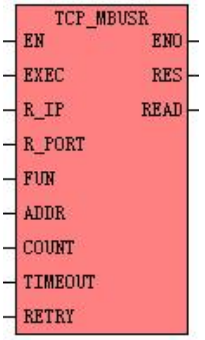
0.3.3.2.1 TCP_MBUSR

➢ Instructions and operation instructions

	name	Instruction format	CR	
LD	TCP_MBUSR			☑ K6
IL	TCP_MBUSR	TCP_MBUSR *EXEC, R_IP, R_PORT, FUN, ADDR, COUNT, TIMEOUT, RETRY, RES, READ*	U	

parameters	Input/Output	Data type	Allowed memory area
EXEC	Input	BOOL	I、Q、V、M、L、SM、RS、SR
R_IP	Input	DWORD	M、V、L、SM、constant
R_PORT	Input	WORD	M、V、L、SM、constant
FUN	Input	INT	constant（Modbus function code）
ADDR	Input	WORD	M、V、L、SM、constant
COUNT	Input	INT	M、V、L、SM、constant
TIMEOUT	Input	INT	M、V、L、SM、constant
RETRY	Input	INT	M、V、L、SM、constant
RES	Input	BYTE	Q、M、V、L、SM
READ	Input	BOOL、WORD、INT	Q、M、V、L、SM

Notice: Parameters R_IP, R_PORT, ADDR, COUNT, TIMEOUT, RETRY must be both constant types or memory types at the same time.

Note that the READ parameter is a variable-length block memory parameter, and the entire block memory cannot use the illegal memory area, otherwise the result will be unpredictable.

parameter	description
EXEC	If the rising edge transition of EXEC is detected, the instruction is triggered to execute.
R_IP	For the IP address of the remote server, you can directly enter the IP such as 192.168.210.100, or you can enter the hexadecimal DW#16#C0A8D264, that is, 192==C0 168==A8 210==D2 100==64.
R_PORT	The port of the remote server. 0 is not supported.
FUN	Modbus function code.
ADDR	The first register address of the modbusTCP slave to access.

COUNT	How many consecutive registers to access, when the FUN parameter==1 or 2, the COUNT range is 1-1600, and other inputs trigger an error; when the FUN parameter==3 or 4, the COUNT range is 1-125, and other inputs trigger an error.
TIMEOUT	The timeout time of this execution, in ms, cannot be 0ms, cannot be greater than 32767ms, and cannot be a negative number. For example, if you enter 5000, it means that within 5 seconds, the following sequence of actions will be performed: a. Always wait for the connection to the server to succeed, and send the data to be sent immediately after the success. If the connection is not successful, return failure and end. b. After the transmission is successful, wait for the first packet to receive data, and if it does not wait, it returns to fail and ends. c. After successful transmission, a packet of data is received, and the command ends successfully.
RETRY	The number of retries, the range is 0-255. If the input exceeds this range, the value of the low byte of this parameter will be automatically intercepted. After the transmission fails, the number of retries. For example, the number of retries is 1. If each transmission fails, the transmission will be started. After that, it is sent 2 times in total.
READ	When the FUN parameter is 1 or 2, it must be a BOOL variable, which is the first bit of the received bit string, and the other bits received in turn. When the FUN parameter is 3, 4, it must be a WORD or INT variable, which is the first word of the received data, and the other words received are placed in order.
RES	。When execution starts, this parameter outputs 0, and when execution ends, bit7 == TRUE. The byte value of bit0-bit6 combined, indicating the error code 0. The command was executed successfully. 1. Unable to automatically allocate client resources 2. wrong length 3. Operation timed out and no receipt received 4. Unable to connect to the server 5. TIMEOUT parameter error 6. IP or PORT parameter error 7. Function code error 8. There is an error in the receipt received

When the K series PLC is used as the ModbusTCP master, the TCP_MBUSR instruction is used to read the data in the slave. The applicable function codes for this instruction are 1 (read DO), 2 (read DI), 3 (read AO) and 4 (read AI).

The parameters R_IP and R_PORT represent the IP address and port number of the target slave station, and the port number range is 1~65535. FUN defines function codes. ADDR defines the starting address of the register to be read. COUNT defines the number of registers to be read. The maximum allowed value is 125 for AI, 125 for AO, 1600 for DI, and 1600 for DO.

A rising edge transition on the EXEC input is used to initiate communication. When the TCP_MBUSR instruction is executed, if the rising edge transition of EXEC is detected, TCP_MBUSR will conduct a communication: organize the message to send out according to the parameters input by the user and wait for the response from the slave station; after receiving the message returned by the slave station, verify that the message is correct, and write the required data into the data buffer if it is correct, otherwise the received message will be discarded.

- LD

  If EN is 1, the instruction is executed, otherwise it is not executed.

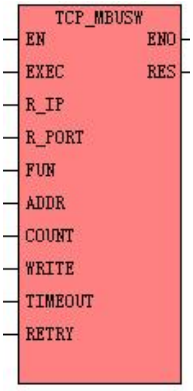
- IL

  If the CR value is 1, the instruction is executed, otherwise it is not executed.

  The execution of this instruction does not affect the CR value.

10.3.3.2.2 TCP_MBUSW

➢ Description of instructions and their operands

	name	Instruction format	CR	
LD	TCP_MBUSW			☑ K6
IL	TCP_MBUSW	TCP_MBUSW *EXEC, R_IP, R_PORT, FUN, ADDR, COUNT, WRITE, TIMEOUT, RETRY, RES*	U	

parameters	input/output	Data type	Allowed memory area

EXEC	input	BOOL	I、Q、V、M、L、SM、RS、SR
R_IP	input	DWORD	M、V、L、SM、constant
R_PORT	input	WORD	M、V、L、SM、constant
FUN	input	INT	(Modbus function code) constant
ADDR	input	WORD	M、V、L、SM、constant
COUNT	input	INT	M、V、L、SM、constant
WRITE	input	BOOL、WORD、INT	Q、M、V、L、SM
TIMEOUT	input	INT	M、V、L、SM、constant
RETRY	input	INT	M、V、L、SM、constant
RES	output	BYTE	Q、M、V、L、SM

Note: Parameters R_IP, R_PORT, ADDR, COUNT, TIMEOUT, RETRY must be both constant types or memory types at the same time.

Note that the WRITE parameter is a variable-length block memory parameter, and the entire block memory cannot fall into the illegal memory area, otherwise the result will be unpredictable.

parameter	description
EXEC	If the rising edge transition of EXEC is detected, the instruction is triggered to execute
R_IP	For the IP address of the remote server, you can directly enter the IP such as 192.168.210.100, or you can enter the hexadecimal DW#16#C0A8D264, that is, 192==C0 168==A8 210==D2 100==64.
R_PORT	The port of the remote server. 0 is not supported.
FUN	Modbus function code.
ADDR	The first register address of the modbusTCP slave to access.
COUNT	How many consecutive registers to access, when FUN parameter == 6, COUNT can only be equal to 1, when FUN parameter == 16, COUNT range is 1-100, other inputs trigger errors; when FUN parameter == 5, COUNT can only be equal to 1 Equal to 1, when the FUN parameter == 15, the COUNT range is 1-800, and other inputs trigger errors.
WRITE	When the FUN parameter is 6, 16, it must be a WORD or INT variable, which is the first word of the data to be sent, and the other words of the data to be sent are placed in order; when the FUN parameter is 5, 15, it must be a BOOL variable, which is the first bit of the data to be sent and the other bits of the data to be sent are placed in sequence.
TIMEOUT	The timeout time of this execution, in ms, cannot be 0ms, cannot be greater than 32767ms, and cannot be a negative number. For example, if you enter 5000, it means that within 5 seconds, the following sequence of actions will be performed:

	a. Always wait for the connection to the server to succeed, and send the data to be sent immediately after the success. If the connection is not successful, return failure and end. b. After the transmission is successful, wait for the first packet to receive data, and if it does not wait, it returns to fail and ends. c. After successful transmission, a packet of data is received, and the command ends successfully.
RETRY	The number of retries, the range is 0-255. If the input exceeds this range, the value of the low byte of this parameter will be automatically intercepted. After the transmission fails, the number of retries. For example, the number of retries is 1. If each transmission fails, the transmission will be started. After that, it is sent 2 times in total.
RES	When execution starts, this parameter outputs 0, and when execution ends, bit7 == TRUE. The byte value of bit0-bit6 combined, indicating the error code 0. The command was executed successfully. 1. Unable to automatically allocate client resources 2. wrong length 3. Operation timed out and no receipt received 4. Unable to connect to the server 5. TIMEOUT parameter error 6. IP or PORT parameter error 7. Function code error 8. There is an error in the receipt received

When the K series PLC is used as the ModbusTCP master station, the TCP_MBUSW instruction is used to write data into the slave station. The applicable function codes for this instruction are 5 (write one DO), 6 (write one AO), 15 (write multiple DOs) and 16 (write multiple AOs).

The parameters R_IP and R_PORT represent the IP address and port number of the target slave station, and the port number range is 1~65535. FUN defines function codes. ADDR defines the starting address of the register to be read. COUNT defines the number of registers to be read. The maximum allowed value is 100 for writing AO and 800 for writing DO.

The parameter WRITE defines the starting address of the data buffer, and the data to be written into the slave is stored in this area. WRITE must match the function code. If the function code is 5, 15, input the address variable of BOOL type; if the function code is 6, 16, input the address variable of INT or WORD type.

A rising edge transition on the EXEC input is used to initiate communication. When the TCP_MBUSW instruction is executed, if the rising edge transition of EXEC is detected, MBUSW will conduct a communication: organize the message to send out according to the parameters input by the user and wait for the response from the slave station; after receiving the message returned

by the slave station , to determine whether the slave station has correctly executed the write command just now.

- LD

  If EN is 1, the instruction is executed, otherwise it is not executed.

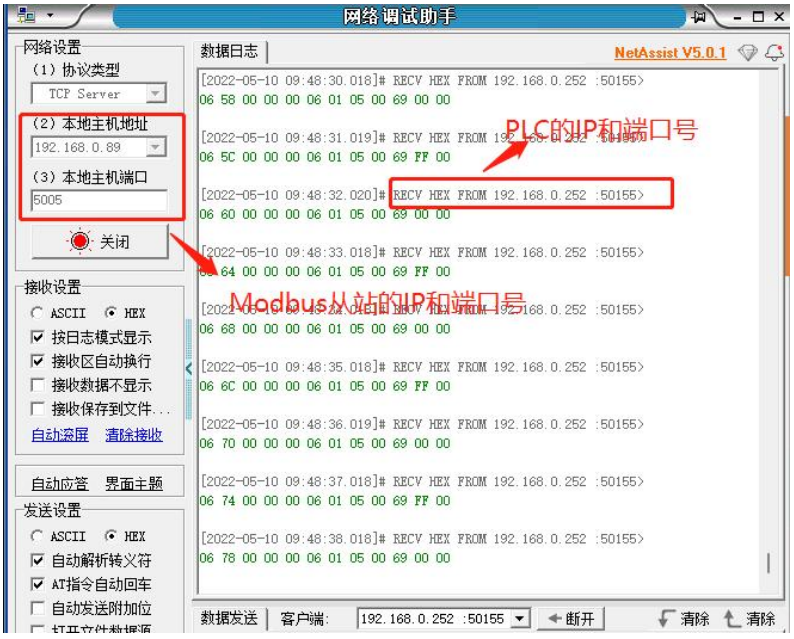
- IL

  If the CR value is 1, the instruction is executed, otherwise it is not executed.

  The execution of this instruction does not affect the CR value.

10.3.3.2.3 Example

Can be copied and used directly



IL	(* Network 0 *) (*Periodic polling for reading and writing*) LD %SM0.3 ST %V10300.0 (* Network 1 *) (*Variable outward written values*) LD %SM0.3 R_TRIG INC %VW10400 INC %VW10410 (* Network 2 *) (*Variable outward written values*) LD %SM0.3 R_TRIG INC %VW10420 INC %VW10430 (* Network 3 *) LD %SM0.0 TCP_MBUSW %V10300.0, 192.168.0.89, W#5006, 6, W#106, 1, %VW10400, 8888, 0, %VB10310 TCP_MBUSW %V10300.0, 192.168.0.89, W#5016, 16, W#116, 5, %VW10410, 8888, 0, %VB10311 (* Network 4 *) LD %SM0.0 TCP_MBUSW %V10300.0, 192.168.0.89, W#5005, 5, W#105, 1, %V10420.0, 8888, 0, %VB10312 TCP_MBUSW %V10300.0, 192.168.0.89, W#5015, 15, W#115, 80, %V10430.0, 8888, 0, %VB10313
IL	(* Network 5 *) LD %SM0.0 TCP_MBUSR %V10300.0, 192.168.0.89, W#5001, 1, W#101, 80, 8888, 0, %VB10314, %V10440.0 TCP_MBUSR %V10300.0, 192.168.0.89, W#5002, 2, W#102, 80, 8888, 0, %VB10315, %V10450.0 (* Network 6 *) LD %SM0.0 TCP_MBUSR %V10300.0, 192.168.0.89, W#5003, 3, W#103, 5, 8888, 0, %VB10316, %VW10460 TCP_MBUSR %V10300.0, 192.168.0.89, W#5004, 4, W#104, 5, 8888, 0, %VB10317, %VW10470