



8-Port Dual-Speed Segment-Bridged Repeater Controller

1. Features

- Fully integrate 8-port hub controller with 4-port switch controller, 2 (Fast) Ethernet switch ports used internally for bridging 10M and 100M segments, and additional 2 (Fast) Ethernet switch ports used for high-throughput user connections.
- The user connection ports of 8 hub ports plus 2 switch ports can be configured to 7 hub ports plus 3 switch ports if all hub connection interfaces follow single specific standard, namely Ethernet or Fast Ethernet.
- Support independent 10Mbps and 100Mbps Ethernet operation segments in hub portion.
- Automatically connect each port to specific segment, namely 10M or 100M by its data flow rate without user intervention.
- Two expansion bus in backplane, one for 10Mbps operation and one for 100Mbps operation are used to cascade other controllers or stack hub devices.
- Integrate LED drivers for at-a-glance operation status monitoring.
- Single 64K x 32 SSRAM memory part used as data buffer and filtering database for 2-port switch operation.
- 274-pin BGA.

2. Description

MX98748 is an 8-port dual-speed segment-bridged hub controller plus 2 additional (Fast) Ethernet switch ports to provide system vendors a cost-effective chip solution on work-group segment-switched, stack hub devices.

Works with (quad) auto-detect PHY components, MX98748 builds separate 10Mbps repeater state machine and 100Mbps repeater state machine inside to supports either conventional Ethernet or Fast Ethernet operation on each MII port. Depending on data rate, controller automatically hooks each port to the specific segment such that the 10M ports operate in one domain and 100M ports in another domain, they do not interfere mutually. Controller provides two expansion ports (or inter-repeater buses) for stack hub application, one for 10Mbps cascading and one for 100Mbps cascading. Up to 31 controllers can be chained together in a stack hub system.

A 4-port switch is built-in to store-and-forward frames between 10M segment and 100M segment and another 2 high-throughput sources. Two extra embedded MII ports are utilized as connection points between (10M and 100M) repeaters and switching ports. The switch auto-learns address information in stack hub system,

maximum 248 search entries within filtering table in fully-stacked hub system. Once frame transmitted in repeater domains, switch verifies whether source host and destination host reside on the same segment or different ones. Suppose two host are on same segment, the frame received on switch port is filtered. Otherwise the received frame will be relayed to the other segment. A single 64K x 32 SSRAM memory component is recommended to be used for storage of received frames and filtering table.

Suppose all the user connection interfaces on hub ports follow single specific standard, namely Ethernet or Fast Ethernet. The user traffic is focused on a certain segment such that the internal bridging function is not necessary. Via configuration pins the attribute of hub port which is numbered 6 or 7 can be changed to (Fast) Ethernet switch to utilize the power of integrated 4-port switch controller most.

LED drivers are integrated per hub port for operation status monitoring. System vendors could implement LED matrix display on front panel for at-a-glance monitoring. Individual LED could indicate "Speed" (10Mbps or 100Mbps rate), "Collision", "Link", "Partition", and "Utilization".



MX98748

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