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## STACKMASTER TX12 SPECIFICATIONS

### Standards

IEEE 802.3u 100BASE-TX  
Class 1 (stacked)  
Class 2 (unstacked)

### Physical

#### Dimensions

17' x 10' x .18' (438 mm x 255 mm x 45 mm)

#### Shipping Weight

9 lbs (4.1 kg)

### Input Power

Internal universal input; 100–240VAC, 50/60 Hz, 53W

#### AC Input Cord:

TN PN	Requirement	Location
3344	120 volts, 60 hertz	USA/Canada/Mexico
3344	100 volts, 50-60 hertz	Japan
3347	230 volts, 50 hertz	Europe
3348	240 volts, 50 hertz	Australia
3349	240 volts, 50 hertz	United Kingdom

### MTBF

50,000 hours

### Environment

Temperature: 0-50°C (32° to 122° F)  
Humidity 10-90%, non condensing  
Altitude 0-10,000 feet

### Warranty

Lifetime

# StackMaster™ TX12

## 100BASE-TX 12-Port Stackable Hub

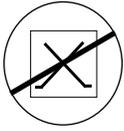
### (SMHB-E-TX-12)

33010.B

For assistance in installing, using, or maintaining the TRANSITION Networks StackMaster™ TX12 100BASE-TX 12-Port Stackable Hub, contact TRANSITION Networks Technical Support at:

**(800) 260-1312**

or contact your local distributor.



**CAUTION: RJ connectors are NOT INTENDED FOR CONNECTION TO THE PUBLIC TELEPHONE NETWORK. Failure to observe this caution could result in damage to the public telephone network.**

Der Anschluss dieses Gerätes an ein öffentliches Telekommunikationsnetz in den EG-Mitgliedstaaten verstößt gegen die jeweiligen einzelstaatlichen Gesetze zur Anwendung der Richtlinie 91/263/EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über Telekommunikationsendeinrichtungen einschliesslich der gegenseitigen Anerkennung ihrer Konformität.

### Compliance Information

UL Listed

C-UL Listed (Canada)

CISPR/EN55022 Class A

### FCC Regulations

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

### Canadian Regulations

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications.

### European Regulations

#### Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

### Copyright Restrictions

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## 100BASE-TX Cable and Connector Specifications

The physical characteristics of the 100BASE-TX cable must meet or exceed IEEE 802.3u 100BASE-TX specifications.

### 100BASE-TX CABLE SPECIFICATIONS

Category 5 wire or better is required. Either shielded twisted pair (STP) or unshielded twisted pair (UTP) can be used. **DO NOT USE FLAT OR SILVER SATIN WIRE.**

#### Category 5:

Gauge	24 to 22 AWG
Attenuation	20 dB/1000' @ 10 MHz
Impedance	100 $\Omega$ $\pm$ 10% @ 10 MHz

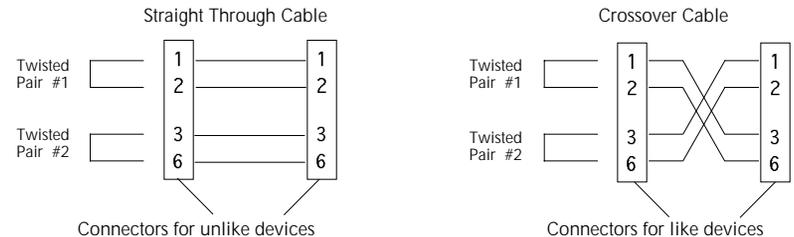
#### Maximum Cable Distance:

100 meters (330 feet)

### 100BASE-TX CONNECTOR CHARACTERISTICS:

The 100BASE-TX connectors are standard RJ-45 connectors with standard pinning.

The two active pairs in a 100BASE-TX network are pins 1 & 2 and pins 3 & 6. Use only dedicated wire pairs (such as blue/white & white/blue, orange/white & white/orange) for the active pins. 100BASE-TX cable for unlike devices (such as hub to terminal device) must be configured as straight through; 100BASE-TX cable for like devices (such as hub to hub or terminal device to terminal device) must be configured as crossover.



NOTE: MDI/MDI-X connectors on hubs allow straight-through cable to be used in a crossover configuration for hub to hub connection.

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# FAST ETHERNET (100BASE-X) CABLE SPECIFICATIONS

Due to the limited collision domain in 100BASE-X, use the shortest cables possible to make a connection between any two devices. Where collisions are not a consideration (full duplex), longer cable may be possible.

Effective cable distances are determined by ambient RF noise and by signal loss in the cable. Since fiber has low signal loss/meter and invulnerability to RF noise, fiber is the preferred medium for extending distances.

## 100BASE-FX Cable and Connector Specifications

The physical characteristics of the 100BASE-FX cable must meet or exceed IEEE 802.3 100BASE-FX specifications.

### 100BASE-FX CABLE SPECIFICATIONS

Fiber Optic Cable Recommended:	62.5 / 125 $\mu$ m multimode fiber
Optional:	100 / 140 $\mu$ m multimode fiber
	85 / 125 $\mu$ m multimode fiber
	50 / 125 $\mu$ m multimode fiber
Fiber Optic Transmitter Power:	
Average power:	-19.0 dBm
Fiber Optic Receiver Sensitivity:	
Average sensitivity:	-33.5 dBm
Bit error rate:	$\leq 10^{-10}$
<b>Maximum Cable Distance:</b>	2000 meters (6500 feet)

### 100BASE-FX CONNECTOR CHARACTERISTICS:

The 100BASE-FX connectors are standard ST connectors.

SC connectors are available.

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# 1. INTRODUCTION

This guide is intended for the system or network administrator responsible for installing and monitoring a TRANSITION Networks StackMasterTX-12 100BASE-TX 12-Port Stackable Hub. A working knowledge of local area network (LAN) operations, including familiarity with communications protocols used on interconnected LANs, is assumed.

## The StackMaster TX12 Hub

The StackMasterTX-12 100BASE-TX 12-Port Stackable Hub (SMHB-E-TX-12) is a Fast Ethernet repeater designed to meet IEEE 802.3u 100BASE-TX standards.



### StackMaster TX12 Hub Features

- Twelve RJ-45 100BASE-TX ports for Fast Ethernet connectivity
- Port #12 provides StackMaster TX12-to-StackMaster TX12 MDI/MDI-X uplink option
- Optional cascading of hubs using SCSI connectors at back
- 19-inch rack mountable
- Auto partitioning of ports with excessive collisions
- Fully automatic preamble regeneration
- Internal universal input power supply

The sole purpose of this remedy shall be provided the customer with the replacement or repair of non-conforming goods in the manner described in this Warranty statement. This exclusive remedy shall not be deemed to have failed of its essential purpose so long as TN is willing and able to repair or replace the defective item(s) or refund the purchase price.

TN reserves the right to inspect products claimed to be defective under warranty either at the customer's location or at TN's plant. TN assumes no liability for liability charges incidental to the adjustment, service, repairing, removal or replacement of the product, or other costs, or the expense of repairs made outside of its factory, except when made with TN's prior written consent. Additionally, Transition Networks reserves the right to charge for all testing and shipping incurred, if after testing, a return is classified as "No Problem Found".

TN's total liability in connection with the products and their installation to all persons and from all causes in the aggregate, whether in contract, tort, or strict liability, shall not exceed the amount paid to TN for the product directly related to the alleged damage. However, in no event shall TN have any liability to a customer or any third party for products manufactures according to the customer's specifications.

### C. Return Procedure

The customer must follow this procedure for the return of defective items:

1. Locate the serial number(s) of the item(s) to be returned.
2. Determine the date the item(s) was received.
3. Contact Transition Networks Technical Support to determine if the problem can be corrected on site.

#### If not, and the product is covered by warranty, then:

- Call the distributor directly or contact TN.
- Request a Return Material Authorization (RMA).
- Ship the item, prepaid in original packaging to Transition Networks at the above address.
- Include the RMA number on the outside of the carton and/or on the Packing List.
- Include a copy of the RMA form.
- Include a copy of the original invoice or packing list (if possible) to expedite processing.
- The item(s) may be shipped by the customer or the distributor.
- Transition Networks will repair or replace the unit, at TN's discretion, and cover the cost of the return freight to the distributor or to the customer, whichever requested the RMA number.

If the item(s) was received **more than five years ago**, or if the item(s) is **no longer covered by warranty** for other reasons, then:

- Call the distributor or contact TN.
- Request a Material Repair Authorization number (MRA).
- Ship the item(s), prepaid, in the original packaging to Transition Networks at the above address.
- Include the MRA number on the outside of the carton add/or on the Packing List.
- Include a copy of the MRA form.
- Include a copy of the original invoice or packing list (if possible) to expedite processing.
- Only the customer (end-user) may send the items(s) to TN.
- TN will contact the customer after the item(s) have been received, inspected, and a cost estimate of the repair determined.
- The repair charges may be billed, with customer's approval, though the distributor, or on a prepaid or C.O.D. basis directly to the customer. The charges will include the cost of shipping.

The return authorization numbers are valid only for 90 days from the date issued.

## Warranty Statement

### A. Five Year Warranty

Transition Networks, Inc. (TN) warrants, for a period of five years, that TN products (with the exception of power supplies and fans that TN warrants for two years) will be free from defects in materials and workmanship, and will be in conformity with TN's specifications.

TN's warranty on products manufactured by or assembled for TN in accordance with a customer's specifications, is a five-year warranty that the goods conform to such specifications.

The warranty is invalidated if the goods have been subject to alterations, misuse, accident, Acts of God (e.g., damage by floods, lightning strikes, Etc.), tampering, improper maintenance, improper installation, or abuse. If the user is unsure about the proper means of installing or using the equipment, contact TN's free Technical Support or Network Design Services, which can be reached by:

**Telephone** 1.800.LAN.WANS or 612.941.7600  
**Fax** 612.941.2322  
**E-mail** techsupport@transition.com  
**Internet** http://www.transition.com

THE ABOVE WARRANTY IS EXCLUSIVE AND EXTENDS ONLY TO PRODUCTS ASSEMBLED BY TRANSITION NETWORKS, INC. TO THE EXTENT PERMITTED BY LAW, TN DOES NOT MAKE AND DISCLAIMS ALL OTHER WARRANTIES, EXCEPT TITLE, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OF DESCRIPTION, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, AND ANY WARRANTY BASED UPON PRIOR WRITTEN OR ORAL REPRESENTATIONS REGARDING SUCH PRODUCTS MADE BY TN, ITS EMPLOYEES, AGENTS, OR REPRESENTATIVES.

### B. Limitations and Exclusions

If the customer believes any goods sold by TN are defective and within the warranty period, the following general procedure will be followed:

1. Locate the serial number and delivery date of the item(s).
2. Notify TN within the warranty period.
3. TN will promptly issue a return authorization form for the goods.
4. Upon receiving the form, the customer will promptly return the item(s) at customer's own expense, shipped prepaid, to the distributor from which it was purchased, or directly to TN.

TN will only accept goods for return if the following conditions have been met:

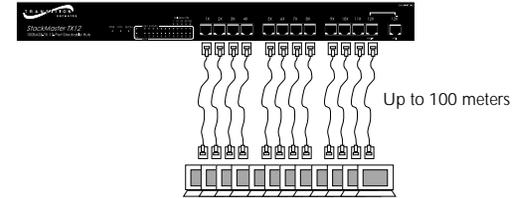
1. A return form is obtained from TN.
2. The freight charges have been prepaid by the customer.
3. Goods are re-packed in their original packaging.

If under warranty TN shall, at its option, (1) repair the goods free of charge (2) replace the goods free of charge, or (3) accept the return of the item(s) and credit the current price to the reseller (within 90 days of purchase), or (4) if the goods are not under warranty, will repair the item(s) at a minimum charge of USD \$200 (two hundred U.S. dollars) per item.

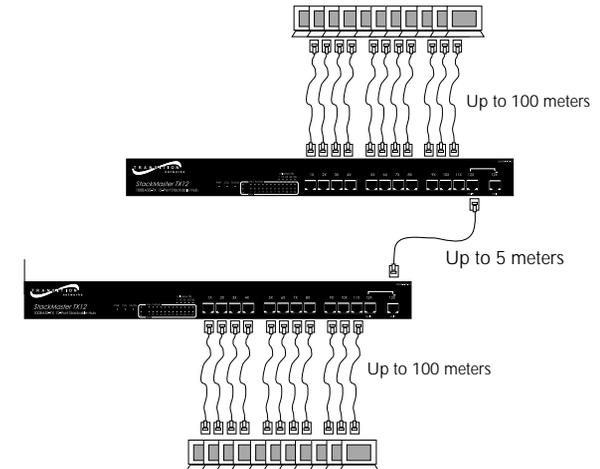
THIS IS THE EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY. IN NO EVENT SHALL TRANSITION NETWORKS BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, WHETHER FOR BREACH OF ANY CONDITION OF SALE, FOR NEGLIGENCE, ON THE BASIS OF STRICT LIABILITY, CONTRACT, OR OTHERWISE AND IRRESPECTIVE OF WHETHER TN IS INFORMED BY CUSTOMER OF THE POSSIBILITY OF SUCH DAMAGES IN ADVANCE OF THIS SALE.

## Networking the StackMaster TX12 Hub

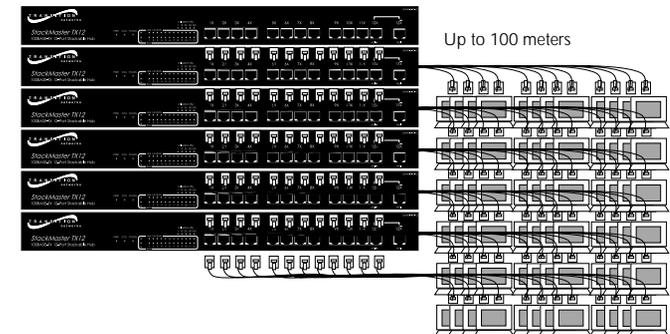
Use the StackMaster TX12 100BASE-TX 12 port stackable hub alone to provide twelve RJ-45 Fast Ethernet port connections.



Cascade two StackMaster TX12 hubs through the uplink port to provide twenty-two RJ-45 Fast Ethernet port connections.



Cascade up to six StackMaster TX12 hub, using SCSI cascade connectors at the back, to provide seventy-two RJ-45 Fast Ethernet port connections.



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## StackMaster TX12 Connectors and Status Indicators

### *RJ-45 Connectors*

Twelve (12) 100BASE-TX RJ-45 connectors are located at the front of the StackMaster TX12. The RJ-45 jacks support connection to Category 5 shielded or unshielded 100 ohm twisted pair 100BASE-TX cable.

### *SCSI Connectors*

Two (2) SCSI connectors are located at the back of the StackMaster TX12 for optionally cascading hubs.

### *Power Connector*

An external power connector is located at the back of the StackMaster TX12.

### *Status LEDs*

Status LEDs are located at the front of the StackMaster TX12.

POWER	<i>Illuminated green:</i> Hub powered ON.
UTILIZATION	<i>Illuminated green</i> 1%, 8%, 16%, 32%, or 64% network activity
COLLISION	<i>Illuminated amber:</i> Collision detected during data transmission on ANY port.
LINK/ACTIVITY	<i>Illuminated green:</i> Port link established. <i>Flashing green:</i> Data being received.
ERROR	<i>Flashing yellow:</i> Error detected on port. <i>Illuminated yellow:</i> Port partitioned and isolated.

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## 5. MAINTENANCE

**WARNING: DO NOT, UNDER ANY CIRCUMSTANCES, open and attempt to repair the StackMaster TX12 100BASE-TX 12-Port Stackable Hub. Failure to observe this warning could result in personal injury or death from electrical shock.**

NOTE: Failure to observe the above warning will immediately void the warranty.

### Fault Isolation

If two network devices fail to communicate through the StackMaster TX12, consider the following:

- Are the LEDs described in the previous section functioning properly?
- Do network devices have Link Integrity enabled?
- Do network devices communicate when the StackMaster TX12 is not installed between them?
- Is flat or “silver satin” wire used in site internal wiring?
- Are internal wiring patch cords, punch down blocks, and wall jacks properly pinned or configured?
- Are network interface cards properly configured?

### Technical Support Contact

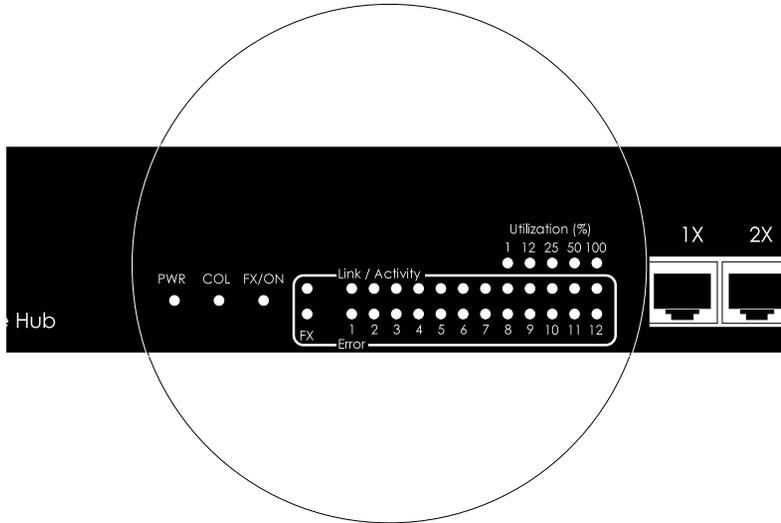
For assistance in fault isolation and in maintaining the StackMaster TX12 100BASE-TX 12-Port Stackable Hub, contact:

Technical Support (800) 260-1312

or your local distributor.

## 4. OPERATION

The StackMaster TX12 normally requires no intervention beyond occasionally monitoring the Power and Status LEDs.



### Status LEDs

Status LEDs are located at the front of the StackMaster TX12.

POWER	<i>Illuminated green:</i> Hub powered ON.
UTILIZATION	<i>Illuminated green</i> 1%, 8%, 16%, 32%, or 64% network activity
COLLISION	<i>Illuminated amber:</i> Collision detected during data transmission on ANY port.
LINK/ACTIVITY	<i>Illuminated green:</i> Port link established. <i>Flashing green:</i> Data being received.
ERROR	<i>Flashing yellow:</i> Error detected on port. OR port partitioned and isolated.

## 2. SITE CONSIDERATIONS

The site for the StackMaster TX12 hub must provide:

- AC power outlet for each hub
- Adequate ventilation
- Standard environmental conditions
- Isolation from electrical noise, including radio transmitters and broadband amplifiers, motors, high power electrical lines, or fluorescent light fixtures.

Additionally:

- The twisted pair cables should not run in the same conduit with power line cables
- Phone lines should be separated from data cables
- Flat or "silver satin" wires should not be used.

And:

- Since the StackMaster TX12 functions as an Ethernet Repeater, the entire installation should comply with the IEEE Ethernet 802.3 specification.

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## 3. INSTALLATION

NOTE: StackMaster TX12 Link Integrity cannot be disabled. All devices connected to the StackMaster TX12 MUST have link functions enabled.

To install the StackMaster TX12:

- Unpack the StackMaster TX12 Hub.
- Install StackMaster TX12 on shelf or in rack
- Optionally cascade StackMaster TX12 hubs
- Connect 100BASE-TX cable to StackMaster TX12
- Connect the StackMaster TX12 to power.

Direction is provided in the pages that follow.

### Unpacking the StackMaster TX12

The StackMaster TX12 packing contents should include the following:

Item	Part Number
StackMaster TX12	SMHB-E-TX-12
Power Cord	3344, 3347, 3348, 3349, or 3523, (depending upon power configuration in country where installed)
SCSI Connector	
User's Guide	33010

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### Connecting Power to StackMaster TX12

To power ON the StackMaster TX12:

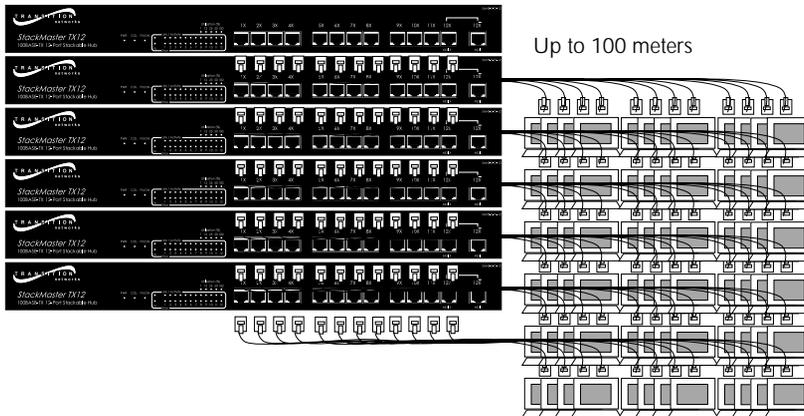
1. Locate the power receptacle on the back of the StackMaster TX12.
2. Connect the StackMaster TX12 power connector end of the power cord to the StackMaster TX12.
3. Connect the external power connector end of the power cord to external AC power.

NOTE: After power is supplied to the StackMaster TX12, the green **Power** LED is illuminated.

## Connecting 100BASE-TX Cable

To connect 100BASE-TX Cable to StackMaster TX12 RJ-45 connectors:

1. Locate or build 100BASE-TX cables with the following characteristics:
  - 803.2 compliant (See page 15)
  - cable length less than 100 meters
  - male RJ-45 plug connectors installed at both ends of cable.
2. Connect male RJ-45 plug connector at one end of 100BASE-TX cable to StackMaster TX12 RJ-45 jack connector.
3. Connect male RJ-45 plug connector at other end of 100BASE-TX cable to terminal device RJ-45 jack connector.

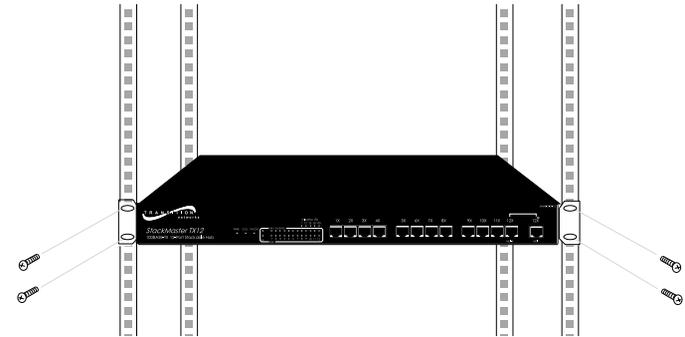


## Installing StackMaster TX12 in 19-inch Rack

NOTE: Optionally, the StackMaster TX12 can be installed on a table or other flat, stable surface.

NOTE: The StackMaster TX12 is shipped with attached brackets for standard 19-inch rack installation. Rackmount screws and clip nuts are NOT provided.

To install the StackMaster TX12 in 19-inch rack:



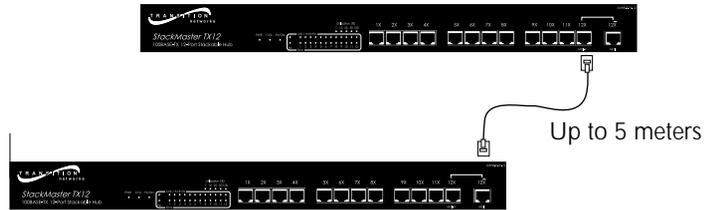
1. Locate four (4) screws (and clip nuts, if necessary) for each StackMaster TX12 to be installed.
2. Carefully align the StackMaster TX12 between the 19-inch rack mounting rails at the installation position.
3. Install two screws through right front bracket and two screws through left front bracket, using clip nuts if necessary.

## Optionally Cascading 12-Port Stackable Hub

### Using Port 12 to Cascade Two Hubs

Two StackMaster™ TX12 hubs can be cascaded using the two connections at the front of each hub that are labelled 'Port 12'.

To cascade two StackMaster TX12 hubs:

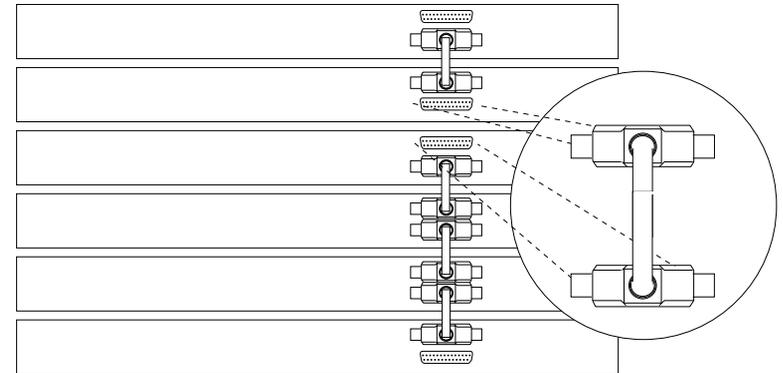


1. Locate or build 100BASE-TX cable with the following characteristics:
  - 803.2 compliant (See page 15)
  - cable length less than 5 meters
  - male RJ-45 plug connectors installed at both ends of cable.
2. Connect male RJ-45 plug connector at one end of 100BASE-TX cable to Port 12 connector marked MDI-X.
3. Connect male RJ-45 plug connector at other end of 100BASE-TX cable to Port 12 connector marked MDI.

### Using SCSI Connectors to Cascade Stacked Hubs

Up to six StackMaster™ TX12 hubs can be cascaded by installing SCSI connectors at the back of the StackMaster™ TX12 stack.

To cascade a StackMaster™ TX12 stack:



**NOTE:** Install the SCSI cable by carefully pressing the cable connector against the StackMaster™ TX12 connector until the connectors snap into place.

1. At back of stacked StackMaster™ TX12 units to be cascaded, connect a SCSI cable to the BOTTOM SCSI connector on the top StackMaster™ TX12 hub.
2. Connect the SCSI cable to the TOP SCSI connector on the next StackMaster™ TX12 hub.
3. Connect another SCSI cable to the BOTTOM SCSI connector on that StackMaster™ TX12 hub, as shown above.
4. Connect the SCSI cable to the TOP SCSI connector on the next StackMaster™ TX12 hub, as shown above.
5. Continue connecting SCSI cables by repeating steps 3 and 4 until the entire StackMaster™ TX12 stack is cascaded.

**NOTE:** The open SCSI connectors at the top and bottom of the StackMaster™ TX12 stack do NOT require termination.