

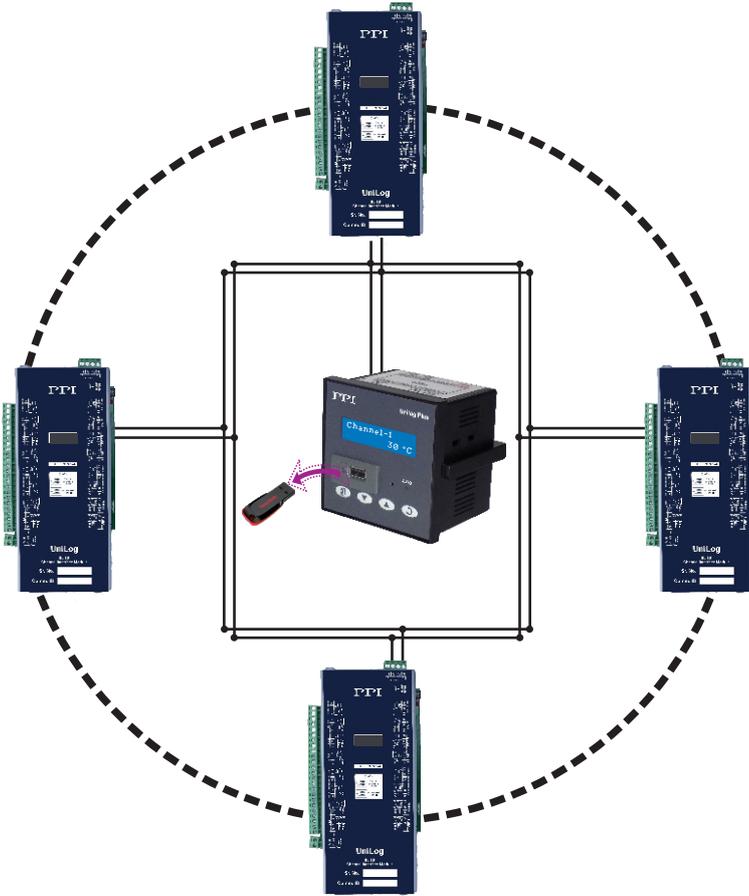
UniLog / UniLog Plus with CIM



PPI

The Perfection Experts

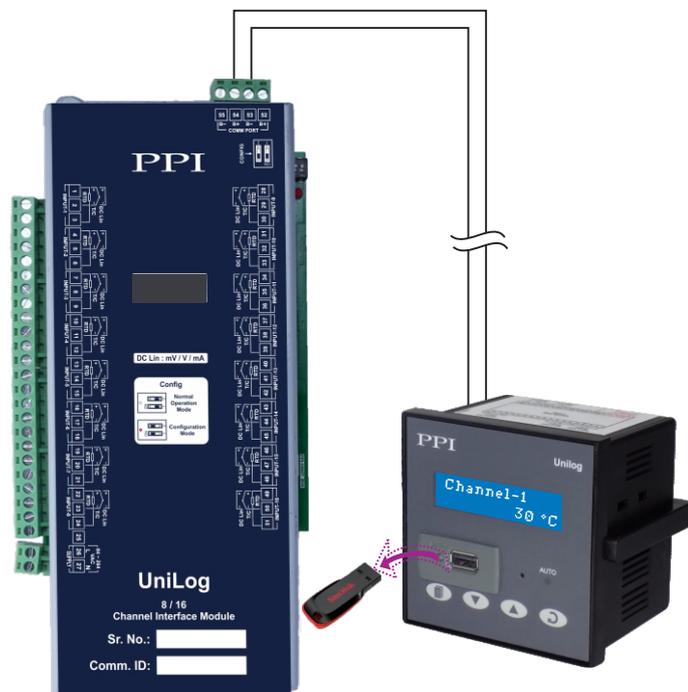
Universal Process Data Recorder Pen-Drive Version



UniLog Plus

8 to 128 Channel
Expandable Version

UniLog
Fixed 8/16 Channel



User Manual

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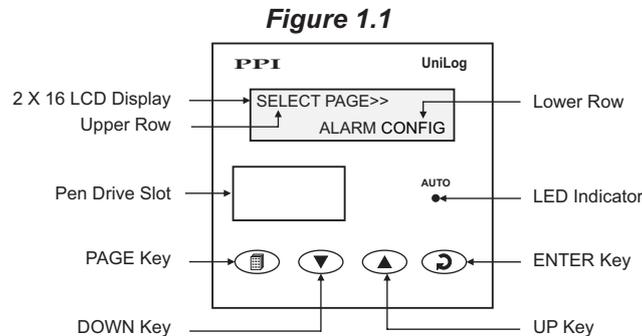
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Section 1 FRONT PANEL : LAYOUT AND OPERATION

The front panel comprises of 2 X 16 (2 rows of 16 characters each) LCD Display, LED indicators, membrane keys and a slot for Pen Drive. Refer Figure 1.1 below.



LCD DISPLAY

The LCD Display has 2 rows, the Upper Row & the Lower Row; each having 16 Characters.

In normal mode of operation (Run Mode), the Upper Row displays the Channel Name and the Lower Row displays the corresponding Process value followed by Units. Refer Figure 1.2 (a) below.



In Set-up Mode, the Upper Row displays the parameter *Name* and the Lower Row displays the corresponding parameter *Value*. Refer Figure 1.2(b) above.

LED INDICATOR

The front panel round LED lamp indicates the channel scan mode. The LED glows ON if the channel scanning is in Auto mode.

KEYS

There are four tactile keys provided on the front panel for setting-up the parameter values and for other functions & commands. The Table 1.1 below lists each key and the associated function.

Table 1.1

Symbol	Key	Function
	PAGE	Press to enter / exit Set-up Mode.
	DOWN	Press to decrease the parameter value. Pressing once decreases the value by one count; holding the key pressed speeds up the change.
	UP	Press to increase the parameter value. Pressing once increases the value by one count; holding the key pressed speeds up the change.
	ENTER	Press to store the set parameter value and to scroll to the next parameter.

PEN-DRIVE SLOT

A rectangular slot with USB connector type A is provided for Pen-Drive operation.

Section 2

BASIC OPERATION

POWER-UP

Upon switching on the power to the unit, the display shows model name on the Upper Row and the Version Number on the Lower Row for approximately 4 seconds as shown below.

UNILOG	USB
Version	1.0.1.0

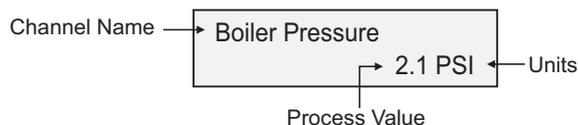
After the power-up display sequence, the UniLog starts showing the process values for all the channels sequentially. This is the MAIN Display Mode that shall be used most often.

MAIN DISPLAY MODE

This is the default display mode. This mode actually comprises of 4 different screens providing different information. The 4 screens are described below. Use Enter key (press and release) to switch from one screen to the next. The multiple information within a selected screen can be viewed using UP / DOWN keys.

Process Value Screen

This is the default screen upon entering the Main Display Mode. The Upper Row shows the channel name and the Lower Row shows the corresponding process value along with user set Units as shown below.



In case of process value error, the Lower Row indicates the type of error in place of process value and units. The various error and the respective causes are listed in Table 2.1.

Table 2.1

Error Message	Cause
Over Range	Process Value above Max. Range
Under Range	Process Value below Min. Range
Sensor Open	Thermocouple / RTD broken
Com. Fail	Communication Link with CIM broken

The channel-wise process value indication update depends upon the selected Auto / Manual scan mode. The scan mode can be toggled between Auto and Manual by holding the ENTER key pressed for approximately 5 Seconds. The front panel LED indicator glows ON in Auto mode and remains OFF in manual mode. The channel update rate in Auto mode depends upon the set value (1 to 99 Sec.) for the parameter 'Scan Rate'. In Manual mode, the channels can be scrolled using UP and DOWN keys.

Alarm Status Information Screen

There are up to 4 soft Alarms (AL1, AL2, AL3 and AL4) provided for each channel. If any one or more set Alarms for a channel is active, the channel is said to be under Alarm condition. The names for the channels under Alarm condition keep flashing on the Upper Row in Process Value screen.

The complete Alarm status information for the channels under Alarm condition is available on this Screen. For example; If Alarm1 (AL1) and Alarm3 (AL3) of a channel named 'Boiler Pressure' is active then the screen displays the following information.

Boiler Pressure
AL1 AL3

If multiple channels are under Alarm condition; use UP / DOWN keys to scroll through the various channels for viewing the individual Alarm status information.

Note :
The front panel ENTER key can be used as Alarm - Acknowledge key. Use Alarm Acknowledgment feature to de-activate the Alarm relay. Note that acknowledging the Alarm(s) does not remove the Alarm condition(s).

Recording Information Screen

This screen facilitates viewing information related to the recording feature. Use UP / DOWN keys to scroll through the various information described below in Table 2.2.

Table 2.2

Information	Sample Screen
<p>REMAINING BATCH TIME</p> <p>This information is available if 'Batch Recording' mode is selected and shows the remaining batch time in Hours:Minutes:Seconds (HH:MM:SS) format if the batch is in progress. Upon completion or prior to start of the batch, the remaining time is shown as 0:00:00.</p>	<div style="border: 1px solid black; padding: 5px;"> Balance Time>> 1:12:36 </div>
<p>NEW RECORDS IN MEMORY</p> <p>Shows the numbers of new records available in the recorder memory for copying (downloading) to Pen-Drive using 'Copy (New)' command.</p>	<div style="border: 1px solid black; padding: 5px;"> New Records>> 12523 </div>
<p>OLD RECORDS IN MEMORY</p> <p>Shows the numbers of old records available in the recorder memory that were copied (downloaded) in the previous session. These records can be re-copied using 'Re-copy (Old)' command.</p>	<div style="border: 1px solid black; padding: 5px;"> Old Records>> 10067 </div>
<p>FREE SPACE AVAILABLE FOR NEW RECORDS</p> <p>Shows the recorder memory space available for new records. That is, this information shows how many more new records can be stored in the memory before it gets full.</p>	<div style="border: 1px solid black; padding: 5px;"> Free Space>> 3833410 </div>
<p>DATE STAMP FOR THE FIRST NEW RECORD IN THE MEMORY</p> <p>This information shows the calendar date of recording of the first available new record in the memory. This information does not appear if there are no new records in the memory.</p>	<div style="border: 1px solid black; padding: 5px;"> First Record>> Date: 01:01:11 </div>
<p>TIME STAMP FOR THE FIRST NEW RECORD IN THE MEMORY</p> <p>This information shows the clock time of recording of the first available new record in the memory. This information does not appear if there are no new records in the memory.</p>	<div style="border: 1px solid black; padding: 5px;"> First Record>> Time: 23:05:40 </div>

Information	Sample Screen
<p>DATE STAMP FOR THE LAST NEW RECORD IN THE MEMORY</p> <p>This information shows the calendar date of recording of the latest available new record in the memory. This information does not appear if there are no new records in the memory.</p>	<div data-bbox="1050 389 1358 465" style="border: 1px solid black; padding: 5px;"> Last Record>> Date: 02:01:11 </div>
<p>TIME STAMP FOR THE LAST NEW RECORD IN THE MEMORY</p> <p>This information shows the clock time of recording of the latest available new record in the memory. This information does not appear if there are no new records in the memory.</p>	<div data-bbox="1050 607 1358 683" style="border: 1px solid black; padding: 5px;"> Last Record>> Time: 14:12:10 </div>

RTC Screen

This is single screen providing the Real Time Clock (RTC) information as shown below. The upper row shows the current calendar date in dd/mm/yy format and the lower row shows the running clock time in hh:mm:ss (24 Hours) format.

Date:	16/05/11
Time:	08:56:00



Section 3

PEN-DRIVE OPERATIONS

UniLog can perform both, *File Read* and *File Write*, operations on the Pen Drive.

The *File Read* Operation facilitates :

1. Assigning user defined names to each of the 8 or 16 input channels
2. Assigning user defined name to the Instrument (UniLog)
3. Assigning user defined file name for downloading records to Pen Drive

The *File Write* operation allows copying (downloading) the stored records inside the internal memory of UniLog onto the Pen Drive (in *csv* format) for transfer to PC. The *csv* file can then be opened in Excel Sheet or PC Software *ProLog* (supplied optionally with UniLog).

The two file operations are described in detail in the following pages.

File System for Read Operation

Channel Name

UniLog is shipped from the factory with each channel assigned a unique factory set default name in accordance to the numbers assigned to the channels. That is, Channel-1, Channel-2, and so on. The user can, however, assign a more meaningful name (such as Boiler Pressure, Oil Temperature, etc.), to each channel for easy identification of the process parameters being measured, displayed and recorded.

Instrument Name

The Instrument Name is useful in identifying the equipment (like Ageing Oven, Muffle Furnace, Test Chamber, etc.) or the location (like Paint Room, Test Lab, etc.) where recording is performed. The Instrument Name is mentioned at the beginning of the file where the stored records are copied. The UniLog is shipped from the factory with a factory set default Instrument Name; UNILOG or UNILOG EX for fixed 8 / 16 Channel & Expandable Channel versions, respectively. This default instrument name can be changed by the user using the file read facility.

File Name

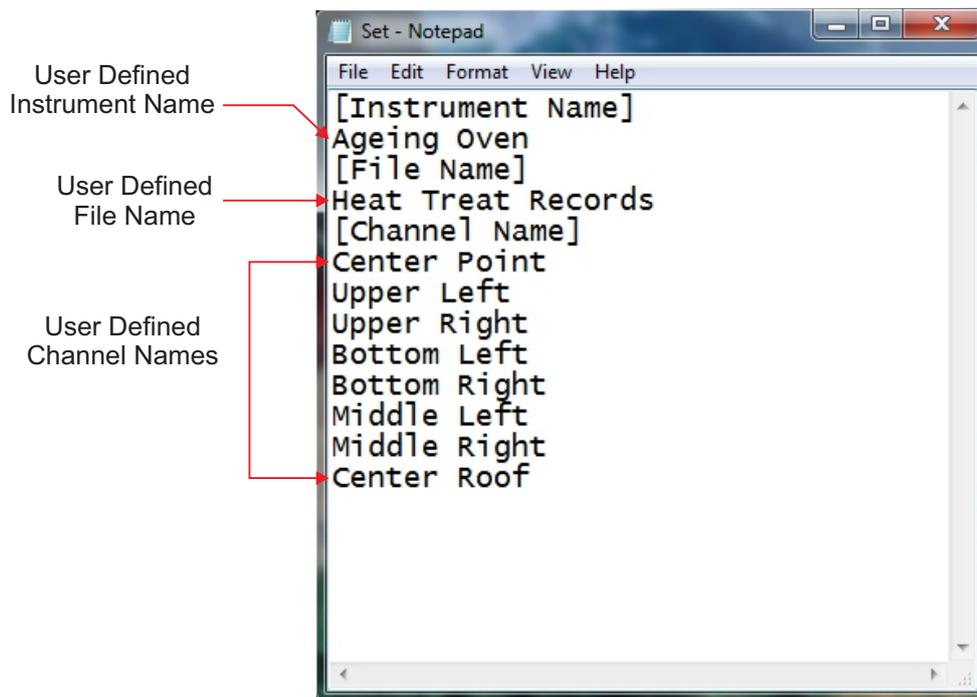
The instrument (UniLog) downloads the records by creating a unique default File Name (explained later). The user can however define a different file name by using file read facility.

The user can create and save a text document file with the name *Set.txt* using Microsoft Notepad Application tool for assigning user defined Channel Names, Instrument Name & the File Name. The *Set.txt* file **must** be saved on the Pen Drive in the main directory (outside of any folders).

Refer Figure 3.1 for example file. Follow the guidelines below for creating and/or editing the file *Set.txt*.

1. The lines with text within square brackets before user defined names are required.
2. The text within square brackets are case insensitive.
3. No blank lines are permitted. Do not press enter after typing last line.
4. The Channel Names must not exceed 16 characters.
5. The Instrument Name must not exceed 16 characters.
6. The File Name must not exceed 8 characters. Regardless of the letter case (lower or upper) used for the file name set by the user, the file is always created with upper case letters. For example; for the user set file name *NewName*, the UniLog creates file NEWNAME.csv.

Figure 3.1



File System for Write Operation

UniLog continuously monitors and measures the process values for various channels and compares these values with the user set Alarm limits to generate Alarm Status.

A set of Process Values along with the corresponding Alarm Status for all channels, stamped with the current Date and Time, is called a *Record*. UniLog stores such records in its internal memory at user set time interval, called *Recording Interval*. These stored records are then available for downloading to a Pen Drive via the front panel USB connector.

Each of the installed UniLog creates and maintains its own Record-Data file on Pen Drive using either user defined File Name or a file naming scheme that involves a unique *5 Digit Code* which is factory set. This *5 Digit Code* can be viewed using the Read-only parameter "UNIQUE ID NUMBER" on the page "RTC Settings". This Read parameter value is actually an 8 digit number of which last 5 digits are used for file naming. Under this file naming scheme the file is named *RECnnnnn.csv*; where *nnnnn* is the unique *5 Digit Code* just described above. For example; if the "UNIQUE ID NUMBER" is 15030006 then the file is named *REC30006.csv*. The records are downloaded to the file on Pen Drive in *Comma Separated Values (CSV)* format and thus the file is assigned the extension. "csv". Note that once the user supplies his own File Name the UniLog does not use the file naming scheme stated above. That is either the user defined File Name or the file name created using unique *5 Digit Code* is stored inside UniLog's memory.

Upon selecting the 'Copy (New)' or 'Re-copy (Old)' operation (explained later) after insertion of the Pen Drive; the UniLog first searches for any existing file that matches with the file name stored in its memory.

Case 1 : File exists

If the File with the name stored in UniLog's memory exists on the pen drive, the UniLog first reads the *File Header* that comprises the Instrument Name & the 8 digit UNIQUE ID NUMBER (Refer Figure 3.2). If the 8 digit UNIQUE ID NUMBER matches then the UniLog appends the available stored records to the file else the following message is displayed :

Couldn't Append
Device Differs

The above message implies that there exists multiple UniLog with the same user defined file names. Assign a different file name and then download the records.

Case 2 : File does not exist

If the file does not exist, the UniLog automatically creates a new file with the name stored in its memory and then creates a *File Header* using the Instrument Name & the 8 digit UNIQUE ID NUMBER. This is followed by downloading the records. Refer Figure 3.2.

Figure 3.2

8 digit
UNIQUE ID NUMBER

Instrument Name

Records

Date Time	Center Point	Alarm	Upper Left	Alarm	Upper Right	Alarm	Bottom Left	Alarm Bot
12-01-17 16:23	265	-	217	-	213	-	214	-
12-01-17 16:24	266	-	225	-	223	-	225	-
12-01-17 16:24	267	-	229	-	224	-	227	-

Back-up File System

It is possible that a file-write operation may be interrupted due to reasons like sudden power-failure or removal (or, loose-contact) of the Pen Drive, resulting in a partial transfer of records. An interrupted file-write operation makes the file unusable for appending any further records. Also, the partially transferred records in the interrupted file are lost (but are still retained inside the UniLog's internal memory). That is, the file on Pen Drive exists with the previous records intact (if any) and becomes a read-only file.

An interrupted file-write operation event is registered by the UniLog in its internal memory as well as on the Pen Drive that was being written. Upon resumption of operation, the UniLog prompts for Recovery of the interrupted operation. Upon selecting the "Recover" operation, the following sequence of steps is executed.

1. A back-up file of the interrupted file is created to retain the previous records

The back-up files is named bN_S.csv; where, 'N' is the last 3 digits of the 5 Digit Code and 'S' is the sequential number (1 to 250) assigned to the back-up file. For example; if the 5 Digit Code is 30006 and there does not exist any previous back-up file, then the new back-up file is named b30006_1.csv. If, however, there exists previous back-up file(s), then 'S' is assigned the lowest numeric value (in sequential order). For example; if a Pen Drive already contains back-up files - [b30006_1.csv, b30006_4.csv and b30006_14.csv] - then the new back-up file is named b30006_2.csv.

2. The interrupted file is deleted.
3. A New File with the same name as the deleted interrupted file is created.
4. All the records (including those that were partially transferred during the interrupted operation) are downloaded to the New File.

PEN DRIVE (MEMORY-STICK) OPERATION

The UniLog is provided with a front panel USB port for file read and write operations using Pen Drive.

Pen Drive Checking

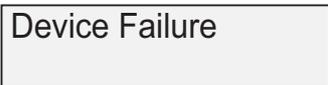
Upon inserting the Pen Drive into the USB port, the UniLog responds by displaying the following message on the LCD screen :



Please Wait....

During this time, the UniLog checks the file format on the Pen Drive and also searches for existence of *Set.txt* file (file containing Instrument Name, File Name & Channel Names) and any interrupted file-write operation in the previous operation. The message may last for 5 to 60 seconds depending upon the disc size and occupancy percentage.

In case of any error in reading the Pen Drive or if the Pen Drive does not respond for more than 60 seconds, the following message is displayed



Device Failure

Ensure proper insertion of the Pen Drive into the USB port and acknowledge the message by pressing front panel ENTER key. The UniLog repeats the device checking operation. If the error persists; remove the Pen Drive from the port and acknowledge the message (using ENTER key). The UniLog responds with the following message:



Insert Drive

Acknowledge the message to revert to normal RUN mode operation or insert a new Pen Drive and then acknowledge the message to continue with file read/write operations.

Select Operation

If the "Pen Drive Checking" operation is successful; the UniLog presents one or more of the following options for the next operation:

Recover
Read Chan Names
Copy (New)
Re-copy (Old)

The above option list is presented one option at a time. Use UP / DOWN keys to view the option & then press ENTER key to select the option.

The option 'Recover' is presented only if the inserted Pen Drive contains an interrupted write operation file. In this case, the 'Copy (New)' and 'Re-copy (Old)' options are not presented.

The 'Read Chan Names' option is presented only if the inserted Pen Drive contains a file with the name *Set.txt*.

The 'Copy (New)' option is presented only if there are new records available in the internal memory and the 'Recover' option is not presented.

The 'Re-copy (Old)' option is presented only if there are old records available in the internal memory and the 'Recover' option is not presented.

Use UP/DOWN keys to select the desired option and then press ENTER key for the execution of the operation.

Recover, Copy(New), & Re-copy(Old) Operations

The 'Recover', 'Copy (New)', & 'Re-copy(Old)' options are similar in operations as they all download (copy) records available in the internal memory onto the inserted Pen Drive. The difference lies in the set of records that is downloaded.

The 'Copy (New)' operation downloads the records that are not yet downloaded even once, that is, "new" records. After successfully downloading the "new" records, the UniLog retains this set of records as "old" records until next successful 'Copy (New)' operation is executed.

The 'Re-copy (Old)' operation downloads the set of records that were successfully copied during last 'Copy (New)' operation and thus retained as "old" records. This feature allows re-gaining the copied records in case the Pen Drive fails or malfunctions after copying records or after inadvertent deletion of the record file from the Pen Drive.

The 'Recover' operation copies the records that were being downloaded in the previous 'Copy (New)' or 'Re-copy (Old)' operation that was interrupted.

Upon selecting one of the above 3 operations, the UniLog opens an existing file or creates a new file for downloading the records (refer section "File System for Write Operation")

If there is an error in opening/creating a file or deleting/re-naming a file (while creating back-up file for 'Recover' operation) or any other errors encountered while downloading the records; the UniLog displays an appropriate error message. The Upper Row shows the message while the Lower Row shows the numbers of records pending for downloading.

For various error messages, the operation types for their occurrence and the meaning of the errors, refer Table 3.1 below.

Table : 3.1

Error Message	Operation	What it Means
Cant Open File	Copy (New) Re-copy (Old) Recover	Unable to open an existing file or create a new file.
Cant Write File Bal 1234	Copy (New) Re-copy (Old) Recover	Unable to write records in an Open file.
Disc Full Bal 1234	Copy (New) Re-copy (Old) Recover	No space on Pen Drive to continue writing records in an Open file.
Cant Close File	Copy (New) Re-copy (Old) Recover	Unable to close the file after successful downloading
Cant Rename File	Recover	Unable to rename an interrupted file for back-up
Cant Delete File	Recover	Unable to delete an interrupted file.

In case of any of the above Error Messages, make sure that the Pen Drive is firmly inserted in the USB port and retry the operation by acknowledging the error message through front panel ENTER key. If the error persists, replace the Pen Drive.

However, if no error is encountered while opening/creating a file for copying the records, the UniLog begins downloading the records with the following message screen.

Copying..... Bal 1234

The upper row shows the operation type; Copying for 'Copy' operation or Re-copying for 'Re-copy' or 'Recover' operation. The Lower Row displays countdown of the numbers of balance records. Upon successful completion of the operation, the UniLog displays the total numbers of records copied (or, re-copied) through the following message:

Records Copied
1234

Remove the Pen Drive and acknowledge the message using ENTER key. The UniLog reverts to normal RUN mode.

'Read Chan Names' Operation

Upon selecting 'Read Chan Names' operation, the UniLog opens the file named *Set.txt* for reading the user defined Instrument Name, File Name & Channel Names (refer section "File System for Read Operation").

If there is an error in opening the file or any other errors encountered while reading the file; the UniLog displays an appropriate error message on the Upper Row of LCD display.

For various error messages and their meaning, refer Table 3.2 below.

Table : 3.2

Error Message	What it Means
Cant Open File	Unable to open the <i>Set.txt</i> file or read the file size.
Cant Read File	Unable to read the file contents.
Cant Close File	Unable to close the file after successful reading file contents.

In case of any of the above Error Messages, make sure that the Pen Drive is firmly inserted in the USB port and retry the operation by acknowledging the error message through front panel ENTER key. If the error persists, replace the Pen Drive.

However, if no error is encountered while opening, reading or closing the file, the UniLog displays the following message after successfully reading file contents.

Names Assigned

Remove the Pen Drive and acknowledge the message using ENTER key. The UniLog reverts to normal RUN mode.

USB Port Failure

In case of any failure of the USB port itself; one of the following two messages may be displayed on the front panel LCD depending upon the type of error.

Cant Sync USB

Cant Change Baud

The UniLog needs servicing for any further Pen Drive operations.

Section 4

SET-UP MODE : ACCESS AND OPERATION

The UniLog requires various user settings that determine how the Recorder will function or operate. These settings are called Parameters.

The parameters are always presented in a fixed format : The Upper Row displays the *Parameter Name* and the Lower Row displays the options / set value. The parameters appear in the same sequence as listed in their respective sections.

For convenience and ease of memorizing, the various parameters have been arranged in different groups depending upon the functions the parameters represent. Each group is assigned a unique Page Header for its access.

SET-UP MODE

The Set-up Mode allows the user to view and / or modify the parameter values. Follow the steps below to open a desired Page Header for setting the parameter values.

1. Press and release PAGE key. The Upper Row shows SELECT PAGE and the Lower Row shows the name for the first available Page Header. See Figure below.



SELECT PAGE>>
Operator Page

2. Select the desired Page Header name on the Lower Readout using the UP/DOWN keys.
3. Press and release ENTER key. The Upper Row shows the name of the first parameter listed in the selected Page Header and the Lower Row shows its current value.

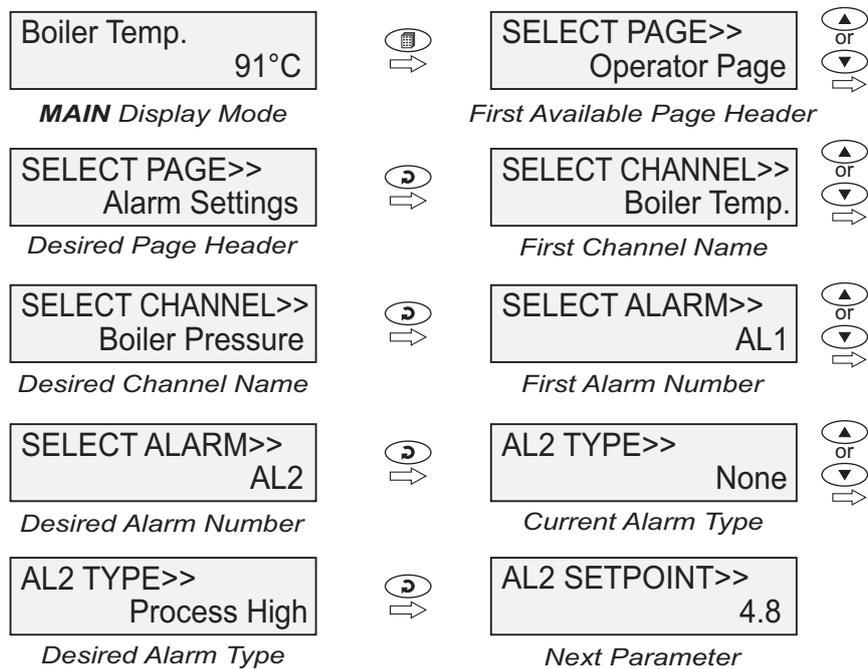
Adjusting Parameter Values

Once a Page Header is accessed; step through the following sequence to adjust the values of the desired parameters.

1. Press and release the ENTER key until the name for the required parameter appears on the Upper Row. The last parameter in the list rolls back to the first parameter.
2. Use UP / DOWN keys to adjust the parameter value.
3. Press and release the ENTER key. The new value gets stored in the non-volatile memory and the next parameter in the list is displayed.

The figure 4.1 illustrates how to access the desired Page Header and edit the parameter value. The illustration shows the example of altering the Alarm-2 Type from 'None' to 'Process High' for the channel name 'Boiler Pressure'.

Figure 4.1



To exit the Set-up Mode and return to the MAIN Display Mode, press and release PAGE key.

Notes :

1. The UniLog communicates with the remote Channel Interface Module (CIM) using 2-wire link. If the link is broken or open, the parameter values can only be viewed and can not be set / altered.
2. It is a must to press the ENTER key after altering the value of parameter else the new value will not be registered / stored. That is, a return to the MAIN Display Mode (by depressing PAGE key) without pressing the ENTER key will not store the altered value in the UniLog memory and the previous set value will be retained.
3. If the UniLog is left in Set-up Mode for more than 30 seconds without any key operation, it automatically exits the Set-up Mode and returns to the MAIN Display Mode.

Section 5 OPERATOR PARAMETERS

The Operator Page contains the parameters that are used most frequently and the commands that are required for day-to-day operation. This page is not locked for editing by Master Lock. The Operator Page parameters are listed below.

Table : 5.1

Parameter Description	Settings (Default Value)
<p>STOP COPY</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">STOP COPY>> NO</div> <p>This command is presented only while the UniLog is downloading (copying) the records to pen drive. Set this parameter to 'Yes' abort the copying operation.</p>	<p>No Yes</p>
<p>SELECT OPTION FOR OPERATION ON PEN DRIVE</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Select Option>> None</div> <p><i>(Available only when a Pen Drive is attached to the USB socket. This list is also presented automatically in the Run Mode upon detection of the Pen Drive insertion)</i></p> <p><i>Refer Section 3 : PEN DRIVE OPERATION for details on each operation.</i></p>	<ol style="list-style-type: none"> 1. None 2. Copy (New) 3. Re-copy (Old) 4. Read Chan Names 5. Recover <p>(Default : None)</p>
<p>'START' COMMAND FOR BATCH RECORDING</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">BATCH START>> NO</div> <p>'STOP' COMMAND FOR BATCH RECORDING</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">BATCH STOP>> NO</div> <p><i>(Available if Batch Recording is selected)</i></p> <p>This two parameters are mutually exclusive.</p> <p>Set BATCH START command to 'Yes' to start recording the data. This is usually issued at the begin of a batch process.</p> <p>Through the Batch Recording automatically stops at the end of the set time interval; it may be desired to abort recording any time during the batch. Set BATCH STOP command to 'Yes' to stop recording the data and terminate the batch.</p>	<p>No Yes (Default : No)</p>

Section 6 ALARM SETTINGS

This Page Header presents a list of parameters that define the Alarm function for the selected channel.

Table : 6.1

Parameter Description	Settings (Default Value)
<p>CHANNEL NAME FOR ALARM SETTINGS <input style="width: 150px;" type="text" value="SELECT CHANNEL>>"/> Channel-1</p> <p>Select the desired Channel Name whose Alarms parameters are to be set.</p>	<p>User defined or default names for channel-1 to channel-8 / 16 (Default : NA)</p>
<p>SELECT ALARM <input style="width: 150px;" type="text" value="SELECT ALARM>>"/> AL 1</p> <p>Select the desired Alarm Number whose parameters are to be set.</p>	<p>AL1, AL2, AL3, AL4 (The actual available options depends on the numbers of Alarms set per channel on Alarm configuration page)</p>
<p>ALARM TYPE <input style="width: 150px;" type="text" value="AL1 TYPE>>"/> None</p> <p><i>The parameter name depends upon the Alarm selected (AL1 TYPE, AL2 TYPE, etc.).</i></p> <p>None : Disable Alarm.</p> <p>Process Low : The Alarm activates when the PV equals or falls below the 'Alarm Setpoint' value.</p> <p>Process High : The Alarm activates when the PV equals or exceeds the 'Alarm Setpoint' value.</p>	<p>None Process Low Precess High (Default : None)</p>
<p>ALARM SETPOINT <input style="width: 150px;" type="text" value="AL1 SETPOINT>>"/> 0</p> <p><i>The parameter name depends upon the Alarm selected (AL1 Setpoint, AL2 Setpoint, etc.).</i></p> <p>Setpoint Value for 'Process High' or 'Process Low' Alarm.</p>	<p>Min. to Max. of selected input type range (Default : 0)</p>
<p>ALARM HYSTERESIS <input style="width: 150px;" type="text" value="AL1 HYSTERESIS>>"/> 2</p> <p><i>The parameter name depends upon the Alarm selected (AL1 Hysteresis, AL2 Hysteresis, etc.).</i></p> <p>This parameter Value sets a differential (dead) band between the ON and OFF Alarm states.</p>	<p>1 to 3000 or 0.1 to 3000.0 (Default : 2 or 2.0)</p>

Parameter Description	Settings (Default Value)
<p>ALARM INHIBIT</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">AL1 INHIBIT>> Yes</div> <p><i>The parameter name depends upon the Alarm selected (AL1 Inhibit, AL2 Inhibit, etc.).</i></p> <p>No : The Alarm activation is suppressed until the PV is within Alarm limits from the time the Recorder is switched ON.</p> <p>Yes : The Alarm is not suppressed during the start-up Alarm conditions.</p>	<p>No Yes (Default : No)</p>



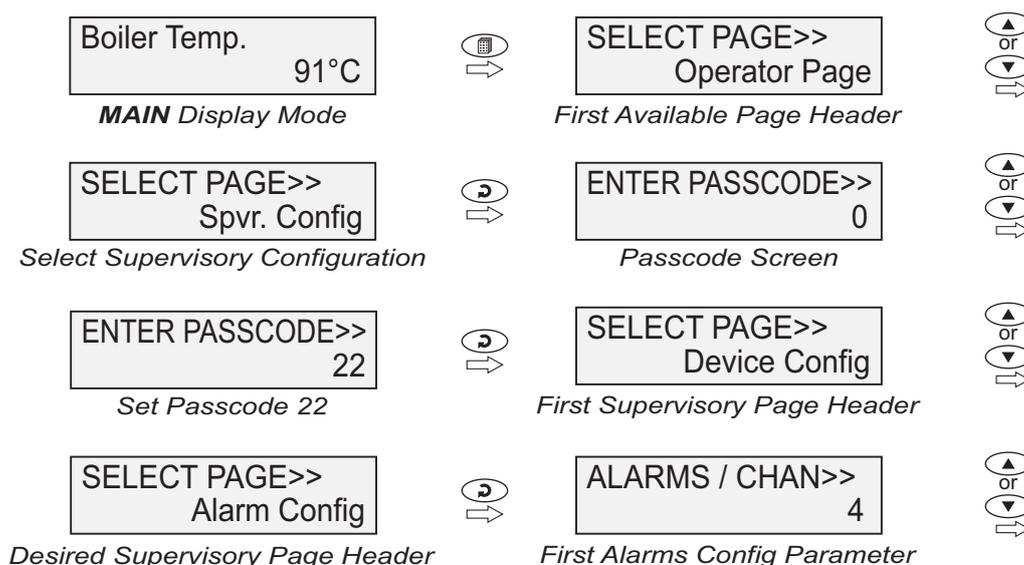
Section 7 SUPERVISORY CONFIGURATION

The Page Header 'Spvr. Config' encompasses a subset of Page Headers containing parameters that are set less frequently. These parameters should only be accessible to Supervisory level and thus are protected by password. Upon entering the appropriate password for the parameter 'ENTER PASSCODE', the following list of Page Header is available.

1. Device Configuration (*Device Config*)
2. Channel Configuration (*Channel Config*)
3. Alarm Configuration (*Alarm Config*)
4. Recorder Configuration (*Recorder Config*)
5. RTC Settings (*RTC Settings*)
6. Utilites (*Utilites*)

The figure below illustrates how to access the parameters under the supervisory Page Header "Alarm Configuration". The parameters covered under each Page Header are described in detail in the following sections.

Figure 7.1



Section 8 DEVICE CONFIGURATION

Table : 8.1

Parameter Description	Settings (Default Value)
<p>CHANNEL UPDATE TIME IN AUTO SCAN MODE</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">SCAN RATE>> 3</div> <p>This parameter value sets the time interval for which each channel is displayed. In other words, the rate at which the channels are sequentially updated for indication.</p>	<p>1 Sec. to 99 Sec. (Default : 3 Sec.)</p>
<p>DEVICE IDENTIFICATION NUMBER</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">RECORDER ID>> 2</div> <p>This parameter assigns a unique identification number to the UniLog which is then used in file naming system for downloading the records to the Pen Drive.</p>	<p>1 to127 (Default : 1)</p>
<p>SELECT TOTAL NUMBERS OF CHANNELS</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">TOTAL CHANNELS>> 16</div> <p>The UniLog is shipped with either 8 or 16 channel interface module. Set this parameter value accordingly.</p>	<p>1. 8 2. 16 (Default : 16)</p>
<p>ERASE ALL STORED RECORDS</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">DELETE RECORDS>> No</div> <p>Setting this command to 'Yes', erases all the records stored in the internal Memory.</p>	<p>No Yes (Default : No)</p>



Section 9 CHANNEL CONFIGURATION

The Channel configuration parameters are listed in Table below and are generally required to be set only at the time of installation.

Table : 9.1

Parameter Description	Settings (Default Value)
<p>SELECT CHANNEL NAME</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">SELECT CHANNEL>> Channel-1</div> <p>Select the channel name for which the parameter values are to be set.</p>	<p>User defined or default names for channel-1 to channel-8 / 16 (Default : NA)</p>
<p>SKIP CHANNEL FOR DISPLAY</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">SKIP>> No</div> <p>Select to 'Yes' if the selected channel is not to be indicated on display.</p>	<p>No Yes (Default : Yes)</p>
<p>SIGNAL INPUT TYPE</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">INPUT TYPE>> Type K (Cr-Al)</div> <p>Set the type of Thermocouple / RTD / DC Linear signal input type connected to the selected channel.</p>	<p>Refer Table 9.2 (Default : Type K (Cr-Al))</p>
<p>DISPLAY RESOLUTION FOR MEASURED PV</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">RESOLUTION>> 0.1 Unit</div> <p>Set the decimal point position for the PV indication on the display. This is applicable only for DC Linear signal input. The temperature value measured from Thermocouple / RTD is always indicated with 0.1 resolution.</p>	<p>1 Unit 0.1 Unit 0.01 Unit* 0.001 Unit* (Default : 0.1 Unit) (*for 4-20mA)</p>
<p>DISPLAY UNITS FOR MEASURED PV</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">UNITS>> °C</div> <p>Select the Units that shall be displayed along with the measured PV on the display. For temperature input (Thermocouple & RTD), only °C and °F units are available and represent actual converted values. All other units available for DC Linear signal input are for indication purpose only and correspond to the units measured by the transmitter.</p>	<p>Refer Table 9.3 (Default : °C)</p>
<p>RANGE LOW</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">RANGE LOW>> 0</div> <p><i>(Available for 4-20mA inputs)</i> The Range Low value sets the process value corresponding to the minimum DC Linear signal of the selected input type (that is, 0 V or 1V or 0mA or 4mA).</p>	<p>-19999 to 30000 Counts with Selected Resolution (Default : 0.0)</p>

Parameter Description	Settings (Default Value)
<p>RANGE HIGH</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">RANGE HIGH>> 1000</div> <p><i>(Available for 4-20mA inputs)</i> The Range High value sets the process value corresponding to the maximum DC Linear signal of the selected input type (that is, 50mV or 200mV or 1.25V or 5V or 10V or 20mA).</p>	<p>-19999 to 30000 Counts with Selected Resolution (Default : 100.0)</p>
<p>APPLY LOWER CLIP ON DISPLAYED PV</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">LOW CLIPPING>> Disable</div> <p><i>(Available for 4-20mA inputs)</i> Setting this parameter to 'Enable' clips the lower Process Value indication to a preset minimum level.</p>	<p>Disable Enable (Default : Disable)</p>
<p>PRESET LOWER CLIP LEVEL</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">LOW CLIP VAL>> 0.0</div> <p><i>(Available for 4-20mA inputs)</i> When Low Clip is enabled; the minimum displayed PV is clipped (restricted) to this parameter value. For example; if Low Clip value is set to 0.0 then all measured values below 0 are displayed as 0.0.</p>	<p>-19999 to 30000 (Default : 0)</p>
<p>APPLY UPPER CLIP ON DISPLAYED PV</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">HIGH CLIPPING>> Disable</div> <p><i>(Available for 4-20mA inputs)</i> Setting this parameter to 'Enable' clips the upper Process Value indication to a preset maximum level.</p>	<p>Disable Enable (Default : Disable)</p>
<p>PRESET UPPER CLIP LEVEL</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">HIGH CLIP VAL>> 100.0</div> <p><i>(Available for 4-20mA inputs)</i> When High Clip is enabled; the maximum displayed PV is clipped (restricted) to this parameter value. For example; if High Clip value is set to 100.0 then all measured values above 100 are displayed as 100.0.</p>	<p>-19999 to 30000 (Default : 100.0)</p>
<p>ZERO OFFSET</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">ZERO OFFSET>> 0</div> <p>This value is algebraically added to the measured PV for removal of any known sensor calibration error.</p>	<p>-1999 / 3000 or -1999.9 / 3000.0 (Default : 0)</p>
<p>USER - LINEARISATION</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">LINEARISATION>> Disable</div> <p><i>(Available for DC Linear Inputs)</i> Set this parameter to 'Enable' if user linearisation co-ordinates are to be applied on the measured PV from DC Linear signal input.</p>	<p>Disable Enable (Default : Disable)</p>

Parameter Description	Settings (Default Value)
<p>TOTAL BREAK - POINTS</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">BREAK POINTS>> 2</div> <p>Select numbers of segments for the purpose of input PV curve-linearisation by setting the number of total break points.</p>	<p>2 to 32 (Default : 2)</p>
<p>SELECT BREAK - POINT NUMBER FOR SETTING</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">SELECT POINT>> 1</div> <p>Select the break-point for which the X, Y co-ordinates are to be set.</p>	<p>1 to Set Numbers of Break-points (Default : NA)</p>
<p>X CO-ORDINATE VALUE</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">X-VALUE>> 0</div> <p>Set the actual measured (X co -ordinate) value.</p>	<p>-19999 to 30000 (Default : 0)</p>
<p>Y CO-ORDINATE VALUE</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Y-VALUE>> 0</div> <p>Set the computed or derived (Y co -ordinate) value.</p>	<p>-19999 to 30000 (Default : 0)</p>

Table 9.2

Option	Range (Min. to Max.)	Resolution & Unit
Type J (Fe-K)	0.0 to +960.0°C / +32.0 to +1760.0°F	1 °C/°F or 0.1 °C/°F
Type K (Cr-Al)	-200.0 to +1376.0°C / -328.0 to +2508.0°F	
Type T (Cu-Con)	-200.0 to +387.0°C / -328.0 to +728.0°F	
Type R (Rh-13%)	0.0 to +1771.0°C / +32.0 to +3219.0°F	
Type S (Rh-10%)	0.0 to +1768.0°C / +32.0 to +3214.0°F	
Type B	0.0 to +1826.0°C / +32.0 to +3218.0°F	
Type N	0.0 to +1314.0°C / +32.0 to +2397.0°F	
Reserved for customer specific Thermocouple type not listed above. The type shall be specified in accordance with the ordered (optional on request) Thermocouple type.		
RTD Pt100	-199 to +600°C / -328 to +1112°F or -199.9 to +600.0°C / -328.0 to +1112.0°F	1°C/°F or 0.1 °C/°F
0 to 20 mA	-19999 to 30000 units	1 0.1 0.01 0.001 units
4 to 20 mA		
0 to 50 mV		
0 to 200 mV		
0 to 1.25 V		
0 to 5 V		
0 to 10 V		
1 to 5 V		

Table 9.3

Option	Description
°C	Degree Centigrade
°F	Degree Fahrenheit
(none)	No Unit (Blank)
°K	Degree Kelvin
EU	Engineering Units
%	Percentage
Pa	Pascals
Mpa	Mpascals
kPa	Kpascals
bar	Bar
mbar	Milli bar
psi	PSI
kg/sq.cm	kg/cm ²
mmH ₂ O	mm water gauge
inH ₂ O	Inches water gauge
mmHg	mm mercury
Torr	Torr
litre/hr	Litres per hour
litre/min	Litres per minute
%RH	% Relative Humidity
%O ²	% Oxygen
%CO ²	% Carbon di-oxide
%CP	% Carbon Potential
V	Volts
A	Amps

Option	Description
mA	Milli Amps
mV	Milli Volts
ohm	Ohms
ppm	Parts per million
rpm	Revolutions per minute
mSec	Milli seconds
Sec	Seconds
min	Minutes
hrs	Hours
PH	PH
%PH	%PH
miles/hr	Miles per hour
mg	Milli grams
g	Grams
kg	Kilo grams



Section 10 ALARM CONFIGURATION

The parameters presented on this page allow configuration of the number of Alarms per channel and Alarm output functions. Relay-1 is a common output for Alarm-1 Ored Alarm-3 of all channels. Relay-2 is a common output for Alarm-2 Ored Alarm-4 of all channels.

Table : 10.1

Parameter Description	Settings (Default Value)
<p>ALARMS PER CHANNEL ALARMS / CHAN >> 4</p> <p>The UniLog is provided with 4 independently settable soft Alarms per channel. However, the actual number of Alarms required per channel may vary from application to application. This parameter allows selecting the exact number of Alarms required per channel.</p>	<p>1 to 4 (Default : 4)</p>
<p>RELAY-1 LOGIC RELAY-1 LOGIC >> Normal</p> <p>RELAY-2 LOGIC RELAY-2 LOGIC >> Normal</p> <p>Normal : The Relay remains ON under Alarm condition; OFF otherwise. Useful for activating Audio / Visual Alarm.</p> <p>Reverse : The Relay remains OFF under Alarm condition; ON otherwise. Useful for Tripping the system under monitoring.</p>	<p>Normal Reverse (Default : Normal)</p>



Section 11 RECORDER CONFIGURATION

Table : 11.1

Parameter Description	Settings (Default Value)
<p>NORMAL RECORDING INTERVAL</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> NORMAL INTERVAL>> 0:00:30 </div> <p>The UniLog respects this parameter value for generating periodic records when none of the channels is under Alarm. For e.g., If this parameter value is set to 0:00:30, then a new record is generated every 30 Sec. if no channel is in Alarm.</p> <p>Setting this parameter value to 0:00:00 disables normal recording.</p>	0:00:00 (H:MM:SS) to 2:30:00 (H:MM:SS) (Default : 0:00:30)
<p>ZOOM RECORDING INTERVAL</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> ZOOM INTERVAL>> 0:00:01 </div> <p>The UniLog respects this parameter value for generating periodic records when any one or more channels are under Alarm. For e.g., If this parameter value is set to 0:00:10, then a new record is generated every 10 Sec. whenever there is any channel(s) is in Alarm.</p> <p>Setting this parameter value to 0:00:00 disables zoom recording.</p>	0:00:00 (H:MM:SS) to 2:30:00 (H:MM:SS) (Default : 0:00:01)
<p>RECORD GENERATION ON ALARM STATUS TOGGLE</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> ALARM TOGGLE REC Disable </div> <p>Set to 'Enable' if a record is to be generated every time the Alarm status for any of the channels is toggled (On-to-Off or Off-to-On).</p>	Disable Enable (Default : Enable)
<p>SELECT RECORDING MODE</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> RECORDING MODE>> Continuous </div> <p>Continuous The UniLog keeps generating records indefinitely. There are no Start / Stop commands. Suitable for continuous processes.</p> <p>Batch The UniLog generates records over a preset time interval. The recording begins upon issuance of Start command and continues until the user set time interval is elapsed. Suitable for batch processes.</p>	Continuous Batch (Default : Continuous)
<p>TIME INTERVAL FOR BATCH RECORDING</p> <div style="border: 1px solid black; padding: 2px; display: inline-block;"> BATCH TIME>> 1.00 </div> <p><i>(Available for Batch Mode Only)</i></p> <p>Sets the time period in Hours:Minutes for which the recording to take place from the time the Start command is issued.</p>	0:01 (HH:MM) to 250:00 (HHH:MM) (Default : 1:00)

Section 12 RTC SETTING

Table : 12.1

Parameter Description	Settings
<p>SET CLOCK TIME (HH:MM) TIME (HH:MM)>> 15:53</p> <p>Set current clock time in Hrs:Min (24 Hours format).</p>	<p>0.0 to 23:59</p>
<p>SET CALENDAR DATE DATE>> 23</p> <p>Set current calendar date.</p>	<p>1 to 31</p>
<p>SET CALENDAR MONTH MONTH>> 11</p> <p>Set current calendar month.</p>	<p>1 to 12</p>
<p>SET CALENDAR YEAR YEAR>> 2011</p> <p>Set current calendar year.</p>	<p>2000 to 2099</p>
<p>UNIQUE ID NUMBER UNIQUE ID NUMBER 16050012</p> <p>This is a Read-only parameter. The value shown is arbitrary and will differ from device to device. The last 5 digits are used for generating the default (factory set) File Name for downloading the records. The last 3 digits are used for generating the Back Up File Name. Refer Section 3 : PEN DRIVE OPERATION.</p>	<p>NA</p>

Section 13
UTILITIES

Table : 13.1

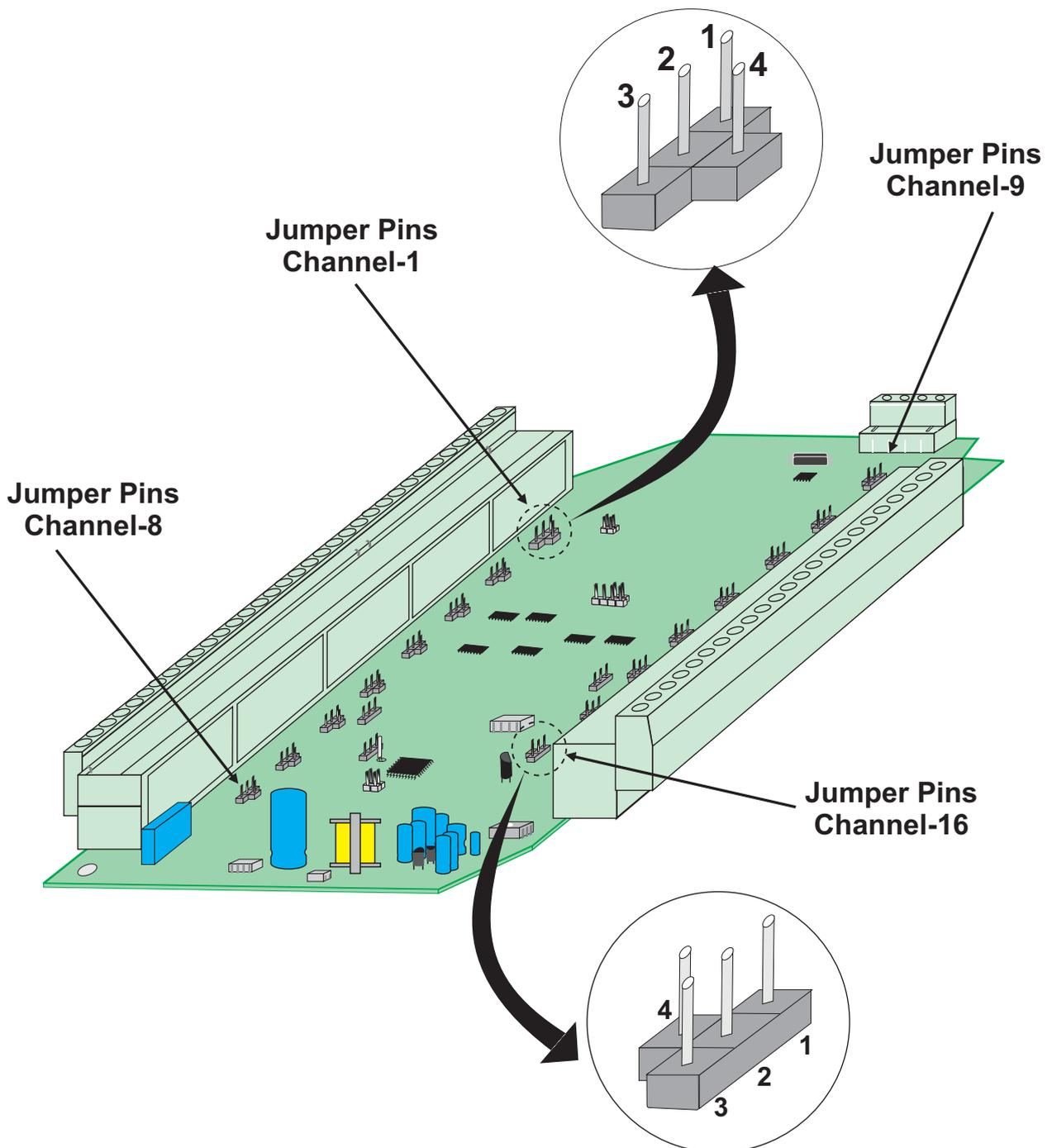
Parameter Description	Settings
<p>MASTER LOCK ENABLE DISABLE</p> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">LOCK>> No</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">UNLOCK>> No</div> <p>This parameter allows locking and unlocking of Alarm Setting parameters. Locking the parameters inhibits editing (modifying) of Alarm parameters to prevent any inadvertent changes by the operator.</p> <p>The Parameters 'Lock' and 'Unlock' are mutually exclusive.</p>	<p>No Yes</p>
<p>UIM DEFAULT</p> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">UIM DEFAULT>> No</div> <p>Setting this command to 'Yes' resets all the recording related parameters to their default values. All the user set Channel Names are also reset to the default names (Channel-1, Channel-2, etc.).</p>	<p>No Yes</p>
<p>CIM DEFAULT</p> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">CIM DEFAULT>> No</div> <p>Setting this command to 'Yes' resets all the Channel-configuration and Alarm related parameters to their default values.</p>	<p>No Yes</p>
<p>MAKE CIM & UIM COMPATIBLE</p> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">CPY CIM TO UIM>> No</div> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin-bottom: 5px;">CPY UIM TO CIM>> No</div> <p>The Channel-configuration and Alarm related parameters that are set via UIM are stored both in UIM & CIM memory. For any reason if either of the units is to be replaced; one of the copy commands can be used to make the changed pair compatible without the need of re-programming all the parameter values.</p> <p>Use 'CPY CIM TO UIM' if a User Interface Module (UIM) is replaced.</p> <p>Use 'CPY UIM TO CIM' if a Channel Interface Module (CIM) is replaced.</p>	<p>No Yes</p>

Section 14 INPUT CHANNEL : JUMPER SETTINGS

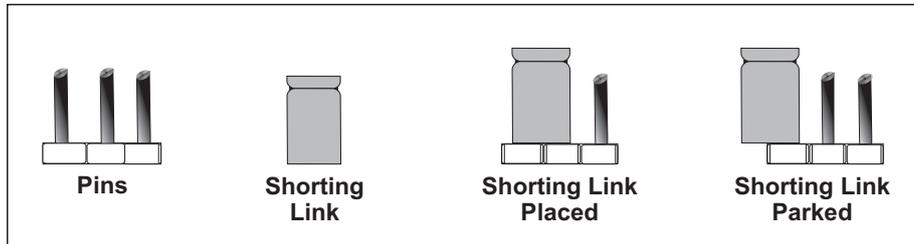
The Analog Input Module is available with 8 (CIM8) or 16 (CIM16) channel inputs. Each input can be user configured for a variety of input types which requires appropriate parameters settings and jumper settings on CIM.

The CIM Module hardware has been re-designed for improved functionality & features. The **Old & New** Hardware designs have different Jumper Setting arrangements. Refer Figures 14.1 & 14.2 for **Old & New** versions respectively.

Figure 14.1 : Old Hardware Version



The jumper setting arrangement comprises of **Pins & Shorting-Link** as shown in the figure below. The figure also depicts how to mount the Shorting-Link for a particular jumper setting.



The figures below show the jumper settings for different input types.

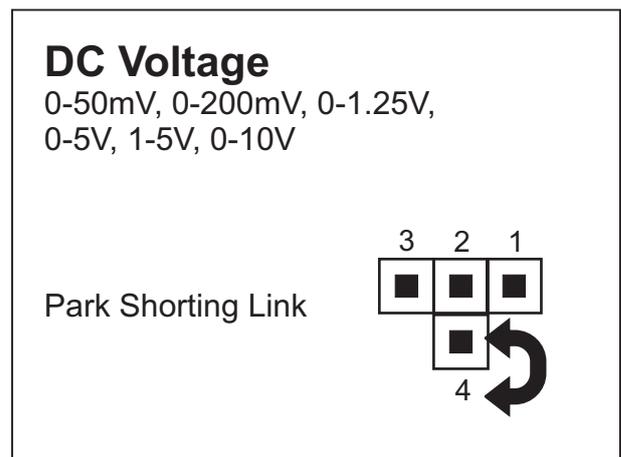
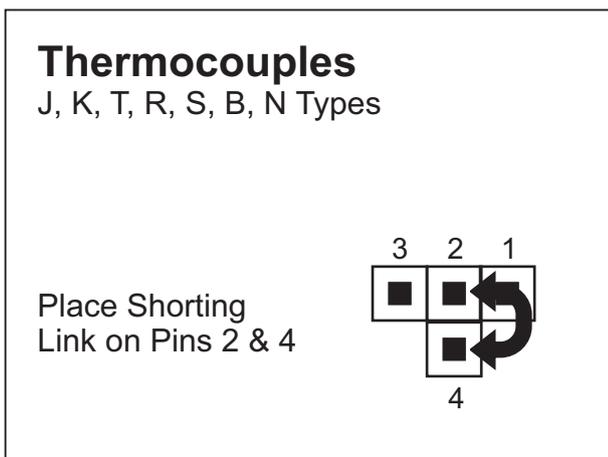
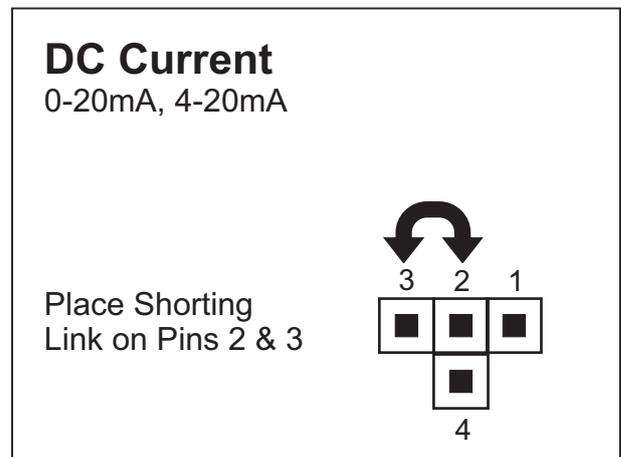
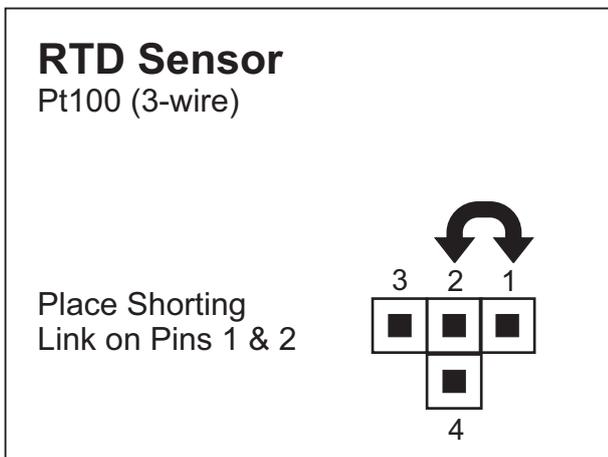
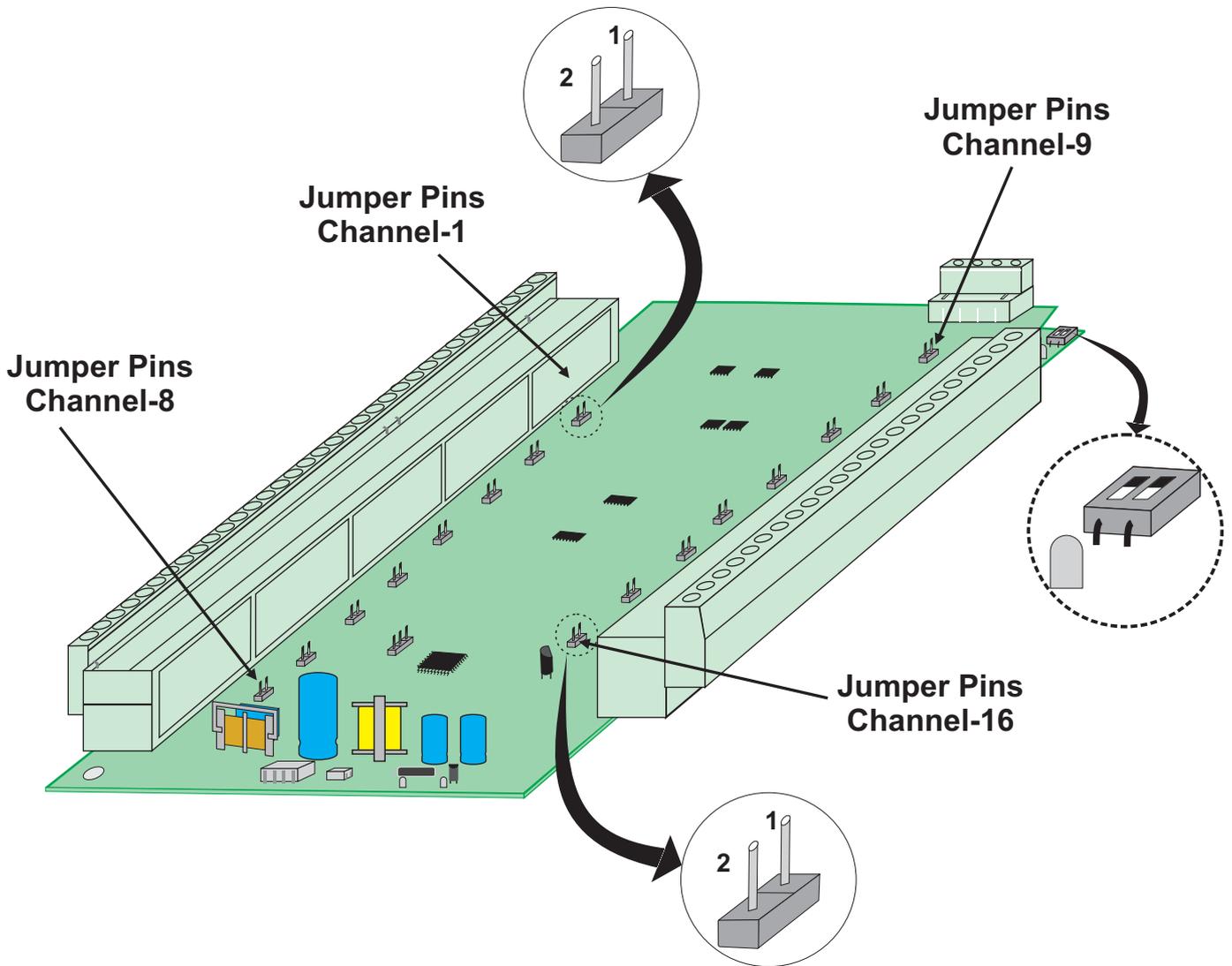
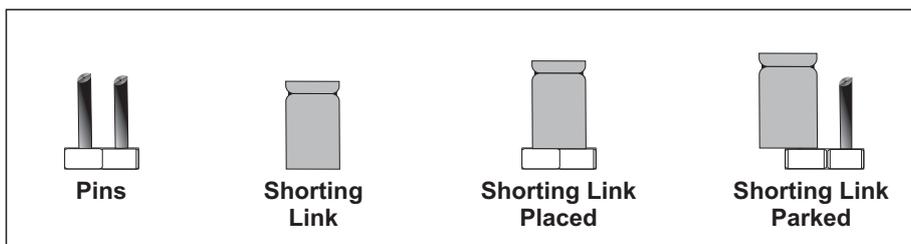


Figure 14.2 : New Hardware Version



The jumper setting arrangement comprises of **Pins & Shorting-Link** as shown in the figure below. The figure also depicts how to mount the Shorting-Link for a particular jumper setting.

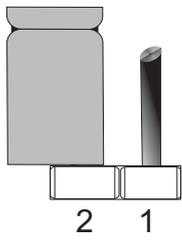


The figures below show the jumper settings for different input types.

RTD Sensor
Pt100 (3-wire)

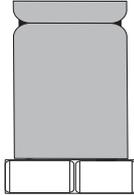
Thermocouples
J, K, T, R, S, B, N Types

DC Voltage
0-50mV, 0-200mV
0-1.25V, 0-5V, 1-5V, 0-10V



Park Shorting Link

DC Current
0-20mA, 4-20mA



Place Shorting Link on Pins 1 & 2

Section 15 ELECTRICAL CONNECTIONS



WARNING
MISHANDLING / NEGLIGENCE CAN RESULT
IN PERSONAL DEATH OR SERIOUS INJURY.

Caution

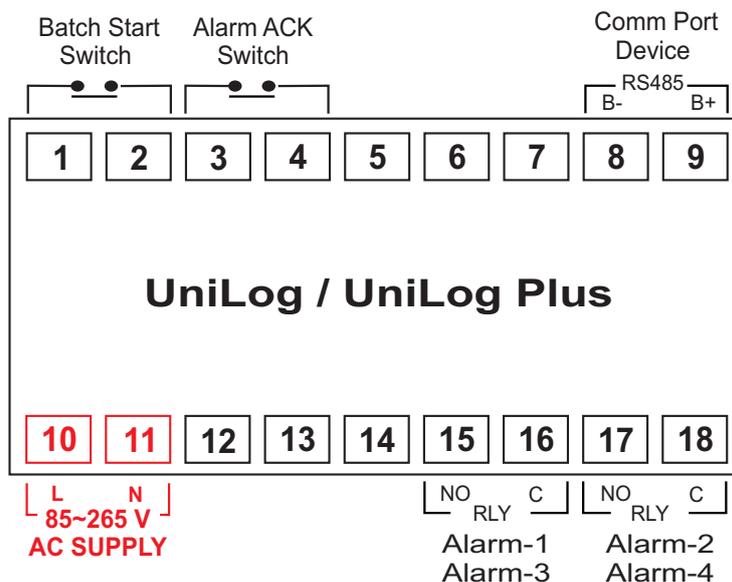
The controller is designed for installation in an enclosure which provides adequate protection against electric shock. Local regulations regarding electrical installation should be rigidly observed. Consideration should be given to prevention of access to the Power Supply terminals by unauthorized personnel.

1. The user must rigidly observe the Local Electrical Regulations.
2. Do not make any connections to the unused terminals for making a tie-point for other wires (or for any other reasons) as they may have some internal connections. Failing to observe this may result in permanent damage to the recorder.
3. Run power supply cables separated from the low-level signal cables (like Thermocouple, RTD, DC Linear Current / Voltage, etc.). If the cables are run through conduits, use separate conduits for power supply cable and low-level signal cables.
4. Use appropriate fuses and switches, wherever necessary, for driving the high voltage loads to protect the recorder from any possible damage due to high voltage surges of extended duration or short-circuits on loads.
5. Take care not to over-tighten the terminal screws while making connections.
6. Make sure that the power supply is switched-off while making / removing any connections.

USER INTERFACE MODULE (UIM) : CONNECTION DIAGRAM

The Electrical Connection Diagram is shown on the Top Side of the enclosure. The diagram shows the terminals viewed from the REAR SIDE with the front label upright. The terminal numbers are also embossed on the rear side of the enclosure. Refer figure 15.1.

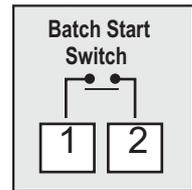
Figure 15.1



DIGITAL INPUT FOR BATCH START COMMAND

Connect a remote potential-free contact closure switch for the purpose of issuing the Batch - Recording START command. An 'OPEN' to 'CLOSE' change over of the contacts initiates time based batch recording. Once the recording starts, the change in the contact status has no effect.

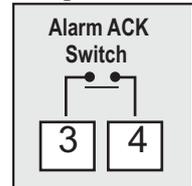
Figure 15.2



DIGITAL INPUT FOR ALARM ACKNOWLEDGE

Connect a remote potential-free contact closure switch for the purpose of issuing Alarm Acknowledgment. An 'OPEN' to 'CLOSE' change over of the contacts acknowledges the alarm and mutes the alarm relay(s)

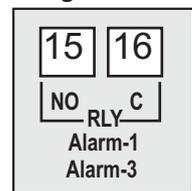
Figure 15.3



ALARM - 1 / ALARM - 3 COMMON RELAY OUTPUT

This relay output status is determined by logically Oring the Alarm-1 and Alarm-3 status of all the channels. Potential-free Relay changeover contacts NO (Normally Open) and C (Common) rated 2A/240 VAC (resistive load) are provided as Relay output.

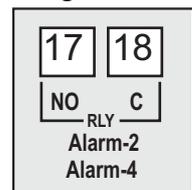
Figure 15.4



ALARM - 2 / ALARM - 4 COMMON RELAY OUTPUT

This relay output status is determined by logically Oring the Alarm-2 and Alarm-4 status of all the channels. Potential-free Relay changeover contacts NO (Normally Open) and C (Common) rated 2A/240 VAC (resistive load) are provided as Relay output.

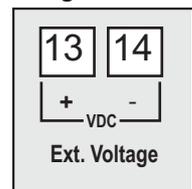
Figure 15.5



TRANSMITTER EXCITATION VOLTAGE OUTPUT

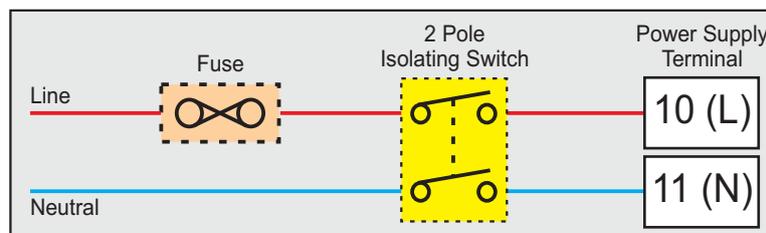
12 VDC is available for transmitter excitation supply. Connect the transmitter (+) to terminal 13 and (-) to terminal 14.

Figure 15.6



POWER SUPPLY

Figure 15.7



As standard, the controller is supplied with power connections suited for 85 to 264 VAC line supply. Use well-insulated copper conductor wire of the size not smaller than 0.5mm² for power supply connections. Connect Line (Phase) supply line to terminal 10 and the Neutral (Return) supply line to terminal 11 as shown in Figure 15.7. The controller is not provided with fuse and power switch. If necessary, mount them separately. Use a time lag fuse rated 1A @ 240 VAC.

CHANNEL INTERFACE MODULE (CIM) : CONNECTION DIAGRAM

The Electrical Connection Diagram is shown right above the terminals. The **Figure 15.8(a) : Old Version & Figure 15.8(b) : New Version** below illustrates the terminal positions on the Left, Right and Top sides of the CIM.

Figure 15.8(a) : Old Version

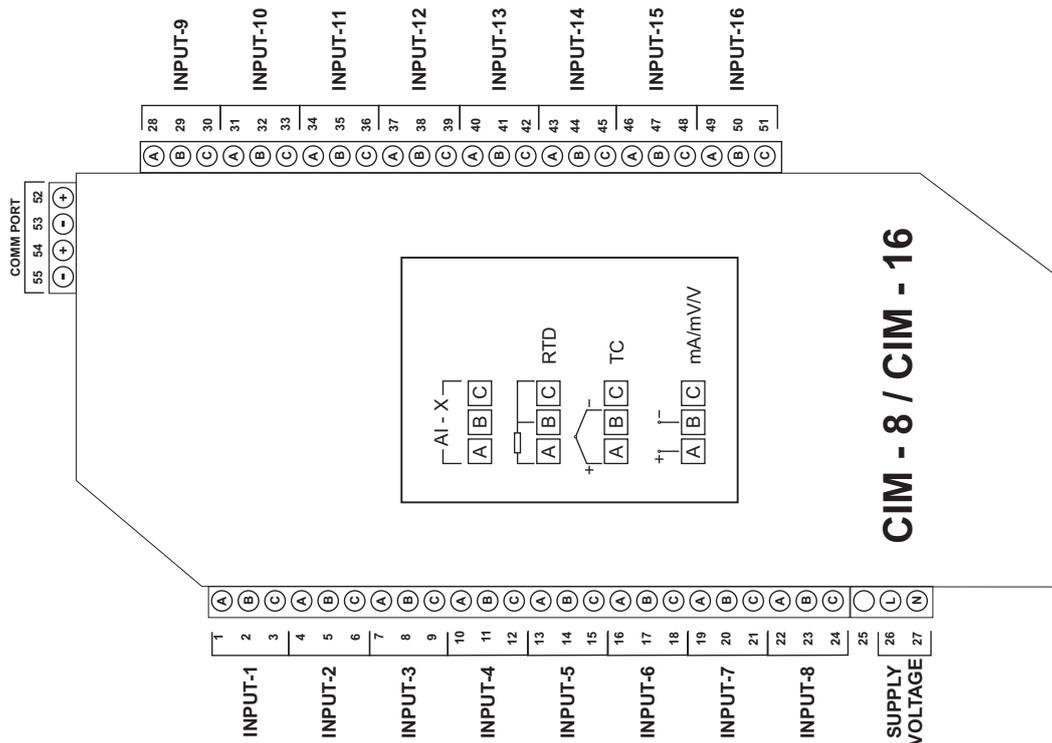
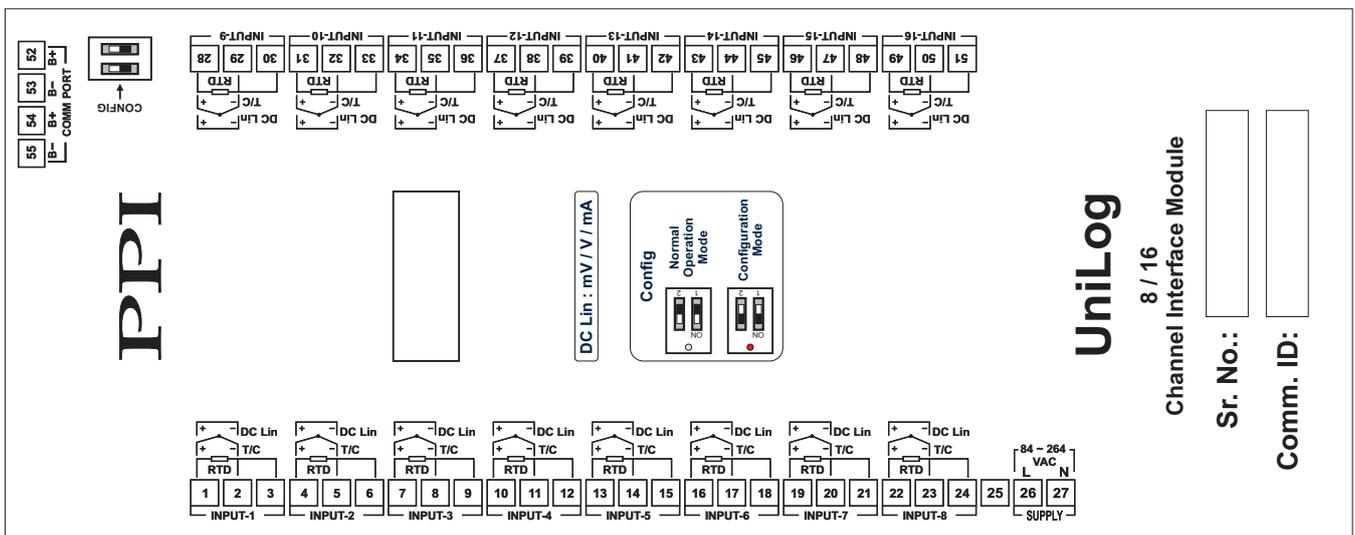


Figure 15.8(b) : New Version



INPUT CHANNELS (1 to 8 OR 1 to 16)

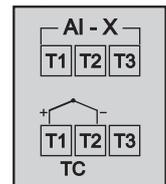
Each of the 8 or 16 input channels is identical from wiring connection viewpoint. In the figure 15.8; the 3 terminals for each input channel are labeled T1, T2 and T3. The descriptions below apply to all the channels with no deviations.

(Make sure that proper jumper settings are made for the desired input type for each channel as described in *Section 14 : Input Channel - Jumper Settings*).

Thermocouple

Connect Thermocouple Positive (+) to terminal T1 and Negative (-) to terminal T2 as shown in Figure 15.9 (a). Use the correct type of Thermocouple extension lead wires or compensating cable for the entire distance ensuring the correct polarity throughout. Avoid joints in the cable.

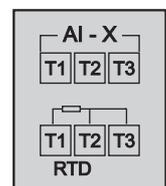
Figure 15.9 (a)



RTD Pt100, 3-wire

Connect single leaded end of RTD bulb to terminal T1 and the double leaded ends to terminals T2 and T3 (interchangeable) as shown in Figure 15.9 (b). Use copper conductor leads of very low resistance ensuring that all 3 leads are of the same gauge and length. Avoid joints in the cable.

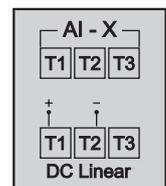
Figure 15.9 (b)



DC Linear Voltage (mV / V) & Current (mA)

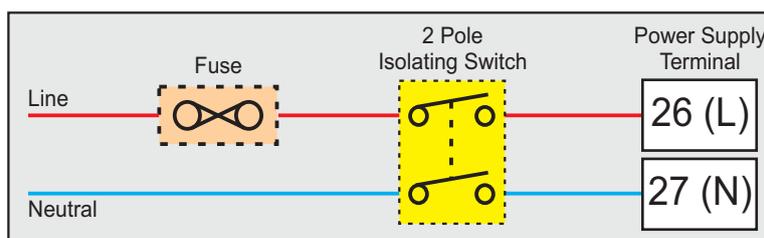
Use a shielded twisted pair with the shield grounded at the signal source for connecting mA / mV / V source. Connect common (-) to terminal T2 and the signal (+) to terminal T1, as shown in Figure 15.9 (c).

Figure 15.9 (c)



POWER SUPPLY

Figure 15.10



As standard, the controller is supplied with power connections suited for 85 to 264 VAC line supply. Use well-insulated copper conductor wire of the size not smaller than 0.5mm² for power supply connections. Connect Line (Phase) supply line to terminal 26 and the Neutral (Return) supply line to terminal 27 as shown in Figure 15.10. The controller is not provided with fuse and power switch. If necessary, mount them separately. Use a time lag fuse rated 1A @ 240 VAC.

SERIAL COMMUNICATION PORT

Refer serial communication wiring connections described in '*Section 17 : COMMUNICATION PORT FOR INTERFACING WITH CIM*'.



Section 16

CONFIGURING COMMUNICATION PARAMETERS

The Module (Analog Interface Module) supports industry standard **MODBUS RTU over Serial** Protocol for communicating Process Values, Alarm Status & Operation Parameters for various Channels.

The CIM Module hardware has been re-designed for improved functionality & features. The pervious hardware version we shall refer as **OLD** & the re-designed version we shall refer as **NEW**.

Old Hardware Version

The Device ID is factory set to 1 and can be changed to any value from 1 to 127 using **Broadcast Messaging Mode**. The communication speed is set to 9600 bps and cannot be modified.

The Data Format is : *1 Start bit, 8 Data bits, 1 Even Parity bit, 1 Stop bit*

New Hardware Version

The Serial Communication Port specifications are shown in Table 16.1 below.

Table 16.1

Port	RS485, 2-wire, Half duplex, Start-stop synchronized	
Protocol	Modbus RTU	
Communication Parameters	Parameter	Settings
	Slave ID	1 to 247
	Baud Rate	2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
	Parity	None (1 or 2 Stop Bits) Even (1 Stop Bit) odd (1 Stop Bit)
Max. No. of Units per Loop	31	
Maximum Distance	1200 Meters	

The Module is shipped from the factory with the following default values for the Communication Parameters.

Slave ID : 1	Baud Rate : 9600 bps	Parity : Even
--------------	----------------------	---------------

The above parameters can be altered to match with the Host (Master) parameters by putting the Module in **Configuration Mode**. In this mode the Module always communicates with the host with the default communication parameter values regardless of the actual set values. The user set values are applicable only when the Module is put back in the **Normal Operation Mode**.

A DIP Switch is provided on the Module, as shown in the Figure 16.1, to select between the Configuration and Normal Operation modes. The Table 3.2 shows the Switch Positions and the respective mode.

It is important to note that the switch position is detected only upon power-up. Select the desired Mode while the Module is OFF. That is changing the switch position while the Module is powered does not have any effect on the Mode.

Figure 16.1

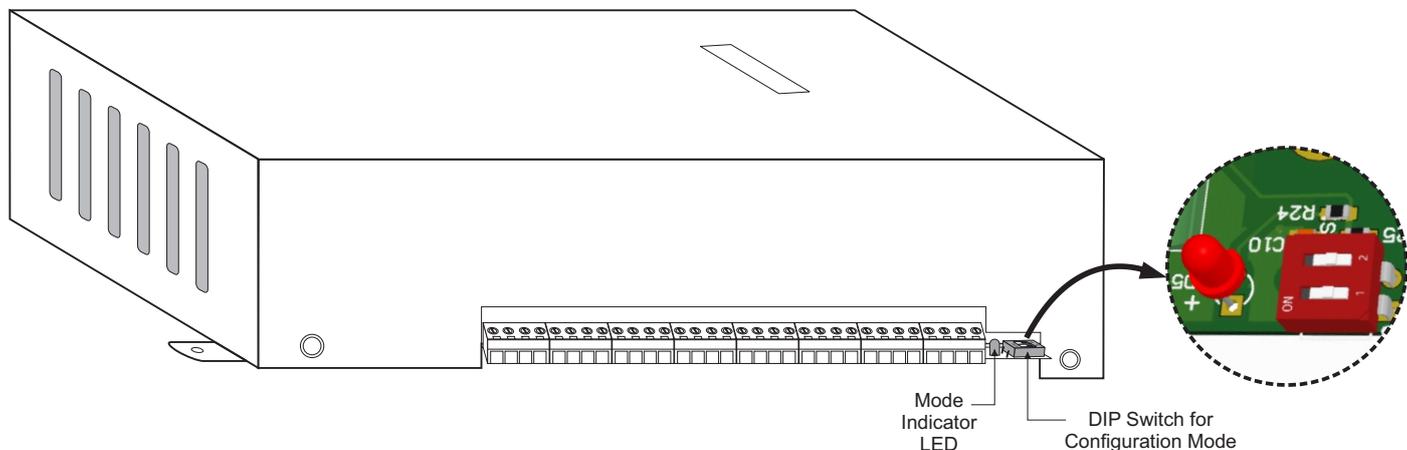
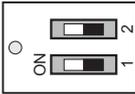
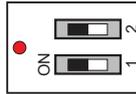


Table 16.2

Switch Position	 Right	 Left
Mode Indicator LED	OFF	ON
Operation Mode	Normal	Configuration
Communication Parameter Values	User Set values for Module Slave ID, Baud Rate & Parity	Module Slave ID : 1 Baud Rate : 9600 Parity : Even

The Communication Parameters values can be altered by using the MODBUS RTU protocol while the Module is in Configuration Mode. Set the host (Master) Baud Rate to “9600 bps” and Parity to “Even”. The MODBUS Addresses and Settings for the Module communication parameters are listed in the Table 16.3 below.

Table 16.3

Parameter Description	MODBUS Address	Settings (Default Value)
<p>Module Slave ID</p> <p>Unique numeric value assigned to the indicator for identification by the host.</p> <p>Set the value as required by the host.</p>	1	1 to 247 (Default : 1)

Parameter Description	MODBUS Address	Settings (Default Value)																	
<p>Baud Rate</p> <p>Communication speed in 'Bits per Second'.</p> <p>Set the value to match with the host baud rate.</p>	2	<table border="1" data-bbox="1019 427 1426 730"> <thead> <tr> <th>Value</th> <th>Baud Rate</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>2400 bps</td> </tr> <tr> <td>1</td> <td>4800 bps</td> </tr> <tr> <td>2</td> <td>9600 bps</td> </tr> <tr> <td>3</td> <td>19200 bps</td> </tr> <tr> <td>4</td> <td>38400 bps</td> </tr> <tr> <td>5</td> <td>57600 bps</td> </tr> <tr> <td>6</td> <td>115200 bps</td> </tr> </tbody> </table> <p style="text-align: center;">(Default : 9600 bps)</p>		Value	Baud Rate	0	2400 bps	1	4800 bps	2	9600 bps	3	19200 bps	4	38400 bps	5	57600 bps	6	115200 bps
Value	Baud Rate																		
0	2400 bps																		
1	4800 bps																		
2	9600 bps																		
3	19200 bps																		
4	38400 bps																		
5	57600 bps																		
6	115200 bps																		
<p>Parity</p> <p>One of the communication error trapping features.</p> <p>Set the data packet parity as implemented by the host protocol.</p>	3	<table border="1" data-bbox="1019 801 1426 954"> <thead> <tr> <th>Value</th> <th>Parity</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>None</td> </tr> <tr> <td>1</td> <td>Even</td> </tr> <tr> <td>2</td> <td>Odd</td> </tr> </tbody> </table> <p style="text-align: center;">(Default : Even)</p>		Value	Parity	0	None	1	Even	2	Odd								
Value	Parity																		
0	None																		
1	Even																		
2	Odd																		

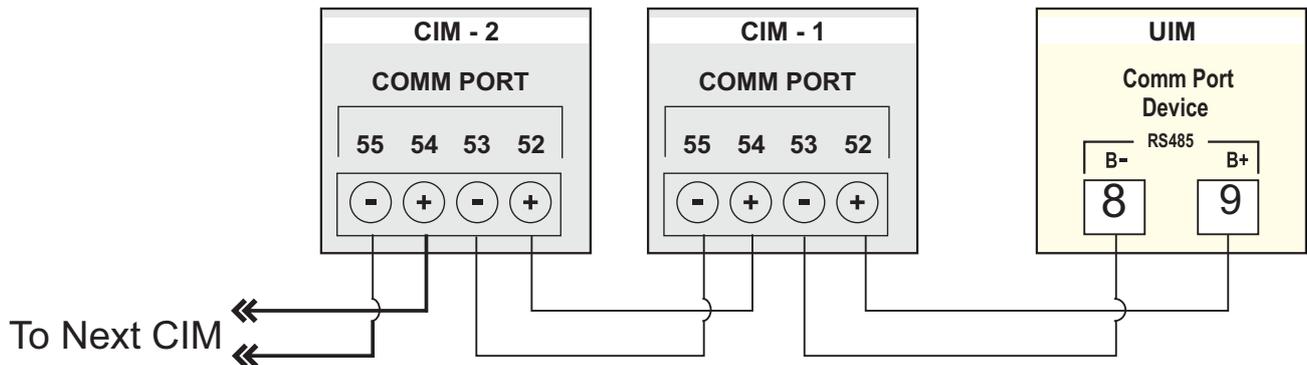


Section 17

COMMUNICATION PORT FOR INTERFACING WITH CIM(S)

Applicable only for **UNILOG PLUS**

Figure 17.1



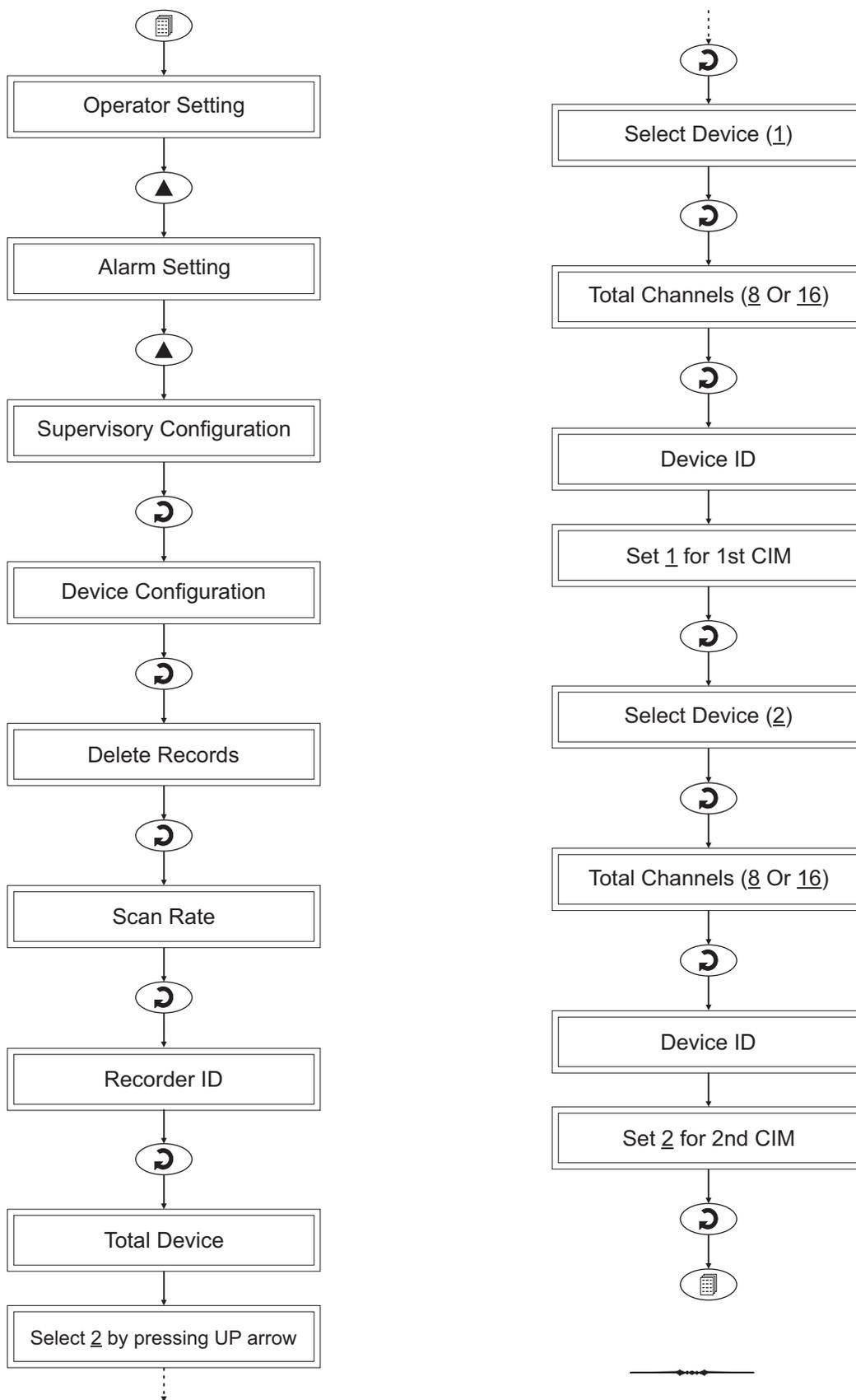
The UIM is connected to 1 or more CIMs using RS485 Serial Communication Port. The wiring connections for interfacing the UIM with CIM(s) is shown in the figure 17.1.

For reliable noise free communication, use a pair of twisted wires inside screened cable. The wire should have less than 100 ohms / km nominal DC resistance (Typically 24 AWG or thicker).

Section 17.1

ID SETTING FOR MORE THAN 1 CIM

Applicable only for **UNILOG PLUS**





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