

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج کولرهای هوایی ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0015_02)</p>							 	
شماره پیمان: 053 – 073 – 9184	Vibration Switch Data Sheets and Catalogue							شماره صفحه : 1 از 14	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	AA	120	IN	DS	0002		V03



طرح نگهداشت و افزایش تولید 27 مخزن

Vibration Switch Data Sheets and Catalogue  
نگهداشت و افزایش تولید میدان نفتی بینک

V03	JAN. 2025	AFC	AAC	M.FAKHARIAN	S.FARAMARZPOUR	
V02	SEP. 2024	IFA	AAC	M.FAKHARIAN	M.SADEGHIAN	
V01	AUG. 2024	IFA	AAC	M.FAKHARIAN	M.SADEGHIAN	
V00	APR. 2024	IFA	AAC	M.FAKHARIAN	S.FRAMARZPOR	
Rev.	Date	Purpose of Issue/Status	Prepared by:	Checked by:	Approved by:	CLIENT Approval

Status:



IFA: Issued For Approval  
IFI: Issued For Information  
AFC: Approved For Construction

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج کولرهای هوایی ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0015_02)</p>							
شماره پیمان: 053 – 073 – 9184	Vibration Switch Data Sheets and Catalogue							شماره صفحه : 2 از 14
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	AA	120	IN	DS	0002	
							V03	

### REVISION RECORD SHEET



PAGE	V00	V01	V02	V03	V04
1	X	X	X	X	
2	X	X	X	X	
3	X	X	X		
4	X				
5	X		X	X	
6	X				
7	X				
8	X	X			
9	X				
10	X				
11	X				
12	X				
13	X				
14			X		
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					
61					
62					
63					
64					
65					

PAGE	V00	V01	V02	V03	V04
66					
67					
68					
69					
70					
71					
72					
73					
74					
75					
76					
77					
78					
79					
80					
81					
82					
83					
84					
85					
86					
87					
88					
89					
90					
91					
92					
93					
94					
95					
96					
97					
98					
99					
100					
101					
102					
103					
104					
105					
106					
107					
108					
109					
110					
111					
112					
113					
114					
115					
116					
117					
118					
119					
120					
121					
122					
123					
124					
125					
126					
127					
128					
129					
130					

	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج کولرهای هوایی ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0015_02)</p>									
<p>شماره پیمان:</p> <p>053 – 073 – 9184</p>	Vibration Switch Data Sheets and Catalogue								<p>شماره صفحه : 3 از 14</p>	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه		
	BK	GCS	AA	120	IN	DS	0002	V03		

## CONTENTS

1.0	INTRODUCTION .....	4
2.0	VIBRATION SWITCH DATA SHEETS AND CATALOGUE .....	5

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج کولرهای هوایی ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0015_02)</p>								
شماره پیمان: 053 – 073 – 9184	Vibration Switch Data Sheets and Catalogue							شماره صفحه : 4 از 14	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	AA	120	IN	DS	0002		V03

## 1.0 INTRODUCTION



Binak oilfield in Bushehr province is a part of the southern oilfields of Iran, is located 20 km northwest of Genaveh city.

With the aim of increasing production of oil from Binak oilfield, an EPC/EPD Project has been defined by NIOC/NISOC and awarded to Petro Iran Development Company (PEDCO). Also PEDCO (as General Contractor) has assigned the EPC-packages of the Project to "Hirgan Energy - Design and Inspection" JV.

### GENERAL DEFINITION

The following terms shall be used in this document.

CLIENT:	National Iranian South Oilfields Company (NISOC)
PROJECT:	Binak Oilfield Development – Manufacturing (w/Engineering & Material Supply) of Air Coolers
EPD/EPC CONTRACTOR (GC):	Petro Iran Development Company (PEDCO)
OWNER:	OWNER is collectively refer to National Iranian South Oil Company (NISOC) and Petro Iran Development Company (PEDCO)
EPC CONTRACTOR:	Joint Venture of : Hirgan Energy – Design & Inspection(D&I) Companies
VENDOR:	Aban Air Cooler (AAC)
EXECUTOR:	Executor is the party which carries out all or part of construction and/or commissioning for the project.
THIRD PARTY INSPECTOR (TPI):	Third Party Inspector
SHALL:	Is used where a provision is mandatory.
SHOULD:	Is used where a provision is advisory only.
WILL:	Is normally used in connection with the action by CLIENT rather than by an EPC/EPD CONTRACTOR, supplier or VENDOR.
MAY:	Is used where a provision is completely discretionary.

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج کولرهای هوایی ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0015_02)</p>								
شماره پیمان: 053 - 073 - 9184	Vibration Switch Data Sheets and Catalogue							شماره صفحه : 5 از 14	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	AA	120	IN	DS	0002		V03

## 2.0 VIBRATION SWITCH DATA SHEETS AND CATALOGUE

03

GENERAL				SWITCH			
1. Type / Mechansim : Mechanical Vibration Switch / Armature mechanism QTY.: 12 2. Setting: Set In Field <input checked="" type="checkbox"/> Factory Set <input checked="" type="checkbox"/> Internal <input checked="" type="checkbox"/> External <input checked="" type="checkbox"/> Dial <input checked="" type="checkbox"/> 3. Manual Reset Button : No <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> 4. Enclosure Protection : EEx db IIB+H2 T4/T6 5. Enclosure Material: Casted Aluminium 6. Connection: MFR STD <input checked="" type="checkbox"/> Bottom <input checked="" type="checkbox"/> Back <input checked="" type="checkbox"/> 7. Mounting: Local <input checked="" type="checkbox"/> Surface <input checked="" type="checkbox"/> Flush <input checked="" type="checkbox"/> 8. Accuracy : ± 1% g				9. Type: Mercury <input checked="" type="checkbox"/> Snap <input checked="" type="checkbox"/> 10. Quantity: Single <input checked="" type="checkbox"/> Dual <input checked="" type="checkbox"/> 11. Form: SPST <input checked="" type="checkbox"/> SPDT <input checked="" type="checkbox"/> 2 SPDT <input checked="" type="checkbox"/> 12. Rating: 5 A , 24VDC 13. Wiring Entry : M20 x 1.5 <input checked="" type="checkbox"/> 1/2" NPTM <input checked="" type="checkbox"/> 14. Enclosure: Explosion Proof <input checked="" type="checkbox"/> Non-Hazardous <input checked="" type="checkbox"/> General Purpose <input checked="" type="checkbox"/> 15. Enclosure Class : IP 54 <input checked="" type="checkbox"/> IP 55 <input checked="" type="checkbox"/> IP 65 <input checked="" type="checkbox"/> 16. Manufacturer & Model No.: PVTM-PT500-12114 17. Standard . IEC60079-1			
REV.	TAG NO.	ADJ. RANGE	SET POINT	AMBIENT TEMP		P&ID No.: / Service	REMARK
				MIN.	MAX.		
2	AE-VSHH-2101-1~2 (A/B/C) AE-VSHH-2102 -1~2 (A/B/C)	0 ~5 g	Shall Be Adjusted At Site	5° C	50° C	BK-GCS-AA-120-PR-PI-0001/ Air Cooler	Completed with remote reset coil
	03						

Note :  
M20 Nickel Brass , EExd, IP 65 Cable Gland suitable for Armored & leak covered cable would be provided.



### PT500 Electro-Mechanical Vibration Switch Introduction

The PT500 is an economical solution to provide basic vibration protection for your rotating or reciprocating machines. The PT500 uses an inertia sensitive mechanism which actuates internal micro-switch contacts when the vibration level exceeds the adjustable set point. The PT 500 start-up delay feature prevents the switch from activating during the higher vibration levels present during the start-up of the machine so that the set point may be adjusted closer to the vibration levels present during normal operation or running speed of the machine.

The PT500 is your “one stop shopping” for all electro-mechanical vibration switch applications. The unique design has all industry required environmental and hazardous area approvals. The E-coat option is suitable for offshore and very corrosive environmental applications. Universal mounting plate will mount in existing mounting holes when replacing older mechanical vibration switches.

Applications include:

- ✓ Fans
- ✓ Cooling Motor/Fans
- ✓ Fin Fans
- ✓ Heat Exchangers
- ✓ Engines
- ✓ Reciprocating Compressors
- ✓ Centrifuges
- ✓ Rock or Coal Crushers

#### PT500 Features

- ✓ Wide operating temperature range of -52°C – 100°C (-62°F – 212°F)
- ✓ All industry environmental ratings
- ✓ Optional NEMA(E-coat), IP65 environmental rating
- ✓ Hazardous area agency approvals CSA, ATEX, CE



- ✓ Universal mounting
- ✓ Local and remote reset
- ✓ Start up delay
- ✓ SPDT, (2) SPDT and gold plated contact options

#### Specification

**Function:** Armature mechanism trips on high vibration and operates snap action switch.

**Vibration Range:** See How to Select “C”

**Frequency Range:** 0 to 3600 rpm

**Set Point Adjust:** 0 to 100% of range. Internal set point adjustment.

**Local Reset:** For field local reset of the switch

**Remote reset with Start-up Delay:** Applying reset coil voltage at start up holds mechanism from tripping delay about 3 seconds, after which the switch is automatically activated.

#### Reset Coil Power Supply:

95 - 250VAC@100mA, 50 - 60Hz or

20 - 30VDC @ 200mA

**Temperature Limit:** -52 °C to +100 °C

**Enclosure:** Casted Aluminum

**Coating:** Standard plastic coating on outside of surface, or E-coating for optional on both inside and outside of surfaces and mounting plate (AL alloy). Mounting stud and local reset are SS304.

**Environmental Rating:** IP65



## Switch Contact(s) Rating:

15A, 125VAC, 250VAC, 480VAC; 1/8 HP 125VAC  
1/4 HP 250VAC; 1/2A, 125VDC; 1/4A, 250VDC;  
1.5A, 8VDC, 14VDC, 30VDC;  
Gold plated contact: 0.1A 125VAC; 0.1A 30VDC

## Storage:

The PT500 switches must be stored in a dry area when not installed. Don't move the conduit plug away which can protect the hole thread from damages during the storage and shipping/handling.

## Hazard Rating: See order information

IECEX: Ex db IIC T4/T6 Gb  
Ex db IIB+H2 T4/T6 Gb  
IECEX DEK 16.0002X

IEC 60079-0: 2011  
IEC 60079-1: 2014

ATEX: II 2G Ex db IIC T4/T6 Gb  
II 2G Ex db IIB+H2 T4/T6 Gb  
T4@Ta= -52°C to +100°C  
T6@Ta= -52°C to +70°C  
DEKRA 16ATEX0003X

EN 60079-0: 2012  
EN 60079-1: 2014

TR CU : 1Ex db IIC T4, T6X Gb  
1Ex db IIB+H2T4, T6 X Gb  
№ TC RU C-US.AA87.B.01024  
NANIO CCVE

GOST 31610.0-2014 (IEC 60079-0: 2011) Explosive atmospheres. Part 0. Equipment. General requirements and GOST IEC 60079-1-2013 Explosive media. Part 1. Equipment with type of protection "flameproof enclosure" d".

## Physical

### Temperature

Operation: -52°C - + 100°C (-62°F - +212°F)  
Storage: -52°C - + 120°C (-62°F - +248°F)

### Dimension

See attached drawing

### Weight

PT500	1285g (2.8 lbs)
PT500-13	205g (0.45 lbs)
PT500-14	279g (0.6 lbs)
PT500-15(PT500-17)	440g (0.97 lbs)
PT500-20	112g (0.25 lbs)

## Order Information

### PT500-ABC-DE\*

A: Hazardous Area Approvals

A = 0: CE Mark

**A = 1: Multiple Approvals (D=0, 1)**

**CSA: Class I, Div 1, Groups B,C & D T4,T6**

**CERTIFICATE: 2079756**

**ATEX: II 2G Ex db IIB+H2 T4/T6 Gb**

**T4@Ta= -52°C to +100°C**

**T6@Ta= -52°C to +70°C**

**DEKRA 16ATEX0003X**

**IECEX: Ex db IIB+H2 T4/T6 Gb**

**IECEX DEK 16.0002X**

**PCEC: Ex d II B+ H2T4/T6 Gb**

**CE Mark**

A = 5: Multiple Approvals (D=5)

**CSA: Class I, Div 1, Groups A, B, C & D, T4, T6**

**CERTIFICATE: 2079756**

**ATEX: II 2G Ex db IIC T4/T6 Gb**

**T4@Ta= -52°C to +100°C**

**T6@Ta= -52°C to +70°C**

**DEKRA 16ATEX0003X**

**IECEX: Ex db IIC T4/T6 Gb**

**IECEX DEK 16.0002X**

**PCEC: Ex d II C T4/T6 Gb**

**CE Mark**

A = 6: Multiple approvals (D=0, 1):

**TR CU: 1Ex db IIB+H2T4, T6 X Gb**

**CE Mark**

A = 7: Multiple approvals (D=5):

**TR CU: 1Ex db IIC T4, T6 X Gb**

**CE Mark**

B: Relay Contact

B = 1: SPDT

**B = 2: (2) SPDT**

B = 3: SPDT (gold plated contact)

B = 4: (2) SPDT (gold plated contact)

C: Full Scale

**C = 1: 5g**

C = 2: 2g

C = 3: 10g

D: Reset Power with Start-up Inhibit; Local Reset

D = 0: Local Reset only

**D = 1: Remote Reset and Inhibit; Local Reset**

D = 5: Remote Reset and Inhibit; No Local Reset

E: Conduit Entries/Mounting Plate or Mounting Stud

E = 1: 3/4" NPT, Mounting Plate PT500-13



## ***PT500 Electro-Mechanical Vibration Switches***

---

E = 2: 3/4" NPT, Mounting Plate PT500-14

**E = 4: M20×1.5, Mounting Plate PT500-14**

E = 5: M20×1.5, Mounting Plate PT500-13

E = 6: 3/4" NPT, Mounting Stud 3/4" NPT

E = 7: M20×1.5, Mounting Stud M20×1.5

**Note:**

\* If E-coating is required, add the suffix "E" at the end of part number. For example: PT500-122-15E.

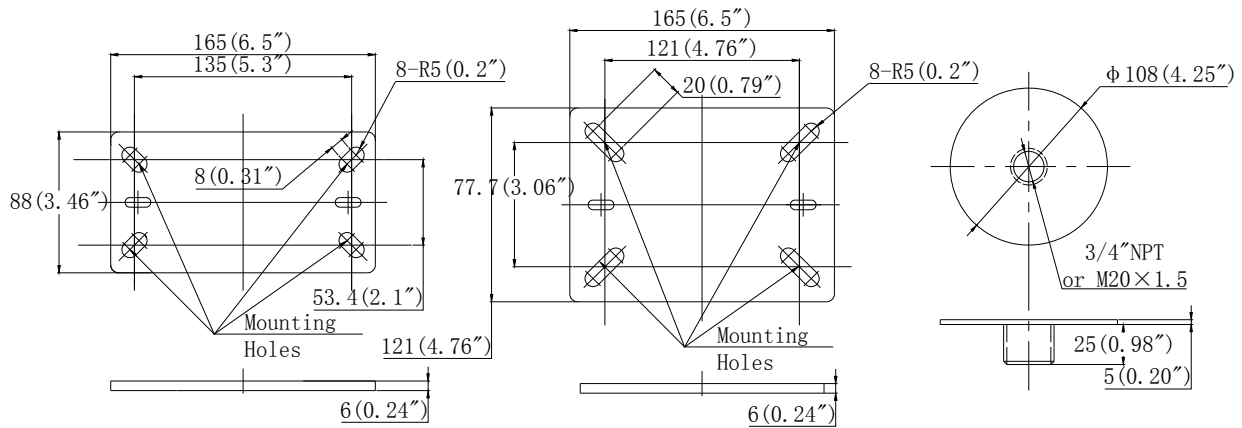






## Accessories

Mounting Plate and mounting studs:



**PT500-13**

**PT500-14**

All dimensions in mm (inches)

**PT500-15 (3/4" NPT)**

**PT500-17 (M20×1.5)**



**3/4" NPT seal**  
**PT500-18**



**3/4" NPT cable feedthrough**  
**PT500-19**



**Blank cover**  
**PT500-3**



**Remote reset circuit**  
**PT500-20**



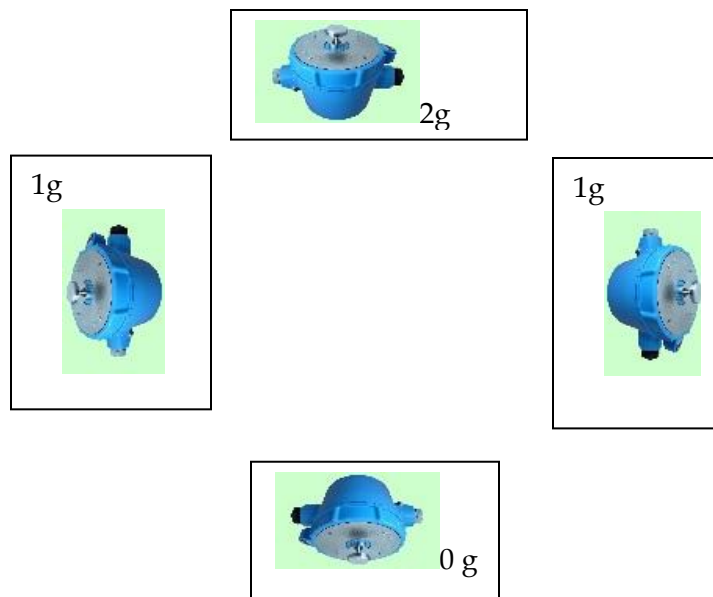
### PT500 installation and adjustment with different positions

The PT500 Provibtech mechanical switch manufacturing with a default 2 g full scale vibration. To set the vibration point when the internal micro switch contacts actuates at vibration exceed set point it depend on how the PT500 installed. It is recommended to install the switch horizontally (face up) which is our standard but it is possible to install it vertically or horizontal ( face down) but the adjust point will be different in each point for same vibration level. In another words, it will need to be calibrated in each position to get a trip at for example 2g.

Basically, with horizontal position (face up), as explained before it manufactured with 2g full scale as default. To change the vibration full scale range then there is a set point adjustment shown in attached document. If you turn the adjustment clockwise for 1/8 turn then you will get 3g and if you turn it anticlockwise then you will get 1g.

How to do adjustment please check attached document and while this is a mechanical switch then there is +/- percentage small error.

In case it installed in a different position then the full scale set point will be different. Basically how to compare it please see below:



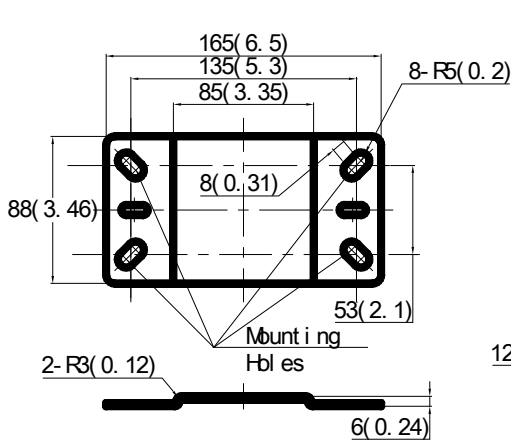


So, from above it can be seen 2 g with face up will be considered as 1 g with vertical installation and 0 g with face down and that will be your starting point and from that point you can adjust the switch according to any position and full scale desired.

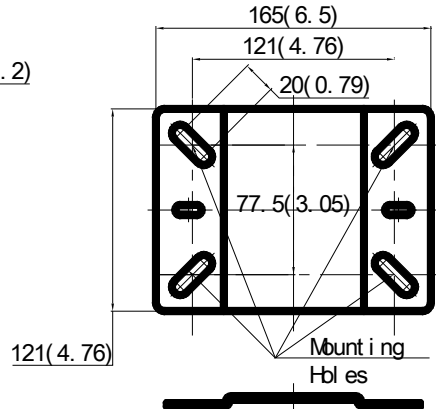
If the unit already installed then you have to turn the set point anticlockwise till there is contact all the time ( latching ). From that point start to do the number of turns according to your full scale.

## Accessories

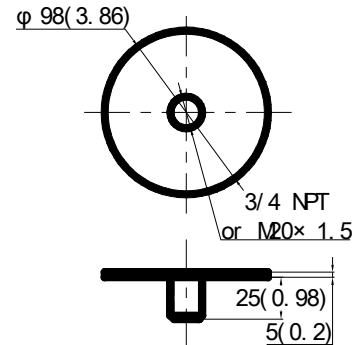
Mounting plate and mounting studs:



**PT500-13**



**PT500-14**



**PT500-15 (3/4' NPT)**

**PT500-17 (M20x1.5)**



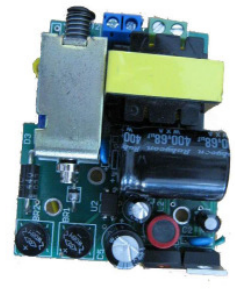
**3/4' NPT seal  
PT500-18**



**3/4' NPT cable feedthrough  
PT500-19**



**Blank cover  
PT500-3**



**Remote reset circuit  
PT500-20**

## Field-Wiring Diagram

