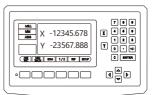
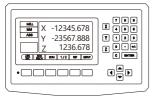
DS50 Digital Readout

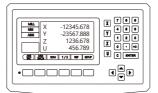
Operation Manual

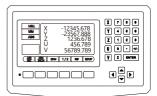
Version: 1.0





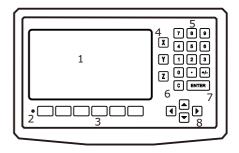






Key Layout

- 1. LCD Display
- 2. Power LED
- 3. Function Keys
- 4. Axis Key
- 5. Numeric Keys
- 6. Cancel Key
- 7. Enter Key
- 8. Arrow Key



Safety

Dear Users:

Thank you for purchasing our Digital Readouts. The digital readout is Applicable for the machines such as millers, lathes, boring machines, grinding machines and EDM ,etc.. Read all the instructions in the manual carefully before used and strictly follow them. keep the manual for future references.

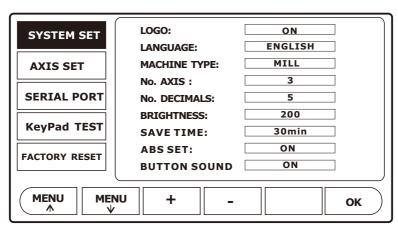
Safety attention:

To prevent electric shock or fire, moisture or directly sprayed cooling liquid must be avoid. In case of any smoke or peculiar smell from the digital readout, please unplug the power plug immediately, otherwise, fire or electric shock may be caused. In such a case, do not try to repair it, please contact distributors

Digital readout is precise measuring device used with an optical Linear scale. When it is in use, if the connection between the Linear Scale and the digital readout is broken or damaged externally, incorrect measuring values may be resulted. Therefore, the user should be careful.

Do not try to repair or modify the digital readout, otherwise, failure fault or injury may occur. In case of any abnormal condition, Please contact distributors.

If the optical Linear Scale used with the digital readout is damaged, do not use a Linear Scale of other brand. Because the performance, specification and connection of the products of different and can not be connected without the instruction of specialized technical personnel, otherwise, trouble will be used to the digital readout.



Note: (1)use MENU MENU to select menu between system set AXIS SET SERIAL PORT

(2)use Arrow keys to select items

(3)use + to change the value of the selected item.

LANGUAGE: ENGLISH / TURKCE / DEUTSCH / PORTUGUES

MACHINE TYPE: MILL / LATHE / GRIND / EDM

No. AXIS: 1/2/3/4/5

No. DECIMALS: 4/5 (only useful @ INCH unit)

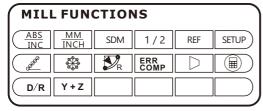
BRIGHTNESS: (Dark) 1 - 255(Bright)

SAVE TIME:

ABS SET: OFF(don't Clear Zero and Enter Dimension)

BUTTON SOUND: ON / OFF Button Buzzer

MACHINE TYPE:



LATHE FUNCTIONS					
$\frac{ABS}{INC}$	MM INCH	SDM	1/2	REF	SETUP
	Y + Z	D/R	ERR COMP	TOOLS	

EDM FUNCTIONS				
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	SDM	1/2	REF	SETUP
	EDM	ERR COMP		

GRIND FUNCTIONS					
ABS INC	MM INCH	SDM	1/2	REF	SETUP
			ERR COMP		

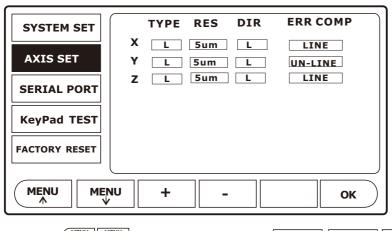
SETUP - AXIS SET



No.Axis: 1 / 2 / 3 / 4 / 5



Parameters Setup - AXIS SET



Note: (1) use MENU MENU to select menu between SYSTEM SET AXIS SET SERIAL PORT

(2) use Arrow keys to select items

(3) use + - to change the value of the selected item.

Type: the Type of the Scale, L (linear Scale) and R(Rotary Scale)

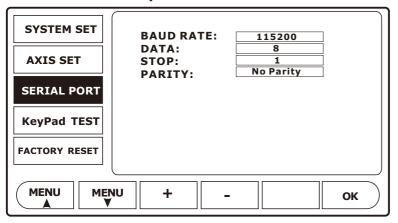
RES: Resolution of the scale . you can press + - to change the value.

DIR: Direction, L for Left direction and R for Right direction. **ERR COMP:** Error compensation, Linear for linear compensation and UN-Linear for un-linear compensation.

Serial Port, KeyPad Test, Factory Reset

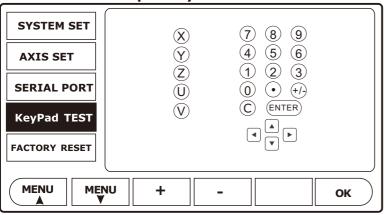
SETUP

Parameters Setup - Serial Port



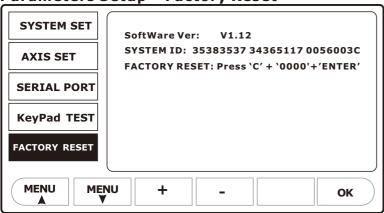
Setup the RS-232 Serial Port

Parameters Setup - KeyPad Test



You can check the DRO keyPad

Parameters Setup – Factory Reset

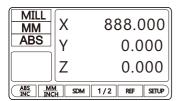


Press 'C' + '0000' +'ENTER' for Default

Clear Zero, Enter Dimension, ABS, MM

ABS INC MM INCH

 Clear Zero: Set the current position to Zero For example: press I c set the X coordinate to Zero





MILL	X	0.000
ABS	Υ	0.000
	Z	0.000
ABS MM INC INC	M SDM	1/2 REF SETUP

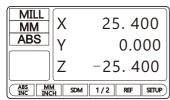
2. Enter Dimensions:
For example: Press X **- 7 8 9 • 5 ENTER to enter the X Dimension.







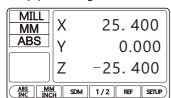
3. Inch / MM Display conversion:



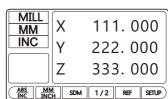


MILL	X	1.0000		
ABS	Y	0.0000		
	Z	-1.0000		
ABS MM SDM 1/2 REF SETUP				

4. ABS / INC (Absolute / Incremental) Display conversion:
Description: There are two sets of basic coordinates display mode ,
ABS and INC. the operator can store the workpiece datum
(zero position) in ABS coordinate, the switch to INC coordinate for continue machining operations. ABS and INC can be simply toggle by pressing the Function key

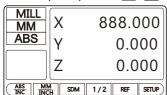




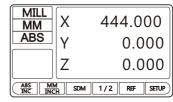


5. **1/2 Function:**

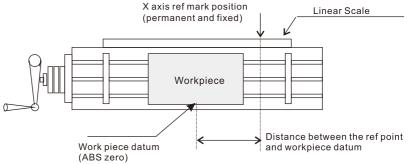
For example: press X 1/2 set the X coordinate to Half.





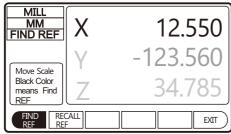


6. Ref Datum Memory function: This function allows the operator to store the workpiece zero position in memory. If the machine is turned off or there is a power failure, the zero reference point can be recovered.



After power failure, the workpiece datum can be recover by presetting this distance from the ref mark position.

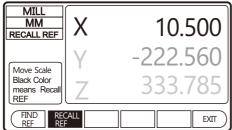
6.1 Store the workpiece zero position in memory(FIND REF function)



Note: Green display Color indicate not Find the Ref.

Move the workpiece, Black display color indicate Find the Ref.

6.2 Recover the workpiece zero position (RECALL REF Mark function)



Note: Green Color means not Recall Ref.

Move the workpiece, Black display color indicate find REF.

After REF, operator can continue their work as before

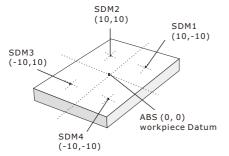
200 sets SDM

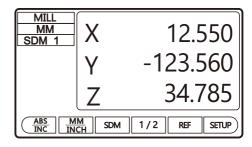


7. 200sets SDM (Sub Datum Function)

There are three kinds of coordinate systems. ABS(1set), INC(1set) and SDM Mode(200sets). It is a good way to store the datum of workpiece in ABS Mode and to machine in INC or SdM Mode. INC Mode is independent of ABS, it is not relative to ABS datum. However, all Sdm coordinate are relative to ABS coordinate, the SDM position will shift together with the ABS zero position change.

Application to workpiece that have more than one datums





There are two methods to setup the all Datums.

Mode1(Zeroing when reaching position):

- 1. Set the origin of ABS
- 2. In ABS mode, move the machine worktable to coordinate(10,-10) then press ▲▼ arrow key to enter SDM 1 Mode, clear X, Y zero,SDM1 OK.
- 3. Press ∰ key to ABS Mode. move the machine worktable to coordinate (10,10), press ▶ arrow key to enter SDM2, clear X,Y zero. SDM2 OK.
- 4. Press key to ABS Mode. move the machine worktable to coordinate (-10,10), press arrow key to enter SDM2, clear X,Y zero. SDM3 OK.
- 5. Press ♣ key to ABS Mode. move the machine worktable to coordinate (-10,-10), press ▶ arrow key to enter SDM2, clear X,Y zero. SDM4 OK

Mode2: (Directly input SDM zero)

Note: the input value and the coordinate value is contrary.

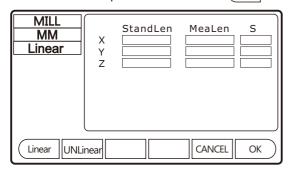
Reason: the TOOI is at the origin of ABS Mode. As the input value is contrary to the coordinate. Retract the axes until the displays read 0. the TOOL can be placed exactly at the origin of SDM.

- 1. Set the origin of ABS
- 2. Press arrow key to enter SDM 1 Mode, Press SDM X 10 SDM to enter X (10)coordinate ,press SDM Y 10 SDM to enter Y (-10)coordinate. SDM1 OK.
- 3. Press arrow key to enter SDM 2 Mode, Press SDM X 10 SDM to enter X (10)coordinate ,press SDM Y 10 SDM to enter Y(10)coordinate. SDM2 OK.
- 4. Press → arrow key to enter SDM 3Mode, Press SDM X → 1 0 SDM to enter X (-10)coordinate, press SDM Y 1 0 SDM to enter Y(10)coordinate. SDM3 OK.
- 5. Press arrow key to enter SDM 4 Mode, Press SDM X 10 SDM to enter X (-10)coordinate, press SDM Y 10 SDM to enter Y (-10)coordinate. SDM4 OK.

Linear & Un-Linear Compenstion, Calcuator



8. Error compensation: Press COMP function key.
8.1 Linear compensation: Press Linear function key



Press Linear Key ,The display is shown as Left.

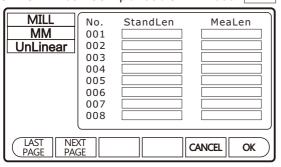
Press () to focus on different item.

Note: StandLen: means Stand Length MeaLen: Means Measure Length

Untinear Parameters Setup

CANCEL

8.2 UnLinear Compensation: Press UNLinear



function key

OK

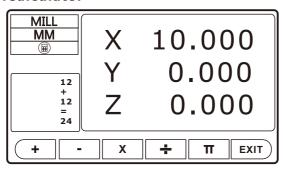
Press Whitness Key ,The display is shown as Left.

Press to focus on different item.

Note: StandLen: means Stand Length MeaLen: Means Measure Length

| Set | NEXT | PAGE | Goto Un-linear Parameters Setup | CANCEL | OK

9. Calculator



Press () Key to enter Calculator

Press () can see all operators as follow

C cancel key

ENTER equal sign key **EXIT** Exit the calculator

For Example:

(1) 12 +12 = 24: 1 2 + 1 2 ENTER

(2)SIN 45 = 0.707107: 4 5 Sin ENTER

(3) ArcSin0.707 =44.9999:: 4 5 Sin ENTER Sin 2nd ENTER

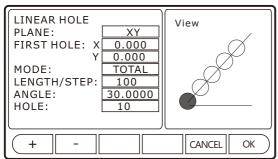
The value computed from the calculator can be transfer to the axis, Operator can only press the X or Y or Z key.

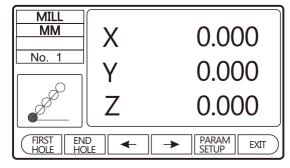
LINEAR HOLE, PCD





10. LINEAR HOLE: Press 🔏 function key.

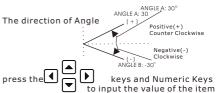




LHOLE Parameters Setup Panel

There are two modes to carry out the Linear Drilling

- TOTAL Mode: Total Length of oblique line. the distance of the centers of the starting hole to the ending hole.
- 2. STEP Mode: STEP Length of two adjacent holes



+ - change the value of the item

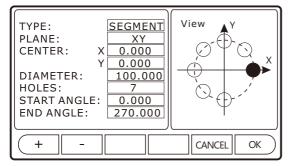
CANCEL Exit the Linear Hole

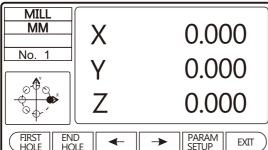
OK Goto Linear Holes Machine

LHOLE Working Panel



11. PCD: Press function key

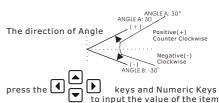




PCD Parameters Setup Panel

There are two modes to carry out the PCD Drilling

- 1. FULL Mode: all circle
- 2. SEGMENT Mode: segment of a circle.



+ - change the value of the item

CANCEL Exit the PCD function

OK Goto PCD Machine

PCD Working Panel

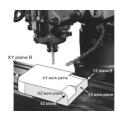
FRST | END | Select No. Hole | PARAM | Goto Parameters setup |

EXIT | Exit PCD Function |

ARC

12. R function:





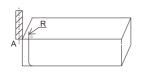
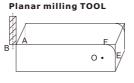
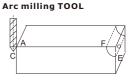


Figure A





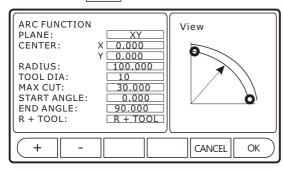
Coordinate system of machine

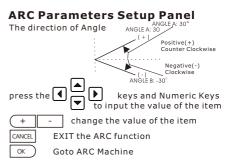
Figure B

Figure C

Install and fix the workpiece in accordance with Figure(A,B,C) and set the parameters.

- 1. Move the TOOL to the start point and Clear zero every axis.
- 2. Press the Key to enter ARC function Parameters Setup Panel





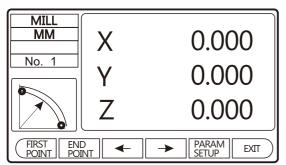
Note:

* CENTER is refer to the position of the center of an arc relative to that of the TOOL at TOOL setting and clear.

When Plane XZ or YZ is machined

As shown in figure B. It refers to the position of Point O at the center of the Arc relative to Point B of the TOOL when a planar milling TOOL is used.

As shown in figure C. It refers to the position of point O at the center of the Arc relative to Point C of the TOOL when an Arc milling TOOL is used.



ARC Function Working Panel



D/R, Y+Z, Taper, TOOLS

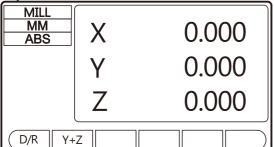
D/R

Y + Z



TOOLS

13. D/R Function

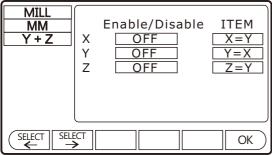


D/R

Press Mey ,The display Mode of X axis is switched between Radius and Diameter. When in Diameter Mode , the color of display is Red.

When in Radius Mode , the color of display is Black.

14. Y+Z Function



Y+Z

Press Y+Z Key ,The display is shown as Left.

Press (to focus on different item.

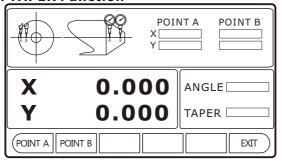
change the value of item

OK, and exit Y+Z function.

Note:(1) when Enable/Disable is ON , the followed Item is enable. (2)X= Y+Z indicate the Y value Plus Z value

will display in X axis

15. TAPER Function





Press D Key ,The display is shown as Left.

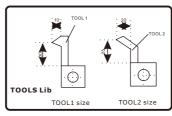
Move the Workpiece to POINT A , press FOINT A the coordinate of POINT A display, Move the Workpiece to POINT B, press the coordinate of POINT B display, and Calculate the value ANGLE and TAPER will be displayed.

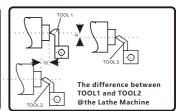
EXIT Exit the TAPER function

16. TOOLS Function

It always needs different TOOL when processing different parts. For convenient operation. the DRO has the function of 200 sets TOOL Libs.

Note: Only when the lathe is equipped with the tool setting block, the 200 sets TOOL Libs can be used.

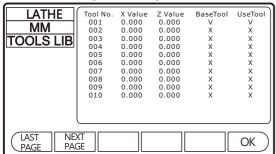




TOOLS, EDM

TOOLS **EDM**

17. TOOLS LIB (continue)



TOOLS Lib Parameters Setup Panel

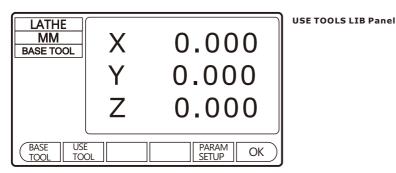
Press TOOLS key, then press PARAM key to enter TOOLS Lib Parameters SETUP Panel. X Value and Y Value of TOOL are TOOL size. BaseTool is the Base TOOL, After Base TOOL setting, zero X axis and z axis, The set zero of absolute coordinate.(ABS)

Use 🜗 key to focus on different TOOL ₹ and input Value.

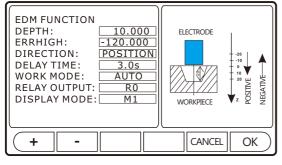
When in BaseTool and UseTool form, use ENTER key to change the state X or V.

goto next Page or go back to last page

OK and Exit the TOOL Lib parameter setup



18. EDM **EDM Parameters Setup Panel**



Press EDM key to enter EDM function kevs and numeric kevs \blacktriangleright to input the value

DEPTH -- Machining depth ERRHIGH - Negative fireproof Height DIRECTION -- machining direction (POSITIVE /

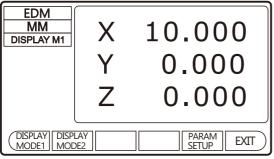
NEGATIVE) DELAY TIME - the time of relay ON when EDM work done. (unit: s)

WORK MODE - AUTO / STOP Mode RELAY OUTPUT - R0 / R1

DISPLAY MODE: there are two display mode, In DISPLAY MODE1 the X-axis will display machining depth target value, Y-axis will display value has been to be depth, and Z-axis will display self-position real time value.

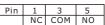
In DISPLAY MODE2, all the X, Y, Z axis will display themself-position real time value.

EDM working Panel (Display Mode 1)



DISPLAY DISPLAY MODE1 MODE2 Select the Mode of display Goto Parameters setup EXIT Exit EDM Function





Specifications of Digital Readout

Features:

1. Supply Volatge range: AC80V -- 265V; 50 -- 60Hz

2. Power consumption: 10VA

3. Operating temperature: -20° - 50°

4. Storage Temperature: -30°- 70°

5. Relative humidity: < 90% (@25)

6. Max coordinate number: 1,2,3,4,5

7. Readout allowable input signal: TTL square wave / EIA422

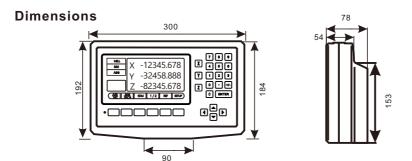
8. Allowable input signal frequency: < 5MHz

9. Max resolution of digital display length: 0.1um

10. Max resolution of digital display angle: 0.0001/PULSE

11. Weight: 2.5 kg

12. Dimensions: 300 x 192 x 78 mm³



InterFace Circuit and output signals:

