

RIO2011 Standard Remote I/O Expansion Module for use with the PC2 and PC3 range of Programmable Controllers

EN 50155 Compliant Remote I/O Expansion Module for Railway Applications on Rail Vehicles

The RIO2011 has been proven to survive the rigors required for Railway Vehicles including:

- Electrical surges and transients of EN 50155 / EN 50121-3-2.
- Shock and vibration in accordance with EN 50155 / EN 61373.
- Operating temperature range of -40°C to +70°C and relative humidity 5% to 95% non-condensing.

Features and Benefits

- One Isolated RS485 port for connection with the Master Controller
- 10 Digital Inputs. 5mA @ 24VDC (Ch1... Ch10)
- 6 Digital Inputs. Configured as: 1.5mA @ 5VDC (Ch11... Ch16). Suitable for use with Dallas DS1820 Digital Temperature sensors
- 16 Digital Outputs. 24VDC 0.5A with individual short circuit protection with automatic reset
- 4 Analogue Inputs. NTC Thermistor (Ch1... Ch4)
- Suitable for nominal battery voltages of 24VDC in accordance with EN 50155
- Operating temperature range: -40°C to +70°C (+85°C for 10 minutes)
- Conformal Coating
- EN 50155 Compliant

Applications

- Passenger Vehicle Condition Based Monitoring
- Heating Ventilation Air Conditioning (HVAC) Control Systems
- Onboard controls for fire protection, power packs and doors
- Locomotive Performance and Condition Monitoring

Ordering Information

- Part Number: 070-0590-3



RIO2011 EXPANSION

Specification

Description	RIO201 I Standard Remote I/O Expansion Module for use with the PC2 and PC3 range of Programmable Controllers	
Environmental	Operating Temperature Range: -40°C to +70°C (EN50155 Class OT4)	
	Switch-on Extended Operating Temperature Range: To +85°C (EN50155 Class ST1) for 10 min	
	Storage Temperature Range: -40°C to +85°C	
	Relative Humidity: 5% to 95% non-condensing	
Shock and Vibration: EN 61373:2010 Category I – Class B		
Power Supply	Nominal Input Voltage	24 VDC
	Minimum Input Voltage	14 VDC (EN50155 Class C1)
	Maximum Input Voltage	36 VDC
	Nominal Input Current	150 mA
LED's	One (1) Power LED	
	One (1) Communications LED	
Watchdog	Independent Watchdog Timer	
Digital Inputs	Ten (10) digital inputs 5mA @ 24VDC. Current sourcing (low-side switching) (Ch1... Ch10)	
	Six (6) digital inputs. Current sourcing (low-side switching) Configured as: 1.5mA @ 5VDC (Ch1... Ch16). Suitable for use with Dallas DS1820 Digital Temperature sensors	
Digital Outputs	Sixteen (16) digital outputs 24VDC 0.5A. Current sinking (low-side switching). Short circuit protection with automatic reset.	
Analogue Inputs	Four (4) analogue inputs 12 bit resolution. Configured as: NTC Thermistor (Ch1... Ch4)	
Communication Ports	RS485 isolated port for connection with the Master Controller	Three-wire RS485+, RS485-, GND
Mechanical	Product dimensions: 178mm x 172mm x 41mm	
Enclosure Material	Aluminium with Anodised Screen Printed Lid	
Ingress Protection (IP) Rating	IP20 (in accordance with EN 60529)	
Weight	0.6 kg	
MTBF	1,341,555 hrs @ 40°C	Standard: Telcordia SR-332 Issue 2 – Parts Count Method
Terminations	Power and I/O: 5.08mm pitch Plug / Socket Connectors	
	RS485 Plug / Socket: Molex Mini-Fit Jr 4.2mm pitch Connector	
Standards	EN 50155:2017	Railway Applications – Electronic Equipment used on Rolling Stock
	EN 50121-3-2:2016	Railway Applications – Electromagnetic Compatibility Part 3-2: Rolling Stock – Apparatus
	EN 61373:2010	Railway Applications Rolling Stock Equipment Shock and Vibration Tests
	EN 45545-2:2013+A1:2015	Railway Applications – Fire Protection for Railway Vehicles Part 2: Requirements for Fire Behaviour of Materials and Components
Materials Compliance	REACH, ROHS, WEEE, EN45545-2	

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Contact us:

Australia

Phone +61 2 9966 9424
sales-aus@duagon.com

China

Phone +86 159 0077 2985
sales-chn@duagon.com

France

Phone +33 450 955 312
sales-fra@duagon.com

Germany

Phone +49 991 99 335 0
sales-deu@duagon.com

India

Phone +91 11 41 61 12 48
sales-ind@duagon.com

Switzerland (HQ)

Phone +41 44 743 73 00
sales@duagon.com

USA

Phone +1 215 542 9575
sales-usa@duagon.com


www.duagon.com