

FOCM-TTX-FX OR SFP COPPER TO FIBER ETHERNET FOCM-TGTX-SX/LX OR SFP COPPER TO FIBER GIGABIT ETHERNET

Feature

Automatic or html/SNMP manageable media converter

- **FOCM-TTX-FX...** copper/fiber from 10/100Baset to 100FX
- **FOCM-TTX-SFP** copper/fiber from 10/100Baset to 100FX with SFP module
- **FOCM-TGTX-GSX/GLX..** copper/fiber from 10/100/1000Baset to 1000SX or 1000LX or 1000ZX
- **FOCM-TGTX-SFP** copper/fiber from 10/100/1000Baset to 1000SX or LX or ZX with SFP module

Interfaces optical fiber

- Standard Distance 100FX: 2km MM, 30/50/80/100km SM
- Distance 1000SX/LX/ZX: 0,5/2/10/30/50/80km fixed optic or with SFP
- Duplex (dual fiber) or Simplex (single fiber) in WDM fixed or SFP
- Colored Lambda CWDM chassis with SFP CWDM modules

Manageable functions:

- « Link Alarm » support on/off
- Ethernet copper rate: Auto negotiation or fixed
- MDI/MDIX Auto negotiation
- Auto full/half duplex or fixed
- Ingress/Egress traffic limitation per 64Kbps step
- Switch mode (layer 2) 10/100bt to 100FX or 10/100/1000BT to 1000FX
- Pure converter mode 100Bt to 100FX, 1000Bt to 1000FX
- Jumbo frames support 9Kbytes
- ISP Ethernet Tag
- Q-in-Q or double VLAN tagging
- Support SFP-8472 DMI

Administration

- DHCP client
- HTML and SNMP V1 et V2c
- Power Down Trap

Others

- 94x71x26 mm—800g
- Power DC5V w AC adapter, option 48V or 24V adapter
- Chassis for 16 FOC/FOCM
- Option DIN-rail fixation
- Option 19" fixation

INTERCONNECTION OF ETHERNET EQUIPMENTS OR EXTENSION OF ETHERNET LINK

The FOCM is an Ethernet/Gigabit-Ethernet performing media converter witch run automatically or is manageable in html/SNMP. This FOCM is used to interconnect copper to fiber Ethernet or Gigabit Ethernet from any vendor or to interconnect over fiber two distant branch of LAN. The Layer 2 functions of simple or double tagging for Q-in-Q give it the mission of Ethernet Demarcation Device for an Ethernet transport network of Telco or large infrastructure. This edge device is particularly appreciated for his automatic or manual setting the integrated RMON probe and the « Link Alarm ». It can be use alone or inside the RACK-MEDIA16 chassis with redundant power supply.

The FOCM is available in version FOCM-TTX for copper Ethernet 10/100Baset to optical Ethernet 100FX with fixed fiber or SFP module and in version FOCM-TGTX for copper Gigabit-Ethernet 10/100/1000Baset to optical Ethernet 1000SX/LX/ZX with fixed fiber or SFP module.

The FOCM can be used in converter and layer 2 switch 2 ports mode with traffic control between copper and fiber sides or in pure converter mode (100Baset to 100FX or 1000Baset to 1000FX) and they particularly carry the Jumbo Frame up to 9Kbytes necessary to some application like IP-TV and server duplications.



SIMPLE CONVERSION OR LAN EXTENSION

The FOCM converter interconnects two Ethernet/Gigabit-Ethernet equipments in copper or fiber compliant to the IEEE 802.3/3u/3ab/3z standards. In the copper side, the adaptation functions of speed/duplex/MDIX are fully automatic or can be selected and LED are showing set-up and traffic.

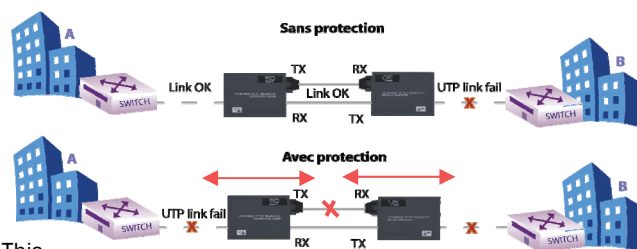


The FOCM converter can be used as LAN extension between two branches of LAN over a fiber optic without traffic congestion because of full duplex rate of 200Mbps or 2000Mbps and the Store-and-Forward switching mode on/off and with filter mode on/off to 148,8Kbps or 1488kbps

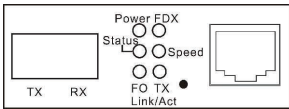


« LINK ALARM » OR « LINK FAULT PASS THROUGH » FUNCTION

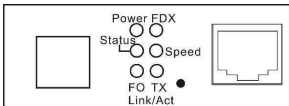
The FOCM support the function « Link Alarm » or « Link Fault Pass Through » witch deactivated the next Ethernet section, or the other side of the converter when the first side is disconnect. In case copper is disconnect the fiber link is put down, in case the fiber is disconnect the copper side is put down. This function is particularly necessary in applications at the front of switch or router to advise the loss of links. This function can be on/off.



Manageable Ethernet media converter



Version w fixed fiber



Version w SFP module



RACK-MEDIA16N

Chassis for 16 FOC/FOCM w 2 modular AC or DC redundant power supplies, 3 FANs



RACK-MEDIA16S

Chassis for 16 FOC/FOCM 1 AC power supply et 3 FANs



RACK19-1FOCx

19" 1U fixation for one FOC, FOCm, FOCF or FOCI



AUTOMATIC WITH DIP-SWITCH

With default setting the FOCM is set-up as an automatic converter and by DIP switches it can be adjusted MDI-MDIX, Full/Half duplex, rate limitation on/off, Link Alarm function on/off, copper Ethernet rate or switch/pure converter with Jumbo frames support.



OR HTML/SIMPLE, PERFORMING SNMP MANAGEABLE

The FOCM is also manageable over copper or fiber LAN ports. Then with a fixed or DHCP IP address and login/password the FOCM can be administrated in html or SNMP directly or inside a VLAN. Over this administration the automatic/manual function can be activated, but also the ingress/egress rates and a RMON probe give access to the analysis of traffic and frame errors.

Selection per port:

Full/half duplex on copper port is selectable, ingress/egress rates at any speed with 64kbps step can be selected on copper and fiber port.

Port Configuration						
Port	Link	Mode	Flow Control	Ingress Rate Limit (kbps)	Egress Rate Limit (kbps)	
TP	1000F	Auto Speed	Enable	2Mb	2048	2Mb
FX	Down	Auto Mode	Enable	8Mb	8192	50Mb

Not Limit: 64Kb, 512Kb, 2Mb, 8Mb, 50Mb, 100Mb, 500Mb, User Setting

Rate limit is 64kbps as a minimal step

Managed 10/100Base-T To 100Base-X Media Converter

Username: admin
Password: _____

Device Information

MAC Address	00:06:19:03:a5:7c
IP Address	192.168.0.1
Gateway	192.168.0.254
Subnet Mask	255.255.255.0
Description	Media Converter

Port Status

Ports	TP	FX
Signal detect(SD)	Detected	No
Link status	On	Down
Speed	100M	
Duplex mode	Full	
Flow control	Disable	Disable
Auto negotiation	Enable	

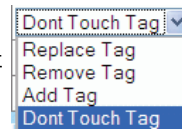
SFP Status

Temperature	--	(C)
Voltage	--	(V)
TX Bias	--	(mA)
TX Power	--	(dBm)
RX Power	--	(dBm)

SUPPORT DES VLAN 802.1Q

Le FOCM supporte le tag/dé-tag du trafic traçant le convertisseur (PVID) mais aussi gestion des trafics entrants des VLAN ID (VID) sur lesquels il effectuera un filtrage des flux taggués or pas selon son accès liste de 16 VID sur les flux Ingress et Egress et distinctement sur les ports cuivre, fibre et le management du FOCM.

Le FOCM supporte le tag et dé-tag par port permettant notamment d'isoler l'administration dans un port indépendant.



802.1Q VLAN Group

VLAN Mode: Enable

VLAN Group	VID	Member	TP	FX	CPU
0	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	8	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8	9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
9	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
10	11	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11	12	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
12	13	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
13	14	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
14	15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
15	16	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

DÉMARCATIION DE STRUCTURE DE TRANSPORT ETHERNET

The FOCM support the tagging and un-tagging functions of traffic crossing the converter (PVID) but also the management of incoming traffic with VLAN to apply a filtering on untagged or tagged flow up to 16 VID independently for Ingress et Egress side and copper, fiber and administration port of the FOCM. This function of EDD (Ethernet Demarcation Device) is particularly interesting to deploy Ethernet network of transport without utilization of MPLS or other costly solution. The edge customer traffic with his C-VLAN is encapsulated in a S-VLAN to be carried over large pipes to the other edge customers. The VLAN provide also the isolation of the administration of FOCM.



SPECIFICATIONS

Manageable Ethernet media converter

STANDARDS	FOCM-TTX-FX	FOCM-TTX-SFP	FOCM-TGTX-GSX/GLX	FOCM-TGTX-SFP
IEEE 802.3 10BaseT	Yes			Yes
IEEE 802.3u 100BaseTX & 100FX	Yes			Yes
IEEE 802.3ab 1000BaseT				Yes
IEEE 803.3z 1000BaseX				Yes
COPPER PORT	1 x 10/100BaseT		1 x 10/100/1000BaseT	
FIBER PORT	1 x 100FX fixed	1 x 100FX per SFP module	1 x 1000SX, LX or ZX fixed	1 x 1000SX, LX or ZX per SFP module
- Multimode	1310nm - 2km	1310nm - 2km	850 nm - 500m	850 nm - 500m 1310 nm - 2km
- Single mode	1310 nm 30 and 50km	1310/1550 nm 10 to 200km	1310/1550 nm 10 to 50km	1310/1550 nm 10 to 200km
- Other	WDM simplex fiber	WDM, CWDM	WDM simplex fiber	WDM, CWDM & DWDM
- Connector	SC or ST	LC	SC (FC-PC option)	LC
FUNCTIONS select per DIP switch or html	Pure Converter 100BaseT to 100FX (Niveau1) or Converter Switch 10/100BaseT (Layer 2)		Pure Converter (Layer 1) 1000BaseT to 1000SX/LX.. or Converter Switch 10/100/1000BaseT (Layer 2)	
PURE CONVERTER	Layer 1 transmission with pure media conversion			
Maximum transfer rate	200Mbps full duplex	200Mbps full duplex	2000Mbps full duplex	2000Mbps full duplex
Transported frame	Jumbo Trame 9Kb	Jumbo Trame 9Kb	Jumbo Trame 9Kb	Jumbo Trame 9Kb
ETHERNET SWITCH	Transmission with Layer 2 switching			
Auto-negotiation (Auto/Manual)	10/ 100BaseT	10/100BaseT	10/100/1000BaseT	10/100/1000BaseT
Flow control (Auto/Manual)	Half/Full duplex	Half/Full duplex	Half/Full duplex	Half/Full duplex
Auto-sence (Auto/Manual)	MDI-MDIX	MDI-MDIX	MDI-MDIX	MDI-MDIX
Store & forward, filter	10M: 14 880/14 880pps 100M: 148 800/148 800pps			
MAC adress table	1Ko			1000M: 1 488 000/1 488 000pps
Buffer	256Ko		256Ko	
Bandwidth limitation	64/512Kbps, 2/8/50/100Mbps, 500Mbps or n 64 Kbps for Ingress/Egress flow			
VLAN per port	Ingress/Egress filtering par port BT, FX et CPU			
VLAN 802.1q Tagging	Taggage/Untaggeage with 16 VID de 1 to 4095			
Double VLAN Tagging or Q-in-Q	Yes with function of direction addition and extraction of Q-in-Q			
Traffic statistic w RMON probe	Number of octet and Ethernet frame, frame in erreur, Unicast, Multicast, Broadcast, per lenght of frame, tagged / un-tagged frames .			
FONCTION Fiber/Copper				
"LINK ALARM "(on/off) or "Link Fault Pass Through"	Unactive the copper Ethernet when the fiber Ethernet is disconnect Unactive the fiber Ethernet when the copper Ethernet is disconnect			
Loop test	Per administration or push button			
ADMINISTRATION				
Over	Over copper or fiber port with Login and Pass word			
Mode	Html or SNMP v1 et v2c.Fixed IP adress or given by DHCP			
Auto or Manageable	Per default the FOCM is set-up by DIP switch, after action per management.			
POWER	DC 5V with adapter AC 120/240V			
Optionnal DC24 or 48V adapter	DCDC-FOC-48V or DCDC-FOC-24V			
Consumption	3W	3W	3W	3,4W
CHASSIS				
For power and FAN	RACK-MEDIA16N or RACK-MEDIA16S for redunded power and FAN			
PHYSIQUE				
Dimention and weight	71 x 94 x 26mm (LxPxH) - 600g			
Working Temperature	0 to 50°C - Option ET -10 to +65° C			
Stocking Temperature	-20 to 60 °C			
Humidity non-condensed	5 to 90%			
MTBF	>50 000 h			
EMC/SECURITY	CE - FCC Class A			

TRAFFIC STATISTIC/RMON PROBE

The FOCM owns a menu of Ethernet statistic traffic or the display of « MIB counter » per port copper/fiber/management on the number of bytes and Ethernet frame.

It is giving the number of Ethernet frames in error, Unicast, Multicast, broadcast par frame length 64k,65-127k.....1518 and over, tagged frame, segmented frame

This facility will help to an efficient administration of Ethernet links for large Ethernet infrastructures.

System Information
Network Information
Module Setting
Network Configuration
Password Setting
Port Configuration
Traffic Statistic
SNMP Configuration
VLAN Configuration
Q-in-Q Configuration
Loop Back Test
Tools
logout

Traffic Statistic
(The following counter means the port received number)

Port	TP	FX	CPU
Total Bytes	89412	0	98735
Total PKTs	875	0	602
Total Error Pkts	0	0	0
Unicast Pkts	651	0	600
Multicast Pkts	46	0	0
Broadcast Pkts	178	0	2
64	129	0	79
65-127	673	0	476
128-255	38	0	4
256-511	15	0	5
512-1023	20	0	2
1024-1518	0	0	36
Undersize Pkts	0	0	0
Oversize Pkts	0	0	0
Fragments	0	0	0
CRC Errors	0	0	0
Jabbers	0	0	0
Drop Events	0	0	0
Pause Frames	0	0	0

Manageable Ethernet media converter

CHOOSE THE RIGHT OPTIC

Fixed optics 100FX of converter/switches FOC-TTX-FX-xxx.

REFERENCE	FX-MM	FX-SM30	FX-SM50	FX-SM80	FX-SM100	FX-SM 20W13	FX-SM 20W15	FX-SM 40W13	FX-SM 40W15
Ethernet	100FX	100FX	100FX	100FX	100FX	100FX	100FX	100FX	100FX
Fiber mode	MM	SM	SM	SM	SM	SM	SM	SM	SM
Number of fiber	2	2	2	2	2	1	1	1	1
Wavelength	1310nm	1310nm	1310nm	1310nm	1550nm	1310nm/1550nm	1550nm/1310nm	1310nm/1550nm	1550nm/1310nm
Budget	11 db	19 db	29 db	37 db	36 db	19db	19db	25 db	25 db
Typical distance	2 km	30 km	50 km	80 km	100 km	20 km	20 km	40 km	40 km

Fixed optics 1000SX/LX/ZX of converter/switches FOC-TGTX-SX/LX-xxx.

REFERENCE	GSX	GLX-SM10	GLX-SM30	GLX-SM50	GLX-SM 20W13	GLX-SM 20W15	GLX-SM 40W13	GLX-SM 40W15	GLX-SM 80W13	GLX-SM 80W19
Ethernet	1000SX	1000LX	1000LX	1000LX	1000LX	1000LX	1000LX	1000LX	1000LX	1000LX
Fiber mode	MM	SM	SM	SM	SM	SM	SM	SM	SM	SM
Number of fiber	2	2	2	2	1	1	1	1	1	1
Wavelength	850nm	1310nm	1310nm	1550nm	1310nm/1550nm	1550nm/1310nm	1310nm/1550nm	1550nm/1310nm	1550nm/1590nm	1590nm/1550nm
Budget	8,5 dB	12 db	19 db	19 db	12 db	12 db	20 db	20 db	24 db	24 db
Typical distance	550 m	10 km	30 km	50 km	20 km	20 km	40 km	40 km	80 km	80 km

PRODUCT REFERENCE NUMBER

FOCM-TTX-FX-MM	Htmi manageable media converter sw itch 10/100BT to 100FX MM 1310nm budget 11dB, full duplex SC
FOCM-TTX-FX-MM-ST	Htmi manageable media converter sw itch 10/100BT to 100FX MM 1310nm budget 11dB, full duplex ST
FOCM-TTX-FX-SM30	Htmi manageable media converter sw itch 10/100BT to 100FX SM 1310nm 19db, full duplex SC
FOCM-TTX-FX-SM50	Htmi manageable media converter sw itch 10/100BT to 100FX SM 1310nm 33db, full duplex SC
FOCM-TTX-FX-SM100	Htmi manageable media converter sw itch 10/100BT to 100FX SM 1550nm 33db, full duplex SC
FOCM-TTX-FX-SM20W13	Htmi manageable media converter sw itch 10/100BT to 100FX SM 1310nm 19db , single fiber full duplex SC
FOCM-TTX-FX-SM20W15	Htmi manageable media converter sw itch 10/100BT to 100FX SM 1550nm 19db , single fiber full duplex SC
FOCM-TTX-FX-SM40W13	Htmi manageable media converter sw itch 10/100BT to 100FX SM 1310nm 25db, single fiber full duplex SC
FOCM-TTX-FX-SM40W15	Htmi manageable media converter sw itch 10/100BT to 100FX SM 1550nm 25db, single fiber full duplex SC
FOCM-TTX-SFP	Htmi manageable media converter 10/100BT to 100FX per SFP module (w/o SFP module)
FOCM-TGTX-GSX-MM	Htmi manageable media converter sw itch 10/100/1000BaseT to 1000SX MM 850nm 8,5db for 550m, full duplex SC
FOCM-TGTX-GLX-SM10	Htmi manageable media converter sw itch 10/100/1000BaseT to 1000LX SM 1310nm 12db, full duplex SC
FOCM-TGTX-GLX-SM30	Htmi manageable media converter sw itch 10/100/1000BaseT to 1000LX SM 1310nm 19db, full duplex SC
FOCM-TGTX-GLX-SM50	Htmi manageable media converter sw itch 10/100/1000BaseT to 1000LX SM 1550nm 19db, full duplex SC
FOCM-TGTX-GLX-SM80	Htmi manageable media converter sw itch 10/100/1000BaseT to 1000LX SM 1550nm 22db, full duplex SC
FOCM-TGTX-GLX-SM10W13	Htmi manageable media converter sw itch 10/100/1000BaseT to 1000LX SM 1310nm 12db , single fiber full duplex SC
FOCM-TGTX-GLX-SM10W15	Htmi manageable media converter sw itch 10/100/1000BaseT to 1000LX SM 1550nm 12db , single fiber full duplex SC
FOCM-TGTX-GLX-SM20W13	Htmi manageable media converter sw itch 10/100/1000BaseT to 1000LX SM 1310nm 15db , single fiber full duplex SC
FOCM-TGTX-GLX-SM20W15	Htmi manageable media converter sw itch 10/100/1000BaseT to 1000LX SM 1550nm 15db , single fiber full duplex SC
FOCM-TGTX-GLX-SM40W13	Htmi manageable media converter sw itch 10/100/1000BaseT to 1000LX SM 1310nm 20db, single fiber full duplex SC
FOCM-TGTX-GLX-SM40W15	Htmi manageable media converter sw itch 10/100/1000BaseT to 1000LX SM 1550nm 20db, single fiber full duplex SC
FOCM-TGTX-SFP	Htmi manageable media converter 1000BT to 1000SX or 1000LX per SFP module (w/o SFP module)
RACK-MEDIA16N	Rack 19" 2U without redundancy power and FAN for 16 FOC-xxxx
RACK-MEDIA-AC	AC power for RACK-MEDIA 16N maxi 2
RACK-MEDIA-DC	AC power for RACK-MEDIA 16N maxi 2
RACK-MEDIA16S	Rack 19" 2U with one fixed power and FAN for 16 FOC-xxxx
DIN-FOC	Kit DIN for FOC , FOCF or FOCL
DCAC-FOC-IEC320M	AC adapter to 5V for FOC , prise AC male IEC320
DCDC-FOC-48V	DC48V to DC5V adapter for FOC
DCDC-FOC-24V	DC24V to DC5V adapter for FOC
RACK19-1FOCx	Fixation to 19" or 23" chassis fixed on one side, 1U high, for one 1 FOC, FOCM, FOCF, FOCL

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