Protocol overview

Serial port settings: baudrate = 115200, databits = 8, stopbits = 1, parity = none

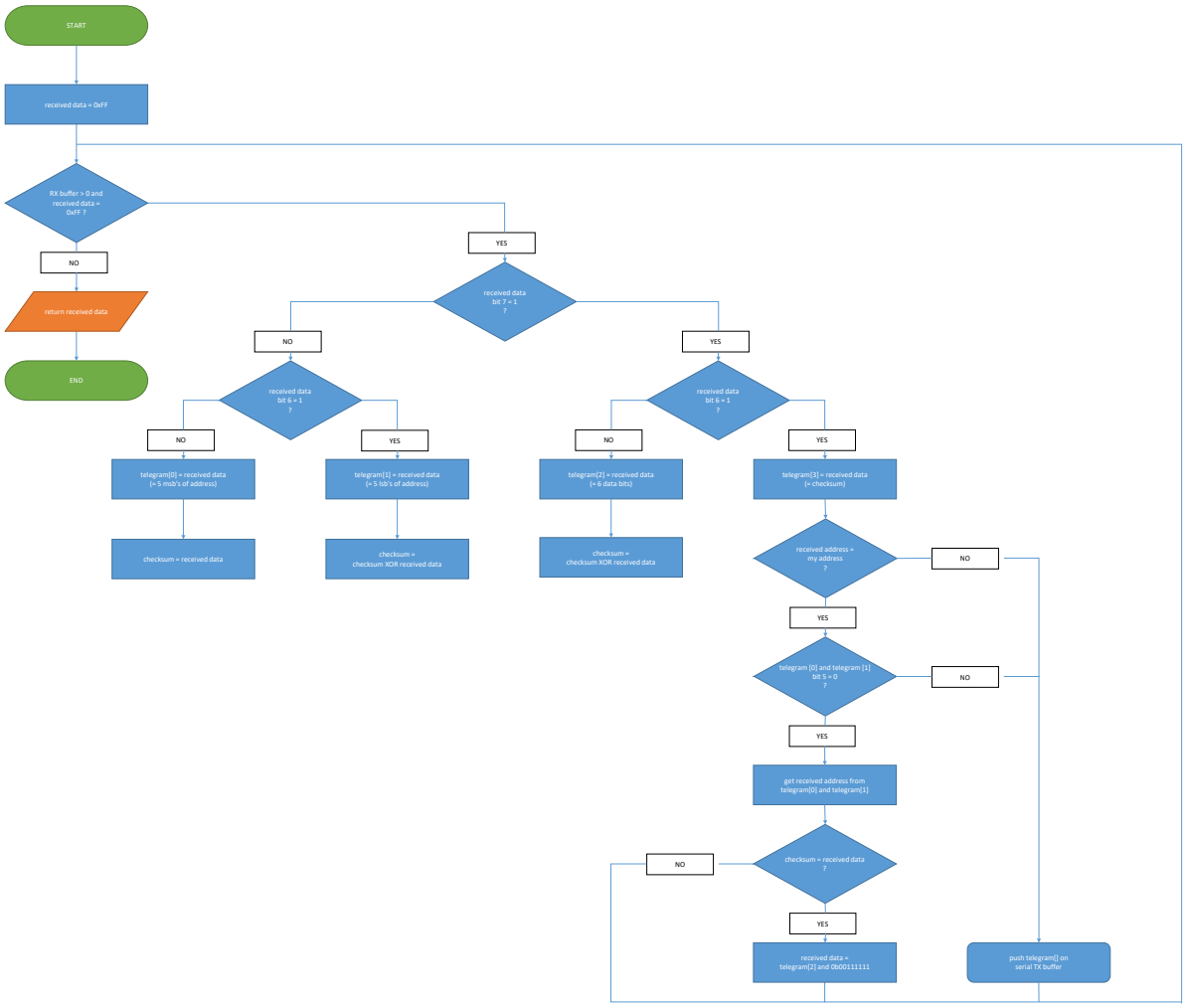
Each device is in a 'daisy chain' configuration
The RX of the device is connected to the TX of the previous device or PC
The TX of the device is connected to the RX of the next device or PC

telegram from PC to device								
	bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
byte 0	0	0	0	5 msb's address				
byte 1	0	1	0	5 lsb's address				
byte 2	1	0	6 bit data					
byte 3	XOR checksum (checksum = 'byte 0' XOR 'byte 1' XOR 'byte 2', starts with 0b11xx xxxx)							

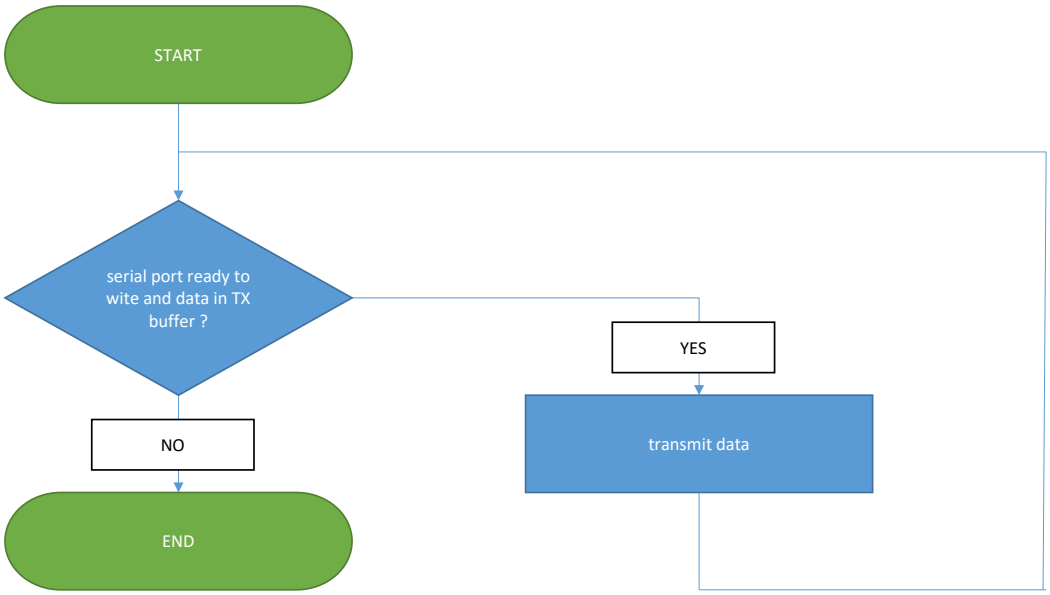
telegram from device to PC								
	bit 7	bit 6	bit 5	bit 4	bit 3	bit 2	bit 1	bit 0
byte 0	0	0	1	5 msb's address				
byte 1	0	1	1	5 lsb's address				
byte 2	1	0	6 bit data					
byte 3	XOR checksum (checksum = 'byte 0' XOR 'byte 1' XOR 'byte 2', starts with 0b11xx xxxx)							

For more detailed information about the address and data configuration format, see next pages

Serial read (poll)



Serial write (send data)



TX buffer, principle of working

The TX buffer is a ringbuffer with a size of 1024 bytes
The TX (ring)buffer is a FIFO buffer (first-in-first-out)

The purpose of this buffer is:
1) to push incomming telegrams in the buffer which are not for my device and that must be forwarded to the next device
2) to push telegrams that must be sended to the PC coming from my device

The TX (ring)buffer has 2 pointers, the'push pointer' and the 'get pointer'
The push pointer will be used to push data (bytes) into the buffer
The get pointer will be used to get data (bytes) from the buffer
At the end of the buffer size (1023), the pointer restart from 0

To test if there is data in the TX buffer (data that is not yet transmitted), see if the push pointer <> the get pointer !

initial state (push pointer = get pointer, nothing to send)															
	TX buffer														
byte	0	1	2	3	4	5	6	7	8	9	10	...	1021	1022	1023
data	?	?	?	?	?	?	?	?	?	?	?	...	?	?	?
push pointer	I'm here														
get pointer	I'm here														

push a telegram on the TX buffer (push pointer <> get pointer, 4 bytes are ready to send)															
	TX buffer														
byte	0	1	2	3	4	5	6	7	8	9	10	...	1021	1022	1023
data	0x00	0x40	0x80	0xC0	?	?	?	?	?	?	?	...	?	?	?
push pointer					I'm here										
get pointer	I'm here														

push another telegram on the TX buffer (push pointer <> get pointer, 8 bytes are ready to send)															
	TX buffer														
byte	0	1	2	3	4	5	6	7	8	9	10	...	1021	1022	1023
data	0x00	0x40	0x80	0xC0	0x20	0x62	0x81	0xC3	?	?	?	...	?	?	?
push pointer									I'm here						
get pointer	I'm here														

get a telegram from the TX buffer (after sending 4 bytes, push pointer <> get pointer, 4 bytes are still ready to send)															
	TX buffer														
byte	0	1	2	3	4	5	6	7	8	9	10	...	1021	1022	1023
data	0x00	0x40	0x80	0xC0	0x20	0x62	0x81	0xC3	?	?	?	...	?	?	?
push pointer									I'm here						
get pointer					I'm here										

get a telegram from the TX buffer (after sending another 4 bytes, push pointer = get pointer, nothing left to send)															
	TX buffer														
byte	0	1	2	3	4	5	6	7	8	9	10	...	1021	1022	1023
data	0x00	0x40	0x80	0xC0	0x20	0x62	0x81	0xC3	?	?	?	...	?	?	?
push pointer									I'm here						
get pointer									I'm here						