

# ENGINEERING DATA



Model: NBD-AS60

welsPACE AirBox

## DESCRIPTION

Monitor indoor PM2.5, CO2, formaldehyde, VOC, carbon monoxide, temperature and humidity, and support measurement and calculation of air change rate and infection risk index

## KEY SPECIFICATIONS

### Primary Operation Parameters

<b>Operation Temp Range</b>	14~122 °F
<b>Operation RH Range</b>	0~95%RH
<b>Storage Temp Range</b>	-4~140 °F
<b>Power Input</b>	DC12~24
<b>Current Consumption</b>	Average 350mA peak 600mA
<b>Signal Output</b>	Modbus, RS486, 9600ps, 1 start bit, 8 data bits, 1 stop bit, no check bit (option WIFI, ZIGBEE, TCP/IP, loRaWan)
<b>Size</b>	450g/133mm×39mm

### Monitor Capability and Range

<b>Primary Monitor Parameter</b>	<b>Range</b>	<b>Resolution Ratio</b>	<b>Accuracy</b>	<b>Method</b>
PM2.5	0~1000 pg/m <sup>3</sup>	1 pg/m <sup>3</sup>	< ±5%	optical scattering
Formaldehyde	0~2.00ppm	0.01 ppm	< ±0.05ppm	electrochemistry
VOC	0~5.00mg/m <sup>3</sup>	0.01 mg/m <sup>3</sup>	< ±10%	semiconductor
CO2	0~5000ppm	1 ppm	± 40ppm±3% reading	infra-red
Temperature	-40 ~ 176 °F	32.18 °F	± 0.9 °F	
Humidity	0 ~ 100%RH	0.1% RH	± 3%RH	

# ENGINEERING DATA



## Model: NBD-GW-IC1000

welSPACE Edge Gateway



### PRODUCT FUNCTIONS

- Compact all-metal design and excellent heat dissipation performance, providing protection from dust and extreme temperatures
- Industrial grade I/O board for RS-232/485
- Buzzer + RTC for precise time keeping
- Full network coverage (Gigabit Ethernet、2.4GHz/5GHz Wi-Fi、4G LTE)
- Fully compliant with Modbus/TCP for seamless integration
- Industrial-grade gateway kit for applications in smart building ventilation monitoring and automation control

### KEY SPECIFICATIONS

Primary Operation Parameters	
<b>CPU</b>	BCM2711 4 cores, ARM Cortex-A72(ARM v8), 1.5GHz, 64 bit
<b>Memory and Storage</b>	512MB DDR3 SDRAM, 4GB eMMC
<b>Wireless</b>	2.4G/5G Wi-Fi + Bluetooth 5.0
<b>Cellular Interface</b>	Fully integrated and external antenna 1×SIM Slot (4G LTE)
<b>Series Ports</b>	4×RS-485 1×RS-232 1×CAN
<b>USB Host</b>	2×USB2.0 Type A, 1×USB2.0, 1×USB micro-B
<b>Operation Voltage</b>	7.5V~18V DC
<b>OS</b>	Raspberry Pi OS
<b>Enclosure</b>	All Aluminum housing
<b>Mounting</b>	Stand, Din-rail
<b>Size</b>	103mm×73mmX32mm

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## Analog Output Converter (Its functions will be embedded into the Edge Gateway)



### DESCRIPTION

The DA analog output module can independently output 2 analog signals; The module adopts a high-performance 12-bit DA chip, with an output accuracy of  $\pm 0.2\%$ . Suitable for various industrial control sites

The module adopts magnetoelectric/optoelectronic isolation technology, effectively ensuring the reliability and safety of the system.

### KEY SPECIFICATIONS

Analog Output Converter Specs	
<b>Analog output channel</b>	2 single-ended
<b>Analog output signal range</b>	+20mA, +5V, +10V
<b>DA output accuracy</b>	$\pm 0.2\%$
<b>DA conversion resolution</b>	12 bits
<b>Wide power supply range</b>	DC 9~30V
<b>Three terminal isolation withstand voltage</b>	$\geq 1500V$ DC between power/communication/analog inputs
<b><math>\pm 15KV</math> ESD protection</b>	
<b>Isolation withstand voltage</b>	DC 2500V
<b>Operating temperature range</b>	-40°C~80°C
<b>Industrial grade ABS flame retardant housing, standard DIN35 guide rail</b>	

# ENGINEERING DATA



## Economizer Kit



### DESCRIPTION

Economizer kit offer a packaged selection designed for a specific economizing strategy. Providing what you need to retrofit existing systems - the Economizer Base, air sensors, Energy Module for Demand Control Ventilation (DCV) integration, and a spring return actuator.

### KEY SPECIFICATIONS

Economizer Kit Specs	
<b>Base Economizer</b>	Power Supply: 24 VAC
<b>Energy Module</b>	Energy Module (DCV, 2 Speed Fan, Exhaust Fan, Pre-Occupancy Purge)
<b>Damper Actuator</b>	24 VAC/VDC Analog Input: 0(2)-10 VDC, 0(4)-20mA Analog Output: 0(2)-10 VDC, 0(4)-20mA 89 in-lb [10 Nm]
<b>Temperature Sensors</b>	10K Temperature Sensors for Supply Air, Return Air, and Outside Air Accuracy: $\pm 0.36$ °F, ( $\pm 0.2$ °C) 0-10VDC Temperature Range: -67 °F to +176 °F (-55 °C to +80 °C)
<b>Humidity Sensors</b>	0 to 100% RH, 0-10VDC (0 to 100% RH) max load 10kOhm Accuracy: $\pm 5\%$
<b>CO2 Sensor</b>	24 VAC/VDC Measurement Range: 0-2000ppm Analog Output: 0-10 VDC Accuracy: $\pm(50$ ppm + 3% of measured value)