

Airfi Modbus Register Map v. 3.4

All registers below apply to software version: **airfi-sw 4.0.0**

Default communication settings:

Modbus RTU 38400 8n1, ID1

Modbus TCP, standard port 502, UnitID 1

A maximum of 30 registers can be read at one time

Input register, 16 bit integer. Read only.

Register	Name	Min	Max	Unit	Description
3x00001	Component ID	1	999		HW-version, 190 = 1.90 (/100)
3x00002	Application ID	1	999		SW-version, 190 = 1.90 (/100)
3x00003	Map version	1	99		Map version
3x00004	T1, Outdoor air temperature			°C	e.g. 23.2 °C = 232
3x00005	T2, Supply air temperature			°C	
3x00006	T3, Extract air temperature			°C	
3x00007	T4, Exhaust air temperature			°C	
3x00008	T5, Supply air temperature			°C	
3x00009	T6, Freeze protection sensor			°C	Water model only
3x00010	Reserved			°C	
3x00011	Reserved				
3x00012	Reserved				
3x00013	AUX3 mode	0			AUX3 actuator selection 0 = not in use 1 = switch function 2 = transmitter function 3 = filter guard
3x00014	AUX4 mode	0			
3x00015	Fireplace / pressure equalization (AUX1 / Sento)	0	1		0 = OFF, 1 = ON (forced function)
3x00016	Home/Away mode	0	1		0 = HOME, 1 = AWAY
3x00017	Emergency stop status	0	1		0=OFF, 1=ON
3x00018	Freezing risk alarm	0	1		0 = OFF, 1 = ON (water coil)
3x00019	Unit fault status	0	1		0 = no fault, 1 = fault
3x00020	Reserved				

3x00021	Reserved				
3x00022	Reserved				
3x00023	Measured humidity content	25	100	Rh%	(internal humidity value)
3x00024	Fan speed	0	5		speed 1–5
3x00025	Forced control	0	3		
3x00026	Suoraohjaus on/off	0	1		
3x00027	Direct control 0–100%	0	100	%	Note! In Model 250 units, the maximum speed is 75% instead of 100%.
3x00028	Temperature setpoint	0	260	x10C	
3x00029	AUX3 setpoint	0	x		Value according to the selected actuator
3x00030	AUX4 setpoint	0	x		Value according to the selected actuator
3x00031	Filter replacement interval	0	6		Times per year (default 0)
3x00032	Error-info	0	99		bitshift: E0 = 0x0000000000000001 = 1 E1 = 0x0000000000000010 = 2 E2 = 0x0000000000000100 = 4 E3 = 0x0000000000001000 = 8 E4 = 0x0000000000010000 = 16 E5 = 0x000000000100000 = 32 E6 = 0x000000001000000 = 64 E7 = 0x000000010000000 = 128 E8 = 0x000000100000000 = 256 E9 = 0x000001000000000 = 512
3x00033	AUX3 read value	0	x		Value according to the selected actuator (RH, CO ² , etc.)
3x00034	AUX4 read value	0	x		Value according to the selected actuator (RH, CO ² , etc.)
3x00035	Constant pressure control supply alarm	0	9		0 = no alarm 1 = alarm, setpoint not entered 2 = alarm, deviation alarm 9 = alarm, possible malfunction
3x00036	Constant pressure control extract alarm	0	9		
3x00037	Filter guard alarm				0 = no alarm 1 = alarm – supply filter fouled 2 = alarm – extract filter fouled 3 = supply and extract alarm 4 = sensor fault, supply 5 = sensor fault, extract 6 = sensor fault, supply + extract 7 = inaccurate calibration
3x00038	AUX2 status	0	1		AUX2 status

3x00039	Fire-risk alarm	0	1		1 if the fire-risk alarm is active. Otherwise 0.
3x00040	Cooker hood status	0	1		0 = cooker hood damper closed 1 = cooker hood damper open
3x00041	S1 read value	0	x		Value according to the selected actuator (RH, CO ² , etc.)
3x00042	Room sensor			°C	Temperature of the selected measurement data
3x00043	Post-heating control valve status (water, electrical control valve only)	0	100		100 = 10.0, 50 = 5.0, 0 = 0.0 NOTE: Water models
3x00044	Defrost active	0	1		0 = not active 1 = active
3x00045	Airflow measurement (supply)	0	3000	m3/h	C-series unit
3x00046	Airflow measurement (extract)	0	3000	m3/h	C-series unit
3x00047	AUX1 status	0	1		0 = not active 1 = active
3x00048	Status output valve control value	0	100	%	0 if status output is not used for valve control
3x00049	Bypass status	0	1		0 = winter, 1 = summer/dynamic
3x00050	CO2 sensor value	0	2000	ppm	

Holding register, 16 bit integer. Read/write.

Register	Name	Min	Max	Unit	Description
4x00001	Speed	0	5		Fan speed 0–5
4x00002	Forced control	0	3		0 = forced control off 1 = emergency stop on 2 = away mode on
4x00003	Direct control enabled	0	1		0 = disabled, 1 = enabled
4x00004	Direct control 0–100%	0	100	%	Extract fan + supply fan (difference from board) Note! In Model 250 units, the maximum speed is 75% instead of 100%.
4x00005	Temperature setpoint	50	260	x10C	Min. 130 (13 °C) for water units; for other units min. 50 (5 °C) NOTE! Decimal values are not supported. If, for example, 155 is written, the decimal part is removed and the temperature setpoint becomes 15 °C.

4x00006	AUX3 setpoint	0	3000		Setpoint according to the selected actuator. Max. 100 in RH mode, otherwise 3000.
4x00007	AUX4 setpoint	0	3000		Setpoint according to the selected actuator. Max. 100 in RH mode, otherwise 3000.
4x00008	Filter replacement interval	0	6		Times per year (default 0)
4x00009	Constant pressure control mode	0	2		0 = disabled 1 = enabled for speeds 1–2 2 = enabled for speeds 1–5
4x00010	Supply fan direct control	25	100		PWM%, range 25–100% Note! In Model 250 units, the maximum speed is 75% instead of 100%.
4x00011	Extract fan direct control	25	100		PWM%, range 25–100% Note! In Model 250 units, the maximum speed is 75% instead of 100%.
4x00012	Home/Away mode	0	1		0 = HOME, 1 = AWAY
4x00013	CP: Supply, speed 1 setpoint	0	999	Pa	Constant pressure control, supply, speed 1 setpoint Setpoint 0–500 Pa
4x00014	CP: Supply, speed 2 setpoint	0	999	Pa	Constant pressure control, supply, speed 2 setpoint Setpoint 0–500 Pa
4x00015	CP: Supply, speed 3 setpoint	0	999	Pa	Constant pressure control, supply, speed 3 setpoint Setpoint 0–500 Pa
4x00016	CP: Supply, speed 4 setpoint	0	999	Pa	Constant pressure control, supply, speed 4 setpoint Setpoint 0–500 Pa
4x00017	CP: Supply, speed 5 setpoint	0	999	Pa	Constant pressure control, supply, speed 5 setpoint Setpoint 0–500 Pa
4x00018	CP: Extract, speed 1 setpoint	0	999	Pa	Constant pressure control, extract, speed 1 setpoint Setpoint 0–500 Pa
4x00019	CP: Extract, speed 2 setpoint	0	999	Pa	Constant pressure control, extract, speed 2 setpoint Setpoint 0–500 Pa
4x00020	CP: Extract, speed 3 setpoint	0	999	Pa	Constant pressure control, extract, speed 3 setpoint Setpoint 0–500 Pa

4x00021	CP: Extract, speed 4 setpoint	0	999	Pa	Constant pressure control, extract, speed 4 setpoint Setpoint 0–500 Pa
4x00022	CP: Extract, speed 5 setpoint	0	999	Pa	Constant pressure control, extract, speed 5 setpoint Setpoint 0–500 Pa
4x00023	CP: deviation alarm setpoint	5	300	Pa	Constant pressure deviation alarm setpoint Factory setting: 10 Pa
4x00024	Filter guard mode	0	2		0 = not in use 1 = in use 2 = calibration, after which it is running
4x00025	Filter guard: supply fouling coefficient	15	30		Coefficient, 1.5...3.0, default 2.0 (x 10)
4x00026	Filter guard: extract fouling coefficient	15	30		Coefficient, 1.5...3.0, default 2.0 (x 10)
4x00027	Critical alarm acknowledgement method (Emergency stop status, fire-risk alarm, water models: water coil freezing risk)	0	1		If 0: resets automatically when the alarm status clears. If 1: requires manual acknowledgement via Modbus (4x00002 = 0)
4x00028	Humidity boost: transmitter-function control coefficient	10	100	%	Default 15%
4x00029	Humidity boost: transmitter-function deviation	1	5	%	Default 5%
4x00030	Fire risk: Supply temperature limit	0	99	°C	0 = off, default 50 °C.
4x00031	Fire risk: Extract temperature limit	0	99	°C	0 = off, default 70 °C.
4x00032	Post-ventilation: Time	0	10	min	Default 3 min.
4x00033	Alarm buzzer signal	0	1		1 = disabled. 0 = enabled.
4x00034	Filter replacement reminder	0	1		If the value is 1, the filter must be replaced. Reset by writing 0.
4x00035	Supply fan speed, speed 1 setpoint	25	100	%	Supply fan speed when speed 1 is selected.
4x00036	Supply fan speed, speed 2 setpoint	25	100	%	Supply fan speed when speed 2 is selected.
4x00037	Supply fan speed, speed 3 setpoint	25	100	%	Supply fan speed when speed 3 is selected.

4x00038	Supply fan speed, speed 4 setpoint	25	100	%	Supply fan speed when speed 4 is selected.
4x00039	Supply fan speed, speed 5 setpoint	25	100	%	Supply fan speed when speed 5 is selected.
4x00040	Extract fan speed, speed 1 setpoint	25	100	%	Extract fan speed when speed 1 is selected.
4x00041	Extract fan speed, speed 2 setpoint	25	100	%	Extract fan speed when speed 2 is selected.
4x00042	Extract fan speed, speed 3 setpoint	25	100	%	Extract fan speed when speed 3 is selected.
4x00043	Extract fan speed, speed 4 setpoint	25	100	%	Extract fan speed when speed 4 is selected.
4x00044	Extract fan speed, speed 5 setpoint	25	100	%	Extract fan speed when speed 5 is selected.
4x00045	Separate supply fan values / shared correction	0	1		0 = separate supply fan values, 1 = shared correction.
4x00046	Supply fan correction percentage	1	199	%	Supply fan correction percentage if shared correction is selected. 100 means 0% correction. 95 means -5% correction. 105 means +5% correction.
4x00047	Bypass set temperature	15	30	C	Bypass set temperature
4x00048	Bypass permitted outdoor-air lower limit	1	30	C	Bypass permitted outdoor-air lower limit. In water units, the minimum limit is 9 °C.
4x00049	Bypass delay	5	30	min	Bypass delay
4x00050	Supply air minimum setting	10	25	C	Supply air minimum setting
4x00051	Enhanced cooling allowed	0	1		0 = enhanced cooling not allowed, 1 = enhanced cooling allowed
4x00052	Temperature setpoint in away mode	50	260	x10C	
4x00053	Cooling operation temperature limit	10	25 (& 99)	C	99 = forced control via register 4x00055
4x00054	Preheating temperature limit	2	6 (& 99)	C	99 = forced control via register 4x00055. 2–6 is the sub-zero temperature limit written as a positive number without the minus sign.
4x00055	AUX2 forced control	0	1		0 = off 1 = on

4x00056	Internal humidity transmitter operating mode	0	2		0 = switch function 1 = transmitter function 2 = not in use
4x00057	Sauna mode	0	1		0 = off 1 = on
4x00058	Pressure equalization / fireplace	0	1		0 = OFF, 1 = ON (forced function, on for max. 1 h per ON command) NOTE! The readback is also 1 if AUX1 is active and in a mode other than motion detector mode.
4x00059	Potentiometer menu lock	0	1		0 = menu enabled, 1 = menu use blocked
4x00060	CO2 setpoint	200	3000	ppm	CO2 boost setpoint
4x00061	CO2 mode	0	1		0 = off 1 = transmitter function
4x00062	Boost time	0	120	min	
4x00063	Boost speed	0	100	%	
4x00064	Boost blocking	0	4		0 = all boosts allowed 1 = humidity boost blocked 2 = CO2 boost blocked 3 = humidity boost and CO2 boost blocked 4 = all boosts blocked
4x00065	AUX1 status	0	1		0 = OFF, 1 = ON (forced function, on for max. 1 h per ON command)
4x00066	Modbus RH sensor	0	100	%	
4x00067	Modbus CO2 sensor	0	10000	ppm	
4x00068	Modbus temperature sensor	-50	50	C	20.5C = 205

Modbus – Error Codes (Error-info Register)

Register: 3x00032

This register indicates error conditions. The register value consists of several error codes that may occur at the same time. Each error code corresponds to a specific numeric value. If several errors are active at the same time, the register value is the sum of those values.

Error code values:

Error Code	Description	Read value	Raw value
E0	General alarm	1	0x0000000000000001
E1	External stop of the unit fans	2	0x0000000000000010

E2	Bypass damper malfunction	4	0x0000000000000100
E3	Supply fan not running	8	0x0000000000001000
E4	Extract fan not running	16	0x0000000000010000
E5	Water coil freeze protection	32	0x000000000100000
E6	Sensor fault	64	0x000000001000000
E7	Defrost protection pressure transmitter fault	128	0x000000010000000
E8	Supply and extract fan temperatures are incorrect	256	0x000000100000000
E9	Constant pressure control alarm	512	0x000000100000000

How is the register value interpreted?

When the register contains one error code, the value corresponds directly to the table above. If several errors are active, the register shows the sum of those error codes.

Examples:

Register value	Active error codes	Raw value
1	E0	0x0000000000000001
6	E1 + E2 (2 + 4)	0x000000000000110
8	E3	0x000000000001000
68	E6 + E2 (64 + 4)	0x000000001000100

What is this used for?

1. General alarm: If the register value is greater than 0, the system has an error.
2. Detailed error check: You can check the register value to determine which error codes are active.