

2104367– rev. AA

K-TEK[®] MT5000 Level Transmitter: PCCU32 and Menu Interface Setup

Application Information

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1.0 INTRODUCTION

The following information will detail the steps necessary to configure Totalflow's® PCCU32 system to work in conjunction with the K-TEK Guided Wave Radar Level Transmitter (MT5000). Additionally, this will include wiring instructions between both the XFC^{G4} and XRC^{G4} boards and the K-TEK MT5000 device.

The K-TEK MT5000 Guided Wave Radar Level Transmitter is designed for use in a variety of harsh environments to include oil and gas processing and power generation. The device can be used in concert with PCCU32 to provide accurate level measurement readings that will enable the customer to effectively utilize both state-of-the-art hardware and software solutions.

2.0 MENU FLOW CHART

The MT5000 Series device has user interface at the front of the device that enables the user to set up the configuration parameters in the MT5000. This is accomplished by using the navigational arrows to scroll through the various options and the Select button to accept the options.

The following information will detail the parameters that the user will encounter by using this interface and the means by which they can change them.

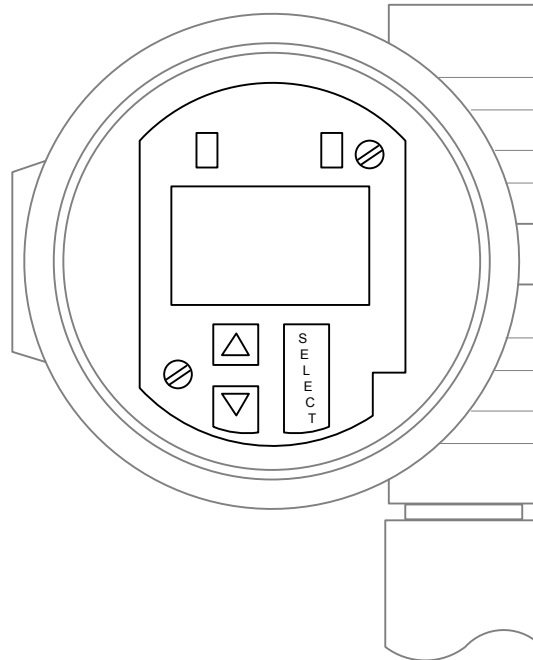


Figure MT5000 User Interface

2.1 Output Setup

The Output Setup is the area where the user can establish the main parameter values that will be shown on the MT5000's display.

As this is the most common area where the user will spend their time, it will be described in detail.

The user can move to this area by pressing the Select button and using the navigational buttons (▲ or ▼) to move to the appropriate option. When found, press the Select button again to choose the Output Setup section. It is then just a matter of using the navigational buttons to move through the various parameters under the Output Setup section until the user finds the one that they prefer to change.

Once found, press the Select button for two (2) seconds. The value that is currently set will begin blinking. The user can then use the navigational buttons to set the parameter value that they want. After that parameter value has been set, click the Select button again to save that value to the device.

After the user has set all of the parameter values that they want within the Output Setup section, they can scroll through the parameters until they come to the END MENU option. Pressing the Select button will return them to the main screen.

The following parameter settings within the table below are in the sequential order that they display within the Output Setup section.

Setting	Description
Output Level	The user can use this field to set the level.
LRV and URV	The LRV and URV can be used to set 0 and 100 percent points, respectively. These points are entered in terms of units as they are measured along the length of the probe.
Polling Address	The Polling Address defines the transmitter as an individual item within the system. This is a unique identifier for the individual transmitter. If there are several devices that are daisy-chained together, each one of the devices will need to have a polling address that is unique from the others that are in the chain.
Transmission Mode	This field enables the user to set the type of communication that the device will perform. The two available options are RTU or ASCII. RTU mode uses 8 data bits per byte, and ASCII mode uses 7 bits per byte.
Baud Rate	This parameter field sets the speed of the data transmission. This can generally be left at the default of 9600.
Parity	The Parity field can be used to check for errors during the transmission of data. This can generally be left at the default of None.
Stop Bits	This parameter field is used to define the end of each packet of data that is being transmitted. This can generally be left at the default of 1.
ASCII LF Code	This parameter field is a hexadecimal code for the Line

Setting	Description
	Feed parameter that is used in ASCII data transmission. This only displays when ASCII is selected as a value in Transmission Mode.
Damping	Working in a similar manner as standard transmitters, damping affects the level output.
Alarm Delay	This parameter field is only reflected in Discrete Inputs.
End Menu	When selected by the user, this will take the user to the main menu.

2.2 Basic Setup

The user can move to this area by pressing the Select button and using the navigational buttons (▲ or ▼) to move to the appropriate option. When found, press the Select button again to choose the Basic Setup section. It is then just a matter of using the navigational buttons to move through the various parameters under the Basic Setup section until the user finds the one that they prefer to change.

Once found, press the Select button for two (2) seconds. The value that is currently set will begin blinking. The user can then use the navigational buttons to set the parameter value that they want. After that parameter value has been set, click the Select button again to save that value to the device.

After the user has set all of the parameter values that they want within the Basic Setup section, they can scroll through the parameters until they come to the END MENU option. Pressing the Select button will return them to the main screen.

The options that are available under the Basic Setup section are as follows:

- Units
- Probe Type
- Mounting Type
- Nozzle Length
- Offset
- Dielectric
- Measure Mode
- Language

2.3 Extended Setup

The user can move to this area by pressing the Select button and using the navigational buttons (▲ or ▼) to move to the appropriate option. When found, press the Select button again to choose the Extended Setup section. It is then just a matter of using the navigational buttons to move through the various parameters under the Extended Setup section until the user finds the one that they prefer to change.

Once found, press the Select button for two (2) seconds. The value that is currently set will begin blinking. The user can then use the navigational buttons to

set the parameter value that they want. After that parameter value has been set, click the Select button again to save that value to the device.

After the user has set all of the parameter values that they want within the Extended Setup section, they can scroll through the parameters until they come to the END MENU option. Pressing the Select button will return them to the main screen.

The options that are available under the Extended Setup section are as follows:

- Waveform at Coupler
- Waveform at LVL
- Temperature

3.0 PCCU32 SETUP

The following instructions will show the user how to configure the PCCU32 system to work with the MT5000 device. The steps are provided in sequential order and should be followed accordingly.

It is assumed that the user has previously installed PCCU32 on their machine.

- 1) Open up PCCU32, and move into Entry mode.
- 2) Click on the Station ID at the top of the PCCU32 tree-view. Once this has been accomplished, select the Applications tab.
- 3) In the Applications tab, it will be necessary for the user to instantiate the LevelMaster application. Scroll down to Application slot 51. From the Type drop-down selection, choose LevelMaster from the available applications list.

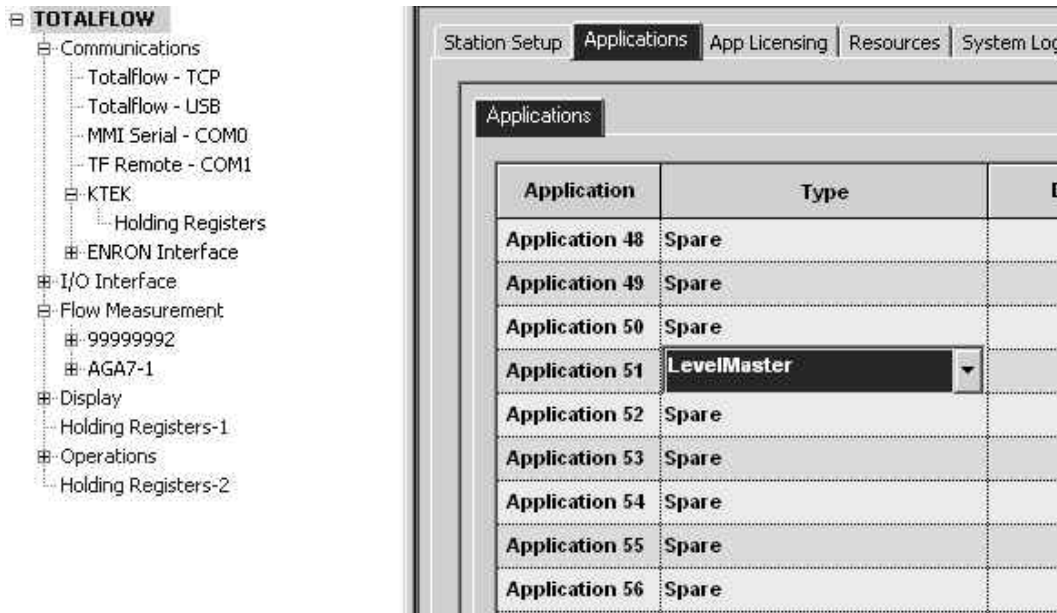


Figure 1. Application Tab

- 4) After LevelMaster has been selected, click the Send button.

- 5) The LevelMaster application displays in the PCCU32 tree-view as a sub-menu under Communications. Under the LevelMaster sub-menu, click on Setup. This will automatically take the user to the Setup tab.
- 6) Within the LevelMaster tab, move to the Number of Tanks parameter field. Click within the field, and set the number of tanks.
- 7) When finished, click the Send button.
- 8) Next, click on the Communications application at the top of the PCCU32 tree-view. This will automatically take the user to the Communications Ports tab.
- 9) Within the Communications Ports tab, locate the Spare-COM2 parameter field. Upon location, it is necessary to assign a com port to the Communication application. Move to the adjacent Port parameter field, and type in COM2:. Syntax is very important, so type in exactly as shown.

FYI



If another Communications application is assigned to COM2, the user must type 'None' to un-assign the port to that particular application.

- 10) Once completed, click the Send button.

	Port Name	Port	Directory
1.3.3	Totalflow - TCP	9999	Dir = \Comm-1
2.3.3	Totalflow - USB	USB1:	Dir = \Comm-2
3.3.3	MMI Serial - COM0	COM0:	Dir = \Comm-3
4.3.3	TF Remote - COM1	COM1:	Dir = \Comm-4
5.3.3	KTEK	COM2:	Dir = \Comm-5
51.3.3	LevelMaster		Dir = \Level-1

Figure 2. Communications Ports Tab

- 11) Click on the Spare-COM2 sub-menu under Communications in the PCCU32 tree-view. This will move the user directly to the Setup tab.
- 12) Within the Setup tab, the user will need to establish certain parameters to ensure correct communication with the MT5000 device. The following are the parameters that need to be established:
 - Port Name – Set a unique identifier for the port name.
 - Port – Click into the parameter field, and type in COM2:. The syntax is important, so type in as shown.
 - Protocol – From the parameter drop-down selection, choose Modbus Host (RTU).
 - Port Type – From the parameter drop-down selection, choose Serial.
 - Baud Rate – From the parameter drop-down selection, choose 9600.

The remaining fields within this screen can remain at their default settings for the time being

- 13) After the changes have been entered in by the user, click the Send button. Once the information has been sent, additional tabs will display.

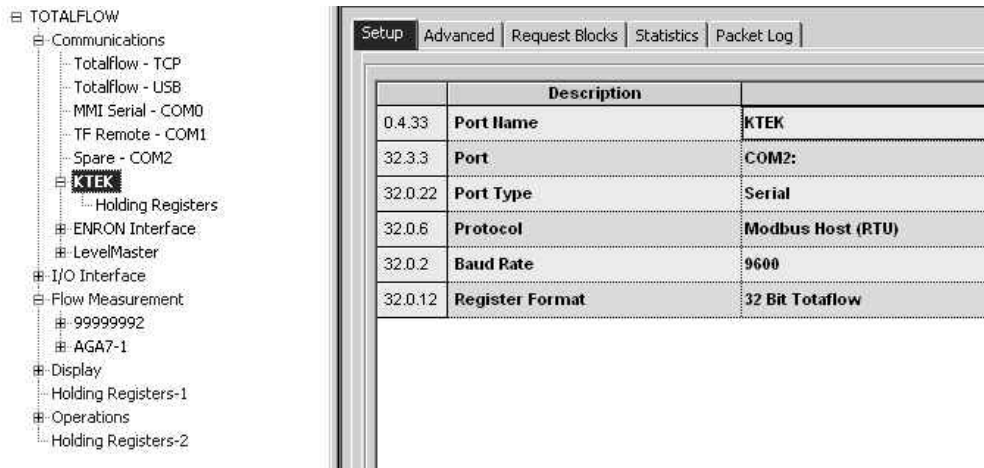


Figure 3. Setup Tab

- 14) Click on the Advanced tab. The following are the parameters that need to be established within this area:

- Interface – From the parameter drop-down menu, select RS485.
- Data Bits – 8
- Parity – None
- Stop Bits – 1
- Response Delay – 40
- Xmit Key Delay (milliseconds) – 10
- Unkey Delay (milliseconds) – 10
- Timeout (milliseconds) – 1500

The remaining fields within this screen can remain at their default settings

- 15) Upon completion, click the Send button.

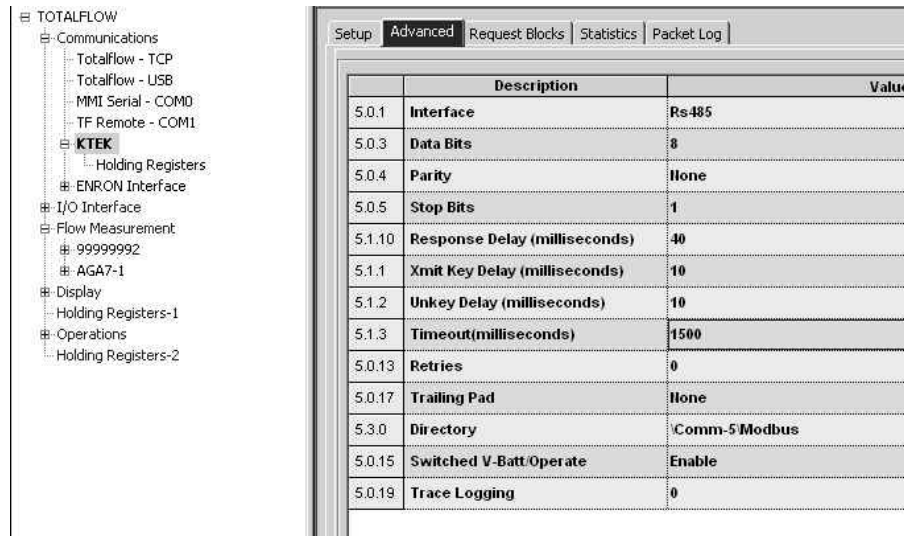


Figure 4. Advanced Tab

- 16) Next, select the Request Blocks tab. Within this area, the user will need to create an MRB file.
- 17) Click the Add button. An Enter File Name dialog box displays. Assign a name to the MRB file. Upon completion, click the OK button.
- 18) Locate the Modbus Function section within the Request Blocks tab. The following are the parameters that need to be set in this section:
 - Modbus Function – From the drop-down selection, choose 4-Read Input Registers.
 - Slave Address – Leave at the default of 1, or assign to the Modbus address of the K-TEK device if it is known to be different than 1.
 - Starting Register – Click into the parameter field, and type in the starting register of 40001.
 - # Registers – Leave at the default of 1.
 - Register Type – Leave at the default of Float.
 - Type – Leave at the default of Interval.
 - Interval – Using the arrow keys, set the interval time to 00:00:02.
 - Response – Click into the Register field, and set the register number to the following: 51.105.1.
 - Destination Register – Click into the parameter field, and type in the following: 51.103.0.
- 19) When the user has finished entering in the parameter values, click the Send button.

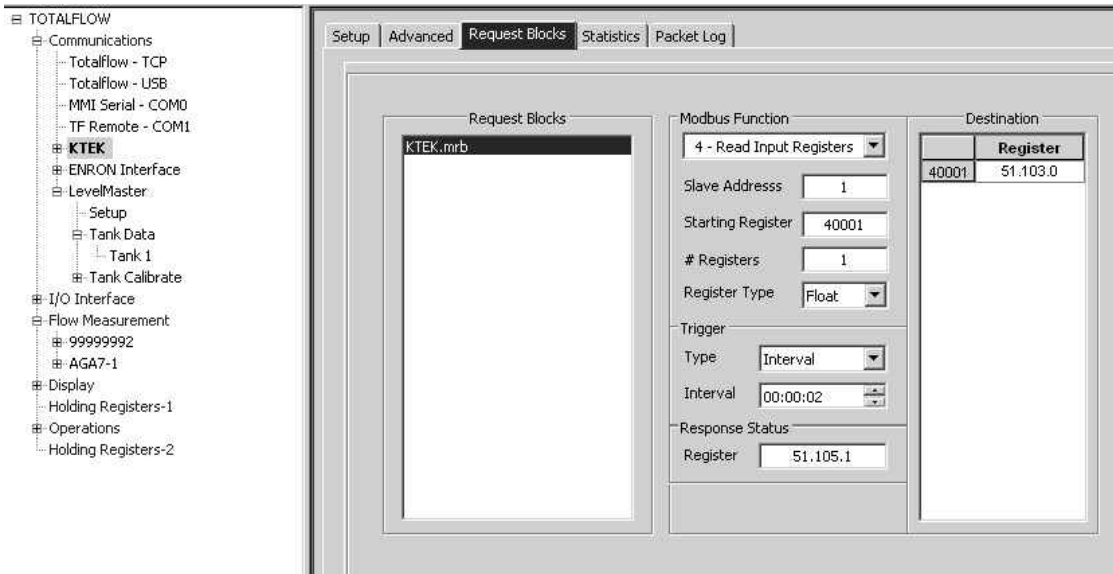


Figure 5. Request Blocks Tab

- 20) The user will now need to click on the LevelMaster application within the PCCU32 tree-view.
- 21) Move to the Tank Data sub-menu within the LevelMaster application, and expand it by clicking on the '+' button. Select Tank 1.
- 22) Within the Tank 1 section, click on the Levels tab. It is within this area that the user will see their K-TEK level value under the 51.103.0 parameter field.



Figure 6. Levels Tab

FYI



If the user has multiple tanks, it will be necessary to repeat steps 16–22 for each tank that is to be associated with the K-TEK device. The user will need to create an MRB file for each tank, and type in parameter data that is unique to that particular tank.

4.0 WIRING THE K-TEK MT5000 TO TOTALFLOW BOARDS

The following illustrations will detail the wiring instructions that need to be followed for proper usage between the K-TEK MT5000 device and various Totalflow boards.

4.1 XRC^{G4} Board Comm 2 to the MT5000 Device

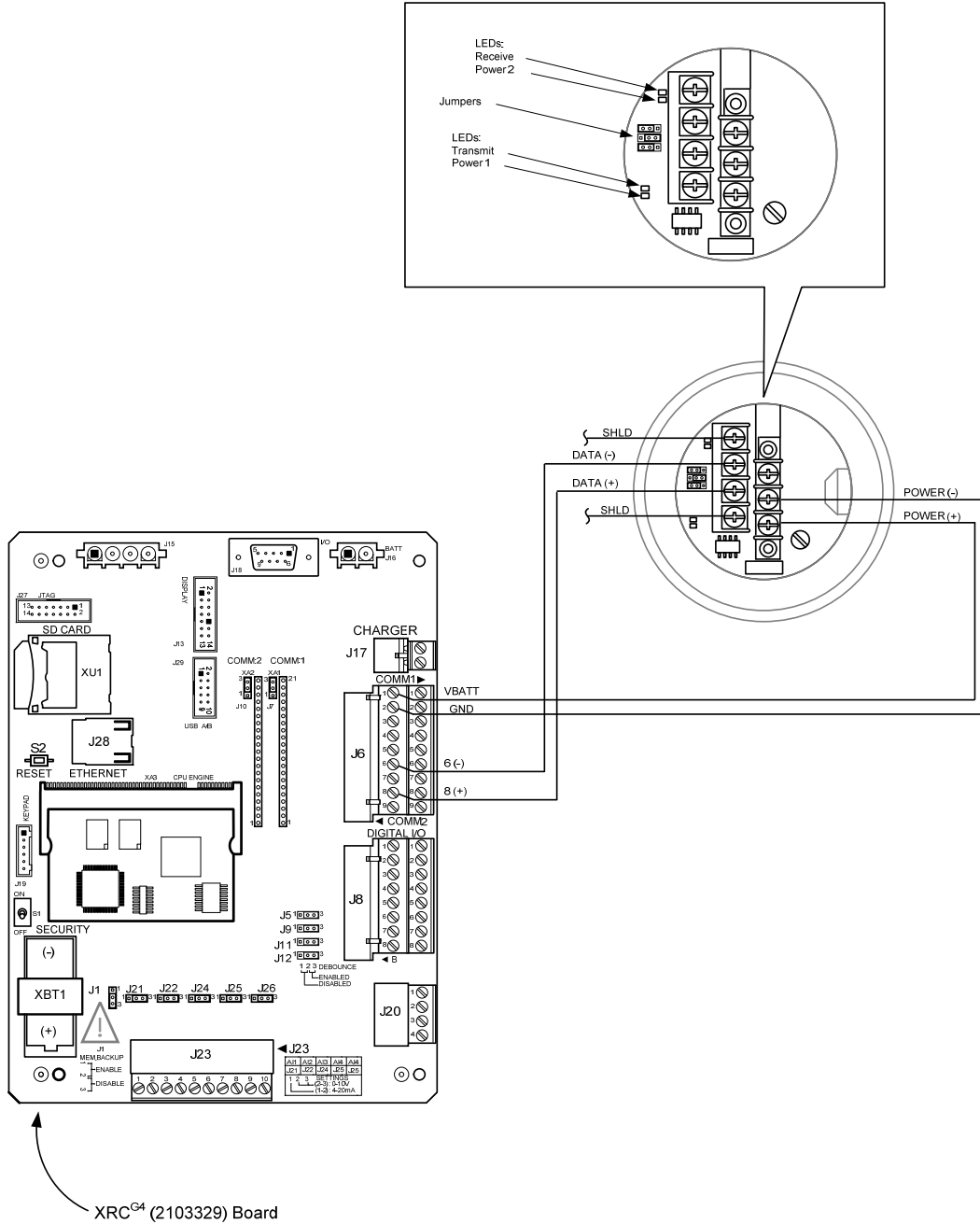


Figure 7. XRC^{G4} Board to MT5000 Device

4.2 XFC^{G4} Board Comm 2 to the MT5000 Device

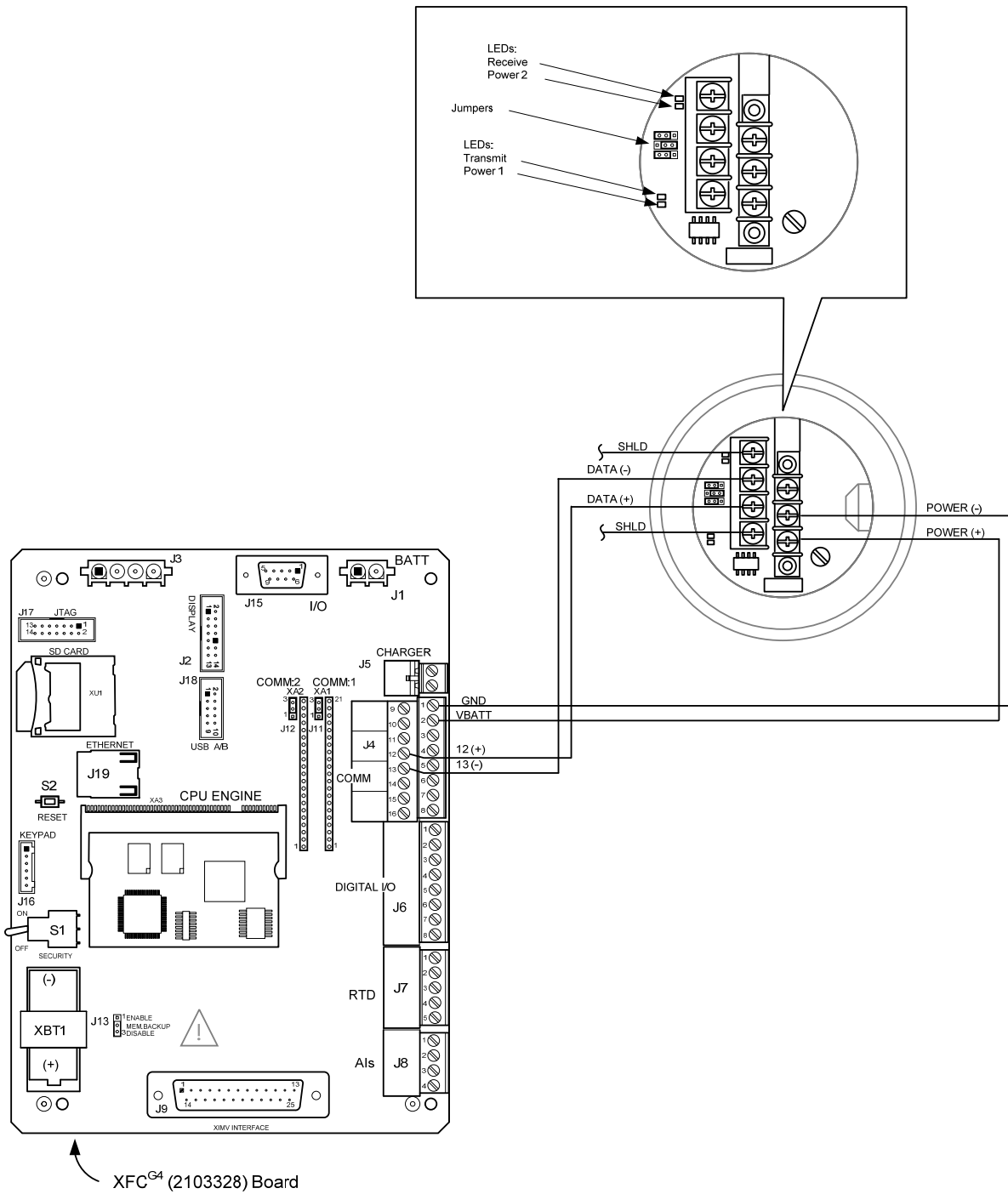


Figure 8. XFC^{G4} Board to MT5000 Device



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