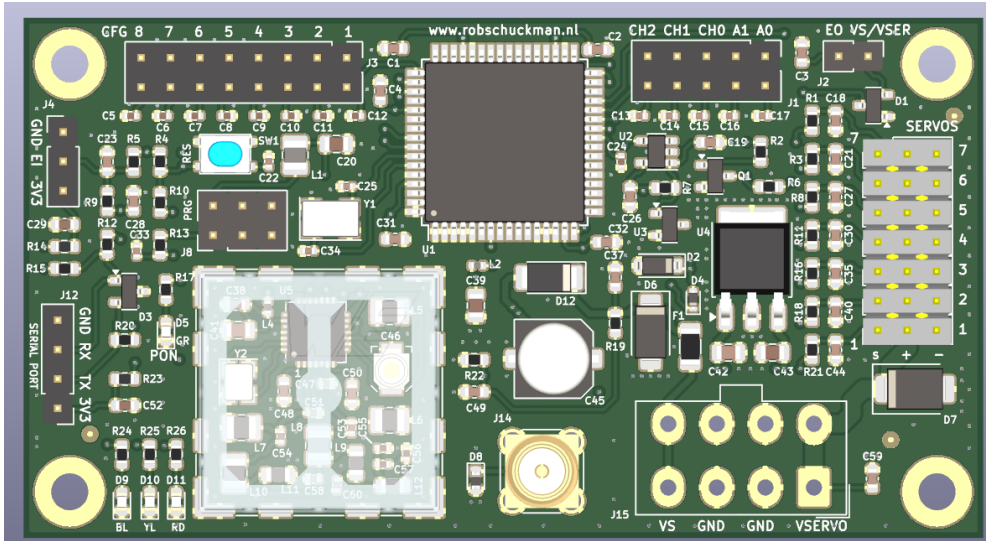


Flyer 27MHz remote control of a model submarine with telemetry.

Based on AX5043 mini receiver without digital outputs

Ashore (relay station)

4x electrical isolated mounting hole that can be connected to GND via solder jumper on back.	CFG ¹ = NU/NA/LO ²	CH2-CH1-CH0 RF channel (0-5). <u>Must match mini receiver PCB in vessel.</u> 000=CH0=26.995MHz 001=CH1=27.045MHz 010=CH2=27.095 MHz 011=CH3=27.145 MHz 100=CH4=27.195 MHz 101=CH5=27.255 MHz	A1-A0= NU/NA/LO	EO ³ = NU/NA/LO	Software ID: rc27hd ⁴ _tele_a shore_mini
EI ⁵ = NU/NA/LO					SERVOS= NU/NA/LO
Rx ⁶ is serial data RC protocol ⁷ from TE27 transmitter PCB or DIY Tx is used for sending telemetry data to BlueSmirf ⁸ v2					
CE pre-compliance	LEDs Steady GRN = Power on indicator Flashing BLUE = Transmitting Flashing YEL = Valid serial data received (Rx) Flashing RED = Valid RF data received	SMA Antenna connector Impedance = 50Ω RF power = 30mW	Supply voltages: VS: 6-12V (battery or adapter) F1: 0.5A slow blow fuse (1206) VSEURO: NU/NA/LO		
Outer PCB dimension: 45x83mm Mounting holes: 4x3.2mm, centre=37x75mm, 4mm from edge of PCB. Function: acts like a relay station for data exchange between vessel and shore.					

¹ Configuration

² Not used/not applicable/leave open

³ Error output

⁴ Remote control 27MHz half-duplex

⁵ Error input

⁶ In case of absence, 7x 1.5ms servo pulses are transmitted to the vessel.

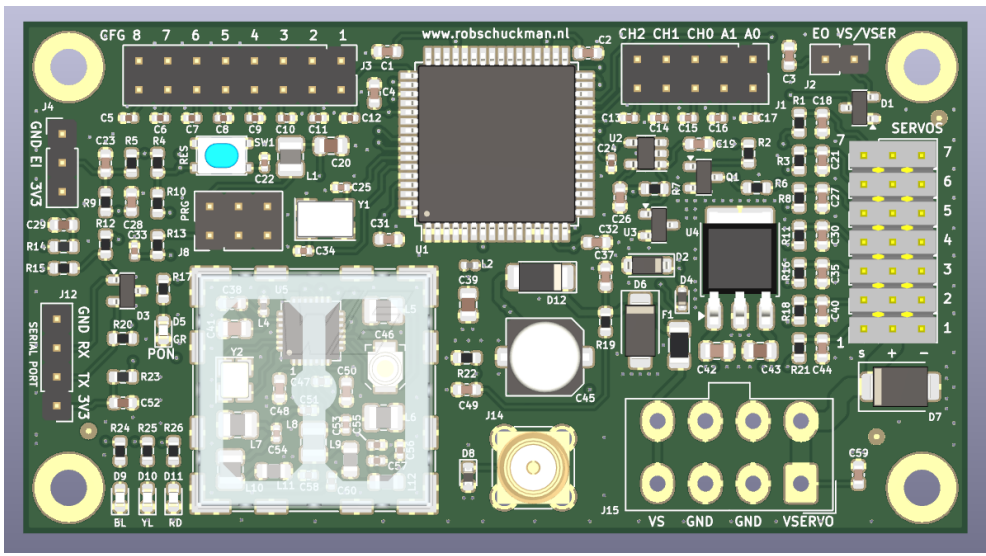
⁷ Open source

⁸ Wireless serial link (Bluetooth). Operated at 3.3V (solder jumper JP2). Display: smartphone with terminal app.

Flyer 27MHz remote control of a model submarine with telemetry.

Based on AX5043 mini receiver without digital outputs

Vessel (controller)

4x electrical isolated mounting hole that can be connected to GND via solder jumper on back.	CFG 8-1 = Configuration 1=Enable reverse thrust 2 =X-rudder ⁹ (uses free 2) 3=Low battery guard VS 4=Low battery guard VS 5=Low battery guard VS 6=Empty tanks direct in case of a non-fatal error 7=Two propellers ¹⁰ (uses free 2) 8=Invert reverse thrust	CH2-CH1-CH0 RF channel (0-5). <u>Must match mini receiver PCB ashore.</u> 000=CH0=26.995MHz 001=CH1=27.045MHz 010=CH2=27.095 MHz 011=CH3=27.145 MHz 100=CH4=27.195 MHz 101=CH5=27.255 MHz	A1-A0 Protocol address (0-3). <u>Must match transmitter PCB ashore.</u> 00=ADRO 01=ADR1 10=ADR2 11=ADR3	EO ¹¹ = 6-24V/0.3A error output (buoy release) VS/VSERVO selection via solder jumper at the back.	Software ID: rc27hd ¹² _tele_vessel_mini
EI = Error input (active low). Response time=2s 3V3 (10mA) available for interface electronics. Rx and Tx connect to optional auxiliary PCB					7x 1-2ms servo pulse (3V3). Low pass output filter (220 Ohm/ 1nF). 7=aftPiston 6= Propeller 5=fwdPiston 4=Free 2 ¹³ 3=Free 1 2=Dive rudder 1=Left/right
	LEDs Steady GRN = Power on indicator Flashing BLUE = Transmitting Flashing YEL = Valid aux data received Flashing RED = Valid RF data received	Configuration (CFG 543) 000= Low battery guard VS off 001=5.75V (6.00V, 3 cells, Lead acid) 010=6.90V (7.20V, 6 cells, NiMH/NiCD) 011=6.60V (7.40V, 2 cells, Lithium/LiPo) 100=8.05V (8.40V, 7 cells, NiMH/NiCD) 101=9.20V (9.60V, 8 cells, NiMH/NiCD) 110=9.90V (11.1V, 3 cells, Lithium/LiPo) 111=10.5V (12.0V, 6 cells, Lead acid)	SMA antenna connector Impedance = 50Ω, RF power = 30mW Supply voltages: - VS: 6-12V battery (low battery guard applicable) - F1: 0.5A slow blow fuse (1206) - VSERVO: 6-24V (max 8A, non-fused)		
Outer PCB dimension: 45x83mm Mounting holes: 4x3.2mm, centre=37x75mm, 4mm from edge of PCB. Non-fatal error ¹⁴ : for instance RF signal loss results in propeller and pistons to halt until RF signal is restored. Limitations: does not support digital outputs (ULN2003/NPN), supports buoyancy system with piston tanks only. Error input (EI): supports open collector/NPN and normally open switches (active low). Signals can be paralleled. Fatal errors ¹⁵ : a low battery and/or an active EI input causes the vessel to surface after which further diving is prohibited (reset required). No auxiliary PCB but using piston tanks: use two end-limit switches with a diode over NC contact in series with motor wiring to stop piston at both end positions.					

⁹ Cannot be used together with two propellers.

¹⁰ Cannot be used together with X-rudder.

¹¹ Activates after error- or water detector input (aux. PCB) is uninterrupted active for 20s

¹² Remote control 27MHz half-duplex

¹³ Is used with two propellers or X-rudder.

¹⁴ Non-fatal error: piston tanks start emptying after 20s. It is a configuration option for the piston tank(s) to start emptying right away.

¹⁵ Fatal error: direction rudder (L/R) and propeller remains controllable. The MCU of mini receiver can be reset via hard- and software.