Gyrocompass Retrofitting Instruction

TG-8000

Version 1.00
Edited on 25/1/2026

1. Four options of retrofitting

	Description	Scenario of retrofitting
OPTION 1 Remove old master compass and keep old control unit	1. Remove the old master compass only. 2. Keep old control unit and connect FOG interface unit to the old control unit. 3. Heading signal will be output from the old control unit. ***See 3.7 & 3.8***	Old master compass is faulty while old control unit works well. FOG will replace the faulty gyro compass while most wirings keep unchanged.
OPTION 2 Keep old gyro system	1. Keep the old gyro system. 2. FOG system will connect to old gyro system through magnetic compass port (by a NMEA selector switch). 3. Heading signal will be output from the old control unit. ***See 4.8 & 4.9***	The old gyro compass system still works well. FOG will be installed as backup system to the old gyro compass system. Most wirings keep unchanged.
OPTION 3 Keep old gyro system	1. Keep the old gyro system. 2. NMEA selector switch, new NMEA distributor and digital to step converter (if needed) will be installed. 3. Heading signals from FOG system and old gyro system will be selected by the NMEA selector switch. 4. All navigation devices will be connected to FOG interface unit. ***See 5.9 & 5.10***	The old gyro system still works well. FOG will be installed as backup system to the old gyro system. In case that old master compass or old control unit is faulty, the system may be switched from old system to FOG easily.
OPTION 4 Remove old gyro system completely	Similar as Option 3 ***See 5.9 & 5.10***	Bothe old master compass and control unit are faulty. The old system is completely replaced by FOG.

2. Notes to the options

For Option 1:
After the initial installation of the FOG is completed, the old gyrocompass control unit must remain powered on continuously. If it is accidentally powered off and restarted, the SSG indicator on the old gyrocompass control panel will flash for approximately 4 hours (this is the stabilization period), but the heading output will remain normal during this time.

For Option 1 and Option 2:
If there is a deviation between the heading reading displayed on the old control panel and that of the display unit of FOG, set the installation deviation value of the old gyrocompass system to 0.

For Option 2 and Option 3:
When using the FOG as the heading signal output during navigation, do not turn off the power supply of the old master compass and old control unit. If there is malfunction in the FOG signal output, you can switch to the old gyrocompass mode for operation promptly.

For Option 3:
Before installing the FOG, clearly mark the interfaces (of the old gyrocompass system) that output signals to each repeater, distributor, and each navigation equipment, as well as the cable routes and port settings. This is to facilitate the smooth installation of the FOG.

Note:
This technical instruction is for reference only. The specific installation plan shall be prepared based on the actual conditions on board.

3. Detailed instruction on Option 1

3.1 Turn off the power supply of the old TG-8000 GYRO compass system, disconnect the connecting cable between the old master compass and the old control unit, and remove the old master compass.

3.2 Install all units of FOG. Connect the cables between all units in accordance with the installation manual, and connect GNSS input.

3.3 Route the signal cables and connect terminals pins **85 and 86** of **P12** on the FOG interface unit (**NGC-512**) to terminals pins **8 and 9** of **TB1** on the old TG-8000 control unit respectively.

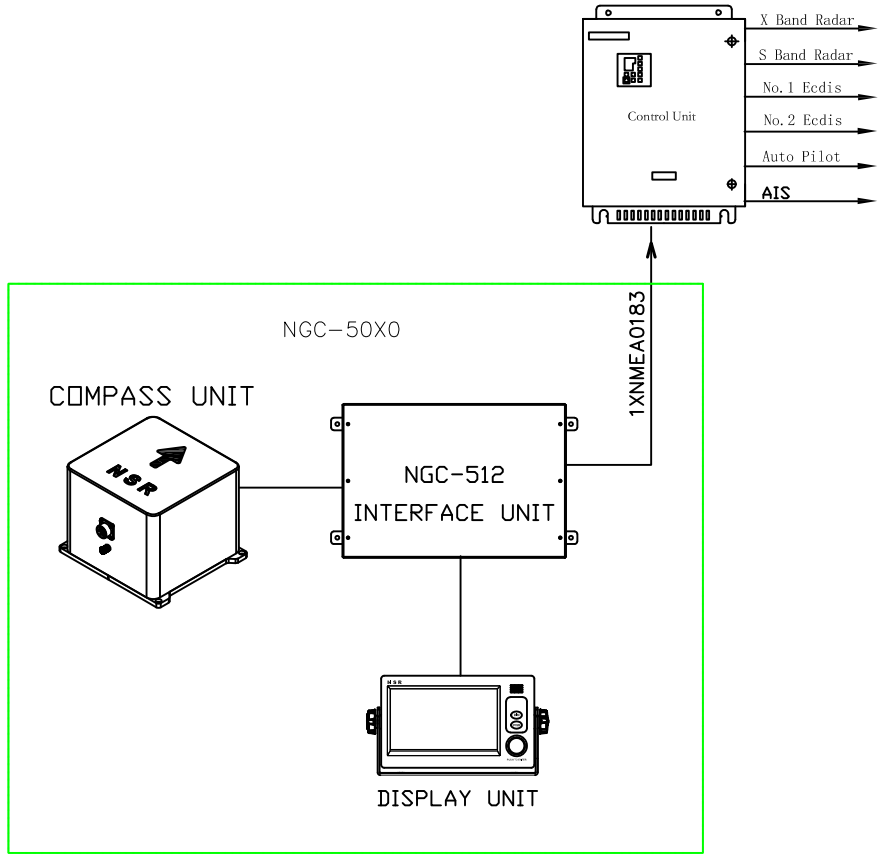
3.4 Short-circuit terminals at pins **3 and 4**, and pins **4 and 5** of the alarm interface on **TB1** of the old TG-8000 control unit.

3.5 Power on FOG. After the heading has stabilized for approximately **10 minutes**, press the **Menu** key, select **Output**, choose the **AP/DP** port, set the baud rate to **38400**, and select **Custom(T)** as the output sentence.

3.6 Power on the old TG-8000 system and verify that the heading displayed on all repeaters is consistent with the heading shown on FOG display unit. Upon confirmation, the replacement is completed.

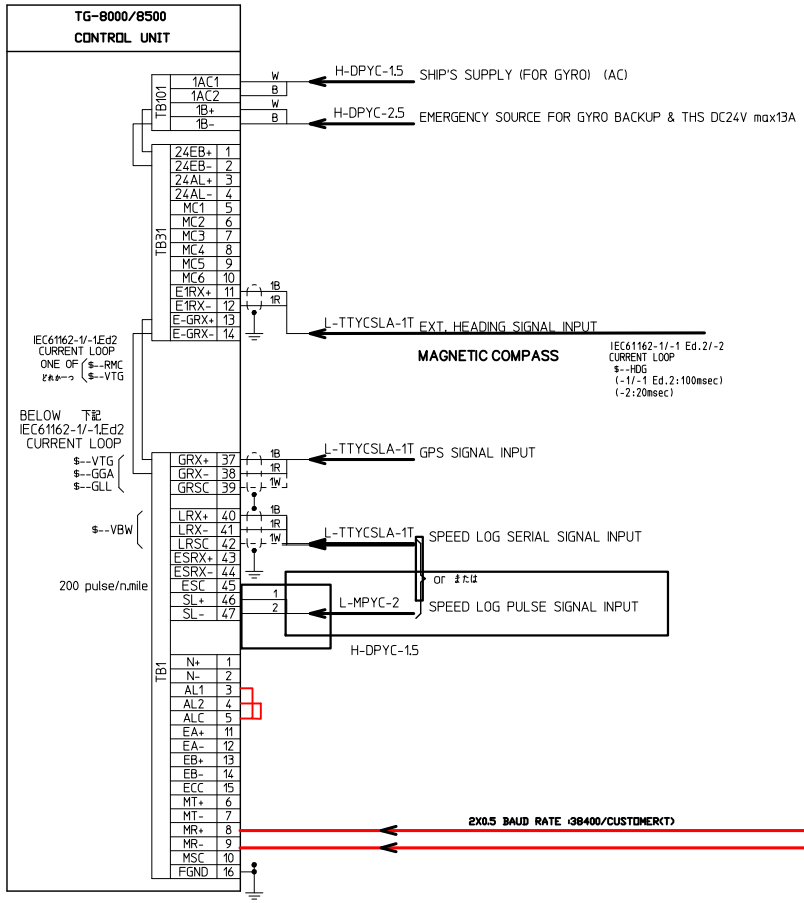
3.7 System diagram of Option 1.

3.8 Wiring drawing of Option 1.



OPTION 1 SYSTEM DIAGRAM

REMOVE THE MASTER GYRO COMPASS



P8							P9							P10							P11							P12							P13						
47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	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
TX-	TX+	GND	24V	TX-	TX+	GND	24V	TX-	TX+	GND	24V	TX-	TX+	GND	24V	TX+	TX-	TX+	TX-	TX+	TX-	TX+	TX-	TX+	TX-	TX+	TX-	TX+	TX-	TX+	TX-	RX-	RX+	RX-	RX+	RX-	RX+	TX-	TX+	ALM	COM	ALM	COM	RX-	RX+	TX-	TX+
REPEATER5				REPEATER6				REPEATER7				REPEATER8				DATA1		DATA2		DATA3		DATA4		DATA5		DATA6		DATA7		DATA8		GNS		SPD		AP/DP				SYS		PWR		BAM			

NGC-512 INTERFACE UNIT

EXT_COMPASS						FOG01				DISPLAY				GNSS2		DATA9	PRT	BACKUP				REPEATER1		REPEATER2				REPEATER3				REPEATER4				PWR
RX3-	RX3+	RX2-	RX2+	RX1-	RX1+	RX-	RX+	TX-	TX+	GND	24V	RX-	RX+	TX-	TX+	GND	24V	RX-	RX+	TX-	TX+	GND	TXD	RX-	RX+	TX-	TX+	GND	24V	TX-	TX+	GND	24V	TX-	TX+	GND	24V	TX-	TX+	GND	24V	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	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		
P1						P2				P3				P4				P5				P6						P7									

OPTION 1 WIRING DIAGRAM

4. Detailed instruction on Option 2

4.1 Turn off the power supply of the old **TG-8000 GYRO compass system** and disconnect the magnetic compass signal input cable from **pins 11** and **12** of **Terminal Block (TB3)** on the old Control Unit.

4.2 Install **NMEA Selector Switch (NGS-100)** at a suitable location, and connect the signal cables removed in Step 1 to **pins A and B** of the **IN1 terminal** on the selector switch respectively.

4.3 Install all units of **FOG**, connect the cables between all units in accordance with the requirements of the installation manual, and connect the **GNSS input**.

4.4 Route the signal cables: connect pins **71 and 72** of **Terminal P11** on the FOG Interface Unit (**NGC-512**) to pins **A and B** of **the IN2 terminal** on the selector switch respectively. Mark **Position 1** on the selector switch panel as "**Magnetic Compass**" and **Position 2** as "**FOG**".

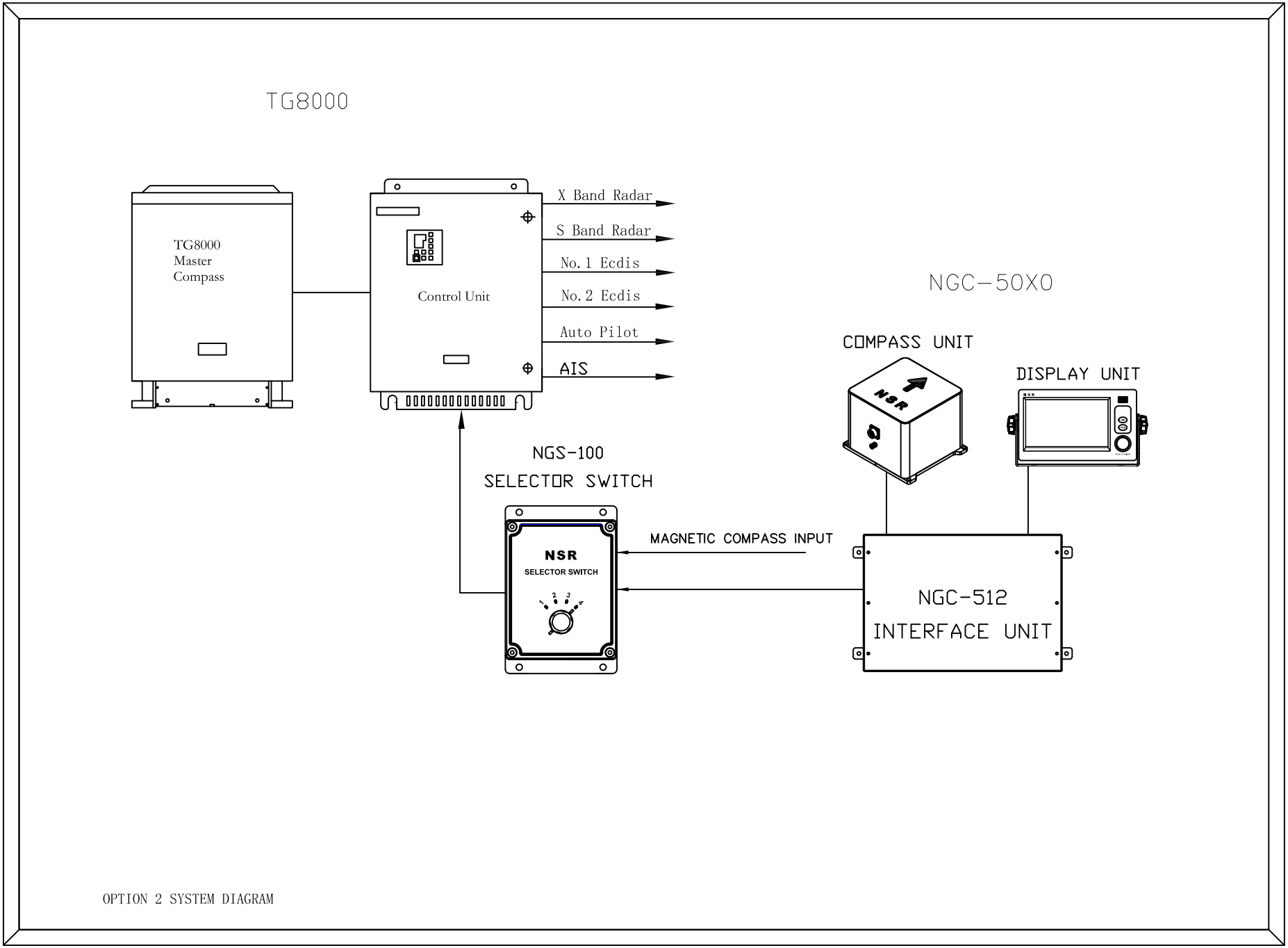
4.5 Route the **signal cables**: connect **pins A and B** of the **OUT terminal** (output end of the selector switch) to **pins 11 and 12** of **Terminal Block (TB3)** on the old **TG-8000 Control Unit** respectively.

4.6 Power on the **FOG**. After the **heading** stabilizes for approximately 10 minutes, press the **Menu key**, **select "Output"**, **choose** the **DATA5678 port**, **set** the **baud rate** to **4800**, and **select HDT** as the **output sentence**.

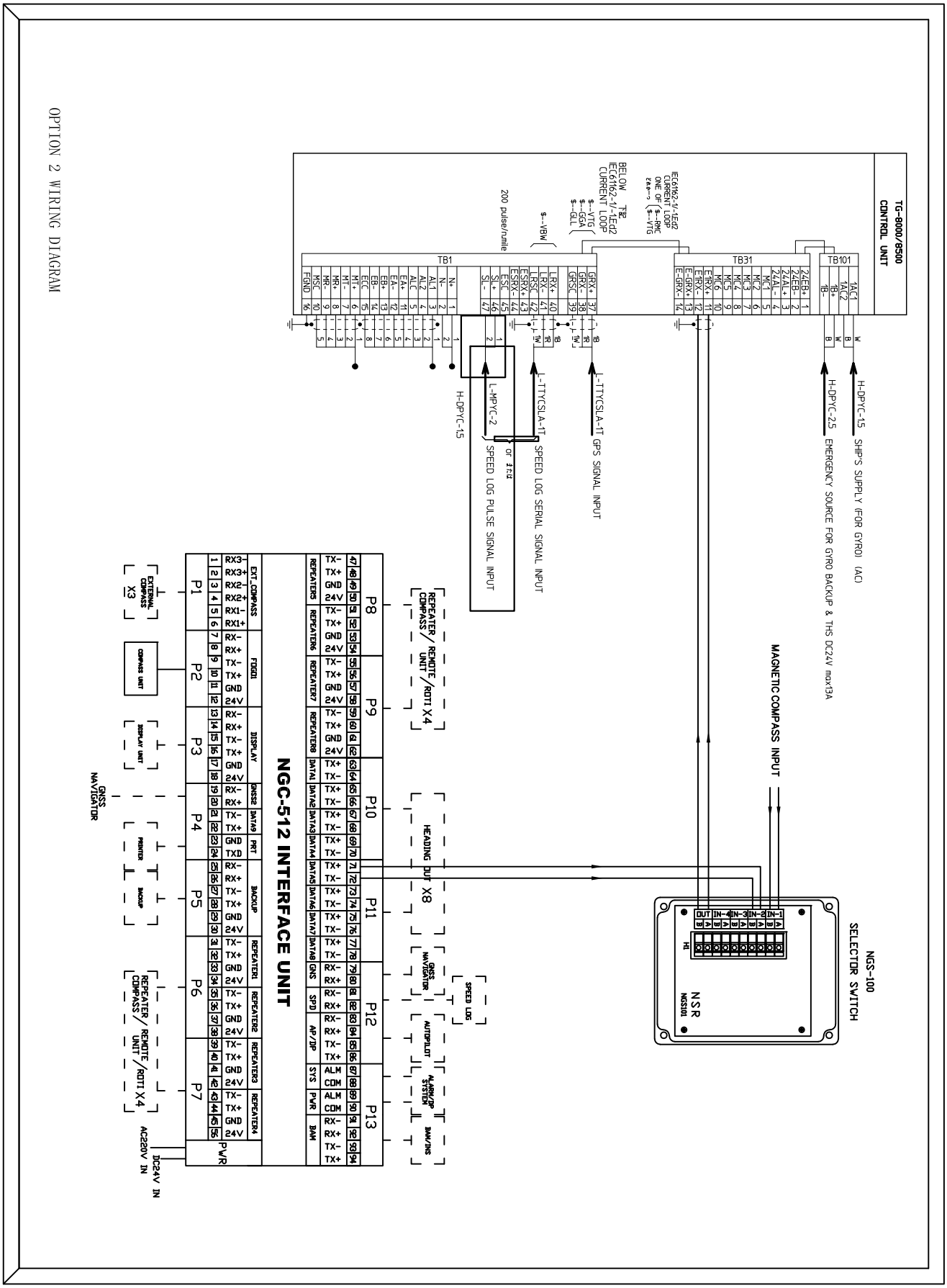
4.7 Power on the old TG-8000 system. On the operation panel, select **"External Signal Input"** for the heading signal, set the selector switch to **Position 2,** and verify that the heading displayed on all repeaters is consistent with that shown on the FOG display unit. Set the selector switch to **Position 1** and check that the **magnetic compass signal** input is normal. If all functions work properly, the installation is completed.

4.8 System diagram of Option 2.

4.9 Wiring drawing of Option 2.



OPTION 2 SYSTEM DIAGRAM



OPTION 2 WIRING DIAGRAM

5. Detailed instruction on Option 3

5.1 Turn off the power supply of the old **TG-8000 GYRO compass system**, inspect and mark all signal cables output from each terminal in the old Control Unit to the repeaters and **NMEA devices**, and **disconnect** all the aforementioned cables from the old Control Unit.

5.2 Install the **NMEA Selector Switch (NGS-100)** at a suitable location, route the signal cables, and connect **pins 30 and 31** of **Terminal Block (TB2D)** on the old Control Unit to **pins A and B** of the **IN1 terminal** on the selector switch respectively.

5.3 Install all units of **FOG**, connect the cables between all units in accordance with the requirements of the installation manual, and connect the **GNSS** input.

5.4 Route the signal cables: connect **pins 71 and 72** of **Terminal P11** on the **FOG Interface Unit (NGC-512)** to **pins A and B** of the **IN2 terminal** on the selector switch respectively. Mark **Position 1** on the selector switch panel as "**Gyrocompass**" and **Position 2** as "**FOG**".

5.5 Route the signal cables: connect **pins A and B** of the **OUT terminal** (output end of the selector switch) to **pin 1 (RX1-A)** and **pin 2 (RX1-B)** of the **signal distributor** respectively.

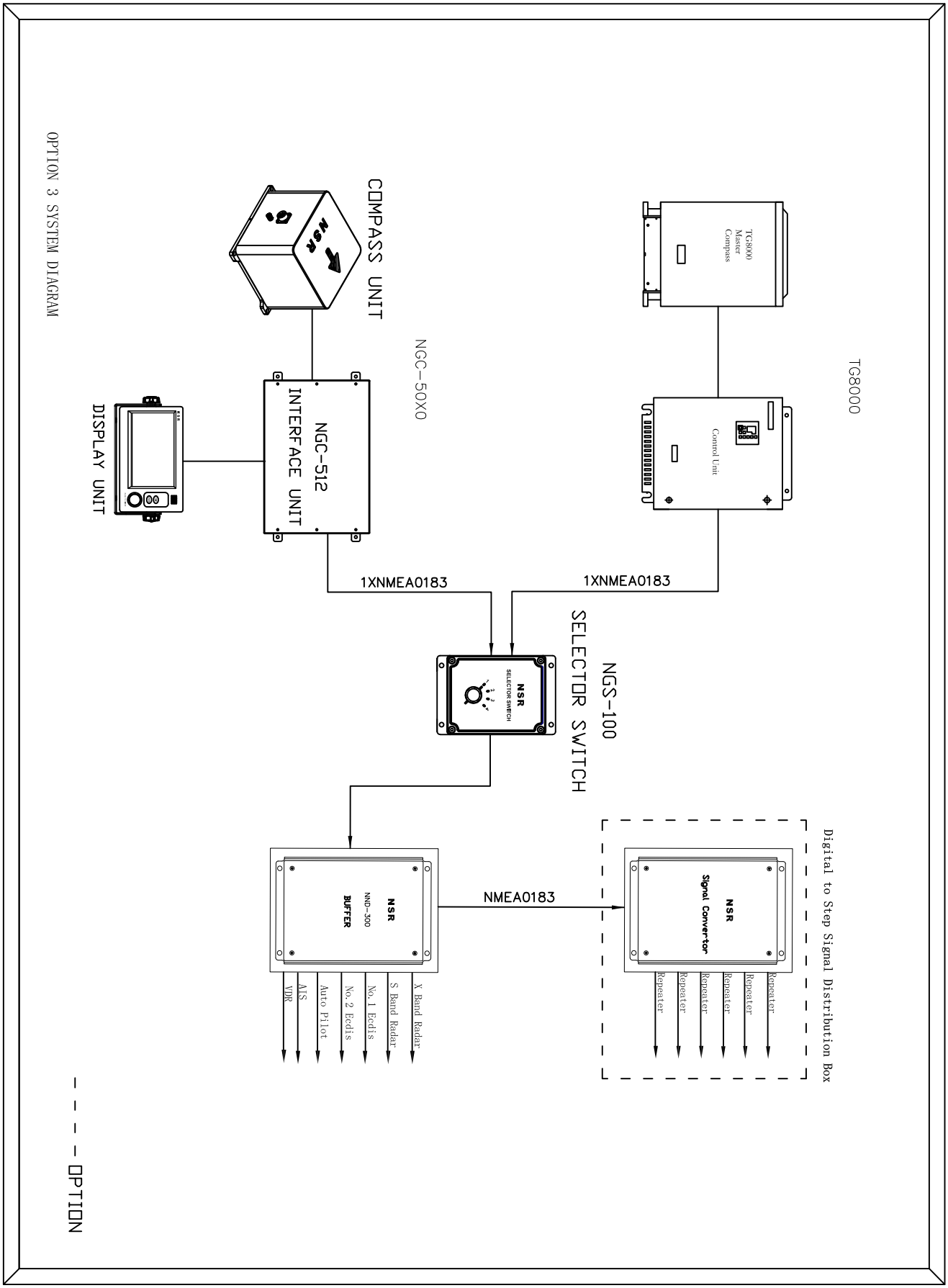
5.6 Connect all the marked repeater cables and NMEA signal cables from Step 1 to the corresponding pins on the output end of the distributor (If output ports on the distributor are insufficient, additional distributors can be added; if the original vessel is equipped with **step signal repeaters**, a **digital-to-step signal converter** must be installed).

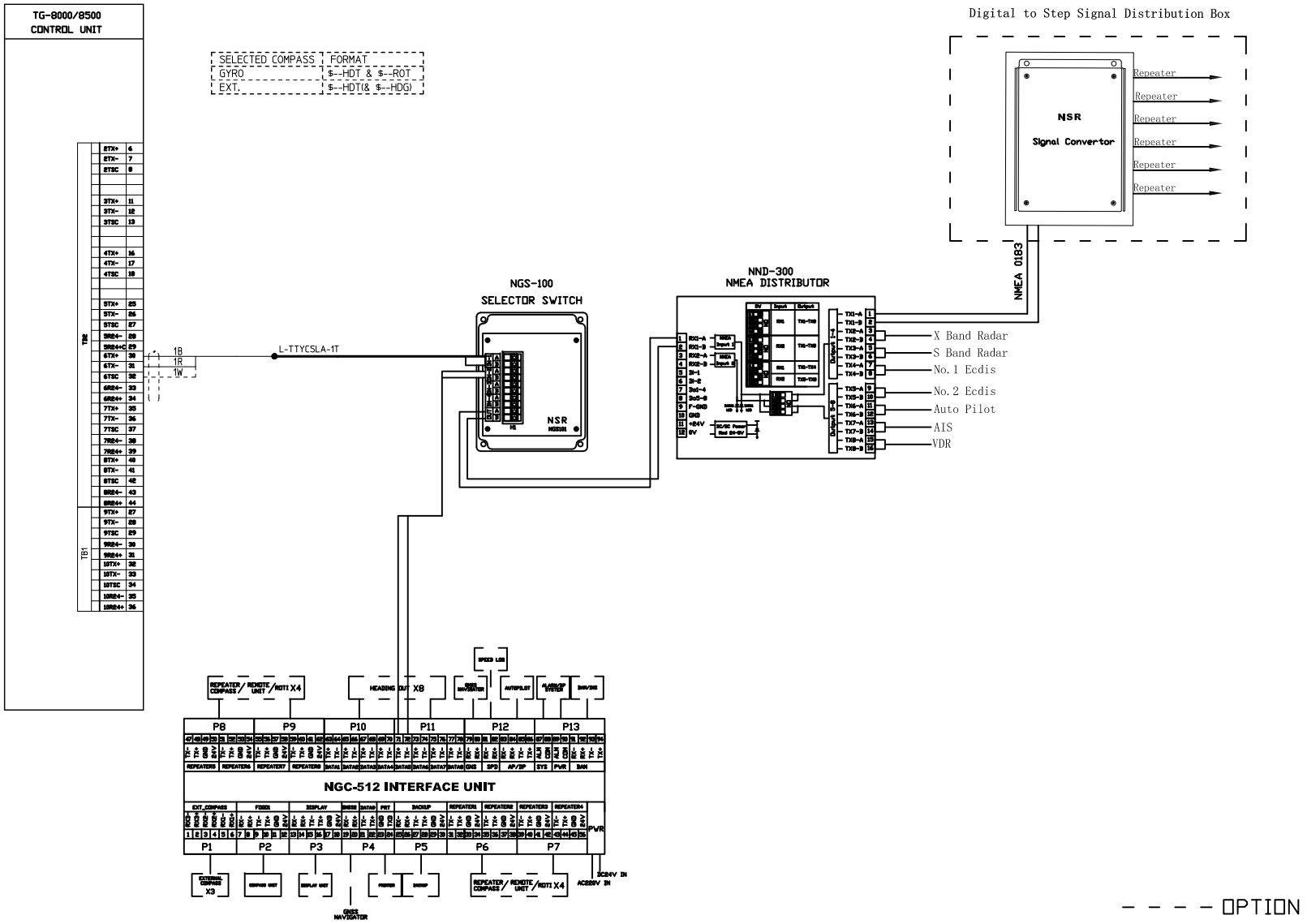
5.7 Power on the **FOG**. After the **heading** stabilizes for approximately 10 minutes, **press** the **Menu key**, **select** "**Output**", **choose** the **DATA5678 port**, **set** the **baud rate** to **4800**, and **select HDT** as the **output sentence**.

5.8 Power on the old TG-8000 system, set the selector switch to **Position 1**, and check whether the heading displayed on all repeaters and navigation equipment is correct. Set the selector switch to **Position 2** and verify that the heading displayed on all repeaters and navigation equipment is correct. If all functions work properly, the installation is completed.

5.9 System diagram of Option 3.

5.10 Wiring drawing of Option 3.


OPTION 3 SYSTEM DIAGRAM
COMPASS UNIT
NGC-50X0
TG8000
TG8000
Master
Compass
Control Unit
NGC-512
INTERFACE UNIT
DISPLAY UNIT
1XNMEA0183
1XNMEA0183
NSR
SELECTOR SWITCH
NGS-100
SELECTOR SWITCH
NSR
NND-300
BUFFER
NMEA0183
NSR
Signal Convertor
Digital to Step Signal Distribution Box
Repeater
Repeater
Repeater
Repeater
Repeater
Repeater
X Band Radar
S Band Radar
No.1 Ecdis
No.2 Ecdis
Auto Pilot
AIS
VDR
- - - - OPTION



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