

Headquarters

France

applicom international s.a.
43, rue Mazagran
76320 Caudebec-lès-Elbeuf

International contact

tel: + 33 (0)2 32 96 26 36
fax: + 33 (0)2 32 96 26 37
infointl@applicom-int.com

National contact

tel: + 33 (0)2 32 96 04 20
fax: + 33 (0)2 32 96 04 21
infofr@applicom-int.com

Subsidiaries

Germany

applicom international GmbH
Im Gässle 9
70771 Leinfelden-Echterdingen
tel: + 49 711/78 23 74-0
fax: + 49 711/78 23 74-11
infode@applicom-int.com

United States

applicom international, Inc
4340 Redwood Hwy,
Suite D-309
San Rafael, CA 94903
tel: + 1 (415) 472-1595
fax: + 1 (415) 472-1596
infousa@applicom-int.com

Benelux

Euro View Services s.a.
273, Chaussée de Lodelinsart
6060 Gilly / Belgique
tel: + 32 (0) 71 42 03 43
fax: + 32 (0) 71 42 06 29
infofe@applicom-int.com

Italy

I.M.A. S.r.l.
(Italia Manutenzione Automatismi)
Piazza della Vittoria, 10 int.6
I-16121 Genova
tel: + 39 010 59 30 77
fax: + 39 010 595 69 25
infoit@applicom-int.com

Web

www.applicom-int.com



UNI-TE on TCP/IP



open industrial communication concept

Uni-Te on TCP/IP

Client and Server modes

The UNI-TE on TCP/IP protocol by **Schneider Electric** manufacturer (Modicon, Telemecanique) use TCP/IP for communication on Ethernet.

The UNI-TE on TCP/IP protocol uses **UNI-TE v1** or **v2** messaging (depending on the equipment) for the application layer and TCP/IP for communication on Ethernet. All layers produced for UNI-TE on TCP can therefore be represented according to the following OSI model :

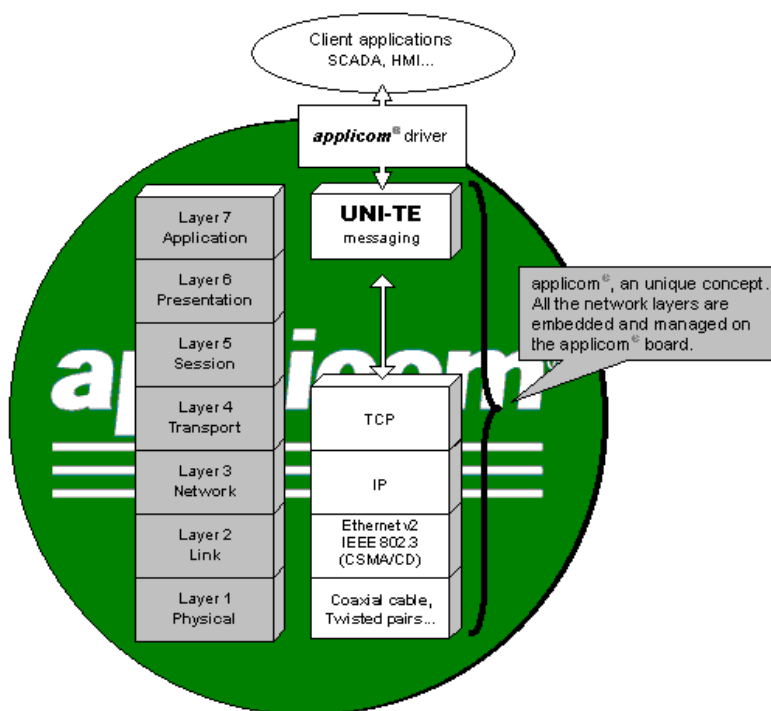


Figure 1 - applicom® protocol layers according to the OSI model.

The Transport **TCP** and Network **IP** layers allow the communication, i.e. the **data transport** between the various peripherals presents on the network (PLCs, sensors, devices...).

The application layer, here the **UNI-TE** messaging, defines the **data format of exchanges**.

The UNI-TE messaging on applicom[®] interface handles exchanges in the Schneider architecture with PLC couplers such as:

System Range	CPU automate	Ethernet Driver
TSX MICRO[1]	Via TSX PREMIUM (X-WAY addressing)	
TSX PREMIUM main server - Gate 0 (version 3.3 minimum)	TSX P57 1xx / PMX P57 1xx TSX P57 2xx / PMX P57 2xx TSX P57 4xx / PMX P57 4xx	TSX ETY 110 (version 2.6 minimum)
TSX PREMIUM auxiliary server - Gate 7 (version 3.3 minimum)	TSX P57 1xx / PMX P57 1xx TSX P57 2xx / PMX P57 2xx TSX P57 4xx / PMX P57 4xx	TSX ETY 110 (version 2.6 minimum)
TSX 47/ 67/87/107[1]	Via un TSX PREMIUM (X-WAY adressing)	

Please contact us for other supported CPU/couplers.

The applicom[®] interface provides in standard the following functionality:

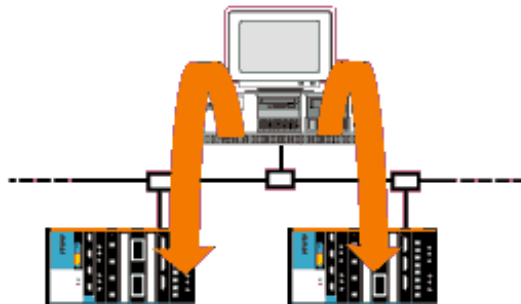
- **Client mode** Multi-request management. Reading and writing variables in the various memory areas of TSX PREMIUM, TSX MICRO and TSX 47/67/87/107 PLCs.
- **Server mode** for UNI-TE client PLCs, access to the applicom[®] database and equipment monitoring.

The use of UNI-TE messaging is available on applicom[®] interface simultaneously with the other TCP/IP messagings from applicom[®] offer – TCP/IP multi-messagings –.

[1] : X-Way defines the Schneider PLCs addressing architecture. X-Way addressing enables data exchange (Network. Station. Gate. Unit. Way) between the Schneider networks.

Client mode

In client mode, the applicom® interface takes the communication initiative to the server equipments.



The applicom® client mode can be used to send several requests simultaneously to an equipment before having received the first response: this operation is called **multi-request**.

To send several requests simultaneously, several connections are used. The applicom® interface manages **128 connections**. Only 30 of them can be used simultaneously for all equipments.

The applicom® interface can read and/or write major PLC data types thanks to applicom® library/DLL, DDE server, OPC server and ActiveX control:

TSX MICRO and TSX PREMIUM (Main Server - Gate 0)

Device data type ►	Internal	Input	Output	Monostable	Timer	Counter
▼ applicom® Data						
Bit	%MX %S	%IX	%QX			
Byte	%MB					
Word (16-bit) ^[1]	%MW %KW			%MNi.P	%Ti.P %Ti.V	%Ci.P %Ci.V
	%SW			%MNi.V	%Ti.D %Ti.R	%Ci.E %Ci.D
				%MNi.R	%TMi.P %TMi.V	%Ci.F
					%TMi.Q	
Double word (32-bit)	%DW					
Floating point (32-bit)	%FW					
IEEE format						

TSX PREMIUM (Auxiliary Server for service 1K - Gate 7)

Device data type ►	Internal	Monostable	Timer	Counter
▼ applicom® Data				
Bit	%MX %S			
Byte	%MB			
Word (16-bit) ^[1]	%MW %KW	%MNI.P	%Ti.P %Ti.V,	%Ci.P %Ci.V
	%SW	%MNI.V	%Ti.D %Ti.R	%Ci.E %Ci.D
		%MNI.R	%TMI.P %TMI.V, %TMI.Q	%Ci.F
Double word (32-bit)	%DW			
Floating point (32-bit)	%FW			
IEEE format				

[1] : Functions available on TSX MICRO, TSX PREMIUM (main server) and TSX47/67/87/107.

TSX 47/67/87/107

Device data type ►	Internal	Input	Output	Timer	Counter
▼ applicom® Data					
Bit	B	I	O		
Byte	O				
Word (16-bit) ^[1]	W CW	IW	QW	Ti,P Ti,V	Ci,P Ci,V
				Ti,D Ti,R	Ci,D Ci,F
Double word (32-bit)	DW				
Floating point (32-bit)	FW				
IEEE format					

Supported UNI-TE Functions ^[1] ^[2]

RUN	Device identification
STOP	Connect
Read error counters	Unconnect
RAZ error counters	

[2] : Functions or data accessible via applicom® library/DLL.

All the other UNI-TE requests can be generated with "TXTUTE" function of applicom® library/DLL. This function is identical to:

- Text function block used with TSX 17/47/67/87/107 PLCs,
- SEND_REQ() programming language function used with TSX MICRO and PREMIUM PLCs.

It allows the user to build his own request

Maximum number of variables per request with OPC server

Data type ►	Read			Write ^[3]		
	TSX MICRO/ TSX PREMIUM ^[1]	TSX PREMIUM ^[2]	TSX 47/64/ 87/107	TSX MICRO/ TSX PREMIUM ^[1]	TSX PREMIUM ^[2]	TSX 47/64/ 87/107
Bit	960	2048	496	1920	2048	496
Input/Output Bits	64	-	16	64	-	1
Word	120	508	60	120	508	60
Input/Output word	-	8	-	-	1	
Double word (32-bit)	60	254	30	60	254	30
Floating word (32-bit)	60	254	30	60	254	30
Monostable	30	120	1	1	1	-
Tempo	30	120	1	1	1	1
Counter	30	120	1	1	1	1

[1] : Frame length configured at 256 bytes.

[2] : Frame length configured at 1K (1024 bytes).

[3] : Maximum quantity in write is always 1 if you are using PCDDDE application.

UNI-TE messaging - Client mode performance

The applicom® interface must feed back variables coming from
16 stations (TSX PREMIMU auxiliary server - service 1K)
with 30ms time cycle.
No inter-PLC exchange is active.

Quantity of data per station
3 tables of 507 words,
1 table of 2048 bits.

applicom® Data-Base retrieval time (out of application and scada) to get
data from 16 stations, i.e. 24336 words and 32768 bits, 64 requests are
necessary :

with 1 simultaneous request by station
64 (requests) / 140 (requests/s)

= 0,477 second

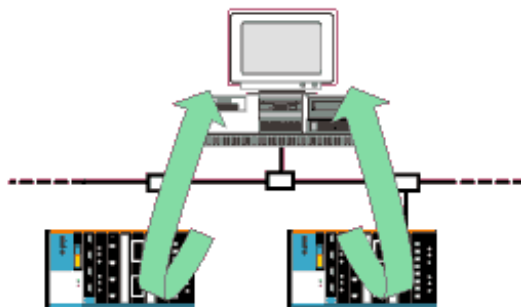
with 2 simultaneous request by station
64 (requests) / 275 (requests/s)

= 0,272 second

For a number of station lower than 9, it is possible to increase the
number de simultaneous requests by station, attending not to over-
load the network.

Server mode

The UNI-TE server on applicom® interface makes a database of **32K Words** and **32K Bits** available to UNI-TE clients. This data base, called applicom® Data-Base, could be access in Read and Write modes.



Without any prior configuration, Uni-Te clients can access the applicom® data-base directly by targeting the main system gate (gate No. = 0) or auxiliary system gate (gate No. = 7) of the applicom® UNI-TE station. The access mode is identical to that of a TSX PLC.

Supported Request	Max. number of Variables / requests		Corresponding UNI-TE variables
	Gate 0	Gate 7	
Read/Write bits	960	4056	%MX
Read/Write words	120	507	%MW, %MB
Read/Write double words (IEEE format)	60	253	%MW, %MD
Read/Write floating points (IEEE format)	60	253	%MF
Read/Write date and time			System area

Supported UNI-TE functions

- Device identification
- Mirror

The UNI-TE server functionality on the applicom® database can be used to optimize information feedback. Rather than permanently polling the equipments to monitor variables which change status occasionally, the equipments can store the information to be feed back in the applicom® database only on status changes (alarm feedback). This operating mode results in:

- PLC processors less solicited.
- Network architecture less heavily loaded.
- Minimized information feedback time.

This principle can be made **reliable** by using a monitoring mechanism of PLC client connections :

- You can define in the configurator a global maximum time between the accesses of the client equipment to the applicom® UNI-TE server. After this interval, the absence is indicated to the application by an "ACCESS STATUS WORD" in the applicom® Data-Base.
- Your application can read (or write to reset) a counter word which is located in the applicom® Data-Base words area "ACCESS INDICATOR WORD" to inform about the current number of writes made by the client device in the applicom® Data-Base.

Diagnostics

The applicom® package includes, free of charge, a set of diagnostic tools to test your communication without developing any kind of application.

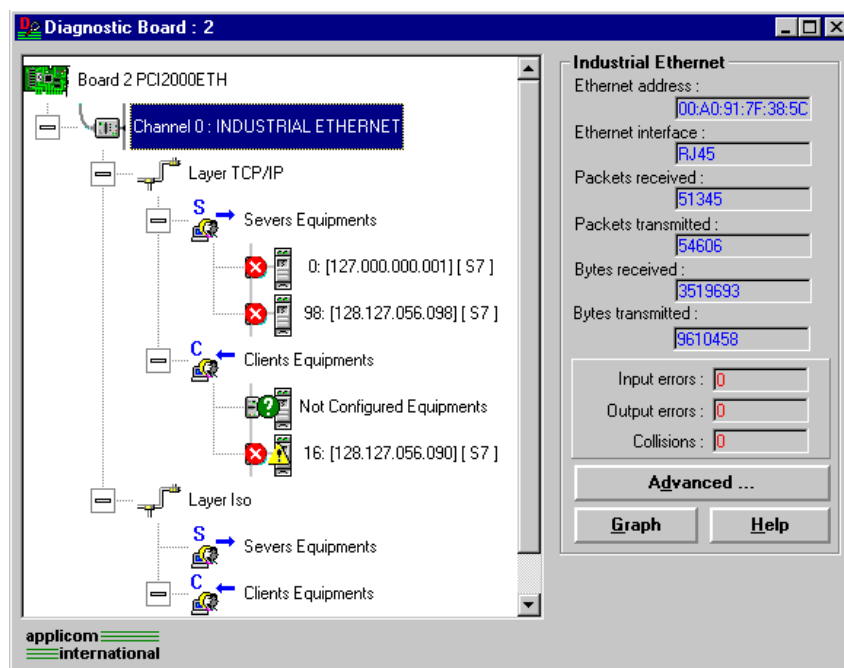
Those tools are an essential help to valid the good running of your industrial communication. You can use them in the same time than your applications.

They are sorted in two categories:

Dagnostic tools for network analysis

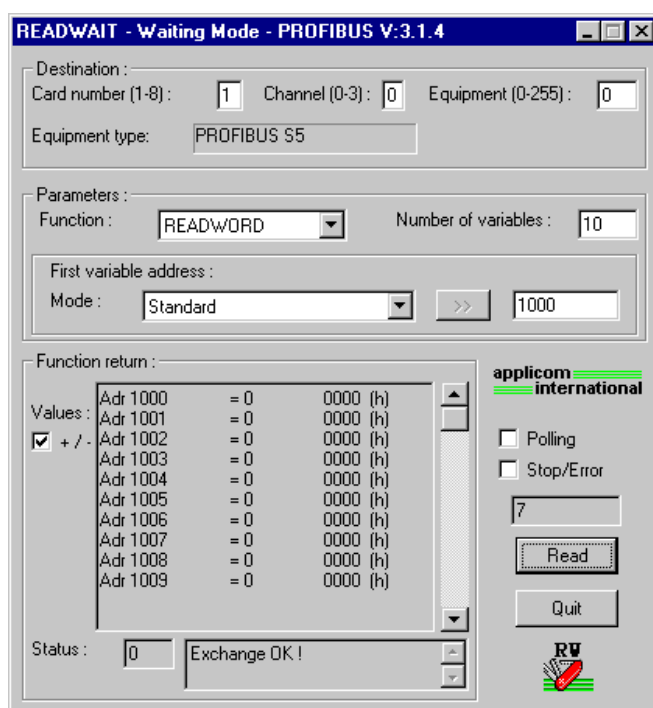
Depending of the protocol used, thus on the transport type, these tools are specialised in the network analysis. They inform you about the traffic and this in real time (load rate, emitted requests number, flow / seconds...). Two modes are available : normal or advanced.

The screen is displayed through a graphic tree representation. The object symbols inform on equipment current state (connected, active, error, not configured...).



Data access utilities

These utilities enable you to access in read and write modes to PLC data's and to applicom® Data-Base. Each access returns a status word and a text comment giving feedback result.



You can used, constently, the applicom® diagnostic tools. These tools cohabit with your applications.

Compatibles applicom® boards

ISA Bus	PCI Bus	PC/104 Bus
	PCI2000ETH	