MICRO PLC
LRK AND LRD SERIES

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Lovato electric

ENERGY AND AUTOMATION

MICRO PLC LRK AND LRD SERIES

Simple, compact but with great performance

The industrial automation sector is constantly evolving and increasingly requires the management of applications with compact and efficient control panels, made with as few components as possible, but at the same time flexible enough to easily adapt to changes required by customers. LRK and LRD series micro PLCs are the simple, compact and functional solution for managing small and medium-sized automations.

LRK series
- advanced version
- built-in Ethernet port
- program memory 600 rows, 500 blocks
- expandable.

LRD series
- basic version
- program memory 300 rows, 260 blocks
- expandable.

Quick installation
- reduction of the number of components inside the panel
- simplicity of wiring
- reduction of installation time
- cost savings.

Flexibility
- rapid identification of anomalies during testing
- quick implementation of changes.

Expandability
up to 8 expansion modules can be added to increase the number of digital or analog I/Os on board.

Applications
- lighting control
- assembly lines, simple automation
- air conditioning (HVAC) systems
- control of automatic doors, shutters, blinds, gates, automatic windows

- automatic irrigation of gardens, greenhouses, nurseries
- transport and lifting systems
- level and pressure controls.

Their main strength is their ability to combine great **versatility**, thanks to numerous integrated features and the possibility of adding the expansion modules for the most demanding applications, with **extremely simple programming**, accessible to everyone, which does not require advanced technical knowledge.

Compact housing
- installation in switchboards with limited space
- compatible with standard modular switchboards for civil, commercial and industrial applications
- DIN rail.

Immediate diagnostics
- real-time monitoring from PC
- offline simulation of program
- versions with display for monitoring I/O status and all variables.

Simplicity
- simple and intuitive configuration with LRXSW software that can be downloaded free of charge from www.LovatoElectric.com
- wide set of integrated features.

Repeatability
- possibility to transfer the project to other micro PLCs
- reduced risk of errors
- significant time savings.

LRK SERIES

● Built-in Ethernet port

- local or remote programming with connection via IP address
- connection with standard Ethernet cable.

● Built-in web server

Real-time monitoring of the status and main variables of the micro PLC from a web browser.

● Wide program memory

- 600 rows for Ladder programming (contact scheme)
- 500 blocks for FBD (Function Block Diagram) programming.

● Wide range of power supply

Base modules with DC auxiliary supply voltage (LRK...D024...) can be powered indifferently at either 12VDC or 24VDC. Also available 100...240VAC auxiliary supply voltage version (LRK10RA240).

● Network I/O: remote I/Os management

In addition to the 56 I/Os that can be managed via LRE-type expansion modules, an additional 172 I/Os (126 digital + 46 analog) can be controlled through network connection of multiple micro PLCs in a master-slave configuration.

- **greater number of available I/Os**: the LRK master can control the I/Os of up to 8 LRK slaves connected on the same network as remote I/Os.

- **simple and flexible wiring**: slave LRKs can be distributed within the system, installed near the devices they need to control, communicating with each other via simple Ethernet connection, eliminating the need for long cables.

LRK MASTER
192.168.10.1

LRK SLAVE 1
192.168.10.2

LRK SLAVE 2
192.168.10.3

LRK SLAVE 8
192.168.10.9
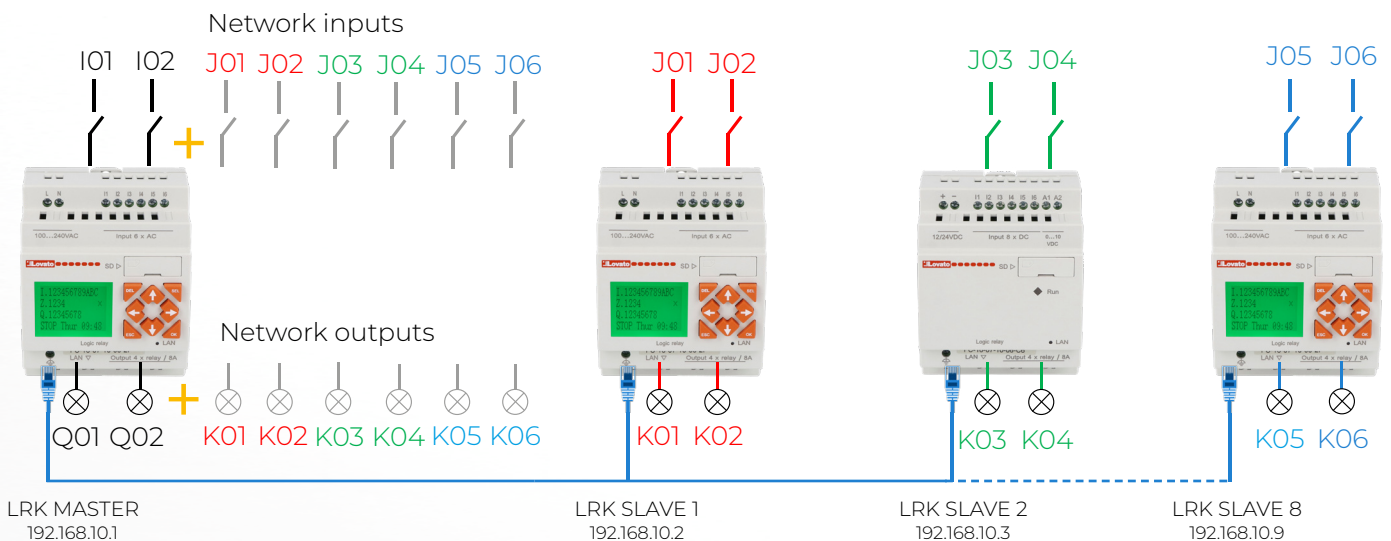
● Certifications

The entire LRD and LRK range (except for the code LRK10RA240) is cULus certified for sale in the North American market.

Battery slot for Real Time Clock

On the back of the micro PLC there is a slot for the insertion of an optional CR1220 type battery for **maintaining date and time in the absence of power**.
This feature is useful for applications that take advantage of the built-in clock calendar, such as the data log function for time-based sampling of variables, timing functions on an hourly, daily, weekly, or monthly basis, or the **astronomical clock** function for automatic calculation of the sunrise and sunset time for a given specific geographical location.

Dual communication port version

The LRK20RD024RS base module is equipped with two independent communication ports: an Ethernet port, dedicated to programming and monitoring, and an RS485 serial port for connection to other Modbus master devices such as PLCs, HMIs or PCs.
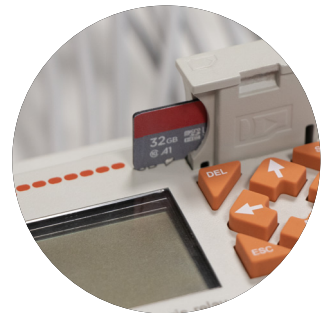
Micro-SD card slot

Support for an optional micro-SD card (32GB max) for:
- **program backup**: saving a copy of the project as a backup or for transferring to other LRK micro PLCs
- **data logging**: recording of up to 15 variables of your choice, sampled at configurable time intervals, exportable to xls file.
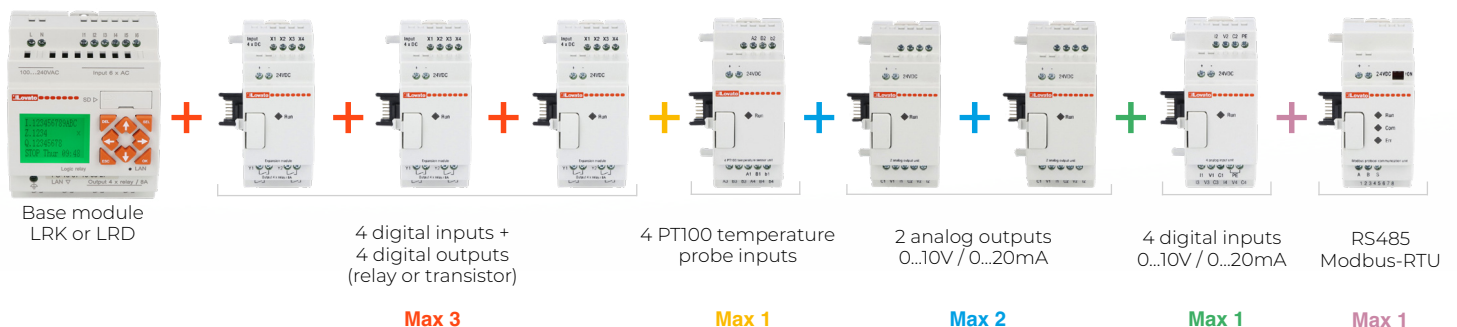

Expandability

Up to 56 I/Os with LRE type expansion modules:
- 20 digital outputs (relay, transistor or mixed)
- 24 digital inputs (4 configurable as analog inputs 0...10V)
- 4 inputs for PT100 temperature probes
- 4 analog inputs 0...10V, 0/4...20mA
- 4 analog outputs 0...10V, 0/4...20mA
- 1 RS485 communication module

With the LRK series micro PLCs, it is also possible to control up to 172 additional I/Os belonging to other LRKs connected in the network as remote I/Os.

Base module LRK or LRD	+	4 digital inputs + 4 digital outputs (relay or transistor)	+	4 PT100 temperature probe inputs	+	2 analog outputs 0...10V / 0...20mA	+	4 digital inputs 0...10V / 0...20mA	+	RS485 Modbus-RTU
		Max 3		**Max 1**		**Max 2**		**Max 1**	**Max 1**

CHARACTERISTICS

	LRK series	LRD series
Built-in Ethernet port	●	–
LCD display	● (except for type LRK12RD024B)	●
Auxiliary power supply	versions: 12/24VDC, 1 00...240VAC	versions: 12VDC, 24VDC, 24VAC, 100...240VAC
I/Os built into the base module	10, 12 or 20	10, 12 or 20
Maximum number of I/Os	56 I/Os with expansion modules (44 digital + 12 analog) + 172 I/Os with network connection (126 digital + 46 analog)	56 I/Os with expansion modules (44 digital + 12 analog)
Program memory	600 rows (ladder), 500 blocks (FBD)	300 rows (ladder), 260 blocks (FBD)
RS485 port	optional, integrated on type LRK20RD024RS	optional, integrated on type LRD20RD024P1
Programming	standard Ethernet cable	dedicated USB cable type LRXC03
Web server	●	–
Program backup memory	micro-SD card (32GB max)	memory module type LRXM00
Battery slot for date clock	● (optional CR1220 battery)	–

Functions		LRK series	LRD series
	Arithmetic operations	●	●
	Timers	● (31)	● (31)
	Counters	● (31)	● (31)
	Analog comparators	● (31)	● (31)
	Real Time Clock (RTC)	● (31)	● (31)
	HMI pages with display text	● (31)	● (31)
	Auxiliary memories (merkers M+N)	● (127 + 127)	● (63 + 63)
	Data registers	● (240)	● (240)
	Multiplexers	● (15)	● (15)
	Data-logging	●	–
	Astronomical clock	●	–
	Analog filter	●	–
	Calculating max, min, avg value	●	–
	PID	●	●
	Network I/O	●	–
	RS485 functions: remote I/O (master-slave), I/O link, Modbus RTU commands	only LRK20RD024RS type	only LRD20RD024P1 type

Base modules

LRK...

LRD...

Order code	Auxiliary supply voltage	Inputs/Outputs	Display	Communication port
LRKs Series				
LRK10RA240	100...240VAC	6/4 relay	Yes	Ethernet
LRK12RD024	12/24VDC	8/4 relay	Yes	Ethernet
LRK12RD024B	12/24VDC	8/4 relay	No	Ethernet
LRK20RD024RS	12/24VDC	12/8 relay	Yes	Ethernet + RS485
LRDs Series				
LRD12RD024	24VDC	8/4 relay	Yes	-
LRD12TD024	24VDC	8/4 transistor	Yes	-
LRD20RD024	24VDC	12/8 relay	Yes	-
LRD12RA024	24VAC	8/4 relay	Yes	-
LRD20RA024	24VAC	12/8 relay	Yes	-
LRD10RA240	100...240VAC	6/4 relay	Yes	-
LRD20RA240	100...240VAC	12/8 relay	Yes	-
LRD20RD012	12VDC	12/8 relay	Yes	-
LRD20RD024P1	24VDC	12/8 relay	Yes	RS485

Also available are kits including LRD base module, programming cable and software, kits with LRD and HMI, and training kits with simulation board. For more information, visit www.LovatoElectric.com.

Expansion modules

LRE...

Order code	Auxiliary supply voltage	Inputs/Outputs
LRE02AD024	24VDC	2 analog outputs 0...10V/0...20mA
LRE04AD024	24VDC	4 analog inputs 0...10V/0...20mA
LRE04PD024	24VDC	4 PT100 temperature probe inputs
LRE08RD024	24VDC	4/4 relay
LRE08TD024	24VDC	4/4 y transistor
LRE08RA024	24VAC	4/4 relay
LRE08RA240	100...240VAC	4/4 relay
LREP00	24VDC	Communication module RS485 Modbus-RTU

Accessories and HMI

LRX1V3D024   LRXM00

LRXC03

LRHA07

LRHA04

Order code	Description
For LRD series base modules	
LRXM00	Backup program memory
LRXC00	LRXP01 (RS232)-LRD connecting cable
LRXC03	PC (USB)-LRD programming cable
For LRD and LRK series base modules	
LRX1V3D024	Power supply unit 100...240VAC/24VDC 1.3A
LRXP01	Operator panel 24VDC, RS232, RS485 (Modbus-RTU Master)
LRXC02	Programming cable for LRXP01 (RS232)
HMI	
LRHA04	Display 4.3" TFT LCD
LRHA07	Display 7" TFT LCD
LRHA10	Display 10.1" TFT LCD

For more information on LRH series HMIs and programming software visit www.LovatoElectric.com.

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