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Application Note

Marine Watch LT - I/O and Expansion

auto MASKIN

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1. Preface

1.1 About this Document

This application note has been published primarily for professionals and qualified personnel.

1.2 Responsibilities

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

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

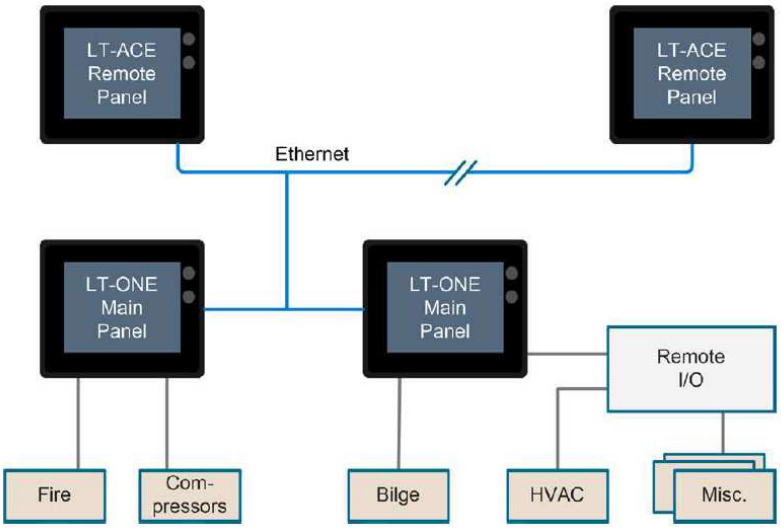
1.3 Revisions

Edition	Release	Information
Release 1.0	2022-03-25	Initial release
Release 1.1	2026-05-20	New logo and minor updates

2. Using LT-ACE to Monitor one or two LT-ONE

A complete alarm system can be monitored from one LT-ACE Remote Panel connected to one or two LT-ONE Main Panel(s).

In addition, the same information can be monitored at different locations using several LT-ACE Remote Panels.



The picture above illustrates the concept and a variety of sensor input. The available I/O and features are limited by the LT-ONE Main Panel I/O and its available external I/O modules compatible with this product.

Note! LT-ONE can be replaced with a DCU 208E or DCU 210E which has the same I/O capabilities. The DCU 208E has no display enforcing all monitoring and control to the LT-ACE panel(s).

3. LT-ONE/DCU208E/210E I/O Capabilities

The LT-ONE/DCU 208E/210E embedded I/O capabilities are explained below and for smaller installations no additional I/O will be necessary.

C1	C2	C3	C4
Power CAN RIO IO 1-4	Relay 1, Relay 2, All Faults, IO 5,20,21	IO 6-17	MPU, RS-485, Thermistor 1&2 IO 18,19

MW-LT-ONE/DCU 208E/210E rear side has 4 Deutsch Connectors named C1..C4.
Some connector pins are dedicated for Power, data communication or fixed I/O but most of the connectors are Flexible I/O pins that can be configured to the following options:

- Switch Inputs
- 4-20 [mA] Inputs
- 0-32 [V] Voltage Inputs
- Switch Outputs

A total of 19 I/O pins have full flexibility and 3 of these can also be configured as 0V reference. In addition two more I/O pins (#20 and #21) can work as additional Switch inputs or as a 2nd CAN Bus interface.

The table below shows the maximum number of different I/O. The numbers in parenthesis () reflect the highest amount possible but if an I/O pin is already allocated for another type the number drops accordingly.

# of CAN Buses	Flexible I/O	Switch Inputs	4-20 mA	Voltage Input	PT100	Output	Relay	0V ref.	Sensor Power
1	21[1]	(21)	(19)	(19)	2	(19)	2	(3)	(1)
2	18	(18)	(18)	(18)	2	(18)	2	(3)	(1)

Note that if two CAN buses are required the number of I/O drops with 3 as the 2nd CAN bus will occupy 3 signal pins for CAN High, Low and Shield (C2.10,11&12).

For a system built with two LT-ONE or DCU 208E/DCU210E units the number of I/O will double.

Additional information regarding I/O capabilities, Installation and Configuration please see other product documentation available form the Web site:

https://www.auto-maskin.com/prod/lt-one-main-panel

[1] 19 of these can be either switch input, 4-20 mA input, voltage input, or output. The last 2 can be switch inputs.

4. RIO modules compatible with LT-ONE/DCU 208E/210E

The I/O capabilities can be further extended with other Auto-Maskin expansion I/O modules. The table below lists the different available units and their I/O capabilities.

I/O unit	P/N	COM Port	Switch Inputs	4-20 mA	Voltage Input	PT100	TC	Output	Relay
RIO 410	1006453	RIO Link	4	9	1[2]	8	2	2	2
RIO 210	1006462	RIO Link	6	-	8[3]	8[4]	2	2	2
RIO 216	1006417	CAN Bus	16 x 2	-	-	-	-	-	-
RIO 412	1006454	CAN Bus	-	-	-	-	20 x 2	-	-
Max[5]			**42**	**9**	**9**	**16**	**44**	**4**	**4**

RIO Link: The LT-ONE/DCU 208E/210E has one dedicated RIO Link interface allowing maximum one of each of the RIO 410 or RIO 210 connected.

CAN Bus: The LT-ONE/DCU 208E/210E has a maximum of two dedicated CAN Bus Interfaces.
Only one RIO 216 and one RIO 412 can be connected at each CAN bus interface.

For a system built with two LT-ONE or DCU 208E/210E units the number of I/O will double.

Additional information regarding I/O capabilities for each unit including installation please see other product documentation available from the Web site:

https://www.auto-maskin.com/prod/rio-410
https://www.auto-maskin.com/prod/rio-210
https://www.auto-maskin.com/prod/rio-216
https://www.auto-maskin.com/prod/rio-210

[2] 0 - 5 V (can be used as switch input using resistor network and threshold configuration)
[3] 0 - 5 V (can be used as switch inputs using resistor network and threshold configuration)
[4] PT100 or Thermistor Input
[5] Maximum External I/O for each LT-ONE/DCU 208E

5. Configuration examples

Type/Size	P/N Product	Switch Inputs	Analog Inputs	PT 100/ TC	Relay/ Outputs
Entry Level	1500074 LT-ONE	21 / (-n)	0 / (+n)	2	2
+ Additional Switch inputs	1500074 LT-ONE 1006417 RIO 216	21 16	0	2	2
+ Various I/O	1500074 LT-ONE 1006453 RIO 410	21 4	 10	 8	2 4
+ Max I/O	1500074 LT-ONE 1006417 RIO 216 (2x) 1006453 RIO 410 1006462 RIO 210 1006453 RIO 412 (2x) **Total:**	18 32 4 6 **60**	0 10 8 **18**	2 8 8 40 **58**	2 4 4 **10**
Dual System	1500074 LT-ONE (2x) 1500120 LT-ACE	42 / (-n)	0 / (+n)	4	4
- Cost Save	1006477 DCU208E (2x) 1500120 LT-ACE	42 / (-n)	0 / (+n)	4	4
+ Max I/O	1500074 LT-ONE (2x) 1006417 RIO 216 (4x) 1006453 RIO 410 (2x) 1006462 RIO 210 (2x) 1006453 RIO 412 (4x) **Total:**	36 64 8 12 **120**	0 20 16 **36**	4 16 16 80 **116**	4 8 8 **20**