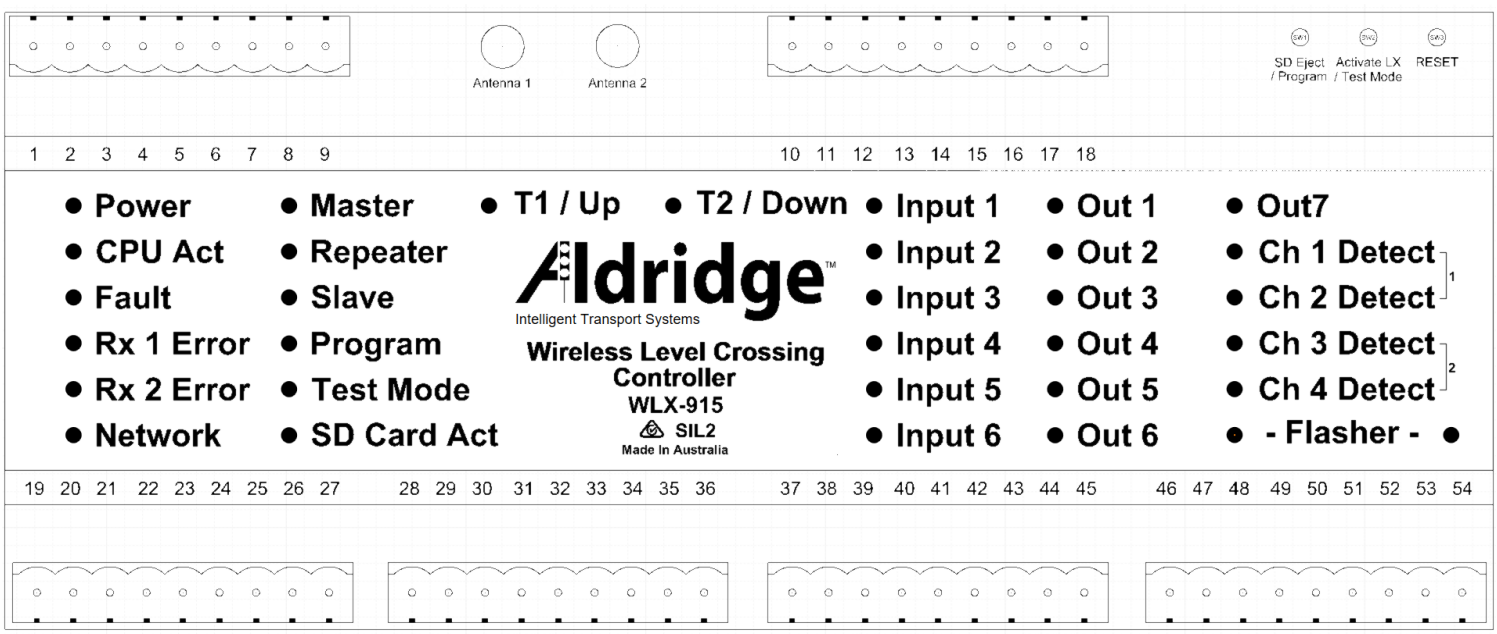
Aldridge™
Intelligent Transport Systems

WLX Wireless Level Crossing

Wireless Level Crossing Controller (WLXC-915)



WLX.
Generation next, now.

Email: sales@railsignal.com
Call: +61 2 9807 7777
Fax: +62 2 9807 7477
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Aldridge ITS Pty Ltd
44 Adderley Street East,
Lidcombe. NSW 2141.
Australia.

Features

- SIL3 compliant Controller, suitable for rail level crossings, detection, control and warning
- Multiple Communications Interfaces including R232, RS485, CAN & low power secure radio
- Data Logging facility records all system condition, events and all interactions on local SD Card and remote web server
- Remote access with back to base monitoring and configuration via web server
- Local Console serial port Interface for maintenance activities
- Controller can be configured as a Master Access Point (MAP), Slave Access Point (SAP), Wireless Slave Controller (WSC) or Wireless Wheel Detector (WWD)
- 100W Class D Audio Warning System
- Flexible configuration of Audio broadcasts and warnings
- 4-Channel Axel Counter (inductive sensing)
- 1 or 2 track operation
- 2-Inputs for external train sensors, flexible configuration
- 2-Auxilary inputs, flexible configuration
- Inputs and Outputs dedicated to drive level crossing, warning elements, bell and boom gates
- Optional dimming of visual elements for night-time operation
- Power Monitoring on visual elements for verification of operation
- Two channel diversity Radio uses AES128 encrypted protocol, forward error correction and low power frequency-hopping spread spectrum technology
- Wireless operation line of site up to 1Km between elements
- Support for multiple, complex level, crossing layouts from one master controller
- Fault detection and fail-safe design immediately detects any failures and raises alarms
- Local test mode operation and wide range of self-diagnostic features
- Low Power operation, operated from Solar Panels and 12V battery
- compliant with AS4268-2003 Radio Equipment and Systems
- compliant with AS61000.6.2.2006 (Electromagnetic Compatibility requirements)

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Certified System
Quality
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Specifications

Processors	TMS570LS1115 CY8C52LP67	Automotive grade microcontroller (ISO 26262 ASIL D) certified for Safety-Critical Applications (IEC 61508 SIL 3) Industrial grade micro controller for audio generation, communications and independent verifications of I/O states
Power Supply	System Audio Monitoring Monitoring TPS65381-Q1	9-24Vdc input, typical 12Vdc @ 150mA 12-24Vdc input, typical 12Vdc @ 1A, up to 100W when audio output is operating Solar Panel Voltage x2, nominal 12Vdc input Internal Power Supply Rails Multi-Rail Automotive Power Supply (AEC-Q100 qualified) for micro controllers in Safety-Critical Applications.
Sensors	Temperature Magnetometer (3x) Accelerometer (3x) Inductive (4x)	Digital +- 0.5 degrees Celsius, 0.0625degrees Celsius resolution 3-axis 16-bit ADC resolution, 400Hz 3-axis 14-bit ADC resolution, 400Hz 4-channel, 28-bit Inductance-to-Digital Converter (analogue wheel sensor)
Audio	DAC Amplifier Warning Indicator	16-bit Digital – Analogue audio Converter 4-channel 25W class D digital power amplifier 3.3Khz Piezo Indicator, 80db output
Radio Communications	Socket Module (2x)	900Mhz ISM, Digital Spread Spectrum, 20 channel Frequency Hopping, Forward Error Correction (FEC), AES128 security encryption, dual antenna diversity, 125Kbps, up to 1000mW output power
	Compliance Compliance	EN50121-4:2016 EN61000-6-4:2007
Communications Interfaces	COM1 COM2 COM3 CAN1 CAN2	RS232, 115,200, N, 8, 1, (Master, back to base monitoring & control) RS232, 115,200, N, 8, 1, Local Console / Monitoring Port RS232/RS485, 115,200, N, 8, 1, external device interface, sensors or monitoring Controller Area Network bus Controller Area Network bus

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User Input Keys	RESET	Master System Reset
	Activate / Test Mode SD Card Eject / Program	- activate Warning System for testing (press once) - Enter Test Mode (press twice rapidly) - Safely Eject SD Card by halting writes to card (press once) - Update Firmware in controller from SD Card (press twice rapidly)
Inputs	Input 1 Input 2 Input 3 Input 4 Input 5 Input 6 Input 7 Input 8	Active low input for External Train detection, (max 24Vdc) Active low input for External Train detection, (max 24Vdc) Active low input for Boom Gate Down position / Boom Up, (max 24Vdc) Active low input for Boom Gate Up position, (max 24Vdc) Active low input for Auxiliary 1 Input, (max 24Vdc) Active low input for Auxiliary 2 Input, (max 24Vdc) Active low input for Door Alarm Active low input for Activating Level Crossing
Outputs	Output 1 Output 2 Output 3 Output 4 Output 5 Output 6 Output 7 Out Signal 1-2 (x2) Audio CH 1-4 (x4)	System Alive Output (0.5Hz toggle), maximum *6A sink Sensor Detect Output, active low when train detected), maximum *6A sink Level Crossing Activated, active low when warning system activated, maximum *6A sink Boom Gate Open / Close, active low when closed, maximum *6A sink Boom Gate Open, active low when gate is open, maximum *6A sink Auxiliary 1, active low when activated, maximum *6A sink Auxiliary 2, active low when activated, maximum *6A sink Warning Lantern, active high, 12Vdc output, maximum *6A source, current monitored 4x audio output channels @ 25W ea *Note maximum total system current is limited to 17A with two batteries connected*
Media	Micro SD Card	FAT32 file system compatible with PC, used for data logging, firmware updates and data storage of audio playback file (wav)
Clock	Real Time Clock	Battery backup RTC
Protection	Power Supply	Overvoltage, Transient Voltage Suppressors 36V 600W
	Inputs 1 - 8	Electrostatic discharge protection (ESD)
	COM1-3	ESD Protection Exceeds ±15 kV Using Human-Body Model
	CAN	ESD protection up to 23 kV IEC 61000-4-2, level 4 (ESD) IEC 61000-4-5 (surge)
	Outputs Signal 1-2	Short circuit, overload, Electrostatic discharge protection (ESD)

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LED Indicators	POWER	LED used to indicate presence of 12Vdc
	CPU Activity	LED used to indicate CPU activity / health
	Fault	LED used to indicate a Fault has been detected
	RX Error 1-2 (x2)	Led used to indicate when Radio receive data packet is lost
	Network	Led used to indicate (blink) when Radio is connected to network
	Master	LED used to indicate controller is configured as the Master
	Repeater	LED used to indicate controller is configured as a Repeater
	Slave	LED used to indicate controller is configured as a Slave
	Program	LED used to indicate Firmware Update in progress
	Test Mode	LED used to indicate system in Test Mode and simulating LX Activation and detection
	SD Card Act	LED used to indicate SD Card access (r/w)
	T1 / Up	LED Used to indicate either Track 1 train presence or Up detection condition
	T2 / Down	LED Used to indicate either Track 2 train presence or Down detection condition
	Inputs 1-6 (x6)	LED used to indicate input state (active when input is low)
	Outputs 1-7 (x7)	LED used to indicate output state (active when output is low)
	Ch 1 Detect	LED to indicate presence of Wheel on Detector 1 (Inductive)
	Ch 2 Detect	LED to indicate presence of Wheel on Detector 2 (Inductive)
	Ch 3 Detect	LED to indicate presence of Wheel on Detector 3 (Inductive)
	Ch 4 Detect	LED to indicate presence of Wheel on Detector 4 (Inductive)
	Flasher 1-2 (x2)	LED used to indicate Warning Lantern output is active (+12Vdc)
	TX Data (x4)	LED used to indicate Transmitting Data on COM1, COM2
	RX Data (x4)	LED used to indicate Receiving Data on COM1, COM2
	Eject (located under cover)	LED used to indicate that it is safe to remove SD Card
Expansion	Radio Modem Socket (x2)	Interface sockets that can accommodate 433Mhz, 900Mhz, 2.4GHz ISM radio modules & interface expansion port
Environment	Temperature	-40 °C ~ 85 °C and 60 °C @ 95% RH Non-Condensing
Firmware		Can be updated via remote download or SD Card
Physical Characteristics	Dimensions	212mm x 90mm x 60mm
	Weight	0.5kg
	Mounting	DIN

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