

DeltaV SISnet Repeater



The DeltaV SIS platform is the world's smart SIS system to use the power of predictive intelligence for increasing the availability of the entire safety instrumented function.

- Fiber-optic repeater for redundant safety-rated communications
- Dedicated to safety—no possibility of common-cause control and safety communications failures
- 50 mS update time anywhere on the DeltaV SISnet

Introduction

The DeltaV SIS™ system, part of Emerson's smart SIS, ushers in the next generation of Safety Instrumented Systems (SIS). This smart SIS approach uses the power of predictive field intelligence to increase the availability of the entire safety instrumented function.



DELTA V SIS

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Benefits

Fiber-optic repeater for redundant safety-rated communications. The SISnet Repeater is used when safety-critical inter-trip signals are needed across a physically spread-out plant.

Dedicated to safety. Some systems use the same networks for both control and safety. The DeltaV SIS system SISnet is dedicated to safety, carrying only safety-rated signals. It is therefore immune to any failure of the control network.

50 mS update time. All of the data broadcast on the SISnet is available to all of the other nodes within 50 mS. Combined with the speed of the logic solver, the 50 mS update time guarantees input-to-output times of less than 225 mS anywhere on the distributed SISnet.

Spans 32 nodes. The SISnet spans 32 nodes in a redundant ring architecture. These nodes can be up to two km apart, so the entire ring can be up to 64 km around. The 50 mS update time is guaranteed—regardless of network size.

Product Description

This section provides general information on DeltaV SIS hardware. Refer to the [Installing Your DeltaV Digital Automation System](#) manual for more information on DeltaV system equipment.

DeltaV SIS Equipment

A DeltaV automation system consists of carriers, one or more I/O subsystems, controllers, power supplies, workstations, and a control network.

The DeltaV SIS system consists of:

- Logic Solvers (SLS 1508) and termination blocks (see separate product data sheet)
- SISnet Repeaters
- Carrier extender cables
- Local peer bus extender cables
- Right 1-wide carrier with termination

SISnet Repeaters extend communication beyond the local Logic Solvers connected to one DeltaV controller and broadcast global messages to remote Logic Solvers through a fiber-optic ring. Global messages refer to messages that are intended for all Logic Solvers. The SISnet Repeater installs on a 2-wide carrier. There is a primary and secondary SISnet Repeater on each carrier.

Carrier Extender CTbles extend LocalBus power and signals between 8-wide carriers. **Local peer bus extender cables** extend the local peer bus (SISnet) between Logic Solvers on different carriers. **1-wide carriers** with terminators terminate the local peer bus at the final carrier.



A redundant pair of SISnet Repeaters

Communication

Control Network: The DeltaV Control Network provides communication between the nodes in the DeltaV network. Refer to the [Installing Your DeltaV Digital Automation System](#) manual for complete information on the Control Network.

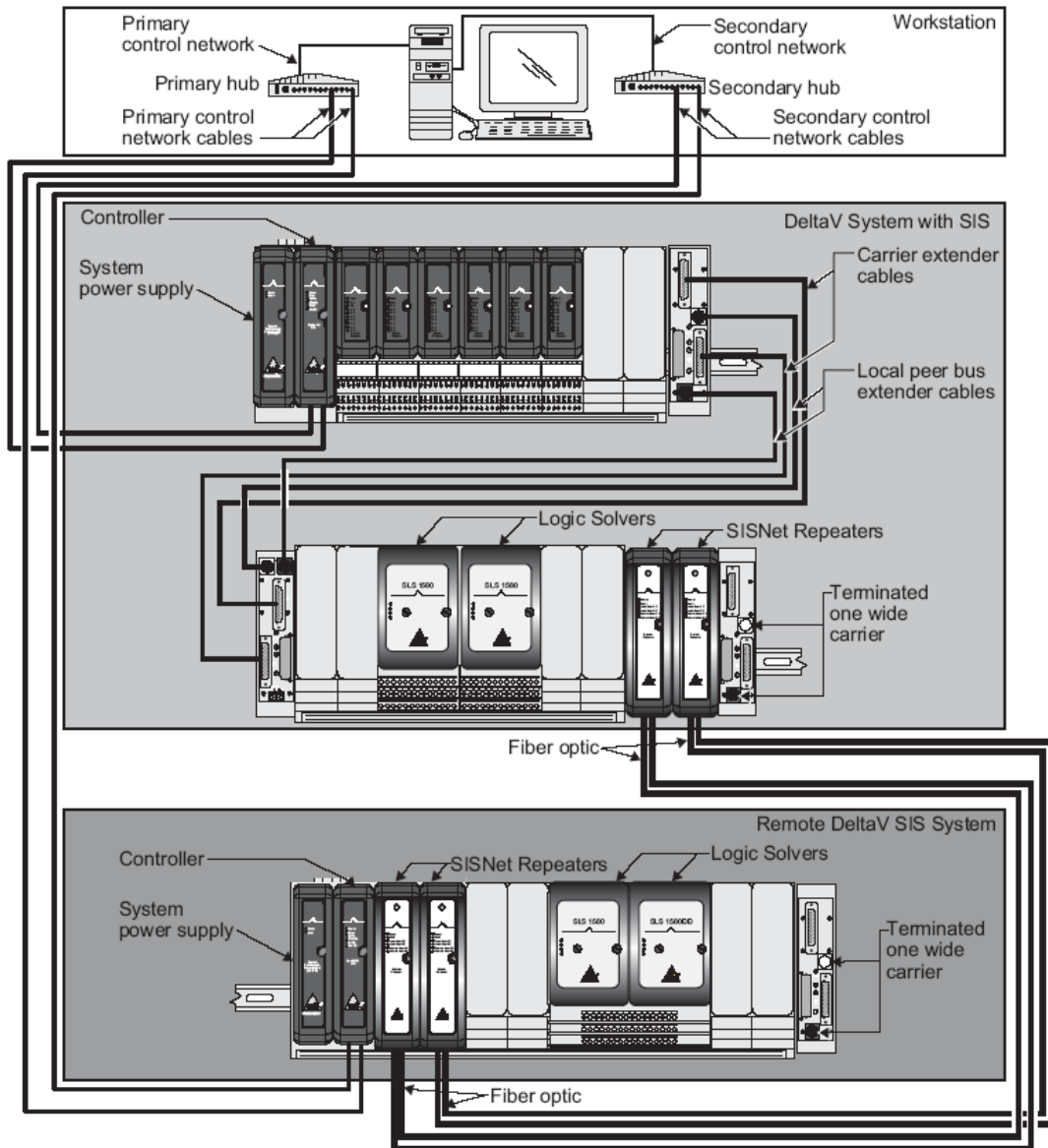
LocalBus: The LocalBus provides communication between DeltaV controllers and Logic Solvers and between DeltaV controllers and SISnet Repeaters.

Local Peer Bus (SISnet): Logic Solvers communicate with other Logic Solvers and with local SISnet Repeaters through the carriers over a 2-channel local peer bus. The same message is broadcast over both channels. The local peer bus must be terminated at both ends. The local peer bus is terminated at the left end through the 2-wide power/controller carrier and at the right end through a terminated 1-wide carrier.

The SISnet Repeaters can be located anywhere on a local peer bus—between the MD Controller(s) and the terminated 1-wide carrier.

Remote Peer Ring: SISnet Repeaters hosted by one DeltaV controller communicate with SISnet Repeaters hosted by a different DeltaV controller over a fiber-optic remote peer ring. A local SISnet Repeater collects locally generated messages into a single message and sends it to the next SISnet Repeater in the ring. Upon receipt of a message, the receiving SISnet Repeater broadcasts it on its local peer bus (SISnet) and forwards the message to the next SISnet Repeater in the ring. A global message is forwarded around the ring once. The primary SISnet Repeaters form one fiber-optic ring and the secondary form a separate, independent ring. The fiber rings operate at 100 MB.

Extender cables: Carrier extender cables and local peer bus extender cables connecting a DeltaV controller and 8-wide carrier with standard DeltaV I/O and DeltaV SIS to a second 8-wide carrier (hosted by the same controller) are installed with Logic Solvers, SISnet Repeaters, and a terminated 1-wide carrier. Logic Solver messages are communicated to a remote DeltaV SIS (hosted by a separate controller) through fiber-optic cables.

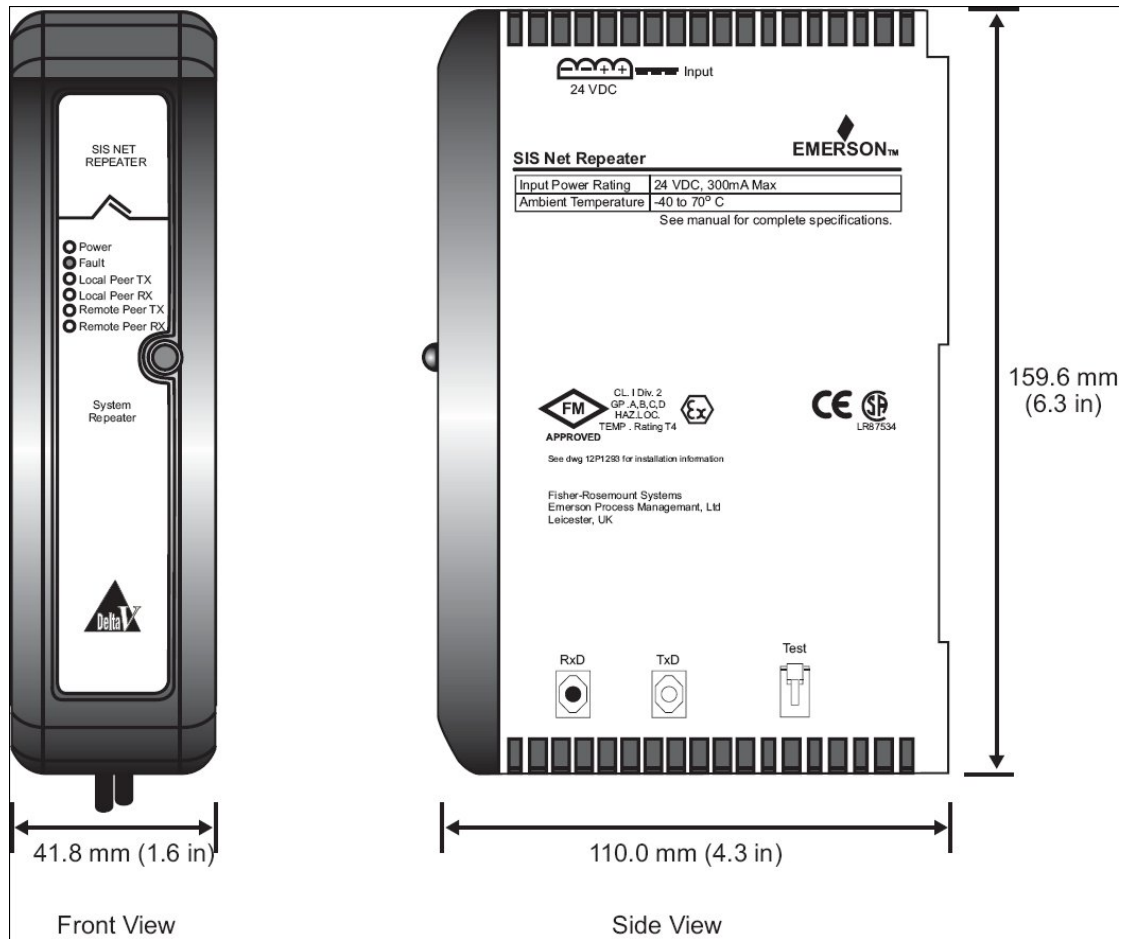


SISnet Repeater Specifications

Common Environmental Specifications for SISnet Repeater	
Category	Specifications:
Storage temperature	-40 to 85 C (-40° to 185 °F)
Operating temperature	-40 to 70 C (-40° to 158° F)
Relative humidity	5 to 95% , non-condensing
Airborne contaminants	ISA-S71.04-1985 Airborne Contaminants Class G3 Conformal coating
Protection rating	IP 20, NEMA 12
Hazardous area/location	European EMC Directive per EN61326-1, Criterion A NAMUR NE21 EMC Requirements Low Voltage Directive IEC 61010-1 Factory Mutual, Non-Arcing Class 1, Div 2, Groups A, B, C, D, T4 hazardous locations ATEX 3 G EEx IIC-nA T4 EN50021:1999 CSA 1010
Shock	10 g ½-sine wave for 11 ms
Vibration	1 mm peak-to-peak from 5 to 16 Hz; 0.5 g from 16 to 150 Hz

SISnet Repeater Specifications	
Item	Specifications:
Port Type	ST Female
Cables Type	Multimode 62.5 / 125 µm; ST type or Multimode 50 / 125 µm; ST type
Output power	< -12 dB
Link budget	Multimode 62.5 / 125 µm – max attenuation 11 dB Multimode 50 / 125 µm – max attenuation 8 dB
Link distance (max)	2 km one way TxD to RxD
Topology	Physical ring: RxD connects to TxD of predecessor and TxD connects to RxD of successor
Test port type	For factory use only
Mounting	2-wide SISnet Repeater carrier Left carrier position is secondary SISnet Repeater; right carrier position is primary SISnet Repeater

SISnet Repeater Power Specifications	
Item	Specifications:
Input	24 V DC, 300 mA (max)
Connector type	4-position screw terminal
Wire type	Solid or Stranded
Wire gauge	12 AWG maximum



SISnet Repeater Dimensions

SISnet Repeater Weight, Heat Generation and Power Consumption	
Item	Specifications:
SISnet Repeater	Weight – 0.795 kg Heat Dissipation – 8 W Power – 0.3 A @ 24 V DC
1-wide SISnet Terminator Assen	Weight – 0.20 kg Heat – N/A Power – N/A

Ordering Information

Description	Model Number
Redundant SIS Net Repeater (Two Repeater modules and a two-wide carrier)	VS6002
SISnet Terminator Assembly	VS6051
8-Wide Carrier with Extend Cable Assembly (Cable Assembly consists of left & right extender cards, 2 coax cables for Logic Solver communications bus and one cable for carrier backplane communications)	VE4050E1C2

Prerequisites

- DeltaV 8.3 software or later.

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