

PRODUCT CATALOGUE

Incremental Encoders

Absolute Encoders

Multiturn Encoders

Harsh & Harzardous Area Encoders

Special Function Encoders

Commutation Encoders

Accessories



GES*group*

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INCREMENTAL ENCODER OVERVIEW

Incremental Encoders are the most common types used in the industry due to the simplicity of their use. Each encoder is comprised of an optical disc with the required number of lines together with an (HRS) reading system coupled with a single L.E.D. for longer life, reliability and enhanced performance. Either speed or relative position can be determined by monitoring the frequency or the number of pulses generated by the encoder.

	IS 240	IS 280	IS 410	IS 580	IS 581	IS 700
						
Type-Size	28 mm	28 mm	41 mm	58 mm	58 mm	70 mm
Available Shaft/ Hollow Shaft Sizes	4 mm 6 mm	4 mm 6 mm	6 mm	6 mm 10 mm	6 mm 8 mm 10 mm 1/4" 3/8"	10 mm 12 mm 3/8" 1/2"
Mechanical Options	—	—	stainless steel	stainless steel	—	—
Connector Location	axial radial	axial radial	axial radial	axial radial	axial radial	axial radial
Output Signals	A+B+0 A+B+0+Complim.	A+B+0 A+B+0+Complim.	A+B+0 A+B+0+Complim.	A+B+0 A+B+0+Complim.	A+B+0 A+B+0+Complim.	A+B+0 A+B+0+Complim.
Output Circuit Type	4,75-30 VDC Push Pull	4,75-30 VDC Push Pull	4,75-30 VDC Push Pull	4,75-30 VDC Push Pull	4,75-30 VDC Push Pull	4,75-30 VDC Push Pull
Pulses Per Revolution	1-1024	1-1024	1-10000	1-25000	1-25000	1-25000
Page	6	8	10	12	14	16

	IS 900	IH 490	IH 510
			
Type-Size	90 mm	49 mm	51 mm
Available Shaft/ Hollow Shaft Sizes	10 mm 12 mm	6 mm 8 mm 1/4"	6 mm 1/4"
Mechanical Options	—	stainless steel	—
Connector Location	axial radial	radial	radial
Output Signals	A+B+O A+B+O+Complim.	A+B+O A+B+O+Complim.	A+B+O A+B+O+Complim.
Output Circuit Type	4,75-30 VDC Push Pull	4,75-30 VDC Push Pull	4,75-30 VDC Push Pull
Pulses Per Revolution	1-25000	1-3600	1-1250
Page	18	20	22

IH 581	IH 740	IH 840	IH 950	IH 951	IH 103	IH 120
						
58 mm	74 mm	84 mm	95 mm	95 mm	103 mm	120 mm
6 mm 10 mm 12 mm 3/8" 1/2"	6 mm 10 mm 1/4" 12 mm 14 mm 1/8" 16 mm 18 mm 1/2"	15 mm	14 mm - 30 mm	14 mm - 30 mm	30 mm - 40 mm	40 mm - 65 mm
—	stainless steel	—	stainless steel	stainless steel	—	—
radial	radial	radial	radial	radial	radial	radial
A+B+O A+B+O+Complim.	A+B+O A+B+O+Complim.	A+B+O A+B+O+Complim.	A+B+O A+B+O+Complim.	A+B+O A+B+O+Complim.	A+B+O A+B+O+Complim.	A+B+O A+B+O+Complim.
4,75-30 VDC Push Pull	4,75-30 VDC Push Pull	4,75-30 VDC Push Pull	4,75-30 VDC Push Pull	4,75-30 VDC Push Pull	4,75-30 VDC Push Pull	4,75-30 VDC Push Pull
1-10000	1-25000	1-3600	1-25000	1-25000	1-50000	1-50000
24	26	28	30	32	34	36

IS 240

INCREMENTAL SHAFT ENCODER

- Micro Miniature Size
- 1024 PPR Maximum
- 4.75 to 30 Volts, RS 422A Compatible
- 100 kHz Maximum Frequency



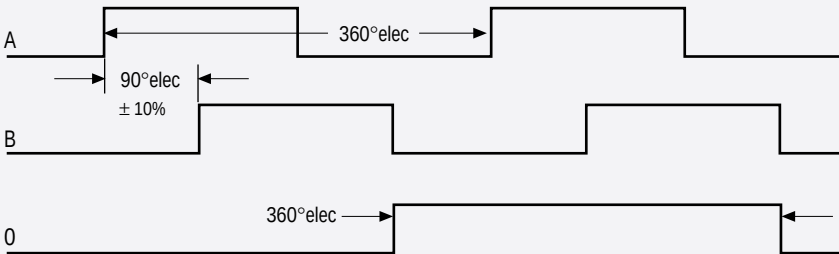
ELECTRICAL SPECIFICATIONS

Supply Voltage	4.75-30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, 422A
Impulse Frequency	100 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

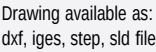
MECHANICAL SPECIFICATIONS

Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.04 Nm
Loading	Axial 30 N, Radial 20 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F)
Weight	0.24 lb (110 g)

OUTPUT SIGNALS



A Leads B in the CW Direction (facing shaft)
Complimentary channel also available



ORDERING CODE

IS 240 - -
a b c d e f g h Pulses Per Revolution

- | | | | |
|---|---|---|--|
| a | Group Function
IS=Incremental Solid Shaft | e | Connector Type
0=2 mtr. Cable |
| b | Basic Series Number
240 | f | Connector Location
A=Axial |
| c | Shaft Size D
06=6 mm | g | Output Signals
3=A+B+0
6=A+B+0+Compliments |
| d | Mechanical Options
0 = None | h | Output Circuit Type
3=Push Pull 4.75 to 30 VDC |
- Note:** Special functions and designs will be designated by a 4 digit

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	Cable Colour Code
0 Volt	white
+ Volt	brown
A	green
B	yellow
0	grey
A	pink
B	blue
0	red

IS 280

INCREMENTAL SHAFT ENCODER

- Micro Miniature Size
- 1024 PPR Maximum
- 4.75 to 30 Volts, RS 422A Compatible
- 100 kHz Maximum Frequency



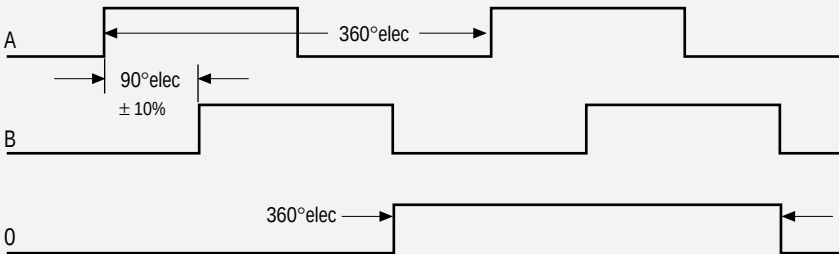
ELECTRICAL SPECIFICATIONS

Supply Voltage	4.75-30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, 422A
Impulse Frequency	100 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

MECHANICAL SPECIFICATIONS

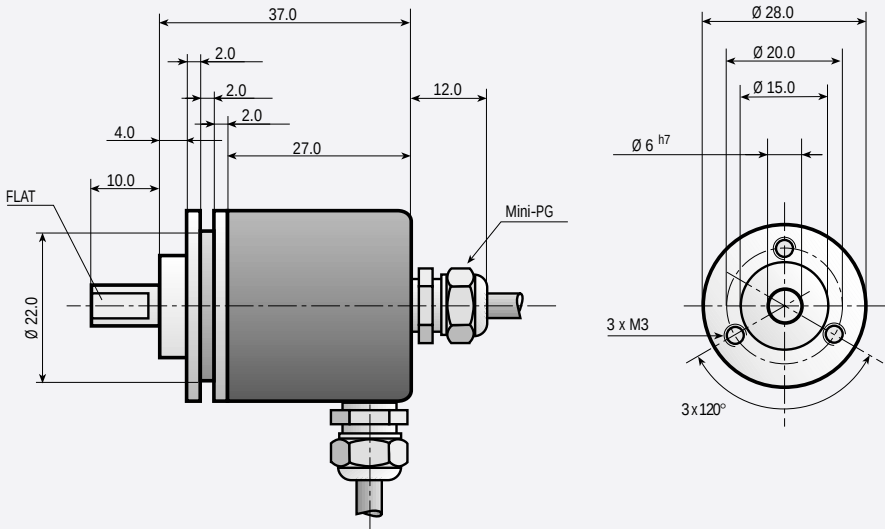
Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.04 Nm
Loading	Axial 30 N, Radial 20 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F)
Weight	0.24 lb (110 g)

OUTPUT SIGNALS



A Leads B in the CW Direction (facing shaft)
Complimentary channel also available

Drawing available as:
dxf, iges, step, sld file



ORDERING CODE

IS	280	-								-					
a	b	c	d	e	f	g	h	Pulses Per Revolution							

- | | | | |
|---|---|---|--|
| a | Group Function
IS=Incremental Solid Shaft | e | Connector Type
0=2 mtr. Cable |
| b | Basic Series Number
280 | f | Connector Location
A=Axial |
| c | Shaft Size D
06=6 mm | g | Output Signals
3=A+B+0
6=A+B+0+Compliments |
| d | Mechanical Options
0= None | h | Output Circuit Type
3=Push Pull 4.75 to 30 VDC |

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	Cable Colour Code
0 Volt	white
+ Volt	brown
A	green
B	yellow
0	grey
$\bar{A}$	pink
$\bar{B}$	blue
$\bar{0}$	red

IS 410

INCREMENTAL SHAFT ENCODER

- Miniature Size
- IP65 Protection
- Syncro Flange Mounting
- 10000 PPR Maximum
- 4.75 to 30 Volts, RS 422 Compatible
- 100 kHz Maximum Frequency



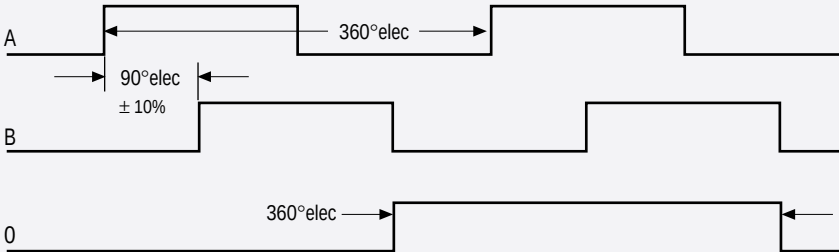
ELECTRICAL SPECIFICATIONS

Supply Voltage	4.75-30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	100 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

MECHANICAL SPECIFICATIONS

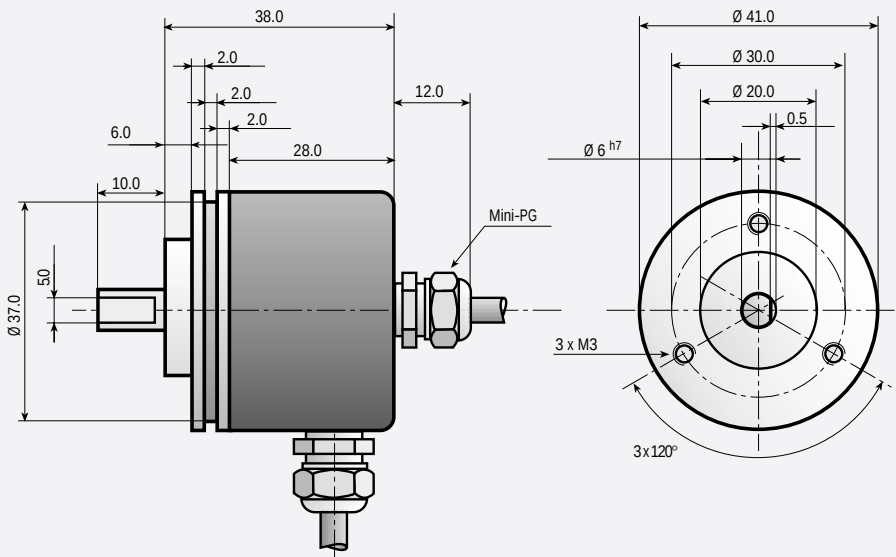
Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.04 Nm
Loading	Axial 30 N, Radial 20 N
Protection	IP 65
Temperature	-20° ... + 70° C (-4° ... +158° F)
Weight	0.31 lb (140 g)

OUTPUT SIGNALS



A Leads B in the CW Direction (facing shaft)
Complimentary channel also available

Drawing available as:
dxf, iges, step, sld file



ORDERING CODE

IS	410	-																		
a	b	c	d	e	f	g	h	Pulses Per Revolution												

- | | | | |
|---|---|---|--|
| a | Group Function
IS=Incremental Solid Shaft | e | Connector Type
0=2 mtr. Cable |
| b | Basic Series Number
410 | f | Connector Location
A=Axial
R=Radial |
| c | Shaft Size D
06=6 mm | g | Output Signals
3=A+B+0
6=A+B+0+Compliments |
| d | Mechanical Options
0= None | h | Output Circuit Type
3=Push Pull 4.75 to 30 VDC |

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	Cable Colour Code
0 Volt	white
+ Volt	brown
A	green
B	yellow
0	grey
- A	pink
- B	blue
- 0	red

IS 580

INCREMENTAL SHAFT ENCODER Industry Standard Size 25
Syncro Flange Mounting
25000 PPR (Maximum)
4.75 to 30 Volts, RS 422 Compatible
300 kHz Maximum Frequency



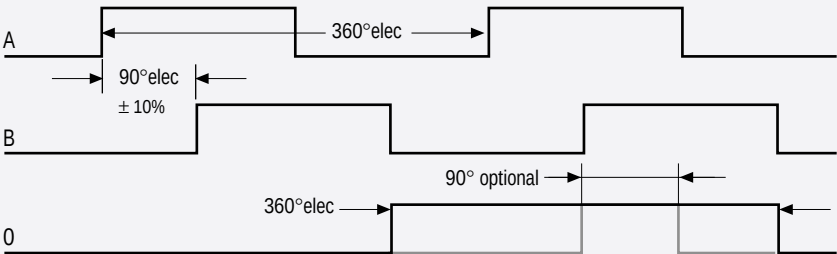
ELECTRICAL SPECIFICATIONS

Supply Voltage	4.75-30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	300 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

MECHANICAL SPECIFICATIONS

Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	8000 RPM (max)
Torque	> 0.05 Nm
Loading	Axial 40 N, Radial 30 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	0.74 lb (320 g)

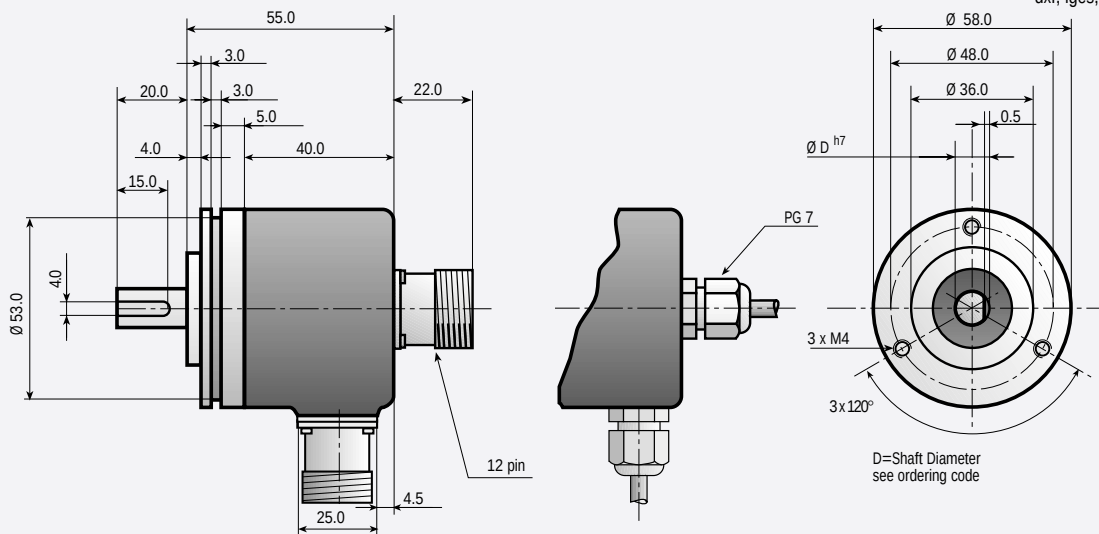
OUTPUT SIGNALS



A Leads B in the CW Direction (facing shaft)
Complimentary channel also available

Optional Gated Marker Pulse
Gated with A+B Shown

Drawing available as:
dxf, iges, step, sld file



ORDERING CODE

IS580-

Pulses Per Revolution

aGroup Function

IS=Incremental Solid Shaft

bBasic Series Number

580

cShaft Size D

06=6 mm

10=10 mm

dMechanical Options

0=None

2=Steel Cover

eConnector Type

0=2 mtr. (6ft.) Cable

7=12 Pin

fConnector Location

A=Axial

R=Radial

gOutput Signals

3=A+B+0

6=A+B+0+Compliments

hOutput Circuit Type

3=Push Pull 4.75 to 30 VDC

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	Cable Colour Code	12 Pin Connector
0 Volt	white	1
+ Volt	brown	2
A	green	3
B	yellow	4
0	grey	5
A	pink	6
B	blue	7
0	red	8

IS 581

INCREMENTAL SHAFT ENCODER

- Industry Standard Size 25
- IP65 Protection
- 25000 PPR Maximum
- 4.75 to 30 Volts, RS 422 Compatible
- 300 kHz Maximum Frequency



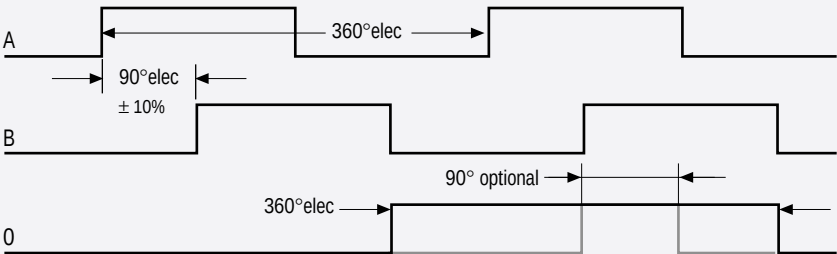
ELECTRICAL SPECIFICATIONS

Supply Voltage	4.75-30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	300 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

MECHANICAL SPECIFICATIONS

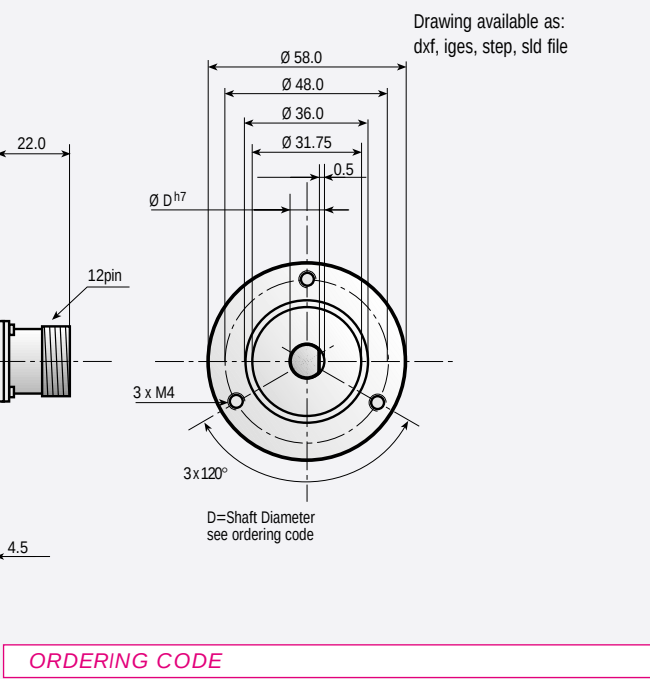
Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	8000 RPM (max)
Torque	> 0.05 Nm
Loading	Axial 40 N, Radial 30 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	0.74 lb (320 g)

OUTPUT SIGNALS



A Leads B in the CW Direction (facing shaft)
Complimentary channel also available

Optional Gated Marker Pulse
Gated with A+B Shown



ORDERING CODE

[illegible]

- #### h Output Circuit Type
- 3=Push Pull 4.75 to 30 VDC

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	Cable Colour Code	12 Pin Connector	6 Pin CR3102A14S	7 Pin CR3102A16S	10 Pin CR3102A18S
0 Volt	white	1	F	F	F
+ Volt	brown	2	D	D	D
A	green	3	A	A	A
B	yellow	4	B	B	B
0	grey	5	C	C	C
A	pink	6	N/C	G	H
B	blue	7		E	I
0	red	8			J

IS 700

INCREMENTAL SHAFT ENCODER

- Heavy Duty Construction
- IP65 Protection
- 25000 PPR Maximum
- 4.75 to 30 Volts, RS 422 Compatible
- 300 kHz Maximum Frequency



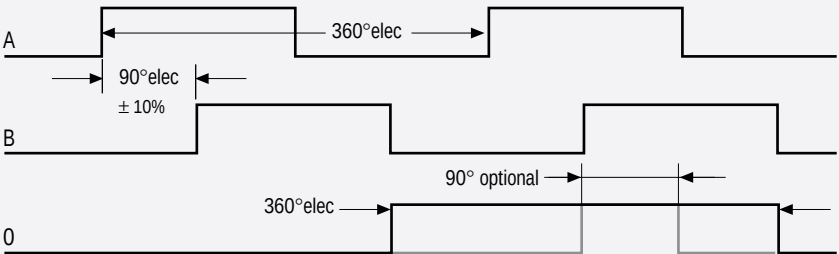
ELECTRICAL SPECIFICATIONS

Supply Voltage	4.75-30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	300 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

MECHANICAL SPECIFICATIONS

Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.1 Nm
Loading	Axial 60 N, Radial 50 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	1.125 lb (450 g)

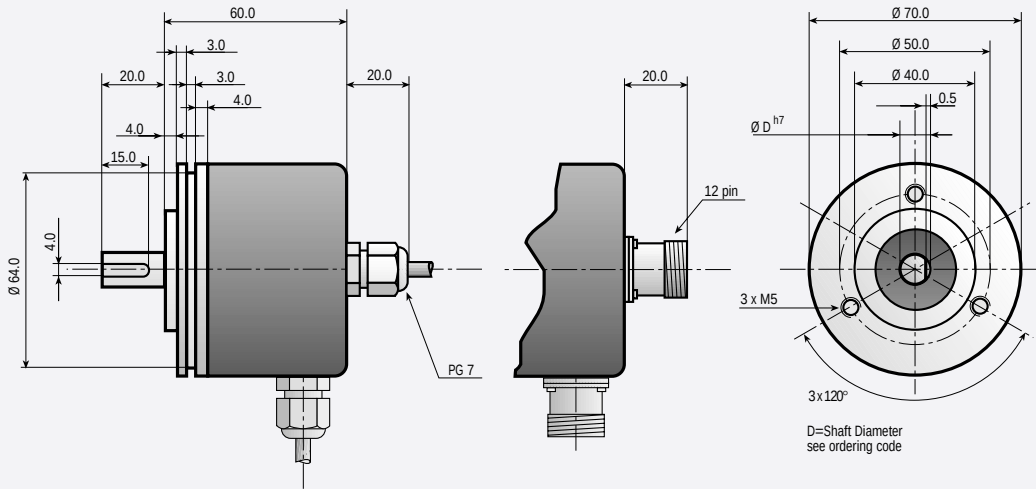
OUTPUT SIGNALS



A Leads B in the CW Direction (facing shaft)
Complimentary channel also available

Optional Gated Marker Pulse
Gated with A+B Shown

Drawing available as:
dxf, iges, step, sld file



ORDERING CODE

IS700--

a b c d e f g h Pulses Per Revolution

aGroup Function

IS=Incremental Solid Shaft

bBasic Series Number

700

cShaft Size D

10=10 mm 12=12 mm

AB=3/8" AC=1/2"

dMechanical Options

0=None

eConnector Type

0=2 mtr. (6ft.) Cable

7=12 Pin

fConnector Location

A=Axial

R=Radial

gOutput Signals

3=A+B+0

6=A+B+0+Compliments

hOutput Circuit Type

3=Push Pull 4.75 to 30 VDC

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	Cable Colour Code	12 Pin Connector
0 Volt	white	1
+ Volt	brown	2
A	green	3
B	yellow	4
0	grey	5
A	pink	6
B	blue	7
0	red	8

IS 900

INCREMENTAL SHAFT ENCODER

- Heavy Duty Construction
- IP65 Protection (Optional IP 66)
- 25000 PPR Maximum
- 4.75 to 30 Volts, RS 422 Compatible
- 300 kHz Maximum Frequency



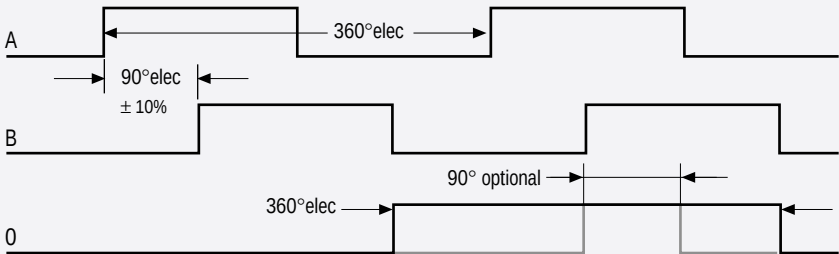
ELECTRICAL SPECIFICATIONS

Supply Voltage	4.75-30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	300 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

MECHANICAL SPECIFICATIONS

Cover	Steel
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.1 Nm
Loading	Axial 60 N, Radial 50 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	1.870 lb (850 g)

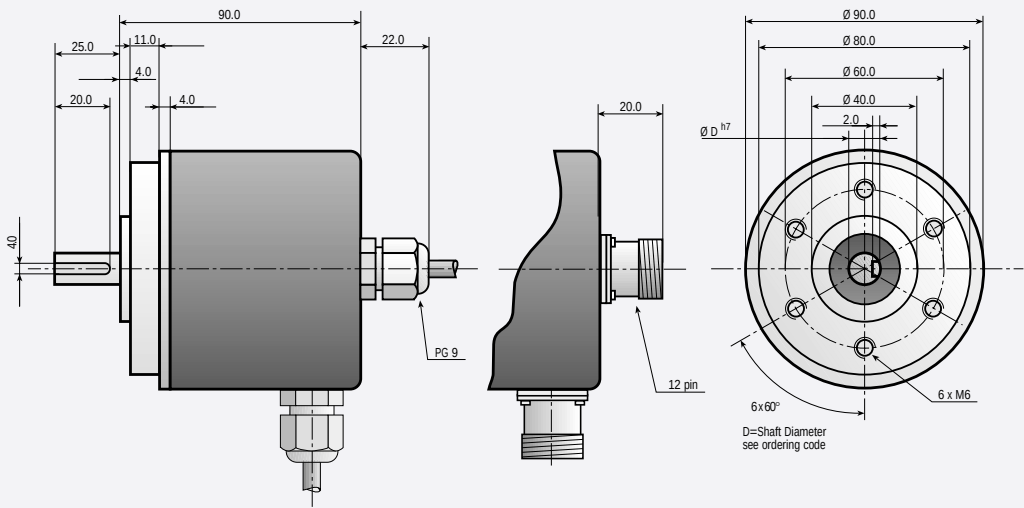
OUTPUT SIGNALS



A Leads B in the CW Direction (facing shaft)
Complimentary channel also available

Optional Gated Marker Pulse
Gated with A+B Shown

Drawing available as:
dxf, iges, step, sld file



ORDERING CODE

IS900--

a b c d e f g h Pulses Per Revolution

aGroup Function

IS=Incremental Solid Shaft

bBasic Series Number

900

cShaft Size D

06=6 mm

12=12 mm

dMechanical Options

0=None

eConnector Type

0=2 mtr. (6ft.) Cable

7=12 Pin

fConnector Location

A=Axial

R=Radial

gOutput Signals

3=A+B+0

6=A+B+0+Compliments

hOutput Circuit Type

3=Push Pull 4.75 to 30 VDC

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	Cable Colour Code	12 Pin Connector
0 Volt	white	1
+ Volt	brown	2
A	green	3
B	yellow	4
0	grey	5
$\bar{A}$	pink	6
$\bar{B}$	blue	7
$\bar{0}$	red	8

IH 490

INCREMENTAL HOLLOW SHAFT ENCODER

- Compact Construction
- Shaft Mounted
- 3600 PPR Maximum
- 4.75 to 30 Volts, RS 422 Compatible
- 100 kHz Maximum Frequency



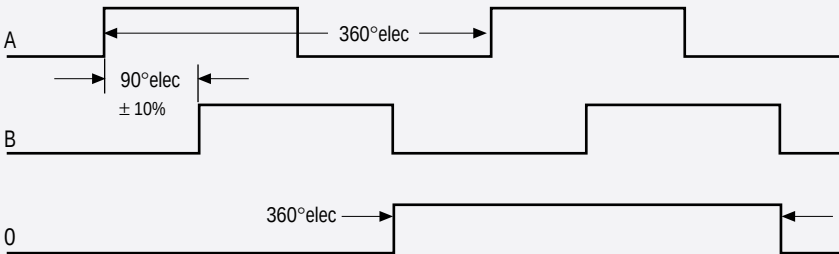
ELECTRICAL SPECIFICATIONS

Supply Voltage	4.75-30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	100 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

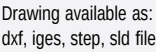
MECHANICAL SPECIFICATIONS

Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.04 Nm
Loading	Axial 20 N, Radial 15 N
Protection	IP 65
Temperature	-20°... +70° C (-4°... +158° F)
Weight	0.29 lb (130 g)

OUTPUT SIGNALS



A Leads B in the CW Direction (facing shaft)
Complimentary channel also available



ORDERING CODE

IH 490 - -

a b c d e f g h Pulses Per Revolution

- h **Output Circuit Type**
3=Push Pull 4.75 to 30 VDC

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	Cable Colour Code
0 Volt	white
+ Volt	brown
A	green
B	yellow
0	grey
A	pink
B	blue
0	red

IH 510

INCREMENTAL HOLLOW SHAFT ENCODER

- Compact Construction
- Shaft Mounted
- 1250 PPR Maximum
- 4.75 to 30 Volts, RS 422 Compatible
- 200 kHz Maximum Frequency



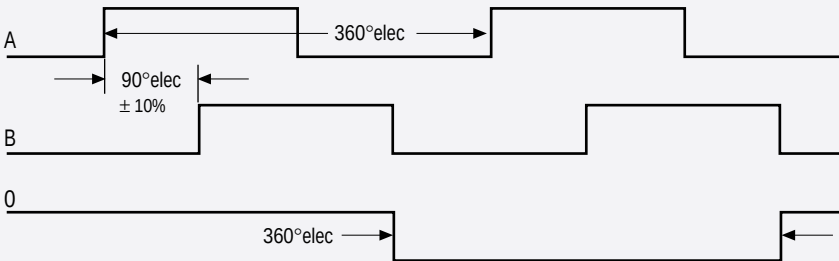
ELECTRICAL SPECIFICATIONS

Supply Voltage	4.75-30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	200 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

MECHANICAL SPECIFICATIONS

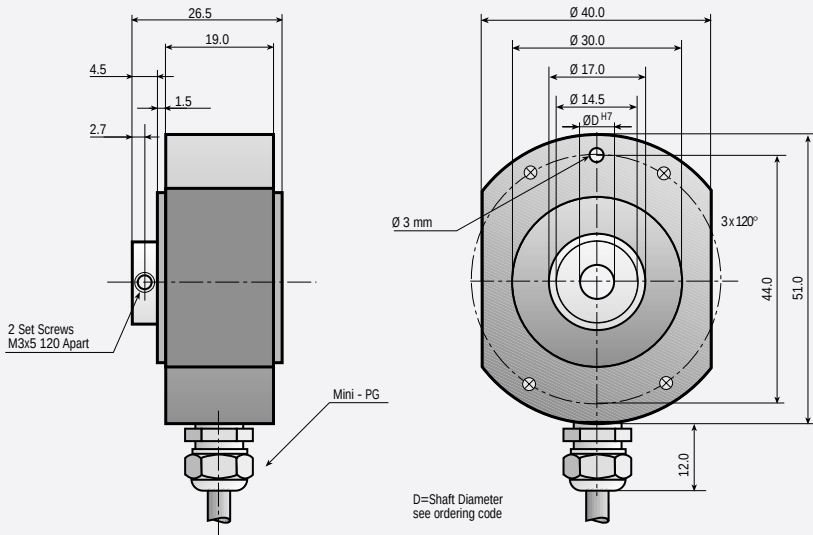
Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.04 Nm
Loading	Axial 20 N, Radial 15 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F)
Weight	0.29 lb (130 g)

OUTPUT SIGNALS



A Leads B in the CW Direction (facing shaft)
Complimentary channel also available

Drawing available as:
dxf, iges, step, sld file



ORDERING CODE

IH	510	-								-					
a	b	c	d	e	f	g	h	Pulses Per Revolution							

a	Group Function	e	Connector Type
IH	Incremental Hollow Shaft	0	2 mtr. (6ft.) Cable
b	Basic Series Number	f	Connector Location
510		R	Radial
c	Shaft Size D	g	Output Signals
06	6 mm	3	A+B+0
AA	1/4"	6	A+B+0+Compliments
d	Mechanical Options	h	Output Circuit Type
0	None	3	Push Pull 4.75 to 30 VDC

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	Cable Colour Code
0 Volt	white
+ Volt	brown
A	green
B	yellow
0	grey
A	pink
B	blue
0	red

IH 581

INCREMENTAL HOLLOW SHAFT ENCODER

- Industry Standard Size 25
- Shaft Mounted
- 10000 PPR Maximum
- 4.75 to 30 Volts, RS 422 Compatible
- 200 kHz Maximum Frequency



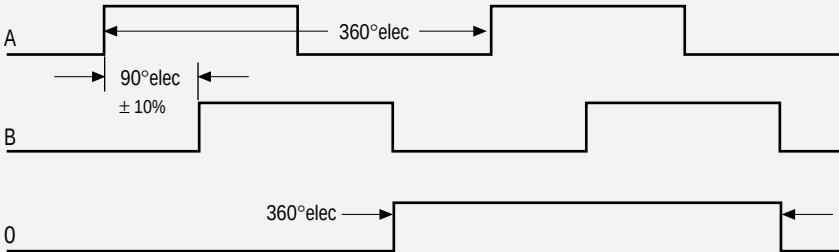
ELECTRICAL SPECIFICATIONS

Supply Voltage	4.75-30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	200 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

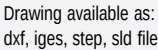
MECHANICAL SPECIFICATIONS

Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.04 Nm
Loading	Axial 20 N, Radial 15 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	0.55 lb (250 g)

OUTPUT SIGNALS



A Leads B in the CW Direction (facing shaft)
Complimentary channel also available



ORDERING CODE

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

□ □ □ □ 25 □

IH 740

INCREMENTAL HOLLOW SHAFT ENCODER

- Heavy Duty Construction
- Shaft Mounted
- Range of shaft bores (6 – 18 mm)
- 25000 PPR Maximum
- 4.75 to 30 Volts, RS 422 Compatible
- 300 kHz Maximum Frequency



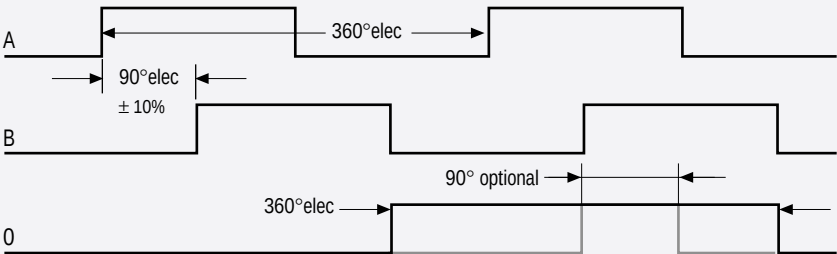
ELECTRICAL SPECIFICATIONS

Supply Voltage	4.75-30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	300 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

MECHANICAL SPECIFICATIONS

Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.04 Nm
Loading	Axial 40 N, Radial 30 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	0.84 lb (380 g)

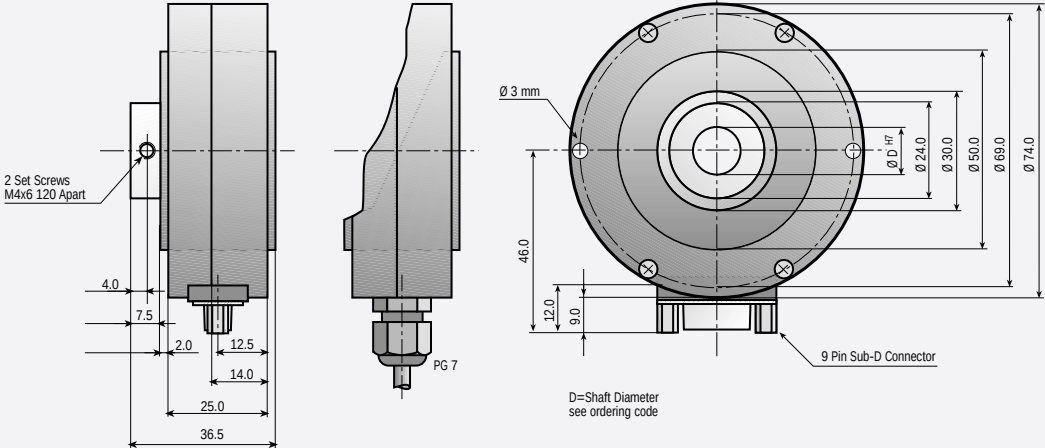
OUTPUT SIGNALS



A Leads B in the CW Direction (facing shaft)
Complimentary channel also available

Optional Gated Marker Pulse
Gated with A+B Shown

Drawing available as:
dxf, iges, step, sld file



ORDERING CODE

IH 740 - -
a b c d e f g h Pulses Per Revolution

- a **Group Function**
IH=Incremental Hollow Shaft

- | | |
|---|----------------------------|
| b | Basic Series Number |
| | 740 |

- C Shaft Size D**
 06=6 mm 10=10 mm 12=12mm
 14=14mm 16=16 mm 18=18 mm
 AA=1/4" AB=3/8" AC=1/2" AE=5/8"

- d **Mechanical Options**
0 = None

- Connector Type**
0=2 mtr. (6ft.) Cable
6=9 Pin Sub D 7=12 Pin

- f **Connector Location**
R=Radial

- g Output Signals**
 $3 = A + B + 0$
 $6 = A + B + 0 + \text{Compliments}$

- h **Output Circuit Type**
3=Push Pull 4.75 to 30 VDC

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	Cable Colour Code	12 Pin Connector
0 Volt	white	1
+ Volt	brown	2
A	green	3
B	yellow	4
0	grey	5
A	pink	6
B	blue	7
0	red	8

IH 840

INCREMENTAL HOLLOW SHAFT ENCODER

- Very Heavy Duty Construction
- Shaft Mounted
- 3600 PPR Maximum
- 4.75 to 30 Volts, RS 422 Compatible
- 300 kHz Maximum Frequency



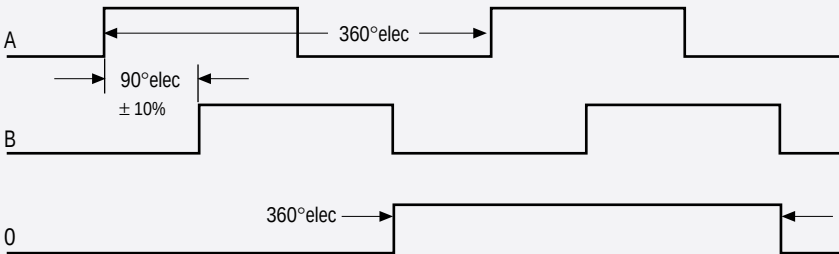
ELECTRICAL SPECIFICATIONS

Supply Voltage	4.75-30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	300 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

MECHANICAL SPECIFICATIONS

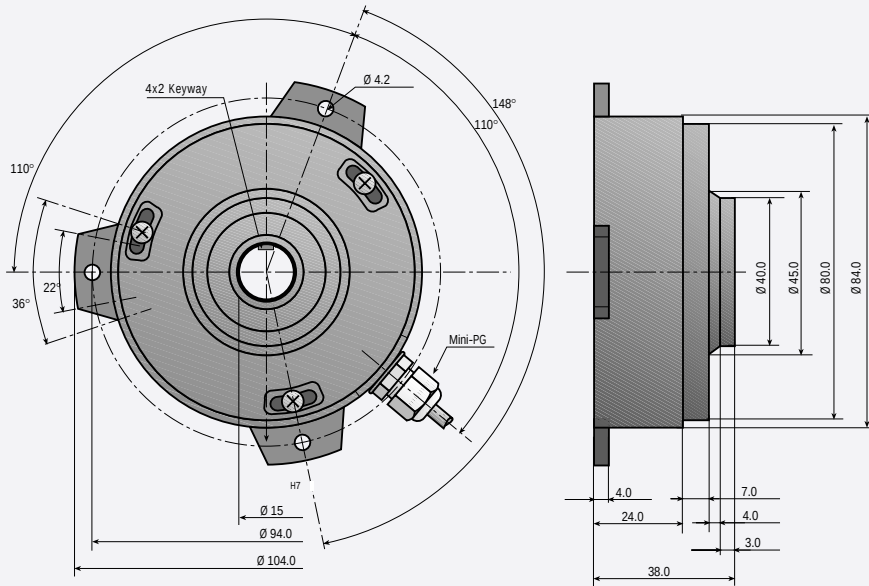
Cover	Plastic (Noryl)
Body	Plastic (Noryl)
Shaft	Plastic (Noryl)
Speed	6000 RPM (max)
Torque	> 0.04 Nm
Loading	Axial 20 N, Radial 30 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	0.27 lb (130 g)

OUTPUT SIGNALS



A Leads B in the CW Direction (facing shaft)
Complimentary channel also available

Drawing available as:
dxf, iges, step, sld file



ORDERING CODE

IH **840** - -

a b c d e f g h Pulses Per Revolution

- | | |
|---|--|
| a | Group Function
IH=Incremental Hollow Shaft |
| b | Basic Series Number
840 |
| c | Shaft Size D
15=15 mm |
| d | Mechanical Options
0=None |

- | | |
|---|--|
| e | Connector Type
0=2 mtr. (6ft.) Cable |
| f | Connector Location
R=Radial |
| g | Output Signals
3=A+B+0
6=A+B+0+Compliments |
| h | Output Circuit Type
3=Push Pull 4.75 to 30 VDC |

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	Cable Colour Code
0 Volt	white
+ Volt	brown
A	green
B	yellow
0	grey
$\bar{A}$	pink
$\bar{B}$	blue
$\bar{0}$	red

IH 950

INCREMENTAL HOLLOW SHAFT ENCODER

- Very Heavy Duty Construction
- Shaft Mounted
- Range of shaft bores (14 – 30 mm)
- 25000 PPR Maximum
- 4.75 to 30 Volts, RS 422 Compatible
- 300 kHz Maximum Frequency



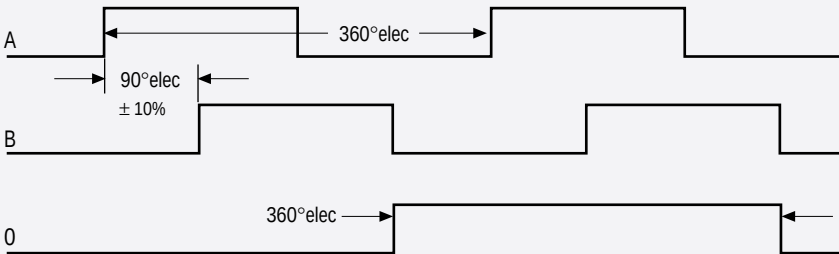
ELECTRICAL SPECIFICATIONS

Supply Voltage	4.75-30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	300 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

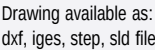
MECHANICAL SPECIFICATIONS

Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.04 Nm
Loading	Axial 50 N, Radial 30 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	1.254 lb (570 g)

OUTPUT SIGNALS



A Leads B in the CW Direction (facing shaft)
Complimentary channel also available



ORDERING CODE

IH	950	-										
a	b	c	d	e	f	g	h	Pulses Per Revolution				

a	Group Function IH=Incremental Hollow Shaft
b	Basic Series Number 950
c	Shaft Size D 12=12 mm 26=26mm AE=5/8" AL = 1"
d	Mechanical Options 0=None

e	Connector Type 0=2 mtr. (6ft.) Cable 6=9 Pin Sub D 7=12 Pin
f	Connector Location R=Radial
g	Output Signals 3=A+B+0 6=A+B+0+Compliments
h	Output Circuit Type 3=Push Pull 4.75 to 30 VDC

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	Cable Colour Code	9 Pin Connector	12 Pin Connector
0 Volt	white	1	1
+ Volt	brown	2	2
A	green	3	3
B	yellow	4	4
0	grey	5	5
$\bar{A}$	pink	6	6
$\bar{B}$	blue	7	7
$\bar{0}$	red	8	8

IH 951

INCREMENTAL HOLLOW SHAFT ENCODER

- Very Heavy Duty Construction
- Shaft Mounted
- Range of shaft bores (14 – 30 mm)
- 25000 PPR Maximum
- 4.75 to 30 Volts, RS 422 Compatible
- 300 kHz Maximum Frequency



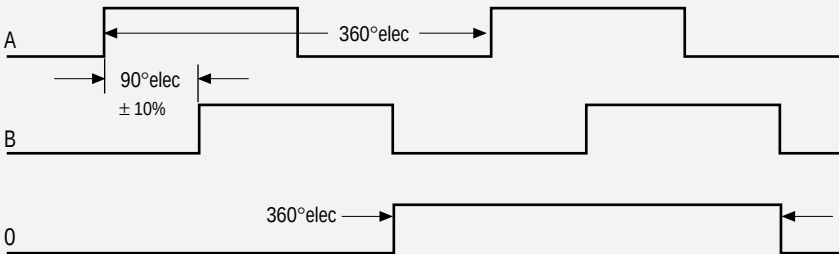
ELECTRICAL SPECIFICATIONS

Supply Voltage	4.75-30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	300 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

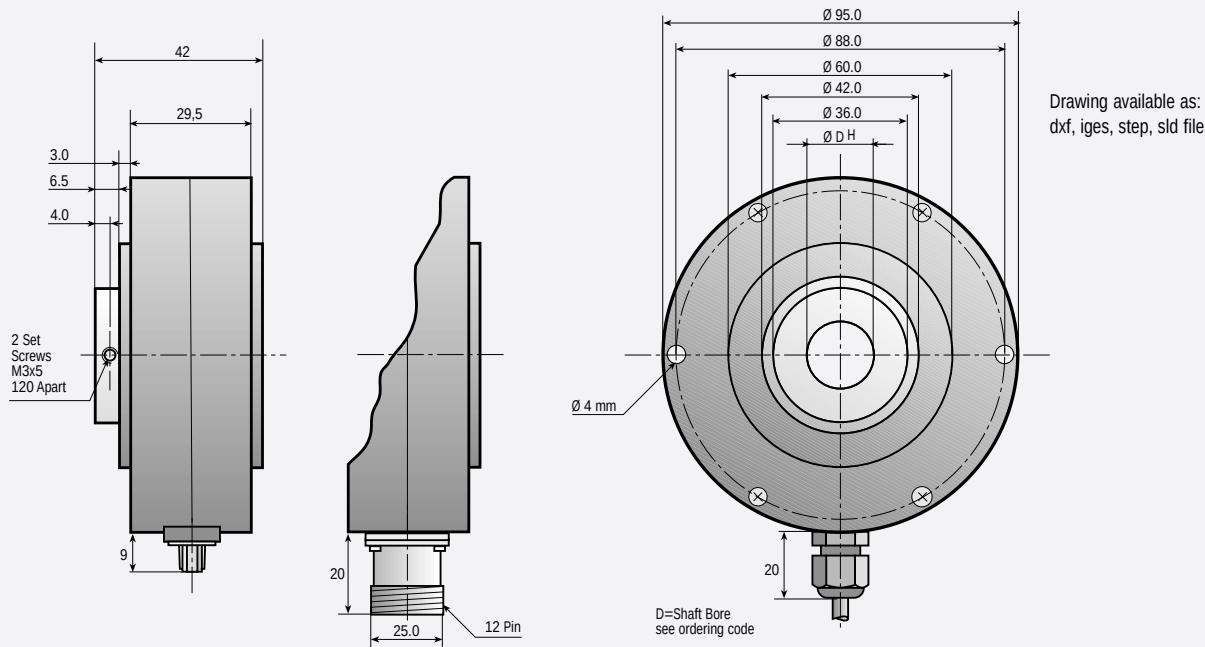
MECHANICAL SPECIFICATIONS

Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.04 Nm
Loading	Axial 50 N, Radial 30 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	1.034 lb (470 g)

OUTPUT SIGNALS



A Leads B in the CW Direction (facing shaft)
Complimentary channel also available



ORDERING CODE

IH	951	-																		
a	b	c	d	e	f	g	h	Pulses Per Revolution												

a	Group Function IH=Incremental Hollow Shaft	e	Connector Type 0=2 mtr. (6ft.) Cable 6=9 Pin Sub D 7=12 Pin
b	Basic Series Number 951	f	Connector Location R=Radial
c	Shaft Size D 12=12 mm 26=26mm AE=5/8" AL=1"	g	Output Signals 3=A+B+0 6=A+B+0+Compliments
d	Mechanical Options 0=None	h	Output Circuit Type 3=Push Pull 4.75 to 30 VDC

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	Cable Colour Code	9 Pin Connector	12 Pin Connector
0 Volt	white	1	1
+ Volt	brown	2	2
A	green	3	3
B	yellow	4	4
0	grey	5	5
A̅	pink	6	6
B̅	blue	7	7
0̅	red	8	8

IH 103

INCREMENTAL HOLLOW SHAFT ENCODER

- Very Heavy Duty Construction
- Shaft Mounted
- Range of shaft bores (30 – 40 mm)
- 50000 PPR Maximum
- 4.75 to 30 Volts, RS 422 Compatible
- 300 kHz Maximum Frequency



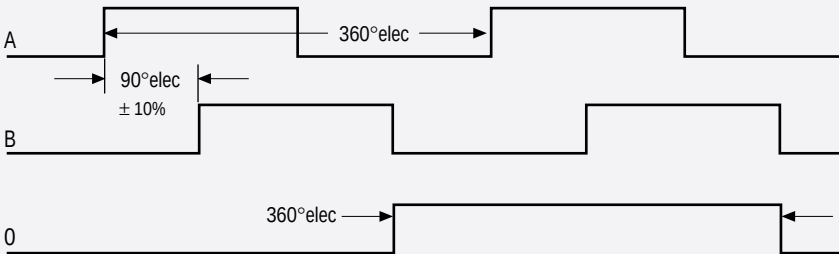
ELECTRICAL SPECIFICATIONS

Supply Voltage	4.75-30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	300 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

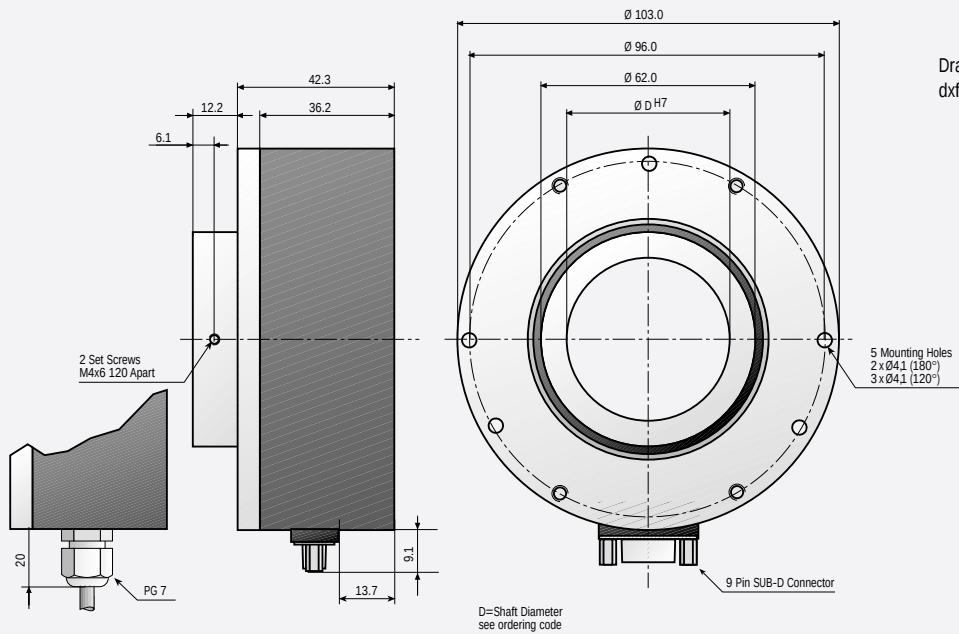
MECHANICAL SPECIFICATIONS

Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.2 Nm
Loading	Axial 60 N, Radial 80 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	1.584 lb (720 g)

OUTPUT SIGNALS



A Leads B in the CW Direction (facing shaft)
Complimentary channel also available



Drawing available as:
dxf, iges, step, sld file

ORDERING CODE

IH 103 - -

a b c d e f g h Pulses Per Revolution

a Group Function IH=Incremental Hollow Shaft	e Connector Type 0=2 mtr. (6ft.) Cable 6=9 Pin Sub D 7=12 Pin
b Basic Series Number 103	f Connector Location R=Radial
c Shaft Size D 26=26 mm 44=44mm AQ=1.5" AR=1.625"	g Output Signals 3=A+B+0 6=A+B+0+Compliments
d Mechanical Options 0=None	h Output Circuit Type 3=Push Pull 4.75 to 30 VDC

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

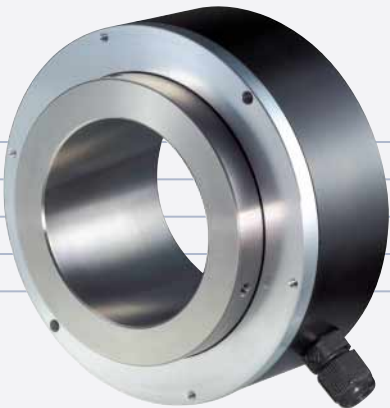
CONNECTIONS

Function	Cable Colour Code	9 Pin Connector	12 Pin Connector
0 Volt	white	1	1
+ Volt	brown	2	2
A	green	3	3
B	yellow	4	4
0	grey	5	5
A	pink	6	6
B	blue	7	7
0	red	8	8

IH 120

INCREMENTAL HOLLOW SHAFT ENCODER

- Very Heavy Duty Construction
- Shaft Mounted
- Range of shaft bores (40 – 65 mm)
- 50000 PPR Maximum
- 4.75 to 30 Volts, RS 422 Compatible
- 300 kHz Maximum Frequency



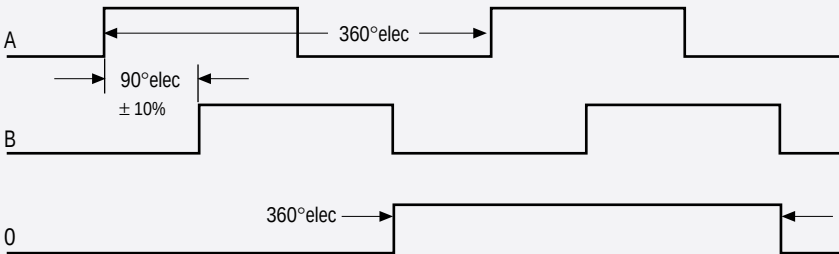
ELECTRICAL SPECIFICATIONS

Supply Voltage	4.75-30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	300 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

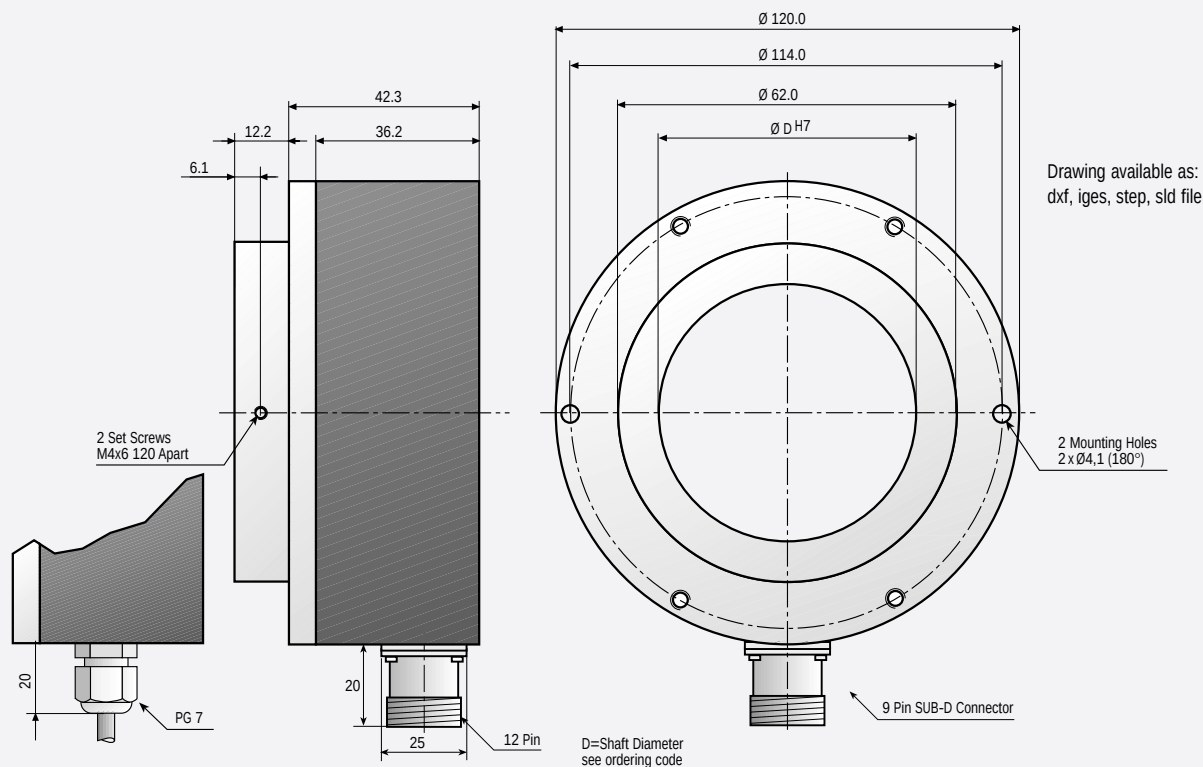
MECHANICAL SPECIFICATIONS

Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	4000 RPM (max)
Torque	> 0.2 Nm
Loading	Axial 60 N, Radial 80 N
Protection	IP 54
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	1.584 lb (720 g)

OUTPUT SIGNALS



A Leads B in the CW Direction (facing shaft)
Complimentary channel also available



ORDERING CODE

IH 120 - -

a b c d e f g h Pulses Per Revolution

- a **Group Function**
IH=Incremental Hollow Shaft

b **Basic Series Number**
120

c **Shaft Size D**
65=65 mm (max)
AY=2.5" (max)

d **Mechanical Options**
0=None
- e **Connector Type**
0=2 mtr. (6ft.) Cable
6=9 Pin Sub D
7=12 Pin

f **Connector Location**
R=Radial

g **Output Signals**
3=A+B+0
6=A+B+0+Compliments

h **Output Circuit Type**
3=Push Pull 4.75 to 30 VDC

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	Cable Colour Code	9 Pin Connector	12 Pin Connector
0 Volt	white	1	1
+ Volt	brown	2	2
A	green	3	3
B	yellow	4	4
0	grey	5	5
A	pink	6	6
B	blue	7	7
0	red	8	8

□ □ □ □ □ □ □ □ □ □

ABSOLUTE ENCODER OVERVIEW

Absolute encoders are commonly used in the industry to measure Absolute Position, which differs from incremental encoders that measure relative position or relative movement. Absolute encoders have a unique digital output representative of each shaft position. Absolute encoders produce a parallel „word“ of data that can be read directly and rapidly by most modern control systems. An absolute encoder also has the added benefit of retaining its position information even in the event of power loss.

The Single-Turn Absolute Encoder will measure Absolute Position of a shaft that rotates within a 0 Degree to 360 Degree range of movement. The count will recycle back to a Zero Count once a full 360 Degree revolution has been completed. The Single-Turn Absolute Encoder is mainly used in applications where the shaft rotation is cyclic between 0 to 360 degrees.

	AS 580	AS 700	AS 900	AH 580	AH 740	AH 950
						
Outside Diameter	58 mm	70 mm	90 mm	58 mm	74 mm	95 mm
Available Shaft/ Hollow Shaft Sizes	4 mm 1/4" 6 mm 3/8"	10 mm 1/2" 12 mm	10 mm 12 mm	6 mm 3/8" 10 mm 1/2" 12 mm	6 mm 1/4" 10 mm 3/8" 12 mm 1/2" 14 mm	6 mm 1/4" 10 mm 3/8"
Mechanical Options	stainless steel	stainless steel	—	—	stainless steel	stainless steel
Connector Location	axial radial	axial radial	axial radial	axial radial	radial	radial
Output Signals	Binary Code Gray Code	Binary Code Gray Code	Binary Code Gray Code	Binary Code Gray Code	Binary Code Gray Code	Binary Code Gray Code
Output Circuit Type	8-30 VDC Push Pull	8-30 VDC Push Pull	8-30 VDC Push Pull	8-30 VDC Push Pull	8-30 VDC Push Pull	8-30 VDC Push Pull
Pulses Per Revolution	up to 13 Bits	up to 13 Bits	up to 13 Bits	up to 12 Bits	up to 12 Bits	up to 13 Bits
Page	40	42	44	46	48	50



ABSOLUTE SHAFT ENCODER Industry Standard Size 25

Synchro Flange Mounting

Up to 13 Bits (8192) Maximum

5 Volt TTL or 8 to 30 Volts

Gray Code or Binary Code

Optional Reset



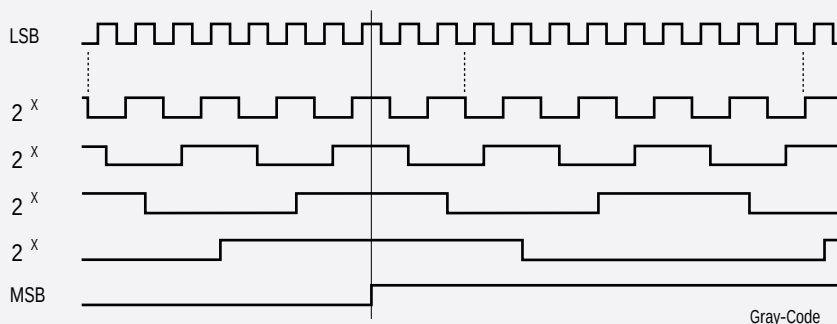
ELECTRICAL SPECIFICATIONS

Supply Voltage	5 Volt or 8 to 30 V DC
Current Consumption	100 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	200 kHz (max)
Logic Level (high)	V _{CC} - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

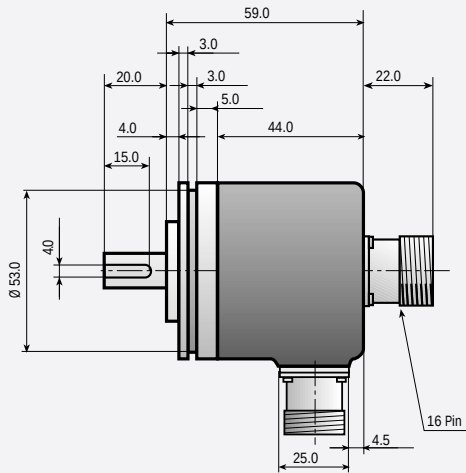
MECHANICAL SPECIFICATIONS

Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.05 Nm
Loading	Axial 40 N, Radial 30 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	0.7 lb (320 g)

OUTPUT SIGNALS



Drawing available as:



ORDERING CODE

AS 580 - -
 a b c d e f g h Increments Per Revolution

- a **Group Function**
AS=Absolute Solid Shaft

- | | |
|---|----------------------------|
| b | Basic Series Number |
| | 580 |

- c Shaft Size D**
 06=6 mm 10=10 mm
 AA=1/4" AB=3/8"

- d **Mechanical Options**
0=None

- e **Connector Type**
0=2 mtr. Cable
8=16 Pin

- f Connector Location**
A=Axial
R=Radial

- g **Output Signals**
E=Binary <->
F=Gray <->

- #### h Output Circuit Type
- 1=TTL (5 VDC)
5=Push Pull 8 to 30 VDC

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	16 Pin Connector	Cable Colour Code
0 Volt	1	white
+ Volt	2	brown
2 ⁰	3	green
2 ¹	4	yellow
2 ²	5	grey
2 ³	6	pink
2 ⁴	7	blue
2 ⁵	8	red
2 ⁶	9	black

Function	16 Pin Connector	Cable Colour Code
2 ⁷	10	violet
2 ⁸	11	grey/pink
2 ⁹	12	red/blue
2 ¹⁰	13	white/green
2 ¹¹	14	brown/green
2 ¹²	15	white/yellow
Reset	—	yellow/brown
<->	16	white/gray
Earth	—	striped



ABSOLUTE SHAFT ENCODER

IP65 Protection

Up to 13 Bits (8192) Maximum

8 to 30 Volts or RS 422A Compatible

Gray Code or Binary Code

Optional Reset



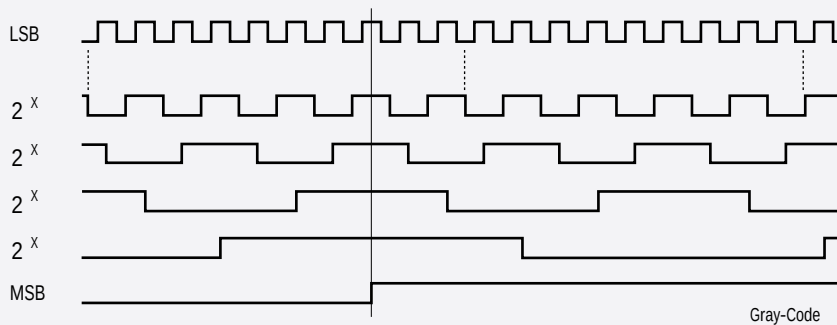
ELECTRICAL SPECIFICATIONS

Supply Voltage	5 Volt or 8 to 30 V DC
Current Consumption	100 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	500 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

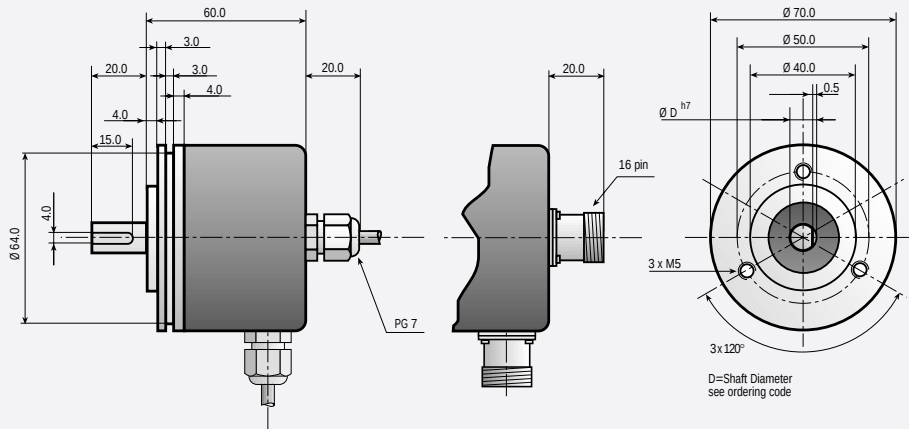
MECHANICAL SPECIFICATIONS

Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.1 Nm
Loading	Axial 60 N, Radial 50 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	0.99 lb (450 g)

OUTPUT SIGNALS



Drawing available as:
dxf, iges, step, sld file



ORDERING CODE

AS700--

a b c d e f g h Increments Per Revolution

a

Group Function

AS=Absolute Solid Shaft

b

Basic Series Number

700

c

Shaft Size D

10=10 mm

12=12 mm

AC=1/2"

d

Mechanical Options

0=None

e

Connector Type

0=2 mtr. Cable

8=16Pin

f

Connector Location

A=Axial

R=Radial

g

Output Signals

E=Binary <->

F=Gray <->

h

Output Circuit Type

1=TTL (5 VDC)

5=Push Pull 8 to 30 VDC

Note:

Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	16 Pin Connector	Cable Colour Code	Function	16 Pin Connector	Cable Colour Code
0 Volt	1	white	2 ⁷	10	violet
+ Volt	2	brown	2 ⁸	11	grey/pink
2 ⁰	3	green	2 ⁹	12	red/blue
2 ¹	4	yellow	2 ¹⁰	13	white/green
2 ²	5	grey	2 ¹¹	14	brown/green
2 ³	6	pink	2 ¹²	15	white/yellow
2 ⁴	7	blue	Reset	—	yellow/brown
2 ⁵	8	red	<->	16	white/gray
2 ⁶	9	black	Earth	—	striped

AS 900

ABSOLUTE SHAFT ENCODER

Heavy Duty Construction

IP65 Protection

Up to 13 Bits (8192) Maximum

Gray Code or Binary Code



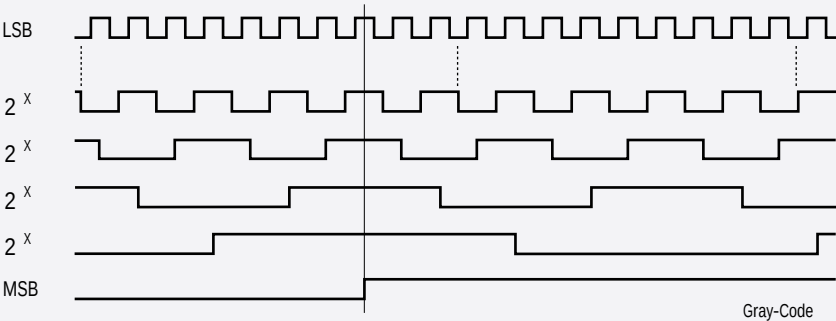
ELECTRICAL SPECIFICATIONS

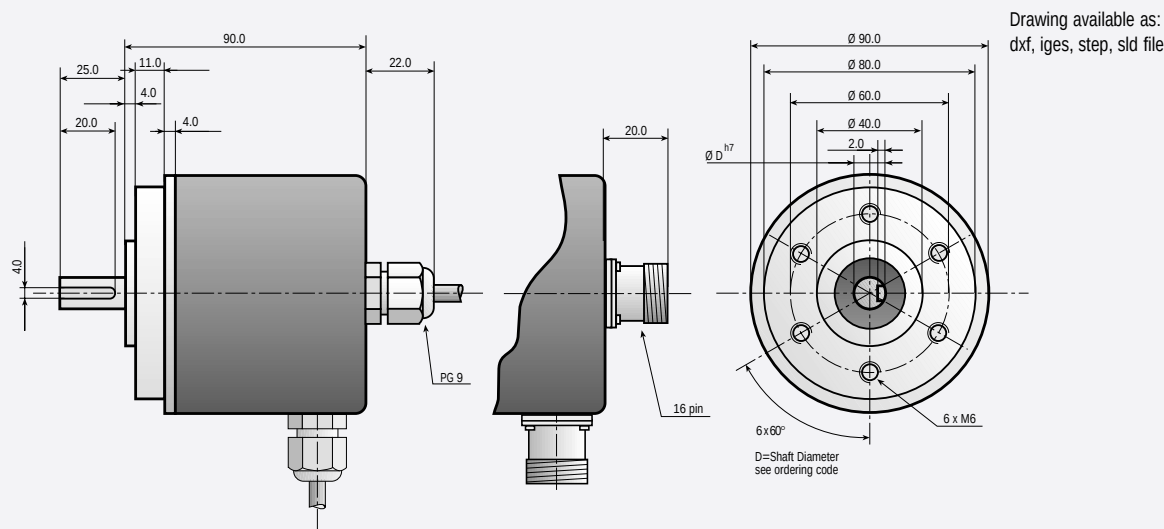
Supply Voltage	5 Volt or 8 to 30 V DC
Current Consumption	120 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	200 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

MECHANICAL SPECIFICATIONS

Cover	Steel
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.1 Nm
Loading	Axial 60 N, Radial 50 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	1.91 lb (850 g)

OUTPUT SIGNALS





ORDERING CODE

AS900-

a b c d e f g h Increments Per Revolution

- a

Group Function
AS=Absolute Solid Shaft
- b

Basic Series Number
900
- c

Shaft Size D
10=10 mm
12=12 mm
- d

Mechanical Options
0=None
- e

Connector Type
0=2 mtr. Cable
8=16Pin
- f

Connector Location
A=Axial
R=Radial
- g

Output Signals
E=Binary <->
F=Gray <->
- h

Output Circuit Type
1=TTL (5 VDC)
5=Push Pull 8 to 30 VDC

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	16 Pin Connector	Cable Colour Code	Function	16 Pin Connector	Cable Colour Code
0 Volt	1	white	2 ⁷	10	violet
+ Volt	2	brown	2 ⁸	11	grey/pink
2 ⁰	3	green	2 ⁹	12	red/blue
2 ¹	4	yellow	2 ¹⁰	13	white/green
2 ²	5	grey	2 ¹¹	14	brown/green
2 ³	6	pink	2 ¹²	15	white/yellow
2 ⁴	7	blue	Reset	–	yellow/brown
2 ⁵	8	red	<->	16	white/gray
2 ⁶	9	black	Earth	–	striped



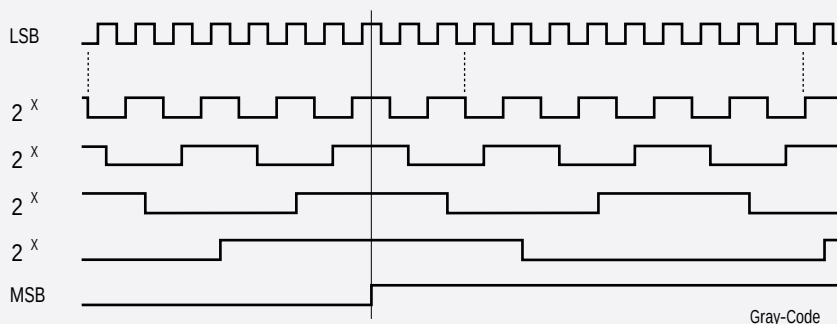
ELECTRICAL SPECIFICATIONS

Supply Voltage	5 Volt or 8 to 30 V DC
Current Consumption	100 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	100 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

MECHANICAL SPECIFICATIONS

Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.04 Nm
Loading	Axial 20 N, Radial 15 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	0.55 lb (250 g)

OUTPUT SIGNALS



Technical drawing of a 16-pin connector. The drawing includes a side view on the left and a front view on the right. Dimensions are provided in millimeters (mm).

Side View Dimensions:

- Overall width: 29.0 mm
- Pin width: 2.9 mm
- Pin spacing: 2.9 mm
- Pin length: 13.2 mm
- Pin diameter: 8.0 mm
- Overall height: 52.0 mm

Front View Dimensions:

- Overall width: 29.0 mm
- Pin width: 2.9 mm
- Pin spacing: 2.9 mm
- Pin length: 13.2 mm
- Pin diameter: 8.0 mm
- Overall height: 41.2 mm
- Pin diameter: 12.0 mm
- Pin length: 14.0 mm

Labels:

- 16 pin

AH **580** - -

a b c d e f g h Increments Per Revolution

- | | |
|---|--|
| e | Connector Type
0=2 mtr. Cable
8=16 Pin |
| f | Connector Location
R=Radial |
| g | Output Signals
E=Binary <->
F=Gray <-> |
| h | Output Circuit Type
1=TTL (5 VDC)
5=Push Pull 8 to 30 VDC |

CONNECTIONS

□ □ □ □ 47 □

Shaft Mounted

Up to 12 Bits (8192) Maximum

5 Volt TTL or 8 to 30 Volts

Gray Code or Binary Code

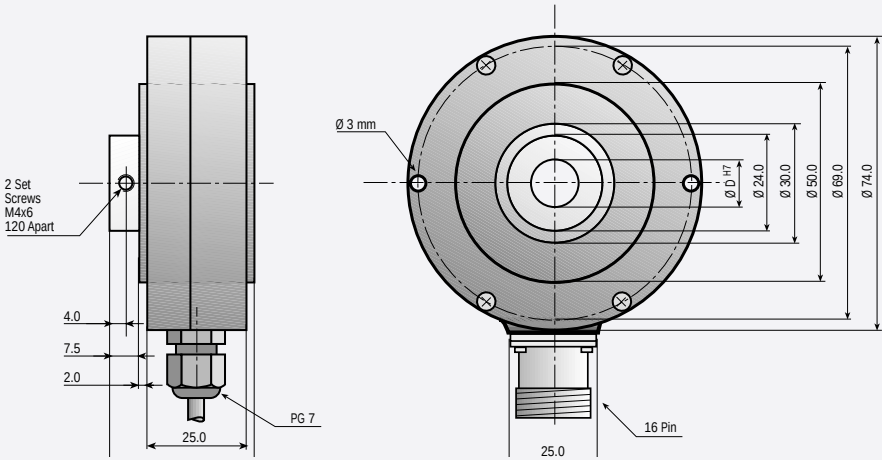


Supply Voltage	5 Volt or 8 to 30 V DC
Current Consumption	100 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	200 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.04 Nm
Loading	Axial 40 N, Radial 30 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	0.84 lb (380 g)

Timing diagram for the Grav-Code signal. The diagram shows the relationship between the Least Significant Bit (LSB), four intermediate signals labeled 2^x , and the Most Significant Bit (MSB). The signals are shown as digital waveforms over time. A vertical line indicates a transition point. The MSB signal is a single pulse that occurs after the other signals have settled.

Drawing available as:
dxf, iges, step, sld file



ORDERING CODE

AH **740** - -

a b c d e f g h Increments Per Revolution

- | | |
|---|---|
| a | Group Function
AH=Absolute Hollow Shaft |
| b | Basic Series Number
740 |
| c | Shaft Size D
06=6 mm 10=10 mm 12=12mm
14=14mm
AA=1/4" AB=3/8" AC=1/2" |
| d | Mechanical Options
0=None |

- | | |
|---|--|
| e | Connector Type
0=2 mtr. Cable
8=16Pin |
| f | Connector Location
R=Radial |
| g | Output Signals
E=Binary <->
F=Gray <-> |
| h | Output Circuit Type
1=TTL (5 VDC)
5=Push Pull 8 to 30 VDC |

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	16 Pin Connector	Cable Colour Code	Function	16 Pin Connector	Cable Colour Code
0 Volt	1	white	2 ⁶	9	black
+ Volt	2	brown	2 ⁷	10	violet
2 ⁰	3	green	2 ⁸	11	grey/pink
2 ¹	4	yellow	2 ⁹	12	red/blue
2 ²	5	grey	2 ¹⁰	13	white/green
2 ³	6	pink	2 ¹¹	14	brown/green
2 ⁴	7	blue	2 ¹²	15	white/yellow
2 ⁵	8	red	<->	16	yellow/brown



Industry Standard Size 25

Up to 13 Bits (8192) Maximum

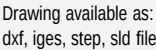
5 Volt TTL or 8 to 30 Volts

Gray Code or Binary Code



Supply Voltage	5 Volt or 8 to 30 V DC
Current Consumption	100 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	200 kHz (max)
Logic Level (high)	V _{CC} - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.05 Nm
Loading	Axial 40 N, Radial 30 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	0.7 lb (320 g)



ORDERING CODE

AH **950** - -
 a b c d e f g h Increments Per Revolution

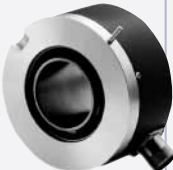
- ## CONNECTIONS

Function	16 Pin Connector	Cable Colour Code	Function	16 Pin Connector	Cable Colour Code
0 Volt	1	white	2 ⁷	9	black
+ Volt	2	brown	2 ⁸	10	violet
2 ⁰	3	green	2 ⁹	11	grey/pink
2 ¹	4	yellow	2 ¹⁰	12	red/blue
2 ²	5	grey	2 ¹¹	13	white/green
2 ³	6	pink	2 ¹²	14	brown/green
2 ⁴	7	blue	Reset	15	white/yellow
2 ⁵	8	red	<->	16	yellow/brown

□ □ □ □ □ □ □ □ □ □

MULTI-TURN ENCODER OVERVIEW

The Multi-Turn Absolute Encoder will measure Absolute Position of multiple shaft revolutions. The count will recycle back to zero once the maximum number of turns has been exceeded. The Multi-Turn Absolute Encoder is mainly used in applications where it requires many shaft revolutions to reach a final position. Some typical applications are: Large Over-Head Gantry Cranes, and Automated Storage and Retrieval Systems.

	MS 650	MH 750
		
Type-Size	65 mm	75 mm
Available Shaft/ Hollow Shaft Sizes	standard	10 – 50,8 mm
Mechanical Options	—	—
Connector Location	radial	radial
Output Signals	SSI	SSI
Output Circuit Type	RS 422	RS 422 or RS 485
Pulses Per Revolution	13 x 12	13 x 12
Page	54	56

MS 650

MULTITURN-ENCODER SSI Small and Compact
Multi-Turn

SSI (Synchronous Serial Interface)
Programmable Encoder Parameters
Standard Interchangeable Mounting Flanges



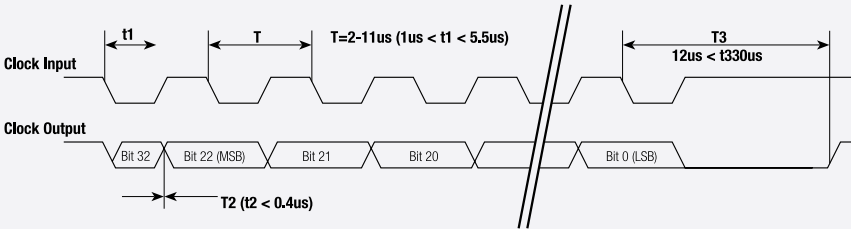
ELECTRICAL SPECIFICATIONS

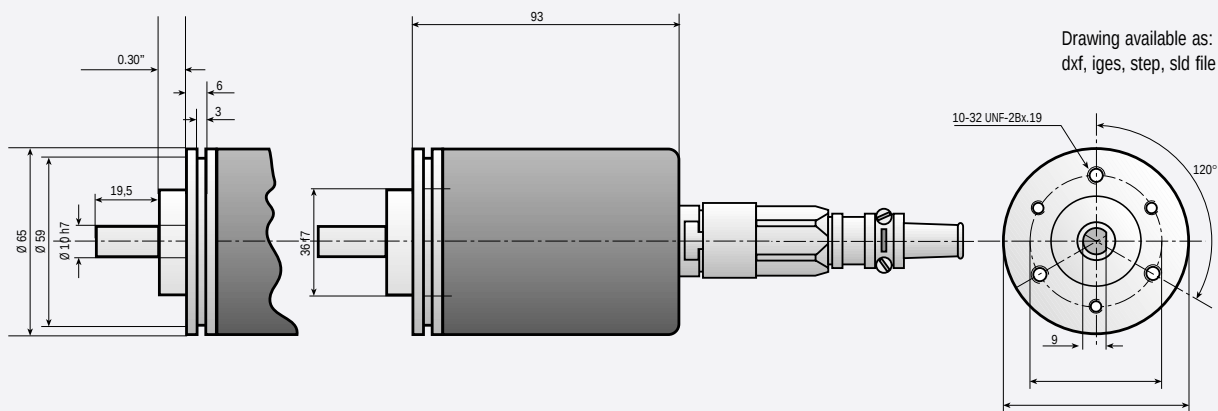
Encoder Capacity	max. 25 Bit
Steps/Revolution	8192 Steps/Rev
Number of Revolutions	4096 Revolution
Supply Voltage	11-27 V DC
Power Dissipation (No Load)	< 4 Watt
Programming via RS485	IBM Compatible EPROG Software, PT 100 Programming Terminal
Output Code (programmable)	Binary, BCD, Gray, Shifted Gray, Excess3, Shifted Excess3
Clock Input	Opto Coupler Isolated
Clock Frequency	95 kHz - 1 MHz
Transmission Cable Length	Dependent on Cable Cross Section, Shielding, Clock Frequency etc...
Data Output	RS422 (2 wire)
Output Format	Standard, Tree Format, with Repetition
Pin Configuration	Upon Request

MECHANICAL SPECIFICATIONS

Max. Rotational Speed	6000 RPM
Max. Load on Shaft	40 N Axial, 60 N Radial (at end of shaft)
Lifetime on Bearings	3.9 x 10 ¹⁰ Revolutions at:
· Operational Speed	3000 RPM
· Load on Shaft	20 N Axial, 30 N Radial (at end of shaft)
· Operating Temperature	60°C (140°F)
Weight	0.7 kg (1.5 lb.)
Max. Angular Acceleration	≤ 10 ⁴ rad/s ²
Momentum of Inertia	2.5 x 10 ⁻⁶ kg m ²
Startup Momentum at 20°C (68°F)	2 Ncm
Vibration (50-2000 Hz Sinusoidal)	
DIN IEC 68-2-6	≤ 100 m/s ² (10g)
Shock (11ms) DIN IEC 68-2-27	≤ 100 m/s ² (100g)
Standard Connector	12 pin Contact Connector - Axial

OUTPUT SIGNALS





Drawing available as:
dxf, iges, step, sld file

ORDERING CODE

MS 650 - -
a b c d e f g h Increment./Rev. (Bits) x Number of Rev. (Bits)

a Group Function MS = Multi-Turn Absolute Solid Shaft	f Connector Location A=Axial
b Basic Series Number 650	g Output Formats E = Binary Code(Parallel) G = BCD Code(Parallel) H = 4 to 20 mA (Analog) I = 0 to 10 Volts (Analog) J = SSI (Serial) O = RS-485(Serial)
c Shaft Size AB = 10 mm	h Output Circuit Type 1 = TTL Line Driver O = 4 to 20mA(Analog) P = 0 to 10 Volts(Analog) S = SSI V = RS-485
d Mechanical Options 0 = None	
e Connector Type 0 = Cable 7 = 12 Pin	

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

ENVIRONMENTAL DATA

Electromagnetic compatibility (EMC)	EN 61000-4-2 (IEC-801-2) / EN 61000-4-4 (IEC-801-4)
Operating Temperature	0°-60°C (32° to 140°F) / (Optional -20° to +70°C) (-4° to 158°F)
Extended Temperature (Optional)	-30° to +80°C (-22° to 176°F)
Relative Humidity	98% (non condensing)
· Protecting Class	IP 65 (DIN 40 050)
· The protecting class of the encoder can be effected by the type of connector used	

MH 750

PROGR. MULTITURN HOLLOWSHAFT ENCODER

Programable Absolute Multiturn Hollow-Shaft
SSI-Interface
25 Bits (13 Bit/Rev. x 12 Bits Rev.)
10-30 Volts DC RS422 or RS485
Hollow-Shafts 10 – 50,8 mm



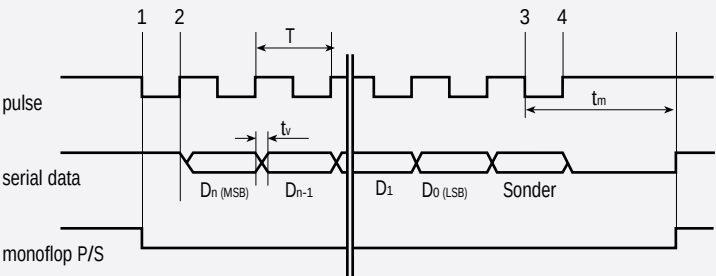
ELECTRICAL SPECIFICATIONS

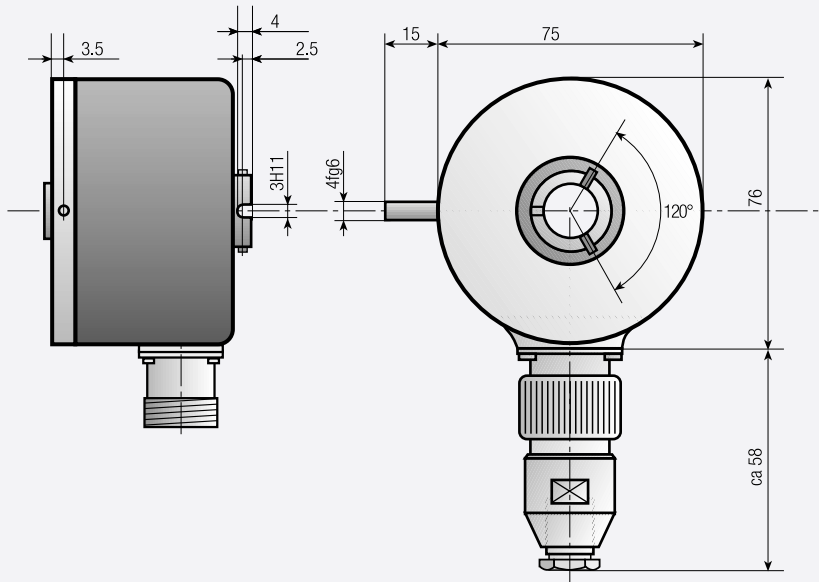
Supply Voltage	10 - 30 V DC
Current Consumption	60 mA (max)
Output Circuit	RS422 or RS485
Codes Available	Gray or Binary
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

MECHANICAL SPECIFICATIONS

Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.05 Nm
Loading	Axial 40 N, Radial 30 N
Protection	IP 65
Temperature	-20°...+70°C (-4°...+158°F) +100°C (+212°F) Optional
Weight	depends on Shaftsize (700-1200g)

OUTPUT SIGNALS





Drawing available as:
dxf, iges, step, sld file

ORDERING CODE

MH750-

Increment./Rev. (Bits) x Number of Rev. (Bits)

- a

Group Function
MH=Multi-Turn Hollow Shaft
- b

Basic Series Number
750
- c

Shaft Size D
10=10 mm 12=10 mm
14=14 mm bis 50=50 mm
- d

Mechanical Options
0=None
- e

Connector Type
0=2 mtr. Cable 8=16 Pin
- f

Connector Location
R=Radial
- g

Output Signals
E=Binary <->
F=Gray <->
- h

Output Circuit Type
8=10-30VDC RS422
V=10-30 VDC RS485

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	16 Pin Connector	Cable Colour Code	Function	16 Pin Connector	Cable Colour Code
Data +	1	violet	Output2	9	black/white
Data -	2	brown/white	Output3	10	brown/green
NC	3	green/white	Output4	11	green/grey
TxD/T,R+	4	yellow/white	GND	12	blue
TxD/T,R-	5	grey/white	Preset-IN	13	yellow
Pulse+	6	white/pink	Up/Down	14	brown
Pulse-	7	blue/white	UB	15	red
Output1	8	red/white	NC	16	pink



HARSH AND HAZARDOUS AREA ENCODER OVERVIEW



This type of encoder is designed for use in potentially explosive atmospheres and in severe environments where superior environmental protection is required. Our complete range of Harsh and Hazardous encoder designed and tested and certified to withstand ingestion protection rating of IP67.

A hazardous area can be defined as. “An area in which a flammable substance in the form of gas or vapour or dust, when mixed with air, is present in such proportions that it can explode when in contact with an ignition source (Electrical Equipment).

Our Explosion Proof Encoders (IX700 Series & AX700 Series) are certified under the ATEX Directive for use in Zone 0 (Division 1), Zone 1(Division 1) and Zone 2 (Division 2) locations.

	IX 700	AX 700	IP 700	AP 700
				
Type-Size	70 mm	70 mm	70 mm	70 mm
Available Shaft/ Hollow Shaft Sizes	10 mm 12 mm	10 mm 12 mm	10 mm 12 mm	10 mm 12 mm
Mechanical Options	—	—	—	—
Connector Location	axial	axial	axial	axial
Output Signals	A+B+O A+B+O+Complim.	Binary Code Gray Code	A+B+O A+B+O+Complim.	Binary Code Gray Code
Output Circuit Type	4,75-30 VDC Push Pull	8-30 VDC Push Pull	4,75-30 VDC Push Pull	8-30 VDC Push Pull
Pulses Per Revolution	1-50000	up to 12 Bit	1-50000	up to 12 Bit
Page	60	62	64	66

IX 700

INCREMENTAL FLAMEPROOF ENCODER

Ex

CE

ATEX

EEx dI / IIC T6 (Tamb 60°C)

IP 66/67 – M/S

Heavy Duty Construction

5000 Pulses/Rev., 300 kHz max.

4,75 – 30 Volts, RS 422 Compatible



APPROVALS / CERTIFICATIONS

Certification Number	DEMKO 02 ATEX 133213X
	EX I/II G D
EN 50014	1197 E incl. A1+A2
EN 50018	2000E
EEx d IIC T6	(Tamb +60°C)
EEx d IIC T4	(Tamb +100°C)
	EEx d I

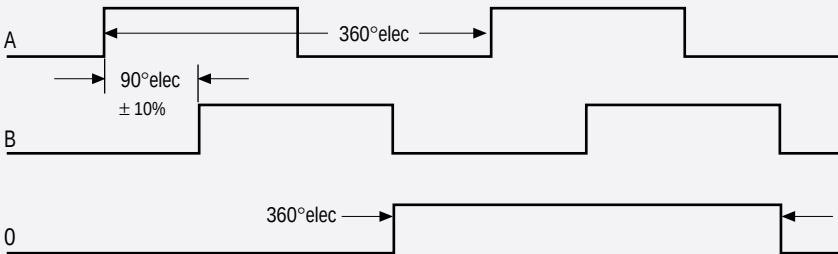
ELECTRICAL SPECIFICATIONS

Supply Voltage	4.75 - 30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	300 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection:	100 %
Cable	Mechanically and Chemically Resistant Flame Retardant – Screened

MECHANICAL SPECIFICATIONS

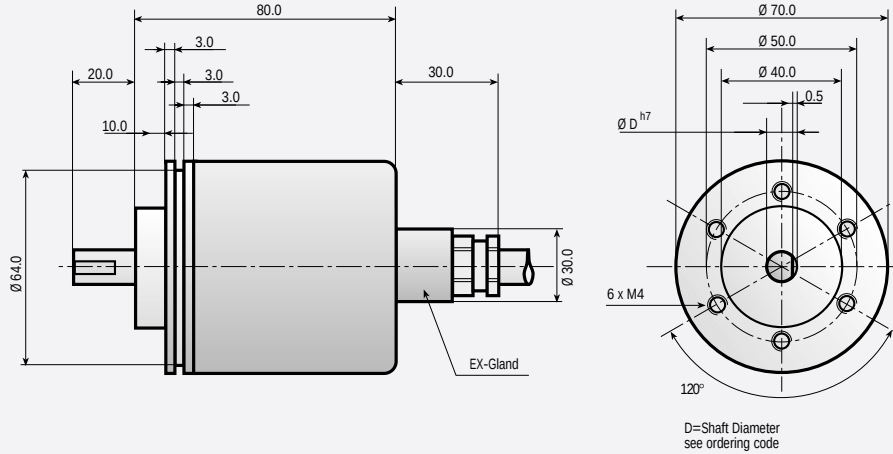
Cover	316 Stainless Steel
Body	316 Stainless Steel
Shaft	316 Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.4 Nm
Loading	Axial 60 N, Radial 50 N
Protection	IP 66/67 – M/S
Temperature	-20°...+70°C (-4°...+158°F)
Weight	(2.866 lb) 1300 g

OUTPUT SIGNALS



A Leads B in the CW Direction (facing shaft)
Complimentary channel also available

Drawing available as:
dxf, iges, step, sld file



ORDERING CODE

IX **700** - -

a b c d e f g h Pulses Per Revolution

- | | |
|---|---|
| a | Group Function
IX=Incremental Explosion Proof |
| b | Basic Series Number
700 |
| c | Shaft Size D
10=10 mm 12=12 mm |
| d | Mechanical Options
0 = None |

- | | |
|---|--|
| e | Connector Type
0=2 mtr. (6 ft.) Cable |
| f | Connector Location
A=Axial |
| g | Output Signals
3=A+B+0
6=A+B+0+Compliments |
| h | Output Circuit Type
3=Push Pull 4.75 to 30 VDC |

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	Cable Number Code
0 Volt	#1
+ Volt	#2
A	#3
B	#4
0	#5
$\bar{A}$	#6
$\bar{B}$	#7
$\bar{0}$	#8

□ □ □ □ □ □ □ □ □ □

AX 700

Ex

CE

ATEX

ABSOLUTE FLAMEPROOF ENCODER

EEx d I/IIC T6 (Tamb 60°C)

IP 66/67 – M/S

Heavy Duty Construction

Up to 12 Bits (4096)

5 Volt TTL or 8 to 30 Volts

Gray Code or Binary Code



APPROVALS/CERTIFICATIONS

Certification Number	DEMKO 02 ATEX 133213X
	EX I/II G D
EN 50014	1197 E incl. A1+A2
EN 50018	2000E
EEx d IIC T6	(Tamb +60°C)
EEx d IIC T4	(Tamb +100°C)
	EEx d I

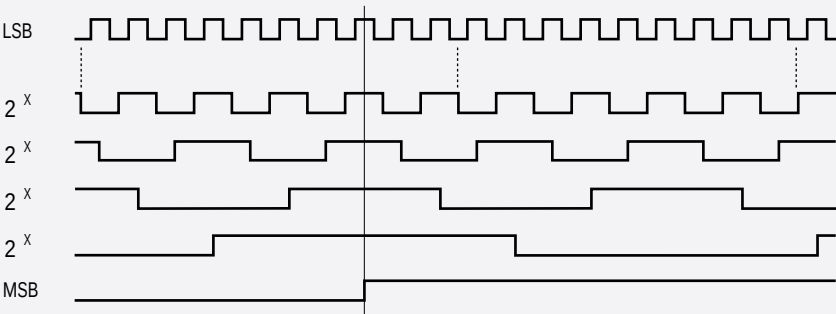
ELECTRICAL SPECIFICATIONS

Supply Voltage	5 Volt TTL or 8 to 30 V DC
Current Consumption	100 mA max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	200 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection:	100 %
Cable	Mechanically and Chemically Resistant Flame Retardant – Screened

MECHANICAL SPECIFICATIONS

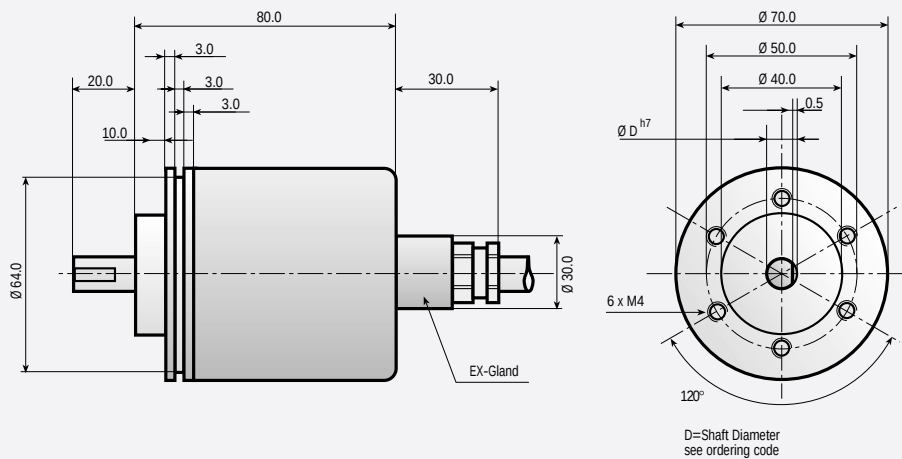
Cover	316 Stainless Steel
Body	316 Stainless Steel
Shaft	316 Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.4 Nm
Loading	Axial 60 N, Radial 50 N
Protection	IP 66/67 – M/S
Temperature	-20°...+70°C (-4°...+158°F)
Weight	(2.866 lb) 1300 g

OUTPUT SIGNALS



Gray Code

Drawing available as:
dxf, iges, step, sld file



ORDERING CODE

AX700-

Pulses Per Revolution

- a

Group Function

AX=Absolute Explosion Proof

b

Basic Series Number

700

c

Shaft Size

10=10 mm

12=12 mm

d

Mechanical Options

0=None
- e

Connector Type

0=2 mtr. (6 ft) Cable

f

Connector Location

A=Axial

g

Output Signals

E=Binary <->

F=Gray <->

h

Output Circuit Type

1=TTL (5 VDC)

5=Push Pull 8 to 30 VDC
- Note:** Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details
- CONNECTIONS
- | Function | Cable Colour Code |
|----------|-------------------|
| 0 Volt | white |
| + Volt | brown |
| A | green |
| B | yellow |
| 0 | grey |
| A | pink |
| B | blue |
| 0 | red |
- 63



IP 700

INCREMENTAL ENCODER IP66/IP67 – M/S IP 66/67 – M/S
Heavy Duty Construction
5000 Pulses/Rev., 300 kHz max.
4,75 – 30 Volts, RS 422 Compatible



APPROVALS/CERTIFICATIONS

EN 50014	1197 E incl. A1 + A2
EN 50018	2000 E

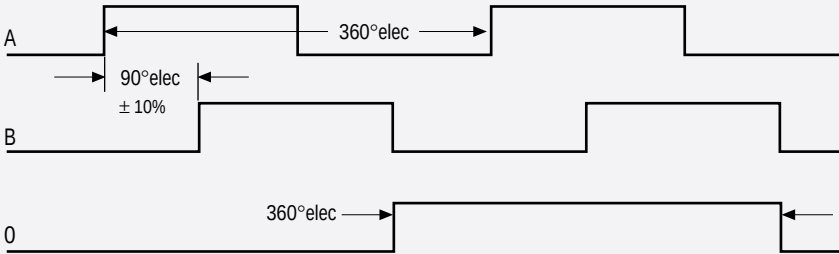
ELECTRICAL SPECIFICATIONS

Supply Voltage	4.75 - 30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	300 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection:	100 %
Cable	Mechanically and Chemically Resistant Screened

MECHANICAL SPECIFICATIONS

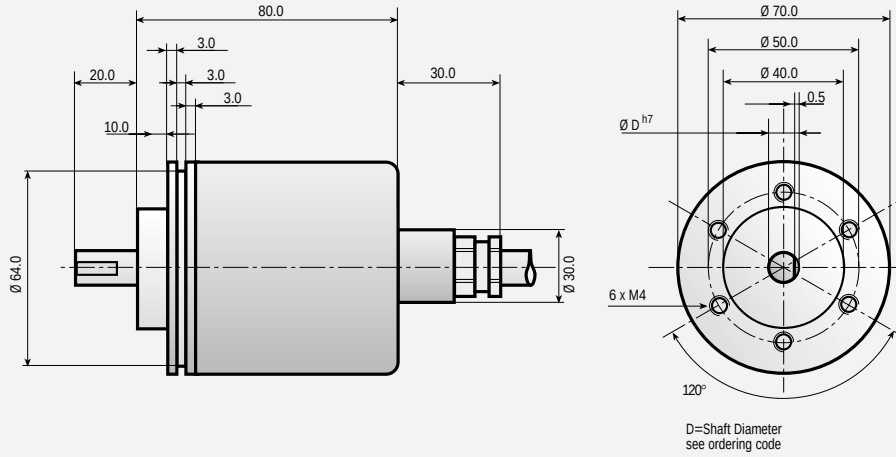
Cover	316 Stainless Steel
Body	316 Stainless Steel
Shaft	316 Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.4 Nm
Loading	Axial 60 N, Radial 50 N
Protection	IP 66/67 – M/S
Temperature	-20°...+70°C (-4°...+158°F)
Weight	(2.866 lb) 1300 g

OUTPUT SIGNALS



A Leads B in the CW Direction (facing shaft)
Complimentary channel also available

Drawing available as:
dxf, iges, step, sld file



ORDERING CODE

IP 700 - -
 a b c d e f g h Pulses Per Revolution

- a **Group Function**
IP=Incremental Encoder IP66/IP67

- b **Basic Series Number**
700

- c Shaft Size D**
10=10 mm
12=12 mm

- d **Mechanical Options**
0 = None

- e **Connector Type**
0=2 mtr. (6ft.) Cable

- f **Connector Location**
A=Axial

- g **Output Signals**
 $3 = A + B + 0$
 $6 = A + B + 0 + \text{Compliments}$

- #### h Output Circuit Type
- 3=Push Pull 4.75 to 30 VDC

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	Cable Colour Code
0 Volt	white
+ Volt	brown
A	green
B	yellow
0	grey
$\bar{A}$	pink
$\bar{B}$	blue
$\bar{0}$	red



CENELEC & IEC Approvals

Heavy Duty Construction

Up to 12 Bits (4096)

5 Volt TTL or 8 to 30 Volts

Gray Code or Binary Code



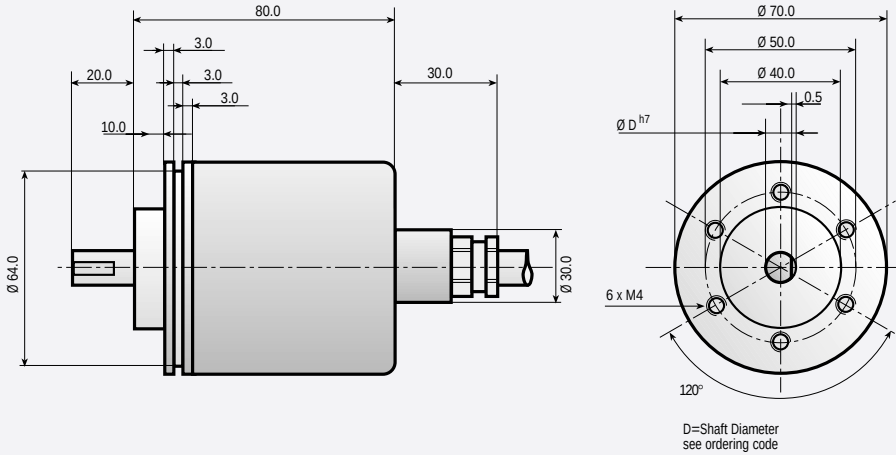
EN 50014	1197 E incl. A1 + A2
EN 50018	2000 E

Supply Voltage	5 Volt TTL or 8 to 30 VDC
Current Consumption	100 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	200 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection:	100 %
Cable	Mechanically and Chemically Resistant Flame Retardant – Screened

Cover	316 Stainless Steel
Body	316 Stainless Steel
Shaft	316 Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.4 Nm
Loading	Axial 60 N, Radial 50 N
Protection	IP 66/67 – M/S
Temperature	-20°...+70°C (-4°...+158°F)
Weight	(2.866 lb) 1300 g

Gray Code

Drawing available as:
dxf, iges, step, sld file



ORDERING CODE

AP700--

a b c d e f g h Pulses Per Revolution

aGroup Function

AP=Absolute Encoder IP66/IP67

bBasic Series Number

700

cShaft Size

10=10 mm

12=12 mm

dMechanical Options

0=None

eConnector Type

0=2 mtr. (6 ft) Cable

fConnector Location

A=Axial

gOutput Signals

E=Binary <->

F=Gray <->

hOutput Circuit Type

1=TTL (5 VDC)

5=Push Pull 8 to 30 VDC

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	Cable Colour Code	Function	Cable Colour Code
0 Volt	white	2 ⁶	black
+ Volt	brown	2 ⁷	violet
2 ⁰	green	2 ⁸	grey/pink
2 ¹	yellow	2 ⁹	red/blue
2 ²	grey	2 ¹⁰	white/green
2 ³	pink	2 ¹¹	brown/green
2 ⁴	blue	Reset	yellow/brown
2 ⁵	red	<->	white/gray

□ □ □ □ □ □ □ □ □ □

SPECIAL FUNCTION ENCODER OVERVIEW

Special function encoders are essentially four encoders in one package. This type of encoder provides four different types of signals simultaneously: traditional incremental encoder signals, Directional activated signals, direction flag signal as well as a Doubled Incremental Signal (X2) and a Quadrupled Encoder Signal (X4). Used in applications where space is limited, and multiple functions are required.

XS 410



Outside Diameter	41 mm	
Available Shaft/ Hollow Shaft Sizes	6 mm	1/4"
Mechanical Options	—	
Connector Location	axial	
Output Signals	A+PL+PR+DR A+B+O+PR+PL+DR+X2+X4	
Output Circuit Type	8 - 30 V DC Push Pull	
Pulses Per Revolution	max. 1024x4	

XS 410

SPECIAL FUNCTION SHAFT ENCODER

- Compact Construction
- IP54 (Optional IP65 Protection)
- Direction Output Signal
- 4096 PPR Maximum
- 200 kHz Maximum Frequency



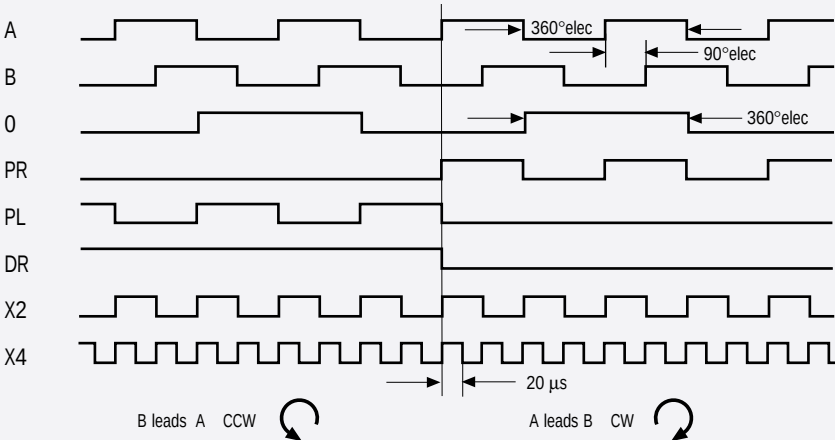
ELECTRICAL SPECIFICATIONS

Supply Voltage	5 Volt TTL or 8 to 30 V DC
Current Consumption	40 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	200 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

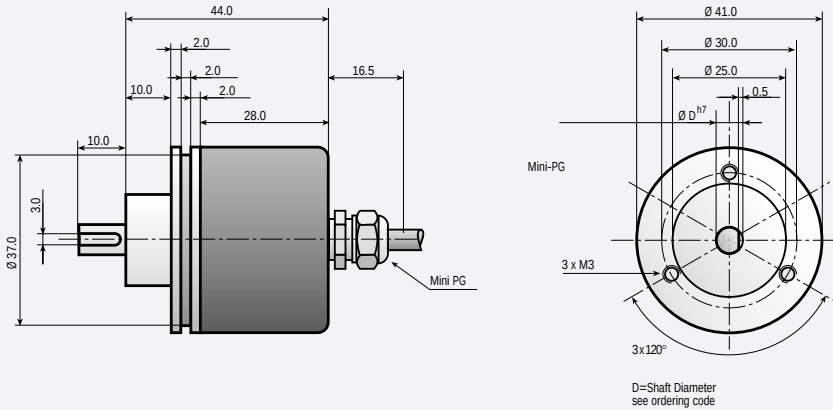
MECHANICAL SPECIFICATIONS

Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	6000 RPM (max)
Torque	> 0.04 Nm
Loading	Axial 40 N, Radial 30 N
Protection	IP 54
Temperature	-20°...+70°C (-4°...+158°F) +100°C (+212°F) Optional
Weight	0.27 lb (130 g)

OUTPUT SIGNALS



Drawing available as:
dxf, iges, step, sld file



ORDERING CODE

XS	410	-											
a	b		c	d	e	f	g	h					
										Pulses Per Revolution			
a Group Function XS=Special Function Solid Shaft													
b Basic Series Number 410													
c Shaft Size D 06=6 mm AA=1/4"													
d Mechanical Options 0= None													
e Connector Type 0=2 mtr. Cable													
f Connector Location A=Axial													
g Output Signals 7=A+PL+PR+DR 8=A+B+0+PR+PL+DR+X2+X4													
h Output Circuit Type 1=TTL (5 VDC) 5=Push Pull 8 to 30 VDC													

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	Cable Colour Code
0 Volt	white
+ Volt	brown
A	green
B	yellow
0	grey.
PR	pink
PL	blue
X2	red
X4	black
DR	violet
Earth	gray/pink

□ □ □ □ □ □ □ □ □ □

COMMUTATION ENCODER OVERVIEW

New applications have opened up for motor and drive system manufactures, thanks to our newly designed Commutation Signal Encoders. Motor manufacturers no longer need to use a Resolver, they can use our Commutation Encoder which has both Incremental Signals and Commutation Signals as part of a mixed system. The concept is to use the Commutation Signals to steer the motor and the Incremental Signals for precision speed control feedback.

Motor applications are the most demanding type of applications for any encoder. the encoder is expected to operate at high frequencies under extreme temperatures, high shaft and high vibration. To achieve this would have been impossible without spending an enormous amount of time and money on our new product. Because of our commitment we can now offer our leading edge technology to this highly demanding industrial sector.

	CH 580	CH 840
		
Type-Size	58 mm	84 mm
Available Shaft/ Hollow Shaft Sizes	6 mm 13 mm	15 mm
Mechanical Options	—	—
Connector Location	radial	radial
Output Signals	A+B+O+U+V+W A+B+O+U+V+W+Complim.	A+B+O+U+V+W A+B+O+U+V+W+Complim.
Output Circuit Type	5-15 V DC 10-30 V DC	A+B+O+U+V+W A+B+O+U+V+W+Complim.
Pulses Per Revolution	1-2048	1-2048
Page	74	76

CH 580

COMMUTATION HOLLOW SHAFT ENCODER

- Compact Construction
- Shaft Mounted
- 2048 PPR Maximum
- DC Motor Commutation Signals
- 300 kHz Maximum Frequency



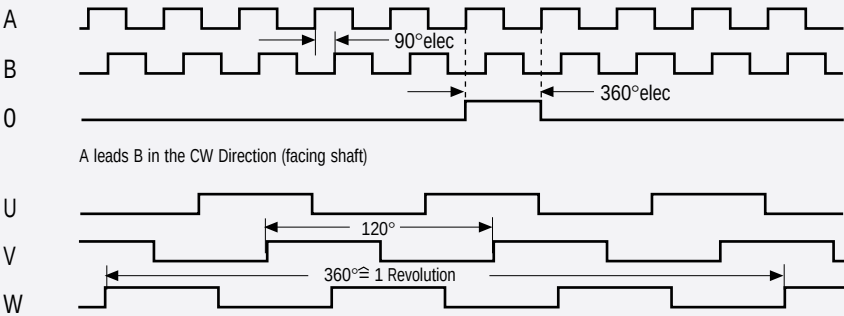
ELECTRICAL SPECIFICATIONS

Supply Voltage	5- 15 V DC or 10- 30 V DC
Current Consumption	100 mA (max)
Output Circuit	TTL or Push-Pull, RS 422A
Impulse Frequency	300 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

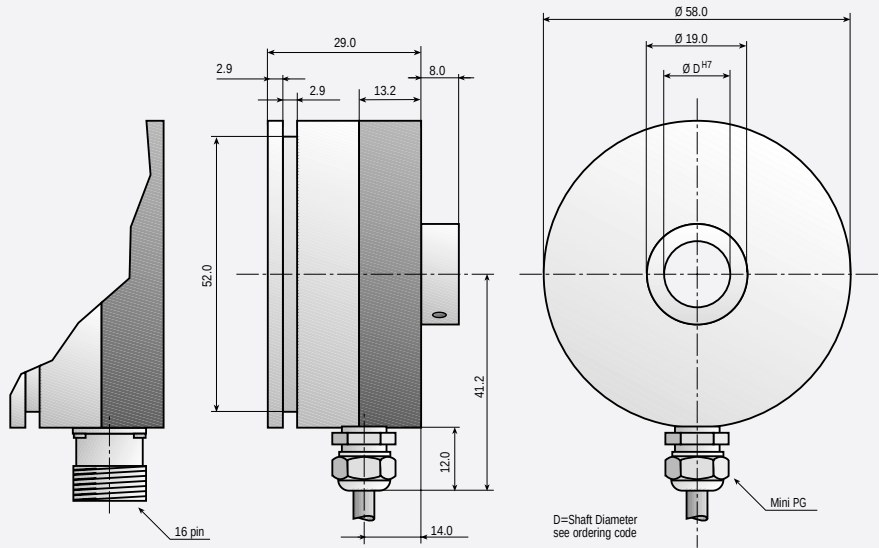
MECHANICAL SPECIFICATIONS

Cover	Aluminium
Body	Aluminium
Shaft	Stainless Steel
Speed	10,000 RPM (max)
Torque	> 0.06 Nm
Loading	Axial 20 N, Radial 30 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	0.374 lb (170 g)

OUTPUT SIGNALS



Drawing available as:
dxf, iges, step, sld file



ORDERING CODE

CH580-

Pulses Per Revolution

aGroup Function

CH=Commutation Hollow Shaft

bBasic Series Number

580

cShaft Size D

06=6 mm

13=13 mm

dMechanical Options

0=None

eConnector Type

0=2 mtr. Cable

8=16 Pin

fConnector Location

R=Radial

gOutput Signals

A=A+B+O+U+V+W

B=A+B+O+U+V+W+Compliments

hOutput Circuit Type

6=5-15 VDC

7=10-30 VDC

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

CONNECTIONS

Function	Cable Colour Code	12 Pin Connector	Function	Cable Colour Code	16 Pin Connector
0 Volt	white	1			
+ Volt	brown	2			
A	green	3	$\bar{A}$	black	9
B	yellow	4	$\bar{B}$	violet	10
O	grey	5	$\bar{O}$	grey/pink	11
U	pink	6	$\bar{U}$	red/blue	12
V	blue	7	$\bar{V}$	white/green	13
W	red	8	$\bar{W}$	brown/green	14

CH 840

COMMUTATION HOLLOW SHAFT ENCODER

- Heavy Duty Construction
- Shaft Mounted (with Key Way)
- 2048 PPR Maximum
- DC Motor Commutation Signals
- 200 kHz Maximum Frequency



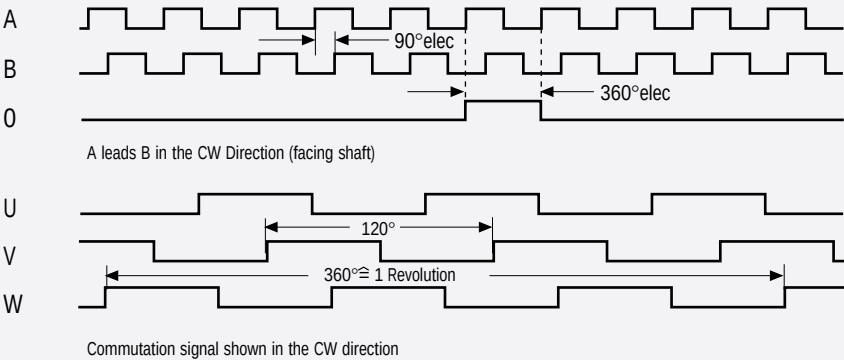
ELECTRICAL SPECIFICATIONS

Supply Voltage	5- 15 Volt or 10- 30 VDC
Current Consumption	100 mA (max)
Output Circuit	Push-Pull, RS 422A
Impulse Frequency	200 kHz (max)
Logic Level (high)	Vcc - 0.7 Volt
Logic Level (low)	0.25 Volt (max)
Short Circuit Protection	100 %

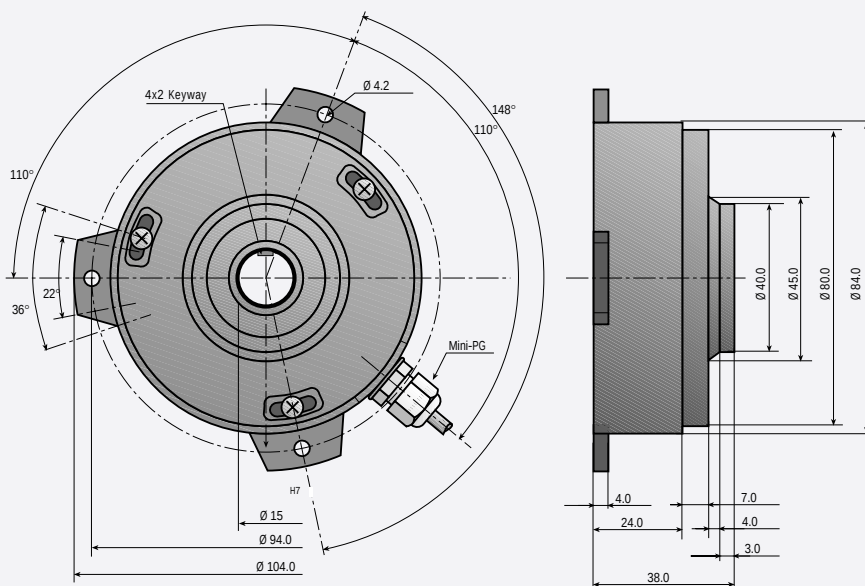
MECHANICAL SPECIFICATIONS

Cover	Plastic (Noryl)
Body	Plastic (Noryl)
Shaft	Plastic (Noryl)
Speed	6000 RPM (max)
Torque	> 0.04 Nm
Loading	Axial 20 N, Radial 30 N
Protection	IP 65
Temperature	-20°...+70° C (-4°...+158° F) +100° C (+212° F) Optional
Weight	0.27 lb (130 g)

OUTPUT SIGNALS



Drawing available as:
dxf, iges, step, sld file



ORDERING CODE

CH	840	-										
a	b	c	d	e	f	g	h	Pulses Per Revolution				

- | | |
|---|--|
| a | Group Function
CH=Commutation Hollow Shaft |
| b | Basic Series Number
840 |
| c | Shaft Size D
15=15 mm |
| d | Mechanical Options
0 = None |

Note: Special functions and designs will be designated by a 4 digit code at the end of the part number. Consult factory for further details

- | | |
|---|---|
| e | Connector Type
0=2 mtr. Cable |
| f | Connector Location
R=Radial |
| g | Output Signals
A=A+B+0+U+V+W
B=A+B+0+U+V+W+Compliments |
| h | Output Circuit Type
6=5 to 15 VDC 7=10 to 30 VDC |

CONNECTIONS

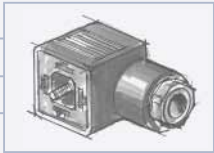
Function	Cable Colour Code	Function	Cable Colour Code
0 Volt	white		
+ Volt	brown		
A	green	$\bar{A}$	black
B	yellow	$\bar{B}$	violet
0	grey	$\bar{0}$	grey/pink
U	pink	$\bar{U}$	red/blue
V	blue	$\bar{V}$	white/green
W	red	$\bar{W}$	brown/green

ACCESSORIES

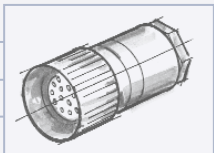
FLANGES, BRACKETS, MEASURING WHEELS &
FLEXIBLE COUPLINGS

CONNECTORS

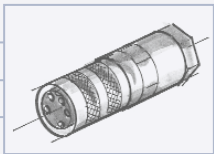
CON-015	Material	Plastic
	Pins	3+GND
	Length	1.3"
	Protection	IP 65



CON-003 (12 Pin) CON-005 (16 Pin)	Material	Brass
	Pins	12 or 16
	Length	2.4"
	Protection	IP 65



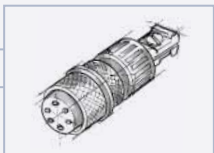
CON-012	Material	Brass
	Pins	5
	Length	2.5"
	Protection	IP 40



CON-000	Material	Plastic/Metal
	Pins	9
	Length	2.0"
	Protection	IP 40

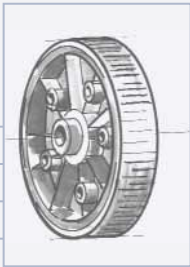


CON-007 (6 Pin) CON-009 (7 Pin)	Material	Aluminium
	Pins	6 or 7
	Length	1.3"



MEASURING WHEELS

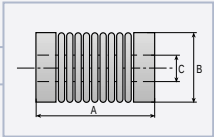
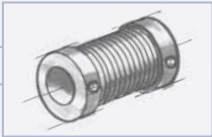
Type	Circumference	Material	D	B
VGM 201	200 mm	Smooth Plastic	6 mm	12 mm
VGM 202	200 mm	Ribbed Plastic	6 mm	12 mm
VGM 203	200 mm	Aluminium	6 mm	15 mm
VGM 501	500 mm	Aluminium	12 mm	25 mm
VGM 503	500 mm	Smooth Plastic	12 mm	25 mm
VGM 504	500 mm	Ribbed Plastic	12 mm	25 mm



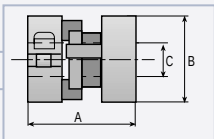
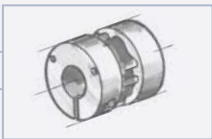
D: Ø Shaft/Bore
B: Surface Width

FLEXIBLE COUPLINGS

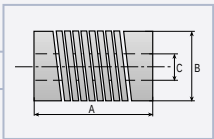
Bellows Coupling	Type	VGK 3520
	A	35
	B	20
	C	6-14



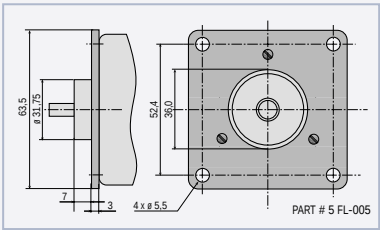
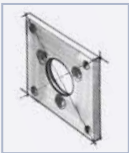
Precision Coupling	Type	VGK 2525
	A	25
	B	25
	C	12

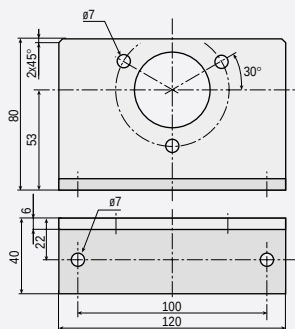
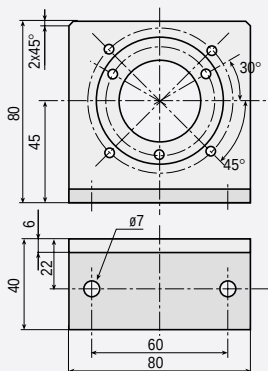
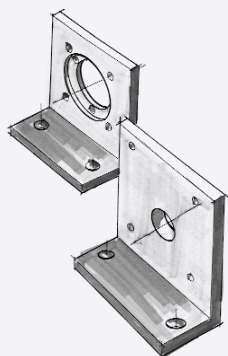
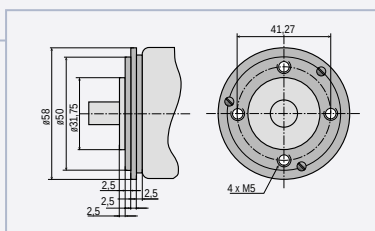
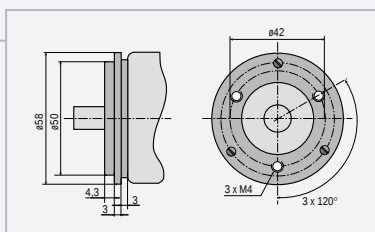
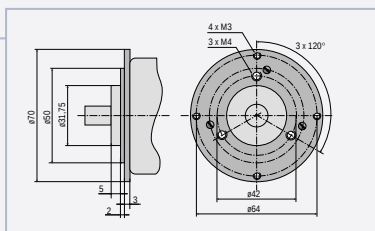
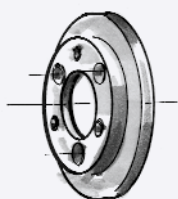


Spring Coupling	Type	VGK 5028	VGK 3516
	A	50	35
	B	28	16
	C	6-24	6-12

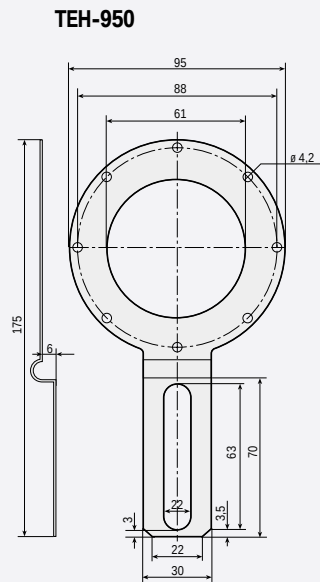
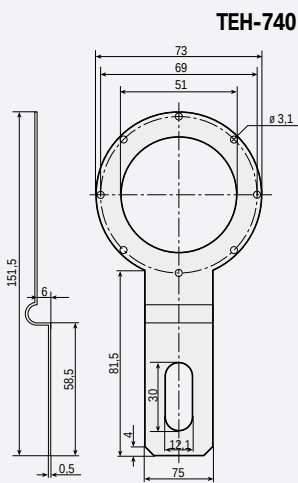


SQUARE FLANGES (IS 581)

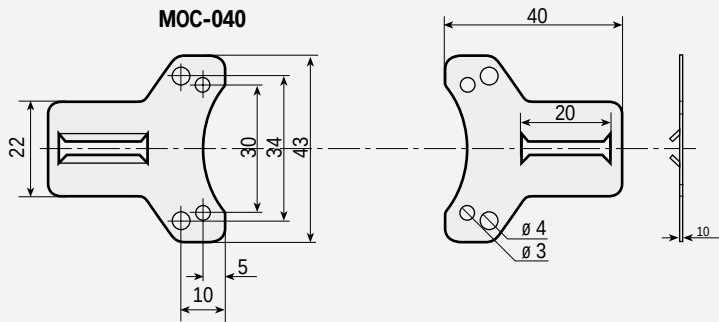




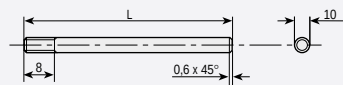
THETHER KITS



MOUNTING CLIP & PIN



Art. No.	L (mm)
MOP-055	55
MOP-050	50
MOP-045	45

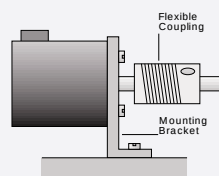


MECHANICAL INSTALLATION

RECOMMENDED MECHANICAL INSTALLATION

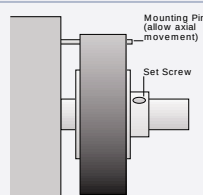
1. Shaft Encoders

- mount encoder to mounting bracket.
- install coupling to shaft encoder.
- align encoder and coupling to drive shaft.
- mount bracket to machine assembly.
- check alignment is correct.
- tighten all screws.



2. Hollow Shaft Encoders

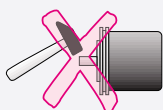
- mount pin to machine assembly.
- install encoder to shaft of the machine.
- use mounting pin to stop encoder from rotating.
- check if mounting pin allows axial movement of the optical encoder.
- check alignment is correct.
- tighten all set screws.



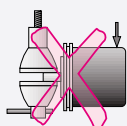
CAUTION

All encoders produced by the GESgroup are designed to be reliable, rugged and easy to install. Should you require clarification on any of these instructions, please contact the nearest GESgroup company (See back cover page).

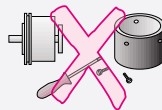
Caution! Any of these actions my cause damage to the product.



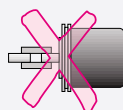
Do not shock the encoder



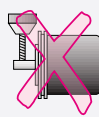
Do not subject the encoder to axial or radial stress



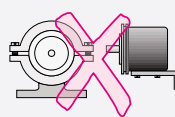
Do not dismantle the encoder



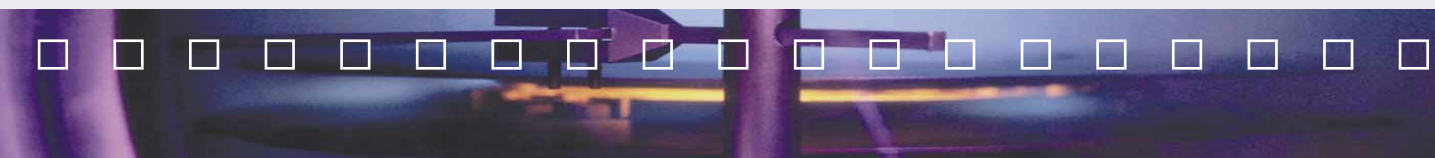
Do not use a rigid coupling



Do not tool the encoder or its shaft



Do not use makeshift techniques to mount the encoder



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