KEMKRAFT
ENGINEERING, INC.

INSTRUCTIONAL MANUAL

SPC DIGITAL INCLINOMETER
MODEL KEI-200A
W/ BAR CODE OPTION

REVISION DATE:

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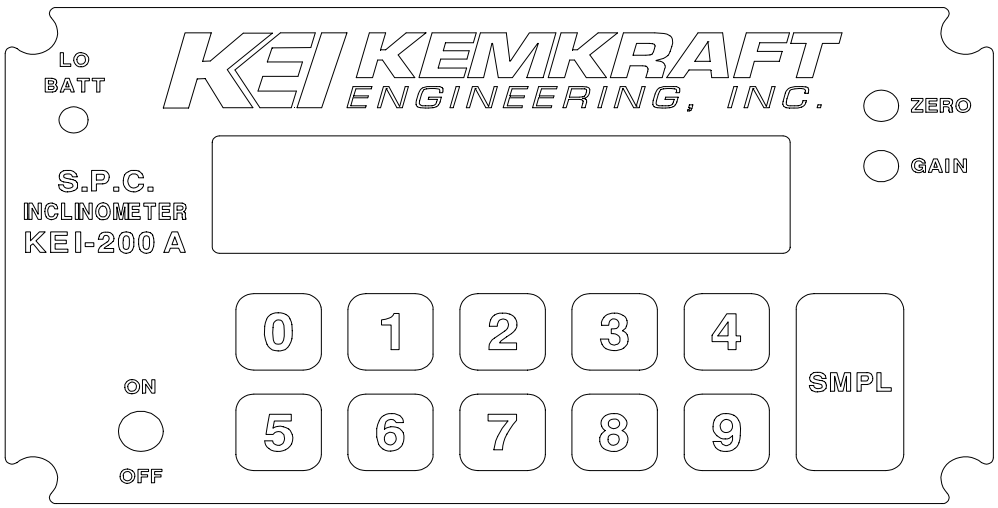
47650 CLIPPER DR. PLYMOUTH TWP., MI. 48170 (734) 414-6500



OPERATION PROCEDURE:

- This unit should be calibrated **once a week minimum**. Refer to the **Calibration Procedure** of this manual.
- The Inclinometer should be fully charged before use. If the unit is used extensively during the day it should be charged at night.
- Turn on the power switch, located on the front panel.
- The unit will first display a 2 second Intro Message of DATE/TIME & Firmware version.
- The unit should display the MAIN MENU as follows:

KEI200-A 0=SETUP
1=RUN 2=DOWNLOAD

- Setup should be performed and set to the users parameters before use:

KEI-200A SET UP PROCEDURE

Press 0 - From the Main Menu to enter Setup Mode. The unit should display as follows:

SETUP 0=CLOCK
1=CONFIGURATION

Press 0 - To set the DATE and TIME (time is 24 hr mode):
Press sample key to continue.
Press 1 - To setup Configuration for:

- **CFG Operator ID:** The operator will be prompted for an ID number before collecting data.

- **CFG Aligmnt M. # :** The operator will be prompted for a machine number before collecting data.
- **CFG Barcode Scan:** The operator will be prompted to scan a barcode or manually enter a VIN number before collecting data.
- **CFG Work Shift:** The operator will be prompted for an operator shift number before collecting data.
- **CFG Slow Powerup:** This parameter enables or disables the slow powerup mode. The slow powerup mode displays the Time & Date when powering up.
- **Vehicle/Tire Type:** The operator will be prompted for a vehicle type code before collecting data.

  Press 1 to set ON
  Press 0 to set OFF
  ST = Status of current setting.
  Press 0 ,1,or Sample key to move to the next screen

*** Note :** Backlight will automatically turn off 1-2 min. after the last keystroke. To reactive press any numeric key.

KEI-200A AUDIT PROCEDURE

Press 1 - To enter Run mode. The unit should display as follows:

XX.X**deg** XXX**smpl**
avg XXX**avct**

XX.X**deg** displays the degree angle value up to a max. of +/-17.5 deg.

smpl: is the sample counter and indicates the amount of samples stored into the units memory. Maximum samples: 249

avg: is the abbreviation for average and will display the average value of the sum of the samples taken when the SAMPLES button is depressed.

avct: is the abbreviation for average counter and will display the amount of averages stored into the units memory each time the AVERAGE button is depressed. Maximum Average count: 250

***Press any key other than the sample key and the unit will return you to the Main Menu.**

Mount the mechanical fixturing accurately onto the vehicle steering wheel. Tests performed should be done on the flattest, smoothest road possible and starting and stopping points should be noted. Drive the vehicle at a slow, constant speed and at the starting point depress

the SAMPLE button. The sample counter will automatically up count. (**When the sample button is pushed at the beginning of the first and second pass, a one second delay timer has been added 11-20- 93 to give the driver a second to straighten the vehicle.**) When the stopping point is reached, depress the SAMPLE button again and the sample taking will cease. Turn the vehicle around and drive at the same constant speed as was in the opposite direction. When the vehicle reaches the previous point that the SAMPLE button was pressed to stop the sampling, press the SAMPLE button again. The sample counter will automatically down count and stop when it reaches 000 SAMPLES. If the test was performed without any flaws, and the values taken you felt were accurate, you will be given the option to either save or not save the AVG value . This will display, in front of AVG, the average value of the sum of samples taken and also display in front of AVGCT the amount of averages saved for future uploading. When the tests are complete and averages have been stored into the units memory, the unit can than be turned off and taken to a computer that has a serial port.

*** "Checksum Error"-** This message indicates that the memory checksum is invalid. The system will initialize the memory to default values after the operator has acknowledged the message.

RS-232-C SERIAL UPLOAD PROCEDURE

Press 2 - To enter the Download menu. The unit should display as follows:

DOWNLOAD 1=BEGIN
0=CLEAR MEMORY

Press 0 - To Clear / Zero data stored in memory. The unit will not automatically clear the stored memory after download, it must be done manually.

Press 1 - To set unit in download mode. Use Kemload to download data stored in memory.

Plug the interface cable supplied with the inclinometer into the side of the unit. Plug the 9 pin computer interface connector into the serial port of the computer. The Kemload Utility Program that was supplied with the inclinometer can be run by double clicking on the KEMLOAD Application. This will open a KEMLOAD Window on the computer. Turn power on to the KEI-200A, from the main menu press 2, then press 1 to put the unit in upload mode. The display will now read, RS232 SRL UPLOAD, XXX AVRGS STORED. The average values are now ready for upload to the computer. To upload the drive audit data averages in the inclinometer, pull down the File menu in the Kemload Utility Program and select download. A file name should be assigned to that set of data by using the Save as... selection in the File menu.

CALIBRATION PROCEDURE:

- Charge unit over night before calibrating.

- Install mechanical steering wheel fixture (with inclinometer permanently mounted onto it) onto a calibration stand that can be adjusted for 0 degrees and some other known value such as 5 or 10 degrees.

- Set the cal. stand to 0 degrees and adjust the ZERO control on the front panel of the inclinometer for 00.0 degrees.

- Set the cal. stand to eg. 10 degrees and adjust the GAIN control on the front panel of the inclinometer for 10.0 degrees.

Repeat the following two procedures until the values are stable.

WARRANTY AND SERVICE INSTRUCTIONS

KEMKRAFT Engineering, Inc. warranties this equipment against defects in workmanship and materials for a period of 90 days from date of signature of release. We will, at our option, repair or replace products which prove defective during the warranty period. No other warranty, expressed or implied, is given. KEI is not liable for consequential damages. Damage caused to the equipment as a result of improper use or abuse, or unauthorized modification of the instrument is not covered under this warranty.

For service contact: KEMKRAFT Engineering, Inc.
47650 Clipper Dr.
Plymouth Twp., MI. 48170
PH: (734) 414-6500
FAX: (734) 414-6599

Barcode SCANNER Option

The KEI-200A was developed to allow the user to scan a Vehicle Identification Number (VIN) of the vehicle that is being audited. This allows the VIN to be stored along with the drive audit average for the vehicle. This information can be uploaded to a P.C. for S.P.C.

OPERATION

The KEI-200A is designed to have the scanner plugged directly into the 9 pin serial port.

1). This port provides power and communication to barcode scanner.
2). This port is also used to upload the stored audit data.

Plug the bar-code scanner into the serial port.

Toggle the power switch, located on KEI-200A the front panel, to turn the unit on. The barcode scanner will beep to confirm power up. The unit should display the following:

KEI200-A 0=SETUP
1=RUN 2=DOWNLOAD

Press 1 - To enter Run mode. The unit should display as follows:

Scan the Barcode
[SMPL] when done

Press SMPL - To enter the VIN number in manually.

Barcode Scanner Gun Option:

Direct the scanner at the desired build sheet VIN and press the trigger. The scanner will emit a visible RED horizontal beam. This beam scans the bar-code. When the scanner has a good scan, a green LED on the unit will blink and the unit will beep. The KEI-200A should display the following:

Barcode Scanner Wand Option:

Place the scanner tip to the left of the desired build sheet VIN and press the trigger. Draw a line with the tip of the scanner across the VIN barcode. When the scanner has a good scan, a green LED on the unit will blink and the unit will beep.

The KEI-200A should display the following:

VIN XXXXXXXXXX
Save? 1=Yes 0=N0

Press 0: To discard the scanned VIN number. The saved Drive Audit Data will not have a VIN number.
Press 1: To apply the scanned VIN number to the Drive Audit data.

The KEI-200A is now ready for a Drive Audit. (Refer to Operating Procedure.)

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Barcode Scanner Settings

NOTE: The scanners are already programmed to work correctly with the KEI-200A if purchased through KEMKRAFT ENGINEERING.

QuickScan 6000 Hand-Held Laser Scanner

1. Programming Guide Booklet (RS-232 Interface Section)
2. Set Baud Rate- 9600
3. Set 8 Bit Data
4. Set 1 Stop Bit
5. Set Parity (NONE)
6. Disable CTS/RTS
7. Disable Xon/ Xoff
8 Set 20 ms Intercharacter Delay
9. Set Very Low power Mode

Scanteam 2400 Hand-Held Wand Scanner

1. User's Guide
2. Initialize word length 8 Data Bits, 1parity, 1 Stop
3. Set Parity (NONE)
4. Set Disable CTS/ RTS
5. Set 20 ms Intercharacter Delay

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*** PASSWORD PROTECTION OPTION ***

KEI-200A SET UP PROCEDURE

Press 0 - From the Main Menu to enter Setup Mode. The unit should display as follows:

0=CLOCK 1= CONFIG
2=SET PASSWORD

Press 0 - To set the DATE and TIME (time is 24 hr mode):
Press sample key to continue.
Press 1 - To setup Configuration for:

- **CFG Operator ID:** The operator will be prompted for an ID number before collecting data.
- **CFG Aligmnt M. # :** The operator will be prompted for a machine number before collecting data.
- **CFG Barcode Scan:** The operator will be prompted to scan a barcode or manually enter a VIN number before collecting data.
- **CFG Work Shift:** The operator will be prompted for an operator shift number before collecting data.
- **CFG Slow Powerup:** This parameter enables or disables the slow powerup mode. The slow powerup mode displays the Time & Date when powering up.
- **Vehicle/Tire Type:** The operator will be prompted for a vehicle type code before collecting data.

Press 1 to set ON
Press 0 to set OFF
ST = Status of current setting.
Press 0 ,1,or Sample key to move to the next screen

Press 2- To Set a Password for the configuration menu. This password is required to make any changes to the configuration menu.

To turn the password protection **OFF** for the configuration menu, the user has to set the password again and when the user is prompted to enter a new password press the sample button. This will disable the password protection.

*** Note :** Backlight will automatically turn off 1-2 min. after the last keystroke. To reactive press any numeric key.

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