Notes on Communication between DEIF Multiline Units and External I/O Modules,
Beckhoff Module

Description:

This document explains how a user can expand digital I/Os and analog I/Os, other than available on DEIF controllers.

Every DEIF Multiline controller have inbuilt digital I/Os and/or analog I/Os. But in some applications, the number of I/O terminals available on DEIF controller fall short as per the field specifications.

For example, the analog inputs available on DEIF controllers are few. But at site, the customer wishes to view exhaust temperature of cylinders, using thermocouple, on controller display.

Also, AGC-200 doesn't have any analog output. Now what to do in above example?

The answer is, Beckhoff Modules.

Basic requirements:

Beckhoff BK-5120, Bus Coupler (FIG.1).

This is a CANopen bus terminals that connect the CAN bus system to the electronic terminal blocks, which can be extended in modular fashion.
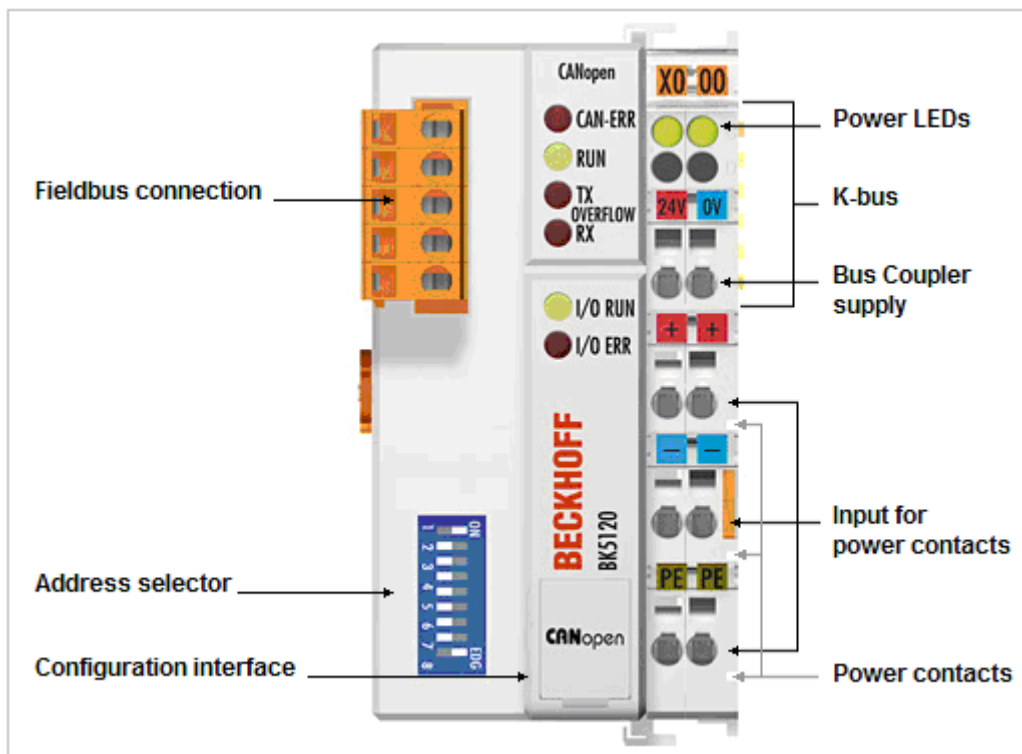

FIG.1

CANopen wires from DEIF controllers are connected on this module.

Beckhoff KL-9010, Bus End Terminal (FIG.2).

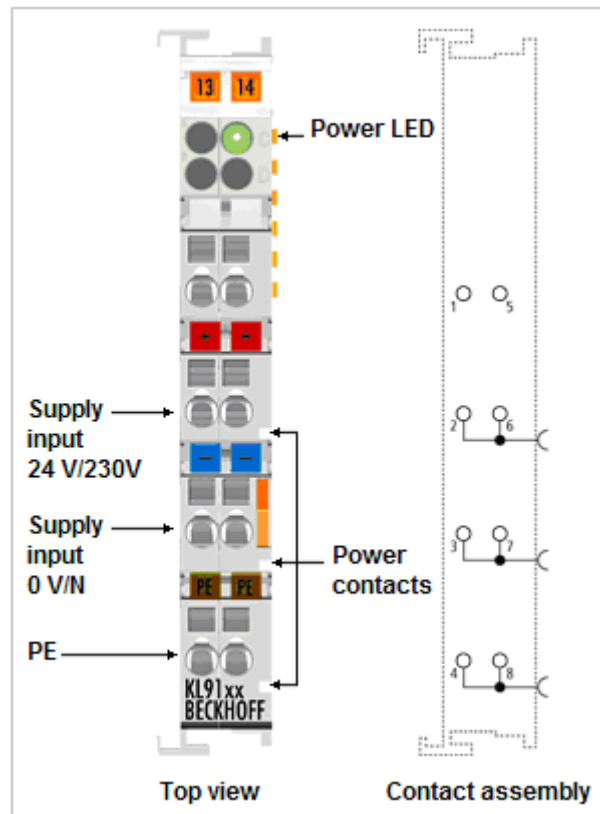This module is used to terminate all the modules within itself and BK-5120.

FIG.2

Now as per the above example of exhaust temperature, for thermocouples you have to use Beckhoff KL-3312 (FIG.3).
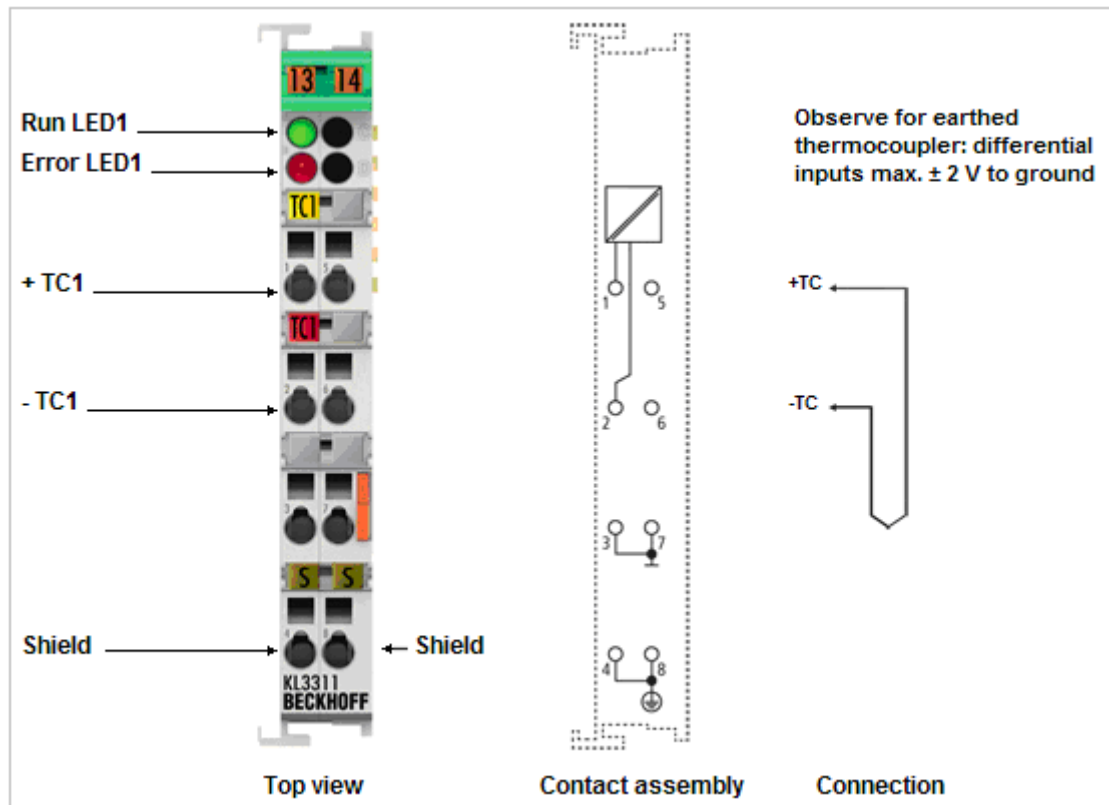KL-3312 is 2-channel Thermocouple Input Terminal.

FIG.3

So this will be sandwiched between BK-5120 Bus Coupler and KL-9010 Bus End Terminal.

In the same way you can use other Beckhoff modules, for expanding I/Os.

Settings:

Note:

Below the explanation is given by considering AGC-200 as DEIF Multiline controller.
Instead of AGC-200 it can be any DEIF Multiline controller, which supports H8 option.
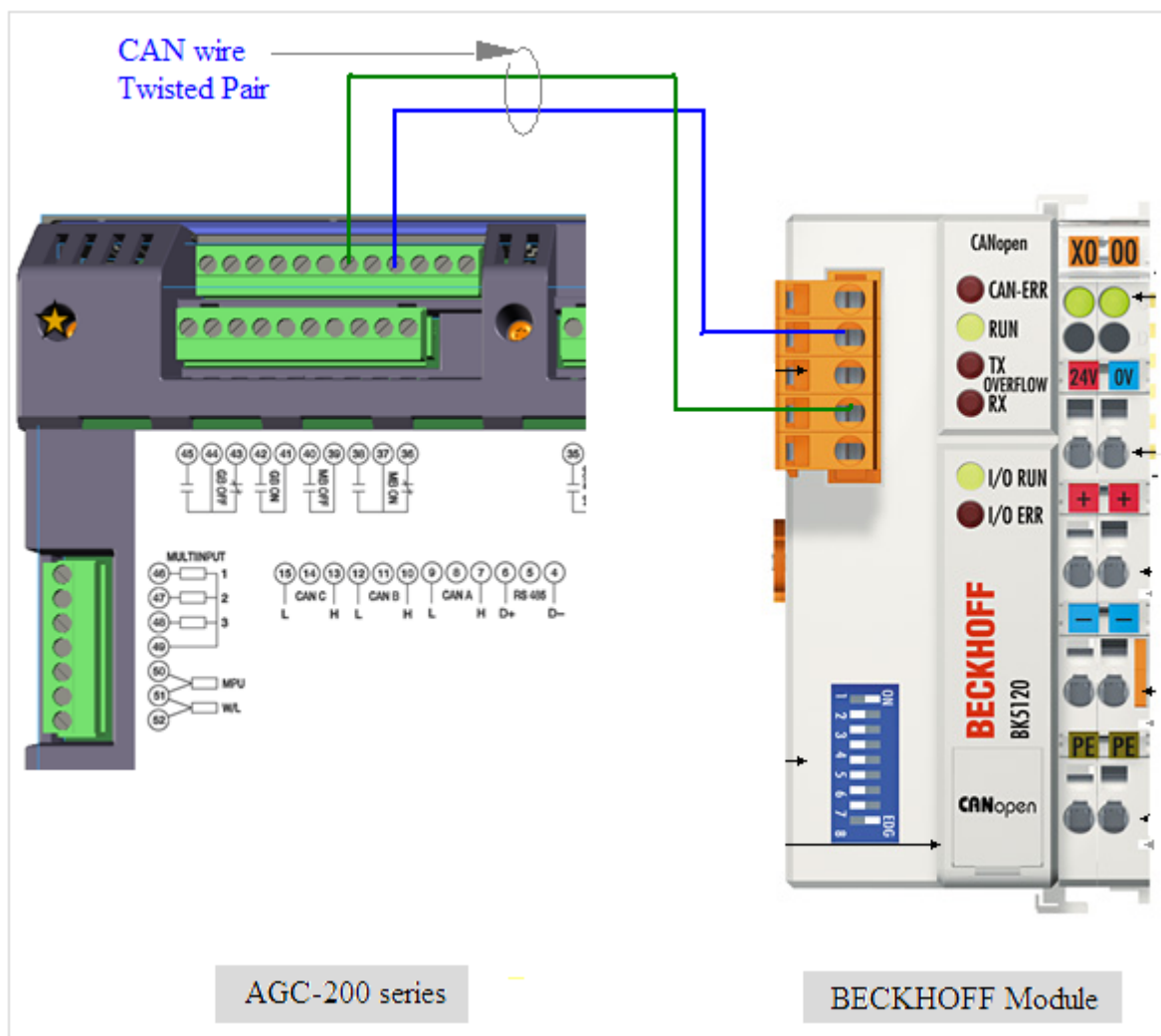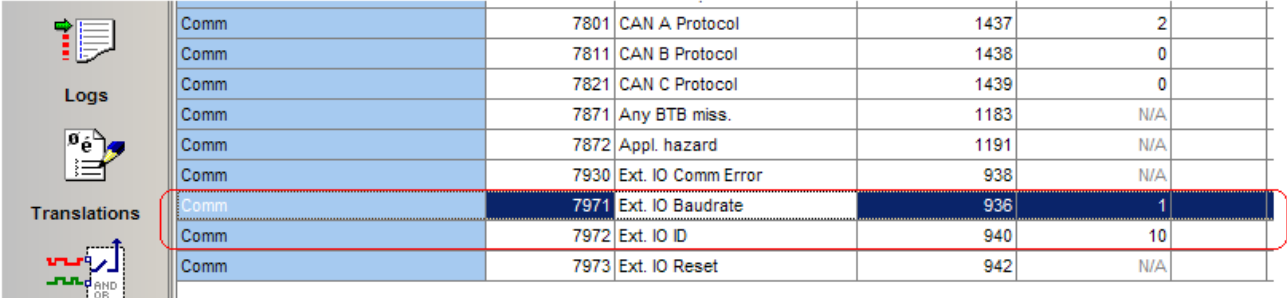

FIG.4

Do the wiring as shown in FIG.4

Please note that by default (factory setting), CAN-A is used for External Modules. You can configure CAN-A, CAN-B or CAN-C for External I/O, but any one.

1. Power up the units, AGC-200 and Beckhoff Module.
2. Open Utility Software (USW).
3. Establish communication between AGC-200 and USW.
4. Go to "Comm" category, and set Beckhoff Module ID and baud rate, as shown in red in FIG.5

Comm		7801	CAN A Protocol	1437	2
Comm		7811	CAN B Protocol	1438	0
Comm		7821	CAN C Protocol	1439	0
Comm		7871	Any BTB miss.	1183	N/A
Comm		7872	Appl. hazard	1191	N/A
Comm		7930	Ext. IO Comm Error	938	N/A
Comm		7971	Ext. IO Baudrate	936	1
Comm		7972	Ext. IO ID	940	10
Comm		7973	Ext. IO Reset	942	N/A

FIG.5

5. Go in Category "External I/O" settings.
6. Open "External Module 0 Status" window and type 5120, for Bus coupler.
7. Open "External Module 1 Status" window and type 3312, for 2-Channel Thermocouple (for our example).
8. For any other Beckhoff modular block, add the number in the next Status window.
9. No need to configure KL9010 Bus End Terminals.

10. Go in View Menu in USW.
11. Select the view page and line where you wish to see the readings.
12. In view selection window select Ext IO Ana In.x (x can be analog input 1, 2…8).
13. Scroll the AGC-200 screen on that particular page and you can see the value (exhaust temperature, in our example).
14. If you wish to use CAN-B instead of CAN-A, then simply go to "Comm" category, click on CAN-B Protocol horizontal area.

15. A window will open as shown in FIG.6.Select External I/O form the drop down list and Write the parameter to the device.
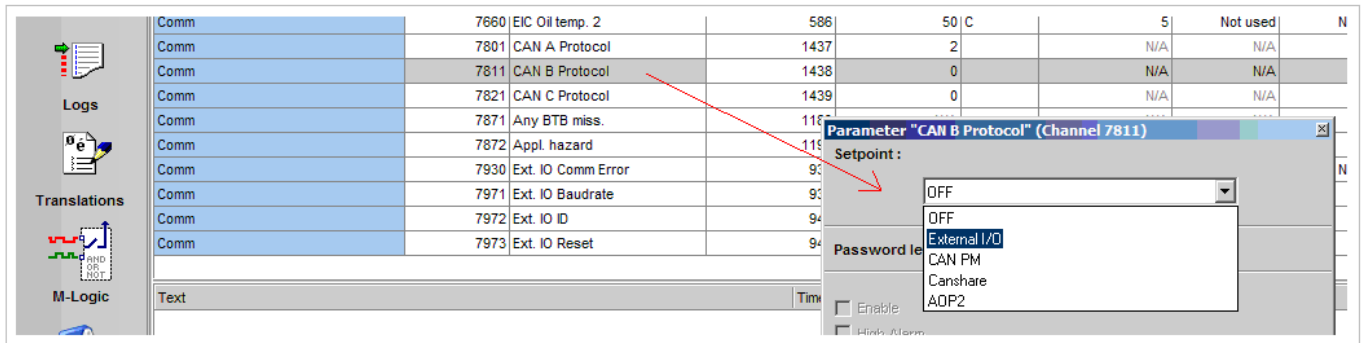

FIG.6

Note: If by mistake you configure two CAN Protocols, say CAN-A and CAN-B, with "External I/O" options, then "External IO Comm Error" will be displayed.