – 9144m/30kft.)

2.1.1 Electrical Specifications

Parameter	Conditions / Comments	Value	Unit
POWER RATING			
Input Voltage	Maximum DC Input voltage IN+ to GND or OUT+ to GND	+/- 900	Vdc
Input Current	Continuous @ 25degC ambient * IN+ to OUT+	3	Adc
Input Current	Pulse < 10sec (max 1 pulse / 5min) IN+ to OUT+	5	A
Power dissipation	Maximum continuous power dissipation* (V_IN+ – V_OUT+) x Current	800	W
DC Resistance	Cable simulator DC Resistance	86	Ω
CABLE CHARACTERISTICS			
Characteristics	Reference cable	1N32PTZ	
Cable length	Reference cable length	9144 30.000	M feet
DC Resistance	Cable DC Resistance	84	Ω
COOLING FANS			
Supply Voltage		90-265	Vac
ENVIRONMENTAL			
Ambient temperature	Operational temperature range	0 – 30	°C
Storage temperature		0 – 50	°C

*Requires cooling (230Vac mains) fans when operated.

2.1.2 Cable characteristics

2.1.2.1 Reference cable

Reference cable for the NSE-5014-11 version is CEM27491 Camesa 1N32PTZ

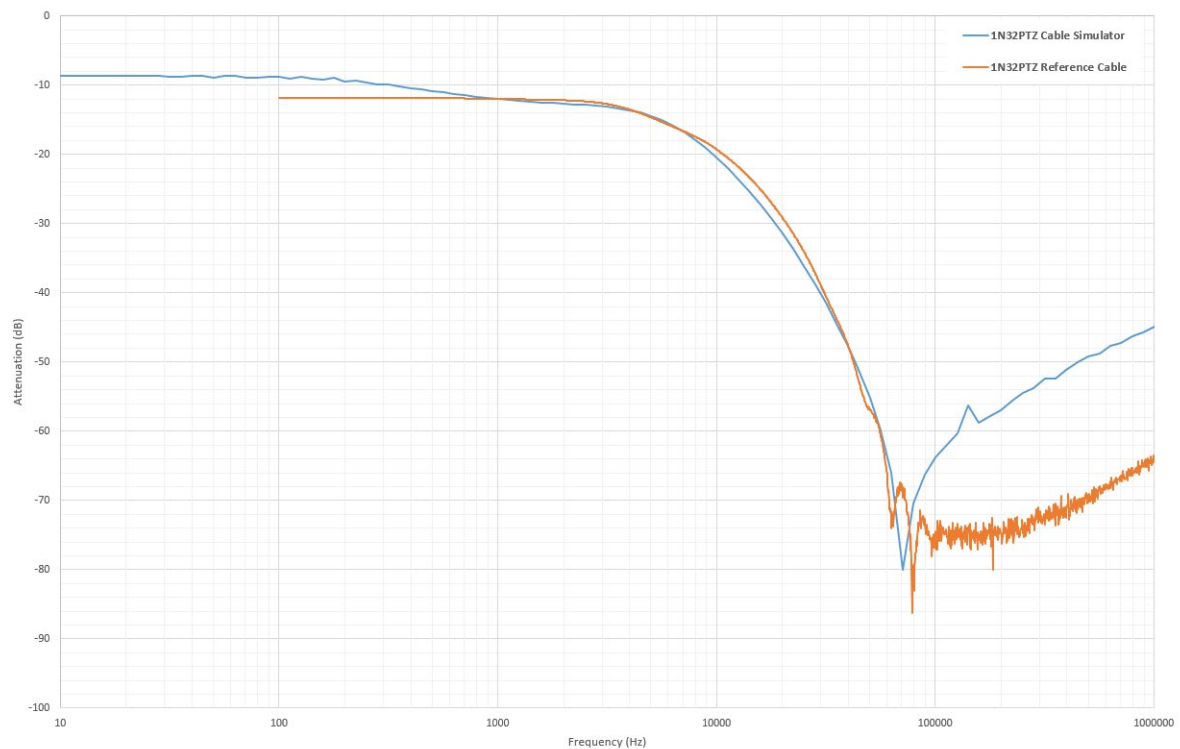
Cable is measured using a BODE 100 instrument to measure the response of the cable.

Parameter	Comment	Value
DC Resistance	-	84ohm
Cable Length	-	9144meter / 30kft
Cable Resistance	-	9.18 ohm/km
Type of Drum	-	Steel drum
Cable type	1N32PTZ	5/16"

2.1.2.2 Comparison of simulator and reference cable

Parameter	Reference cable	Cable Simulator
DC Resistance	84Ω	86Ω

The plot below shows the comparison of the cable simulator (blue line) versus the reference cable (red line).



2.2 NSE-5014-12 (SLB Active Coil, 8.7km/28.5kft.)

2.2.1 Electrical Specifications

Parameter	Conditions / Comments	Value	Unit
POWER RATING			
Input Voltage	Maximum DC Input voltage IN+ to GND or OUT+ to GND	+/- 900	Vdc
Input Current	Continuous @ 25degC ambient * IN+ to OUT+	2,5	Adc
Input Current	Pulse < 10sec (max 1 pulse / 5min) IN+ to OUT+	5	A
Power dissipation	Maximum continuous power dissipation* (V_IN+ - V_OUT+) x Current	800	W
DC Resistance	Cable simulator DC Resistance	X	Ω
CABLE CHARACTERISTICS			
Characteristics	Reference cable	SLB Active Coil	
Cable length	Reference cable length	8700 28.500	m feet
DC Resistance	Cable DC Resistance	229	Ω
COOLING FANS			
Supply Voltage		24	Vdc
ENVIRONMENTAL			
Ambient temperature	Operational temperature range	0 – 30	°C
Storage temperature		0 – 50	°C

*Requires cooling (230Vac mains) fans when operated.

2.2.2 Polarity and AC voltage

NOTE! The cable simulator is designed for DC Voltage ONLY!

However, it will handle AC voltages and noise ripple from telemetry systems and/or motor controllers connected, but it should not be fed with an AC power supply.

The **IN+** and **OUT+** terminals of the simulator can be connected to either positive or negative DC voltage sources.

The simulator is bi-directional. Current can flow from IN+ to OUT+ or in the opposite direction.

2.2.3 Cable characteristics

2.2.3.1 Reference cable

Reference cable for the NSE-5014-12 version is SLB Active Coil

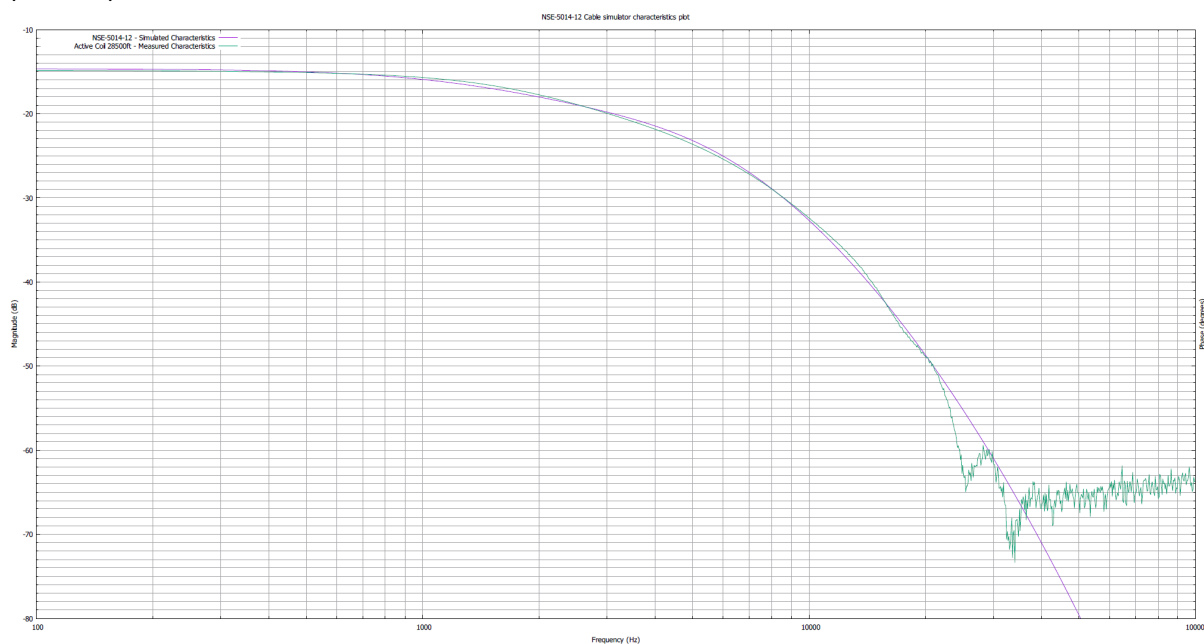
Cable is measured using a BODE 100 instrument to measure the response of the cable.

Parameter	Comment	Value
DC Resistance	-	229 ohm
Cable Length	-	8700meter / 28,5kft
Cable Resistance	-	26,3 Ω /km
Type of Drum	-	Steel drum
Cable type	SLB Active coil	

2.2.3.2 Comparison of simulator and reference cable

Parameter	Reference cable	Cable Simulator
DC Resistance	229 Ω	X Ω

The plot below shows the comparison of the cable simulator (blue line) versus the reference cable (red line).



2.3 NSE-5014-13 (SLB Active Coil, 5.6km/18.4kft.)

2.3.1 Electrical Specifications

Parameter	Conditions / Comments	Value	Unit
POWER RATING			
Input Voltage	Maximum DC Input voltage IN+ to GND or OUT+ to GND	+/- 900	Vdc
Input Current	Continuous @ 25degC ambient * IN+ to OUT+	3	Adc
Input Current	Pulse < 10sec (max 1 pulse / 5min) IN+ to OUT+	5	A
DC Resistance	Cable simulator DC Resistance	148	Ω
Power dissipation	Maximum continuous power dissipation* (V_IN+ - V_OUT+) x Current	1300	W
CABLE CHARACTERISTICS			
Characteristics	Reference cable	IFCP-128-4LMA	
Cable length	Reference cable length	5600 18370	m feet
DC Resistance	Cable DC Resistance	152	Ω
COOLING FANS			
Supply Voltage		24	Vdc
ENVIRONMENTAL			
Ambient temperature	Operational temperature range	0 – 30	°C
Storage temperature		0 – 50	°C

*Requires cooling (230Vac mains) fans when operated.

2.3.2 Polarity and AC voltage

NOTE! The cable simulator is designed for DC Voltage ONLY!

However, it will handle AC voltages and noise ripple from telemetry systems and/or motor controllers connected, but it should not be fed with an AC power supply.

The **IN+** and **OUT+** terminals of the simulator can be connected to either positive or negative DC voltage sources.

The simulator is bi-directional. Current can flow from IN+ to OUT+ or in the opposite direction.

2.3.3 Cable characteristics

2.3.3.1 Reference cable

Reference cable for the NSE-5014-13 version is IFCP-128-4LMA – 18,3kft – 152ohm

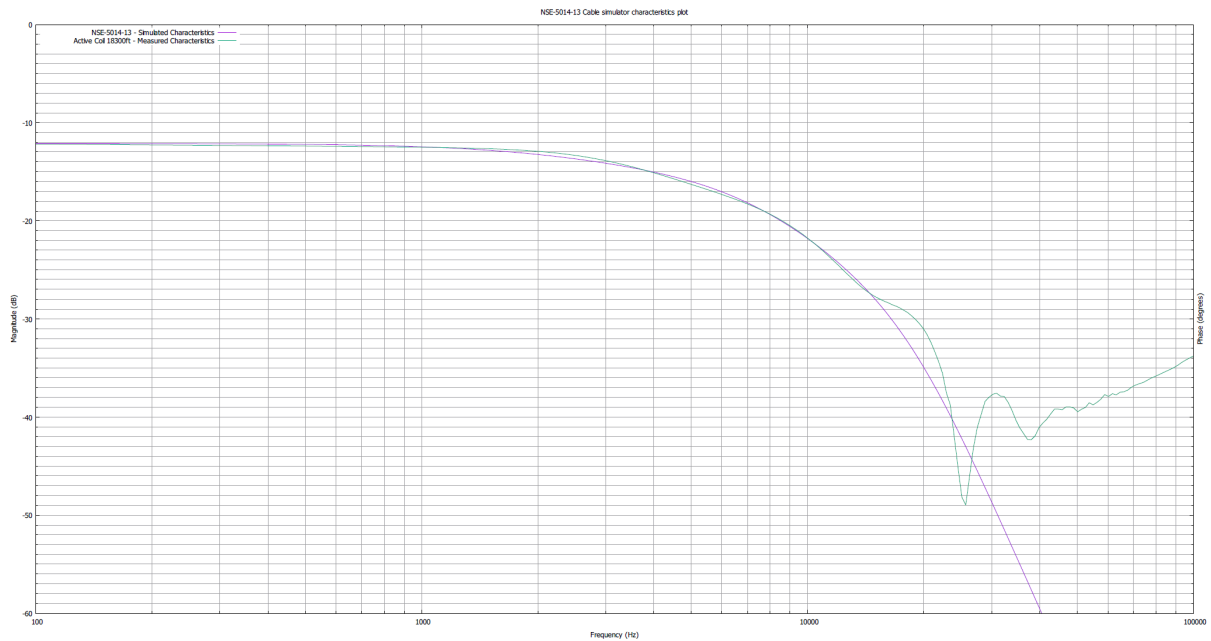
Cable is measured using a BODE 100 instrument to measure the response of the cable.

Parameter	Comment	Value
DC Resistance	-	152 Ω
Cable Length	-	5600meter / 18,3kft
Cable Resistance	-	27,14 ohm/km
Type of Drum	-	Steel drum
Cable type	IFCP-128-4LMA	

2.3.3.2 Comparison of simulator and reference cable

Parameter	Reference cable	Cable Simulator
DC Resistance	152 Ω	148 Ω

The plot below shows the comparison of the cable simulator (blue line) versus the reference cable (red line).



2.4 NSE-5014-14 (Draka cable 18AWG, 4.3km/14.1kft.)

2.4.1 Electrical Specifications

Parameter	Conditions / Comments	Value	Unit
POWER RATING			
Input Voltage	Maximum DC Input voltage IN+ to GND or OUT+ to GND	+/- 900	Vdc
Input Current	Continuous @ 25degC ambient * IN+ to OUT+	3	Adc
Input Current	Pulse < 10sec (max 1 pulse / 5min) IN+ to OUT+	5	A
Power dissipation	Maximum continuous power dissipation* (V_IN+ - V_OUT+) x Current	1000	W
DC Resistance	Cable simulator DC Resistance	114	Ω
CABLE CHARACTERISTICS			
Characteristics	Reference cable	Draka 18 AWG	
Cable length	Reference cable length	4300 14100	m feet
DC Resistance	Cable DC Resistance	110	Ω
COOLING FANS			
Supply Voltage		24	Vdc
ENVIRONMENTAL			
Ambient temperature	Operational temperature range	0 – 30	°C
Storage temperature		0 – 50	°C

*Requires cooling (230Vac mains) fans when operated.

2.4.2 Polarity and AC voltage

NOTE! The cable simulator is designed for DC Voltage ONLY!

However, it will handle AC voltages and noise ripple from telemetry systems and/or motor controllers connected, but it should not be fed with an AC power supply.

The **IN+** and **OUT+** terminals of the simulator can be connected to either positive or negative DC voltage sources.

The simulator is bi-directional. Current can flow from IN+ to OUT+ or in the opposite direction.

2.4.3 Cable characteristics

2.4.3.1 Reference cable

Reference cable for the NSE-5014-14 version is Draka 18 AWG

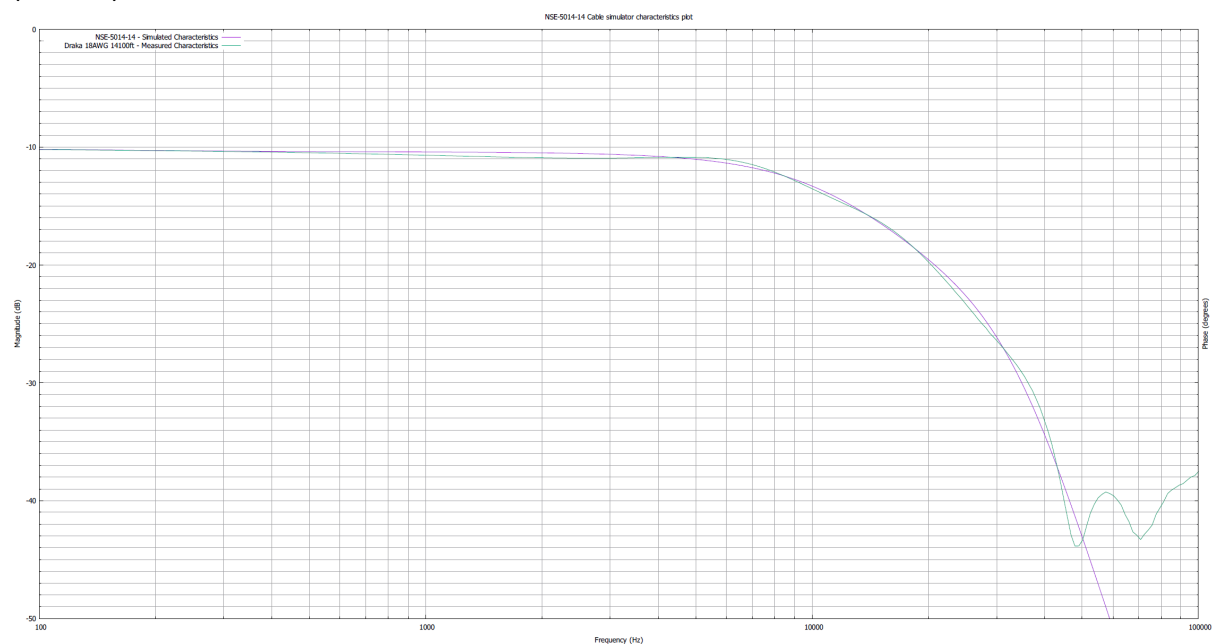
Cable is measured using a BODE 100 instrument to measure the response of the cable.

Parameter	Comment	Value
DC Resistance	-	110 Ω
Cable Length	-	4300meter / 14,1kft
Cable Resistance	-	25,6 Ω /km
Type of Drum	-	Steel drum
Cable type	Draka 18 AWG	

2.4.3.2 Comparison of simulator and reference cable

Parameter	Reference cable	Cable Simulator
DC Resistance	110 Ω	114 Ω

The plot below shows the comparison of the cable simulator (blue line) versus the reference cable (red line).

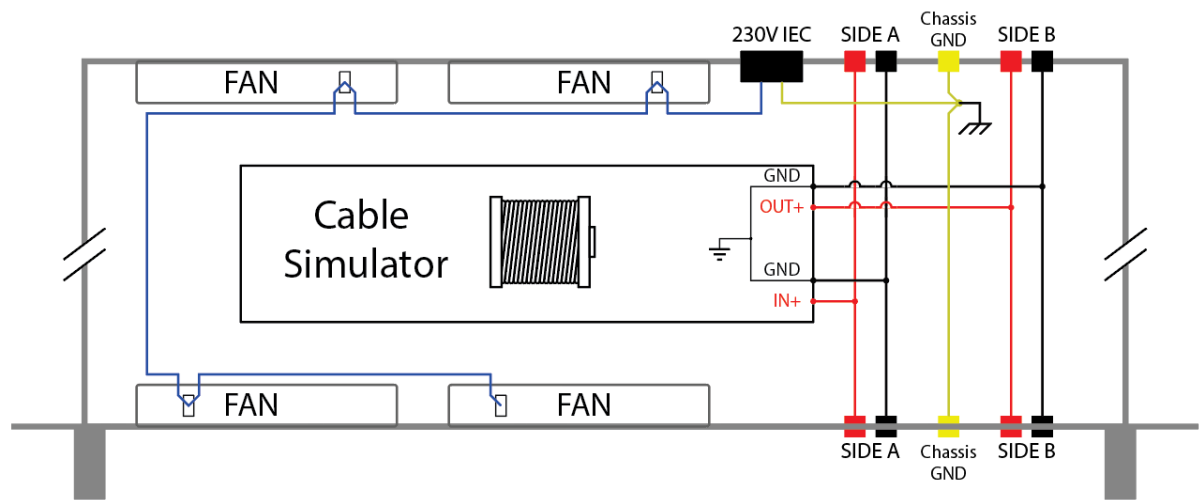


3 Connections

The cable simulator has terminals on both the front and rear panel as shown below. These terminals are routed in parallel, so it does not matter which is used. One should however note that due to the connection, voltage may be present on either side of the panel, even if one side is unconnected.

The simulator has safety banana connections on the front and on the rear panel. In addition, there is a chassis GND connector for ground safety connections on both sides.

3.1 Model: NSE-5014-11



3.1.1 Front panel connections

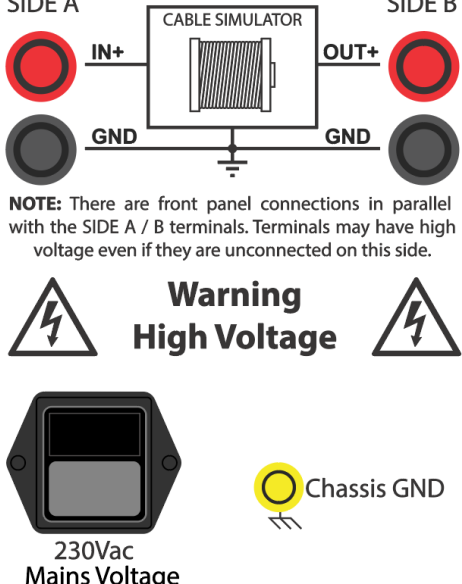
Signal name	Description / Function	Connector Pinout (Face View)
SIDE A – IN+	Input to cable simulator	
SIDE A – GND	Ground reference	
SIDE B – OUT+	Output from cable sim.	
SIDE B – GND	Ground reference	
Chassis GND	Simulator chassis ground	

Note that the simulator is bi-directional.
Input and output can be swapped.

Chassis ground should always be used to ensure safety of the setup.

Warning High Voltage

3.1.2 Rear panel connections

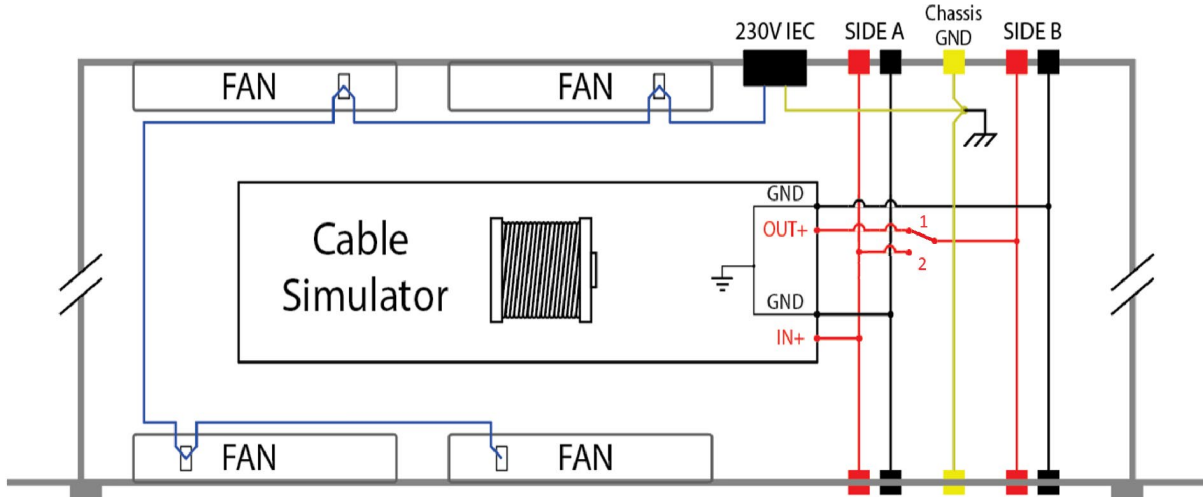
Signal name	Description / Function	Connector Pinout (Face View)
SIDE A – IN+	Input to cable simulator	
SIDE A – GND	Ground reference	
SIDE B – OUT+	Output from cable sim.	
SIDE B – GND	Ground reference	
Chassis GND	Simulator chassis ground	

230Vac AC Fan voltage

Note that the simulator is bi-directional.
Input and output can be swapped.

Chassis ground should always be used to ensure safety of the setup.

3.2 Model: NSE-5014-12/-13/-14



3.2.1 Front panel connections

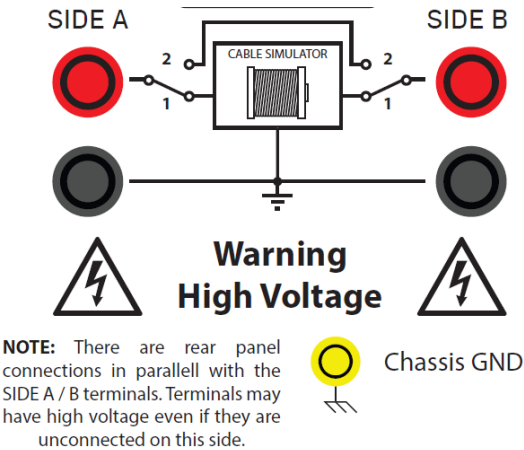
Signal name	Description / Function	Connector Pinout (Face View)
SIDE A – IN+	Input to cable simulator	
SIDE A – GND	Ground reference	
SIDE B – OUT+	Output from cable sim.	
SIDE B – GND	Ground reference	

Chassis GND Simulator chassis ground

Note that the simulator is bi-directional.

Input and output can be swapped.

Chassis ground should always be used to ensure safety of the setup.

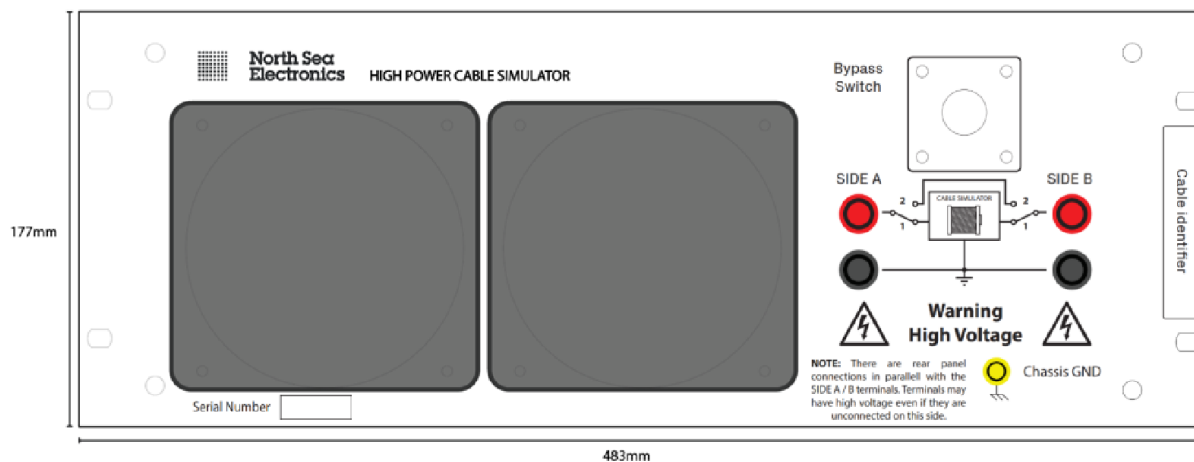


3.2.2 Rear panel connections

The simulator has safety banana connections on the rear panel. In addition, there is a chassis GND connector for ground safety connections.

Signal name	Description / Function	Connector Pinout (Face View)
SIDE A – IN+	Input to cable simulator	Warning High Voltage NOTE: There are front panel connections in parallel with the SIDE A / B terminals. Terminals may have high voltage even if they are unconnected on this side. Chassis GND
SIDE A – GND	Ground reference	
SIDE B – OUT+	Output from cable sim.	
SIDE B – GND	Ground reference	
Chassis GND	Simulator chassis ground	
230Vac	AC Fan voltage	Warning High Voltage 230Vac Mains Voltage Chassis GND
Note that the simulator is bi-directional. Input and output can be swapped.		
Chassis ground should always be used to ensure safety of the setup.		

4 Mechanical Dimensions



- Rack Height: 4U (177mm)
- Depth: 340mm + front handles
- Width: 19" (483mm)

5 Datasheet Revision History

REV	DATE	DESCRIPTION	PREP	APPR
A	25.01.2022	Initial release	RFY	GLK
B	03.03.2024	Added model 12-13-14	LWE	GLK
C	14.08.2025	Corrected mains voltage range to 90-265VAC	EEN	GLK

6 Ordering

6.1 Order code

			Order code:	NSE-5014	-1x
Category	NSE-5014	= NSE High Power Cable Simulator			
Model	-1	= 1N32PTZ, 9.1km			
	-2	= SLB Active Coil, 8.7km			
	-3	= SLB Active Coil, 5.6km			
	-4	= Draka 18 AWG, 4.3km			
	-X	<i>Custom cable (on request)</i>			

6.2 Where to buy

Email: sales@nse.no
Web: www.nse.no
Phone: +47 406 48 400