

## CNC 8025M RESOLUTION WITH EXAMPLES

### Parameters

	Resolution	x4 Impulse	Divide by 2	Feedback	1250/2500	X5 Extra	Binary	Sinewave
Axis		(0)=Yes	(1)=Yes	1=Inches	(0)=Yes	(1) = Yes	Encoder	(1)=Yes
X	P103	P604(8)	P631(8)	P604(4)	P610(8)	P622(1)	P603(8)	P106
Y	P203	P604(7)	P631(7)	P604(3)	P610(7)	P622(2)	P603(7)	P206
Z	P303	P604(6)	P631(6)	P604(2)	P610(6)	P622(3)	P603(6)	P306
W	P403	P604(5)	P631(5)	P604(1)	P610(5)	P622(4)	P603(5)	P406
V	P503	P616(8)	P631(4)	P616(7)	P616(6)	P622(5)	P616(5)	P506

For Encoders and Linear Scales: <b>Pitch = N * B * Factor * Resolution</b>	B = 1 for square, 5 for sine Factor = 1 or 2 or 4
For Rotary: <b>360 degrees = N * B * Factor * Resolution</b>	

<b>Max RPM = 100K/(B*N)</b>	B = 1 for square, 2 for sine
<b>Max Feed for Encoders = (100K * Pitch)/(B*N)</b>	

**Allowed Resolutions .0001, .0002, .0005, .0010 inch  
.001, .002, .005, .010 mm**

### Examples

Type	Units	Pitch	N	Factor	Resolution	Sinewave	Max Feed
Encoder	Metric	5mm/rev	1250ppr	2	2	N	24m/min
Encoder	Metric	5mm/rev	250ppr	2	2	Y	60m/min
Encoder	Inches	4	1250ppr	2	1	N	1200i/min
Encoder	Inches	4	250ppr	2	1	Y	3000i/min
Linear	Metric	20,40	N/A	2	5,10,20	N	60m/min
Linear	Metric	20,40	N/A	2	1,2,4	Y	60m/min
Rotary	Degrees	N/A	18000ppr	4	5	N	333.33rpm
Rotary	Degrees	N/A	3600ppr	4	5	Y	833.33rpm

### Examples:

#### **Resolution in "inches" with a square wave encoder:**

We would like to obtain 0.0001 inch resolution with a square wave encoder mounted to the X axis which has a 5-pitch lead screw. The CNC always applies a multiplying factor of x2 or x4 (selected by parameter). The required encoder line count in each case is:

With x4 factor:

$$\#pulses = (1/5) / (4 * 0.0001) = 500 \text{ ppt}$$

P103=1      P604(4)=1      P106=0      P604(8)=0

With a x2 factor:

$$\#pulses = (1/5) / (2 * 0.0001) = 1000 \text{ ppt}$$

P103=1      P604(4)=1      P106=0      P604(8)=1

#### **Resolution in "inches" with a sine-wave encoder:**

We would like to get a 0.0001 inch resolution with a sine wave encoder mounted to the X axis which has a 5-pitch leadscrew. The CNC always applies a x5 multiplying factor to the sinewave feedback signals. The required encoder line count in each case:

With a x4 factor:

$$\#pulses = (1/5) / (5 * 4 * 0.0001) = 100 \text{ ppt}$$

If P622(1)=0 ==> P604(4)=1      P106=Y      P604(8)=1      P103=5  
If P622(1)=1 ==> P604(4)=1      P106=Y      P604(8)=1      P103=1

With a x2 factor:

$$\#pulses = (1/5) / (5 * 2 * 0.0001) = 200 \text{ ppt}$$

If P622(1)=0 ==> P604(4)=1      P106=Y      P604(8)=0      P103=5  
If P622(1)=1 ==> P604(4)=1      P106=Y      P604(8)=0      P103=1

## CNC 8025T RESOLUTION WITH EXAMPLES

### Parameters

Axis	Resolution	x4 Impulse	Divide by 2	Feedback	1250/2500	X5 Extra	Binary	Sinewave
		(0)=Yes	(1)=Yes	1=Inches	(0)=Yes	(1) = Yes	Encoder	(1)=Yes
X	P103	P602(6)	P620(5)	P602(3)	P604(7)	P619(1)	P604(2)	P106
Z	P303	P602(5)	P620(6)	P602(2)	P604(6)	P619(2)	P604(1)	P306
3rd / C	P203	P612(5)	P613(8)	P612(2)	P612(4)	P619(3)	P612(3)	P206
4th	P403	P614(5)	P613(7)	P614(2)	P614(4)	P619(4)	P614(3)	P406

For Encoders and Linear Scales: <b>Pitch = N * B * Factor * Resolution</b>	B = 1 for square, 5 for sine Factor = 1 or 2 or 4
For Rotary: <b>360 degrees = N * B * Factor * Resolution</b>	

<b>Max RPM = 100K/(B*N)</b>	B = 1 for square, 2 for sine
<b>Max Feed for Encoders = (100K * Pitch)/(B*N)</b>	

**Allowed Resolutions .0001, .0002, .0005, .0010 inch**  
**.001, .002, .005, .010 mm**

### Examples

Type	Units	Pitch	N	Factor	Resolution	Sinewave	Max Feed
Encoder	Metric	5mm/rev	1250ppr	2	2	N	24m/min
Encoder	Metric	5mm/rev	250ppr	2	2	Y	60m/min
Encoder	Inches	4	1250ppr	2	1	N	1200i/min
Encoder	Inches	4	250ppr	2	1	Y	3000i/min
Linear	Metric	20,40	N/A	2	5,10,20	N	60m/min
Linear	Metric	20,40	N/A	2	1,2,4	Y	60m/min
Rotary	Degrees	N/A	18000ppr	4	5	N	333.33rpm
Rotary	Degrees	N/A	3600ppr	4	5	Y	833.33rpm

### Examples:

#### **Resolution in "inches" with a square wave encoder:**

We would like to obtain 0.0001 inch resolution with a square wave encoder mounted to the X axis which has a 5-pitch lead screw. The CNC always applies a multiplying factor of x2 or x4 (selected by parameter). The required encoder line count in each case is:

With x4 factor:

$$\#pulses = (1/5) / (4 * 0.0001) = 500 \text{ ppt}$$

P103=1      P602(3)=1      P106=0      P602(6)=0

With a x2 factor:

$$\#pulses = (1/5) / (2 * 0.0001) = 1000 \text{ ppt}$$

P103=1      P602(3)=1      P106=0      P602(6)=1

#### **Resolution in "inches" with a sine-wave encoder:**

We would like to get a 0.0001 inch resolution with a sine wave encoder mounted to the X axis which has a 5-pitch leadscrew. The CNC always applies a x5 multiplying factor to the sinewave feedback signals. The required encoder line count in each case:

With a x4 factor:

$$\#pulses = (1/5) / (5 * 4 * 0.0001) = 100 \text{ ppt}$$

If P619(1)=0 ==> P602(3)=1      P106=Y      P602(6)=1      P103=5  
If P619(1)=1 ==> P602(3)=1      P106=Y      P602(6)=1      P103=1

With a x2 factor:

$$\#pulses = (1/5) / (5 * 2 * 0.0001) = 200 \text{ ppt}$$

If P619(1)=0 ==> P602(3)=1      P106=Y      P602(6)=0      P103=5  
If P619(1)=1 ==> P602(3)=1      P106=Y      P602(6)=0      P103=1