

# DV Scanner

## Datasheet

A-DVS

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# 1. PREFACE

## 1.1. ABOUT THIS DOCUMENT

This document contains the technical data for the DV Scanner.

## 1.2. INTRODUCTION TO THE DV SCANNER

The DV Scanner allows interfacing between a Rockwell Automation Logix system and the DeltaV™ M-series IO. (DeltaV™ is a mark of one of the Emerson Process Management family of companies.)

The DV Scanner connects to a Rockwell Automation Logix Controller (e.g. ControlLogix or CompactLogix) via EtherNet/IP and connects to the DeltaV™ M-series LocalBus via a Right Carrier Extender (KJ4001X1-NA1) using a standard D-shell cable (KJ4002X1-BF2).

This allows the DV Scanner to connect to, and control, the IO in an M-series system

A typical DV Scanner (as a Standalone Master) connecting to the DeltaV™ M-series IO is shown below.

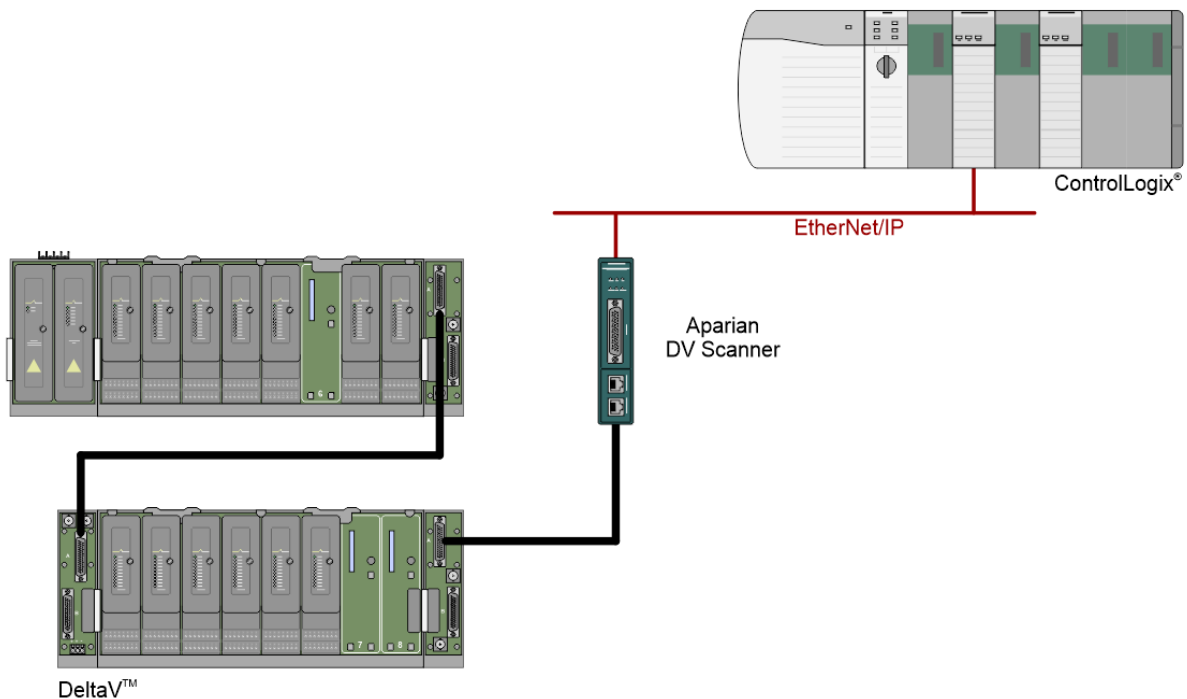


Figure 1.1 – Typical Standalone Setup

## 1.3. FEATURES

The DV Scanner provides an interface between DeltaV™ M-series IO and a Logix system using multiple EtherNet/IP class 1 connections. The DV Scanner supports up to 32 DeltaV™ M-series IO cards and consumes 8 Logix IO (Class 1) connections.

The DV Scanner is configured using the Aparian Slate application which can be downloaded from [www.aparian.com](http://www.aparian.com) free of charge.

Within the Slate environment each DV IO card can be configured to match the application. The following IO cards are supported:

- **KJ3001X1-CA1** – 32 Channel, 24Vdc Dry Contact, Digital Input (DI)
- **KJ3204X1-BA1** – 32 Channel, 24Vdc High-Side, Series 2 Digital Output (DO)
- **KJ3222X1-BA1** – 8 Channel, 4-20mA HART, Series 2 Analog Input (AI)
- **KJ3221X1-BA1** – 8 Channel, 4-20mA HART, Series 2 Analog Output (AO)
- **KJ3001X1-BA1** – 8 Channel, 24Vdc Isolated, Digital Input (DI)
- **KJ3001X1-BG1** – 8 Channel, 24Vdc Isolated, Digital Output (DO)
- **KJ3002X1-BC1**– 8 Channel, 4-20mA, Analog Input (AI)
- **KJ3002X1-BB1**– 8 Channel, 4-20mA, Analog Output (AO)

Using the EDS AOP (Add-On-Profile) in Studio 5000, the DV Scanner can be added directly into the Logix IO tree. AOIs (Add-On-Instructions) are provided for both Standalone and Redundant architectures and facilitate the mapping of IO and diagnostic information to meaningful (UDT) structures.

In the case of a redundant system, the AOI also automatically switches between the Active and Standby DV Scanner.

To aid in migration, the DV Scanner provides a Shadow mode where the DV Scanner can run in parallel with the existing DeltaV™ M-series controller. In this mode the existing CPU is controlling the IO cards and the DV Scanner is listening-in and providing the input and output readback data to the Logix.

The DV Scanner hosts two Ethernet ports which can either be used as an unmanaged switch or in a Device-Level-Ring (DLR) topology providing Ethernet redundancy.

The DV Scanner has a range of diagnostics, statistics, and tools to support the user during the migration process. This will speed up fault finding and reduce down-time.

## 1.4. ARCHITECTURE

The DV Scanner can be employed in a number of architectures based on the following options:

- Logix System – Standalone or Redundant
- Ethernet – Linear or Device Level Rung (DLR)
- DV Scanner – Standalone or Redundant

Examples of some of these combinations are described below.

### STANDALONE MODE, LINEAR ETHERNET, SINGLE LOGIX CONTROLLER

In this architecture, a single DV Scanner is connected to the DeltaV™ M- series system, with a linear Ethernet network connecting to a single Logix Controller.

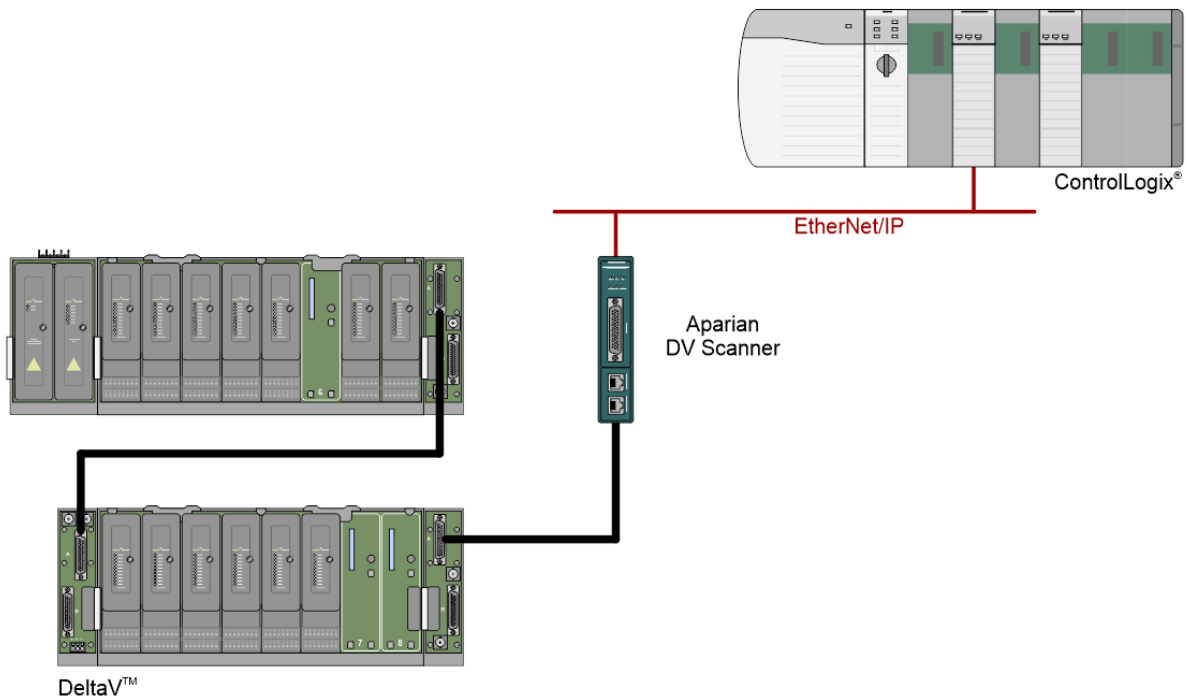


Figure 1.2 – Standalone mode, linear Ethernet, single Logix Controller

### STANDALONE MODE, RING ETHERNET, SINGLE LOGIX CONTROLLER

In this architecture, a single DV Scanner is connected to the DeltaV™ M-series system with a ring DLR Ethernet network connecting to a single Logix Controller.

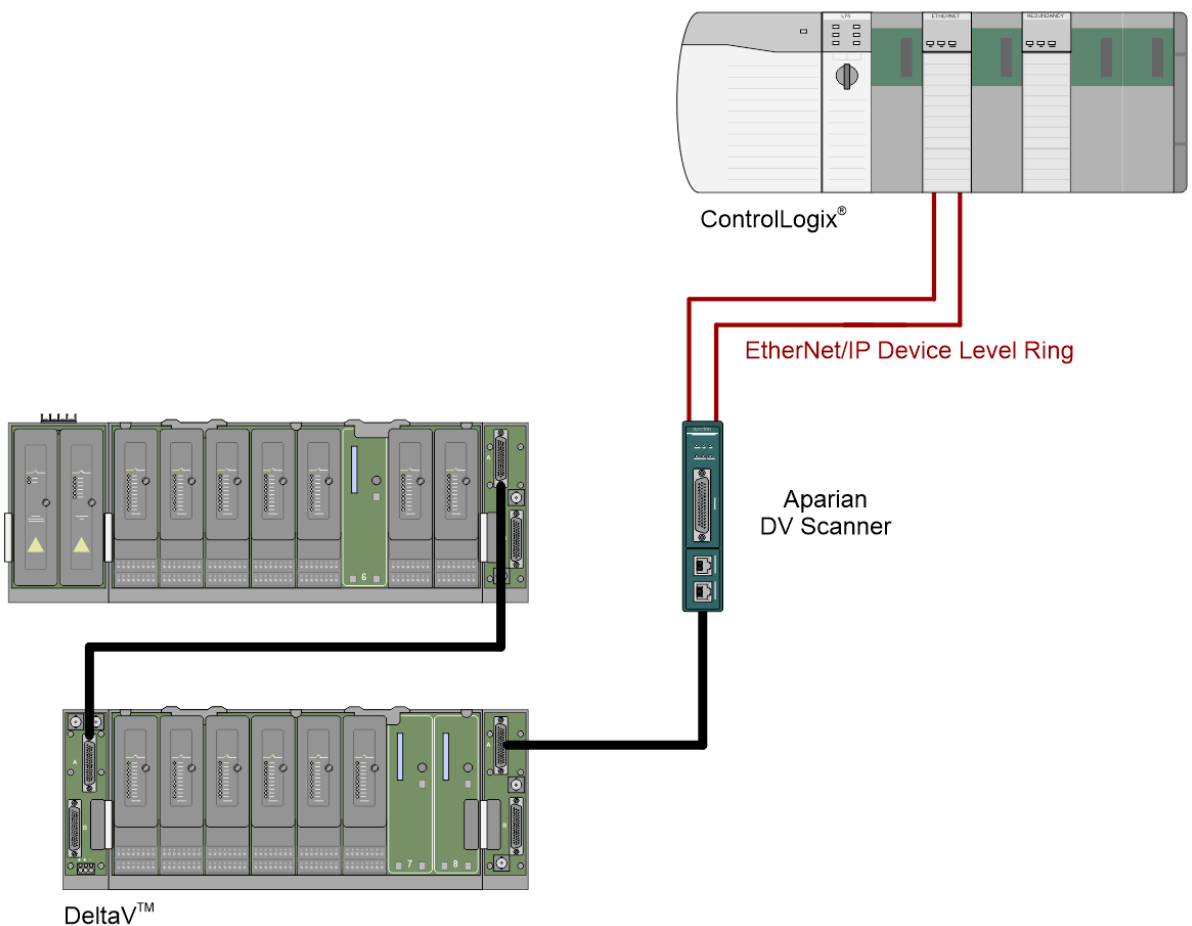


Figure 1.3 – Standalone mode, ring Ethernet, single Logix Controller

REDUNDANT MODE, LINEAR ETHERNET, SINGLE LOGIX CONTROLLER

In this architecture, two DV Scanners are connected to the DeltaV™ M-series system, with a linear Ethernet network connecting them a single Logix Controller.

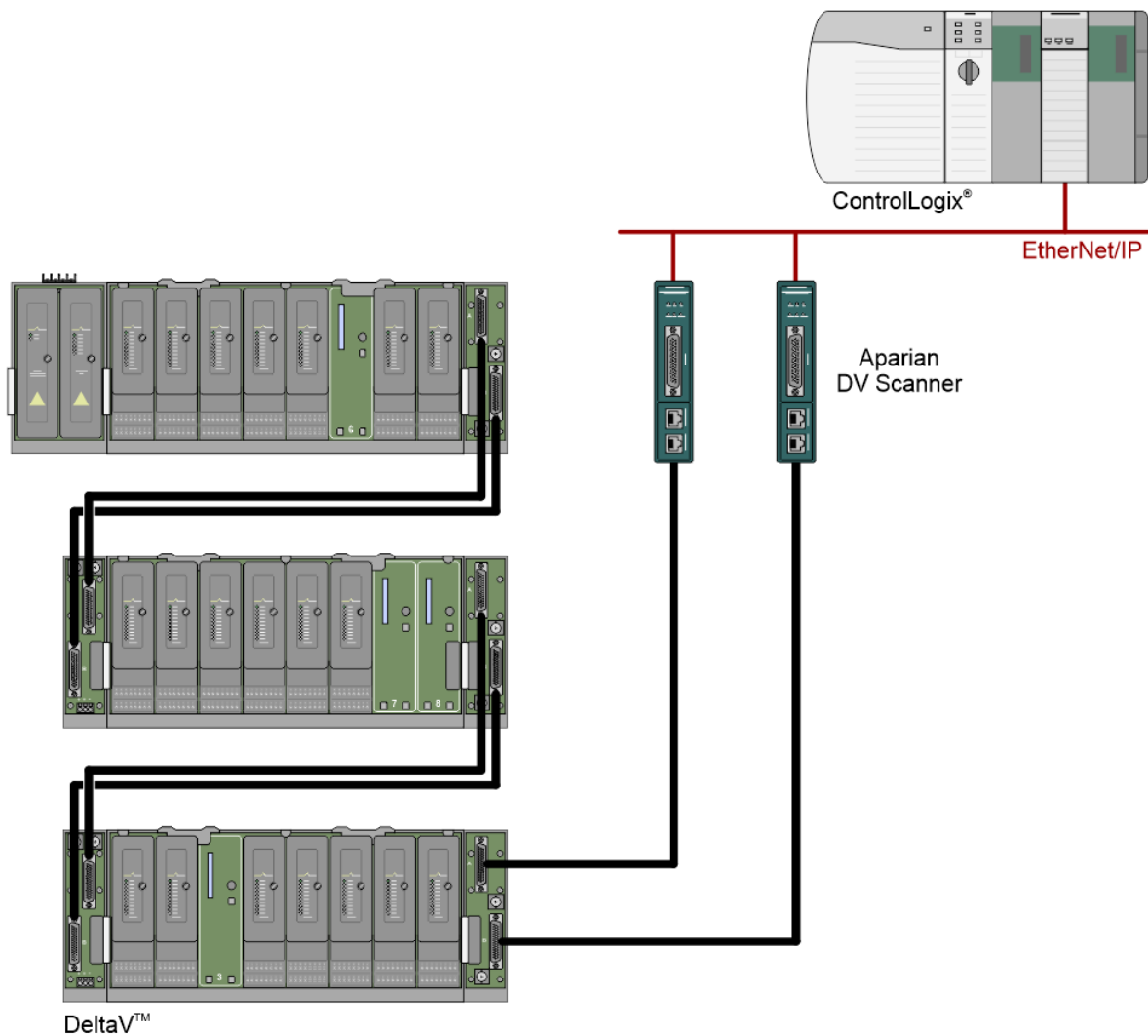


Figure 1.4 – Redundant mode, linear Ethernet, single Logix Controller

REDUNDANT MODE, RING ETHERNET, REDUNDANT LOGIX CONTROLLER

In this architecture, a redundant pair of DV Scanners are both connected to the DeltaV™ M-series system, with a DLR Ethernet network connecting to a redundant pair of Logix Controllers.

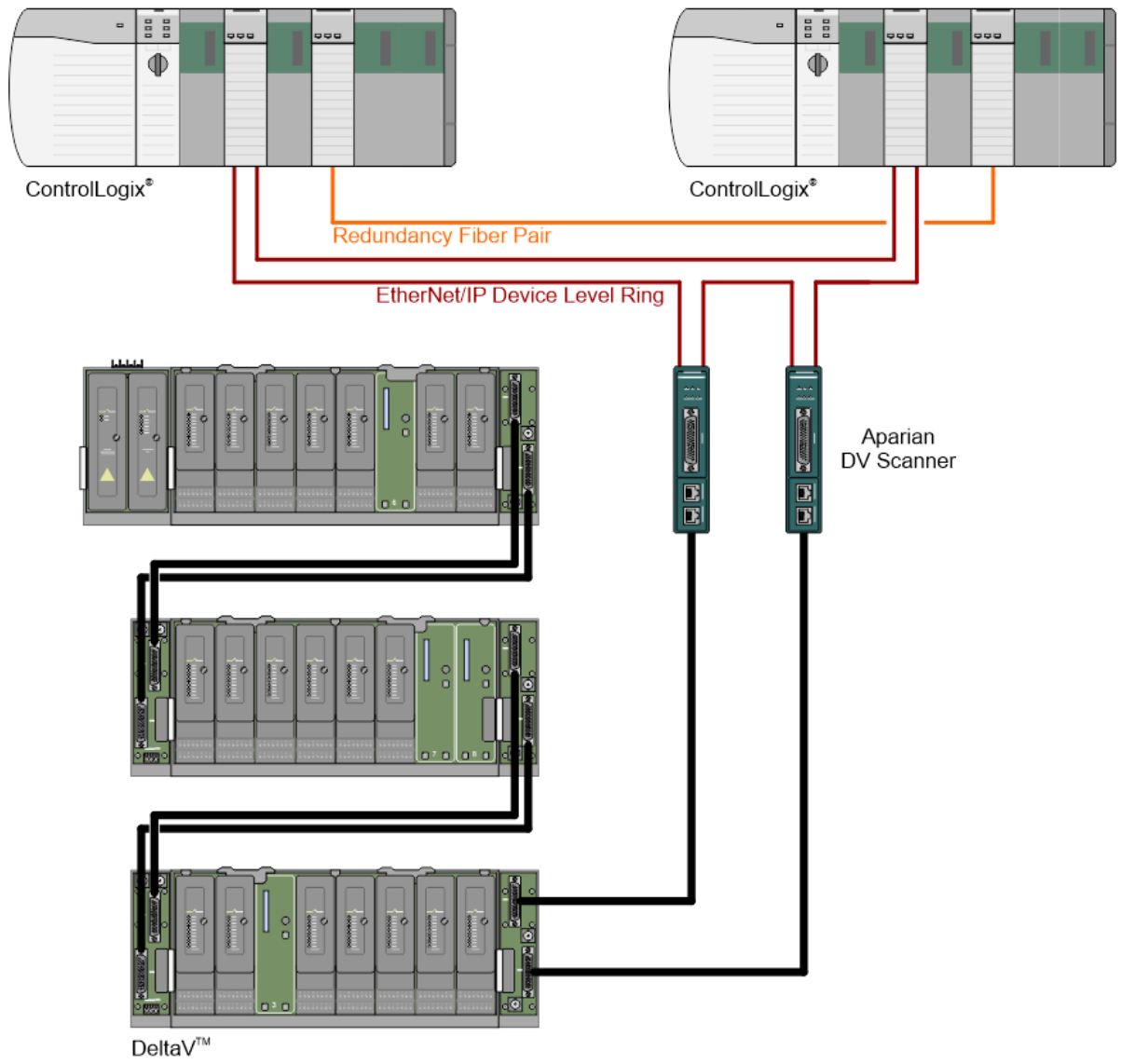


Figure 1.5 – Redundant mode, ring Ethernet, redundant Logix Controller

## 2. TECHNICAL SPECIFICATIONS

### 2.1. DIMENSIONS

Below are the DV Scanner enclosure dimensions and DIN rail dimensions. All dimensions are in millimeters.

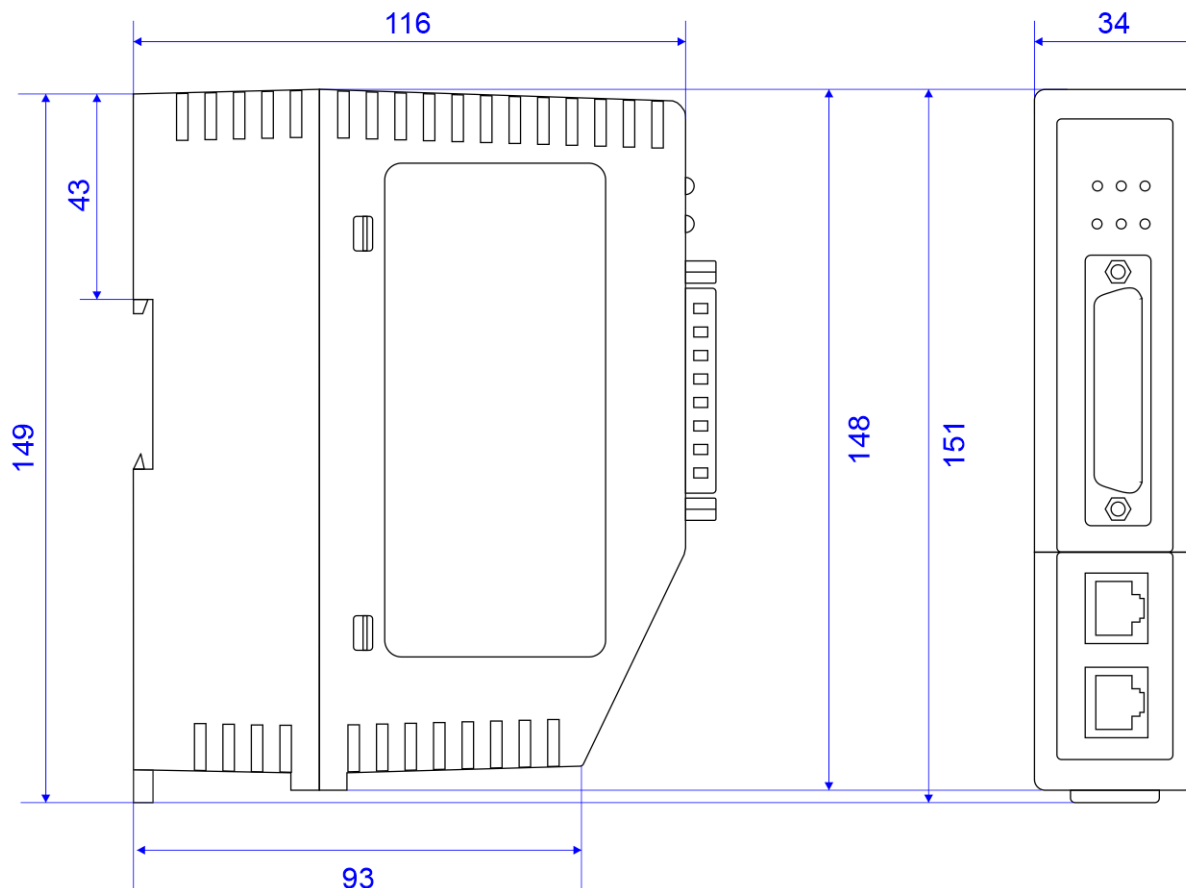


Figure 2.1 – DV Scanner Dimensions

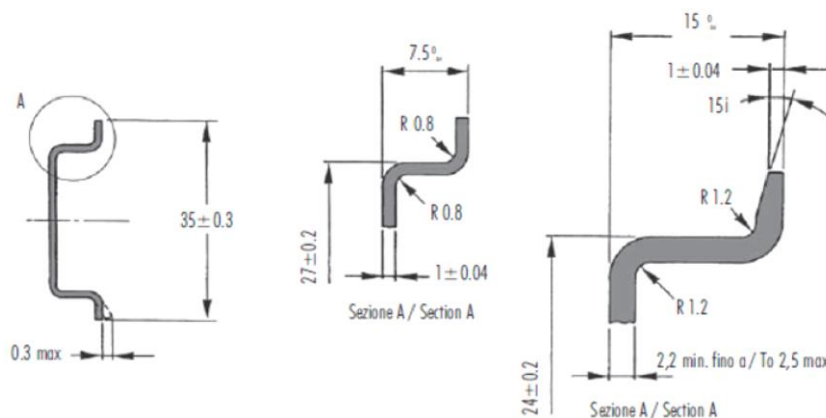


Figure 2.2 - Required DIN dimensions



## 2.2. ELECTRICAL

Specification	Rating
Power requirements	Input: 10 – 32V DC
Power consumption	1.5 W (Max.) Current: 140 mA @ 10 V Current: 60 mA @ 24 V
Connector	3-way terminal
Conductors	24 – 18 AWG
Enclosure rating	IP20, NEMA/UL Open Type
Temperature	-20 – 70 °C
Earth connection	Yes, terminal based
Emissions	IEC61000-6-4
ESD Immunity	EN 61000-4-2
Radiated RF Immunity	IEC 61000-4-3
EFT/B Immunity	EFT: IEC 61000-4-4
Surge Immunity	Surge: IEC 61000-4-5
Conducted RF Immunity	IEC 61000-4-6

Table 2.1 - Electrical specification

## 2.3. ENVIRONMENTAL

Specification	Rating
Mounting	External DIN Rail mounted.
Temperature	-20 – 70 °C
Air Quality	Non-corrosive

Table 2.2 - Environmental specification

## 2.4. ETHERNET

Specification	Rating
Connector	RJ45
Conductors	CAT5 STP/UTP
ARP connections	Max 40
TCP connections	Max 40
CIP connections	Max 10
Communication rate	10/100Mbps
Duplex mode	Full/Half
Auto-MDIX support	Yes
Embedded switch	2 x Ethernet ports Supports DLR (Device-Level-Ring) and Linear topology.

Table 2.3 - Ethernet specification

## 2.5. IO BUS (LOCALBUS)

Specification	Rating
IO Card Count	Max of 32
Cards Supported	<b>KJ3001X1-CA1</b> – 32 Channel, 24Vdc Dry Contact, Digital Input (DI) <b>KJ3204X1-BA1</b> – 32 Channel, 24Vdc High-Side, Series 2 Digital Output (DO) <b>KJ3222X1-BA1</b> – 8 Channel, 4-20mA HART, Series 2 Analog Input (AI) <b>KJ3221X1-BA1</b> – 8 Channel, 4-20mA HART, Series 2 Analog Output (AO) <b>KJ3001X1-BA1</b> – 8 Channel, 24Vdc Isolated, Digital Input (DI) <b>KJ3001X1-BG1</b> – 8 Channel, 24Vdc Isolated, Digital Output (DO) <b>KJ3002X1-BC1</b> – 8 Channel, 4-20mA, Analog Input (AI) <b>KJ3002X1-BB1</b> – 8 Channel, 4-20mA, Analog Output (AO)
Connection Port	DB44 D-Shell (male)
Connection Cable	Requires D-shell extender cable, either: <b>KJ4002X1-BF2</b> - Standard cable (1.2m, or <b>KJ4002X1-BF3</b> - Short cable (0.87m), or <b>KJ4002X1-BF4</b> - Extended cable (1.53m) <b>Note:</b> Cables are <b>not</b> supplied with the DV Scanner.
IO Carrier Extender	Requires a Right Carrier Extender: <b>KJ4001X1-NA1</b> - Right Carrier Extender (or similar) <b>Note:</b> Carrier Extenders are <b>not</b> supplied with the DV Scanner.

Table 2.4 – IO Bus specification

## 2.6. CERTIFICATIONS


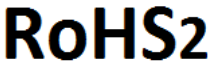
Certification	Mark
CE Mark	
RoHS2 Compliant	

Table 2.5 – Certifications