

Autopilot Series

Model PT500



SAFE NAVIGATION

Yokogawa Denshikiki Co., Ltd.

Bulletin 80B20M07E
5th Edition

The model PT500 autopilot is designed for high

The model PT500 autopilot, which has superior operability and functionality compared to previous models, is suitable for a wide range of applications, from large tankers to small freighters and high speed boats. It is available in two versions, model PT500A and model PT500D, which differ in respect of the method of automatic steering. You can freely select a suitable model and configure the optimum system for the type of vessel concerned.

Features

High reliability due to separation of functions

The follow-up steering and non follow-up steering systems are completely independent of each other. Consequently, an abnormality in one system has no effect on the other system.

Also, the control systems of the automatic and hand steering units are independent of each other.

High operability which minimizes human error

The course setter has a dial (25 degrees/rotation), and the set course indicator uses a readily visible red LED. The function keys use easy-to-understand pictorial characters in order to minimize the possibility of a misoperation.

High system expandability due to the use of a separate unit for each function

A separate DIN standard unit is used for each function, making for excellent functional expandability and operability.

The automatic steering unit, steering repeater compass and other units are of compact design and occupy a volume of about 80% of that of previous units. They can thus be easily incorporated in a console or used to build up a system.



reliability and meets the needs of the times.

Functions

A wide variety of steering functions

By connecting the autopilot to an ECDIS or INS, for example, you can perform rate constant control of automatic steering, and also fixed radius course altering control when navigating through a narrow channel. You can also add an override function (option) to the autopilot for collision avoidance. This autopilot can thus cope with a wide range of navigation conditions.

Multi-heading input

There are two input circuits: one is for a gyro compass, the other is for a magnetic compass etc. By inputting a heading signal from a magnetic compass, for example, you can back up the automatic steering heading signal from the gyro compass. (Input signal: NMEA0183)

Input port generation function

You can freely generate a heading signal from a heading sensor, such as a gyro compass or magnetic compass, as well as a set course signal from a GPS or INS etc, according to the particular format.

Off-course alarm

You can generate an off-course alarm by simply inputting a magnetic heading with NMEA0183.

Digital remote controller (option)

A digital remote controller enables you to change the steering angle setting (P/S 35 degrees) and also the set course from an arbitrary location during automatic steering.

Example of incorporating the PT500A in a panel



Control Panel

PT500 A

AUTO STEERING UNIT ADAPTIVE TYPE PB343

Gyro compass select key

Pressing this key selects the gyro compass to determine the control heading during AUTO steering.

External compass select key

Pressing this key selects an external compass to determine the control heading during AUTO steering.

Pressing the key increases the heading.

Pressing the key decreases the heading.

Pressing the and keys together causes the numbers below the decimal point

Buzzer stop key

Course altering control mode select key

RATE: Turns the vessel at a constant rate during automatic course altering.

RADIUS: Turns the vessel at a constant radius during automatic course altering.

Vessel speed setting key

Selects auto or manual vessel speed, and also sets the manual vessel speed.

Steering angle limit setting key

Sets the rudder angle for controlling the steering angle during automatic steering. At the limit, displayed "RUDDER LIMIT" on the data display.

Off-course alarm setting key

Sets the deviation angle at which the off-course alarm is detected.

Key for setting various parameters

Sets the dimmer/contrast, pilot control and various hull parameters.

Data display

Indicates various control data and also the cause of an alarm.

By selecting the display screen, you can display the steering angle and rate of turn on a bar graph.

Set course display

This is an LED display which displays the set course during automatic steering.

Course setting dial

To set a course, press the dial, then rotate it while keeping it depressed.

Heading one-touch read key

Pressing this key causes the gyro heading to be read to the set course display.

Data UP key

Data DOWN key

Data finalizing key

Draft mode select key

FULL : Full load mode (60% to 100% of the designed full load draft)

MIDDLE : Medium load mode (55% to 60% of the designed full load draft)

BALLAST : Light load mode (up to 55% of the designed full load draft)

Operation mode select key

ECONOMY : Low energy steering used during an ocean voyage

PRECISION 1 : Medium steering used when yawing is excessively large

PRECISION 2 : Automatic steering which is used mainly to maintain the vessel on course in a narrow sea area



PT500D

AUTO STEERING UNIT PID TYPE PB344

Gyro compass select key

External compass select key

Set course display

Buzzer stop key

Proportional gain select key

Derivative gain select key

Rudder angle limit setting key

Off-course alarm setting key

Key for setting various parameters

Data display

Course setting dial

Weather adjustment setting key

Heading one-touch read key

Data UP key

Data DOWN key

Data setting key

Draft mode select key

Operation mode select key



CONTROL STAND UPPER PANEL

ANNUNCIATOR UNIT (PH614)

This unit monitors the operation of the autopilot.

- Operation indicator lamps
- Alarm indicator lamps
 - Power failure
 - Actuator failure
 - Auto steering unit failure
 - Emergency alarm
 - Caution alarm
 - Course deviation alarm
 - Off-course alarm

ADAPTIVE AUTO UNIT (PB343)

HAND STEERING UNIT (PB335)

Steering direction indicator lamp

◀ : Port ▶ : Starboard

Steering angle indicator

Steering handle

STEERING REPEATER COMPASS (MKR051)
Main card (1X)

Vernier card (36X)

PID AUTO UNIT (PB345)

Dimmer

SWITCH UNIT (PH721)

Auto unit select switch
ADAP : Adaptive type
PID : PID type

MODE switch (PH720)

NAVI : Route tracking steering
AUTO : Automatic steering
HAND : Hand steering
RC : Remote steering

SWITCH UNIT (PH718)

Non follow-up steering lever

Dimmer

SYSTEM switch

OFF : Operation stop
FU-1 : No.1 system operation
FU-2 : No.2 system operation
NFU : Non follow-up steering



PT500D (option)

AUTO STEERING UNIT
PID TYPE (upright type) PB345

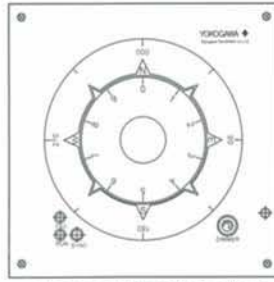
This is the PT500D PID type upright type unit. It has roughly the same functions as the horizontal type PID. When used in combination with the PB343 or the PB344 it permits full duplication of the automatic steering function. (In this case, the human-machine interface function, CPU, monitoring function and the power supply of the respective systems are independent of each other.)



CONTROL STAND

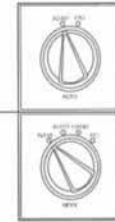
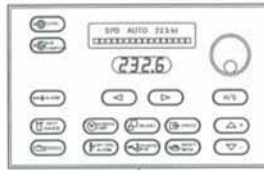
STEERING REPEATER COMPASS
MKR056

PID AUTO UNIT
PB345 (OPTION)



AUTO STEERING UNIT
PB343

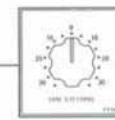
SWITCH UNIT
PH721/PH720



- GYRO/LOG
- ECDIS
- MAGNETIC COMPASS
- 24V DC SHIP'S PATTERY



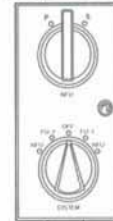
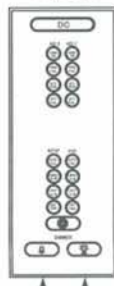
DIAL STEERING UNIT
PT161 (OPTION)



ANNUNCIATOR UNIT
PH614

HAND STEERING UNIT
PB335

SWITCH UNIT
PH718 (SYSTEM/NFU)



No.2 Potentiometer

No.1 Potentiometer

SHIP'S POWER SUPPLY
220/380/440 AC 50/60Hz 1 φ or 3 φ

No.2 CONTROL & POWER BOX

No.1 CONTROL & POWER BOX

SHIP'S POWER SUPPLY
220/380/440 AC 50/60Hz 1 φ or 3 φ

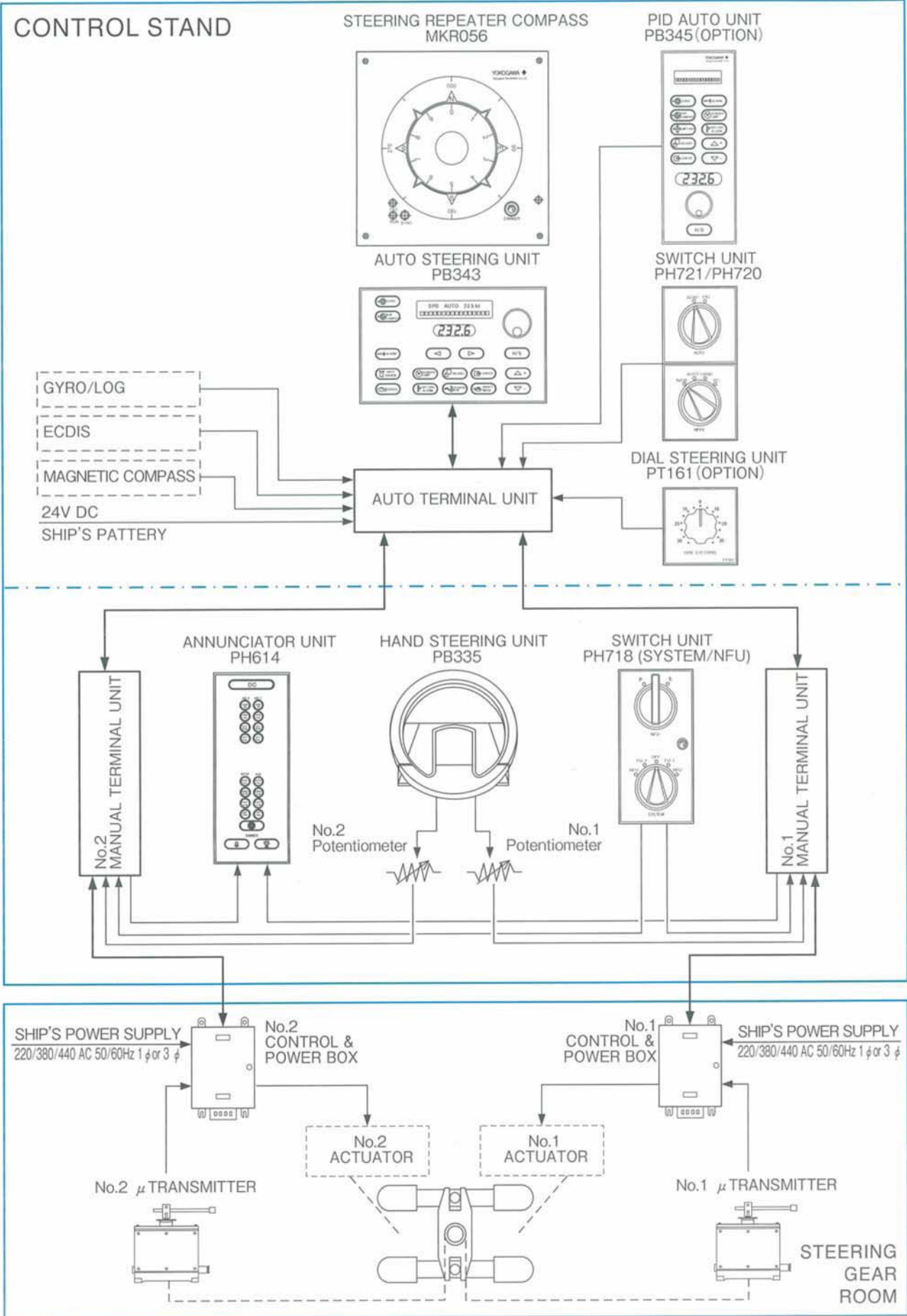
No.2 μ TRANSMITTER

No.2 ACTUATOR

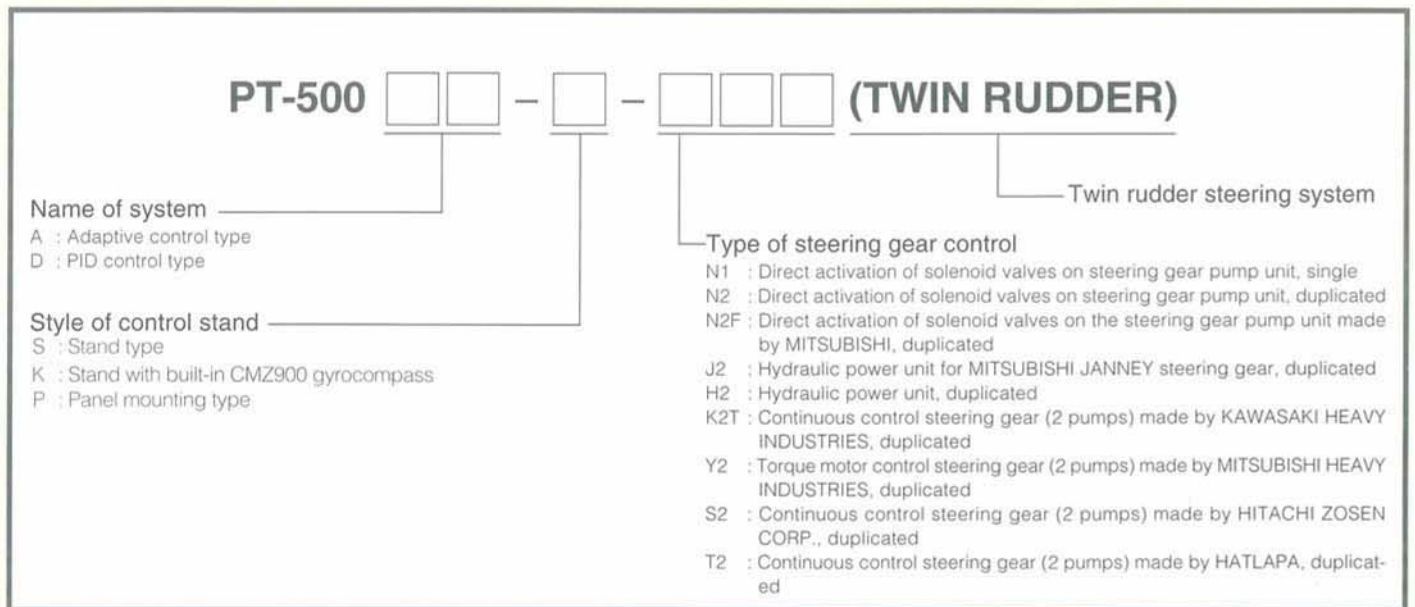
No.1 ACTUATOR

No.1 μ TRANSMITTER

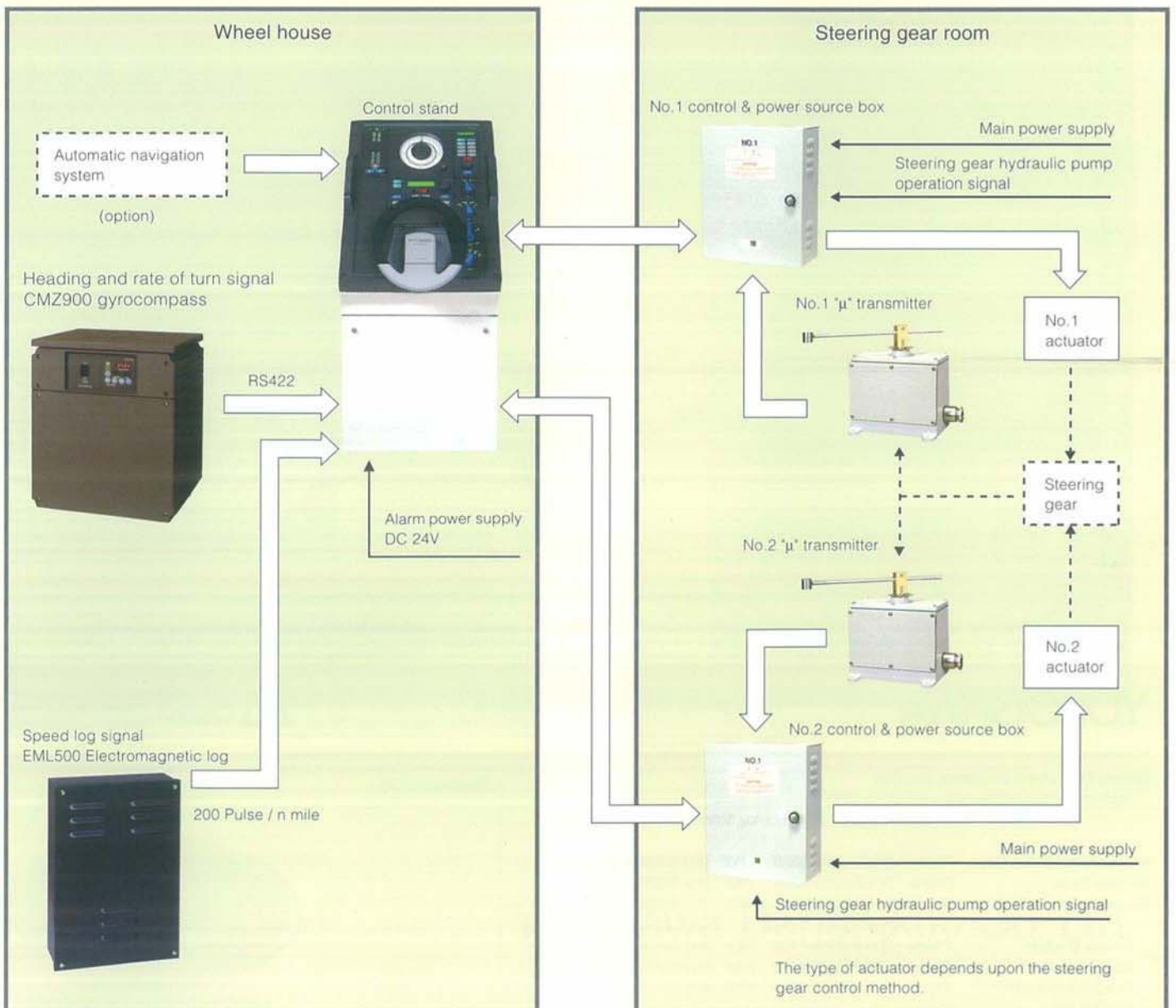
STEERING
GEAR
ROOM



System model numbers



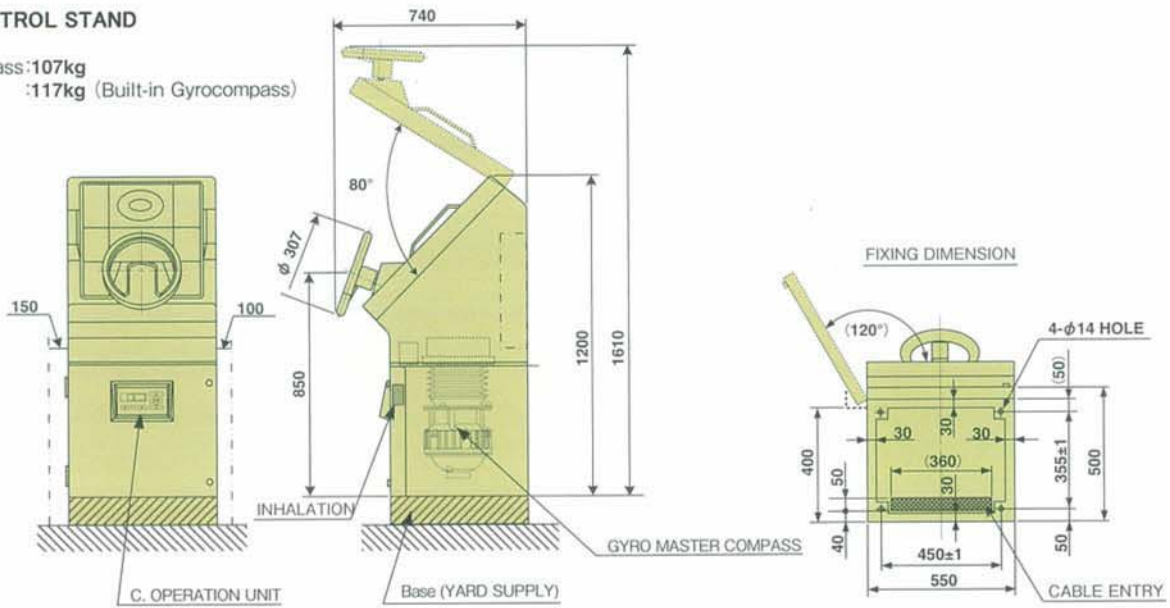
Basic system configuration



Dimensions

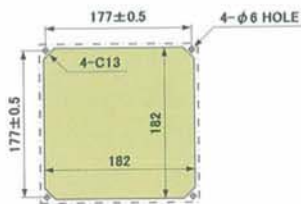
CONTROL STAND

Mass: 107kg
: 117kg (Built-in Gyrocompass)

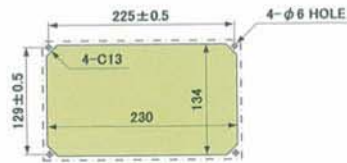


Panel cut drawing

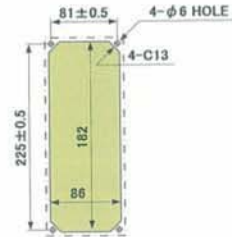
STEERING REPEATER COMPASS
MKR056



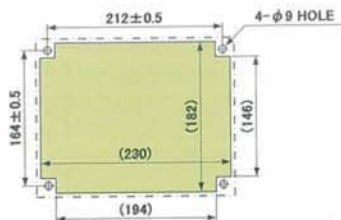
AUTO STEERING UNIT
PB343 & PB344



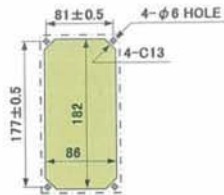
ANNUNCIATOR UNIT PH614
& PID AUTO UNIT PB345



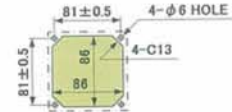
HAND STEERING UNIT
PB335



SWITCH UNIT
PH718



DIAL STEERING UNIT PT161
SWITCH UNIT PH720/PH721



Caution: Be sure to read the instruction manual before using the equipment.

YOKOGAWA ◆

Yokogawa Denshikiki Co., Ltd.

URL : <http://www.yokogawa.com/ydk/>



Caution: Please read the manual before using this product.

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