Product Description

AL-3412 Ethernet network 10/100 Mbits/s Interface belonging to AL-2000 PLC series is designed to connect to Ethernet local area networks. It permits the communication between PLCs and/or between PLCs and supervisors IHMs through Ethernet TCP/IP protocol, with ALNET II application level.

The AL-3412 interface makes possible the PLC connection to open networks which follows TCP/IP standard. The module has 10/100BaseT physical interface using RJ45 connector.

His main characteristics are:

- Allows multimaster communication between CLPs for control tasks simultaneously with IHM supervision softwares and MasterTool programmer.
- Communication with supervision softwares through polling or through exception (unsolicited messages)
- 10 and 100 Mbits/s BaseT physical standard (UTP)
- Compatible to AL-2004 and AL-2003 CPUs
- Network speed auto detection
- TCP/IP transport and net protocols
- ALNETII application level protocol
- Easy configuration through MasterTool programmer
- Advanced configuration through F-Ethernet module
- Diagnostic available through F-Ethernet module
- State indication through LEDs on panel and in RJ45 connector
- Plug & play in already configured systems in substitution of AL-3405, increasing performance ever in 10Mbits/s networks

Software F Ethernet Module

F Ethernet module allows to AL-2003 and AL-2004 programmable controllers access to interface AL-3412 operation diagnostic and statistical data, through F-ETHER.094 function, and also allows parameter configuration which modify operation characteristics.

Accessing AL-3412 diagnostics allows evaluate his operation mode and Ethernet network communication quality.

The F-Ethernet module is not necessary AL-3412 operation but it allows improve his performance and easy network related problem detection through furnished diagnostics.

Ordering Information

Packing List

The product packing contains the following parts:
- AL-3412 Module
- Installation guide
- Mini-CD with F Ethernet module

Part Number

The following code must be used when ordering th product

Part Number	Description
AL-3412	Ethernet 10/100 Mbits/s Interface

Related Products

For AL-3412 interface utilization the following products are needed for configure a typical minimum system:

- Frame
- Power supply
- CPU
- Programming software

More complete systems may be configured with the following products:

- I/O digital modules
- I/O analog modules
- Bus expansion interfaces
- PROFIBUS interfaces
- Serial protocols interfaces
- Redundancy co-processors and remote I/O
- Multitask co-processors

Characteristics

General Characteristics

	AL-3412
Network interface	Physical level: RJ45 10/100 BaseT (UTP)
	Link level: Ethernet II
	Network level: IP
	Transport level: TCP
	Application level: ALNET II
Memory	1 Mbytes code (Flash)
	1 Mbytes data (RAM)
CLP interface	DMA for CPU memory accessing
Transfer data rate	2 Mbytes/for CPU memory
State indication	4 LEDs on panel
	2 LEDs in RJ45 connector
Diagnostic indication	Through F-ETHER.094 module
Configurable parameters	Address through MasterTool
	Special characteristics through F-ETHER.094
Response time	7 ms (mean time)
Autotesting	Executed on module start up
Operation temperature	0 to 60 °C (exceeds IEC 1131 standard)
Storage temperature	-25 to 75 °C (according to IEC 1131 standard)
Operation humidity	5 to 95% without condensation (according to IEC 1131 standard RH2 level)
Protection index	IP 011, against hand accidental accessand against vertical water drops (according to IEC Pub. 144 standard)
Weight	0,5 Kg
Physical dimensions	261,6 x 30,4 x 183,0 mm (A x L x P)

Notes:

- **Response time:** In this time is included a message reception in Ethernet network (typically a memory operand read request), the ALNET II CPU encapsulated message processing and the answer message transmission through Ethernet network. The CPU cycle time is not considered (CPU in programming mode).

Electrical Characteristics

	AL-3412
Connection	10/100 BaseT twisted pair (UTP)
Bus power consumption	600 mA @ 5 Vdc
Power dissipation	3 W
Electrical chock protection	According to IEC 536 (1976) standard, class I

Software Characteristics

	AL-3412
Link level	LLC (logical link control)
Network level	IP (internet protocol)
Transport level	TCP (transmission control protocol)
Application level	ALNET II (Altus proprietary protocol)
Configuration	MasterTool programmer F-ETHER.094 module
Diagnostics	F-ETHER.094 module

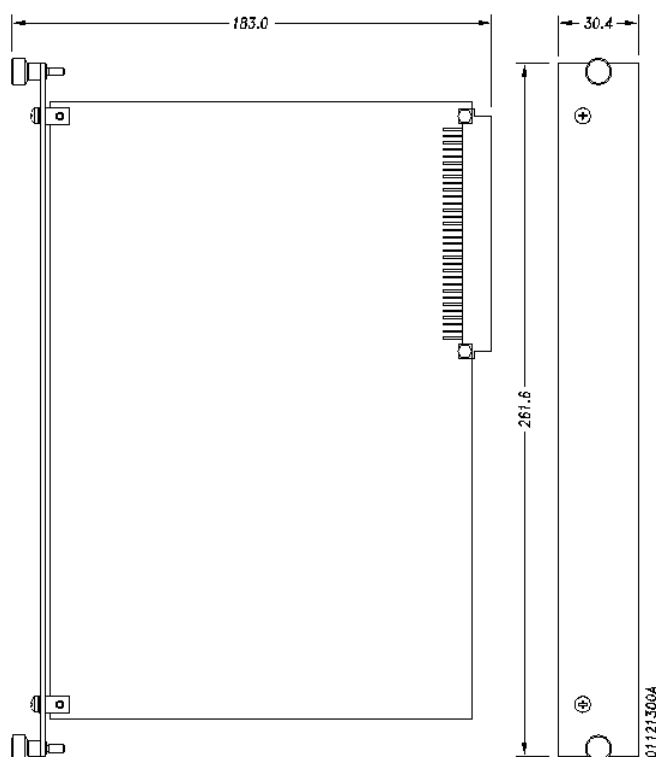|	F-ETHER.094
Compatibility	AL-2003 and AL-2004
Programming language	Ladder diagram and logical blocks
Program memory used	542 bytes (F module) 177 bytes (suggested programming logic)
Mean execution time	1,5 miliseconds
Used operand quantity	90 consecutive memory operands (M), or 1 memory table operand (TM) with 90 positions

Installation

The Al-3412 Ethernet network interface must be inserted in one of the AL-363X frame intelligent module reserved positions. For more information about consult the related frame technical characteristics.

The F-Ethernet module is constituted by one F-ETHER.094 function module which can be included in a MasterTool project and downloaded to related CPU latter. This F module is optional, and is not needed on Ethernet Interface module operation.

Physical Dimensions

Dimensions in millimeters.

Manuals

For better technical details in dos PONTO series products configuration, installation and programming, The following documents may be consulted:

Document number	Description
MU207011	AL-2002/AL-2003/AL-2004 Utilization Manual
MP399100	MT4100 - MasterTool Programming Manual
MAN/MT4100	MT4100 - MasterTool Utilization Manual
NTP032	ALNET II network technical standard
NAP103	Application Note - Ethernet Network Configuration