Industrial Ethernet

Catalog

June 2017

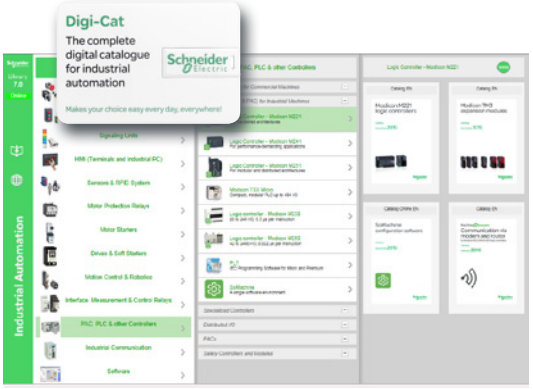
Quick access to Product information

Select your Catalogue, your Training

With just 3 clicks, you can reach the 7,000 pages of the Industrial Automation & Control catalogue, in both English and French.

- Digi-Cat is available on a USB key (for PC). To get your Digi-Cat, please contact your local center
- Download Digi-Cat from this address:

http://digi-cat.schneider-electric.com/download.html

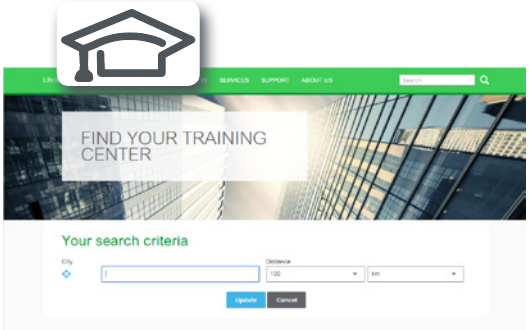


Find your training

- Find the right training for your needs
- Locate the training center with the selector tool, using this address:

http://www.schneider-electric.com/b2b/en/services/training/technical-training.jsp

then click on Find your training center



Life Is On | Schneider Electric

General content

Industrial Ethernet network

For Modicon M221, M221 Book, M241 and M251 logic controllers and Modicon TM4ES4 Ethernet switch module

General

Industrial Ethernet is the term used to refer to industrial communication protocols which use standard Ethernet physical layers such as:

- EtherNet/IP
- Modbus TCP
- TCP and UDP

On an Industrial Ethernet network, it is possible to connect:

- industrial products (industrial communication protocols) such as controllers, variable speed drives, robots, etc.
- products using TCP/UDP-based proprietary protocols

In addition, it is possible to use different Industrial Ethernet protocols on the same network simultaneously.

EtherNet/IP protocol

EtherNet/IP is an industrial communication protocol based on CIP (Common Industrial Protocol), owned and managed by the ODVA, an international independent standards organization (www.odva.org).

EtherNet/IP results from implementation of the CIP protocol on standard Ethernet. EtherNet/IP operates on the same equipment and the same infrastructure as Modbus TCP, and both protocols can be activated simultaneously and at any time on the network.

EtherNet/IP is a robust protocol which allows the use of sophisticated equipment such as cameras, robots, etc.

Advanced services and outstanding performance

EtherNet/IP is object-oriented. In each EtherNet/IP device, the data are categorized as objects and each device can be associated with several types of object depending on its intended purpose. Equipment is integrated more easily thanks to predefined objects and standards.

The EtherNet/IP protocol uses an Originator/Adapter architecture for data exchange.

Modbus TCP protocol

Modbus has been the industry communication standard since 1979. During the internet revolution, Modbus was combined with Ethernet to form Modbus TCP, a completely open Ethernet protocol.

Modbus TCP, simple and open

The Modbus application layer is simple and universally familiar with its 9 million installed connections.

- Thousands of manufacturers have already implemented this protocol. Many have already developed a Modbus TCP connection and numerous products are presently available.
- The simplicity of Modbus TCP enables any fieldbus device, such as an I/O module, to communicate over Ethernet without the need for a powerful microprocessor or a lot of internal memory.

Modbus TCP, a standard

- The application protocol is identical on Modbus serial link and Modbus TCP: messages can be routed from one network to the other without converting the protocol.
- Since Modbus operates on the TCP/IP higher layer, users benefit from IP routing, thus enabling devices located anywhere in the world to communicate without worrying about the distance between them. Modbus and Modbus TCP are recognized as a fieldbus by the international standard IEC/EN 61158. They also comply with the “national Chinese standard” managed by ITEI.

The Modbus TCP protocol uses a client/server architecture for data exchange.

Industrial Ethernet network

For Modicon M221, M221 Book, M241 and M251 logic controllers and Modicon TM4ES4 Ethernet switch module

Modicon M221, M241 and M251 logic controllers

The embedded Ethernet communication ports in the Modicon M221, M241 or M251 logic controllers and in the Modicon TM4ES4 communication module optimize machine integration in factory network architectures.

Modicon M221, M241 and M251 logic controllers can easily be integrated in architectures such as:
- machine to devices (variable speed drives, remote I/O modules, HMI terminals) with the I/O Scanner function
- machine to machine with the NGVL function
- machine to supervision with the Modbus Client/Server, EtherNet/IP Adapter and OPC UA Server function

Ethernet also brings transparency to the factory, in particular - thanks to the firewall functions - making it possible from any point on the network to safely:
- program, monitor a controller or download an application
- access device parameters, variable speed drives for example

A simple web browser can be used to access machines anytime anywhere, using a tablet or smartphone, for example, using the web servers embedded in Modicon M241 and M251 controllers.

Safety can be enhanced by the use of VPN modems (see our Partner program on our website www.schneider-electric.com > Products and Services > Automation and Control > Collaborative Automation Partner Program).

Main devices supported

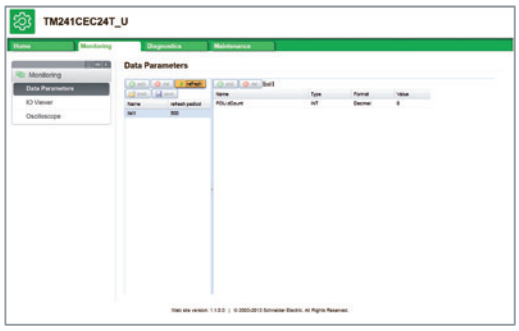
	Equipment	Protocols supported			SoMachine software integration tools *(1)*
		TCP/UDP	Modbus TCP	EtherNet/IP	
Variable speed drives	Altivar 32	–	☑	☑	FDR, DTM, TVDA
	Altivar 320	–	☑	☑	FDR, DTM, TVDA
	Altivar 340	–	☑	☑	FDR, DTM, TVDA
	Altivar Process ATV600	–	☑	☑	FDR, DTM, TVDA
	Altivar 71	–	☑	☑	FDR, DTM, TVDA
	Altivar Process ATV900	–	☑	☑	FDR, DTM, TVDA
Servo drive	Lexium 32 M	–	☑	☑	FDR, DTM, TVDA
Integrated servo drives	Lexium ILA	–	☑	☑	FDR, libraries, TVDA
	Lexium ILE	–	☑	☑	FDR, libraries, TVDA
	Lexium ILS	–	☑	☑	FDR, libraries, TVDA
Radio frequency identification	OsiSense XG	–	☑	☑	TVDA
Vision sensors	OsiSense OsiSense XUW	–	–	☑	TVDA
Distributed I/O modules	Modicon OTB1EODM9LP	–	☑	–	Libraries
Modular safety controllers	Preventa XPSMCM	–	*(2)*	☑	TVDA for EtherNet/IP
Wireless pushbuttons (metal/plastic) without batteries	Harmony XB4R/XB5R	–	☑	–	DTM, libraries
Logic controllers	Modicon M221/M241/M251	☑	☑	☑	User parameters (only for EtherNet/IP), libraries
Equipment supplied with EDS file *(1)*		–	–	☑	User parameters
Generic equipment		☑	☑	☑	User parameters (only for EtherNet/IP), libraries

(1) SoMachine configuration software: please consult our catalog DIA3ED2140110FR/EN.pdf or our website www.schneider-electric.com
- *FDR: "Fast Device Replacement"*
- *DTM: "Device Type Manager"*
- *TVDA: Tested Validated Documented Architectures*

(2) Integration as a generic device.

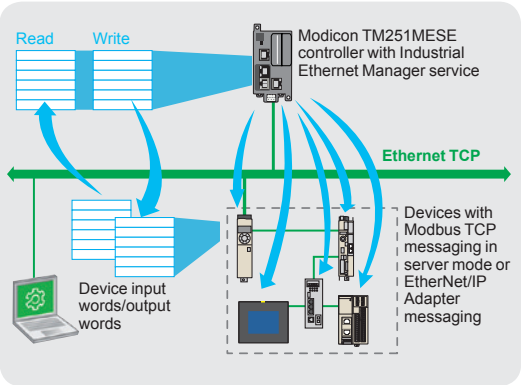
Industrial Ethernet network

For Modicon M221, M221 Book, M241 and M251 logic controllers and Modicon TM4ES4 Ethernet switch module



Preconfigured Web server

Viewer Web server



I/O Scanner (Industrial Ethernet Manager)

Web servers

Preconfigured Web server

Using a simple web browser available on PC, smartphone or tablet, this server authorizes the following “ready-to-use” functions:

- With no prior programming
  - Display of the I/O states
  - Controller diagnostics, and of its expansion and communication modules
  - Communication port diagnostics
  - I/O Scanner function diagnostics
  - Maintenance and configuration functions (Ethernet/IP, firewall, etc.)
- After configuration
  - Viewing data values
  - Viewing their evolution over time (oscilloscope function)

Viewer Web server

The SoMachine programming software is used to create customized pages for viewing and monitoring devices. These pages can also be accessed on any mobile device such as a tablet or smartphone with any operating system (iOS, Android, Windows).

Description of Ethernet services

Network Global Variable List (NGVL)

The NGVL protocol allows a controller to share data with other controllers on a local Ethernet network (LAN) or subscribe to data published by other controllers which support the NGVL protocol and thus allowing, for example, synchronization between control platforms.

I/O Scanner (Industrial Ethernet Manager)

The Industrial Ethernet Manager service is used to manage the exchange of remote I/O states over the Ethernet network after a simple configuration operation, with no need for special programming.

I/O Scanning is performed transparently by means of read/write requests in accordance with the Modbus TCP or EtherNet/IP protocol, so we talk about Scanner Manager on Modbus TCP or Scanner Manager on EtherNet/IP.

Slave Modbus TCP

This function can be used to create a dedicated I/O table in the controller, which can be accessed via the Modbus TCP protocol and by a controller with the Modbus TCP I/O Scanner function.

Fast Device Replacement (FDR)

This service uses standard address management technologies (BOOTP, DHCP) and the TFTP (Trivial File Transfer Protocol) file management service, in order to simplify maintenance of Ethernet products.

The FDR service is used to replace a device with a new device; the device is detected, reconfigured and automatically rebooted by the system.

Access to files via FTP (File Transfer Protocol)

This service provides access to the controller files from, for example, a PC (FTP client) and is used to exchange files such as application programs, data, etc.

This service can be accessed even if the controller has no application program in its memory.

Industrial Ethernet network

For Modicon M221, M221 Book, M241 and M251 logic controllers and Modicon TM4ES4 Ethernet switch module

Description of Ethernet services

Dynamic Host Configuration Protocol (DHCP)

This protocol can be used to assign an address to a controller (DHCP/BOOTP client) automatically. This address can be:

- fixed and determined either in the SoMachine software or included in a post-configuration file
- assigned by a controller with the DHCP server or BOOTP server function (such as the **TM251MESE** logic controller)

SNMP (Simple Network Management Protocol)

From a network management station, the SNMP protocol is used to monitor and control the Ethernet architecture components, meaning problems are diagnosed quickly.

The SNMP protocol is used to access configuration and management objects that are contained in the device MIBs (Management Information Bases).

Modicon M241 and M251 controllers support the “MIB 2 Standard” SNMP network management interface. This interface accesses a first level of network management; it enables the manager to identify the devices making up the architecture and retrieve general information about configuration and operation of the Ethernet Modbus TCP interfaces.

IP address filter (Whitelisting)

IP addresses that are authorized to access the controller can be loaded in the controller from either an SD card or an FTP client.

Locking communication protocols

Not only SoMachine, NetManage *(1)*, SNMP communication protocols but also Modbus, Web and FTP servers can be locked individually in the SoMachine software.

EtherNet/IP Adapter

This function can be used to create a dedicated I/O table in the controller, which can be accessed via the EtherNet/IP protocol and by a controller with the Ethernet/IP Originator function. EtherNet/IP Adapter has the same role for EtherNet/IP as a slave Modbus TCP.

EtherNet/IP Originator

Controllers with this function are responsible for exchanges with devices with the Ethernet/IP Adapter function. EtherNet/IP Originator has the same role for EtherNet/IP as a master Modbus TCP.

SNTP Client

For synchronizing controller clocks in the same network. The PLC can synchronize its time with an NTP/SNTP Server.

DNS Client

This service is used to convert a domain name to the IP address of the machine with this name.

OPC UA Server

OPC Unified Architecture (OPC UA) is an independent communication protocol for industrial automation applications. It is based on the client-server principle and allows sensors and actuators to communicate transparently with the ERP system or the cloud. The OPC UA Server is directly integrated in Modicon M241 and M251 controllers, allowing direct communication without passing via gateways and additional PCs with supervision systems.

(1) The NetManage function can automatically detect which controllers are present on the network. It also offers the option of straightforward connection to any controller present on the network in order to identify it physically by means of a visual or audible message and modify its parameters or manage the resident application.

Industrial Ethernet network

For Modicon M221, M221 Book, M241 and M251 logic controllers and Modicon TM4ES4 Ethernet switch module

Transparent Ready class and Functions

	Logic controllers					Ethernet switch module
	TM221ME●●●, TM221CE●●●	TM241C●●●	TM241CE●●●	TM251MESC	TM251MESE	TM4ES4 *(1)*
Transparent Ready class	A10	B20				
Internet protocol version	IPV4					
Ethernet services						
Programming, downloading, monitoring	■	–	■	■	■	■
Firmware update	–	–	■	■	■	■
Modbus TCP/IP Client/Server	■	–	■	■	■	■
Slave Modbus TCP	■	–	■	■	■	■
EtherNet/IP Adapter	■	–	■	■	■	–
EtherNet/IP Originator	–	–	■	–	Ethernet port 2	■
Data exchange – NGVL and IEC VAR ACCESS	–	–	■	■	■	■
Web server	–	–	■	■	■	■
MIB2 Client/Server SNMP network management	–	–	■	■	■	■
Scanner Manager on Modbus TCP	–	–	■	–	Ethernet port 2	–
Scanner Manager on EtherNet/IP	–	–	■	–	Ethernet port 2	–
FTP Client/Server file transfer	–	–	■	■	■	■
DHCP Client dynamic configuration	■	–	■	■	Ethernet port 1	■
DHCP Server dynamic configuration	–	–	■	–	Ethernet port 2	–
FDR fast device replacement	–	–	■	–	■	–
SMS	*(2)*	–	■	■	■	■
SQL Client *(3)*	–	–	■	■	■	–
Email sending and receipt, based on TCP/UDP library	–	–	■	■	■	–
DNS Client	–	–	■	■	■	■
SNTP Client	–	–	■	■	■	■
OPC UA Server	–	–	■	■	■	■
NGVL	–	–	■	■	■	■
Viewer Web	–	–	■	■	■	■
Web system	–	–	■	■	■	■
Safety functions						
IP address filter (Whitelisting)	–	–	■	■	■	■
Locking communication protocols	■	–	■	■	■	■
Locking IP address routing	–	–	■	■	■	■

■ Available

(1) Switch function only: no service for TM251ME and for TM241CE if not configured in SoMachine.
(2) With specific function block in SoMachine Basic software.
(3) For more information, please consult the "SoMachine configuration software" catalog, on our website www.schneider-electric.com.

Industrial Ethernet network

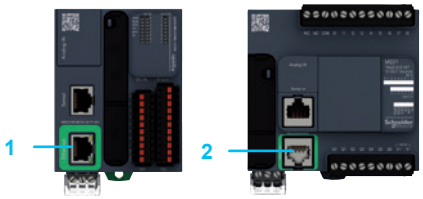
For Modicon M221, M221 Book, M241 and M251 logic controllers and Modicon TM4ES4 Ethernet switch module

Network characteristics of Modicon M241 and M251 controllers

Topology	Daisy chain and star with use of switches
Bandwidth	10/100 Mbps
EtherNet/IP Scanner performance	Up to 16 slave devices managed by the controller in 10 ms
Ethernet Modbus TCP Scanner performance	Up to 64 slave devices managed by the controller in 64 ms

Note: When EtherNet/IP and Modbus TCP devices are controlled simultaneously on the same network, 16 devices maximum can be controlled (EtherNet/IP + Modbus TCP).

Ethernet ports on logic controllers and the Ethernet switch module



TM221ME●●●● *TM221CE●●●*

M221 logic controllers

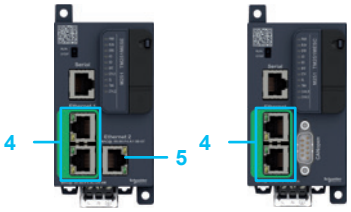
1 On **TM221ME●●●●** controllers: RJ 45 connector for Ethernet network, with exchange and activity speed LED indicator.

2 On **TM221CE●●●** controllers: RJ 45 connector for Ethernet network, with exchange and activity speed LED indicator.

TM241CE●●●

M241 logic controllers

3 On **TM241CE●●●** controllers: RJ 45 connector for Ethernet network, with exchange and activity speed LED indicator.

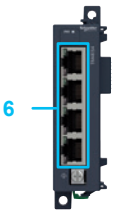


TM251MESE *TM251MESC*

M251 logic controllers

4 On **TM251MESE** and **TM251MESC** controllers: 2 connectors connected by an RJ 45 internal switch for “Machine or Factory” Ethernet network, with exchange and activity speed LED indicator.

5 On **TM251MESE** controller: RJ 45 connector for “fieldbus” Ethernet network with exchange and activity speed LED indicator. This port can be used with the Industrial Ethernet Manager function.



TM4ES4

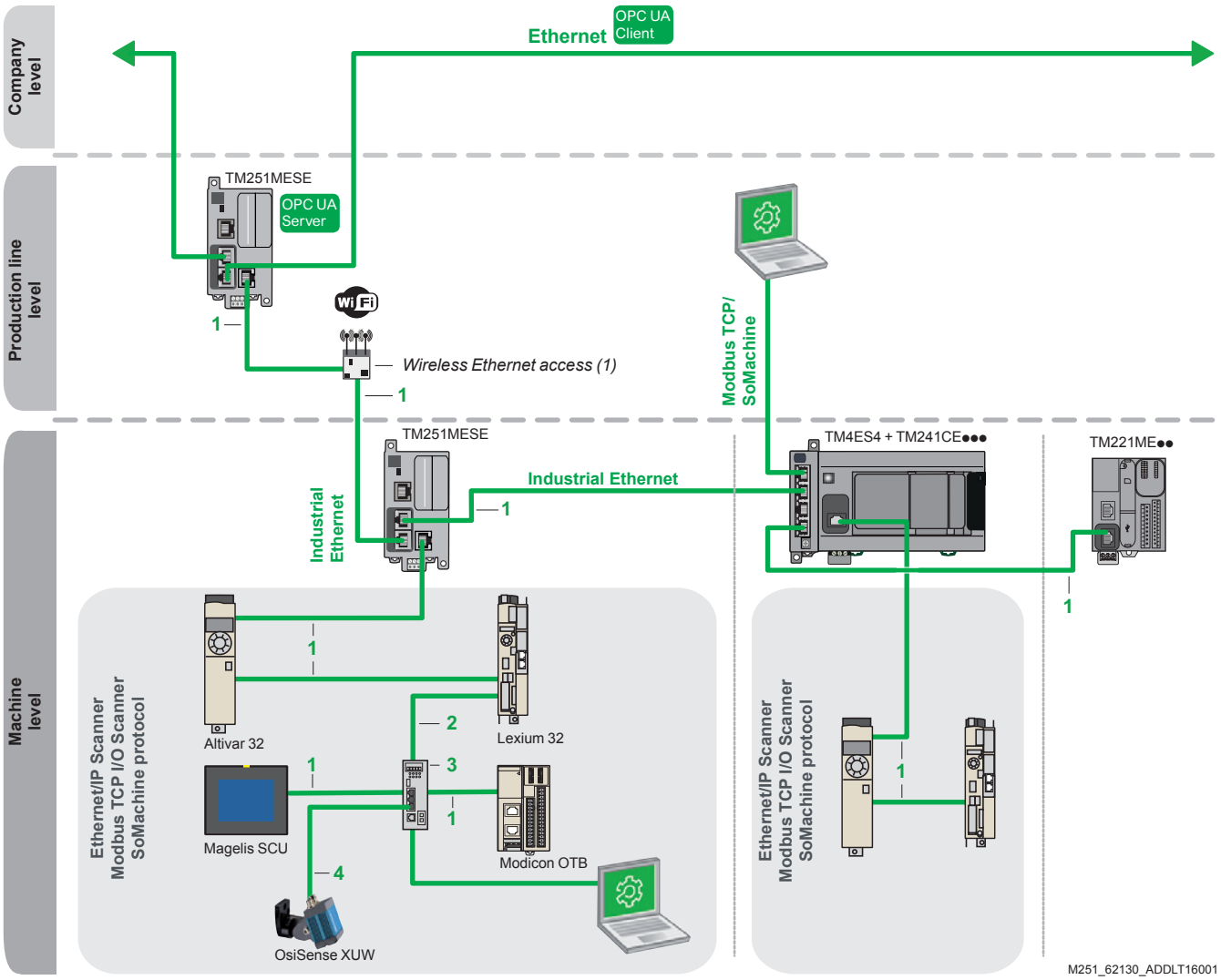
TM4ES4 Ethernet switch communication module

6 4 RJ 45 connectors for Ethernet network with exchange and activity speed LED indicator.

Industrial Ethernet network

For Modicon M221, M221 Book, M241 and M251 logic controllers and Modicon TM4ES4 Ethernet switch module

Industrial Ethernet architecture



Note: The ports on M251 controllers and the TM4ES4 communication module cannot be used to create redundant architectures.
(1) Wireless Ethernet access, see our partner program.

Items 1, **2** and **3**: see references on next page.

Item 4: Ethernet **XGSZ●2E45●●** extension cables (M12 straight/RJ45, shielded cable, straight cabling) for **OsiSense XUW** vision sensors.

For more information, see our partner website www.tesensors.com.

Shielded copper connection cables

ConneXium shielded connection cables are available in two versions to meet the various current standards and approvals :

- **EIA/TIA 568, shielded twisted pair cables for CE market**

These cables conform to:
- EIA/TIA-568 standard, category CAT 5E
- IEC 11801/EN 50173-1 standard, class D

Their fire resistance conforms to:
- NF C32-070 standard, class C2
- IEC 322/1 standards
- Low Smoke Zero Halogen (LSZH)

- **EIA/TIA 568 shielded twisted pair cables for UL market**

These cables are:
- CEC type FT-1
- NEC type CM

A new range of **ConneXium** fully shielded preassembled cables has been specially designed for use in harsh industrial environments. These cables combine a category 5E shielded cable and RJ 45 connectors reinforced with a metal rail.

Industrial Ethernet network

For Modicon M221, M221 Book, M241 and M251 logic controllers and Modicon TM4ES4 Ethernet switch module

References

EIA/TIA 568 shielded twisted pair cables for CE market

TCSEC●3M3M●●S4

Description	End fittings	Item	Type	Length m *(ft)*	Reference	Weight kg
Straight-through copper cables compatible CE	2 RJ 45 connectors For connection to terminal devices (DTE)	1	standard	2 *(6.56)*	**490NTW00002**	–
				5 *(16.41)*	**490NTW00005**	–
				12 *(39.37)*	**490NTW00012**	–
				40 *(131.23)*	**490NTW00040**	–
				80 *(262.467)*	**490NTW00080**	–
		1	ruggedized	1 *(3.28)*	**TCSECE3M3M1S4**	–
				2 *(6.56)*	**TCSECE3M3M2S4**	–
				3 *(9.84)*	**TCSECE3M3M3S4**	–
				5 *(16.40)*	**TCSECE3M3M5S4**	–
				10 *(32.81)*	**TCSECE3M3M10S4**	–

Shielded twisted pair cables for UL market

Description	End fittings	Item	Type	Length m *(ft)*	Reference	Weight kg
Straight-through copper cables UL compatible	2 RJ 45 connectors For connection to terminal devices (DTE)	1	standard	2 *(6.56)*	**490NTW00002U**	–
				5 *(16.40)*	**490NTW00005U**	–
				12 *(39.37)*	**490NTW00012U**	–
				40 *(131.23)*	**490NTW00040U**	–
				80 *(262.47)*	**490NTW00080U**	–
		1	ruggedized	1 *(3.28)*	**TCSECU3M3M1S4**	–
				2 *(6.56)*	**TCSECU3M3M2S4**	–
				3 *(9.84)*	**TCSECU3M3M3S4**	–
				5 *(16.40)*	**TCSECU3M3M5S4**	–
				10 *(32.81)*	**TCSECU3M3M10S4**	–

Do it Yourself copper cable and connectors

The **ConneXium** "Do it Yourself" offer consists of 2 connector references (M12 and RJ 45) and 1 cable reference - 300 m (984.25 ft) reel - enabling Ethernet 10/100 Mbps network cables to be made up in situ.

The maximum length of cables made up in this way is 80 m *(262.47 ft)*. They are assembled using only a knife and wire cutters (no special tool is required).

Description	Characteristics	Item	Length m *(ft)*	Reference	Weight kg
Ethernet copper cable 2 shielded twisted pairs 24 AWG	Conforming to the above-mentioned standards and approvals	2	300 *(984.25)*	**TCSECN300R2**	–
RJ 45 connector	Conforms to EIA/TIA-568-D	2	–	**TCSEK3MDS**	–

TCSESU053FN0

ConneXium unmanaged switches, 3, 4 and 5 ports, twisted pair and optical fiber

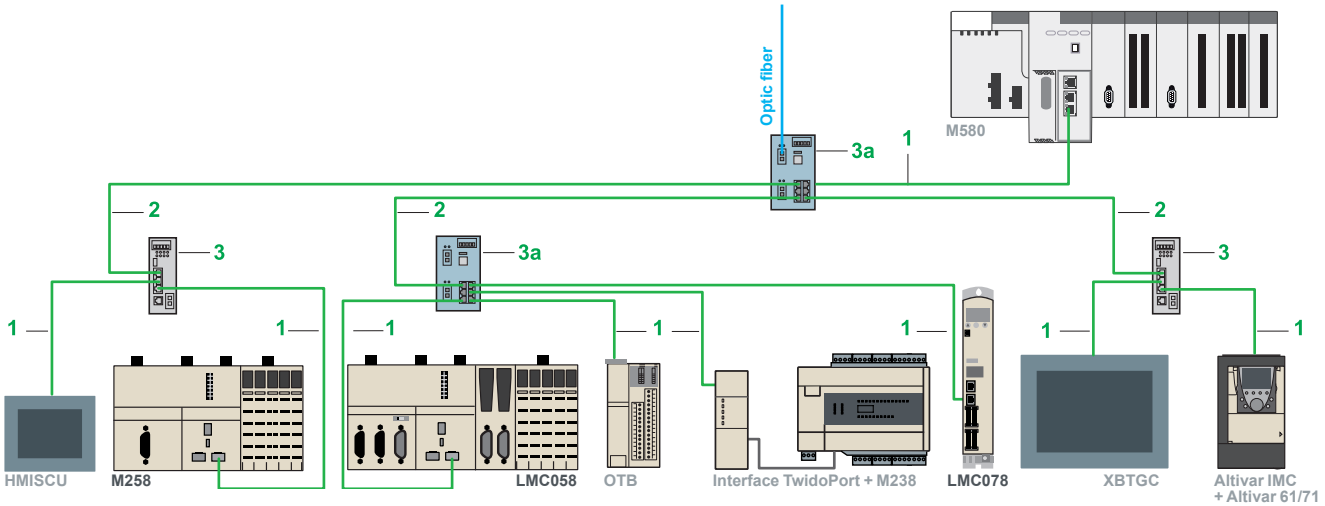
Description	Interfaces	Item	Reference	Weight kg *lb*
ConneXium switches, unmanaged	3 x 10BASE-T/100BASE-TX ports (copper cable), RJ 45 shielded connectors	3	**TCSESU033FN0**	0.113 *0.249*
	■ 4 x 10BASE-T/100BASE-TX ports (copper cable), RJ 45 shielded connectors ■ 1 x 100BASE-FX port (multimode optical fiber), duplex SC connector	3	**TCSESU043F1N0**	0.120 *0.265*
	5 x 10BASE-T/100BASE-TX ports (copper cable), RJ 45 shielded connectors	3	**TCSESU053FN0**	0.113 *0.249*

*Other wiring components are available, please consult the **ConneXium** offer on our website www.schneider-electric.com*

Industrial Ethernet network

For Modicon M258 logic controllers, Modicon LMC058 and Modicon LMC078 motion controllers

Industrial Ethernet or EtherNet/IP network architecture



Transparent Ready class and Functions

	M258 logic controllers	LMC058 motion controllers	LMC078 motion controllers
Transparent Ready class	B20		
Internet protocol version	IPV4		
Ethernet Services			
Programming, downloading, monitoring	■	■	■
Firmware update	■	■	■
Modbus TCP/IP (client & server)	■	■	■
Modbus TCP slave	■	■	■
EtherNet/IP target	■	■	■
EtherNet/IP originator	–	–	–
Data exchange – NVGL and IEC VAR ACCESS	■	■	■
WEB visu	■	■	■
Web server	■	■	–
SNMP network management MIB2	■	■	■
Scanner Manager on Modbus TCP	–	–	–
Scanner Manager on EtherNet/IP	–	–	–
FTP file transfer	■	■	■
DHCP Client dynamic configuration	■	■	■
DHCP Server dynamic configuration	–	–	–
FDR faulty device replacement	–	–	–
SMS	■	■	■
Security functions			
IP address filter (Whitelisting)	■	■	■
Locking communication protocols (fire wall)	■	■	■
Locking IP address routing	■	■	■

Compatible

References *(1)*

Shielded copper connection cables

ConneXium shielded copper connection cables are available in two versions to comply with the different standards and approvals in force:

■ **Shielded twisted pair copper cables to standard EIA/TIA 568**
These cables conform to: standard EIA/TIA 568, category CAT 5E, and standard IEC 11801/EN 50173, class D.
Their flame resistance conforms to NFC 32070# classification C2, and standards IEC 322/1, Low Smoke Zero Halogen (LSZH).

■ **Shielded twisted pair copper cables, UL and CSA 22.1 approved**
These cables conform to standards UL and CSA 22.1. Their flame resistance conforms to NFPA 70.

"Do It Yourself" cable and connectors

The ConneXium "Do It Yourself" range allows the user to make up Ethernet copper cables on site and to the required length. They are designed for cabling Ethernet 10/100 Mbit/s networks. The maximum length of cables made up in this way is 80 m. They can be assembled quickly using a knife and cutting pliers (no special tools are required).

Description	Conforming to	Length m *(ft.)*	Reference	Weight kg/ *lb*
Ethernet copper cable 2 shielded twisted pairs 24 AWG	The above-mentioned standards and approvals	300 *(984,25)*	**TCSECN300R2**	–
RJ 45 connector	EIA/TIA-568-D	–	**TCSEK3MDS**	–
M12 connector	IEC 60176-2-101	–	**TCSEK1MDRS**	–

(1) Other versions (fibre optic, switches, …): please consult the **Connexium** *range offer on our web site www.schneider-electric.com*

Industrial Ethernet network

For Modicon M258 logic controllers, Modicon LMC058 and Modicon LMC078 motion controllers

490NT●000●●

TCSESU043F1N0

TCSESM043F2C●0

499NMS/NSS25102

TCSESM083F2C●0

TCSESU051F0

References (continued)

Shielded twisted pair cables to standard EIA/TIA568

Description	Pre-formed at both ends	Item	Length m (ft.)	Reference	Weight kg/lb
Straight cables	2 x RJ45 connectors For connection to terminal equipment (DTE)	1	2 (6.562)	**490NTW00002**	–
			5 (16.404)	**490NTW00005**	–
			12 (39.370)	**490NTW00012**	–
			40 (131.234)	**490NTW00040**	–
			80 (262.467)	**490NTW00080**	
Crossover cables	2 x RJ45 connectors For connection between hubs, switches and transceivers	2	5 (16.404)	**490NTC00005**	–
			12 (39.370)	**490NTC00015**	–
			40 (131.234)	**490NTC00040**	–
			80 (262.467)	**490NTC00080**	–

Shielded twisted pair cables, UL and CSA 22.1 approved

Description	Pre-formed at both ends	Item	Length m (ft.)	Reference	Weight kg/lb
Straight cables	2 x RJ45 connectors For connection to terminal equipment (DTE)	1	2 (6.562)	**490NTW00002U**	–
			5 (16.404)	**490NTW00005U**	–
			12 (39.370)	**490NTW00012U**	–
			40 (131.234)	**490NTW00040U**	–
			80 (262.467)	**490NTW00080U**	–
Crossover cables	2 x RJ45 connectors For connection between hubs, switches and transceivers	2	5 (16.404)	**490NTC00005U**	–
			40 (131.234)	**490NTC00040U**	–
			80 (262.467)	**490NTC00080U**	–

Shielded twisted pair cable for IP 67 switch

Description	Pre-formed at both ends	Item	Length m (ft.)	Reference	Weight kg/lb
Straight cables	1 x IP 67 4-way M12 connector and 1 x RJ45 connector	–	1 (3.281)	**TCSECL1M3M1S2**	–
			3 (9.843)	**TCSECL1M3M3S2**	–
			5 (16.404)	**TCSECL1M3M5S2**	–
			10 (32.808)	**TCSECL1M3M10S2**	–
			25 (82.021)	**TCSECL1M3M25S2**	–
			40 (131.234)	**TCSECL1M3M40S2**	–

ConneXium hub

Description	Number of ports: Copper cable	Number of ports: Fibre optic cable	Item	Reference	Weight kg/lb
Twisted pair hub 10BASE-T copper ports, RJ45 shielded connectors	4	–	3	**499NEH10410**	0.530 1.168

ConneXium switches

Description	Number of ports: Copper cable	Number of ports: Fibre optic cable	Item	Manageable	Reference	Weight kg/lb
Optimized twisted pair switch 10BASE-T/100BASE-TX copper ports, RJ45 shielded connectors 100BASE-FX optic port, SC connectors	3	–	3	No	**TCSESU033FN0**	0.113 0.249
	4	1	3	No	**TCSESU043F1N0**	0.120 0.265
	5	–	3	No	**TCSESU053FN0**	0.113 0.249
Twisted pair switches 10BASE-T/100BASE-TX copper ports, RJ45 shielded connectors	8	–	3	No	**499NES18100**	0.230 0.507
	8	–	3a	Yes	**TCSESM083F23F0**	0.410 0.904
Twisted pair and fibre optic switches 10BASE-T/100BASE-TX copper ports, RJ45 shielded connectors. 100BASE-FX optic ports, SC connectors	3	1, multimode	3a	Yes	**TCSESM043F1CU0**	0.400 0.882
	2	2, multimode	3a	Yes	**TCSESM043F2CU0**	0.400 0.882
	3	1, single-mode	3a	Yes	**TCSESM043F1CS0**	0.400 0.882
	2	2, single-mode	3a	Yes	**TCSESM043F2CS0**	0.400 0.882
	4	1, multimode	3	No	**499NMS25101**	0.330 0.728
	3	2, multimode	3	No	**499NMS25102**	0.335 0.739
	4	1, single-mode	3	No	**499NSS25101**	0.330 0.728
	3	2, single-mode	3	No	**499NSS25102**	0.335 0.739
	7	1, multimode	3a	Yes	**TCSESM083F1CU0**	0.410 0.904
	6	2, multimode	3a	Yes	**TCSESM083F2CU0**	0.410 0.904
	7	1, single-mode	3a	Yes	**TCSESM083F1CS0**	0.410 0.904
	6	2, single-mode	3a	Yes	**TCSESM083F2CS0**	0.410 0.904
IP 67 twisted pair switch *(1)* 10BASE-T/100BASE-TX copper ports, shielded M12 connectors (type D)	5	–	–	No	**TCSESU051F0**	0.210 0.463

(1) Require special cables with M12 connectors for their ⎓ 24 V supply: **XZCP1●64L●**

The Next Generation

Schneider Electric Industries SAS

Head Office
35, rue Joseph Monier
F-92500 Rueil-Malmaison
France

www.schneider-electric.com/msx

Design: Schneider Electric
Photos: Schneider Electric

June 2017 - V3.1

DIA3ED2160105EN