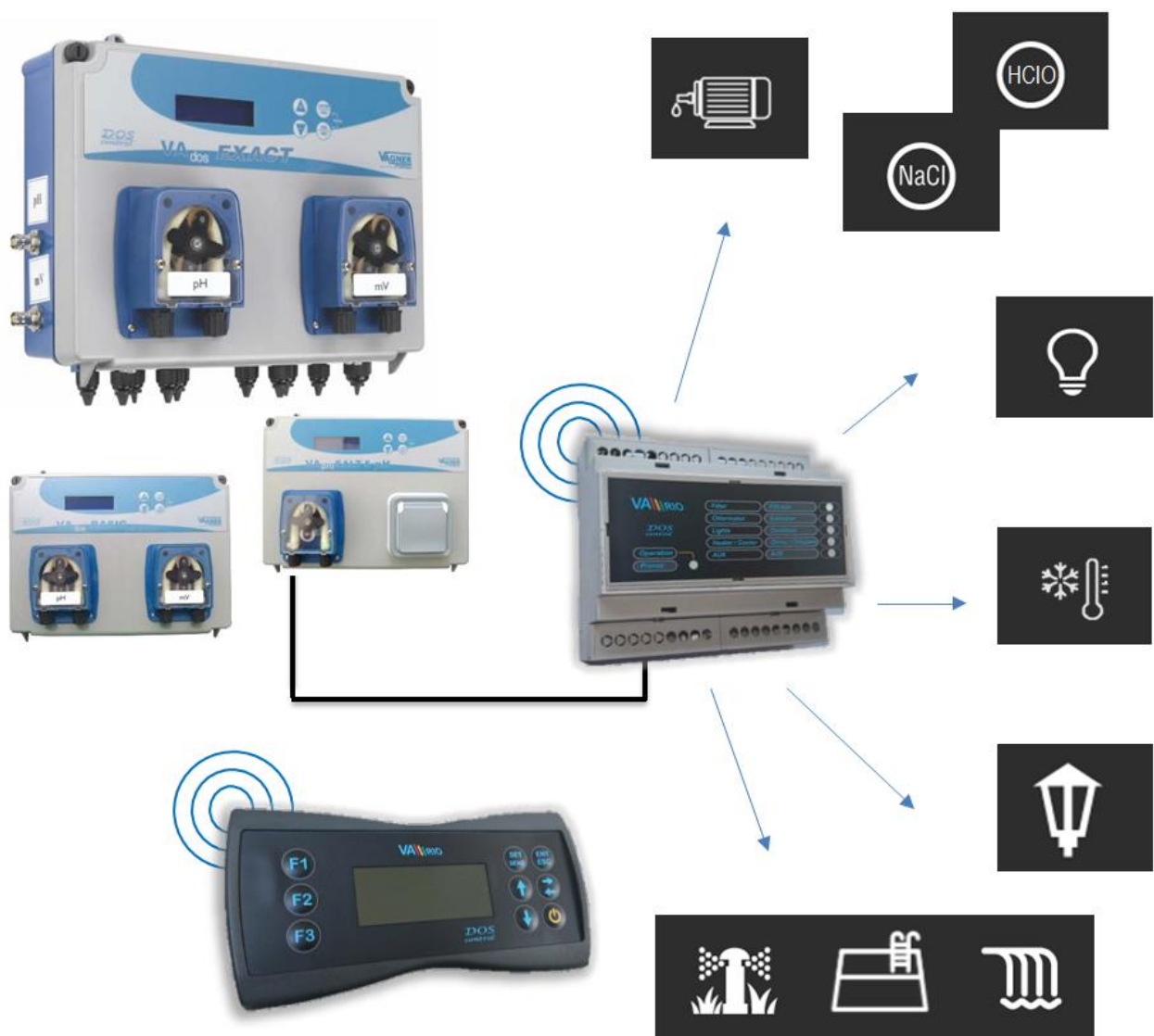# POOL TECHNOLOGY
CONTROL SYSTEM

VAⵯⵯRIO

--- DIN Module / RC Module (remote control) ---

1. Safety instructions

Read this user manual before installation and unit activation. Should you need any explanation or should you have any doubts, do not hesitate to contact Your VArio supplier.

The unit shall be always installed by a trained professional. Always disconnect the main power supply before performing repairs or maintenance, or before connecting additional external devices.

The system uses radio-frequency communication. It is forbidden to use the device near mines / quarries or any places with possible risk of explosion.

2. General information

Pool control system consists of a VA RIO DIN module, which can control up to 5 output relays (filtering, dosing, lights, heating, attraction), and a local radio remote control unit VA RIO RC (furthermore RC module). The relay outputs are pre-set from the factory as follows:

DIN module

R1 – Filtration (4 programmable timers - programs)
R2 – Dosing (operation depends on filtering time - 25%/50%/75%/100% of filtering time) / Attraction2 (timer)
R3 – Lights (timer - 15 min. step: 0/15/30/45/60/90/120/180/240 min. or permanent ON)
R4 – Heating (heating or cooling based on the pre-set/actual temperature)
R5 – Attraction (timer - 15 min. step: 0/15/30/45/60/75/90/105/120 min)

RC module provides information and statuses of relay contacts and outputs and allow the user to modify the parameters. When a dosing station is connected (VA DOS EXACT / VA DOS BASIC / VA DOS FLOC / VA FOR SALT pH), the RC will display actual water quality parameters as measured by the dosing unit and will also allow the user to change the operating parameters of the dosing unit.

3. Technical information

DIN module (VArio)

Dimensions (w – h – d)	106,3 x 57,8 x 90,2 mm
Material	ABS nylon 66
Flammability Class	UL94V-066
Power supply/consumption	100-250 VAC 50-60 Hz / max. 12W
Temperature sensor:	0 - 50 °C (±0,5 °C)
Output relays:	8 A 250 V (potential-free contact)
Frequency / Band	869,530 / P, max. output ≤ 20mW

RC module (VA RIO RC)

Dimensions (w – h – d)	81 x 165 x 31 mm
Material	ABS
Power supply	4,5V, 3x AA (rechargeable batteries may be used)
Frequency / Band	869,530 / P, max. power ≤ 20mW

Internal EEPROM memory

The DIN module automatically stores the measured water temperature into internal memory – 3x daily at pre-set times: 10:00 / 16:00 / 22:00.

Other features and protective functions

Heating priority – system will automatically switch on the filtration pump for 5 mins each hour to check the water temperature. Based on the water temperature settings the filtration pump may be switched on for heating or cooling.

Anti-freeze protection – with water temperature below 4°C the system will automatically run the filtration pump every ½ hour in order to keep the water from freezing.

Salinator protection – with water temperature below 14°C the system will automatically deactivate the R2 relay output (Dosing/Atr2) to prevent the salinator from operating in cold water.
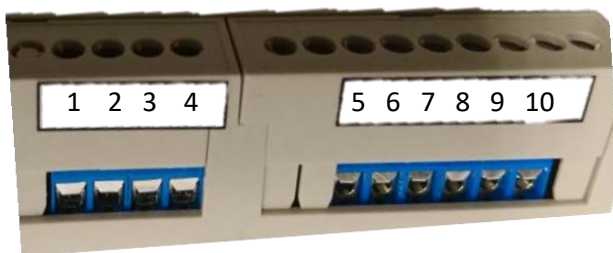
2

4. Electrical connection

DIN module
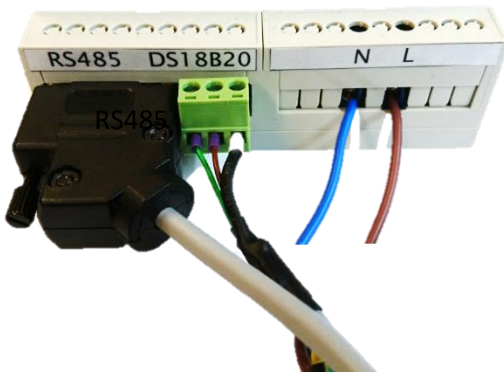
- **RS485** – Communication cable (connection to dosing unit)

- **Temperature sensor**
  - **D** – (data / green wire)
  - **+** – (+3,3 V / brown wire)
  - **-** – (0,0 V / black or blue wire)

- **Power supply**
  - **N** – neutral wire
  - **L** – phase wire 230 V

Pre-set relay outputs

- **1/2** – R1 output (Filtration)

- **3/4** – R2 output (Dosing) / (Attraction2)

- **5/6** – R3 output (Lights)

- **7/8** – R4 output (Heating/Cooling)

- **9/10** – R5 output (Attraction)

Note:
The relay connection and suppression of their inductive load diagram is in Section 8, page 11..

5. Pairing the DIN and RC modules

To establish a radio communication between Din and RC modules, both units need to be paired. Required for pairing is the DIN module serial number – simply input the last 4 digits into the RC module. The DIN S/N is located on the side label of the DIN module; alternatively, also under the DIN microchip cover.

To access the pairing mode, take the turned-off RC module, press and hold the **"F1"** button and **press the** "⏻" button for at least 3 seconds. The display will light up and „0000" will be displayed.

VÁGNER POOL s.r.o.
DIN Module
S/N: DN18MO11**0022**
100-250VAC/50-60Hz
Max. 12W   CE

0000

0022
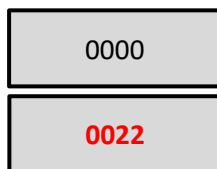
a) Using the "**V**" or"**Λ**" buttons, select the desired number,
b) Press "**<>**" to move to the next digit,
c) Press "**SET/SEND**" to confirm changes and pair the device. The display will switch to normal screen.

3
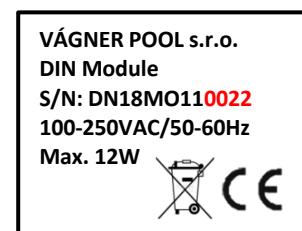
6. Unit notifications

DIN module

The statuses of the individual relay outputs are indicated by green LEDs (unit active = green LED steady on).

A flashing green LED indicates that the DIN module is under voltage or communicating with the RC. Rapid flashing indicates ongoing communication with a dosing station (connected with a cable).

RC module

Statuses of measured parameters and relay outputs are displayed on a 4-line screen.

VArioRC
AerBus II
Verze 3.0
Connecting

Default screen after RC start-up (after pressing the "ON" button).

"Connecting" – a connection to the DIN module or dosing station is being initialized.

Filtration		[ZAP]
Dosing		[ZAP]
Temp 22°C		[ZAP]
Lights 014	Atr	015

Status [**ON**] - relay contact closed / output active
Status [**OFF**] - relay contact closed / output active
Status **22°C** - actual water temperature / heating [**ON**]
Status **??°C** - filtration is not active (timer OFF), waiting for filtration ON
Status **Lights** "014" - relay contact closed / lights ON with 14 mins remaining
*Status **Atr** "015" - relay contact closed /output ON with 15 mins remaining*

7. Unit controls and configuration menu

7.1. Unit controls

The DIN module can be controlled by the RC remote module (using a radio frequency signal). An overview of all control buttons including configuration commands is listed below. The **F1 / F2 / F3 buttons are pre-programmed for easy access to Lighting / Attraction / Filtration functions**.

Quick access

F1

F2

F3

Control buttons:

SET	ENT
SEND	ESC
Λ	<>
V	⏻

F1	- By default Lights **(ON/Timer 15-240 min / 000 = VYP)**
F2	- By default Attraction **(Timer 15-120 min / 000 = OFF)**
F3	- By default Filtration (**AUTO / CL24** "ON with chlorine shock (24 hours)" **/** manual **ON / OFF**
SET/SEND	- Parameter change / Save changes = send to DIN module
ENT/ESC	- Confirm choice / Enter menu / Go back to higher menu
Λ	- Move up in menu / Increase parameter / Time set – hours
<>	- Move to next parameter / Heating - cooling mode / Switch to dosing unit / Paging
V	- Activate item / Move down in menu / Decrease parameter / Time set – minutes
⏻	- Sleep mode ON / Wake up / Quick access edit

7.2. Quick-access buttons

Using the **F1** / **F2** / **F3** buttons, you can easily control preset devices. If the default F1 (Lights) / F2 (Attraction) / F3 (Filtration) functions are not up to your choice, the button functions can be reprogrammed and/or renamed.

7.2.1. Changing the quick-access button function

With RC in the sleep mode, press and hold "**F2**" **+ press** "⏻" for at least 3 seconds. The display will light up and the actual button configuration will be displayed:

Lights	F1	
Attraction		F2
Filtration			F3
Attraction 2		

Lights			F3
Attraction	F1	
Filtration		F2
Attraction 2		

a) With repeated pressing of the "**F1**", "**F2**" or "**F3**" buttons the new function will be assigned,

b) Confirm changes with the "**SET/SEND**" button, the display will automatically refresh,

c) If you do not wish to save the changes, press "**ENT/ESC**".

Note:
If you assign the same function to two buttons, (e.g. Lights for both F1 and F2 buttons), both buttons will control the same function.

7.2.2. Renaming the quick-access button functions

You can also rename the functions, should you not like the preset names.

Renaming the quick-access functions:
In the sleep mode (display off) press and hold the "**F3**" **+ press** "⏻" for at least 3 seconds. The display will light up and current configuration will be displayed, e.g.:

| >Lights |
| Attraction |
| Attraction 2 |

| >Shower |
| Massage |
| Attraction |

a) Activate the renaming function by pressing the "**ENT/ESC**",
b) Select desired letter using the "**V**" or "**Λ**" buttons,
c) Move to next position with "**<>**",
d) Use "**F1**" to switch between UPPERCASE/lowercase,
e) Insert space with the "**F2**",
f) Select desired digit by repeated pressing of "**F3**",
g) Press "**SET/SEND**" to confirm and save changes, the display will automatically refresh,
h) Press "**ENT/ESC**" to skip (changes will not be saved).

7.3. Configuration menu

7.3.1. RC module / DIN module

5 outputs can be activated in the configuration menu: *Filter pump* with up to 4 programmable daily cycles, *Dosing (Salinator)* based on filtration time, *Heating / Cooling* function with regard to preset water temperature, *Lights* and *Attraction* (e.g. counterflow) with timer.

1. Press the "⏻" button to wake the RC from the sleeping mode.

2. Press the "**V**" button to enter the configuration menu:

```
  Atraction2
 >Filtration
  Lights
  Heating/Cooling
```
a) Press "**V**" to move down in the menu,

b) Press "**Λ**" to move up in the menu,

c) The "**>**" arrow indicates the selected parameter,

```
  Attraction
 >Time/Date
  Language
  Dosing
```
d) **Press the "ENT/ESC" key to enter to selected parameter menu. Flashing rectangle on the display indicates ongoing information transfer between the DIN and RC modules – wait for the communication to finish in order to change the parameter setting.**

3. The "Filtration" menu allows the user to set up to 4 running cycles within 24 hours:

```
 07:00      10:00
 12:00      15:00
 16:00      19:00
 21:00      23:00
```
a) In main menu, select "**>Filtration**" and press "**ENT/ESC**" button,
b) Press "**SET/SEND**" button to activate the timer set mode,
c) Press "**V**" to adjust minutes (1 click = +5 min),
d) Press "**Λ**" to adjust hours (1 click = +1 hour),
d) Press "**<>**" to move to the next timer,
e) Pres "**SET/SEND**" to confirm and send changes to DIN module,
f) A "**Sending…**" message will be displayed.

Note:
The first cycle starting time (in this case 07:00) also determines the starting time for salinator/dosing unit in automatic operation mode.

4. The "Dosing" menu allows the user to set the working time of a salt water chlorinator with regard to total filtration time:

```
 Filtration    660min
 Dosing        100%
               [660min]
 Time left     470min
```
a) In main menu, select "**>Dosing**" and press "**ENT/ESC**" button,
b) Press "**SET/SEND**" button to activate the setting mode and set the salt-chlorination time in % of filtration time,
c) Pres "**V**" to decrease the dosing time (1 click = -25%),
d) Press "**Λ**" to increase the dosing time (1 click = +25%),
e) Press "**SET/SEND**" to confirm and send changes to DIN module,
f) A "**Sending…**" message will be displayed.

Note:
The salinator/dosing unit operation time is directly based on the total filtration time as set in the "AUTO" mode. With filtration running in any other mode (manual ON/XXCL) this "extra" filtrating time is not calculated in total filtration time used for dosing.

5. The "Temp" menu allows the user to set the heating / cooling and water temp.:

Heating	29°C
Cooling	27°C

Filtration	[ZAP]
Dosing	[ZAP]
Temperature 25°C	[-08]
Lights 014	Atr

g) In main menu, select ">Temperature" and press "ENT/ESC" button,
h) Press "SET/SEND" button to start to set temperature,
i) Press "V" to decrease temperature (1 click = -1°C),
j) Press "Λ" to increase temperature (1 click = +1°C),
k) Press "<>" to select operation heating or cooling mode,
l) Press "SET/SEND" to confirm and send changes to DIN module,
m) A "Sending…" message will be displayed.

Note:
Preset output delay *– in this case 8 mins remain to heating power ON (preset delay 10) and* **allowed operating temperature range** *are preset in the system. These technology-protecting parameters can be modified only by authorized person.*

6. The "Lights" and "Attraction/Attraction 2" menus allow the user to set operating timers for these outputs with a 15 min. step (0-120 for Attr, 0-240/ON for Lights):

Lights 015min	Attraction 030mi
Lights 045min	Attraction 060mi
Lights 075min	Attraction 090mi
Lights 120min	Attraction 000mi

n) Select ">Lights" and press "ENT/ESC" button,
o) Press "SET/SEND" button to start to set timer,
p) Press "V" to decrease operation time (1 click = -15 min),
q) Press "Λ" to increase operation time (1 click = +15 min),
r) Press "SET/SEND" to confirm and send changes to DIN module,
s) A "Sending…" message will be displayed.

Note:
The quick-access F1 button (Lights by default) also allows permanent ON ((000 – **ON** *– 015 – 030 … 240 min).*

7. The "Time/Date" menu allows the user to set system time and date – important for proper filtration and dosing/salinator functioning:

Cas	14:10
Den	27
Mesic	07
Rok	18

Verification code
0 0 0 0
Wrong code

t) Select ">Time/Date" and press "ENT/ESC" button,
u) Press "SET/SEND" button to set time and date,
v) Press "V" to adjust minutes (1 click = +5 min),
w) Press "Λ" to adjust hours (1 click = +1 hour),
x) Press "<>" to move to next parameter (d/m/y),
y) Press "V" and "Λ" to adjust the selected parameter,
z) Press "SET/SEND" to confirm and send changes to DIN module,
aa) As a safety precaution, a "Verification code" must be entered.
bb) A "Sending…" message will be displayed; in case wrong code is entered the "Wrong code" message will appear.

Note:
Default verification code is 1234. *Only an authorized person may change the verification code.*
When a wrong code is entered, changes will not be sent to the DIN module and the unit will return to original settings.

7.3.2. RC Module / DIN Module / Dosing Station

In order to review or modify the pool water parameters and review the operating status of a dosing station on your RC module, follow these steps:

1. Dosing unit must be connected to the DIN module with a communication cable. The description below corresponds to the **VA DOS EXACT** unit.


Illustrative picture

2. The dosing station must have active **RS485 (ON/Active)** communication. The settings must be as follows:

   DIN module configuration:

   There is a DIP switch under the DIN module lid. It´s configuration is shown on the picture below.

   1 – Recirculation flow measurement (**OFF / active = ON**)
   2 – Type of connected dosing station (**OFF = BASIC / ON = EXACT**)
   3 – reserve function (**ON**)
   4 – reserve function (**ON**)
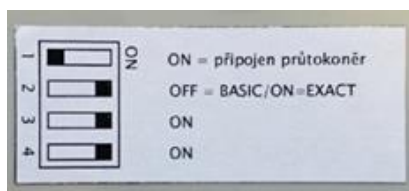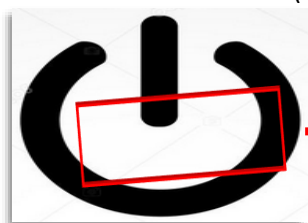
   Dosing unit configuration:
   VA DOS EXACT – ID: 1, Parity: NO, Speed: 2400, DOA=OFF,
   VA DOS BASIC – ID: 2, Parity: NO, Speed: 2400, DOA=OFF,

3. Press the "**ON**" button to wake DIN module from sleeping mode,

4. In the default RC screen, press the "**<>**" button to switch to the dosing unit screen (view could be changed **only if the dosing unit is connected by the communication cable to DIN** – for more details about connection go to section 3 of this manual). **If there is no dosing unit connected to the DIN module, the dosing station screen will not appear !!!**

Filtration	[ZAP]
Dosing	[ZAP]
Temperature 22°C	[ZAP]
Lights 014 Atr 015	

"<>"

PH=7.2	[≤7.0]
CL=0.6ppm	[≥0.8]
RX=610mV	T=25°C
Operation OK	

Note:

The dosing station screen also displays the dosing unit operation statuses: "Operation OK" / or alarms "OFA alarm" / "OFA stop". The alarms cannot be deactivated from the RC – they must be reset directly on the dosing station by pressing the "ENTER/CAL" button.

5. You may configure certain operating parameters of a connected dosing station form your RC module. The logic of the dosing unit menu is the same as of DIN module.

Press the "**V**" button to enter the dosing station main configuration menu:

```
Setpoint  PH
>Setpoint  CL
Setpoint  RX
AlrBand PH
```

```
AlrBand CL
>AlrBand RX
TotalFlow
ResetFlow
```

```
Active alarms
>Language
```

a) Press "**V**" button to move down in the menu,

b) Press "**Λ**" button to move up in the menu,

c) The "**>**" arrow indicates the selected parameter,

d) **Press the "ENT/ESC" key to enter the selected parameter menu. Flashing orange rectangle on the display indicates ongoing information transfer between the DIN/RC modules and the dosing unit – wait for the communication to finish in order to change the parameter setting.**

6. The "Setpoint PH" menu allows the user to change pH settings of the dosing unit:

```
Setpoint  PH


>    7.0
```

a) Select "**>Setpoint PH**" and press "**ENT/ESC**" button,
b) Press "**SET/SEND**" to activate pH setting mode,
c) Press "**V**" to decrease pH value (1 click = -0,1 pH),
d) Press "**Λ**" to increase pH value (1 click = +0,1 pH),
e) Press "**SET/SEND**" to confirm and send changes to DIN module,
f) An "**OK**" message will appear at the bottom right of the display.

7. Menu "AlrBand pH" allows the user to modify the value range for the pH alarm:

```
AlrBand  PH


>    2.5
```

a) Select "**>AlrBand**" and press "**ENT/ESC**" button,
b) Press "**SET/SEND**" to start modify alarm range,
c) Press "**V**" to decrease alarm range (1 click = -0,1 pH)
d) Press "**Λ**" to increase alarm range (1 click = +0,1 pH)
e) Press "**SET/SEND**" to confirm and send changes to DIN module,
f) An "**OK**" message will appear at the bottom right of the display.

Note:
*Other parameters such as **Redox (ORP)** and **free chlorine (CL)** can be adjusted the same way. To cancel unwanted parameter changes, press "ENT/ESC".*

8. The "TotalFlow" screen allows the user to see the total volume of filtered water. The "ResetFlow" screen shows the volume of filtered water within a resettable time interval:

```
TotalFlow


0.000m3
```

```
ResetFlow


0.000m3
           Read only
```

a) Select "**>TotalFlow** " and press "**ENT/ESC**" button,
b) "**Read only**" = the parameter is only for information and cannot be modified.

9. The "Active alarms" menu allows the user to see active alarms on the dosing unit (OFA stop / OFA alarm / AlrBand.

<u>Alarms can be deactivated only on the dosing unit using the "ENTER/CAL" button</u>.

Active alarms OFA alarms AlrBand	Active alarms OFA alarms AlrBand Read only

a) Select ">**Active alarms**" and press "**ENT/ESC**" button,
b) "**Read only**" = parameter is only for viewing.

9. The "Language" menu allows the user to change the dosing station and also the DIN module menu language. When you change the menu language of the dosing unit using the RC module, the DIN module will automatically switch to the same language as selected on the dosing station (available languages: **<u>CZ/DE/EN/ESP/FR/HR</u>**).

Language >   Czech

g) Select ">**Language**" and press "**ENT/ESC**" button,
a) Press "**SET/SEND**" to start language selection,
b) Press "**V**" button to move down in the language list (e.g. English),
c) Press "**Λ**" button to move up in the list (e.g. Espanol),
d) Press "**SET/SEND**" to confirm and send changes to DIN module,
e) An "**OK**" message will appear on the display.

Note:
*If the dosing unit is connected to the DIN module, the menu language can only be changed in the dosing unit screen (step 4 above). The language settings in the RC main menu will be shown as "Read only" and cannot be modified. **Menu language can also be changed on the dosing station; in that case please restart the RC after the change to load the selected language.***

8. Relay connection and suppression of their inductive load

AC control coils diagram:
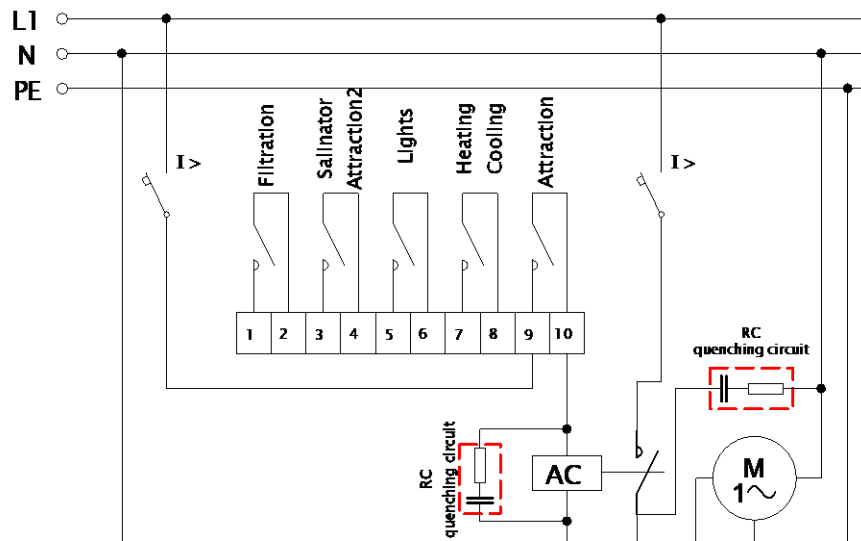
DC control coils diagram:
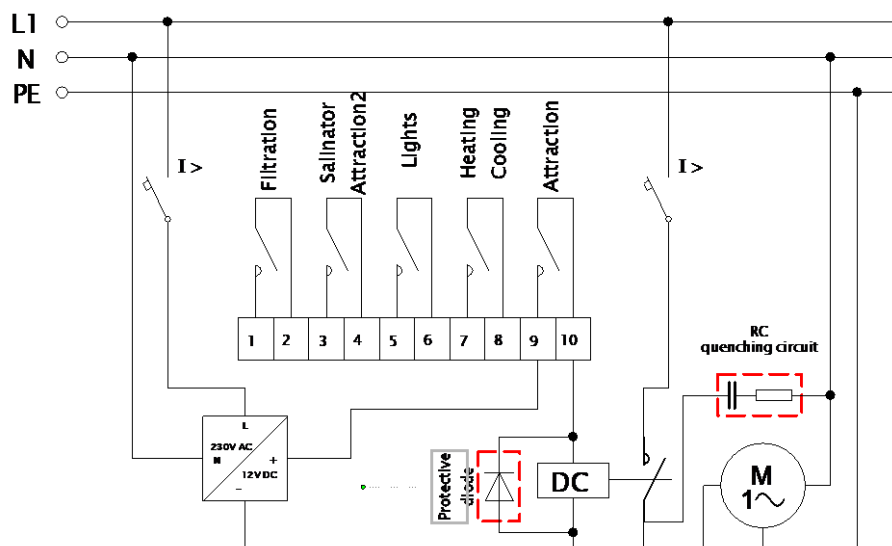
This is the recommended output connection of the VArio DIN Module for connection of inductive load inside a breaker box (diagram is valid for one output = in this case the "Attraction" contact). Connect the other outputs with inductive load accordingly.

The outputs are designed for general use as potential-free contacts, which provides for a wide range of utilization.

For DC coil switching / inductive load suppressing, we strongly recommend using a parallel diode connection (in closing direction).

Following these rules and recommendations will result in significant lifetime extension of contacts and relays in the DIN module. In addition, the failure rate of electronic systems placed inside the breaker box, which could be caused by disturbances from inductive load switching, will be substantially reduced (e.g. electromotors, the contactor control coil transformers and relays).

DECLARATION OF CONFORMITY

The company VÁGNER POOL s.r.o. hereby declares, that all below-listed products meet the necessary requirements for placing the product on the market:

Product line: VArio – Pool Technology Remote Control System
Directive: RED Directive č. 2014/53/EU

Module: **DIN Module**

Applicable norms:
    EN 62368-1: 2014/A11:2017, EN 60730-1: 2016, EN 62479: 2010
    EN 301 489-1 V2.1.1, EN 301 489-3 V2.1.1
    EN 300 220-1 V3.1.1, EN 300 220-2 V3.2.1

Module: **WiFi Module**

Applicable norms:
    EN 62368-1: 2014/A11:2017, EN 62311: 2008
    EN 301 489-1 V2.1.1, EN 301 489-3 V2.1.1, EN 301 489-17 V3.1.1
    EN 300 220-1 V3.1.1, EN 300 220-2 V3.2.1, EN 300 328 V2.1.1

Module: **RC Module**

Applicable norms:
    EN 62368-1: 2014/A11:2017, EN 62479: 2010
    EN 301 489-1 V2.1.1, EN 301 489-3 V2.1.1
    EN 300 220-1 V3.1.1, EN 300 220-2 V3.2.1

Module: **Servce Module**

Applicable norms:
    EN 62368-1: 2014/A11:2017, EN 62479: 2010
    EN 301 489-1 V2.1.1, EN 301 489-3 V2.1.1
    EN 300 220-1 V3.1.1, EN 300 220-2 V3.2.1

Conformity was checked by Technický skúšobný ústav Piešťany (TSÚ), which – based on test report No. 190500058/1-4 – issued Conformity Certificates to all of the above-listed modules.

Declaration Issue Date: **20. 3. 2019**   Producer Stamp and Signature:

Further information and documents to the VArio system can be found at www.variopools.com