DNA R-2

Dynamic Network Analyser

For an independent EN54-13 Life safety Communication Network layer

Overview

The DNA R-2, Dynamic Network Analyser for Ring Topology Networks, has been developed by INSTANCE to facilitate dynamic network management through the provision of an independent communication layer.

The equipment is designed to improve the Quality of Service (QoS) of critical communication networks while operating under the performance criteria required by EN54-13 and BS5839 part 1.

The ports connected to the communications ring, are correctly terminated to match the network communications cable impedance to ensure optimum signal quality and amplitude. Signal quality is constantly monitored and the termination impedance is adjusted to compensate for changes in cable impedance due to climatic or physical cable parameter changes.

Four Input/Output interfaces are provided for through an independent communications layer.

This feature provides a basic redundant network protocol with the mapping configuration managed through the PC graphics I-View programming tool.

Features

- Independent Reporting with Class A communication redundancy
- Multiple fault tolerance
- 2.5 kV isolation on all ports
- Dual and single Industrial Equipment RS485 connection
- 4 independent I/O channels across the redundant network ring for independent protocol redundancy
- Can operate on Hosted Fiber /Ethernet links
- Simple LED System Status indication
- Signal quality and amplitude visual indication
- Wireless Connectivity for remote monitoring using a Blue tooth or WiFI communication connection
- Supports the generation of system performance reports for Installation commissioning
- Visual interface provided by IView, the INSTANCE Graphical User Interface with Monitoring, Diagnostics and Reporting options
- Enables preventative maintenance management through system degradation monitoring
- Configuration and commissioning parameters are stored allowing for system performance tracking over time
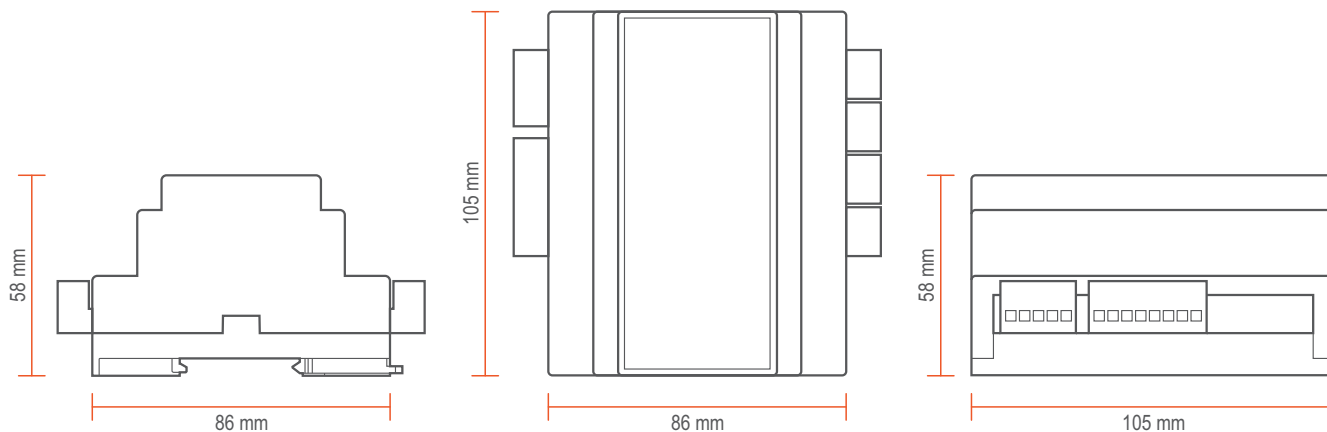- Baud rate selectable from 9600-115kbits/sec

Instance
Managing Data Xchange

Specifications

Dimension Diagram

Dimensions: 105 X 58 X 86 mm
Weight: 0.2kg
Din Rail Mount: EN60715 (width 35 mm)

Power

Operating voltage: 18 to 36V (24V DC nominal)
Rated current: 250mA (at 24V)

Interfaces

RS485:   Port A1: Fixed Termination
            Port A2: Fixed Termination
            Port B: Dynamic Termination
            Port C: Dynamic Termination
            Port A, B, C and I/O bank: Isolated (2.5kV)
USB: USB Micro-B connection (Device / Slave Mode)

Temperature

Operating: -10 to 50°C
Storage: -40 to 70°C

Agency Approvals and Standards

CE, RoHs, WEEE compliant
EMC   EN 61000-6-2, Immunity Standard (Industrial Environments)
             EN 61000-6-4, Emission Standard (Industrial Environments)
Safety   EN 60950, IT Equipment

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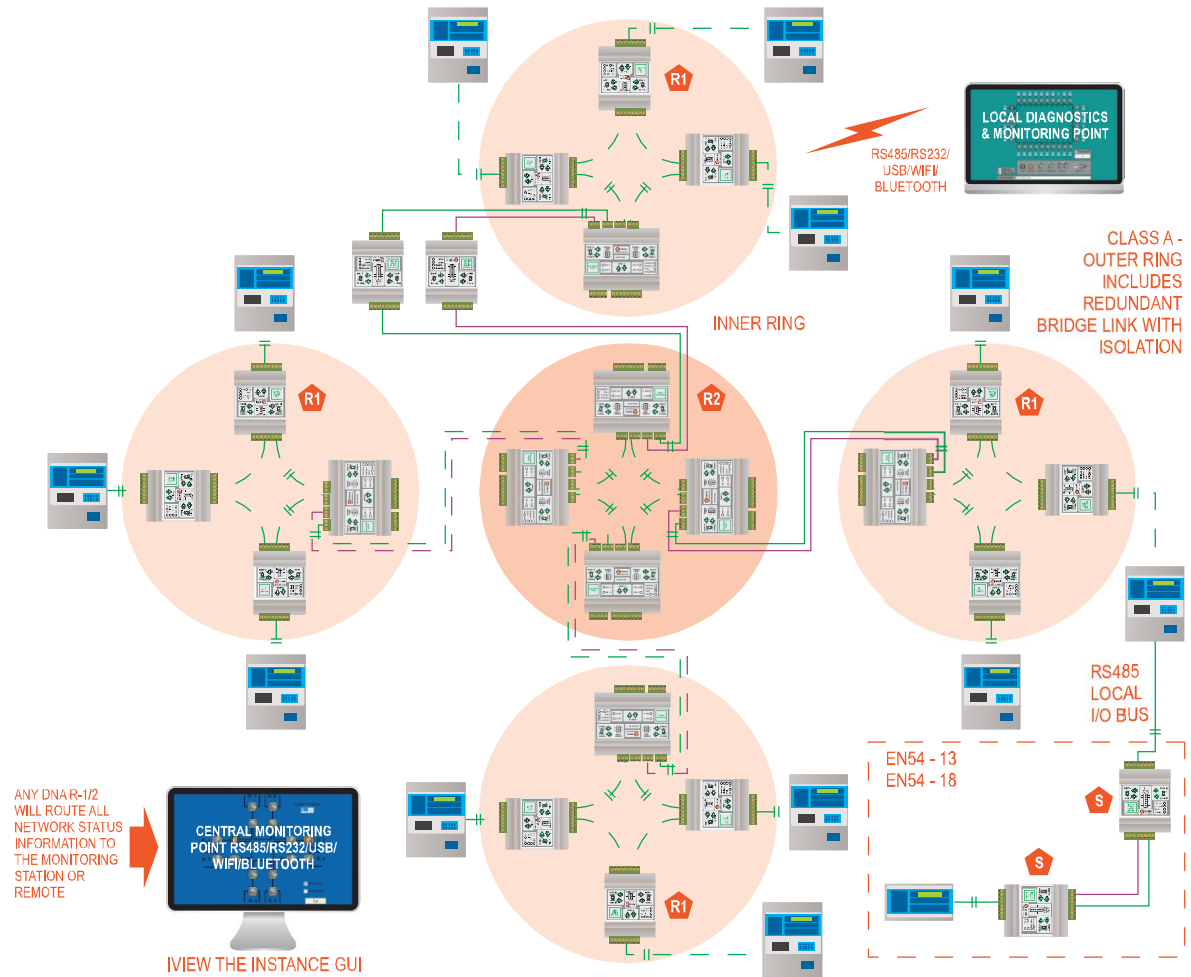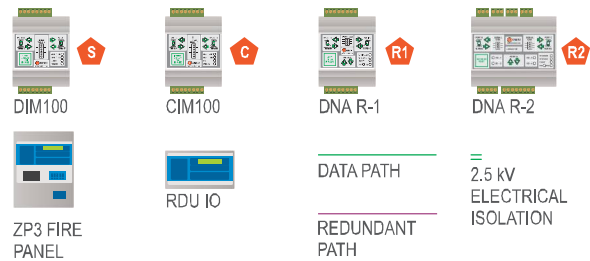
Instance Network Equipment

Application:

Ziton Multiple Fault (wiring) Network
Redundancy for BS5839-1

Products Used:

DNA-R2   Dynamic Network Analyzer
          (Dual CIE port with CIE & Link Isolation)

DNA-R1   Dynamic Network Analyzer
          (Single CIE port with CIE Isolation)

CIM100   RS485 Isolator/Repeater Module

DIM100   DIM Impedance (Redundancy) Module

IVIEW   Graphics Monitoring Tool

Legend:

DIM100 — S

CIM100 — C

DNA R-1 — R1

DNA R-2 — R2

ZP3 FIRE PANEL

RDU IO

DATA PATH

REDUNDANT PATH

2.5 kV ELECTRICAL ISOLATION

LOCAL DIAGNOSTICS & MONITORING POINT

RS485/RS232/USB/WIFI/BLUETOOTH

CLASS A - OUTER RING INCLUDES REDUNDANT BRIDGE LINK WITH ISOLATION

INNER RING

R1

R2

RS485 LOCAL I/O BUS

EN54 - 13
EN54 - 18

ANY DNA R-1/2 WILL ROUTE ALL NETWORK STATUS INFORMATION TO THE MONITORING STATION OR REMOTE

CENTRAL MONITORING POINT RS485/RS232/USB/WIFI/BLUETOOTH

IVIEW THE INSTANCE GUI

Instance

Managing Data Xchange
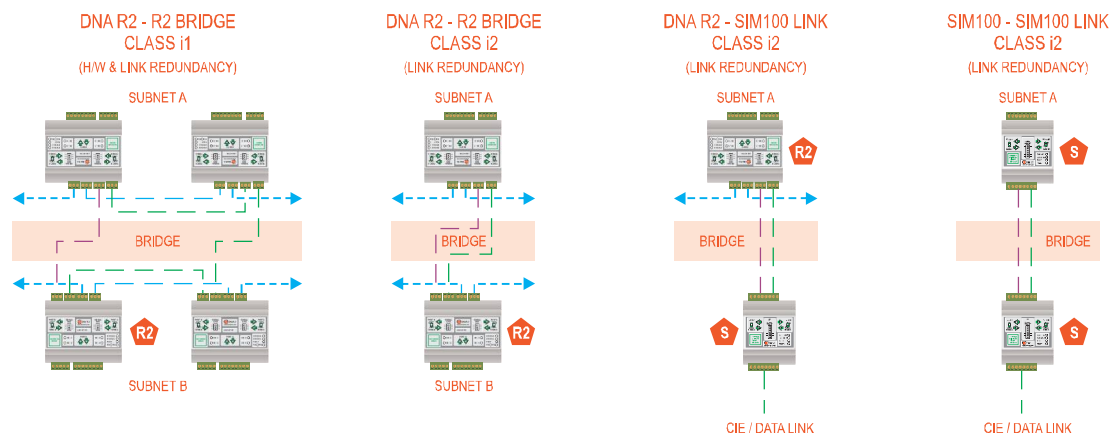
Instance Network Equipment

Application:

Instance Redundant Network Bridge for full
EN54-13 Class i1 and
BS5839-1 Class i2 compliance

The multi-Ring topology supported by Instance
is utilised to increase the number of faults a
network can tolerate while maintaining full
communication.

Products Used:

DIM 100 — Dynamic Impedance Module
DNA-R2 — Dynamic Network Analyzer
(Dual CIE port with CIE & Link Isolation)

Legend:

DIM 100
DNA R-2
SUBNET PATH
DATA PATH
REDUNDANT PATH

DNA R2 - R2 BRIDGE CLASS i1 (H/W & LINK REDUNDANCY)
DNA R2 - R2 BRIDGE CLASS i2 (LINK REDUNDANCY)
DNA R2 - SIM100 LINK CLASS i2 (LINK REDUNDANCY)
SIM100 - SIM100 LINK CLASS i2 (LINK REDUNDANCY)

SUBNET A
SUBNET B
BRIDGE
CIE / DATA LINK

Instance
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Instance Network Equipment

Application:

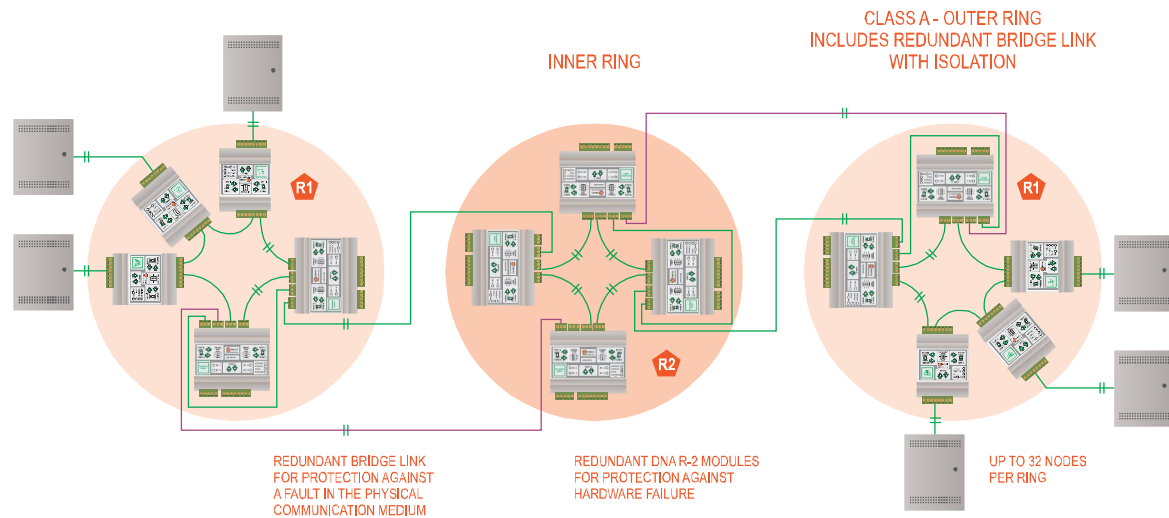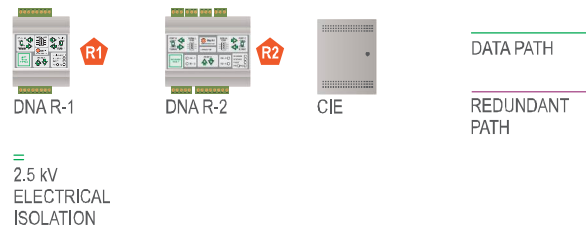Instance Redundant Network Bridge for full EN54-13 and BS5839-1 compliance

The multi-Ring topology supported by Instance is utilised to increase the number of faults a network can tolerate while maintaining full communication.

Products Used:

DNA-R1   Dynamic Network Analyzer
(Single CIE port with CIE Isolation)

DNA-R2   Dynamic Network Analyzer
(Dual CIE port with CIE & Link Isolation)

Legend:

DNA R-1   R1

DNA R-2   R2

CIE

DATA PATH

REDUNDANT PATH

2.5 kV
ELECTRICAL
ISOLATION

CLASS A - OUTER RING
INCLUDES REDUNDANT BRIDGE LINK
WITH ISOLATION

INNER RING

R1

R2

R1

REDUNDANT BRIDGE LINK
FOR PROTECTION AGAINST
A FAULT IN THE PHYSICAL
COMMUNICATION MEDIUM

REDUNDANT DNA R-2 MODULES
FOR PROTECTION AGAINST
HARDWARE FAILURE

UP TO 32 NODES
PER RING

Instance
Managing Data Xchange

Instance Network Equipment

Application:

Ziton Network Redundancy for
BS5839-1/EN54-13/EN54-18

The Inner Ring allows for a single fault in
each subnet while maintaining full
communication with each CIE node.

Products Used:

DNA-R2   Dynamic Network Analyzer
       (Dual CIE port with CIE & Link Isolation)

DNA-R1   Dynamic Network Analyzer
       (Single CIE port with CIE Isolation)

DIM100   Impedance (Redundancy) Module

IVIEW   Graphics Monitoring Tool

Legend:

DIM100   DNA R-1   DNA R-2   ZP3 FIRE PANEL

RDU IO   REDUNDANT PATH   DATA PATH   2.5 kV ELECTRICAL ISOLATION

LOCAL DIAGNOSTICS & MONITORING POINT

RS485/RS232/USB/WIFI/BLUETOOTH

TYPE 2: CLASS A RING
CIE ISOLATION

INNER RING

TYPE 1: CLASS A RING
CIE & FULL LINK ISOLATION

ANY DNA R-1/2 WILL ROUTE ALL NETWORK STATUS INFORMATION TO THE MONITORING STATION OR REMOTE

CENTRAL MONITORING POINT RS485/RS232/USB/WIFI/BLUETOOTH

IVIEW THE INSTANCE GUI

RS485 LOCAL I/O BUS

EN54 - 13
EN54 - 18

Instance
Managing Data Xchange