# INTELART

Robust in Automation

# IM210 V1.0

Digital Input Module

Technical Manual

# INTELART

## Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

| DANGER |
|---|
| Indicates that death or severe personal injury will result if proper precautions are not taken. |

| WARNING |
|---|
| Indicates that death or severe personal injury may result if proper precautions are not taken. |

| NOTICE |
|---|
| Indicates that property damage can result if proper precautions are not taken. |

## Qualified personnel

The product/system described in this documentation may be operated only by personnel qualified for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions.

Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems

# Contents

# 1 Technical Specifications

## 1.1 Hardware Parameters

The following table specifies the hardware information of the module.

*Table 1 Hardware parameters*

| | | |
|---|---|---|
| **Digital Inputs** | Inputs count | 16 |
| | Type of digital input | Isolated transistor (both sinking and sourcing) |
| | Number of inputs group | 4 |
| | Group 0 distribution | COM0, DI00, DI01, DI02, DI03 |
| | Group 1 distribution | COM1, DI04, DI05, DI06, DI07 |
| | Group 2 distribution | COM2, DI08, DI09, DI10, DI11 |
| | Group 3 distribution | COM3, DI12, DI13, DI14, DI15 |
| | Type of input voltage | DC |
| | Rated voltage | 24 V |
| | For signal "0" | -30 to 11 V |
| | For signal "1" | 12 to 30 V |
| | Power consumption for signal "1" | 72 mW |
| | Configurable input delay | Yes. 1, 2.5, 7, 12, 20 ms |
| | Input impedance | 8 kΩ |
| | Response time from "0" to "1" | 20 µs |
| | Response time from "1" to "0" | 40 µs |
| | Alternate Functions | No |
| | Stop Actions | No |
| **Dimensions** | Width | 30 mm |
| | Height | 102 mm |
| | Depth | 58 mm |
| **Ambient Conditions** | Storage temperature | -15 to 75 ˚C |
| | Operating temperature | 0 to 55 ˚C |
| | Relative Humidity | Max 90 %, No Condensation |
| **Miscellaneous** | Weight | Approx. 90 g |
| | Power LED | Yes. Green LED |
| | Diagnostic LED | Yes. Yellow LED |

# 2 Configurations

## 2.1 Digital Inputs

All digital inputs have a configuration for the input delay. The default value of the input delay is 0ms. The input delay is applicable to eliminate the bouncing effect of a mechanical switch.
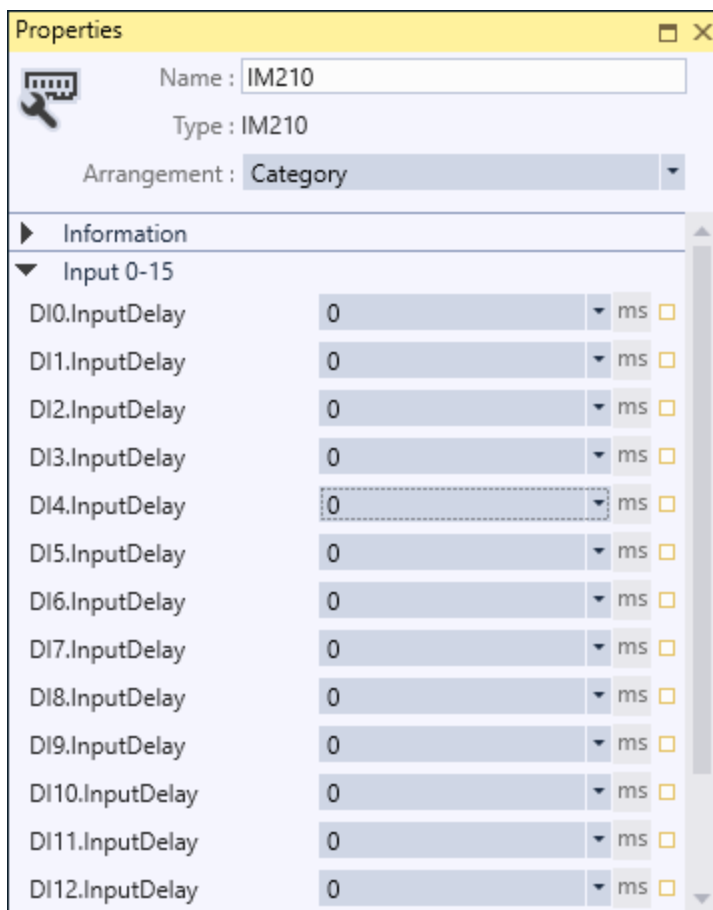


*Figure 1 Properties of digital inputs*

The inputs of the module have no alternate function.

# 3 Address Space

The value of input channels and output channels and some configurations will be accessible via an address space. There are bunch of predefined mapped tags in order to read or write a value in the address space. The following table illustrates the type and purpose of each mapped tag.

*Table 2 Mapped tags of parameters in the address space*

| Category | Name | Data Type | Address | Function |
|---|---|---|---|---|
| **Input Space (I)** | | | | |
| **Digital Inputs** | DI00 ⋮ DI07 | BOOL | %I0.0 ⋮ %I0.7 | Gets the value of channel |
| | DI00_07 | BYTE | %IB0 | A wrapper to get first 8 digital input channel values as a byte |
| | DI08 ⋮ DI15 | BOOL | %I1.0 ⋮ %I1.7 | Gets the value of channel |
| | DI08_15 | BYTE | %IB1 | A wrapper to get second 8 digital input channel values as a byte |
| | DI00_15 | WORD | %ID0 | A wrapper to get all digital input channel values as a byte |
| **Diagnose** | DiagInfo | WORD | %IW4 | Gets all diagnostic information when the module is in RUN mode. • Bit0- Bit15: Reserved |

# 4 Diagnostic and Wiring

The module has 2 LEDs indicating the status of module. The following table explains the combination of these two LEDs state.

*Table 3 Combination of "POWER" and "MAINT" LEDs*

| LED | | Indicating | Solution |
|---|---|---|---|
| POWER | MAINT | | |
| □<br>Off | □<br>Off | Power missing or hardware failure. | • Check the main power supply<br>• Verify that the module is installed correctly |
| ■<br>On | ■<br>On | The module is configured and is in RUN mode. | -- |
| ■<br>On | ☀<br>Flashes | Indicates an error (communication error, configuration error etc.) | • Verify that the module is installed correctly |

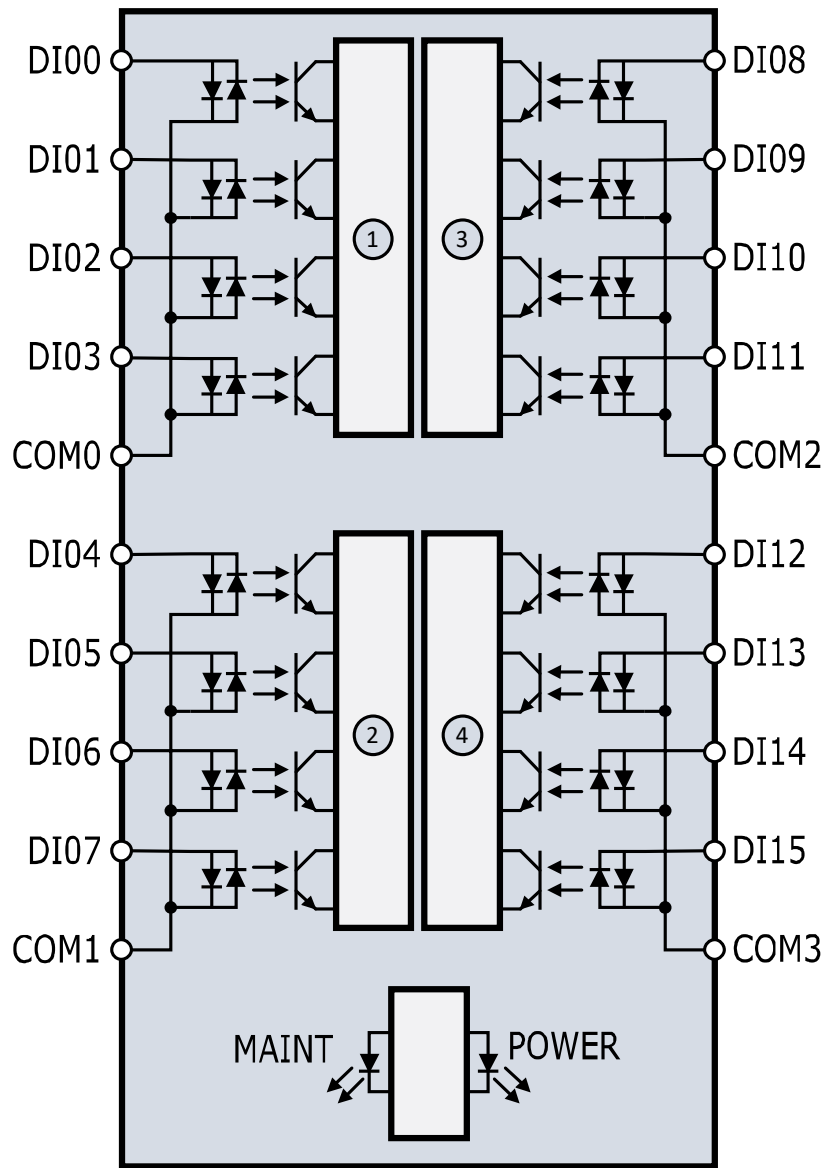The following block diagram shows you information about wiring of the module.



*Figure 2 Wiring diagram and terminal assignments*

| | | | |
|---|---|---|---|
| ① | Groups of digital inputs | **POWER**: | Power LED |
| ② | Group1 of digital inputs | **MAINT**: | Maintenance LED |
| ③ | Group2 of digital inputs | **DIx**: | Digital Input terminal |
| ④ | Group3 of digital inputs | **COMx**: | Common terminal of a DI group |

# 5 Dimensional drawing

The dimensions of the module are available in this section. For install the module and its main device follow the below dimensional drawing.