Dual Gyro Changeover Unit DGC-01

Installation and Operation MANUAL

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Document : Manual DGC-01
Issue : 1.0

Contents

I Preface

The Dual Gyro Changeover unit has been designated for any size of vessel to enhance the navigation capabilities and reliability. The Dual Gyro Changeover unit provides a variety of electrical outputs to supply accurate and consistent heading information to other navigational equipment. It is designed to be connected to AlphaMidiCourse Mk2 and AlphaMidiCourse HSC Mk2 Gyrocompass systems.

- The Dual Gyro Changeover unit complies with IMO A.424 (11) and Wheelmark MARed - MED/4.65 Specifications

I.1 Revision History

Revision Nr.	Date	Description	Author
V1.0	June 2025	First Issue	J. van der Knoop

I.2 Points of Attention

1. Thoroughly read this instruction manual before installation and operation of the equipment.
2. We recommend keeping this manual near the equipment to ensure ready access to it. Assign a person in charge for maintaining this manual in an assigned place.
3. Users of this manual are assumed to be qualified personnel according to governmental law for ship's officers, or the corresponding laws.
4. Relevant drawings of the As Built plan of this system should be kept together.
5. Only qualified personnel as described above, or personnel under the supervision of a qualified person should operate this system. Do not permit unqualified personnel to operate this system.
6. If the manual is lost, request a new copy from ALPHATRON MARINE.
7. If labels become unreadable, or detached, request new ones from ALPHATRON MARINE.

I.3 Storage

Observe the following items when storing:

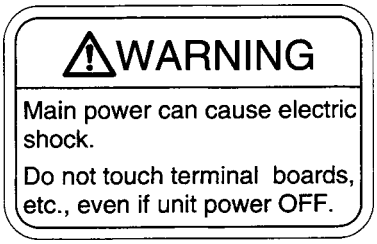
1. Turn all power switches of this system to the OFF position to disconnect the power.
2. Storage temperature should be between –20℃ to +55℃.
3. Avoid a place with high humidity as much as possible.
4. Prevent the storage place from generating corrosive gas, breeding of bacteria such as mold or intrusion of insects and small animals.
5. Cover the system with a plastic sheet, etc., keep te system away from dust. When welding works, etc., are carried out near this system, provide suitable protection to prevent damage caused by sparks, etc.

II Caution

To safely install and operate this instrument, so as not to adversely affect the warranty, the WARNINGS and CAUTIONS must be adhered to.

II.1 Warning Label

The following warning label is attached to this system.



II.2 Location Warning Label

The warning label is attached to the inside of the door below the operation panel.

II.3 Cautions

- WARNING - Clarification
- Indicates potential risk of injury or death to users of the product.

- WARNING - Operations
- Improper operations caused by failure of this product, or malfunctions caused by operator's misunderstanding may cause collision or grounding and may result in property damage and environmental pollution. Also, death or serious injury may happen.
- Full attention must be paid in the use of this product by understanding its limitations in performance and characteristics. Thoroughly familiarize yourself with the operation of this product.

- WARNING - Operations
- Carefully observe the CAUTIONS and WARNINGS prior to starting up and operating this product.
- Read the Operator Manual of the automatic steering system carefully and prepare for the occurrence of trouble or alarm in this product. Ensure the emergency steering method is well understood to quickly respond to trouble.

- WARNING - Maintenance
- During maintenance or check of the product, touching internal parts may cause electric shock, because the ship's power supply is still connected to the system distribution board, even if the main power switch of this product is turned "OFF". Do not touch internal parts such as terminal boards, power supply unit, etc. If necessary, disconnect the power cable from the ship’s distribution board. A warning label is attached to point out this danger.

- WARNING
- Matters requiring attention in starting up and operations during progress are described in chapter Operation and are punctuated with a CAUTION or a WARNING, which must be strictly observed.
- Attentively read the Operator Manual of the automatic steering system carefully preparing for occurrence of trouble or alarm in this system. The emergency steering method should be well understood to easily respond to failures, or alarms.

- WARNING
- When checking fuses, turn "OFF" the power switch, and further disconnect the power cable from the ship's distribution terminal board.

- CAUTION - Clarification
- Indicates potential risk of damage to equipment.

- CAUTION - Prohibition
- Do not use megger or other device to test system insulation as it will damage internal electrical components. Always disconnect the wiring connected to this system before testing related power distribution lines with such testers.

- CAUTION - General use
- This system displays Gyro Compass heading and outputs the heading information externally. Although the safety design such as the alarm function against failure, etc., is provided, at the present time there is no perfect safety design. In addition, as this system has many important functions, it is hard to say that anyone can use this system without failure. Failures or malfunctions of this system may cause distress, and full attention should be paid in using this product. The use of this equipment does not absolve the user's responsibility and obligation in practicing proper navigational techniques.
- Observe the following CAUTIONS:
- Always perform daily check to maintain normal system condition.
- When anomalies are detected because of daily checks, investigate and repair at once to restore to normal conditions and request advice from Alphatron service engineer.
- When the alarm system is activated during use, always check to confirm the cause and reinstate.

- CAUTION - System Selection
- System selection (switching) may cause a large change of True Heading. When on automatic steering, first turn the steering mode of the automatic steering system to "MANUAL" to prevent a large course change. Confirm the area around the ship is clear and turn to "AUTO" steering again.

- CAUTION - Monitoring in Progress
- Change of the ship's Speed Input System and the Latitude Input System, or large change of the ship's speed and latitude, may cause a large change of the Gyro Compass True Heading. When on automatic steering, first turn the steering mode of the automatic steering system to "MANUAL" to prevent a large course change. Confirm the area around the ship is clear and turn to "AUTO" steering again.

- CAUTION - Confirmation of Latitude
- Change of the latitude input system or large change of the latitude may cause a large change of True Heading. When on automatic steering, first turn the steering mode of the automatic steering system to "MANUAL" to prevent a large course change. Confirm the area around the ship is clear and turn to "AUTO" steering again.

- CAUTION - Confirmation of Ship Speed
- Change of the ship's speed input system or large change of the ship's speed may cause a large change of True Heading. When on automatic steering, first turn the steering mode of the automatic steering system to "MANUAL" to prevent a large course change. Confirm the area around the ship is clear and turn to "AUTO" steering again.

- CAUTION - System Selection
- System selection (switching) may cause large changes of True Heading. When on automatic steering, first turn the steering mode of the automatic steering system to "MANUAL" to prevent a large course change. Confirm the area around the ship is clear and turn to "AUTO" steering again.

- CAUTION - Operating Procedure Master Compass Switch
- DO NOT touch both Compasses Power Switch while Gyro Compass operates normally, to prevent serious damage to the sensitive element, reduce the life cycle of the product, or unexpected problems. The Master Compass Power Switch must be operated only when the master compass is in abnormal condition.

- CAUTION - Alarms
- When alerts are activated, the heading information from this system may not be sent at all or may have a large error. All units operated by the heading information from this system (in particular, the automatic steering system, etc.) should be operated immediately according to the individual emergency operating procedure.

- navigation, great care should be taken, because large course changes may have happened.

- CAUTION - Troubleshooting
- When an alert is activated, immediately confirm content of the activated alert and priority. Then take appropriate measures.
- When a failure has been activated, confirm the area around the ship is clear to perform check and take appropriate measures in non-hazardous sea area, stopping the ship as a rule.

- CAUTION - Corrective Measures
- Before checking and replacing of fuses, and disconnecting / connecting of each unit, connector, printed circuit, terminal cable, turn "OFF" the power switch of the operating panel, and disconnect the power cable from the ship's distribution board, etc. It may cause electric shock and failure if left in "ON" position.

- CAUTION - Failure Phenomena Corrective Measures
- Whenever the internal setting of the system is changed, follow instructions of the Alphatron Service Engineer.
- When another failure is activated than appeared in this clause, or a replaced fuse has blown again, turn "OFF" the power switch of the operating panel, disconnect the power cable from the ship's distribution board and request repair from an Alphatron Service Engineer.
- When a failure has occurred and it has not been repaired according to this clause, turn "OFF" the power switch of the operating panel and request an Alphatron Service Engineer to repair it on making a call to port. Even if it has been repaired, request an Alphatron Service Engineer to check it.

- CAUTION – When one of the Gyro Compass does not operate, when turned ON and the power switch on the operating panel is turned ON.
- Be aware of electric shock when checking the main power supply.
- When checking fuses, turn OFF the power switch on the operating panel and disconnect the power cable from the ship's distribution board before checking fuses.

- CAUTION - Not all repeaters operate
- When checking fuses, turn OFF the power switch, and disconnect the power cable from the ship's distribution terminal board.

- CAUTION - No repeaters operate
- When checking fuses, turn OFF the power switch, and disconnect the power cable from the ship's distribution board.

- CAUTION - Maintenance and check
- Main units of this system consist of electronic circuits of high reliability. If a failure occurs, perform the check and maintenance as described in this chapter and correct the fault(s) to prevent further risk of failure and to maintain the system's performance. Failure to carry this out, the detection of the failure sign will be delayed and may cause accidents such as collision or grounding.

III Introduction

This Dual Gyro Changeover unit or DGC-01 receives serial signals of the heading and rate of turn from the double connected AlphaMidiCourse (HSC) gyrocompasses and both heading information will be displayed. The DGC-01 has the selection function to output the true heading of the selected AlphaMidiCourse (HSC) such as serial signals, step signals and rate of turn as analog signals to connected external equipment.

- WARNING - Operations
- Improper operations caused by failure of this product, or malfunctions caused by operator's misunderstanding may cause collision or grounding and may result in property damage and environmental pollution. Also, death or serious injury may happen.
- Full attention must be paid in the use of this product by understanding its limitations in performance and characteristics. Thoroughly familiarize yourself with the operation of this product.

- CAUTION - General use
- This system displays Gyro Compass heading and outputs the heading information externally. Although the safety design such as the alarm function against failure, etc., is provided, at the present time there is no perfect safety design. In addition, as this system has many important functions, it is hard to say that anyone can use this system without failure. Failures or malfunctions of this system may cause distress, and full attention should be paid in using this product. The use of this equipment does not absolve the user's responsibility and obligation in practicing proper navigational techniques.
- Observe the following CAUTIONS:
- Always perform daily checks to maintain normal system condition.
- When anomalies are detected because of daily checks, investigate and repair at once to restore to normal conditions and request advice from Alphatron service engineer.
- When the alarm system is activated during use, always check to confirm the cause and reinstate.

It has the following features:

1. Automatic Changeover of true heading source.
2. Compare true heading sources.
3. Digital signal processing conforms to International Standards IEC61162.
4. Long service life.
5. Conformance to IMO Standards

This system has been designed to build a Gyro system of two AlphaMidiCourse (HSC) Gyrocompasses with their Control Units.

III.1 Automatic Changeover Function

The Dual Gyro Changeover unit as an automatic changeover function built in. This will be triggered when one of the connected AlphaMidiCourse (HSC) gyrocompasses loses its power. The changeover only occurs when both sources are true. GPS for latitude and speed or optional LOG for speed information needs to be present on the connected heading sources.

III.2 Compare Function

The Dual Gyro Changeover unit operational panel will display both connected AlphaMidiCourse gyrocompasses bearing and constant compare them. When there is a heading difference bigger than the set heading difference it will generate an alert.

III.3 Display and Alarm

For navigational safety considerations, various indicators and indicator lamps required for the system's operation and alarm functions, have been built into the operating panel.

III.5 Warranty Conditions

For Warranty Conditions and period contact Alphatron Marine.

Items to which warranty is not applied:

1. Failures and malfunctions caused by misuse of the described maintenance, handling and operation procedures in the manual and by non-certified personnel.
2. Failures and malfunctions caused from repairs performed by non Alphatron Marine or the service company not specified by Alphatron Marine.
3. Remodeled parts performed by user without relation to Alphatron Marine or failures and malfunctions caused by the remodeled parts.
4. Indirect loss and the cause-and-effect relations loss generated by failures of this system.
5. In case of force majeure such as earthquake, fire, ect.
6. In case the Gyro Sphere is not stored according to the indication on its box.

Provided, however, that when other warranty provisions have been established separately in writing should have priority.

1 Installation Instructions

This chapter explains the configuration, specifications and structure of this system.

- This will give an overview of your installation regarding Dipswitch and Jumper settings

1.1 Installation Guidelines

Dual Gyro Changeover unit

- Select a mounting location where the wall is flat and mounted with regards to the DGC-01 environmental specifications.

  Note Mounting location should have sufficient space for installation and servicing.

  Note be sure to install all equipment cables more than 5m away from radio equipment feeders.

- Connect terminals marked with the ground terminals of the vessel.

  Note Shielded end of shielded cable to be finished close to the terminal board and connect to the ground terminals of the vessel.

- Do **NOT** use a megger for any tests!
- Ensure sufficient servicing space around the DGC-01.

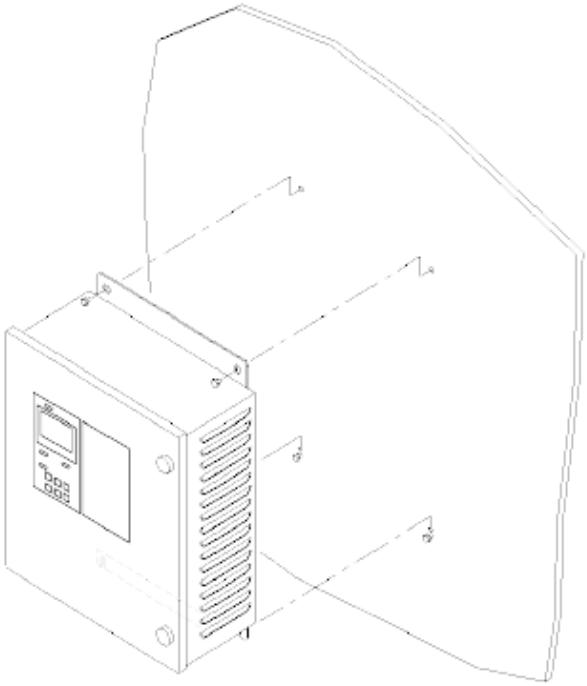
1.1.1 Unpacking of the DGC-01

The DGC-01 is packed together with is manual in one box.

Note Care should be taken when unpacking and handling the equipment. A visual inspection should be conducted to see that the equipment has not been damaged during shipment and that all components and parts are present.

1.1.2 Mounting of DGC-01 Unit

DGC-01 can be mounted with four bolts as shown in the figure below. For dimension of the unit refer to paragraph 7.1.1 *Dimensions of DGC-01 Unit*



1.1.3 DGC-01 Operation Panel Extension

There may be applications where you prefer to install the Operation Panel at some distance from DGC-01 Unit. In this case a DGC-01 Operation Panel Extension Kit is needed and is ordered separately.

The DGC-01 Operation Panel Extension kit includes the following:

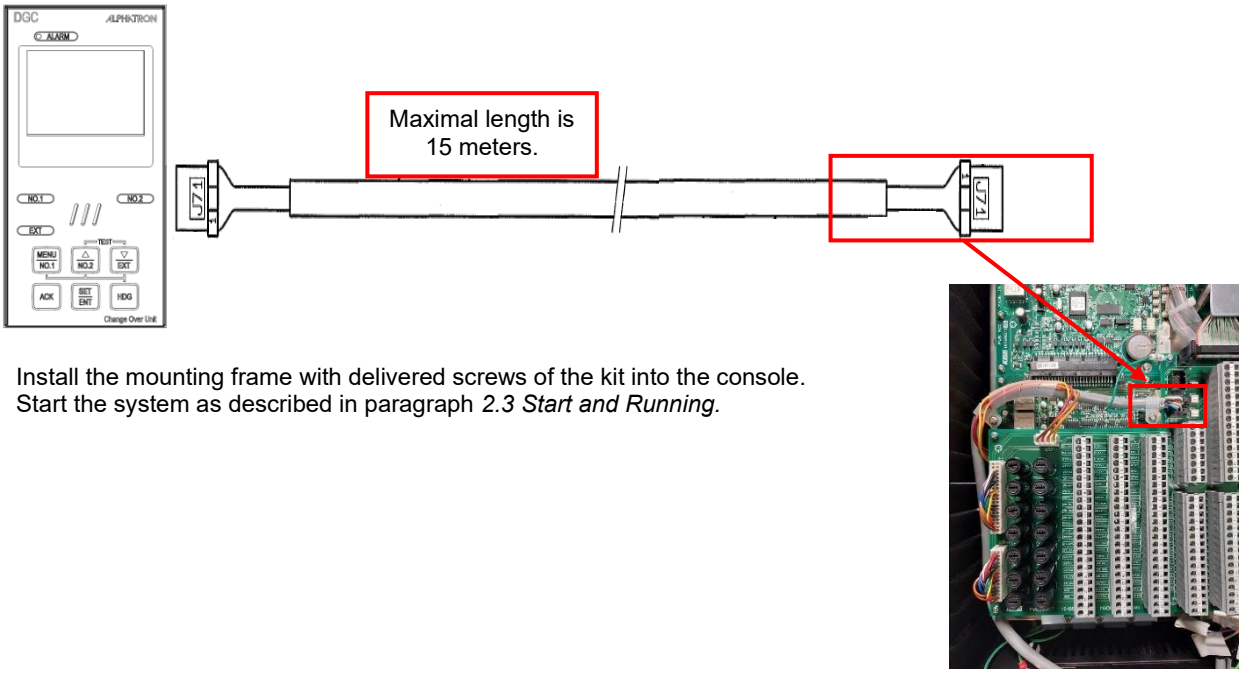
- Harness DGA15 cable with premade connector J71 on both sides
- Blind Panel for DGC-01 Unit
- DGC-01 Operation Panel mounting frame for installation into a console.

  For dimensions, refer to paragraph *7.1.2 Dimensions of DGC-01 Operation Panel Frame*.
- 6x screws and 6x washer for mounting the DGC-01 Operation Panel mounting frame into a console.

Note Maximal length of Harness DGA15 cable is 15 meters.

1. Make a cutout with the dimensions shown in paragraph *7.1.2 Dimensions of DGC-01 Operation Panel Mounting Frame*.
2. Make sure Switches SW101 and SW102 are in the OFF position inside DGC-01 Unit.
3. Unplug the 8 pinned connector J71 on the backside of DGC-01 Operation Panel.
4. Unscrew and reuse the four inbus screws located on the backside of the DGC-01 Operation Panel.
5. Mount the delivered Blind Panel on the front of the DGC-01 Unit.
6. Install DGC-01 Operation Panel inside mounting frame with the four inbus screws as shown in figures.

7. Connect delivered DGA 15 cable with connector in J71 socket on backside of DGC-01 Operation Panel and connect the other side of DGA15 cable to J71 socket inside the DGC-01 as example shown in below figure.



8. Install the mounting frame with delivered screws of the kit into the console.
9. Start the system as described in paragraph *2.3 Start and Running.*

1.2 Configuration

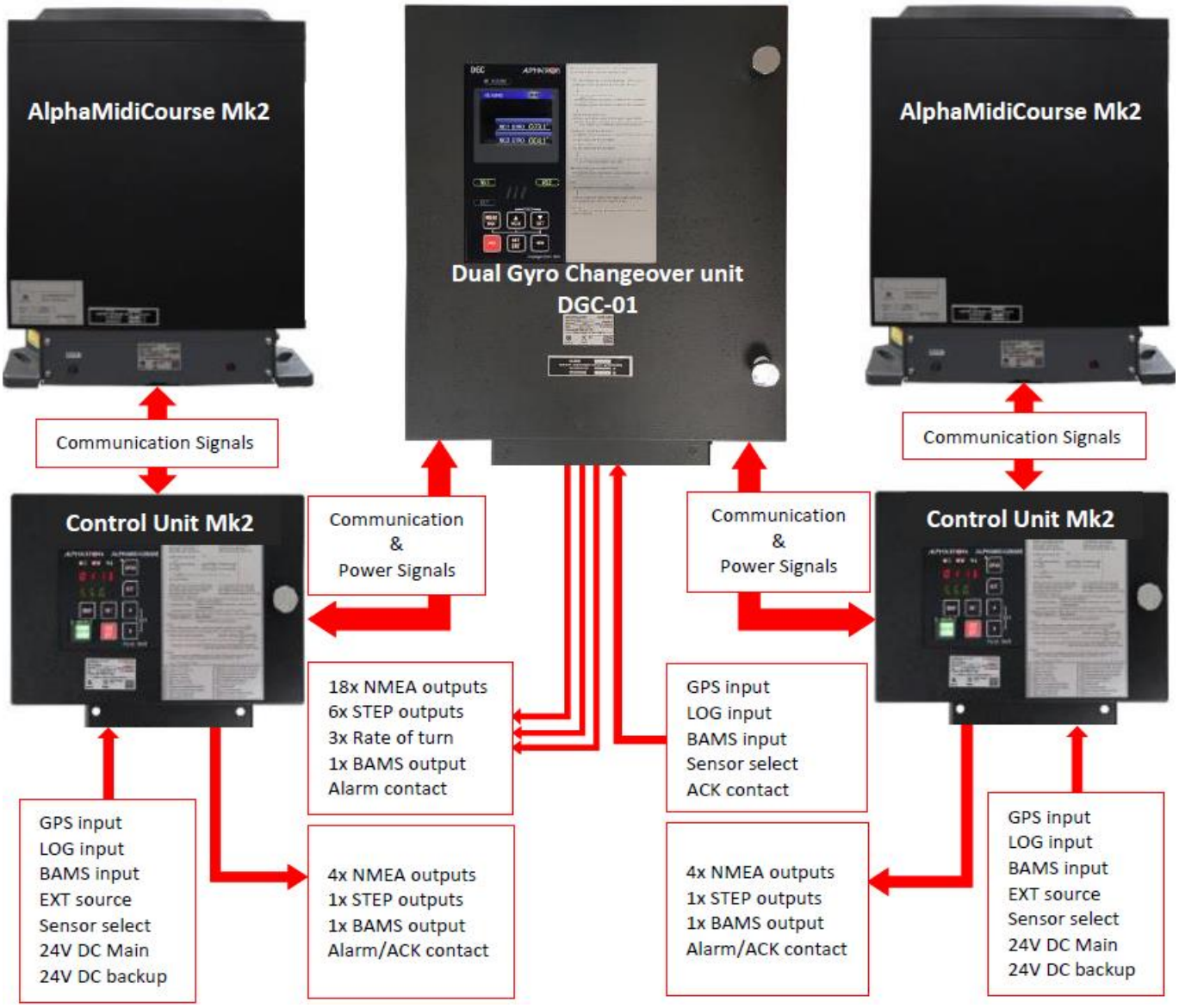


Figure: System Configuration

This system consists of the following units.
AlphaMidiCourse (HSC) Mk2 Gyrocompasses are separated purchased and packed.

1. Dual Gyro Changeover unit
2. Two AlphaMidiCourse Mk2 Gyrocompass with their Control Units

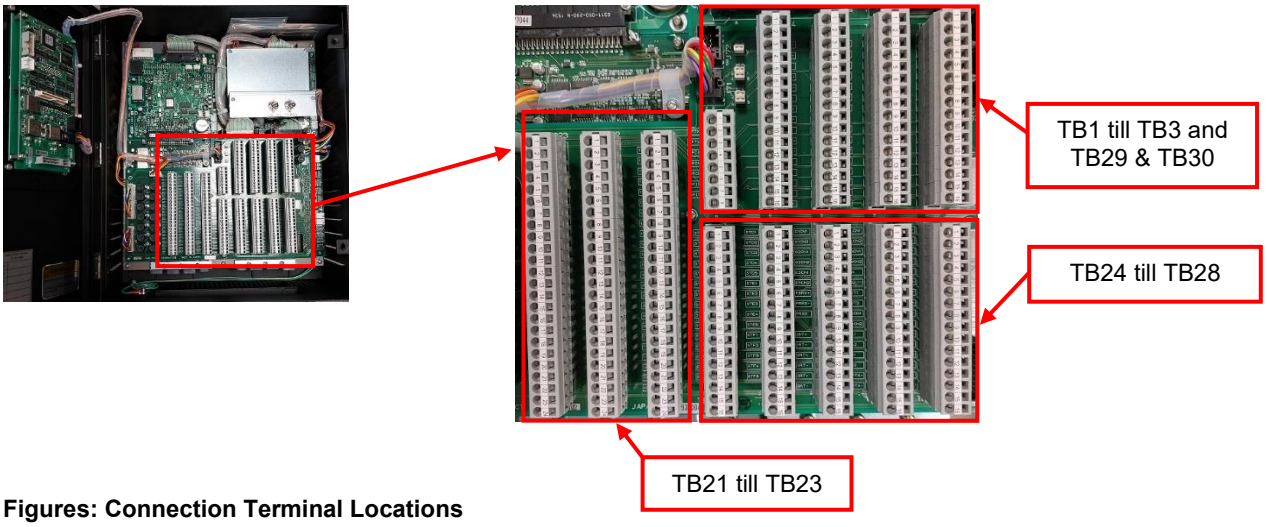
1.3 Connecting the AlphaMidiCourse (HSC) Mk2 to DGC-01

Refer to paragraph 7.1. *Drawings* for connections and refer to paragraph 7.1.8 *Cable Diagram* for cable information.

The location of the connection terminals can be seen in below figures or refer to paragraph 7.1.3 *Boards of DGC-01*.
For inputs and outputs of the DGC-01 refer to paragraph 1.3.1 *Connection terminals of DGCT Board*.

1. Connect power and signaling cables as indicated in the connection diagram.
2. Use wire straps to fasten cables.

CABLE SPECIFICATIONS - See 7.1. *Drawings* and 7.1.8 *Cable Diagram*.



Figures: Connection Terminal Locations

Note Below shown terminals table TB1 and TB2 are can only be used for AlphaMidiCourse (HSC) Mk2 Gyrocompasses.

TB1 Gyrocompass No.1 AlphaMidiCourse (HSC) Mk2					
No.	**Details**	**Description**	**No.**	**Details**	**Description**
1	G1 24V	+24VDC Power from No.1 Gyro	9	G1SEL2	No.1 Gyro selection signal
2	G1 GND	-24VDC Power from No.1 Gyro	10	E1SEL1	No.1 Gyro EXT heading selection signal input
3	G1TX+	No.1 Gyro internal communication serial output	11	E1SEL2	
4	G1TX-		12	G1ALCN1	No.1 Gyro Alert signal output
5	G1RX+	No.1 Gyro internal communication serial input	13	G1ALCN2	
6	G1RX-		14	G1RNCN1	No.1 Gyro Running signal output
7	G1SC	No.1 Gyro internal communication	15	G1RCCN2	
8	G1SEL1	No.1 Gyro selection signal	16	NC	Not Connected

TB2 Gyrocompass No.2 AlphaMidiCourse (HSC) Mk2					
No.	**Details**	**Description**	**No.**	**Details**	**Description**
1	G2 24V	+24VDC Power from No.2 Gyro	9	G2SEL2	No.2 Gyro selection signal
2	G2 GND	-24VDC Power from No.2 Gyro	10	E2SEL1	No.2 Gyro EXT heading selection signal input
3	G2TX+	No.2 Gyro internal communication serial output	11	E2SEL2	
4	G2TX-		12	G2ALCN1	No.2 Gyro Alert signal output
5	G2RX+	No.2 Gyro internal communication serial input	13	G2ALCN2	
6	G2RX-		14	G2RNCN1	No.2 Gyro Running signal output
7	G2SC	No.2 Gyro internal communication	15	G2RCCN2	
8	G2SEL1	No.2 Gyro selection signal	16	NC	Not Connected

Table: Terminal TB1 & TB2 of DGCT Board Terminal

1.3.1 Connection terminals of DGCT Board

Below shown tables will indicate all inputs and outputs possibilities in the DGC-01 Unit.

TB21					
No.	**Details**	**Description**	**No.**	**Details**	**Description**
1	11TX+	Serial signal output 1 (IEC61162-1/2)	13	15TX+	Serial signal output 5 (IEC61162-1/2)
2	11TX-		14	15TX-	
3	11TSC	Serial signal common 1	15	15TSC	Serial signal common 5
4	12TX+	Serial signal output 2 (IEC61162-1/2)	16	16TX+	Serial signal output 6 (IEC61162-1/2)
5	12TX-		17	16TX-	
6	12TSC	Serial signal common 2	18	16TSC	Serial signal common 6
7	13TX+	Serial signal output 3 (IEC61162-1/2)	19	17TX+	Serial signal output 7 (IEC61162-1/2)
8	13TX-		20	17TX-	
9	13TSC	Serial signal common 3	21	17TSC	Serial signal common 7
10	14TX+	Serial signal output 4 (IEC61162-1/2)	22	18TX+	Serial signal output 8 (IEC61162-1/2)
11	14TX-		23	18TX-	
12	14TSC	Serial signal common 4	24	18TSC	Serial signal common 8
TB22					
No.	**Details**	**Description**	**No.**	**Details**	**Description**
1	19TX+	Serial signal output 9 (IEC61162-1/2)	13	22TX-	Serial signal output 12
2	19TX-		14	22TSC	Serial signal common 12
3	19TSC	Serial signal common 9	15	22_GND	-24VDC for Serial Repeater 12
4	20TX+	Serial signal output 10 (IEC61162-1/2)	16	22_24V	+24VDC for Serial Repeater 12
5	20TX-		17	23TX+	Serial signal output 13 (IEC61162-1/2)
6	20TSC	Serial signal common 10	18	23TX-	
7	21TX+	Serial signal output 11 (IEC61162-1/2)	19	23TSC	Serial signal common 13
8	21TX-		20	23_GND	-24VDC for Serial Repeater 13
9	21TSC	Serial signal common 11	21	23_24V	+24VDC for Serial Repeater 13
10	21_GND	-24VDC for Serial Repeater 11	22	24TX+	Serial signal output 14 (IEC61162-1/2)
11	21_24V	+24VDC for Serial Repeater 11	23	24TX-	
12	22TX+	Serial signal output 12	24	24TSC	Serial signal common 14
TB23					
No.	**Details**	**Description**	**No.**	**Details**	**Description**
1	24_GND	-24VDC for Serial Repeater 14	13	27TX+	Serial signal output 17 (IEC61162-1/2)
2	24_24V	+24VDC for Serial Repeater 14	14	27TX-	
3	25TX+	Serial signal output 15 (IEC61162-1/2)	15	27TSC	Serial signal common 17
4	25TX-		16	27_GND	-24VDC for Serial Repeater 17
5	25TSC	Serial signal common 15	17	27_24V	+24VDC for Serial Repeater 17
6	25_GND	-24VDC for Serial Repeater 15	18	28TX+	Serial signal output 18 (IEC61162-1/2)
7	25_24V	+24VDC for Serial Repeater 15	19	28TX-	
8	26TX+	Serial signal output 16 (IEC61162-1/2)	20	28TSC	Serial signal common 18
9	26TX-		21	28_GND	-24VDC for Serial Repeater 18
10	26TSC	Serial signal common 16	22	28_24V	+24VDC for Serial Repeater 18
11	26_GND	-24VDC for Serial Repeater 16	23	24R	-24VDC for Serial Repeater spare
12	26_24V	+24VDC for Serial Repeater 16	24	24RC	+24VDC for Serial Repeater spare

Table: Terminal TB21 till TB23 of DGCT Board Terminal

TB24					
No.	Details	Description	No.	Details	Description
1	STA1	STEP to STEP signal output 1 (3 phases) : selected sensor	9	STB4	-24VDC for STEP signal output 2
2	STA2		10	STB5	+24VDC for STEP signal output 2
3	STA3		11	STC1	STEP to STEP signal output 3 (3 phases) : selected sensor
4	STA4	-24VDC for STEP signal output 1	12	STC2	
5	STA5	+24VDC for STEP signal output 1	13	STC3	
6	STB1	STEP to STEP signal output 2 (3 phases) : selected sensor	14	STC4	-24VDC for STEP signal output 3
7	STB2		15	STC5	+24VDC for STEP signal output 3
8	STB3		16	NC	Not Connected
TB25					
No.	Details	Description	No.	Details	Description
1	STD1	STEP to STEP signal output 4 (3 phases) : selected sensor	9	STE4	-24VDC for STEP signal output 5
2	STD2		10	STE5	+24VDC for STEP signal output 5
3	STD3		11	STF1	STEP to STEP signal output 6 (3 phases) : selected sensor
4	STD4	-24VDC for STEP signal output 4	12	STF2	
5	STD5	+24VDC for STEP signal output 4	13	STF3	
6	STE1	STEP to STEP signal output 5 (3 phases) : selected sensor	14	STF4	-24VDC for STEP signal output 6
7	STE2		15	STF5	+24VDC for STEP signal output 6
8	STE3		16	NC	Not Connected
TB26					
No.	Details	Description	No.	Details	Description
1	G1CN1	No.1 Gyro selection signal input (potential free contact)	9	PRSC	Heading Control System serial common
2	G1CN2		10	NC	Not Connected
3	G2CN1	No.2 Gyro selection signal input (potential free contact)	11	1RT+	Turn Rate analog signal output 1
4	G2CN2		12	1RT-	Turn Rate analog signal output 1 common
5	ESCN1	EXT heading senor selection input (potential free contact)	13	2RT+	Turn Rate analog signal output 2
6	ESCN2		14	2RT-	Turn Rate analog signal output 2 common
7	PRRX+	Heading Control System serial input	15	3RT+	Turn Rate analog signal output 3
8	PRRX-		16	3RT-	Turn Rate analog signal output 3 common
TB27					
No.	Details	Description	No.	Details	Description
1	MALCN1	Changeover Unit alert output (potential free contact)	9	OPRCN1	Operation signal contact output
2	MALCN2		10	OPRCN2	
3	MRNCN1	Changeover Unit running output (potential free contact)	11	BNA1	Back-up navigation alert signal contact output (spare)
4	MRNCN2		12	BNA2	
5	AIN1	External alert acknowledge input (potential free contact)	13	BIN1	External alert acknowledge signal input potential free contact (Buzzer stop)
6	AIN2		14	BIN2	
7	AOUT1	External alert acknowledge output (potential free contact)	15	MSPTX+	Serial signal RS422 output (spare)
8	AOUT2		16	MSPTX-	

Table: Terminal TB24 till TB27 of DGCT Board Terminal

TB28					
No.	Details	Description	No.	Details	Description
1	AM1TX+	Alert transfer serial BAM output No.1 CCRS	9	AM2RX-	Alert transfer serial signal input No.2 CCRS (spare)
2	AM1TX-		10	AM2SC	Alert transfer serial signal common No.2 CCRS (spare)
3	AM1RX+	Alert transfer serial BAM input No.1 CCRS	11	BWTX+	BNWAS serial signal output (spare)
4	AM1RX-		12	BWTX-	
5	AM1SC	Alert transfer serial common No.1 CCRS	13	BWRX+	BNWAS serial signal input (spare)
6	AM2TX+	Alert transfer serial signal output No.2 CCRS (spare)	14	BWRX-	
7	AM2TX-		15	BWSC	BNWAS serial signal common
8	AM2RX+	Alert transfer serial signal input No.2 CCRS (spare)	16	NC	Not Connected
TB29					
No.	Details	Description	No.	Details	Description
1	GN1RX+	No.1 GNSS serial signal input	9	LG1SC	No.1 SDME serial signal common
2	GN1RX-		10	LG2RX+	No.2 SDME serial signal input
3	GN1SC	No.1 GNSS serial signal common	11	LG2RX-	
4	GN2RX+	No.2 GNSS serial signal input	12	LG2SC	No.2 SDME serial signal common
5	GN2RX-		13	LG1P1	No.1 SDME pulse signal input (200 Pulse/NM)
6	GN2SC	No.2 GNSS serial signal common	14	LG1P2	
7	LG1RX+	No.1 SDME serial signal input	15	LG2P1	No.2 SDME pulse signal input (200 Pulse/NM)
8	LG1RX-		16	LG2P2	
TB30					
No.	Details	Description	No.	Details	Description
1	SPTX+	Serial RS422 signal output (spare)	5	SPCN2	Potential free contact signal output (spare)
2	SPTX-		6	SPIN1	Potential free contact signal input (spare)
3	SPTSC	Serial RS422 signal output common (spare)	7	SPIN2	
4	SPCN1	Potential free contact signal output (spare)	8	NC	Not Connected
TB3					
No.	Details	Description	No.	Details	Description
1	P_RX+	Extension of operation panel internal comm. serial signal input	9	P_G124V	Not Used
2	P_RX-		10	P_G1CN	
3	P_SC	Extension of operation panel internal comm. serial common	11	P_G224V	
4	P_TX+	Extension of operation panel internal comm. serial signal output	12	P_G2CN	
5	P_TX-		13	P_E24V	
6	P-24V	Extension of operation panel internal 24 VDC power output	14	P_ECN	
7	P_GND		15	P_GGND	
8	NC	Not Connected	16	P_EGND	

Table: Terminal TB28 till TB30 & TB3 of DGCT Board Terminal

1.4 DIP Switch Settings

The Dual Gyro Changeover unit system includes Dip Switch Settings on several locations.

Their locations are marked on the figure below or refer to paragraph 7.1.3 *Boards of DGC-01*.
Setting of the dipswitches are required to be set during installation of the system, for example there is possibility to change NMEA sentence from HDT to THS.

Note These Dip Switch Settings are read when the system is started up. Any changes made while the system is running will therefore not take effect before the system is restarted.

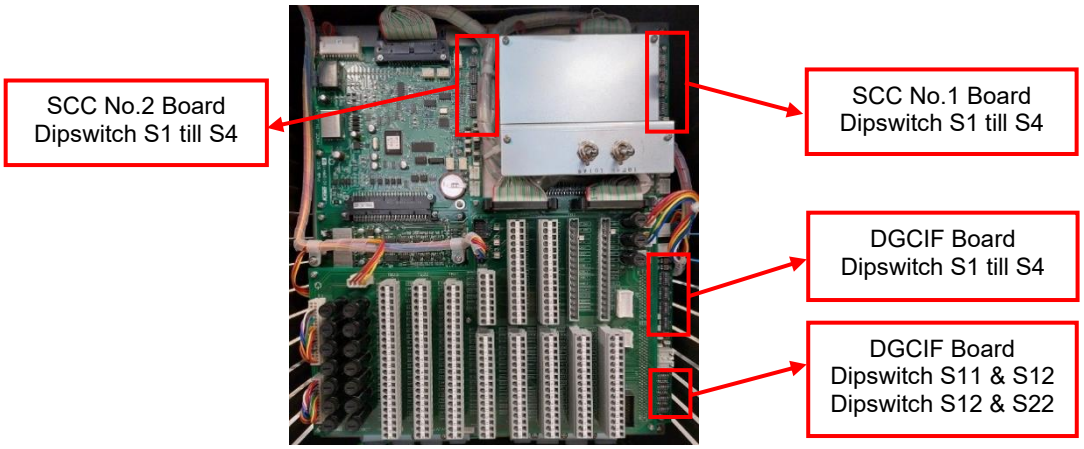


Figure: DIP switch locations

1.4.1 Dip Switch Settings SCC Board No.1

SCC S1	Default	Details	Function		Read Timing	Remarks
NO.1	**[ON]**	Connect External Power Supply Unit	[OFF]: Yes [ON: No		Start Up	
NO.2	**[OFF]**	Master Compass Type	[OFF] : Standard [ON] : HSC		Start Up	*1
NO.3	**[ON]**	Control Box type	[OFF] : Type S [ON] : Type D (dual gyro)		Start Up	
NO.4	**[OFF]**	No.2 Gyro or not	[OFF] : No [ON] :Yes		Start Up	
NO.5	**[OFF]**	External (Mag.) Sensor Connection	NO5.[OFF], NO6.[OFF] : Non	NO5. [ON], NO6. [OFF] : Ext. Sensor Conn.	Start Up	
NO.6	**[OFF]**		NO5.[OFF] NO6.[ON]: Mag . Sensor conn. (backup)	NO5. [ON] NO6.[ON]: Ext. System Conn. (back up)		
NO.7	**[OFF]**	Serial Signal Select Selection	[OFF] : IEC61162-2 [ON] :Tokimec format		Start Up	
NO.8	**[OFF]**	Alarm Output Setup	[OFF] : All alarm output [ON] : only power fail		Start Up	

Table: SCC Board No.1 Dip Switch S1 assign

***1** Setting when connected to a AlphaMidiCourse HSC Mk2 gyrocompass.

SCC S2	Default	Details	Function		Read Timing	Remarks
NO.1	**[OFF]**	For debugging (**Do Not Touch**)	-		-	
NO.2	**[OFF]**	For debugging (**Do Not Touch**)	-		-	
NO.3	**[ON]**	Operation Panel Type	[OFF] : GPANEL PWB (not for BAM) [ON] :GPANEL-A PWB (for BAM)		Start Up	
NO.4	**[OFF]**	Pendulum Ferry	[OFF] : No [ON] : Yes		Start Up	
NO.5	**[OFF]**	Serial Signal Transmit Frequency IEC61162-1 ed.2	NO5.[OFF] NO6. [OFF] 1sec	NO5.[ON] NO6. [OFF] ; 200msec	Start Up	
NO.6	**[OFF]**		NO5.[OFF] NO6.[ON] ; 100msec	NO5.[ON] NO6.[ON] ; Invalid (1sec)		
NO.7	**[OFF]**	**Do Not Touch**	-		-	
NO.8	**[OFF]**	System Select Information Contact	[OFF] : No [ON] : Yes		Start Up	

Table: SCC Board No.1 Dip Switch S2 assign

SCC S3	Default	Details	Function		Read Timing	Remarks
NO.1	**[OFF]**	Timer Start Up	[OFF] : No [ON] : Yes		Start Up	
NO.2	**[OFF]**	Talker ID of "ROT" Sentence	[OFF] : "HE" [ON] : "TI"		Start Up	
NO.3	**[OFF]**	Rate of Turn Scale for Analog meter	NO3.[OFF], NO4.[OFF] : Max 30.0˚/min.	NO3.[ON] NO4.[OFF] : Max 120.0˚/min	Start Up	
NO.4	**[OFF]**		NO3.[OFF], NO4.[ON] : Max 300.0˚/min.	NO3.[ON] NO4. [ON] : **DO NOT SET**		
NO.5	**[ON]**	Alphatron or other	NO5.[ON] NO6.[OFF] Alphatron Marine	NO5.[ON] NO6.[ON] **DO NOT SET**	Start Up	
NO.6	**[OFF]**					
NO.7	**[OFF]**	Unit check mode (For factory only)	[OFF] : No [ON] : Yes		Start Up	
NO.8	**[OFF]**	Buzzer stop contact output	[OFF] : No [ON] : Yes		Start Up	

Table: SCC Board No.1 Dip Switch S3 assign

SCC S4	Default	Details	Function	Read Timing	Remarks
NO.1	**[OFF]**	**Do Not Touch**	-	-	
NO.2	**[ON]**	For DGC-01 or not	[OFF] : For Single Gyro System [ON] : For DGC-01 Control Unit (Double Gyro System)	Start Up	*1
NO.3	**[OFF]**	**Do Not Touch**	-	-	
NO.4	**[OFF]**	Alarm detection time for Main Power Fail / Power Unit fail	[OFF] : 300ms [ON] : 2sec	Start Up	
NO.5	**[OFF]**	THS sentence output	[OFF] : Disable [ON] : Enable	Start Up	
NO.6	**[ON]**	Connection to DGC-01 or not	[OFF] : For Single Gyro System [ON] : For DGC-01 Control Unit (Double Gyro System)	Start Up	*1

Table: ICNT Board Dip Switch S4 assign

***1** Setting for DGC-01 internal SCC board is S4-2:**ON** and S4-6:**ON**

* For SCC Board check mode : S1, S2, S3 all [ON]

* For ICIF Board check mode : S1, S2 all [ON] S3 (except No.8 all [ON]

1.4.2 Dip Switch Settings SCC Board No.2

SCC S1	Default	Details	Function		Read Timing	Remarks
NO.1	**[ON]**	Connect External Power Supply Unit	[OFF]: Yes [ON: No		Start Up	
NO.2	**[OFF]**	Master Compass Type	[OFF] : Standard [ON] : HSC		Start Up	*1
NO.3	**[ON]**	Control Box type	[OFF] : Type S [ON] : Type D (dual gyro)		Start Up	
NO.4	**[ON]**	No.2 Gyro or not	[OFF] : No [ON] :Yes		Start Up	*2
NO.5	**[OFF]**	External (Mag.) Sensor Connection	NO5.[OFF], NO6.[OFF] : Non	NO5. [ON], NO6. [OFF] : Ext. Sensor Conn.	Start Up	
NO.6	**[OFF]**		NO5.[OFF] NO6.[ON]: Mag . Sensor conn. (backup)	NO5. [ON] NO6.[ON]: Ext. System Conn. (back up)		
NO.7	**[OFF]**	Serial Signal Select Selection	[OFF] : IEC61162-2 [ON] :Tokimec format		Start Up	
NO.8	**[OFF]**	Alarm Output Setup	[OFF] : All alarm output [ON] : only power fail		Start Up	

Table: SCC Board No.2 Dip Switch S1 assign

***1** Setting when connected to a AlphaMidiCourse HSC Mk2 gyrocompass.
***2** Setting when second AlphaMidiCourse (HSC) Mk2 Gyrocompass is connected to DGC-01.

SCC S2	Default	Details	Function		Read Timing	Remarks
NO.1	**[OFF]**	For debugging (**Do Not Touch**)	-		-	
NO.2	**[OFF]**	For debugging (**Do Not Touch**)	-		-	
NO.3	**[ON]**	Operation Panel Type	[OFF] : GPANEL PWB (not for BAM) [ON] :GPANEL-A PWB (for BAM)		Start Up	
NO.4	**[OFF]**	Pendulum Ferry	[OFF] : No [ON] : Yes		Start Up	
NO.5	**[OFF]**	Serial Signal Transmit Frequency IEC61162-1 ed.2	NO5.[OFF] NO6. [OFF] 1sec	NO5.[ON] NO6. [OFF] ; 200msec	Start Up	
NO.6	**[OFF]**		NO5.[OFF] NO6.[ON] ; 100msec	NO5.[ON] NO6.[ON] ; Invalid (1sec)		
NO.7	**[OFF]**	**Do Not Touch**	-		-	
NO.8	**[OFF]**	System Select Information Contact	[OFF] : No [ON] : Yes		Start Up	

Table: SCC Board No.2 Dip Switch S2 assign

SCC S3	Default	Details	Function		Read Timing	Remarks
NO.1	**[OFF]**	Timer Start Up	[OFF] : No [ON] : Yes		Start Up	
NO.2	**[OFF]**	Talker ID of "ROT" Sentence	[OFF] : "HE" [ON] : "TI"		Start Up	
NO.3	**[OFF]**	Rate of Turn Scale for Analog meter	NO3.[OFF], NO4.[OFF] : Max 30.0˚/min.	NO3.[ON] NO4.[OFF] : Max 120.0˚/min	Start Up	
NO.4	**[OFF]**		NO3.[OFF], NO4.[ON] : Max 300.0˚/min.	NO3.[ON] NO4. [ON] : **DO NOT SET**		
NO.5	**[ON]**	Alphatron or other	NO5.[ON] NO6.[OFF] Alphatron Marine	NO5.[ON] NO6.[ON] **DO NOT SET**	Start Up	
NO.6	**[OFF]**					
NO.7	**[OFF]**	Unit check mode (For factory only)	[OFF] : No [ON] : Yes		Start Up	
NO.8	**[OFF]**	Buzzer stop contact output	[OFF] : No [ON] : Yes		Start Up	

Table: SCC Board No.2 Dip Switch S3 assign

SCC S4	Default	Details	Function	Read Timing	Remarks
NO.1	**[OFF]**	**Do Not Touch**	-	-	
NO.2	**[ON]**	For DGC-01 or not	[OFF] : For Single Gyro System [ON] : For DGC-01 Control Unit (Double Gyro System)	Start Up	*1
NO.3	**[OFF]**	**Do Not Touch**	-	-	
NO.4	**[OFF]**	Alarm detection time for Main Power Fail / Power Unit fail	[OFF] : 300ms [ON] : 2sec	Start Up	
NO.5	**[OFF]**	THS sentence output	[OFF] : Disable [ON] : Enable	Start Up	
NO.6	**[ON]**	Connection to DGC-01 or not	[OFF] : For Single Gyro System [ON] : For DGC-01 Control Unit (Double Gyro System)	Start Up	*1

Table: SCC Board No.2 Dip Switch S4 assign

***1** Setting for DGC-01 internal SCC board is S4-2:**ON** and S4-6:**ON**

* For SCC Board check mode : S1, S2, S3 all [ON]

* For ICIF Board check mode : S1, S2 all [ON] S3 (except No.8 all [ON]

1.4.3 Dip Switch Settings Dual Configuration Overview

Below tables will give a global overview of the Dual AlphaMidiCourse (HSC) connected to a DGC-01 configuration concerning their dipswitch setting in default.

Gyro No. 1 ICNT S1		Gyro No.2 ICNT S1		DGC-01 SCC No.1 S1		DGC-01 SCC No.2 S1		Remarks
NO.1	[ON]	NO.1	[ON]	NO.1	[OFF]	NO.1	[OFF]	
NO.2	[OFF]	NO.2	[OFF]	NO.2	[OFF]	NO.2	[OFF]	
NO.3	**[ON]**	NO.3	**[ON]**	NO.3	**[ON]**	NO.3	**[ON]**	
NO.4	**[OFF]**	NO.4	**[ON]**	NO.4	**[OFF]**	NO.4	**[ON]**	
NO.5	[OFF]	NO.5	[OFF]	NO.5	[OFF]	NO.5	[OFF]	
NO.6	[OFF]	NO.6	[OFF]	NO.6	[OFF]	NO.6	[OFF]	
NO.7	[OFF]	NO.7	[OFF]	NO.7	[OFF]	NO.7	[OFF]	
NO.8	[OFF]	NO.8	[OFF]	NO.8	[OFF]	NO.8	[OFF]	

Table: ICNT and SCC Board Dip Switches S1 assign

Gyro No. 1 ICNT S2		Gyro No.2 ICNT S2		DGC-01 SCC No.1 S2		DGC-01 SCC No.2 S2		Remarks
NO.1	[OFF]	NO.1	[OFF]	NO.1	[OFF]	NO.1	[OFF]	
NO.2	[OFF]	NO.2	[OFF]	NO.2	[OFF]	NO.2	[OFF]	
NO.3	[ON]	NO.3	[ON]	NO.3	[ON]	NO.3	[ON]	
NO.4	[OFF]	NO.4	[OFF]	NO.4	[OFF]	NO.4	[OFF]	
NO.5	[OFF]	NO.5	[OFF]	NO.5	[OFF]	NO.5	[OFF]	*1
NO.6	[OFF]	NO.6	[OFF]	NO.6	[OFF]	NO.6	[OFF]	
NO.7	[OFF]	NO.7	[OFF]	NO.7	[OFF]	NO.7	[OFF]	
NO.8	[OFF]	NO.8	[OFF]	NO.8	[OFF]	NO.8	[OFF]	

Table: ICNT and SCC Board Dip Switches S2 assign

Gyro No. 1 ICNT S3		Gyro No.2 ICNT S3		DGC-01 SCC No.1 S3		DGC-01 SCC No.2 S3		Remarks
NO.1	[OFF]	NO.1	[OFF]	NO.1	[OFF]	NO.1	[OFF]	
NO.2	[OFF]	NO.2	[OFF]	NO.2	[OFF]	NO.2	[OFF]	
NO.3	[OFF]	NO.3	[OFF]	NO.3	[OFF]	NO.3	[OFF]	*2
NO.4	[OFF]	NO.4	[OFF]	NO.4	[OFF]	NO.4	[OFF]	
NO.5	[ON]	NO.5	[ON]	NO.5	[ON]	NO.5	[ON]	
NO.6	[OFF]	NO.6	[OFF]	NO.6	[OFF]	NO.6	[OFF]	
NO.7	[OFF]	NO.7	[OFF]	NO.7	[OFF]	NO.7	[OFF]	
NO.8	[OFF]	NO.8	[OFF]	NO.8	[OFF]	NO.8	[OFF]	

Table: ICNT and SCC Board Dip Switches S3 assign

Gyro No. 1 ICNT S4		Gyro No.2 ICNT S4		DGC-01 SCC No.1 S4		DGC-01 SCC No.2 S4		Remarks
NO.1	[OFF]	NO.1	[OFF]	NO.1	[OFF]	NO.1	[OFF]	
NO.2	**[OFF]**	NO.2	**[OFF]**	NO.2	**[ON]**	NO.2	**[ON]**	
NO.3	[OFF]	NO.3	[OFF]	NO.3	[OFF]	NO.3	[OFF]	
NO.4	[OFF]	NO.4	[OFF]	NO.4	[OFF]	NO.4	[OFF]	
NO.5	[OFF]	NO.5	[OFF]	NO.5	[OFF]	NO.5	[OFF]	
NO.6	**[ON]**	NO.6	**[ON]**	NO.6	**[ON]**	NO.6	**[ON]**	

Table: ICNT and SCC Board Dip Switches S4 assign

***1** Setting of IEC61162-1 transmit frequency can be set according to connected users.
***2** Setting rate of turn can be according to connected users.

1.4.4 Dip Switch Settings DGCIF Board

DGCIF S1	Default	Details	Function	Read Timing	Remarks
NO.1	**[OFF]**	Do Not Touch			*1
NO.2	**[OFF]**	Do Not Touch			
NO.3	**[OFF]**	Do Not Touch			
NO.4	**[OFF]**	Do Not Touch			
NO.5	**[ON]**	Ext. Sensor connection	[OFF] : Yes [ON] : Non	Start Up	
NO.6	**[OFF]**	TMC used or not	[OFF] : Used [ON] : Non	Start Up	
NO.7	**[OFF]**	ALR sentences used of not	[OFF] : Non [ON] : Used	Start Up	
NO.8	**[ON]**	Auto Changeover of sensor function	[OFF] : Not Active [ON] : Active	Start Up	*2

Table: DGCIF Board Dip Switch S1 assign

***1** Keep it in the OFF position.
***2** Changeover switching of heading sensor only occurs when sensor is powerless.

DGCIF S2	Default	Details	Function	Read Timing	Remarks
NO.1	**[ON]**	No.1 AMS connection	[OFF] : Not Connected [ON] : Connected	Start Up	
NO.2	**[OFF]**	No.2 AMS connection	[OFF] : Not Connected [ON] : Connected	Start Up	
NO.3	**[OFF]**	AUTOPILOT connection	[OFF] : Not Connected [ON] : Connected	Start Up	
NO.4	**[OFF]**	BNWAS connection	[OFF] : Not Connected [ON] : Connected	Start Up	
NO.5	**[OFF]**	**Do Not Touch**			*1
NO.6	**[OFF]**	**Do Not Touch**			
NO.7	**[OFF]**	**Do Not Touch**			
NO.8	**[OFF]**	**Do Not Touch**			

Table: DGCIF Board Dip Switch S2 assign

***1** Keep it in the OFF position.

DGCIF S3	Default	Details	Function	Read Timing	Remarks
NO.1	**[ON]**	AUTOPILOT serial signal baudrate	[OFF] : 4800 bps [ON] : 38400 bps	Start Up	*1
NO.2	**[OFF]**	No.1 AMS serial signal baudrate	[OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.3	**[OFF]**	No.2 AMS serial signal baudrate	[OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.4	**[OFF]**	BNWAS serial signal baudrate	[OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.5	**[OFF]**	**Do Not Touch**			*2
NO.6	**[OFF]**	**Do Not Touch**			
NO.7	**[OFF]**	**Do Not Touch**			
NO.8	**[OFF]**	**Do Not Touch**			

Table: DGCIF Board Dip Switch S3 assign

***1** Keep it in the ON position.
***2** Keep it in the OFF position.

DGCIF S4	Default	Details	Function	Read Timing	Remarks
NO.1	**[OFF]**	**Do Not Touch**			*1
NO.2	**[OFF]**	**Do Not Touch**			
NO.3	**[OFF]**	**Do Not Touch**			
NO.4	**[OFF]**	**Do Not Touch**			
NO.5	**[OFF]**	**Do Not Touch**			
NO.6	**[OFF]**	**Do Not Touch**			
NO.7	**[OFF]**	**Do Not Touch**			
NO.8	**[OFF]**	**Do Not Touch**			

Table: DGCIF Board Dip Switch S4 assign

***1** Keep it in the OFF position.

1.4.5 Dip Switch Settings DGCIF Board Serial outputs

Below tables can be used to set the baud rate of the heading outputs.

DGCIF S11	Default	Details	Function	Read Timing	Remarks
NO.1	**[OFF]**	Gyro No.1 (baud) Output **TX13** +/-	Output connection on DGCIF TB21 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.2	**[OFF]**	Gyro No.1 (baud) Output **TX14** +/-	Output connection on DGCIF TB21 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.3	**[OFF]**	Gyro No.1 (baud) Output **TX15** +/-	Output connection on DGCIF TB21 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.4	**[OFF]**	Gyro No.1 (baud) Output **TX16** +/-	Output connection on DGCIF TB21 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.5	**[OFF]**	Gyro No.1 (baud) Output **TX17** +/-	Output connection on DGCIF TB21 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.6	**[OFF]**	Gyro No.1 (baud) Output **TX18** +/-	Output connection on DGCIF TB21 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.7	**[OFF]**	Gyro No.1 (baud) Output **TX19** +/-	Output connection on DGCIF TB22 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.8	**[OFF]**	Gyro No.1 (baud) Output **TX20** +/-	Output connection on DGCIF TB22 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	

Table: DGCIF Board Dip Switch S11 assign

DGCIF S12	Default	Details	Function	Read Timing	Remarks
NO.1	**[OFF]**	Gyro No.1 (baud) Output **TX21** +/-	Output connection on DGCIF TB21 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.2	**[OFF]**	Gyro No.1 (baud) Output **TX22** +/-	Output connection on DGCIF TB21 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.3	**[OFF]**	Gyro No.1 (baud) Output **TX23** +/-	Output connection on DGCIF TB2 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.4	**[OFF]**	Gyro No.1 (baud) Output **TX24** +/-	Output connection on DGCIF TB21 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.5	**[OFF]**	Gyro No.1 (baud) Output **TX25** +/-	Output connection on DGCIF TB23 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.6	**[OFF]**	Gyro No.1 (baud) Output **TX26** +/-	Output connection on DGCIF TB23 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.7	**[OFF]**	Gyro No.1 (baud) Output **TX27** +/-	Output connection on DGCIF TB23 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.8	**[OFF]**	Gyro No.1 (baud) Output **TX28** +/-	Output connection on DGCIF TB23 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	

Table: DGCIF Board Dip Switch S11 assign

Note Baud rate setting for Gyro No.1 serial outputs TX11+/- and TX12+/- located on DGCIF TB21 can be set by jumper J7(1TX) and J8(2TX) on SCC Board No.1. Refer to paragraph 1.5.1 *Jumper Settings SCC Board No.1.*

DGCIF S21	Default	Details	Function	Read Timing	Remarks
NO.1	**[OFF]**	Gyro No.2 (baud) Output **TX13** +/-	Output connection on DGCIF TB21 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.2	**[OFF]**	Gyro No.2 (baud) Output **TX14** +/-	Output connection on DGCIF TB21 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.3	**[OFF]**	Gyro No.2 (baud) Output **TX15** +/-	Output connection on DGCIF TB21 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.4	**[OFF]**	Gyro No.2 (baud) Output **TX16** +/-	Output connection on DGCIF TB21 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.5	**[OFF]**	Gyro No.2 (baud) Output **TX17** +/-	Output connection on DGCIF TB21 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.6	**[OFF]**	Gyro No.2 (baud) Output **TX18** +/-	Output connection on DGCIF TB21 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.7	**[OFF]**	Gyro No.2 (baud) Output **TX19** +/-	Output connection on DGCIF TB22 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.8	**[OFF]**	Gyro No.2 (baud) Output **TX20** +/-	Output connection on DGCIF TB22 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	

Table: DGCIF Board Dip Switch S21 assign

DGCIF S22	Default	Details	Function	Read Timing	Remarks
NO.1	**[OFF]**	Gyro No.2 (baud) Output **TX21** +/-	Output connection on DGCIF TB21 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.2	**[OFF]**	Gyro No.2 (baud) Output **TX22** +/-	Output connection on DGCIF TB21 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.3	**[OFF]**	Gyro No.2 (baud) Output **TX23** +/-	Output connection on DGCIF TB2 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.4	**[OFF]**	Gyro No.2 (baud) Output **TX24** +/-	Output connection on DGCIF TB21 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.5	**[OFF]**	Gyro No.2 (baud) Output **TX25** +/-	Output connection on DGCIF TB23 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.6	**[OFF]**	Gyro No.2 (baud) Output **TX26** +/-	Output connection on DGCIF TB23 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.7	**[OFF]**	Gyro No.2 (baud) Output **TX27** +/-	Output connection on DGCIF TB23 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	
NO.8	**[OFF]**	Gyro No.2 (baud) Output **TX28** +/-	Output connection on DGCIF TB23 [OFF] : 4800 bps [ON] : 38400 bps	Start Up	

Table: DGCIF Board Dip Switch S22 assign

Note Baud rate setting for Gyro No.2 serial outputs TX11+/- and TX12+/- located on DGCIF TB21 can be set by jumper J7(1TX) and J8(2TX) on SCC Board No.2. Refer to paragraph 1.5.2 *Jumper Settings SCC Board No.2.*

1.4.6 Dip Switch Settings DGC-01 Operation Panel

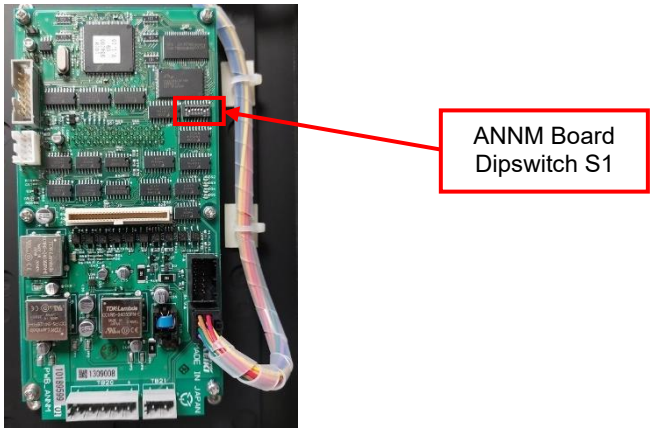


Figure: DIP Switch location on ANNM Board (Backside of Operating Panel)

GPANEL S1	Default	Details	Function		Read Timing	Remarks
NO.1	**[OFF]**	Dual Gyro or Single Gyro	[OFF] : Dual Gyro [ON] : Single Gyro		Start Up	
NO.2	**[ON]**	Ext. Sensor connection	[OFF] : YES (option) [ON] : Non		Start Up	
NO.3	**[OFF]**	AMS maker is JRC or Not	[OFF] : Other JRC [ON] : JRC		Start Up	
NO.4	**[OFF]**	No.1 Compass is FOG or not	[OFF] : Other compass [ON] : FOG		Start Up	
NO.5	**[OFF]**	No.2 Compass is FOG of not	[OFF] : Other compass [ON} : FOG		Start Up	
NO.6	**[OFF]**	Alphatron or other	NO.6 : [ON] NO.7 : [OFF] Alphatron	NO.6 : [ON] NO.7 : [ON] Other	Start Up	
NO.7	**[ON]**					
NO.8	**[OFF]**	**Not used**				

Table: ANNM Dip Switch S1 assign

1.5 Jumper Settings

The Dual Gyro Changeover unit includes several Jumpers.
Their locations are marked in the figure below or refer to paragraph 7.1.3 *Boards of DGC-01.*

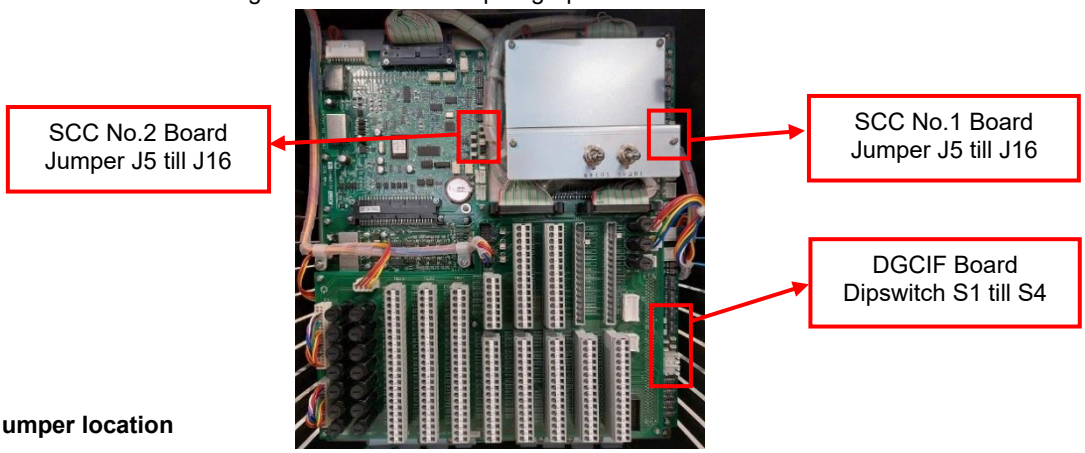


Figure: Jumper location

1.5.1 Jumper Settings SCC Board No.1

Name	Default	Details	Function
J5	**OPEN**	Reset CPU	Short: CPU will be reset
J7	**3-4 SHORT**	1TX	5-6 short: 4800 bps serial output 11TX+/- 3-4 short: 38400 bps serial output 11TX+/- 1-2 short: Unused
J8	**3-4 SHORT**	2TX	3-4 short: 4800 bps serial output 12TX+/- 1-2 short: 38400 bps serial output 12TX+/-
J9	**1-2 SHORT**	ALCN	3-4 short: Alarm Contact set to Normal – open / Alarm – close 1-2 short: Alarm Contact set to Normal – close / Alarm – open
J10	**1-2 SHORT**	RNCN	3-4 short: Running contact set to Running – open / stop – close 1-2 short: Running contact set to Running – close / stop – open
J11	**1-2 SHORT**	OPCN1	1-2 short / 3-4 open: unused
J12	**1-2 SHORT**	OPCN2	1-2 short / 3-4 open: unused
J13	**3-4 SHORT** **1-2 SHORT**	ENC	1-2 short / 3-4 short: encoder signal AlphaMidiCourse 1-2 open / 3-4 open: not encoder signal
J15	**3-4 OPEN** **1-2 OPEN**	FOG	1-2 open / 3-4 open: not attitude signal 1-2 short / 3-4 short: attitude signal
J16	**1-2 SHORT**	R3SEL	Unused

Table: SCC Board No.1 Jumper assign

1.5.2 Jumper Settings SCC Board No.2

Name	Default	Details	Function
J5	**OPEN**	Reset CPU	Short: CPU will be reset
J7	**3-4 SHORT**	1TX	5-6 short: 4800 bps serial output 11TX+/- 3-4 short: 38400 bps serial output 11TX+/- 1-2 short: Unused
J8	**3-4 SHORT**	2TX	3-4 short: 4800 bps serial output 12TX+/- 1-2 short: 38400 bps serial output 12TX+/-
J9	**1-2 SHORT**	ALCN	3-4 short: Alarm Contact set to Normal – open / Alarm – close 1-2 short: Alarm Contact set to Normal – close / Alarm – open
J10	**1-2 SHORT**	RNCN	3-4 short: Running contact set to Running – open / stop – close 1-2 short: Running contact set to Running – close / stop – open
J11	**1-2 SHORT**	OPCN1	1-2 short / 3-4 open: unused
J12	**1-2 SHORT**	OPCN2	1-2 short / 3-4 open: unused
J13	**3-4 SHORT** **1-2 SHORT**	ENC	1-2 short / 3-4 short: encoder signal AlphaMidiCourse 1-2 open / 3-4 open: not encoder signal
J15	**3-4 OPEN** **1-2 OPEN**	FOG	1-2 open / 3-4 open: not attitude signal 1-2 short / 3-4 short: attitude signal
J16	**1-2 SHORT**	R3SEL	Unused

Table: SCC Board No.2 Jumper assign

1.5.3 Jumper Settings DGCIF and DGCT Board

Name	Default	Details	Function
E1	**SHORT**	FWR G1	short: Normal open: enable download version software of SCC No.1 Board
E2	**1-2 SHORT**	LOG1	3-4 short: 400 ppnm LOG No.1 input contact signal 1-2 short: 200 ppnm LOG No.1 input contact signal
E3	**SHORT**	FWR G2	short: Normal open: enable download version software of SCC No.2 Board
E4	**1-2 SHORT**	LOG2	3-4 short: 400 ppnm LOG No.2 input contact signal 1-2 short: 200 ppnm LOG No.2 input contact signal
E5	**OPEN**	RESET M	open: Normal short: reset of DGCIF CPU(U1)
E6	**SHORT**	FWR M	short: Normal open: enable download version software of DGCIF CPU (U1)
E7	**3-4 SHORT**	MALCN	3-4 short: Alarm Contact set to Normal – close / Alarm – open 1-2 short: Alarm Contact set to Normal – open / Alarm – close
E8	**3-4 SHORT**	MRNCN	3-4 short: Running contact set to Running – close / stop – open 1-2 short: Running contact set to Running – open / stop – close
E9	**OPEN**	RESET S	open: Normal short: reset of DGCIF CPU(U2)
E103	**SHORT**	FWR S	short: Normal open: enable download version software of DGCIF CPU (U2)

Table: DGCIF Board Jumper assign

Name	Default	Details	Function	
E1	**1-2 SHORT** **3-4 SHORT**	GPS input Connection to DGC-01	1-2 short 3-4 short One GPS signal connected	1-2 open 3-4 open Two GPS signal connected
E2	**1-2 SHORT** **3-4 SHORT**	LOG input Connection to DGC-01	1-2 short 3-4 short One LOG signal connected	1-2 open 3-4 open Two LOG signal connected
E3	**SHORT**	Pulse LOG input connected to DGC-01	1-2 short 3-4 short One pulse LOG signal connected	1-2 open 3-4 open Two pulse LOG signal connected

Table: DGCT Board Jumper assign

2 Operation

In this chapter, the procedure of operation, starting and stopping of DGC-01 are explained. Before operation, confirm that each master compass together with their control unit are properly installed and connected to the DGC-01.

The DGC-01 outputs the true heading of the selected Gyrocompass and the external heading sensor (option).

- WARNING
- Matters requiring attention in starting up and operations during progress are described in chapter Operations and are punctuated with a CAUTION or a WARNING, which must be strictly observed.

2.1 Operating Unit

The operating panel is located in the Operating Unit, see below figure.

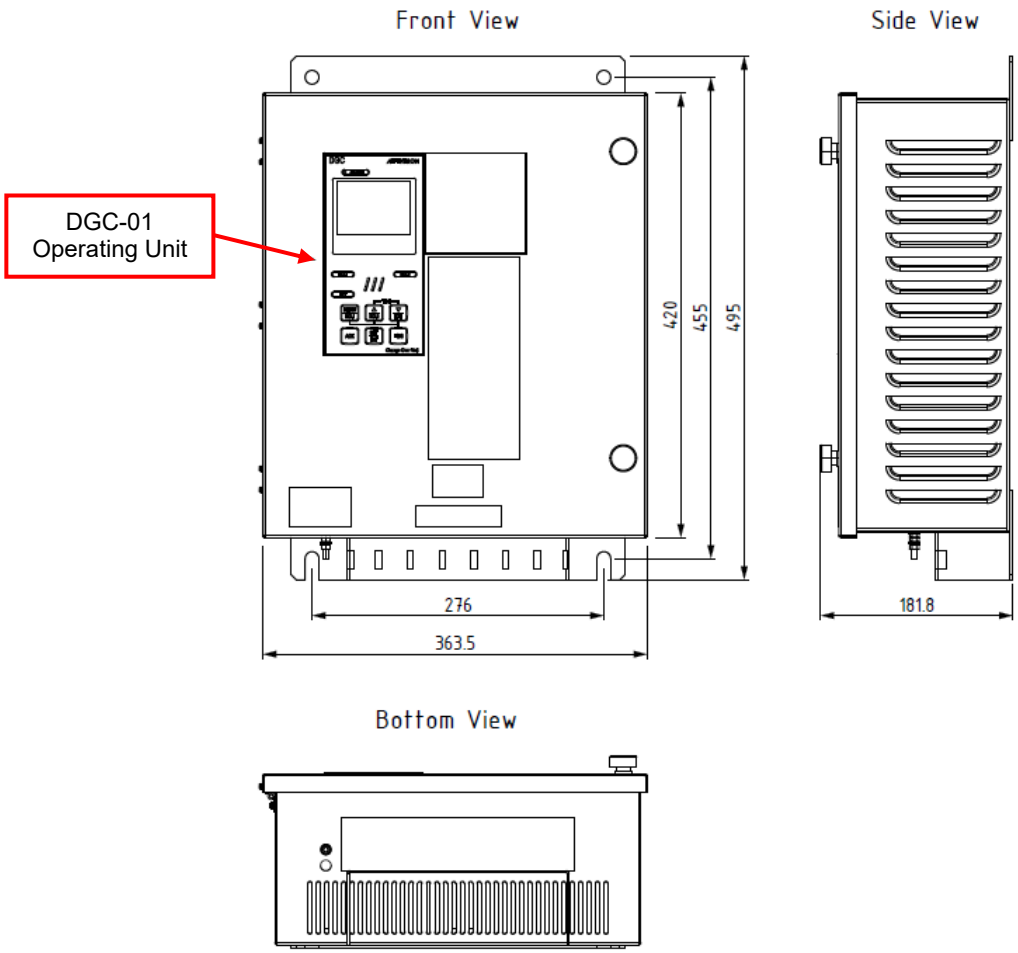


Figure 18: Operating Unit

2.2 Explanation of the Operating Unit

This section explains the function of the operation buttons.

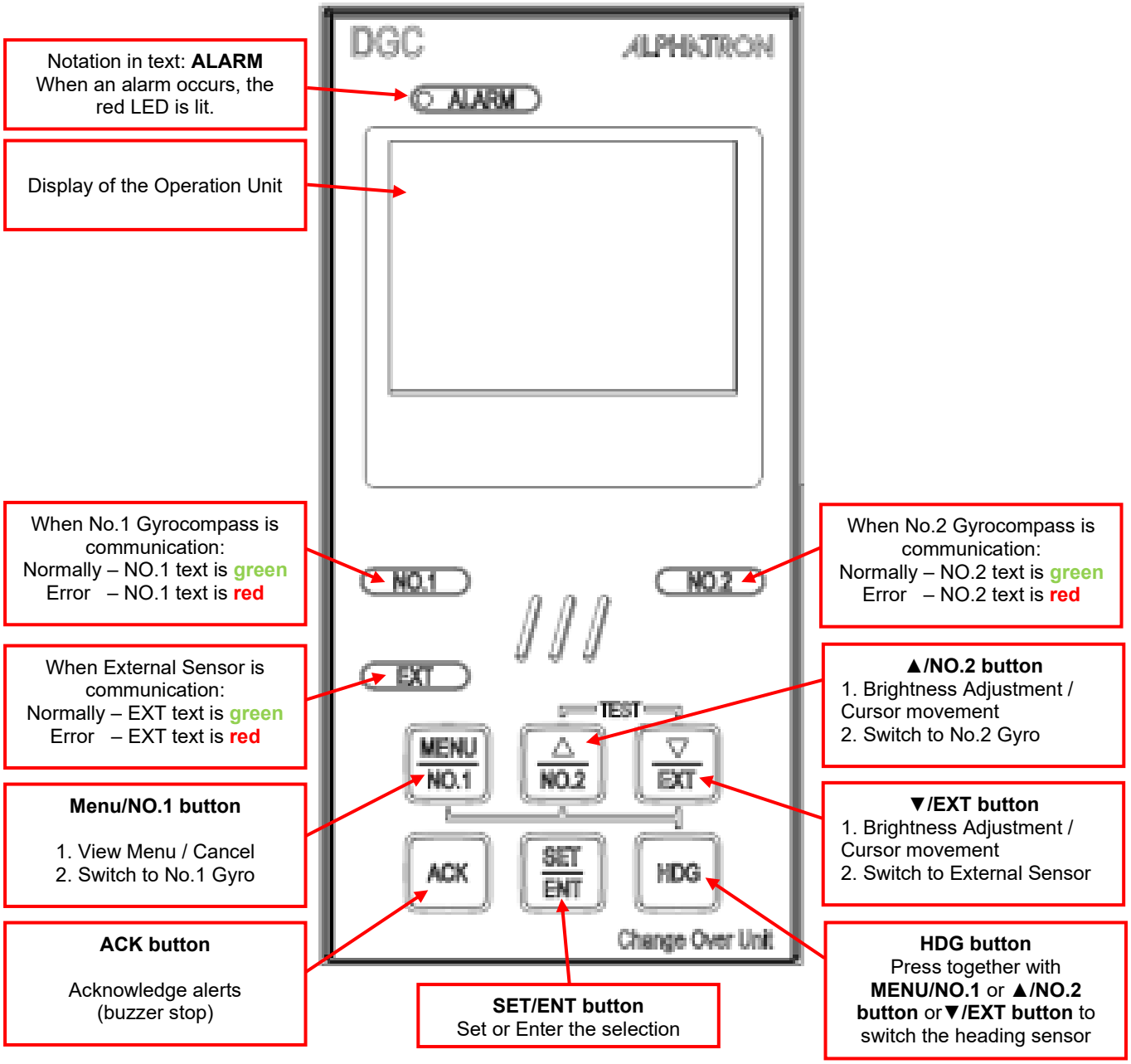


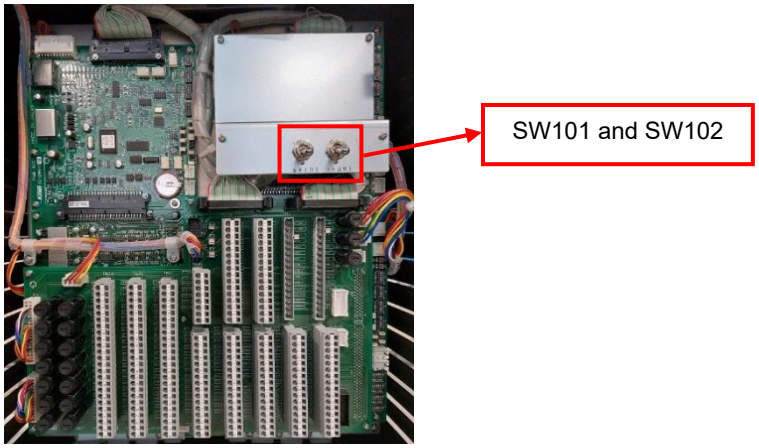
Figure: Operating Panel

2.3 Start and Running

- CAUTION - Start Up
- Start up after turning the automatic steering system to another mode than "AUTO".

2.3.1 Start Screen

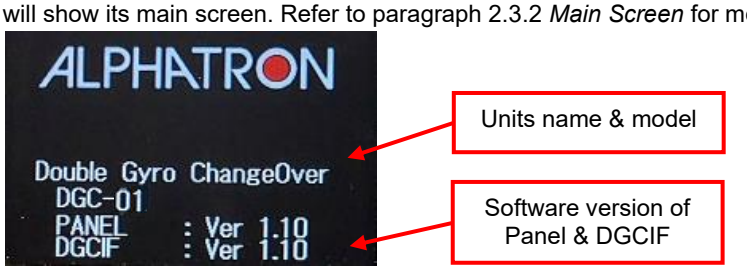
1. Turn the two internal Server Switches SW101 and SW102 in the upward position to power ON the system. Their location is shown in the picture below.



Server switch SW101 will turn ON power and signals coming from AlphaMidiCourse (HSC) Mk2 Control box. Server switch SW201 will turn ON power and signals coming from AlphaMidiCourse (HSC) Mk2 Control box.

Note The two connected AlphaMidiCourse (HSC) Mk2 control boxes must be turned ON or turned ON as described in the AlphaMidiCourse (HSC) Mk2 Gyrocompass manual.

2. When one of the connected AlphaMidiCourse Gyrocompass has been turned ON, the operation panel of the DGC-01 will startup. Its start screen as shown below the unit's name, model and software version is displayed for 3 seconds. Then it will show its main screen. Refer to paragraph 2.3.2 *Main Screen* for more details.



When power **OFF** it has a BLACK screen

2.3.2 Main Screen

A list with connected heading sources is displayed. The **SELECTED** heading source will be displayed larger than the other heading sources. When the **SELECTED** source is settling its heading value will be yellow and above the heading value a flashing **STANDBY** indication will be displayed.

In the below given example figures, on the left are both heading sources settling. In the middle Gyro No.1 is selected and figure on the right Gyro No.2 is selected. Refer to paragraph 2.4 *Heading Senor Selection* how to select a heading source.

Figures: Main Screens

2.3.3 Main Menu

Press the **MENU/NO.1** button to display a menu in the upper left corner of the screen. Here three submenu options will be displayed as below shown figure. If you want to hide the menu then press **MENU/NO.1** button again.

Figures: Main menu

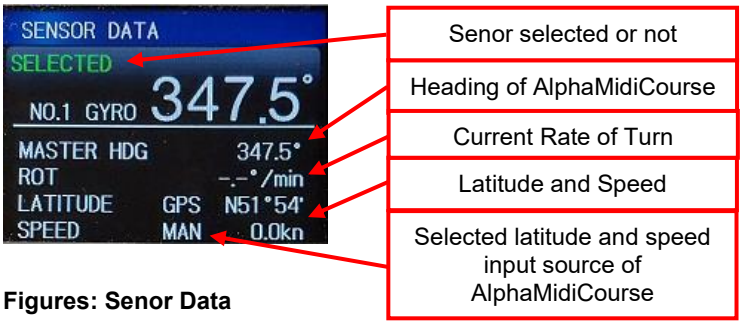
2.3.4 Data (Sensor) Submenu

This section explains how to check the heading sensor parameters.

Press the **MENU/NO.1** button to display the main menu in the upper left corner of the screen. Press **▼/EXT** button and move the yellow frame to DATA. Press **SET/ENT** button to display the connected heading sensors. With **▲/NO.2** or **▼/EXT** buttons move the yellow frame to the desired source NO2.GYRO or NO.1 GYRO and press **SET/ENT** to view their data.

Figures: Data menu

Within the sensor data menu, the following information can be found as shown in below example.



Figures: Senor Data

2.3.5 Set (Heading Difference) Submenu

This chapter will explain how to set the heading difference between connected heading sensors.

Note Date and Time are automatically received from connected GPS signal.

Press the **MENU/NO.1** button to display the main menu in the upper left corner of the screen. Press **▼/EXT** button and move the yellow frame to SET. Press **SET/ENT** button to view Settings menu with GYRO DIFF.ALERT. Press **SET/ENT** button and the value starts blinking. Press **▲/NO.2** or **▼/EXT** buttons to change the value. Press **SET/ENT** button to confirm the set value. To return to the main screen press **MENU/NO.1** button. Refer to below shown example.

Figures: Set menu

Note The heading difference between connected heading sources can be set from 3.5 till 15 degrees.
When the difference between the two heading sources exceeds the threshold level an alert is activated.

2.3.6 Alert Submenu (Current and History Alert List)

This chapter will explain how to view the Alert list. In the Alert list, information will be shown of the current alert.
Within the current alert list a more detailed history of the alerts can be shown in the Alert History list such as time, date and priority of the alerts. Refer to paragraph 2.6 *Alerts* for more details.
Refer to below shown example.

Press the **MENU/NO.1** button to display the main menu in the upper left corner of the screen. Press **▼/EXT** button and move the yellow frame to ALERT. Press **SET/ENT** button to view CURRENT ALERT list. To view the Alert History list of the DGC-01 press **SET/ENT.** To return to main screen press **MENU/NO.1** button.

Figures: Alert menu

2.4 Heading Sensor Selection

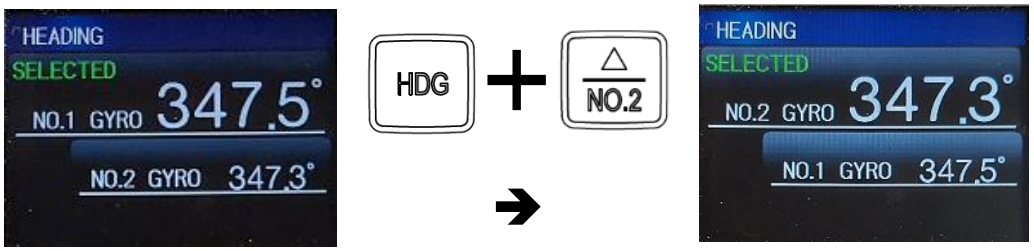
- CAUTION - System Selection
- Heading sensor selection (switching) may cause a large change of True Heading. When on automatic steering, first turn the steering mode of the automatic steering system to "MANUAL" to prevent a large course change. Confirm the area around the ship is clear and turn to "AUTO" steering again.

This chapter will explain how to select the heading sensor as main true heading source for the DGC-01 to transmit its data to the connected external equipment. Refer to below given example how to select a heading sensor.

Heading Sensor selection:

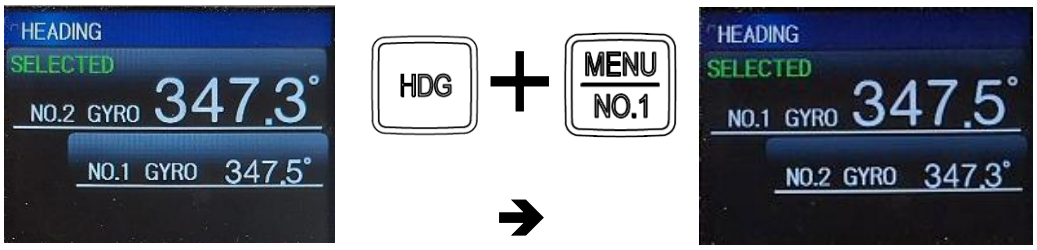
Selecting Gyro No.2

Press and hold **HDG** button then press **▲/NO.2** button to select NO.2 GYRO as main source.



Selecting Gyro No.1

Press and hold **HDG** button then press **MENU/NO.1** button to select NO.1 GYRO as main source.

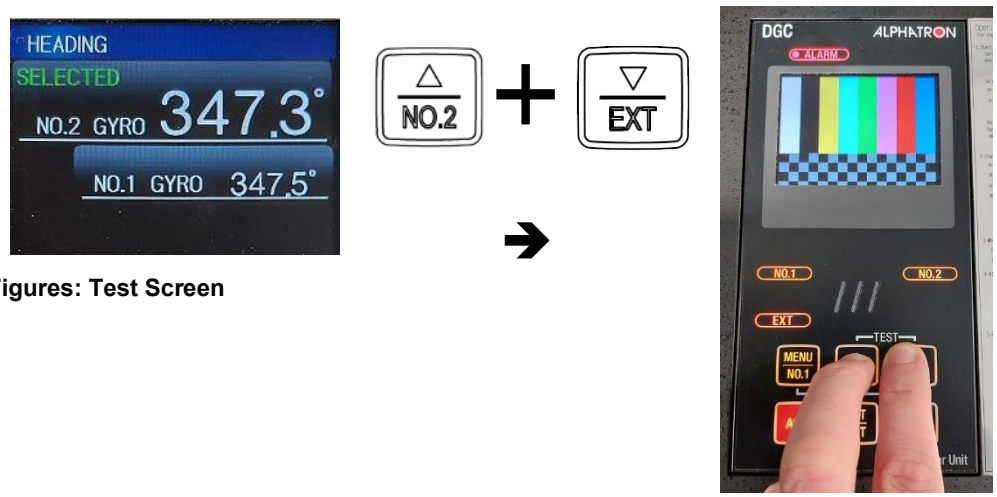


Figures: Sensor Selection

2.5 Test Screen

The operation panel can generate a TEST screen to check its main screen illumination, backlight of all buttons and buzzer will sound. Refer to below given example.

Press simultaneously **▲/NO.2** and **▼/EXT** button.



Figures: Test Screen

2.6 Alerts

- WARNING - Alarms
- If an alert is activated, check it immediately and take appropriate measures following the directions in the Alert list of paragraph 2.6.3 *Alarm list.*
- While in troubleshooting, check the system and take measures after checking the navigational condition around the ship for safety and stopping at non-dangerous sea area in principle. For the troubleshooting list refer to paragraph 3 *Troubleshooting.*

- CAUTION - Alarms
- Before checking and replacing fuses or electronical boards be sure to turn OFF the internal power switches of the DGC-01 and the power supply fed from the equipment to the system.
- Before checking and disconnecting or connecting of terminals be sure to turn OFF the internal power switches of the DGC-01 and the power supply fed from the equipment to the system.

When an alarm is activated, the buzzer will provide an audible alarm and an alarm description will be displayed on its operation panel.

An alarm is acknowledged by pressing the ACK/ENT button on the operational panel or on an external acknowledge button that has been installed.

2.6.1 Alert Priority (※1)

Alerts are provided with three levels of priority corresponding to alert descriptions:
Alarm (A), Warning (W) and Caution (C).
Because color and alert sounds are different by the alert level, refer to below table for more information.

Alert Priority		Description	LED Indication	Buzzer Sound
High	A: Alarm	Alert requiring immediate attention and action. (The operator should stop the automatic steering and switch to manual steering because it will be unavailable)	**Red**	Sounds three times with short sounds “beep beep beep”. It repeats every seven seconds unless pressing ACK key.
Middle	W: Warning	Alert doesn’t require immediate action but immediate attention. (After acknowledging the alert displayed on the Panel, take measures depending on the situation. Some alerts escalate to alarms if acknowledging after a certain time).	**Yellowish Orange**	Sounds twice with short sounds “beep beep”. It repeats every 60 seconds until pressing ACK key.
Low	C: Caution	Alerts aren’t falling under Alarm and Warning priority. (The alert does not have an influence on the current steering. Recover it before switching the steering mode from manual to automatic).	**Yellow**	None

2.6.2 Alert Categories (※2)

The Alert Categories of the Dual Gyro Changeover unit are described in below shown table.

Category	Description
A	Alert which allows an operator to acknowledge (ACK key) alerts activated in the Dual Gyro Changeover unit by operating the system
B	Alert which allows an operator to acknowledge (ACK key) alerts activated on the Dual Gyro Changeover unit by operating the system or external Central Alert Management (CAM-HMI)

2.6.3 Alarm List

This system provides alert information which meets the specifications of the Alert Management System.
The alert list below shows alert codes displayed on the Operation Panel of DGC-01 and the alerts information to be noticed by the Alert Management System.

Alert code Operation Panel	Alert Name	Troubleshooting	Alert Priority ※1	Category ※2	Remarks
240	SYSTEM FAULT	TS-01	A/W	B	※3
130	NO.1 GYRO COMM	TS-02	A/W/C	B	※3
131	NO.2 GYRO COMM	TS-03	A/W/C	B	※3
132	THS COMM	TS-04	A/W/C	B	※3
101	NO.1 SCC COMM	TS-05	A/W/C	B	※3
102	NO.2 SCC COMM	TS-06	A/W/C	B	※3
100	PANEL COMM	TS-07	W	B	※4
001	DGCIF COMM	TS-08	A/W	B	※3
103	THS TO NO.1 SCC	TS-09	W	B	※3
104	THS TO NO.2 SCC	TS10	W	B	※3
110	G1 PWR 24V	TS-11	A/W/C	B	※4
111	G2 PWR 24V	TS-12	A/W/C	B	※4
112	THS PWR 24V	TS-13	A/W/C	B	※4
113	IF PWR NO.1 E5V	TS-14	A/W/C	B	※4
114	IF PWR NO.2 E5V	TS-15	A/W/C	B	※4
115	IF PWR DGC E5V	TS-16	W	B	※4
116	IF PWR NO.1 +12V	TS-17	A/W/C	B	※4
117	IF PWR NO.1 -12V				
118	IF PWR NO.2 +12V	TS-18	A/W/C	B	※4
119	IF PWR NO.2 -12V				
120	SENSOR SWITCH	TS-19	W	B	※4
123	NO.1 SCC WDT	TS-20	C	B	※4
124	NO.2 SCC WDT				
125	MASTER WDT				
126	SLAVE WDT				
250	INTEGRITY FAILED	TS-21	W	B	※4
251	INTEGRITY DOUBTFULL1	TS-22	W	B	※4
252	INTEGRITY DOUBTFULL2	TS-23	W	B	※4

Table: Alert List

※1: Alert Priority is explained in paragraph 2.6.1
※2: Alert Category is explained in paragraph 2.6.2.
※3: If Alert priority Warning is not acknowledged within 60 seconds it will escalate to Alert priority Alarm. If not acknowledged within another 30 seconds, it will be transmitted to the Alert Management System.
※4: If Alert priority is Warning is not acknowledged within 60 seconds its buzzer sound will be reactivated with indication.

Alert code Operation Panel	Alert Name	Troubleshooting No.	Alert code Gyrocompass	Alert Priority ※1	Category ※2	Remarks
300	NO.1 GYRO MAIN PWR	TS-24	1	W	A	※4
301	NO.1 GYRO PWR FAIL	TS-24	2	W	A	※4
302	NO.1 GYRO INVERTER	TS-24	3	W	A	※4
303	NO.1 GYRO CONT.PWR	TS-24	4	W	A	※4
304	NO.1 GYRO ROTOR	TS-24	5	W	A	※4
305	NO.1 GYRO LEVEL	TS-24	6	W	A	※4
306	NO.1 GYRO SERVO	TS-24	7	W	A	※4
307	NO.1 GYRO EEPROM	TS-24	9	W	B	※4
308	NO.1 GYRO INN.COM1	TS-24	A	W	A	※4
309	NO.1 GYRO INN.COM2	TS-24	b	W	A	※4
310	NO1. GYRO GPS COMM	TS-24	c	W	B	※4
311	NO.1 GYRO GPS DATA	TS-24	d	W	B	※4
312	NO.1 GYRO LOG COMM	TS-24	P	W	B	※4
313	NO.1 GYRO LOG DATA	TS-24	U	W	B	※4
318	NO1. GYRO E5V	TS-24	r	W	A	※4
319	NO.1 GYRO STEP ERR	TS-24	G	W	A	※4
320	NO.1 GYRO ZERO ERR	TS-24	8	W	B	※4
321	NO.1GYRO DGC COMM	TS-24	J	W	A	※4
500	NO.2 GYRO MAIN PWR	TS-24	1	W	A	※4
501	NO.2 GYRO PWR FAIL	TS-24	2	W	A	※4
302	NO.2 GYRO INVERTER	TS-24	3	W	A	※4
503	NO.2 GYRO CONT.PWR	TS-24	4	W	A	※4
504	NO.2 GYRO ROTOR	TS-24	5	W	A	※4
505	NO.2 GYRO LEVEL	TS-24	6	W	A	※4
506	NO.2 GYRO SERVO	TS-24	7	W	A	※4
507	NO.2 GYRO EEPROM	TS-24	9	W	B	※4
508	NO.2 GYRO INN.COM1	TS-24	A	W	A	※4
509	NO.2 GYRO INN.COM2	TS-24	b	W	A	※4
510	NO.2 GYRO GPS COMM	TS-24	c	W	B	※4
511	NO.2 GYRO GPS DATA	TS-24	d	W	B	※4
512	NO.2 GYRO LOG COMM	TS-24	P	W	B	※4
513	NO.2 GYRO LOG DATA	TS-24	U	W	B	※4
518	NO2. GYRO E5V	TS-24	r	W	A	※4
519	NO.2 GYRO STEP ERR	TS-24	G	W	A	※4
520	NO.2 GYRO ZERO ERR	TS-24	8	W	B	※4
521	NO.2GYRO DGC COMM	TS-24	J	W	A	※4

Table: Alert List (continued)

※1: Alert Priority is explained in paragraph 2.6.1
※2: Alert Category is explained in paragraph 2.6.2.
※3: If Alert priority Warning is not acknowledged within 60 seconds it will escalate to Alert priority Alarm.
If not acknowledged within another 30 seconds, it will be transmitted to the Alert Management System.
※4: If Alert priority is Warning is not acknowledged within 60 seconds its buzzer sound will be reactivated with indication.

2.7 Alert is Activated

After acknowledging the alert, take appropriate measures following the operation guidance. When an alert is activated, check the system and take measures after checking the navigational condition around the vessel for safety and in principle stopping at non-dangerous sea area.

- WARNING - Alarms
- If an alert is activated, check it immediately and take appropriate measures following the directions in the Alert list of paragraph 2.6.3 *Alarm list.*
- While in troubleshooting, check the system and take measures after checking the navigational condition around the ship for safety and stopping at non-dangerous sea area in principle. For the troubleshooting list refer to paragraph 3 *Troubleshooting.*

2.7.1 Operation when an alert is activated

This section explains the display of the DGC-01 operation and alarm flow in steps when an alert is activated.

Step 1) An alert s activated

- An alert window appears on the bottom of the screen.
- The total number of alerts is shown in the upper right corner of the screen.
- A buzzer will sound.

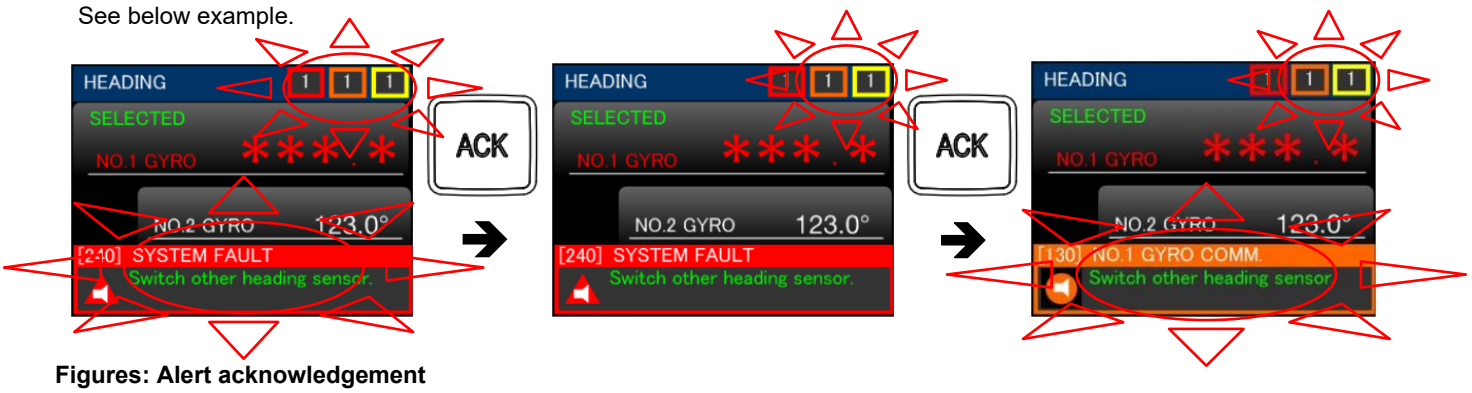
See below given example when a alert is activated.

Figures: Alert activated

Step 2) Acknowledge the alert

- Read the blinking message in the alert window and press the **ACK** button.
- When more alerts are activated, press and hold the **ACK** button for 3 seconds.

See below example.



Figures: Alert acknowledgement

Step 3) End the acknowledgement of the alert.

- The alert window disappears.
- The total number of alerts indicator stops blinking
- Buzzer stops

See given examples on the next page.

Figures: Alert management flow

Step 4) Check the acknowledged alerts

- After acknowledging the alerts cause, you can check alerts of which causes are still left and which causes are removed in the current alert list or alert history list. Refer to paragraph 2.3.6 *Alert Submenu.*

3 Troubleshooting

- WARNING - Alarms
- If an alert is activated, check it immediately and find the appropriate troubleshoot number in the Alert list of paragraph 2.6.3 *Alarm list.*
- While in troubleshooting, check the system and take measures after checking the navigational condition around the ship for safety and stopping at non-dangerous sea area in principle.

- CAUTION - Alarms
- Before checking and replacing fuses or electronical boards be sure to turn OFF the internal power switches of the DGC-01 and the power supply fed from the equipment to the system.
- Before checking and disconnecting or connecting the terminals be sure to turn OFF the internal power switches of the DGC-01 and the power supply fed from the equipment to the system.

The following pages present an overview of symptoms and corrective action for fault that may be corrected by the owner of the system. When none of the below describes counter measures resolve the alarm contact Alphatron Marine for advice or request on board service.

3.1 TS-01 SYSTEM FAULT

System gyrocompass abnormality.

Check procedure and treatment:

1. The alert is activated if fatal abnormality occurs on the gyrocompass as system senor.
2. Check operation of the selected gyrocompass.
3. If the gyrocompass is abnormal, switch to the other normal heading sensor.
4. Recover the abnormality of the gyrocompass following the installation/operation manual of the gyrocompass

Relevant Information:

With automatic switching function (option), the other gyrocompass is automatically selected.

When calling at a port, contact Alphatron Marine service engineer or agent.

3.2 TS-02 NO.1 GYRO COMM

Communication error between the system and No.1 gyrocompass control unit.

Check procedure and treatment:

1. Check the working condition of No.1 gyrocompass.
2. If No.1 gyrocompass is abnormal, recover the abnormality following the installation/operation manual of the gyrocompass.

Relevant Information:

If an alert or symptom is not resolved, contact Alphatron Marine service engineer or agent.

3.3 TS-03 NO.2 GYRO COMM

Communication error between the system and No.2 gyrocompass control unit.

Check procedure and treatment:

1. Check the working condition of No.2 gyrocompass.
2. If No.2 gyrocompass is abnormal, recover the abnormality following the installation/operation manual of the gyrocompass.

Relevant Information:

If an alert or symptom is not resolved, contact Alphatron Marine service engineer or agent.

3.4 TS-05 NO.1 SCC COMM

Communication error of No.1 gyrocompass signal processing unit of DGC-01

Check procedure and treatment:

1. Check the status of service switch SW101 and fuse XF101 in the system.

Relevant Information:

If an alert or symptom is not resolved, contact Alphatron Marine service engineer or agent.

3.5 TS-06 NO.2 SCC COMM

Communication error of No.2 gyrocompass signal processing unit of DGC-01.

Check procedure and treatment:

1. Check the status of service switch SW102 and fuse XF102 in the system.

Relevant Information:

If an alert or symptom is not resolved, contact Alphatron Marine service engineer or agent.

3.6 TS-07 PANEL COMM

Display communication error.

Check procedure and treatment:

1. Check the status of fuse XF103 in the system.

Relevant Information:

If an alert or symptom is not resolved, contact Alphatron Marine service engineer or agent.

3.7 TS-08 DGCIF COMM

Communication error of control unit of the DGC-01.

Check procedure and treatment:

1. Turn OFF the service switches SW101 and SW102 in the system. Then turn ON al the switches again.

Relevant Information:

If an alert or symptom is not resolved, contact Alphatron Marine service engineer or agent.

3.8 TS-11 G1 PWR 24V

Power supply interruption or power failure from No.1 gyrocompass control unit to DC-01.

Check procedure and treatment:

1. Check the condition of the service switch SW101 and fuse XF101 in the system
2. Check the fuse of No.1 gyrocompass following the installation/operation manual of the gyrocompass.

Relevant Information:

If an alert or symptom is not resolved, contact Alphatron Marine service engineer or agent.

3.9 TS-12 G2 PWR 24V

Power supply interruption or power failure from No.2 gyrocompass control unit to DC-01.

Check procedure and treatment:

1. Check the condition of the service switch SW102 and fuse XF102 in the system
2. Check the fuse of No.2 gyrocompass following the installation/operation manual of the gyrocompass.

Relevant Information:

If an alert or symptom is not resolved, contact Alphatron Marine service engineer or agent.

3.10 TS-14 IF PWR NO.1 E5V

Power failure of No.1 gyrocompass communication system of DGC-01.

Check procedure and treatment:

1. Check the condition of the service switch SW101 and fuse XF101 in the system
2. Check the fuse of No.1 gyrocompass following the installation/operation manual of the gyrocompass.

Relevant Information:

If an alert or symptom is not resolved, contact Alphatron Marine service engineer or agent.

3.11 TS-15 IF PWR NO.2 E5V

Power failure of No.2 gyrocompass communication system of DGC-01.

Check procedure and treatment:

1. Check the condition of the service switch SW102 and fuse XF102 in the system.
2. Check the fuse of No.2 gyrocompass following the installation/operation manual of the gyrocompass.

Relevant Information:

If an alert or symptom is not resolved, contact Alphatron Marine service engineer or agent.

3.12 TS-16 IF PWR DGC E5V

Power failure of internal communication system of DGC-01.

Check procedure and treatment:

1. Check fuse XF103 in the system.

Relevant Information:

If an alert or symptom is not resolved, contact Alphatron Marine service engineer or agent.

3.13 TS-17 IF PWR NO.1 +12V or -12V

Power failure of No.1 gyrocompass analog system of DGC-01.

Check procedure and treatment:

1. Check the condition of the service switch SW101 and fuse XF101 in the system.
2. Check the fuse of No.1 gyrocompass following the installation/operation manual of the gyrocompass.

Relevant Information:

If an alert or symptom is not resolved, contact Alphatron Marine service engineer or agent.

3.14 TS-18 IF PWR NO.2 +12V or -12V

Power failure of No.2 gyrocompass analog system of DGC-01.

Check procedure and treatment:

1. Check the condition of the service switch SW102 and fuse XF102 in the system.
2. Check the fuse of No.2 gyrocompass following the installation/operation manual of the gyrocompass.

Relevant Information:

If an alert or symptom is not resolved, contact Alphatron Marine service engineer or agent.

3.15 TS-19 SENSOR SWITCH

Switch failure of heading sensor.

Check procedure and treatment:

1. Check the condition of the service switch SW101, SW102 and fuse XF101, XF102 in the system.

Relevant Information:

If an alert or symptom is not resolved, contact Alphatron Marine service engineer or agent.

3.16 TS-20 CPU RESTART detected

Internal CPU restart detected of DGC-01.

Check procedure and treatment:

1. Check the heading information of the gyrocompass and external heading sensor which is displayed in the system coincides with the heading information of each heading sensor.
2. Check the heading information of the equipment connected with the system coincides with the heading information of the heading sensor selected by the system.

Relevant Information:

The alert is cleared by restarting the system. Perform it when the vessel is at anchor.

If an alert or symptom is not resolved, contact Alphatron Marine service engineer or agent.

3.17 TS-21 INTEGRITY FAILED

Gyrocompass integrity failed.

Check procedure and treatment:

1. Check the working condition of the gyrocompasses.
2. Check the latitude and vessels speed setting parameter of gyrocompasses

Relevant Information:

If an alert or symptom is not resolved, contact Alphatron Marine service engineer or agent.

3.18 TS-22 INTEGRITY DOUBTFUL 1

Gyrocompass integrity doubtful 1.

Check procedure and treatment:

1. Check the working condition of the *unselected* gyrocompass.
2. Check that the *unselected* gyrocompass started more than 3 hours ago (not under standby mode).

Relevant Information:

If an alert or symptom is not resolved, contact Alphatron Marine service engineer or agent.

3.19 TS-23 INTEGRITY DOUBTFUL 2

Gyrocompass integrity doubtful 2.

Check procedure and treatment:

1. Check the working condition of the selected gyrocompass.
2. If GPS or LOG communication error is ON, recover the system.
3. After confirming the system recovery, push **ACK/ENT** button to determine the heading of the selected gyrocompass.

Relevant Information:

If an alert or symptom is not resolved, contact Alphatron Marine service engineer or agent.

3.20 TS-24 GYROCOMPASS ABNORMALITY

Abnormality detected on connected gyrocompasses.

Check procedure and treatment:

1. Check the error code displayed on the gyrocompass and troubleshoot accordance with installation/operation manual of the gyrocompass.

Relevant Information:

If an alert or symptom is not resolved, contact Alphatron Marine service engineer or agent.

4 Fuse Replacement

- WARNING
- Before checking fuses or replacing fuses be sure to turn OFF the internal service switches SW101 and SW102 of the DGC-01 and the power supply fed from the equipment to the system

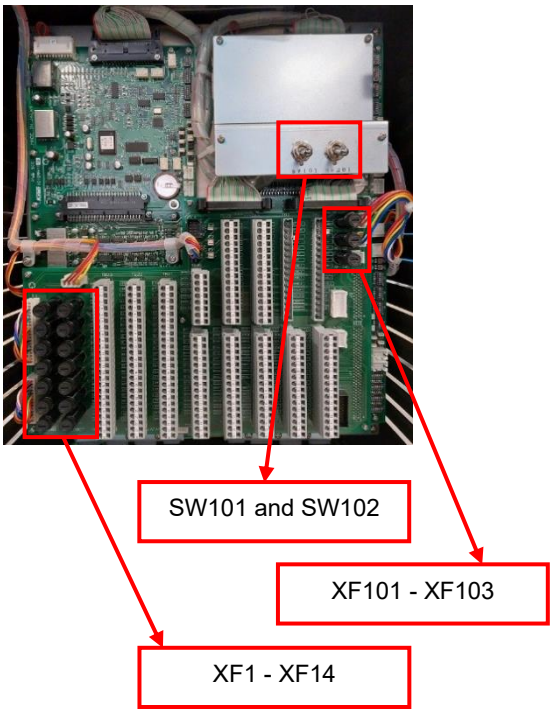
Replace a fuse when it has blown according to the following procedure.

1. Turn OFF the system with SW101 and SW102.

   Note The DGC-01 is powered by the connected gyrocompasses, turn them OFF by pressing their POWER button

2. Disconnect the power supply from the ship's distribution board and the emergency power supply of this system.
3. Investigate the cause of the fuse blowing. It will occur again unless the cause is resolved.
4. See below table with their description and below image for their location.

Fuse No.	Capacity	Signal	Description
XF1	1A	21_24V	Power supply for serial repeater 11
XF2		22_24V	Power supply for serial repeater 12
XF3		23_24V	Power supply for serial repeater 13
XF4		24_24V	Power supply for serial repeater 14
XF5		25_24V	Power supply for serial repeater 15
XF6		26_24V	Power supply for serial repeater 16
XF7		27_24V	Power supply for serial repeater 17
XF8		28_24V	Power supply for serial repeater 18
XF9		STA	Power supply for STEP repeater 1
XF10		STB	Power supply for STEP repeater 2
XF11		STC	Power supply for STEP repeater 3
XF12		STD	Power supply for STEP repeater 4
XF13		STE	Power supply for STEP repeater 5
XF14		STF	Power supply for STEP repeater 6
XF101	10A	G1_24V	Power from Gyro No.1 Control Unit
XF102		G2_24V	Power from Gyro No.2 Control Unit
XF103	3.15A	Not Used	



Note All fuses are ø5.2x20mm.

5. Press and turn the fuse holder counterclockwise to open it.
6. Replace the blown fuse with a new fuse and close the holder by turning it clockwise.

5 Maintenance

- WARNING - Maintenance
- During maintenance or check of the product, touching internal parts may cause electric shock, because the ship's power supply is still connected to the system distribution board, even if the main power switch of this product is turned "OFF". Do not touch internal parts such as terminal boards, power supply unit, etc. If necessary, disconnect the power cable from the ship's distribution board. A warning label is attached to point out this danger.

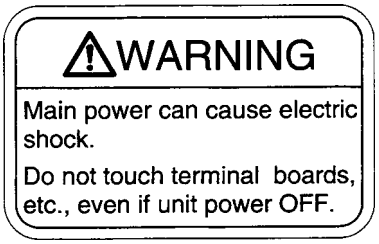


Figure: Warning Label

- CAUTION - Maintenance and check
- Main units of this system consist of electronic circuits of high reliability. If a failure occurs, perform the check and maintenance as described in this chapter and correct the fault(s) to prevent further risk of failure and to maintain the system's performance. Failure to carry this out, the detection of the failure sign will be delayed and may cause accidents such as collision or grounding.

- CAUTION - Prohibition
- Do not use megger or other device to test system insulation as it will damage internal electrical components. Always disconnect the wiring connected to this system before testing related power distribution lines with such testers.

5.1 General Procedures

This system consists of carefully selected parts based on safety design. Periodical checks (operational checks) and maintenance must still be performed for long-term satisfactory operation.

Main purpose of the periodical checks and maintenance is to catch signs of equipment failure at an early stage. Repairs on call in port as a result of these checks will prevent unexpected failures to a minimum while sailing.

For the periodical checks and maintenance of the connected gyrocompasses to this system, refer to the separate Installation and Operation manuals.

Record content of the checks and maintenance performed in the logbook.

1. Assign a person in charge of periodical checks and maintenance for this system to be executed under his responsibility.
2. Check and re-tighten loosened screws of mechanical connections, due to body shock and resonance vibration.
3. Re fix parts, fixing screws, mounting parts, reinsert connectors and repair loosened cables and wires.

   Note Most parts used in the main sections of this system are electronic/electric parts. Occurrence of electronic parts trouble themselves is very seldom, and troubles in mounting sections of electronic (electric) parts, being about to disconnect wires at roots or lead wires of electric parts, occur easily due to hull body shock or resonance vibration. These are the points to be checked.
4. Record strange burn smells, sounds and heat generation, etc. different from those that exist in normal operations.
5. Request repair from Alphatron Marine Service Engineer, or agent.
6. Have the system checked periodically by Alphatron Service Engineer, or agent.
7. Have the checklist table and the logbook evaluated by the engineer.

Note The troubleshooting and repair should be carried out by the engineer according to the results of the checks of the faulty items.

5.2 Periodical Checks

Use the periodical check tables for the periodical check. See paragraph 7.2 *Periodical Check Tables.*
Frequency of the checks are:

1. Items to be executed once a day.
2. Once a half year / once a year.

Checked items are regarded as normal, or not, by comparing their condition as at installation time on the ship as a standard.

1. Copy and use periodical check table (including operational check) [once a day], in paragraph 7.2.1.

   Mark the request checks accordingly.

   Note When table is full file it.

2. Copy and use periodical check table (including operational check) [once a half year/ a year], in paragraph 7.2.2

   Mark the requested check accordingly.

   Note When table is full file it.

5.3 Check Warning Label

Always check and clean warning labels so they are easy to read.

When warning labels become dirty or detached, request new ones from Alphatron Marine.

5.4 Check Display and Backlight

Check the letters on the operation panel are legible. Display or backlight may become dark owing due to aging. If the letters are hard to read, replacement is required. Contact Alphatron Marine service engineer or agent.

5.5 Periodic Maintenance

We recommend that the system is checked and maintained by Alphatron Marine qualified service engineer or agent at least once a year. If needed, please let them evaluate the check table and logbook. From the evaluation, if there is any sign of trouble or problem, both the detection and recovery are available. In case the electronica boards are malfunctioning or there are signs of trouble the part can be ordered. Contact Alphatron Marine service engineer or agent.

5.6 Disposal Method

When disposing of this system, it should be treated as industrial waste and disposed of in accordance with the laws and regulations.

6 Specifications

Refer to the As Built plan kept aboard and table below.

Functionality:

1. Display the true heading information of Gyrocompass No.1 and No.2.
2. Display the Rate of Turn.
3. Gives a true heading output.
4. Gives a Rate of Turn output.
5. Gives an Alert History and Alert detailed information.
6. Automatic Changeover function.

Dual Gyro Changeover Unit Specifications		
Display	Size	3.5 Inches
	Effective display range	70.56 x 52.92 mm
	Resolution	320 x 240 pixels, QVGA
	Dot Pitch	0.0735 x 0.2205 mm
Outputs	Step	6x Step signal DC24V, 6 steps/°
	Heading	18x outputs RS-422 IEC61162-1/2
	BAM	1x IEC62923-1/2 / 61162-1
	Status/alarm	Dry contacts (alarm ack, buzzer stop)
	Rate of Turn	3x Analog ROT (30°/min, 120°min, 300°/min selectable)
Inputs	Serial signal	Based on IEC61162-1/2
	True Heading Information	Received from No.1 & No.2 Gyrocompass
Power	Received from No.1 & No.2 Gyrocompass	Main power: 24V DC +30%, -20%, 250VA (max)
		Battery power: 24V DC +30%, -20%, 75VA (max)
Environmental	Specified operating conditions	Temperature: –15°C – +55°C Humidity: 95% RH (40°C) or less
	Recommended operating conditions	Temperature: –0°C – +45°C Humidity: 95% RH (35°C) or less
	Storage	Temperature: –20°C – +55°C
	Protection	IP22
Dimensions	Size	495mm (h) x 364mm (w) x 182mm (d)
	Weight	14 kg. (Master Compass)
Standards		IMO Res A424(XI), IMO Res.A694 (XVII), IMO Res. MSC.191(79), MSC.302(87), ISO8728:2014, IEC 61162 Series, IEC 62288 Ed 2.0, IEC 62923-1/2 2018, Marine Equipment Directive 2014/90/EU

Table: Specifications

6.1 Input Signal Specifications

Sensor	Type of signal	Protocol		Sentence
GPS	IEC61162-1	Baud rate	4800 bps	$--GGA,x,xxxx.xx,N,xx.x,E,x,~*hh<CR><LF>[1] ↑ Latitude $--GLL,xxxx.xx,N,xxxx.xx,E,*hh<CR><LF> ↑ Latitude $--VTG,xx,T,xx,M,xx.x,N,xx,K*hh<CR><LF> ↑ Speed(knots) $--ZDA,xxxxxx.xx,xx,xx,xxxx,xx,xx*hh<CR><LF> ↑ Year ↑ Month ↑ Day ↑ UTC time
		Data Bits	8 bits	
		Parity	none	
SPEED LOG		Stop Bits	1	$--VBW,x.x,x.x,A,x.x,x.x,A~*hh<CR><LF>[2] ↑ Speed(knots) ↑ Ground Speed(knots) ↑ Water Speed(knots) $--VHW,xx.x,T,xx.x,M,xx.x,N,xx.x,K*hh<CR><LF> ↑ Water Speed(knots)
		Frequency	1 Hz	
BAM INS STATION	IEC62923-1/2 IEC61162-1	Baud rate	4800 bps	$--ACN,xxxxxx.xx,aaa,xx,xx,C,a*hh<CR><LF> ↑ Command ↑ Alert Instance ↑ Alert Identifier ↑ Manufacturer MNEMONIC Code ↑ Time $--HBT,xx.x,A,x*hh<CR><LF> ↑ Sequential Sentence Identifier ↑ Repeat Interval
		Data Bits	8 bits	
		Parity	none	
		Stop Bits	1	
		Frequency	1 Hz	
SPEED LOG	Dry Contacts	--------		200 or 400 pulses per nautical mile 5V / 5mA
Heading Sensor select				32V / 20mA
Alarm ACK				5V / 5mA
Buzzer Stop				5V / 5mA

Table: Input Signal Specifications

[1] GGA sentence is high priority.

[2] Ground speed is high priority.

6.2 Output Signal Specifications

Sensor	Type of signal	Protocol		Sentence
SELECTED COMPASS	Step output	Voltage		24VDC - Step 1/6°
DGC-01	Alarm Output[4]	Potential Free		NO/NC
DGC-01	Running Contact[4]	Potential Free		NO/NC
SELECTED COMPASS	+/-10V +/-5V	Voltage		+/-120°(Default), +/-30°, +/-300°
SELECTED COMPASS	IEC61162-1 IEC61162-2 Heading Signal[3]	Baud rate	4800 38400 bps	$HEHDT,xxx.xT*hh<CR><LF> ↑ Heading(deg) $HETHS,xxx.x,A*hh<CR><LF>[1] ↑ Mode Identifier ↑ Heading(deg) $HEROT,-xxx.x,A*hh<CR><LF>[2] ↑ Rate of Turn(deg/min) -:PORT $HEHCR,x.x,a,a,x.x*hh<CR><LF> ↑ Correction Value ↑ Correction State ↑ Mode Indicator ↑ True Heading $--PTKM,HEALM,xxxx,x,xx*hh<CR><LF>
		Data Bits	8 bits	
		Parity	none	
		Stop Bits	1	
		Frequency	1,5,10, 50 Hz	
DGC-01	IEC62923-1/2 IEC61162-1 BAM Signal	Baud rate	4800 38400 bps	$HEALC,x,x,x,xx,aaa,xx,xx,xx…. … *hh<CR><LF> ↑ Revision Number ↑ Alert Instance ↑ Alert Identifier ↑ Manufacturer Identifier ↑ Number of Alert Entry ↑ Sequential Message Identifier ↑ Sentence Number ↑ Total Number of ALC $HEHBT,xx.x,A,x*hh<CR><LF> ↑ Sequential Sentence Identifier ↑ Repeat Interval $HEALF,x,x,x,xxxxxx.xx,a,a,a,aaa,xx,xx,xx,aa*hh<CR><LF> ↑ Alert Text ↑ Revision Counter ↑ Alert Instance ↑ Alert Identifier ↑ Manufacturer MNEMONIC Code ↑ Alert State ↑ Alert Priority ↑ Alert Category ↑ Time of Last Change ↑ Sequential Message Identifier ↑ Sentence Number ↑ Total Number of ALF
		Data Bits	8 bits	
		Parity	none	
		Stop Bits	1	
		Frequency	30sec (ALC) 5sec (HBT) Indeterminately (ALF)	

Table: Output Signal Specifications

The table will continue on next page.

Sensor	Type of signal	Protocol		Sentence
DGC-01	IEC62923-1/2 IEC61162-1 BAM Signal	Baud rate	4800 38400 bps	$HEARC,xxxxx,aaa,x.x,x.x,a*hh<CR><LF> ↑ Refused Alert Command ↑ Alert Instance ↑ Alert Identifier ↑ Manufacturer Identifier ↑ Time $HEALRxxxxxx.xx,xxx,x,x,x,a*hh<CR><LF> ↑ Alarm Text ↑ Alarm acknowledge state A= acknowledged V= Unacknowledged ↑ Alarm condition ↑ Alarm identifier ↑ Time
		Data Bits	8 bits	
		Parity	none	
		Stop Bits	1	
		Frequency	30sec (ALC) 5sec (HBT) Indeterminately (ALF)	

[1] Mode identifier: A = autonomous, E = computed (accurate trajectory calculation),

M = manual input, S = simulation mode and V = data not valid (including idle mode).

[2] Rate of Turn scale can be set by dipswitches, refer to paragraph 1.4 *DIP Switch settings*.

[3] Frequency of heading output signal IEC61162-1 or type of sentences can be set by Dipswitches, refer to paragraph 1.4 *DIP Switch settings*.

The frequency of heading output signal IEC61162-2 is 50Hz.

[4] Jumper can be used to Selection between NO/NC, refer to paragraph 1.5 *Jumper Settings*.

7 Appendices

The Appendix contains Drawings and Periodic Check Tables.

7.1 Drawings

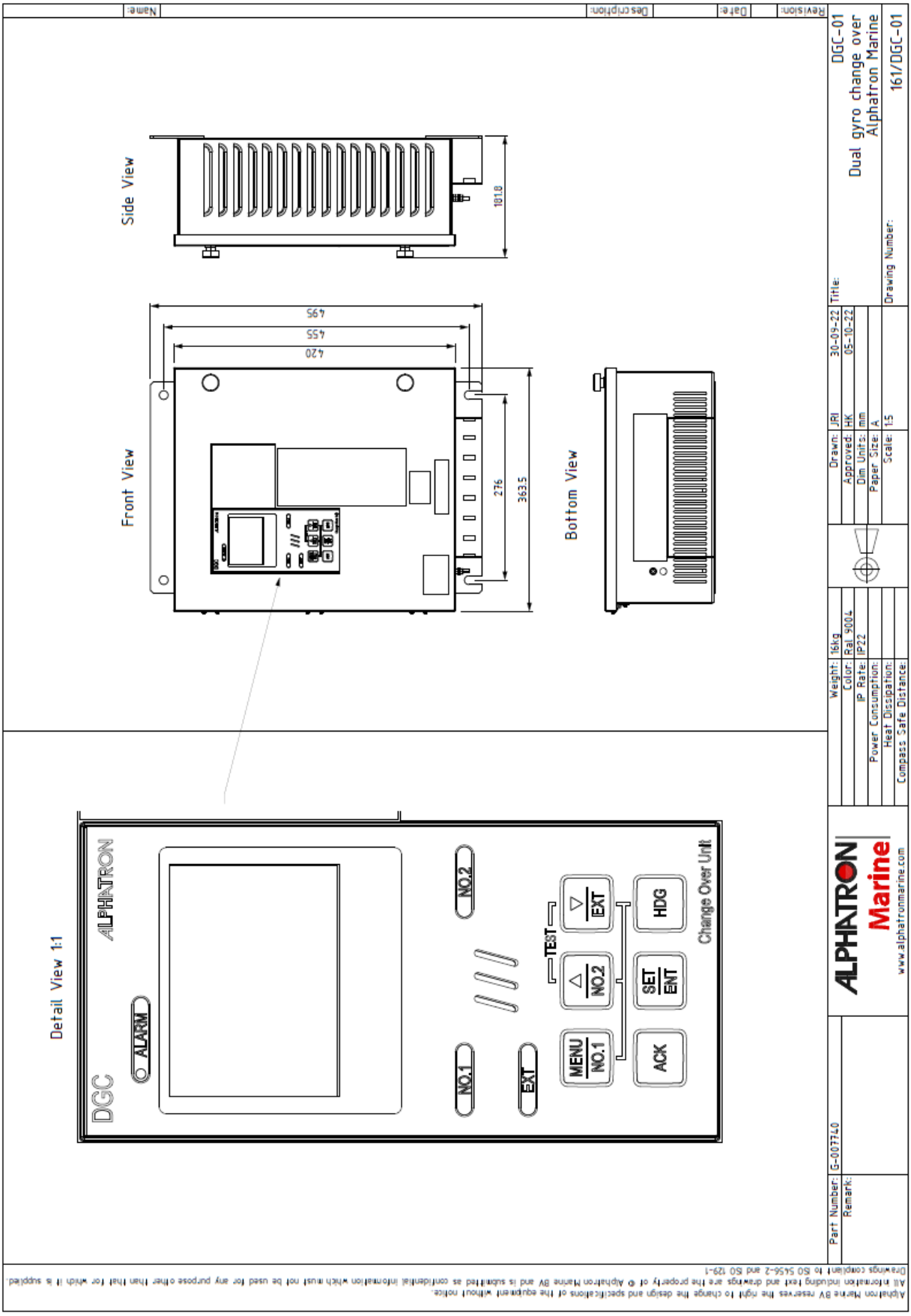
Drawing Contents:

1. Dimensions of DGC-01 Unit
2. Dimensions of DGC-01 Operation Panel
3. Boards of DGC-01
4. Connection Diagram DGC-01 to No.1 and No.2 Gyrocompass
5. Connection Diagram Gyrocompass No.1 to DGC-01
6. Connection Diagram Gyrocompass No.2 to DGC-01
7. Connection Diagram DGC-01 Inputs & Outputs
8. Cable Diagram DGC-01

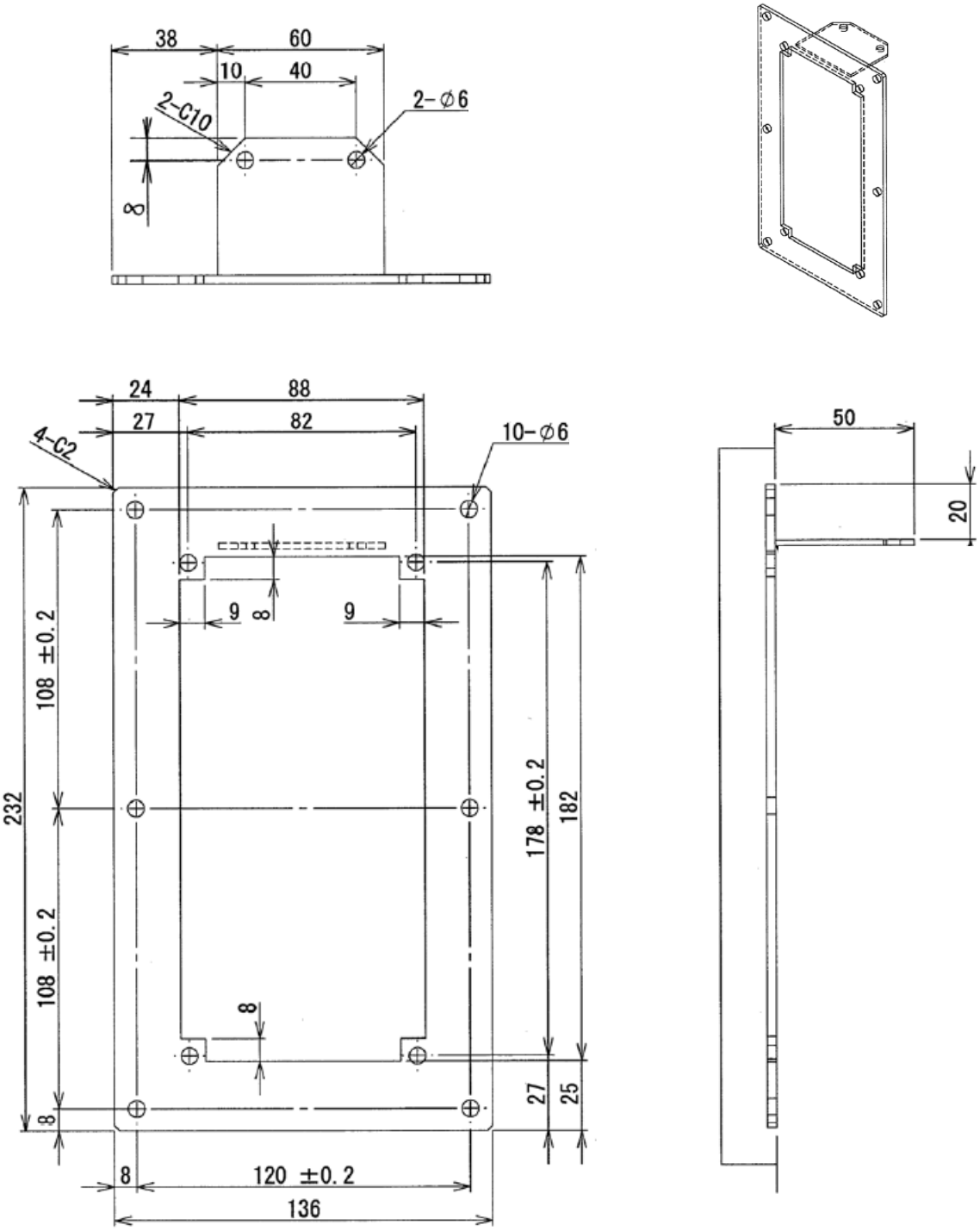
7.2 Periodical Check Tables

1. Periodical Table (Once a day)
2. Periodical Table (Once a (halve) year)

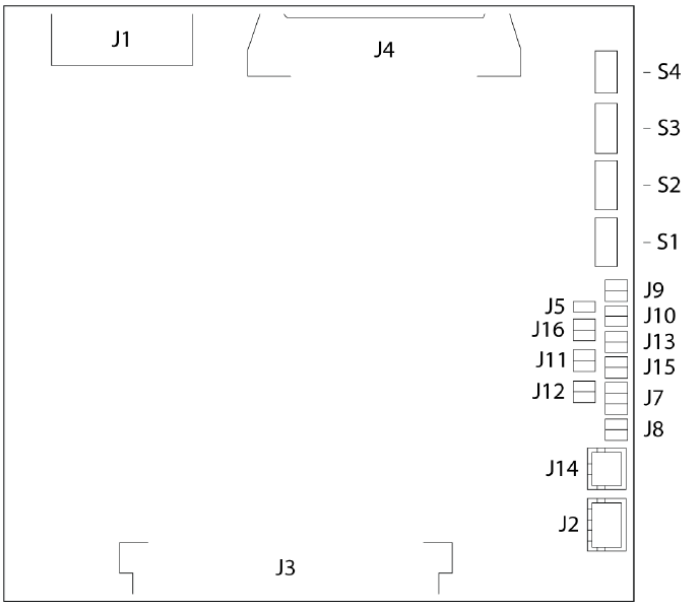
7.1.1 Dimensions of DGC-01 Unit

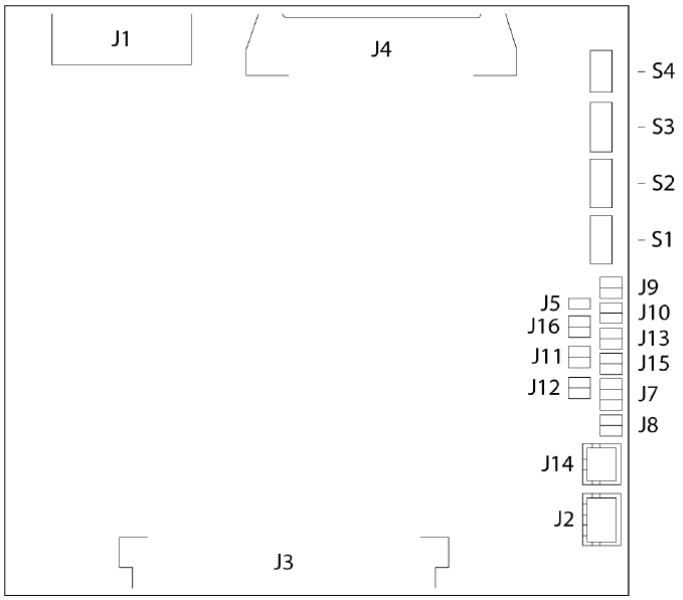


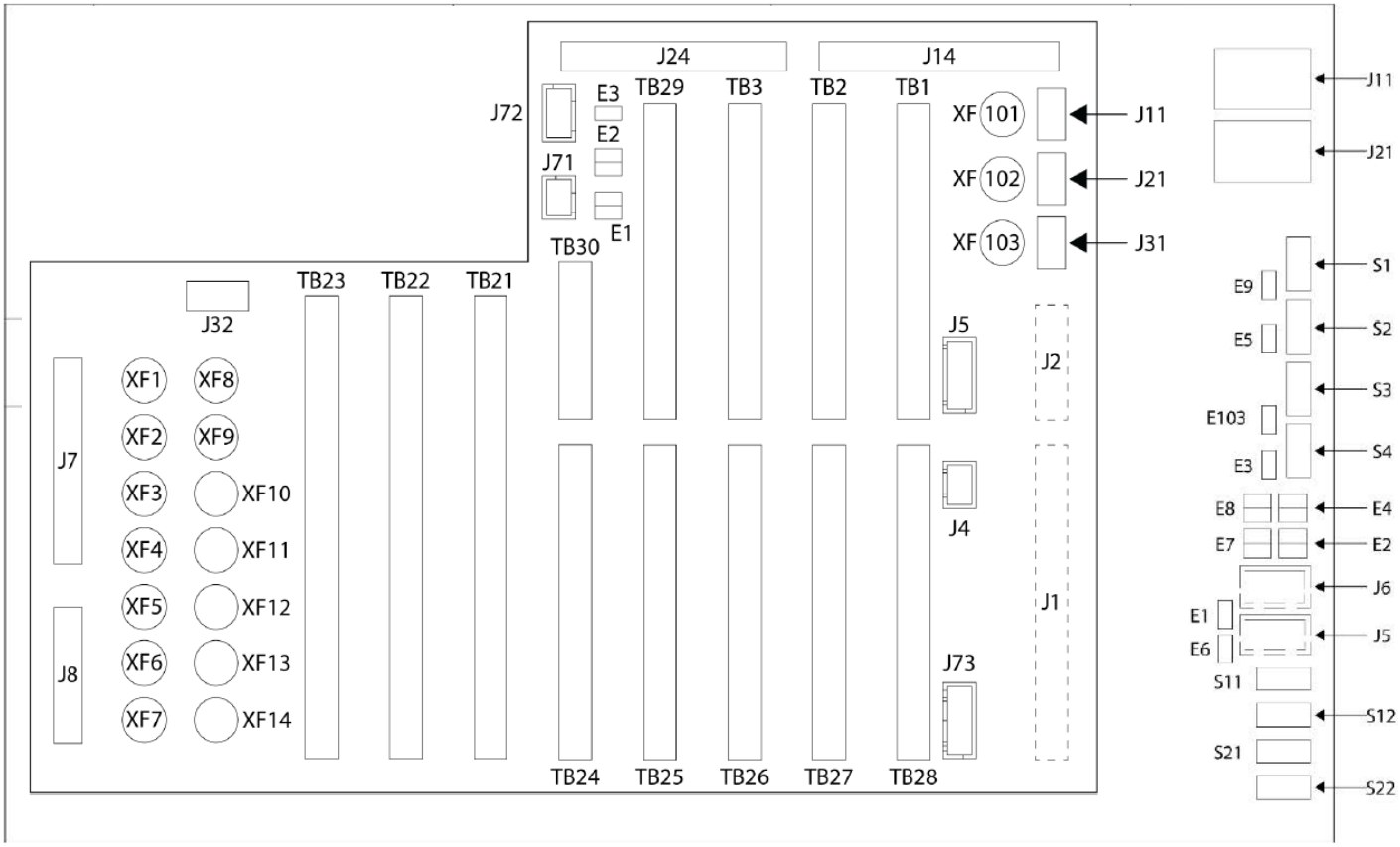
7.1.2 Dimensions of DGC-01 Operation Panel Mounting Frame



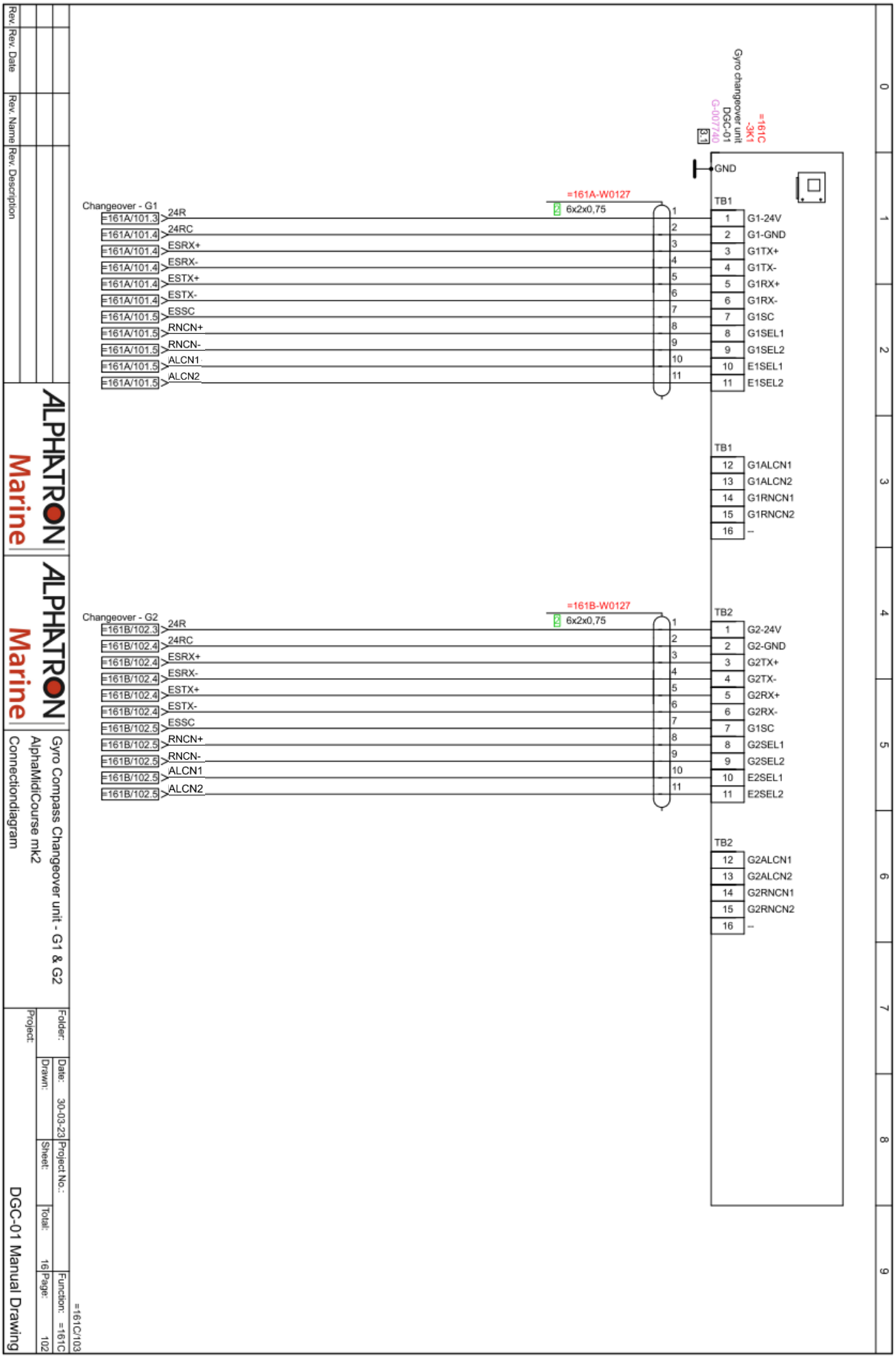
7.1.3 Boards of DGC-01



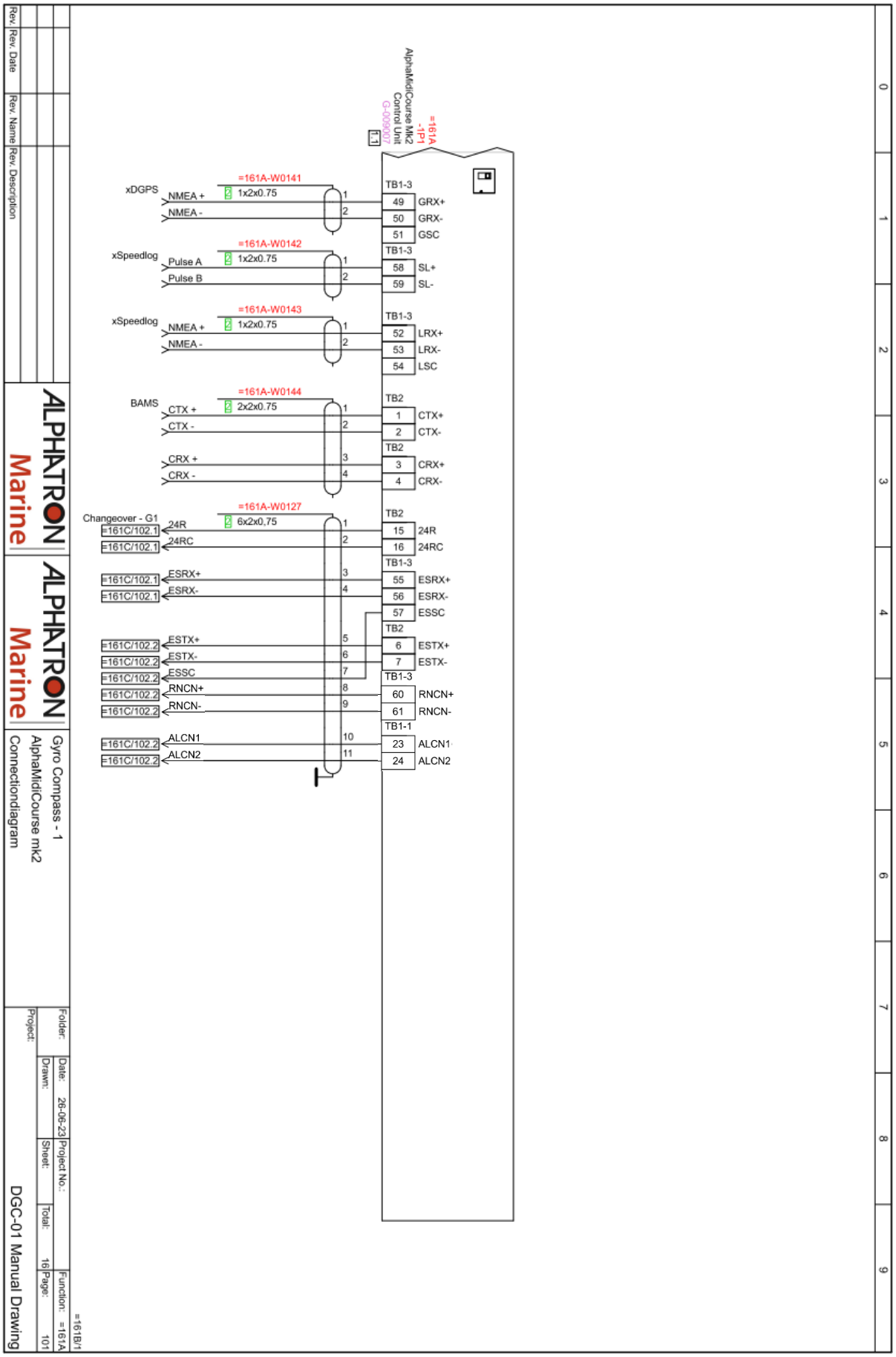




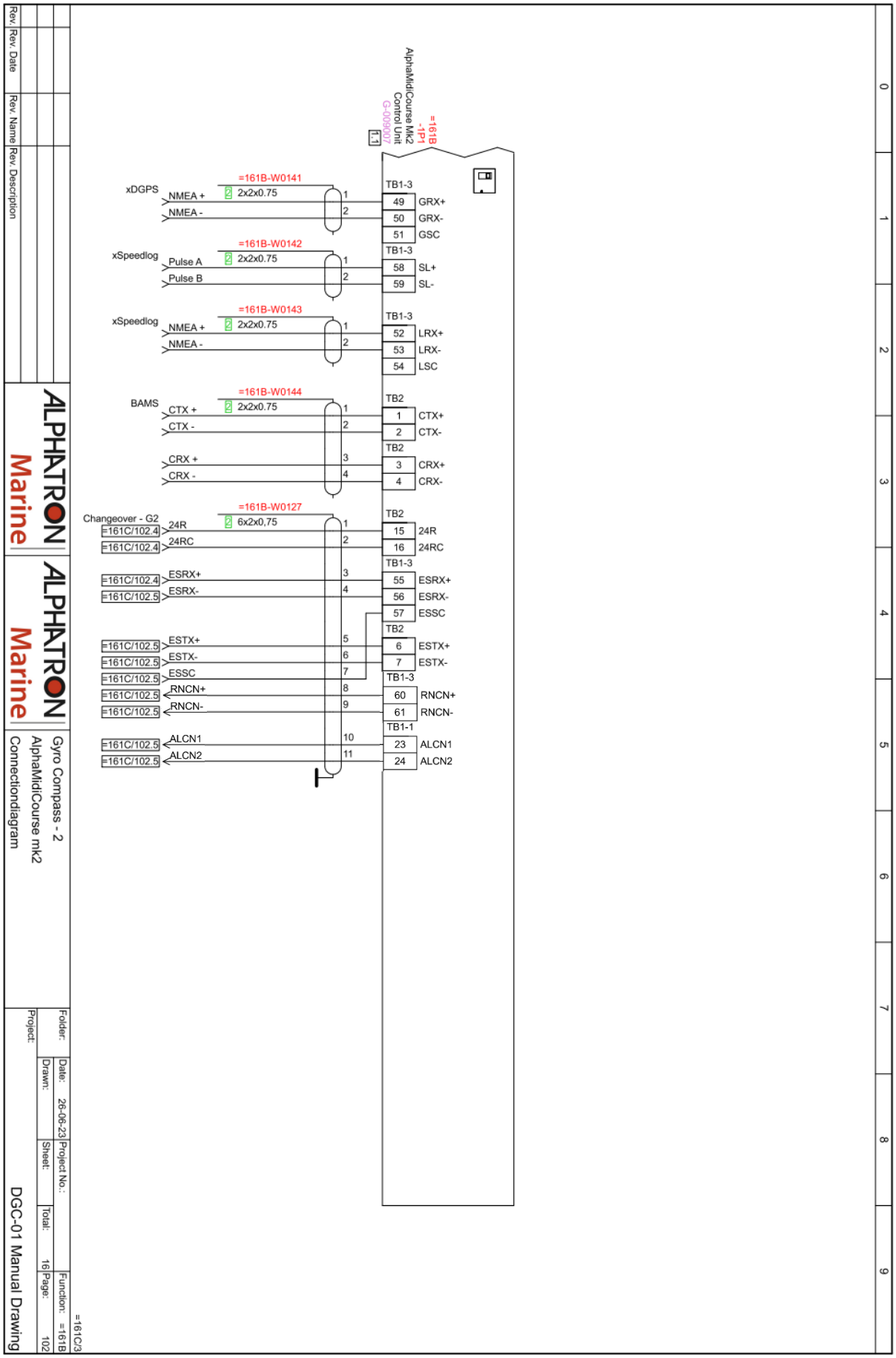
7.1.4 Connection Diagram DGC-01 to No.1 and No.2 Gyrocompass



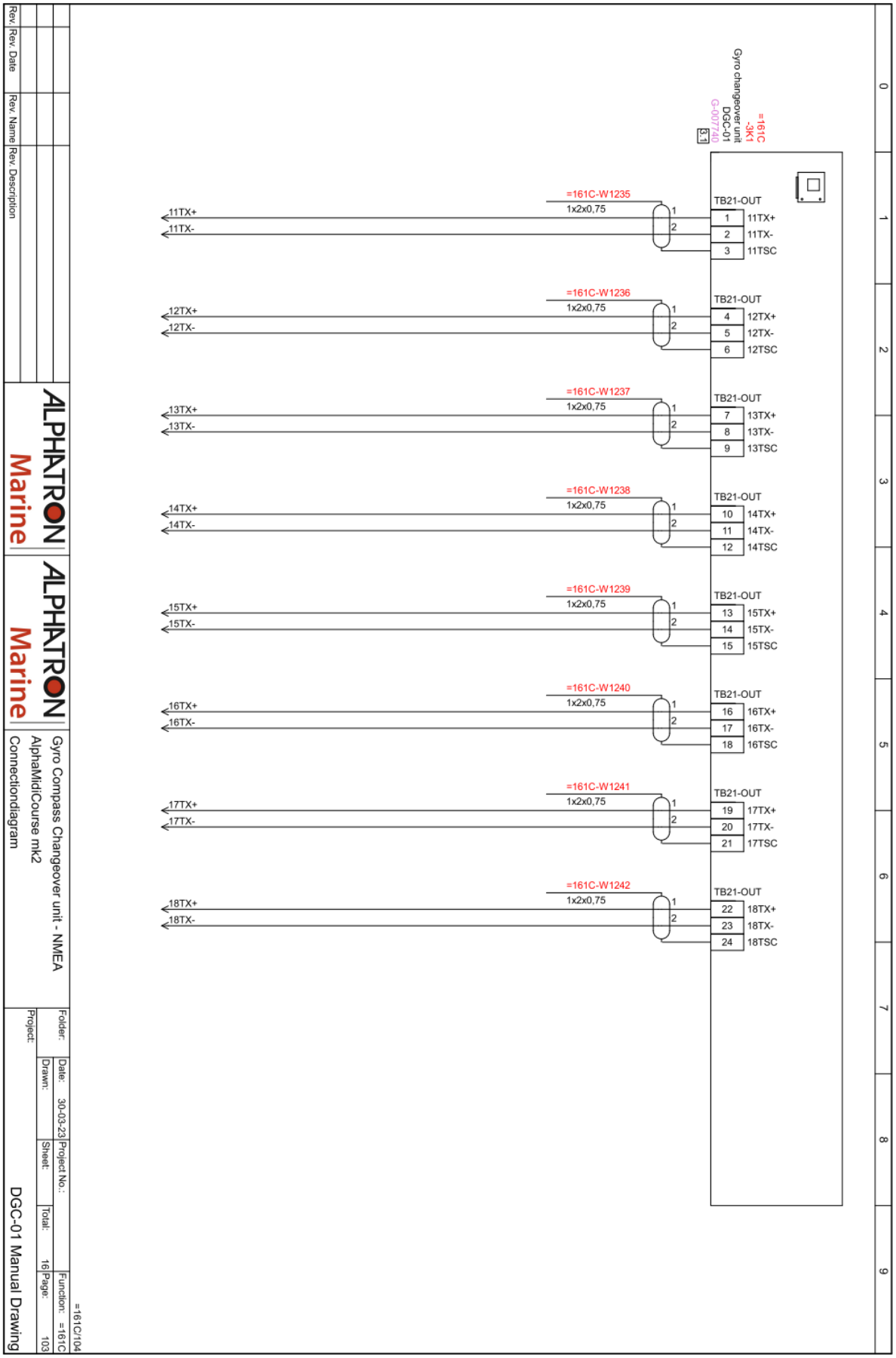
7.1.5 Connection Diagram Gyrocompass No.1 to DGC-01

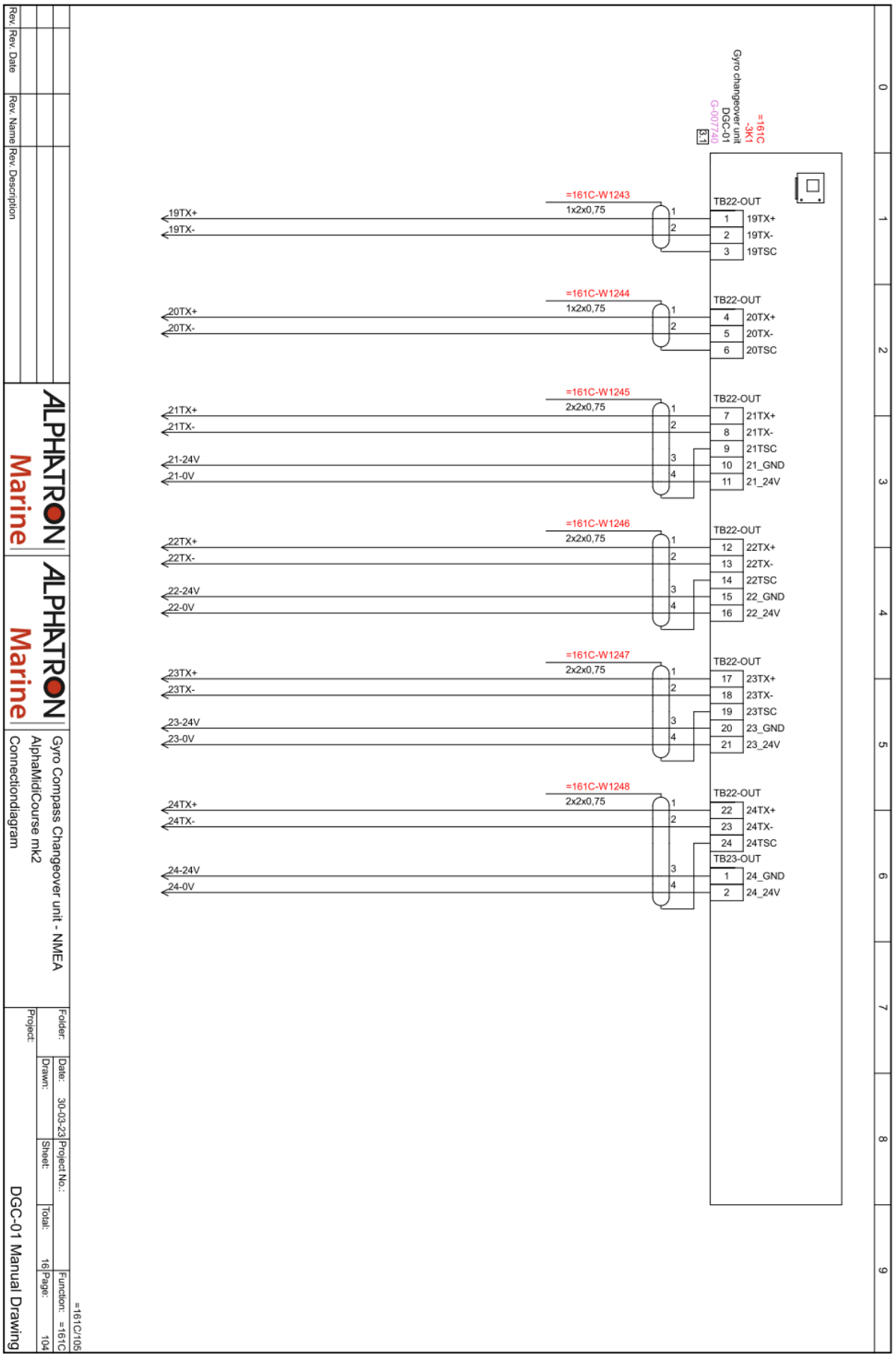


7.1.6 Connection Diagram Gyrocompass No.2 to DGC-01



7.1.7 Connection Diagram DGC-01 Inputs & Outputs




Gyro changeover unit
DGC-01
G-007740
=161C
-3K1
TB22-OUT
1 19TX+
2 19TX-
3 19TSC
=161C-W1243
1x2x0,75
19TX+
19TX-
TB22-OUT
4 20TX+
5 20TX-
6 20TSC
=161C-W1244
1x2x0,75
20TX+
20TX-
TB22-OUT
7 21TX+
8 21TX-
9 21TSC
10 21_GND
11 21_24V
=161C-W1245
2x2x0,75
21TX+
21TX-
21-24V
21-0V
TB22-OUT
12 22TX+
13 22TX-
14 22TSC
15 22_GND
16 22_24V
=161C-W1246
2x2x0,75
22TX+
22TX-
22-24V
22-0V
TB22-OUT
17 23TX+
18 23TX-
19 23TSC
20 23_GND
21 23_24V
=161C-W1247
2x2x0,75
23TX+
23TX-
23-24V
23-0V
TB22-OUT
22 24TX+
23 24TX-
24 24TSC
TB23-OUT
1 24_GND
2 24_24V
=161C-W1248
2x2x0,75
24TX+
24TX-
24-24V
24-0V
Rev. Rev. Date Rev. Name Rev. Description
ALPHATRON Marine
ALPHATRON Marine
Gyro Compass Changeover unit - NMEA
AlphaMidiCourse mk2
Connectiondiagram
Folder:
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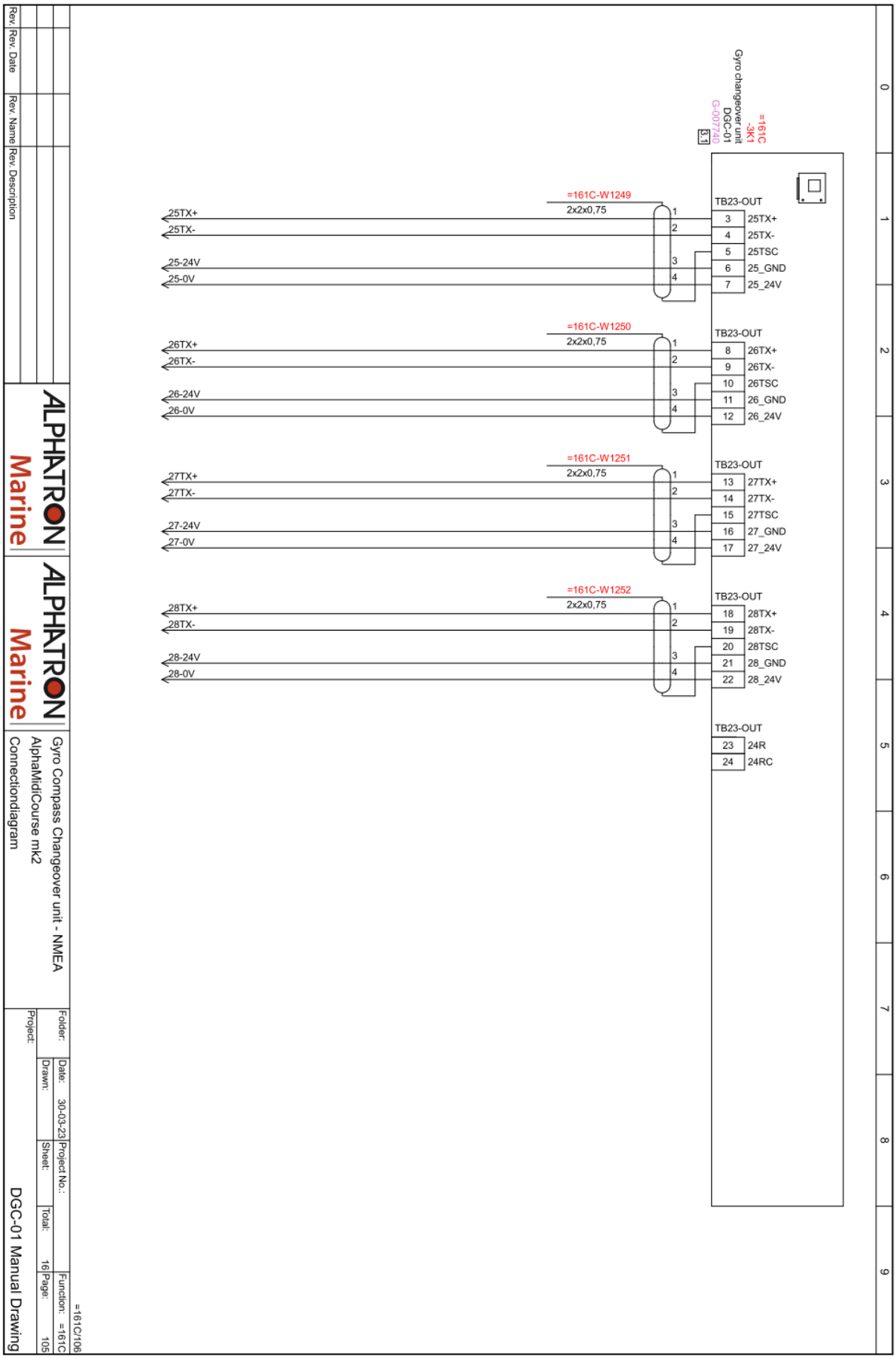
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Gyro changeover unit
DGC-01
G-007740
5.1
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2x2x0,75
25TX+
25TX-
25-24V
25-0V
TB23-OUT
3 25TX+
4 25TX-
5 25TSC
6 25_GND
7 25_24V
=161C-W1250
2x2x0,75
26TX+
26TX-
26-24V
26-0V
TB23-OUT
8 26TX+
9 26TX-
10 26TSC
11 26_GND
12 26_24V
=161C-W1251
2x2x0,75
27TX+
27TX-
27-24V
27-0V
TB23-OUT
13 27TX+
14 27TX-
15 27TSC
16 27_GND
17 27_24V
=161C-W1252
2x2x0,75
28TX+
28TX-
28-24V
28-0V
TB23-OUT
18 28TX+
19 28TX-
20 28TSC
21 28_GND
22 28_24V
TB23-OUT
23 24R
24 24RC
Rev. Rev. Date Rev. Name Rev. Description
ALPHATRON Marine
ALPHATRON Marine
Gyro Compass Changeover unit - NMEA
AlphaMidiCourse mk2
Connectiondiagram
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Drawn:
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Total:
Page: 105
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Project:
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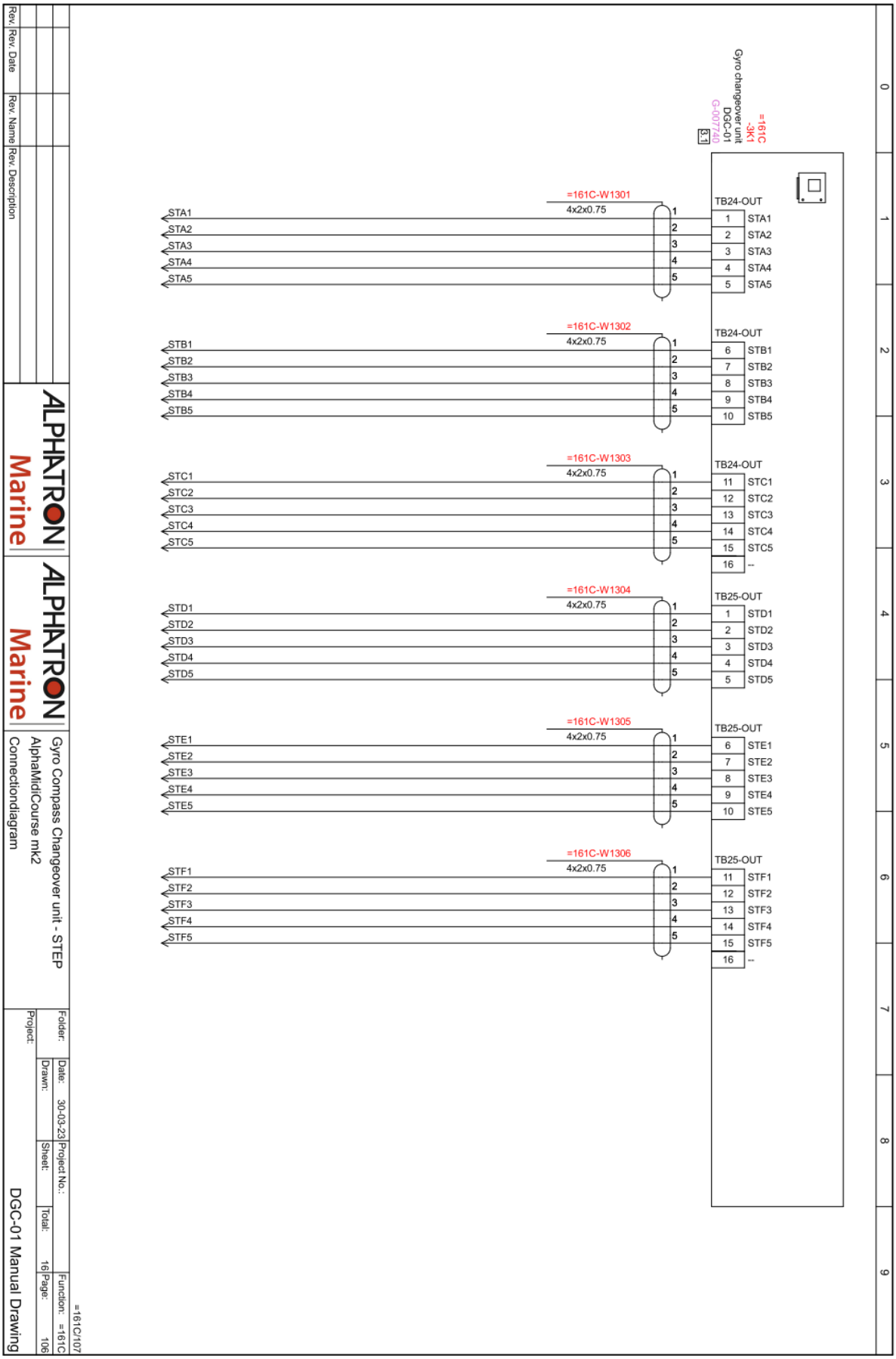
=161C
-3K1
Gyro changeover unit
DGC-01
G-007740
S1
=161C-W1301
4x2x0.75
STA1
STA2
STA3
STA4
STA5
TB24-OUT
=161C-W1302
4x2x0.75
STB1
STB2
STB3
STB4
STB5
TB24-OUT
=161C-W1303
4x2x0.75
STC1
STC2
STC3
STC4
STC5
TB24-OUT
=161C-W1304
4x2x0.75
STD1
STD2
STD3
STD4
STD5
TB25-OUT
=161C-W1305
4x2x0.75
STE1
STE2
STE3
STE4
STE5
TB25-OUT
=161C-W1306
4x2x0.75
STF1
STF2
STF3
STF4
STF5
TB25-OUT
Rev. Rev. Date Rev. Name Rev. Description
ALPHATRON Marine
Gyro Compass Changeover unit - STEP
AlphaMidiCourse mk2
Connectiondiagram
Folder:
Date: 30-03-23
Project No.:
Function: =161C
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DGC-01 Manual Drawing
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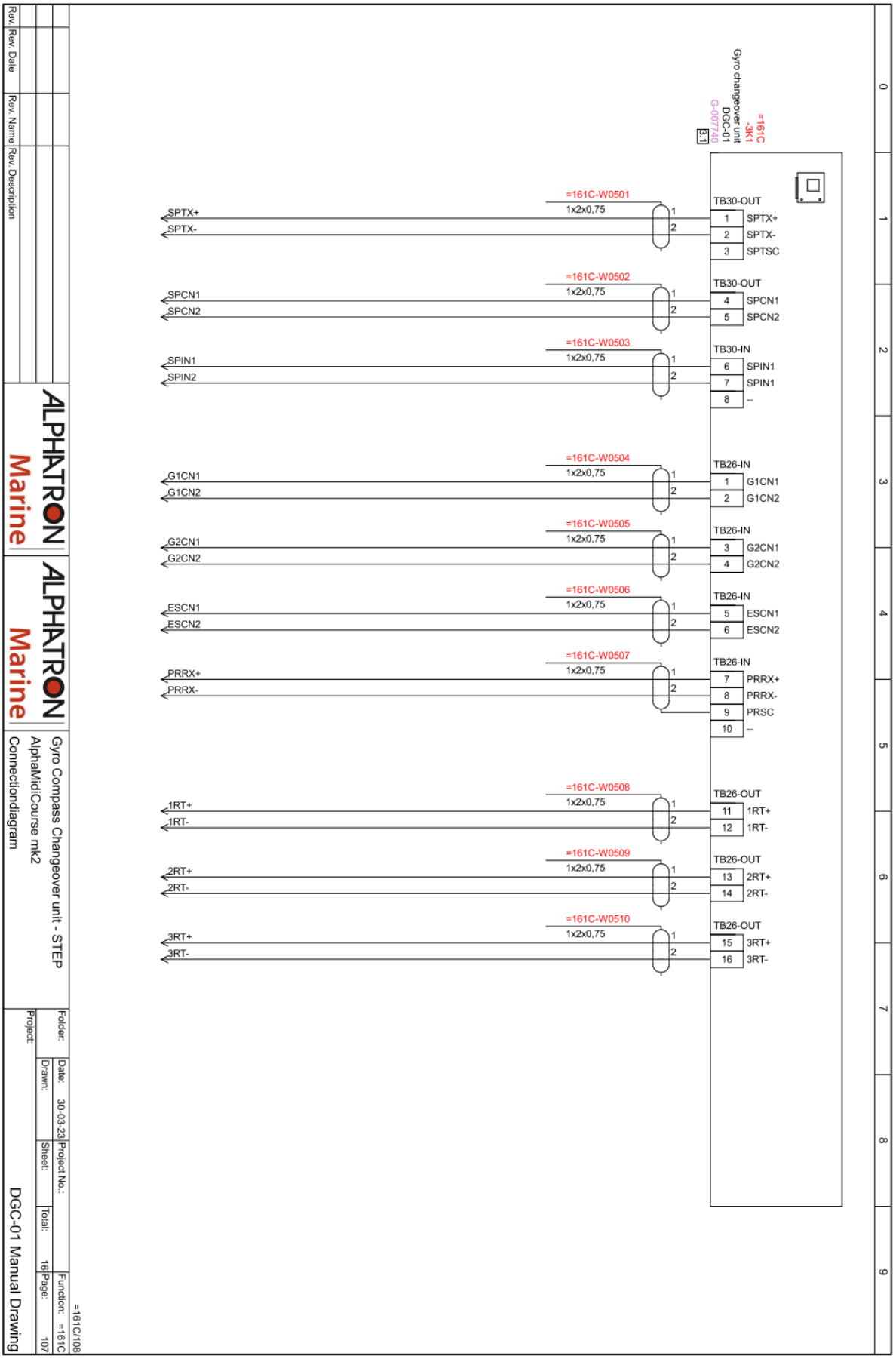
=161C
-3K1
Gyro changeover unit
DGC-01
G-007740
8.1
TB30-OUT
1 SPTX+
2 SPTX-
3 SPTSC
TB30-OUT
4 SPCN1
5 SPCN2
TB30-IN
6 SPIN1
7 SPIN1
8 --
TB26-IN
1 G1CN1
2 G1CN2
TB26-IN
3 G2CN1
4 G2CN2
TB26-IN
5 ESCN1
6 ESCN2
TB26-IN
7 PRRX+
8 PRRX-
9 PRSC
10 --
TB26-OUT
11 1RT+
12 1RT-
TB26-OUT
13 2RT+
14 2RT-
TB26-OUT
15 3RT+
16 3RT-
=161C-W0501
1x2x0,75
SPTX+
SPTX-
=161C-W0502
1x2x0,75
SPCN1
SPCN2
=161C-W0503
1x2x0,75
SPIN1
SPIN2
=161C-W0504
1x2x0,75
G1CN1
G1CN2
=161C-W0505
1x2x0,75
G2CN1
G2CN2
=161C-W0506
1x2x0,75
ESCN1
ESCN2
=161C-W0507
1x2x0,75
PRRX+
PRRX-
=161C-W0508
1x2x0,75
1RT+
1RT-
=161C-W0509
1x2x0,75
2RT+
2RT-
=161C-W0510
1x2x0,75
3RT+
3RT-
Rev. Date
Rev. Name
Rev. Description
ALPHATRON Marine
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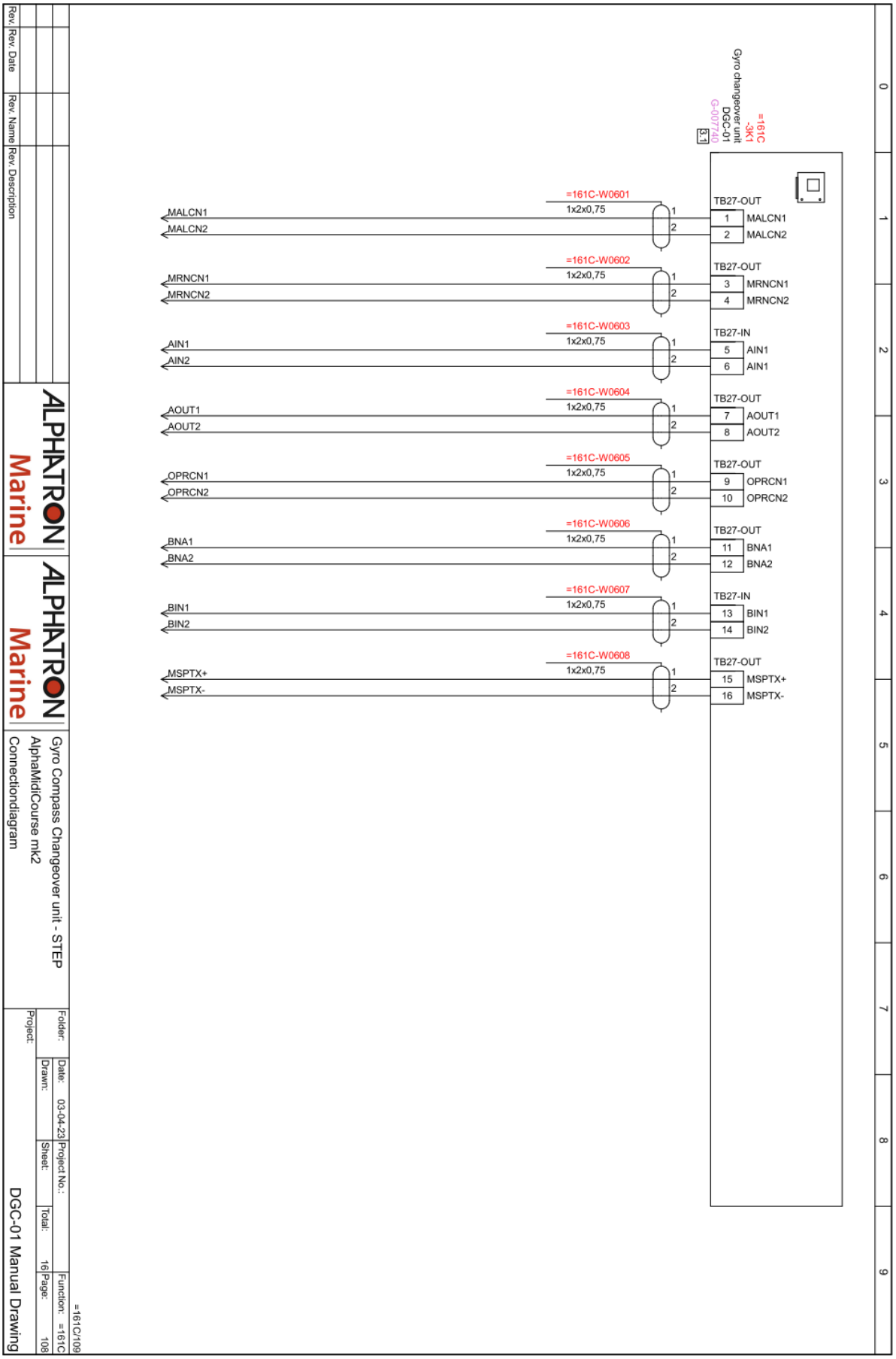
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-3K1
Gyro changeover unit
DGC-01
G-007740
3.1
TB27-OUT
1 MALCN1
2 MALCN2
TB27-OUT
3 MRNCN1
4 MRNCN2
TB27-IN
5 AIN1
6 AIN1
TB27-OUT
7 AOUT1
8 AOUT2
TB27-OUT
9 OPRCN1
10 OPRCN2
TB27-OUT
11 BNA1
12 BNA2
TB27-IN
13 BIN1
14 BIN2
TB27-OUT
15 MSPTX+
16 MSPTX-
=161C-W0601
1x2x0,75
MALCN1
MALCN2
=161C-W0602
1x2x0,75
MRNCN1
MRNCN2
=161C-W0603
1x2x0,75
AIN1
AIN2
=161C-W0604
1x2x0,75
AOUT1
AOUT2
=161C-W0605
1x2x0,75
OPRCN1
OPRCN2
=161C-W0606
1x2x0,75
BNA1
BNA2
=161C-W0607
1x2x0,75
BIN1
BIN2
=161C-W0608
1x2x0,75
MSPTX+
MSPTX-
Rev. Date
Rev. Name
Rev. Description
ALPHATRON Marine
ALPHATRON Marine
Gyro Compass Changeover unit - STEP
AlphaMidiCourse mk2
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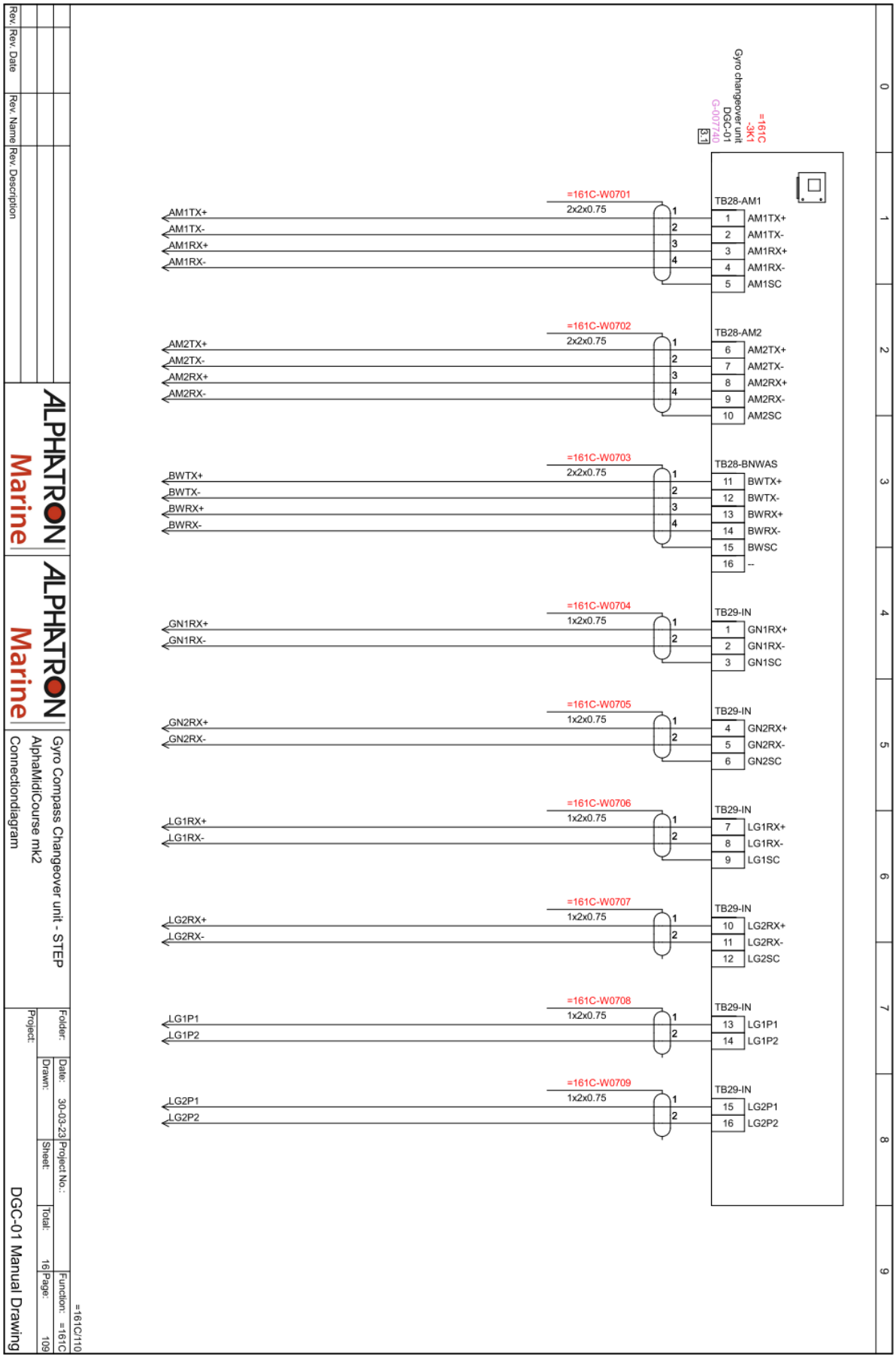
=161C
-3K1
Gyro changeover unit
DGC-01
G-007740
3.1
TB28-AM1
1 AM1TX+
2 AM1TX-
3 AM1RX+
4 AM1RX-
5 AM1SC
=161C-W0701
2x2x0.75
AM1TX+
AM1TX-
AM1RX+
AM1RX-
TB28-AM2
6 AM2TX+
7 AM2TX-
8 AM2RX+
9 AM2RX-
10 AM2SC
=161C-W0702
2x2x0.75
AM2TX+
AM2TX-
AM2RX+
AM2RX-
TB28-BNWAS
11 BWTX+
12 BWTX-
13 BWRX+
14 BWRX-
15 BWSC
16 --
=161C-W0703
2x2x0.75
BWTX+
BWTX-
BWRX+
BWRX-
TB29-IN
1 GN1RX+
2 GN1RX-
3 GN1SC
=161C-W0704
1x2x0.75
GN1RX+
GN1RX-
TB29-IN
4 GN2RX+
5 GN2RX-
6 GN2SC
=161C-W0705
1x2x0.75
GN2RX+
GN2RX-
TB29-IN
7 LG1RX+
8 LG1RX-
9 LG1SC
=161C-W0706
1x2x0.75
LG1RX+
LG1RX-
TB29-IN
10 LG2RX+
11 LG2RX-
12 LG2SC
=161C-W0707
1x2x0.75
LG2RX+
LG2RX-
TB29-IN
13 LG1P1
14 LG1P2
=161C-W0708
1x2x0.75
LG1P1
LG1P2
TB29-IN
15 LG2P1
16 LG2P2
=161C-W0709
1x2x0.75
LG2P1
LG2P2
Rev. Date
Rev. Name
Rev. Description
ALPHATRON Marine
Gyro Compass Changeover unit - STEP
AlphaMidiCourse mk2
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Folder:
Date: 30-03-23
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Total: 16
Page: 109
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Project:
DGC-01 Manual Drawing
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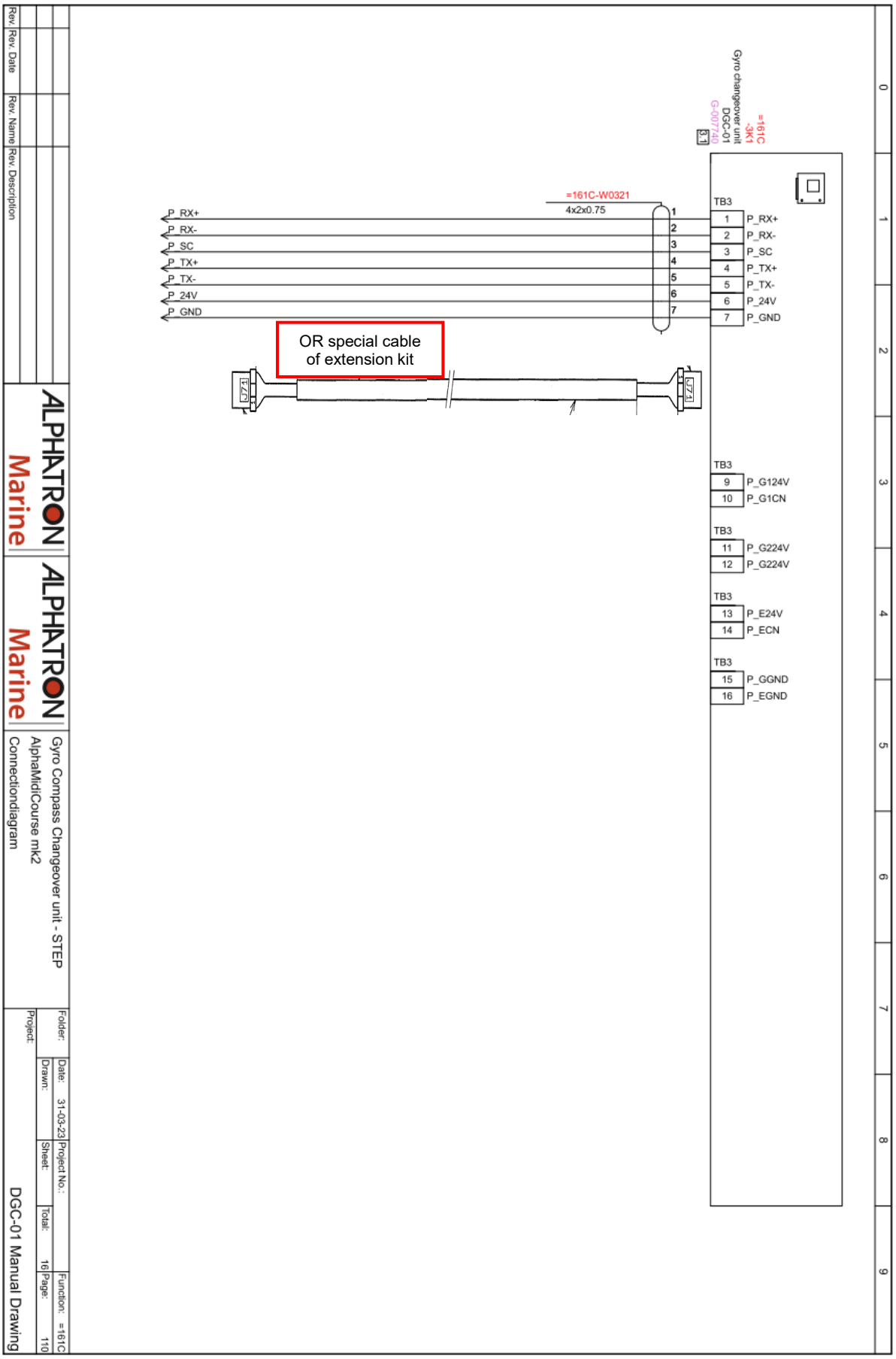
=161C
-3K1
Gyro changeover unit
DGC-01
G-00774
3.1
=161C-W0321
4x2x0.75
P_RX+
P_RX-
P_SC
P_TX+
P_TX-
P_24V
P_GND
OR special cable
of extension kit
J171
J171
TB3
1 P_RX+
2 P_RX-
3 P_SC
4 P_TX+
5 P_TX-
6 P_24V
7 P_GND
TB3
9 P_G124V
10 P_G1CN
TB3
11 P_G224V
12 P_G224V
TB3
13 P_E24V
14 P_ECN
TB3
15 P_GGND
16 P_EGND
Rev. Rev. Date Rev. Name Rev. Description
ALPHATRON Marine
ALPHATRON Marine
Gyro Compass Changeover unit - STEP
AlphaMidiCourse mk2
Connectiondiagram
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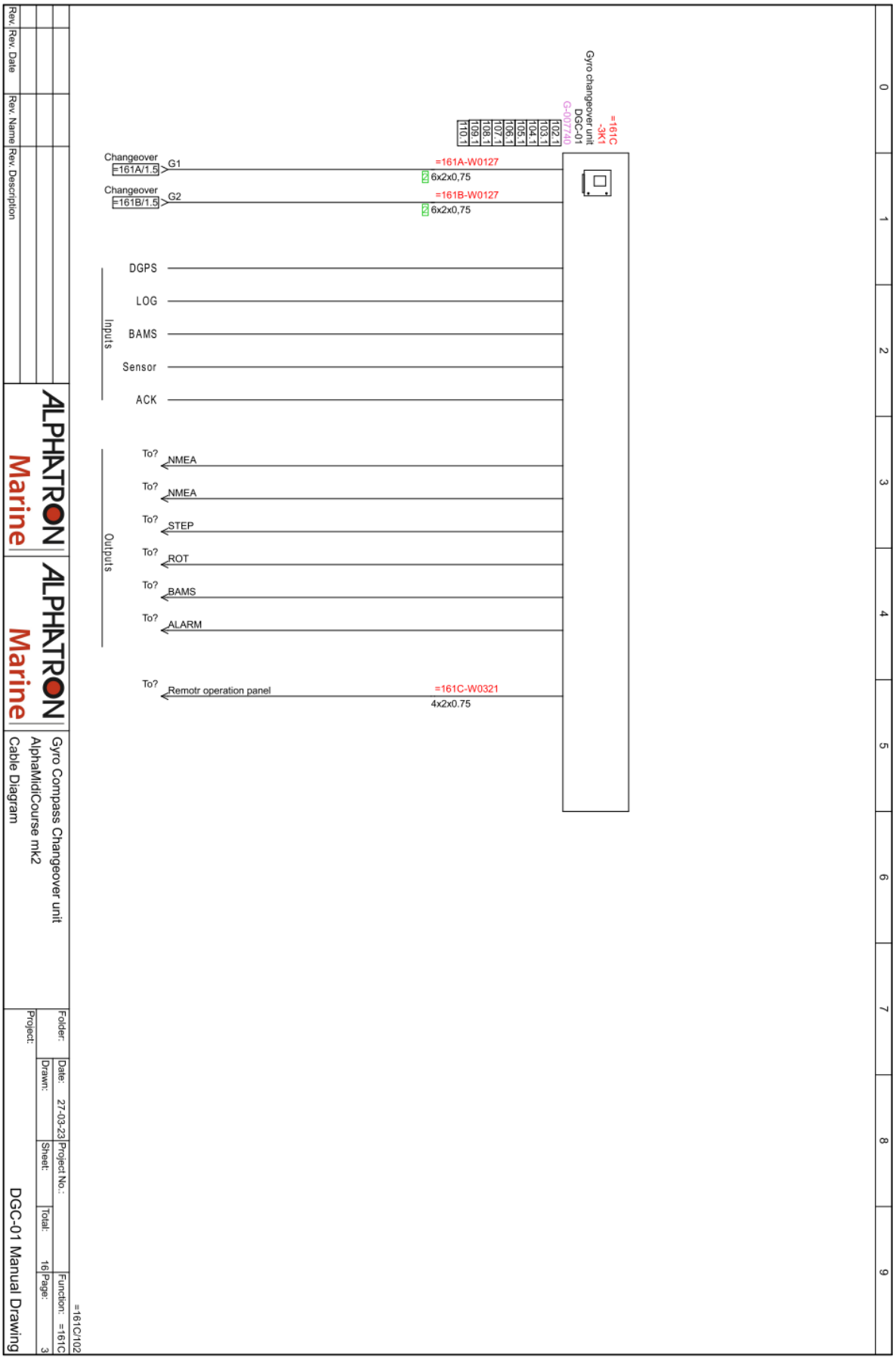
Function: =161C
Project:
DGC-01 Manual Drawing

7.1.8 Cable Diagram DGC-01



7.2 Periodical Check Tables

7.2.1 Periodical Table (Once a day)

Once a day: Periodical Check Table (including operation check).

Check marks ○ : Normal, △ : Normal after rework or repair	DGC-01 ALPHATRON Marine									
Date checked										
Inspector **Name & Function**										
Check items										
Confirm that the value of each repeater synchronizes with the displayed true heading on the operating panel.										
Confirm that the displayed latitude and speed are according to the vessel's actual latitude and speed. Refer to paragraph 2.3.4 *Data (Sensor) Submenu.*										
Measure error with observation if possible.										
Confirm that ship's power supply voltage is stable and within specifications.										
Confirm that all indicators and lamps are lit and it buzzes, when "lamp test" operate.										
tems to be dealt with, and items to be informed.										
REMARKS										

7.2.2 Periodical Table (Once a (halve) year)

Once a (halve) year: Periodical Check Table (including operation check).

Check marks ○ : Normal, △ : Normal after rework or repair	**AlphaMidiCourse Mk2** ALPHATRON Marine				
Date checked					
Inspector **Name & Function**					
Check items					
Confirm tightness of fixing screws in mechanical sections and connecting screws in the terminal board. (Re-tighten if loosened.)					
Confirm connecting and wire wearing conditions at connecting wire mounting points and wire bases					
Confirm operating conditions of switches, and displayed state of LEDs and indicators.					
Confirm that warning labels and other indication labels are not dirty or detached. ean if they become dirty.					
Items to be dealt with, and item to be informed.					
REMARKS					