

Robitronic IR Transponder Protocol

Transfers 3 byte data (little endian) plus 1 byte CRC at 100KHz serial like with start/parity/stop bit.
Total number of bits sent $4 \times (1+8+1+1) = 44$ bits.

Serial byte frame format (11 bits):

<start bit><8 data bits><parity bit><stop bit>

Packet format (44 bits):

<11 bit data byte 1><11 bits data byte 2><11 bits data byte 3><11 bits CRC byte><random 1..4.5ms pause>

Data representation IR:

0 = 10us IR off

1 = 2us IR on, 8us off

start bit = 1

parity bit = 1 if even number of bits in data byte, 0 otherwise

stop bit = 0

pause = 0

Example for ID 80175 decimal:

1. convert to 24Bit (big endian): 00000001 00111001 00101111
2. convert to 24Bit (little endian - swap first and last byte): 00101111 00111001 00000001
3. negate 24Bit little endian bit wise: 11010000 11000110 11111110
4. send 3 bytes byte wise with start/parity/stop bits
5. calculate 8 bit CRC (don't know how yet)
6. send CRC byte byte wise with start/parity/stop bits

Resulting IR stream for ID 80175 decimal:

1 11010000 00

1 11000110 10

1 11111110 00

1 10111000 10

pause

CRC calculation (to be verified)

CRC for 80175 is 10111000 (184 decimal) or inverted 01000111 (71 decimal)

Using data from step 2 (0x2f 0x39 0x01) <https://crccalc.com/?crc=2f3901&method=crc8&datatype=hex&outtype=3> returns CRC 0b01000111. Needs to be sent inverted ->

0b10111000.

Algorithm seems to be CRC-8 with CRC to be negated before sending.

