Y301-006/008/00G Serial I/O Modules (Analog Input) Specification

Y301-006	Y301-008	Y301-00G
		

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- User Manual and Wiring

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1. Overview

The Y301-006/008/00G series is a family of multi-channel analog input concentrators with 6, 8, or 16 input channels. The modules acquire 4-20 mA or 0-10 V signals over a Modbus RTU/ASCII link and transfer input readings to PLCs, SCADA systems, or edge controllers.

Model	Analog Input	Interface Options
Y301-006	6 channels	RS485 / RS232
Y301-008	8 channels	RS485 / RS232
Y301-00G	16 channels	RS485 / RS232

Product Highlights

- 12-bit ADC; use the signal-specific register conversion in Section 8
- 7-30 VDC supply with a power indicator and channel indicators
- 35 mm DIN-rail enclosure, 100 × 70 × 35 mm
- Platform reference: default stored address 0; manufacturer setup address 254 for a single device

2. Ordering Information

2.1 Model Configuration

The I/O code follows `DI / DO / AI / AO`. These are channel counts on one module; the fourth position is omitted on models without AO.

Model	DI	DO	AI	AO
Y301-006	0	0	6	0
Y301-008	0	0	8	0
Y301-00G	0	0	16	0

Interface type is a configuration option. It is not appended to the product model number.

For the full code and examples, see Model Naming.

2.2 Configuration Matrix

Model	Interface Options	Description
Y301-006	RS485 / RS232	6-channel analog input concentrator
Y301-008	RS485 / RS232	8-channel analog input concentrator
Y301-00G	RS485 / RS232	16-channel analog input concentrator

2.3 Standard Package

Module, online quick reference card, and warranty card. Optional accessories include shielded twisted-pair cable, USB-to-RS485 converter, and a 12/24 V DIN-rail power supply.

3. Key Features

1. **Analog inputs** - 6, 8, and 16 channel variants with per-channel LED indication
2. **Dual serial options** - RS485 multi-drop (`A/B/GND`) and RS232 (`TX/RX/GND`) share the same firmware base
3. **Signal inputs** - Accepts 4-20 mA loops or 0-10 V inputs and supports 2-wire, 3-wire, and 4-wire sensors
4. **Modbus compatible** - Function code `0x04` for analog reads and `0x03/0x06` for address and baud-rate settings

5. **Power and temperature** - 7-30 VDC and -40 to +85 °C
6. **JYDAM utility** - Configuration tool for communication checks, readings, and address/baud settings

4. Technical Specifications

4.1 Electrical and Environmental

Parameter	Specification
Supply voltage	7-30 VDC
Power consumption	Not specified
Indicators	1 x power LED, per-channel AI LED
Operating temperature	-40 to +85 °C
Humidity	Not specified
Dimensions	100 × 70 × 35 mm
Mounting	35 mm DIN rail
Weight	Approx. 60 g

4.2 Analog Input Specifications

Parameter	Specification
Channel count	6, 8, or 16 depending on model
Input type	4-20 mA or 0-10 V; select the hardware version when ordering
Resolution	12-bit (4096 steps)
Accuracy	Not specified for the ordered hardware
Linearity	Not specified for the ordered hardware
Sampling rate	Not specified for the ordered hardware

Parameter	Specification
Input impedance	Not specified for the ordered hardware
Overvoltage protection	Not specified for the ordered hardware

4.3 Communication Specifications

Parameter	Specification
Interface	RS485, RS232
Protocol	Modbus RTU, Modbus ASCII
Baud rate	2400, 4800, 9600, 19200, 38400 bps; default 9600
Address setting	Platform reference: 0-255; assign a unique polling address other than 0 or 254
Default serial format	9600 bps, 8 data bits, no parity, 1 stop bit
Isolation	RS485 isolation is described for selected platform versions; scope and test voltage require the ordered hardware data

5. Interfaces and Pinout

5.1 Terminal Layout

Terminal	Description
Power	`VIN` , `GND` (7-30 VDC)
RS485	`A` , `B` , `GND`
RS232	`TX` , `RX` , `GND`
AI input	`AI1-AIn` signal positive; `COM` common signal negative
`V_out`	Unused; do not use as a sensor power output

5.2 LED Indicators

LED	Status	Description
Power	On	Supply present; use the hardware-specific indicator definitions
Channel indicators	Not specified	Use the ordered model's indicator definitions

6. Wiring Guidelines

6.1 Power Connection

- Use 18-22 AWG wiring for the 7-30 VDC supply
- Add a 500 mA fuse for overcurrent protection
- Verify correct polarity before power-on

6.2 Sensor Connection

Voltage mode (0-10 V):

- Wire signal positive to the selected `AI` terminal and signal negative to `COM`
- Suitable for 3-wire voltage sensors

Current mode (4-20 mA):

- Wire the measured current loop through the selected `AI` terminal and `COM`; include the transmitter supply
- Suitable for 2-wire or 4-wire current transmitters

6.3 Communication Connection

RS485:

- Use shielded twisted pair
- Add 120 ohm termination resistors at both ends of the bus

- Connect `A` to `A`, `B` to `B`, and `GND` to `GND` across all devices

RS232:

- Use the connector pinout for the ordered RS232 version
- Choose cable length for the baud rate, cable capacitance, and electrical environment

7. Mechanical and Environmental

Item	Value
Dimensions	100 × 70 × 35 mm
Mounting	35 mm DIN rail
Protection rating	Not specified
Housing	ABS plastic
Weight	Approx. 60 g

Keep at least 15 mm clearance above and below, and 10 mm on each side for wiring and airflow.

8. Communication and Configuration

8.1 Modbus Register Map

The analog-input platform reference uses function code `0x04` and zero-based input-register addresses. Read only channels fitted on the model.

Channels	Protocol addresses	PLC notation	Access
AI1-AI6	`0x0000–0x0005`	30001-30006	RO; Y301-006/008/00G
AI7-AI8	`0x0006–0x0007`	30007-30008	RO; Y301-008/00G

Channels	Protocol addresses	PLC notation	Access
AI9-AI16	`0x0008–0x000F`	30009-30016	RO; Y301-00G

The platform specifies `actual value = raw × 0.001`. Voltage values use V. Verify the current-mode unit and endpoints against a known current for the ordered hardware; do not treat 4-20 mA as a normalized 0-10000 range or apply the Y331 sampling-resistor formula.

8.2 Configuration Parameters

Configuration uses holding registers, read with `0x03` and write with `0x06`.

Parameter	Protocol address	PLC notation	Description
Baud-rate code	`0x03E8`	41001	`1=2400`, `2=4800`, `3=9600`, `4=19200`, `5=38400`
Reserved	`0x03E9`	41002	Do not write
Address offset	`0x03EA`	41003	Device address; this platform has no DIP address offset

The platform lists 9600 bps as the default speed but assigns code `0` to 38400 in its baud table. Read the setting and use an explicit code from 1-5 when changing it. Restart after changing the address or baud rate and update the host settings.

The platform's stored default address is 0, which does not accept normal polling. Use manufacturer setup address `254` with one module on the bus to assign a unique polling address. It is not standard Modbus broadcast address `0`.

9. Diagnostics and FAQ

9.1 Troubleshooting

Symptom	Possible Cause	Solution
No channel reading	Sensor fault	Check sensor wiring and power
Communication failure	Baud-rate mismatch	Check serial settings; use setup address `254` only with one device on the bus
Unstable reading	Poor wiring	Check shielding and grounding

9.2 FAQ

Q: How do I configure the input type for each channel? A: Order the required voltage or current version. Range switching and mixed-channel support require the hardware-specific instructions.

Q: Which communication protocols are supported? A: Modbus RTU and Modbus ASCII are supported.

Q: How can I discover devices on the bus? A: Use the setup tool and address `254` with one device connected. Read its stored address and assign a unique address before adding it to a multi-device bus.

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