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## PRODUCT SPECIFICATION SHEET (AX-LUS-R41D)

# LANE USE SIGNALS, R4-1D



### Product Key Features

- Patent No. 2002301437
- Superior visibility to any other product on the market today
- Supports multiple protocols
- Supports multiple communication standards (from full wireless to hard wired)
- Supports multiple operational platforms
- 100,000 hours+ lifetime
- High reliability
- Use of only the highest quality LED's and componentry
- Meets Australian and International Standards
- Fully configurable for dimensions, and communication type
- Lightweight
- Mounted from top, side or bottom
- Easy servicing
- NATA rated and tested
- Australian designed and manufactured
- Fully interchangeable and configurable

## Overview

Axent's patented Lane Use Signals (LUS) utilise the latest in technology, quality and functionality for use on roadways across the world, especially on Motorways, Freeways, Tunnels and Toll based roads.

LUS are available in a number of configurations, ranging from the latest RGB (red, green, blue) light emitting diode (LED) technology for superior viewing, legibility and longevity, through to discrete and dedicated LED displays for more cost effective solutions where quantity, performance and ease of use are paramount. There is no substitute when it comes to Axent LUS.

Axent LUS are type approved across Australia and are by far the most common and reliable product on the market today. Axent LUS are designed and manufactured in Australia and use only the latest in componentry and manufacturing techniques.

The Axent LUS will suit all types of communication formats, whether it be an IP based system, GPRS, broadband or a hard wired RS based configuration as well as a host of protocols to suit (see detailed specifications).

## Generic Operational Technical Specifications

### Display Features

#### Available Sizes/Formats

- Any size width and height of LUS is available. Axent LUS are made up from interchangeable modules in varying formats
- Available display module formats vary on requirement
- Optional conspicuity devices
- Patented Axent annulus
- White display symbols and words
- Optional green arrow, red cross and amber circle
- The minimum viewing distance of Axent LUS is based on 25mm of display character height for every 15m of required viewing distance (normal standard for minimum legibility)

#### Colours

- Colors in accordance with photometric class designations (refer to EN 1296-1:2005)
- Full RGB of 3 and 4 LED's per pixel (1 or 2 red, 1 blue, 1 green) providing up to 16 million colors and shades
- Multi-color format of red, green and amber providing up to 256 colors and shades
- Single color format of red, amber, green or white.
- Single colors are available in customised wavelengths
- Amber conspicuity lamps/devices

#### Brightness

- Brightness is in accordance with photometric class designations (refer to EN 1296-1:2005)
- Min output of all LUS devices is >15,000cd/m<sup>2</sup>
- Automatic and manual dimming to 20 levels via LDR

#### LED Details

- Minimum lifetime of 100,000 continuous hours of operation
- MTBF is 0.01% of LED's at 50,000 hours continuous operation
- Display module MTTR of 15 minutes (not including site access and travel to/from)

#### Displays and Functions

- RGB displays output messages, logos, text, graphics
- Discrete displays output arrow, cross and circle (or as customised)
- Displays frames, messages (as per LUS)
- Displays numerous test patterns/diagnostics
- Scheduling of up to 60 months in advance

#### Display of Legends and Speeds

- Displays any speed from 10 to 200 in 10 increments (generally white)
- Arrows of varying shapes and sizes (see diagrams)
- Flash annulus, symbols and/or text

- Green/white/amber arrows and/or legends
- Flash sequences for annulus and conspicuity devices/lamps

### Communications

#### Types

- Wireless broadband
- 3G/Next G
- GPRS
- Serial (wired)
- Ethernet (normally serial over IP)
- WiFi
- ADSL
- Dialup (normally via PSTN)
- RF Wireless
- Relay input

#### Communications Ports

- Serial (DB and other)
- USB 2.0 and 1.1
- RJ45 for serial and Ethernet
- Local access ports at ground level
- All communication ports are secure and isolated
- And more...

### Protocols Supported

- LUS Protocol versions 1.15 through to 1.45c inclusive
- Protocol format is downward compatible
- RTA protocol TSI-SP-003
- RTA protocol TSI-SP-003 with Axent LUS RTA overlay
- Tx Ax 1.03.567b
- And more...

### Controller

#### General

- Axent roadside cabinet controller (if required)
- Minimum memory capacity in the sign is all possible messages (and new) plus 70% spare
- IP65 aluminium cabinet
- Operating temperatures of -40 deg. C to 75 deg. C.
- Wiring to AS3100 or greater
- Tx's to AS 61558 or as required
- Optional auxillary GPO's
- Manual override control switch

#### Reporting – Faults and Status

- Power status (mains/battery and level)
- Communications presence
- Polling
- Interlocking
- Processor response and performance
- LED usage and pixel detect features
- Door tampers
- LDR values and tolerances
- Internal web camera on/off
- Current display showing
- Temperature (internal and external)

## Generic Operational Technical Specifications (continued)

- User access reports
- Local access reports
- And much more...

### Electrical/Electronic

- Requires min 230AC supply +/- 10%, 50hz, or as specified
- Wiring to AS3100 or greater
- Internal protection from lighting, RF and other transients
- All conductors are high conductivity copper
- All conductors are colored for ease of identification
- All power supply circuits are tested for the isolation of electronic equipment as per Axent control standards including impedance tests, disturbance tests, power frequency tests, and short circuit tests
- All PCB's will be manufactured in accordance with specification and assembled on high quality, fire resistant, epoxy fibre glass laminate
- All Axent LUS wiring is colored coded
- Axent LUS incorporate safety designs including terminals and wiring carrying live voltages that are fully protected against accidental contact

### Certifications

- EMC compliant to AS4251.1 (NATA approved)
- Degree of protection is IP65 (or as required)
- NATA rated and tested for loads, bump, vibration, etc.
- Numerous Government certificates and type approvals

## General Specifications

### LUS Housing/Cabinet

#### Materials Used

- All materials are marine grade aluminium (unless otherwise specified)
- Finish is chromate treated prior to powder coat (color of choice – normally matt black)
- Rear doors/access via Southco locks or similar
- Access doors can be configured to open left or right/front
- External hinges, nuts, bolts, etc. are 316 stainless steel
- All structural fixings are hot dipped galvanised and corrosion resistant
- All fixings are vandal proof
- All materials and fixings are designed to withstand the effects of solar radiation
- Axent LUS suit the following environmental conditions:
  - Temperature - 40 to 75 deg C
  - Humidity - 0 to 95%
  - Carbon monoxide - 150ppm max

- Particulates - 1.5mg/m<sup>3</sup> max
- Vapours of sulphur combustion and hydrogen sulphide

### Facia

- Front window is anti-glare 4.5mm polycarbonate (GE)
- Front window is mounted to achieve maximum viewing angles (nominally 30 deg horizontal and 45 deg vertical)
- Front window is secured in a flat plane and designed to cater for thermal expansion and contraction without noticeable flex
- Polycarbonate is fixed to achieve IP65 (see certification)

### General

- Axent LUS are designed and constructed for service considering the atmosphere and site conditions prevalent for the project
- Axent LUS are resistant to wind forces as defined in the specification and relevant Australian Standards
- All Axent LUS are tested in accordance with the requirements of the Axent standards and any tests performed as required by the purchaser/user
- All Axent LUS are supplied with all test certificates, records, and QA documents as required
- All testing and pre-commissioning of all Axent equipment is included with the supply of all Axent LUS, including:
  - Insulation tests on all mains, control and signal cabling
  - Checking of terminations, tightness and wiring
  - Checking of all bolted connections
  - Dimming circuit tests
  - Tests on all automatic controls
  - Full display tests
  - Full operational tests
  - Setting of instrument, protective and timing devices
  - Full operational check of each circuit with no load
  - Testing the resistance of the earthing systems
- All Axent LUS are identified as per the design requirements set down by Axent and the relevant specifications
- All equipment, circuits and components will be standardised where possible to facilitate design, construction, testing, operation and maintenance
- Axent LUS are securely protected against damage during all handling operations, including shipping and installation

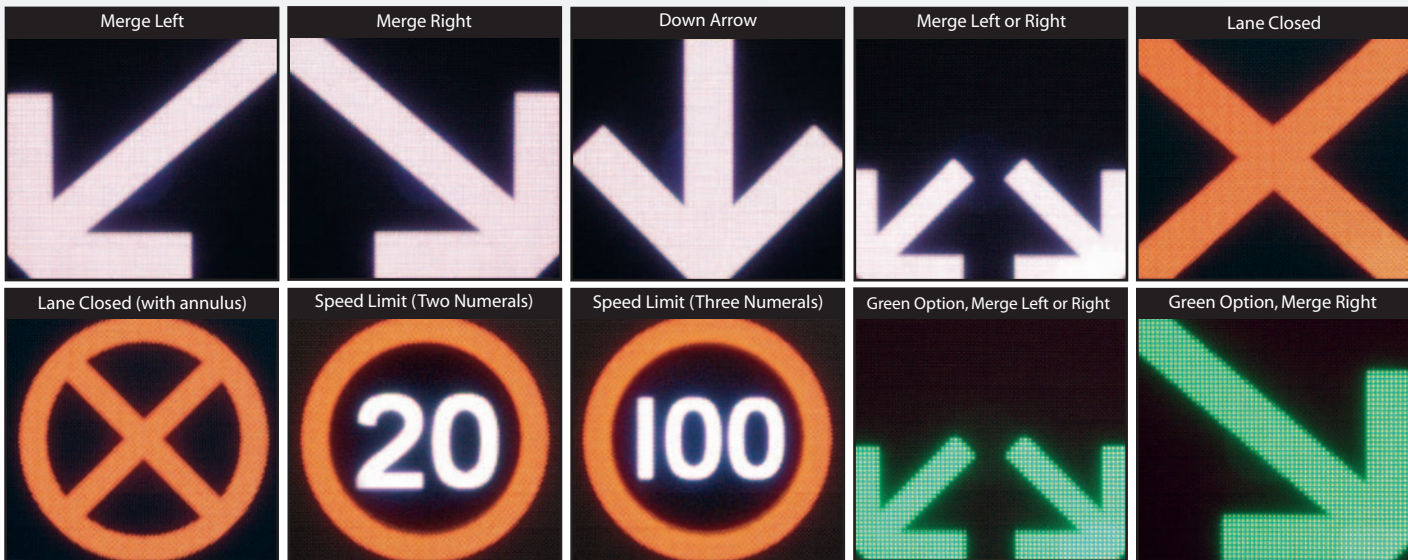
### Standards

All Axent LUS are built to the following standards:

- EMC compliances of AS/NZS 4251.1-1999 and 4251.2 1999
- TCS 037 – VicRoads Speed Limit Signs
- AS3100 – Electrical Equipment standards
- AS/NZS 3000 – Wiring
- AS1742, 1743, 1744 0 Traffic devices, road signs
- AS2578 – Traffic Controllers

## LUS R4-1D, Dimensions & Details

Sign Type	Height	Width	Approx Weight
LUS R4-1D	1800mm	1300mm	38kg



**\*Typical LUS R4-1D Shown**

