IntertechRio
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21 3681 7199 - 21 99607 2513
contato@intertechrio.com.br
www.intertechrio.com.br

ENCONTRE A CAUSA RAIZ IMEDIATAMENTE

O tempo de inatividade relacionado ao encoder e a solução de problemas complexos custam às indústrias mais de US$ 400 milhões por ano.

Quanto custa para você?

Apresentamos o Encoder HS35iQ com Tecnologia PulseIQ™. Minimize esforços na resolução de problemas para que sua operação possa voltar a funcionar rapidamente.

Solucione problemas de forma inteligente para identificar causas-raiz comuns, como:

- Alta Temperatura
- Tensão Insuficiente
- Integridade do cabo
- Escorregamento do Eixo
- Falha Eletrônica

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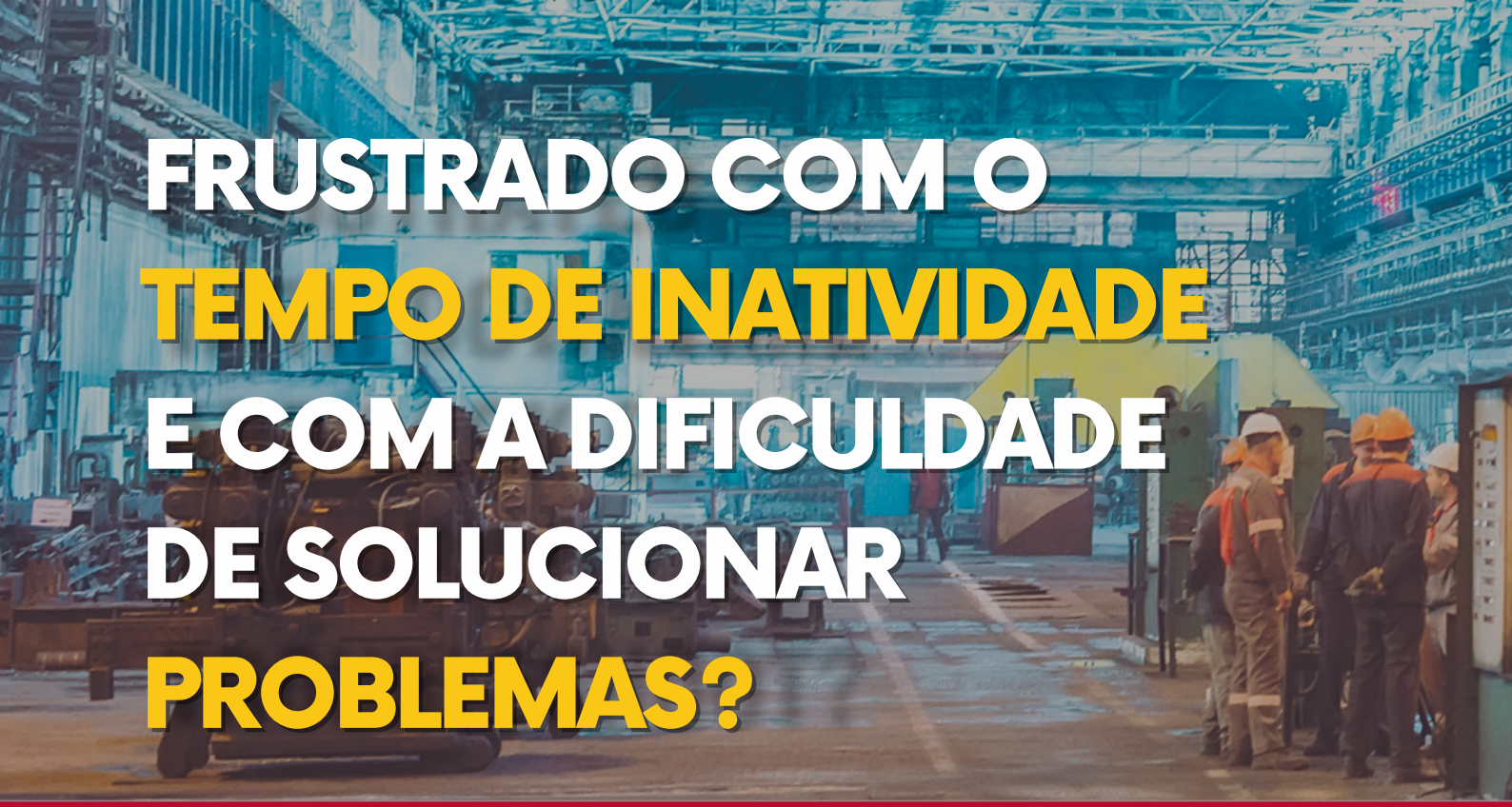
DYNAPAR™
INNOVATION - CUSTOMIZATION - DELIVERY



FRUSTRADO COM O TEMPO DE INATIVIDADE E COM A DIFICULDADE DE SOLUCIONAR PROBLEMAS?

Conheça o HS35iQ com tecnologia PulseIQ™

Fornece indicação visual da integridade do encoder por meio de LEDS de diagnóstico e saída digital. Essa solução pode indicar especificamente problemas comuns e a ação corretiva recomendada para ajudar a corrigir a causa raiz e evitando paradas recorrentes.

Trabalhe de forma mais inteligente e não da forma mais difícil com a tecnologia PulseIQ™

De: Tempo de inatividade não programado sem capacidade de chegar à causa raiz. Falhas repetidas e substituição frequente do encoder.

Para: Volte a funcionar com eficiência, com notificação imediata das falhas e com detalhes específicos para correção da causa raiz.

1 Não foi possível verificar a função adequada do encoder durante a instalação.	1 Economize tempo de comissionamento do encoder, encontre e corrija falhas rapidamente.
2 Erro na unidade de falha do encoder, mas não há meios para analisar a causa raiz.	2 Os indicadores visuais permitem que os operadores vejam a função adequada do encoder
3 Tempo de inatividade não programado sem aviso prévio de falhas.	3 O monitoramento integrado com indicação antecipada permite que você planeje com antecedência.
4 Solução de problemas complexos com equipamentos caros.	4 Não há necessidade de eliminar o encoder, a memória integrada salva o status de falha para solução rápida de problemas.

A TECNOLOGIA PULSEIQ™ FORNECE PREVISÃO E INDICAÇÃO DE FALHAS ESPECÍFICAS

Veja exatamente o que está com defeito para que você possa solucionar problemas com confiança. Não há mais adivinhação ou substituição apenas para ter a falha da unidade novamente.

- Os LEDS de diagnóstico fornecem indicação visual de possíveis falhas.
- A memória integrada armazena dados de ciclo de vida e status de falha.
- O microprocessador incorporado avalia a integridade do pulso e as condições gerais de operação.
- Conector de comunicação de diagnóstico dedicado e saída de falha.
- O conector primário fornece saída de encoder incremental padrão para o inversor, resolução programável de até 20.000 PPR.
- O design robusto suporta até 400g de choque, 20g de vibração. Grau de proteção IP67, faixa de temperatura de operação -40°C a +100°C. Diâmetros de furo imperial e métrico até 1-1/4" ou 30mm.

HS35iQ com tecnologia PulseIQ™. Montagem conveniente do eixo vazado. Design Heavy Duty

Tensão Insuficiente

Detecte mudanças na tensão de alimentação e condições de baixa tensão que, de outra forma, são difíceis de detectar.

Integridade do cabo

Capturar falhas 'abertas' no cabo do encoder, como quebras de cabos ou condutores soltos.

Escorregamento do Eixo

Detecte o Escorregamento do colar de fixação, entre o eixo e a conexão física do encoder, antes da falha do acoplamento.

Alta Temperatura

Meça a temperatura ambiente para fornecer indicação antecipada de mudanças nas condições de operação.

Falha Eletrônica

Monitore continuamente a eletrônica que pode resultar em saída de pulso irregular.

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INNOVATION - CUSTOMIZATION - DELIVERY

SOLUÇÃO VISUAL E RÁPIDA DE PROBLEMAS

Conecte-se sem esforço com dados do ciclo de vida do encoder.

Indicadores LED dedicados para as quatro falhas mais comuns

- STATUS OK
- FALHA ATIVA
- RECUPERAÇÃO DE FALHA (Piscando)

Revise rapidamente as condições de falha e os dados de diagnóstico sem perder tempo. Basta conectar à porta de diagnóstico via cabo USB e abrir o software PulseIQ™. A funcionalidade programável depende da decodificação e inclui posição de índice, polaridade e gate, fase de canal, níveis de saída de quadratura e resolução (PPR).

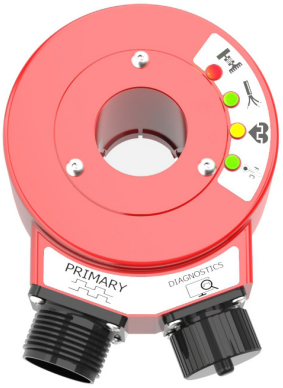
SERIES HS35iQ

Hollowshaft Encoder with PulseIQ™ Technology

IND Industrial Duty

Key Features

- Revolutionary Visual Fault Forewarning For:
  - Encoder Health: Signal Quality, Low Voltage
  - Over/Under Environment Temperature
  - Cable Integrity Issues
  - Shaft Slip/Loose Clamp
- Fault Notification to Controls
- Advanced Diagnostics Via Software Service Tool
- Programmable Encoder Option to 20,000 PPR



CE EN 61326-1 RoHS

SPECIFICATIONS

STANDARD OPERATING CHARACTERISTICS

Code: Incremental, Optical

Resolution: Selectable resolution up to 20,000 PPR upon order or programmable resolution up to 20,000 PPR with factory default setting of 1,024 PPR. .

Format: Two channel quadrature (AB) with optional Index (Z), and complementary outputs

Phase Sense: A leads B for CW shaft rotation viewing the shaft clamp end of the encoder

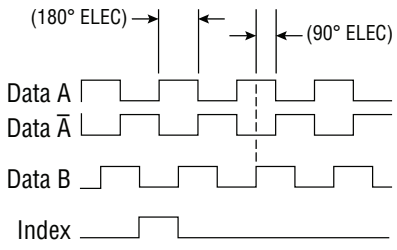
Quadrature Phasing: 90° ±30° electrical

Symmetry: 180° ±25° electrical

Index: 180° default gated to B low, with 90° and 360° programmable options

Waveforms: Squarewave with rise and fall times less than 1 microsecond into a load capacitance of 1000 pf

STANDARD DATA AND INDEX
Not all complements shown
A shown for reference



Index Width: 180° Default
A leads B, CW (from clamp end)

ELECTRICAL

Input Power: 5-26VDC (7272, 7273 line driver options), 5-15VDC (4469 line driver option), 250 mA max. not including output loads.

Primary Outputs:
7272 Differential Line Driver: 40 mA, sink or source
7273 Open Collector: 40mA, sink max
4469 Differential Line Driver: 100mA, sink or source

Fault Outputs: TTL (5V) or HTL (5-26V), 12 mA max

Frequency Response: 200 kHz (data & index)

Noise Immunity: Tested to EN61326-1

Electrical Immunity: Reverse polarity, short circuit protected with 7272 or 7273 line drivers only

Termination: MS Connector; M12 Connector; cable exit w/seal. See Ordering Information

Mating Connector:
7 pin MS, style MS3106A-16S-1S (MCN-N5)
10 pin MS, style MS3106A-18-1S (MCN-N6)
10 pin, NEMA4 style (MCN-N6N4)
10 pin Bayonet, MS3116-F12-10S (MCN-B1)
Cable w/ 5 pin M12 Connector(112859-XXXX)
Cable w/ 8 pin M12 Connector(112860-XXXX)

Note: "MS" type mating connectors and prebuilt cables are rated NEMA 12. "M12" Cable assemblies are rated IP67

MECHANICAL

Bore Diameter: 6mm to 28mm, 1/4" to 1-1/8", electrically isolated

Mating Shaft Length: 1.25", Minimum, 1.60", Recommended

Shaft Speed: 6000 RPM, Maximum (Enclosure Rating is IP64 at speed over 5000 RPM)

Starting Torque: 10 in-oz. typical (at 25°C)

Running Torque: 5 in-oz. typical (at 25°C)

Bearings: ABEC 1

Housing and Cover: Powder Coated Aluminum

Shaft Material: 6061-T6 Aluminum, Stainless Steel for Extended Temp Option

Disc Material: Aluminum

Weight: 1.76lb (28 Oz) Typical

ENVIRONMENTAL

Standard Operating Temperature: -40 to +85°C (0 to +70°C with 4469 line driver, see "Ordering Information"). At shaft speed above 3000 RPM, derate 10°C per 1000 RPM

Extended Temperature Range: -40 to +100°C (See ordering information)

Storage temperature: -40 to +100°C

Shock: 400G, 6mSec

Vibration: 5 to 3000 Hz, 20G

Humidity: Up to 98% (non-condensing)

Enclosure Rating: IP67 (IP64 at shaft speed above 5000 RPM)

SERIES HS35iQ

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PULSEiQ™ TECHNOLOGY SPECIFICATIONS

FAULT FOREWARNING

The HS35iQ Encoder with PulseIQ™ Technology provides fault forewarning for common encoder issues. Notification to the user is via status lights on the encoder and a digital output to the control system. Fault signal is provided as 5V (TTL) or 5-26V (HTL).

Fault	Fault Condition	Operation				Corrective Action Sequence
		Green	Red	Orange (Fault Recovery)	Orange (Warning)	
Over-Temperature	Internal encoder temperature exceeds operating conditions	LED pulses green during normal operation	LED pulses red during fault condition	LED flickers orange for 30 minutes after fault is corrected or cleared. Event logged in onboard memory.	LED pulses orange for temperature warning	Verify ambient temperature on and around the encoder is within acceptable limits.
Shaft Slippage	Detection of shaft slippage				N/A	Stop rotation. Tighten coupling. Restart and monitor.
Cable Integrity	Cable open or short condition such as damaged cable, touching or loose conductors.				N/A	Verify all cables are properly secured to the encoder and no damage or shorts are noticed.
Encoder Internal Health	Electronics and voltage monitoring				LED pulses orange for encoder health warning	Check for sufficient voltage at encoder connector and/or review Instructional Manual for additional guidance.

PROGRAMMABILITY (OPTIONAL)

For programmable units, specifications can be customized from factory default settings to the programmable options below when using included software in expert mode. Please see manual for details.

Specification	Factory Default Setting	Programmable Options
Pulses Per Revolution	1,024 PPR	1 to 20,000 PPR in 1 PPR increments
Phasing	A leads B, CW from clamp end	A leads B, CW from clamp end A leads B, CCW from clamp end
Output Voltage	TTL, Unless Ordered HTL	TTL, HTL
Z Index Pulse Polarity	Standard High	Standard High, Inverted Low
Z Index Pulse Position and Gating	180° electrical gated to B low	90°, 180° or 360° electrical, many gating options to A/B

SERIES HS35iQ

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See next page for non-programmable unit options and part number information.

PROGRAMMABLE UNIT ORDERING INFORMATION

To order, complete the model number with code numbers from the table below:

Code 1: Model	Code 2: PPR	Code 3: Bore Size	Code 4: Fixing	Code 5: Control Output Format	Code 6: Termination	Code 7: Fault Output Format	Code 8: Options
HS35iQ	**PROGR**	☐	☐	☐	☐	☐	☐☐
HS35iQ Hollowshaft Encoder	**PROGR** Programmable Resolution Up to 20,000 PPR. Set as 1,024 PPR From Factory	**0** 6mm **1** 1/4" **2** 5/16" **3** 8mm **4** 3/8" **5** 10mm **6** 12mm **7** 1/2" **8** 5/8" **9** 15mm **A** 16mm **C** 19mm **D** 3/4" **E** 20mm **F** 7/8" **G** 24mm **H** 1" **J** 1-1/8" **M** 14mm **N** 18mm **P** 25mm **R** 28mm Not Electrically Isolated **K** 1-1/4" **S** 30mm	**0** None **1** Tether Kit, 4.5" C-Face Single Point with 3/8" Bolt **2** Tether Kit, 8.5" C-Face Single Point with 1/2" Bolt **3** Tether Kit, Slotted with T-bolts for Standard AC Motor Fan Covers **6** Same as 1 w/ Cover **7** Same as 3 w/ Cover **8** Same as 2 w/ Cover **A** Rod Tether **B** Rod Tether + Grounding Strap **D** Rod Tether + Grounding Strap + 4.5" C-Face Cover	**0** ABZ, Single Ended, 5-26VDC (7272) **1** ABZ, Single Ended O/C (7273) **2** ABZ, Single Ended O/C w2.2kOhm (7273) **H** Same as "0" with Extended Temp Range **J** Same as "1" with Extended Temp Range **K** Same as "2" with Extended Temp Range Not Available When Code 6 is H **4** Differential AB Only (7272). 5-26VDC In, Programmable Vin or 5VDC Out **C** Differential AB Only (4469). 5-15VDC In, Programmable Vin or 5VDC Out **L** Same as "4" with Extended Temp Range Not Available When Code 6 is 1, 6, or H **7** Differential ABZ (7272). 5-26VDC In, Programmable Vin or 5VDC Out **9** Differential ABZ (4469) 5-15VDC In, Programmable Vin or 5VDC Out **P** Same as "7" with Extended Temp Range	6 Pin Not Available. Recommend 10 Pin MS and Mating Cable Assembly. **1** 7 Pin MS* **6** 7 Pin MS + Mating* **2** 10 Pin MS **4** 10 Pin Bayonet **7** 10 Pin MS + Mating **9** 10 Pin Bayonet + Mating **H** 5 pin M12* **J** 8 pin M12* **A** 0.5m (18") Cable **C** 1m (36") Cable **D** 2m (72") Cable **E** 3m (120") Cable **F** 0.3m (13") Cable with 10 Pin Bulk-head Connector and Mate **G** 0.3m (13") Cable *Fault Output Not Available on Primary Connector for 7 Pin Differential and All M12 Connectors. Fault Output Available on Primary Connector 7 pin Single Ended, 10 pin MS and Bayonet and cable exit. Always Available on Secondary Diagnostic Connector for All Options.	**0** 5V **1** 5-26V* *5-26V output determined by input voltage	**R1** Diagnostics and Output

SERIES HS35iQ

DYNAPAR™

NON PROGRAMMABLE UNIT ORDERING INFORMATION

To order, complete the model number with code numbers from the table below:

Code 1: Model	Code 2: PPR	Code 3: Bore Size	Code 4: Fixing	Code 5: Control Output Format	Code 6: Termination	Code 7: Fault Output Format	Code 8: Options
HS35iQ	□□□□□	□	□	□	□	□	□□
HS35iQ Hollowshaft Encoder	Enter Any Quadrature Resolution (PPR) From 00001-20000. Example: **00001** = 1 PPR	**0** 6mm **1** 1/4" **2** 5/16" **3** 8mm **4** 3/8" **5** 10mm **6** 12mm **7** 1/2" **8** 5/8" **9** 15mm **A** 16mm **C** 19mm **D** 3/4" **E** 20mm **F** 7/8" **G** 24mm **H** 1" **J** 1-1/8" **M** 14mm **N** 18mm **P** 25mm **R** 28mm Not Electrically Isolated **K** 1-1/4" **S** 30mm	**0** None **1** Tether Kit, 4.5" C-Face Single Point with 3/8" Bolt **2** Tether Kit, 8.5" C-Face Single Point with 1/2" Bolt **3** Tether Kit, Slotted with T-bolts for Standard AC Motor Fan Covers **6** Same as 1 w/ Cover **7** Same as 3 w/ Cover **8** Same as 2 w/ Cover **A** Rod Tether **B** Rod Tether + Grounding Strap **D** Rod Tether + Grounding Strap + 4.5" C-Face Cover	**0** ABZ, Single Ended, 5-26VDC (7272) **1** ABZ, Single Ended O/C (7273) **2** ABZ, Single Ended O/C w2.2kOhm (7273) **H** Same as "0" with Extended Temp Range **J** Same as "1" with Extended Temp Range **K** Same as "2" with Extended Temp Range Not Available When Code 6 is H **4** Differential AB Only, 5-26VDC, 5-26VDC out (7272) **5** Differential AB Only, 5-26VDC In, 5VDC Out (7272) **A** Differential AB Only, 5-26VDC In, 5VDC Out (4469) **C** Differential AB Only, 5-15VDC in, 5-15VDC Out (4469) **L** Same as "4" with Extended Temp Range **M** Same as "5" with Extended Temp Range Not Available When Code 6 is 1, 6, or H **6** Differential ABZ, 5-26VDC In, 5VDC Out (7272) **7** Differential ABZ (7272), 5-26V In, 5-26V Out **8** Differential ABZ, 5-26VDC In, 5VDC Out (4469) **9** Differential ABZ (4469), 5-15V In, 5-15V Out **N** Same as "6" with Extended Temp Range **P** Same as "7" with Extended Temp Range	6 Pin Not Available. Recommend 10 Pin MS and Mating Cable Assembly. **1** 7 Pin MS* **6** 7 Pin MS + Mating* **2** 10 Pin MS **4** 10 Pin Bayonet **7** 10 Pin MS + Mating **9** 10 Pin Bayonet + Mating **H** 5 pin M12* **J** 8 pin M12* **A** 0.5m (18") Cable **C** 1m (36") Cable **D** 2m (72") Cable **E** 3m (120") Cable **F** 0.3m (13") Cable with 10 Pin Bulk-head Connector and Mate **G** 0.3m (13") Cable *Fault Output Not Available on Primary Connector for 7 Pin Differential and All M12 Connectors. Fault Output Available on Primary Connector 7 pin Single Ended, 10 pin MS and Bayonet and cable exit. Always Available on Secondary Diagnostic Connector for All Options.	**0** 5V **1** 5-26V* *5-26V output determined by input voltage	**R1** Diagnostics and Output

SERIES HS35iQ

COMPATIBLE ACCESSORIES

MATING CONNECTORS (NO CABLE)

MCN-N5 7 pin, style MS3106A-16S-1S
MCN-N6 10 pin, style MS3106A-18-1S
MCN-N6N4 10 pin, NEMA4 style
MCN-B1 10 pin bayonet, style MS3116-F12-10S

ACCESSORY KITS

114573-0001 Tether Kit, 4.5" C-Face Single Point with 3/8" Bolt
114574-0001 Tether Kit, Slotted with T-bolts for Standard AC Motor Fan Covers
114575-0001 Tether Kit, 8.5" C-Face Single Point with 1/2" Bolt
118024-0001 Cover Kit, 4.5" C-Face
118025-0001 Cover Kit, 8.5" C-Face
118026-0001 Cover Kit, Fan Cover for Standard AC Motor
116233-0001 Rod Tether Only
116233-0002 Rod Tether + 56 C-Face Cover (Single)
116233-0004 Rod Tether + Grounding Strap
118027-0004 Rod Tether + Grounding Strap + 4.5" C-Face Cover

PRIMARY CABLE ASSEMBLIES WITH MS CONNECTOR*

118019-XXXX 7 Pin MS, Cable Assembly. For Use with Single Ended Outputs w/ Fault Output
108596-XXXX 7 Pin MS, Cable Assembly. For Use with Differential Line Driver w/o Index Outputs w/o Fault Output
118020-XXXX 10 Pin MS, Cable Assembly. For Use with Differential Line Driver with Index Outputs
118021-XXXX 10 Pin Bayonet, Cable Assembly. For Use with Differential Line Driver with Index Outputs
118022-XXXX NEMA4 10 pin MS, Cable Assembly. For Use with Differential Line Driver with Index Outputs

PRIMARY CABLE ASSEMBLIES WITH M12 CONNECTOR*

112859-XXXX 5 Pin M12, Cable Assembly. For Use with Single Ended Outputs
112860-XXXX 8 Pin M12, Cable Assembly. For Use with Single Ended Outputs
112860-XXXX 8 Pin M12, Cable Assembly. For Use with Differential Line Driver Outputs

DIAGNOSTIC CABLE ASSEMBLIES

117995-0001 6ft Diagnostic and Programming Cable to PC. 6 Pin MS to USB.
118023-XXXX Cable Assembly for Fault Output on Secondary Connector. 6 Pin MS to Flying leads

SOLID STATE RELAY

608793-0001 Solid State Relay for Non Isolated Use of Fault Output. 60VDC max 3A

***Note:** Standard cable length is 10 feet but may be ordered in any length in 5 foot increments. For example, for a 20 foot cable, replace XXXX with -0020.

SERIES HS35iQ

DYNAPAR™

PRIMARY ELECTRICAL CONNECTIONS

7 & 10 PIN MS CONNECTORS AND CABLES - CODE 6 = 1 TO 9, H, J

Connector and mate/accessory cable assembly pin numbers and wire color information is provided here for reference.
Models with direct cable exit carry the same color coding as shown for each output configuration.

Encoder Function	Cable #108596-XXXX 7 Pin Differential Line Driver without Index		Cable #118019-XXXX 7 Pin MS Single Ended		Cable #1118020-XXXX 10 Pin MS or #118022-XXXX NEMA4 10 Pin Differential w Index*		Cable #118021-XXXX 10 Pin MS Bayonet		Cable Exit with Seal
	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Wire Color
Sig. A	A	BRN	A	BRN	A	BRN	5	BRN	BRN
Sig. B	B	ORN	B	ORN	B	ORN	8	ORN	ORN
Sig. Z**	—	—	C	YEL	C	YEL	C	YEL	YEL
Power +V	D	RED	D	RED	D	RED	D	RED	RED
Fault	—	—	E	BLK/WHT	E	BLK/WHT	E	BLK/WHT	BLK/WHT
Com	F	BLK	F	BLK	F	BLK	F	BLK	BLK
Case	G	GRN	G	GRN	G	GRN	G	GRN	GRN
Sig. $\bar{A}$	C	BRN/WHT	—	—	H	BRN/WHT	H	BRN/WHT	BRN/WHT
Sig. $\bar{B}$	E	ORN/WHT	—	—	I	ORN/WHT	J	ORN/WHT	ORN/WHT
Sig. $\bar{Z}$**	—	—	—	—	J	YEL/WHT	K	YEL/WHT	YEL/WHT

Cable Configuration: PVC jacket, 105°C rated, overall foil shield; 3 twisted pairs 24 AWG (output signals), plus 2 twisted pairs 22 AWG (input power)

PRIMARY ELECTRICAL CONNECTIONS

5 & 8 PIN M12 ACCESSORY CABLES WHEN CODE 6 = H OR J

Connector pin numbers and cable assembly wire color information is provided here for reference.

Encoder Function	Cable #112859-XXXX 5 Pin Single Ended		Cable #112860-XXXX 8 Pin Single Ended		Cable #112860-XXXX 8 Pin Differential	
	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color
Sig. A	4	BLK	1	BRN	1	BRN
Sig. B	2	WHT	4	ORG	4	ORG
Sig. Z**	5	GRY	6	YEL	6	YEL
Power +V	1	BRN	2	RED	2	RED
Com	3	BLU	7	BLK	7	BLK
Sig. $\bar{A}$	—	—	—	—	3	BRN/WHT
Sig. $\bar{B}$	—	—	—	—	5	ORG/WHT
Sig. $\bar{Z}$**	—	—	—	—	8	YEL/WHT

Cable Configuration: PVC jacket, 105°C rated, overall foil shield; 24 AWG conductors, minimum

DIAGNOSTIC ELECTRICAL CONNECTION

Encoder Function	Cable #118023-XXXX 6 Pin MS Single Ended	
	Pin	Wire Color
Data	E	BRN
Data	D	ORN
5vdc	C	YEL
Fault	B	RED
NC	F	—
COM	A	BLK

Standard cable length is 10 feet but may be ordered in any length in 5 foot increments. For example, for a 20 foot cable, replace -XXXX with -0020
"MS" Type mating connectors and pre-build cables are rated NEMA 12
"M12" Cable assemblies are rated IP67
**Index not provided on all models. See ordering information.
*For watertight applications, use NEMA4 10 pin cable and connector 109209-XXXX

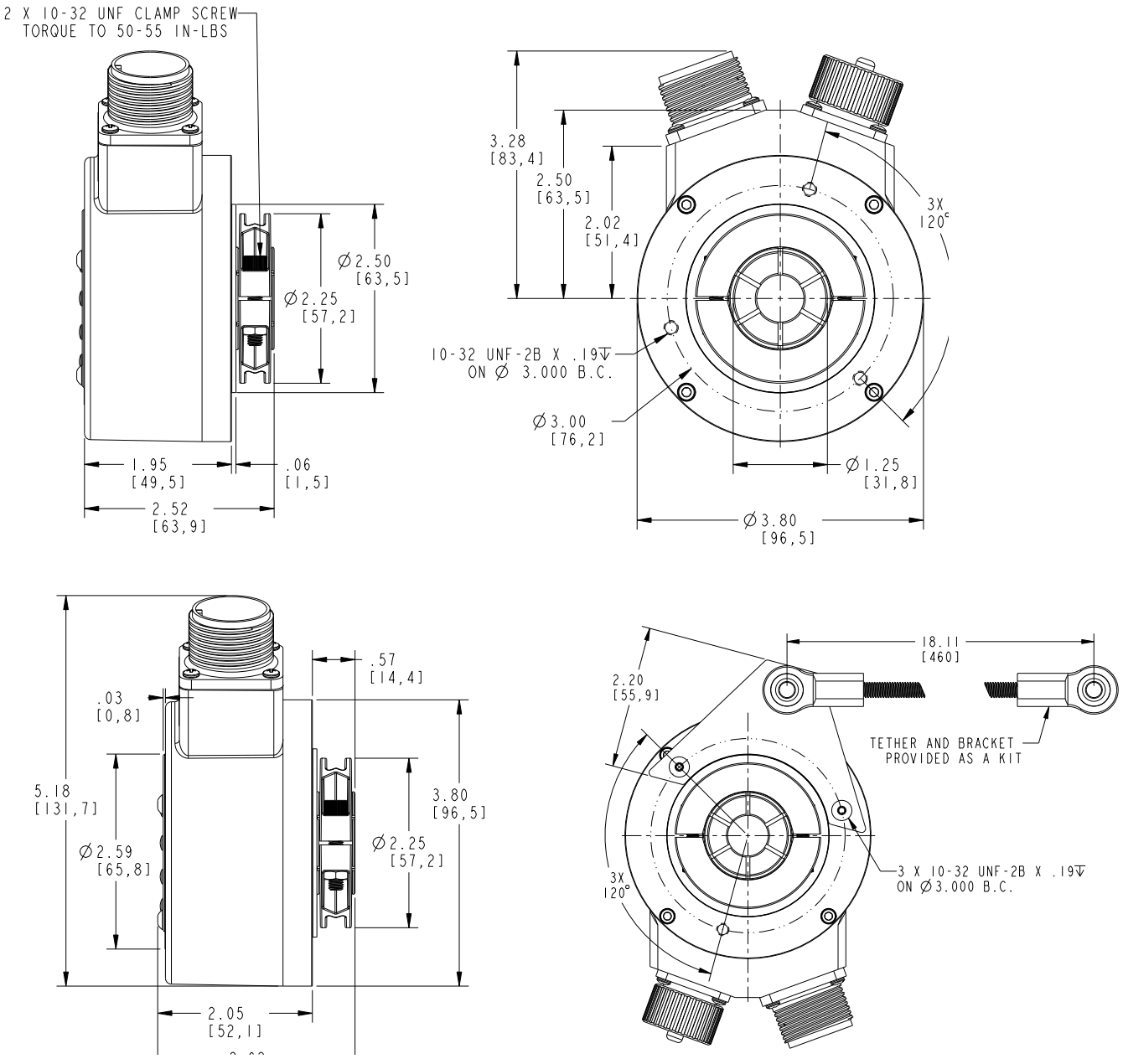
SERIES HS35iQ

Dimensions: inch (mm)

HS35iQ Encoder

Download Sample 3D Model File Here >

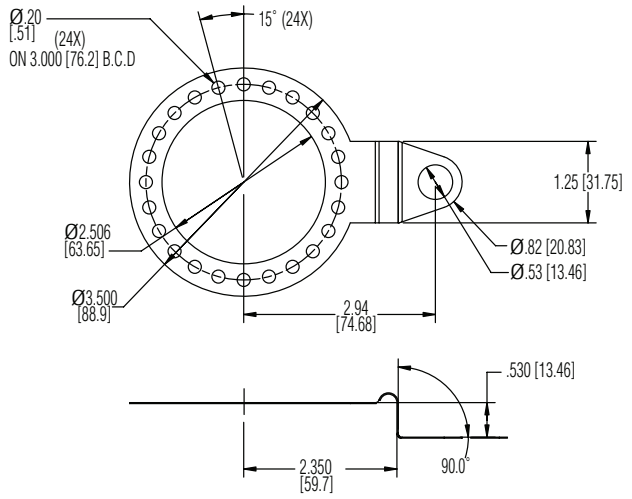
.stp format, 10 pin dual connector option



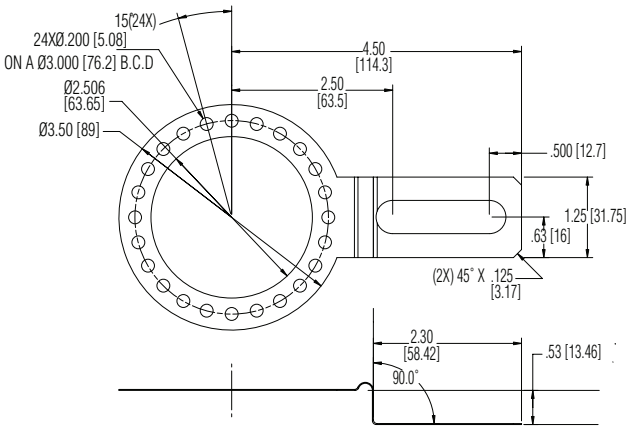
SERIES HS35iQ

Dimensions: inch (mm)

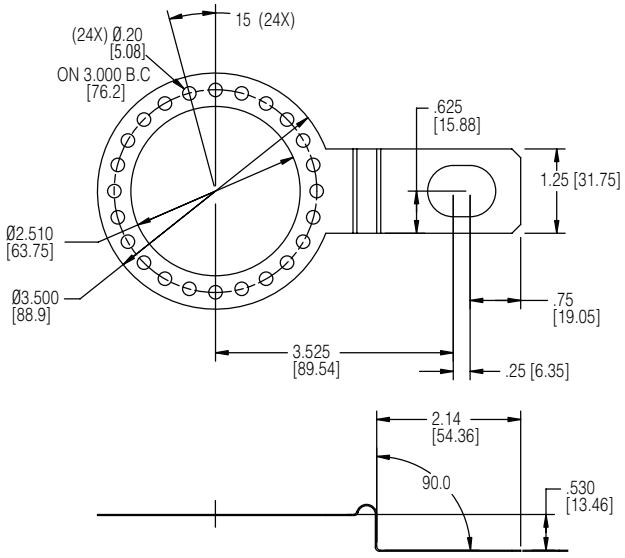
114573-0001 Tether Kit



114574-0001 Slotted Tether Kit



114575-0001 Tether Kit



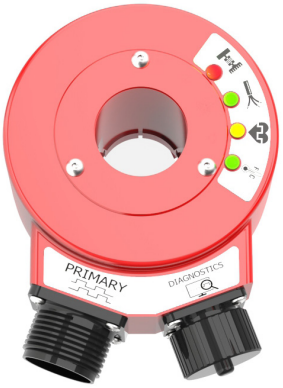
SERIES HS35iQ

Hollowshaft Encoder with PulseIQ™ Technology

IND Industrial Duty

Key Features

- Revolutionary Visual Fault Forewarning For:
  - Encoder Health: Signal Quality, Low Voltage
  - Over/Under Environment Temperature
  - Cable Integrity Issues
  - Shaft Slip/Loose Clamp
- Fault Notification to Controls
- Advanced Diagnostics Via Software Service Tool
- Programmable Encoder Option to 20,000 PPR



CE EN 61326-1 RoHS

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Resolution: Selectable resolution up to 20,000 PPR upon order or programmable resolution up to 20,000 PPR with factory default setting of 1,024 PPR. .

Format: Two channel quadrature (AB) with optional Index (Z), and complementary outputs

Phase Sense: A leads B for CW shaft rotation viewing the shaft clamp end of the encoder

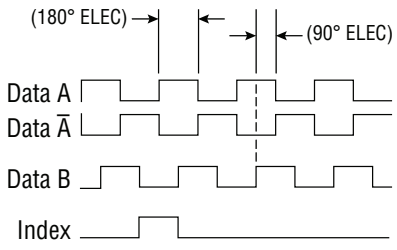
Quadrature Phasing: 90° ±30° electrical

Symmetry: 180° ±25° electrical

Index: 180° default gated to B low, with 90° and 360° programmable options

Waveforms: Squarewave with rise and fall times less than 1 microsecond into a load capacitance of 1000 pf

STANDARD DATA AND INDEX
Not all complements shown
A shown for reference



Index Width: 180° Default
A leads B, CW (from clamp end)

ELECTRICAL

Input Power: 5-26VDC (7272, 7273 line driver options), 5-15VDC (4469 line driver option), 250 mA max. not including output loads.

Primary Outputs:
7272 Differential Line Driver: 40 mA, sink or source
7273 Open Collector: 40mA, sink max
4469 Differential Line Driver: 100mA, sink or source

Fault Outputs: TTL (5V) or HTL (5-26V), 12 mA max

Frequency Response: 200 kHz (data & index)

Noise Immunity: Tested to EN61326-1

Electrical Immunity: Reverse polarity, short circuit protected with 7272 or 7273 line drivers only

Termination: MS Connector; M12 Connector; cable exit w/seal. See Ordering Information

Mating Connector:
7 pin MS, style MS3106A-16S-1S (MCN-N5)
10 pin MS, style MS3106A-18-1S (MCN-N6)
10 pin, NEMA4 style (MCN-N6N4)
10 pin Bayonet, MS3116-F12-10S (MCN-B1)
Cable w/ 5 pin M12 Connector(112859-XXXX)
Cable w/ 8 pin M12 Connector(112860-XXXX)

Note: "MS" type mating connectors and prebuilt cables are rated NEMA 12. "M12" Cable assemblies are rated IP67

MECHANICAL

Bore Diameter: 6mm to 28mm, 1/4" to 1-1/8", electrically isolated

Mating Shaft Length: 1.25", Minimum, 1.60", Recommended

Shaft Speed: 6000 RPM, Maximum (Enclosure Rating is IP64 at speed over 5000 RPM)

Starting Torque: 10 in-oz. typical (at 25°C)

Running Torque: 5 in-oz. typical (at 25°C)

Bearings: ABEC 1

Housing and Cover: Powder Coated Aluminum

Shaft Material: 6061-T6 Aluminum, Stainless Steel for Extended Temp Option

Disc Material: Aluminum

Weight: 1.76lb (28 Oz) Typical

ENVIRONMENTAL

Standard Operating Temperature: -40 to +85°C (0 to +70°C with 4469 line driver, see "Ordering Information"). At shaft speed above 3000 RPM, derate 10°C per 1000 RPM

Extended Temperature Range: -40 to +100°C (See ordering information)

Storage temperature: -40 to +100°C

Shock: 400G, 6mSec

Vibration: 5 to 3000 Hz, 20G

Humidity: Up to 98% (non-condensing)

Enclosure Rating: IP67 (IP64 at shaft speed above 5000 RPM)

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PULSEiQ™ TECHNOLOGY SPECIFICATIONS

FAULT FOREWARNING

The HS35iQ Encoder with PulseIQ™ Technology provides fault forewarning for common encoder issues. Notification to the user is via status lights on the encoder and a digital output to the control system. Fault signal is provided as 5V (TTL) or 5-26V (HTL).

Fault	Fault Condition	Operation				Corrective Action Sequence
		Green	Red	Orange (Fault Recovery)	Orange (Warning)	
Over-Temperature	Internal encoder temperature exceeds operating conditions	LED pulses green during normal operation	LED pulses red during fault condition	LED flickers orange for 30 minutes after fault is corrected or cleared. Event logged in onboard memory.	LED pulses orange for temperature warning	Verify ambient temperature on and around the encoder is within acceptable limits.
Shaft Slippage	Detection of shaft slippage				N/A	Stop rotation. Tighten coupling. Restart and monitor.
Cable Integrity	Cable open or short condition such as damaged cable, touching or loose conductors.				N/A	Verify all cables are properly secured to the encoder and no damage or shorts are noticed.
Encoder Internal Health	Electronics and voltage monitoring				LED pulses orange for encoder health warning	Check for sufficient voltage at encoder connector and/or review Instructional Manual for additional guidance.

PROGRAMMABILITY (OPTIONAL)

For programmable units, specifications can be customized from factory default settings to the programmable options below when using included software in expert mode. Please see manual for details.

Specification	Factory Default Setting	Programmable Options
Pulses Per Revolution	1,024 PPR	1 to 20,000 PPR in 1 PPR increments
Phasing	A leads B, CW from clamp end	A leads B, CW from clamp end A leads B, CCW from clamp end
Output Voltage	TTL, Unless Ordered HTL	TTL, HTL
Z Index Pulse Polarity	Standard High	Standard High, Inverted Low
Z Index Pulse Position and Gating	180° electrical gated to B low	90°, 180° or 360° electrical, many gating options to A/B

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See next page for non-programmable unit options and part number information.

PROGRAMMABLE UNIT ORDERING INFORMATION

To order, complete the model number with code numbers from the table below:

Code 1: Model	Code 2: PPR	Code 3: Bore Size	Code 4: Fixing	Code 5: Control Output Format	Code 6: Termination	Code 7: Fault Output Format	Code 8: Options
HS35iQ	**PROGR**	☐	☐	☐	☐	☐	☐☐
HS35iQ Hollowshaft Encoder	**PROGR** Programmable Resolution Up to 20,000 PPR. Set as 1,024 PPR From Factory	**0** 6mm **1** 1/4" **2** 5/16" **3** 8mm **4** 3/8" **5** 10mm **6** 12mm **7** 1/2" **8** 5/8" **9** 15mm **A** 16mm **C** 19mm **D** 3/4" **E** 20mm **F** 7/8" **G** 24mm **H** 1" **J** 1-1/8" **M** 14mm **N** 18mm **P** 25mm **R** 28mm Not Electrically Isolated **K** 1-1/4" **S** 30mm	**0** None **1** Tether Kit, 4.5" C-Face Single Point with 3/8" Bolt **2** Tether Kit, 8.5" C-Face Single Point with 1/2" Bolt **3** Tether Kit, Slotted with T-bolts for Standard AC Motor Fan Covers **6** Same as 1 w/ Cover **7** Same as 3 w/ Cover **8** Same as 2 w/ Cover **A** Rod Tether **B** Rod Tether + Grounding Strap **D** Rod Tether + Grounding Strap + 4.5" C-Face Cover	**0** ABZ, Single Ended, 5-26VDC (7272) **1** ABZ, Single Ended O/C (7273) **2** ABZ, Single Ended O/C w2.2kOhm (7273) **H** Same as "0" with Extended Temp Range **J** Same as "1" with Extended Temp Range **K** Same as "2" with Extended Temp Range Not Available When Code 6 is H **4** Differential AB Only (7272). 5-26VDC In, Programmable Vin or 5VDC Out **C** Differential AB Only (4469). 5-15VDC In, Programmable Vin or 5VDC Out **L** Same as "4" with Extended Temp Range Not Available When Code 6 is 1, 6, or H **7** Differential ABZ (7272). 5-26VDC In, Programmable Vin or 5VDC Out **9** Differential ABZ (4469) 5-15VDC In, Programmable Vin or 5VDC Out **P** Same as "7" with Extended Temp Range	6 Pin Not Available. Recommend 10 Pin MS and Mating Cable Assembly. **1** 7 Pin MS* **6** 7 Pin MS + Mating* **2** 10 Pin MS **4** 10 Pin Bayonet **7** 10 Pin MS + Mating **9** 10 Pin Bayonet + Mating **H** 5 pin M12* **J** 8 pin M12* **A** 0.5m (18") Cable **C** 1m (36") Cable **D** 2m (72") Cable **E** 3m (120") Cable **F** 0.3m (13") Cable with 10 Pin Bulk-head Connector and Mate **G** 0.3m (13") Cable *Fault Output Not Available on Primary Connector for 7 Pin Differential and All M12 Connectors. Fault Output Available on Primary Connector 7 pin Single Ended, 10 pin MS and Bayonet and cable exit. Always Available on Secondary Diagnostic Connector for All Options.	**0** 5V **1** 5-26V* *5-26V output determined by input voltage	**R1** Diagnostics and Output

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NON PROGRAMMABLE UNIT ORDERING INFORMATION

To order, complete the model number with code numbers from the table below:

Code 1: Model	Code 2: PPR	Code 3: Bore Size	Code 4: Fixing	Code 5: Control Output Format	Code 6: Termination	Code 7: Fault Output Format	Code 8: Options
HS35iQ	□□□□□	□	□	□	□	□	□□
HS35iQ Hollowshaft Encoder	Enter Any Quadrature Resolution (PPR) From 00001-20000. Example: **00001** = 1 PPR	**0** 6mm **1** 1/4" **2** 5/16" **3** 8mm **4** 3/8" **5** 10mm **6** 12mm **7** 1/2" **8** 5/8" **9** 15mm **A** 16mm **C** 19mm **D** 3/4" **E** 20mm **F** 7/8" **G** 24mm **H** 1" **J** 1-1/8" **M** 14mm **N** 18mm **P** 25mm **R** 28mm Not Electrically Isolated **K** 1-1/4" **S** 30mm	**0** None **1** Tether Kit, 4.5" C-Face Single Point with 3/8" Bolt **2** Tether Kit, 8.5" C-Face Single Point with 1/2" Bolt **3** Tether Kit, Slotted with T-bolts for Standard AC Motor Fan Covers **6** Same as 1 w/ Cover **7** Same as 3 w/ Cover **8** Same as 2 w/ Cover **A** Rod Tether **B** Rod Tether + Grounding Strap **D** Rod Tether + Grounding Strap + 4.5" C-Face Cover	**0** ABZ, Single Ended, 5-26VDC (7272) **1** ABZ, Single Ended O/C (7273) **2** ABZ, Single Ended O/C w2.2kOhm (7273) **H** Same as "0" with Extended Temp Range **J** Same as "1" with Extended Temp Range **K** Same as "2" with Extended Temp Range Not Available When Code 6 is H **4** Differential AB Only, 5-26VDC, 5-26VDC out (7272) **5** Differential AB Only, 5-26VDC In, 5VDC Out (7272) **A** Differential AB Only, 5-26VDC In, 5VDC Out (4469) **C** Differential AB Only, 5-15VDC in, 5-15VDC Out (4469) **L** Same as "4" with Extended Temp Range **M** Same as "5" with Extended Temp Range Not Available When Code 6 is 1, 6, or H **6** Differential ABZ, 5-26VDC In, 5VDC Out (7272) **7** Differential ABZ (7272), 5-26V In, 5-26V Out **8** Differential ABZ, 5-26VDC In, 5VDC Out (4469) **9** Differential ABZ (4469), 5-15V In, 5-15V Out **N** Same as "6" with Extended Temp Range **P** Same as "7" with Extended Temp Range	6 Pin Not Available. Recommend 10 Pin MS and Mating Cable Assembly. **1** 7 Pin MS* **6** 7 Pin MS + Mating* **2** 10 Pin MS **4** 10 Pin Bayonet **7** 10 Pin MS + Mating **9** 10 Pin Bayonet + Mating **H** 5 pin M12* **J** 8 pin M12* **A** 0.5m (18") Cable **C** 1m (36") Cable **D** 2m (72") Cable **E** 3m (120") Cable **F** 0.3m (13") Cable with 10 Pin Bulk-head Connector and Mate **G** 0.3m (13") Cable *Fault Output Not Available on Primary Connector for 7 Pin Differential and All M12 Connectors. Fault Output Available on Primary Connector 7 pin Single Ended, 10 pin MS and Bayonet and cable exit. Always Available on Secondary Diagnostic Connector for All Options.	**0** 5V **1** 5-26V* *5-26V output determined by input voltage	**R1** Diagnostics and Output

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COMPATIBLE ACCESSORIES

MATING CONNECTORS (NO CABLE)

MCN-N5 7 pin, style MS3106A-16S-1S
MCN-N6 10 pin, style MS3106A-18-1S
MCN-N6N4 10 pin, NEMA4 style
MCN-B1 10 pin bayonet, style MS3116-F12-10S

ACCESSORY KITS

114573-0001 Tether Kit, 4.5" C-Face Single Point with 3/8" Bolt
114574-0001 Tether Kit, Slotted with T-bolts for Standard AC Motor Fan Covers
114575-0001 Tether Kit, 8.5" C-Face Single Point with 1/2" Bolt
118024-0001 Cover Kit, 4.5" C-Face
118025-0001 Cover Kit, 8.5" C-Face
118026-0001 Cover Kit, Fan Cover for Standard AC Motor
116233-0001 Rod Tether Only
116233-0002 Rod Tether + 56 C-Face Cover (Single)
116233-0004 Rod Tether + Grounding Strap
118027-0004 Rod Tether + Grounding Strap + 4.5" C-Face Cover

PRIMARY CABLE ASSEMBLIES WITH MS CONNECTOR*

118019-XXXX 7 Pin MS, Cable Assembly. For Use with Single Ended Outputs w/ Fault Output
108596-XXXX 7 Pin MS, Cable Assembly. For Use with Differential Line Driver w/o Index Outputs w/o Fault Output
118020-XXXX 10 Pin MS, Cable Assembly. For Use with Differential Line Driver with Index Outputs
118021-XXXX 10 Pin Bayonet, Cable Assembly. For Use with Differential Line Driver with Index Outputs
118022-XXXX NEMA4 10 pin MS, Cable Assembly. For Use with Differential Line Driver with Index Outputs

PRIMARY CABLE ASSEMBLIES WITH M12 CONNECTOR*

112859-XXXX 5 Pin M12, Cable Assembly. For Use with Single Ended Outputs
112860-XXXX 8 Pin M12, Cable Assembly. For Use with Single Ended Outputs
112860-XXXX 8 Pin M12, Cable Assembly. For Use with Differential Line Driver Outputs

DIAGNOSTIC CABLE ASSEMBLIES

117995-0001 6ft Diagnostic and Programming Cable to PC. 6 Pin MS to USB.
118023-XXXX Cable Assembly for Fault Output on Secondary Connector. 6 Pin MS to Flying leads

SOLID STATE RELAY

608793-0001 Solid State Relay for Non Isolated Use of Fault Output. 60VDC max 3A

***Note:** Standard cable length is 10 feet but may be ordered in any length in 5 foot increments. For example, for a 20 foot cable, replace XXXX with -0020.

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PRIMARY ELECTRICAL CONNECTIONS

7 & 10 PIN MS CONNECTORS AND CABLES - CODE 6 = 1 TO 9, H, J

Connector and mate/accessory cable assembly pin numbers and wire color information is provided here for reference.
Models with direct cable exit carry the same color coding as shown for each output configuration.

Encoder Function	Cable #108596-XXXX 7 Pin Differential Line Driver without Index		Cable #118019-XXXX 7 Pin MS Single Ended		Cable #1118020-XXXX 10 Pin MS or #118022-XXXX NEMA4 10 Pin Differential w Index*		Cable #118021-XXXX 10 Pin MS Bayonet		Cable Exit with Seal
	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color	Wire Color
Sig. A	A	BRN	A	BRN	A	BRN	5	BRN	BRN
Sig. B	B	ORN	B	ORN	B	ORN	8	ORN	ORN
Sig. Z**	—	—	C	YEL	C	YEL	C	YEL	YEL
Power +V	D	RED	D	RED	D	RED	D	RED	RED
Fault	—	—	E	BLK/WHT	E	BLK/WHT	E	BLK/WHT	BLK/WHT
Com	F	BLK	F	BLK	F	BLK	F	BLK	BLK
Case	G	GRN	G	GRN	G	GRN	G	GRN	GRN
Sig. $\bar{A}$	C	BRN/WHT	—	—	H	BRN/WHT	H	BRN/WHT	BRN/WHT
Sig. $\bar{B}$	E	ORN/WHT	—	—	I	ORN/WHT	J	ORN/WHT	ORN/WHT
Sig. $\bar{Z}$**	—	—	—	—	J	YEL/WHT	K	YEL/WHT	YEL/WHT

Cable Configuration: PVC jacket, 105°C rated, overall foil shield; 3 twisted pairs 24 AWG (output signals), plus 2 twisted pairs 22 AWG (input power)

PRIMARY ELECTRICAL CONNECTIONS

5 & 8 PIN M12 ACCESSORY CABLES WHEN CODE 6 = H OR J

Connector pin numbers and cable assembly wire color information is provided here for reference.

Encoder Function	Cable #112859-XXXX 5 Pin Single Ended		Cable #112860-XXXX 8 Pin Single Ended		Cable #112860-XXXX 8 Pin Differential	
	Pin	Wire Color	Pin	Wire Color	Pin	Wire Color
Sig. A	4	BLK	1	BRN	1	BRN
Sig. B	2	WHT	4	ORG	4	ORG
Sig. Z**	5	GRY	6	YEL	6	YEL
Power +V	1	BRN	2	RED	2	RED
Com	3	BLU	7	BLK	7	BLK
Sig. $\bar{A}$	—	—	—	—	3	BRN/WHT
Sig. $\bar{B}$	—	—	—	—	5	ORG/WHT
Sig. $\bar{Z}$**	—	—	—	—	8	YEL/WHT

Cable Configuration: PVC jacket, 105°C rated, overall foil shield; 24 AWG conductors, minimum

DIAGNOSTIC ELECTRICAL CONNECTION

Encoder Function	Cable #118023-XXXX 6 Pin MS Single Ended	
	Pin	Wire Color
Data	E	BRN
Data	D	ORN
5vdc	C	YEL
Fault	B	RED
NC	F	—
COM	A	BLK

Standard cable length is 10 feet but may be ordered in any length in 5 foot increments. For example, for a 20 foot cable, replace -XXXX with -0020
"MS" Type mating connectors and pre-build cables are rated NEMA 12
"M12" Cable assemblies are rated IP67
**Index not provided on all models. See ordering information.
*For watertight applications, use NEMA4 10 pin cable and connector 109209-XXXX

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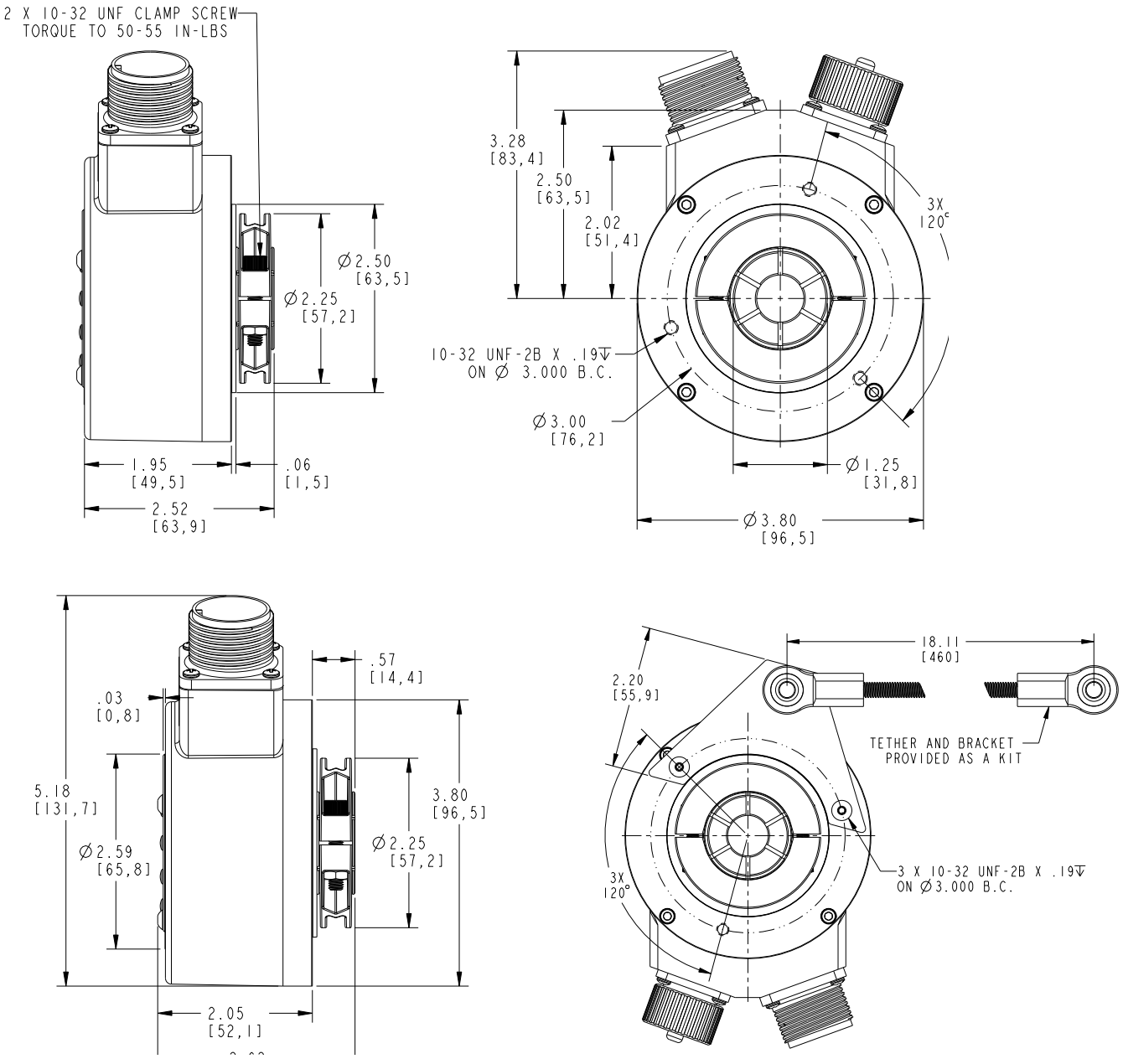
Dimensions: inch (mm)

HS35iQ Encoder

Download Sample 3D Model File Here >

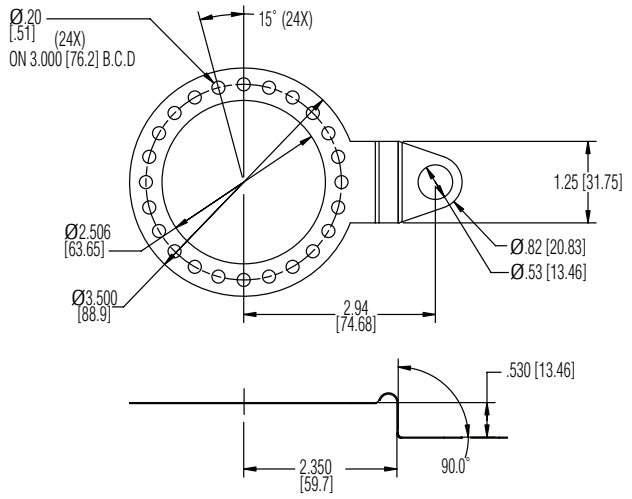
.stp format, 10 pin dual connector option



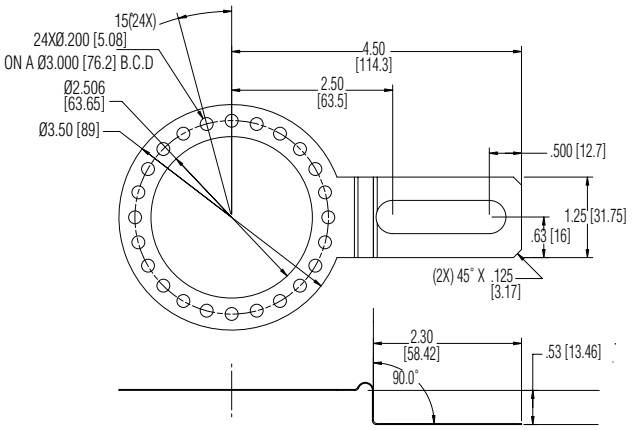
SERIES HS35iQ

Dimensions: inch (mm)

114573-0001 Tether Kit



114574-0001 Slotted Tether Kit



114575-0001 Tether Kit