DS10-1V MultiFunction

DIGITAL READOUTS

Operation Manual

(Version 2.0)

ООО «ЯНИ-МОТОРС»

Комплектный электропривод
Двигатели постоянного тока
Тахогенераторы и энкодеры
Модернизация станков с ЧПУ

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Dear Users:

Thank you fo r purchasing DS10- 1V series 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 Delos or distributors.

Digital readout is a 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 Delos or distributor.

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 caused to the digital readout.

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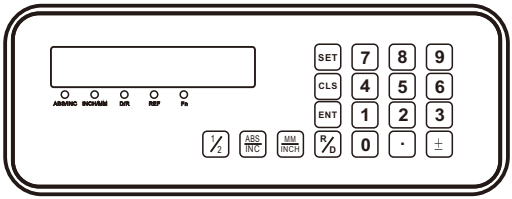
1. Operation Instructions

1.1 Illustration of Panel and key board



Key to realize processing operation and parameter programming On the operation panel; According to different processing operations, the single key has double functions, some functions need to be two key combination for achieve different operation; Specific operation, please see the processing operation and parameter programming;

1.2 General Operations

1、Zeroing
Press [CLS], Zeroing is to set the current point in normal display ;

2、Toggle Unit between inches and mm
Press [mm/inch], Display unit can be toggled between mm and inch, a mm/inch LED will be appear of the right at the same time; Light indicator is the inches unit; Otherwise, is mm;

3、Absolute/Incremental
Press [ABS/INC], Display coordinate can be toggled between ABS to INC coordinate, A ABS/INC **LED will** appear of the right; Light indicator is the ABS coordinate; otherwise, is the INC coordinate.

1. Operation Instructions

4、Enter coordinate

Preset a value to current position for a designated axis in normal display state; Press [SET] key to input state ; then press data key, Input data value;

5、Linearity Compensation

Press [SET], then [MM/INCH], which indicates the step is to Linear Compensation, then Input the Linear Compensation value . Compensate the linear error to make display value equals to standard value;
The calculation of compensation rectifying coefficient:
(Measurement I Standard value) x 1000.000
Coefficient^
Standard value Example for X axis:
Measurement 200.020mm Standard value 200.000mm
Rectifying coefficient
= (200.020-200) * 1000 /200 =-0.01 mm/m

6、1/2 Function

Set the center of work piece as datum by halving the displayed value. Press [SET], then Press [1/2], in turn to value the axis display value , The position is the work-piece's center.

7、Toggle Between R/D Display Mode

Press[SET]，then press [R/D]，Display the data will be radius and diameter of processing mode, A D/R LED will be appear of the right; Light indicator is the diameter; Otherwise, is the radius。

2.Parameters setting

Note:

Press key [.] to enter initial system and self-check after DRO powers on in 1 second; then Parameters settings display in the arameters window; press [R/D] and [MM/INCH] to select the item you want to change of the step; press [Enter] key to enter the modification program. Press [.] key to Exit.

2.1 PA-00 Select the encoder type: Linear or Rotary Encoder

Parameters: Linear or Rotary
Operations:
Windows displays PA-00 , Press [Enter] key to enter ;
Press [CLS] key to toggle Linear or Rotary ,
Press the [Enter] to confirm your choice
and Windows displays PA-00, Press the [R/D] key to the next step;

2.2 PA-01 Set the resolution for Encoder:

Parameters: 0.1; 0.2; 0.5; 1; 2; 2.5; 5.0; 10.0; for Linear Encoder
and input value for Rotary Encoder
Operations:
Windows displays PA-01 , Press [Enter] key to enter ;
For linear encoder : Press [CLS] key to select the resolution ,
For Rotary encoder: Press [SET] key then press numeric number to input the parameter for rotary encoder; when the input numeric number is positive, the unit is degree; when the input numeric number is negative, the unit is degree/minute/second;
Press the [Enter] to confirm your choice
and Windows displays PA-01,
Press the [MM/INCH] key to the last step;
Press the [R/D] key to the next step;

2.3 PA-02 Set the counting direction of the counter:

Parameters: dir-0 or dir-1
Operations:
Windows displays PA-02 , Press [Enter] key to enter ;
Press [CLS] key to toggle dir-0 or dir-1,
Press the [Enter] to confirm your choice
and Windows displays PA-02,
Press the [MM/INCH] key to the last step;
Press the [R/D] key to the next step;

2.Parameters setting

2.4 PA-03 UART mode type:

Parameters: UArt-0 (BIN format) or UArt-1 (ASCII format)
Operations:
Windows displays PA-03 , Press [Enter] key to enter ;
Press [CLS] key to toggle UArt-0 or UArt-1 ,
Press the [Enter] to confirm your choice
and Windows displays PA-03,
Press the [MM/INCH] key to the last step;
Press the [R/D] key to the next step;

2.5 PA-04 Accuracy adjustment of imperial unit:

Parameters: INCH-4 (4 bits decimal points)
or INCH-5 (5 bits decimal points)
Operations:
Windows displays PA-04 , Press [Enter] key to enter ;
Press [CLS] key to toggle INCH-4 or INCH-5 ,
Press the [Enter] to confirm your choice
and Windows displays PA-04,
Press the [MM/INCH] key to the last step;
Press the [R/D] key to the next step;

2.6 PA-05 Enable soft Limit function:

Parameters: ON (for enable) or OFF(for disable)
Operations:
Windows displays PA-05 , Press [Enter] key to enter ;
Press [CLS] key to toggle ON or OFF ,
Press the [Enter] to confirm your choice
and Windows displays PA-05,
Press the [MM/INCH] key to the last step;
Press the [R/D] key to the next step;

2.7 PA-06 input lower Soft Limit value:

Parameters:
Operations:
Windows displays PA-06 , Press [Enter] key to enter ;
Press [SET] key then press numeric number
to input lower soft limit value;
Press the [Enter] to confirm your choice
and Windows displays PA-06,
Press the [MM/INCH] key to the last step;
Press the [R/D] key to the next step;

2.8 PA-07 input Upper Soft Limit value

Parameters:
Operations:
Windows displays PA-07 , Press [Enter] key to enter ;
Press [SET] key then press numeric number
to input upper soft limit value;
Press the [Enter] to confirm your choice
and Windows displays PA-07,
Press the [MM/INCH] key to the last step;
Press the [R/D] key to the next step;

2.9 PA-08 Restore factory default (PINCoder: 2019)

Parameters:
Operations:
Windows displays PA-08 ,
Press [Enter] key to enter ;
Windows display : " PinCode"
input : 2019 then press [Enter];
Windows display: "CLS---"
and then Windows displays PA-08,
Press the [MM/INCH] key to the last step;
Press the [R/D] key to the next step;

Default Parameters;

3.RS232 communication Protocol

3.1 Transport protocols : 9600, 8, N, 1

(1) single transmit data: Data receiver(PC) transmit “R”(52H) to DRO electronic box which well transmit data single. DRO electronic box receive each 52H, then transmit a set of data (current showing value).

(2) Continuous transmit data: Data receiver(PC) transmit “U”(55H) to DRO electronic box which will transmit data continuous. It will transmit when ever showing value changed.

(3)Stop to transmit data: DRO electronic box received 53H, then stop to transmit data. When enter in continuous transmit data state, it must be transmit 53H to stop it, then can receive other orders.

3.2 ASCII code number format:

[Blank] X [sign-bit][Value][Value][Value][Value][Value][Decimal Point] [Value][Value][Value][Blank] Y [sign-bit][Value][Value][Value][Value] [Value][Decimal Point][Value][Value][Value][Blank] Z [sign-bit][Value] [Value][Value][Value][Value][Decimal Point][Value][Value][Value] [LF 0AH]

Decimal point position unfixed, along with set-up resolution changed, for example:

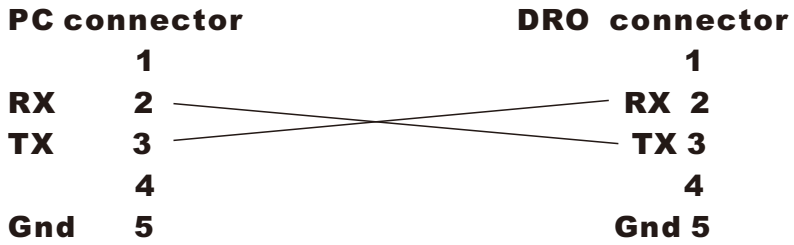
X+1234.567 (resolution = 1,2,5,10) (Decimal point behind three figures)

X+123.4567(resolution = 0.5, 0.1) (Decimal point behind four figures)

X+123.4567 (I/M = I INCH I/M = M METRIC)

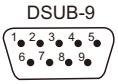
(Inch more than one decimal point compare Metric)

3.3 Transmission line 1.5m wire, the following is the connection method:



4. Relay output

Relay output DB9



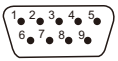
EXP

pin	Color	State
1	Red	ON
2		
3	Yellow	COM
4		
5	Black	OFF
6		
7		
8		
9		

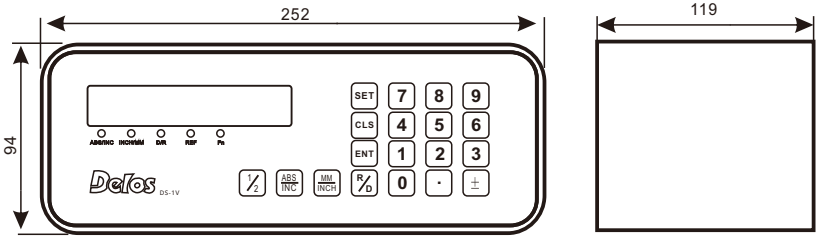
5.Appendix

Mechanical
Eelectrical Features

DSUB-9



pin	PP signal	EIA422 signal
1	—	$\overline{A}$
2	OV	OV
3	—	$\overline{B}$
4	GND	GND
5	—	$\overline{R}$
6	A	A
7	5V	5V
8	B	B
9	R	R

Resolutions for Linear Scale	10--0.1um
Resolutions for Rotary Encoder	0.001--1"
Power Supply	100VAC--230VAC±10% / 15 VA
Axis Display	7 Segment LED H = 17mm
Signal input per axis	A / B quadrature signals
Maximum input frequency	500KHz
Operating Temperature	0^o – 50^o
Storage Temperature	-20^o – 70^o
Relative Humidity	95% (not condensed)
Vibration Resistance	25 m/s^2 (55 – 2000Hz)
Protection Class(EN60529)	IP42
Weight	2.1 Kg

DIMENSIONS