



All Digital Fiber Optic Manufacturing Specialists

Installation and Operation Manual

FT010CB Series



Digital Series

1 Bi-directional Contact Closure
Fiber Optic Converter

Models covered in this manual

Standalone Units

Single-Mode Transmitters

FT010CB-SSTRSA

FT010CB-SSTRLSA

Single-Mode Receivers

FT010CB-SSRTSA

FT010CB-SSRTLSA

Multi-Mode Transmitter

FT010CB-SMTRSA

Multi-Mode Receiver

FT010CB-SMRTSA

Card Modules

Single-Mode Transmitters

FT010CB-SSTR

FT010CB-SSTRL

Single-Mode Receivers

FT010CB-SSRT

FT010CB-SSRTL

Multi-Mode Transmitter

FT010CB-SMTR

Multi-Mode Receiver

FT010CB-SMRT

Remark:

If the optical connector is FC type, the suffix in the model number will be “-*FXX*”. Eg.

FT010CB-*FSTR*

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(1) Safety Instructions

Please be familiar with all information in this manual prior to installation and operation.

Note 1: The products described contain a Class 1 laser or LED fiber optic emitter. The following safety precautions apply.

Warning: Do not disconnect the fiber optic connector while the unit is powered up. Exposure to Class I invisible optical radiation is possible when the internal fiber optic connector is disconnected while the unit is powered up.

Caution: Any access to the controls, adjustments, or performing operations, which are other than those specified may result in hazardous radiation exposure. Permanent eye damage or other bodily injuries may be resulted from such exposure even for only seconds.

Note 2: This assembly contains parts sensitive to damage by electrostatic discharge (ESD). ESD precautionary procedures should be applied in the course of touching, removing or inserting parts or assemblies.

(2) Product Overview

2.1 Introduction

The FT010CB Series products comprise of either single-mode or multi-mode fiber optic transmitters and receivers for the optical transmission of ONE bi-directional (Tx ↔ Rx) contact closure signals all on one fiber. The products work at wavelengths of 1310nm and 1550nm with either a 9/125um or 62.5/125um fiber for single-mode or multi-mode transmission respectively.

Bi-directional transmission of Contact Closure (CC) status is supported. The CC input can be a Dry contact or a TTL logic input. Normally Open (NO) or Normally Close (NC) Contact selectable output is provided for a maximum current of 1000mA at 110VDC/125VAC.

For single-mode transmission, we also offer specifically designed products for long-haul transmissions up to 60km. These models include the letter “L” in the suffix, e.g. FT010CB-SSTR L for Tx, FT010CB-SSR L for Rx, etc.

The FT010CB Series units are available as standalone units, which can be mounted horizontally or vertically wall-mounted on any fixture. The standalone unit comes with an external power supply FT-PA/12V, which can be powered by local 110/220V power.

The FT010CB Series units are also available as plug-in card modules installed in a 19” rack-mount chassis. Each plug-in card occupies one slot in the rack-mount chassis. The rack mount chassis has to be ordered separately, and comes with its own power supply for powering the installed card modules.

2.2 Models selection table

Type	Mode	Models ¹	Descriptions	Installation requirements	Remarks
Standalone Units	Single-Mode	FT010CB-SSTRSA	Single-mode 1 bi-directional Contact Closure Transmitter Standalone unit	Horizontally or vertically wall-mounted Standalone unit	FT-PA/12V external power supply is included for the Standalone unit ²
		FT010CB-SSTRLSA	Single-mode Long-haul 1 bi-directional Contact Closure Transmitter Standalone unit		
		FT010CB-SSRTSA	Single-mode 1 bi-directional Contact Closure Receiver Standalone unit		
		FT010CB-SSRTLSA	Single-mode Long-haul 1 bi-directional Contact Closure Receiver Standalone unit		
	Multi-Mode	FT010CB-SMTRSA	Multi-mode 1 bi-directional Contact Closure Transmitter Standalone unit		
		FT010CB-SMRTSA	Multi-mode 1 bi-directional Contact Closure Receiver Standalone unit		
Card Modules	Single-Mode	FT010CB-SSTR	Single-mode 1 bi-directional Contact Closure Transmitter Card Module	Housed in FT-C18 chassis ³	FT-C18 chassis has to be ordered separately
		FT010CB-SSTRL	Single-mode Long-haul 1 bi-directional Contact Closure Transmitter Card Module		
		FT010CB-SSRT	Single-mode 1 bi-directional Contact Closure Receiver Card Module		
		FT010CB-SSRTL	Single-mode Long-haul 1 bi-directional Contact Closure Receiver Card Module		
	Multi-Mode	FT010CB-SMTR	Multi-mode 1 bi-directional Contact Closure Transmitter Card Module		
		FT010CB-SMRT	Multi-mode 1 bi-directional Contact Closure Receiver Card Module		

¹ If the optical connector is FC type, the suffix in the model number will be “-FXX”. Eg. FT010CB-FSTR

² FT-PA/12V works under 100 -240VAC, 50/60Hz power supply

³ Refer to FT-C18 product manual for specifications

(3) Installation

3.1 General

All OT Systems products are thoroughly inspected, tested and securely packaged before delivery to ensure a stable, intact and trouble-free service. Please check the equipment upon receipt for any visible damage which may have been caused during shipping.

The FT010CB Series standalone units (Fig.3.1) can be either horizontally or vertically wall-mounted, or mounted on any fixture. The Standalone unit works with an external power supply FT-PA/12V powered by local 110/220V power.

The FT010CB Series card modules are housed inside the FT-C18 rack-mount chassis (Fig. 3.2) with an included power supply unit. The whole chassis is powered by local 110/220V power. FT-C18 is a standard 19" (483mm) rack-mount chassis which occupies 4 rack units (177.8mm) in height. Each FT010CB card module occupies one slot and a total of 18 cards can be housed inside the chassis.



Fig. 3.1 Standalone unit



Fig. 3.2 FT-C18 chassis

3.2 Standalone unit installation

- a) Mount the standalone unit onto a fixture, (either on the wall or on a flat surface) with four screws through the holes on the mounting frame to secure it in position.
- b) The provided power supply should also be mounted on the same fixture or in the proximity for connection of the supply cables to the unit, provided that an AC power supply socket is nearby for powering the adaptor.
- c) Connect all the signal inputs and outputs at the back of the unit with appropriate cables: fiber optic cable for optical link, and UTP cables for contact closure inputs/outputs (Tx/Rx).
- d) Once the unit is powered up, check that the red POWER LED on the unit is lit. If not, check the power supply cable connections between the unit and the power supply socket.
- e) With all the signals available at the input and output ports, check the status of LEDs located on the unit. With correct status of each LED, installation is now completed [for LEDs status, see **Operational Guides** on this manual's section (5)].

3.3 Card module installation

- a) Insert the card module into the FT-C18 chassis along the top and bottom card guides of an empty slot and push the card into the multi-pin socket at the rear firmly. Secure with the provided thumb screws.
- b) Repeat the above procedure for all the rest card modules. Unused slots must be covered with blank panels provided.
- c) Connect all the signal inputs and outputs at the back of the unit with appropriate cables: fiber optic cable for optical link, and UTP cables for contact closure inputs/outputs (Tx/Rx).
- d) Once the chassis is powered up, check that the red POWER LED on the front and back panels of the card modules are lit. If not, check the power supply cable connections between the chassis and the power supply socket.
- e) With all the signals available at the input and output ports, check the status of LEDs located on the unit. With correct status of each LED, installation is now completed [for LEDs status, see **Operational Guides** on this manual's section (5)].

(4) Cable Connections & Setup Procedures

4.1 System Cable Connections

Signal Type	Cable Type	Connector
Optical	Single-mode or Multi-mode fiber	ST (or FC) Connector
Contact Closure	Twisted-pair cable	Screw Terminal Block

Typical System Cable Connections Diagrams:

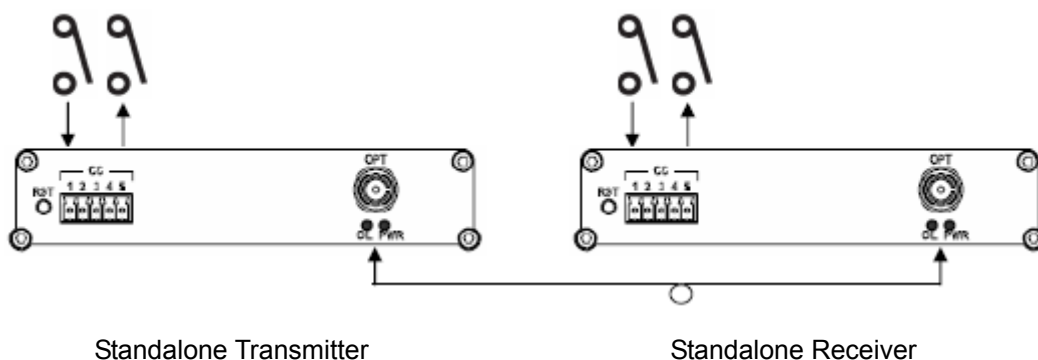
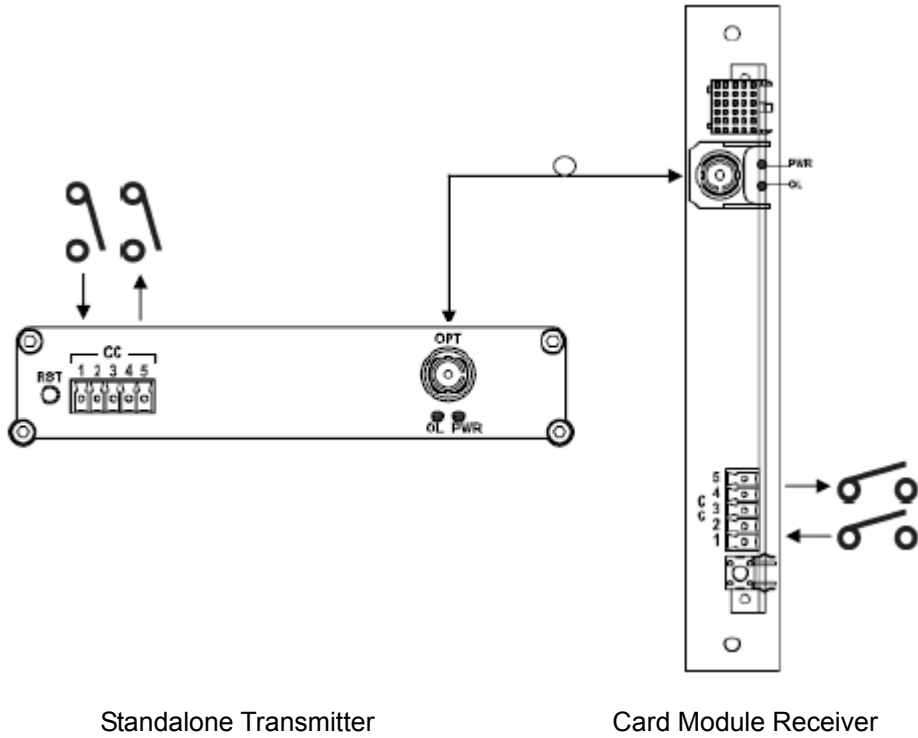


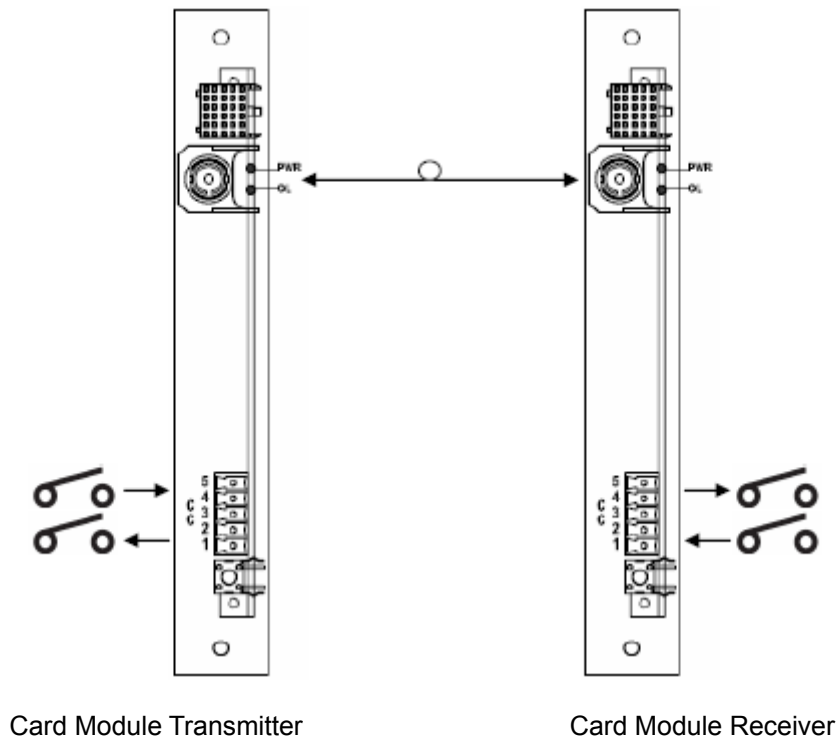
Fig. 4.1 Standalone unit to Standalone unit connection diagram



Standalone Transmitter

Card Module Receiver

Fig. 4.2 Standalone unit to Card Module connection diagram



Card Module Transmitter

Card Module Receiver

Fig. 4.3 Card Module to Card Module connection diagram

4.2 Contact Closure (CC) connections

For Contact closure input and output connections, please note the following pin assignment:

Pin Assignment (Screw Terminal Block)		1	2	3	4	5
		Data format				
Input	Contact closure / TTL	Input (Hi)	Input (Low /COM)	N/A	N/A	N/A
	Normally Close (NC)	N/A	N/A	Output (Hi)	Output (Low /COM)	N/A
Output	Normally Open (NO)	N/A	N/A	N/A	Output (Low /COM)	Output (Hi)

Contact Closure/TTL Input and Normally Close (NC) Output connection diagram:

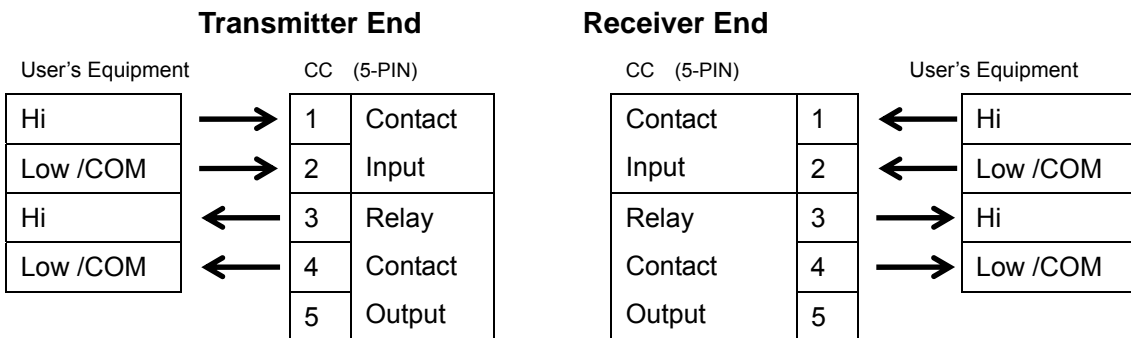


Fig. 4.4.1 Connector Pin Assignments for Contact Closure/TTL input and Normally Close (NC) output at CC port

Contact Closure/TTL Input and Normally Open (NO) Output connection diagram:

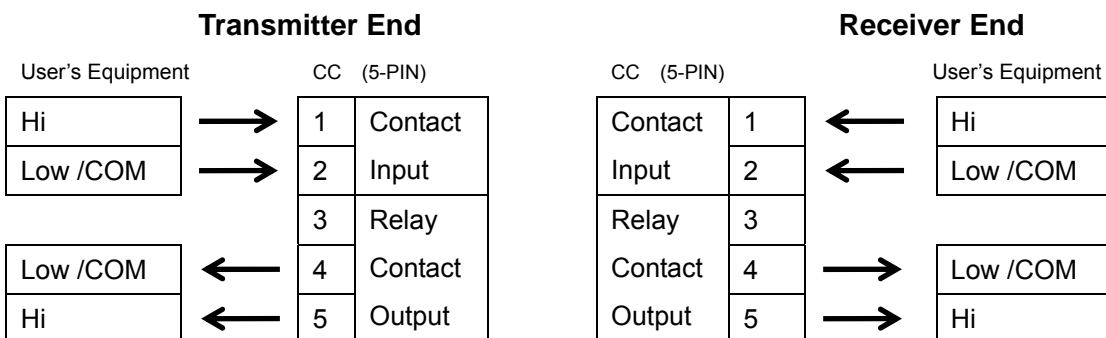


Fig. 4.4.2 Connector Pin Assignments for Contact Closure/TTL input and Normally Open (NO) output at CC port

4.3 Ground connection

For enhanced safety to reduce the risks of electrical shock and physical damage, caused by lightning and other power surges, as well as a connection to the surge suppression devices in the product, a screw terminal is provided on the Standalone cabinets (Fig. 4.5). It is highly recommended that the Standalone unit have good ground connections to the buildings ground in accordance with the local codes.

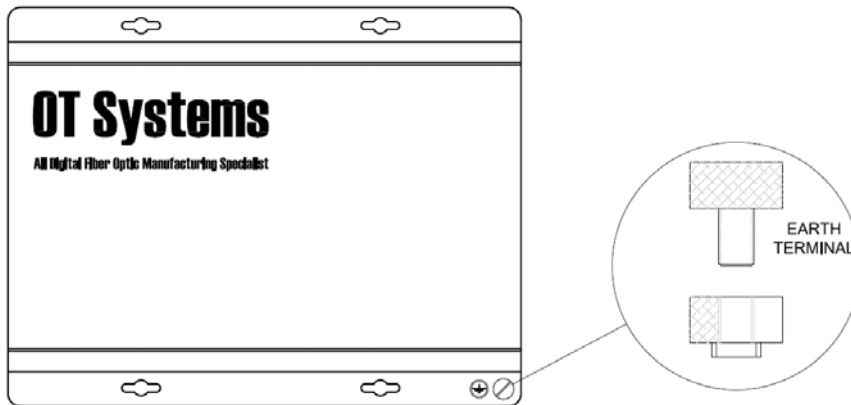


Fig. 4.5 Standalone unit earth ground terminal location

(5) Operational Guides

5.1 FT010CB Series Transmitter

LED Indicators

Indicator	Color	Description	
PWR	Red	Lit when power is supplied to the Receiver.	
OL	Yellow	Lit when optical signal from transmitter to receiver is active.	
CC	IN	Red	Blinks when input contact closure is available at Tx.
	OUT	Green	Blinks when relay output is available at Rx.
AL	Blue	Lit when the transmitter power off or optical fiber link has been broken down between the Transmitter & Receiver (Fiber cable dis-connected or No power at Transmitter).	

Signal Ports

OPT -	ST (or FC) Optical Connector for fiber cable connection.
CC -	5-pin Screw Terminal Block for contact closure signal.

5.2 FT010CB Series Receiver

LED Indicators

Indicator	Color	Description
PWR	Red	Lit when power is supplied to the Receiver.
OL	Yellow	Lit when optical signal from transmitter to receiver is active.
CC	IN	Blinks when input contact closure is available at Tx.
	OUT	Blinks when relay output is available at Rx.
AL	Blue	Lit when the transmitter power off or optical fiber link has been broken down between the Transmitter & Receiver (Fiber cable dis-connected or No power at Transmitter).

Signal Ports

OPT -	ST (or FC) Optical Connector for fiber cable connection.
CC -	5-pin Screw Terminal Block for contact closure signal.

5.3 Reset Button (RST)

Press the 'RST' button shortly will make the internal alarm buzzer silent upon recognition of the fault.

5.4 Operational information

In case of transmitter power off, broken down of optical link, the alarm buzzer will sound and lit of AL (Blue LED) to alert the system operator accordingly.

The alarm buzzer can be made silent by pressing the RST button (on the rear panel) of FT010CB transmitter and receiver upon the acknowledgement and recognition of the fault.

AL (blue LED) lit until the optical signal resume normal.

(6) Specifications

PARAMETERS	MODELS*	FT010CB-SSTR(RT)SA FT010CB-SSTR(RT) (Single-Mode)	FT010CB-SSTR(RT)LSA FT010CB-SSTR(RT)L (Single-Mode)	FT010CB-SMTR(RT)SA FT010CB-SMTR(RT) (Multi-Mode)
	OPTICAL			
No. of Fiber / Connector		1 / ST (or FC)	1 / ST (or FC)	1 / ST (or FC)
Wavelength		1310/1550 nm	1550/1310 nm	1310/1550 nm
Optical Power Budget		17 dB	24 dB	23 dB
Max Distance		40 km	60 km	4 km
CONTACT CLOSURE				
Channel / Connector		1 / 5-pin Screw Terminal		
Direction		Bi-directional (Duplex)		
Input		Dry contact or TTL input		
Output		Dry contact, Normally Open (NO) or Normally Close (NC) Max. 1000mA @ 110VDC, 125VAC		
POWER				
Power consumption		12VDC @ 2.4W		
Power Supply		Standalone unit: FT/PA12V DC Adaptor Card module: Powered by FT-C18 chassis		
Connector (Standalone unit)		2-pin Screw Terminal		
PHYSICAL				
Weight (Kg)		Standalone unit: 0.58 Card module: 0.2		
Dimensions (W x H x D) (mm)		Standalone unit: 156 x 30.5 x 223 mm (MAX) Card module: 148 x 20.4 x 213 mm (MAX)		
ENVIRONMENTAL				
Operating Temperature		-40°C ~ +75°C		
Storage Temperature		-40°C ~ +85°C		
Relative Humidity		0 ~ 95% non-condensing		
MTBF		>100'000 Hours		

*If the optical connector is FC type, the suffix in the model number will be "-FCX". Eg. FT010CB-FSTR

(7) Drawings

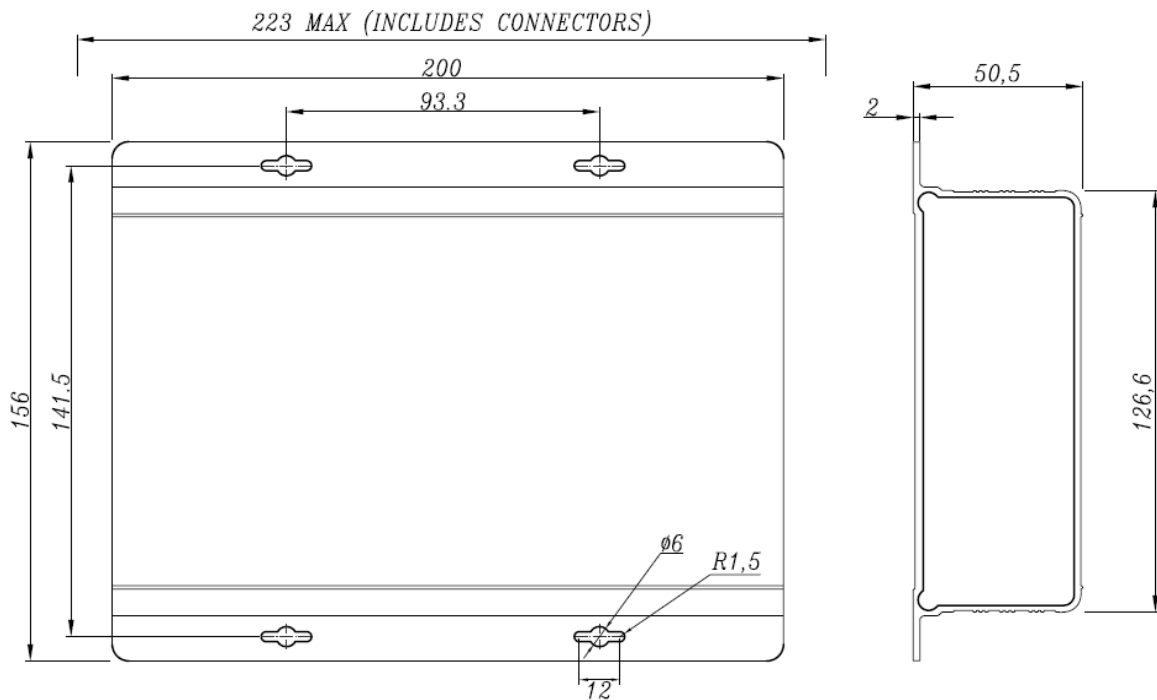


Fig. 7.1 Dimensional drawings of Standalone unit (mm)

(8) Warranty Information

All OT Systems products are subject to a limited life-time warranty offered by the company in normal circumstances. Please refer to the OT Systems Products Warranty Statement for details. Access to the statement is available in our company website at www.ot-systems.com.

(9) Contact Information

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