

VERSION 1.0

8.5.2014



**ELEKTRONIKA**  
**naglič**

# TELEMETRY TX & TELEMETRY RX

USER GUIDE

ELEKTRONIKA NAGLIČ D.O.O.  
GORICICA PRI IHANU 44, 1230 DOMZALE, SLOVENIA

## TELEMETRY TX & TELEMETRY RX

### ABOUT

Telemetry TX and Telemetry RX are used to transfer one or two digital inputs (switches, water float switches, etc.) from sensors thru Motorola DMR Radios.

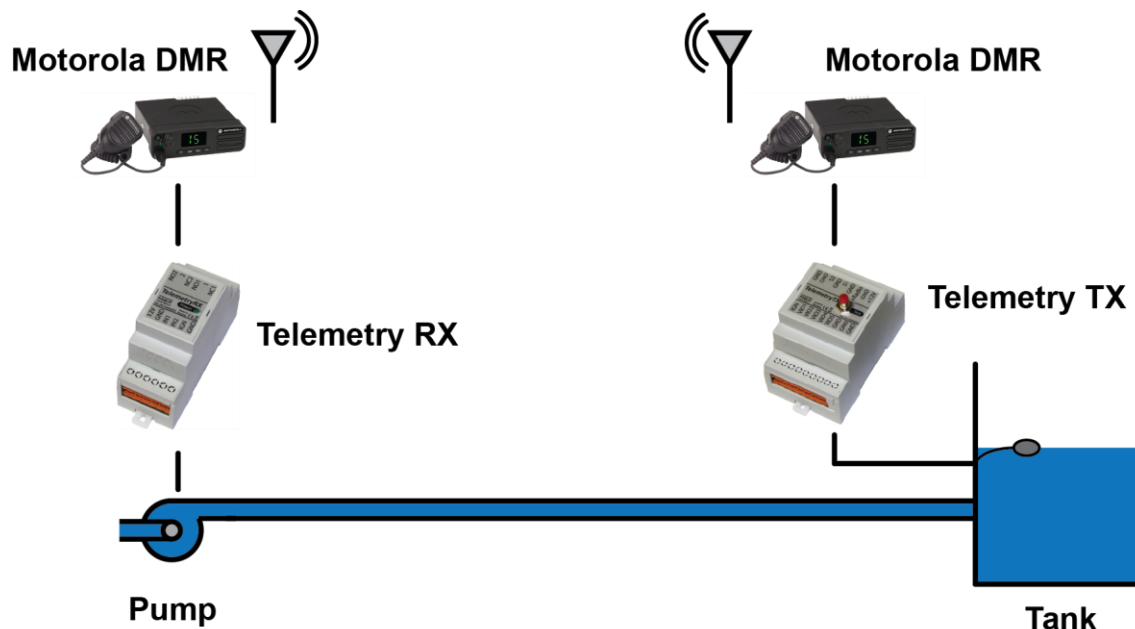
Transmit device can sample two inputs. Device can work in different ways, regarding the configuration:

- transmitting input states when states changes,
- transmitting input states in defined time intervals,
- device can turn off radio when not transmitting (between time intervals) for saving battery,
- transmitting input states when TEST button is pressed

Receive device receive signals from Motorola DMR Radio. User has access to “normal open” and “normal closed” relay contacts.

### USE CASE

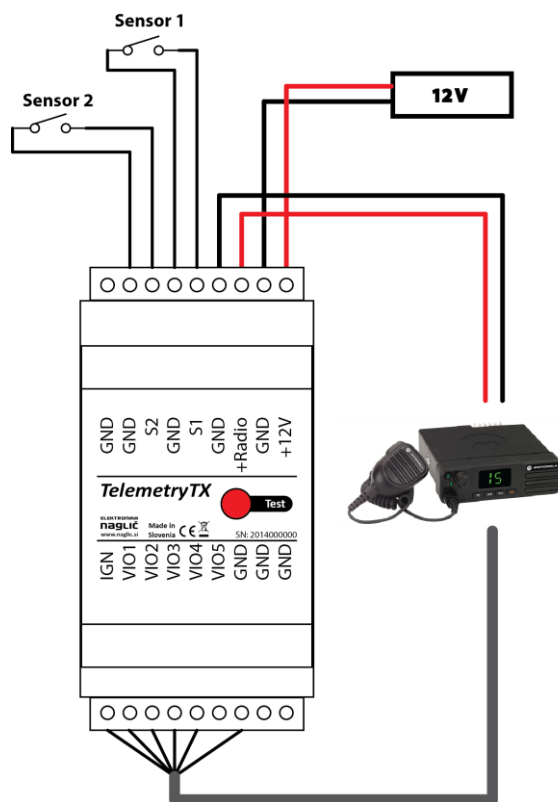
We have water pump in valley pumping water in tank located on hill, where we have systems powered from solar cells (we must save power). Task is to equip both locations with Motorola DMR Radios and Telemetry TX and Telemetry RX devices. When tank is empty radio must transmit signal to pump. Pump starts filling the tank. When tank is full we must send signal to stop pump.



## WIRING DIAGRAMS

## WIRING DIAGRAM ON TX SIDE

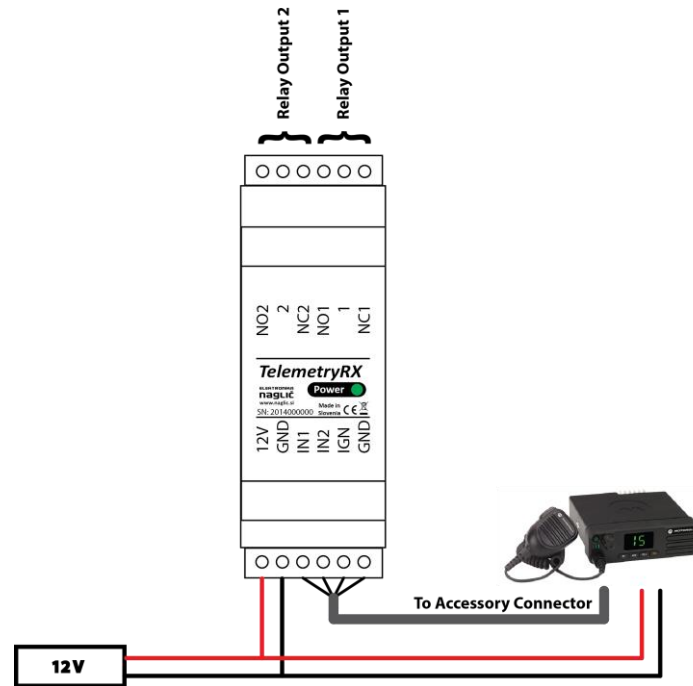
On TX side connect Telemetry TX, Motorola MotoTRBO radio as showed on diagram:



If you have continuous AC power and do not have solar cells then Motorola MotoTRBO radio can be connected to permanent 12V. You can also omit IGN wire from Telemetry TX and connect to +12V.

## WIRING DIAGRAM ON RX SIDE

On RX side connect Telemetry RX, Motorola MotoTRBO radio as showed on diagram:



## CONFIGURING MOTOROLA DMR CPS

## CONFIGURING MOTOROLA DMR CPS ON RX SIDE

Under Accessories settings, GPIO Physical Pins use following configuration:

GPIO Physical Pins			
	Feature	Active Level	Debounce
Pin #17	Unassigned	Low	<input checked="" type="checkbox"/>
Pin #19	Unassigned	Low	<input checked="" type="checkbox"/>
Pin #20	Telemetry VIO 1	High	<input checked="" type="checkbox"/>
Pin #21	Telemetry VIO 2	High	<input checked="" type="checkbox"/>
Pin #22	Unassigned	Low	<input checked="" type="checkbox"/>
Pin #24	Unassigned	Low	<input checked="" type="checkbox"/>
Pin #26	Unassigned	Low	<input checked="" type="checkbox"/>

Important settings are for pin #20, #21. Other pins can be used for other functions.

Under Telemetry settings use following configuration:

	Feature	Description	Action	Pulse Time (ms)		Mode	Channel	Call	Target VIO	Text Message
►	Telemetry Button 1		None	200	↕	None	Selected	None	None	None
	Telemetry Button 2		None	200	↕	None	Selected	None	None	None
	Telemetry Button 3		None	200	↕	None	Selected	None	None	None
	Telemetry VIO 1	Signal1	On Voltage High/Low Command	200	↕	None	Selected	None	None	None
	Telemetry VIO 2	Signal2	On Voltage High/Low Command	200	↕	None	Selected	None	None	None
	Telemetry VIO 3		None	200	↕	None	Selected	None	None	None
	Telemetry VIO 4		None	200	↕	None	Selected	None	None	None
	Telemetry VIO 5		None	200	↕	None	Selected	None	None	None

Important settings are Telemetry VIO1 and VIO2. Other Telemetry settings can be used for other functions.

Digital channel must be used for telemetry. Use of "Data Call Confirmed" function is recommended.

## CONFIGURING MOTOROLA DMR CPS ON TX SIDE

First add new digital contact with ID of MotoTRBO radio on RX side. Name it "TelemetryRX" or name of site.

Under Accessories settings, GPIO Physical Pins use following configuration:

GPIO Physical Pins			
	Feature	Active Level	Debounce
Pin #17	Unassigned	Low	<input checked="" type="checkbox"/>
Pin #19	Unassigned	Low	<input checked="" type="checkbox"/>
Pin #20	Telemetry VIO 1	High	<input checked="" type="checkbox"/>
Pin #21	Telemetry VIO 2	High	<input checked="" type="checkbox"/>
Pin #22	Telemetry VIO 3	High	<input checked="" type="checkbox"/>
Pin #24	Telemetry VIO 4	High	<input checked="" type="checkbox"/>
Pin #26	Unassigned	Low	<input checked="" type="checkbox"/>

Important settings are for pin #20, #21, #22, #24. Other pins can be used for other functions.

Under Telemetry settings use following configuration:

	Feature	Description	Action	Pulse Time (ms)	Mode	Channel	Call	Target VIO	Text Message
▶	Telemetry Button 1		None	200	None	Selected	None	None	None
	Telemetry Button 2		None	200	None	Selected	None	None	None
	Telemetry Button 3		None	200	None	Selected	None	None	None
	Telemetry VIO 1	Signal1ON	Send Voltage High Command	200	Digital	Selected	TelemetryRX	Telemetry VIO 1	None
	Telemetry VIO 2	Signal1OFF	Send Voltage Low Command	200	Digital	Selected	TelemetryRX	Telemetry VIO 1	None
	Telemetry VIO 3	Signal2ON	Send Voltage High Command	200	Digital	Selected	TelemetryRX	Telemetry VIO 2	None
	Telemetry VIO 4	Signal2OFF	Send Voltage Low Command	200	Digital	Selected	TelemetryRX	Telemetry VIO 2	None
	Telemetry VIO 5		None	200	None	Selected	None	None	None

Important settings are Telemetry VIO1-4. Other Telemetry settings can be used for other functions.

Digital channel must be used for telemetry. Use of "Data Call Confirmed" function is recommended.

## PREPARING CABLES

## TELEMETRY RX TO MOTOROLA DMR CABLE

For wiring Telemetry RX to Motorola DMR we need 4 core cable and PMLN5072 Motorola kit (MotoTRBO Rear Accessory Connector).

Signal name	Telemetry RX pin	MotoTRBO Accessory pin
Ground	GND	#18
Ignition	IGN	#25
Telemetry VIO1	IN1	#20
Telemetry VIO2	IN2	#21

## TELEMETRY TX TO MOTOROLA DMR CABLE

For wiring Telemetry TX to Motorola DMR we need 6 core cable and PMLN5072 Motorola kit (MotoTRBO Rear Accessory Connector).

Signal name	Telemetry RX pin	MotoTRBO Accessory pin
Ground	GND	#18
Ignition	IGN	#25
Telemetry VIO1	VIO1	#20
Telemetry VIO2	VIO2	#21
Telemetry VIO3	VIO3	#22
Telemetry VIO4	VIO4	#24