

## NEMA Receptacles 5-15R

- > NR010 – IDC Terminals for efficient wiring
- > NR020 – The Classic with improved temperature rating
- > NR021 – Tamper Resistant

TR

Convenience Outlets Redesigned



## Trends in Power Distribution

- > The global trend in **digitalization** creates increasing demand for **multi-faceted power distribution**
- > The subsequent impact to the world of computing and related peripheral devices is therefore increasing and so too is the demand for **increased convenience, mobility, localization, and safety** of electronic devices
- > Manufacturers of devices for **distributed power** are also impacted when it comes to **meeting these demands effectively and efficiently**
- > **SCHURTER's** new range of outlets according to **UL 498 Standard for Attachment Plugs & Receptacles, configuration 5-15R**, enable these advancements with the **quality and reliability** our customers have come to expect

# PDUs for Data Centers – UL 60950



- > SCHURTER's NR010 and NR020 series have an operating temperature range of  $-25^{\circ}\text{C}$  to  $150^{\circ}\text{C}$ , responding to demand for increasing ambient temperatures due to packing density



Power distribution units  
for 19" racks (1RU)



PDU – Power Distribution Strips



# Receptacles and PDUs for Household & Commercial Furnishings – UL962 and UL 962A

- > UL 962 is the North American **Standard for household and commercial furnishings**, and verifies that products meet **electrical, flammability** and personal injury **safety** requirements.
- > UL 962A requirements cover indoor use cord and plug connected or permanently connected, **furniture power distribution units (FPDU)** rated 250 VAC or less and 20 Amperes or less. FPDU's are for fixed mounting to portable or stationary furnishings as a power supply connection for cord and plug connected electrical utilization equipment in accordance with the US National Electrical Code (NEC), and National Fire Protection Agency (NFPA).



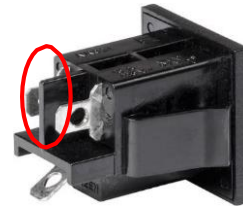
Desktop PDUs



# Receptacles and PDUs for Household & Commercial Furnishings – UL962 and UL 962A

- > SCHURTER's NR020 and NR021 series with the insulation wall between L and N are designed for use in applications according to UL 962 and UL 962A, which are subjected to the Spill Test as outlined in section sec. 62.
- > An added insulation wall obstructs a direct path for liquids to seep in between live contacts.
- > The added feature enables the manufacturer to achieve compliance with less costly and more efficient assembly.

Added insulation wall  
between L & N



# PDU for Dwellings – UL 498 Tamper Resistant



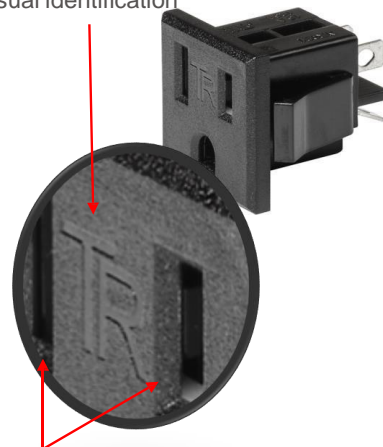
- > The US National Electric Code NEC® Article 406.12 states that all 15- and 20-ampere, 125- and 250- volt nonlocking-type receptacles installed in dwelling units must be Tamper Resistant, “dwelling units” described as -
  - > household (as outlined)
  - > guest rooms and suites of hotels and motels
  - > child care facilities
  - > preschool and elementary schools
  - > business offices, corridors, waiting rooms in clinics, medical and dental offices
  - > waiting places including transportation, gymnasiums, skating rinks, auditoriums
  - > Dormitories

## PDU's for Dwellings – UL 498 Tamper Resistant

- > Tamper resistant receptacles feature a UL recognized safety shutter system that prevents the insertion of foreign objects into a receptacle. The safety shutters will only open upon simultaneous insertion of 2 plug blades.
- > Additional tests including Probe Test, Impact Test, Mechanical Endurance Test and Dielectric Voltage Withstand Test for Tamper Resistant Receptacles are included in UL 498.
- > After passing all of the above performance tests, tamper-resistant receptacles must have either the words "Tamper Resistant" or the letters "TR" (minimum 3/16 in. high) on the device as a clear indication that this is a tamper-resistant receptacle.



"TR" designation provides visual identification



Safety shutters will only open upon simultaneous insertion of 2 plug blades



# The Importance of the Outlet Design for Use in PDUs

The power **outlet** is one of the components which significantly **influences the design** of a power distribution appliance

- > Function...
  - > The outlet provides a safe and detachable power connection to the appliance
  - > Ambient temperatures continue to rise as increased functionality and packing density become topics in in power applications spanning all industries
- > Form...
  - > Multiple outlets take up a large volume of space
  - > Multiple outlets take up a large surface space, and can only be reduced insofar as the outlet configuration meets the design specifications of the regulatory standard
- > Assembly...
  - > Multiple outlets are electrically interconnected and therefore can be labor intensive to assemble
  - > Maximum rated current according to UL 15 A, 125 V and/or expanded function for each outlet individually



# SCHURTER - NR010

- > Outlet with improved operating temperature rating
  - > Max. allowable Operating Temperature -25°C to 150°C
- > Insulation Displacement Terminals (IDC)
  - > Insulated wire size 12-14 AWG
  - > Variants available with Q.C. 6.3 x 0.8 mm L,N&PE; or with IDC N&E and Q.C. 6.3 x 0.8 mm L, which allows for maximum load and/or extended functionality of each outlet
- > Rear Cover is delivered separate
  - > The cover is designed to be used as an assembly tool
  - > The press force depends on the wire size
  - > If recommended installation instructions are used, the proper connection is achieved with an audible lock in of the rear cover
- > Variants in white and grey



# SCHURTER - NR020

- > Outlet with improved operating temperature rating
  - > Max. allowable Operating Temperature -25°C to 150°C
  - > Solder L,N&E terminals 4.8 x 0.6
- > With or without insulation wall between L & N
  - > For applications requiring spill test acc. to UL 962 section 62
- > Variants in white and grey



# SCHURTER - NR021









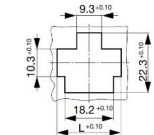
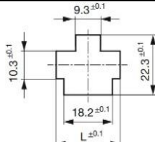
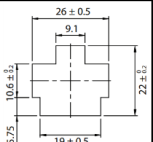
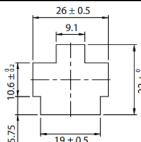
- > Standard outlet for applications requiring “Tamper Resistant” recognition according to UL 498
  - > Max. allowable Operating Temperature -25°C to 70°C
  - > Solder L,N&E terminals 4.8 x 0.8
- > With or without insulation walls for use in appliances according to UL 962
- > Variants in white and grey
- > Low profile front plate thanks to slim design of shutter mechanism
  - > SCHURTER = 3.8 mm
  - > Qualtek = 6.2 mm







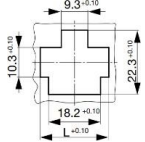
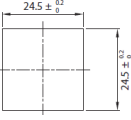
# Competitor Cross Reference NR010

Manufacturer	SCHURTER (New)	SCHURTER (Old)	Qualtek	Qualtek	Qualtek	Tyco (AMP)
Type	<a href="http://www.schurter.com">www.schurter.com</a> <b>NR010</b>	<a href="http://www.schurter.com">www.schurter.com</a> <b>0710</b>	<a href="http://www.qualtekusa.com">www.qualtekusa.com</a> <b>739W-X2</b>	<a href="http://www.qualtekusa.com">www.qualtekusa.com</a> <b>739W-X2</b>	<a href="http://www.qualtekusa.com">www.qualtekusa.com</a> <b>739W-X2</b>	<a href="http://www.te.com">www.te.com</a> <b>208979</b>
Material Number	3-119-048, <b>3-119-049</b>	4300.0703	739W-X2/02, /03, /04, /40	739W-X2/32/32-A	739W-X2/45	208979
						
Product Standards	UL 498/CSA C22.2 no 42	UL 498/CSA C22.2 no 42	UL 498/CSA C22.2 no 42	UL 498/CSA C22.2 no 42	UL 498/CSA C22.2 no 42 <b>UL 498 "Tamper Resistant"</b>	UL 498/CSA C22.2 no 42
NEMA Type	5-15R	5-15R	5-15R	5-15R	5-15R	5-15R
Protection Class	I	I	I	I	I	I
Approvals						
Mounting style	Src  usl	Src  usl	 	 	 	 
Panel cut-out	24.* x 24.6 mm	24.* x 24.6 mm	24.5 x 24.5 mm	24.5 x 24.5 mm	24.5 x 24.5 mm	24.59 x 24.59 mm
Panel thickness	0.8-1.2 *≈ 24.6 mm 1.3-2.0 *≈ 24.8 mm	0.8-1.2 *≈ 24.6 mm 1.3-2.0 *≈ 24.8 mm	0.8-1.8 mm	0.8-1.8 mm	0.8-2.0 mm	0.76-1.78 mm
Terminals	L, N & E IDC or Q.C. 6.3 x 0.8 mm <b>N &amp; E IDC w/L q.c. 6.3 x 0.8mm</b>	L, N & E IDC or Q.C. 6.3 x 0.8 mm	L, N & E IDC or Solder 4.8 x 0.4 mm	<b>L, N &amp; E PCB / Solder</b>	L, N & E IDC	L, N & E IDC or Q.C. 6.3 x 0.8 mm
Insulated wire size	12-14 AWG	12-14 AWG	12-14 AWG <b>16-18 AWG</b>	12-14 AWG	12-14 AWG	12-14 AWG
Wire installation orientation	Along the pin axis	Along the pin axis	Along the pin axis <b>Across the pin axis</b>	Along the pin axis	Along the pin axis	Along the pin axis
Ratings UL/CSA/MET/IEC	15 A/125 VAC, 60 Hz	15 A/125 VAC, 60 Hz	15 A/125 VAC, 60 Hz	15 A/125 VAC, 60 Hz	15 A/125 VAC, 60 Hz	15 A/125 VAC, 60 Hz
Operating Temperature	<b>-25°C to 150°C</b>	-25°C to 65°C	-25°C to 75°C	-25°C to 75°C	-25°C to 75°C	N/A
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-2	UL 94 V-2	UL 94 V-2	UL 94 V-2
Standard Colors	<b>Black, Grey, White</b>	Black	Black	Black	Black, White	<b>Black, Almond, Platinum, Grey, Orange White</b>




# Competitor Cross Reference NR020

Manufacturer	SCHURTER (New)	SCHURTER (Old)	Qualtek	Qualtek
Type	<a href="http://www.schurter.com">www.schurter.com</a> <b>NR020</b>	<a href="http://www.qualtekusa.com">www.qualtekusa.com</a> <b>0709</b>	<a href="http://www.qualtekusa.com">www.qualtekusa.com</a> <b>738W-X2</b>	<a href="http://www.qualtekusa.com">www.qualtekusa.com</a> <b>738W-X2</b>
Material Number	3-119-051, <b>3-119-052</b>	4300.0701, <b>4300.0708</b>	738W-X2/01	738W-X2/03
				
Product Standards	UL 498/CSA C22.2 no 42 <b>Version with Insulation wall for UL962 spill test</b>	UL 498/CSA C22.2 no 42 <b>Version with Insulation wall for UL962 spill test</b>	UL 498/CSA C22.2 no 42	UL 498/CSA C22.2 no 42
NEMA Type	5-15R	5-15R	5-15R	5-15R
Protection Class	I	I	I	I
Approvals				
Mounting style	Snap in front L = 24-26.2 mm x 22.3	Snap in front L = 24-24.6 mm x 22.3	Snap in front 26 x 22 mm	Snap in front 26 x 22 mm
Panel cut-out				
Panel thickness	0.8-1.6 mm	0.8-1.6 mm	0.8-2.0 mm	0.8-1.8 mm
Terminals	Solder 4.8 x 0.6 mm	Solder 4.8 x 0.6 mm	Solder 4.8 x 0.6 mm	Solder 4.8 x 0.6 mm
Ratings UL/CSA/MET/IEC	15 A/125 VAC, 60 Hz	15 A/125 VAC, 60 Hz	15 A/125 VAC, 60 Hz	15 A/125 VAC, 60 Hz
Operating Temperature	<b>-25°C to 150°C</b>	-25°C to 60°C	-25°C to 75°C	-25°C to 105°C
Flammability Rating	UL 94 V-0	UL 94 V-0	UL 94 V-2	UL 94 V-0
Standard Colors	<b>Black, Grey, White</b>	Black	Black	Black

# Competitor Cross Reference NR021

Manufacturer	<b>SCHURTER (New)</b> <a href="http://www.schurter.com">www.schurter.com</a>	<b>Qualtek</b> <a href="http://www.qualtekusa.com">www.qualtekusa.com</a>
Type	<b>NR021</b>	<b>738W-X2</b>
Material Number	3-119-053, <b>3-119-054</b>	738W-X2/35
		
Product Standards	UL 498/CSA C22.2 no 42 <b>Version with insulation wall for UL962 spill test</b> UL 498 "Tamper Resistant"	UL 498/CSA C22.2 no 42 UL 498 "Tamper Resistant"
NEMA Type	5-15R	5-15R
Protection Class	I	I
Approvals		
Mounting style	Snap in front L = 24-26.2 mm x 22.3	Snap in front 24.5 x 24.5 mm
Panel cut-out		
Panel thickness	0.8-1.6 mm	0.8-2.0 mm
Terminals	Solder 4.8 x 0.6 mm	Solder 4.8 x 0.6 mm
Ratings UL/CSA/MET/IEC	15 A/125 VAC, 60 Hz	15 A/125 VAC, 60 Hz
Operating Temperature	-25°C to 70°C	-
Flammability Rating	UL 94 V-0	UL 94 V-2
Standard Colors	<b>Black, Grey, White</b>	Black, White

# NR Cross Reference to SCHURTER Type 0709 / 0710

	Type Old	Part Number Old	Type New	Part Number New	Pack. Unit [pcs]	Description
	0709	4300.0708	NR020	3-119-052	100	Nema 5-15R; Snap-in 0.8-1.6 mm; Solder; <b>with Insulation Walls</b>
	0709	4300.0701	NR020	3-119-051	100	Nema 5-15R; Snap-in 0.8-1.6 mm; Solder; <b>without Insulation Walls</b>
			NR021	3-119-054	100	Nema 5-15R; <b>Tamper Resistant</b> ; Snap-in 0.8-1.6 mm; Solder; with Insulation Walls
			NR021	3-119-053	100	Nema 5-15R; <b>Tamper Resistant</b> ; Snap-in 0.8-1.6 mm; Solder; without Insulation Walls
	0710	4300.0703	NR010	3-119-048	120	Nema 5-15R; Snap-in 0.8-1.6 mm; <b>3xIDC</b>
			NR010	3-119-049	120	Nema 5-15R; Snap-in 0.8-1.6 mm; <b>2xIDC; indiv. QC6.3x0.8 mm</b>



# Nema Receptacles – Market Position

## Strategic Positioning

- > Expanding and improving existing NEMA receptacles from Inalways to SCHURTER products
- > Series incorporates new versions meeting UL standards for Furniture Power Distribution Units (FPDUs) and Tamper Resistant requirements according to NEC and enforced by UL 498 testing

## Competitors

- > Qualtek USA

## Price Position

- > Very competitive with main competition

## Applications

- > Power Duplex Units
- > Power Strips
- > Power Distribution Units – PDU
- > Uninterruptible Power Supply – UPS

## USP (Customer focus)

- > NR020 – improved temperature rating up to 150 °C
- > NR010 – Efficient wiring saves cost during assembly
- > NR021 – Tamper Resistant outlet with low profile front plate design

## Additional Information

- > [NR010 data sheet](#)
- > [NR020 data sheet](#)
- > [NR021 data sheet](#)
- > [Landing Page PDU](#)
- > **Find mating cord sets in our online catalog**
- > You can find CAD files and mounting instructions referenced on the data sheet or when searching for NR010, NR020 or NR021 on our website
- > Click on [Partner Services](#) to download:
  - > Latest press releases
  - > Training presentations
  - > Price lists
- > For further questions please contact your local SCHURTER sales contact

