

KOHLER ATS CONTROLLERS APPLICATION NOTE

Document Name: Kohler ATS Controllers_Application Note_2020- 11

Date (MM/DD/YYYY): November 2020

Purpose: This application note presents a step-by-step approach to integrate an intelligent Kohler ATS Controller System to a FUSION.

Target Equipment: M340/M340+, MPAC1000 & MPAC1500 ATS Controllers

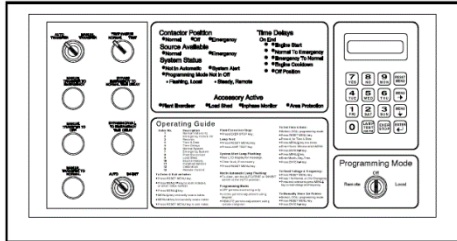


Figure 3 M340 / M340+ ATS Controller

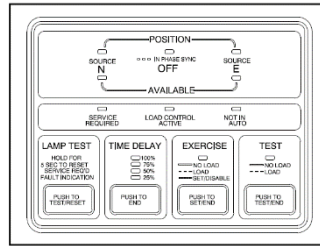


Figure 2 MPAC 1000 ATS

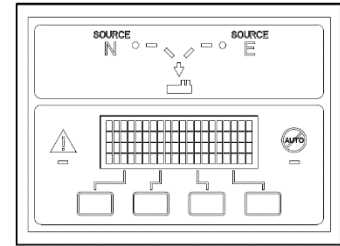


Figure 1 MPAC 1500 ATS Controller

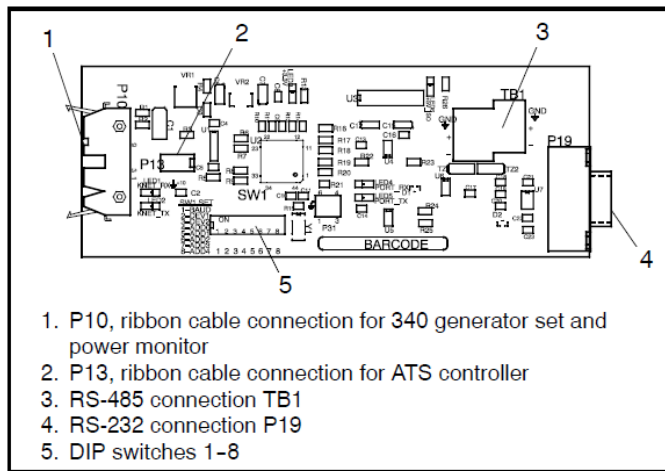
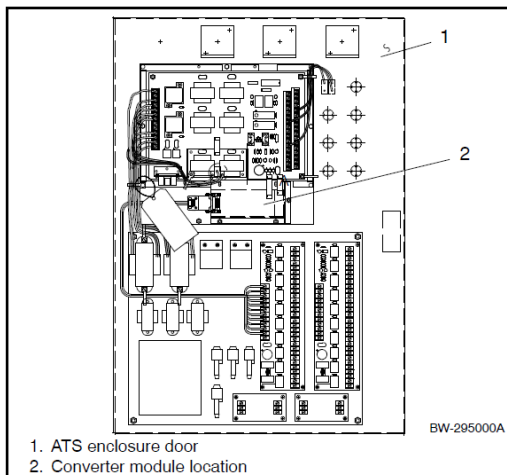
Equipment Description: The M340 and MPAC are ATS controller manufacture by Kohler. The controller provides a mean to communicate via standard 2-wire RS-485 using Modbus RTU protocol (M340, M340+, MPAC1000 and MPAC1500) and Modbus TCP (MPAC 1000/1500).

PRODUCT DESCRIPTION	
Name	M340, M340+, MPAC1000 & MPAC1500
Manufacturer	Kohler
System Type	ATS Controller
Modbus Version	
Manufacture Technical Support	1(800)456-4537
Specificities	<p>M340/M340+: Modbus/KBUS Converter Kits</p> <p>MPAC 1000: Modbus/Ethernet converter for Modbus TCP, ATS Controller Setup Program required to change Modbus parameters</p> <p>See Protocol Operation Modbus Communication Protocol (TP6113) from Kohler for more information</p>

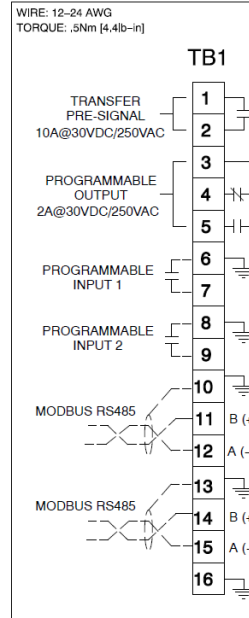
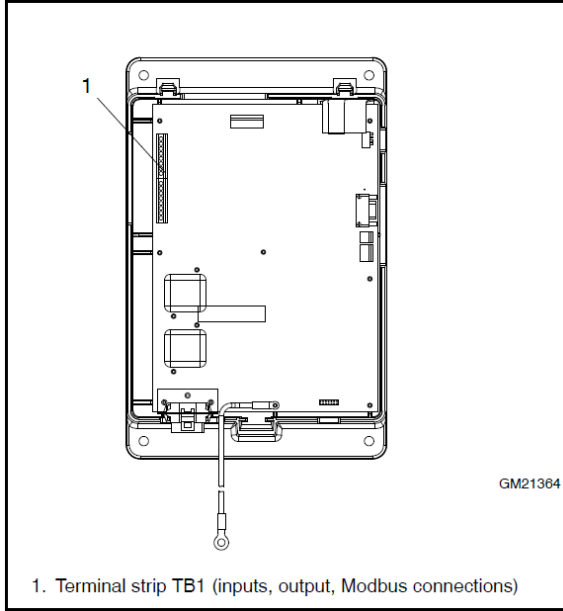
EQUIPMENT CONNECTIONS

MODBUS RTU over RS-485 must be wired in a daisy chain pattern, star network is not allowed as it modifies drastically the electrical characteristics of the RS-485 driver and can ultimately cause communication failures. The use of a good quality cable such as a 22AWG stranded, twisted shielded wire to perform the termination at the desired. Polarity must be respected throughout the RS-485 network, otherwise communication failures will prevail.

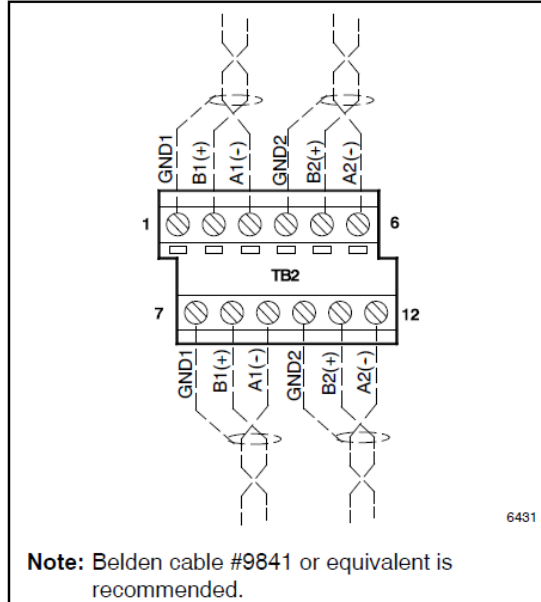
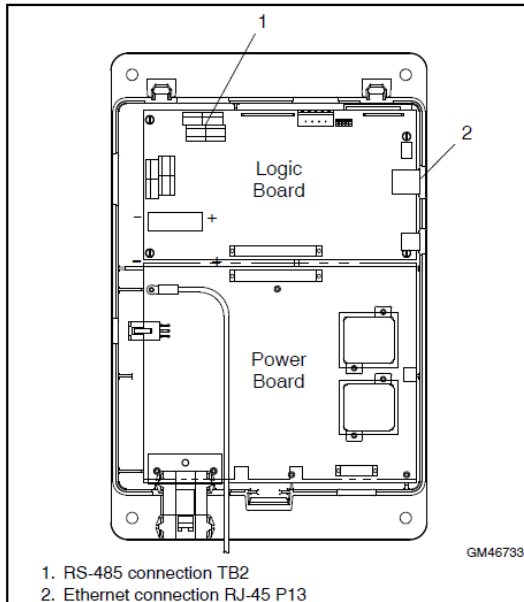
M340/M340+ (SECTION 8, PAGE 103, TP6113)



MPAC 1000 (SECTION 9, PAGE 109, TP6113)



MPAC 1500 (SECTION 10, PAGE 121, TP6113)



EQUIPMENT COMMUNICATION SETTINGS

Using the information below specific to each ATS controller models, apply the following parameters for Modbus communication

- Node Address: 1-247, An address cannot be used more than once on the same network
- Baud rate: 9600 bps
- Parity: none
- Stop Bits: 1

M340/M340+ (DIP SWITCHES SETTING, SECTION 8, PAGE 104, TP6113)

Set the DIP switches on a printed circuit board before installing the converter module inside the enclosure. To change DIP switches setting, you need to remove the power of the printed circuit board first.

1	2	3	4	5	6	7	8
Baud (9600)	Device Type (M340/M340+ ATS Controller)		Network Address				
ON	ON	OFF	See table below				

Network Address	DIP 4	DIP 5	DIP 6	DIP 7	DIP 8
1	On	On	On	On	On
2	OFF	On	On	On	On
3	On	OFF	On	On	On
4	OFF	OFF	On	On	On
5	On	On	OFF	On	On
6	OFF	On	OFF	On	On
7	On	OFF	OFF	On	On
8	OFF	OFF	OFF	On	On
9	On	On	On	OFF	On
10	OFF	On	On	OFF	On

11	On	OFF	On	OFF	On
12	OFF	OFF	On	OFF	On
13	On	On	OFF	OFF	On
14	OFF	On	OFF	OFF	On
15	On	OFF	OFF	OFF	On
16	OFF	OFF	OFF	OFF	On
17	On	On	On	On	OFF
17	OFF	On	On	On	OFF
19	On	OFF	On	On	OFF
20	OFF	OFF	On	On	OFF
21	On	On	OFF	On	OFF
22	OFF	On	OFF	On	OFF
23	On	OFF	OFF	On	OFF
24	OFF	OFF	OFF	On	OFF
25	On	On	On	OFF	OFF
26	OFF	On	On	OFF	OFF
27	On	OFF	On	OFF	OFF
28	OFF	OFF	On	OFF	OFF
29	On	On	OFF	OFF	OFF
30	OFF	On	OFF	OFF	OFF
31	On	OFF	OFF	OFF	OFF
32	OFF	OFF	OFF	OFF	OFF

MPAC 1000 (SECTION 9, PAGE 110, TP6113)

Use the ATS Controller Setup Program to set the device Modbus Network unique ID (1-247) and baud rate to 9600. You can refer to the Setup Program Operation Manual for further instruction on how to program.

MPAC 1500 (SECTION 10, PAGE 123, TP6113)

Set the controller communication setting through the controller user interface. Using display keys, navigate to Communications Setup screen and changed the following parameters:

- Modbus Server Port 1: should be Enabled
- Modbus Address Port 1: 1-247 Unique ID
- Baud Rate Port 1: Change to 9600 baud

FUSION CONNECTIONS

Refer to your detailed engineering or the layout of your MODBUS network, respect the MODBUS best practises at all times by preventing star shape network, thus terminate to the last equipment of the current MODBUS daisy chain trunk or if this is you first equipment on the network device, then terminate directly at the FUSION back panel. The FUSION offers (2) RS-485 ports, one called MLINK and the other one RS-485. Use the connector available from Multitel to convert the RJ-12 connector to a screw type connector. (Part# is C-7000-MOD).



Figure 4 C-7000-MOD

FUSION COMMUNICATION SETTINGS

Once you have logged into the FUSION using the “supervisor” username and no password, click on the **CONFIG** menu and select “**Communication Ports**” from the left menu. Select the **MLINK** or **RS-485** port and configure operating parameters as follows:

Communication Ports	
COMRS485	Value
Enter protocol (0: Terminal, 1: Mlink, 2: ISNMS, 3: MODBUS, 4: NONE, 5: Port forwarding, 6: Card reader)	MODBUS
Enter baudrate (0=300, 1=1200, 2=2400, 3=4800, 4=9600, 5=19200, 6=38400, 7=57600 or 8=115200)	9600
Enter character parameters (number of bit, parity, stop bit) 1: 8N1, 2: 8E1, 3: 8O1, 4: 7N1, 5: 7E1, 6: 7O1)	8N1
Enter configuration (1-RS485(2 wires), 2-RS422(4 wires))	RS485(2 wires)
Enter the number of IDLE char to wait (1 to 255)	5
Enter device (0=None, 1=Modem)	None

FUSION “MODULE” SETTINGS

Once the FUSION communication port is setup, associate the equipment to a specific Module number. Select “**Modules**” from the left menu and choose the pre-assigned module or click on a module available (State = None). Each ATS controller is using the same Module information.

Modules		Edit
M5	Value	
The module state is	Enabled	
The name is	MPAC 1500 Transfert Switch	
The slave ID is	2	
The port is	MLINK Port	
The number of retry is	10	
The module type is	GEN	
The time out is	30	
The register order is	Most significative register = higher address	
The register base address is	subtract 1 from given address	
The silent (in 0.01 sec) before sending request is	50	

Configure the name of the Module using the reference name of the Genset, such as “MPAC 1500 ATS”

FUSION “TEST CHANNEL” SETTINGS

Once the Equipment is associated to a module, a list of channels will appear and be available for Multitel to configure. However, in order to test the MODBUS RTU wiring and ATS communication settings, it is highly recommended to configure a test channel as per the following to validate. Click on M1A1 and configure the operating parameters as follows for:

M340/M340+

Modules		Edit
M5A1	Value	
The channel state is	Enabled	
The name is	Contacteur Position	
The measure unit is	Not Programmed	
The number of decimal digits is (4 = auto)	4	
The bits for the mask used to extract value is	0 - 1	
The strings associated to each code is	undefined, Normal, Emerg, undefined	
The register address is	64	
The reading function code is	3	

MPAC 1000

Modules		Edit
M5A1	Value	
The channel state is	Enabled	
The name is	Contacteur Position	
The measure unit is	Not Programmed	
The number of decimal digits is (4 = auto)	4	
The bits for the mask used to extract value is	0 - 1	
The strings associated to each code is	Off, Normal, Emerg, Fault	
The register address is	1	
The reading function code is	3	

MPAC 1500

Modules		<input type="button" value="Edit"/>
M5A1	Value	
The channel state is	Enabled	
The name is	Contactor Position	
The measure unit is	Not Programmed	
The number of decimal digits is (4 = auto)	4	
The bits for the mask used to extract value is	0 - 1	
The strings associated to each code is	Off, Normal, Emerg, Fault	
The register address is	1	
The reading function code is	3	