FOG based north finder

▶ Product specification

Main technical parameters				
Parameters	BS-NF701-M-D6EC	BS-NF702-M-D6EC	BS-NF703-M-D6EC	Unit
North seeking accuracy (1σ)	≤0.1	≤0.35	≤0.5	°
North seek time	≤ 3			min
Horizontal accuracy (pitch and roll)	≤0.05 (1σ)	≤0.05 (1σ)	≤0.05 (1σ)	°
Power-on preparation time	6			min
interface	RS422			/
Power supply	12			V
Power consumption	20 (peak)			w
Weight	<1.5			Kg
Dimension	L120×W90×H115			mm
Working mode	After power on, it start self-test. After the self-test completed, it will response to the upper computer's north seek command. And after north seeking, the north seeking result will be sent to upper computer.			
Environment requirements				
Operating temperature	-20 ~ +50			° C
Storage temperature	-45~ +70			° C
Relative humidity	95			%
Appearance	The metal surface shall not be rusted, and the coating shall not cause blistering or peeling.			
Electrical performance				
Insulation resistance	The insulation resistance between the individual circuits of the gyro north finder and its circuit and housing shall be not less than 10 MΩ under standard atmospheric			

	conditions.	
maintainability		
MTBF	≥10000	hrs
MTTR	≤30	min

▶ Plug

pin definitions are shown in the table below.

a	24V+	24V+
b	24V GND	24V GND
c	TD+	TXD
d	TD -	Reserved, the user does not wire
e	RD+	RXD
f	RD-	Reserved, the user does not wire
g	GND	GND

▶ Instructions

1 Installation method

Facing the gyro north finder arrow, the left and right sides of the mounting base plate are for mounting the reference surface, and the reference surface is aligned with the mounting head and tail line of the carrier, and the gyro north finder is fixed on the carrier by four M4 screws. The installation diagram of the gyro north finder is shown in Figure 1.

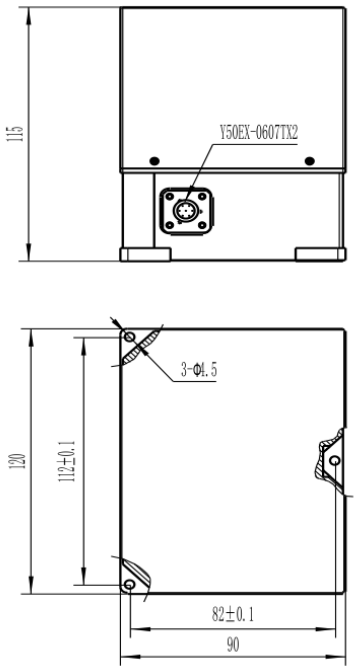

Fig 1, north finder installation drawing

▶ Steps for usage

1) Install the gyro north finder according to the requirements of 2.1.

2) Connect the leads according to the pin definition of 1.8.3, and check them correctly.

3) Turn on the 24V power supply, the north finder automatically enters the self-test state, and the self-test result (within 1 minute) is output after the self-test is completed. If the device is normal, the north finder will be in the north seek command waiting state.

4) The host computer sends the north seek command, and the north seeker immediately sends the north seek command response message, and immediately enters the north seeking state. Within about 3 minutes, the north seek is completed, and the north seek result is output.

5) After the search for the North, the North Finder waits for the next North Search command.

6) Power off after use.

▶ Protocol

Adopt RS422 serial interface form, start bit 1 bit, data bit 8 bit, stop bit 1 bit, no parity, baud rate 9600bps. The data is in ASIC format.

Northfinder output information

1	$GAT,x,x,x,x, *hh<cr><lf>	Self-test result output
2	$STR,1,64*<cr><lf>	Response to begins to seek north and enters the north seeking state.
3	$HPR,xxx.xx,±xx.xx, ±xx.xx,*hh<cr><lf>	Output north find result

Description:

1) hh is the exclusive OR checksum of all characters between $ and *, excluding $ and *;

2) <cr><lf> is the end of data mark, carriage return and line feed;

3) The output contents of the self-test result x, x, x, x are gyro, tilt, index, and tilt angle respectively. If the normal output is 0, the fault output is 1.

4) The order of the northward result output content is azimuth, longitudinal inclination, and lateral inclination.

▶ Command from host computer to north finder

1	$STR,1,64*<cr><lf>	Start to find north

Note: The North Search command will be ignored during the North Search process.

▶ Use maintenance

1) If the gyro north finder is found to have a starting current greater than 1A during use, check

whether the power supply voltage meets the requirements. If the inspection is correct, the professional should be repaired.

2) If the gyro north finder is found to have no serial port data output during use, check whether the connection is correct, whether the serial port setting and data receiving format are correct. If the check is correct, the professional should be repaired.

▶ Precautions

1) The gyro north finder should be handled gently during the transportation process and installation process, and it is strictly forbidden to impact.

2) The carrier should be kept absolutely stationary during the north seeking process, otherwise it will affect the accuracy of north seeking.

3) The longitudinal and lateral inclination of the carrier should be no more than ±8°, otherwise it will affect the accuracy of north seeking.

▶ Composition

The equipment package includes:

a) 1 set of fiber optic gyro north finder;

b) One plug.

▶ Notes

1 The gyro north finder should be handled gently during the transportation process and installation process.

2 The carrier should be kept absolute stationary during the north seeking process, otherwise it will affect the accuracy of north seeking.

3 The longitudinal and lateral inclination of the carrier should be no more than ±3°, otherwise it will affect the accuracy of north seeking, and the gyro north finder can measure the inclination of ±10°.