

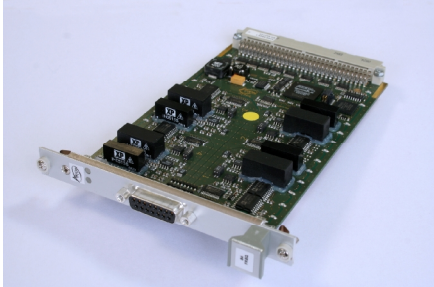


## Frequency Outputs (x4) optically isolated

Ref: 5056-0608-1

Arion-IO  
Technical  
specification

### Features



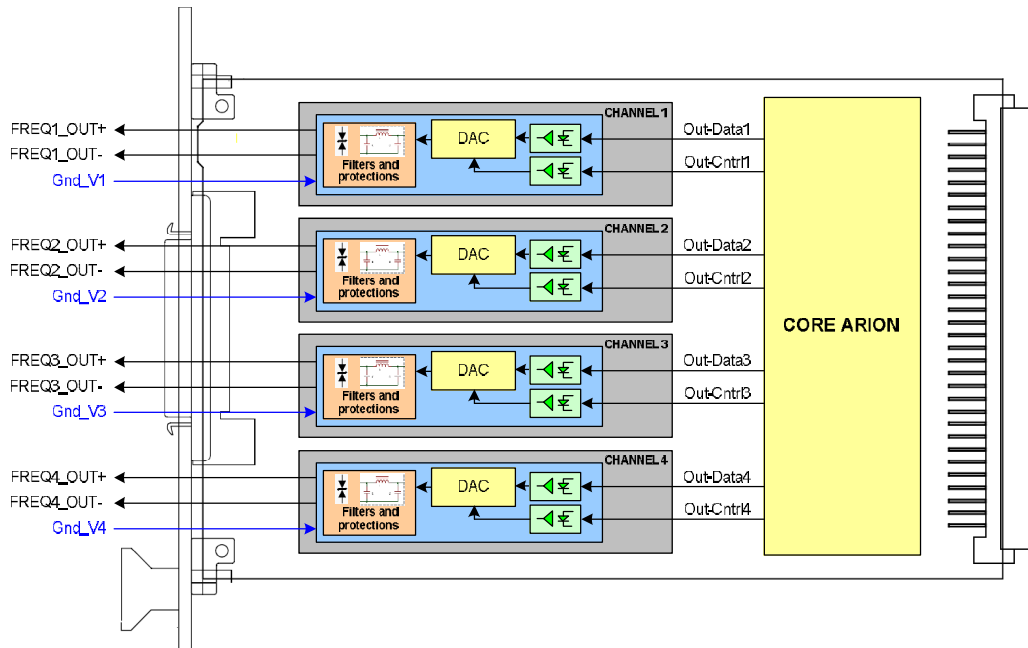
- § 4 programmable frequency outputs
- § Differential or non-differential outputs
- § Frequency Range: 0.001Hz to 100KHz  $\pm 1\%$
- § Sine or Square output signals
- § 4 voltage ranges:
  - Ø 0V to 5V
  - Ø 0V to 10V
  - Ø -5V to +5V
  - Ø -10 to +10V
- § Optically isolated: provides a direct connection to industrial equipments
- § Common mode transient immunity of 100V/ $\mu$ s
- § All outputs are protected from transient voltage spikes, short-circuits and overvoltage



### Physical and environmental condition

Dimensions: 3U format (length 160mm) x 3T  
Temperature: Industrial range temperature -40°C / +85°C  
Weight: 300g  
Consumption: 1.5A for analogical 5V line and 200mA for numerical 3.3V line

### Block diagram





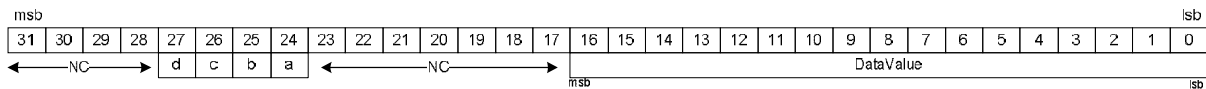
Principle

This board generates the output frequency as: **Frequency = (DataValue / 10,000) \* SetCoeff**

Frequency Range	SetCoeff	D	C	B	A
0.001Hz < f ≤ 0.01Hz	0.001	0	0	0	1
0.01Hz < f ≤ 0.1Hz	0.01	0	0	1	0
0.1Hz < f ≤ 1Hz	0.1	0	0	1	1
1Hz < f ≤ 10Hz	1	0	1	0	0
10Hz < f ≤ 100Hz	10	0	1	0	1
100Hz < f ≤ 1KHz	100	0	1	1	0
1KHz < f ≤ 10KHz	1000	0	1	1	1
10KHz < f ≤ 100KHz	1000	1	0	0	0

The parameter DataValue is encoded on 17 bits in binary. The parameter SetCoeff is set by 4 bits d-c-b-a.

Data coding:



Arion operating modes

Regarding the data of Arion-IO boards, three operating modes are available. These 3 modes can be used in 'Global Channel' or 'Channel List'; See Configuration documentation for more information.

1. **Cyclic mode:** default mode

On cyclic trigger, the data are set to the outputs of the board.

Remark: The cyclic trigger is created by a configurable timer. This timer is set during the configuration step.

2. **Up-Sampled mode:** this mode works like cyclic mode but with N samples.

On cyclic trigger, a sub-cycle is defined to set N data samples to the outputs of the board.

Remark: The N number of samples has to be defined during the configuration step.

3. **On demand:** this mode is only available on Output Boards.

The data are set to the outputs of the board when the user writes data.



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Arion-IO  
Board  
installation

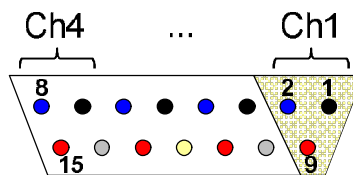
### Board installation

This board can be installed in any of the 11 slots of the Arion-IO rack. Each position gives a specific address to the board: addresses 3 to 13 are valid (See *Arion-IO Module installation documentation*)  
This address is used to define the configuration commands send to the boards. (See *configuration documentation*)

### Board Connector - Pin assignment

Front view board's connector:

- OUT+
- OUT
- GND
- GND MECA



	Pin No	Signal Name
Ch1	1	GND_EXT1
	2	FREQ_OUT1-
	9	FREQ_OUT1+
	10	NC
Ch2	3	GND_EXT2
	4	FREQ_OUT2-
	11	FREQ_OUT2+
	12	GND MECA
Ch3	5	GND_EXT3
	6	FREQ_OUT3-
	13	FREQ_OUT3+
	14	NC
Ch4	7	GND_EXT4
	8	FREQ_OUT4-
	15	FREQ_OUT4+

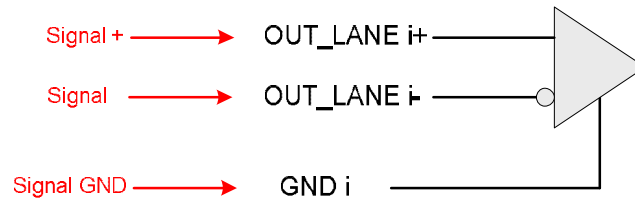


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### Signal Modes

#### Differential:

Signal connected between IN\_LANEn+ and IN\_LANEn- with GND\_EXTn.



#### Non-Differential:

Signal connected between IN\_LANEn+ and GND\_EXTn.  
IN\_LANEn- must be left unconnected.

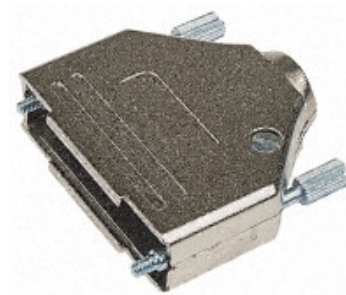


### Accessories

Examples of male connector and cap lock to use to make a cable:

Harting products:

- § Connector : ref 09 67 015 5604
- § Metal cap lock : ref 09 67 015 0348





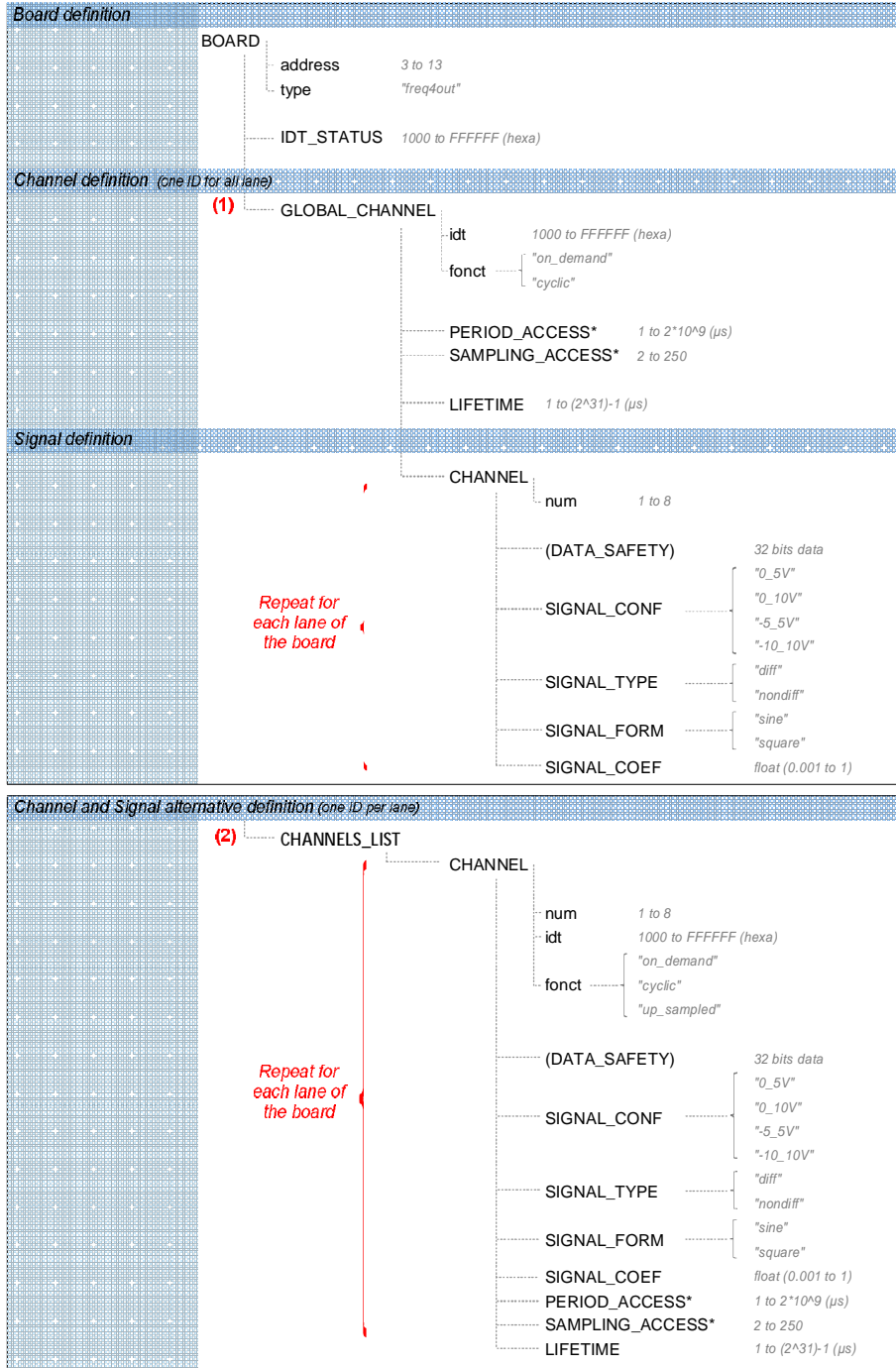
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Arion-IO Board configuration

## Configuration pattern

You must follow the tags and attributes order explained in this pattern to write your ArionIO.xml.



- Uppercase = XML tag
- Lowercase = XML attribute
- Lowercase italic = value
- (1) ... (2) = Alternative configuration
- () = Optional tag configuration
- \* = Conditional configuration (see table below)



Parameters description

Name	Value	Fonction	Special condition
<i>Board definition (Tag: BOARD)</i>			
address	integer (3 to 13)	Address of the board	<i>none</i>
type	freq4out	Type of the board	<i>none</i>
IDT_STATUS	1000 to FFFFFFFF	Unique ID of the data status of the board in hexadecimal	<i>none</i>
<i>Channel definition (Tag: GLOBAL_CHANNEL)</i>			
idt	1000 to FFFFFFFF	Unique ID of the data object in hexadecimal	<i>none</i>
fonct	on_demand cyclic up_sampled	Set the fonctional mode of the data object	<i>none</i>
PERIOD_ACCESS	integer (1 to 2*10^9)	LSB=1us (multiple of arion timer_x)	ONLY IF: cyclic or up-sampled mode
SAMPLING_ACCESS	integer (2 to 250)	Number of sample per period. LSB=1us (multiple of arion timer_x)	ONLY IF: up-sampled mode
LIFETIME	integer (1 to (2^31)-1)	Time validity of data object (LSB=1 us)	<i>none</i>
<i>Signal definition (Tag: CHANNEL)</i>			
num	integer (1 to 4)	Lane number of the board	<i>none</i>
DATA_SAFETY	32 bits value	Default data value in case of dysfunction	Optional
SIGNAL_TYPE	diff nondif	Configuration of the lane: differential or non-differential connexion	<i>none</i>
SIGNAL_CONF	0_5V 0_10V -5_5V -10_10V	Voltage level of the lane	<i>none</i>
SIGNAL_COEF	float (0.001 to 1)	multiplayer coef for input voltage	<i>none</i>
SIGNAL_FORM	sine square	Configuration of the lane: sine or square signal	<i>none</i>

**Remarks:**

In GLOBAL\_CHANNEL configuration, only one unique ID is set for the 4 channels of the board. All the data are in the same ID.

In CHANNEL\_LIST configuration, each channel has a unique ID for its data.

In up-sampled mode PERIOD\_ACCESS / SAMPLING\_ACCESS must be:

- an integer value
- multiple of 2µs and greater than 10µs
- less than 2,097,151µs (2<sup>21</sup>µs)

The tag "IDT\_STATUS" and the attribute "idt" can be set as "auto" in the XML. In this case the IDs are created automatically.

idt format: "rack number"+"board number"+"channel number"

IDT\_STATUS format: "rack number"+"board number"+100

WARNING: The slots 3 to 13 are numbered from 1 to 11. For example, rack 2 / board in slot 7 / channel 3:

-idt: 25003  
-IDT\_STATUS: 25100