

Non Contact Thickness or Width Software

Manual

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Laser safety

The standard PreciCura sensors are an instrument that conforms to Laser class 2, according to IEC 825-1. PreciCura has an in-built laser with very low power. The light is visible in the red spectrum. Normally the blink reflex of the eye prevents the light from hitting the retina. Laser light can damage the eye. Avoid staring in to the laser beam.

The Norm IEC 825-1 is an International Standard, describing handling and demands of laser product. We reference to the latest version IEC 825-1:1993/A2:2001. This paper is identical with the European Standard EN 60825-1/A2. Every manufacturer of laser products is obligated to classify according to this standard.

Class 2: Lasers emitting visible radiation in the wavelength range from 400nm to 700nm. Eye protection is normally afforded by aversion responses including the blink reflex.

Please consult the LIMAB PreciCura manual for full safety guide lines.

Introduction

The PreciLogger software is designed to be used with LIMAB PreciCura range of non contact laser sensors. The software is used for monitoring the width or thickness of continuously moving product in a production environment and providing an operator with a clear display of the measured dimensions. In addition the software will provide statistics, record the measurements to hard disk provide alarm outputs if tolerances are exceeded.

PreciLogger – Principle features

- Large numeric display of width or thickness
- Numeric display of deviation from nominal
- Graph showing dimension trend
- On screen indicators showing out of tolerance and pre-alarms warnings
- Length display (if encoder is used)
- Product library
- Printed statistical summary report
- Logging of measurements to hard disk
- Alarm and pre-alarm outputs
- Input for remote start/stop of measurements



PreciLogger – main operator screen

Installing the software

The software is designed to work with a PC running Windows XP operating system. Close all other running programs before starting the installation. Insert the CD into the PC CD drive open the folder called PreciLogger (V1.X.X) and click the SETUP.EXE icon and follow the on screen instructions.

Default installation directory

C:\Program Files\LIMAB\Limab PreciLogger\

Default location for data files

C:\Program Files\LIMAB\Limab PreciLogger\results

Output module drivers (USB-4761)

If you are using the USB 8 channel relay input/output module drivers will need to be installed. These are supplied on the installation CD in the folder I/O driver. Click the SETUP.EXE icon and follow the on screen instructions.

CAN-Bus Drivers (USBcan II)

If you are using the CAN-Bus connection from the PreciCura sensors you will need to install the CAN-Bus drivers. These are supplied on the installation CD in the folder CAN-Bus Driver. Click the SETUP.EXE icon and follow the on screen instructions.

USB Dongle (DK3 usb DESKey)

PreciLogger software requires a USB Dongle to operate. Upon inserting the dongle into the USB port Windows should recognise the device and will automatically install the drivers. If Windows does not recognise the device these can be installed manually using. These are also provided on the Installation CD in a folder called Dongle driver.

On the installation disk

- LIMAB PreciLogger application
- LIMAB PreciCura SET
- Acrobat reader
- PreciLogger manual
- PreciCura manual
- Kvaser CAN-Bus driver
- USB-4761 I/O module drivers

System Overview

Computer

The computer will be provided with PreciLogger will have Windows XP Pro operating system. The PreciLogger software and any optional I/O interfaces will be pre-installed and ready to use. The computer receives the measurements from the laser sensors via com 1 serial RS232 port or via an optional CAN-Bus to USB converter connected to the PC.

Laser sensors (PreciCura SR or PreciCura LR)

For measuring thickness or width two PreciCura laser sensors are used one either side of the material being measured. The connection between the two lasers is CAN-Bus. The master gauge will synchronise the sampling of the two lasers and calculate the thickness (or width). The calculated value is sent to the PC via a serial RS232 connection or via an optional CAN-Bus interface.

I/O Module USB-4761 (optional)

When specified a USB I/O module will be supplied and the drivers will be pre-installed. A USB connection cable of length 1.7m will also be supplied. This module provides 5 relay outputs and 2 inputs lines with the connection made by screw terminals mounted on the module. These outputs are used to switch external devices for pre-alarms and alarms conditions. There are also two inputs, one is for starting and stopping the logging of data, the other is for a length encoder input. Details of the connections are shown in the appendix of the manual.

Length counter Proc-M8-24 (optional)

When specified, an encoder will be supplied with the system. This is provided so that the product length information can be also displayed and logged. This is connected to the inputs IDI1A & IDI1B on the USB-4761 I/O module.

Remote Large LED display LED-100-6-S (optional)

When specified a large remote LED display can be connected to the system. This connects to the PC via com 2, a second RS232 serial on the PC. If more than one remote display is used the displays are connected to the PC via a RS485 connection.

CAN-Bus – USB Converter USBcan II (optional)

When specified a CAN-Bus to USB converter will be supplied and the drivers pre-installed by LIMAB prior to delivery. The converter card has two 9 pin D connectors, channel 0 & 1. The lasers are connected to channel 0.

Demonstration Mode

PreciLogger software can be used in demonstration mode without any hardware connected. Before the software can be used in demonstration mode it will need to be enabled in the configuration menu.

- Config menu

- Configuration
 - Hardware tab

- Tick Simulation Mode

Sconfiguration	
Hardware Graph	s General
Communications CAN Bus Serial COM 1	Filtering Numeric Display Rate (Secs): 0.10 Alarm Output Rate (Secs): 0.10 Graph Update Rate (Secs): 0.10
Sensor PreciCura SR PreciCura MR Sensor Rate (mS): 100	Operating Mode Manual (Initiated by user) Up Simulation Mode Calibration Calibration Duration (Secs): 5
0	K Cancel

Demonstration Mode - Operation

Select 'Simulation Part' and press the 'Start' button to start

onfia Tools Help					
	AB PreciLogger	Product Operator Batch No	Simulated Part Admin	<u>•</u>	Nominal 10.00 mm +Tolerance 0.50 mm -Tolerance 0.50 mm
Start	Dimension (mm)		9.9 ′	High OK Low	Deviation (mm) -0.0 Length (M) 0.00
10.55					+ Tolerance
10.33					
10.22					
10.11					
10.00					
9.89					
9.78					
9.67					
9.56					
					- Tolerance

When the button turns green and the graph be activated and will display the demo data file.



Software Operation

Using the product library, tolerance alarms, statistics and data logging

 Select Product from pull down menu The nominal and tolerances of the selected product will now be shown in the top right corner

Note: The Products will need to be defined in the product library first

- 2) Press the red 'Start' button to start
 - The button will now turn green and the system will be fully operational activating the following; Graph Active
 - Tolerance indicators active
 - Relay outputs active
 - Statistics active
 - Data logging active
- 3) If you require the data to be logged against an operator name and a batch these will need to be entered in the fields provided.
- Press the green 'Stop' button to stop The button will now turn red and the system will stop recording
 - Graph not active
 - Tolerance indicators not active
 - Relay outputs not active
 - The statistics will be stopped and saved
 - Data logging will be stopped and saved
- 5) To view statistics
 - File
- View/Print Summary Report

Note – Starting and stopping using external signal

Instead of using the on screen button to start and stop the measurement this can be done by an external signal connected to ID10A & ID10B see page 30 for connection details.

Operator Screen Indicators

Start/Stop button and indicator

When the system is not running the button displays 'Start' and is red in colour. Upon clicking the button it will change colour to green and display 'stop' the system will be fully operational.

Dimension (mm)

Displays the thickness or width in mm. The background colour will be green, yellow or red to indicate the tolerance status OK, warning or out of tolerance.

Deviation (mm)

Displays the deviation from nominal in mm. The background colour will be green, yellow or red to indicate the tolerance status OK, warning or out of tolerance.

Length (M)

Displays the accumulated length from when the start/stop button was used to start and stop the measurement. This function is only operational when a length encoder is installed.

Alarm and Pre-Alarm Indicators

Indicator	Colour	Meaning
High	Red	Measurement has exceeded the upper alarm limit
	Yellow	Measurement has exceeded the upper pre-alarm limit
ОК	Green	Measurement values within alarm and pre-alarm limits
	Yellow	Measurement has exceeded the lower pre-alarm limit
Low	Red	Measurement has exceeded the lower alarm limit

File Menu

View/Print summary report

A statistical summary report can be displayed on screen. This report will be generated automatically after stopping the measuring sequence. The maximum number of measurement samples that can be logged in one file is 500,000. If the maximum number is exceeded the software will automatically save the file and start a new file.

To view summary report

- File

- View/Print Summary Report



PreciLogger Summary Report

Statistics

Number of samples

This is a count of all the data samples collected from when the start/stop button is pressed at the start to when the stop/start button is collected at the end of the batch.

Minimum (mm)

This is the minimum value of all the data samples collected from when the start/stop button is pressed at the start to when the stop/start button is collected at the end of the batch.

Maximum (mm)

This is the minimum value of all the data samples collected from when the start/stop button is pressed at the start to when the stop/start button is collected at the end of the batch.

Mean (mm)

This is the mean (average) value of all the data samples collected from when the start/stop button is pressed at the start to when the stop/start button is collected at the end of the batch.

Standard Deviation

This is the standard deviation (1 sigma) of all the data samples collected from when the start/stop button is pressed at the start to when the stop/start button is collected at the end of the batch.

Range (mm)

This is the difference between the maximum value and the minimum value in the data set

Ср

This index shows how tightly spread the data is compared with total tolerance limits. As a rule of thumb a value of 1 or greater indicated that the total range of the data is the same as the difference between the upper and lower tolerance limit. The Cp index is calculated for of all the data samples collected from when the start/stop button is pressed at the start to when the stop/start button is collected at the end of the batch. Based on the following formula:

$$C_p = \frac{(USL - LSL)}{6\hat{\sigma}_r}$$

Where USL = Upper Tolerance limit and LSL = Lower Tolerance Limit

Cpk

This index is used to show how the data is centred relative to the nominal. As a rule of thumb a value of 1 indicated that the distribution is evenly centred around the nominal. The Cpk index will lower the more off centre the distribution is. The Cp index is calculated for of all the data samples collected from when the start/stop button is pressed at the start to when the stop/start button is collected at the end of the batch. Based on the following formula:

MIN[(USL - X-Bar)/(3*sigma), (X-Bar - LSL)/(3*sigma)] When X-Bar (or X-Bar lies between the spec limits)

$$C_{pk} = \frac{Z_{min}}{3}$$

Where

$$Z_{min} = smaller of Z_{upper}, Z_{lower}$$

$$Z_{upper} = \frac{\left(USL - \overline{X}\right)}{\hat{\sigma}_r}$$

$$Z_{lower} = \frac{\left(\overline{X} - LSL\right)}{\hat{\sigma}_r}$$

Where USL = Upper Tolerance limit and LSL = Lower Tolerance Limit

Percentage above

This is the percentage of measurement collected that are above the upper tolerance limit of the data set.

Percentage below

This is the percentage of measurement collected that are below the minimum tolerance limit of the data set.

Config Menu

Configuration menu – Hardware

Sconfiguration	
Hardware Graphs	General
Communications CAN Bus Serial COM 1	Filtering Numeric Display Rate (Secs): 0.50 Alarm Output Rate (Secs): 0.50 Graph Update Rate (Secs): 0.50
Sensor PreciCura SR PreciCura MR	Operating Mode Manual (Initiated by user) Automatic (Initiated by Ext. Input) Simulation Mode
Sensor Rate (mS): 100	Calibration Calibration Duration (Secs): 5
10	Cancel

Configure Communications

CAN-Bus - Use when the PreciCura sensors are connected via the CAN-Bus

Serial – Use when the PreciCura sensors are connected via the serial

Com 1 – (Default Com 1, Range 1-32) This is used to set the com port for the serial RS232 which the PreciCura sensor is connected

Configure Sensor

PreciCura SR – When using the PreciCura SR sensors

PreciCura MR– When using the PreciCura SR sensors

Sensor Rate (mS) – (Default = 100, Range = 100-4000 mS)

Set this to match the data rate from the sensors, for most applications use the default 100.

Configure Filtering

Numeric Display Rate (Secs) – (Default = 0.1, Range = 0.01-5.0 sec)

This is used to set the average period for the following:

- Large numeric display
- The data that is used for calculating statistics
- The data rate that is used in storing the csv files to the Hard drive

Alarm Output Rate (Secs) – (Default = 0.1, Range = 0.01-5.0 sec)

This is used to set the average period for the following:

- The on screen alarm status indicator lights
- The alarm relay outputs

Graph Output Rate (Secs) – (Default = 0.1, Range = 0.01-5.0 sec)

This is used for setting the average period for the graph update

Operating Mode

Manual (initiated by user)

In this mode the start and stopping of the measurement is made by the operator using the on screen buttons

Automatic (Initiated by Ext, Input)

In this mode the start and stopping of the measurement is made by using a signal to In1 on the I/O interface

Simulation Mode

This mode allows the software can be used in demonstration mode without any hardware connected; an internal sample data file is used to simulate measurements.

Calibration duration

Calibration Duration (Secs) – (Default = 2, Range = 2-15 sec)

This sets the averaging period when calibrating, recommended value 5 seconds.

Configuration menu – Graphs

Sconfiguration	×
Hardware Graphs	General
Vertical Scale • Automatic Range • User Range	
Horizontal Scale Number Of Points: 100	
Graph Mode C Line IT Thick Lines C Bar	30 20- 10-
C Dot	
OK	Cancel

Vertical Scale

Automatic Range – This will automatically scale the vertical axis according to the nominal and tolerance of the current selected product.

User Range – When this is selected it enables the user to choose values for the minimum and maximum range for the vertical axis.

Horizontal Scale

Number of points – (Default 100, Range 25-2000) This enables the user to select from the pull down list how many values are displayed on the horizontal axis.

Graph Mode

Line mode



Bar mode



Dot mode



Configuration menu – General

Sconfiguration			×
Hardware	Graphs	General	
General Report Header			
Your Company Nar	ne		
CSV Summary Re	port Location AB\LIMABP~1\Results		
Remote Display	ogging Serial Port: NotUsed	t T	
		· · · ·	
	OK	Cancel	

Report Header

This allows the user to customise the text that is printed on top of the summary report

CSV Summary Report Location

This allows the user to select the path where the csv files will be stored. The default location is C:\Program Files\LIMAB\Limab PreciLogger\results

Enable Data Logging

When enabled every measurement that is displayed on the large numeric display will be recorded in the results folder. The logging of the data commences when the Start button on the operator screen is pressed or input IDIOA & ID10B on I/O module is active. The logging will stop when the Stop button is pressed or input IDIOA & ID10B on the I/O module is inactive. Up to 500,000 measurements in a single run can be recorded. If the maximum number is exceeded the software will automatically save the file and start a new file. The data will be saved at the same rate as the Numeric Display Rate which can be set by the operator. The data is stored in a CSV format which can be read by Microsoft Excel or other software programmes. The logging of the measurement to hard disk can be disables to save disk space un-tick to disable logging

Remote Display Serial Port: - (Default = Not Used, Range Com 1 – Com 4)

Select the serial port on the PC that the remote display (optional) is connected

Raw data format and location

The default location for the data files is C:\Program Files\LIMAB\Limab PreciLogger\results\Date\Rawdata.csv Each day a new folder will be created containing all the data files for the day.

Dimension Length (when encoder is fitted) Raw Data Example file

9.88	0
9.94	0
9.95	0
9.96	0
9.97	0
9.98	0
9.99	0
10	0
10.01	0
10.02	0

Results summary data and location

For each raw data file there is also a corresponding results file. This file contains all the header and statistical summary of each file saved. The data is saved as a TXT file. The default location for the data files is C:\Program Files\LIMAB\Limab PreciLogger\results\Date\Results.txt Each day a new folder will be created containing all the data files for the day.

Results Example file:

Product Name = Simulation Part Operator Name = Batch = Length = 0.000Time Started = 11/07/2008 08:34:53 Time Finished = 11/07/2008 08:35:05 Minimum = 9.93Maximum = 10.53 Average = 10.34Range = 0.60Standard Deviation = 0.191 Cp = 0.523Cpk = 0.337 Number Above Tolerance = 30 Number Below Tolerance = 0 Number of Readings = 100

Calibration

The calibration menu allows the user to calibrate the system to a master part of know size. The master part should be made from a non reflective material that provides a diffuse scattering of the light. The ideal surface is white paper or similar. A more accurate calibration is possible if the master part moves laterally in the laser beam during the calibration. LIMAB provide a rotating calibration fixture (Part No. 96506) which can be used for this purpose.

To calibrate for thickness or width place a part of know dimensions in the measuring region. The 'Calibrated Sensor Reading (mm):' box shows the current calibrated value. To recalibrate enter the actual size of the part in the 'Master Part Dimension (mm): box and press the calibrate button. After a few seconds) the system is calibrated. (The actual time is determined by the 'Calibration Duration (Secs:)' setting in the config menu.

Calibration	
Dimension Calibration Raw Sensor Reading (mm): Calibrated Sensor Reading (mm): Master Part Dimension (mm):	26.45 25.20 25.00 <u>Calibrate</u>
Length Calibration Pulses per Meter: 1.000]
ок [Cancel

Setting the password

Default password = limab

A separate password can be set for the following menus

- Configuration Menu
- Calibration Menu
- Parts Database Menu
- User Database Menu

of Set Password	×
Menu:	Configuration Menu
Old Password:	
New Password:	
Confirm Password:	
	OK Cancel

Product Library

The product library allows the operator to quickly recall pre-defined products from a file. The operator can select a new product from the main operator screed using the pull down selection menu. The following criteria for the product have already been defined;

- Product name (alpha numeric characters)
- Nominal value (mm)
- Upper tolerance (mm)
- Lower tolerance (mm)
- Pre- alarms (% of tolerance)
- Calibration off set (mm)

Selecting a new product from the library

PreciLogger					
Eile <u>C</u> onfig <u>T</u> ools <u>H</u> elp					
LIMAB PreciLogger	Product Operator Batch No	Special Product 12.5 mm Rubber foam 25 mm Nominal Thickness Simulated Part Simulation (In Tolerance) 10 mm +/- 4 Simulation (Out of Tolerance) 10 mm +/- 0.5		Nominal +Tolerance -Tolerance	12.50 mm 0.25 mm 0.25 mm
Start		Special Product 12.5 mm Structual Insulated Panel 1150 mm Test 100 +/- 50 Wood part with a long name 12236644u889g	OK	Length (M)	-0.07).000
12.77				+ Tolera	nce
12.72-					
12.66					
12.61-					
12.55					
12.50					
12.45-					
12.39-					
12.34					100110
12.28					
12.23				- Tolera	nce
		Time			

Adding a Part to the product Library

A new part can be added to the Product Library by clicking 'Add Part' button.

Served and the server of the s			
Part Name	Nominal	Upper Tolerance	Lower Tolerance
Simulation Part	10	0.5	0.5
121	121.7	5	5
0 to 200 mm	100	100	100
Rubber foam 25 mm Nominal Thickness	25	10	10
Foam 10 mm	10	0.5	0.5
New part	10	0.5	0.5
Add Part Delete Part Edit Part			<u>D</u> K

Part details

The new part is defined by entering values in the various dialog boxes, the OK button saves the part to the part database.

😵 Part Details	\mathbf{X}
Part Name: New part	
Nominal Dimension (mm):10.00Upper Tolerance (+) (mm):0.5	Upper Alarm (mm): 10.5
Pre-Alarm (%): 80	Upper Pre-Alarm (mm): 10.4
Calibration Offset: 0	Lower Pre-Alarm (mm): 9.6
<u>0</u> K	Cancel

Adding or deleting users

Additional users can be added or deleted from the user database. To add a new user click 'Add User' button and add the new name in the dialog box. Clicking OK saves the new name to the user database.

🛱 Users	
User Name	
🕱 Admin	
🕱 John Miller	
🕱 Paul Smith	
Add User Delete User	<u>0</u> K

🕱 Add User		
Name:		
<u></u>]
	<u>OK</u> <u>C</u> ancel	1
		1

Help

Show help

This will open Acrobat reader and display the full software manual. Adobe Acrobat Reader is provided on the installation disk.

About

This provides information regarding the version number of the software installed and LIMAB contact information see page 27 for all LIMAB regional office contact details.



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Appendix A

Configuration of PreciCura sensors

The PreciCura sensor will need to be set up to communicate with PreciLogger software. This will be done by LIMAB prior to delivery. The correct settings are shown below. To check the setting use PreciCura SET software that is provided on the installation disk.

The RS232 serial connection (C1) from the PreciCura sensors is factory set to the following settings

Baud Rate:	38,400
Data Bits:	8
Parity:	None
Stop Bits:	1

PreciCura sensors configuration table

Key values highlighted in yellow

Single Sensor setup		Dual Sensor setup			
Parameter	Used	Value	Parameter	Used	Value
Serial No	No	-	Serial No	No	-
Current mode	No	020 mA	Current mode	No	020 mA
Damin	No	0	Damin	No	0
Damax	No	200	Damax	No	200
CAN Baudrate	No	250	CAN Baudrate	No	250
CAN id	No	100	CAN id (Master)	Yes	100
			CAN id (Slave)	Yes	101
CAN Data per message	No	1	CAN Data per message	No	1
CAN Format (MR)	No	Binary 16 bit	CAN Format (MR)	No	Binary 16 bit
HOST Baudrate (MR)	No	9600	HOST Baudrate (MR)	No	9600
HOST Stopbits (MR)	No	1	HOST Stopbits (MR)	No	1
HOST Databits (MR)	No	8	HOST Databits (MR)	No	8
HOST Parity (MR)	No	Ν	HOST Parity (MR)	No	Ν
HOST Format (MR)	No	OFF	HOST Format (MR)	No	OFF
Sample Time	Yes	500 (2KHz)	Sample Time	Yes	500 (2KHz)
Range Mask (MR)	No	Not selected	Range Mask (MR)	No	Not selected
Low Border (mm) (MR)	No	0	Low Border (mm) (MR)	No	0
High Border (mm) (MR)	No	2000	High Border (mm) (MR)	No	2000
Filter type	Yes	AVG*	Filter type	Yes	AVG*
Nr to Start	No	5	Nr to Start	No	5
% Skip	No	10	% Skip	No	10
Filter length	Yes	200	Filter length (Master)	Yes	200
			Filter Length (Slave)	Yes	1
Sample division	Yes	1	Sample division	Yes	1
Median (%)	No	50	Median (%)	No	50
Median mode	No	True Median	Median mode	No	True Median
Measurement Function	Yes	Distance	Measurement Function (Master)	Yes	Thickness
			Measurement Function (Slave)	Yes	Distance
Thickness Cal Factor (mm)	No	0	Thickness Cal Factor (mm)	No	0
Distance Offset (mm)	No	0	Distance Offset (mm)	No	0
Synchronisation	Yes	Master	Synchronisation (Master)	Yes	Master
			Synchronisation (Slave	Yes	Slave
Parallel Format (MR)	No	OFF	Parallel Format (MR)	No	OFF
DAV Time (ms) (MR)	No	0	DAV Time (ms) (MR)	No	0
Unit	Yes	mm	Unit	Yes	mm
Info (firmware version)	No	-	Info (firmware version)	No	-

Note 1- Parameters marked (MR) apply to MR sensors only

Note 2 - *AVG - Definition the sensor makes a mean average over a number of samples determined by the filter length (200). Other types of averages can be set in the sensor to optimize the measurement for certain types of materials. Consult LIMAB for details.

I/O Module USB-4761

The USB-4761 module has 8 relay outputs and 8 isolated digital inputs. Each of the isolated digital inputs accepts 10-30 VDC voltage, of bi directional input. The pin assignments are shown in the main table. The module is also equipped with a LED indicator to show the status of the device. When the device is plugged into the USB on the PC port the LED indicator with blink 5 times and then stay lit to indicate that it is on. The detailed LED status is shown in the table below.

LED status indicator

LED Status	Description
On	Device ready
Off	Device not ready
Slow blinking (5 times)	Device initialization
Fast blinking (depends on data transfer speed)	Device working

Isolated inputs

Channels	8
Optical isolation	2,500 VDC
Opto-isolator response time	25 us
Input Voltage	VIH (max) 30 VDC
	VIH (min) 5VDC
	VIL (max) 2VDC
Input current	5VDC 1.2 mA
	12VDC 3.3 mA
	24VDC 6.9 mA
	30VDC 8.7 mA

Relay outputs

Channels	8
Rating (resistive)	30VDC @ 1A
	110 VAC @ 0.3A
	120 VAC @ 0.5A
	240 VAC @ 0.25A
Max switching power	62.5 VA, 60W
Max switching voltage	220 VDC, 250 VAC
Max switching current	5 A
Breakdown voltage	1500 V

Relay Outputs (¤ indicated default connection)				
Marking	Description	Function	Notes	
NO0	Normally Open 0	Low Alarm NO	¤	
COM0	Common 0	Low Alarm Common	¤ Low Alarm	
NC0	Normally Closed 0	Low Alarm NC		
NO1	Normally Open 1	Low Pre-Alarm NO	¤	
COM1	Common 1	Low Pre-Alarm Common	¤ Low Pre-alarm	
NC1	Normally Closed	Low Pre-Alarm NC		
NO2	Normally Open	OK NO	¤	
COM2	Common 2	OK Common	¤ Within tolerance	
NC2	Normally Closed	OK NC		
NO3	Normally Open	High Pre-Alarm NO	¤	
COM3	Common 3	High Pre-Alarm Common	¤ High Pre-Alarm	
NC3	Normally Closed	High Pre-Alarm NC		
NO4	Normally Open	High Alarm NO	¤	
COM4	Common 4	High Alarm NC	¤ High Alarm	
NC4	Normally Closed	Not used		
NO5	Normally Open	Not used		
COM5	Common 5	Not used		
NC5	Normally Closed	Not used		
NO6	Normally Open	Not used		
COM6	Common 6	Not used		
NC6	Normally Closed	Not used		
NO7	Normally Open	System OK NO	¤	
COM7	Common 7	System OK Common	¤ System OK	
NC7	Normally Closed	System OK NC		
Inputs	1	1		
IDI0A	Isolated Input 0A		¤ Start/Stop	
IDIOB	Isolated Input OB		¤	
IDI1A	Isolated Input 1A		¤ Length I/P	
IDI1B	Isolated Input 1B		¤	
IDI2A	Isolated Input 2A	Not used		
IDI2B	Isolated Input 2B	Not used		
IDI3A	Isolated Input 3A	Not used		
IDI3B	Isolated Input 3B	Not used		
IDI4A	Isolated Input 4A	Not used		
IDI4B	Isolated Input 4B	Not used		
IDI5A	Isolated Input 5A	Not used		
IDI5B	Isolated Input 5B	Not used		
IDI6A	Isolated Input 6A	Not used		
IDI6B	Isolated Input 6B	Not used		
IDI7A	Isolated Input 7A	Not used		
IDI7B	Isolated Input 8B	Not used		

USB-4761 I/O module pin assignments

Inputs

Remote Start/Stop

To use the remote start and stop of measurement logging a 5-24 VDC voltage to inputs IDIOA & IDIOB on the I/O module USB-4761 is required. To start logging connect the voltage to stop the logging disconnect the voltage. The inputs are bi-directional, meaning that the polarity can be connected either way. The feature will need to be enabled in config menu by selecting 'Automatic (initiated by Ext. Input).



Length Input

To use the length counting feature a pulse input is required from and external encoder or proximity switch this is connected to inputs IDI1A & IDI1B on the I/O module USB-4761. The input will accept a bidirectional 5-24 VDC input voltage. To calibrate the pulse input set the 'Pulses per Meter' in the calibration menu.



Connecting the length counter Prox-M8-24





PreciLogger wiring schematic using serial RS232



PreciLogger wiring schematic using CAN-Bus



Wiring Diagram

