RA40 *Series*
USER'S MANUAL

Overview:

RA40 is a programmable unit based on microprocessor, made for marine applications.
It reads either temperature or pressure signals coming from the more common commercial transducers.
RA40 can manage up to two readings by an alternatively visualization on LED-display, in manual or automatic way.

Functioning:

After switching on, a "lamp-test" is executed.
A and B LEDs indicates which reading display is visualizing.
If only one input channel is supplied, it must be the one corresponding to channel **A**.

A1 and A2 LEDs indicate alarm condition about A reading.
B1 and B2 LEDs indicate alarm condition about B reading.
Alarn condition is also indicate by buzzer and internal relay switch-on.
Press **SET** key to silence buzzer and switch off relay, but LEDs still stay on until alarm condition exists.

If one or both alarm thresholds are not used, they have to be disabled moving up their value until **ESC** message appears in set-up mode.
Two SPDT output pins related to A1 and B1, or four SPDT output pins related to all alarm conditions can be provided on request.

RA40 has a display **luminous intensity regulation**. If luminous memory is on (see **Lu** code in **SEt1** table), after switching on display stays at previous intensity regulation. This is useful if RA40 works only at night.

RA40 allows to adjust the measure scale in a proportional way: +/- 25% range starting from default set.

Keys :

TYPE	increase display luminosity / increase value in set-up mode;
MODE	decrease display luminosity / decrease value in set-up mode;
SET	switch off buzzer and internal relay / set-up accessing;
SEL	A/B readings swapping in manual mode / next step in set-up mode.

Set-up:

Entering set-up: press **SET** key for 10 seconds until buzzer produces a "beep" and **SEt1** message appears on display; release **SET** key. During set-up, A and B LEDs blink.

SEL key allows to go ahead to next step. Value can be set by **TYPE** key (increase) and **MODE** key (decrease). **SEt1** table shows set-up codes.
Once all changes are made, **SEt1** message appears again: **exit from set-up and store in memory changes by pressing TYPE key.**

Instead of store, press **SET** key for 20 seconds until buzzer produces a "beep" and **SEt2** message appears on display; release **SET** key.
Use the same keys and procedures described above to move in second level set-up to manage:

- channel to set-up transducer type: **Ch A**, **Ch b**;
- readings to measure: **°C** temperature, **bAr** pressure, **4-20** mA, **ESC** disable (channel B only);
- transducer type: **Udo** (VDO), **UEG** (Veglia), **YAE** (Jaeger);
- transducer range of measure.

Once **SEt2** message appears again, **exit from set-up and store in memory changes by pressing TYPE key.**

Caution: if no keys are pressed for more than one minute, RA40 will escape from set-up mode and **no changes** will be stored in memory.

SEt2 table:

Code	Description	
CH A	A channel set-up	
CH b	B channel set-up	
bAr	Pressure transducer on selected channel	
°C	Temperature transducer on selected channel	
4-20	4-20mA type transmitter on selected channel	
Udo	VDO type transducer	
UEG	Veglia type transducer	
YAE	Jaeger type transducer	
d2	2 bar VDO transducer	
d5	5 bar VDO transducer	
d10	10 bar VDO transducer	
d25	25 bar VDO transducer	
J10	10 bar Jaeger transducer	
J25	25 bar Jaeger transducer	
4-20mA		
nEG	Add negative sign in negative reading	(0=OFF, 1=ON)
dP	Decimal point	(0=OFF, 1=ON)
tALL	0 = Slope + alarm; 1 = Slope – alarm	
M 4	Scale bottom (related to 4mA)	
M 20	Scale top (related to 20mA)	

Particular function and signaling:

- Setting defauld datas: switch on panel keeping **SEL** key pressed.
  WARNING : all previous informations will be lost forever.
- SEt1and SEt2 tables show default datas beetween square brackets.
- All LEDs blinking indicate a memory damage. Press **SET** key to visualize error code.

SEt1 table:

Code	Description	[default]
A1	A1 alarm threshold. To disable, move up until ESC message appears	[80]
A2	A2 alarm threshold. To disable, move up until ESC message appears	[ESC]
b1	B1 alarm threshold. To disable, move up until ESC message appears	[80]
b2	B2 alarm threshold. To disable, move up until ESC message appears	[ESC]
rA	Scale proportional adjustement (A channel). Range +/- 25%	[0%]
rb	Scale proportional adjustement (A channel). Range +/- 25%	[0%]
CH	0 = manual A / B channel swapping by SEL key	[0]
	1 = automatic A /B channel swapping	
tCHA	Display refeshing time (A channel) - 1 step = 0.6 seconds	[0,6]
tCHb	Display refeshing time (B channel) - 1 step = 0.6 seconds	[0,6]
Lu	0 = luminosity memory off	[0]
	1 = luminosity memory on	
bu	0 = buzzer disabled	
	1 = buzzer enabled	[1]
Sir	0 = relay disabled	
	1 = relay enabled	[1]
oA1	0 = SPDT output disabled (A1 alarm threshold)	
	1 = SPDT output enabled (A1 alarm threshold)	[1]
oA2	0 = SPDT output disabled (A2 alarm threshold)	
	1 = SPDT output enabled (A2 alarm threshold)	[1]
ob1	0 = SPDT output disabled (B1 alarm threshold)	
	1 = SPDT output enabled (B1 alarm threshold)	[1]
ob2	0 = SPDT output disabled (B2 alarm threshold)	
	1 = SPDT output enabled (B2 alarm threshold)	[1]
iStA	A1 A2 thresholds hysteresis	[3]
iStb	B1 B2 thresholds hysteresis	[3]
ritA	A1 A2 alarms intervention time-delay (seconds)	[1]
ritb	B1 B2 alarms intervention time-delay (seconds)	[1]
SEt1	Press **TYPE** key to exit set-up and store in memory changes	

Technical specifications:

Power supply	10 / 30 V d.c. in no alarm output pins version 10 / 15 V d.c. in 12 V and alarm output pins version 20 / 30 V d.c. in 24 V and alarm output pins version
Absorption	150 mA
Working temperature	-5 / 60 °C
Available alarms	4 User-adjustable thresholds alarm, LED signalings, buzzer, SPDT output pins (on request).
Relay output	SPDT - I max = 2 A res. / V max = 50 V d.c.
Scale proportional adjustement	+/- 25 % starting from default set
Plastic box	DIN 43700 - 48.0 x 96.0 mm Total length: 120.0 mm
Cutting edge	44.0 x 91.0 mm

Wiring diagram:

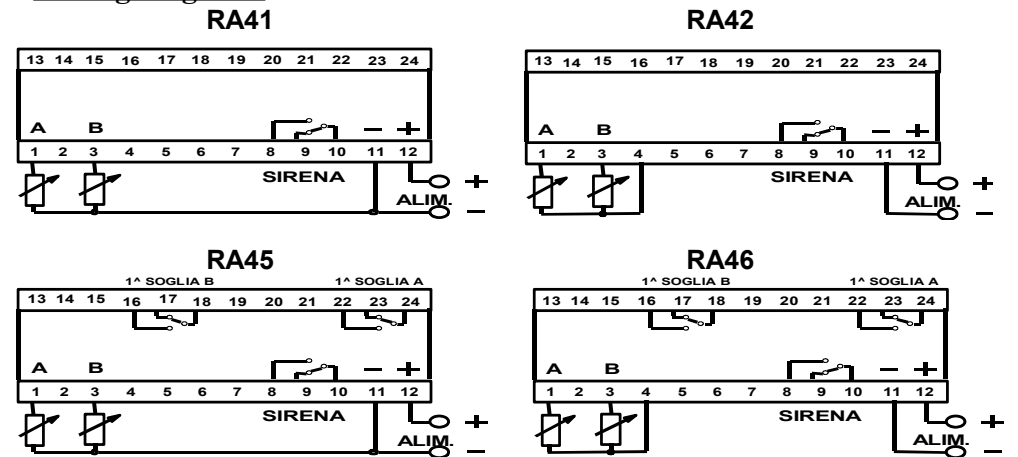

RA41   RA42   RA45   RA46

Diagram description:
A - Temperature or pressure transducer, A channel.
B - Temperature or pressure transducer, B channel.
Transducer Common pin has to be connected to Negative.

IMPORTANT:
Voltage drop beetween Negative pole of power supply and negative pole of transducer must not be more than 20/30 mV. It is advisable to use an appropriate wire size.

Ordering informations:
- RA41   Resistor-type Transducers without outout relay
- RA42   4-20mA-type Transmitters without outout relay
- RA45   Resistor-type Transducers with two outout relay
- RA46   4-20mA-type Transmitters with two outout relay

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