



## **USER GUIDE**

# **2 CHANNEL COUNTER INTERFACE**

## **USAGE NOTICE**

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## 1. Introduction

Product: 2 CHANNEL COUNTER USB INTERFACE

Communication Interface: USB 2.0

Two channel counter USB interface translates encoder position to industry standards USB 2.0 format that can be read by computer.



## 2. Description

An Encoder to USB Converter translates encoder position to industry standards USB 2.0 format that can be read by computer.

- ❖ 32 bit real time up/down counter.
  - ❖ Count range from 0 to 4294967295.
  - ❖ Very high speed. Measures up to 20Mhz input frequency.
  - ❖ Two encoders can be interfaced with 2 channel counter
- a. Following facility available through USB input.
    - Reset
    - Present
    - Reset on index pulse
    - Preset on index pulse
    - Search index (Z pulse)
  - b. Lot of communication commands available for configuring the device.
    - Change communication baud rate of virtual com port
    - Change sampling rate
    - Enable or disable index (Z pulse)
    - Configure direction of encoder through software without re-wiring

- c. USB 2.0 compliant. USB Port is accessed via virtual com (serial) port. Hence simple serial port communication can be used for interfacing with this counter unit.
- d. No need of external power supply. Connects directly to a computer's USB port. There is additional provision for external power supply. This enables connecting encoders that require more current or voltage than the standard USB port can supply.
- e. Quadrature X4 differential 5V TTL as well as RS422 type input supported.
- f. Virtual com port USB driver available for Windows 32bit as well as 64bit.

### 3. Serial Interface

- Number of Ports: 1 x DB9 Female (Cable End).....  
(Computer communication & programming)
- Serial Standards: RS232
- ESD Protection:  $\pm 15\text{KV}$
- Parameters: 9600bps to 115200bps
- RS-232: DCD, RxD, TxD, DTR, GND, DSR, RTS, CTS, RI

### Power Supply and Consumption

Power supply gives through USB port

- Power Supply Interface: 2-pin 3.5mm pluggable terminal block
- Input Voltage: 5 VDC

USB Interface:

- Number of Ports: 1 x mini USB Female..... (For Key-board use)
- Speed: USB 2.0 High Speed (480 Mbit/s)

### System

- LED Indicators: RUN

## Physical Characteristics

- Mechanical Dimension: 22mm x 76mm x 91mm
- Weight: 150gm approx.

## 4. Connection Details

### D type 9 pin male connector (for both CH1 and CH2)

- To be connected to encoder 1 and encoder 2.
- Can withstand transients and noise coming from control panel.
- Cable length can be up to 10mtr.

DB9 PIN	Encoder 1	Encoder 2
1	A+	A+
2	A-	A-
3	B+	B+
4	B-	B-
5	GND	GND
6	INDEX+	INDEX+
7	INDEX-	INDEX-
8	DIN1	DIN2
9	+5V	+5V

### Table Terminology

**NC: No internal connection.**

GND: Supply negative.

Warning: Wrong connection or over voltage at any of the D type serial connector pin may permanently damage the modem.

## 5. Commands

- All commands start with \$ and end with #
- All responses start with \$ and end with #

Command Format:

\$<Two digit command code><Optional payload depending on command code>#

### 1. Change Communication Baud Rate

Communication baud rate of 2 channel counter USB interface can be changed by issuing this command. This is one time setting and user need not to set it every time. The new baud rate is saved in non volatile memory and takes effect only after the board is power cycled.

Default baud rate is 19200.

Command Code : 02

Format: \$<**Command Code**><**Baud Rate Designator**>#

Example: \$021##

Baud Rate Designator: 1 = 4800, 2 = 9600, 3 = 19200, 4 = 38400, 5 = 57600.

### 2. Product Name and Firmware Version

Product name and firmware version can be obtained by issuing this command.

Command Code: 03

Format: \$<**Command Code**>#

Example: \$03#

### 3. Set Sampling Time

This command allows setting of data transmission sampling time .  
Factory setting for sampling time is 50 ms. This is one time setting and user need not to set it every time.

Command Code: 01

Format: **\$<Command Code><Three digit sampling time in milliseconds>#**

Example: \$01100#

Response: \$01,100#

Trying to set invalid sampling rate will respond with current sampling time.

#### 4. Index Search

This command allows searching of encoder index. Index should be disabled after detecting first index after search index command.

Command Code: 04

Format: **\$<Command Code><Encoder Channel Number>#**

Example:

#### 6. Application Diagram



## 7. Warranty Statement

The 2 Channel Counter Interface unit specified in this document is covered under warranty for a period of 12 months against manufacturing defects, workmanship and malfunction under normal operating conditions. The warranty is subject to the terms and conditions mentioned below.

1. The warranty commences from the date of sale for a period of 12 months irrespective of the actual installation date.
2. The warranty is against manufacturing defects and any subsequent malfunction of the instrument during the normal operation. The warranty shall not be applicable in case of accidental damage, damage due to wrong operation, connection or conditions that are out of normal operating specifications.
3. KARL PL, at its discretion may repair or replace the product depending on the condition of instrument, availability of spare parts and type of failure.
4. In case of warranty claim, the warranty period will not be extended and remains same as stated earlier from the date of sale.
5. Maximum liability of KARL PL remains up to repair or replacement of the product only. Any damages or losses raised out of use of the instrument are not covered by this warranty. In any case, cost of the product will not be refunded.
6. In case of warranty claim, the product should be sent over to KARL PL immediately after noticing the defect or failure. A detailed note of operating conditions in which fault occurred will be helpful in rectifying the defect.
7. Do not try to open or repair the instrument on your own. Warranty will stand null and void in such case. Products with tampered warranty seal will not be considered for warranty claims and regular service charges will be applicable.
8. In all claims, the company's decision will be final and legally binding.
9. Any and all disputes are subject to pune jurisdiction only.

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