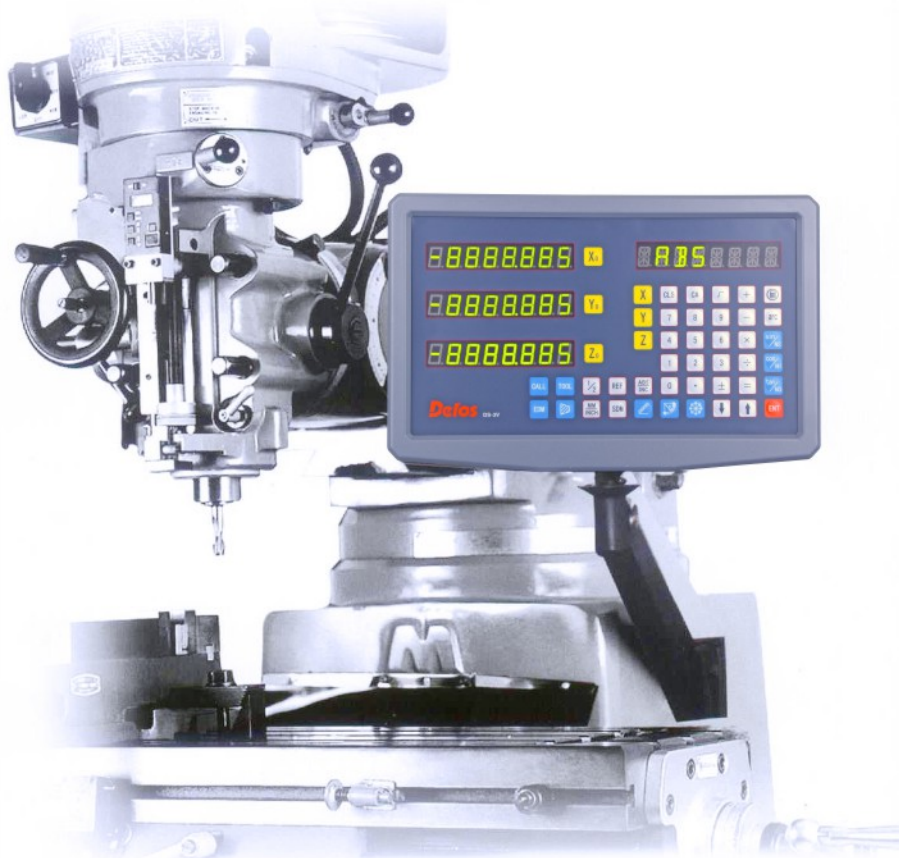


Delos

be professional
on machine tools



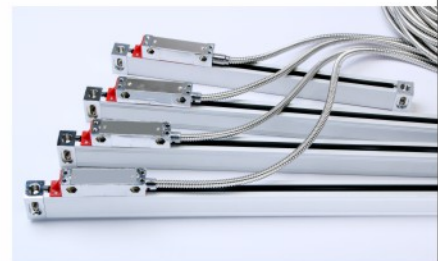
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Delos Encoder Co.LTD



COMPANY INTRODUCTION

Delos encoder Co.LTD is a well-known specialized manufacturer of linear scale; magnetic scale and digital readout (DRO) for machine tools in China. We have more than 10 years' experience in the field of grating and digital readout. Delos was set up in 2007, to adopt the high advanced technology and the rich experience, we had developed a series of industrial products. And because our stable quality and the reasonable price, Delos are famous in domestic and foreign market. Also the Delos products have ISO9001, ROHS and CE2000 certification.

The good quality and customers' satisfaction is our goal, so we promise we would do the best for you.



Delos DS Series DRO



- **DS-2V:** Full-function digital readout be used for all 2 axis machines (milling machine; boring machine; lathe machine; grinding machine.)



- **DS-3V:** Full-function digital readout be used for all 3 axis machines (milling machine; boring machine; lathe machine; grinding machine; electronic spark machine; EDM cutting machine)



- **DS-2M/3M:** Be used for 2axis/3axis milling machine and boring machine.



- **DS-1V:** Be used for single-axis machine.



- **DS-4V:** Be used for mill ,etc machine



- **DS-3000:** Be used for profile projector



DS-2V

DS-2V is a 2 axis multi-function digital readout which is used for different machines by setting the parameters. It has a lot of graphics processing capabilities. For example: including special function only for milling machine (R arc function, parts round function, slope processing function, slash drilling function, progressive cavity processing), special function only for EDM machine, special function only for lathe machine (tool library function, taper measurement function and so on). With the help of these functions, it can greatly reduce the difficulty of processing graphics.

Basic function:

- 200 points auxiliary zero;
- Function calculator(only for milling machine);
- Power-down memory;
- Linear error compensation and Non-linear error compensation;
- 1/2 function;
- Mm/inch mode.

Processing function:

- PCD function (for milling machine and EDM cutting machine);
- Linear drilling (for milling machine);
- Progressive cavity processing (for milling machine);
- Display filter (for grinding machine);
- Machining of oblique plane (for milling machine);
- R arc function (for milling machine);
- N3 function (for milling machine);
- 200 sets tool base (for lathe machine);
- Taper function (for lathe machine);
- RS-232 communication (order separately)





DS-3V

DS-3V is one new design of 3 coordinates' multi-function digital readout, when we use it for different machines, just need to modify the parameters, then you can switch out the corresponding function. It has a lot of graphics processing functions: functions for milling machine® arc function, equal portions round functions, slope processing functions, bore on oblique line), functions for electronic sparking machine (EDM function), functions for lathe machine (tool library functions, taper measurement function). With the help of these functions, it can greatly reduce the difficulty of processing graphics.

Basic function:

- 200 auxiliary zero;
- gamma calculator (for milling machine);
- Power-down memory;
- non-linear error compensation and linear error compensation;
- Points in the function;
- Inch / metric mode.

Processing function:

- PCD circular sub-holes (for milling, EDM)
- Slash punch (for milling machine)
- Tool compensation function (for milling machine);
- Taper measurement function (for lathe);
- Slope processing (for milling machine);
- R arc function (for milling machine);
- 200 tool magazine (for lathe);
- EDM functions (for EDM, ordered separately)
- RS-232 communication (ordered separately)



The technical parameter of DRO

Voltage range:	AC 80V-260V/50HZ-60HZ
Power dissipation:	20VA
Coordinate number:	1/2/3
Display:	7 bit display with signed
Times frequency:	4X
Readout box input signal:	TTL,ELA-422-A
Input frequency:	>250KHZ
Resolution:	10um, 5um, 0.25um, 1um, 0.5um, 0.2um, 0.1um
Operating keyboard:	light touch buttons
Linear scale Grating space:	0.04mm, 0.02mm,0.01mm,power supply is +5V.the difference between two and four TTL output signal is 90°.



Digital readout functions

Circular drilling function:	Digital readout can automatically calculate the location of the hole according to the inputted data
Linear drilling function:	Opposite to the axis of any angle, only the hole spacing remain fixed value, The DRO can calculate the location of the hole according to the inputted data
Tool radius compensation:	In the use of cylindrical milling tool carrier, the tool radius must be taken into account. The direction of process will decide the increase or decrease of calculated value .Once the tool number is inputted, the DRO value will be saved.
1/2 Function:	Determine the workpiece center Only through the tool or touching the two points of workpiece, the DRO can calculate the workpiece center
200 sets tool base:	while repeat the same process in the workpiece, you can store the tool value which will be convenience to the operator
Round arc processing:	sample round processing and two axis arc processing
Function calculator:	calculator function can improve operation efficiently
Slope calculation:	input the two points of workpiece, the DRO can calculate the slope of the workpiece.
Z-axis combination calculation:	Z-axis can display the combination displacement of two parallel axis
Preset value:	preset the radius of workpiece
Linear compensation:	Linear scale error compensation or non-linear scale error compensation: compensation to ensure absolute precision and maximum efficiency. Multi-point compensation can reduce the machine error.
Vibration filtering:	Numerical filtering function
EDM depth control:	can assist tool make depth control efficiently



Delos DS series DRO Function list

Function/Model		DS-2M	DS-2L	DS-2G	DS-3M	DS-3L	DS-3E	DS-1V
Axis		2	2	2	3	3	3	1
Resolution (μm)		0.1 / 0.2 / 0.5 / 1 / 2.5 / 5 / 10						
Basic Function	Zero Reset	✓	✓	✓	✓	✓	✓	✓
	1/2 Function							
	Inch/mm Mode							
	Enter Dimensions							
	ABS/INC Mode							
	Non-power Memory							
200 Toll Memory								
Calculator		✓			✓		✓	
Bore PCD Circle		✓			✓		✓	
Bore on Oblique line		✓			✓		✓	
Taper Function			✓			✓		
Shrinkage Calculation		✓			✓			
Simple 'R' Function		✓			✓			
Smooth R Function		✓			✓			
Linear compensation		✓	✓	✓	✓	✓	✓	✓
Non-linear Error Compensation		✓		✓	✓			
Vibration filtering				✓				
XZ-axis shows the sum			✓			✓		
Chamber on Z Axis Function							✓	



Linear Scale

Delos DLS Series linear scale

DLS-W: the series of Universal linear scale

Resolution: 10um, 5um, 1um, 0.5um

DLS-M: the series of Micro-linear scale

Resolution: 5um, 1um, 0.5um

DLS-B: The series of Large-linear scale

Resolution: 5um, 1um, 0.5um



Key Features

Resolution: 0.5/1/5/10um

Accuracy: $\pm 3/\pm 5/\pm 10\mu\text{m}$ (20°C/68°F)

Bench marks: The grating period: 20um optical linear scale.

Grating system: The transmissive and infrared optical measuring system, the infrared wave length is 880nm.

Reading head sliding system: vertical or 45° five precision bearing system



Model	DLS-S	DLS-M	DLS-W	DLS-B
Measure length(mm)	50-500	50-500	100-1200	1000-3000
Sectional Size(mm)	18X23	20X29	21.5X33.5	29X49
Accuracy	$\pm 3/\pm 5/\pm 10\mu\text{m}$ (20°C/68°F)			
Resolution(um)	0.5/1/5/10			
Reference Signal	Every 50mm per length specification			
Seal protection	IP55			
Max working speed	60m/min			
Output signal	TTL/EIA-422-A			
Voltage	5V/12V/24V/36V			

Linear Scale Signal Wiring Diagram

9 Pin TTL Signal Output Map

Pin	1	2	3	4	5	6	7	8	9
Signal	Empty	0V	Empty	Shield	empty	A	+5V	B	R
Color		Black		Shielding		Yellow	Red	Green	Blue

9 Pin EIA-422-A Signal Output Map

Pin	1	2	3	4	5	6	7	8	9
Signal	A-	0V	B-	Shield	R-	A	+5V	B	R
Color	Brown	bule	Orange	Shielding	Skybule	Yellow	Red	Green	White

7 Pin TTL Signal Output Map

Pin	1	2	3	4	5	6	7
Signal	0V	Empty	A	B	+5V	R	Shield
Color	Black		Yellow	Green	Red	Blue	Shielding

Magnetic scale



Model	DM-A	DM-B
Max length(meter)	32	32
Sectional size(mm)	13*18	33*46
Seal protection	IP67	
Accuracy	+/-10um, 15um, 30um	
Resolution	0.025mm, 0.01mm, 5um, 0.5um	
magnetic gap	1+1mm/2+2mm/5+5mm	
Working temperature	-10°C to 80°C	

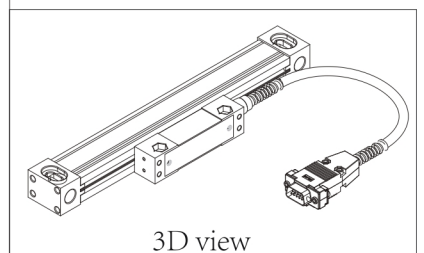
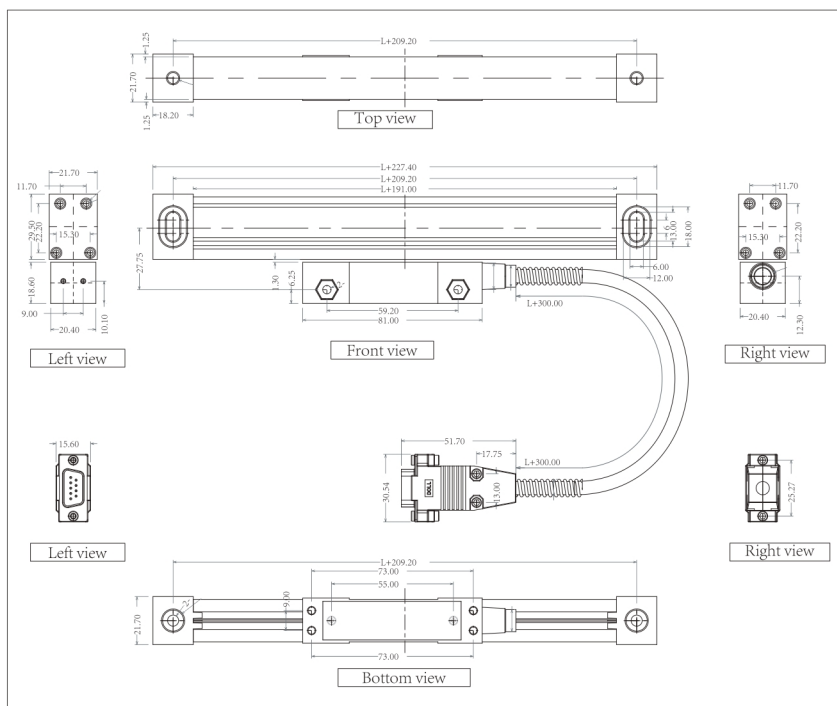
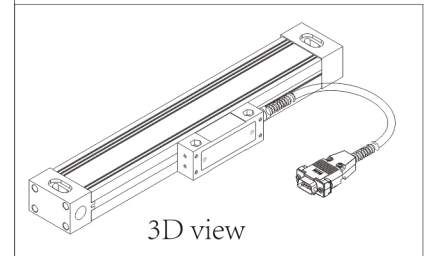
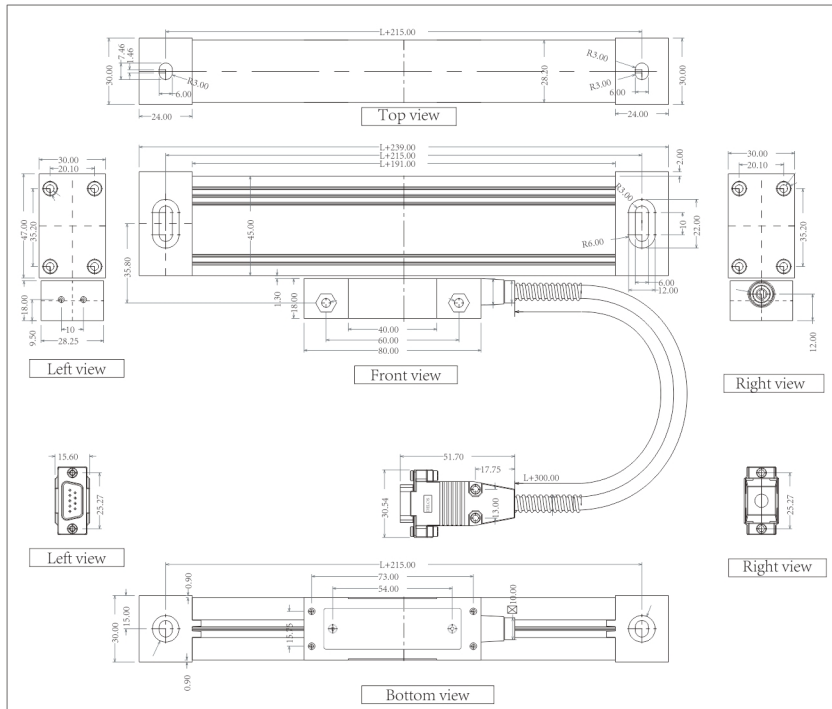
Magnetic Scale

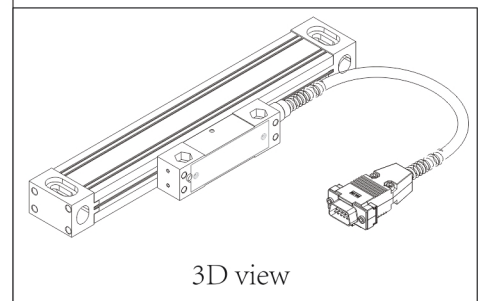
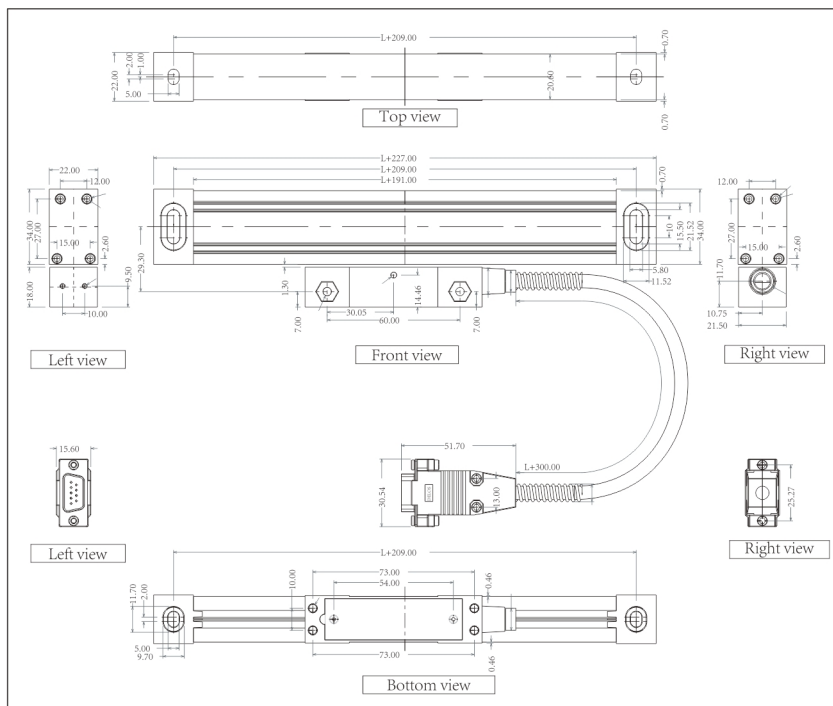
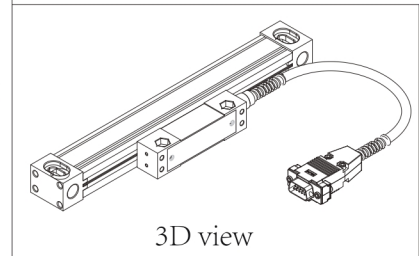
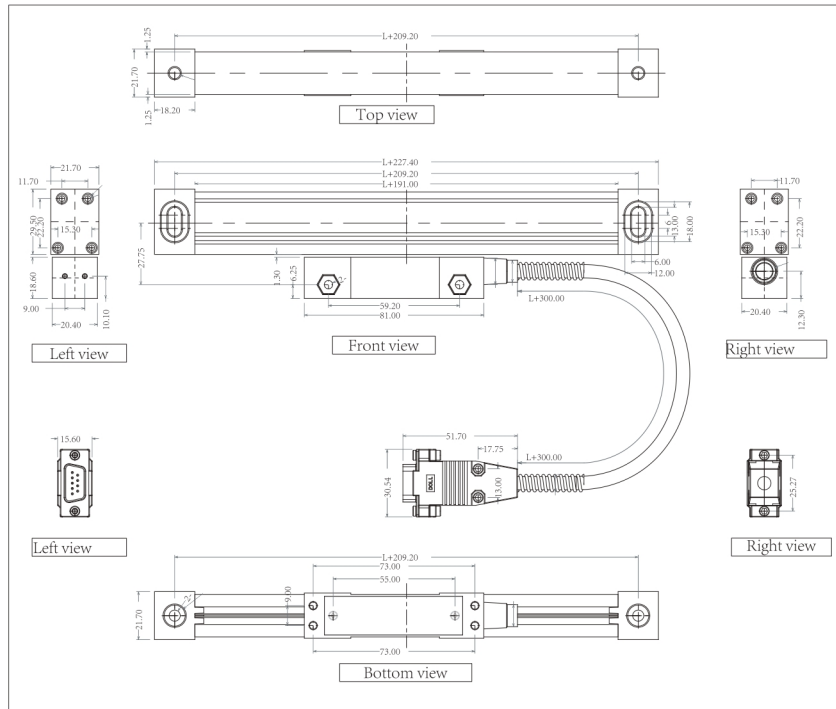
Specification of DM series magnetic scale

- 1: Can't be polluted by the coolant water, coolant liquid or metal dust, so it has the strong capacity of anti-pollution.
- 2: As the metal shell, so it can't be damaged easily, even when doing the machine cleaning, the strong compressed air was sprayed on the magnetic scale, it also can't be damaged.
- 3: As the non-connecting of magnetic read head and magnetic steel, so the scale is seldom damaged by the friction, then the life of the product can be longer.
- 4: Simply designed structure, and easy for installation, It uses the high sealing design, and it has the 1.5mm self-adhesive magnetic steel, which the travel length can be 32M
- 5: The magnetic scale can output grid digital or analog signal, it can output a series of resolution with 1um, 2um, 5um, 10um, 20um and 50um, which can be selected by customers. When the resolution is 1 um, the highest traveling speed can be 4m/s
- 6: The DM series magnetic scale can be used in a very harsh environment, such as: stone cutting or processing machinery; metal working machinery; knitting machinery; packaging machinery; rubber machinery; automation machinery; plasma cutting machinery; laser cutting machinery; water jet cutting machinery; semiconductor production machinery, and etc.



Linear scale dimension drawing







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