

2.9 Modbus Data Concentrator, MDC-700 series

MDC-700 series

Modbus Data Concentrator with Ethernet, RS-232 and RS-485 Serial Ports



Features:

- Supports Modbus master/slave on the serial port and Modbus TCP slave on the Ethernet interface
- Supports up to 8 simultaneous Modbus TCP connections at one time
- Data pool for up to 9600 registers
- Modbus polling commands for up to 250 definitions
- Easy configuration with a simple CSV file for quick start-up
- HTML5 Web-based user interface
- MDC-705i-DL supports data recording and storage to a removable microSD card

Introduction:

MDC-700 series is a Modbus Data Concentrator that has ability to perform up to 250 Modbus/RTU commands to read/write from/to Modbus slave devices via RS-232/485 and allows up to 8 Modbus/TCP masters to get the polled data via the Ethernet.

MDC-700 series provide a built-in web server to ease the configuring and provide clear information for the performed results of each Modbus/RTU command on the RS-232/485.

Modbus Data Concentrator

The MDC performs the pre-defined Modbus/RTU commands to read/write data from/to the Modbus/RTU slave devices via the RS-232/485. It mirrors the data of the slave devices to its own shared memory. And it accepts up to 8 Modbus/TCP masters to directly read/write data form/to the shared memory instead of polling each Modbus/RTU slave device one by one.

This way not only makes the data on the RS-232/485 sharable to multiple Modbus/TCP master but also shorten the time to read/write data from/to multiple Modbus/RTU slave devices.

	A	B	C	D	E	F	G	H	I
1	#	TCPPort	ModbusID						
2	*	502	1						
3	#	ModuleInfo							
4	*	this is my data concentrator							
5	#	ComPortNo	BaudRate	DataBit	Parity	StopBit	TimeOut	PollDelay	Mode
6	*	1	115200	8		0	1	50	20 Master
7	*	2	115200	8		0	1	50	20 Master
8	*	3	9600	8		0	1	100	20 Master
9	*	4	9600	8		0	1	100	20 Master
10	*	5	9600	8		0	1	100	20 Master
11	#	UseComPort	SlaveModbusID	FunctionCo	RegStartAddr	RegCount			
12	*	2	1	1	0	4			
13	*	2	2	2	0	4			
14	*	2	3	3	0	4			
15	*	2	4	4	0	4			
16	*	2	4	4	4	8			

Great Capability of Shared Memory

The MDC can perform up to 250 polling definitions. And the internal shared memory has four tables to store the polled AI, AO, DI and DO data. Each table can store up to 9600 registers.

Config.CSV to Ease Hard Work of Editing a lot of Definition

The Modbus polling definition is defined in a Config.CSV file. Editing/checking a lot of polling definitions is a hard work and may have chance to make a mistake. A CSV format file can ease the work by using Excel. Furthermore, the built-in web server allows users import/export the Config.CSV via a simple mouse-click action.

Web Sever to Ease the Operating and Show Clear Information

The IP address, configuration file, Config.CSV can be simply configured via the Web server. And the performed results of all Modbus polling definition are shown on the web page. It is very easy to debug which Modbus/RTU device has communication problem. And the MDC firmware will skip the abnormal Modbus polling definition for a while to smoothly perform the whole polling without

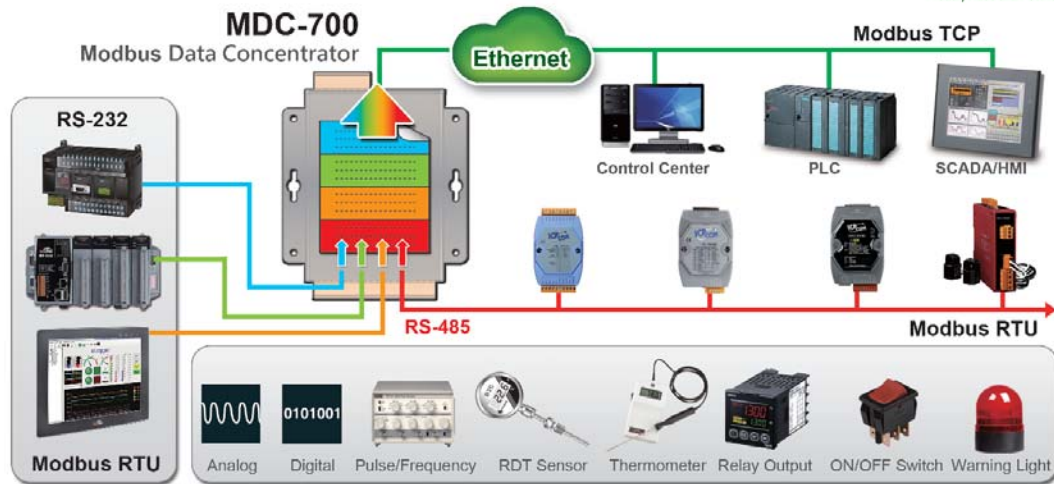
MDC-714
this is my data concentrator

THIS COMPUTER - MDC-700

Modbus Connection

- COM1: 151 ms (NOW), 457 ms (MAX), 141 ms (MIN) [RESET]
 - Def. #001 - ID [01] Register [400000:400007] → Local Register [400000:400007] **GOOD**
- COM2: 149 ms (NOW), 474 ms (MAX), 141 ms (MIN) [RESET]
 - Def. #002 - ID [02] Register [300000:300007] → Local Register [300000:300007] **TIMEOUT**
- COM3: 150 ms (NOW), 439 ms (MAX), 149 ms (MIN) [RESET]
 - Def. #003 - ID [03] Register [100000:100007] → Local Register [100000:100007] **ERROR: ILLEGAL FUNCTION**
- COM4: 150 ms (NOW), 402 ms (MAX), 149 ms (MIN) [RESET]
 - Def. #004 - ID [04] Register [000000:000007] → Local Register [000000:000007] **ERROR: ILLEGAL DATA ADDRESS**
- COM5: 150 ms (NOW), 485 ms (MAX), 149 ms (MIN) [RESET]
 - Def. #005 - ID [05] Register [400008:400015] → Local Register [400008:400015] **ERROR: ILLEGAL DATA VALUE**

Applications:



System Specifications:

Model Name	MDC-711	MDC-714	MDC-741	MDC-771	MDC-705i-DL
Ethernet					
Port	x1, 10/100 Base-TX				
Protocol	Modbus/TCP Slave				
Max. connection	8				
COM port					
RS-232	x1, (TXD, RXD, RTS, CTS, GND)		x4, (TXD, RXD, RTS, CTS, GND)	x1, (TXD, RXD, RTS, CTS, GND) x6, (TXD, RXD, GND)	-
RS-485	x1, (Data+, Data-)	x4, (Data+, Data-)	x1, (Data+, Data-)	x1, (Data+, Data-)	x5, (Data+, Data-) Each of COM3/COM4/COM5 is isolated RS-485
Baudrate	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200				
Data Format	N81, E81, O81				
Protocol	Modbus RTU Master/Slave				
Max. Node	32 nodes for each RS-485 port				
Polling Definition	250 definitions for all RS-232/485 ports				120 definitions for all RS-485 ports
Shared Memory	9600 registers for each of AI, AO, DI and DO data				800 registers for each of AI, AO, DI and DO data
System					
5-Digit 7 Segment LED Display	Yes, to display IP address				
System LED Indicator	Yes, to display hear beat				
Mechanical					
Material	Metal				
Dimension (W × H × D)	102 mm × 125 mm × 28 mm				
Installation	Wall Mount				
Power					
Required Supply Voltage	+10 VDC ~ +30 VDC (non-regulated)				
Power Consumption	2.5 W				
Data Logger					
Data Storage	-				Removable microSD Card (supports for storage expansion of up to 32 GB)
File format	-				CSV
Recording Periodicity	-				5s, 10s, 30s, 1m, 5m, 30m, 1hr
File Manager Interface	-				Built-in web server
Environment					
Operating Temperature	-25°C ~ +75°C				
Storage Temperature	-30°C ~ +80°C				
Relative Humidity	10 ~ 90% RH, Non-condensing				

Ordering Information:

Model No.	Description
MDC-711 CR	Modbus data concentrator with 1 × Ethernet and 1 × RS-232, 1 × RS-485 (RoHS)
MDC-714 CR	Modbus data concentrator with 1 × Ethernet and 1 × RS-232, 4 × RS-485 (RoHS)
MDC-741 CR	Modbus data concentrator with 1 × Ethernet and 4 × RS-232, 1 × RS-485 (RoHS)
MDC-771 CR	Modbus data concentrator with 1 × Ethernet and 7 × RS-232, 1 × RS-485 (RoHS)
MDC-705i-DL CR	Modbus data logger with 1 × Ethernet and 5 × RS-485 (RoHS)