RTA 602

4189350070C

Installation instructions

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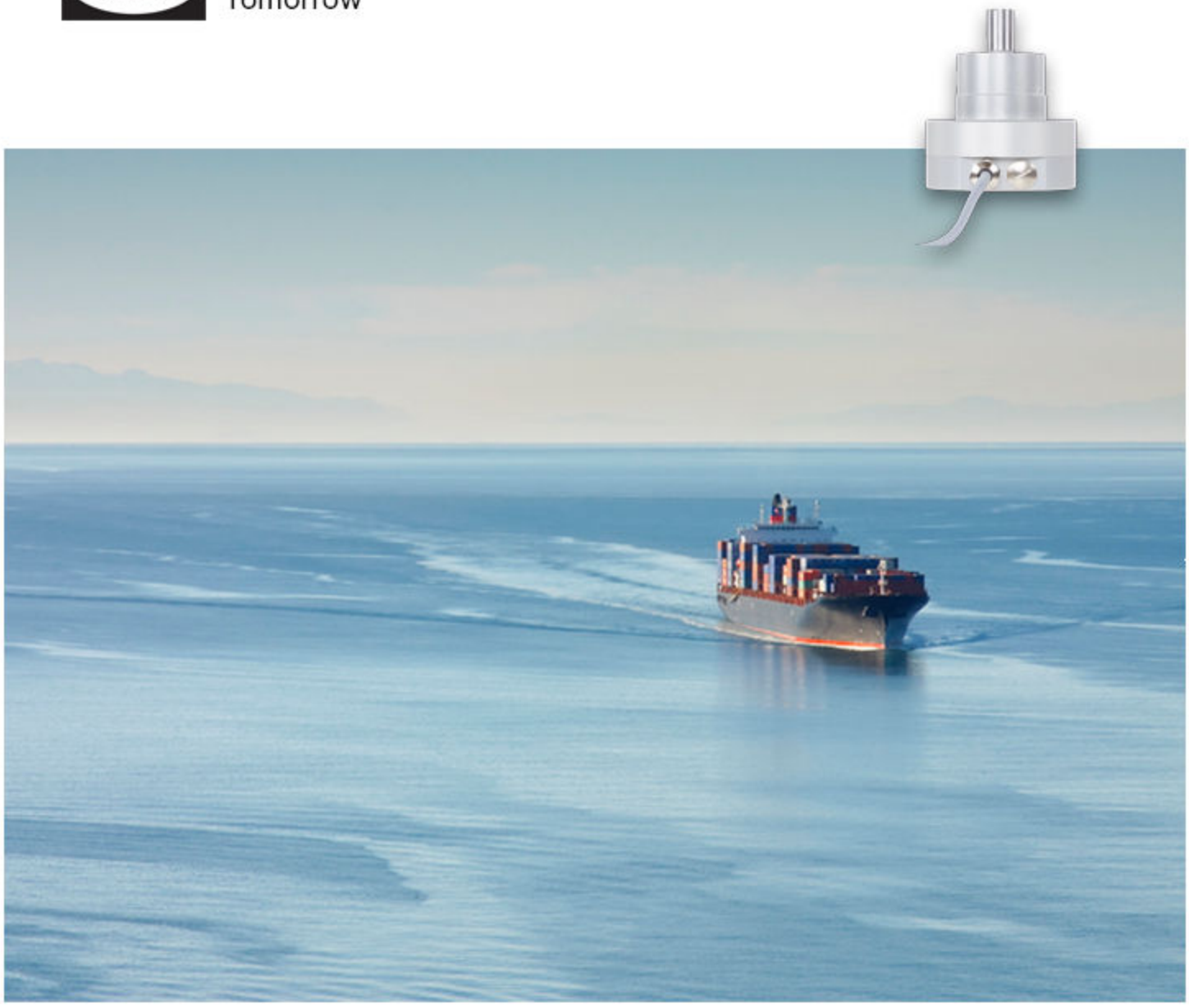


1. Rudder angle setup

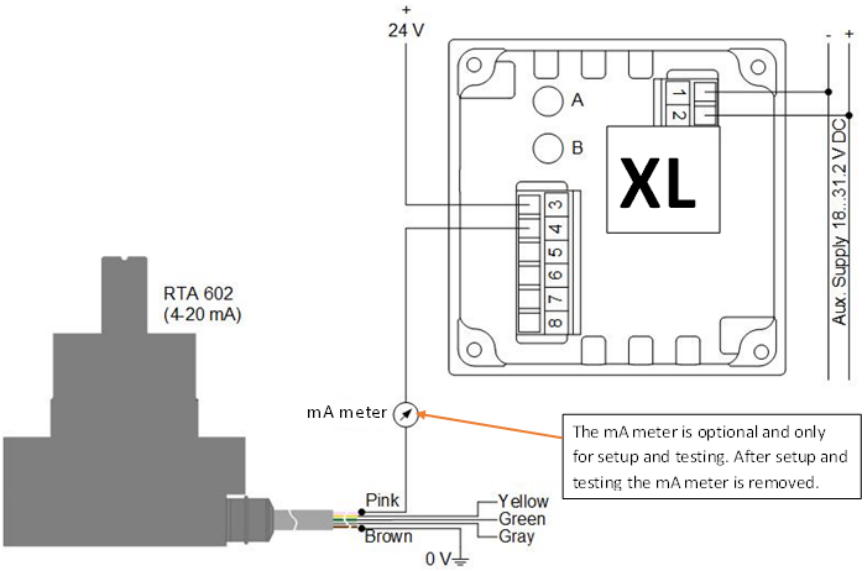
2. Azimuth angle setup

1. Rudder angle setup

1.1 Zero angle set (at 12 mA)

This document includes system description of a complete Rudder Angle indicator (RAI) system setup. It includes examples of wiring application and setup procedure suitable for a rudder angle transmitter. Default rotation is CW (clockwise).

If the rudder transmitter RTA 602 needs zero setting after installation, the following setup functions must be performed:



XL connection table

Table 1.1 XL connection table

Pin Number	Function		Note
1	Supply voltage	0 V	Consumption max. 150 mA
2		24 V	
3	Analogue input	Input 1 (sin)	Input 1 and GND used for single input. On 4 to 20 mA, input 1 is CW and input CCW. **Note: GND is mutual for input 1 and input 2.**
4		GND	
5		Input 2 (cos)	
6	Illumination	Illumination +	Dimmer input. Dimmer range 7 to 30 V DC. Consumption max. 30 mA.
7		Illumination GND	
8	-	NC	Not connected - can be used freely.
A	Analogue adjustment	Max. adjustment	Max. and zero adjustment, sealed by label.
B		Zero adjustment	On 360 degree versions, A is EM selection and B is zero adjustment.

For adjusting CW and CCW on the XL, the power must be disconnected after selecting input 1 (CW) or input 2 (CCW).

For CW zero angle adjustment, follow these steps (4–20 mA):

Table 1.2 XL Connection table

1. Place the rudder at zero 0° (after mounting the RTA 602 to the rudder system)

2. The green (S1) + yellow (S2) + grey (SC) wires are not connected (all open) for more than 10 sec.

3. Connect the green (S1) + grey (SC) wires. XL goes "out of range" (mA-meter shows 3.2 mA) (if you exceed 10 sec., the RTA goes out of setup mode and you have to start from step 1).

XL Indicator "out of range"

4. Between 3 to 10 sec., disconnect the green (S1) and grey (SC) wires (if you exceed 10 sec., the RTA goes out of setup mode and you have to start from step 1).

5. Between 3 to 10 sec., connect the green (S1) + yellow (S2) + grey (SC) wires. XL goes to zero 0° (mA-meter shows 12 mA).

The RTA is now zero-adjusted.
Rotation = CW
Angle = ± 180°

INFO
Normal operation: all three setup wires must be connected.

For CCW zero angle adjustment, follow these steps (20-4 mA):

1. Place the rudder at zero 0° (after mounting the RTA 602 to the rudder system).

2. The green (S1) + yellow (S2) + grey (SC) wires are not connected (all open) for more than 10 sec.

3. Connect the yellow (S2) + grey (SC) wires. XL goes "out of range" (mA-meter shows 3.2 mA) (if you exceed 10 sec., the RTA goes out of setup mode and you have to start from step 1).

XL Indicator "out of range"

4. Between 3 to 10 sec., disconnect the yellow (S2) and grey (SC) wires (if you exceed 10 sec., the RTA goes out of setup mode and you have to start from step 1).

5. Between 3 to 10 sec., connect the green (S1) + yellow (S2) + grey (SC) wires. Indicator goes to zero 0° (mA-meter shows 12 mA)

The RTA is now zero-adjusted.
Rotation = CCW
Angle = ± 180°

INFO
Normal operation: all three setup wires must be connected.

1.2 Min. angle set (at 4 mA) and Max. angle set (at 20 mA)

Max. Angle is ±170°

After zero adjustment, you have to adjust the minimum and maximum range. If you are not able to mechanically set the rudder at max XL indicator scale angle, then go to section 3 for ½ angle calibration.

1. Place rudder at min. "45° STBD side". (Range 1° to 170°)

2. Connect the green (S1) + yellow (S2) wire, and keep them connected during the min. and max. procedure. The grey (SC) wire is not connected (open) - then we are ready for programming min.

3. Connect the grey (SC) wire to the two wires green (S1) + yellow (S2). XL Indicator goes "out of range" (mA-meter shows 3.2 mA).

XL indicator "out of range"

4. Between 3 to 10 sec., remove the grey (SC) wire from the green (S1) + yellow (S2) wires (if you exceed 10 sec., the RTA goes out of setup mode and you have to start from step 1).

5. Between 3 to 10 sec., connect the grey (SC) wire to the green (S1) + yellow (S2) wires. The indicator goes to min. 45° "STBD side" (mA-meter shows 4 mA).

6. Remove the grey (SC) wire from the green (S1) + yellow (S2) wires.

7. Place rudder at max. "45° PORT side" (range 1° to 170°).

8. Connect the grey (SC) wire to the two wires green (S1) + yellow (S2). The XL Indicator goes "out of range" (mA-meter shows 3.2 mA).

XL Indicator "out of range"

9. Between 3 to 10 sec., remove the grey (SC) wire from the green (S1) + yellow (S2) wires (if you exceed 10 sec., the RTA goes out of setup mode and you have to start from step 6).

10. Between 3 to 10 sec., connect the grey (SC) wire to the green (S1) + yellow (S2) wires. The indicator goes max. 45° "Port side" (mA-meter shows 20 mA).

The system is now set up and running normally.

INFO
Normal operation: all three setup wires must be connected.

INFO
If you have made an error and want to start over, disconnect the grey (SC) wire from the green (S1) + yellow (S2) wires for more than 1 sec. and start at step 1 or step 6.

INFO
If the indicator after adjustment in step 5 "Port side" goes the wrong way, that is to STBD (= 20 mA), then you have to make the new CW or CCW zero alignment and minimum and maximum range adjusting.

1.3 Min. ½ angle set: (at 8 mA) and Max. ½ angle set: (at 16 mA)

In some rudder installations, it may not be possible to physically position the rudder at the indicators min.

(4 mA) and max. (20 mA) scale positions. In this case, it is possible to make a ½ angle calibration.

1. Place rudder at min ½ scale angle (22.5° STBD side). (Range 1° to 85°)

2. Connect the green (S1) + yellow (S2) wires. The grey (SC) wire is not connected (open) - then we are ready for programming ½ angle.

3. Connect the grey (SC) wire to the two wires green (S1) + yellow (S2). The indicator goes "out of range" (mA-meter shows 3.2 mA).

4. Between 3 to 10 sec., remove the green (S1) wire from the grey (SC) + yellow (S2) wires (if you exceed 10 sec., the

RTA goes out of setup mode and you have to start from step 1).

5. Between 3 to 10 sec., connect the green (S1) wire to the grey (SC) + yellow (S2) wires. The indicator goes min. 22.5° STBD side (mA-meter shows 8 mA).

6. Remove all wire connections and place rudder at max ½ scale angle (22.5° PORT side) (range 1° to 85°).

7. Connect the grey (SC) wire to the two wires green (S1) + yellow (S2). The indicator goes "out of range" (mA-meter shows 3.2 mA).

8. Between 3 to 10 sec., remove the green (S1) wire from the grey (SC) + yellow (S2) wires (if you exceed 10 sec., the RTA goes out of setup mode and you have to start from step 6).

9. Between 3 to 10 sec., connect the green (S1) wire to the grey (SC) + yellow (S2) wires. The indicator goes max. 22.5° STBD side (mA-meter shows 16 mA).

The system is now set up and running normally.

INFO
Normal operation: all three setup wires must be connected.

INFO
If you have made an error and want to start over, disconnect the grey (SC) wire from the green (S1) + yellow (S2) wires for more than 1 sec. and start at step 1 or step 6.

INFO
If the indicator after adjustment in steps 5 PORT side goes the wrong way, that is to STBD (= 20 mA), then you have to make the new CW or CCW zero alignment and minimum and maximum range adjusting.

2. Azimuth angle setup

2.1 Azimuth setting (±180°)

Azimuth operations require RTA 602 with software version SW 2.5.2 or higher.

For CW zero angle adjustment, follow these steps (4–20 mA):

1. Place the rudder at zero 0° (after mounting the RTA 602 to the rudder system)

2. The green (S1) + yellow (S2) + grey (SC) wires are not connected (all open) for more than 10 sec.

3. Connect the green (S1) + grey (SC) wires.
XL turn to random angle and the amber triangle in the lower right corner of XL flashing (if you exceed 10 sec., the RTA goes out of setup mode and you have to start from step 1).

XL Indicator "out of range"

4. Between 3 to 10 sec., disconnect the green (S1) and grey (SC) wires (if you exceed 10 sec., the RTA goes out of setup mode and you have to start from step 1).

5. Between 3 to 10 sec., connect the green (S1) + yellow (S2) + grey (SC) wires.
XL goes to zero 0° (mA-meter shows 12 mA)and the amber triangle in the lower right corner of the XL stops flashing

INFO
Normal operation: all three setup wires must be connected.

The RTA is now zero-adjusted and set up for ±180°. This is the only way to set up the RTA for azimuth. If you adjust the RTA with max/min and then afterwards want to adjust it to ±180°, you have to make a new zero adjustment.

For CCW zero angle adjustment, follow these steps (20-4 mA):

1. Place the rudder at zero 0° (after mounting the RTA 602 to the rudder system)

2. The green (S1) + yellow (S2) + grey (SC) wires are not connected (all open) for more than 10 sec.

3. Connect the yellow (S2) + grey (SC) wires.
The XL turns to random angle and the amber triangle in the lower right corner of the XL flashing (if you exceed 10 sec., the RTA goes out of setup mode and you have to start from step 1).

XL Indicator "out of range"

4. Between 3 to 10 sec., disconnect the yellow (S2) and grey (SC) wires (if you exceed 10 sec., the RTA goes out of setup mode and you have to start from step 1).

5. Between 3 to 10 sec., connect the green (S1) + yellow (S2) + grey (SC) wires.
The XL goes to zero 0° (mA-meter shows 12 mA) and the amber triangle in the lower right corner of the XL stops flashing.

INFO
Normal operation: all three setup wires must be connected.

The RTA is now zero-adjusted and set up for ±180°. This is the only way to set up the RTA for azimuth. If you adjust the RTA with max/min and then afterwards want to adjust it to ±180°, you have to make a new zero-adjustment.

2.1.1 Disclaimer

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