TimeProvider® XT Extension System

A Grandmaster Solution for E1/T1/CC Signals (Third-Generation BITS/SSU)

Description:

The TimeProvider® XT extension system allows you to migrate E1/T1/CC outputs to the TimeProvider 4100 grandmaster for scalable, flexible, and resilient next-generation SONET/SDH synchronization. The XT extension system receives its frequency source from a TimeProvider 4100 grandmaster and provides outputs of framed E1, 2.048 MHz, T1, 1.544 MHz, DS1 and CC. All configuration, status monitoring and alarm reporting is done via the TimeProvider 4100 grandmaster. Using two high-precision ToD ports on the grandmaster for inter-shelf connections and redundant power connections, the extension system delivers the carrier-grade protection needed to ensure service availability and network uptime.
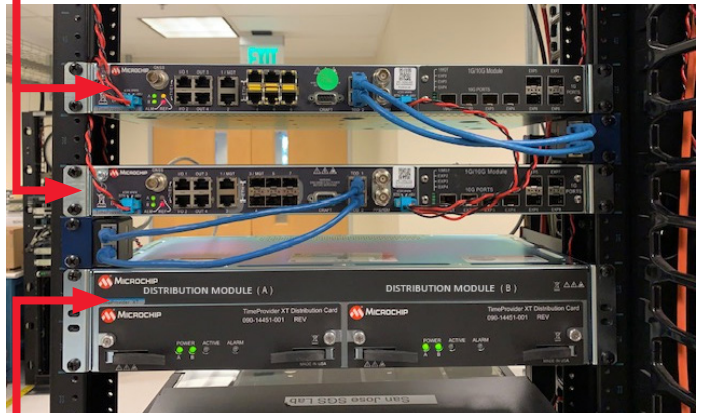
Each XT extension shelf, which is configured with two distribution modules and two plug-in modules, provides 40 fully redundant and individually programmable outputs with synchronization that meets ITU-T G.823 for the control of wander and jitter. This solution scales up to 200 outputs by connecting five XT shelves to a redundant pair of TimeProvider 4100 grandmasters.

The XT's plug-in modules and distribution modules are hot swappable and can be changed in the field. Options for physical connectors to plug-in output modules include RJ-48, BNC, wire wrap, SCSI (SSU 2000 compatible) and IDE (DCD, TimeHub® system compatible). The XT extension system does not require a software license. Its flexible form factor is field replaceable and scalable. XT requires TimeProvider 4100 2.4 firmware or later.

Key Features:

- Two Rack Unit (RU) shelf can be rack mounted with TimeProvider 4100 grandmasters
- Reversible rack ears allow for installation in all rack types
- Can be configured with only one distribution module and one plug-in module for small Point-of-Presence (PoP) applications

Fully redundant TimeProvider® 4100 grandmasters with PTP, SyncE and NTP

TimeProvider XT extension system with 40 redundant synchronization T1/E1/CC outputs fully managed by TimeProvider 4100 grandmasters
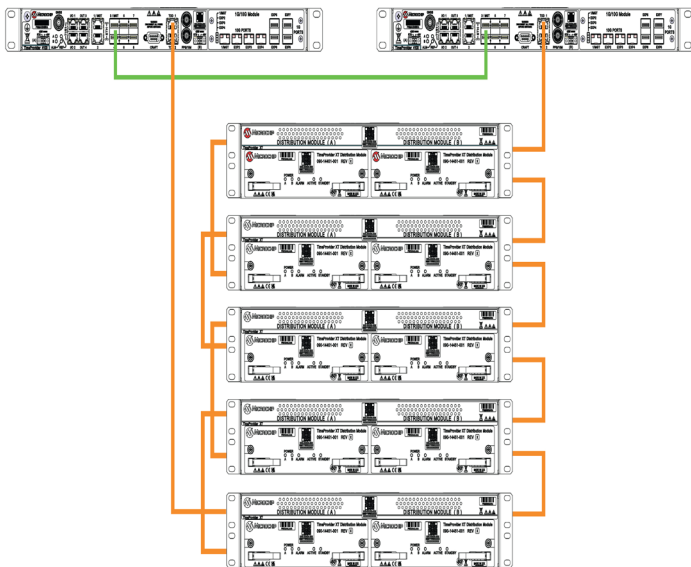
- Functions with TimeProvider 4100 grandmaster in SSU, Gateway and ePRTC modes
- Fully compatible with TimeHub system, SSU 2000 and DCD wire wrap and distribution panels
- TimePictra® software supplies network management

Benefits:

- Delivers fully redundant synchronization per ITU-T G.823 for the control of wander and jitter
- Replaces old BITS/SSU platforms with an extension system that subtends to a state-of-the-art PTP grandmaster, saving you time, money and space
- Offers single management interface for next-generation and SONET/SDH synchronization requirements
- Simplifies migration from DCD, TimeHub and SSU 2000 systems
- Allows for live, in-service CC phase cutover typically performed during maintenance window

Applications:

- SONET/SDH TDM synchronization for telecommunication carriers, utilities, transportation and government markets

A pair of redundant TimeProvider 4100 grandmasters managing five TimeProvider XT extensions with redundant A side and B side timing and management connections

Specifications:

Power

- DC power models: dual-power feeds, –38.4 VDC to –72 VDC
- Power consumption: 20 watts (typical)

Environmental

- Operating temperature: –5°C to 55°C
- Storage and transportation temperature: –40°C to 70°C

Mechanical

- Rear access shelf: 3.5 in × 19 in × 10 in
  (88.9 mm × 482.6 mm × 254 mm)
- Weight: 11 lbs. (5 kilos) (shelf + two distribution modules + two RJ-48 modules)
- Inputs: Two uplinks to TimeProvider 4100 series ToD outputs
- One CC input for cutovers to accomplish phase alignment
- Outputs: 20–40 outputs per extension unit; can be daisy-chained to supply up to 200 outputs

Regulatory and Environmental Requirements

Compliance Marks

- NRTL   North America Safety
- CB Scheme   International Safety
- CE   EU Safety and EMC
- FCC   USA EMC
- VCCI   Japan EMC
- RCM   Australia/New Zealand EMC
- KC   Korea EMC

Safety Compliance

- UL 62368-1, 3rd ed.
- CAN/CSA-22.2 No. 62368-1, 3rd ed.
- IEC 62368-1, 3rd ed.
- EU Safety Directive 2014/35/EU, 3rd ed.
- EN 62368-1

Emissions Compliance

- FCC Part 15 (Class A)
- ICES 003 (Class A)
- VCCI (Class A)
- CISPR32
- KN32
- EU EMC Directive 2014/30/EU
- EN55032
- EN 300 386

Immunity Compliance

- KSC 9832/9835
- EU EMC Directive 2014/30/EU
- EN55035

Environmental

- Acoustic noise level: 0 dBA
- Operating temperature: –5°C to 55°C
- Storage temperature: –40°C to 70°C
- Relative humidity: 5% to 90% non-condensing, 100% with condensation
- ETSI EN 300-019-2-3, Operating, Class T3.2
- ETSI EN 300 019-2-2 – Transportation, Class T2.3
- ETSI EN 300 019-2-1 – Storage, Class T1.2
- GR-63
- RoHS EU Directive 2011/65/EU and the (EU) 2015/863 amendment

Network Equipment Building System

- NEBS Level 3*, GR-1089

*When following deployment guidelines as specified in the user manual.
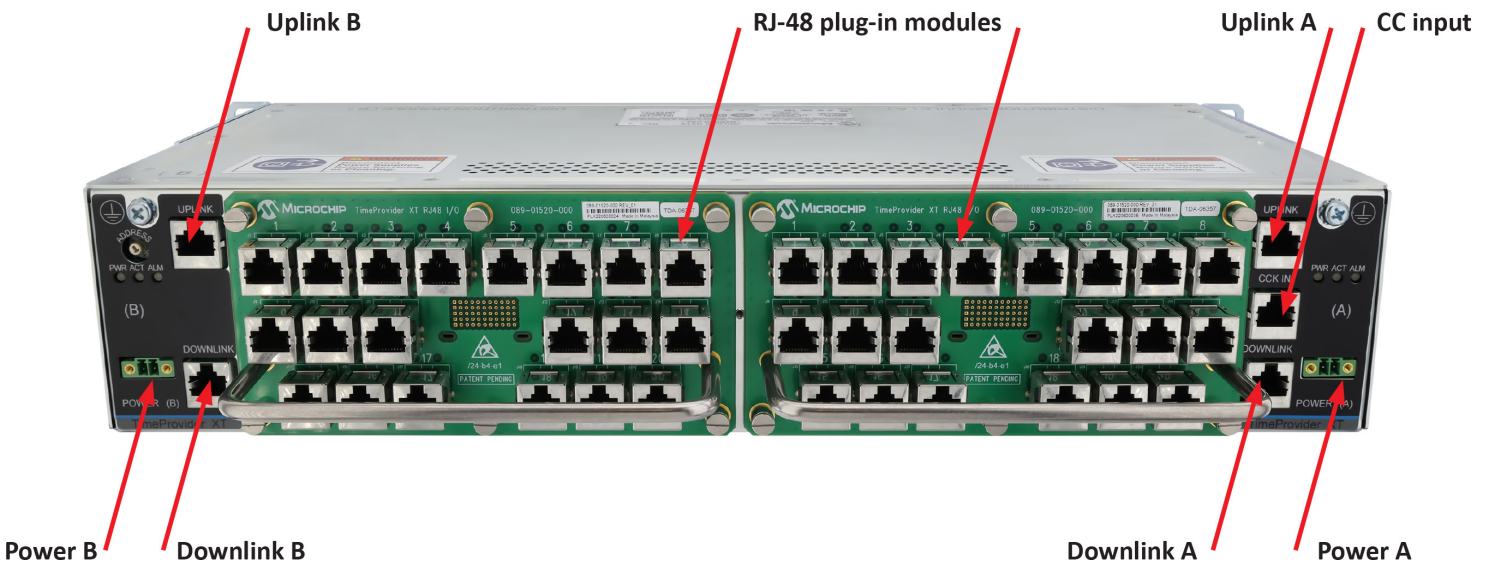
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Performance Standards

- ANSI T1.101 Synchronization Interface Standard
- G.812: Timing requirements of slave clocks suitable for use as node clocks in synchronization networks (already available in TimeProvider 4100 grandmaster)
- G.823: The control of jitter and wander within digital networks which are based on the 2048 kbps hierarchy
- Telcordia/Bellcore GR-1244-CORE: Clocks for the synchronized network: common generic criteria
- G.703 standard for encoding voice of data over digital carriers such as T1 and E1
- GR-378-CORE and G.704 for Synchronization Status Messages (SSM)
- Composite clock (64 kHz signal) as defined in G.703

XT Extension System Physical Outline

Two fully redundant and hot-swappable distribution modules

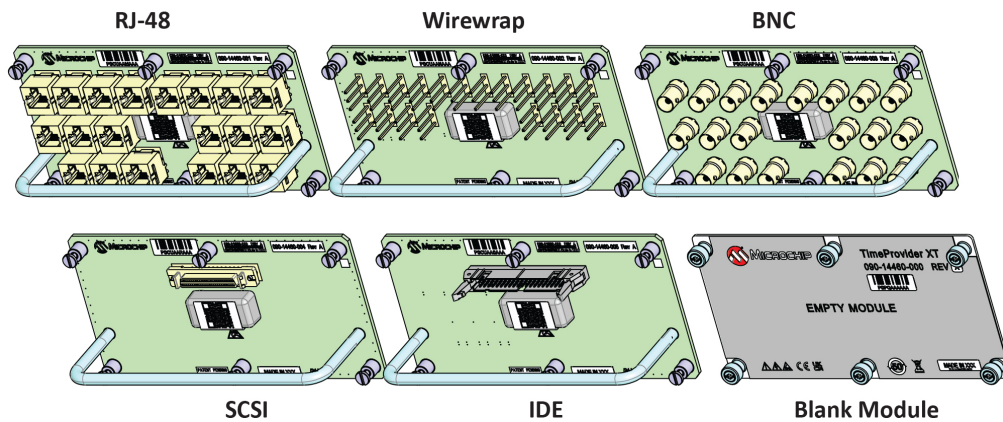Uplink B   RJ-48 plug-in modules   Uplink A   CC input

Power B   Downlink B   Downlink A   Power A

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Choice of Plug-in Modules:

RJ-48   Wirewrap   BNC

SCSI   IDE   Blank Module

Ordering Guide:

Part Number	Description
090-14401-001	TimeProvider® XT shelf
090-14401-102	TimeProvider XT shelf with lug power adapter
090-14451-001	TimeProvider XT distribution module
090-14450-001	TimeProvider XT blank panel distribution module
090-14460-000	TimeProvider XT blank panel plug-in module
090-14460-001	TimeProvider XT RJ-48 plug-in module
090-14460-002	TimeProvider XT wire wrap plug-in module
090-14460-003	TimeProvider XT BNC 75Ωplug-in module
090-14460-004	TimeProvider XT SCSI plug-in module
090-14460-005	TimeProvider XT IDE plug-in module
093-14401-001	TimeProvider XT protective shield kit
093-14401-002	TimeProvider XT Y-adapter kit
093-55595-11	TP1000 ABS cable management kit, one RU

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