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8906 DIN-RAIL STEPPER/ENCODER INTERFACE

USERS MANUAL

PCB Issue 2

Document Nos.: 8906/UTM/A/x/1.1

Date: 30/12/2019

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Revision History

The following table shows the revision history for this document.

Date	Version	Revision
05/10/15	1.0	Use manual issue
30/12/19	1.1	Change from Hytec to Newwood Solutions for contact details The Hytec 8601 has been updated to the Newwood Solutions 8602/1 but has the same functionality as the 8601.

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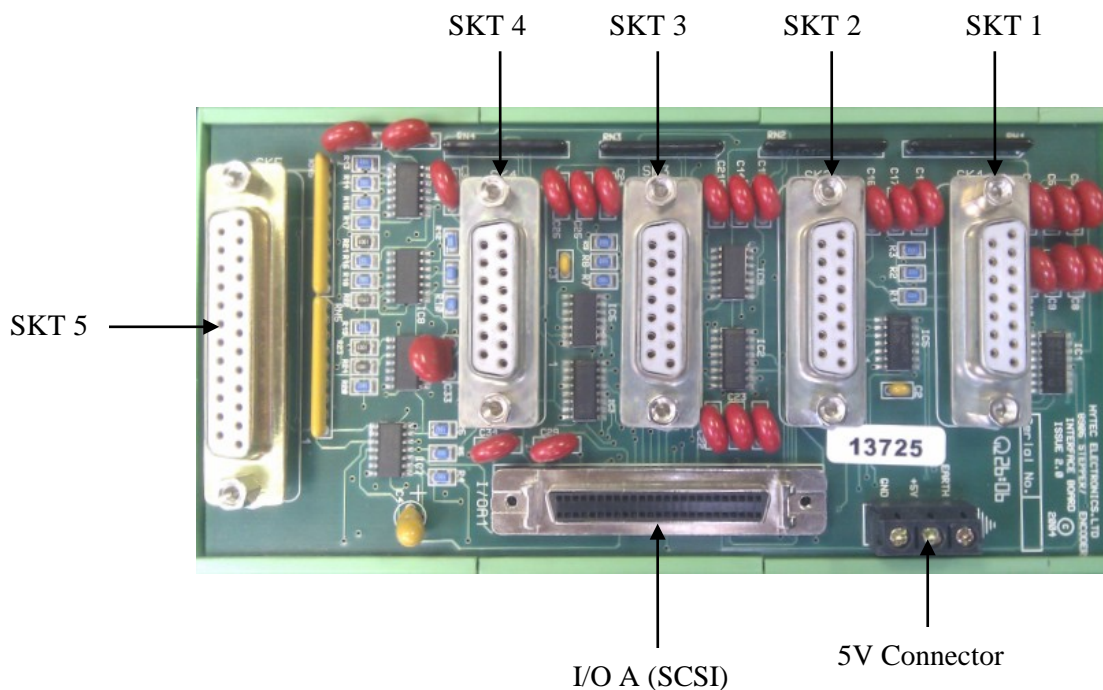
1. PRODUCT DESCRIPTION

The 8906 is a simple and compact DIN-rail mounted interface board for use with stepper motor drivers and quadrature encoders. Designed to be used with the Newwood Solutions 8602/1 4-axis Stepper Motor Controller Industry Pack, it provides a simple interface to the external step motor drives and encoders.

The 8906 can also be used to input data from quadrature encoders when used with the Newwood Solutions 8513 Industry Pack.

1.1 Key Features

- Four channels of stepper motor and encoder interface.
- Single external 5-volt power supply.
- Direct SCSI cable connection to the 8602/1 Stepper IP card via transition card.
- Simple hook-up to the motor driver and limit switches via Cannon connectors
- Limit switch and incremental encoder inputs on all four channels
- Transient protection on encoder signals
- Use with readily available DIN-rail mounted power supplies, connected via screw terminals.



2. CONNECTING UP

2.1 DRIVER CONNECTIONS

See figure 1 for details.

The card provides three outputs per channel on the 15-way cannon connectors (SKT1 – SKT 4). They are **STEP**, **DIRECTION** and **AUX1**. All are buffered with 74LS06 open-collector drivers capable of sinking 40mA with a maximum off state voltage of 30 volts – compatible with the input stages of a wide variety of motor drivers.

In addition to the encoder and limit switch connections (see below), a **FAULT** input signal can be brought in from the motor driver. This has a similar circuit to the limit switch inputs and needs to be held in the ‘low’ state, just like the limit switch signals, for the channel to operate. **If no status signal is available from the driver, this pin should be strapped to GND.**

Note: the FAULT signals are connected through the Auxiliary 25-way Cannon connector SKT 5.

2.2 ENCODER AND LIMIT SWITCH CONNECTIONS

See figure 1 for connection details.

2.2.1 Limit switch functions

The **limit switch** inputs on this card are compatible with voltage-free contacts from micro-switches or the transistor outputs of opto switches. The wetting current of these inputs at 0.4 volts is 0.1mA. All these inputs are conditioned before being sent to the 8602/1. **The assumed function of these switch inputs is ‘Normally Closed’, meaning that an open condition indicates travel beyond the limit.**

If limit switches are not used in a system, the positive and negative travel limit switch inputs should be strapped to ground.

The ‘Home’ limit switch input is only used in systems where the software function ‘go to home limit’ will be used. It therefore has no function and can be left open in systems where just the two travel limits are used.

2.2.2 Encoder types

The encoder inputs on this unit are compatible with any encoder which works with a 5-volt supply at up to 50 milliamps and gives RS422 compatible quadrature outputs in phase A +/- phase B +/- format. These signals are received by the 8906 and fed to the 8602/1 where they are used to update the Absolute Position Accumulator if selected in the 8602/1 channel CSR.

2.3 Connector Pinouts.

15-way Cannon socket connectors SK1-SK4 (SK1 for channel 1):

Pin	Function
1	VCC for encoders
2	Encoder Phase A +
3	Encoder Phase A –
4	Encoder Index + (not used)
5	Encoder Index –
6	Encoder Phase B +
7	Encoder Phase B –
8	Ground
9	Step Output
10	Direction Output
11	AUX1 Output
12	Ground
13	Positive Limit
14	Negative limit
15	Home Limit.

25-way Cannon socket connectors SK5:

1	Ground
2	Spare input 1
3	Spare input 2
4	VCC
5	Spare input 3
6	Spare input 4
7	Ground
8	Ground
9	Fault channel 1
10	Fault channel 3
11	VCC
12	N/C
13	Ground
14	Ground
15	AUX2 output channel 1 (from 8601 CSR)
16	AUX2 output channel 2
17	VCC
18	AUX2 output channel 3
19	AUX2 output channel 4
20	VCC
21	Fault channel 2
22	Fault channel 4
23	VCC
24	N/C
25	Ground

2.4 POWER CONNECTIONS

There is a 3-way screw-terminal block on the PCB for receiving 5-volt power from a local power supply. The current used by this unit is less than 100 milliamps. Note that there is also an earth connection used for the input transient protection system. If a local earth is not available, this should be connected to Ground.

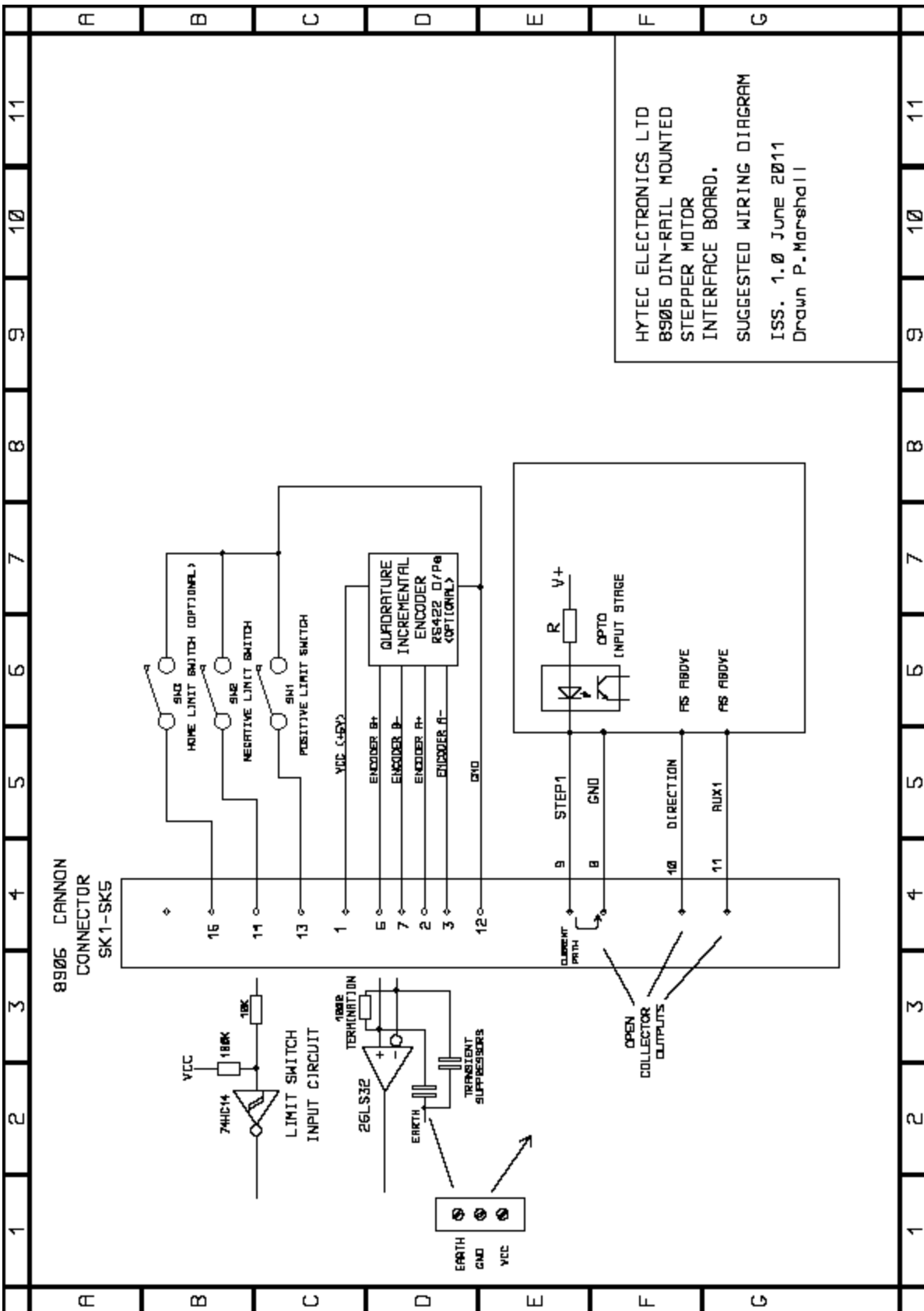


Figure 1 Suggested Wiring Diagram for a Typical Application.