COMAC CAL

CZECH PRODUCER
AND DEVELOPER
OF MEASUREMENT
AND SENSOR TECHNOLOGY

FLOW 38
v8.x

Communication protocol specification
MODBUS RTU

d.v. 21/6/2013

WWW.COMACCAL.COM

Transmission service used

The master is the primary station which initiates all the messages transfers, the satellites stations are secondary stations which only transmit when they are asked for.

Transmission SPEED

The transmission speed can be 1200, 2400, 4800, 9600 baud. The transmission is asynchronous RS485 with a start bit, 8 data bits and a stop bit. Default transmission speed is 9600Bd.

Addresses

The addresses 1 to 255 are reserved for 255 secondary stations.

Request / Response

Public function code 03h – read holding registers

The master sends a public function code 03h (Read holding registers), starting address, no. of registers and the address of secondary station.

Address space:

0x00	unsigned long Fabrication No.
0x02	unsigned long volume ∑
0x04	unsigned long volume +
0x06	unsigned long volume -
0x08	unsigned long volume user
0x0A	signed long flow
0x0C	error code*

***Error table code:** Hi Byte = 0
Lo Byte = error code:

bit 0	Add volume overflow(unreasonable increment)
bit 1	FRAM error
bit 2	Empty tube
bit 3	Imp out overflow
bit 4	reserved
bit 5	reserved
bit 6	reserved
bit 7	reserved

Request:	Address	1Byte
	Function code (03h)	1Byte
	Starting address	2Byte
	No. of Registers	2Byte
	CRC32	2Byte
Response:	Address	1Byte
	Function code (03h)	1Byte
	Byte count	1Byte 2 x N*
	Register value	N* x 2Bytes
	CRC32	2Byte
		*N = Quantity of Registers
Error:	Address	1Byte
	Error code (83h)	1Byte
	Exception code	1Byte
	CRC32	2Byte

Here is an example of a request to read volume registers 02h – 09h:

Request:

Address	01h	
Function code	03h	
Starting address Hi	00h	
Starting address Lo	02h	(volume ∑)
No. of Registers Hi	00h	
No. of Registers Lo	08h	
CRC32 Hi	E5h	
CRC32 Lo	CCh	

Response:

Address	01h	
Function code	03h	
Byte count	10h	
Register value Hi	xxh	(volume ∑)
	xxh	
	xxh	
Register value Lo	xxh	
Register value Hi	xxh	(volume +)
	xxh	
	xxh	
Register value Lo	xxh	
Register value Hi	xxh	(volume -)
	xxh	
	xxh	
Register value Lo	xxh	
Register value Hi	xxh	(volume user)
	xxh	
	xxh	
Register value Lo	xxh	
CRC32 Hi	xxh	
CRC32 Lo	xxh	

Resolution units in the registers is given from resolution of LCD display.

Example:	LCD	Register
	53.4 m3	534
	689,89 L	68989
	5,6 m3/h	56

Illegal data address:

The data address 1, 3, 5, 7, 9, 11 received in the query is not an allowable address for the server (or slave). These addresses generate exception 0x02. Memory address spaces 0xFE00 through 0xFFFF are system registers, for the routine user are blocked.

Communication timing: