

General Features

The i211 is an intelligent high precision analog interface module for the ionia™ system. The module has 12 analog inputs grouped into four galvanically isolated sections, each with its own reference ground.

Each group can be individually selected as voltage, resistive or current measurement inputs. Each analog input has a maximum resolution of 24 bits. The sampling rate is 200 Hz per input.

All configuration registers and the input values are accessible by a fast and secure point to point connection from the central unit.

A built-in supervisory mechanism called «Condition Monitoring» can detect and report any overtemperature usage as well as selected user-defined values.

Configuring the i211 is done easily and time saving by using one of the five methods defined by IEC 61131.

The i211 is designed for harsh rolling stock environments and is fully compliant to EN 50155.

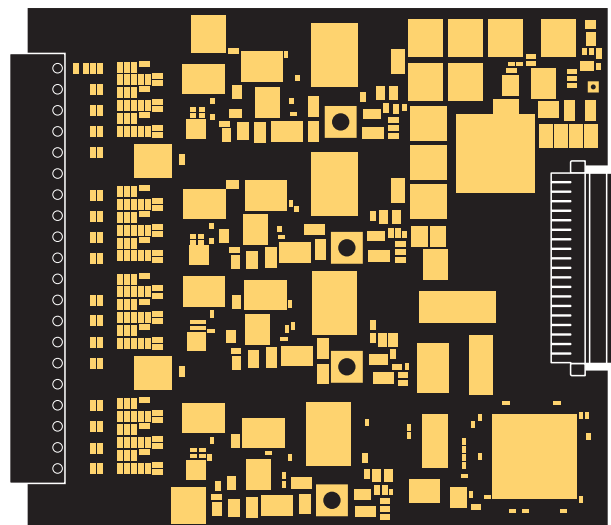
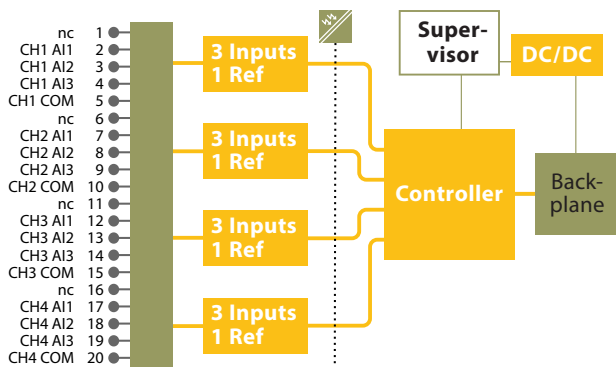
Key Benefits

- Status LEDs on each analog input for easy diagnostics
- Galvanically separated groups for independent measurements
- «Condition Monitoring» sends detailed diagnostics to the central unit
- IEC 61131 for fast and easy programming
- No capacitor replacement necessary
- Complies to EN 50155, EN 50121, IEC 61373

Application Examples

- Voltage monitoring
- Current measurements
- Resistive measurements
- Temperature measurement with PT1000/PT100
- Tachometer measurement
- Humidity sensor
- Ambient light measurement
- Battery monitoring

i211 Hardware Architecture



Life Cycle Cost

The i211 has been strictly designed without electrolytic capacitors and without any opto-coupler to avoid service cost for changing capacitors and to reduce the life cycle cost of the system. The use of an FPGA with included duagon soft-IP min-

imizes the risk and cost in case of component obsolescence. Any firmware upgrade can be done via the central unit, without the need of removing the device.

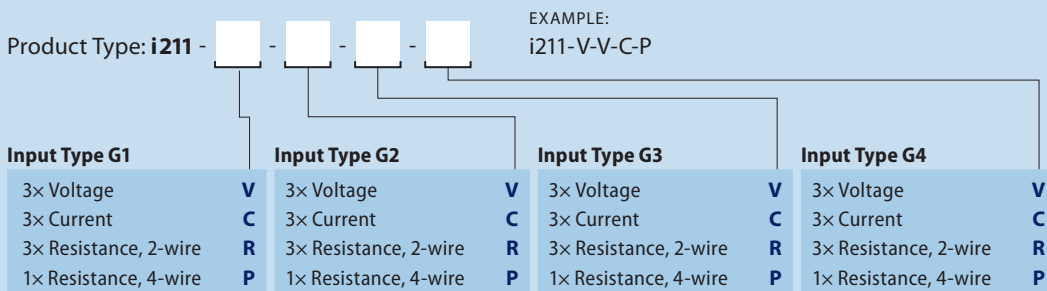
Technical Data

Analog Inputs	<ul style="list-style-type: none"> – 12 analog inputs divided into four groups – Each group has there own reference ground – 500Vac galvanic isolation between groups – Each group selectable prior to ordering as <ul style="list-style-type: none"> – Voltage input: ±12 Vdc, input resistance: 50 kΩ – Current loop: ±50 mA, input impedance: 120Ω – Resistive measurement: 10Ω to 10 kΩ – Kelvin (4-wire) resistance measurement (1x per group) 10Ω to 10 kΩ can be used for PT100/PT1000 elemets – Absolute precision: (– 40 °C to + 85 °C) 0.2% of full scale – Measurement resolution: 24 bits – Conversion rate of each specific input: 200 Hz
Configuration	– Programmable by the central unit using IEC 61131 compliant executor and IDE supporting LD, FBD, ST, IL and SFC
Security / Watchdog	<ul style="list-style-type: none"> – External supervisor temperature monitoring → «Condition Monitoring» – Communication Link with watchdog supervision
Backplane Communication	<ul style="list-style-type: none"> – 100 Mbit duagon serial star slave – Secure communication protocol – Configurable status scan cycle time minimum: 1 ms

Diagnostic/ Service	<ul style="list-style-type: none"> – Configurable diagnostic LEDs for each analog input indicating the status or a user-defined functionality – LEDs for visual status information (power on, running, communicating, failure, I/O, ...) – Diagnostic information readable through the central unit's service interfaces (see i101/i102/i103 for further information about these possibilities)
Power Consumption	<ul style="list-style-type: none"> – $P_{max} < 2 W$ – Fully powered via backplane (no external power supply needed) – Interruption Class S2 with ceramic capacitors
Operating Conditions	<ul style="list-style-type: none"> – Ambient temperature: – 40 to + 85 °C (EN 50155) – Relative humidity: 75%, max 95% for 30 days per year (conformal coating) EN 60068 – Shock and vibration: According to IEC 61373 category 1, class B – EMI: According to EN 50121 and EN 50155
Dimensions/ Weight	<ul style="list-style-type: none"> – 3TE × 92 × 86 mm, fitting the ionia™ housing – < 100 g
Cabling	<ul style="list-style-type: none"> – Connector type: FMC 1,5/ 20-STF-3,5 or similar – Wire cross section: 0.2mm² to 1.5mm²
Environment	– Fully compliant with RoHS and REACH

d-006355-015035

Order Code and HW Options



Related Documents

Data Sheet i211  d-006660-nnnnnn.pdf
available at www.duagon.com

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