Wireless Heavy Duty Limit Switch (WLS Series)

Limitless™ Switch

DESCRIPTION

The new Limitless™ product line combines the best of MICRO SWITCH™ Heavy Duty limit switches with the latest commercial off-the-shelf wireless technology. Wireless-enabled limit switches can be used for position sensing and presence/absence detection for an endless number of applications.

The Limitless™ Series is especially beneficial for remote monitoring applications where wiring or wire maintenance is not physically possible or economically feasible. Combining this greater flexibility with proven harsh duty packaging can result in increased efficiencies and improved safety for machines, equipment, OEMs, and operators.

FEATURES

Wireless design
- Radio (license-free and global): WPAN 802.15.4, 2.4 GHz, point-to-point
- FCC 15, IC, ACMA & ETSI
- EMI Immunity
- Up to 305 m [1000 ft] communication range when used with a Limitless™ wireless monitor or receiver module (sold separately)
- Reliable, flexible, and secure wireless transmission
- Standard replaceable battery with ultra-low power consumption
- Direct or remote mount antenna options

Mechanical design
- IP67; NEMA 1, 3, 4, 6, 6P, 12, 13
- Unique all-metal drive train
- Twin shaft seals (rotary)
- Zinc head and body are phosphate treated and epoxy finished making it less susceptive to effects from environmental exposure
- Captive head and body screws
- Full complement of operating heads and levers
- Chemical resistant fluorocarbon seals (optional)

POTENTIAL APPLICATIONS

- Valve position
- Crane boom/jib/skew position
- Lifts
- Material handling
- Presses
- Construction/Ag machines
- Conveyors
- Remote or temporary equipment
- Movable machinery
- Grain diverters or flaps
- Door position
- Hose attachment verification
- Specialty machines

SWITCH BENEFITS

- Built on MICRO SWITCH™ HDLS heritage
- Operating head rotary tested in excess of 50 million cycles for enhanced reliability
- Diaphragm seal between head and body cavity provides sealing protection
- Twin shaft seals protect head and internal components from corrosion and debris
- Sintered bronze bearings provide extended mechanical life

APPLICATION BENEFITS

- Enables wireless presence/absence detection in applications/ machinery where wiring is challenging or not feasible
- Integration of existing wireless technology with the superior reliability of Honeywell MICRO SWITCH™ limit switch series
- Ability to reconfigure and network multiple switches or point-to-point personalized addresses, thus easily allowing adding, subtracting, or relocating Limitless™ switches
- Reduced installation/maintenance costs with no wires, conduit, strain relief, clips, connectors, or connection boxes
- Output options
  - Panel mount monitor: visual, audible (buzzer), NPN output
  - DIN-mount receiver: visual, NPN/PNP (relay, CAN, Ethernet, Profibus available in the future)
- Consumes ultra-low power to prolong battery life (replaceable)
- Long-range signal of 305 m/1000 ft line-of-sight in North America
- RF board operating in 2.4 GHz globally license-free frequency band; WPAN 802.15.4
- EN 50041 metal enclosure; IP67;NEMA 1, 3, 4, 6, 6P, 12, 13
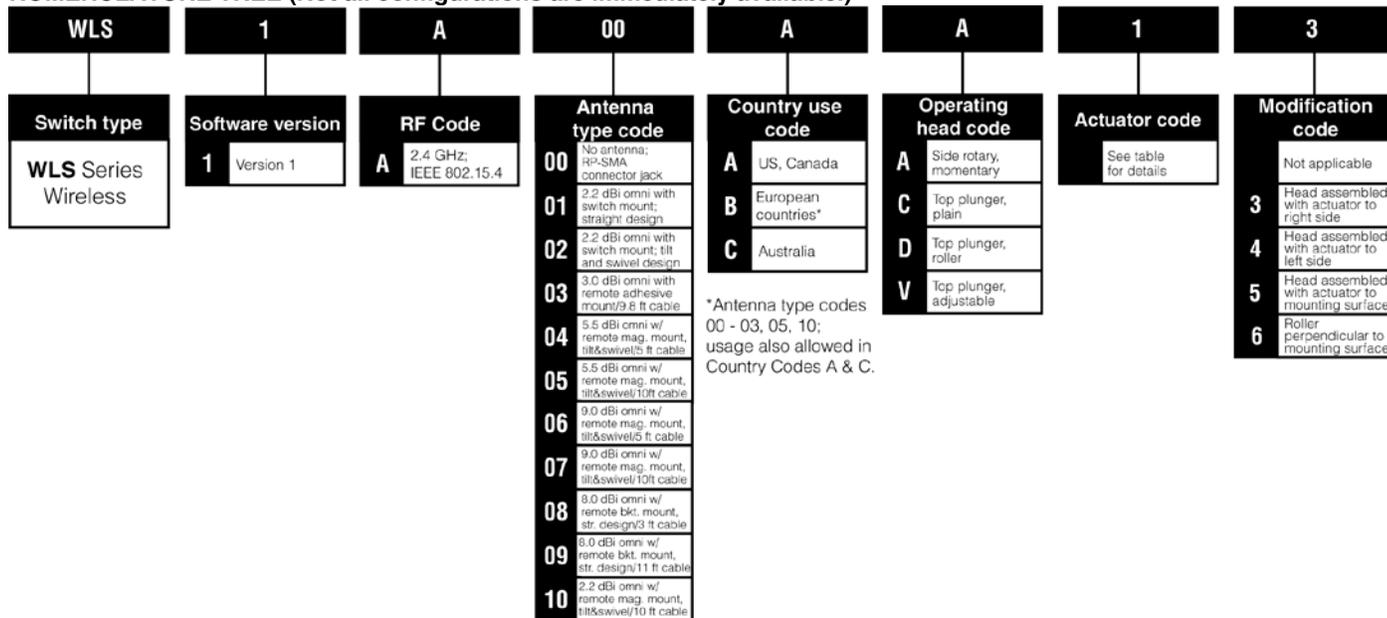- Full complement of operating heads and levers, as well as monitor/receivers and accessories

Limitless™ WLS Series

Description	Parameter
Series name	WLS Series
Product type	Limitless™ Heavy Duty Limit Switches
Availability	Global, license-free bands
Operating characteristics	Reference WLS installation drawing
Actuator	Side rotary, top plunger, top roller plunger, top adjustable plunger
Lever type	Many rotary lever options available
Housing material	Zinc head and body are phosphate treated and epoxy finished
Housing type	WLS
Radio	WPAN 802.15.4; 2.4GHz
Antenna type	Direct or remote mount antenna options; Omni directional
Signal range	Nominal 304 m* for International use (Europe and Australia due to signal restrictions); Nominal 1000 ft* for use in US and Canada *clear line of sight between Limitless™ switch and monitor/receiver when using 2.2 dBi integral antenna
Battery	3.6 Vdc Lithium Thionyl Chloride; 2/3 AA size (Est. life >1yr) Manufactured by Uniwell, part number DEV-10-0009
Sealing	IP67; NEMA 1, 3, 4, 6, 6P, 12, 13
EMC	Latest applicable standards: EN 300 328, V1.7.1; EN 61326-1 (2006); EN 301 489-1, V1.8.1; EN 301 489-17, V2.1.1
Shock	IEC 60068-2-27; half sine, 10 g, 6 mS, 3 axis
Vibration	IEC 60068-2-6; 10-500Hz w/ 0,35 mm peak-to-peak, 58-500 Hz- 5g
Operating temperature	-40 °C to 85 °C [-40 °F to 185 °F]
Agency approvals and standards	FCC 15.247 Industry Canada RSS 210 ETSI, CE mark ACMA, C-Tick mark
UNSPSC code	20142601
UNSPSC commodity	20142601
Sealed	Industrial

* Actual range will vary depending upon antennas, cables, and site topography.

Wireless Heavy-Duty Limit Switches

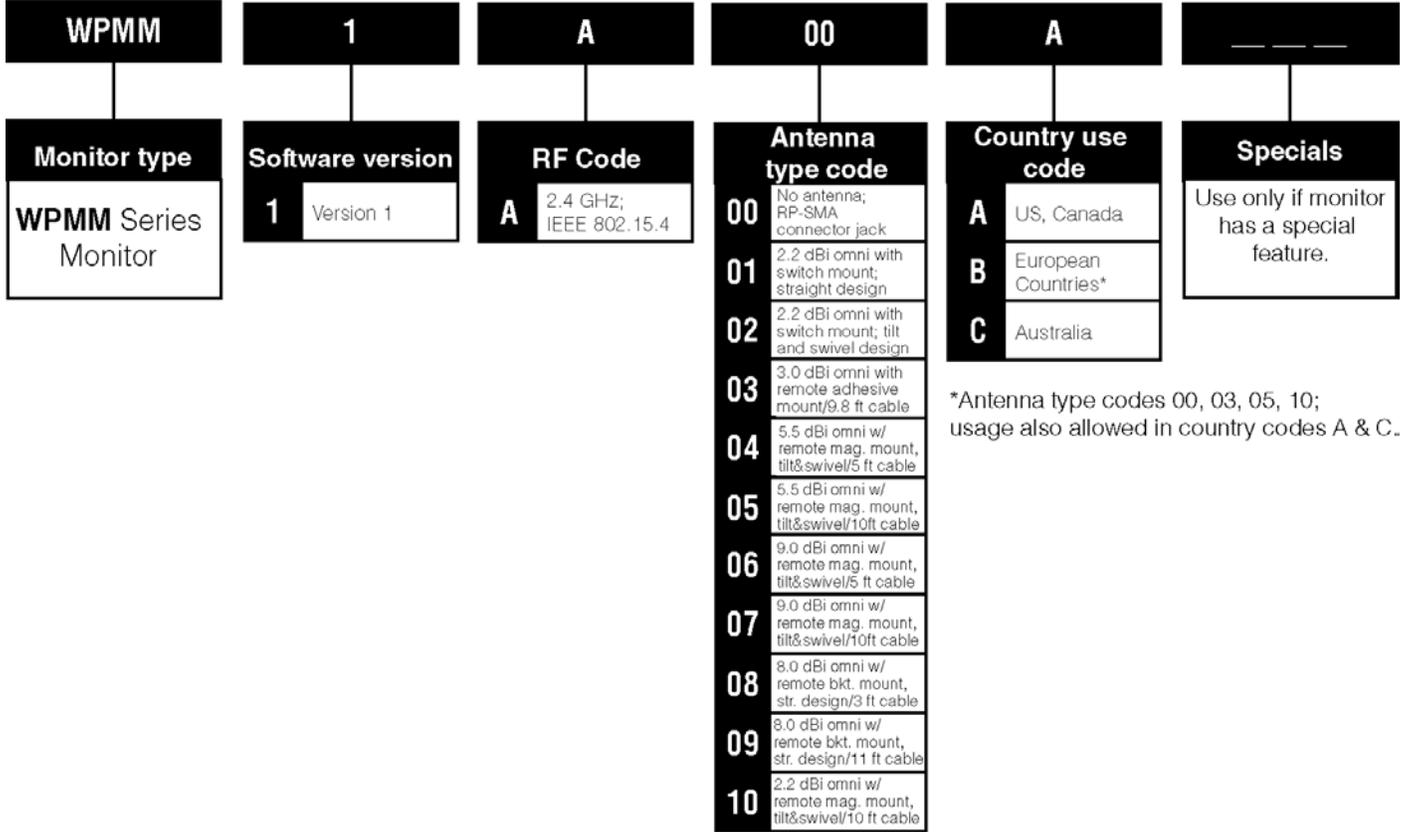**NOMENCLATURE TREE (Not all configurations are immediately available.)**

WLS	1	A	00	A	A	1	3

Switch type
WLS Series Wireless

Software version
1 — Version 1

RF Code
A — 2.4 GHz; IEEE 802.15.4

Antenna type code
- 00 — No antenna; RP-SMA connector jack
- 01 — 2.2 dBi omni with switch mount; straight design
- 02 — 2.2 dBi omni with switch mount; tilt and swivel design
- 03 — 3.0 dBi omni with remote adhesive mount/9.8 ft cable
- 04 — 5.5 dBi omni w/ remote mag. mount, tilt&swivel/5 ft cable
- 05 — 5.5 dBi omni w/ remote mag. mount, tilt&swivel/10ft cable
- 06 — 9.0 dBi omni w/ remote mag. mount, tilt&swivel/5 ft cable
- 07 — 9.0 dBi omni w/ remote mag. mount, tilt&swivel/10ft cable
- 08 — 8.0 dBi omni w/ remote bkt. mount, str. design/3 ft cable
- 09 — 8.0 dBi omni w/ remote bkt. mount, str. design/11 ft cable
- 10 — 2.2 dBi omni w/ remote mag. mount, tilt&swivel/10 ft cable

Country use code
- A — US, Canada
- B — European countries*
- C — Australia

*Antenna type codes 00 - 03, 05, 10; usage also allowed in Country Codes A & C.

Operating head code
- A — Side rotary, momentary
- C — Top plunger, plain
- D — Top plunger, roller
- V — Top plunger, adjustable

Actuator code
See table for details

Modification code
- Not applicable
- 3 — Head assembled with actuator to right side
- 4 — Head assembled with actuator to left side
- 5 — Head assembled with actuator to mounting surface
- 6 — Roller perpendicular to mounting surface

ACTUATOR CODE TABLE

Code	Material	Roller Dia. (in)	Roller Width (in)	Roller mounting	Code	Material	Roller Dia. (in)	Roller Width (in)	Roller mounting
Fixed 1.5 inch radius					**Yoke – 1.5 in radius (continued)**				
1	Rollerless	n/a	n/a	n/a	3P	Steel	0.75	0.25	Back/Back
1A	Nylon	0.75	0.25	Front	3S	Nylon	0.75	0.25	Back/Back
1B	Steel	0.75	0.75	Front	3J	Steel	0.75	0.25	Back/Front
1C	Nylon	0.75	0.25	Back	**Rod**				
1D	Steel	0.75	0.25	Back	4	Hub only	n/a	n/a	n/a
1F	Nylon	1.0	0.50	Front	4M	Alum, 5.5 in	n/a	n/a	n/a
1G	Nylon	1.5	0.25	Front	4N	Stainless, 13 in	n/a	n/a	n/a
1J	Nylon	1.0	0.50	Back	4R	Spring Wire, 12 in	n/a	n/a	n/a
1L	Ball bearing	0.75	0.25	Back	4V	Flex cable, 4.8 in	n/a	n/a	n/a
1M	Nylon	0.75	1.30	Back	**Offset – 1.5 in radius**				
1N	Steel	0.75	1.25	Front	5	Rollerless	n/a	n/a	n/a
1P	Nylon	0.75	0.50	Front	5A	Nylon	0.75	0.25	Back
Adjustable 1.5 in to 3.5 in radius					5B	Steel	0.75	0.25	Back
2	Rollerless	n/a	n/a	n/a	5C	Nylon	0.75	0.25	Front
2A	Nylon	0.75	0.25	Back	5D	Steel	0.75	0.25	Front
2B	Steel	0.75	0.25	Back	5E	Nylon	0.75	0.50	Front
2C	Nylon	0.75	0.25	Front	5K	Nylon	1.5	0.25	Front
2D	Steel	0.75	0.25	Front	**Wobble Stick**				
2E	Nylon	0.75	1.30	Front	7A	Plastic	n/a	n/a	n/a
2J	Nylon	1.0	0.50	Front	7M	Wire	n/a	n/a	n/a
2K	Nylon	1.5	0.50	Front	7W	Cable	n/a	n/a	n/a
2L	Ball bearing	0.75	0.25	Front	**Cat Whisker**				
2M	Nylon	2.0	0.25	Front	8A	Steel, 5.5 in	n/a	n/a	n/a
2N	Nylon	0.75	0.50	Front	8B	Steel, 7.5 in	n/a	n/a	n/a
Yoke – 1.5 in radius					8C	Coil Spring, 5.5 in	n/a	n/a	n/a
3A	Nylon	0.75	0.25	Front/Back	**Short fixed - 1.3 in radius**				
3B	Steel	0.75	0.25	Front/Back	9A	Nylon	0.75	0.25	Front
3D	Steel	0.75	0.25	Front/Back	9B	Steel	0.75	0.25	Front
3E	Nylon	0.75	0.25	Back/Front	9C	Nylon	0.75	0.25	Back
3M	Nylon	0.75	1.25	Back/Front	9D	Steel	0.75	0.25	Back

Limitless™ WLS Series

Monitor Nomenclature

WPMM	1	A	00	A	___ ___ ___
Monitor type	**Software version**	**RF Code**	**Antenna type code**	**Country use code**	**Specials**

Monitor type

WPMM Series Monitor

Software version

1 — Version 1

RF Code

A — 2.4 GHz; IEEE 802.15.4

Antenna type code

00	No antenna; RP-SMA connector jack
01	2.2 dBi omni with switch mount; straight design
02	2.2 dBi omni with switch mount; tilt and swivel design
03	3.0 dBi omni with remote adhesive mount/9.8 ft cable
04	5.5 dBi omni w/ remote mag. mount, tilt&swivel/5 ft cable
05	5.5 dBi omni w/ remote mag. mount, tilt&swivel/10ft cable
06	9.0 dBi omni w/ remote mag. mount, tilt&swivel/5 ft cable
07	9.0 dBi omni w/ remote mag. mount, tilt&swivel/10ft cable
08	8.0 dBi omni w/ remote bkt. mount, str. design/3 ft cable
09	8.0 dBi omni w/ remote bkt. mount, str. design/11 ft cable
10	2.2 dBi omni w/ remote mag. mount, tilt&swivel/10 ft cable

Country use code

A	US, Canada
B	European Countries*
C	Australia

*Antenna type codes 00, 03, 05, 10; usage also allowed in country codes A & C.

Specials

Use only if monitor has a special feature.

Wireless Heavy-Duty Limit Switches

DIMENSIONS

Side Rotary Momentary Head

1.620
1.56
.578
1.00
1.435
.750
4.204
2.344
2.769
MTG PADS
2X Ø.203
MTG HOLES
2.465±.030
2X 10-32 UNF 2B
TAPPED FROM REAR ONLY
.500 MIN DEPTH
1.156
.800
1.535
1.745

Top Adjustable Plunger Head

.85
.312
2.335
X OPERATING
POINT
2.085 MIN
OPERATING
POINT
MTG PADS
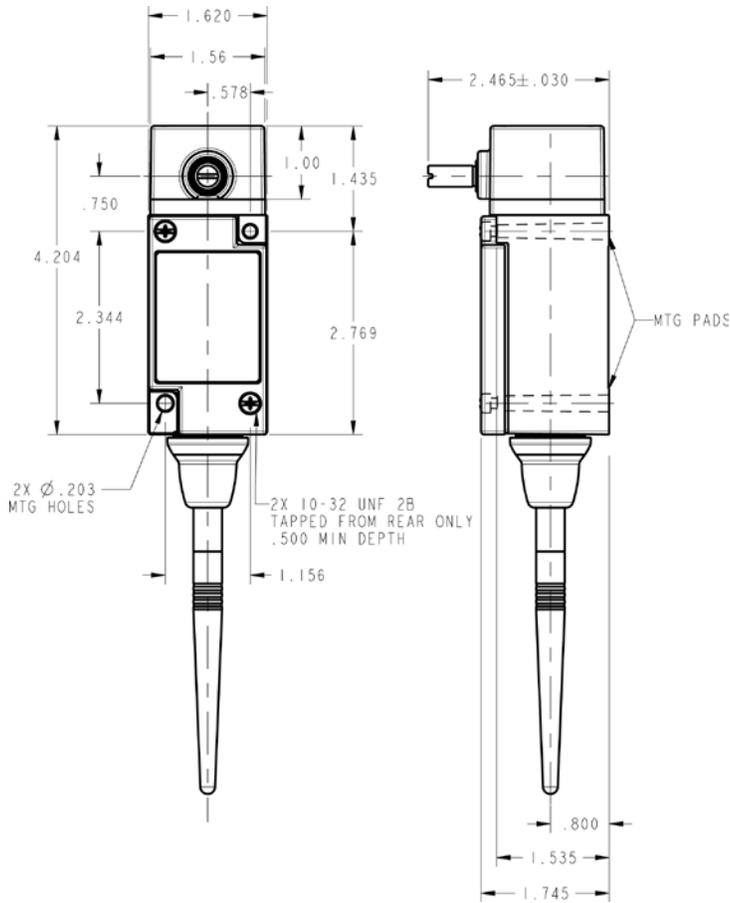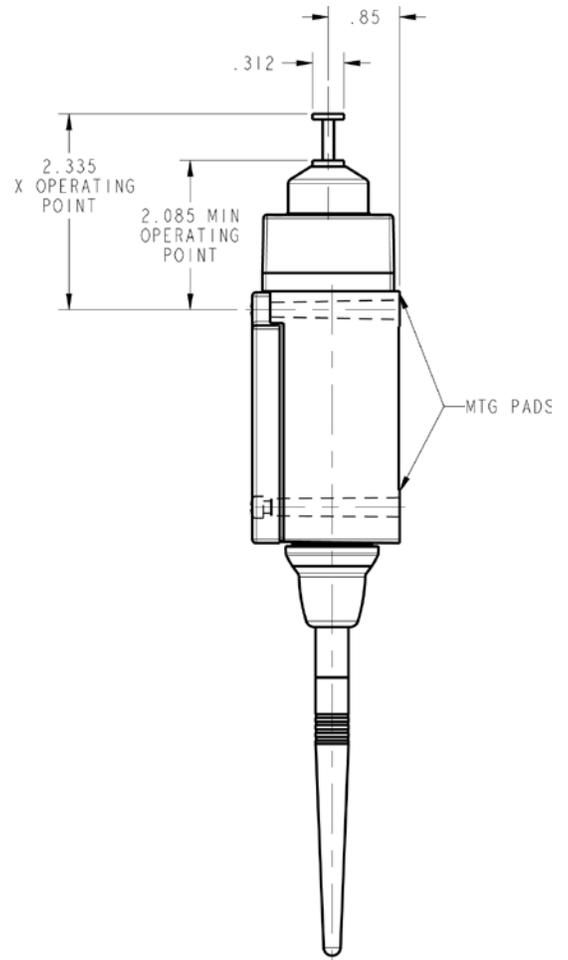
Limitless™ WLS Series

DIMENSIONS

Top Roller Plunger Head
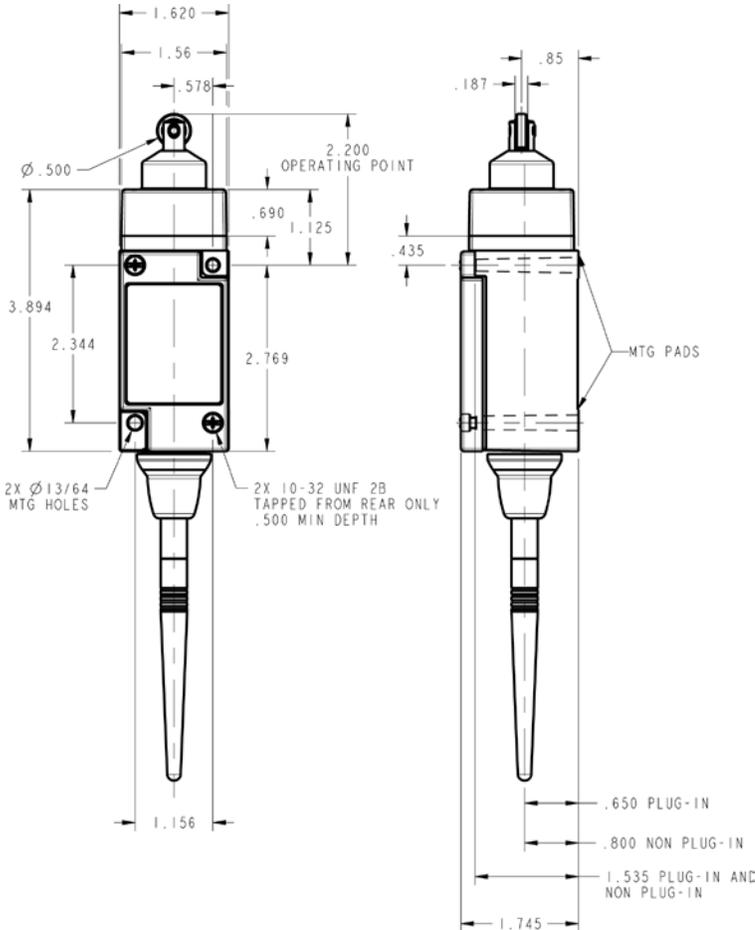
Top Plunger Head
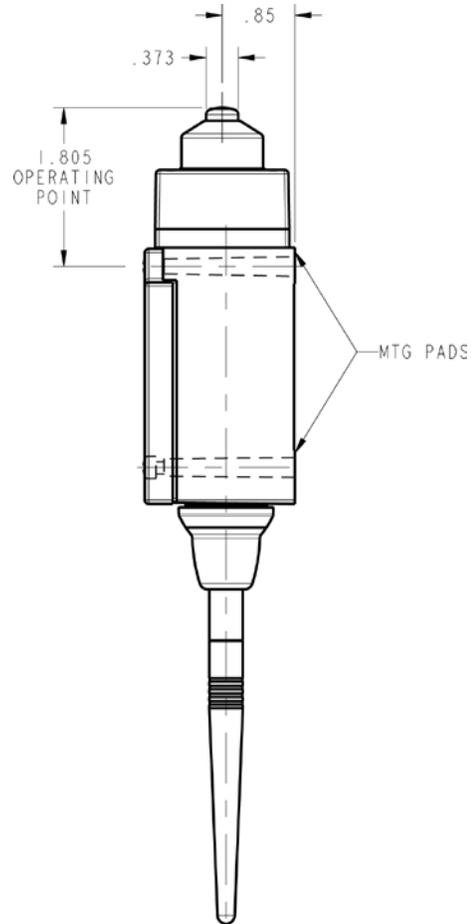
STANDARD WLS LISTINGS

Part Number	Description
WLSA1A01AA1A	Limitless™ heavy-duty limit switch, 2.2 dBi straight antenna, US/Canada, momentary action, side rotary, fixed 1.5 in lever with nylon roller
WLSA1A01AA1B	Limitless™ heavy-duty limit switch, 2.2 dBi straight antenna, US/Canada, momentary action, side rotary, fixed 1.5 in lever with steel roller
WLSA1A01AA2A	Limitless™ heavy-duty limit switch, 2.2 dBi straight antenna, US/Canada, momentary action, side rotary, adjustable 3.5 in lever with nylon roller
WLSA1A01 AA2B	Limitless™ heavy-duty limit switch, 2.2 dBi straight antenna, US/Canada, momentary action, side rotary, adjustable 3.5 in lever with steel roller
WLSA1A01AC	Limitless™ heavy-duty limit switch, 2.2 dBi straight antenna, US/Canada, top plunger
WLSA1A01AD	Limitless™ heavy-duty limit switch, 2.2 dBi straight antenna, US/Canada, top roller plunger
WLSA1A02AA1A	Limitless™ heavy-duty limit switch, 2.2 dBi tilt/swivel antenna, US/Canada, momentary action, side rotary, fixed 1.5 in lever with nylon roller
WLSA1A02AA1B	Limitless™ heavy-duty limit switch, 2.2 dBi tilt/swivel antenna, US/Canada, momentary action, side rotary, fixed 1.5 in lever with steel roller
WLSA1A02AA2A	Limitless™ heavy-duty limit switch, 2.2 dBi tilt/swivel antenna, US/Canada, momentary action, side rotary, adjustable 3.5 in lever with nylon roller
WLSA1A02AA2B	Limitless™ heavy-duty limit switch, 2.2 dBi tilt/swivel antenna, US/Canada, momentary action, side rotary, adjustable 3.5 in lever with steel roller
WLSA1A02AC	Limitless™ heavy-duty limit switch, 2.2 dBi tilt/swivel antenna, US/Canada, top plunger
WLSA1A02AD	Limitless™ heavy-duty limit switch, 2.2 dBi tilt/swivel antenna, US/Canada, top roller plunger

Wireless Heavy-Duty Limit Switches

WHDLS Series Available Levers

LCZ51A	LCZ51B	LCZ51C	LSZ51D	LCZ53A-D	LCZ55A-D
Fixed rotary lever, nylon roller, front	Fixed rotary lever, steel roller, front	Fixed rotary lever, nylon roller, back	Fixed rotary lever, steel roller, back	Yoke lever, nylon and steel rollers, front and back placement	Offset lever, nylon and steel rollers, front and back placement

LSZ52A-D	LSZ52J	LSZ52K	LSZ54M	LSZ60	LSZ61
Adj. lever, nylon and steel roller, front and back placement	Adj. lever, 1.0 in nylon roller	Adj. lever, 1.5 in nylon roller	5.5 inch aluminum rod	One-way roller lever	6 inch loop
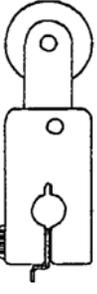
LCZ68	LSZ54R	LSZ54N
12 inch rod with spring	12 inch spring wire	13 inch stainless steel rod

Limitless™ WLS Series

ACCESSORIES NOMENCLATURE

Antenna Nomenclature

WAN	01	RSP	_ _ _
Antenna type	**Antenna type code**	**Connector Code**	**Specials**
WAN Series Antenna	01 2.2 dBi omni; straight design	RNJ Reverse polarity N jack**	Use only if antenna has a special feature.
	02 2.2 dBi omni; tilt & swivel des.	RSP Reverse polarity SMA plug	
	03 3.0 dBi omni with adhesive mount & 9.8 ft cable		
	04 5.5 dBi omni;*** tilt & swivel des.		
	05 9.0 dBi omni;*** tilt & swivel des.		
	06 8.0 dBi omni w/ bracket, straight des. 1 ft cable		

** Only used with 06 antenna type code
*** Limited outdoor exposure. Protect against direct rain, salt, snow, ice, etc.

Limitless™ Antennas

WAN01RSP Straight Design Direct Mount Connector	WAN02RSP Tilt and Swivel Design, Direct Mount Antenna	WAN05RSP with WAMM100RSP-005 Tilt and Swivel Design, Magnetic Mount Antenna	WAN03RSP Flat Design, Adhesive Mount Antenna	WAN06RNJ Straight Design, Bracket Mount Antenna

Wireless Heavy-Duty Limit Switches

Cable Assembly Nomenclature

WCA	200	RNP	RSP–	010	___ ___ ___
Cable type **WCA** Series Cable	**Cable Type** **200** 200 Series Coax	**Connector Code** **RNP** Reverse polarity N plug	**Connector Code** **RSP** Reverse polarity SMA plug	**Length Code** Not applicable **002** 2 ft cable length **010** 10 ft cable length	**Specials** Use only if cable has a special feature.
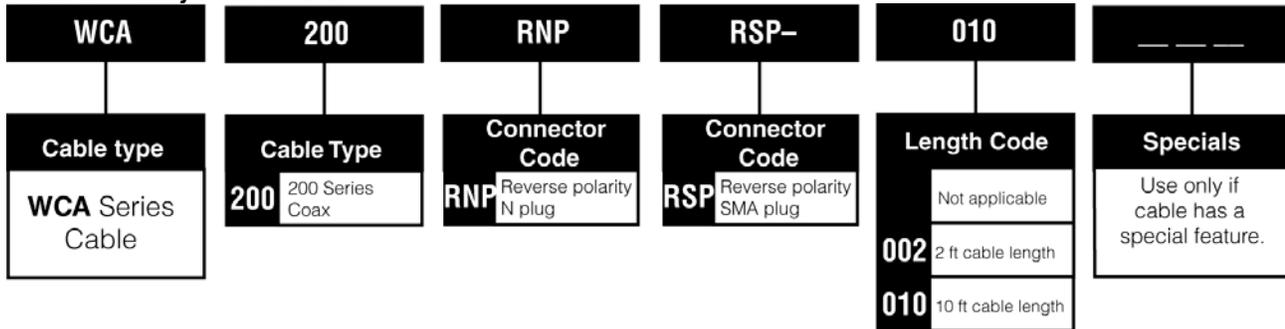
Limitless™ Cable Accessories

WCA200RNPRSP-002/010 Cable Assembly

Antenna Mounting Nomenclature

WAM	M	100	RSP–	005	___ ___ ___
Mounting **WAM** Series Antenna Mount	**Type Code** **M** Magnetic	**Cable Type** **100** 100 Series Coax	**Connector Code** **RSP** Reverse polarity SMA plug	**Length Code** Not applicable **005** 5 ft cable length **010** 10 ft cable length	**Specials** Use only if mount has a special feature.
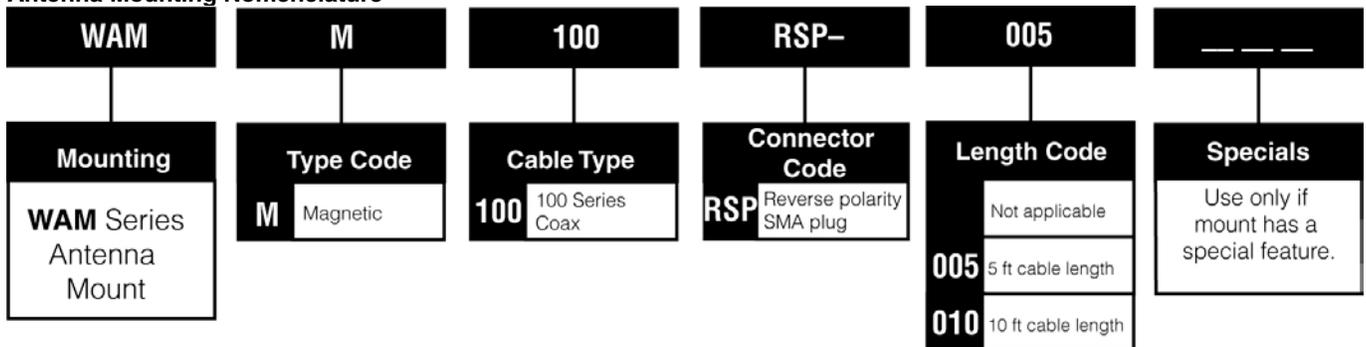
Limitless™ Panel Mount Accessories

WAMM100RSP-005/010 Magnetic Antenna Mount

Limitless™ WLS Series

STANDARD ACCESSORIES

Part Number	Description
WAN03RSP	Flat wireless antenna with 3 dBi gain, reverse polarity SMA plug, adhesive mount with 10 ft of cable
WAN06RNJ	Straight wireless antenna with 8 dBi gain, reverse polarity N jack, bracket mount with 1 ft of cable
WAN01RSP	Straight wireless antenna with 2.2 dBi gain, reverse polarity SMA plug, connector mount (RP-SMA)
WAN02RSP	Tilt/swivel wireless antenna with 2.2 dBi gain, reverse polarity SMA plug, connector mount (RP-SMA)
WAN04RSP	Tilt/swivel wireless antenna with 5.5 dBi gain, reverse polarity SMA plug, connector mount (RP-SMA)
WAN05RSP	Tilt/swivel wireless antenna with 9 dBi gain, reverse polarity SMA plug, connector mount (RP-SMA)
WCA200RNPRSP-002	200 Series coax cable assembly, reverse polarity N plug, reverse polarity SMA plug, 2 ft of cable
WCA200RNPRSP-010	200 Series coax cable assembly, reverse polarity N plug, reverse polarity SMA plug, 10 ft of cable
WAMM100RSP-005	Magnetic antenna mounting, 100 Series coax cable, reverse polarity SMA plug with 5 ft of cable
WAMM100RSP-010	Magnetic antenna mounting, 100 Series coax cable, reverse polarity SMA plug with 10 ft of cable

⚠ WARNING

PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

⚠ WARNING

MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

⚠ WARNING

Honeywell does not recommend using devices for critical control applications where there is, or may be, a single point of failure or where single points of failure may result in an unsafe condition. It is up to the end-user to weigh the risks and benefits to determine if the products are appropriate for the application based on security, safety and performance. Additionally, it is up to the end-user to ensure that the control strategy results in a safe operating condition if any crucial segment of the control solution fails.

Failure to comply with these instructions could result in death or serious injury.

SALES AND SERVICE

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office or:

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