USER MANUAL

DIGITAL ANEMOMETER SYSTEM

AM-100

AM-100 UM.E 20240229-04

NOTICE TO USERS

- Thanks for your purchasing this product AM-100 digital anemometer system.

- Please read this manual carefully to ensure proper use before installation and operation of the AM-100.

- NSR will assume no responsibility for the damage caused by improper use or modification of the product or claims of loss of profit by a third party.

- NSR reserves the right on continuous improvement of products both in software and hardware without any prior notice.

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- Please keep the manual for your future reference.

MODIFY RECORD

No.	Modify by	Date	Paragraph	Version	Reason
1	Q/A	2010/07/09		01	First edition
2	Q/A	2016/03/04	2, 3, 5.1, 5.5	02	a. System diagram revised from DC24V to AC220V. b. Photos increased
3	Q/A	2022/11/02	all	03	General modification
4	Q/A	2024/02/29	3, Appendix	04	Some modification

TABLE OF CONTENTS

1. GENERAL

AM-100 digital anemometer system is specially designed for marine use. The transmitter installed on radar mast is made of special nylon to protect from strong wind and salty air at sea. With 72 LED indicators, both relative and true wind direction can be clearly displayed. For large vessels, up to four display units can be installed on bridge and other locations on board. For easy operation, a remote button can be installed at operator's to control the display unit.

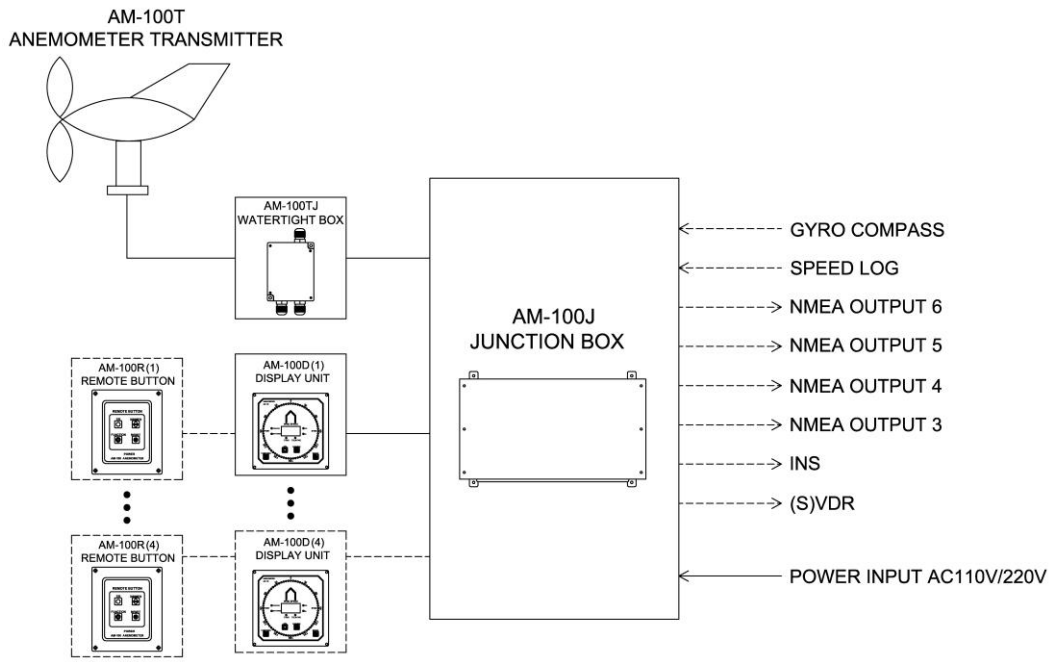
The digital anemometer can provide six ports of RS-422 wind data to various externals, including (S)VDR, INS, etc.

2. SYSTEM CONFIGURATION

The system consists of five main parts:

- **AM-100T** Anemometer Transmitter
- **AM-100D** Display Unit
- **AM-100R** Remote Button (Optional)
- **AM-100J** Junction Box
- **AM-100TJ** Watertight box for Transmitter

Normally one Display Unit is connected to Junction Box, but four ports are available for maximum 4 sets of Display Units to be connected, especially for some large vessels. Each Display Unit can be connected with one Remote Button for easy operation.



NOTE: ------ Optional or Yard Supplied

Fig 2.1 Block Diagram of Anemometer System

3. TECHNICAL SPECIFICATIONS

NO	ITEM	Wind Speed	Wind Direction
1	**Wind Range**	0～60 m/s	0～360°
2	**Accuracy**	±(0.5+V×5%) m/s	±5°
3	**Display Capacity**	Up to 4 Display Units can be connected	
4	**Input Interface** (see note)	**Heading data input (Compass):** NMEA0183, RS422, 4800bps **Speed data input (Speed Log):** NMEA0183, RS422, 4800bps	
5	**Output Interface**	**Port Number**: RS422 6 ports **Output Format**: NMEA0183 **Baud Rate**: 4800bps **Output Sentence**: $WIMWV,180.00,R,30.5,M,A*2D	
6	**Operating Environment**	Indoor 0～+40℃ Outdoor -30℃～+70℃	
7	**Power Supply**	AC110V/220V	
8	**Power Consumption**	Max 12W	
9	**Weight**	Transmitter (AM-100T) 3kg Display Unit (AM-100D) 0.2kg Remote Button (AM-100R) 0.1kg Junction Box (AM-100J) 2.7kg Watertight Box (AM-100TJ) 0.2kg	

NOTE: Input sentences are for calculating true wind.
One of the conditions below should be satisfied:
A. Compass HDT + Speed Log VBW
B. Compass HDT + GNSS RMC
C. GNSS RMC

4. OPERATION

4.1 Direction Indicators

There are totally 72 LED indicators. Each LED represents 5 degrees in wind direction. Among 72 LEDs, 12 LEDs are in **yellow**, representing 0, 30, 60, 90, 120, 150, 180 degree, and the right LEDs are in **green** and left LEDs are in **red**.
Depending the direction in which the wind comes from, all the LEDs in the sector from 0 degree to that direction will light on.

The brightness of the LEDs can be adjusted by pressing the 

button.

4.2 Digit Window

In the Digit Window, three digits can be displayed.
The displayed contents can be Heading degree or wind speed or ship speed. The change among three values is controlled by 

button.

The default value displayed is wind direction. If no button is pressed in 5 minutes, wind speed will be displayed no matter what the current status is.

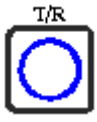
4.3 Control Buttons

There are four control buttons, which are described as below.

4 steps to adjust the brightness of all LED indicators:
Most Bright → Bright → Dark → Darker

Continuously press the button to select the following functions:

① **k/n** indicator on. Either wind speed or ship speed is displayed in k/n.
② **m/s** indicator on. Only wind speed can be displayed in m/s.
③ **HEADING** indicator on. Heading data is displayed in window.
④ **SHIP SPEED** indicator on. Ship speed is displayed in window.



Change between True wind and Relative wind. Both direction and speed will be changed accordingly.

Press “RESET” to reset the display unit or switch off it. When the display unit is switched off, LED on the button will light on.

5. INSTALLATION

5.1 Installation of Transmitter

The Transmitter should be installed in clear space to avoid any obstacle of wind.
There is an installation base and installation plate supplied together with the Transmitter. The steel base should be welded directly or through a support pole on the radar mast. There are five long holes on the round base. The center of one of five holes should be pointed to ship bow. Keep the base horizontal while welding. The installation plate is to protect the Transmitter base from cracking while fastened.

There are five round holes on the Transmitter base. Fix the transmitter on the mount base with five M10X45 bolts. The long-holes on mount base are used to for the transmitter to adjust until the “N” mark on Transmitter base points to bow direction.

The transmitter should be grounded through the small junction box with a grounding cable.

5.2 Installation of Display Unit

The Display Unit is flush mount-type. Make a cutting area as attached drawing. Usually the Display Unit can be installed on bridge console or up the bridge.

5.3 Installation of Remote Button

Same as the Display Unit, the Remote Button is also flush mount-type. Make a cutting area as attached drawing.
Remote Button is optional part. When the Display Unit is installed up the bridge, in which case, panel operation is impossible, a Remote Button is necessary to operate the Display Unit.

5.4 Installation of Junction Box

Junction Box can be mounted on table or wall. Enough space should be kept for cabling.

5.5 Cable Connection between Units

- **Connect Transmitter to Junction Box**

A watertight box is used to connect Transmitter and Junction Box.

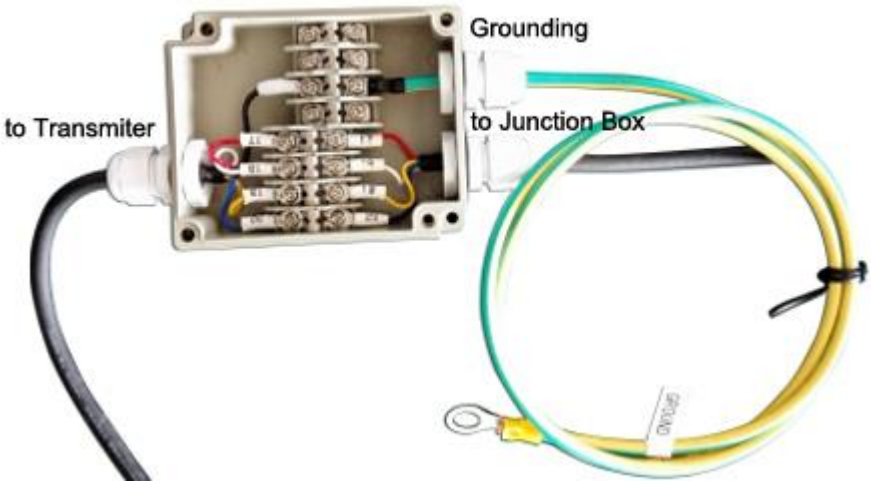


Fig 5.1 Connection between Transmitter and Junction Box

Rubber cable is recommended for outdoor environments. After cable connecting, it is suggested to use rubber tape to wrap the cable gland for water-tight treatment.

- **Connect Display Units to Junction Box**

A 4-wire cable is supplied in length of 10m for connection between AM-100D Display Unit and AM-100J Junction Box. Interface between the units is also RS422.
Max four Display Units can also be connected to Junction Box. Each Display Unit can operate independently.

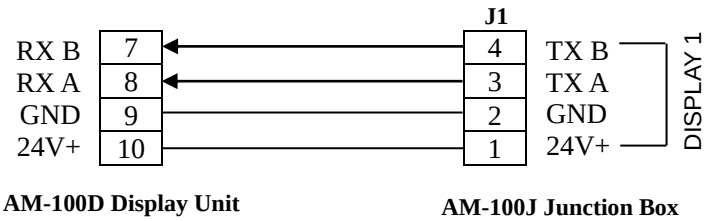


Fig 5.2 Connection between Display Unit and Junction Box

- **Connect Remote Button to Display Unit**

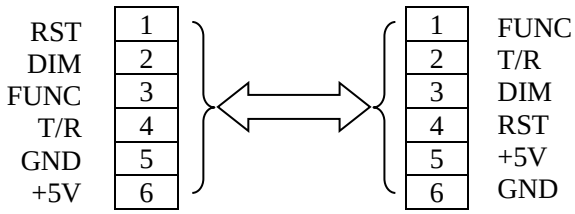


Fig 5.3 Connection between Remote Button and Display Unit

A 6-wire cable is supplied in length of 10m for connection between AM-100D and AM-100R. The AM-100R Remote Button is an optional part of the system. All the panel operating function can be realized through AM-100R Remote Button.

- **Connect with Compass and Speed Logger**

Heading data and Ship Speed data should be input into AM-100J Junction Box in order to calculate the true wind's speed and direction. Refer to manuals of Speed Logger and Compass for connections. The input data should be in NMEA0183 format/RS422, at baud rate of 4800bps.

- **Connect with (S)VDR and other externals**

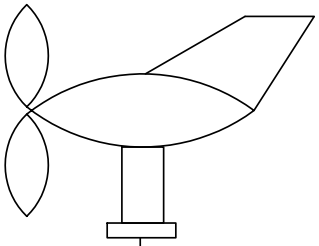
Totally there are six output ports of wind data. The data format is NMEA0183 at baud rate of 4800bps. The data sentence is as follows:
$WIMWV,180.00,R,30.5,M,A*2D

APPENDIX INSTALLATION DRAWINGS

Drawing No.	Description
AM100-ID-001	AM-100 ANEMOMETER SYSTEM DIAGRAM
AM100-ID-002	AM-100 ANEMOMETER SYSTEM WIRING DIAGRAM
AM100-ID-003	AM-100T ANEMOMETER TRANSMITTER SIZE DRAWING
AM100-ID-004	AM-100TJ WATERTIGHT BOX SIZE DRAWING
AM100-ID-005	AM-100J JUNCTION BOX SIZE DRAWING
AM100-ID-006	AM-100D DISPLAY UNIT SIZE DRAWING
AM100-ID-007	AM-100R REMOTE BUTTON SIZE DRAWING

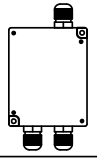
NO.	DATE	REVISION & DESCRIPTION	REVIEWED SIGNATURE	CHECKED
1				

AM-100T
ANEMOMETER TRANSMITTER



4x0.75

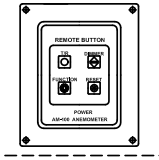
AM-100TJ
WATERTIGHT BOX



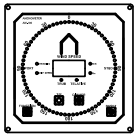
4x0.75

AM-100J
JUNCTION BOX

AM-100R(1)
REMOTE BUTTON

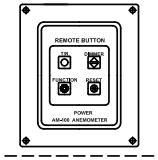


AM-100D(1)
DISPLAY UNIT

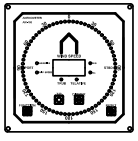


4x0.4

AM-100R(4)
REMOTE BUTTON



AM-100D(4)
DISPLAY UNIT



4x0.4

2x0.4 ← GYRO COMPASS

2x0.4 ← SPEED LOG

2x0.4 → NMEA OUTPUT 6

2x0.4 → NMEA OUTPUT 5

2x0.4 → NMEA OUTPUT 4

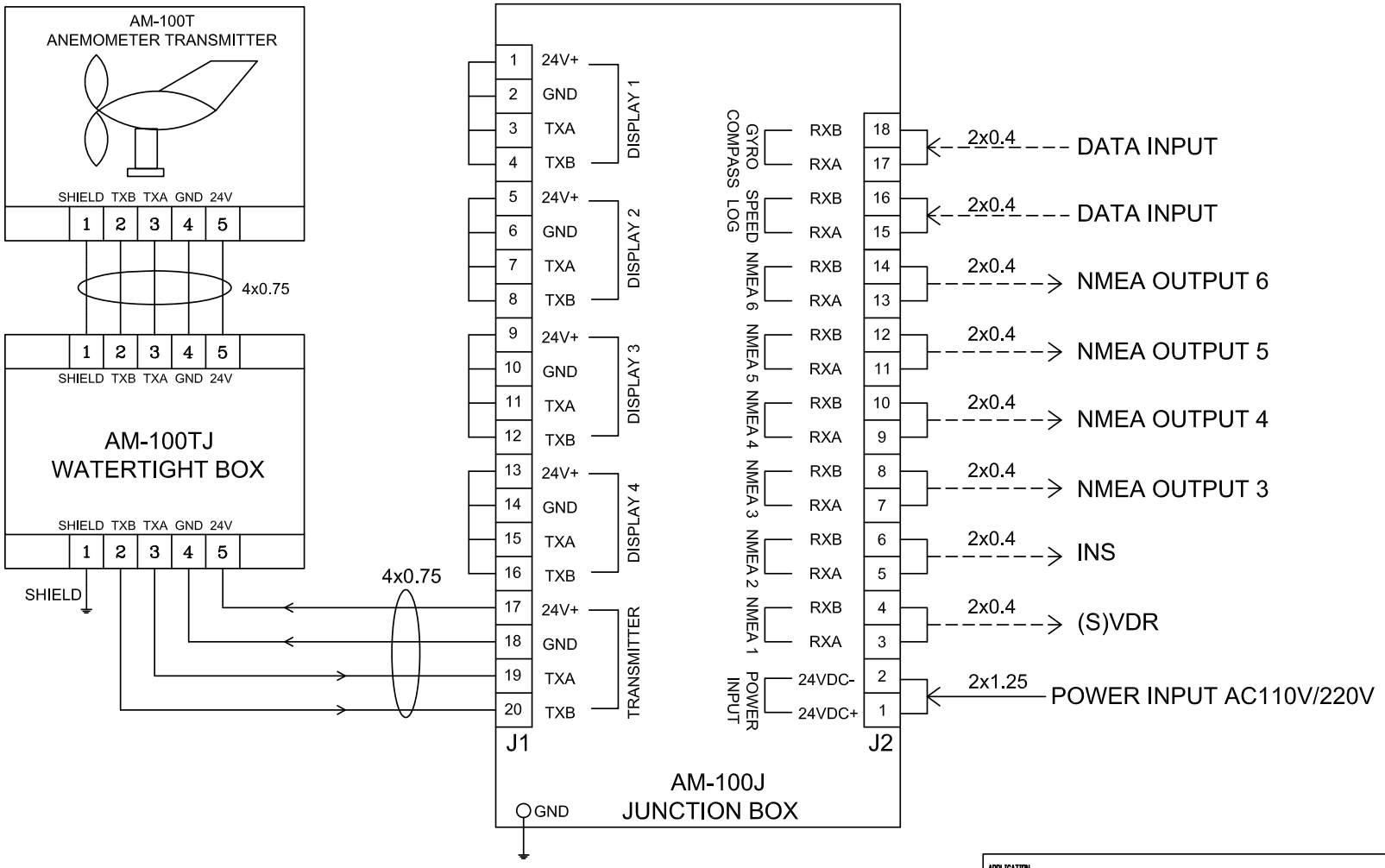
2x0.4 → NMEA OUTPUT 3

2x0.4 → INS

2x0.4 → (S)VDR

2x1.25 ← POWER INPUT AC110V/220V

APPLICATION	AM-100 ANEMOMETER SYSTEM DIAGRAM		
DATE		ITEM	SIZE A4
APPROVAL		SCALE N/S UNIT	
CHECKED			
DRAWING		NSR marine	NEW SUNRISE CO., LTD.
DWG NO.	AM100-ID-001		



YARD SUPPLIED

NO.	DATE	REVISION & DESCRIPTION	REVIEWED / CHECKED SIGNATURE
1			

APPLICATION	AM-100 ANEMOMETER SYSTEM WIRING DIAGRAM
DATE	
APPROVAL	
CHECKED	
DRAWING	
DWG NO.	AM100-ID-002
ITEM	
SCALE	N/S
UNIT	
SIZE	A4

NSR marine NEW SUNRISE CO., LTD.

NO.	DATE	REVISION & DESCRIPTION	REVIEWED SIGNATURE	CHECKED
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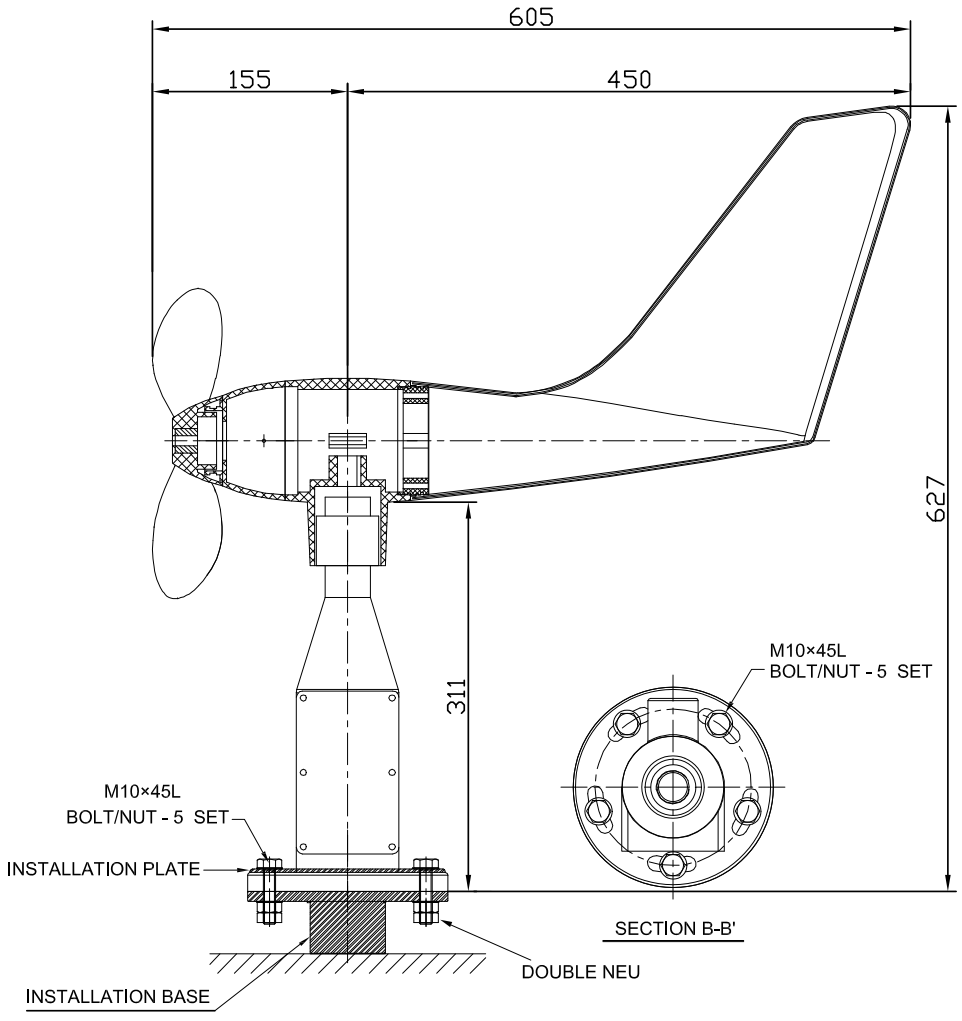
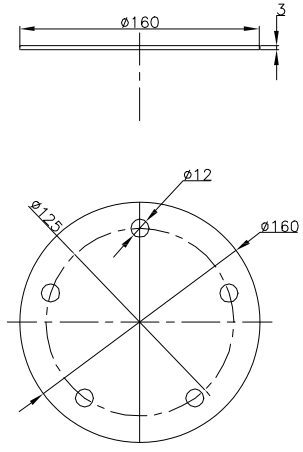


INSTRUCTIONS

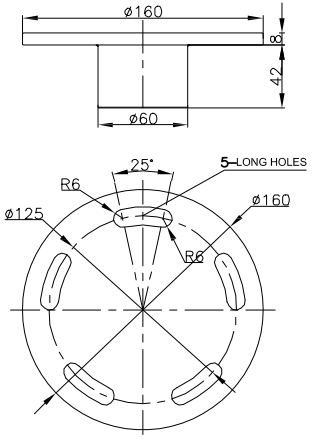
1. The plate is installed upon the transmitter base to be protected from cracking when hardly fastened.
2. Two half-circle plates make one complete circle.
3. Material: Steel A3,Zn coating.



INSTALLATION PLATE

INSTRUCTIONS

1. The Base is fixed on mast directly or with a support pole by welding.
2. The center of one of five long holes points to bow while the base is fixed.
3. While welding,the base should be kept horizontally.
4. Material: Steel A3,Zn coating.



INSTALLATION BASE

Materials:

1.Wing part : PC
2.Lower part : Nylon with 30% glass
3.Installation plate/base : Steel A3,Zn coating

APPLICATION	AM-100T ANEMOMETER TRANSMITTER SIZE DRAWING		
DATE		ITEM	SIZE A4
APPROVAL		SCALE N/S UNIT	
CHECKED			
DRAWING		NSR marine	NEW SUNRISE CO., LTD.
DWG NO.	AM100-ID-003		

NO.	DATE	REVISION & DESCRIPTION	REVIEWED / CHECKED SIGNATURE
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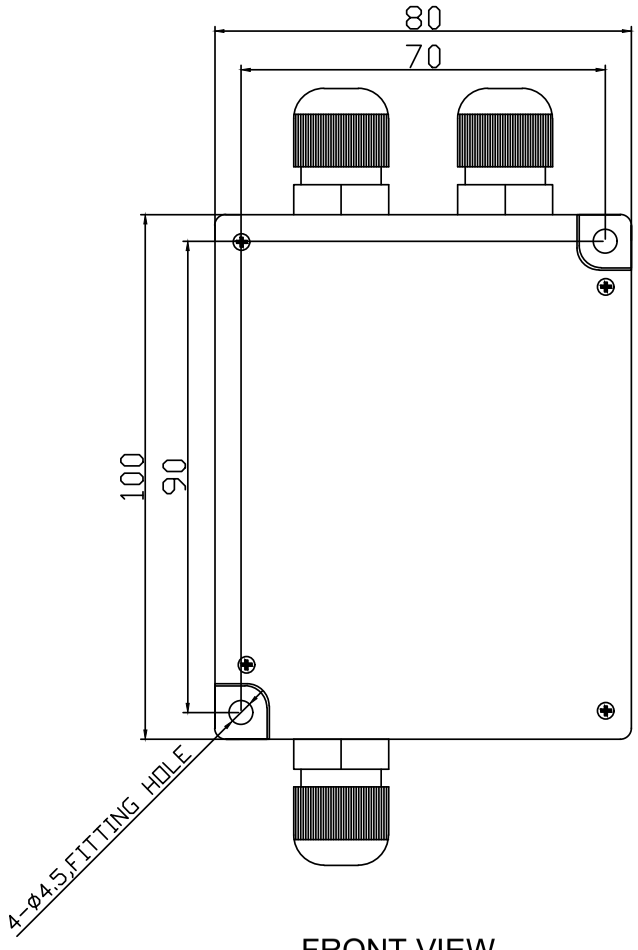
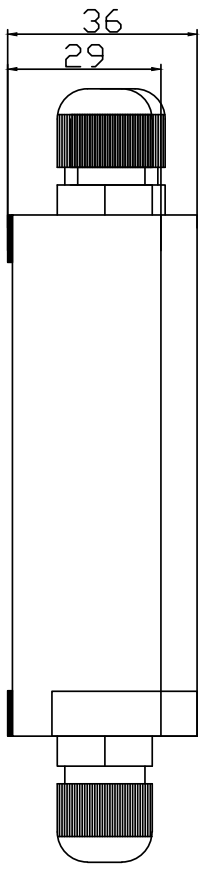


FRONT VIEW



SIDE VIEW

APPLICATION	AM-100TJ WATERTIGHT BOX SIZE DRAWING		
DATE		ITEM	SIZE A4
APPROVAL		SCALE N/S UNIT mm	
CHECKED			
DRAWING		NSR marine	NEW SUNRISE CO., LTD.
DWG. NO.			

NO.	DATE	REVISION & DESCRIPTION	REVIEWED / SIGNATURE	CHECKED
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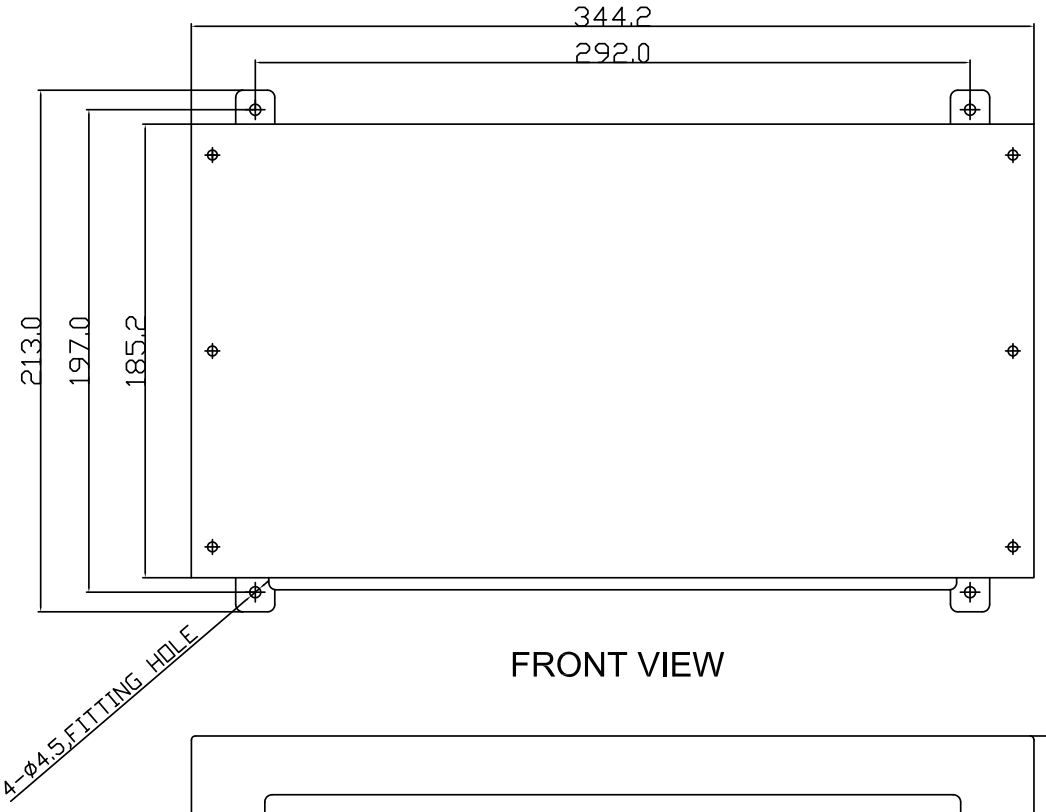
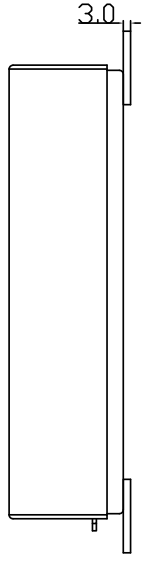


FRONT VIEW



SIDE VIEW

BOTTOM VIEW

APPLICATION	AM-100J JUNCTION BOX SIZE DRAWING		
DATE		ITEM	SIZE A4
APPROVAL		SCALE N/S UNIT	
CHECKED			
DRAWING		NSR marine	NEW SUNRISE CO., LTD.
DWG NO.	AM100-ID-005		

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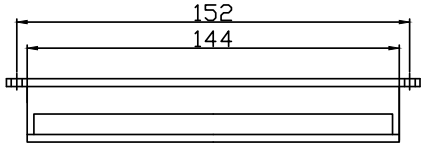
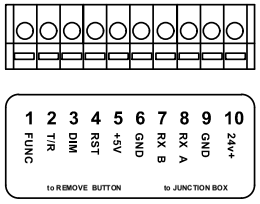
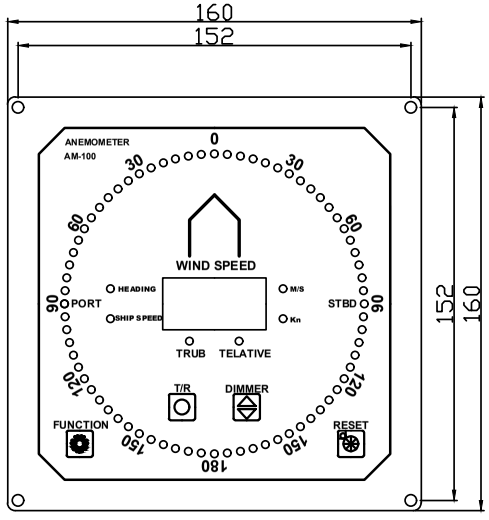
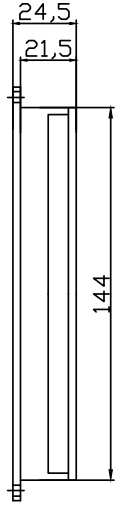


TOP VIEW

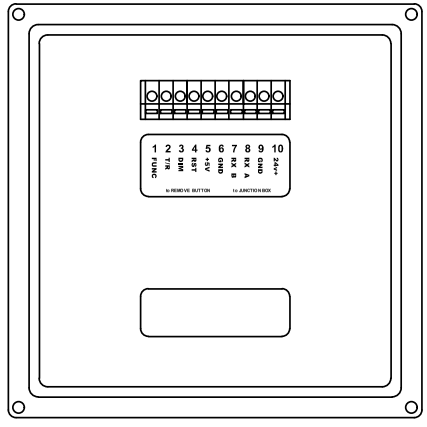




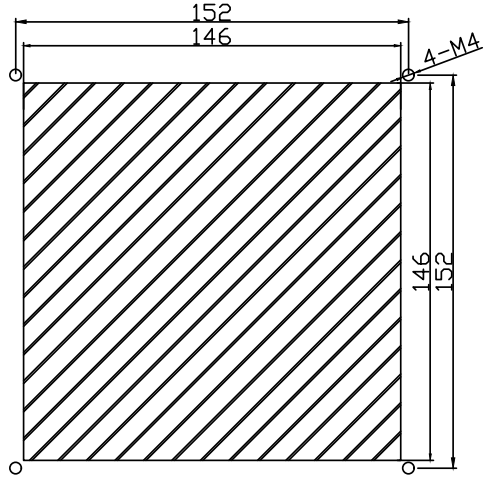
FRONT VIEW



SIDE VIEW



REAR VIEW



YARD AREA CUTTING SIZE

APPLICATION	AM-100D DISPLAY UNIT SIZE DRAWING		
DATE		ITEM	SIZE A4
APPROVAL		SCALE N/S UNIT mm	
CHECKED			
DRAWING		NSR marine	NEW SUNRISE CO., LTD.
DWG. NO.	AM100-ID-006		

NO.	DATE	REVISION & DESCRIPTION	REVIEWED / CHECKED SIGNATURE
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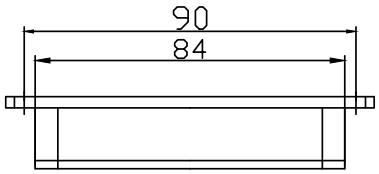
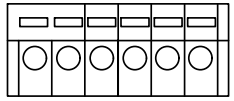
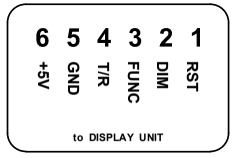
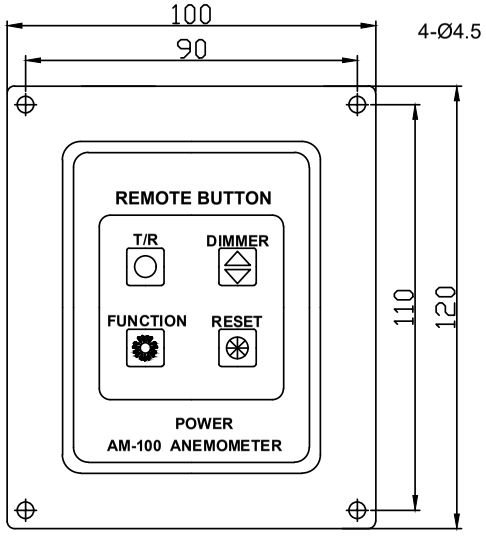


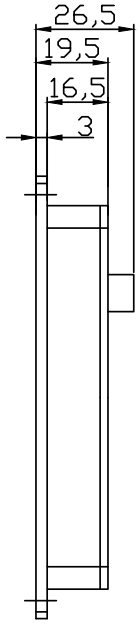
TOP VIEW



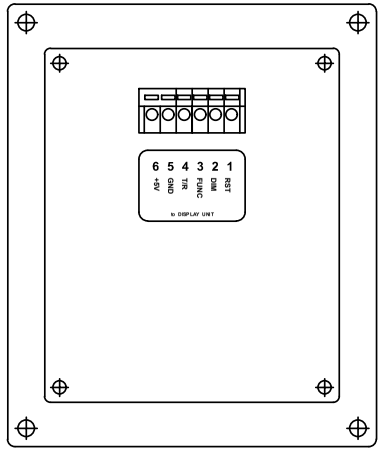




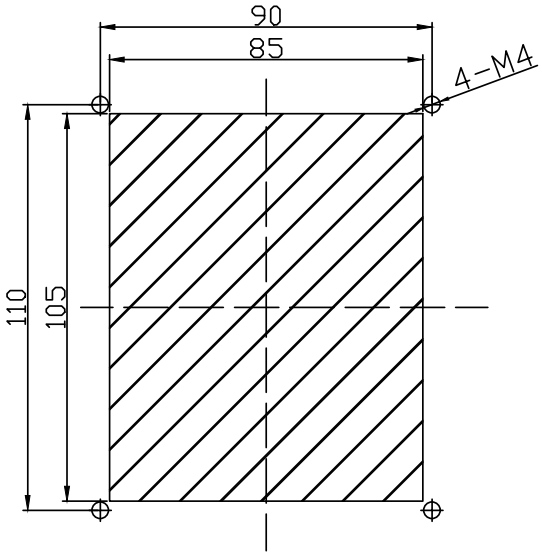
FRONT VIEW



SIDE VIEW



REAR VIEW



YARD AREA CUTTING SIZE

APPLICATION	AM-100R REMOTE BUTTON SIZE DRAWING		
DATE		ITEM	SIZE A4
APPROVAL		SCALE N/S UNIT	
CHECKED			
DRAWING		NEW SUNRISE CO., LTD.	
DWG. NO.	AM100-ID-007		

www.nsrmarine.com

info@nsrmarine.com

February, 2024