KTX Communication Interfaces

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Contents

1 Introduction

This document explains the gateway options available for the KTX. There are 3 hardware options: Wireless Gateway, Serial Device Server, and Wi-Fi. Each hardware option has one or more communication protocols.

2 Description

A gateway is used to communicate between the Ethernet interface of a PC, PLC, or other equipment and the RS 485 2 wire interface of the KTX. The gateway can be a wireless gateway, a serial device server, or a Wi-Fi radio.

3 Interfaces

3.1 Wireless Gateway (Connectport X2)

The Wireless Gateway or ConnectPort X2 is intended to provide gateway functionality between various network technologies such as Ethernet, Wi-Fi, and XBee. The Gateway communicates with one or multiple BRX radios equipped with a Digi Xbee module. The BRX radio can communicate with up to 2 interfaces. The Gateway can communicate using the following protocols:

3.1.1 BCSGrain Software

BCSGrain software communicates using a UDP based protocol. The software can store the temperatures to a network folder as a CSV based file or a regular text file after each read. The file has a unique name with embedded timestamp. The stored file contains one row per cable (up to 21 TC readings per line);

3.1.2 Modbus TCP/IP

Used to communicate with a PLC which supports Modbus TCP/IP.

3.1.3 HTTP

Used to communicate with the interface over the Web. This is an HTTP based protocol.

3.1.4 Device Cloud

Communicate to Device Cloud using RCI (a Digi Device Cloud protocol). Device Cloud is provided by Etherios, a Division of Digi International.

3.2 Serial Device Server

Uses Digi One SP/Connect SP (wired gateway). The Digi-One SP is a serial to Ethernet communication device which supports a single interface for each IP address. This option uses the BCSGrain software.

3.3 Wi-Fi

Uses BRX radio board equipped with a Digi Xbee Wi-Fi module. The BRX board can communicate with up to 2 interfaces. This supports up to 2 interfaces for each IP address. The BCSGrain software supports Wi-Fi.

4 BCSGrain Software

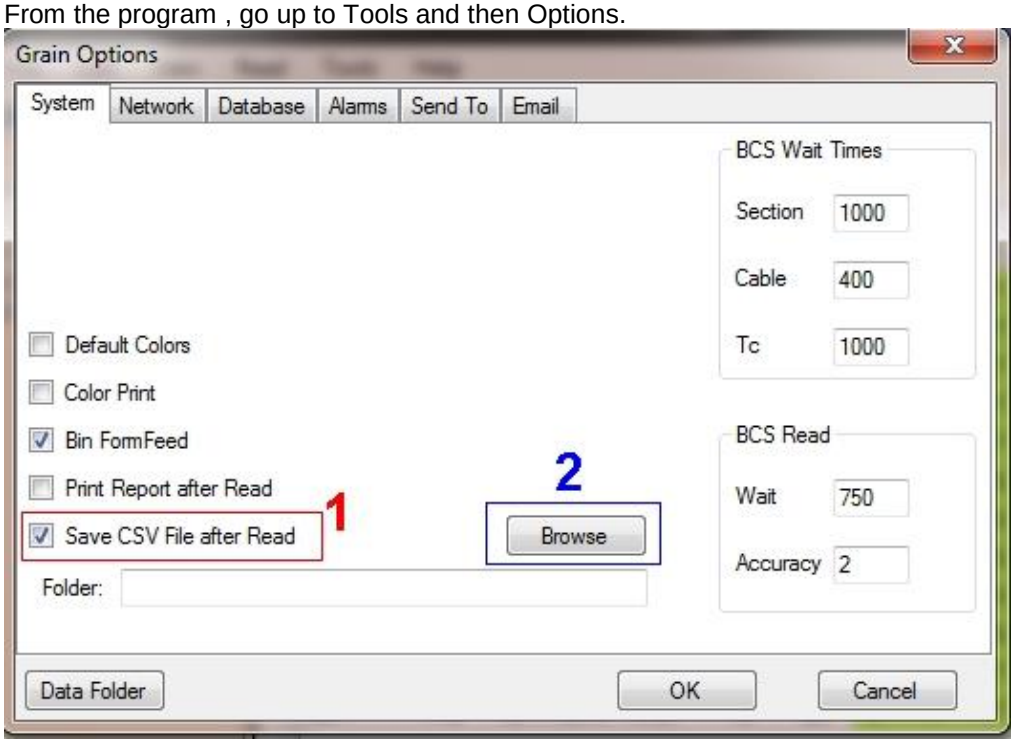
4.1 Sample File

BCS 12182014 1105.csv

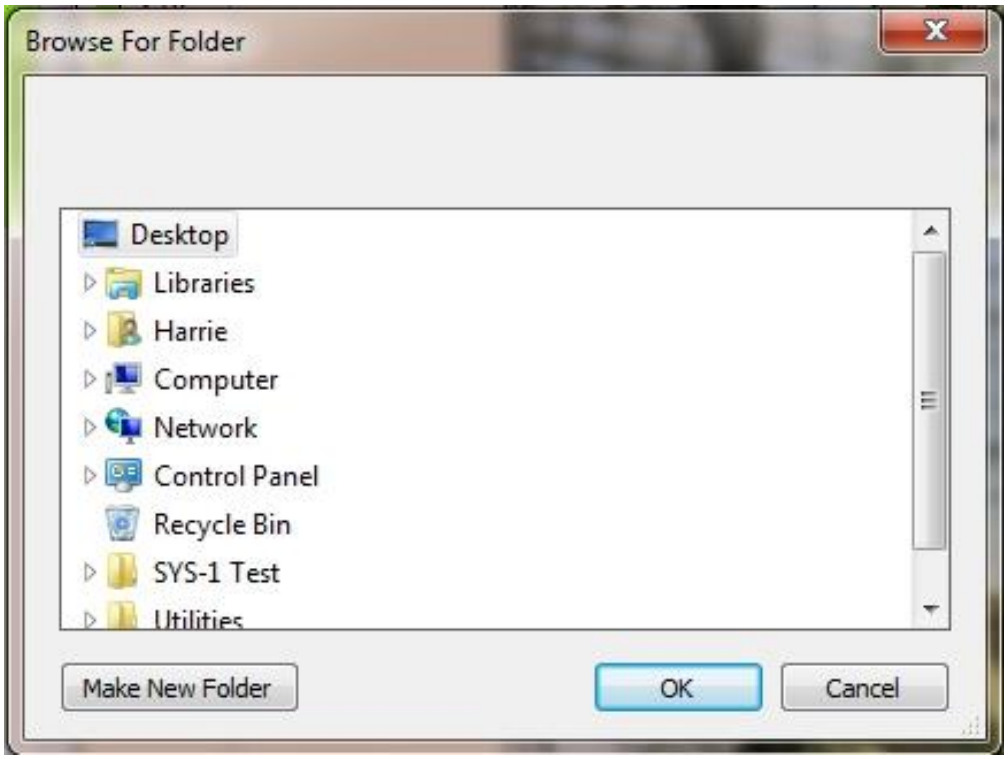
Boone Cable Works, Boone IA, Temperature
Bin 1,1,12/18/2014 11:05:54 AM,69,69,69,69,69,69,69,69,69,69,69,69,69,69,69,69,69,69
Bin 1,2,12/18/2014 11:06:09 AM,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67
Bin 1,3,12/18/2014 11:06:23 AM,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67
Bin 1,4,12/18/2014 11:06:37 AM,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67
Bin 1,5,12/18/2014 11:06:52 AM,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67
Bin 1,6,12/18/2014 11:07:06 AM,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67
Bin 1,7,12/18/2014 11:07:21 AM,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68
Bin 1,8,12/18/2014 11:07:35 AM,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67
Bin 1,9,12/18/2014 11:07:49 AM,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68
Bin 1,10,12/18/2014 11:08:04 AM,66,66,66,66,66,66,66,66,66,66,66,-1,66,66,66,66,66,66
Bin 1,11,12/18/2014 11:08:18 AM,66,66,66,66,66,66,66,66,66,66,66,66,66,66,66,66,66,66
Bin 1,12,12/18/2014 11:08:32 AM,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68
Bin 1,13,12/18/2014 11:08:46 AM,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68
Bin 1,14,12/18/2014 11:09:01 AM,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68
Bin 1,15,12/18/2014 11:09:15 AM,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68
Bin 1,16,12/18/2014 11:09:30 AM,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67
Bin 1,17,12/18/2014 11:09:45 AM,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68
Bin 1,18,12/18/2014 11:09:59 AM,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67
Bin 1,19,12/18/2014 11:10:13 AM,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68
Bin 1,20,12/18/2014 11:10:28 AM,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67,67
Bin 1,21,12/18/2014 11:10:42 AM,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68
Bin 1,22,12/18/2014 11:10:57 AM,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68
Bin 1,23,12/18/2014 11:11:11 AM,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68
Bin 1,24,12/18/2014 11:11:26 AM,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68,68

4.2 BCSGrain Software Options

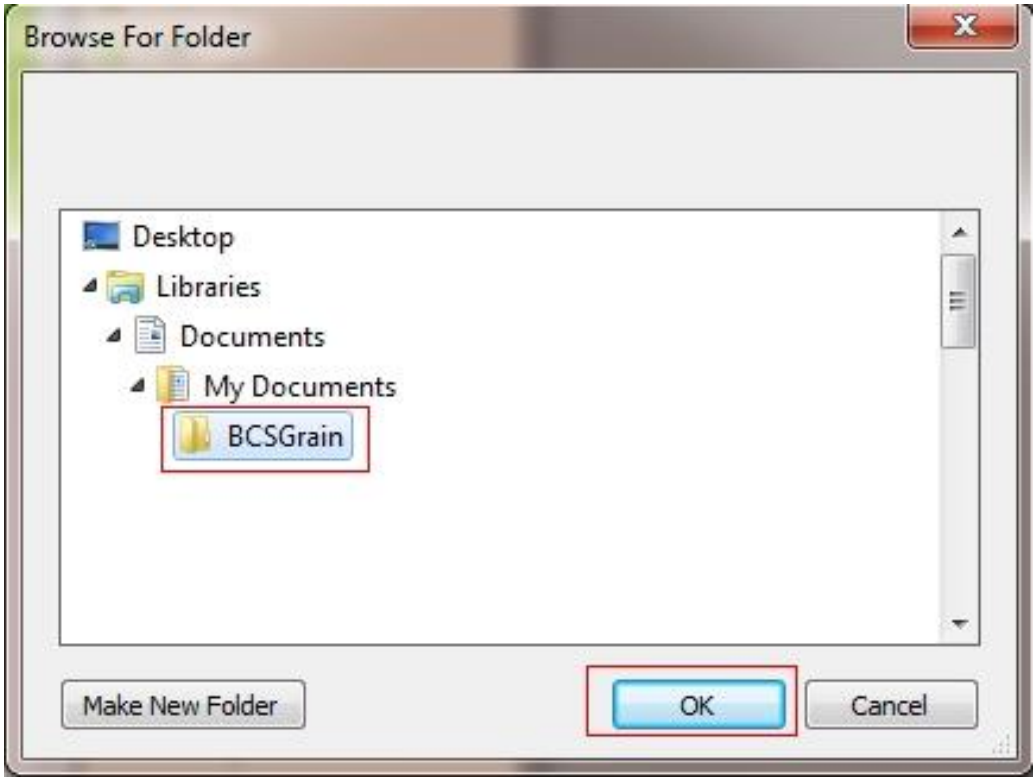
From the program , go up to Tools and then Options.



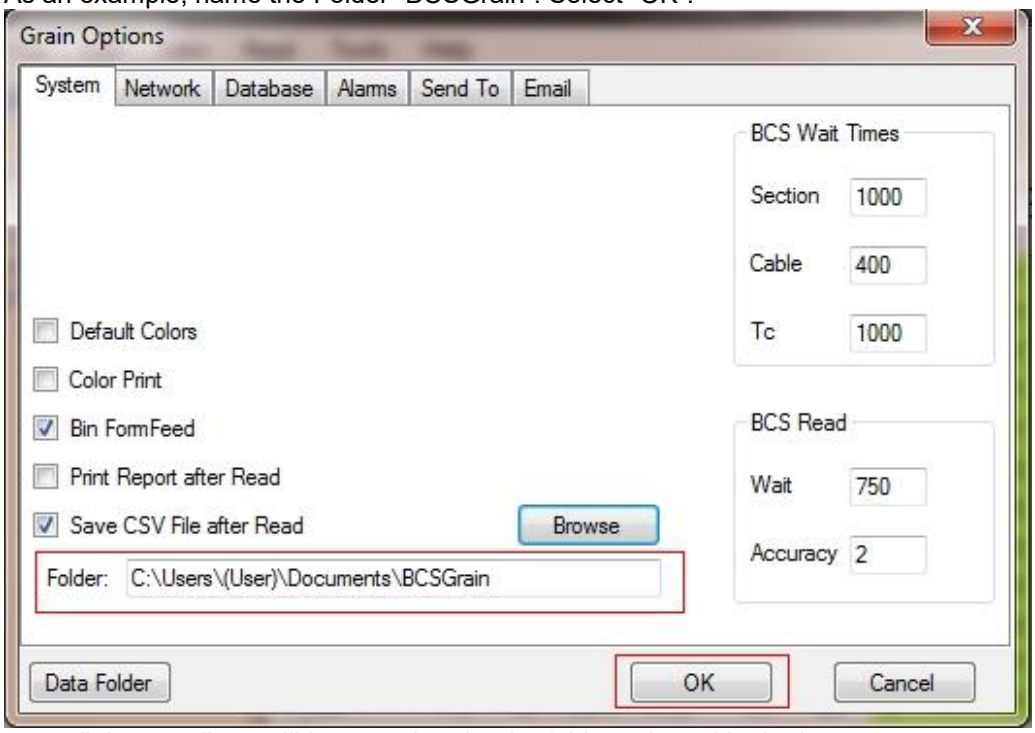
From the System tab, checkmark the “Save CSV file after Read” (1) and select “Browse” (2)



A “Browse for Folder” window appears. Search for a folder to store your files or make a new folder.



As an example, name the Folder “BCSGrain”. Select “OK”.



Now all the Readings will be stored under the folder selected in the box.

5 KTX Modbus TCP/IP

Holding Register: Length 5

Register#	Description	Notes
1	Mux Id	
2	Mode	0 – Off, 1 – Temp, 2 – Resistance, 3- Voltage
3	Tc Start	First TC to read
4	Tc Count	TC Count, set to 0 to disable read for this cable
5	Read Cable	Cable Num – Read Started when written – Cleared when Finished

Input Registers – Max Length 40 (18TC) 46 (21 TC)
100 – 2400 Cable 1 100, Cable 2 200, etc.

Register#	Description	Notes
101	Mux Id	
102	Cable Id	
103	Timestamp	32 bit If 0, then no Data available
104		
105	State	0 No Read, 1 OK, -1 OT
106	Temp	
107	State	
108	Temp	

Note 105-106 Repeat for each TC

6 HTTP

<IP Address>/Device/<Device Id>/<Cable num>

6.1 Examples

192.168.0.100/Device

```
<List>
      <Device Id="1" Type="Mux" Name="Mux1"/>
      <Device Id="2" Type="Mux" Name="Mux2"/>
      <Device Id="3" Type="Mux" Name="Mux3"/>
      <Device Id="4" Type="Mux" Name="Mux4"/>
</List>
```

192.168.0.100/Device/1/1

```
<CableData>
      <Device Id="1" Type="Mux" Cable="1"/>
      <List>
            <TcData>
                  <TC>1</TC>
                  <Quality>1</Quality>
                  <Data>69F</Data>
            </TcData>
            <TcData>
                  <TC>2</TC>
                  <Quality>1</Quality>
                  <Data>69F</Data>
            </TcData>
            <TcData>
                  <TC>3</TC>
                  <Quality>1</Quality>
                  <Data>69F</Data>
            </TcData>
            <TcData>
                  <TC>4</TC>
                  <Quality>1</Quality>
                  <Data>69F</Data>
            </TcData>
            <TcData>
                  <TC>5</TC>
                  <Quality>1</Quality>
                  <Data>69F</Data>
            </TcData>
            <TcData>
                  <TC>6</TC>
                  <Quality>1</Quality>
                  <Data>69F</Data>
            </TcData>
      </List>
</CableData>
```

7 Device Cloud

Cloud based service provided by Digi International.

Command to List equipment connected to gateway
<List />

Command to read a device (Cable 1)
<Read Device=”1” Cable=”1” />

Command to return version of gateway software
<Version />