

## SYMBOLS



Attention,  
Risk of Danger,  
Warning



High Voltage,  
Risk of  
Electric Shock



Double /  
Reinforced  
Insulation



NOT  
Litter



CE Mark

## PRODUCT DESCRIPTION

- This device is designed for basic automatic control applications.
- Free of charge Ladder Logic Editor with GUI running on PC, "GEMO LADDER EDITOR"; programming, simulation, download.
- 256 lines, 5 contact column, 1 coil column
- Rising / Falling Edge option for contacts
- Up to 28 Discrete Inputs, built-in filter for each input
- Up to 20 Discrete Outputs
- 32 Timers (11 modes, 9 time bases)
- 2 Timer Ticks (Event Counting)
- 32 Counters (16 bits, Up/Down)
- 32 Counter Comparators (with Offset feature)
- 2 Fast Input Counters
- 2 Independent State Machines (Internal Timer)
- 3 Front Panel F Keys, with built in filter for each
- 48 Auxiliary Relays
- 16 Analog Comparators (with hysteresis)
- Up to 4 x 0-10V Analog Inputs
- Up to 2 x PTC Temperature Sensor Input
- 32 Run Time Screens with internal timer; each having 4 sub screens
- Welcome screen with 4 sub screens
- 3 Level user programmable menu system
- 4 Password contacts
- 4 Configuration contacts
- Real Time Clock - optional
- Weekly / Yearly Alarms (for RTC option)
- RS-485 port to connect to extension modules
- Scan time < 10msec.
- 2x16 character back-light LCD display or LED front panel
- 18...32VDC or 100...240VAC supply options, 18Vdc Auxiliary Supply Out for discrete inputs

## CLEANING



- Do not use any solvents (alcohol, thinners, benzene, acid, etc.) or corrosive substances to clean the device. Use only a dry and clean non-abrasive cloth. Before cleaning, disconnect the power supply and mains connections.

## RS-485 CONNECTION



Use shielded twisted pair (24 AWG) cable  
Connect; A <--> A, B <--> B

## INSTALLATION, USE and WARNINGS



- This device and its packing is NOT litter and may NOT be disposed of with domestic waste. Please return this device and its packing to an appropriate recycling point at the end of its service life.
- Please read this user manual and "GEMO Ladder Editor" user manual carefully and completely before installation and use. Please take into consideration all warnings mentioned in these manuals.



- AR2-A, AR2-S and AR2-S are suitable only for permanent rail mounting. AR2-P is suitable only for permanent panel type mounting.



- Installation and use of this device must be done by qualified, authorized and trained technical personnel only.
- Inspect device carefully before installation. Do not install and use broken and defective devices.
- Do not disassemble device. Do not make any repair on any part of the device. There is no accessible part inside the device. Please contact to manufacturer for broken and defective devices.



- Do not use device in environments subject to flammable, explosive and corrosive gases and/or substances.
- This device is not suitable for medical and residential use. This device is not suitable for use related with human health and safety. This device is not suitable for automotive, military and marine use.
- Do not allow children and unauthorized people to use this device.
- Before installation and any technical work, disconnect the power supply and mains connections.
- Check the power supply voltage level before power on, and make sure voltage level is in specified limits. Check quality of neutral line. Improper neutral line may give permanent damage to the device.

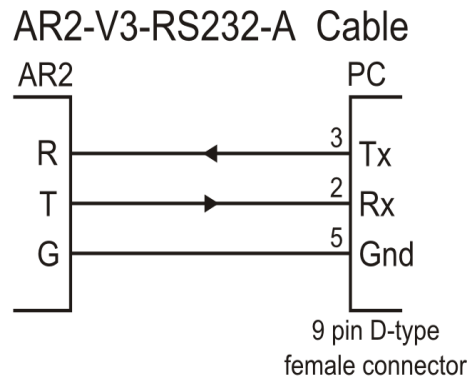
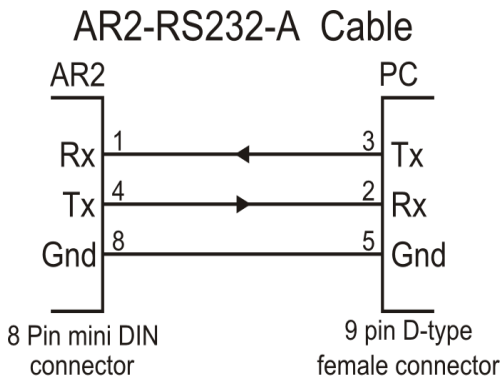


- Connect an external power switch and an external fuse (1A, 250VAC) to the power supply line that are easily accessible for rapid intervention. Connect an external fuse (2A, 250VAC) for each relay output separately.
- Use appropriate cables for power supply and mains connections. Apply safety regulations during installation.
- Install the device in a well ventilated place. Install the device permanently into a proper panel cut-out. Fix the device with two fasteners supplied with the device. Only front panel must be accessible after installation is completed.
- Do not operate the device other then the environmental conditions given in Technical Specification.
- Do not operate the device in environments that may cause conductive pollution.
- Take precautions against negative environmental conditions like humidity, vibration, pollution and high/low temperature during installation.




- Keep device, signal cables and communication cables away from circuit breakers, power cables and devices/cables emitting electrical noise. Use shielded and twisted signal and communication cables and connect shield to earth ground on device side. Keep length of signal and communication cables less than 3m.
- In your applications, always use separate and independent mechanical and/or electromechanical devices/apparatus to support AR2 to handle emergency cases.
- Use insulated cable end-sleeves at the end of cables screwed to the device connector terminals.
- Maximum torque for screwing; 0.5 N.m.
- You can download "GEMO Ladder Editor" and its user's manual to program AR2 from web site [www.gemo.com.tr](http://www.gemo.com.tr) free of charge.
- Please check [www.gemo.com.tr](http://www.gemo.com.tr) for latest editor, device and documentation updates regularly. All updates and all information are subject to change without notice.
- Use twisted pair shielded (24 AWG) cable for RS-485 connection. Line termination may be required. Refer to related application note for correct termination.
- Analog inputs, PTC input, RS-232 and RS-485 inputs are not electrically isolated from each other. The sensors connected to the Analog inputs should be powered with regulated and double isolated external power supplies. Possible ground fault may result RS-485 communication failure.


### PC DATA CABLES (RS-232)



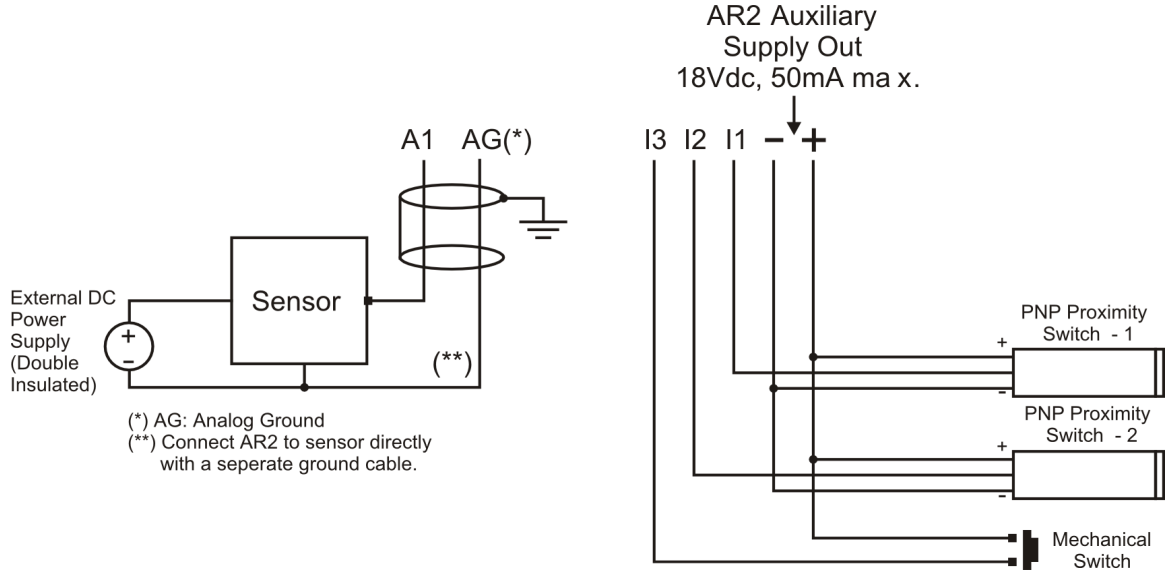
**TECHNICAL SPECIFICATIONS**

-  • **Programming** : Free of charge Ladder Logic Editor with GUI running on PC, "GEMO LADDER EDITOR"; programming, simulation, download. You can download from [www.gemo.com.tr](http://www.gemo.com.tr) free of charge.
- **Display** : 2x16 character LCD, with back-light, or LED indicators
- **Discrete Inputs** : OFF:0..2VDC; ON:10..32VDC, max.32VDC, common (-) negative connection (PNP/Totem Pole), isolated (opto-coupler) (max. isolation voltage 40VAC)
- **Discrete Input Filter Time:** min. 8ms (ON->OFF, OFF->ON)
- **Fast Input ON time** : min. 1.25ms
- **Fast Input OFF time** : min. 1.25ms
- **Fast Input Frequency** : max. 400Hz, 50% duty cycle
- **Analog Input** : 0-10Vdc, max. 16Vdc, Optional, with separate analog ground.
- **Analog Ground** : Not isolated. Use double isolated external power supply to supply sensors. Refer to sample connection diagram below.
- **A/D Resolution** : 10 bits
- **Analog Input Sampling Period:** 100ms
- **PTC Input** : 2 wire PTC (-50..150°C), ask for sensors
- **Discrete Outputs (Relay)** : 10xRelay, max. 250VAC, 2A, Resistive load
- **Discrete Outputs (Transistor)** : 10xPNP Transistor, max. 32VDC, 0.3A (Optional)
- **SW Download Interface:** RS-232.
- **Network Interface** : RS-485
- **RS-485 Cable** : Shielded twisted pair; 24 AWG. Connection; A<->A, B<->B.
- **RS-485 Termination** : Line termination may be required. Refer to related application note.
- **Timer Resolution** : minimum 0.01 seconds.
- **Timer Accuracy** :  $\pm 0.1\%$  or 1 digit (whichever larger); of Preset value
- **Ladder Scan Time** : less then 10ms
- **Torque for screwing** : max. 0.5 N.m
- **Supply Voltage** : 18..32VDC (isolated; max. isolation voltage 40VAC), or 100..240VAC, 50-60Hz; optional
- **Auxiliary Supply Out** : (for Discrete Inputs) 18Vdc, max. 50mA (max. isolation voltage; 40VAC)
- **Power Consumption** : less then 6W
- **Operating Temperature:** 0°C .. 50°C
- **Storage Temperature** : -10°C..60°C
- **Humidity** : %80 up to 30°C, then linearly decreases to 50% at 50°C (non-condensing)
- **Operating Altitude** : less then 2000 m
- **Protection Class** : IP20; according to EN 60529
- **EMC** : TS EN 61000-6-2:2019, IEC 61000-6-2:2016 RLV  
TS EN 61000-6-4:2020, IEC 61000-6-4:2018 RLV
- **Safety** : TS EN 61010-1:2012 + A1:2019 + A1/AC:2019
- **Dimensions** : 96x96x95mm (AR2-P), 115x125x65mm (AR2-A, AR2-S, AR2-G1), 120x70x65mm (AR2-A-xxx-8D), with connectors inserted
- **Panel Cut-out** : 91x91 mm (AR2-P)
- **Weight** : less then 0.6 kg

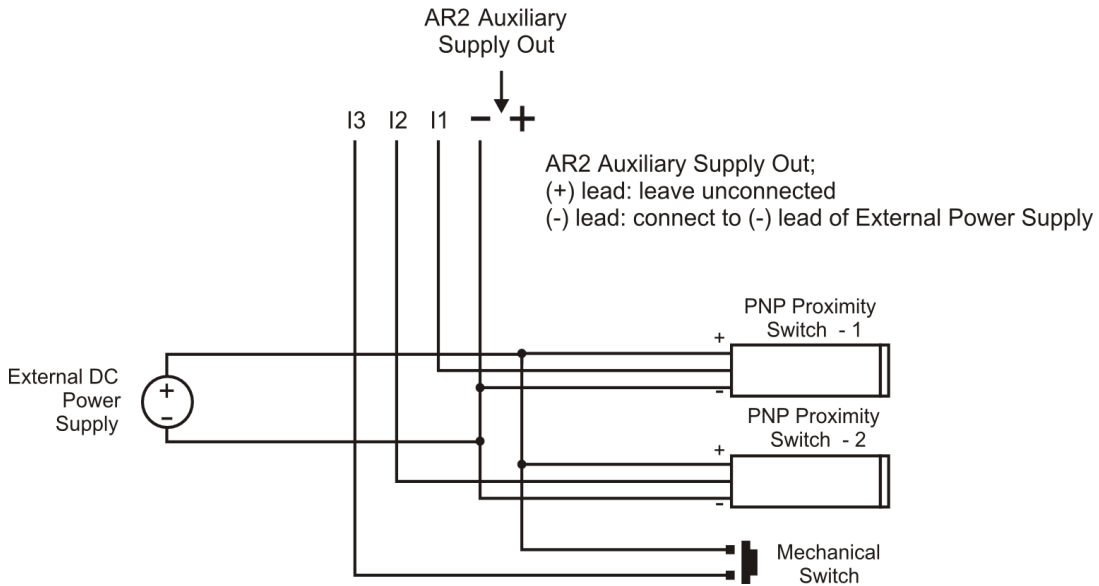
**DATA TRAFER / LOAD A PROGRAM**

-  • Connect AR2 RS232 data cable to PC and AR2 while AR2 is OFF.
- Power AR2. In the GEMO Ladder Editor; select appropriate COM port, and start to download a new program.

**SAMPLE CONNECTION DIAGRAM**

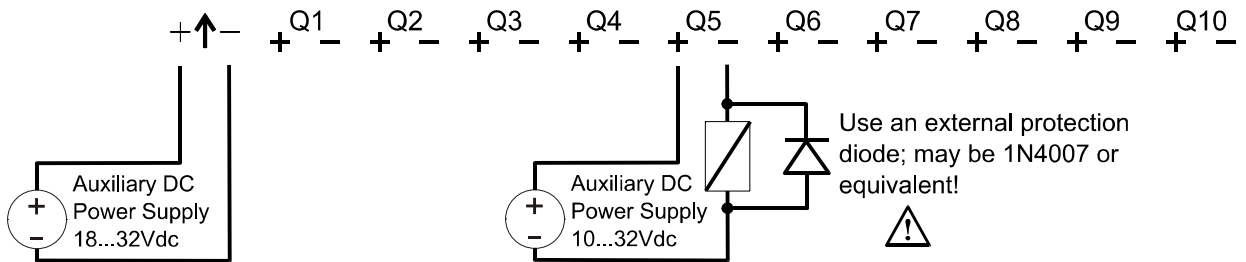


Driving Digital Inputs from an External Power Supply



Typical PNP Transistor Output Connection

Supply In:  $\triangle$  Outputs; Q1...Q10  
18...32Vdc PNP Transistor output, max. 0.3A, 32Vdc



- 1) (+) terminals of Q1...Q10 PNP transistor outputs are all short circuited internally.
- 2) The two auxiliary DC power supplies shown on the diagram above may be selected as separate or a single power supply.