

Airobot Ventilation Unit — Modbus

Airobot ventilation units integrate into smart home and building automation systems over the Modbus protocol. Both Modbus RTU (serial) and Modbus TCP (Ethernet) are supported, for reading live values and reading or writing settings.

Compatible L, L5, S1, S2, V3, V4, V6, V8

Protocols Modbus RTU, Modbus TCP

Last updated 29.06.2026

SAFETY

WARNING

Modbus access is intended for qualified system integrators. You may only set values within the specified Min–Max range. Writing out-of-range values may cause unexpected behaviour or damage the device.

OVERVIEW

Airobot ventilation units are designed to integrate into modern smart home and building automation systems. To enable external control and monitoring, Airobot supports communication over the Modbus protocol, one of the most widely used open standards in industrial automation. Both Modbus RTU (serial communication) and Modbus TCP (Ethernet-based communication) are supported, offering flexibility for different project requirements.

MODBUS TCP

Modbus TCP allows communication over a local area network (LAN) and is the preferred method for most modern integrations.

Connection:

- All Airobot ventilation units come standard with Ethernet functionality.
- Connect an Ethernet cable to the RJ45 port on the device enclosure (typically located near the power cable input).
- If the RJ45 port is not present on the enclosure, connect the Ethernet cable directly to the “LAN” socket on the controller board.

Activation:

- Modbus TCP is disabled by default.
- On the device, go to Menu > Settings > Other > Modbus TCP and set it to ON. The device reboots.
- The IP address assigned by your router is then saved as a static IP.

NOTE

If no controller is available, contact Airobot customer support for remote activation (internet connectivity required).

MODBUS RTU

Modbus RTU is enabled by default and provides a serial communication option.

NOTE

The VE1 remote controller cannot operate at the same time as Modbus RTU. If a controller is required, use Modbus TCP instead. The special 4-pin connector is not included with the device; it is supplied only with the VE1 controller.

Connection:

- Connect the A and B wires to the 4-pin “LCD” connector on the controller board (follow the marking on the board).
- Alternatively, use the 4-pin connector on the device enclosure near the power cable input.

Configuration:

Setting	Value
Modbus slave address	1
Baud rate	230400
Stop bits	1
Parity	None

READ DATA

If a value is larger than 16 bits, it is split across two Modbus registers.

Register	Description	Unit	Min	Max
1000	Device firmware version		256	999
1001	Extract (room) air temperature	°C	-999	999
1002	Supply air temperature	°C	-999	999
1003	Outdoor air temperature	°C	-999	999
1004	Exhaust air temperature	°C	-999	999
1005	Extra temperature sensor (optional; required with an external humidifier)	°C	-999	999
1006	Extract air humidity	RH %	-999	999
1007	Supply air humidity	RH %	-999	999
1008	Outdoor air humidity	RH %	-999	999
1009	Exhaust air humidity	RH %	-999	999
1010	Extra humidity sensor (optional; required with an external humidifier)	RH %	-999	999
1011	Carbon dioxide level (CO ₂)	ppm	0	5000
1014	Supply fan level		0	10
1015	Extract fan level		0	10
1016	Supply fan pulses per minute	RPM	0	9999
1017	Extract fan pulses per minute	RPM	0	9999
1018	Device working time since last reset	ms	0	4294967295
1026	Sum of errors (bit values): FIRE_ALARM 1, FAN1 2, FAN2 4, SENSOR_1 8, SENSOR_2 16, SENSOR_3 32, SENSOR_4 64, SENSOR_5 128, SENSOR_CO2 256, HEATER 512, LOW_SUPPLY 1024, FILTER 1048		0	4294967295
1028	Server connected		0	1
1029	VOC	Index	0	500
1031	PM2.5 (optional sensor)	µg/m ³	0	999999
1034	Heat recovery temperature efficiency	%	0	100
1051	Supply air airflow (constant-flow models only)	m ³ /h	0	999
1052	Extract air airflow (constant-flow models only)	m ³ /h	0	999

READ AND WRITE DATA

You may only set values within the Min–Max range; otherwise the device may behave unexpectedly or be damaged.

Register	Description	Min	Max	Default
2000	Device working mode: 1 = Automatic, 2 = Manual	1	8	1
2003	Setpoint humidity level	50	950	600
2004	Setpoint CO ₂ level (for extract air sensor)	450	2000	800
2005	Manual mode fan working level	0	10	5
2007	Overpressure (fireplace) mode fan working level	0	10	5
2009	Settings flag (sum of active flags): POWER_ON 1, BOOST_ON 16, OVERPRESSURE_ON 32, REBOOT 64	0	65535	1
2010	Boost mode timeout (seconds)	180	3600	1800
2012	Overpressure / fireplace mode timeout (seconds)	180	3600	1800
2014	UI flags (sum of active flags): FILTER_ALERT 16	0	65535	9
2015	UI flags 1 (sum of active flags): MODBUS_ON (Modbus TCP) 16	0	65535	8
2017	Filter reminder interval (hours)	720	8760	4320
2018	Filter reminder time elapsed — set value 0 to reset the filter timer	0	65535	0
2034	Setpoint VOC level	0	500	200
2064	Setpoint PM2.5 level	0	999	50

READ AND WRITE COIL DATA

You may only set values in the 0–1 range.

Register	Description	Min	Max	Default
4000	POWER_ON — stops ventilation	0	1	1
4003	BYPASS_ON — enables bypass automatic mode	0	1	0
4004	BOOST_ON — activates boost mode if 1	0	1	0
4005	OVERPRESSURE_ON — activates Overpressure (fireplace) mode if 1	0	1	0
4006	REBOOT — reboots the device if 1	0	1	0
4020	FILTER_ALERT (read only) — device sets this to 1 if filter replacement is required	0	1	0
4027	HUMIDITY_CONTROL_ENABLE — enables humidity setpoint control	0	1	0
4030	VOC_CONTROL_ENABLE — enables VOC setpoint control	0	1	0
4031	PM_CONTROL_ENABLE — enables PM2.5 setpoint control	0	1	0
4036	MODBUS_ON — activates Modbus TCP if 1	0	1	0

TROUBLESHOOTING

Device unreachable on port 502:

First confirm the device is reachable on the network by pinging its IP address. Then test port 502 specifically. On Windows, run:

```
Test-NetConnection <device-IP> -Port 502
```

If `TcpTestSucceeded` returns `True`, the port is open — continue to the next symptom below. If `TcpTestSucceeded` returns `False`, the Modbus service is not running, a firewall is blocking port 502, or the device has a different IP than expected.

NOTE

The device IP is saved as static when Modbus TCP is first activated. If the router has been reset or reconfigured since then, the IP may have changed. Check the router's DHCP table to confirm the current address.

TCP connects but Modbus returns no response:

The most common causes are, in order of likelihood:

- Timeout too short — the device may take 2–3 seconds to respond depending on network conditions. Set the master timeout to at least 3000 ms; a timeout of 2000 ms or less may give up before the response arrives, with no error returned.
- Wrong Unit ID — all Airobot units use Unit ID 1. With Modbus TCP, units are differentiated by IP address; do not use different slave IDs to address different units.
- Register address offset — some Modbus tools use 0-based addressing. If register 1000 returns nothing, try address 999. Start with a single FC03 read of one register to confirm communication before polling multiple registers.
- Multiple masters connected at once — Modbus TCP devices typically handle one active connection at a time. If a BMS and a diagnostic tool are both connected, one will get no response. Disconnect any other Modbus client before troubleshooting.
- Polling too fast — sending requests faster than the device can process them causes queued requests to time out. Leave a gap of 100–500 ms between polls.

Device stops responding mid-session:

This is most often caused by too many open TCP connections. If the BMS does not close connections after each session, the device can run out of available sockets and stop accepting new connections. Reboot the device to clear the open sockets, then configure the BMS to either close the TCP connection after each poll cycle or maintain a single persistent connection, rather than reconnecting repeatedly.