PLC / SMART RELAY AR1-A

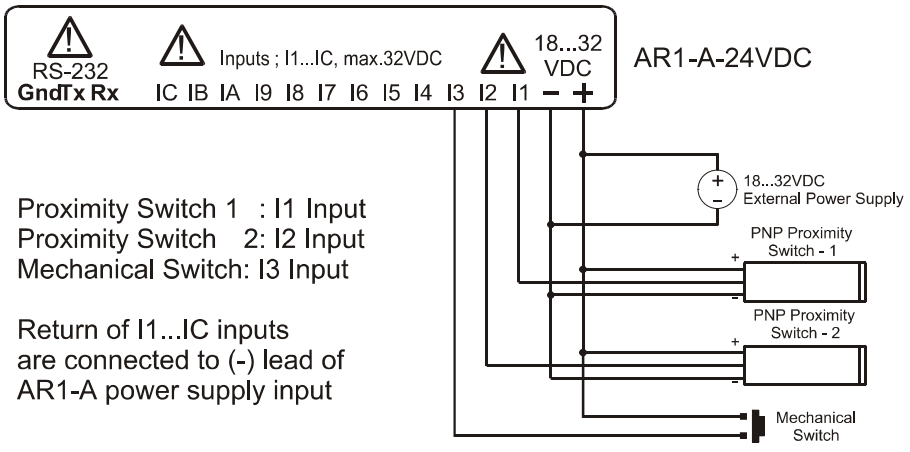
SYMBOLS

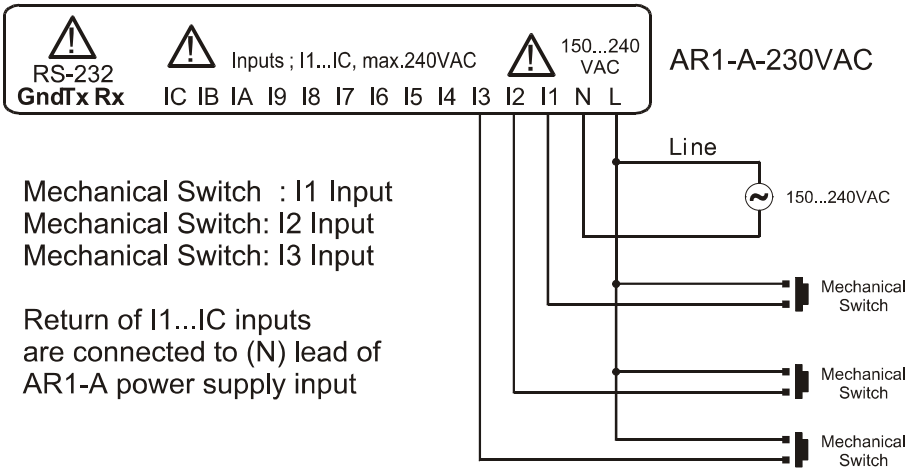
Attention, Risk of Danger, Warning	High Voltage, Risk of Electric Shock	Double / Reinforced Insulation	NOT Litter	CE Mark

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.
- 120 lines, 5 contact column, 1 coil column
- 12 Discrete Inputs; 24VDC or 230VAC
- 8 Discrete Outputs (Relay)
- 16 Timers (11 modes, 4 time bases)
- 16 Counters (15 bits, Up/Down)
- 32 Auxiliary Relays
- User programmable multilingual two level menu system with password protection
- Scan time < 10msec.
- 2x16 character back-light LCD display
- 18...32VDC or 100...240VAC supply options

SAMPLE CONNECTIONS FOR AR1-A DIGITAL INPUTS; 24VDC and 230VAC





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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.
- AR1-A is suitable only for permanent rail 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.

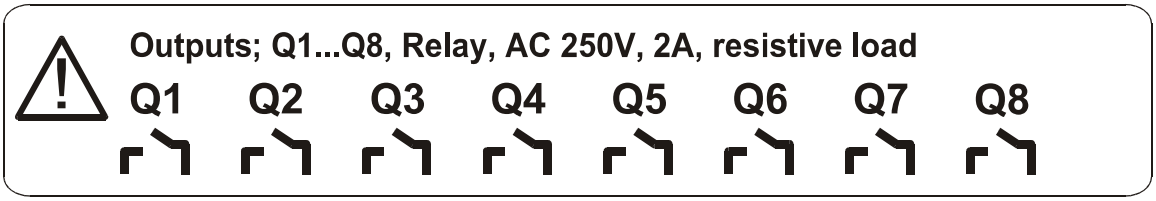
- Connect an external power switch and an external fuse (1A, 250VAC) to the power supply line that are easily accessible for rapid intervention. Connect an external fuse (2A, 250VAC) for each relay output separately.
- Use appropriate cables for power supply and mains connections. Apply safety regulations 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 AR1-A 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 AR1-A from web site www.gemo.com.tr free of charge.

- Please check www.gemo.com.tr for latest editor, device and documentation updates regularly. All updates and all information are subject to change without notice.
- RS-232 input is <u>not</u> electrically isolated from control circuitry.

OUTPUTS

- 8 x Relays (normally open), Q1..Q8, maximum. 250VAC, 2A, resistive load



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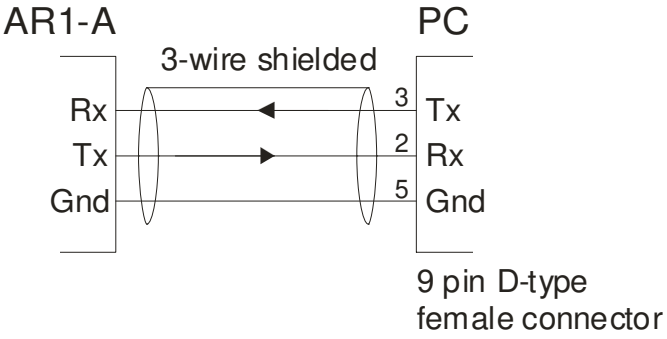
TECHNICAL SPECIFICATIONS

- **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 free of charge.
- **Display** : 2x16 character LCD, with back-light
- **Inputs (24VDC)** : I1..IC; (OFF:0..2VDC; ON:10..32VDC), max.32VDC, isolated with opto-coupler (max. isolation voltage: 40VAC)
- **Inputs (230VAC)** : I1..IC; (OFF:0..30VAC; ON:150..240VAC), 50/60Hz, isolated with opto-coupler
- **Outputs** : Q1 .. Q8; 8xRelays, max. 250VAC, 2A, Resistive load
- **Communication Port** : RS-232. Used to transfer program from PC. Tx; transmit, Rx; receive, Gnd; signal return (ground)
- **"Ladder" Lines** : 120 lines
- **"Ladder" Columns** : 5 contact columns & 1 coil column
- **"Ladder" Components:** 12 x digital input; I1..I12
  8 x digital output; Q1..Q8
  32 x auxiliary relay; A1..A32
  16 x timers; T1..T16,
  16 x counters; C1..C16; cnt = count, pulse
- **Timer Resolution** : sc;1/100 second, Sc;1/10 second, mn;1 second, hr; 1 minute
- **Timer Accuracy** : ± 0.1% or 1 digit (whichever larger); of Preset value
- **Ladder Scan Time** : less then 10ms
- **Input Latency** : (24VDC) minimum 8ms (ON->OFF, OFF->ON)
  (230VAC) minimum 20ms (ON->OFF, OFF->ON)
- **Torque for screwing** : max. 0.5 N.m
- **Supply Voltage** : 18..32VDC (isolated; max. isolation voltage 40VAC), or 100..240VAC, 50-60Hz
- **Power Consumption** : less then 6W
- **Operating Temperature:** 0ºC .. 50ºC
- **Storage Temperature** : -10ºC..60ºC
- **Humidity** : %80 up to 30ºC, then linearly decreases to 50% at 50ºC (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** : 105x91x60mm (excluding connectors)
- **Weight** : less then 0.6 kg

AR1-A – PC COMMUNICATION CABLE (RS-232)



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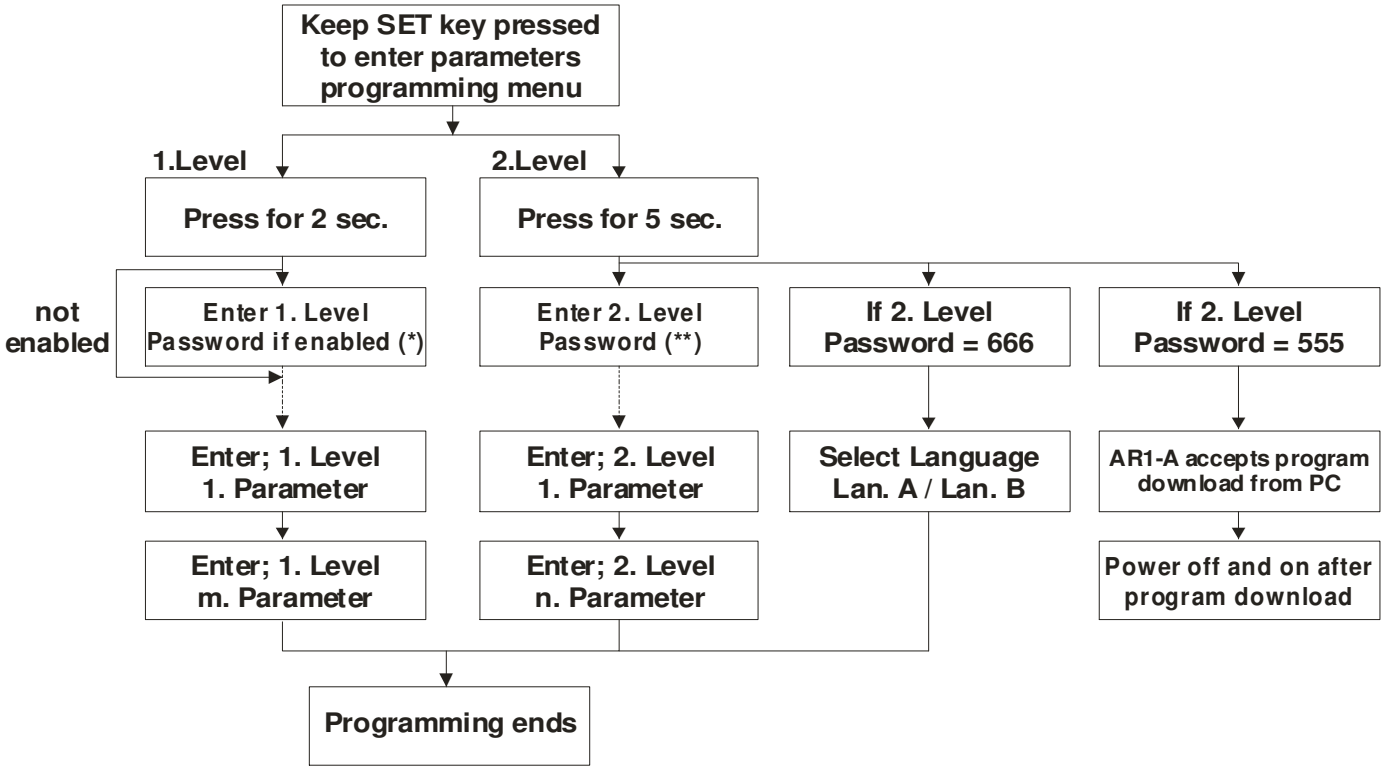
USER INTERFACE

AR1-A user interface consists of a 2x16 character LCD module and SET, Up & Down keys. User programmable multilingual two level menu system with password protection is designed with “GEMO Ladder Editor” LCD menu designer. AR1-A user programmable parameters (Preset A & Preset B values of 16 timers and Preset values of 16 counters) shall be accessed by user at any order in a two level password protected manner as shown on the diagram. Maximum 32 parameters in total (total of 2 levels) shall be accessed by the user. By pressing SET key for 2 sec., user shall access to “PARAMETERS LEVEL1 (L1)” page which is the entry of 1. Level. 1. Level access starts when user releases SET key. If user keeps pressing SET key for 5 sec., “PARAMETERS LEVEL2 (L2)” page, which is the entry of 2. level, is seen. 2. level password entry shall be done after SET key is released. If user enters “555” as level 2 password, AR1-A is initiated to accept program from PC via its RS-232 port. Program download ends only when AR1-A is turn off. If user enters “666” as level 2 password, menu language selection screen is accessed and Language A or Language B (as designed in GEMO ladder Editor’s LCD menu designer screen) selection is accomplished. If 1. Level (if enabled) and 2. Level passwords are entered incorrectly, menu entry is canceled.



(*) 1. Level password as entered in “GEMO Ladder Editor” LCD Menu Designer Screen

(**) 2. Level password as entered in “GEMO Ladder Editor” LCD Menu Designer Screen

MESSAGES

- “Load Program”: AR1-A has no program to run. Load a new program.
- “PARAMETERS LEVEL1 (L1)”: 1. Level Menu entry. Release SET key to enter 1. Level or keep pressing SET key and wait for Level 2 entry page.
- “PARAMETERS LEVEL2 (L2)”: 2. Level Menu entry. Release SET key to enter 2. Level. Enter password as; “555” for program download or “666” for language selection. Or enter level 2 password to start level 2 parameters entry.

CLAEANING

- Do not use any solvents (alcohol, thinners, benzine, 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.

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