

# RC4 - Fixed Parameters of Ripple Control System

RC4 parameters can be edited using Windows based application “RC4 configurator”. Ripple Control System defines some parameters, and they are the same for all devices and all application. These parameters are specified by end user, and built in “RC4 configurator” as so called preset values. Users are not allowed to change it, to avoid mistakes and errors while programming RC4 devices.

Next chapters give some explanations of system parameters and table, which is supposed to be filled by end user.

## 1. Control signal

It is necessary to define control signal frequency, operate voltage and non-operate voltage. Operate voltage is the lowest signal level (given in % supply voltage) at which receiver always receives telegram. Non-operate voltage is the highest signal level (given in % supply voltage) at which receiver never receives telegram.

## 2. Telegram timing and pulses for special purpose

Telegram is always sent using well-defined timing sequence. Timing is defined by start pulse, start pause, pulse and pause duration. After start pulse follows start pause and ripple of ‘N’ pulses. ‘N’ is length of classic telegram.

During start pulse time, control signal is added to main voltage, and during start pause control signal is not added. If control signal is added in time slices of pulse, logical ‘1’ is send, otherwise logical ‘0’. During pause time slices, control signal is not added to main voltage, although some telegram definitions allow signal during pause, too. RC4 device can be parameterized to handle all this requirements.

Classic telegram is made of ‘N’ pulses, which can be used for selection or action. While receiving classic telegram, it is possible to switch to DIN43861-301 protocol. For this purpose active pulse for switch action and first pulse of new protocol has to be defined.

## 3. Defining modes of operation of RC4 device

Modes of operations of RC4 device are set by parameters, but users cannot edit them. “RC4 configurator” only displays it. The modes are:

- STATUS LED                      ACTIVE/INACTIVE  
ACTIVE means that STATUS LED shortly flashes every 2 seconds, INACTIVE means that STATUS LED is permanently turned off.
- Rel. refreshing                      ACTIVE/INACTIVE  
ACTIVE means that relays state will be refreshed every 2 minutes, INACTIVE means that no refreshing will take place.
- DIN interpreter at PON      Starts after 1.st TIME SYNC/Starts immediately  
“Starts after 1.st TIME SYNC” means that receiver will start to operate as local automat after first setting of real time: locally or remotely. RC4 will wait for new

setting of real time after local programming, or if battery is run out. PON commands will be executed anyway.

“Starts immediately” means that receiver will start to operate as local automat, no matter of real time adjusting.

- Switching to DIN protocol      With command/Always  
 “With command” means that only special command (DS) can switch the receiver to DIN43861-301 protocol.  
 “Always” means that no command is required for switching to DIN43861-301 protocol.  
 In both cases DIN43861-301 protocol can start with any pulse of classic telegram.
- Compatibility mode      pure DIN43861-301/Other manufacturer  
 Since some manufacturer slightly differs from DIN43861-301, this option guarantees full compatibility with existing devices in system.
- Cycling used with classic teleg      CYC1 MODE/MYCYC MODE  
 RC4 uses 2 types of cyclic functions: CYC1 and MYCYC.  
 “CYC1 MODE” means that classic telegram will start CYC1 cyclic function, by ‘C’ command.  
 “MYCYC MODE” means that classic telegram will start MYCYC cyclic function, by ‘T’ command.
- Telegram timing can be based on 50 Hz main frequency, or crystal quartz oscillator.  
 Which timing has to be applied depends on Ripple Control Transmitter. Both transmitter and receivers must use the same type of time base.
- Telegram restart      Enabled/Disabled  
 If enabled, the receiver will start receiving new telegram if new start pulse arises during telegram in progress.
- Enable commands on:      Only active pulse/Active and inactive pulse  
 “Only active pulse” means that only ACTIVE command pulse (CP) will carry out assigned commands.  
 “Active and inactive pulse” means that command pulse could be ACTIVE or INACTIVE, if it falls into the address area. After the address area only ACTIVE command pulse can carry out assigned commands.
- Time for TS command (min):      Time of day in minutes from midnight  
 Time to which device will set its clock, when it receives TS (Time Sync) conventional command.
- Auto inverse addr:      YES/NO  
 If YES, conventional commands in 1<sup>st</sup> column will work with the combination of selection pulses as it is, and commands in 2<sup>nd</sup> column will work with inverse combination of selection pulses.  
 If NO, conventional commands in both columns will work with combination of selection pulses, as it is.
- RTC (Real Time Clock) time base can be 50 Hz main frequency or quartz crystal oscillator.

## 4. Table of Fixed Parameters of Ripple Control System for RC4

Fixed Parameters of Ripple Control System for RC4		
Control signal	Nominal main voltage $U_N(V_{rms})$	
	Nominal main frequency $f_N(Hz)$	
	Control signal frequency $f_s(Hz)$	
	Control signal operate voltage $U_f(\%U_N)$	
	Control signal non-operate voltage $U_{fN}(\%U_N)$	
Telegram timing and special purpose pulses	Start pulse duration (msec)	
	Start pause duration (msec)	
	Pulse duration (msec)	
	Pause duration (msec)	
	Pause check required (YES/NO)	
	Number of pulses in classic telegram	
	Number of selection pulses in classic telegram	
	First pulse of DIN43861-301 protocol	
	Telegram timing derived from: (A/B) A-main frequency-50 Hz B-crystal quartz oscillator	
Modes of operation of RC4 devices	STATUS LED (ACTIVE/INACTIVE)	
	Relay state refreshing (YES/NO)	
	DIN interpreter at power ON: (A/B) A- starts after 1.st TIME SYNC B- starts immediately	
	Switching to DIN protocol: (A/B) A- with special command (DS) B- no command needed (always)	
	Compatibility mode: A/B A-Other manufacturer B-pure DIN43861-301	
	Type of cyclic function used with classic telegram: CYC1/MYCYC	
	Telegram restart Enabled/Disabled	
	Enable commands on: A/B A-Only active pulse B-Active and inactive pulse	
	Time for TS command (min)	
	Auto inverse addr (YES/NO)	
	RTC time base: A/B A- main frequency-50 Hz B-crystal quartz oscillator	

Signature:

Stamp