

AirGate-3G

MODBUS COMMUNICATION MANUAL

INTRODUCTION

AirGate-3G has many communication interfaces. Among all of them, we can highlight a couple that can be used with Modbus protocol:

- Ethernet, acting as a server in Modbus TCP protocol.
- Cellular, acting as server in Modbus TCP protocol.

This manual contains all needed information to read **AirGate-3G** input channels data without using the **WebGUI configurator**.

MODBUS COMMANDS

The only Modbus command (or function) implemented is the

READ HOLDING REGISTERS – 03H

This command can be used to read one or more holding registers, as listed in a table in the next chapter.

In order to get more information about this command and about Modbus protocol in general, check the website:

<http://www.modbus.org>

HOLDING REGISTERS TABLE

This table should be mapped as a Modbus Holding Register table, so it can be read by external Modbus masters. All Holding Registers are read only registers.

The specified *addresses* are related to the low-level physical addresses, where zero (0) means the PLC address 40001. *Minimum* and *Maximum* columns have the valid range for each parameter. All holding registers are read-only (R).

Address	Description	Minimum	Maximum
0	Serial number (word high)	0	65535
1	Serial number (word middle)	0	65535
2	Serial number (word low)	0	65535
3	Signal level in dB (signed 16-bit integer)		
4	Connection Status (unsigned 16-bit integer)		
5	Digital input 1 state	0	1
6	Digital input 1 counting value (unsigned 32-bit integer – word high)	0	4294967295
7	Digital input 1 counting value (unsigned 32-bit integer – word low)		
8	Digital input 2 state	0	1
9	Digital input 2 counting value (unsigned 32-bit integer – word high)	0	4294967295
10	Digital input 2 counting value (unsigned 32-bit integer – word low)		
11	Remote channel 1 value (signed 16-bit integer) or (floating point – word high)	-3.4e+38	+3.4e+38
12	Remote channel 1 value (signed 16-bit integer) or (floating point – word low)		
13	Remote channel 2 value (signed 16-bit integer) or (floating point – word high)	-3.4e+38	+3.4e+38
14	Remote channel 2 value (signed 16-bit integer) or (floating point – word low)		
15	Remote channel 3 value (signed 16-bit integer) or (floating point – word high)	-3.4e+38	+3.4e+38
16	Remote channel 3 value (signed 16-bit integer) or (floating point – word low)		
17	Remote channel 4 value (signed 16-bit integer) or (floating point – word high)	-3.4e+38	+3.4e+38
18	Remote channel 4 value (signed 16-bit integer) or (floating point – word low)		
19	Remote channel 5 value (signed 16-bit integer) or (floating point – word high)	-3.4e+38	+3.4e+38
20	Remote channel 5 value (signed 16-bit integer) or (floating point – word low)		
21	Remote channel 6 value (signed 16-bit integer) or (floating point – word high)	-3.4e+38	+3.4e+38
22	Remote channel 6 value (signed 16-bit integer) or (floating point – word low)		
23	Remote channel 7 value (signed 16-bit integer) or (floating point – word high)	-3.4e+38	+3.4e+38
24	Remote channel 7 value (signed 16-bit integer) or (floating point – word low)		
25	Remote channel 8 value (signed 16-bit integer) or (floating point – word high)	-3.4e+38	+3.4e+38
26	Remote channel 8 value (signed 16-bit integer) or (floating point – word low)		

259	Remote channel 125 value (signed 16-bit integer) or (floating point – word high)		
260	Remote channel 125 value (signed 16-bit integer) or (floating point – word low)	-3.4e+38	+3.4e+38
261	Remote channel 126 value (signed 16-bit integer) or (floating point – word high)		
262	Remote channel 126 value (signed 16-bit integer) or (floating point – word low)	-3.4e+38	+3.4e+38
263	Remote channel 127 value (signed 16-bit integer) or (floating point – word high)		
264	Remote channel 127 value (signed 16-bit integer) or (floating point – word low)	-3.4e+38	+3.4e+38
265	Remote channel 128 value (signed 16-bit integer) or (floating point – word high)		
266	Remote channel 128 value (signed 16-bit integer) or (floating point – word low)	-3.4e+38	+3.4e+38
267	Alarm 01 status (1 = no alarm; 0 = on alarm condition)	0	1
268	Alarm 02 status (1 = no alarm; 0 = on alarm condition)	0	1
269	Alarm 03 status (1 = no alarm; 0 = on alarm condition)	0	1
270	Alarm 04 status (1 = no alarm; 0 = on alarm condition)	0	1
271	Alarm 05 status (1 = no alarm; 0 = on alarm condition)	0	1
272	Alarm 06 status (1 = no alarm; 0 = on alarm condition)	0	1
273	Alarm 07 status (1 = no alarm; 0 = on alarm condition)	0	1
274	Alarm 08 status (1 = no alarm; 0 = on alarm condition)	0	1
275	Alarm 09 status (1 = no alarm; 0 = on alarm condition)	0	1
276	Alarm 10 status (1 = no alarm; 0 = on alarm condition)	0	1
277	Alarm 11 status (1 = no alarm; 0 = on alarm condition)	0	1
278	Alarm 12 status (1 = no alarm; 0 = on alarm condition)	0	1
279	Alarm 13 status (1 = no alarm; 0 = on alarm condition)	0	1
280	Alarm 14 status (1 = no alarm; 0 = on alarm condition)	0	1
281	Alarm 15 status (1 = no alarm; 0 = on alarm condition)	0	1
282	Alarm 16 status (1 = no alarm; 0 = on alarm condition)	0	1
283	Alarm 17 status (1 = no alarm; 0 = on alarm condition)	0	1
284	Alarm 18 status (1 = no alarm; 0 = on alarm condition)	0	1
285	Alarm 19 status (1 = no alarm; 0 = on alarm condition)	0	1
286	Alarm 20 status (1 = no alarm; 0 = on alarm condition)	0	1
287	Alarm 21 status (1 = no alarm; 0 = on alarm condition)	0	1
288	Alarm 22 status (1 = no alarm; 0 = on alarm condition)	0	1
289	Alarm 23 status (1 = no alarm; 0 = on alarm condition)	0	1
290	Alarm 24 status (1 = no alarm; 0 = on alarm condition)	0	1
291	Alarm 25 status (1 = no alarm; 0 = on alarm condition)	0	1
292	Alarm 26 status (1 = no alarm; 0 = on alarm condition)	0	1
293	Alarm 27 status (1 = no alarm; 0 = on alarm condition)	0	1
294	Alarm 28 status (1 = no alarm; 0 = on alarm condition)	0	1
295	Alarm 29 status (1 = no alarm; 0 = on alarm condition)	0	1
296	Alarm 30 status (1 = no alarm; 0 = on alarm condition)	0	1
297	Alarm 31 status (1 = no alarm; 0 = on alarm condition)	0	1
298	Alarm 32 status (1 = no alarm; 0 = on alarm condition)	0	1
299	Alarm 33 status (1 = no alarm; 0 = on alarm condition)	0	1
300	Alarm 34 status (1 = no alarm; 0 = on alarm condition)	0	1
301	Alarm 35 status (1 = no alarm; 0 = on alarm condition)	0	1
302	Alarm 36 status (1 = no alarm; 0 = on alarm condition)	0	1
303	Alarm 37 status (1 = no alarm; 0 = on alarm condition)	0	1
304	Alarm 38 status (1 = no alarm; 0 = on alarm condition)	0	1
305	Alarm 39 status (1 = no alarm; 0 = on alarm condition)	0	1
306	Alarm 40 status (1 = no alarm; 0 = on alarm condition)	0	1
307	Alarm 41 status (1 = no alarm; 0 = on alarm condition)	0	1
308	Alarm 42 status (1 = no alarm; 0 = on alarm condition)	0	1
309	Alarm 43 status (1 = no alarm; 0 = on alarm condition)	0	1
310	Alarm 44 status (1 = no alarm; 0 = on alarm condition)	0	1
311	Alarm 45 status (1 = no alarm; 0 = on alarm condition)	0	1
312	Alarm 46 status (1 = no alarm; 0 = on alarm condition)	0	1
313	Alarm 47 status (1 = no alarm; 0 = on alarm condition)	0	1
314	Alarm 48 status (1 = no alarm; 0 = on alarm condition)	0	1
315	Alarm 49 status (1 = no alarm; 0 = on alarm condition)	0	1
316	Alarm 50 status (1 = no alarm; 0 = on alarm condition)	0	1
317	Alarm 51 status (1 = no alarm; 0 = on alarm condition)	0	1

377	Alarm 111 status (1 = no alarm; 0 = on alarm condition)	0	1
378	Alarm 112 status (1 = no alarm; 0 = on alarm condition)	0	1
379	Alarm 113 status (1 = no alarm; 0 = on alarm condition)	0	1
380	Alarm 114 status (1 = no alarm; 0 = on alarm condition)	0	1
381	Alarm 115 status (1 = no alarm; 0 = on alarm condition)	0	1
382	Alarm 116 status (1 = no alarm; 0 = on alarm condition)	0	1
383	Alarm 117 status (1 = no alarm; 0 = on alarm condition)	0	1
384	Alarm 118 status (1 = no alarm; 0 = on alarm condition)	0	1
385	Alarm 119 status (1 = no alarm; 0 = on alarm condition)	0	1
386	Alarm 120 status (1 = no alarm; 0 = on alarm condition)	0	1
387	Alarm 121 status (1 = no alarm; 0 = on alarm condition)	0	1
388	Alarm 122 status (1 = no alarm; 0 = on alarm condition)	0	1
389	Alarm 123 status (1 = no alarm; 0 = on alarm condition)	0	1
390	Alarm 124 status (1 = no alarm; 0 = on alarm condition)	0	1
391	Alarm 125 status (1 = no alarm; 0 = on alarm condition)	0	1
392	Alarm 126 status (1 = no alarm; 0 = on alarm condition)	0	1
393	Alarm 127 status (1 = no alarm; 0 = on alarm condition)	0	1
394	Alarm 128 status (1 = no alarm; 0 = on alarm condition)	0	1
395	Latitude (floating point – word high) – GPS MODEL ONLY	-3.4e+38	+3.4e+38
396	Latitude (floating point – word low) – GPS MODEL ONLY		
397	Longitude (floating point – word high) – GPS MODEL ONLY	-3.4e+38	+3.4e+38
398	Longitude (floating point – word low) – GPS MODEL ONLY		
399	Altitude (signed 16-bit integer) – GPS MODEL ONLY	-32768	32767
400	Speed (unsigned 16-bit integer) – GPS MODEL ONLY	0	65535

DETAILS ABOUT SOME REGISTERS

REGISTERS 0, 1 AND 2 – SERIAL NUMBER

Device serial number is considered as a 48 bit value. Register 0 has the first 16 bits of the serial number (most significant bits), register 1 refer to next 16 bits and register 2 the remaining 16 bits.

REGISTER 4 – CONNECTION STATUS (unsigned 16-bit integer)

0 = not connected; 1 = connected.

REGISTERS 395 AND 396 – LATITUDE

Inform the latitude as a floating point value.

REGISTERS 397 AND 398 – LONGITUDE

Inform the longitude as a floating point value.

REGISTERS 399 – ALTITUDE

The altitude value is given in meters multiplied by 10, so an altitude of “16.9” will be read as “169”.

REGISTERS 400 – SPEED

The speed value is given in km/h multiplied by 10, so a speed of “1.9” will be read as “19”.

FLOATING POINT FORMAT USED

AirGate-3G uses floating point values in *single precision* (32 bit) format as described in standard **IEEE-754** (IEEE Standard for Floating-Point Arithmetic).