Micro PLC

Kinco

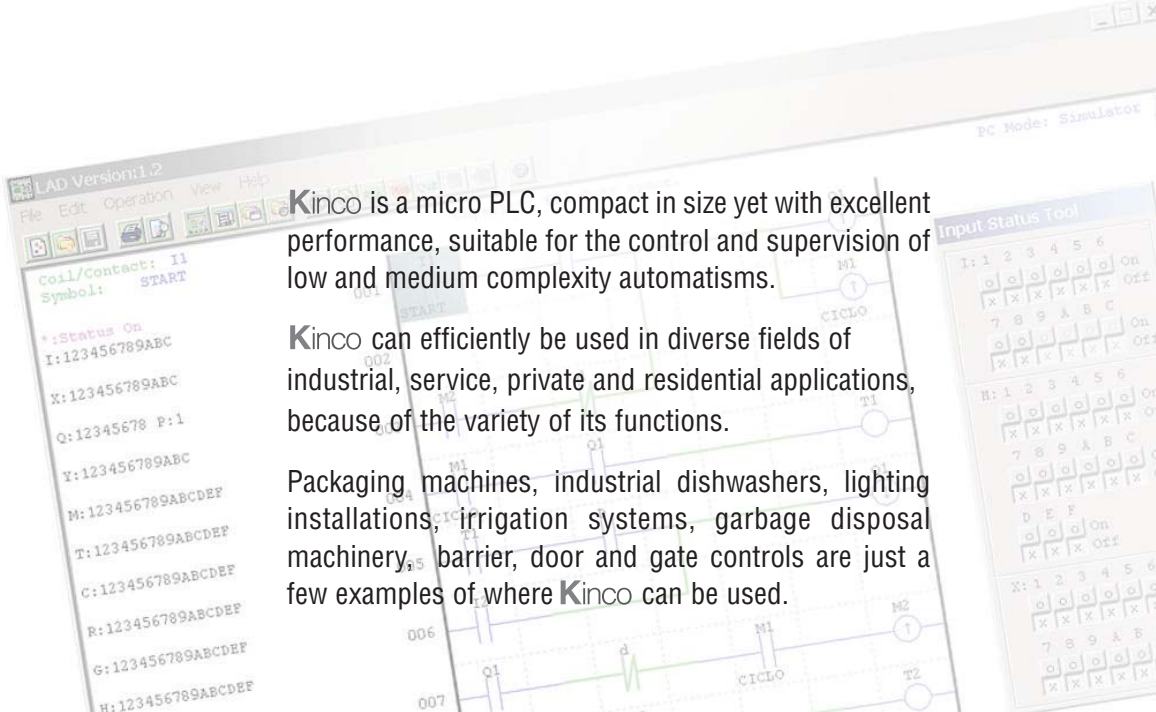
moduLo

Lovato electric

100% electricity

Micro PLC

Kinco



Kinco is a micro PLC, compact in size yet with excellent performance, suitable for the control and supervision of low and medium complexity automatisms.

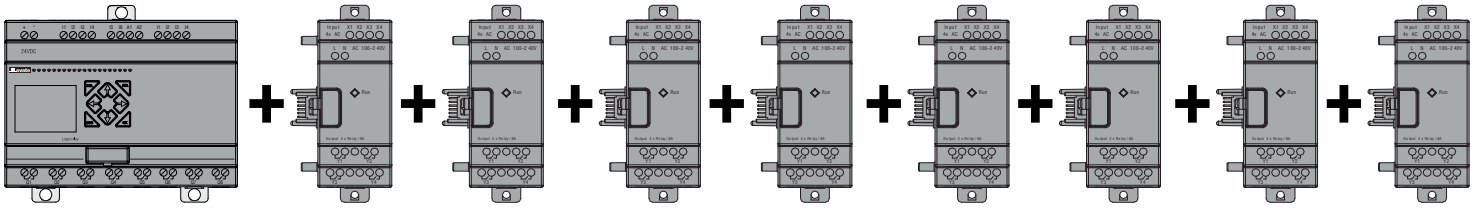
Kinco can efficiently be used in diverse fields of industrial, service, private and residential applications, because of the variety of its functions.

Packaging machines, industrial dishwashers, lighting installations, irrigation systems, garbage disposal machinery, barrier, door and gate controls are just a few examples of where Kinco can be used.

Lovato electric

Expandable
Versatile
Smart
Simple

Maximum combinations



Base module
12 inputs
+
8 outputs

4 inputs
+
4 outputs

4 inputs
+
4 outputs

4 inputs
+
4 outputs

4 inputs for
temperature
sensors PT100

2 outputs
for 0...10V or
0...20mA signal

2 outputs
for 0...10V or
0...20mA signal

4 inputs
for 0...10V or
0...20mA signal

RS485
Modbus®-RTU
interface

- 24 digital inputs
  (4 configurable as analog 0...10V inputs
- 20 digital outputs (relay, transistor or mixed)
- 4 analog inputs for PT100 temperature sensors
- 4 analog outputs configurable as 0...10V or 0/4...20mA
- 4 analog inputs configurable as 0...10V or 0/4...20mA
- 1 RS485 communication module.

N.B. The sequence of the products given above must be respected for correct operation.

Kinco

Small PLC
Exceptional performance

Kinco combines the facility of numerous traditional devices, such as control relays, timers, counters, hour meters and so on.
The advantages are many: cost reduction of materials and installation time, space reduction, easy reprogramming when needed, and function adjustment of the system for relay adaptation to new installation requirements.
Kinco is available for 24VDC or 24VAC or 100-240VAC power supply and with 10 to 44 inputs and outputs.

Applications

Residential and home automation

Timing and programming control for:
- Lighting
- Garden and park irrigation and pool filling systems
- Heating and air-conditioning systems
- Roller shutters, blinds and shades.

Industrial buildings

Timing and programming control for:
- Automatic door, window and gate opening and closing

Industrial machinery

- Machinery cycle control
- Speed control
- Operation feedback control (temperature, speed, pressure, etc.)
- Operating rate count
- Alarm verification and display.

Cold storage and refrigeration

- Timers
- Temperature control
- Humidity-ventilation control
- Compressor controls.

Conveying and transfer systems

- Conveyor belts
- Stop and go controls
- Automatic programmed stopping
- Baggage handling controls
- Storage and car silos.

Level and pressure control

- Automatic valve opening and closing control
- Level controls
- Pressure controls
- Pump change
- Storage silo and tank filling and draining.

Greenhouses

- Lighting
- Temperature control
- Humidity control
- Irrigation
- Sprinkling systems.

Lifting mechanisms

- Bridge crane control
- Roadway barriers and gates
- Automatic car garages
- Platforms
- Hoists and lifts.

Lovato electric

Features

Quick control board installation
- Fewer number of components
- Less wiring. Fewer number of connections.

Repetitiveness
- Less errors during panel building
- Considerable time saving.

Flexibility
- Quick correction of abnormal conditions at final testing
- Fast changes on control boards.

With a personal computer, two programming language logics can be used: FBD (Function Block Diagrams) and LADDER (contact scheme).

Both of these can be accomplished:
- Simulate the program directly "off-line" on a personal computer to test if it runs correctly.
- Use the supervision mode to check the project "on-line".

On front, Kinco has 8 function keys, dedicated to "on-board" programminng and for status and variable supervision.

The 4 directional key can be configured as function keys, programmable by the user.

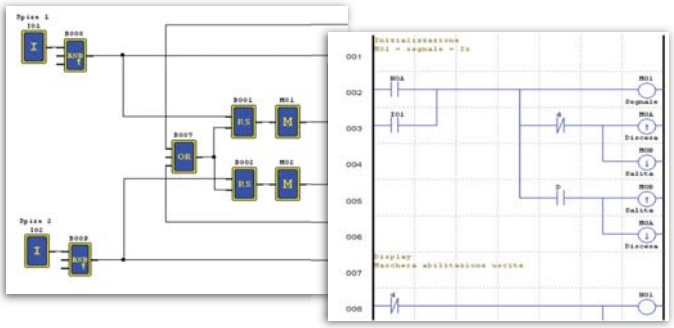
Function blocks and memory

Timer (T) (delay on/off, recycle, pulsing, ...)	31
Real Time Clock (RTC) (daily, weekly, monthly and yearly mode)	31
Counter (C)	31
Analog comparator (G)	31
User's pages (H) - 16 characters and 4 lines	31
Auxiliary relay - Scratchpad (M + N memory types)	63 + 63
Data register (DR)	240

Saving can be in memory storage of:
- Auxiliary relay
- Counter value
- Data register.

Program size

Language	
LADDER (contact scheme)	300 lines
FBD (function blocks)	260 blocks



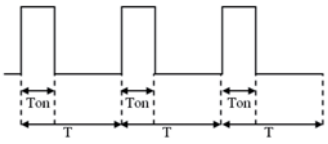
Functions

- Addition-Subtraction on variables
- Multiplication-Division on variables
- Comparators on variables
- HMI display for parameter viewing and programming
- PWM output
- High speed input (1kHz)
- PID function
- Multiplexer
- Analog Ramp
- Register transfer (numerical variables and status)
- Shift function
- Boolean logic blocks

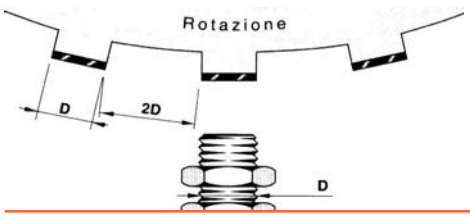
PWM OUTPUT

Pulse train generation with programmable pulse time and frequency

$$V_{out} = 24VDC \times \frac{T_{on}}{T}$$

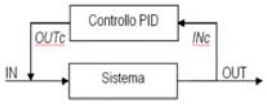


HIGH SPEED INPUT



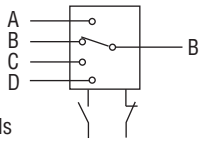
Position and speed detection

PID FUNCTION



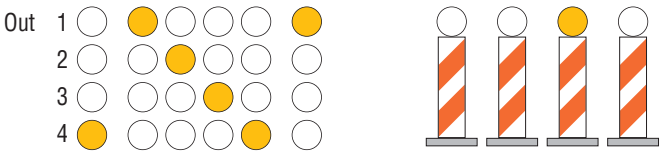
IN: Heating switch on and required temperature setting
OUT: Current room temperature
INc: Measured room temperature in a precise point
OUTc: Temperature adjusting and controlling.

MULTIPLEXER



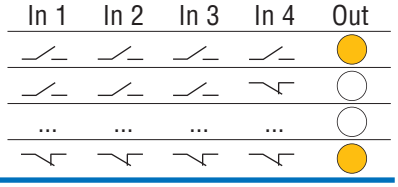
Selection of 1 of 4 values based on the combination of two digital signals

SHIFT FUNCTION - activation of pulsed outputs in sequence



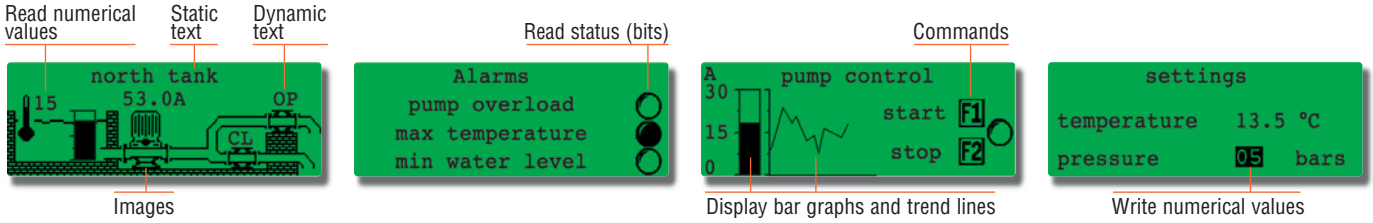
BOOLEAN LOGIC BLOCKS

Output activation based on a series of digital singals



HMI operator panel LRX P01

LRX P01 is an HMI operator panel, used with many types of PLCs or other intelligent controllers equipped with communication port.
By using the HMI, the values of both PLC inner registers and relay status can be monitored and changed with the keys or LEDs.
In this way, machinery and equipment functioning results to be simple and direct.
LRX P01 supports Modbus®-RTU protocol and different communication methods can be chosen, such as RS232 and RS485.
The LRX SW P01 editor software permits to make dedicated screens by taking advantage of the graphic display to view bitmaps, bar graphs and trend lines.



Characteristics

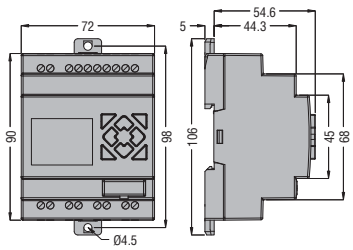
- 24VDC power supply
- Backlight graphic 192x64 pixel LCD
- RS232 communication port:
  - Direct connection to Kinco using LRX C00
  - Connection to other devices using a serial cable
- RS485 communication port
- LRX SW P01 editor software.

Functions

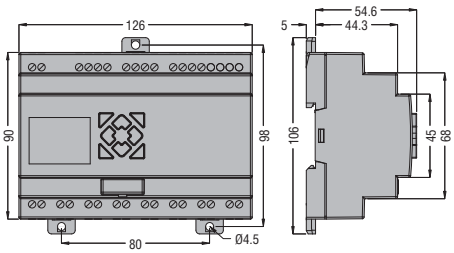
- Send commands
- Read status
- Provide static and dynamic texts
- Write variables
- Read variables: numerical value, bar graph and trend line.

Dimensions [mm]

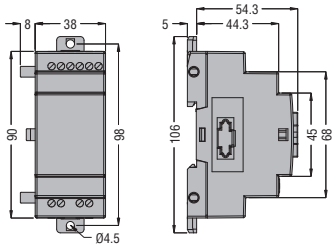
LRD10... - LRD12...



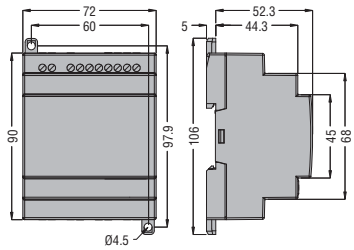
LRD20...



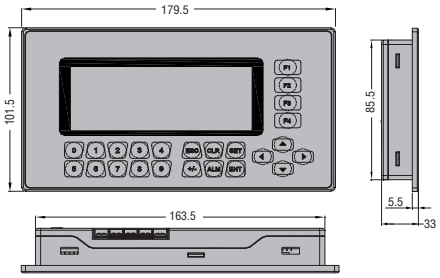
LRE...



LRX1V3 D024



LRX P01



How to order

Order code	Power supply	INPUTS	OUTPUTS	MAX DIGITAL I/O
Base modules				**Base + expansions**
LRD12RD024	24VDC	6 digital + 2 digital/analog	4 Relay	12 + 24
LRD12TD024	24VDC	6 digital + 2 digital/analog	4 Transistor	12 + 24
LRD20RD024	24VDC	8 digital + 4 digital/analog	8 Relay	20 + 24
LRD20TD024	24VDC	8 digital + 4 digital/analog	8 Transistor	20 + 24
LRD10RA240	100-240VAC	6 digital	4 Relay	10 + 24
LRD20RA240	100-240VAC	12 digital	8 Relay	20 + 24
LRD12RA024	24VAC	8 digital	4 Relay	12 + 24
LRD20RA024	24VAC	12 digital	8 Relay	20 + 24
Expansion and communication modules				
LRE02AD024	24VDC	—	2 analogic	—
LRE04AD024	24VDC	4 analog	—	—
LRE04PD024	24VDC	4 PT100	—	—
LRE08RD024	24VDC	4 digital	4 Relay	—
LRE08TD024	24VDC	4 digital	4 Transistor	—
LRE08RA240	100-240VAC	4 digital	4 Relay	—
LRE08RA024	24VAC	4 digital	4 Relay	—
LREP00	24VDC	RS485 Modbus®-RTU slave communication unit	—	—
Accessories				
LRX M00	Program backup memory unit			
LRX C00	PC - LRD connecting cable (1.5m long)			
LRX SW	Programming and supervision software and user's manual (CD-ROM) for LRDs			
LRX 1V3 D024	Power supply unit, 100-240VAC/24VDC, 1.3A			
LRX D00	User's manual in Italian (hard copy)			
LRX D01	User's manual in English (hard copy)			
LRX D02	User's manual in Spanish (hard copy)			
LRX D03	User's manual in French (hard copy)			
LRX P01	HMI operator panel 24VDC, interface RS232 and RS485 (Modbus®-RTU Master)			
LRX C02	PC - LRX P01 connecting cable			
LRX SW P01	Editor software and user's manual (CD-ROM) for LRX P01 HMI			
Starter kits				
LRDKIT 12R D024	LRD starter kit complete with LRD12R D024 micro PLC, LRX SW software and LRX C00 cable			
LRDKIT 12R A024	LRD starter kit complete with LRD12R A024 micro PLC, LRX SW software and LRX C00 cable			
LRDKIT 10R A240	LRD starter kit complete with LRD10R A240 micro PLC, LRX SW software and LRX C00 cable			

Techanical characteristics

Auxiliary power supply		**LRD…D024**	**LRD…A024**	**LRD…A240**
Rated voltage Ue (frequency)		24VDC	24VAC (50-60Hz)	100-240VAC (50-60Hz)
Operating range		20.4-28.8VDC	20.4-28.8VDC (47-63Hz)	85-264VAC (47-63Hz)
Digital inputs				
Rated voltage		24VDC	24VAC (50-60Hz)	100-240VAC (50-60Hz)
Input voltage	State 0	<5VDC/<0.625mA	<6VDC/<0.85mA	<40VAC/<0.28mA (LRD10R A240); <0.15mA (LRD20R A240)
	State 1	>15VDC/>1.875mA	>14VDC/>3mA	>79VAC/>0.41mA
Delay time	0 to 1	3ms (0.5ms high speed)	90ms	50-45ms (Ue=120VAC); 22-18ms (Ue=240VAC)
	1 to 0	5ms (0.3ms high speed)	90ms	50-45ms (Ue=120VAC); 90-85ms (Ue=240VAC)
Analog inputs (for 24VDC versions only)				
Input signal range		0-10V	-	-
Display resolution		0.01V	-	-
Conversion		8 bits	-	-
Current consumption at 10VDC		<0.17mA	-	-
Input resistance		<1kΩ	-	-
Maximum overload		28VDC	-	-
Maximum cable length		≤ 30m screened	-	-
Digital outputs		**LRD…R… / LRE08R…**		**LRD…T… / LRE08T…**
Type of output / Rated current Ith		Relay / 8A		Transistor / 0.3A 24VDC
Applied voltage		12-24VAC / 12-125VDC		10-28.8VDC
Ambient conditions				
Temperature - operation / storage		-20…+55°C / -40…+70°C		
Relative humidity		20-90% with no condensation		
Maximum pollution degree		2		
Housing				
Version		Modular for mounting on 35mm (IEC/EN 60715) DIN rail or screw fixing (M4x20mm)		
Connections	Type of terminal	Screw		
	Conductor section	0.14-2.5mm² / 26-14AWG		
	Tightening torque	0.6Nm / 0.4lbft		
	Maximum cable length	≤100m		
Degree of protection		IP20		
Certifications and compliance				
Certifications obtained / Compliant with standards		cULus / IEC/EN 61131-2		

new

2011

Switch disconnectors
16A to 1600A

Fuse holders

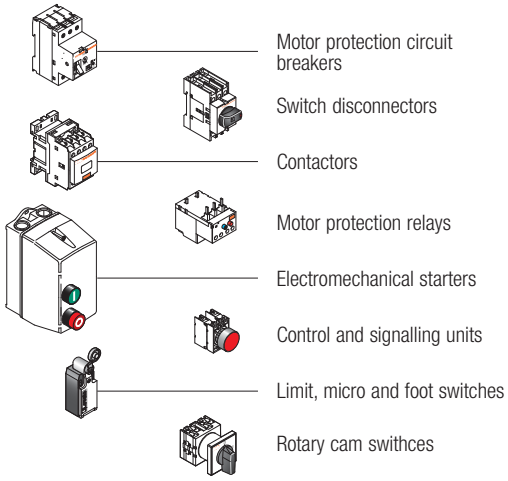
Digital multimeters
and analyzers

Energy meters

Automatic transfer switch
controllers

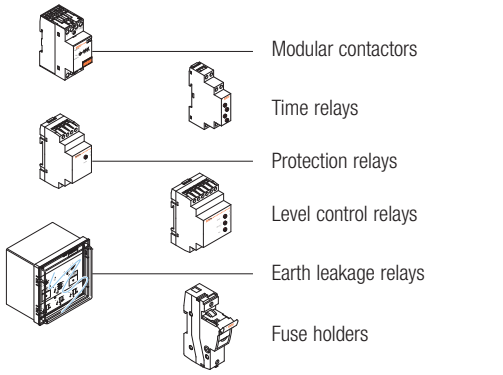
Switching power supplies

Planet Switch



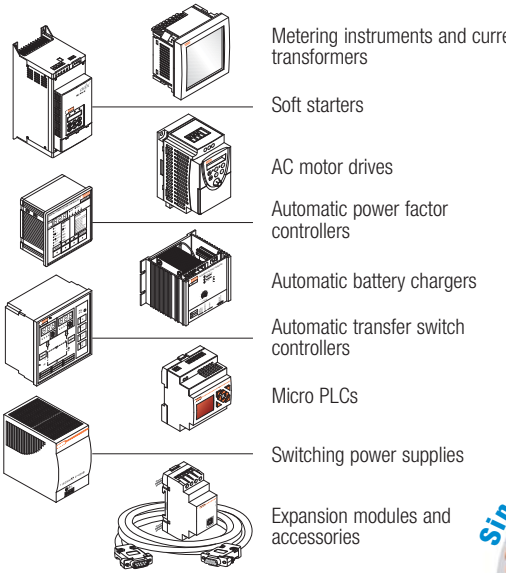
- Motor protection circuit breakers
- Switch disconnectors
- Contactors
- Motor protection relays
- Electromechanical starters
- Control and signalling units
- Limit, micro and foot switches
- Rotary cam swithces

Planet Din



- Modular contactors
- Time relays
- Protection relays
- Level control relays
- Earth leakage relays
- Fuse holders

Planet Logic



- Metering instruments and current transformers
- Soft starters
- AC motor drives
- Automatic power factor controllers
- Automatic battery chargers
- Automatic transfer switch controllers
- Micro PLCs
- Switching power supplies
- Expansion modules and accessories

Present in over 100 countries

www.LovatoElectric.com

LOVATO ELECTRIC S.P.A.
CONTROL SOLUTIONS FOR INDUSTRY
VIA DON E. MAZZA, 12 - 24020 GORLE (BERGAMO) ITALY
Tel. +39 035 4282111 **Fax** +39 035 4282200
E-mail: info@LovatoElectric.com
Sales Department: **Tel.** +39 035 4282354 - **Fax** +39 035 4282400

LOVATO Electric offices in the world

United Kingdom
LOVATO ELECTRIC LTD
Tel. +44 8458 110023
www.Lovato.co.uk

Germany
DELTEC LOVATO GmbH
Tel. +49 7237 1733
www.DeltecLovato.de

Spain
LOVATO ELECTRIC S.L.U.
Tel. +34 93 7812016
www.LovatoElectric.es

Poland
LOVATO ELECTRIC SP. Z O.O.
Tel. +48 71 7979010
www.LovatoElectric.pl

Czech Republic
LOVATO SPOL. S.R.O.
Tel. +420 382 265482
www.LovatoElectric.cz

USA
LOVATO ELECTRIC INC
Tel. +1 757 545 4700
www.LovatoUsa.com

Canada
LOVATO ELECTRIC
CORPORATION
Tel. +1 450 681 9200
www.Lovato.ca

Mexico
LOVATO ELECTRIC
DE MEXICO, S.A. DE C.V.
Tel. +52 555 3415662
www.LovatoElectric.com.mx

Lovato electric

100% electricity

PD09 GB 10 11