

MODBUS PROTOCOL LD and LD PLUS SERIES

ATTENZIONE - WARNING - ATTENTION

Impostare ID RS485 dello strumento a 1
Set RS485 controller's ID to 1
Définissez l'ID du contrôleur RS485 sur 1





NORME CE
EC RULES(STANDARD EC)
NORMAS DE LA CE

Direttiva Bassa Tensione }
Low Voltage Directive } **2014/35/UE**
Directiva de baja tensión }

Direttiva EMC Compatibilit  Elettromagnetica }
EMC electromagnetic compatibility directive } **2014/30/UE**
EMC directiva de compatibilidad electromagn tica }



GENERAL SAFETY GUIDELINES

Danger!

In emergencies the instrument should be switched off immediately! Disconnect the power cable from the power supply!

When installing always observe local regulations!

Manufacturer is not liable for any unauthorized use or misuse of this product that may cause injury, damage to persons and / or materials.

Caution!

Instrument must be accessible at all times for both operating and servicing. Access must not be obstructed in any way!

Feeder should be interlocked with a no-flow protection device to automatically shut-off the pumps when there is no flow!

Pumps and accessories must be serviced and repaired by qualified and authorized personnel only!

Always discharge the liquid end before servicing the instrument!

Empty and rinse the liquid end before work on a pump which has been used with hazardous or unknown chemicals!

Always read chemical safety datasheet!

Always wear protective clothing when handling hazardous or unknown chemicals!

Instrument must be operated / serviced by trained technicians only!

All connection operations must be performed while the instrument is not connected to main supply!

MODBUS

This device use MODBUS RTU protocol and it is a “slave”.

What is MODBUS?

It is a application-layer messaging protocol. It provides client/server communication between devices connected on networks.

Devices with MODBUS protocol use 8, N, 1 data format: 8 data bits, no parity, 1 stop bit.

Communication speed rate (baud) can be set from devices communication menu directly.

MODBUS transactions are related always to the “master”, that manage the line and a “slave” device per time (except for broadcast messages).

Each “slave” device is univoquely identified by an **address**.

First character of the message always contains the “slave” device’s numeric address.

Permitted addresses are from 1 to 255. 0 is used only for broadcast messagges, directed to all “slave” devices at the same time.

Second character of the message contains the master’s request. The “slave” device replies with same character to mean the request has been executed.

Frequently used requests are :

Function	Description
01	Read Coil Status
02	Read Input Status
03	Read Holding Registers
04	Read Input registers
05	Force Single Coil
06	Preset Single register
07	Read Status

Last two character of the message contains Cyclic Redundancy Check obtained by CRC16 algorithm.

MODBUS FUNCTIONS

Read Output Status (01)

The function asks the ON / OFF of binary logic variables. Broadcast is not allowed.

Request

In addition to the “slave” address and the function code (01), message contains starting address on two bytes and the number of bits to be read also on two bytes. The address numbering starts from zero (bit1 = 0) for the MODBUS.

Example: Request to read from the slave's 17-bit 04-015.

ERROR MANAGEMENT

ADDR	FUNC	DATA exept. code	CRC HI	CRC LO
0A	81	02	7A	74

Exceptional codes

CODE	NAME	DESCRIPTION
01	ILLEGAL FORMAT	Uncorret format message
02	ILLEGAL DATA ADDRESS	Address referred is not allowed on the "slave"
03	ILLEGAL DATA VALUE	Uncorrect function
04	CRC ERROR	CRC checksum error

ADDRESS LIST VALUE (RED PLUS VERSION ONLY ADDRESSES):

Address	No. register	Format	Property	Function	Description
40002	2	Int16	R	03	Channel 1 reading without decimal point
40004	2	Int16	R	03	Channel 1 current measure dividing factor. Values: 1, 10, 100, 1000
40006	2	Int16	R	03	Channel 2 reading without decimal point
40008	2	Int16	R	03	Channel 2 current measure dividing factor. Values: 1, 10, 100, 1000
Alarms					
01	1Bit	Bit	R	01	Ch1 level1 0: No alarm 1: alarm
02	1Bit	Bit	R	01	Ch1 level2 0: No alarm 1: alarm
03	1Bit	Bit	R	01	Ch2 level 0: No alarm 1: alarm
04	1Bit	Bit	R	01	Flow 0: No alarm 1: alarm
05	1Bit	Bit	R	01	OUT OF RANGE ALARM1 0: No alarm 1: alarm
06	1Bit	Bit	R	01	OUT OF RANGE ALARM2 0: No alarm 1: alarm
07	1Bit	Bit	R	01	Dosing Alarm ch2 (out IS) 0: No alarm 1: alarm
08	1Bit	Bit	R	01	Dosing Alarm ch2 (out relè) 0: No alarm 1: alarm
09	1Bit	Bit	R	01	Dosing Alarm ch1(out IS1) 0: No alarm 1: alarm
10	1Bit	Bit	R	01	Dosing Alarm ch1(out relè) 0: No alarm 1: alarm

11	1Bit	Bit	R	01	Dosing Alarm ch1(out IS2) 0: No alarm 1: alarm
12	1Bit	Bit	R	01	Probe fail ch1 0: No alarm 1: alarm
13	1Bit	Bit	R	01	Probe Fail ch2 0: No alarm 1: alarm
14	1Bit	Bit	R	01	Stby 0: No stby 1: stby
Output					
40026	2	Int16	R	03	P/m for out IS ch1
40028	2	Int16	R	03	P/m for out IS ch2
40030	2	Int16	R	03	P/m for out IS ch2
40032	2	Int16	R	03	out relay pH 0: disable 1: ON 2: OFF ch1
40024	2	Int16	R	03	out relay cl 0: disable 1: ON 2: OFF ch2
Temperature					
40052	2	Int16	R	03	Temperature to be divided per 10
Setpoint					
40068	2	Int16	R/W	03/06	ch1 pulse1 val1
40070	2	Int16	R/W	03/06	ch1 pulse1 val2
40072	2	Int16	R/W	03/06	ch1 pulse1 perc1
40074	2	Int16	R/W	03/06	ch1 pulse1 perc2
40076	2	Int16	R/W	03/06	ch1 pulse1 wait ON/OFF or mc/h in prop + WM
40078	2	Int16	R/W	03/06	x working mode 0 ON/OFF 1 PROP 2 Dis. 3 PROP+WM 4 PID 5 LINE
40082	2	Int16	R/W	03/06	xxxx ch1 RELAY val1
40084	2	Int16	R/W	03/06	xxxx ch1 RELAY val2
40086	2	Int16	R/W	03/06	xxx ch1 RELAY perc1
40088	2	Int16	R/W	03/06	xxx ch1 RELAY perc2
40092	2	Int16	R/W	03/06	x working mode 0 PROP PWM 1 ON/OFF 2 Fixed PWM

					3 Dis 4 PROP+WM 5 PID
40140	2	Int16	R/W	03/06	xxxx ch1 pulse2 val1
40142	2	Int16	R/W	03/06	xxxx ch1 pulse2 val2
40144	2	Int16	R/W	03/06	xxx ch1 pulse2 perc1
40146	2	Int16	R/W	03/06	xxx ch1 pulse2 perc2
40148	2	Int16	R/W	03/06	xx ch1 pulse2wait t in ON/OFF o mc/h in prop + WM
40150	2	Int16	R/W	03/06	x working mode 0 ON/OFF 1 PROP 2 Dis. 3 PROP+WM 4 PID 5 LINE
40154	2	Int16	R/W	03/06	xxxx ch2 pulse1 val1
40156	2	Int16	R/W	03/06	xxxx ch2 pulse1 val2
40158	2	Int16	R/W	03/06	xxx ch2 pulse1 perc1
40160	2	Int16	R/W	03/06	xxx ch2 pulse1 perc2
40162	2	Int16	R/W	03/06	xx ch2 pulse1 wait t ON/OFF or mc/h in prop + WM
40164	2	Int16	R/W	03/06	x working mode 0 ON/OFF 1 PROP 2 Dis. 3 PROP+WM 4 PID 5 LINE
40212	2	Int16	R/W	03/06	xxxx ch2 RELAY val1
40214	2	Int16	R/W	03/06	xxxx ch2 RELAY val2
40216	2	Int16	R/W	03/06	xxx ch2 RELAY perc1
40218	2	Int16	R/W	03/06	xxx

					ch2 RELAY perc2
40222	2	Int16	R/W	03/06	x working mode 0 PROP PWM 1 ON/OFF 2 Fixed PWM 3 Dis 4 PROP+WM 5 PID
40284	2	Int16	R/W	03/06	percentual mc/h set prop+WM Pulse 1 ch1
40286	2	Int16	R/W	03/06	percentual 0 mc/h set prop+WM Pulse 1 ch1
40288	2	Int16	R/W	03/06	mc/h set prop+WM out relay 1 ch1
40290	2	Int16	R/W	03/06	percentual mc/h set prop+WM Relè 1
40294	2	Int16	R/W	03/06	percentual 0 mc/h set prop+WM realy 1 ch1
40292	2	Int16	R/W	03/06	percentual mc/h set prop+WM Pulse 2 ch1
40296	2	Int16	R/W	03/06	percentual 0 mc/h set prop+WM Pulse 2 ch1
40298	2	Int16	R/W	03/06	percentual mc/h set prop+WM Pulse ch2
40300	2	Int16	R/W	03/06	percentuale a 0 mc/h set prop+WM Pulse ch2
40302	2	Int16	R/W	03/06	mc/h in prop+WM out relay ch2
40304	2	Int16	R/W	03/06	Percentual mc/h set prop+WM Relè ch2
40308	2	Int16	R/W	03/06	percentual 0 mc/h set prop+WM Relè ch2
40312	2	Int16	R/W	03/06	PID mode ch1 0: - 1: +
40330	2	Int16	R/W	03/06	PID mode ch2 0: - 1: +
40314	2	Int16	R/W	03/06	Integral Time
40316	2	Int16	R/W	03/06	Derivative Time
40318	2	Int16	R/W	03/06	Perturbative 0:dis 1:ADD 2: Molt
40322	2	Int16	R/W	03/06	Perturbative percentual
40320	2	Int16	R/W	03/06	Perturbative mc/h
40324	2	Int16	R/W	03/06	WM 0: L/P 1:P/L 2: 0-20mA 3: 4-20mA
40326	2	Int16	R/W	03/06	L/P or P/L or mc/h at 20mA (as set on WM)
40328	2	Int16	R/W	03/06	Timeout

40332	2	Int16	R/W	03/06	Reset
40336	2	Int16	R/W	03/06	Ch1 stk max
40334	2	Int16	R/W	03/06	Ch2 stk max
40338	2	Int16	R/W	03/06	V[%]
Clock Read					
40044	2	Int16	R		MOUNTh DAY
40046	2	Int16	R		HOUR YEAR
40048	2	Int16	R		00 MINUTES
Parameter					
40520	2	Int16	R/W	03/06	Tau
40522	2	Int16	R/W	03/06	Delay
58	1Bit	Bit	R/W	01/05	Mode 0: priority pH 1: No priority pH
40542	2	Int16	R/W	03/06	Password
Dosing Alarm					
40428	2	Int16	R/W	03/06	Time for ch1 probe
44	1Bit	Bit	R/W	01/05	Mode 0: Dose 1 : Stop
40430	2	Int16	R/W	03/06	Time for ch2 probe
59	1Bit	Bit	R/W	01/05	Mode 0: Dose 1 : Stop
Alarm Probe					
40444	2	Int16	R/W	03/06	Time for ch1
75	1Bit	Bit	R/W	01/05	Mode 0: Dose 1 : Stop
40446	2	Int16	R/W	03/06	Time for ch2
90	1Bit	Bit	R/W	01/05	Mode 0: Dose 1 : Stop
Flow					
40526	2	Int16	R/W	03/06	Mode0:Disable 1:Reverse 2: Direct
40524	2	Int16	R/W	03/06	Time in minutes
Clock Setpoint					
41624	2	Int16	R/W	03/06	MOUNTh DAY
41626	2	Int16	R/W	03/06	HOUR YEAR
41628	2	Int16	R/W	03/06	00 MINUTES
45	1Bit	Bit	R/W	01/05	AM 1: Yes 0: No
46	1Bit	Bit	R/W	01/05	PM 1: Yes 0: No
47	1Bit	Bit	R/W	01/05	Format 0: Europe 1: USA
Log Setpoint					
48	1Bit	Bit	R/W	01/05	1: Enable 0: disable
40530	2	Int16	R/W	03/06	Time Hour = Value /100 Time Minute= Value%100
40532	2	Int16	R/W	03/06	Every Hour = Value /100 Every Minute= Value%100
54	1Bit	Bit	R/W	01/05	Time Am if =1
55	1Bit	Bit	R/W	01/05	Time Pm if =1
mA Setpoint					
49	1Bit	Bit	R/W	01/05	Mode ch1 0: 0/20 mA 1:4/20mA
40124	2	Int16	R/W	03/06	Max ch1
40126	2	Int16	R/W	03/06	Min ch1
60	1Bit	Bit	R/W	01/05	Mode ch2 0: 0/20 mA 1:4/20mA
40196	2	Int16	R/W	03/06	Max ch2
40198	2	Int16	R/W	03/06	Min ch2
50	1Bit	Bit	R/W	01/05	Mode ch3 0: 0/20 mA 1:4/20mA

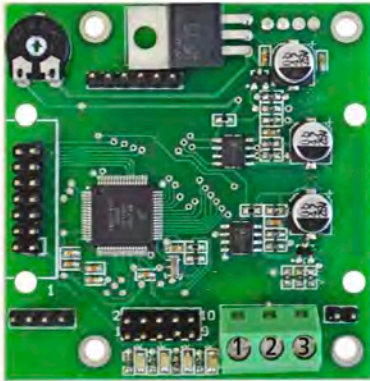
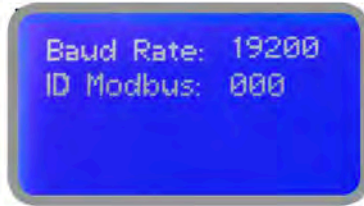
40128	2	Int16	R/W	03/06	Max ch2
40130	2	Int16	R/W	03/06	Min ch2
MinMax					
51	1Bit	Bit	R/W	01/05	Mode ch1 High 0:disable 1 : Enable
40438	2	Int16	R/W	03/06	Value ch1 High
52	1Bit	Bit	R/W	01/05	Mode ch1 Low 0:disable 1 : Enable
40442	2	Int16	R/W	03/06	Value ch1 Low
53	1Bit	Bit	R/W	01/05	Mode ch1 0: Dose 1 : Stop
40440	2	Int16	R/W	03/06	Time ch1
61	1Bit	Bit	R/W	01/05	Mode ch2 High 0:disable 1 : Enable
40454	2	Int16	R/W	03/06	Value ch2 High
63	1Bit	Bit	R/W	01/05	Mode ch1 Low 0:disable 1 : Enable
40458	2	Int16	R/W	03/06	Value ch1 Low
64	1Bit	Bit	R/W	01/05	Mode ch1 0: Dose 1 : Stop
Service					
40056	2	Int16	R	03/06	Mv probe ch1
40058	2	Int16	R	03/06	Mv probe ch2
LabelRead					
40844	2	Int16	R/W	03/06	Label "chr0-chr1"
40845	2	Int16	R/W	03/06	Label "chr2-chr3"
40846	2	Int16	R/W	03/06	Label "chr4-chr5"
40847	2	Int16	R/W	03/06	Label "chr6-chr7"
40848	2	Int16	R/W	03/06	Label "chr8-chr9"
40849	2	Int16	R/W	03/06	Label "chr10-chr11"
40850	2	Int16	R/W	03/06	Label "chr12-chr13"
40851	2	Int16	R/W	03/06	Label "chr14-chr15"
40852	2	Int16	R/W	03/06	Label "chr16-chr17"
40853	2	Int16	R/W	03/06	Label "chr18-chr19"
40854	2	Int16	R/W	03/06	Label "chr20-chr21"
40855	2	Int16	R/W	03/06	Label "chr22-chr23"
40856	2	Int16	R/W	03/06	Label "chr24-chr25"
40857	2	Int16	R/W	03/06	Label "chr26-chr27"

40458	2	Int16	R/W	03/06	Value ch1 Low
64	1Bit	Bit	R/W	01/05	Mode ch1 0: Dose 1 : Stop
Service					
40056	2	Int16	R	03/06	Mv probe ch1
40058	2	Int16	R	03/06	Mv probe ch2
LabelRead					
40844	2	Int16	R/W	03/06	Label "chr0-chr1"
40845	2	Int16	R/W	03/06	Label "chr2-chr3"
40846	2	Int16	R/W	03/06	Label "chr4-chr5"
40847	2	Int16	R/W	03/06	Label "chr6-chr7"
40848	2	Int16	R/W	03/06	Label "chr8-chr9"
40849	2	Int16	R/W	03/06	Label "chr10-chr11"
40850	2	Int16	R/W	03/06	Label "chr12-chr13"
40851	2	Int16	R/W	03/06	Label "chr14-chr15"
40852	2	Int16	R/W	03/06	Label "chr16-chr17"
40853	2	Int16	R/W	03/06	Label "chr18-chr19"
40854	2	Int16	R/W	03/06	Label "chr20-chr21"
40855	2	Int16	R/W	03/06	Label "chr22-chr23"
40856	2	Int16	R/W	03/06	Label "chr24-chr25"
40857	2	Int16	R/W	03/06	Label "chr26-chr27"

Appendix - MODBUS

Modbus is a serial communications protocol originally published by Modicon (now Schneider Electric) in 1979 for use with its programmable logic controllers (PLCs). Simple and robust, it has since become a de facto standard communication protocol, and it is now a commonly available means of connecting industrial electronic devices.

From main menu select COMMUNICATION then MODBUS to access the options. Set the communication speed according to the PLC system available. Set the ID assigning an UNIQUE address to avoid conflicts.



- 1: GND
- 2: A-RS485 (+)
- 3: B-RS485 (-)

To access the module MODBUS open the instrument only after power is switched off!

Never make connections with the instrument powered!



WARNING



*When dismantling this instrument please separate material types and send them according to local recycling disposal requirements.
We appreciate your efforts in supporting your local Recycle Environmental Program.
Working together we'll form an active union to assure the world's invaluable resources are conserved.*