

Watertight Wiring Devices

A complete collection of watertight devices
for demanding industrial environments

wetguard®



wetguard®

Leviton's Wetguard products are the most versatile and well-engineered watertight wiring devices on the market.

The Wetguard line consists of a comprehensive array of plugs, connectors, inlets, outlets, covers and rugged FD boxes that allow mounting of single-gang devices in multi-gang configurations.

Watertight Electrical Connections

Wetguard devices are designed for industrial applications where electrical connections are exposed to wet locations such as outdoor weather or indoor washdown. They have IEC and NEMA watertight and dust-tight enclosure ratings and offer many significant advantages over competitive brands. A patented multi-point sealing system forms an impenetrable barrier against dirt and moisture providing the ultimate protection that you should expect from a watertight device.

Corrosion-Resistant

Wetguard devices feature corrosion-resistant electroless nickel-coated brass blades, contacts, terminal screws and wiring clamps, and stainless steel assembly screws, making them ideal for use in wet and corrosive environments.

Withstands Abuse in Harsh Environments

Wetguard devices are resistant to water, acids, alkalies, and many automotive and industrial lubricants and solvents. The plug and connector husk is molded to a bondable nylon body, providing a device that withstands physical abuse as well. In addition, the patented compression nut strain relief system ensures the integrity of the electrical connection and watertight seal.





Agriculture

Agricultural operations typically expose electrical equipment and connections to wet conditions from weather, irrigation and washdown activities. Wetguard watertight devices provide secure electrical connectivity for equipment that also keeps the operators and livestock safe.

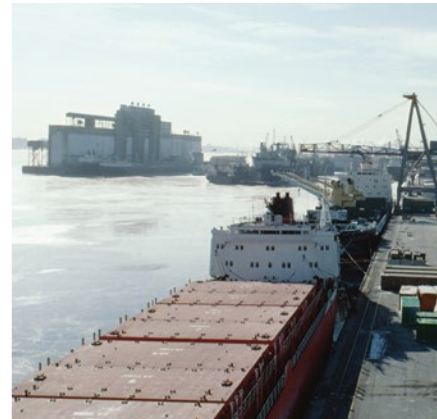


Construction

Equipment on construction sites is constantly exposed to rain, snow, and mud, as well as physically harsh conditions. Wetguard watertight devices provide safe and secure electrical connections that withstand the rigors of this environment.

Food & Beverage Processing

The washdown activity typically found in food and beverage processing facilities presents a challenge for keeping equipment running and operators safe. Wetguard watertight devices provide unsurpassed protection, maximizing uptime of equipment and safety to workers.



Water Treatment

Water and sewage treatment plants, as well as other chemical processing facilities, typically subject electrical equipment and connections to both wet and corrosive environments. Wetguard watertight devices are constructed of materials that resist corrosion and damaging effects of chemical exposure.

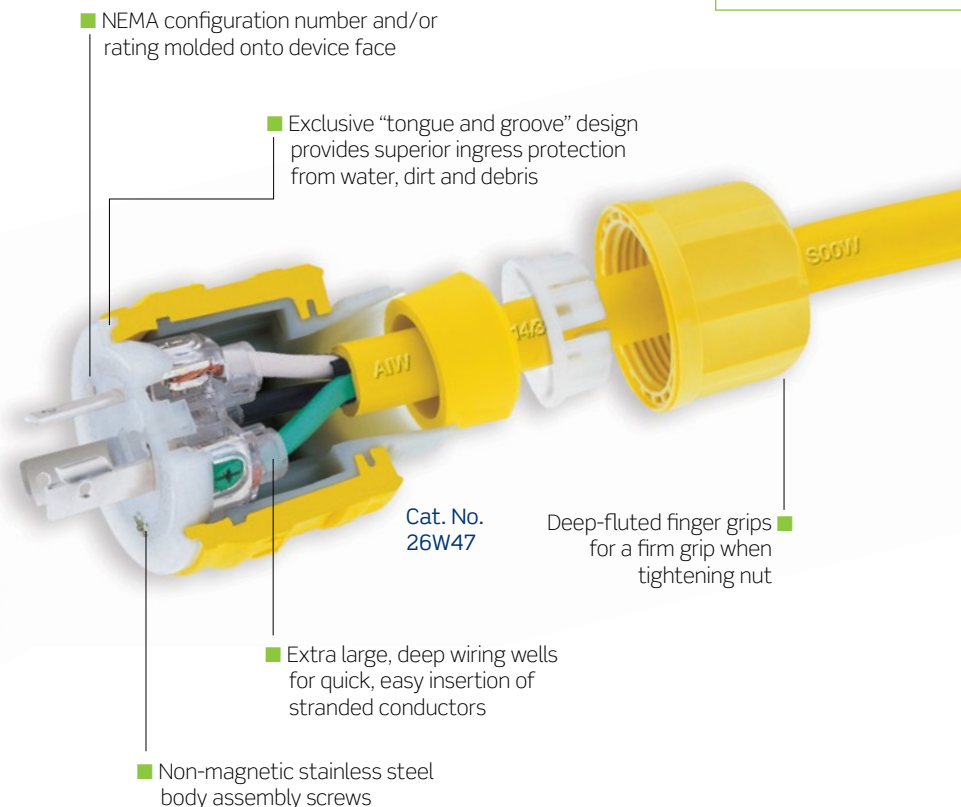
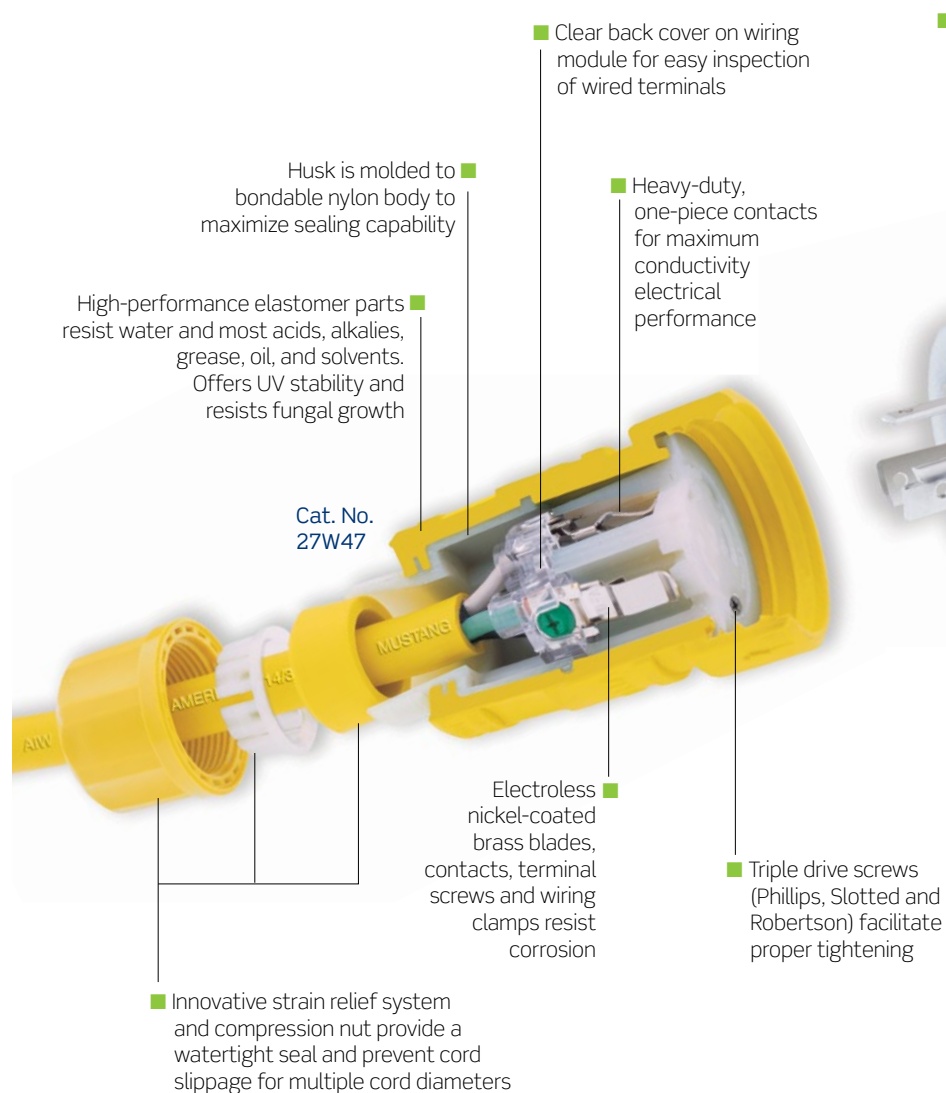


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Plug & Connector Features:

LEVITON®

Replacement interiors
also available



**LIFETIME
WARRANTY**

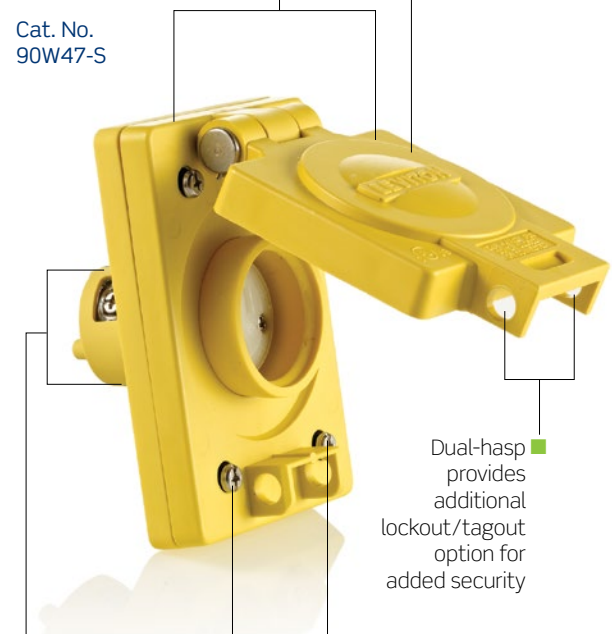
Wetguard connectors are covered by Patents:
U.S. 5,863,221 and 6,017,243
CAN 2,266,253 and 2,243,838
MEX 215,544 and 225,136

Flanged Inlet/Outlet Features:

■ Impact and chemical resistant Valox® PBT cover and lid provide extended life in abusive environments

■ Spring-loaded flip lid cover ensures a watertight seal when the cover is closed

Cat. No. 90W47-S



■ Dual-hasp provides additional lockout/tagout option for added security

■ Electroless nickel-coated brass blades, contacts, wiring screws and wiring clamps resist corrosion

■ Stainless steel mounting and assembly screws provide corrosion resistance; triple-drive head facilitates proper tightening

Wetguard inlets and outlets are covered by Patents:
U.S. 5,863,221
CAN 2,243,838
MEX 225,136

Single-Gang Switch Cover Features:

■ Impact and chemical resistant Valox® PBT cover and handle provide extended life in abusive environments

■ Integrated lockout handle meets OSHA safety regulations

Cat. No. COVER-S



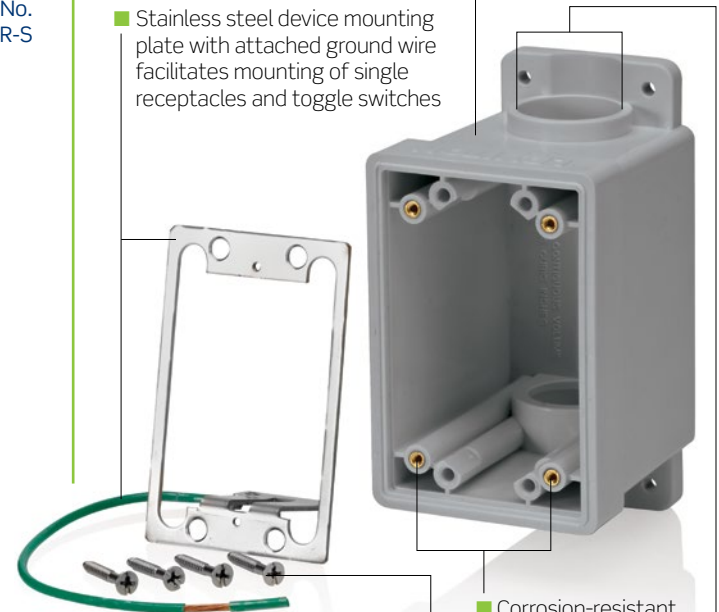
■ Stainless steel mounting and assembly screws provide excellent corrosion resistance; triple-drive head facilitates proper tightening

Non-Metallic FD Box Features:

■ Rigid PVC construction provides excellent resistance to impact, water and chemicals found in harsh industrial environments

Cat. No. FDBX1-GY

■ Stainless steel device mounting plate with attached ground wire facilitates mounting of single receptacles and toggle switches



■ Stainless steel assembly screws provide excellent corrosion resistance

■ Corrosion-resistant brass threaded inserts for mounting covers



■ Boxes feature 1" diameter unthreaded conduit openings, and include reducers for 3/4" and 1/2" PVC conduit. Also included are plugs for unused openings.

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Non-Metallic FD Boxes

Our non-metallic FD Boxes are constructed of a rigid PVC, making them extremely durable and resistant to impact, chemicals, solvents and other harsh industrial conditions. They are available in yellow and gray one-, two- and three-gang unthreaded configurations that will readily accept PVC conduit.

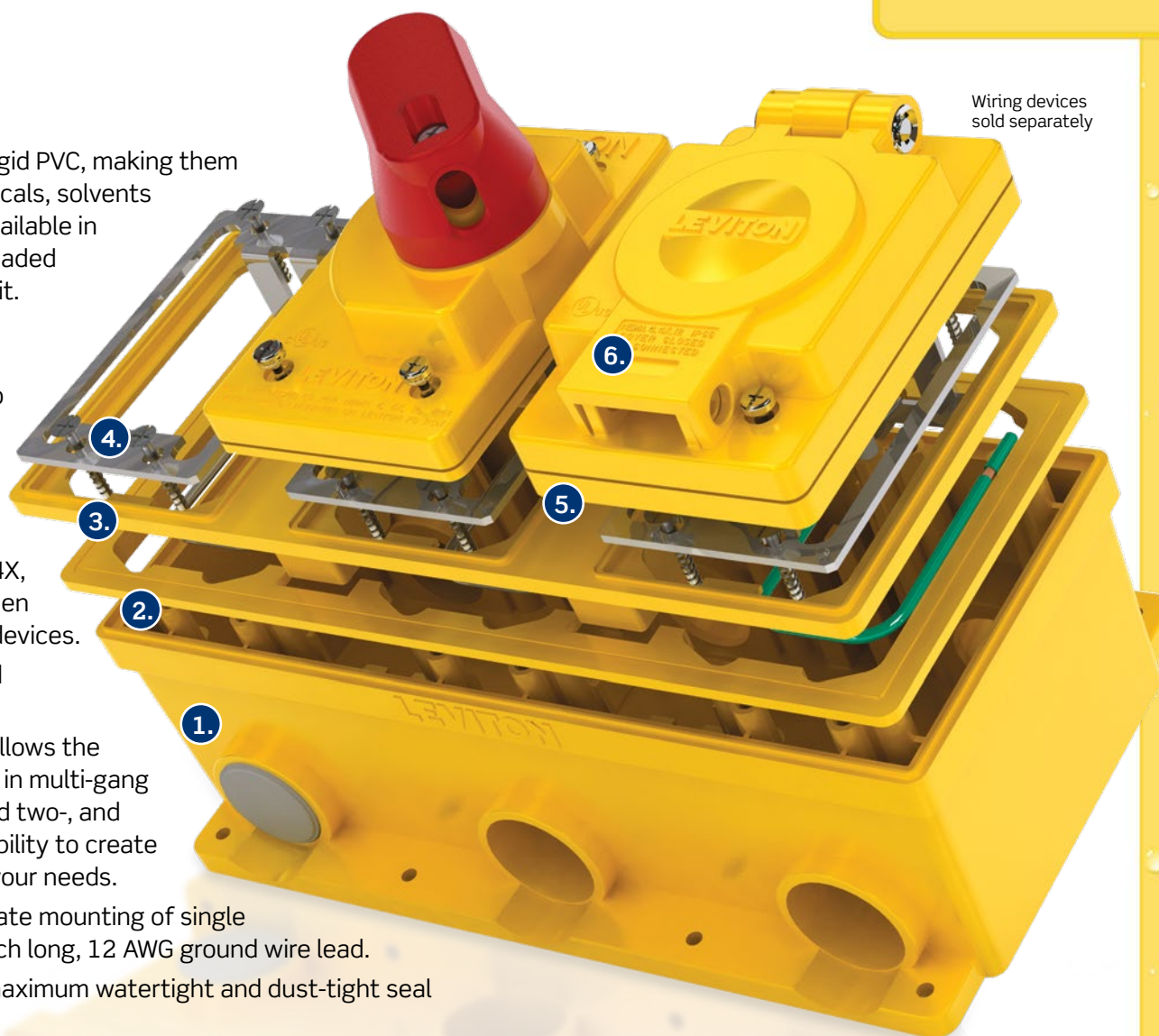
1. Non-metallic boxes feature 1" diameter unthreaded conduit openings, and include reducers for $\frac{3}{4}$ " and $\frac{1}{2}$ " PVC conduit. They also include plugs for unused openings.

An external flange with mounting holes makes them excellent for wall mounting.

Our boxes comply with UL and CSA standards and have enclosure ratings of NEMA Type 4, 4X, 12 and IEC IP66 watertight and dust-tight when used in conjunction with Leviton's Wetguard devices.

2. TPV gasket assures maximum watertight and dust-tight seal between frame and box.
3. Our patent-pending "modular" frame design allows the combining of a variety of single-gang devices in multi-gang configurations without the need for dedicated two-, and three-gang cover plates! This gives you the ability to create custom power distribution boxes specific to your needs.
4. Stainless steel device mounting plates facilitate mounting of single receptacles and toggle switches with an 8-inch long, 12 AWG ground wire lead.
5. TPV gasket on all Wetguard covers assures maximum watertight and dust-tight seal between device cover and frame.
6. Single-gang Wetguard devices and covers fit in any frame position and provide excellent protection from water and dust ingress. Plus, our boxes feature up to 30% more volume than competitive boxes, making it easier to install devices.

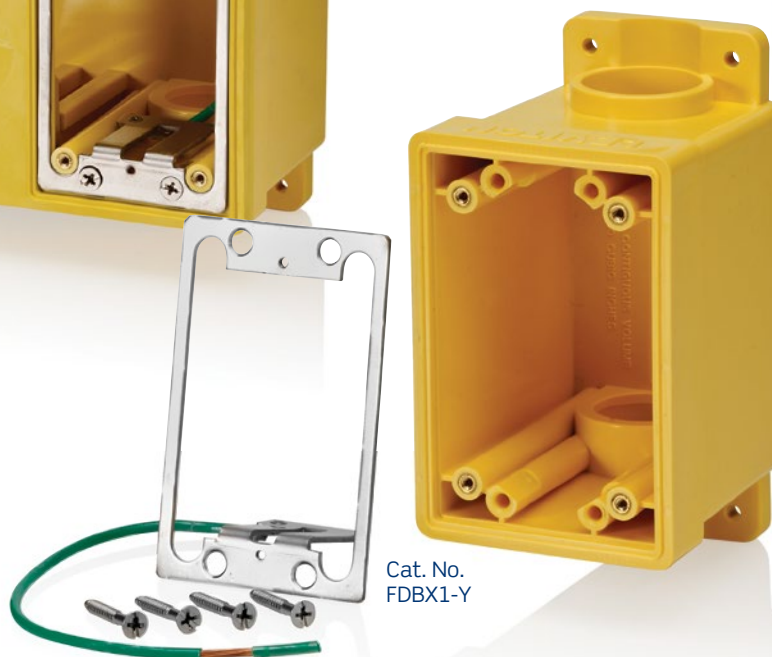
Wiring devices
sold separately



Cat. No.
FDBX3-Y



Cat. No.
FDBX2-Y



Cat. No.
FDBX1-Y

All boxes are shipped with ground plate assembled to box. Single-gang box image shows ground plate removed for clarity.

Description	Box Volume	Conduit Openings	Color	
			Yellow	Gray
Single-Gang FD Box with plugs and reducers	26.0 cu in/426 cu cm	2	FDBX1-Y	FDBX1-GY
Two-Gang FD Box with plugs and reducers	67.3 cu in/1103 cu cm	4	FDBX2-Y	FDBX2-GY
Three-Gang FD Box with plugs and reducers	109.1 cu in/1788 cu cm	6	FDBX3-Y	FDBX3-GY

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Stainless Steel FD Boxes

Our stainless steel boxes are constructed of a rugged 14 gauge type 304 stainless steel for resistance against heat, chemical corrosion and physical abrasion. The ultra-smooth finish strengthens the steel, making it easy to clean and sanitize. These boxes are available in one- and two-gang configurations and are intended for use with metallic rigid or flexible conduit.

Suitable for use in wet and damp locations

Cat. No.
SSHUB



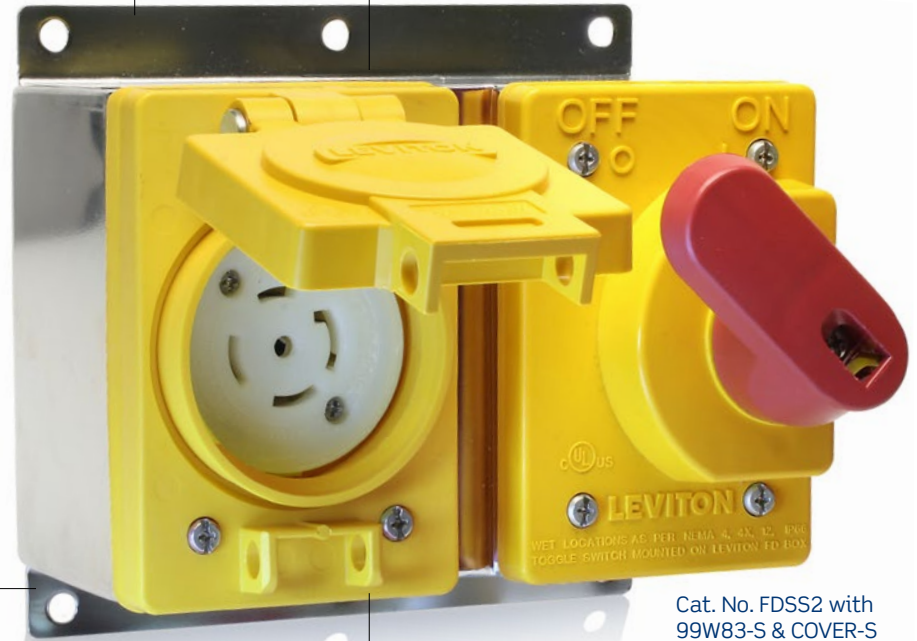
Cat. No.
FDSS1

Electropolished finish provides a smoother surface for ease of cleaning and improved sterilization



Available in single-gang and two-gang configurations

Welded 304 stainless steel construction provides resistance against heat, chemical corrosion and physical abrasion



FD Boxes accept any Wetguard FS mount single outlets, inlets, receptacles and covers

Description	Box Volume	Conduit Openings	Cat #
Single-Gang Stainless Steel FD Box	37.2 cu in/609.6 cu cm	0	FDSS1
Two-Gang Stainless Steel FD Box	87.3 cu in/1430.6 cu cm	0	FDSS2
3/4" Watertight Stainless Steel Hub	—	—	SSHUB

Wetguard Individual Covers

Cat #	Color	Description
COVER-S	Yellow	Single Gang Switch Cover and Gasket for 15 Amp - 40 Amp Toggle Switches, Including Leviton Manual Motor Starters
COVER-GS	Gray	Single Gang Switch Cover and Gasket for 15 Amp - 40 Amp Toggle Switches, Including Leviton Manual Motor Starters
WTCVD*	Yellow	Wetguard Replacement Cover and Gasket for Wetguard Duplex Outlets Only
WTCVS-15	Yellow	Wetguard Replacement Cover and Gasket for 15 Amp and 20 Amp Straight and 15 Amp Locking Single Inlets and Outlets
WTCVS-20	Yellow	Wetguard Replacement Cover and Gasket for all 20 Amp Locking Single Inlets and Outlets
WTCVS-30	Yellow	Wetguard Replacement Cover and Gasket for all 30 Amp Locking Single Inlets and Outlets
WP459	Yellow	Wetguard Blank Plate and Gasket
60W03*	Yellow	Wetguard Replacement Cover and Gasket for 15 Amp and 20 Amp Straight Blade and 15 Amp Locking Box Mount Single Flush Receptacles
60W04*	Yellow	Wetguard Replacement Cover and Gasket for 20 Amp Locking Box Mount Single Flush Receptacles
60W05*	Yellow	Wetguard Replacement Cover and Gasket for 30 Amp Locking Box Mount Single Flush Receptacles



Cat. No. COVER-GS



Cat. No. WTCVS-15



Cat. No. WP459






















Cat. No. WTCVD*

*Available in black. To order, add "-B" suffix to catalog number. * For use only as replacement for Leviton Wetguard duplex outlets

15 Amp Wetguard Straight Blade & Locking Devices

2-Pole, 2-Wire • 2-Pole, 3-Wire

Amp	Volt	NEMA Configuration	Plug	Plug Cap	Connector	Connector Cap	Single Outlet	Duplex Outlet	Single Inlet	Connector for Single Inlet	Single Receptacle	Receptacle Cover with Gasket
												
Straight Blade 2-Pole, 2-Wire Devices												
15	125	1-15		14W04	14W*	15W04	50W50*	90W04-S	80W04-D	59W04	79W04-C	—
Locking 2-Pole, 2-Wire Devices												
15	125	L1-15		24W04	14W*	25W04	50W50*	95W04-S	85W04-D	64W04	74W04-C	—
Straight Blade 2-Pole, 3-Wire Devices												
15	125	5-15		14W47* ‡	14W*	15W47* ‡	50W50*	90W47-S	80W47-D	59W47	79W47-C	5261-CR
15	250	6-15		14W49	14W*	15W49	50W50*	90W49-S	80W49-D	59W49	79W49-C	5661-CR
15	277	7-15		14W34	14W*	15W34	50W50*	—	—	—	—	—
15	347	24-15		14W15	—	15W16	50W50*	—	—	—	—	—
Locking 2-Pole, 3-Wire Devices												
15	125	L5-15		24W47* ‡	14W*	25W47* ‡	50W50*	95W47-S	85W47-D	64W47	74W47-C	47CM-10
15	250	L6-15		24W49	14W*	25W49	50W50*	95W49-S	85W49-D	64W49	74W49-C	45CM-60
15	277	L7-15		24W34	14W*	25W34	50W50*	95W34-S	85W34-D	64W34	74W34-C	47CM-60

NEMA configuration diagrams represent plug blade configuration.

* Available in black. To order, add "-B" suffix to catalog number.

‡ Replacement interior available. To order, add "-IN" to catalog number (Ex: 14W47-IN).

15 & 20 Amp Wetguard Straight Blade & Locking Devices

15 A: 3-Pole, 3-Wire — 20 A: 2-Pole, 2-Wire • 2-Pole, 3-Wire

**LIFETIME
WARRANTY**




Amp	Volt	NEMA Configuration		Plug	Plug Cap	Connector	Connector Cap	Single Outlet	Duplex Outlet	Single Inlet	Connector for Single Inlet	Single Receptacle	Receptacle Cover with Gasket
													
Straight Blade 3-Pole, 3-Wire Devices													
15	125	Non-NEMA		14W07	14W*	15W07	50W50*	90W07-S	80W07-D	59W07	79W07-C	---	---
10	250												
Locking 3-Pole, 3-Wire Devices													
15	125	Non-NEMA		24W07	14W*	25W07	50W50*	95W07-S	85W07-D	64W07	74W07-C	---	---
10	250												
Locking 2-Pole, 2-Wire Devices													
20	250	L2-20		26W07	26W*	27W07	50W50*	97W07-S	87W07-D	66W07	76W07-C	---	---
Straight Blade 2-Pole, 3-Wire Devices													
20	125	5-20		14W33	14W*	15W33	50W50*	90W33-S	---	59W33	79W33-C	5361-CR	60W03*
20	250	6-20		14W48	14W*	15W48	50W50*	90W48-S	---	59W48	79W48-C	5461-CR	60W03*
20	347	24-20		14W17	14W*	15W18	50W50*	---	---	---	---	---	---

NEMA configuration diagrams represent plug blade configuration.

*Available in black. To order, add "-B" suffix to catalog number.

20 Amp Wetguard Locking Devices

2-Pole, 3-Wire • 3-Pole, 3-Wire • 3-Pole, 4-Wire

Amp	Volt	NEMA Configuration	Plug	Plug Cap	Connector	Connector Cap	Single Outlet	Duplex Outlet	Single Inlet	Connector for Single Inlet	Single Receptacle	Receptacle Cover with Gasket	
													
Locking 2-Pole, 3-Wire Devices													
20	125	L5-20		26W47* ‡	26W*	27W47* ‡	50W52*	97W47-S	—	66W47	76W47-C	23CM-10	60W04*
20	250	L6-20		26W48*	26W*	27W48*	50W52*	97W48-S	—	66W48	76W48-C	23CM-20	60W04*
20	277	L7-20		26W49	26W*	27W49	50W52*	97W49-S	—	66W49	76W49-C	23CM-30	60W04*
20	347	L24-20		22W07	26W*	23W07	50W52*	93W07-S	—	68W29	78W29-C	—	—
Locking 3-Pole, 3-Wire Devices													
20	125/250	Non-NEMA		26W08	26W*	27W08	50W52*	97W08-S	—	66W08	76W08-C	7310-B	60W04*
20	250	Non-NEMA		26W08-G	26W*	27W08-G	50W52*	—	—	—	—	—	
10	600												
Locking 3-Pole, 4-Wire Devices													
20	125/250	L14-20		26W74* ‡	26W*	27W74* ‡	50W52*	97W74-S	—	66W74	76W74-C	24CM-10	60W04*
20	3Ø 250	L15-20		26W75*	26W*	27W75*	50W52*	97W75-S	—	66W75	76W75-C	24CM-20	60W04*
20	3Ø 480	L16-20		26W76* ‡	26W*	27W76* ‡	50W52*	97W76-S	—	66W76	76W76-C	24CM-30	60W04*

NEMA configuration diagrams represent plug blade configuration.




















* Available in black. To order, add "-B" suffix to catalog number.

‡ Replacement interior available. To order, add "-IN" to catalog number (Ex: 27W47-IN).

20 & 30 Amp Wetguard Locking Devices

20 A: 4-Pole, 4-Wire • 4-Pole, 5-Wire — 30 A: 2-Pole, 3-Wire • 3-Pole, 3-Wire

**LIFETIME
WARRANTY**

Amp	Volt	NEMA Configuration	Plug	Plug Cap	Connector	Connector Cap	Single Outlet	Duplex Outlet	Single Inlet	Connector for Single Inlet	Single Receptacle	Receptacle Cover with Gasket	
													
Locking 4-Pole, 4-Wire Devices													
20	3ØY 120/208	Non-NEMA		26W09	26W*	27W09	50W52*	97W09-S	---	66W09	76W09-C	7410-B	60W04*
Locking 4-Pole, 5-Wire Devices													
20	3ØY 120/208	L21-20		26W81*	26W*	27W81*	50W52*	97W81-S	---	66W81	76W81-C	2510	60W04*
20	3ØY 277/480	L22-20		26W82	26W*	27W82	50W52*	97W82-S	---	66W82	76W82-C	2520	60W04*
20	3ØY 347/600	L23-20		26W83	26W*	27W83	50W52*	97W83-S	---	66W83	76W83-C	2530	60W04*
20	250	Non-NEMA		26W10	26W*	27W10	50W52*	97W10-S	---	66W10	76W10-C	---	60W04*
10	600												
Locking 2-Pole, 3-Wire Devices													
30	125	L5-30		28W47*	28W*	29W47*	50W54*	99W47-S	---	68W47	78W47-C	26CM-10	60W05*
30	250	L6-30		28W48	28W*	29W48	50W54*	99W48-S	---	68W48	78W48-C	26CM-20	60W05*
30	277	L7-30		28W49	28W*	29W49	50W54*	99W49-S	---	68W49	78W49-C	2630	60W05*
Locking 3-Pole, 3-Wire Devices													
30	125/250	Non-NEMA		28W08	28W*	29W08	50W54*	99W08-S	---	68W08	78W08-C	3330	60W05*

NEMA configuration diagrams represent plug blade configuration.

*Available in black. To order, add “-B” suffix to catalog number.

30 Amp Wetguard Locking Devices

3-Pole, 4-Wire • 4-Pole, 4-Wire • 4-Pole, 5-Wire

Amp	Volt	NEMA Configuration	Plug	Plug Cap	Connector mates with Plug	Connector Cap	Single Outlet	Duplex Outlet	Single Inlet	Connector mates with Inlet	Single Receptacle	Receptacle Cover with Gasket	
													
Locking 3-Pole, 4-Wire Devices													
30	125/250	L14-30		28W74 ‡	28W*	29W74 ‡	50W54*	99W74-S	---	68W74	78W74-C	27CM-10	60W05*
30	3Ø 250	L15-30		28W75 ‡	28W*	29W75	50W54*	99W75-S	---	68W75	78W75-C	27CM-20	60W05*
30	3Ø 480	L16-30		28W76* ‡	28W*	29W76* ‡	50W54*	99W76-S	---	68W76	78W76-C	2730	60W05*
30	3ØY 600	L17-30		28W77	28W*	29W77	50W54*	99W77-S	---	68W77	78W77-C	2740	60W05*
Locking 4-Pole, 4-Wire Devices													
30	3ØY 120/208	Non-NEMA		28W09	28W*	29W09	50W54*	99W09-S	---	68W09	78W09-C	3430	60W05*
Locking 4-Pole, 5-Wire Devices													
30	3ØY 120/208	L21-30		28W81	28W*	29W81	50W54*	99W81-S	---	68W81	78W81-C	2810	60W05*
30	3ØY 277/480	L22-30		28W82	28W*	29W82	50W54*	99W82-S	---	68W82	78W82-C	2820	60W05*
30	3ØY 347/600	L23-30		28W83	28W*	29W83	50W54*	99W83-S	---	68W83	78W83-C	2830	60W05*

NEMA configuration diagrams represent plug blade configuration.

* Available in black. To order, add "-B" suffix to catalog number.

‡ Replacement interior available. To order, add "-IN" to catalog number (Ex: 28W76-IN).

Wetguard Covers Technical Specifications

Material Specifications

Cover/Lid	Valox PBT
Torsion Spring Mechanism (Flip Lids)	Stainless Steel
Gasket	TPV
Actuator Handle (Switch Cover)	Valox PBT
Actuator Spring (Switch Cover)	Zinc-plated music wire
Mounting Screws	Stainless Steel

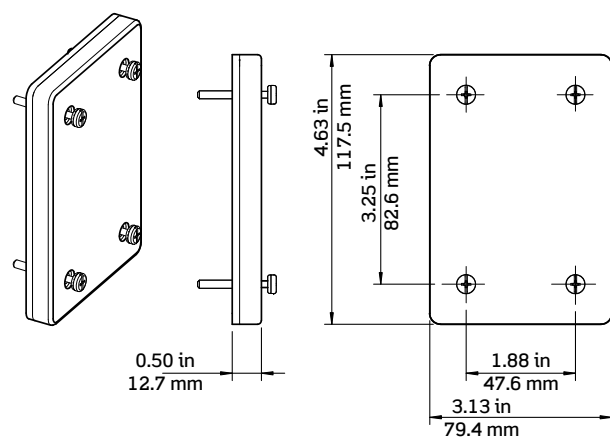
Environmental Specifications

Enclosure Ratings	NEMA 4, 4X, 12
	IEC IP66

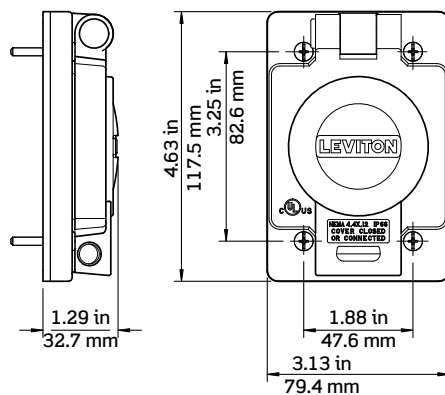
Standards & Certifications

UL	498
CSA	C22.2 No. 42
NOM*	#057

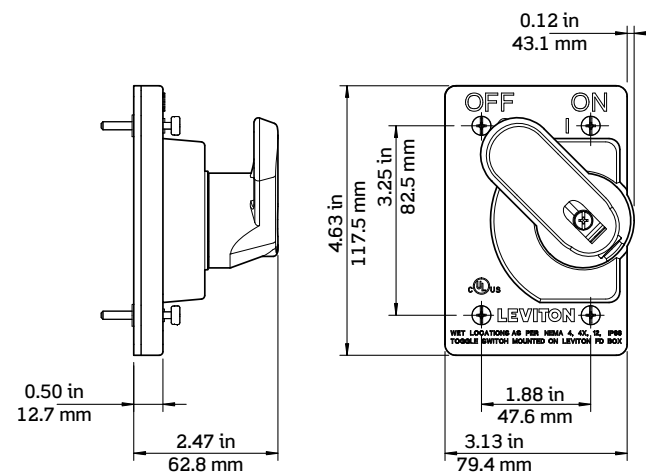
* For Cover for Toggle Switch Only



Blank Cover



Cover for Single Flush Receptacles



Cover for Toggle Switch

Wetguard Non-Metallic FD Box Technical Specifications

**LIFETIME
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Material Specifications

Box	Rigid PVC
Reducers/Plugs	Non-Threaded Rigid PVC
Frame (2- and 3-gang)	Valox PBT
Gasket (2- and 3-gang)	TPV
Threaded Inserts	Brass
Mounting Plate	Stainless Steel
Grounding Wire	Green #12 AWG stranded copper, 8" long

Box Volume

Single-Gang	26.0 cu in/426 cu cm
Two-Gang	67.3 cu in/1103 cu cm
Three-Gang	109.1 cu in/1788 cu cm

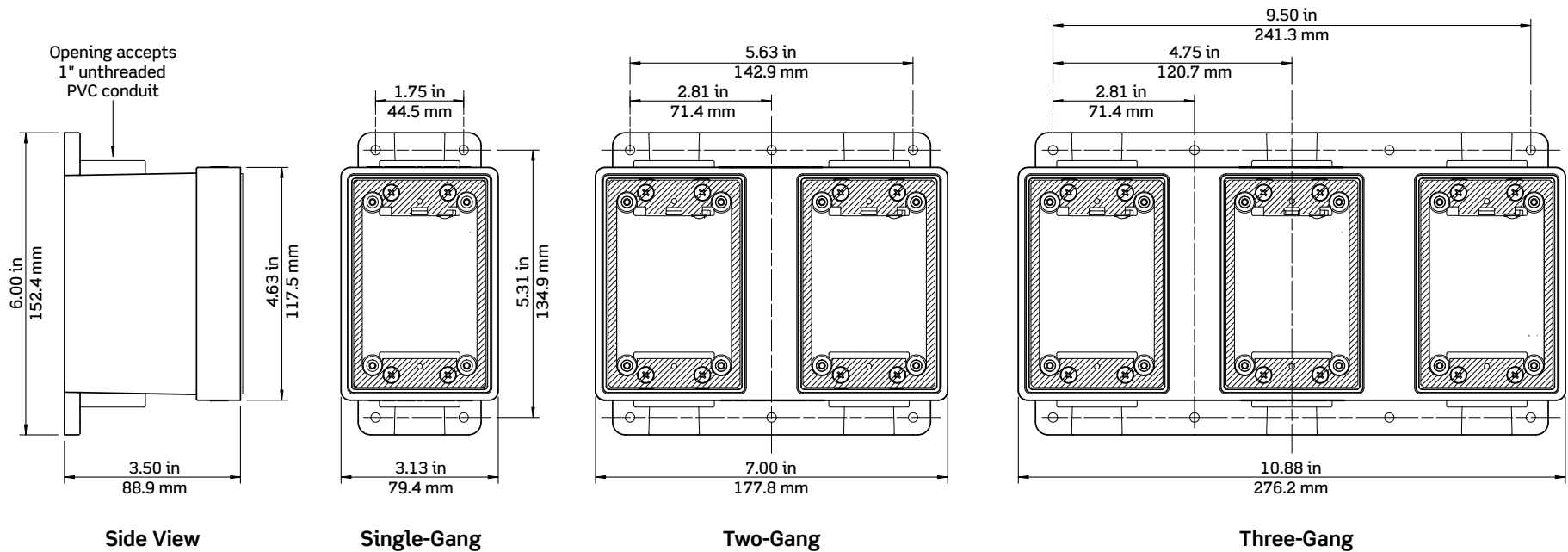
Environmental Specifications

Enclosure Ratings*	NEMA 4, 4X, 12
	IEC IP66

Standards & Certifications

cULus	514C
NOM	#057

* with cover closed or connected



Wetguard Stainless Steel FD Box

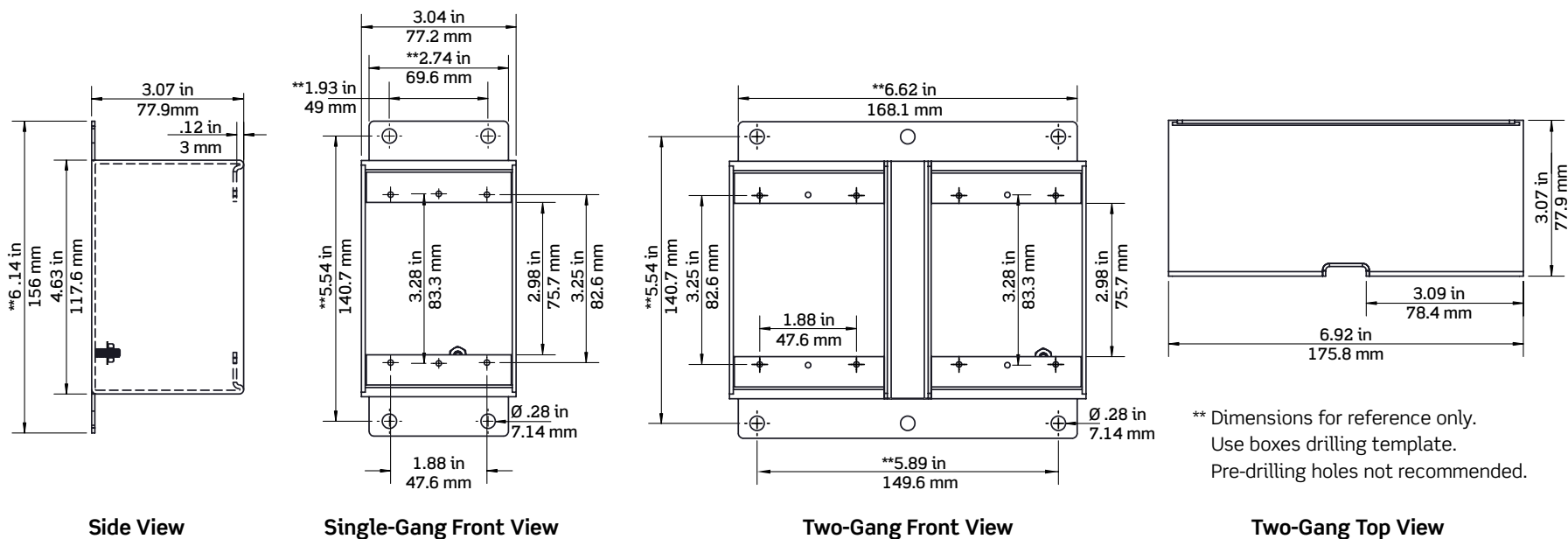
Technical Specifications

**10 YEAR
WARRANTY**

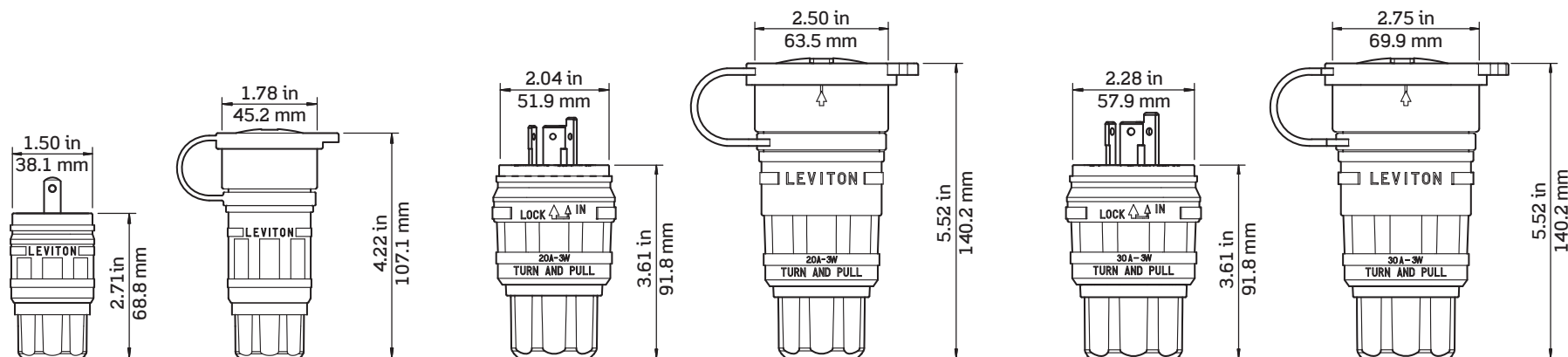
Material Specifications	
Box	14 Gauge Type 304 Stainless Steel
Box Volume	
Single-Gang	37.2 cu in/609.6 cu cm
Two-Gang	87.3 cu in/1430.6 cu cm

Environmental Specifications	
Enclosure Ratings*	IEC IP66
Standards & Certifications	
cULus	UL 514A

* with cover closed or connected



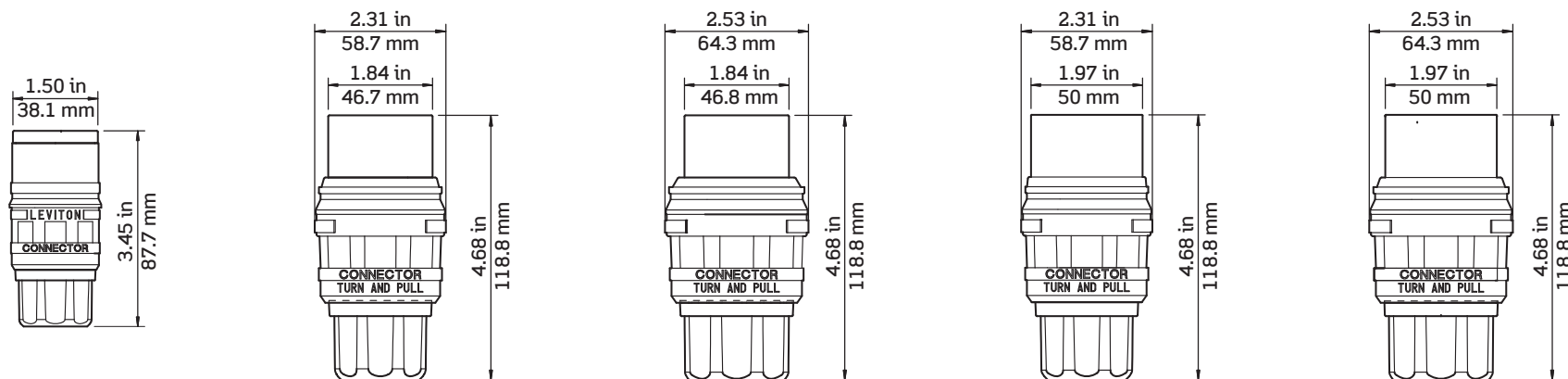
Wetguard Plugs and Connectors Technical Specifications



**All 15 A and 20 A Straight Blade,
All 15 A and NEMA L2-20 Locking
Plugs and Mating Connectors**

**20 A Locking Plugs
and Connectors
(Except L2-20)**

**30 A Locking
Plugs and Connectors**



**All 15 A and 20 A
Straight Blade,
All 15 A and NEMA L2-20
Locking Connectors
for Inlets**

**All 20 A Locking
3-Wire Connectors
for Inlets**

**All 30 A Locking
3-Wire Connectors
for Inlets**

**All 20 A Locking 4-Wire
and 5-Wire Connectors
for Inlets**

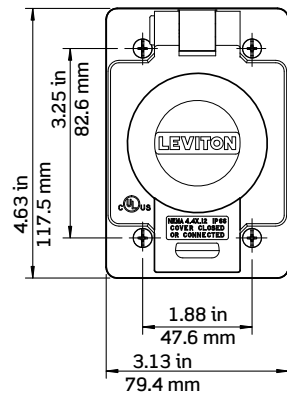
**All 30 A Locking 4-Wire
and 5-Wire Connectors
for Inlets**

Electrical Specifications		
Dielectric Voltage		Withstands 2000 V per UL 498
Current Limiting		Full rated current
Temperature Rise		Max 30 °C after 250 cycles overload at 200% of rated current
Environmental Specifications		
Flammability		Rated V-2 per UL 94 (wiring module)
Operating Temperature		-40 °C to 60 °C
Enclosure Ratings	Plugs/Connectors	NEMA 4, 4X, 6, 6P
		IEC IP66, IP67
	Connector for Single Inlets	NEMA 4, 4X, 12
		IEC IP66
Material Specifications		
Husk		TPV
Body		Nylon
Wiring Module		Nylon
Strain Relief System	Compression Nut	Nylon
	Strain Relief Clamp	Nylon
	Bushing	TPV
Blades/Contacts, Terminal Clamps		Electroless Nickel-coated Brass
Terminal Screws		Electroless Nickel-coated Brass
Assembly Screws		Stainless steel, non-magnetic

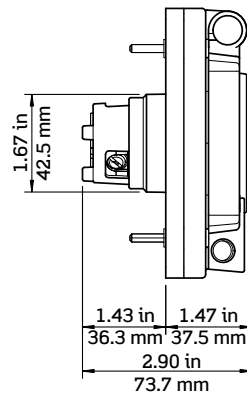
Mechanical Specifications		
Terminal Accommodation	15 Amp	#18 AWG to #10 AWG
	20 Amp	#16 AWG to #10 AWG
	30 Amp	#12 to #8
Product ID		Ratings and NEMA ID permanently marked on device
Cord Grip Range (in)	15 Amp	.234 - .687 diameter
	20 Amp	.375 - .875 diameter
	30 Amp	.625 - 1.125 diameter
Standards & Certifications		
NEMA		WD-6
ANSI		C-73
UL		498
CSA		C22.2 No. 42
NOM		#057

For Fed Spec information, please consult the factory for details.

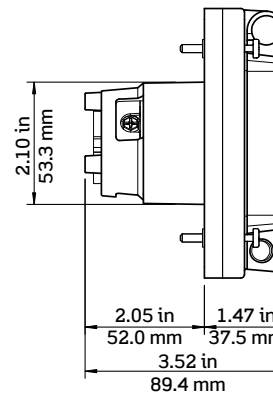
Wetguard Inlets and Outlets Technical Specifications



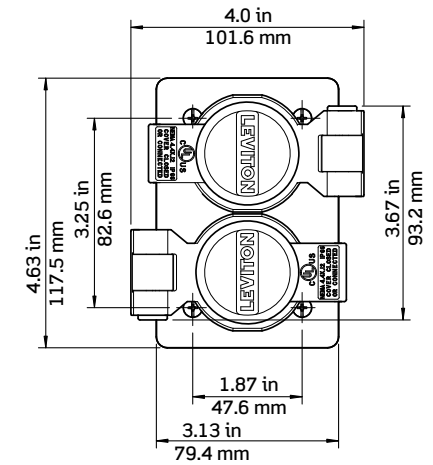
All Single Inlets and Outlets



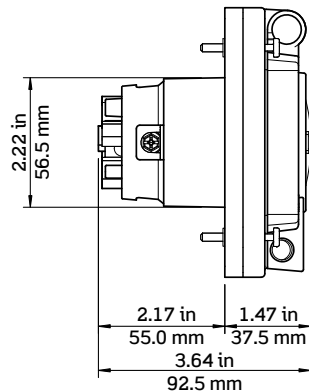
All 15 A and 20 A Straight Blade, 15A and NEMA L2-20, Locking Single Inlets and Outlets



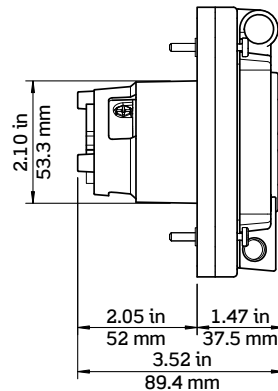
All 20 A 3-Wire Locking Single Inlets and Outlets



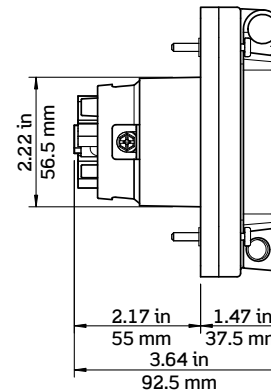
All Duplex Outlets



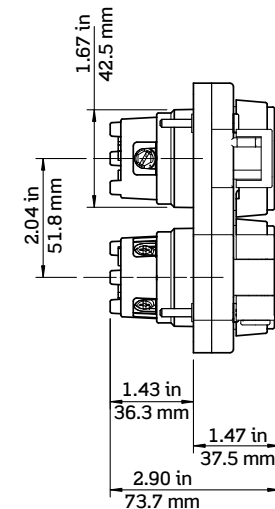
All 20 A, 4- and 5-Wire Locking Single Inlets and Outlets



All 30 A, 3-Wire Locking Single Inlets and Outlets



All 30 A, 4- and 5-Wire Locking Single Inlets and Outlets



All Duplex Outlets

Electrical Specifications	
Dielectric Voltage	Withstands 2000 V per UL 498
Current Limiting	Full rated current
Temperature Rise	Max 30 °C after 250 cycles overload at 200% of rated current
Environmental Specifications	
Flammability	Rated V-2 per UL 94 (wiring module)
Operating Temperature	-40 °C to 60 °C
Enclosure Ratings	NEMA 4, 4X, 12
	IEC IP66
Material Specifications	
Cover/Lid	Valox PBT
Wiring Module Mounting Cup	Valox PBT
Wiring Module	Nylon
Cover Gasket	TPV
Torsion Spring Mechanism	Stainless Steel
Blades/Contacts, Terminal Clamps	Electroless Nickel-coated Brass
Terminal Screws	Electroless Nickel-coated Brass
Mounting & Assembly Screws	Stainless steel, non-magnetic

Mechanical Specifications		
Terminal Accommodation	15 Amp	#18 AWG to #10 AWG
	20 Amp	#16 AWG to #10 AWG
	30 Amp	#12 AWG to #8 AWG
Product ID		Ratings and NEMA ID permanently marked on device
Standards & Certifications		
NEMA		WD-6
ANSI		C-73
UL		498
CSA		C22.2 No. 42
NOM		#057

Technical Reference

Enclosure Classifications

Enclosures serve the dual purpose of protecting personnel from incidental contact with the enclosed electrical equipment and protecting the enclosed equipment against specified environmental conditions. Enclosures are rated for use in specific environmental conditions by NEMA, UL, CSA and the IEC. The rating systems most often cited are the NEMA Enclosure Type Numbers as defined in NEMA Standards Publication 250 (and corresponding UL/CSA designations) and the IEC Enclosure Classification Designation as defined in the International Standard IEC 60529 - Degrees of protection provided by enclosures (IP Code).

IEC Enclosure Classifications

The International Electrotechnical Commission (IEC) is an international standards organization that prepares and publishes International Standards for all electrical, electronic and related technologies. IEC 60529 classifies the degrees of protection provided against the intrusion of solid objects (including body parts like hands and fingers), dust, accidental contact, and water in electrical enclosures.

IEC 60529 - IP Suitability Ratings					
First Number - Degree of Access to Hazardous Parts			Second Number - Degree of Protection From Water Ingress		
Level	Ingress Limit	Effective Against	Level	Ingress Limit	Effective Against
0	—	No protection against contact and ingress of objects	0	—	No protection against water ingress
1	≥ 50 mm diameter	Any large surface of the body, such as the back of a hand, but no protection against deliberate contact with a body part	1	Dripping water	Dripping water (vertically falling drops) shall have no harmful effect
2	≥ 12.5 mm diameter	Fingers or similar objects	2	Dripping water when tilted up to 15°	Vertically dripping water shall have no harmful effect when the enclosure is tilted at an angle up to 15° from its normal position
3	≥ 2.5 mm diameter	Tools, thick wires, etc.	3	Spraying water	Water falling as a spray at any angle up to 60° from the vertical shall have no harmful effect
4	≥ 1 mm diameter	Most wires, screws, etc.	4	Splashing water	Water splashing against the enclosure from any direction shall have no harmful effect
5	Dust protected	Ingress of dust is not entirely prevented, but it must not enter in sufficient quantity to interfere with the satisfactory operation of the equipment	5	Water jetting	Water projected by a nozzle (6.3 mm) against enclosure from any direction shall have no harmful effects
6	Dust-tight	No ingress of dust	6	Powerful water jetting	Water projected in powerful jets (12.5 mm nozzle) against the enclosure from any direction shall have no harmful effects
			7	Temporary immersion (up to 1 m)	Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time
			8	Continuous immersion	The equipment is suitable for continuous immersion in water under conditions which shall be specified by the manufacturer
			9	High pressure and temperature water jets	Water projected at high pressure and high temperature against the enclosure from any direction shall not have harmful effects

NEMA, UL, and CSA Enclosure Classifications

NEMA, UL, and CSA are standard writing organizations commonly recognized in North America. Their ratings are based on similar application descriptions and expected performance. UL and CSA both require enclosure testing by qualified evaluators. NEMA does not require independent testing and leaves compliance completely up to the manufacturer. Below is a partial listing of the NEMA/UL/CSA.

Rating	NEMA Standard 250	UL 50	CSA Standard C22.2 No 94
Type 1	Indoor use to provide a degree of protection against contact with the enclosed equipment; in locations where unusual service conditions do not exist.	Indoor use to provide a degree of protection against contact with the enclosed equipment and against a limited amount of falling dirt.	General purpose enclosure. Protects against accidental contact with live parts.
Type 2	Indoor use to provide a degree of protection against contact with the enclosed equipment and against limited amounts of falling water and dirt.	Indoor use to provide a degree of protection against limited amounts of falling water and dirt.	Drip proof enclosure same as Type 1; indoor use to provide a degree of protection against dripping and light splashing of non-corrosive liquids and falling dirt.
Type 3	Indoor or outdoor use to provide a degree of protection against windblown dust, rain and sleet; undamaged by the formation of ice on the enclosure (not sleet proof).	Indoor or outdoor use to provide a degree of protection against windblown dust, rain and sleet; undamaged by the formation of ice on the enclosure.	Indoor or outdoor use; provides a degree of protection against rain, snow, and windblown dust; undamaged by the external formation of ice on the enclosure.
Type 3R	Indoor or outdoor use to provide a degree of protection against falling rain and sleet; undamaged by the formation of ice on the enclosure.	Indoor or outdoor use to provide a degree of protection against falling rain and sleet; undamaged by the formation of ice on the enclosure.	Weather proof enclosure; indoor or outdoor use to provide a degree of protection against rain or snow; undamaged by the external formation of ice on the enclosure.
Type 3S	Indoor or outdoor use to provide a degree of protection against falling dirt, rain, sleet, snow, and windblown dust; and in which the external mechanism(s) remain operable when ice laden.	Indoor or outdoor use primarily to provide a degree of protection against rain, sleet, windblown dust and to provide for operation of external mechanisms when ice laden.	Weather proof enclosure; indoor or outdoor use to provide a degree of protection against rain or snow; undamaged by the external formation of ice on the enclosure surface.
Type 4	Indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, and hose directed water; undamaged by the formation of ice on the enclosure.	Indoor or outdoor use to provide a degree of protection against falling rain, splashing water, and hose-directed water; undamaged by the formation of ice on the enclosure.	Indoor or outdoor use; provides a degree of protection against rain, snow, windblown dust, splashing and hose-directed water; undamaged by the external formation of ice on the enclosure.
Type 4X	Indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, and hose-directed water; undamaged by the formation of ice on the enclosure.	Indoor or outdoor use to provide a degree of protection against falling rain, splashing water, and hose-directed water; undamaged by the formation of ice on the enclosure; resists corrosion.	Indoor or outdoor use; provides a degree of protection against rain, snow, windblown dust, splashing and hose-directed water; undamaged by the external formation of ice on the enclosure; resists corrosion.
Type 6	Indoor or outdoor use where occasional submersion is encountered, limited depth; undamaged by the formation of ice on the enclosure.	Indoor or outdoor use to provide a degree of protection against entry of water during temporary submersion at a limited depth; undamaged by the external formation of ice on the enclosure.	Indoor or outdoor use; provides a degree of protection against the entry of water during temporary submersion at a limited depth. Undamaged by the external formation of ice on the enclosure; resists corrosion.
Type 6P	Indoor or outdoor use to provide a degree of protection against the entry of water during prolonged submersion at a limited depth.	Indoor or outdoor use to provide a degree of protection against the entry of water during prolonged submersion at a limited depth.	No CSA equivalent.
Type 12	Indoor use to provide a degree of protection against dust, falling dirt and dripping non-corrosive liquids - No knockouts.	Indoor use to provide a degree of protection against dust, falling dirt and dripping non-corrosive liquids - No knockouts.	Indoor use to provide a degree of protection against circulating dust, lint, fibers, dripping and light splashes of non-corrosive liquids.
Type 12K	Enclosures with knockouts are intended for indoor use primarily to provide a degree of protection against dust, falling dirt, and dripping non-corrosive liquids.	Indoor use to provide a degree of protection against dust, dirt, dripping water, and external condensation of non-corrosive liquids. Knockouts located in the top or bottom walls, or both.	Indoor use to provide a degree of protection against circulating dust and lint; dripping and light splashing of non-corrosive liquids; provided with knockouts.
Type 13	Indoor use to provide a degree of protection against lint, dust, seepage, external condensation and spraying of water, oil and non-corrosive coolant.	Indoor use to provide a degree of protection against dust and spraying of water, oil and non-corrosive coolants.	Indoor use to provide a degree of protection against circulating dust, lint, fibers, seepage and spraying of non-corrosive liquids including oils and coolants.

Technical Reference (continued)

Comparing North American and International Enclosure Classifications

NEMA Standard 250 is a product standard that addresses construction and performance elements of the enclosure itself, along with its ability to protect persons from contacting hazardous components inside and against solid object and water ingress. IEC 60529 is NOT a product standard, and only covers the enclosures ability to protect persons from contacting hazardous components inside the enclosure, as well as from solid object and water ingress. As a result, there is not a direct correlation between the two classifications. Additionally, if the requirement for an enclosure Type is specified, an enclosure with just an IP rating cannot be substituted. However, while NEMA Type ratings meet and exceed the test requirements of associated IEC classifications, the table below shows the comparative relationship between the two ratings (as outlined in the NEMA whitepaper: A Brief Comparison of NEMA 250 and IEC 60529).

NEMA Enclosure Type Number	IEC Enclosure "IP" Designation
1	20
2	22
3	55
3R	24
3S	55
4 and 4X	66
5	53
6	67
6P	68
12 and 12K	54
13	54

Note: This table cannot be used to convert from IEC classifications to NEMA types

Testing Standards

In applications such as processing plants and industrial marinas, electrical devices are frequently exposed to high pressure water streams, temporary immersion in water and corrosive environments (such as salt air). It is imperative that the electrical connectors are able to withstand the rigors of such environments.

Leviton Wetguard devices are tested to and exceed IEC and UL watertight and weatherproof standards. These independent tests have defined parameters as noted in the text that follows:

IEC IP Water Penetration Test:

Water is sprayed from a 12.5 millimeter (.5 inches) diameter nozzle from a distance of 3 meters (10 feet) at a rate of 100 liters (26 gallons) per minute on a joined plug and connector. The water spray is directed at the connector/plug joint and cable entries. Additionally, parts are submerged in water 1 meter (3 feet) deep for 30 minutes.

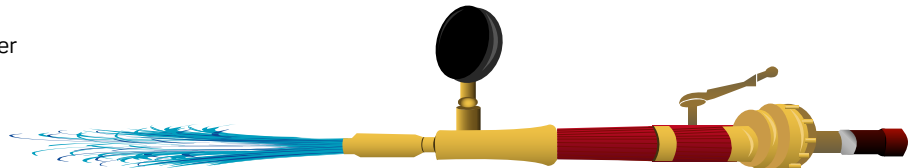
Result: Wetguard Plugs and Connectors are rated to IP67 when connected.



UL NEMA Water Penetration Test:

Water is sprayed from a 25 millimeter (1 inch) diameter nozzle from a distance of 3.5 meters (12 feet) at a rate of 240 liters (65 gallons) per minute on a joined plug and connector. The water spray is directed at the connector/plug joint and cable entries. Additionally, parts are submerged in water 1.8 meters (6 feet) deep for 24 hours and subjected to a salt spray (fog) for 200 hours.

Result: Wetguard Plugs and Connectors are rated to NEMA 4, 4X, 6, and 6P when connected.



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