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Smart IO

IO-10MIXR-WE/IO-10MIXR-NWE

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APPLICATION

The Smart IO is an advanced wireless device that provides equipment monitoring and on/off control of VRF/VRV systems, lighting, exhaust fans, and other loads that need to be controlled based on a schedule and/or analog/digital input signals. Each Smart IO adds 10 points with a mix of inputs and outputs for installation flexibility.

The device includes 4 Universal Inputs/Outputs (UIO), 4 Digital Outputs (DO) and 2 Digital Inputs (DI). It also has 2 Ethernet ports, Wi-Fi, and Bluetooth connectivity. This device can be commissioned using a mobile app. The firmware of the device can be upgraded via the Wi-Fi network.

The device can be mounted on the wall, panel, and DIN rail.

FEATURES

- **Plug-and-play functionality for easy installation and maintenance.**
- **Supports a wide range of sensors such as 20KNTC, PT1000, and other resistive sensors.**
- **16-bit A/D conversion resolution for accurate measurement.**
- **Indication LEDs for all Inputs and Outputs.**
- **Compact size for small installation housings.**
- **Field configurable and programmable for control of the input and output functions using the mobile app.**
- **Supports OTA (Over the Air) firmware updates via Wi-Fi.**
- **Each UIO channel supports six configurable modes such as Voltage input, Current input, Voltage output, Current output, Digital input, and RTD measurement.**
- **An onboard 20VDC output is used to power external sensors.**
- **Compatible component in SaMBa (Small and Medium Building Administrator) Eco system.**
- **Wi-Fi and Bluetooth connectivity.**
- **External antenna for Wi-Fi and Bluetooth.**
- **Main LED to show the operational status of the Smart IO.**
- **A reset button to restore the factory default settings.**
- **Removable terminal blocks for wiring connections.**

Smart IO Inputs/Outputs

Table 1. Smart IO Input/Outputs

UIO (Configured as DI) and DI	• Pulse inputs capability — 100Hz max. Minimum duty cycle (50%/50%) = 5ms ON / 5ms OFF — Pulse counting with totalizing • Dry contact mode — Closed contact: <= 500 ohm. Wetting current: ~3.5mA — Open contact: >= 3k ohm. • Logic input mode — Low: 0…2V — High: 4…40V
DO Relay	• 5 amp and 10 amp relays • Relay 1: DO1 — Change over relay. — Contact rating (resistive load): 19…250Vac, 10A Max N.O. / 10A Max N.C. 12…30Vdc, 5A Max N.O. / 5A Max N.C. Minimum load: 10mA • Relay 2-4: DO2…DO4 — Change over relays. — Contact rating (resistive load): 19…250VAC, 5A Max N.O. / 3A Max N.C. 5…30VDC, 5A Max N.O. / 3A Max N.C. Minimum load: 10mA
UIO (Configured as AI, AO, or DO)	• Voltage input: 0…10VDC, 2…10VDC • Current input: 4…20mA • Voltage output: 0…10VDC, 1…10VDC, 2…10VDC, 0…11VDC • Current output: 0…20mA, 4…20mA. • RTD measurement: Refer to Table 2 Supported Sensors.
20VDC	• Current: Max. 100mA • Voltage: Min. 18V@100mA

NOTE: The GNDs for the UIO and DI are interconnected.

Supported Sensors

Table 2. Supported Sensors

UIO Mode	Sensor Type
Current Input Externally Powered Mode	• ALS–300 19.25- 4.25mA 0-300fc • ALS–1.5K 19.25-4.25mA 0-1500fc
Voltage Input Mode (Monitoring only)	• 7330900 (0…100 psig) • 7330910 (0…400 psig) • RCC-SP150-2 (0…150 psig) • RCC-SP150-5 (0…150 psig) • RCC-SP150-M (0…150 psig) • RCC-SP300-2 (0…300 psig) • RCC-SP300-5 (0…300 psig) • RCC-SP300-M (0…300 psig) • RCC-SP500-2 (0…500 psig) • RCC-SP500-5 (0…500 psig) • RCC-SP500-M (0…500 psig)
Voltage Input Mode	• CO_2 0-10VDC_0…2000 ppm • Pressure 0-10VDC_0…5 in. WC • Pressure 0-10VDC_0…2.5 in. WC • Pressure 0-10VDC_0…0.25 in. WC • RH 0-10VDC (0…100%) • RH 2-10VDC (0…100%)
Resistance Input Mode	• RCC-ST2K-2 (–45.5…+51.7°C) • RCC-ST2K-5 (–45.5…+51.7°C) • RCC-ST2K-8 (–45.5…+51.7°C) • NTC10kΩ (Type 2 and Type 3) (–30…+100°C) • NTC20kΩ (–50…+150°C) • PT100 (–50…+250°C) • PT1000 (–50…+400°C) • PT3000 (–50…+150°C) • BALCO500 (–40…+150°C) • NI1000TK5000 (–30…+130°C) • 10K3A1 (–40…+125°C) • Nickel Class B DIN 43760 sensors (–60…+169°C) • JOHNSON A99 (–40…+120°C)

NOTE: Honeywell sensors were tested and are recommended for use with the Smart IO. Refer to the recommended parts list.
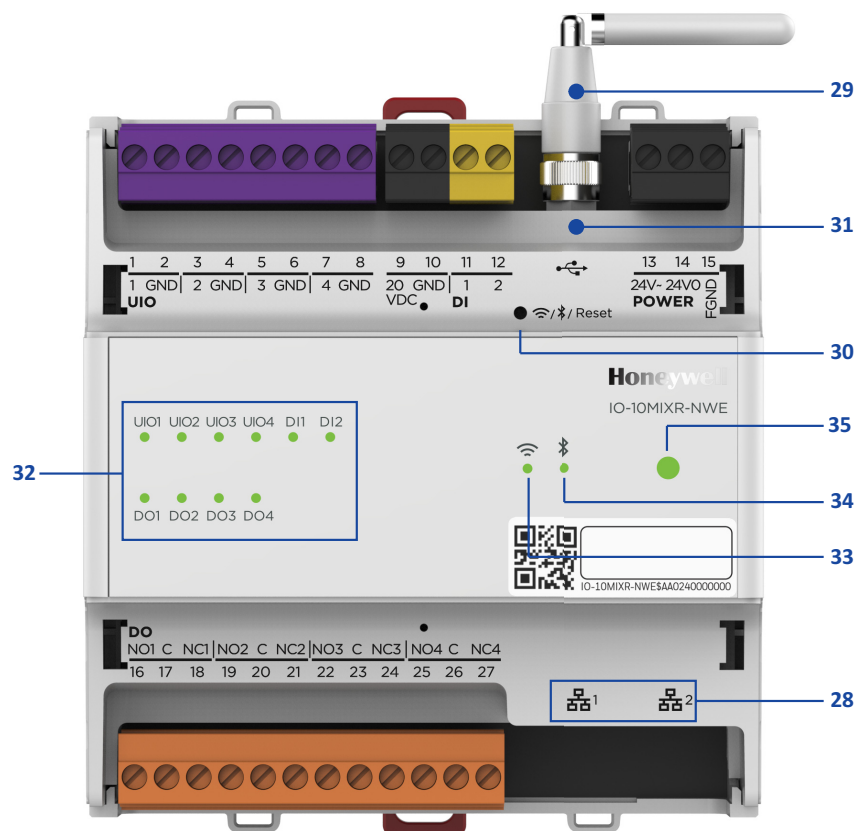
INTERFACES AND TERMINALS

Table 3. Device Terminals

Type	Terminal Number	Signal	Description
UIO 1	1	1	Input/Output signal for UIO 1
UIO 1	2	GND	Signal ground for UIO 1
UIO 2	3	2	Input/Output signal for UIO 2
UIO 2	4	GND	Signal ground for UIO 2
UIO 3	5	3	Input/Output signal for UIO 3
UIO 3	6	GND	Signal ground for UIO 3
UIO 4	7	4	Input/Output signal for UIO 4
UIO 4	8	GND	Signal ground for UIO 4

Table 3. Device Terminals (Continued)

Type	Terminal Number	Signal	Description
20 VDC Output	9	20V DC	20 Vdc power supply output for active sensors
20 VDC Output	10	GND	GND for 20 Vdc and DI
DI	11	1	Digital Input for channel 1
DI	12	2	Digital Input for channel 2
POWER	13	24V~	Power supply (for 24V AC, positive terminal for 24V DC)
POWER	14	24V0	Power supply common (for 24V AC, Negative terminal for 24V DC)
POWER	15	FGND	Earth ground in the field

Table 3. Device Terminals (Continued)

Type	Terminal Number	Signal	Description
Change-over Relay 1	16	NO1	Normally Open contact
	17	COM	COM contact for Relay 1
	18	NC1	Normally Closed contact
Change-over Relay 2	19	NO2	Normally Open contact
	20	COM	COM contact for Relay 2
	21	NC2	Normally Closed contact
Change-over Relay 3	22	NO3	Normally Open contact
	23	COM	COM contact for Relay 3
	24	NC3	Normally Closed contact
Change-over Relay 4	25	NO4	Normally Open contact
	26	COM	COM contact for Relay 4
	27	NC4	Normally Closed contact
RJ45 Interface	28	Ethernet 1	10/100 base-T/TX
		Ethernet 2	
SMA Connector	29	Wi-Fi and Bluetooth antenna	Antenna for both Wi-Fi and Bluetooth 802.11a/b/g/n/ac + BT 4.2
Reset/Wireless Button	30	Bluetooth /Factory reset button	Physical button to activate Bluetooth or reset the device to factory default.

Table 3. Device Terminals (Continued)

Type	Terminal Number	Signal	Description
USB-C	31		USB-C port to connect with laptops, mobile, and tablets for initial firmware upgrade.
LED	32	UIO 1	Transmit and receive indication of Universal Input/Output (Off, Green, Yellow, and Red)
		UIO 2	
		UIO 3	
		UIO 4	
		DI 1	Status indication of Digital input (Off, Green, Yellow, and Red)
		DI 2	
		DO 1	Relay status of Digital output (Off and Green)
		DO 2	
		DO 3	
		DO 4	
	33	Wi-Fi	Indicates operational status of the Wi-Fi (Off, Green, Yellow, and Red)
	34	Bluetooth	Indicates operational status of the Bluetooth (Off, Green, Yellow, and Red)
	35	Main LED	Indicates the operational status of the Smart IO (Off, Green, Yellow, and Red)

NOTES:
 — Ethernet Ports are for Future Use
 — USB-C Port is for Future Use.
 — Wi-Fi 5 GHz is for Future Use.
 — The GNDs for the UIO and DI are intercon-
    nected.
 — Refer to 31-00429(SmartIO Installation
    Instructions) for terminal wiring.

TECHNICAL SPECIFICATIONS

System Data

Table 4. System Data

Operating Voltage (AC)	19 to 29 Vac (50/60Hz)
Operating Voltage (DC)	23 to 29 Vdc
Overvoltage Protection	Protected against overvoltages of max. 29 Vac or 40 Vdc. Terminals protected against short–circuiting.

NOTE: The Smart IO requires a minimum supply voltage of 23 volts DC for terminal 9 (20Vdc) to provide 20 volts.

Power Consumption

Table 5. Power Consumption

Device	Power	
	24 Vac	**24 Vdc**
Smart IO	Max. 27 VA	Max. 12W

Operating Environment

Table 6. Operating Environment

Ambient Operating Temperature	–25 to 55 °C (–13 to 131 °F)
Wi-Fi and Bluetooth Operating Temperature	–10 to 55 °C (14 to 131 °F)
Ambient Operating Humidity	5 to 95% relative humidity (non-condensing)
Storage Temperature	–28.9 to +70 °C (–20 to 158 °F)
Vibration Under Operation	0.024" double amplitude (2 to 30 Hz), 0.6 g (30 to 300 Hz)
Dust, Vibration	According to EN60730–1
RFI, EMI	Commercial, light, industrial, residential environments
MTBF (Mean Time Between Failure)	11.5 years

Standards

Table 7. Standards

Protection Class	According to final product evaluation, meet requirements of IP20
Product Standards	CAN/CSA–E60730–1:02, Ethernet Protocol version IEEE 802.3,BACnet Standard 135 version 1.14
Testing Electrical Components	IEC68
Certification	• UL60730–1 • CSA E60730–1 • UL916 • CSA C22.2 No. 205 • EN 60730–1 • EN 60730–2–9 • FCC Part15, Subpart B • CAN ICES-3 (B)/NMB-3(B) • RoHS II: 2011/65/EU • REACH
System Transformer	The system transformer(s) must be safety isolating transformers according to IEC 61558–2–6. In the U.S.A. and Canada, NEC Class 2 transformers must be used.
Mounting compliances	DIN43880 and DIN19

Other Specifications

Table 8. Other Specifications

Real-Time Clock Retention	Buffered for 72 hours by gold capacitor

Communication Baud Rates

Table 9. Communication Baud Rates

Ethernet port	10/100 Mbps autobaud
Wi-Fi	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 150Mbps 802.11ac: up to 433Mbps
Bluetooth	BR: up to 1Mbps EDR: up to 3Mbps BLE: up to 1Mbps

NOTES:
— Ethernet Ports are for Future Use.
— Wi-Fi 5 GHz is for Future Use.

Restrictions in the 5 GHz band

Within the 5.15 to 5.25 GHz band, UNII devices will be restricted to indoor operations to reduce any potential for harmful interference to co-channel Mobile Satellite System (MSS) operations.

Restrictions dans la bande de 5 GHz

Dans la bande de 5,15 à 5,25 GHz, les appareils UNII seront restreints aux opérations intérieures pour réduire toute possibilité d'interférence pouvant nuire aux opérations du Système satellite mobile dans le même canal(MSS).
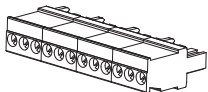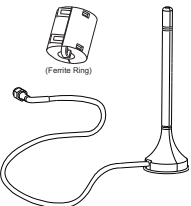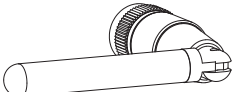
Smart IO Part Numbers

Table 10. Smart IO Part Numbers

Part Number	Description
IO-10MIXR-NWE	Wireless Smart IO with North American conformance
IO-10MIXR-WE	Wireless Smart IO with European and Latin America conformance

Accessories Part Numbers

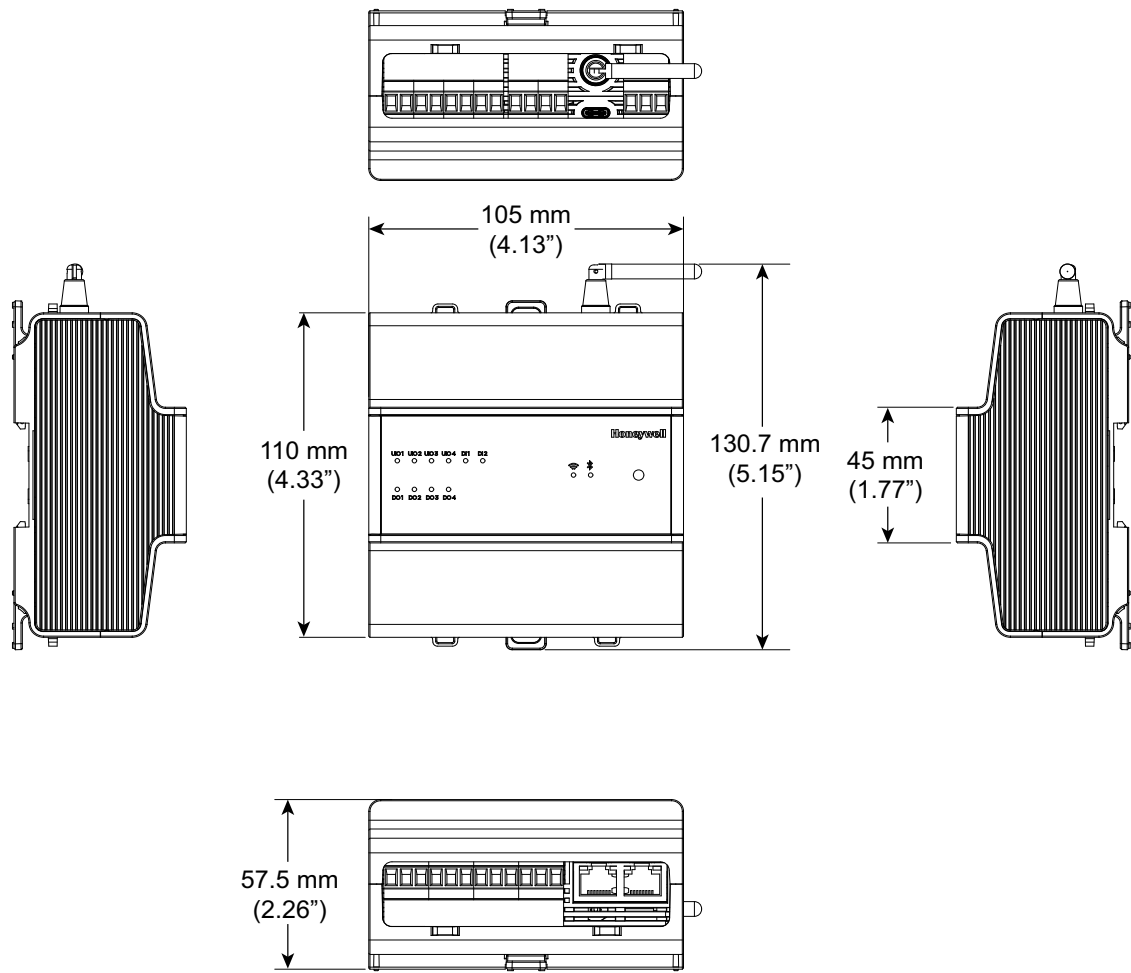These accessories are available by separate order.

Table 11. Accessories Part Numbers

	Part Number	Description
	IO-TCVR-105	Replacement small terminal cover. Fits 105mm IO modules. (Pack of 6)
	IO-10MIXR-STB	Replacement screw terminal blocks for wiring connection. (Pack of 10 Sets)
	ANT-REM	Remote antenna for wireless communication with adhesive and screw mounted base. 1.5 meter (4.9 feet) cable length for remote mounting of the antenna. Includes Ferrite Ring. (Pack of 4)
	IO-ANT-LOC	Local antenna for wireless communication. (Pack of 5)

Remote Antenna Part Numbers

Table 12. Remote Antenna Part Numbers

Part Number	Vendor Name	Type	Gain
CA #ANTT935-4	ADAM	External	2.4 GHz: 2.9dbi, 5 GHz: 5.9dbi
GW.05.0113W	TAOGLAS	External	2.4 GHz: 2.57dbi, 5 GHz: 1.38dbi
ARY113-0012-004-00	WIESON	External	2.4 GHz: –0.31dbi, 5 GHz: 1.17dbi

DIMENSIONS

105 mm
(4.13")

110 mm
(4.33")

130.7 mm
(5.15")

45 mm
(1.77")

57.5 mm
(2.26")

GENERAL SAFETY INFORMATION

- When performing any work (installation, mounting, start-up), all manufacturer instructions and in particular the Installation and Commissioning Instructions (EN1B–0206IE10) are to be observed.
- The Smart IO and other related accessories, manual disconnect modules, and the auxiliary terminal packages) may be installed and mounted only by authorized and trained personnel.
- Rules regarding electrostatic discharge should be followed.
- If the Smart IO is modified in any way, except by the manufacturer, all warranties concerning operation and safety are invalidated.
- Make sure that the local standards and regulations are observed at all times. Examples of such regulations are VDE 0800 and VDE 0100 or EN 60204-1 for earth grounding.
- Use only accessory equipment which comes from or has been approved by Honeywell.
- It is recommended that devices be kept at room temperature for at least 24 hours before applying power. This is to allow any condensation resulting from low shipping/storage temperatures to evaporate.
- The Smart IO must be installed in a manner (e.g., in a lockable cabinet) ensuring that unauthorized persons have no access to the terminals.
- Investigated according to United States Standard UL–60730-1,UL–916, and UL60730-2-9.
- Investigated according to Canadian National Standard(s) C22.2, No. 205-M1983 (CNL-listed).
- Do not open the Smart IO, as it contains no user-serviceable parts inside!
- CE declarations according to LVD Directive 2014/35/EU and EMC Directive 2014/30/EU.
- Product standards are EN 60730-1 and EN 60730-2-9 for indoor use only.

Safety Information as per EN60730–1

The Smart IO is intended for residential, commercial, and light-industrial environments.

The Smart IO is an independently mounted electronic control system with fixed wiring.

The Smart IO is suitable for mounting in fuse boxes conforming with standard DIN43880 and DIN19, and having a slot height of max. 45 mm.

It is suitable for panel rail mounting on 35 mm standard panel rail (both horizontal and vertical rail mounting possible).

The Smart IO is used for the purpose of building HVAC control and is suitable for use only in non-safety controls for installation on or in appliances.

Table 13. Safety Information as per EN60730–1

Electric Shock Protection	SELV
Pollution Degree	Pollution Degree 2, suitable for use in industrial environments.
Installation	Safety class: Evaluated in final product
Overvoltage Category	AC 230V for relay: Category II
Rated Impulse Voltage	330 V AC for Category I (SELV) 2500V AC for Relay output (DO)
Automatic Action	Type 1.B(micro-disconnection for relay)
Software Class	Class A
Enclosure	According to final product evaluation, meet requirements of IP20
Ball-pressure Test Temperature	>75 °C for all housing and plastic parts >125 °C in the case of devices applied with voltage-carrying parts, connectors, and terminals.
Electromagnetic Interference	Tested at 230 Vac, with the modules in normal condition.
System Transformer	Europe: safety isolating transformers according to IEC61558-2-6 U.S.A. and Canada: NEC Class-2 transformers

WEEE

WEEE Directive 2012/19/EC Waste Electrical and Electronic Equipment Directive
- At the end of the product life, dispose of the packaging and product in an appropriate recycling center.
- Do not dispose of the device with the usual domestic refuse.
- Do not burn the device.

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