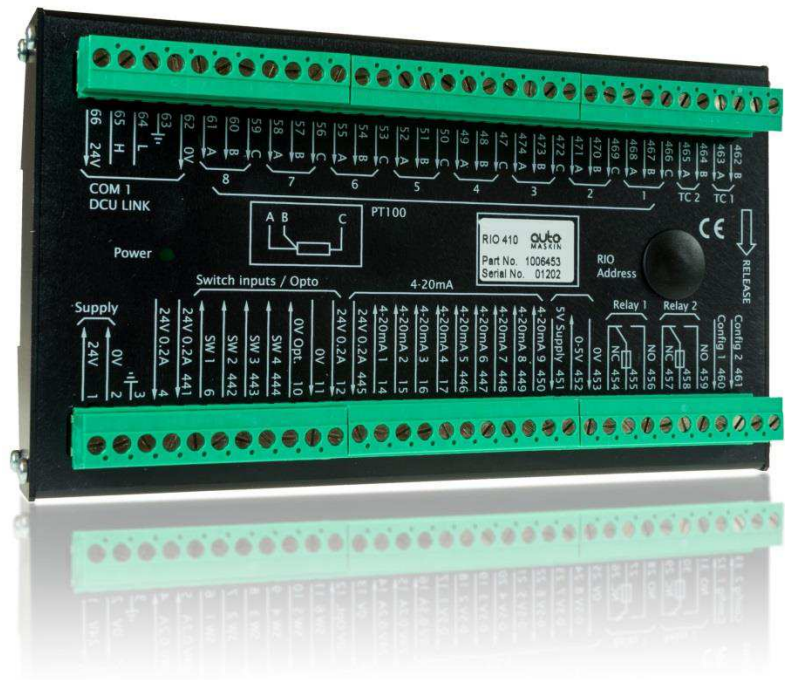


Quick Installation Guide

marine-pro

RIO 410
RIO 210
I/O Expansion Unit



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Table of Content

Document Information	2
Ordering Information	3
About this manual	3
Responsibilities	4
Installation of RIO 410/210	5
Operating Conditions.....	5
Wiring	5
Power Supply	5
I/O Connections	5
Communication	6
Configuration	8
Schematic.....	9

Document Information

Valid Versions

This Quick Installation Guide is valid for the following and higher panel firmware releases.

Panel	Firmware	Release
DCU 410	1.4 →	October 2009
DCU 408	1.4 →	October 2009
DCU 210	1.9 →	December 2010
DCU 208	1.9 →	December 2010

Manual Revisions

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Ordering Information

The following parts are available in the MarinePro range

Item	Part #
DCU 410 – Engine Control Unit	1006450
DCU 408 – Engine Control Unit	1006455
RIO 410 – I/O Expansion Unit	1006453
RIO 210 – I/O Expansion Unit	1006462
RIO 425 – Generator Interface Unit	1006409
SDU 410 – Safety Unit	1006451
RP 410 – Remote Panel Unit	1006452
MK-14 – Relay Expansion	1121341
DCU 210 – Engine Control Unit	1006481
DCU 208 – Engine Control Unit	1006480
DMU 206 – Engine J1939 CANbus Reader	1006483
RP 210 – Remote Panel Unit	1006482
IP Camera	1121258

About this manual

This manual has been published primarily for professionals and qualified personnel. The user of this material is assumed to have basic knowledge in marine systems, and must be able to carry out related electrical work.

Work on the low-voltage circuit should only be carried out by qualified and experienced personnel. Installation or work on the shore power equipment *must only* be carried out by electricians authorized to work with such installations.

Responsibilities

It is the *sole responsibility of the installer* to ensure that the installation work is carried out in a satisfactorily manner, that it is operationally in good order, that the approved material and accessories are used and that the installation meet all applicable rules and regulations.

Note! Auto-Maskin continuously upgrades its products and reserves the right to make changes and improvements without prior notice.

All information in this manual is based upon information at the time of printing.

For updated information, please contact your local distributor.

Installation of RIO 410/210

Operating Conditions

Operating Temperature:	-10 °C/ +50 °C
Relative Humidity:	5 to 95 % RH (without condensation)
Max distance to DCU:	1000m

Wiring

The RIO has these main connections

- Power Supply
- I/O Connections
- Communication

Power Supply

On the RIO 410/210, connect 24VDC power supply to terminals 66 and 62.

Wire Requirement

Supply wires shall have a minimum area of 1 mm².

I/O Connections

Connect the sensors and switches to the respective sections on the RIO.

Communication

All connected I/O is made available on a Modbus RTU communication link.

This can be connected to a MarinePro DCU engine controller, or it can be read by an external unit.

Modbus Reference

To access the RIO 410/210 Modbus I/O list, go to www.auto-maskin.com/reference and locate the Communication document for the MarinePro range.

Modbus RTU Channel Specification

Physical interface	RS-485
Baudrate	19200
Startbits	1
Stopbits	1
Parity	Even

Bus Address

The RIO 410/210 can have four different addresses; meaning up to four units can be used on the same Modbus network. This can be a mix of RIO 410 and RIO 210.

Make sure all units are addressed uniquely! Not two units on the same RIO Link network can have the same Modbus address.

<u>DIP setting</u>	<u>Modbus Address</u>
00	10 (default)
01	11
10	12
11	13

0 = down
1 = up

The DIP switches are located under the rubber cap on the front of the RIO unit.

Connect to MarinePro DCU

If connecting to a DCU, wire as follows:

The 400 Series

DCU 410/408 wire terminal	RIO 410/210 wire terminal
57 (Shield)	63 (Shield)
58 (L)	64 (L)
59 (H)	65 (H)
5 (24V)	66 (24V)
6 (0V)	62 (0V)

The 200 Series

DCU 210/208 wire terminal	RIO 410/210 wire terminal
22 (Shield)	63 (Shield)
23 (L)	64 (L)
24 (H)	65 (H)

When used with the Pro 200 Series, connect the same power supply to the RIO 410/210 as used to supply the DCU 210/208.

Termination Resistor

The 120 ohm termination resistor shall be connected at the last RIO unit (furthest away from the DCU) in the RIO link chain.

If the RIO 410/210 is the only unit on the RIO link, then the termination resistor shall be connected at this RIO 410/210. If so, connect the resistor directly across terminal 64 (L) and 65 (H) on the RIO 410/210.

If however this RIO 410/210 is *not* the last RIO unit on the link, then the termination resistor shall *not* be connected to this RIO 410/210, but at the last RIO unit on the RIO link.

Note! There shall be *one* termination resistor only on the RIO link. The DCU has an inbuilt termination resistor at its end, so there shall not be a termination resistor added here.

Is the DCU communicating with the RIO?

This can be verified in the DCU web server here:

Home -> Troubleshooting -> DCU -> Communication.

Locate the RIO 410/210 line.

Inclusion in the configuration

When properly connected, the DCU will find the RIO automatically (plug and play), and add it to its configuration file automatically.

If the RIO is later not detected because of a fault, then the DCU will indicate with a warning.

If a RIO is removed from the application, then it must be manually removed from the configuration, otherwise the DCU will keep looking for it and indicate with a warning.

Configuration

All RIO channels are configured on the DCU panel web-server that the RIO is connected to. The RIO does not store any I/O configuration internally.

If the RIO is connected to a MarinePro DCU, then refer to the configuration section of the DCU.

Schematic

Please see drawing 1976 at www.auto-maskin.com/reference for connection examples.

In the drawing below “RIO 410” can be either RIO 410 or RIO 210, and “DCU 410” can be any DCU in the MarinePro range.

