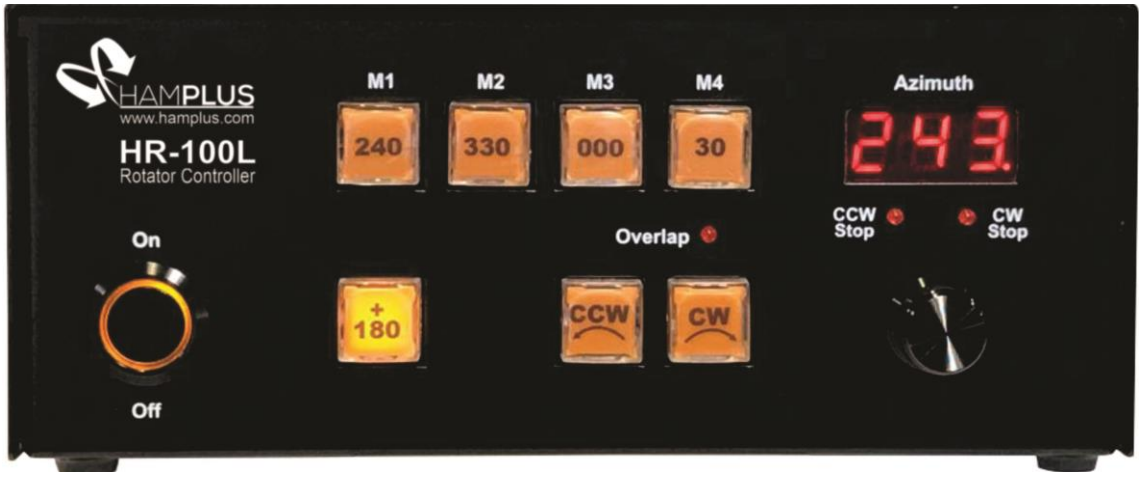
HR-100L

Rotator Controller

Operation Manual



V.1.0

https://www.hamplus.com

HR-100L
Rotator Controller

The **HR-100L** was developed to control all models of rotators with **DC** motor and position indicator with potentiometer. It has four memories, a three-digit display indicating the azimuth, an encoder to select the azimuth, two buttons for **CW** and **CCW** advance, a Button for **long path** (+180), two **LED**s to indicate the end of the rotator stroke and one **LED** to indicate the overlap.
It also has an **RS-232 Serial** port for remote control with the **Yaesu** protocol for rotators.

Initial settings:
The **HR-100L** leaves the factory calibrated for **Yaesu** rotators.
The calibration aims to synchronize the **rotator position** with the **display indication**.

1- Rotator Calibration Procedure

Calibration is a simple task that, to make it easier, should be done before placing the rotator on the tower. Before starting the calibration, connect all the cables between the parts involved. Also connect it to the power source.

a- **First step**- *Enter calibration mode:* Turn on the **HR-100L** with the **Encoder** button pressed. Wait with the Encoder pressed until the **Display shows C A L**, then release the Encoder. At this point, the Memory buttons will flash in sequence and the Rotator will start to rotate counterclockwise and will only stop when it reaches the beginning of its stroke.

b- **Second step**- *Position the Rotor at the end of its stroke:* Now you must create a reference point for this rotor position, with the greatest possible precision, then you will rotate the Rotator clockwise (**CW**) in a complete turn (360 degrees) using the **CW** and **CCW** buttons until you reach exactly the point where the Rotator started to rotate. This is the end point of the Rotator's stroke.

c- **Third step**- *Finish the calibration:* After marking the end of the stroke, momentarily press the Encoder. The display will no longer show **C A L** and will show the rotator position (**0 0 0**) and the rotor will start to rotate to the **North** position (**0 0 0**). The rotator calibration is complete and positioned at the center of the course.

d- **Fourth step**- *Install the rotor on the tower:* Now that the rotor is calibrated, you can place it on the tower.

2- Antenna alignment

After calibration, you can place the rotator on the tower and position the antenna.

Suggestion for positioning the antenna in the **North Course Center** option:
Adjust the rotator position to **North**, **0 0 0** degrees on the display. Then direct the **Antenna to the North** and attach it to the Rotator. Do not forget to take into account the magnetic declination of the location, as you must align the antenna to true North. This way, the display will always indicate the correct direction of the antenna.

3- Rotator rotation limit

In some installations, such as on the side of the tower, the antenna cannot rotate 360 degrees because it encounters obstacles. For these cases, the **HR-100L** rotator control has a stroke limit function.

To set the counterclockwise (CCW) limit

a- **First step**- *Turn the rotator and position the antenna at the desired counterclockwise (**CCW**) rotation limit*. Do not let the antenna touch the obstacle, leave a small gap.

b- **Second step-** *Save the chosen limit point*. After executing the first step, press the **+180** button for ten seconds. At this point, the **M1**, M2, M3 and M4 buttons start flashing. Press the **M1** button to set and save the chosen counterclockwise (**CCW**) rotation limit. After setting and saving, the procedure is finished.

To set the Clockwise (CW) limit

a- **First step**- *Turn the rotor and position the antenna at the desired **CW** limit*. Do not let the antenna touch the obstacle, leave a small gap.

b- **Second step-** *Mark and save the chosen CW limit point*. After executing the first step, press the +180 button for ten seconds. At this point, the M1, M2, **M3** and M4 buttons will start flashing.
Press the **M3** button to mark and save the chosen **CW limit**. After marking and saving, the procedure is finished.

To undo all limit points

a- **First step-** *Press the **+180** button for ten seconds*. At this point, the M1, **M2**, M3 and M4 buttons will start flashing.

b- **Second step-** *Press the **M2** button*. At this point, all the rotator limit points are deselected and the procedure is finished.

4- Offset function

The calibration of the **HR-100L** rotator controller has as standard the indication of the center of the rotator stroke at **Zero** degrees (**0 0 0**), which is the **North** position. In this way, the beginning and end of the rotator stroke point to **1 8 0** degrees, which represents the **South** position.
The **Offset** adjustment allows you to change the indication of the **Display** to **Zero** degrees (**0 0 0**) in any position of the Rotator.

Procedure to adjust the Offset

a- **First step-** *Position the Rotator*. Turn the rotator to the position where you want the Display to indicate **Zero** degrees (**0 0 0**).

b- **Second step**: *Enter the configuration mode.* Press the **+180** button for 10 seconds. At this moment the M1, M2, M3 and **M4** buttons start flashing.

c- **Third step-** *Adjust the **Display** indication*. Press the **M4** button and the indication on the Display will be changed to **Zero** degrees (**0 0 0**).

5- General Reset

This function removes all adjustments made by the operator. This way, the controller returns to its original parameters.

Procedure for General Reset

a- **First step**: Turn off the Controller.

b- **Second step**: Press and hold the four memory Buttons **M1**, **M2**, **M3** and **M4**

c- **Third step**: With the **Buttons pressed**, turn on the Controller. The two end-of-stroke LEDs will light up. Release the **Buttons** and when the end-of-stroke LEDs go out, the **General Reset** is complete.

6- Memories

The **HR-100L** has four memory Buttons, **M1**, **M2**, **M3** and **M4**.
To memorize an antenna position, press one of the four **Buttons** until it goes out.

7- Remote operation:

The **HR-100L** can be operated remotely through its **RS-232** serial port. It complies with the **Yaesu protocol for rotors**. Therefore, any application for **Yaesu** rotators will also control the **Hamplus HR-100L** controller.

Commands for rotators at 9600 baud:

A = STOP
S = STOP
L = Turns on CCW and stops when CCW limit is reached
R = Turns on CW and stops when CW limit is reached
C = Returns current azimuth in the format: AZ=aaa + 0x0D + 0x0A
Maaa = Points to azimuth "aaa"

+180 Button

This button has three distinct functions:

1- First Function: When pressed momentarily, it adds **180 degrees** to the position indicated on the **Display** and moves the **Rotator** to this new position. Function known as **Long Path**.

2- Second Function: Hold down and turn the Encoder for the **Display** to advance **10 degrees** at a time

3- Third Function: When pressed for **10** seconds, the **HR-100L** enters **Configuration mode**

Factory Calibration

Factory calibration saves the data related to the synchronization of the rotator with the Display (Calibration) made at the Factory in a special memory position, which is not affected by the **General Reset.**
This way, when the **General Reset** function is applied, all the settings made by the user will be deactivated and the Rotator calibration made at the factory will be reactivated.

Factory Calibration Procedure:

1- First step: After calibrating the Rotator (Synchronizing the Display with the Rotator), turn off the Controller.
2- Second step: Turn on the Controller with the **M1** and **M3** memory Buttons pressed.
3- Third step: Release the Buttons and the procedure will be completed.

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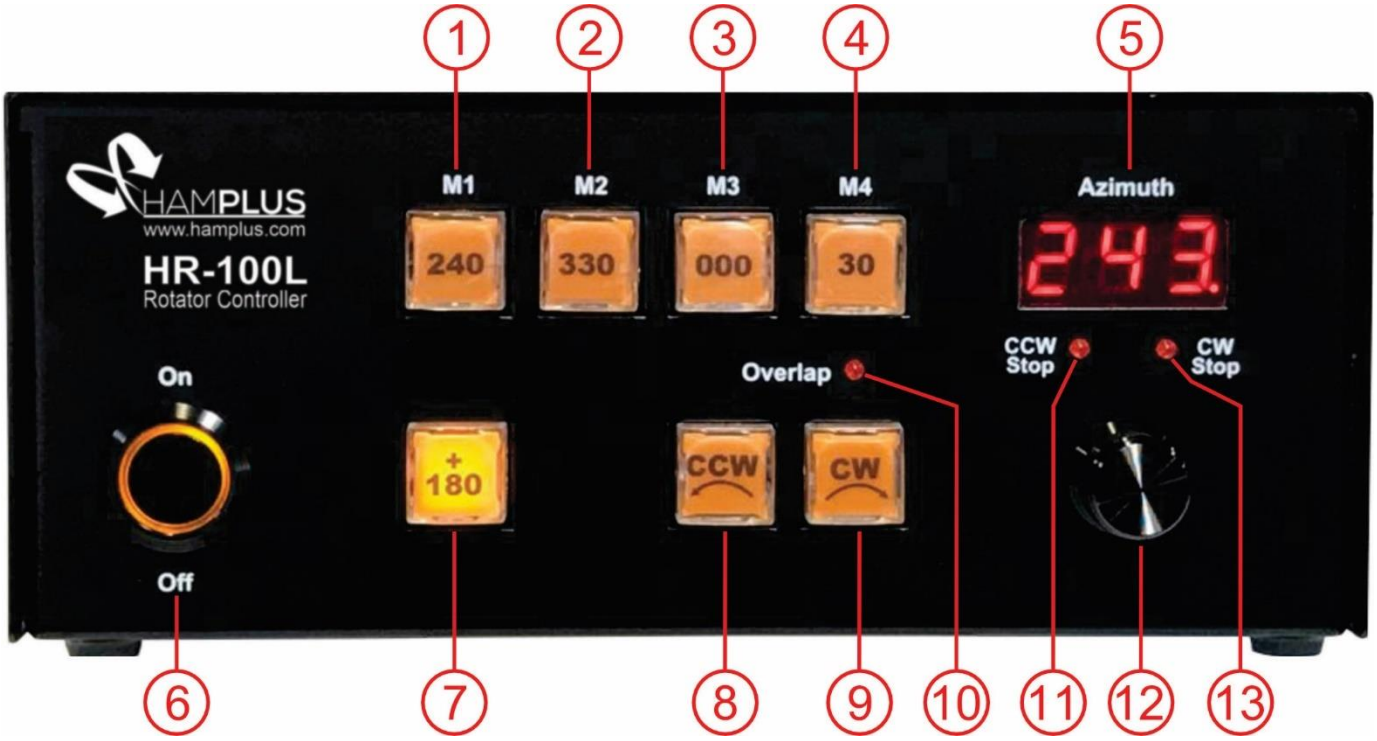
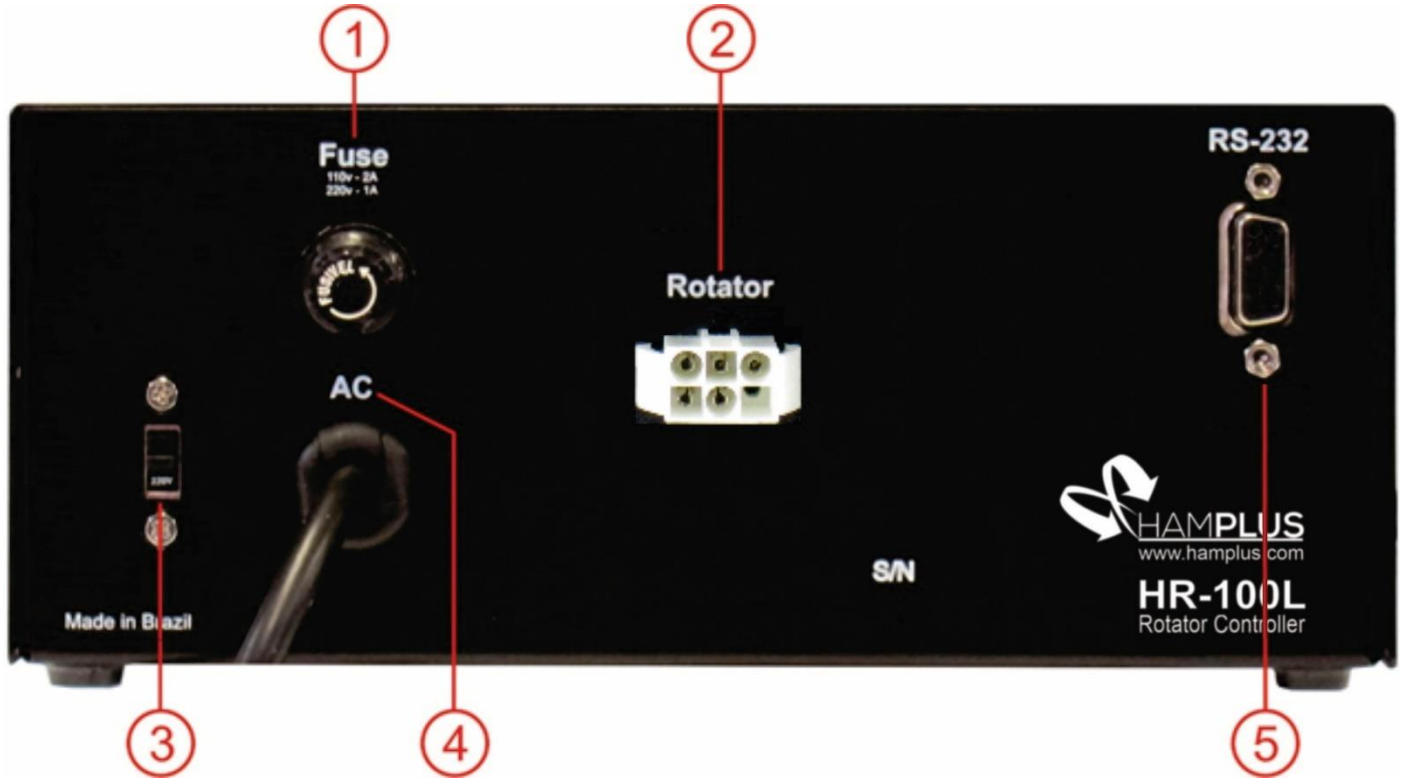
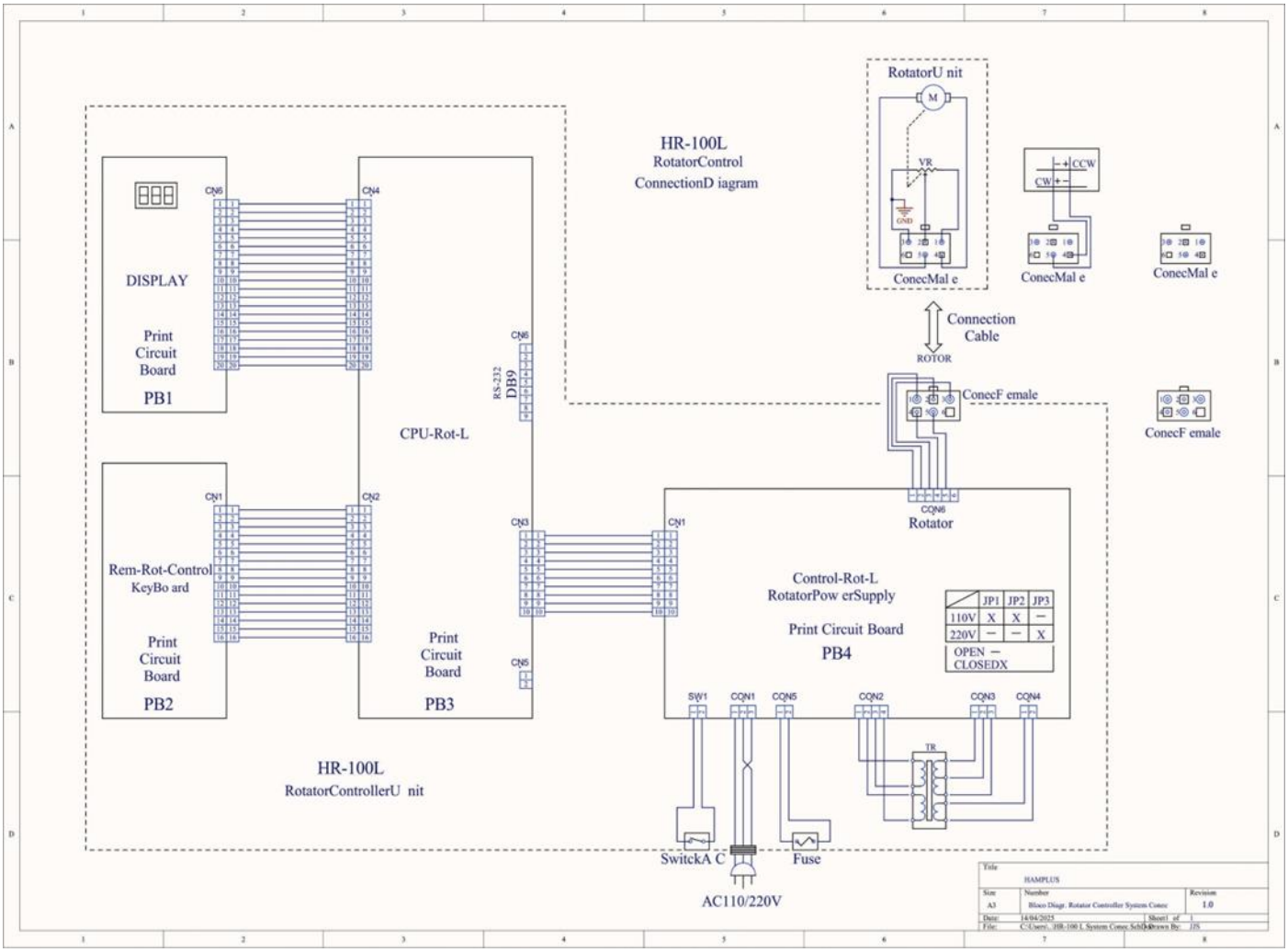


1- Memory 1 M1 Button
2- Memory 2 M2 Button
3- Memory 3 M3 Button
4- Memory 4 M4 Button
5- Azimuth indicator Display
6- On/Off Button
7- Long Path activation Button
8- Counterclockwise activation Button
9- Clockwise activation Button
10- Overlap indicator LED
11- Counterclockwise end of stroke indicator LED
12- Azimuth selector encoder
13- Clockwise end of stroke indicator LED



1- Fuse 2A 110v / 1A 220v
2- SP-20 Rotator connector
3- 110/220 Volts selector
4- Power cable
5- RS-232 remote control (DB-9 Connector)


HR-100L
RotatorControl
ConnectionD iagram
RotatorU nit
M
VR
GND
CCW
CW
ConecMal e
ConecMal e
ConecMal e
Connection
Cable
ROTOR
ConecF emale
ConecF emale
CQN6
Rotator
DISPLAY
Print
Circuit
Board
PB1
CN6
CN4
RS-232
DB9
CN6
CPU-Rot-L
CN1
CN2
Rem-Rot-Control
KeyBo ard
Print
Circuit
Board
PB2
CN3
CN1
CN5
Print
Circuit
Board
PB3
Control-Rot-L
RotatorPow erSupply
Print Circuit Board
PB4
JP1 JP2 JP3
110V X X —
220V — — X
OPEN —
CLOSEDX
SW1
CQN1
CQN5
CQN2
CQN3
CQN4
TR
HR-100L
RotatorControllerU nit
SwitckA C
Fuse
AC110/220V
Title
HAMPLUS
Size
A3
Number
Bloco Diagr. Rotator Controller System Conec
Revision
1.0
Date:
14/04/2025
Sheet1 of
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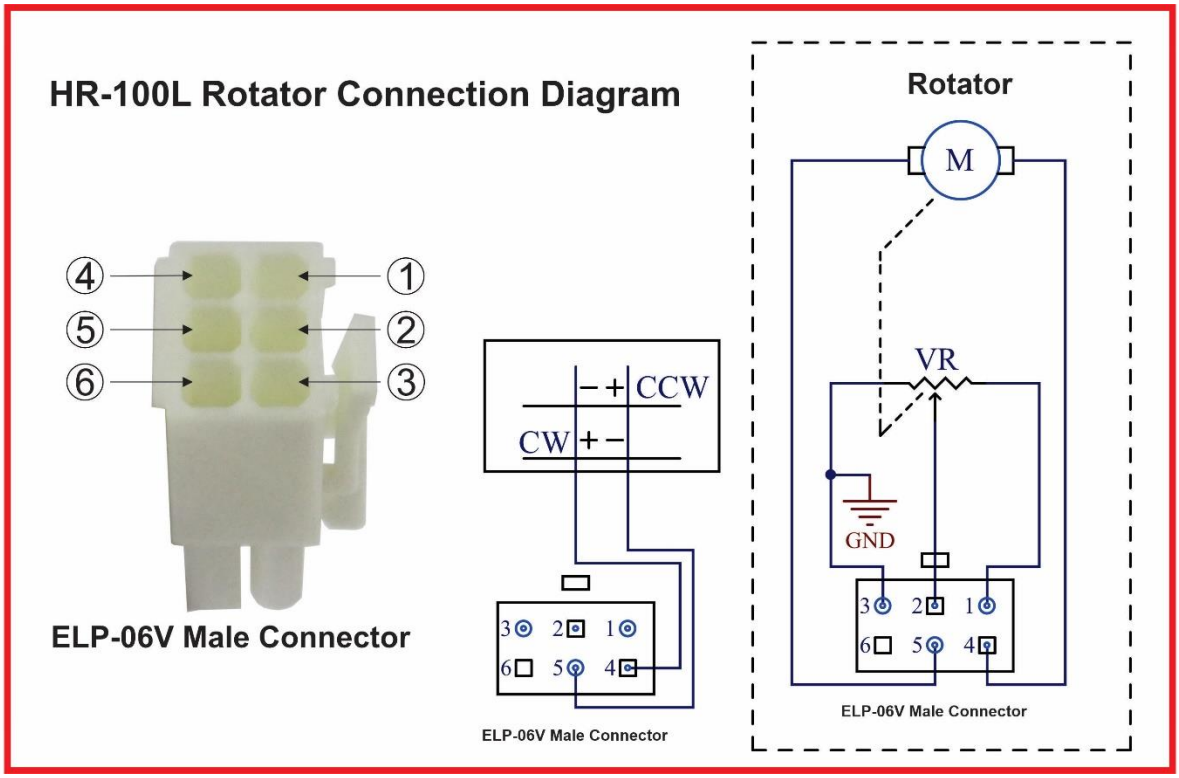
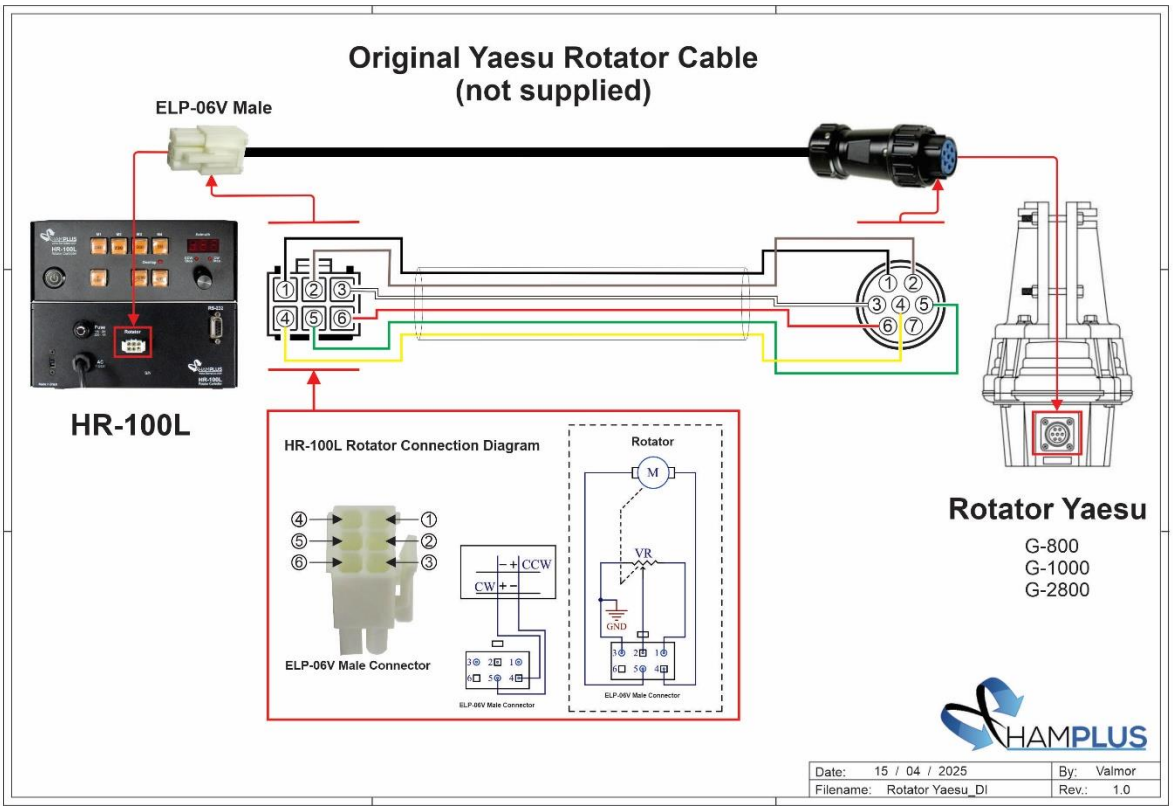
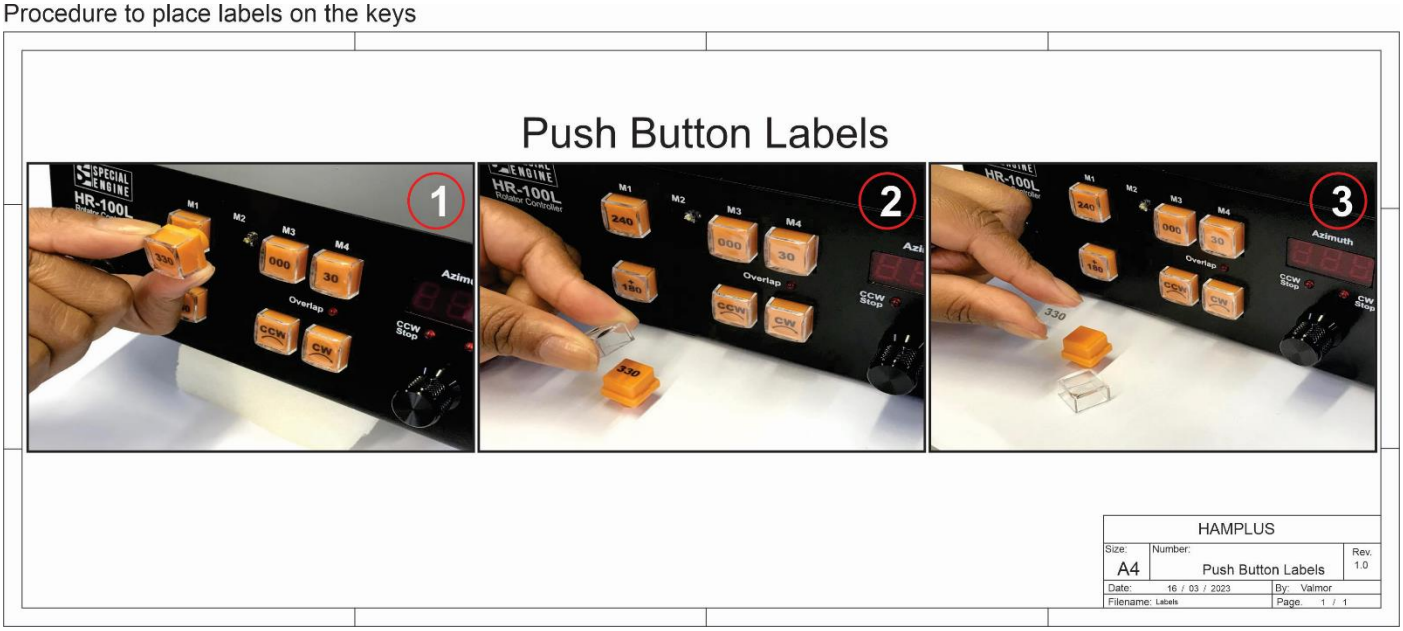
C:\Users\...\HR-100 L System Conec Sch.SchDoc
Drawn By:
JJS


HR-100L Rotator Connection Diagram
Rotator
M
VR
GND
CCW
CW
4
5
6
1
2
3
ELP-06V Male Connector
ELP-06V Male Connector
ELP-06V Male Connector


Original Yaesu Rotator Cable
(not supplied)
ELP-06V Male
HR-100L
HR-100L Rotator Connection Diagram
Rotator
ELP-06V Male Connector
Rotator Yaesu
G-800
G-1000
G-2800
HAMPLUS
Date: 15 / 04 / 2025
By: Valmor
Filename: Rotator Yaesu_DI
Rev.: 1.0

Procedure to place labels on the keys



Labels - print on transparent paper with laser printer

000	05	10	15	20	25	30	35	40	45	50	55	60	65	70	75
80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155
160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235
240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315
320	325	330	335	340	345	350	355	360	OSO	SSO	L	N	S	O	E
W	NW	NE	SW	SE	NO	SO	NNW	NNE	WNW	ENE	WSW	ESE	SSW	SSE	NNW
NNO	ONO	+ 180	CCW	CW											

HR-100L

March 4, 2025

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