KTM LOADGARD Series

Model KTM-2 / KTM-4

USER MANUAL

Rev. 2

HELM INSTRUMENT CO., INC.

LIMITED WARRANTY

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Should you have any questions concerning this Warranty, you may contact Helm by writing or calling:

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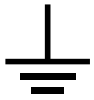
CUSTOMER SERVICE
361 WEST DUSSEL DRIVE
MAUMEE, OHIO 43537
(419) 893-4356

EXPLANATION OF SYMBOLS

Alternating Current


Earth (ground) TERMINAL

On (Supply)

Off (Supply)

Caution, risk of electric shock

Caution (refer to accompanying documents)

INTRODUCTION

HELM INSTRUMENT CO., INC. manufactures a complete line of load monitoring control systems for use on metal stamping, forging, compaction and assembly presses; cold forming, cold heading, injection molding and die cast machines. Standard or custom transducers and load cells are available for in-die monitoring and transfer or progressive tooling. At HELM, quality is inherent not only in the design of our products but in the attitudes of our employees as well. We're working together to give you the best. After all, that's what our business is all about - providing innovative instrumentation to help make your manufacturing process more productive and your operation more effective.

ABOUT KTM LOADGARD SERIES

KTM LOADGARD series is the advanced load monitoring systems for Stamping machine. Its sophisticated features such as smart sampling, adaptive learning, PT Tracking alarms can help maintaining the quality of your production and protecting your machine from faulty operation.

BENEFIT

- **Machine Protection** – protect machine components and tools from costly damage
- **Parts Quality Control** – ensure parts are being made as specified

Variations in the mechanical press and the part making process have the potential of costly damage, waste of materials, and downtime. The KTM LOADGARD uses force monitoring for both machine protection and parts quality control. If any excessive force that could cause any damage to the machine/tools or any variation in force occurs during the part making process are detected, the KTM LOADGARD triggers an “alarm” to stop the process. This gives the operator a chance to inspect pact and correct the potential problem ahead.

MAIN FEATURES

OPERATING MODES

The monitor has three function modes. These modes can be manually controlled by the operator from the screen or automatically.

- **Bypass Mode** – Used for system setup, Job setup or new job download.
  Only High alarm is active.
- **Learn Mode** – Learns new sample (Good) tonnage peaks and signatures used for Trend/Tracking alarm.
  High alarm is active.
- **Monitor Mode** – When learning is done, Mode switches to Monitor automatically.
  High alarm is active. Trend/Tracking alarm is active
  Adaptive learning is active if enabled

LOOK WINDOW TIME (ms) - Look Window Time is the duration of time while the sensor signal is being monitored and captured within a stroke.

SAMPLING (also referred to as “Learning” or “Trending” cycles)

Samples for pre-determined number of press strokes, defined as sample counts in *Alarm Setup* screen.

When the sampling is completed, the monitor takes an average peak tonnage and / or tonnage signature per channel and stores as a *Sample peak value* and/or *Sample Signature* per channel and uses it as a reference point for Trend / Tracking Alarm conditions.

- **Sample –** Sample is the value learned automatically from Learn mode or Monitor mode by adaptive learn feature. The Sample value is used to calculate the Trend and Tracking Alarm boundary in Monitor mode.

ALARMS

In normal operation, the Alarm relay is closed for fail safe. When the tonnage alarm(s) condition is detected, the system opens the TOP STOP relay

- **High –** Normally set at machine or tool capacity. This provides the protection for the Machine and/or tool. This alarm is active in all modes.

- **High/Low Trend** – creates high and low tolerance boundary for peak load based on Sample tonnage. The tolerance value is the allowable tonnage deviation above and below the Sample tonnage. Trend alarm is available in Monitor mode.

- **High/Low Tacking** – creates high and low tolerance envelop around the sampled tonnage signature for monitoring the alarm condition throughout the look window. This provides the more precise way of maintaining the part's quality. Tracking alarm is only available in Monitor mode

OTHER FEATURES

- **Signature Analysis** – Displays the forming force signature for each channel. You can zoom, read the tonnage value at angle, overlay multiple channels, view multiple peak tonnage value in bar graph, and more to help you analyzing the force signature.

- **Alarm History** – You can view last 1000 alarm messages with time stamped.

- **Peaks History** – You can track the trend of peak tonnage history graph for your operation. it holds record of last 40,000 strokes of peak loads per channel.

- **Jobs Recipe** – You can create alarm settings per job and store to Job Recipe database for quick setup of alarm parameters later.

- **Adaptive learning** – While the system is in Monitor mode, Adaptive Learning continuously re-learns new sample tonnage while monitoring. This allows the monitor to adapt any small gradual variation of the tonnages over time preventing nuisance alarm

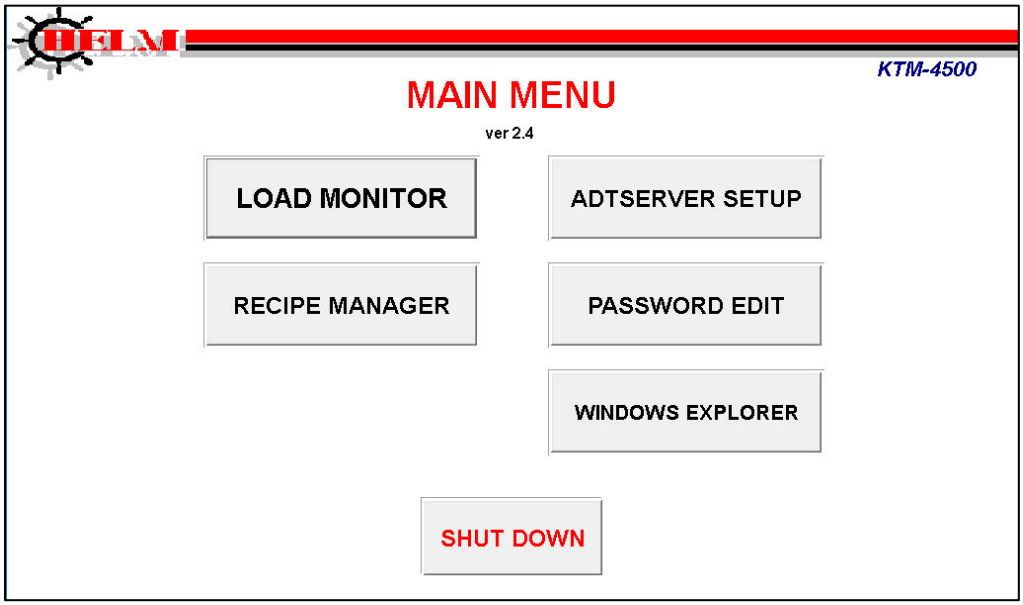
- **Multi-Level Password Protection** – you can restrict certain functions or screens of the system from being accessed by unauthorized personnel or prevent from unauthorized changes of the system settings. Different level of passwords gives more secure and effective protection for the system.

- **Two Independent Counter with Preset.**

TOUCH SCREEN INTERFACE

MAIN MENU

Main menu allows you to access different area of the system. The PTM LOADGARD™ features a touch screen display for easy navigation and operation of the system. Click or touch on the button you wish to access.



LOAD MONITOR – This is the main load monitor screen where you can view the peak loads, load signatures, change Alarms settings, etc.

RECIPE MANAGER – You can create a new job, edit or delete existing jobs, and download a stored job settings for ADC.

PASSWORD EDIT – set or change the passwords.

ADTSERVER – System diagnoses screen and status for the trouble shooting purposes. Initial and system setup is done here as well.

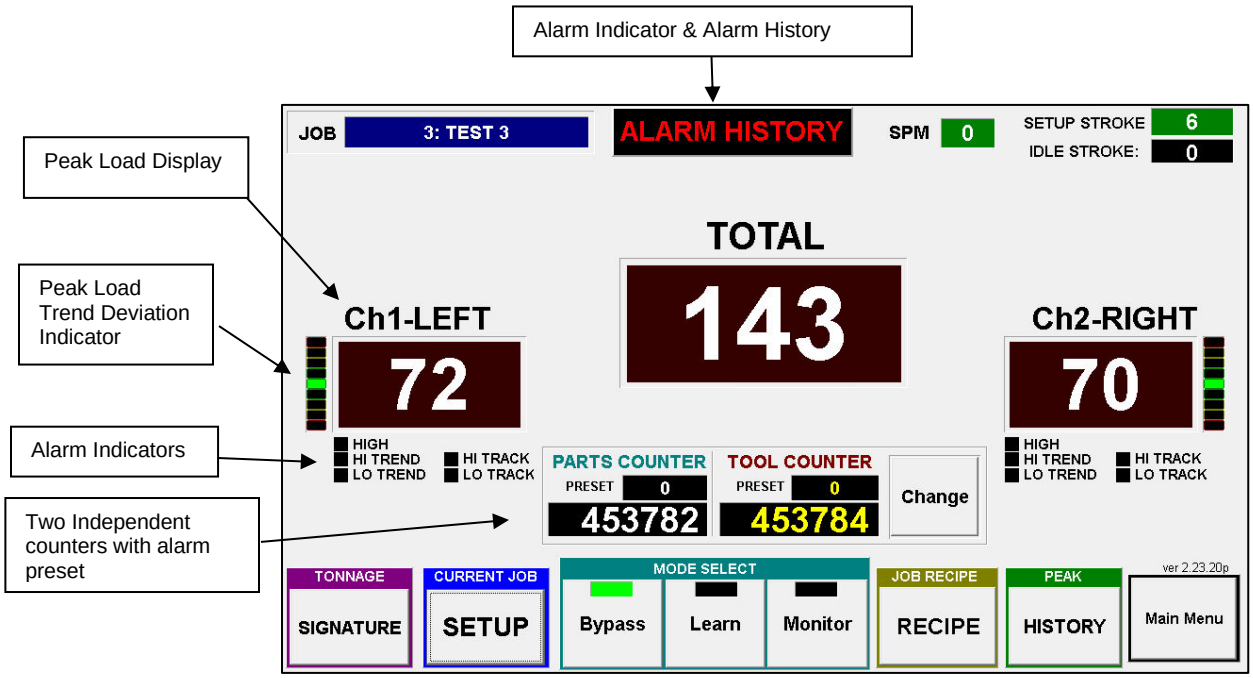
SHUTDOWN – This is protected by operator password. Use “4356123” as password to exit out to Windows Desktop screen.

LOAD MONITOR

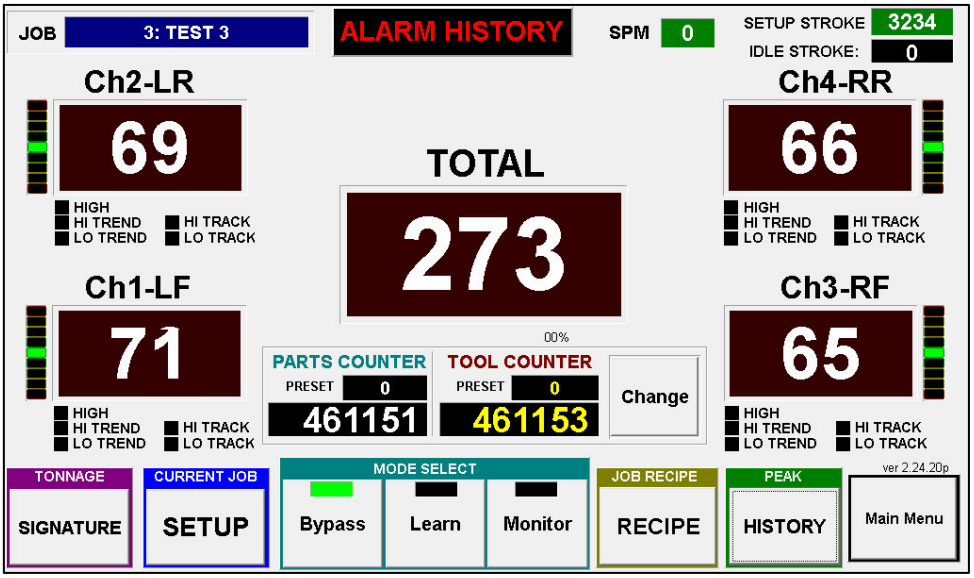
LOAD MONITOR screen provides current peak load, load signatures, peak load history. You can change alarm parameter settings and view Alarm messages history as well.

MAIN LOAD MONITOR SCREEN

This screen displays peak tonnage values, alarm settings, and alarm indicators for all channels.



KTM-2 Two Channel System Main Screen



KTM-4 Four Channel System Main Screen

CURRENT JOB DISPLAY

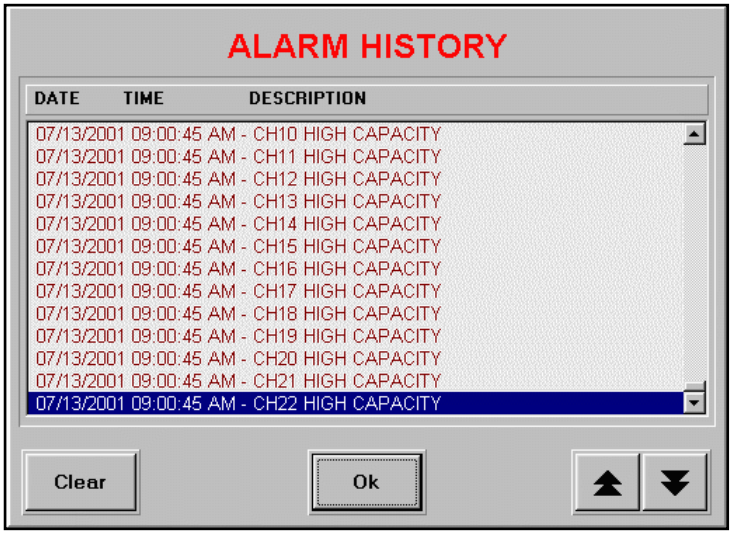
Shows current Job number downloaded from Recipe manager.

ALARM INDICATOR & HISTORY

This ALARM INDICATOR button has two functions, it indicates any alarms tonnage condition and lets you view alarm history. When the machine is running within normal parameter, the message on the button shows ALARM HISTORY. The message ALARM with red color background indicates there is an alarm condition(s). In this case, it will flash the message “Click Here for Detail”. To view the detail message of the alarm, click on the display to open ALARM HISTORY screen. You can click on this display to view previous alarm messages at any time.

ALARM HISTORY

Click on ALARM WARNING DISPLAY button to view ALARM HISTORY.



You can view up to last 1000 alarm messages recorded with date and time stamp each. Use the scroll bar on the right side of the list box or arrow buttons on the bottom to scroll up and down the list. Use *Clear* button to empty all messages.

Note: you need administrator or higher level of password to clear the alarm history.

PEAK TONNAGE DISPLAY FOR FRAME

This peak display shows the peak tonnage load of each channel within the look window from each cycle of the press.

TREND LED

The vertical bar meter next to the peak display box is a Trend Display bar. It shows the visual reference of a peak tonnage variation comparing to TARGET or SAMPLE tonnage for Trend Alarm. The center green light indicates 0% variance within the tolerance of the Trend Alarm. The green light, one above the center, indicates 25% variance. Toward to the red light on the top, the yellow light shows 50% and 75%. Once the tonnage reaches 100% of the tolerance or beyond, all the bars from the center to top light up and it indicates the High Trend Alarm condition. This applies to Low Trend Alarm as well. Only difference is the negative percentage (-25%, -50%, -75% and –100%) and opposite instead.

ALARM INDICATOR LED FOR FRAME CHANNEL

When alarm(s) occurred, ALARM INDICATOR LED displays the cause of the alarm.

HIGH Alarm
When the peak tonnage of an individual channel reaches the high limit of the setting for Capacity alarm, the black rectangle next to the description will turn red to indicate that High-Capacity alarm is triggered. Refer to ALARM SETUP SCREEN for details.

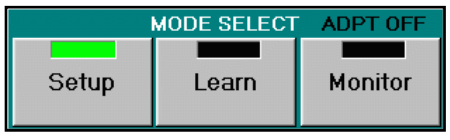
HIGH TREND / TRACKING Alarm
When the peak tonnage of an individual channel reaches the high limit of the setting for Trend Alarm, the black rectangle next to the description will turn red to indicate that a High Trend /Tracking alarm is detected. Refer to ALARM SETUP SCREEN for details.

LOW TREND / TRACKING Alarm
When the peak tonnage of an individual channel reaches the low limit of the setting for Trend Alarm, the black rectangle next to the description will turn red to indicate that a Low Trend/Tracking alarm is detected. Refer to ALARM SETUP SCREEN for details.

ALARM SETUP

Click on ALARM SETUP button to bring up CURRENT ALARM SETTING screen where you can set or change the current alarm settings and download the new settings to the system to take effect. You can also store any change you made in this screen to Recipe database easily. Refer to CURRENT ALARM SETTING for details.

OPERATING MODE



Operating mode can be switched by clicking one of the CURRENT MODE buttons. While in LEARN mode, the mode always changes to MONITOR mode automatically after LEARN cycle is completed.

Setup Mode – Used for system setup, Job setup or job download.

Capacity alarms and Press Curve alarms are available. Trend alarm is only available if enabled. The tolerance band for Trend alarm is calculated by Target value + (±TOL x Expand Factor) instead of sample in Setup mode if enabled. You can enable or disable the Target Trend Alarm in Setup mode from the ADTServer System Setup screen.

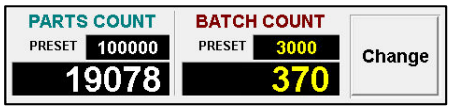
Learn Mode – In LEARN mode, system averages the peak values for each channel during the predefined learning cycle. Once the learning cycle is completed, each average tonnage value is stored as sample tonnage for each channel and the mode automatically switches to Monitor mode. Capacity alarms and Press Curve are available. Trend alarm is only available during Learn mode if enabled. The tolerance band for Trend alarms is calculated by Target value + (±TOL x Expand Factor). You can enable or disable the Target Trend Alarm from ADT Server System Setup screen.

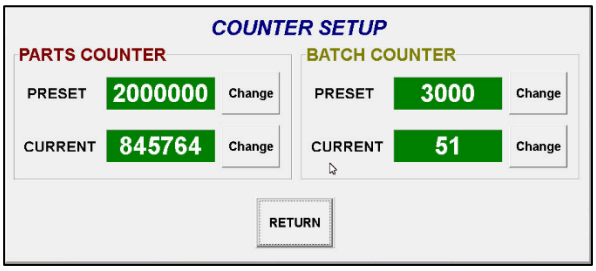
Note: you can define the number of Learn Cycle and store it as a part of job recipe item in Job Setup screen.

Monitor Mode – In Monitor mode, you have the option to enable or disable the Adaptive Learning feature which is part of job recipe item. When the Adaptive Learning is active, the system continuously re-learns sample values while monitoring for any alarm condition. You can change the number of Adaptive Learning cycle by changing the Learning Cycle from Alarm Setup screen.

ADPT ON/OFF - This indicates whether Adaptive Learning feature is turned on or off.
Once the Adaptive Learn is active, you should see that the green LED on the mode select button flashes.

COUNTERS





There are two independent counters with Counter Alarm Preset. In order to change any counter settings, it requires Operator or higher level of password to get into COUNTER SETUP screen. You can change the counter alarm presets and the current counters as well if necessary.

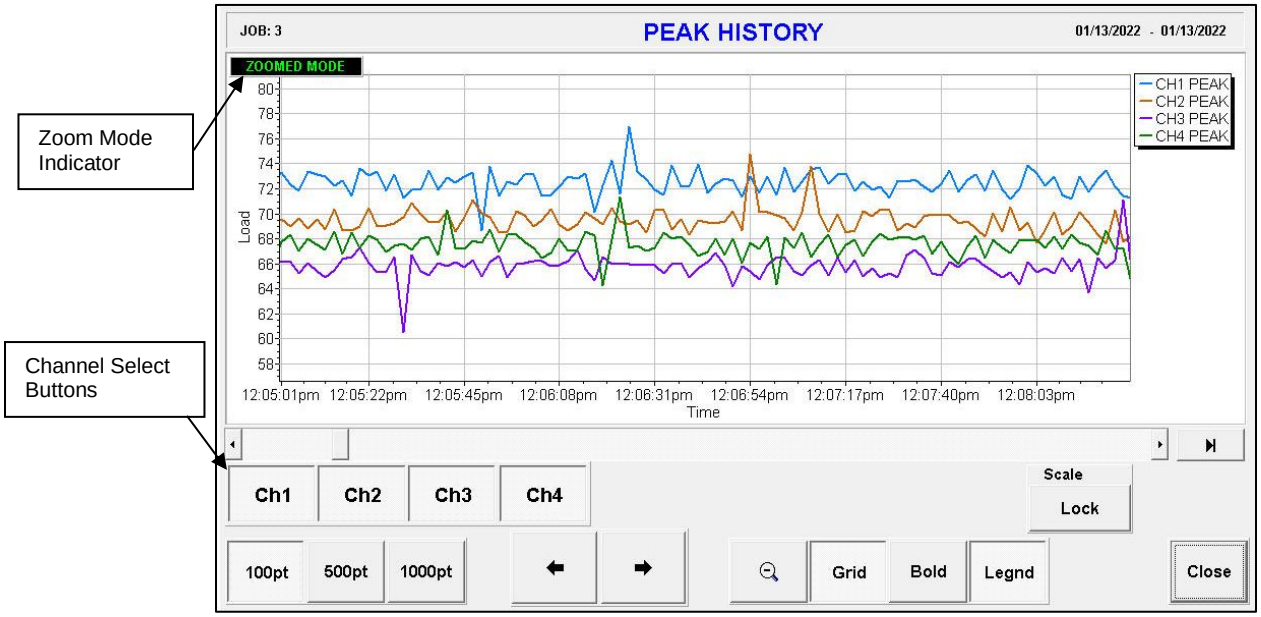
When Counter reaches the preset and triggers Alarm, Pushing the alarm rest automatically resets the counter causing alarm back to 0. For the Batch Counter, if a job download is done from the Job Recipe screen, it automatically resets the Batch Counter back to Zero.

VIEW PEAK HISTORY

Click this button to open PEAK TONNAGE HISTORY screen where you can view a recorded peak tonnage graph up to previous 1000 hits in one screen. Also, you can select the range of the peak history to display SPC (Statistical Processor Control) charts. Refer PEAK HISTORY & SPC for details.

PEAK HISTORY & SPC(STATISTICAL PROCESS CONTROL) CHARTS

The Peak history records up to 40,000 previous peak values per channel.



ZOOMED MODE

This indicates that the current history graph has been zoomed. To zoom the graph, point to the area on the screen where you want to start zooming and drag the point down right to create a zoom rectangle. Once the inside of the zoom rectangle covers the area where you want to zoom in, release the point from the screen. You can repeat this to continue zooming within the area.

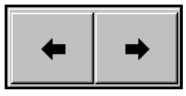
CHANNEL SELECT BUTTONS

Toggle the buttons to add or remove the peak graph of the channel from the history graph.

CHANGE GRAPH RESOLUTION

You can change the number of viewable peak points on a graph by choosing one of the options
100pt – to display 100 peak points at a time
500pt – to display 500 peak points at a time
1000pt – to display 1000 peak points at a time

SCROLL



These buttons let you scroll left or right to view rest of the peak points outside the graph. Click left arrow button to scroll left, right arrow button to scroll right.

UNZOOM

Click this button to reset the zoomed graph and return to original size.

GRID

Click this button to show or hide vertical and horizontal grid lines on Peak Graph screen.

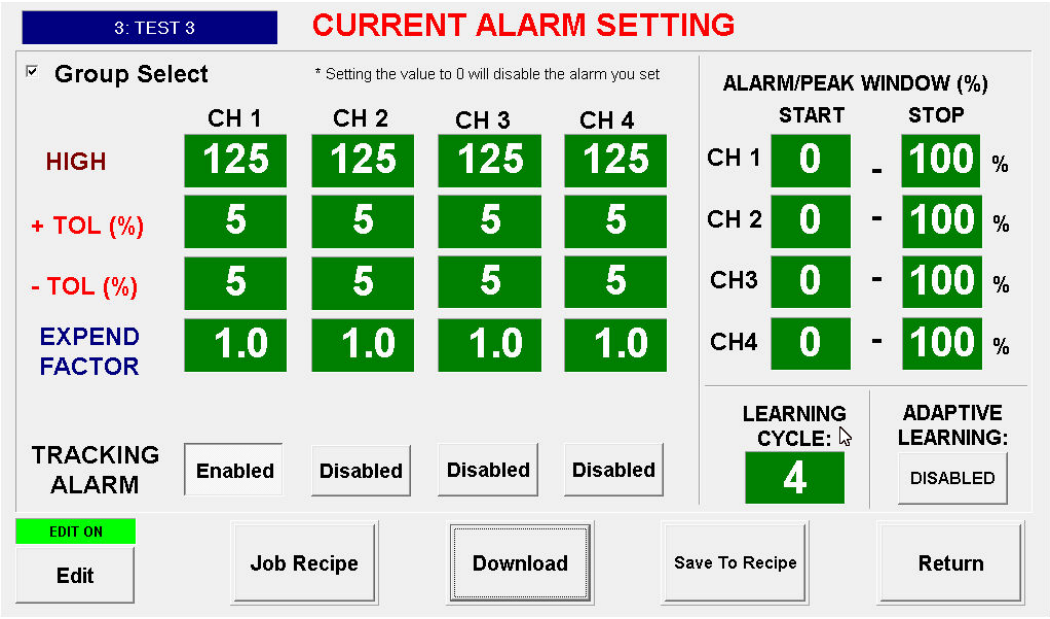
BOLD

Click this toggle button to make the width of the peak graph line bold.

LEGEND

Click this button to show or hide the legend of the graphs displayed on the screen.

CURRENT ALARM SETTING



Model: KTM-4

In CURRENT ALARM SETTING, you can view / edit current job parameters. You can save any changes made in this screen to the recipe database directly for the same job. After you modify any settings, make sure to download for the changes to take effect to current job.

HIGH

HIGH is the set limit for the maximum peak load allowed to operate the machine. HIGH alarm is active in all operation modes.
Note: You need to enable the Edit mode by using Administrator or higher level of password to make any changes from this screen.

+ TOL

This is the upper tolerance tonnage limit for a High Trend alarm of each channel. This limit prevents the current peak tonnage load from exceeding the +TOL tonnage setting above the Target (In Setup or Learn mode) or Sample (In Monitor mode) value.

Note: Depending on EXPAND FACTOR value, actual tolerance may differ from the value that was set while the system is in Setup or Learn mode. Refer to EXPAND FACTOR for detail.

- TOL

This is the lower tolerance tonnage limit for a Low Trend alarm of each channel. This limit prevents the current peak tonnage from exceeding the -TOL tonnage setting below the Target (In Setup or Learn mode) or Sample (In Monitor mode) value.

Note: Depending on EXPAND FACTOR value, actual tolerance may differ from the value that was set while the system is in Setup or Learn mode. Refer to EXPAND FACTOR for detail.

EXPAND FACTOR

Expend factor multiplies + and - TOL percentage settings to widen up the Alarm tolerance for Trend Alarm. This does not affect Tracking alarm Tolerance. Since Trend alarm and Tracking alarm shares the same TOL settings, by utilizing the Expand factor, you can set the Trend alarm tolerance differently from the Tracking alarm.

Example: Sample Peak = 60, +Tol = 10, -Tol =15, Exp Factor = 2.0
Actual High Trend limit = 60 + (10 * 2.0) = 80
Actual Low Trend limit = 60 - (15 * 2.0) = 30

Note: Setting Expand Factor to '0' turns off Trend alarm feature

TRACK ALARM ENABLE/DISBALE

You can enable or disable Tracking alarm feature.

LEARNING CYCLE

Enter the number of cycles to learn good sample load during LEARN mode. Adaptive Learning feature uses this cycle to re-learn new Samples in Monitor Mode when it is enabled.

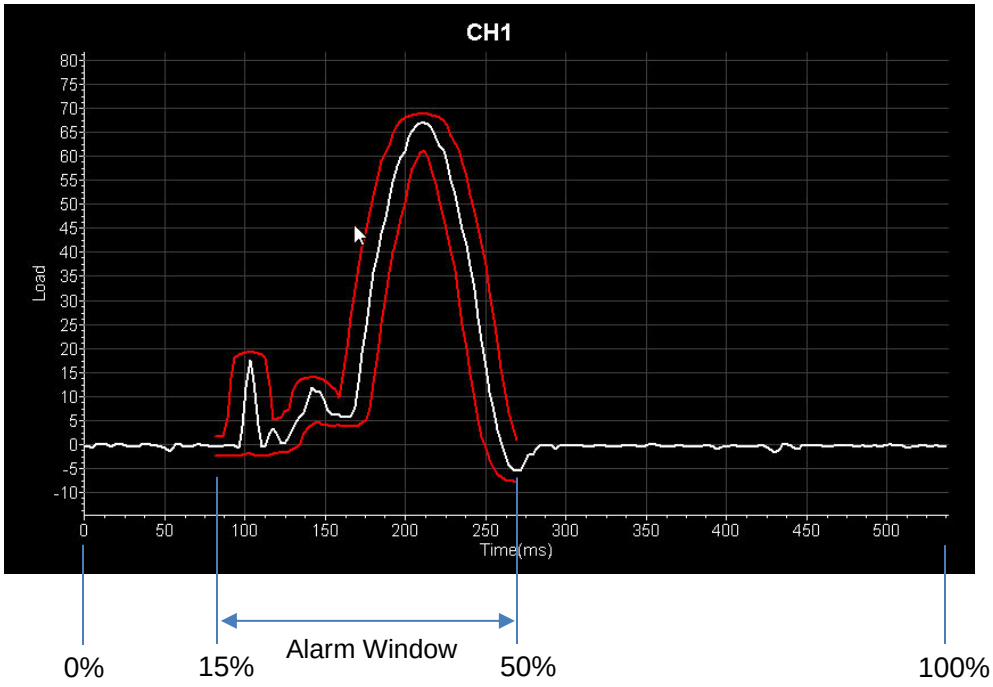
IDLE STROKE ALARM PRESET

Enter the number of stroke that the machine is allowed to run without parts going through. Once the idle stroke reaches to preset count, IDLE Stroke Alarm occurs and drops the alarm output relay. If the monitor detects any part in during stroke, the current idle stroke counter resets back to 0. Setting the value to '0' disables this feature.

ALARM WINDOW (%)

Alarm window is only used for Tracking Alarm feature.
Set alarm windows to limit the area of the load signature to monitor for High/Low tracking alarm. Enter start and stop Alarm Window in percent where 100% is the entire window.

Note: Because the Look window is automatically adjusted base on the duration of CAM input signal, Any SPM change varies the Look window time. By using percentage as the Alarm window set, it keeps the Alarm window area consistent related to the position of the signature regardless the Look window time difference. Here is the example how the tracking alarm monitoring area changes for Alarm window set from 15% to 50%



ADATIVE LEARN ENABLE / DISABLE

Adaptive Learning allows the monitor to continuously re-learns new peak sample load and sample signature every learn cycle stroke set during the Monitor mode. This allows the Trend and Tracking alarm to adapt any minor gradual variation of the load over time which considers as normal for certain jobs and prevent nuisance alarm.

Note: During Adaptive Learning exclude the stroke that caused an alarm from re-learning or empty stroke indicated as No part on the monitor.

ENABLING EDIT

Before you are able to make any changes on the settings in this screen, you have to enable Edit mode first. To do so, click on Edit button and enter a password to enable the Edit mode. Depending on the password clearance level, restrictions will apply.

Note: This password protection can be enabled/disabled in the ADTServer System Setup screen.

Default Password:
Operator password = “123”
Administrator Password = “123456”
Master Password = “1968”

Here is the table for editable contents based on the password type.

Functions	Operator Password	Administrator Password	Master Password
ADT Server System Setup	X	X	O
High/Low-Capacity Setting	X	X	O
	X	X	O
High/Low Tolerance Setting	O	O	O
Target/ EXP Factor	O	O	O
Tracking On/Off	O	O	O
Learn Cycle Count	O	O	O
Alarm Window Setting	O	O	O
RECIPE Job Download	O	O	O
RECIPE Job Add/Edit	X	O	O

DOWNLOAD

Click this button to download any change you made in the Alarm setup screen to take effect. Download will force the operation mode back to Setup mode automatically.

JOB RECIPE

Click this button to go to RECIPE MANAGER screen.

SAVING TO RECIPE DATABASE

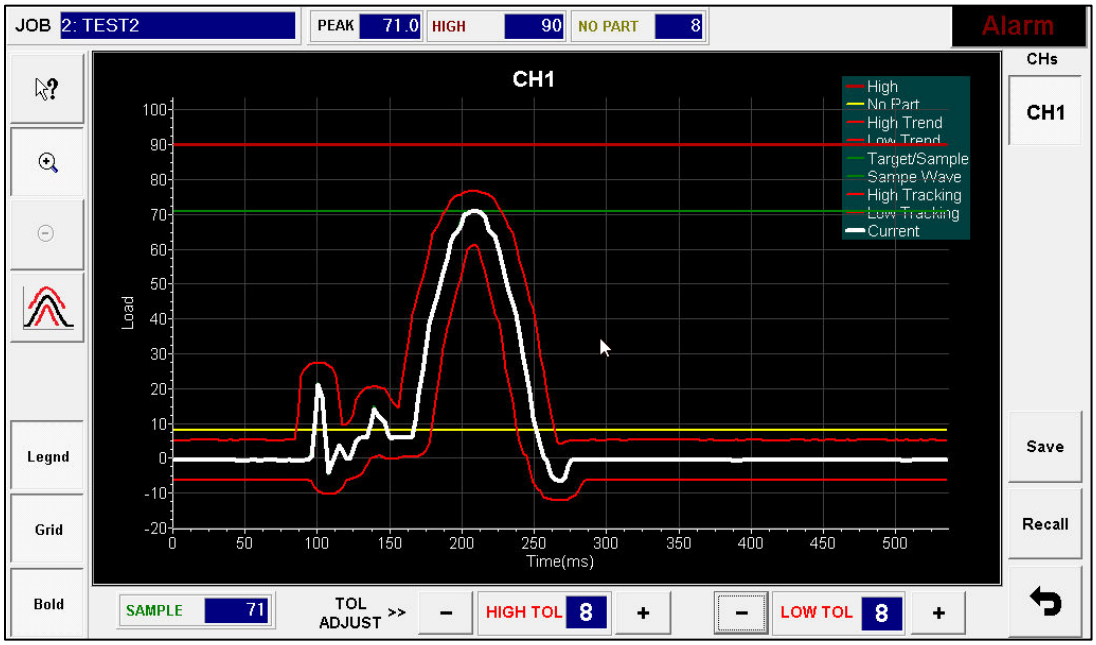
Click this button to update current job stored in Recipe database with the new settings made from this screen.

MAIN MENU

Click this button to return to main tonnage screen

SIGNATURE (WAVE) DISPLAY SCREEN

The Signature Display screen displays real-time force signatures for individual channels. The overlaying with other signatures or graphs help you to monitor the operating status of the machine or verify the alarm conditions easier.



JOB
This is the current job No downloaded from RECIPE MANAGER.

PEAK
Current peak tonnage value for the channel currently displayed.

HIGH
High-Capacity Alarm setting value in tons for the channel currently displayed.

SAMPLE
SAMPLE value in tons for the channel currently displayed.

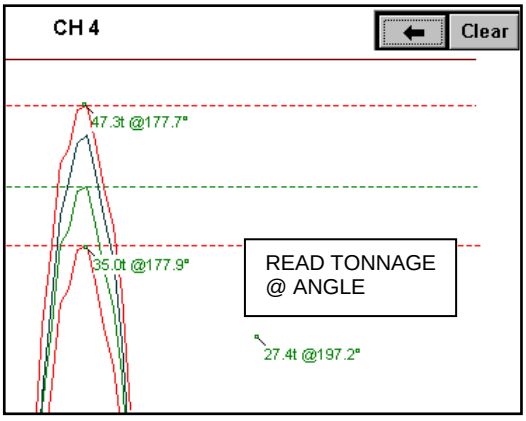
HIGH TOL
+ TOLERANCE setting value in tons for the channel currently displayed.

LOW TOL
- TOLERANCE setting value in tons for the channel currently displayed.

TOL ADJUST
Using +, - button, the Tolerance percent for the tracking alarm can be adjusted in real time during in Monitor Mode.

READ TONNAGE AT ANGLE

Click on this button to enable the Read Tonnage at Angle feature. To view the tonnage at angle, click on the coordination you want to read from the signature screen. You can view up to 20 readings on a screen simultaneously. Use Back or Clear button at the top-right corner to delete unwanted readings.



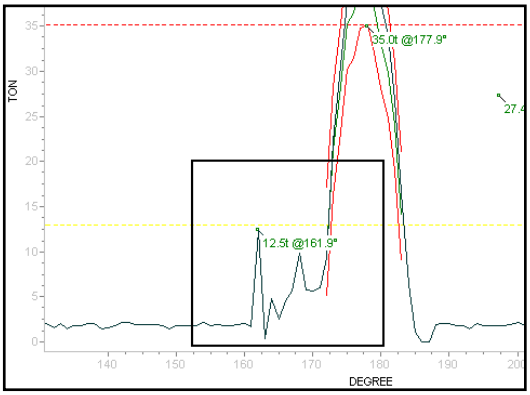
To delete last reading on the screen

To clear all readings on the screen

ZOOM IN

The Zoom feature allows the user to “zoom in” on a selected area of the signature for analysis at a higher resolution. Click this button to put the signature screen in zoom mode.

Note: Once the wave is zoomed, a message “ZOOMED” shows up on the top-left corner of the Signature View Window to indicate that signature is currently in zoomed mode.



To select an area to zoom in: Press touch screen (and keep pressed) at top left area of desired part of wave to zoom in, and drag finger at a diagonal down and to the right. A box will be drawn, and finger followed as the touch screen is pressed. Release touch screen to draw zoomed-in part of the wave.

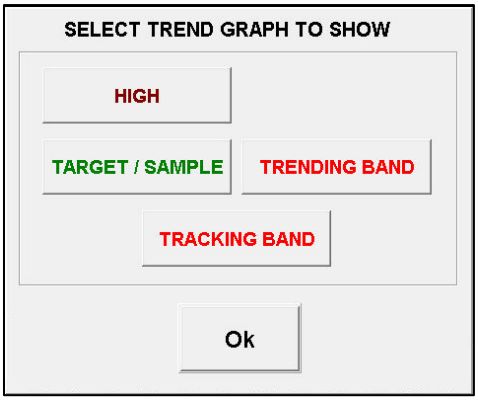
Repeat Zooming is permitted to continuously zoom in on a particular area of a signature.

RESET ZOOM

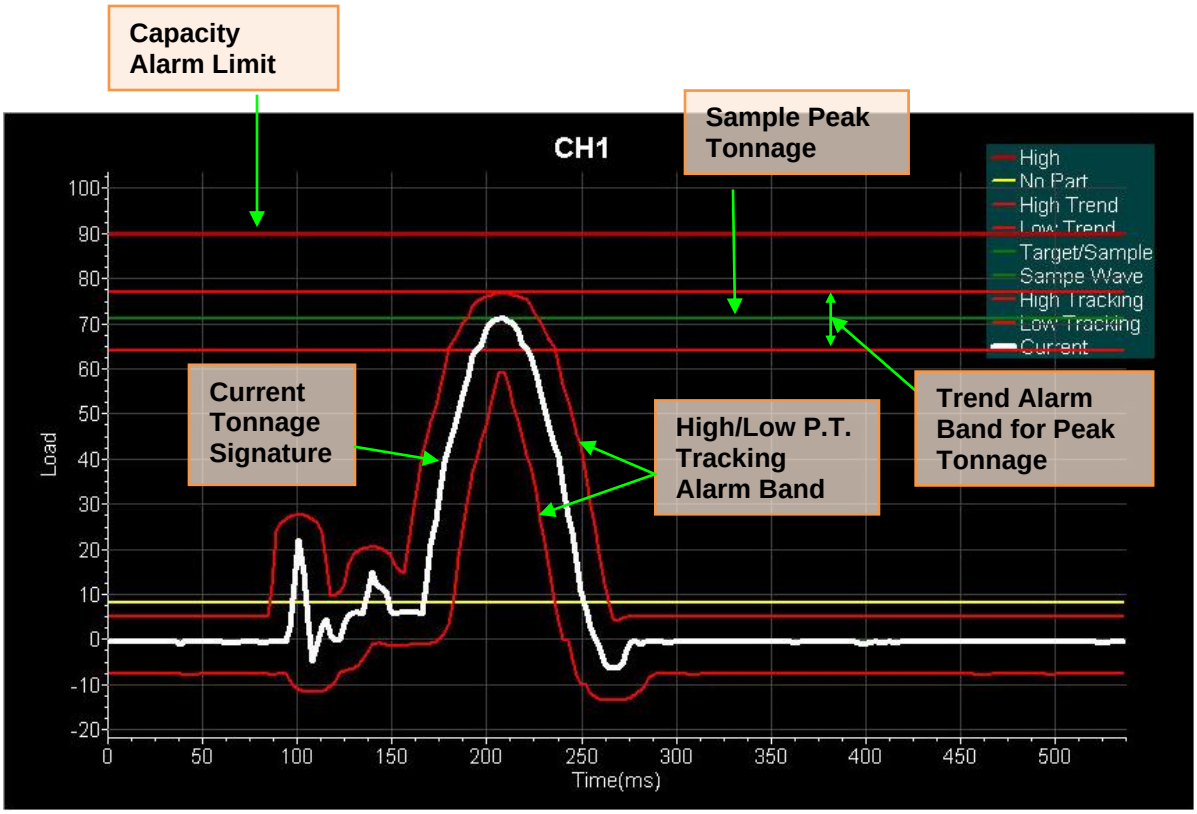
Click this button to return full view(unzoom)

TREND

Click this button to open the SELECT TREND GRAPH TO SHOW screen to select any Trend graphs to overlay with current tonnage signature.



You can add/remove different types of trend graphs to overlay on the signature screen. When the button is pushed in, the option for the graph is added. Click again to remove it.



KTM-Loadgard Signature Trend Overlay

GRID

Click this button to show or hide vertical and horizontal grid lines on the wave screen.

BOLD

Click this toggle button to make the current signature graph line bold.

LEGEND

Click this button to show or hide the legend of the graphs displayed on the screen.

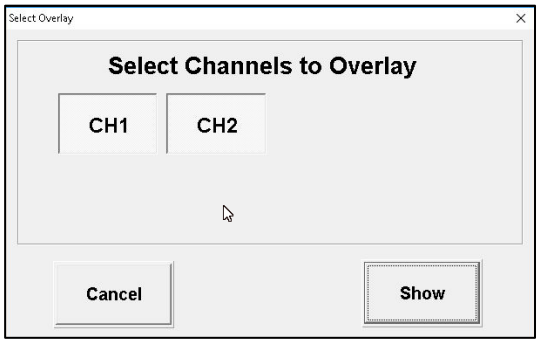
CHANNEL SELECT

Select a button to display the corresponding channel signature on the screen.

OVERLAY

Click this button to view the overlay of multiple channels of current signatures. Also, you can select the option to view multi-channel peak bar graph from here. Refer to OVERLAY SCREEN for details

Note: You cannot view Trend graphs while Overlay screen is on. All other features are still available.

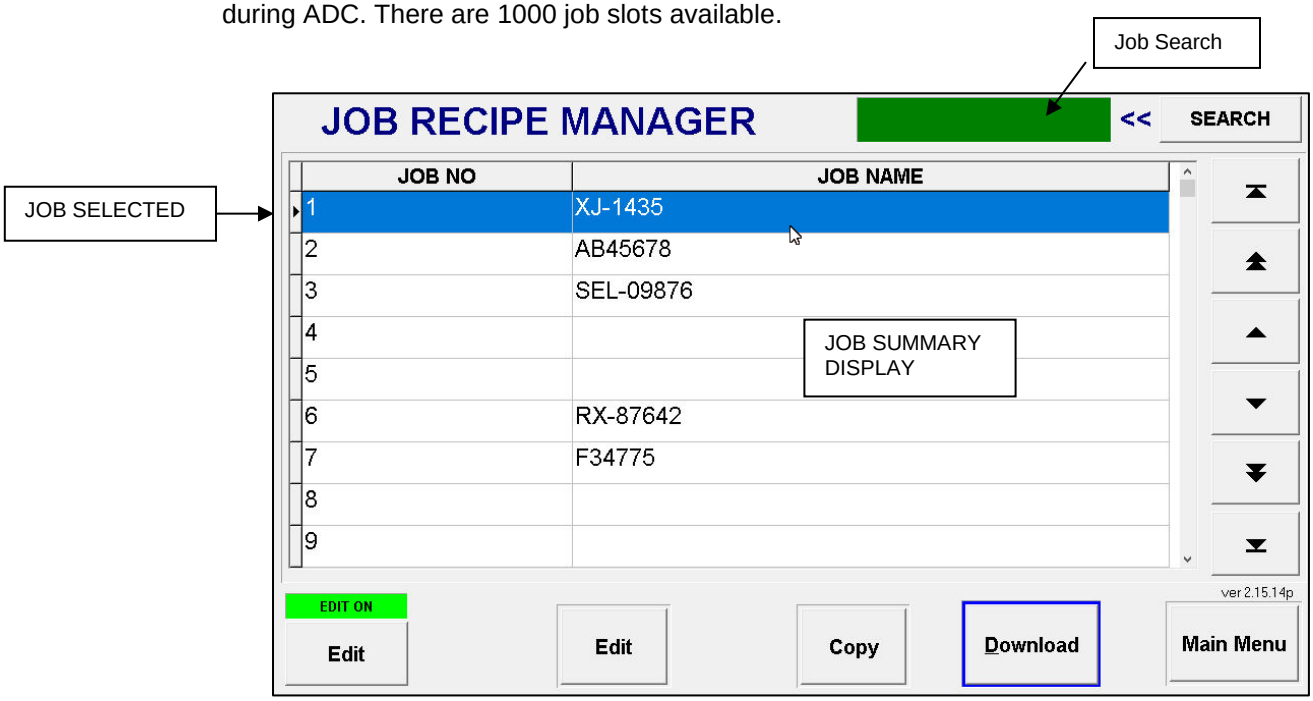


You can add/remove multiple channels of signatures to overlay on one screen by selecting the channel buttons from *Select Channels to Overlay* screen.

RECIPE MANAGER

RECIPE MAIN SCREEN

Recipe Manager is where you can store all the alarm settings for each job for quick download during ADC. There are 1000 job slots available.



JOB SUMMARY DISPLAY

Job Summary Display shows a list of all the jobs available in the job database. Each job is listed with Job no and name. Job number is index number which cannot be changed. Job name can be edited to identify for each job. Select a job from screen by clicking on it to edit or download as current job.

EDIT ON

In order to edit or download a job selected, the Edit button on the bottom-left of the screen must be turned on. This enables Edit and/or Download buttons depending on the level of password entered. Download requires either the Operator level or higher password. Edit require Administrator level or higher password.

EDIT

EDIT button will lead you to JOB SETUP screen where you can make changes of current active job settings such as Job name, alarm settings, etc. In order to edit a job, select the job you wish to edit from Job Summary Display and click on EDIT button.

COPY

When you create a new job, you can also copy the settings from an existing job from the Job Summary List and paste them into a new job or the existing job. To copy a job, select the job you want to copy and click on COPY button. Once you go to JOB SETUP screen to add or edit a job, you will see that PASTE button is enabled. Click on the PASTE button to paste the settings, you copied, into the alarm settings for the job.

DOWNLOAD

Click DOWNLOAD button to download the current active job to ADTServer to take effect of the new settings. The operation mode has to be in SETUP mode to download the job.

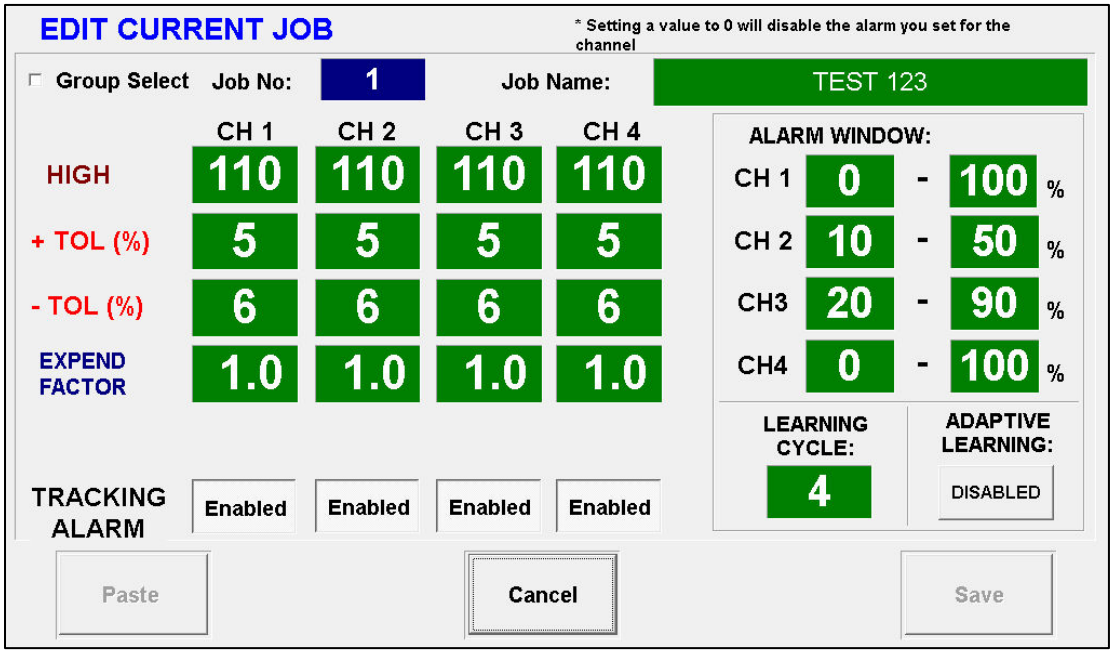
MAIN MENU

Click this button to return to Main menu.

.

JOB SETUP SCREEN

This is where you can edit or enter new settings for the job you created.



JOB NAME

Enter a job name for the job you created. This will identify each job in the Job database. You can enter any character up to 20 characters.

HIGH

HIGH is the set limit for the maximum peak load allowed to operate the machine.

+ TOL

This is the upper tolerance tonnage limit for a High Trend alarm of each channel. This limit prevents the current peak tonnage load from exceeding the +TOL tonnage setting above the Target (In Setup or Learn mode) or Sample (In Monitor mode) value.

Note: Depending on EXPAND FACTOR value, actual tolerance may differ from the value that was set while the system is in Setup or Learn mode. Refer to EXPAND FACTOR for detail.

- TOL

This is the lower tolerance tonnage limit for a Low Trend alarm of each channel. This limit prevents the current peak tonnage from exceeding the -TOL tonnage setting below the Target (In Setup or Learn mode) or Sample (In Monitor mode) value.

Note: Depending on EXPAND FACTOR value, actual tolerance may differ from the value that was set while the system is in Setup or Learn mode. Refer to EXPAND FACTOR for detail.

EXPAND FACTOR

Expend factor multiplies + and - TOL percentage settings to widen up the Alarm tolerance for Trend Alarm. This does not affect Tracking alarm Tolerance. Since Trend alarm and Tracking alarm shares the same TOL settings, by utilizing the Expand factor, you can set the Trend alarm tolerance differently from the Tracking alarm.

Example: Sample Peak = 60, +Tol = 10, -Tol =15, Exp Factor = 2.0
Actual High Trend limit = 60 + (10 * 2.0) = 80
Actual Low Trend limit = 60 - (15 * 2.0) = 30

Note: Setting Expand Factor to '0' turns off Trend alarm feature

LEARNING CYCLE

Enter the number of cycles to take to learn new Sample values in LEARN mode. In MONITOR mode, Adaptive Learning feature uses this cycle to learn new Samples when it is enabled.

ADAPTIVE LEARNING ENABLE/DISABLE

You can enable or disable Adaptive Learning feature in MONITOR mode. By enabling the Adaptive Learning, the system continuously learns new sample values while it is in Monitor mode and applies the new Sample values to monitor Trend alarm conditions as soon as available. This will allow the system to adapt any small gradual variances of the tonnage load through the time which are caused by environmental change such as temperature. If any tonnage load that causes an alarm, the reading is excluded from Adaptive Learning process.

ALARM WINDOW (%)

Set alarm window to adjust the tracking alarm range to monitor specific area within the force signature on the screen. If PEAK WINDOW from ADTServer Setup screen is enabled, the peak tonnage will be captured from the load signature within this ALARM WINDOW instead of from entire signature. Enter start and stop Alarm Window in percent where start of the look window is 0% and the end of look window is 100%.

For Tracking Alarm feature, set alarm windows to limit the area of the load signature to monitor for High/Low tracking alarm. Enter start and stop Alarm Window in percent where 100% is the entire window.

Note: Because the Look window is automatically adjusted based on the duration of CAM input signal, Any SPM change varies the Look window time. By using percentage as the Alarm window set, it keeps the Alarm window area consistent related to the position of the signature regardless the Look window time difference. Here is the example how the tracking alarm monitoring area changes for Alarm window set from 15% to 50%

PASTE

Click PASTE button to overwrite the current settings in this screen with the settings you copied from RECIPE MAIN SCREEN. It is very useful when you create a new job by duplicating existing job and making some adjustment from there.

CANCEL

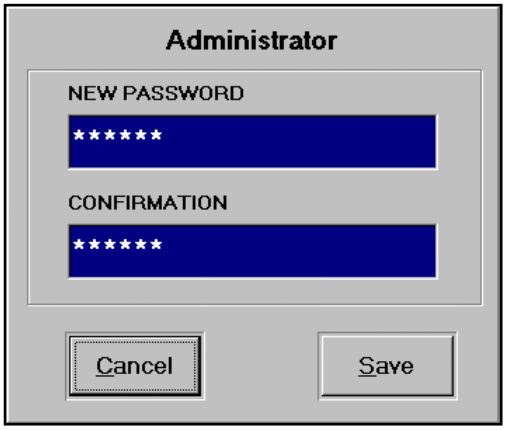
Click CANCEL to cancel any changes you made on this screen and return back to RECIPE main screen. If you are creating a new job, Clicking CANCEL button will terminate the creating the job and delete it from the Job Summary Display.

SAVE

Click SAVE button to save the changes you made in this screen. If you are creating a new job, it will save all settings you entered and add to Job Summary Display as a new job.

PASSWORD CHANGE

In PASSWORD CHANGE screen, you can set and change the different level of the passwords.



MASTER PASSWORD

A master level of password can access any password-protected areas. It overrides the ADMINISTRATOR and OPERATOR level of the passwords and allows you to change their passwords from this screen. Click MASTER button to change the Master password. This requires Master level of password.

ADMINISTRATOR PASSWORD

Administrator level of password can access most of the password-protected areas except for SYSTEM SETUP change in ADTServer. It overrides the OPERATOR level of password and allows you to change it from this screen. Click ADMINISTRATOR button to change the Administrator password. This requires Administrator or higher level of password.

OPERATOR PASSWORD

Operator level of password has limited access areas. With Operator level password, you can change current alarm settings and download the change. However, you cannot alter any existing jobs in the JOB RECIPE database or create a new job. It only allows you to download existing job from RECIPE MANAGER screen. Click OPERATOR button to change the Operator password. This requires Operator or higher level of password.

INITIAL PASSWORD

Master:	1968
Administrator:	123456
Operator:	123

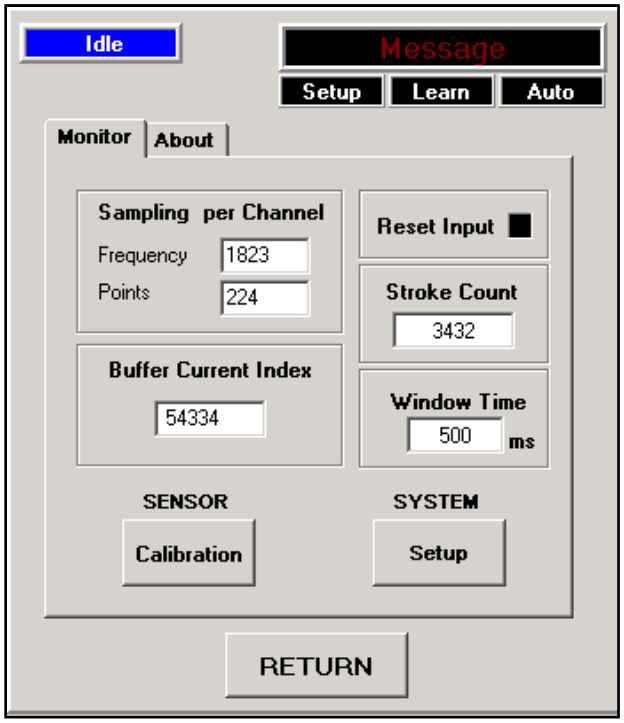
Note: If you forget your passwords, contact HELM INSTRUMENT CO., Inc. at (419) 893-4356

ADTSERVER SETUP SCREEN

ADTServer is the core of the engine for the software of this system. ADTServer receives tonnage signal from SCM module, processes the data, monitors the alarm conditions, and handles I/Os. When the system is installed in a machine for the first time, ADTSERVER requires several initial setups from SYSTEM SETUP screen. Any change of the settings in ADTSERVER is protected by the Master level of password.

MONITOR SCREEN

Here, you can monitor the current operating status of the ADTSERVER for system trouble shooting purpose.



FREQUENCY
Sampling speed rate in Hz per Channel

POINTS
Number of sampled points per cycle.

BUFFER CURRENT INDEX
Total number of data stored in buffer per a cycle.

RESET INPUT
Reset Input Indicator. Turn to red color when there is reset input.

STROKE COUNT
Displays stroke count after the system is powered on.

WINDOW TIME (Only applicable to no Resolver Model)

Displays current Window Time setting.

OPERATING STATUS INDICATOR

IDLE
This indicates that press slide position is out of look window and ADTSERVER is in idle.

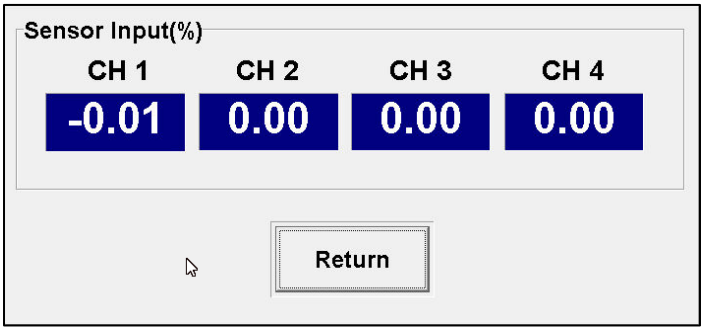
READING
This indicates that press slide position is within look window and ADTSERVER is sampling data.

OPERATING MODE INDICATOR

OPERATING MODE INDICATOR indicates the system's current operating mode. Green background color shows the currently active mode.
Note: Auto means Monitor mode.

SENSOR CALIBRATION SCREEN

Click Calibration button to view a Sensor Calibration screen. You can check the sensor balance and current gain(CAL) precent values.

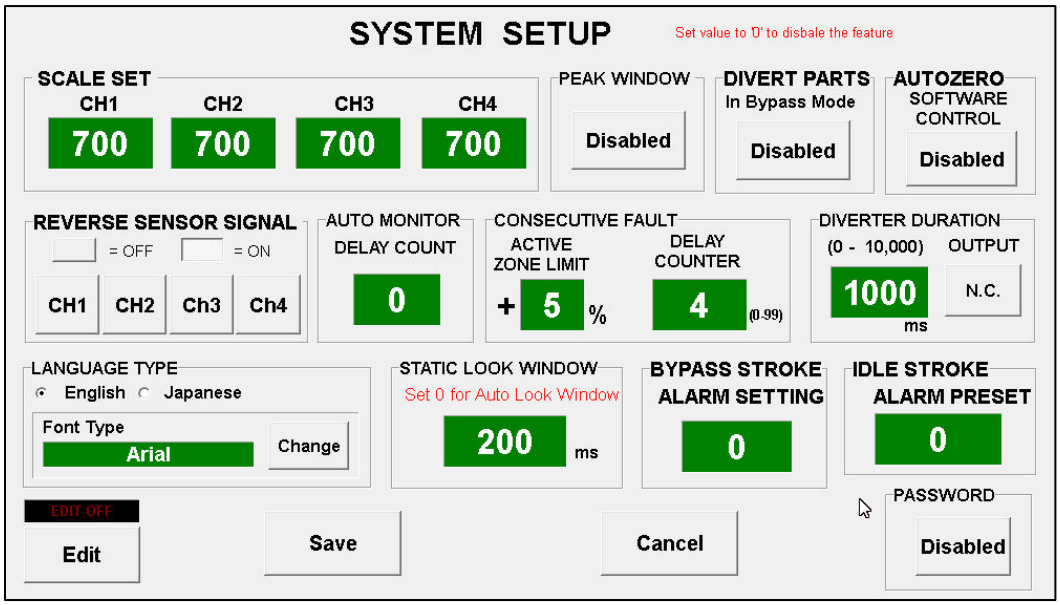


This screen is to help calibrating the PTM-1/CLM-1 module to get a proper reading from the load sensors connected. Each number is the precent values from PTM-1 track out signals for each channel. It displays sensor balance position if the PTM module's function switch is in OFF position and Cal percent value if the switch is in CAL position.

For details about PTM function switches, please refer to Calibrating PTM Module section of this manual.

SYSTEM SETUP SCREEN

The SETUP screen is where you can configure the initial settings for the system. To make any changes of the settings, Master level of password is required to turn on the Edit Enable mode.



SCALE SET

Default Scale values for Piezo series are set to 267. We recommend using this value as your scale set. This will scale the peak load output value to match with the sensor voltage output. For example, if Ch1 peak shows 157, it means the sensor peak output from PTM Piezo module is 1.57V.

PEAK WINDOW (Enable/Disable)

If you are interested in monitoring certain part of the signature to capture the peak tonnage instead of the entire signature, enable PEAK WINDOW option.
When PEAK WINDOW is enabled, you can adjust the monitoring area by using ALARM WINDOW. The Trend alarm and Tracking alarm will only apply to the PEAK WINDOW area. However, High-Capacity alarm still looks for the actual peak tonnage of entire signature.

DIVERTER DURATION

Enter a time in msec to adjust the duration how long the Diverter output stays on. When Trend/ tracking/ capacity alarm condition happen, the diverter output turns on for given duration.
You can choose the Diverter output type to be either Normally Open (N.O.) or Normally Closed (N.C.)
The diverter works for any High/Trend/Tracking alarm condition regardless of the Consecutive fault Delay counter settings.

By setting the duration to '0', the output becomes latching output. When any alarm condition occurs, the output gets actuated and stays until Alarm reset button is pushed. By setting the duration to '0', you can use the diverter output as secondary alarm output as well.

CONSECUTIVE FAULT DELAY COUNTER

Enter the number of consecutive fault strokes to stop the machine.
When the Delay Counter is set larger than 1, when the Trend and/or Tracking alarm condition occurs, alarm output does not engage until the alarm condition persists consecutively for the for the duration of the set cycle.

For example, if the "Consecutive Fault delay counter " is set to 3, If any trend/tracking alarm conditions happens 3 times in a row consecutively, the monitor would triggers the Alarm output. However, if Trend/tracking alarm condition occurs for 2 consecutive strokes but no alarm condition in 3rd stroke, the delay counter reset to 0 and the machine would run continuously without interruption.

Note that regardless of the delay counter set, the diverter output is always activated when the monitor detects any alarm conditions.

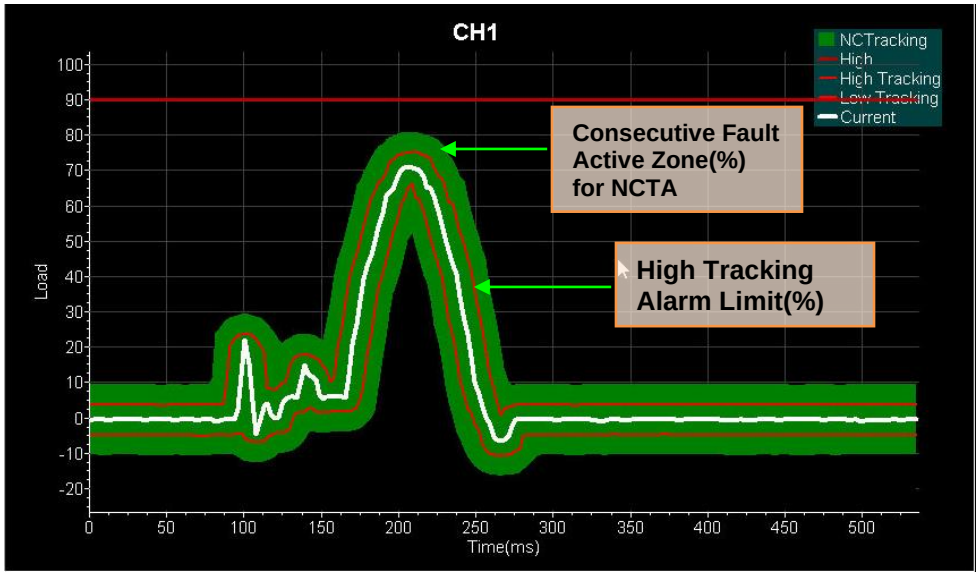
* In case of High alarm, the monitor will trigger the alarm output relay right away regardless of the Consecutive Fault delay counter setting.

CONSECUTIVE FALUT ACTIVE ZONE (%) for NUISANCE COMPENSATION TRACKING ALARM (NCTA)

When the Consecutive Fault Delay Counter is set 2 or higher and the ACTIVE ZONE is set higher than 0, the green zone appears enveloping Tracking alarm bands by percent set. The area of the green zone outside the tracking bands is the ACTIVE ZONE where the Consecutive Fault Delay is being counted. If current load signal exceeds the Tracking bands but stays within the Active Zone(Green), the Consecutive Fault starts to count and the counter reaches the Consecutive Fault Delay set, it trips the tonnage fault output. However, If the current load signal exceeds ACTIVE ZONE area, tonnage alarm faults occur regardless of the Consecutive Fault Delay counter set.

By utilizing CONSECUTIVE FAULT DELAY and the ACTIVE ZONE setting, you can enable NCTA (NUISANCE COMPENSATION TRACKING ALARM) feature.
NCTA feature is useful if your load signal has small popcorn noise high enough to break the tracking alarm bands occasionally causing nuisance faults. You can set the ACTIVE ZONE high enough to cover the popcorn noise level while keeping the normal Tracking Tolerance limit. As long as the noise spike does not exceed the ACTIVE ZONE consecutively to the delay count set, these noise spikes will be filtered from triggering tracking alarm preventing nuisance fault. However, the moment the load signal exceeds the ACTIVE ZONE, the tonnage fault occurs immediately to stop the machine.

NOTE: The diverter output gets always engaged upon any Tracking or trend alarm condition regardless of the CONSECUTIVE FAULT DELAY or ACTIVE ZONE set and whether the fault condition stops the machine or not.



STATIC LOOK WINDOWS

You can manually set the fixed look window duration regardless of the CAM timing input duration. The monitor triggers the beginning of the look window as the CAM signal goes high, then the end of look window is determined by the time value set in millisecond. This can help trouble shooting sensor installation issue by setting large enough window time to capture multiple strokes in one screen. It helps finding any abnormal sensor output outside the stroke area where normally do not get monitored.

Setting Static look window to '0' enables Auto look window timing which uses CAM/proxy On input duration as the look window time duration.

AUTO MONITOR DELAY COUNTER

Enter the number of strokes for the monitor to switch the mode from Bypass to Learn/Monitor mode automatically. While the mode is in Monitor/Learn mode, the mode switches back to Bypass mode automatically if the machine is stopped for 5 seconds or longer. Setting the value to '0' disables this feature.

BYPASS STROKE ALARM SETTING

Enter the number of stroke that the machine is allowed to run continually while the mode is in Bypass. Setting the value to '0' disables this feature.

IDLE STROKE ALARM SETTING

Enter the number of stroke that the machine is allowed to run without parts going through. Once the idle stroke reaches to preset count, IDLE Stroke Alarm occurs and drops the alarm output relay. If the monitor detects any part in during stroke, the current idle stroke counter resets back to 0. Setting the value to '0' disables this feature.

*This value can be adjusted in Alarm setup screen as well.

DIVERT PARTS IN BYPASS MODE

Enable this feature activates the Diverter output to divert all the parts made while the mode is in Bypass.

REVERSE SENSOR SIGNAL

It reverses the polarity of the sensor signal input per channel. This is useful if there is no other way to flip the polarity of the sensor wire connection when the load signal looks to be is reversed.

AUTO ZERO SOFTWARE CONTROL

When enabled, Autozero of sensor balance is controlled by Software instead of hardware level of PTM-1 module. PTM-1 modules' toggle switch must be in OFF position to enable this option. This also woks conjunction with IS CAM REVERSE=1 in the TMonitor.INI file to run the monitor in reversed CAM/Proxy input signal.

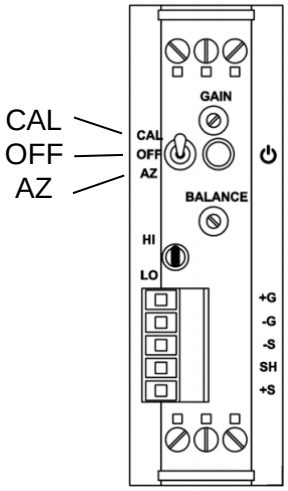
SAVE

Click SAVE button to save any configuration changes on this screen for ADTSERVER to take effect.

CANCEL

Click on CANCEL button to cancel any configuration changes on this screen and return to previous screen.

CALIBRATING PTM MODULES



1. Move the 3 position switch of the PTM module to Off position
2. Adjust ‘Balance’ potentiometer to show ‘0’ on the Calibration screen for each module.
3. Move 3 position switch of the PTM module to CAL position
4. Adjust “Gain” potentiometer to show ‘50’ on the Calibration screen for start.
5. Move 3 position switch of the PTM module to AZ position
6. Go back to main tonnage screen.

7. Make a hit on load cell to generate known tonnage.
8. Get calculated new Cal value = (Load cell reading / PTM tonnage reading) * 50
9. Move 3 position switch of the PTM module to CAL position
10. Adjust “Gain” potentiometer to show the new calculated CAL value on the Calibration screen.
11. Move 3 position switch of the PTM module to AZ position
12. Go back to main tonnage screen.

13. You can repeat the step 7 – 12 until to obtain satisfactory CAL value.

SYSTEM SPECIFICATIONS

1. 100-240 VAC input power source @ 0.125 Amp.

2. Automatic Zero Balance (Auto-Zero)

3. 1/2/4 channel load-strain gauge input utilizes 175 - 700 ohm nominal bridge resistance. Or Piezo Sensor

4. *24VDC-Cam/Prox/PLC input

5. Hi/Lo Gain Range (1 meg/140K)

6. 24VDC I/O
   2 Solid State inputs : 10-30 VDC
   2 Relay outputs : 10-30 VDC or 100~240AC

7. A/D Sampling Rate: Up to 10,000 sample/s per channel

8. A/D resolution: 16Bit

9. Speed Range: 6 - 700SPM

10. 1 Ethernet port.

11. Interface Display
    7” LCD Display with 840x480 Resolution w/ Capacitive Touch Screen.
    Windows 10 IOT Enterprise with UWF enabled for OS protection
    Dual Drive: 42GByte + 16GByte

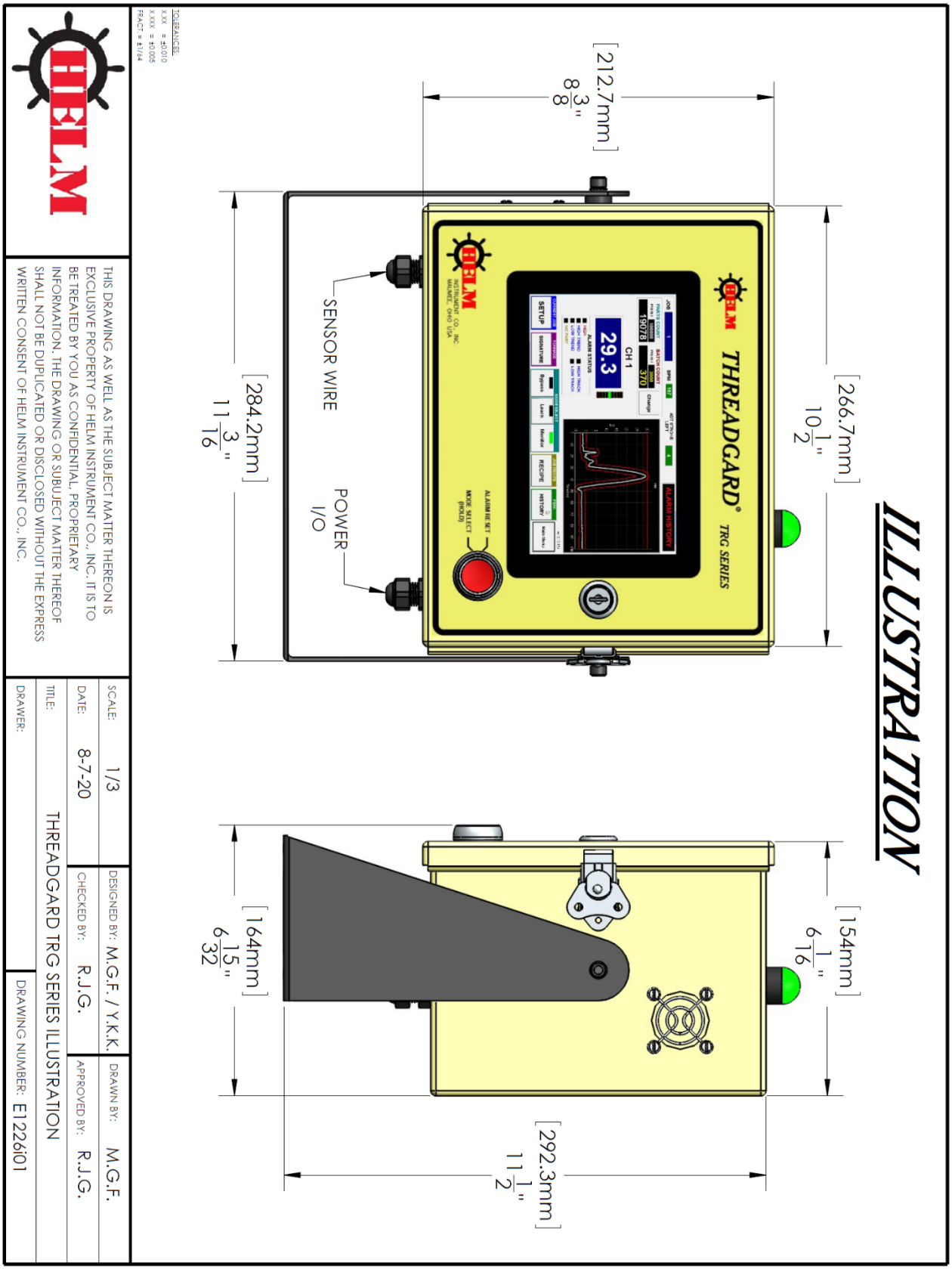


ILLUSTRATION
[266.7mm] 10 1/2"
[212.7mm] 8 3/8"
[284.2mm] 11 3/16"
SENSOR WIRE
POWER I/O
THREADGARD TRG SERIES
[154mm] 6 1/16"
[164mm] 6 15/32"
[292.3mm] 11 1/2"
TOLERANCES:
X.XX = ±0.010
X.XXX = ±0.005
FRACT = ±1/64
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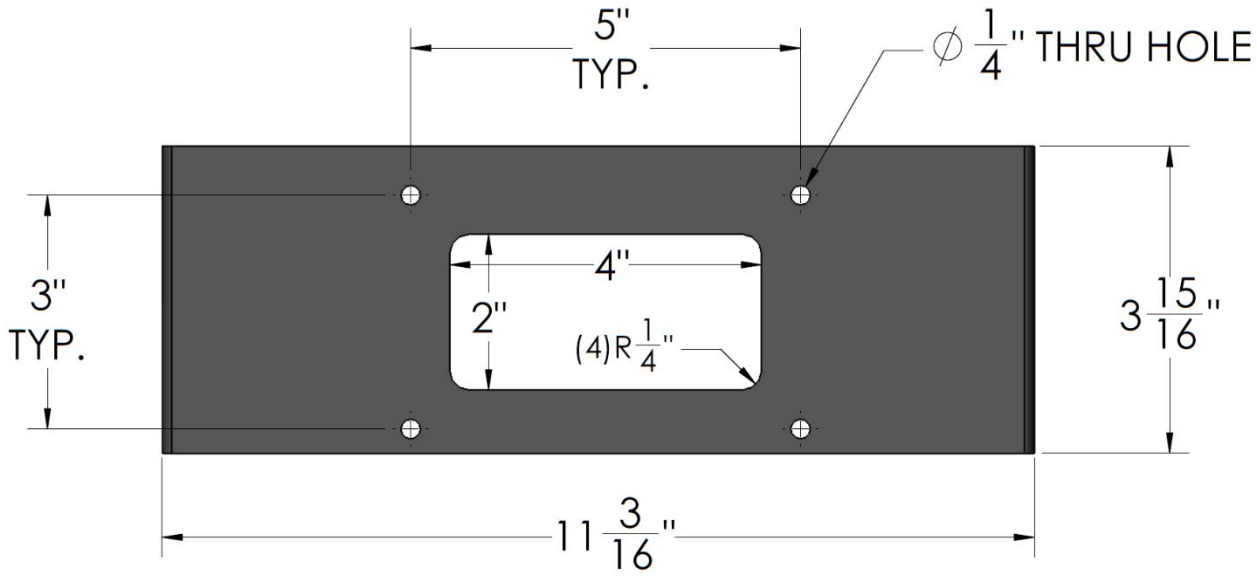
SCALE: 1/3
DESIGNED BY: M.G.F. / Y.K.K.
DRAWN BY: M.G.F.
DATE: 8-7-20
CHECKED BY: R.J.G.
APPROVED BY: R.J.G.
TITLE: THREADGARD TRG SERIES ILLUSTRATION
DRAWER:
DRAWING NUMBER: E1226i01

NOTES:
1. MOUNTING BRACKET IS FOR THREADGARD TRG SERIES ENCLOSURE
2. MOUNTING BRACKET CAN BE INSTALLED FORWARD OR BACKWARD DEPENDING ON FRONT FACE ANGLE

MOUNTING BRACKET HOLE DIMENSIONS



BOTTOM FACE

TOLERANCES:
X.XX = ±0.010
X.XXX = ±0.005
FRACT. = ±1/64

HELM

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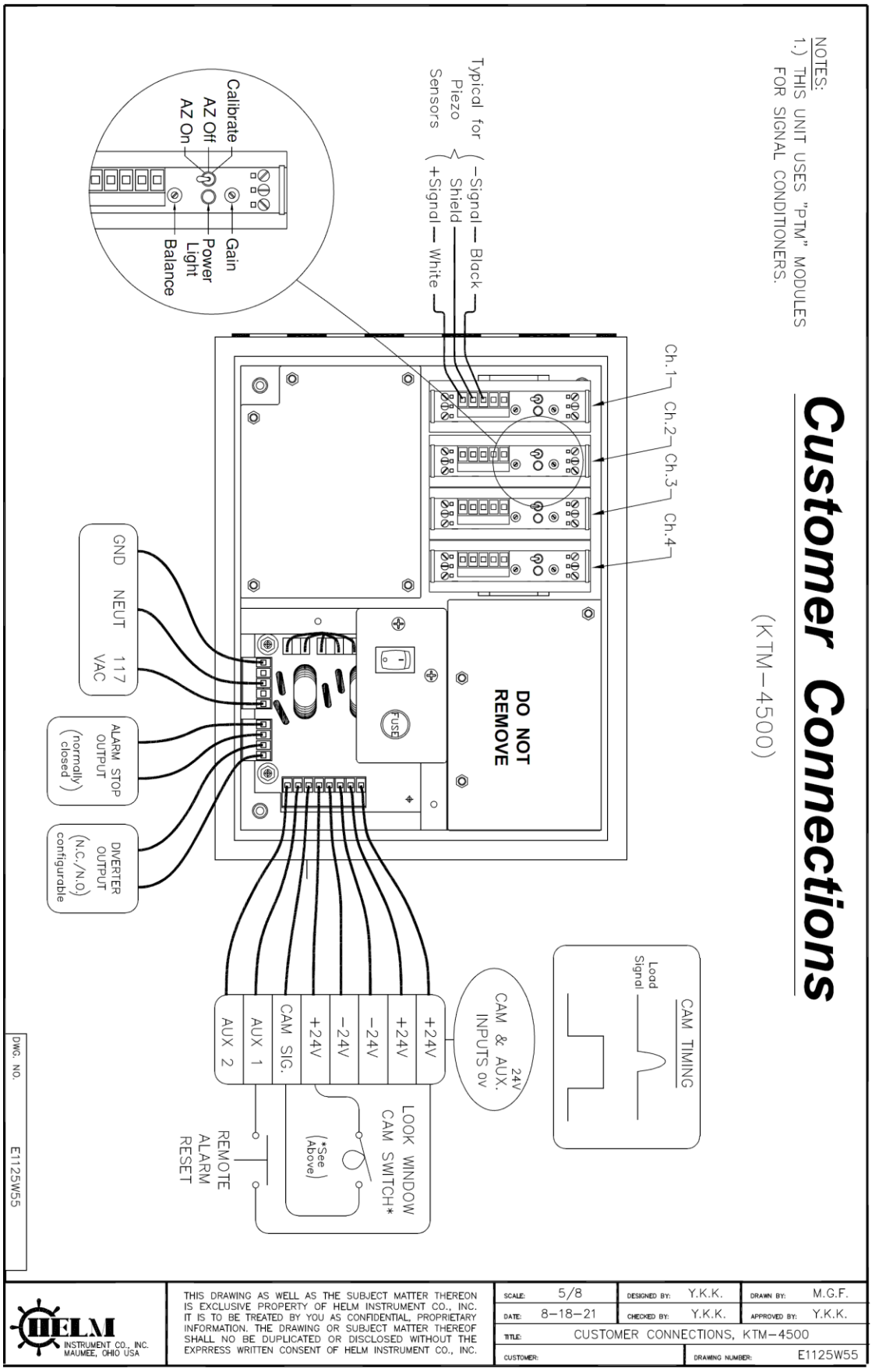
SCALE:	1/2	DESIGNED BY:	M.G.F.	DRAWN BY:	M.G.F.
DATE:	8-28-20	CHECKED BY:	Y.K.K.	APPROVED BY:	R.J.G.
TITLE:	THREADGARD TRG SERIES, MOUNTING BRACKET HOLE DIM.				
DRAWER:				DRAWING NUMBER:	E1226i02


NOTES:
1.) THIS UNIT USES "PTM" MODULES FOR SIGNAL CONDITIONERS.
Customer Connections
(KTM-4500)
Typical for Piezo Sensors
-Signal — Black
Shield
+Signal — White
Calibrate
AZ Off
AZ On
Gain
Power Light
Balance
Ch.1
Ch.2
Ch.3
Ch.4
DO NOT REMOVE
FUSE
GND
NEUT
117 VAC
ALARM STOP OUTPUT (normally closed)
DIVERTER OUTPUT (N.C./N.O.) configurable
CAM TIMING
Load Signal
24V CAM & AUX. INPUTS 0V
+24V
+24V
-24V
-24V
+24V
CAM SIG.
AUX 1
AUX 2
LOOK WINDOW CAM SWITCH*
(*See Above)
REMOTE ALARM RESET
DWG. NO. E1125W55
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SCALE: 5/8
DESIGNED BY: Y.K.K.
DRAWN BY: M.G.F.
DATE: 8-18-21
CHECKED BY: Y.K.K.
APPROVED BY: Y.K.K.
TITLE: CUSTOMER CONNECTIONS, KTM-4500
CUSTOMER:
DRAWING NUMBER: E1125W55