Quick Start Guide for the **Limitless™ Series WDRR Receiver**

Issue 2
50063986

⚠ 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

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.
Honeywell customers assume full responsibility for learning and meeting the required Declaration of Conformity, Regulations, Guidelines, etc. for each country in their distribution market.

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

⚠ WARNING
RF EXPOSURE
- To satisfy FCC RF exposure requirements for mobile transmitting devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation To ensure compliance, operation at closer than this distance is not recommended. The antenna used for this transmission must not be co-located in conjunction with any other antenna or transmitter.

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

⚠ WARNING
- The WDRR must be installed in accordance with the requirements specified in this document in order to comply with the specific Country Communication Agency requirements. (i.e. FCC, IC, ETSI, ACMA, etc.) See Section 3 as it requires choosing the correct Country Use Code and thus allowable antenna and/or cable usage.

CAUTION
- Power to the WDRR should not be applied during installation of antenna as damage could occur to the WDRR electronics.

CAUTION
* The WDRR receiver offers optimal performance when paired with Limitless™ inputs that have a firmware version of 7170 or a greater number (i.e., FW7170 will be printed on the Limitless™ input label). If the Limitless™ input is paired with older firmware (FW7170 or a lesser number), the WDRR may exhibit delayed responses under simultaneous operation.

Limitless™ WDRR Series

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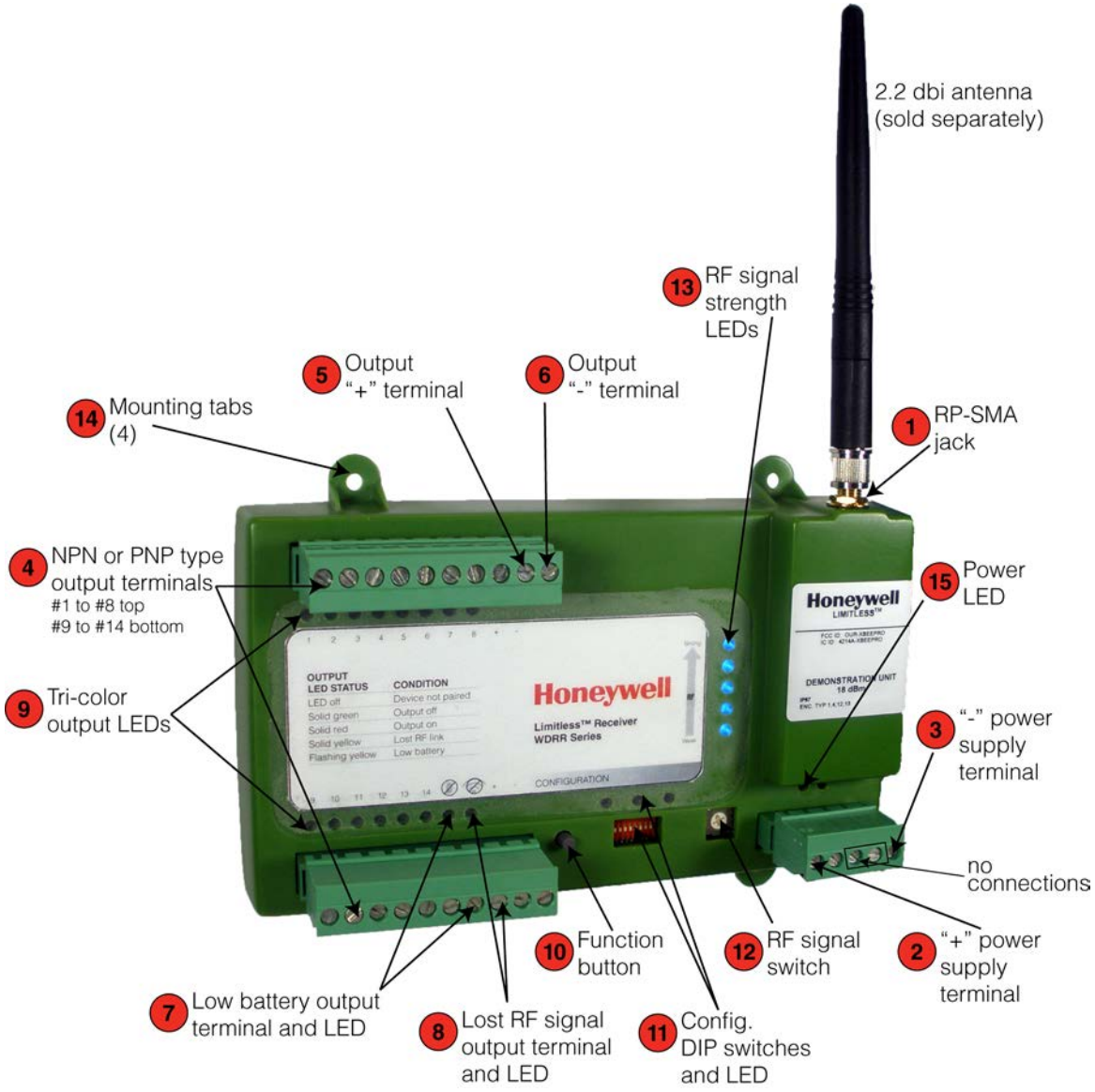
This WDRR (Wireless DIN-Rail Receiver) Series quick start installation guide provides basic installation instructions and product functionality for the Limitless™ WDRR Series when used in conjunction with up to fourteen (14) Limitless™ inputs. Figure 1 (see below) contains labels of the features and descriptions of the WDRR DIN-Rail Receiver where the function, operation, etc. of each will be provided throughout this document.

Figure 1 – Limitless™ WDRR Din-Rail Receiver with location call-outs



1.1 Antenna Connection (refer to Figure 1)

⚠ WARNING

RF EXPOSURE

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A **direct mount antenna** (either straight or tilt & swivel) can be easily mounted by threading the mating RP-SMA plug of the antenna to the RP-SMA jack ① on the WDRR. Tighten the connection until finger tight.

A **remote mount antenna** requires the use of an extension cable to allow the antenna to be mounted in a different location than the WDRR location. The extension cable will need to have one end with a RP-SMA plug connector which will mate with the WDRR **RP-SMA jack** ① under the same mounting procedure as the direct mount antenna.

ATTENTION

Only Honeywell antennas types should be used. The antenna gain when using the WDRR should meet the Country Communication Agency requirements for the specific country the WDRR is being used in. Contact Honeywell for further information.

1.2 Electrical Connections (refer to Figure 1)

⚠ WARNING

RISK OF ELECTRICAL SHOCK

* Potential shock hazard where HAZARDOUS LIVE voltages greater than 30 Vrms, 42.4 Vpeak, or 60 Vdc may be accessible.

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

ATTENTION

Do not run the electrical wires in parallel and close proximity to the antenna or antenna cable.

Power supply connections: The Limitless™ WDRR Series has two cage clamp screw terminals on the bottom right of the housing. A regulated voltage supply of 10 Vdc to 28 Vdc needs to be connected to the terminals identified as "+" ② and "-" ③ power supply terminals. Notice: if the product is being used in Brazil, Honeywell part number, WDRRPWRASM, will need to be used and electrical connections made as shown in Figure 2.

NOTICE

The measured voltage across the output "-" terminal ⑤ and the output "+" terminal ⑥ is nominally 1.5 Vdc less than the voltage supplied.

NOTICE

ANATEL requires the use of Honeywell part number WDRRPWRASM.

Figure 2. Limitless™ WDRR Din-Rail Receiver with WDRRPWRASM connected
Brown wire connects to positive power supply terminal. Blue wire connects to negative power supply terminal.

NPN or PNP output connections: The WDRR Series Receiver is supplied with fourteen (14) configurable NPN/PNP type outputs intended to be used with a customer provided PLC. A specific output will change when one or more of the Limitless™ input(s) changes. The customer has the option of connecting the outputs for use as: NPN- type current sinking or totem pole (current sinking); PNP-type current sourcing or totem pole (current sourcing). See Section 1.3 for proper settings of the DIP switches. The connections to the customer's PLC would be as follows for each:

NPN-type: Current Sinking or Totem Pole (current sinking) output connecting to a PLC sourcing input

- Connect NPN-type terminal ④ to PLC sourcing input
- Connect Output "+" terminal ⑤ to PLC common
- No connection to Output "-" terminal ⑥

PNP-type: Current Sourcing or Totem Pole (current sourcing) output connecting to a PLC sinking input

- Connect PNP-type terminal ④ to PLC sinking input
- Connect Output "-" terminal ⑥ to PLC common
- No connection to Output "+" terminal ⑤

CAUTION
Do not apply direct power (supply voltage "+" or "-") to the "-" terminal ⑤ or "+" terminal ⑥ or any of the NPN/PNP type output terminals④ as damage could occur to the WDRR electronics.

The Limitless™ WDRR Series is supplied with one configurable NPN/PNP type “low battery” output intended to be used with a customer provided PLC. The output changes state when one or more of the Limitless™ inputs has a low battery. The customer has the option of connecting the outputs for use as: NPN type-current sinking or totem pole (current sinking); PNP type-current sourcing or totem pole (current sourcing). See Section 1.3 for proper settings of the DIP switches. The connections to the customer’s PLC would be as follows for each:

NPN type-Current Sinking or Totem Pole (current sinking) output connecting to a PLC sourcing input:

- Low battery output terminal ⑦ to PLC sourcing input
- Connect Output “+” terminal ⑤ to PLC common
- No connection to Output “-” terminal ⑥

PNP type-Current Sourcing or Totem Pole (current sourcing) output connecting to a PLC sinking input:

- Low battery output terminal ⑦ to PLC sinking input
- Connect Output “-” terminal ⑥ to PLC common
- No connection to Output “+” terminal ⑤

> **CAUTION**
> Do not apply direct power (supply voltage “+” or “-”) to the “-” terminal ⑤ or “+” terminal ⑥ or any of the NPN/PNP type output terminals④ as damage could occur to the WDRR electronics.

Lost RF Link output connection: The Limitless™ WDRR Series is supplied with one configurable NPN/PNP type “Lost RF Link” output intended to be used with a customer provided PLC. The output changes state when one or more of the Limitless™ inputs has lost RF Link with the WDRR. The customer has the option of connecting the outputs for use as: NPN type-current sinking or totem pole (current sinking); PNP type-current sourcing or totem pole (current sourcing). See Section 1.3 for proper settings of the DIP switches. The connections to the customer’s PLC would be as follows for each:

NPN type-Current Sinking or Totem Pole (current sinking) output connecting to a **PLC sourcing input**:

- Lost RF link output terminal ⑧ to PLC sourcing input
- Connect Output “+” terminal ⑤ to PLC common
- No connection to Output “-” terminal ⑥

PNP type-Current Sourcing or Totem Pole (current sourcing) output connecting to a **PLC sinking input**:

- Low battery output terminal ⑧ to PLC sinking input
-Connect Output “-” terminal ⑥ to PLC common
- No connection to Output “+” terminal ⑤

> **CAUTION**
> Do not apply direct power (supply voltage “+” or “-”) to the “-” terminal ⑤ or “+” terminal ⑥ or any of the NPN/PNP type output terminals④ as damage could occur to the WDRR electronics.

1.3 Configuration DIP switches ⑪

The NPN/PNP-type outputs ④, NPN/PNP-type "low battery" output ⑦, and NPN/PNP-type "Lost RF Link" output ⑧ may be connected for use as: NPN-type current sinking or totem pole; PNP-type current sourcing or totem pole. The configuration DIP switches ⑪ identified as "1" and "2" on the DIP switch housing can be set to interface with a PLC as follows:

OUTPUT TYPE	DIP SW 1 LOGIC	DIP SW 2 LOGIC
NPN-type: Current sinking open collector	OFF	OFF
PNP-type: Current sourcing open collector	ON	OFF
NPN-type: Totem pole (current sinking)	OFF	ON
PNP-type: Totem pole (current sourcing)	ON	ON

Note: DIP switches 3 thru 8 are not used; factory default for both DIP switches is OFF.

1.4 RF Link switch ⑫

The RF Link switch allows users to select between the 14 different Limitless™ outputs to view the RF link strength of a specific Limitless™ input. The five (5) blue LEDs will then indicate the RF link strength of the Limitless™ input and corresponding output that is chosen (reference section 1.5.6). The following chart identifies the switch position that is related to each Limitless™ input/output.

Switch position	NPN/PNP Input/Output # - RF Link strength displayed
0	None-Normal operation
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
A	10
B	11
C	12
D	13
E	14
F	None-LED test mode

Note: Factory default switch position is zero

1.5 Functional Indicator

The Limitless™ WDRR Series has several LEDs to indicate various states, functions, actions, etc. The LEDs functions will be described in this section and their indication will depend on the position of the RF Link switch ⑫.

1.5.1 Power LED

Refer to Figure 1. One green LED turns on to indicate power is applied to the WDRR receiver. This occurs when the electrical power is supplied to the "+" ② and "-" ③ power supply terminals.

1.5.2 Tri-color Output LEDs:

RF Link switch position "0" ⑫

Output LED status ⑨	Condition
LED off	No device paired to output
Solid green	Output off (set-up mode allows indication to be reversed)
Solid red	Output on (set-up mode allows indication to be reversed)
Solid yellow	Lost RF link
Flashing yellow	Low battery

RF Link switch position 1-9, A-E ⑫

Output LED status ⑨	Condition (RF Signal switch position 1-9, A-E)
LED off	No device paired to output
Flashing green	Output off & RF signal strength LEDs ⑬ indicated for chosen output
Flashing red	Output on & RF signal strength LEDs ⑬ indicated for chosen output
Solid yellow	Lost RF link
Flashing yellow	Low battery

RF Link switch position F ⑫

Sequence each LED color	LED test mode

1.5.3 Low Battery output LED⑦

RF Llink switch position 0-9, A-E ⑫

Low battery LED status⑦	Condition
Solid green	Acceptable voltage(s)
Solid red	Low voltage(s)

RF Signal switch position F ⑫

Sequence each LED color	LED test mode

1.5.4 Lost RF Link output LED⑧

RF Link switch position 0-9, A-E ⑫

Lost RF Signal LED status⑧	Condition
Solid green	Acceptable RF link(s)
Solid red	Lost RF link(s)

RF Link switch position F ⑫

Sequence each LED color	LED test mode

1.5.5 Function Button ⑩ and Configuration LEDs ⑪ Operation

The Function button allows the Limitless™ WDRR Receiver to enter many different configuration modes such as Set-up, Pairing, Purge, etc. while the configuration LEDs will indicate the different modes as well as different states. This Quick Start Guide (QSG) will only show the use of the function button and configuration LEDs when in the Pairing Mode (see Section 1.7) and Start-up or Restart Sequence (see Section 1.6)

1.5.6 RF Link Strength LEDs ⑬

The five (5) blue LEDs indicate the RF Link Strength ⑬ of the Limitless™ input when communicating (i.e. Limitless™ input change of state/actuation) with the WDRR Receiver. One (1) blue LED on indicates a weak RF link and the increased number of blue LEDs on indicates a stronger RF link.

1.6 Start-up or Re-start Sequence

Apply power to the "+" ② and "-" ③ power supply terminals and the following describe how the WDRR Configuration LEDs ⑪ will indicate that the Limitless™ WDRR is ready for use:

Zero switches paired to the WDRR: The Configuration LEDs ⑪ will illuminate for a few seconds while the WDRR performs a channel scan. Afterwards, all Configuration LEDs ⑪ will turn off and only the green power LED ⑮ will illuminate. This indicates power is being supplied to the Limitless™ WDRR, and the unit is ready to use.

One or more switches paired (per Section 1.7) to the WDRR: The Configuration LEDs ⑪ will illuminate for a few seconds while the WDRR performs a channel scan. The WDRR Receiver will then enter a System Check Mode for up to two minutes. The red, yellow, and green Configuration LEDs ⑪ illuminate sequentially until the system check is successfully completed. At which time, all Configuration LEDs ⑪ will turn off, and the green power LED ⑮ will illuminate indicating power is being supplied to the WDRR. The Limitless™ WDRR is ready to use, and will also display the status of tri-color output LEDs ⑨, low battery output LED ⑦, and lost RF signal output LED ⑧ assuming the RF Link switch ⑫ is in position "0".

1.7 Pairing Mode (Factory Default: No Limitless™ Inputs Paired)

Pairing is required to initiate and establish an RF communication link between a single WDRR and a single Limitless™ input. **The Limitless™ input example used in this Quick Start Guide (QSG) will be the Limitless™ WGLA switch.**

The Limitless™ switch is shipped from the factory with two identification labels ⑯ (see Figure 5) that are recommended to be completed and applied to the Limitless™ switch housing during the pairing mode. As there are up to 14 Limitless™ switches that can be paired to a single WDRR, these labels will be used to identify the Limitless™ switch in the sequence of #1 to #14. The initial Limitless™ switch paired to the WDRR receiver will be Sequence #1 (corresponding to output #1); the second Limitless™ switch paired will be Sequence #2 (corresponding to output #2) and so on.

The battery will need to be activated in the Limitless™ switch and proper power applied to the WDRR Series Receiver before proceeding with this pairing procedure. Once the pairing is completed, the Limitless™ switch selected will only communicate with the WDRR Receiver it was paired to and no other device.

Step	Action
1	Completely read this procedure before starting in order to understand the timing of events that need to be performed.
2	Limitless™ switch: Remove (if required) the two screws ⑰ on the housing cover (See Figure 3) of the Limitless™ switch and locate the function button ⑱ (see Figure 4) to be used in Step 4.
3	WDRR: Press the Function button ⑩ on WDRR (See Figure 4) for more than four seconds and less than eight seconds at which time the green and yellow LEDs ⑪ (see Figure 4) will be flashing which indicates to release the function button immediately as it has entered the pairing mode.
4	Limitless™ switch: Within a 30 second interval of Step 3, depress the Limitless™ switch function button ⑱ (See Figure 5) and hold depressed for more than one second and less than 12 seconds at which time the orange ⑲ LED turns on (see Figure 5). While in pairing mode, the orange led will flash on for 100 ms every second. The orange ⑲ LED flashes three times 100 ms on, 100 ms off when pairing succeeds. If pairing does not succeed, the orange ⑲ LED will turn off and user will need to repeat steps starting with Step 3.
5	WDRR Receiver: Successful pairing will be indicated by the green and amber LEDs ⑪ (see Figure 4) ceasing to flash and remaining on for a few seconds before turning off. The specific Tricolor Output LED will also turn on.
6	To confirm proper pairing between the Limitless™ switch and WDRR, actuate the Limitless™ switch, and the Tricolor Output LED ⑨ (see Figure 1) should turn on to indicate the proper output status.
7	Record the Limitless™ switch Sequence # on identification labels ⑯ and apply to the Limitless™ switch housing in desired locations (See Figure 6).
8	Repeat Steps 2-7 to add additional Limitless™ switch. Up to 14 Limitless™ switches can be paired to a single WDRR.

Figure 3. Limitless™ Switch Housing

Figure 4. Limitless™ Switch Housing

Figure 5. Limitless™ Switch with Function Button Depressed

NOTE: Use a blunt object, such as a paper clip or tooth pick to actuate the function switch ⑱.

Figure 6. Limitless™ Switch Label Placement

1.8 WDRR Mounting

The WDRR is intended to be mounted to a DIN-Rail or mounted via the four (4) mounting tabs.

DIN Rail mounting: The WDRR Receiver is supplied with two snap in DIN-Rail tabs that will need to be inserted into the back of the WDRR housing as shown below.

Figure 7. Limitless™ WDRR Mounting Clips

Tab mounting: The WDRR has four tabs that are intended to allow mounting with a #6 style screw. As there are many types of screw fasteners, care should be taken to not overtighten the fastener and cause the mounting tab/housing to crack or fracture. Also, ensure that the housing is being mounted on a flat surface.

Figure 8. Limitless™ WDRR Mounting Tabs

1.9 Antenna Adjustment

The antenna of the Limitless™ WDRR and WGLA should be oriented so that they are parallel with each other. This will in most cases allow the longest range and highest RF link strength. The least RF link strength is normally in a direction in-line with the top of the antenna, so it is best to avoid having the antennas pointed directly toward each other, or directly away from each other. An acceptable RF link strength is also indicated on the WDRR with five (5) blue LEDs ⑬.

Figure 9. Limitless™ WGLA

Figure 10. Limitless™ WDRR

⚠ WARNING

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

WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

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