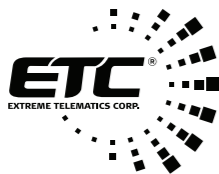




Installation and Operating Instructions



For additional instructions and support visit support.etcorp.ca



DWG: 10-10112 Rev 1

Introduction

The Cyclops plunger arrival sensor is a device that can detect the movements of ferrous objects by measuring changes in the Earth's background magnetic field. This detected movement is signaled to a industrial control system via means of a built in dry-contact switch. Cyclops is intended to detect the arrival of a plunger at the surface of oil and gas wells and signal this event to a control system via closing a dry contact switch to ground.

The sensor is designed for use in hazardous locations and is available in two varieties to meet the needs for different methods of protection.

Explosion Proof Models (ET-11000-1020-0000, ET-11000-1020-0100)

The explosion proof models are designed and certified for installation and use with explosion proof methodologies in Class I Zone 1/Class I Div 1 locations.

Intrinsically Safe Models (ET-11000-1019-0000, ET-11000-1019-0100)

Intrinsically safe models are dual certified to for installation and use as an intrinsically safe device in Class I Zone 0 - Class I Div 1 locations or for use as a non-incendive electrical device in Class I Zone 2 - Class I Div 2 locations.

Installation

Please read carefully before installing

Mounting

- Choose a suitable location on the lubricator where the sensor can lay flat.
- Non ferrous plunger types may need the sensor mounted higher to detect the motion of the anvil and spring assembly due to the lack of magnetic fields created directly by these plungers. See Figure 1
- Attach appropriate 1/2" NPT cable glands.
- For **explosion proof models**, align the cable hubs of the enclosure parallel to the lubricator and using the included band clamps strap each side to the lubricator.
- For **intrinsically safe models**, slide the band clamp through slots on the base of Cyclops enclosure and wrap around the lubricator.
- Tighten band clamps using a 5/16" (8mm) nut driver.

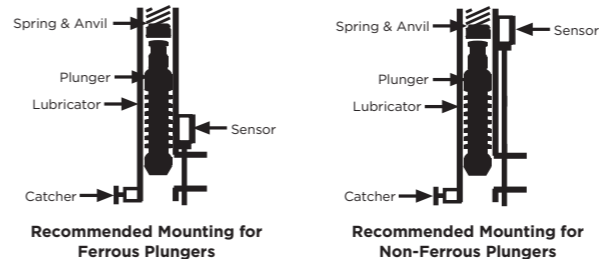


Figure 1

Wiring

- Measure and strip appropriate cable wires for the installation.
- Feed wires into sensor enclosure through connector and tighten the cable gland to specification.
- Terminate wires for power and signal to 3-pin connector. Plug in the connector and tighten the retaining screws.

Sensitivity Selection

- The sensor has 7 sensitivity selections that range from 1 - 7 where 1 is least sensitive and 7 is most sensitive. Default sensitivity is 4.
- Sensitivity dial position 0 puts the sensor into communications/debug mode and is not used for normal operations.
- Select the desired sensor sensitivity by rotating the sensitivity dial with the included screw driver.

Close Enclosure on Explosion Proof Models

- Replace the lid and fully screw it on to prevent moisture ingress.

Close Enclosure on IS Models

- Replace the lid and tighten the four captive screws.
- Do not over tighten as enclosure damage may result.
- Mark label of models ET-11000-1019-0000, ET-11000-1019-0100 with method of protection utilized during installation.

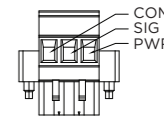
Connection Information

- Use only an approved connector with the sensor.

Approved Mating Connector:
Phoenix Contact - 1835481
Würth Elektronik - 691340700003

Terminals

- COM** - Common (Ground)
- SIG** - Dry contact to COM during arrival signaling
- PWR** - Power input for the sensor



Specifications

Electrical

Supply Voltage (PWR): --- 6-24V DC
Operating Current: 1mA Typ, 5mA Max
Dry Contact Switch Impedance to COM: 100 Ohm

Environmental

Operating Temperature: -40 to +70 °C (-40 to +158 °F)	Relative Humidity: 90% max non-condensing
Storage Temperature: -40 to +125 °C (-40 to +257 °F)	Operating Altitude: 2000m Max CAT 1, Pollution Degree 2

Maintenance, Servicing and Cleaning

- Routine inspections and maintenance are not required.

•The Sensor is not to be repaired by the user and must be replaced by an equivalent certified unit. Repairs can only be carried out by the manufacturer or an authorized repairer.

- Clean only with a damp cloth.

Disposal

Dispose of sensor and packaging according to local waste disposal regulations.

Manufacturer

Extreme Telematics Corporation
5925 12th Street SE, Bay 14
Calgary, Alberta, Canada
T2H 2M3
Tel +1-403-290-6300
Web www.etcorp.ca

WARNING

- To prevent ignition of flammable or combustible atmospheres, do not remove, replace, or disconnect while circuit is energized unless the area is known to be non-hazardous
- No serviceable parts
- If equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired
- Final installation shall be in accordance with the national electrical code, NFPA 70, and/or the Canadian electrical code
- Avoid striking or excessive friction on the equipment surface due to ignition hazard
- Use conductors rated for minimum 85°C
- This device must not be connected to any apparatus which uses or generates more than 250 Vrms

AVIS

- Pour éliminer les risques d'inflammation dans les environnements à atmosphère explosible et ou gazeuse, prière de ne pas déconnecter, remplacer ou extraire si les circuits sont alimentés. Veuillez vérifier que l'environnement est sécuritaire avant de procéder
- Pas de composants interchangeables
- L'équipement doit être utilisé selon les normes et standards du fabricant pour assurer un maximum de protection. Une utilisation non-conforme peut réduire le niveau de protection.
- L'installation finale doit être conforme au code national de l'électricité, NFPA 70 et / ou au code Canadien de l'électricité, y compris les exigences spécifiques aux emplacements dangereux.
- Éviter de frapper ou friction excessive sur la surface de l'équipement en raison de risques d'inflammation
- Câble doit être garanti 85°C minimum
- Cet appareil ne doit pas être connecté à un appareil qui utilise ou génère plus de 250 Vrms

Class I, Division 1 - Class I, Zone 1 Installations

Models ET-11000-1020-0000, ET-11000-1020-0100 Only

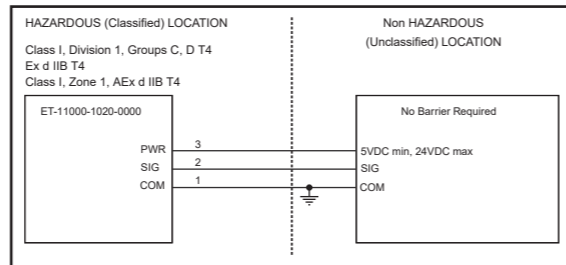


Figure 2

Notes:

- The installation must comply with national installation requirements. (For example the Canadian Electrical Code Section 18 or to United States National Electrical Code Article 501.
- Housing: KILLARK Model GECCT-1

WARNING

- Explosion proof when connected per Figure 2
- Substitution of components may impair explosion proof rating

AVIS

- L'équipement est antidéflagrant quand il est branché selon Figure 2
- La substitution de composants peut compromettre la sécurité antidéflagrante

Class I, Division 1 - Class I, Zone 0 Installations

Models ET-11000-1019-0000, ET-11000-1019-0100 Only

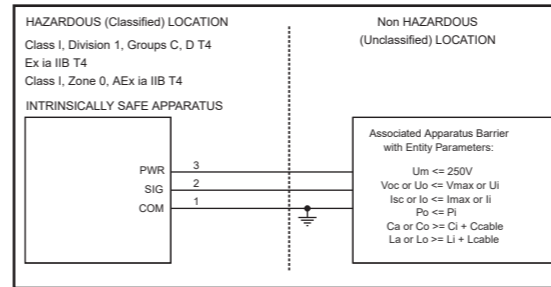


Figure 3

Entity Parameters:

Class I, Division 1, Groups C, D T4 Ex ia IIB T4 Class I, Zone 0, AEx ia IIB T4	
Terminal 1,3	Terminal 1,2
V_{max} or $U_i = 28V$	V_t or $U_o = U_i$
I_{max} or $I_i = 175mA$	I_t or $I_o = 0.60 mA$
$P_i = 1W$	P_t or $P_o = 4.2mW$
$C_i = 2.0nF$	$C_a = 400nF$
$L_i = 1\mu H$	$L_a = 5mH$

Notes:

- For installation in accordance with Figure 3, one dual-channel or two single-channel barriers may be used, where in either case, both channels have been certified for use together with combined entity parameters.

WARNING

- Intrinsically safe when connected per Figure 3
- Substitution of components may impair intrinsic safety

AVIS

- La sécurité intrinsèque est préservée lorsqu'il est connecté selon la Figure 3
- La substitution de composants peut compromettre la sécurité intrinsèque

Class I, Division 2 - Class I, Zone 2 Installations

Models ET-11000-1019-0000, ET-11000-1019-0100 Only

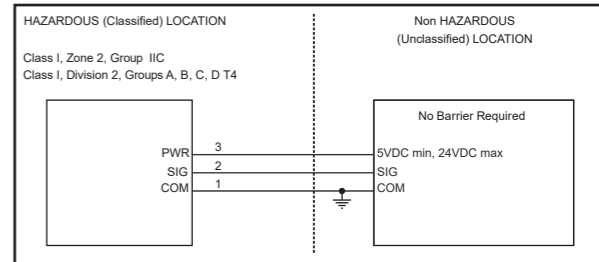


Figure 4

Notes:

WARNING

- Explosion hazard - Substitution of components may impair suitability for Class I, Division 2
- This equipment is suitable for use in Class I, Zone 2, Group IIC / Class I, Division 2, Groups A, B, C, D or nonhazardous locations only when installed per Figure 4

AVIS

- Risque d'explosion - La substitution de composants peut rendre ce matériel inacceptable pour les emplacements de classe I, division 2
- Cet équipement convient pour une utilisation dans des emplacements de Class I, Zone 2, Group IIC / Class I, Division 2, Groups A, B, C, D ou zone non dangereuse, uniquement lorsqu'il est installé conformément à la Figure 4