

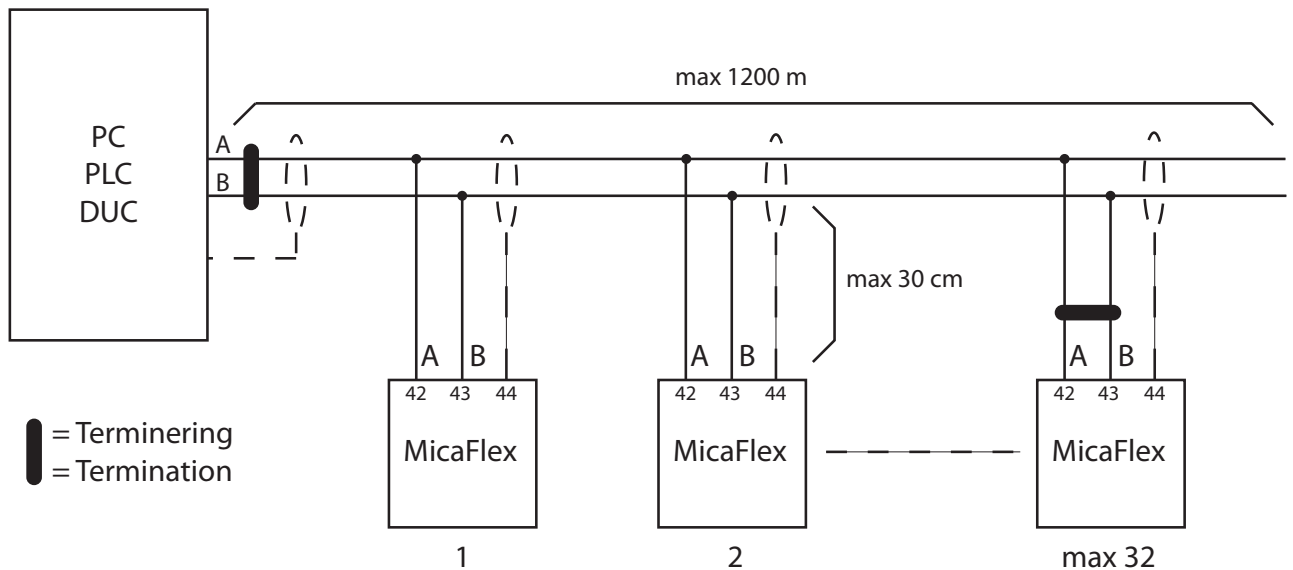
Modbus RTU Data communication module with RS-485 interface

Modbus RTU

Electrical connection

The communication module for Modbus RTU uses RS-485 as interface and has 4 terminals:

- 41 Signal zero (normally not used)
- 42 A
- 43 B
- 44 Shield



RS-485 must be terminated in each end of the bus and it is done by setting the miniature switches on DIL1 in position 'ON'. The termination is done to prevent signal reflections in the wire and at the same time set the bus (RS-485) to a preset passive signal level. This minimize the risc of signal and communication distortion. According to standard the twisted-paired wires are named with A and B. When connecting, lead 'A' should be connected to 'A' and lead 'B' connected to 'B'.

Common guidelines:

- The used cable should be of twisted-pair type.
- Bus net must be used as topology, NOT any star-net. Max distance between the bus and each unit is 30 cm.
- Each end of the bus must be terminated.
- Max length of the bus is approximately 1200 meter, depending on cable quality.
- Max number of connected units to the bus is 32 pcs.

Configuration

Parameters for Modbus RTU are located in the parameter group **Communication**.

Lead text	Min	Max	Default
Address	1	247	21
Baud	OFF 600 1200 2400 4800 7200 9600 14400 19200 38400 57600 115200 128000		38400
Parity	NONE ODD EVEN		NONE
Protect	NO YES		NO

- *Address* is the units unique id on the bus. Using several units on the same bus requires that each unit has its own unique id.
- *Baud* is the transfer rate. It is very important that all units are configured with the same rate in Baud.
- *Parity* is the selected parity for data communication. All units on the same bus must use the same parity to communicate. If 'NONE' is selected, two stop bits are automatically added. If 'ODD' or 'EVEN' parity is used, one stop bit is automatically added.
- *Protect* is used to protect the configuration and settings to be altered through remote access. 'YES' will result in read-only mode, i.e. parameters and values can only be read on the remote terminal. 'NO' will result in read and write permissions on the remotely accessed unit, i.e. parameters can be read and changed. It is for example possible to set a different set point value through the Modbus RTU.

Reading values from the parameter list

Reading of parameter list is done with the function 03 in Modbus RTU, "Read Holding Registers". The data address to each parameter is found in the installation manual for the respective product. Since all communication use only integer values, parameter values that use decimal value must be scaled to the correct decimal value in the receiving unit. E.g. if the set value has two decimals and the communication reads the integer value 286, the received value must be scaled to 2,86 after reading.

Writing values to the parameter list

Writing to parameter list is done with the function 06 in Modbus RTU, "Preset Single Register" alternatively function 16, "Preset Multiple Registers". The data address to each parameter is found in the installation manual for the respective product. Since all communication use only integer values, parameter values that use decimal value must be scaled to the correct decimal value in the receiving unit. E.g. if the set value has two decimals and should be programmed to 5,23 l/s, the integer value 523 is written to the data address for the set value.

Reading measuring values

Reading of measuring values is done with the function 04 in Modbus RTU, "Read Input Registers". The data address for the measuring values are found in following table. Since all communication use only integer values, parameter values that use decimal value must be scaled to the correct decimal value in the receiving unit. E.g. if the flow has one decimal and the communication read the integer value 183, the value must be scaled to 18,3 after reading.

Micaflex-PFA, -PFA-PU, -PFC, -PFCA, -PFT, -PFTT:

No	Measuring value	Min	Max	Decimals
I0	Actual pressure	MinRange	MaxRange	see P18
I1	Actual flow	0	MaxFlow	see P25
I2	Actual control output %	0,00	100,00	2
I3	Actual set point controller	MinRange	MaxRange	see P18 alt. P25
I4	Input set point control %	0,00	100,00	2
I5	Status SPD	0 = OPEN 1 = CLOSED	Contact open Contact closed	
I7	Status MUTE	0 = OPEN 1 = CLOSED	Contact open Contact closed	
I8	Input temperature	MinTemp	MaxTemp	1
I9	Status purging unit	0 = OFF 1 = PRE 2 = CLEAN 3 = POST 4 = PAUSE 5 = TEST	Disabled Preparing purging Purging Completed Purging Waiting for next purging Manual test	
I10	Status automatic zero setting	0 = OFF 1 = PRE 2 = EVAC 3 = DO_ZERO 4 = POST 5 = PAUSE 6 = EXTRA	Disabled Preparing AutoZero Evacuate air Execute AutoZero Completed AutoZero Waiting for next AutoZero Extra zero setting	

Micaflex-HTT:

No	Measuring value	Min	Max	Decimals
I0	Actual set point	-30,0	360,0	1
I1	Actual control output	0,00	100,00	2
I2	Actual relative humidity (RH)	0,0	100,0	1
I3	Actual temperature at sensor	-30,0	80,0	1
I4	Actual humidity ratio (HR)	0,00	25,00	2
I5	Actual dew point	-60,0	93,0	1

Micaflex-HTC/T2, EH3, KC-4:

No	Measuring value	Min	Max	Decimals
I2	Actual relative humidity (RH)	0,0	100,0	1
I3	Actual temperature at sensor	-30,0	80,0	1
I4	Actual humidity ratio (HR)	0,00	25,00	2
I5	Actual dew point	-60,0	93,0	1
I6	Actual temperature cold surface	-30,0	80,0	1
I7	Actual deviation between TDP and T2 (FDP)	-25,0	25,0	1
I8	Actual control signal PI1	0,00	100,00	2
I9	Actual control signal PI2	0,00	100,00	2
I10	Actual set point PI1	-30,0	360,0	1
I11	Actual set point PI2	-30,0	360,0	1
I12	Actual status for 2-stage control	0 = OFF 1 = CH1 2 = CH2 3 = CH1+CH2	Disabled Channel 1 active Channel 2 active Channel 1 and 2 active	

Micaflex-FHC:

No	Measuring value	Min	Max	Decimals
I0	Actual velocity m/s	0,0000	1,0000	4
I1	Actual sash opening in cm	0,0	99,9	1
I2	Actual sash area in dm ²	0,00	99,99	2
I3	Actual flow l/s	0,0	1000,0	1
I4	Actual set point m/s	0,0000	1,0000	4
I5	Actual control signal PI-control. %	0,00	100,00	2

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