

Denso Robotics

RC7 Robot Type Change

****Attention****

Read this resource material carefully and in its entirety before use to ensure it is understood and used properly. Failure to properly follow the instructions in the resource materials DENSO provides may result in damage to your equipment. As a result, by using the resource materials, you are assuming the risks associated with modifying your equipment. DENSO holds no liability, implied or otherwise, for damage, injury or any legal responsibility incurred, directly or indirectly from the use of the resource materials, including any loss of data or damage to property which may occur by your use of the resource materials. The use of the resource materials is not recommended unless you have technical knowledge and functional experience with the equipment and related software. DENSO is unable to provide support, remote or otherwise, for the information included in the resource material, nor for the ancillary topics relating to the information included in the resource materials. Therefore, if you are not fully comfortable with it, we strongly recommend that you send your unit to one of our Regional Support Centers for repair. The information contained in the resource materials are subject to change at the sole discretion of DENSO.

Necessary Equipment

- Computer with the latest version of Wincaps III installed
- LAN Cable / LAN crossover cable
- RC7 Controller with Teach Pendant

Contents

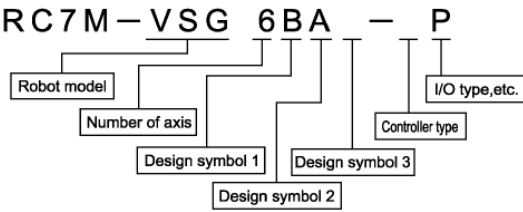
1. Considerations before changing robot type in controller	5
2. Extracting a backup from the controller	6
3. Teach Pendant Steps.....	6
4. Controller Changes (if needed)	17
5. Sending the original backup project to the controller	20

1. Considerations before changing robot type in controller

In order to change robot types in an RC7 controller you will need to extract a backup, if possible from the old controller to install in the new controller at the end of this documentation. If after reading this procedure you do not feel confident in performing these tasks please contact a Denso Service Dealer to schedule and perform this service. A complete list of Denso Service Dealers can be found at:

<https://www.densorobotics.com/support/>

The **RC7 Specification controller** can be changed with the following steps. The following picture describes each robot type for the RC7 controllers.

Robot series	G series	
Controller model	RC7M - * * * * - **	August,2005~
Coding of controller model		
Denotes	Category	
Robot model name	VMG:VM-G, VSG:VS-G, VPG:VP-G, HMG:HM-G, HSG:HS-G, SMT:SMART	
Number of axis	4:4 axis, 5/6:5 axis or 6 axis, 6:6 axis	
Design symbol 1	A:Encoder A, B:Encoder B, C:Encoder C	
Design symbol 2	A:24V Brake	
Design symbol 3	Blank:200VAC Power, A:100VAC Power	
Controller type	Blank:Standard (Japanese Standard) B:Global (With Safety board) C:Global (With Safety Box) D:UL (With Safety board) E:UL (With Safety Box)	
I/O type,etc.	Blank or N:NPN I/O (Japanese Standard) P:PNP I/O	

Note: The above image is for a six axis robot but is only used for reference.

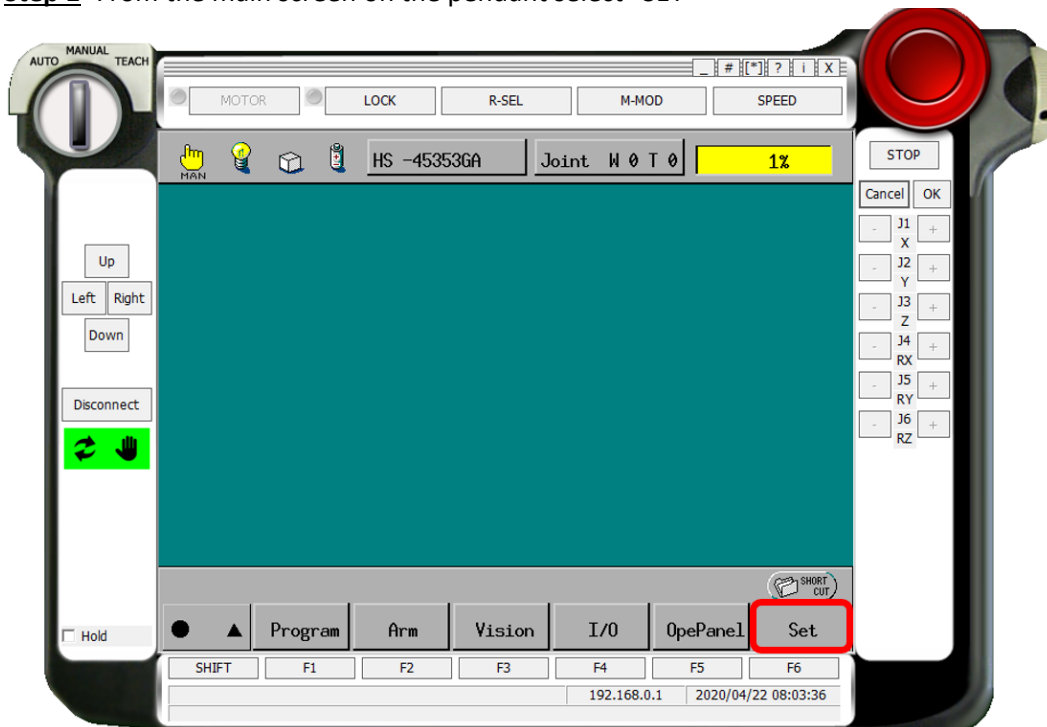
2. Extracting a backup from the controller

Before performing any modification to a controller, it is always important to extract a backup project. At this time extract a backup project from the controller using your computer and a LAN cable and store the project in a safe location.

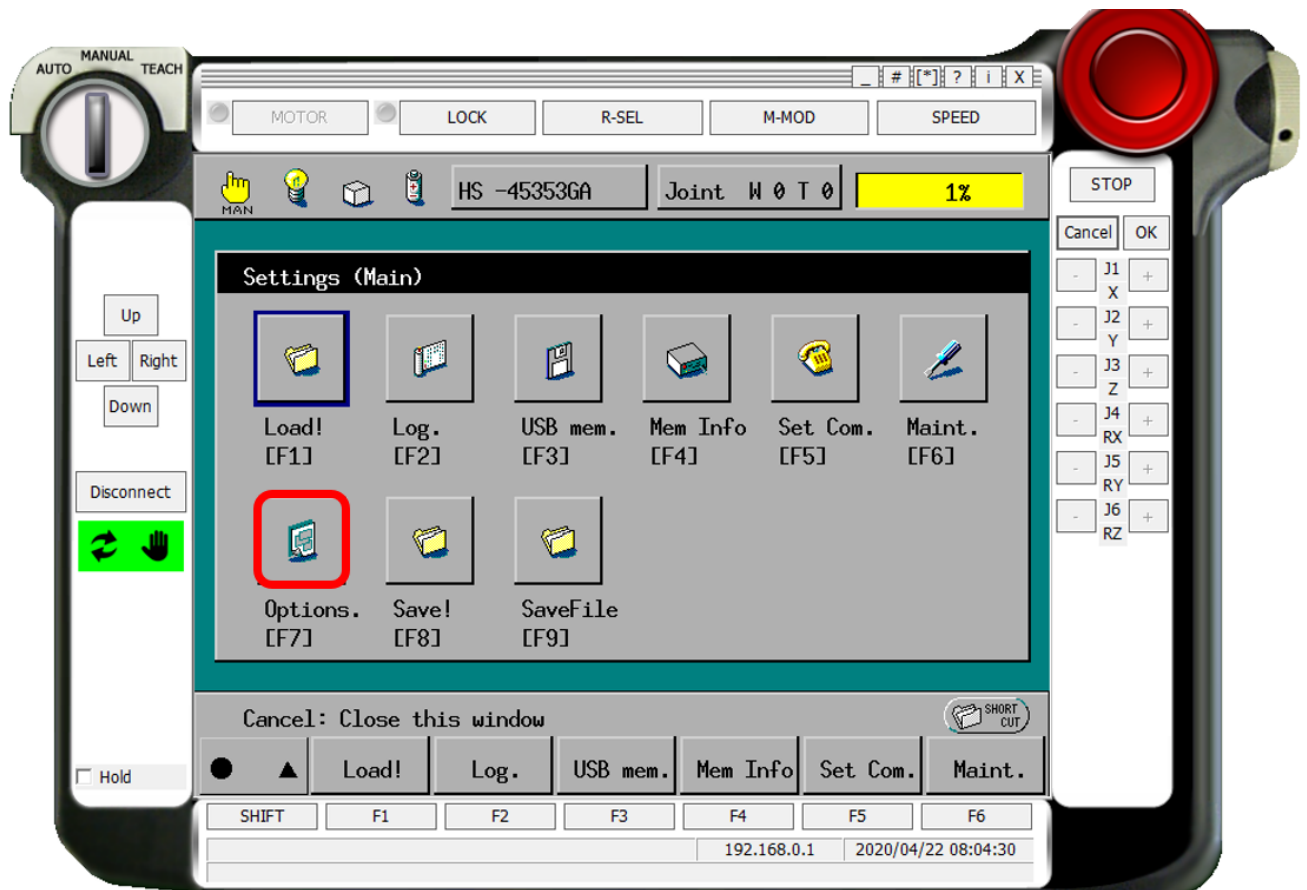
If you are unfamiliar with the process of extracting a backup project, please reference the default user manuals included with the robot, or download them from the Denso Wave website. If you are unfamiliar with creating a backup of a controller, it is recommended that you not attempt this procedure. Denso Certified Service Dealers are capable of performing this conversion if you are unable to complete or perform this process. Find a list of Service Dealers at <https://www.densorobotics.com/support/>

3. Teach pendant steps

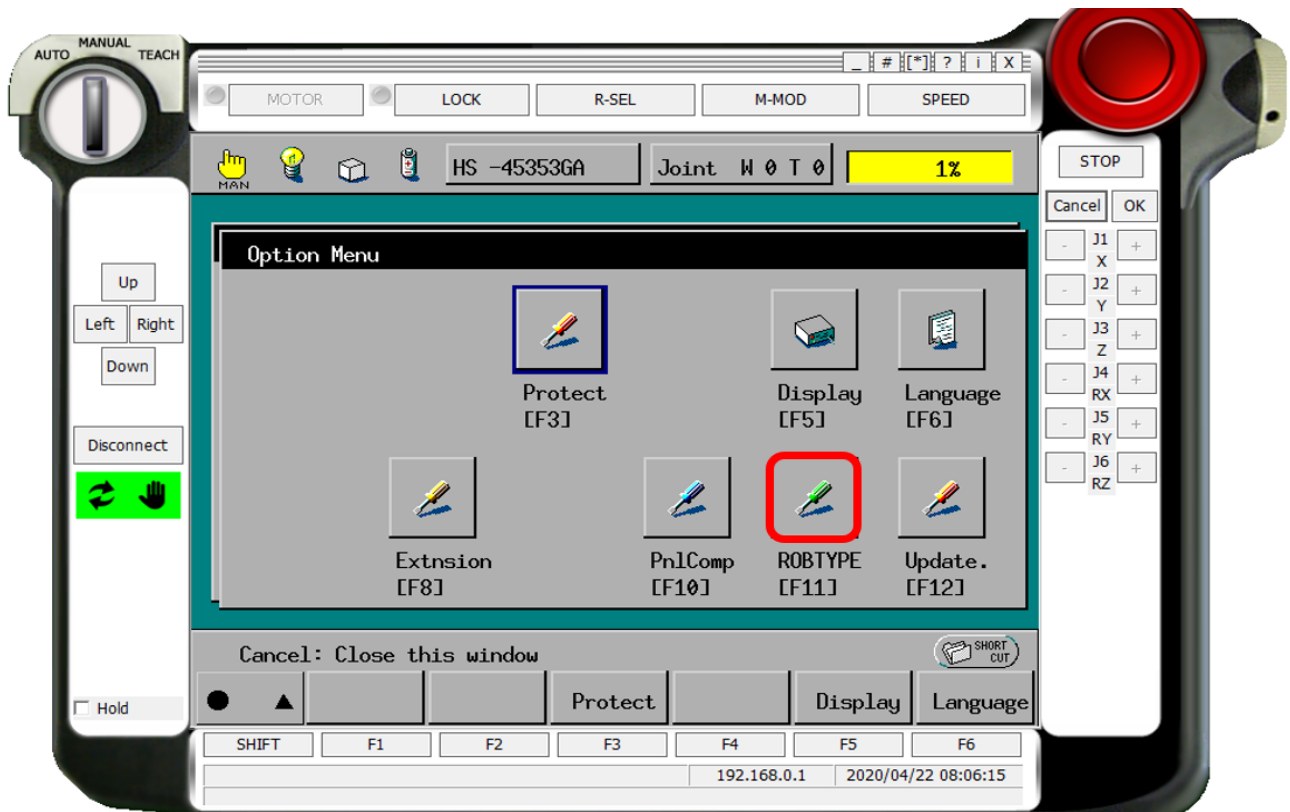
Step 1- From the main screen on the pendant select “SET”



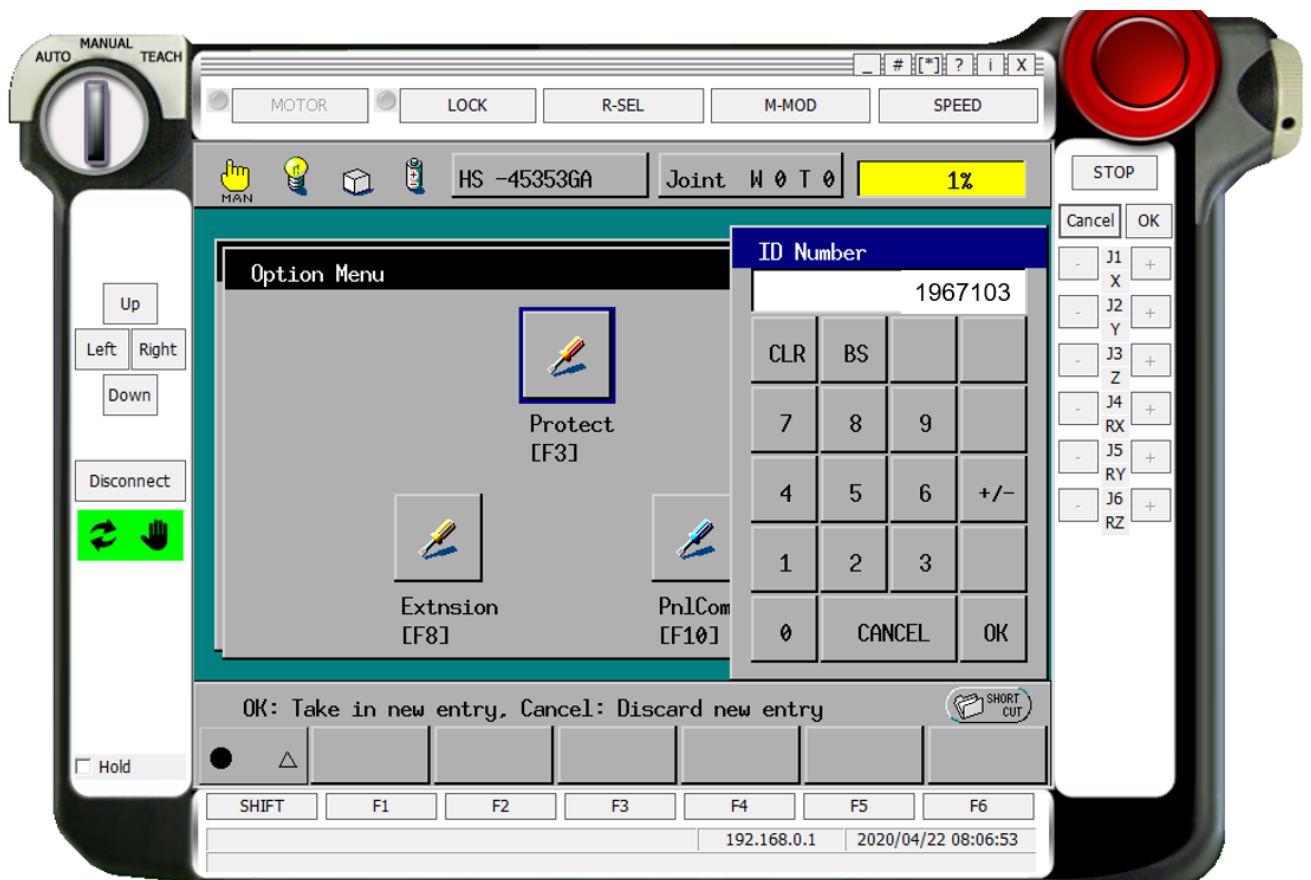
Step 2- On the next screen choose F7 “Options.”



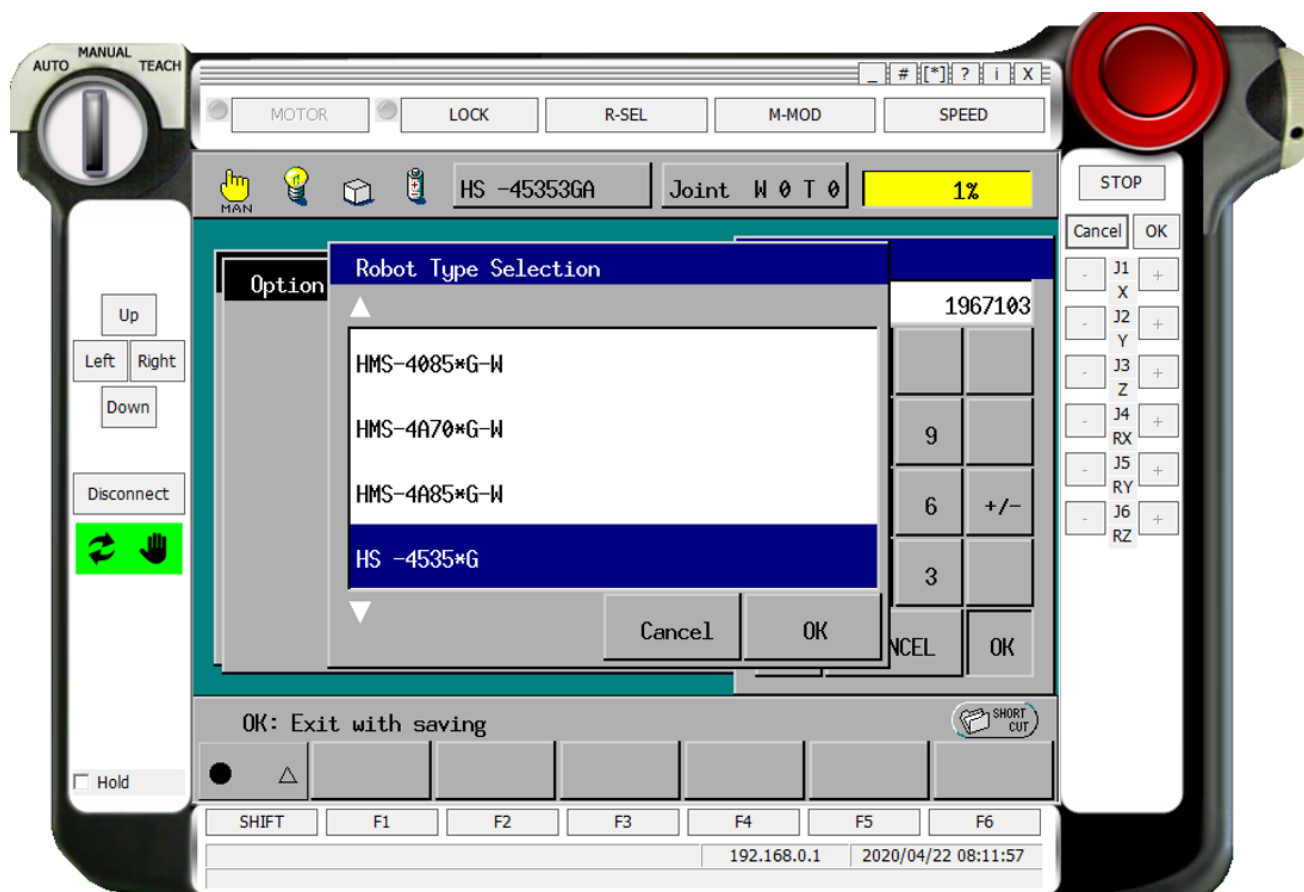
Step 3- On the next scree choose F11 “ROBTYPE”



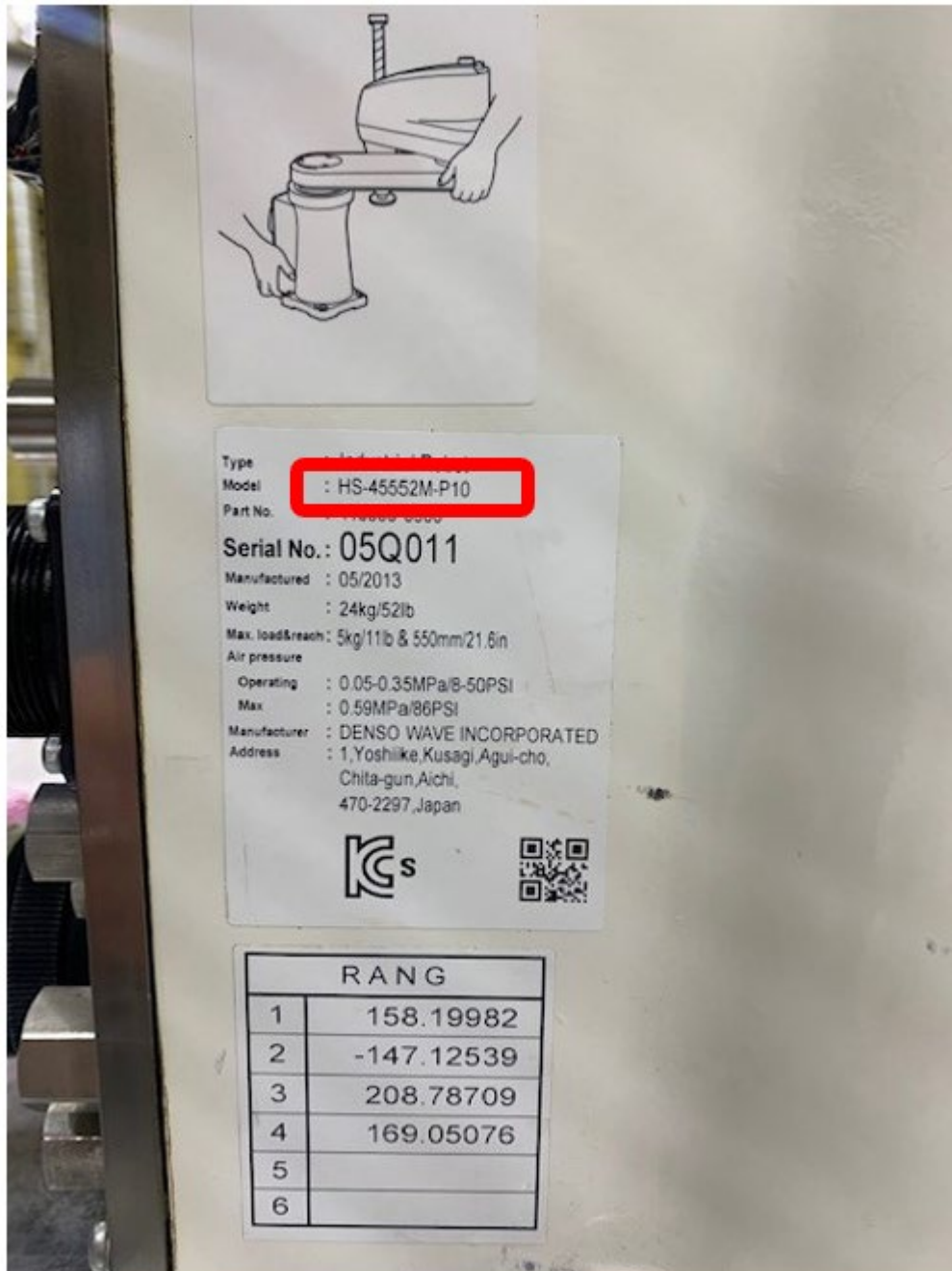
Step 4- When you select ROBTYP E an input keypad will appear and you will need to enter: **1967103** then press the “OK” button on the input pad.



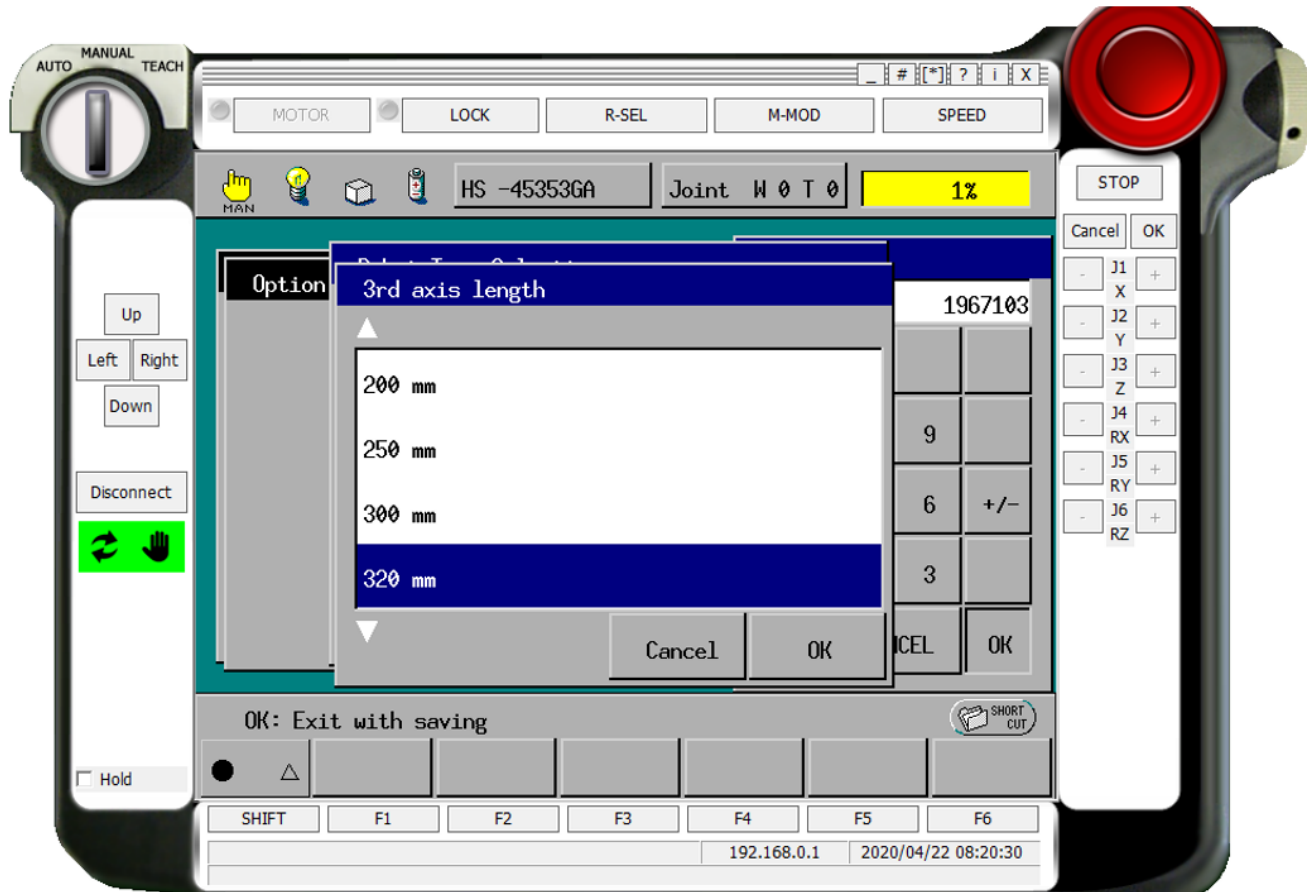
Step 5- After you enter the correct INPUT ID into the number pad and “OK” the following screen will appear with all the robot types available for the currently installed ROM version.



Step 6- Compare the model number on the name plate label at the base of the robot. This image shows an HS-45552M-P10. In the selection screen on the pendant you will select HS-45552G-P. Then press the on screen “OK” button. **NOTE:** The “G” denotes an RC7 controller attached.



Step 7- If using a 4-axis robot are you are then asked to select a shaft length.
Select shaft length and then press the on screen “OK”



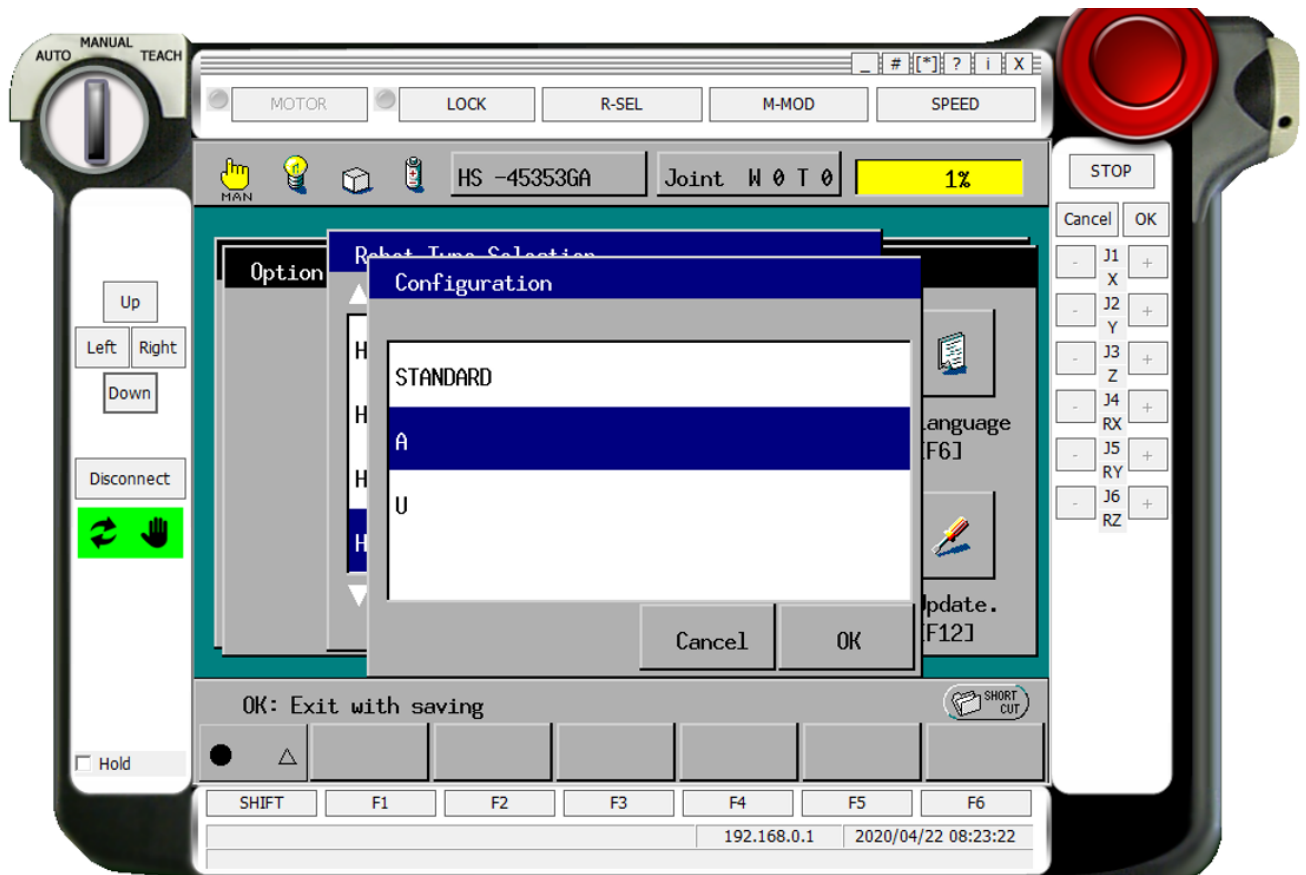
Note: With a 4 axis arm you are asked to select a shaft length.

Step 8- This step will appear after the type selection on a six axis robot and after the shaft length selection on a 4-axis. The following is the configuration selection

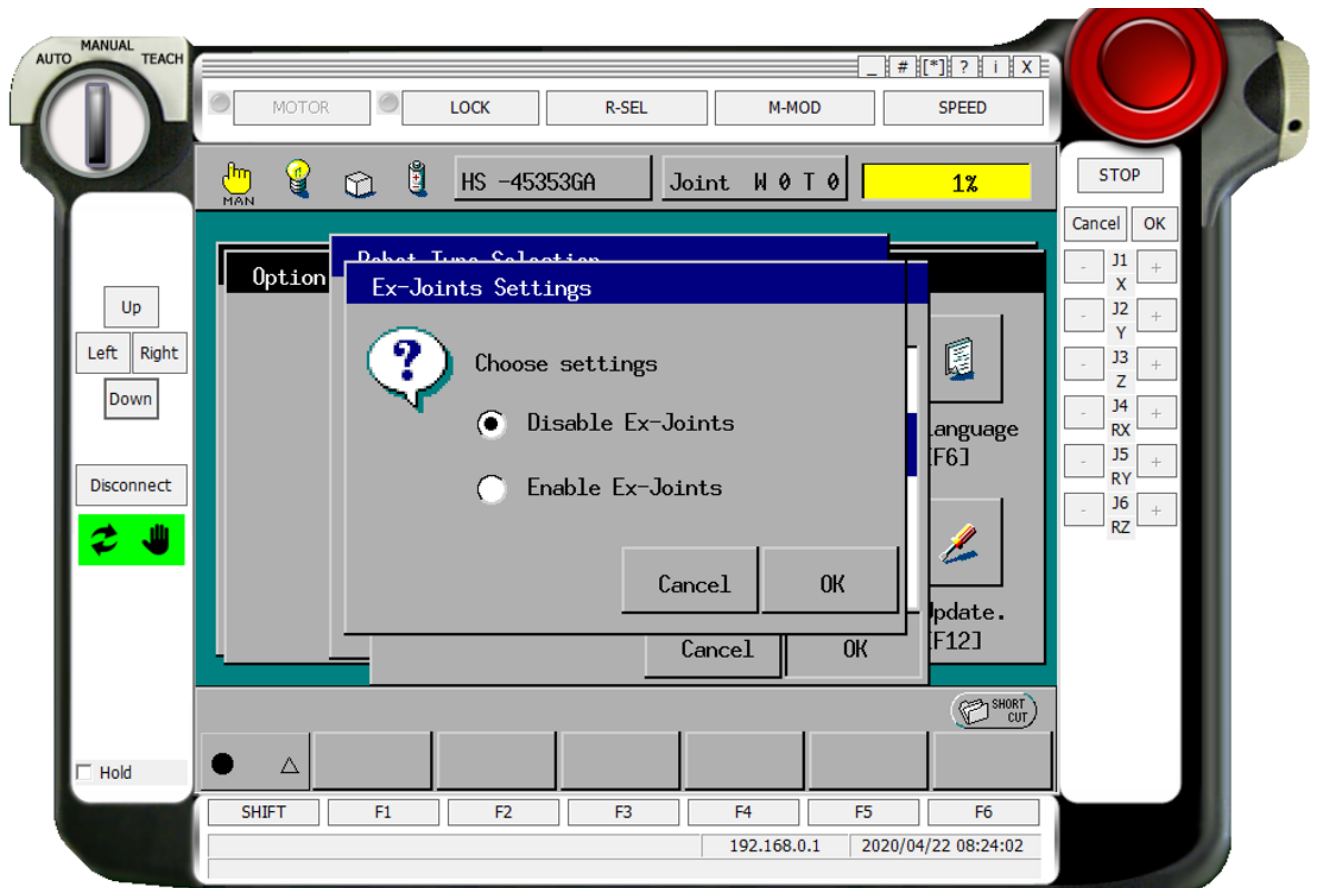
STANDARD is Japanese Specs

A is ANSI Standards (Usually American Standards)

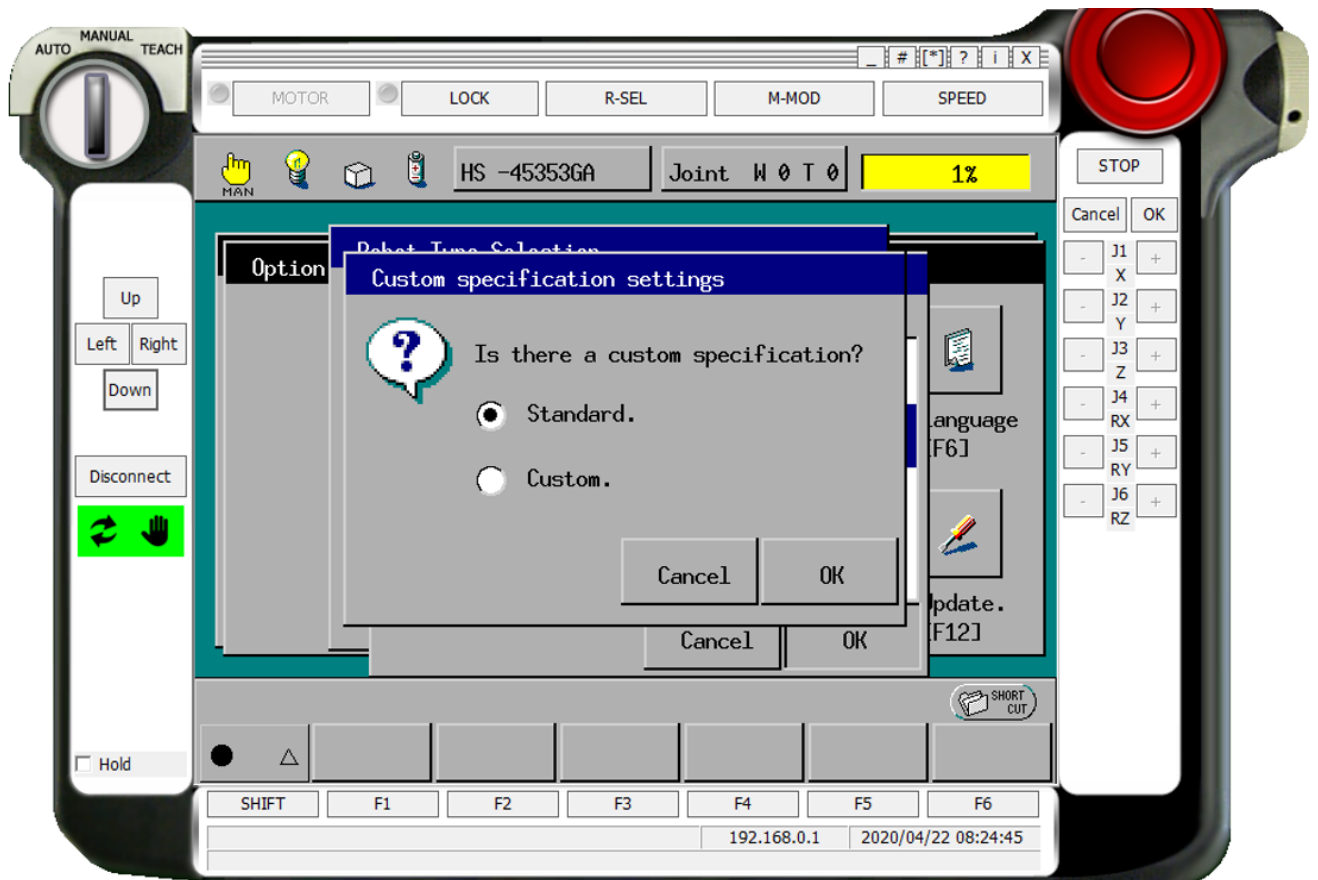
U is UL Standards



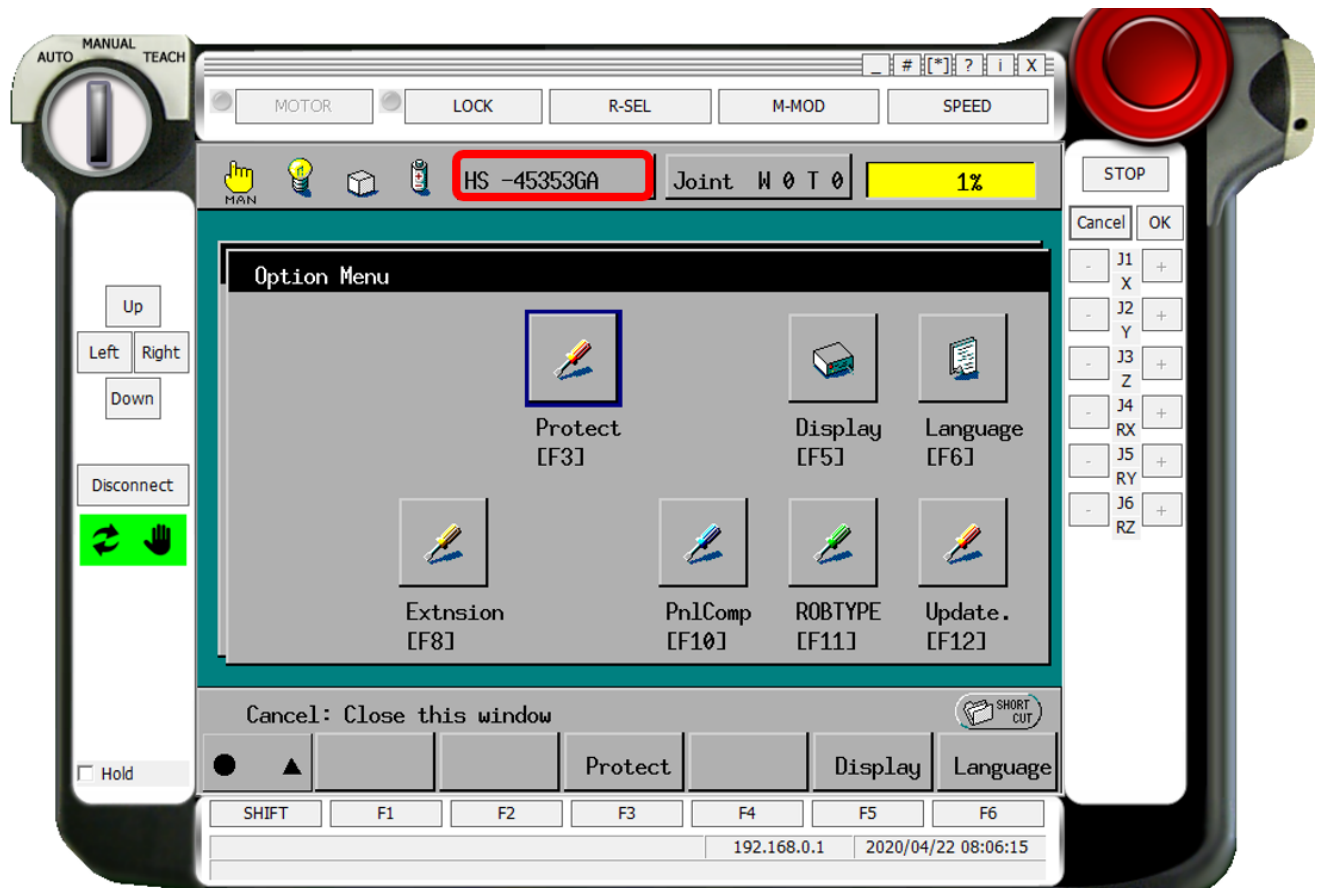
Step 9- The next screen is for extra joints. Choose whether or not you have extra joints and then press the on screen “OK”.



Step 9- The next screen is for Custom Specifications. Choose whether or not your arm has Standard or Custom Specifications, then press the on screen “OK”.



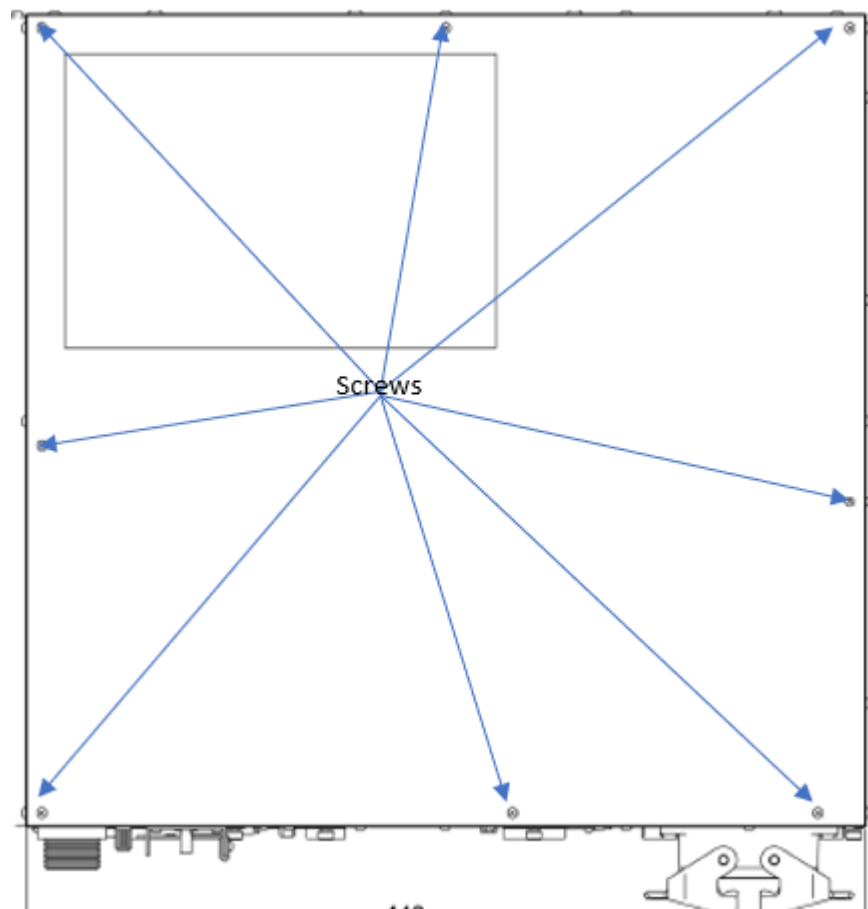
Step 10- This concludes the Teach Pendant setup and on this screen the high lighted red area should reflect the same as the robot type on the base of the robot. Turn controller power of at this time for the following three steps.



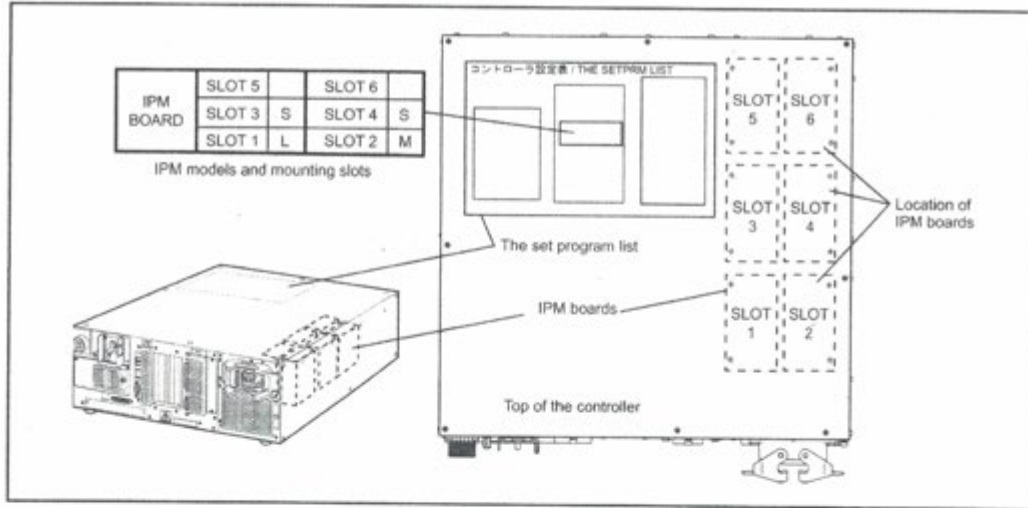
4. Controller changes (if needed)

Note: These three steps will not be needed if the robot type stays the same. Ex: VS to VS, VSA to VSA, HM to HM. etc...

Step 1 Remove supplied power to the controller and remove the eight screws holding the cover for the controller in place.



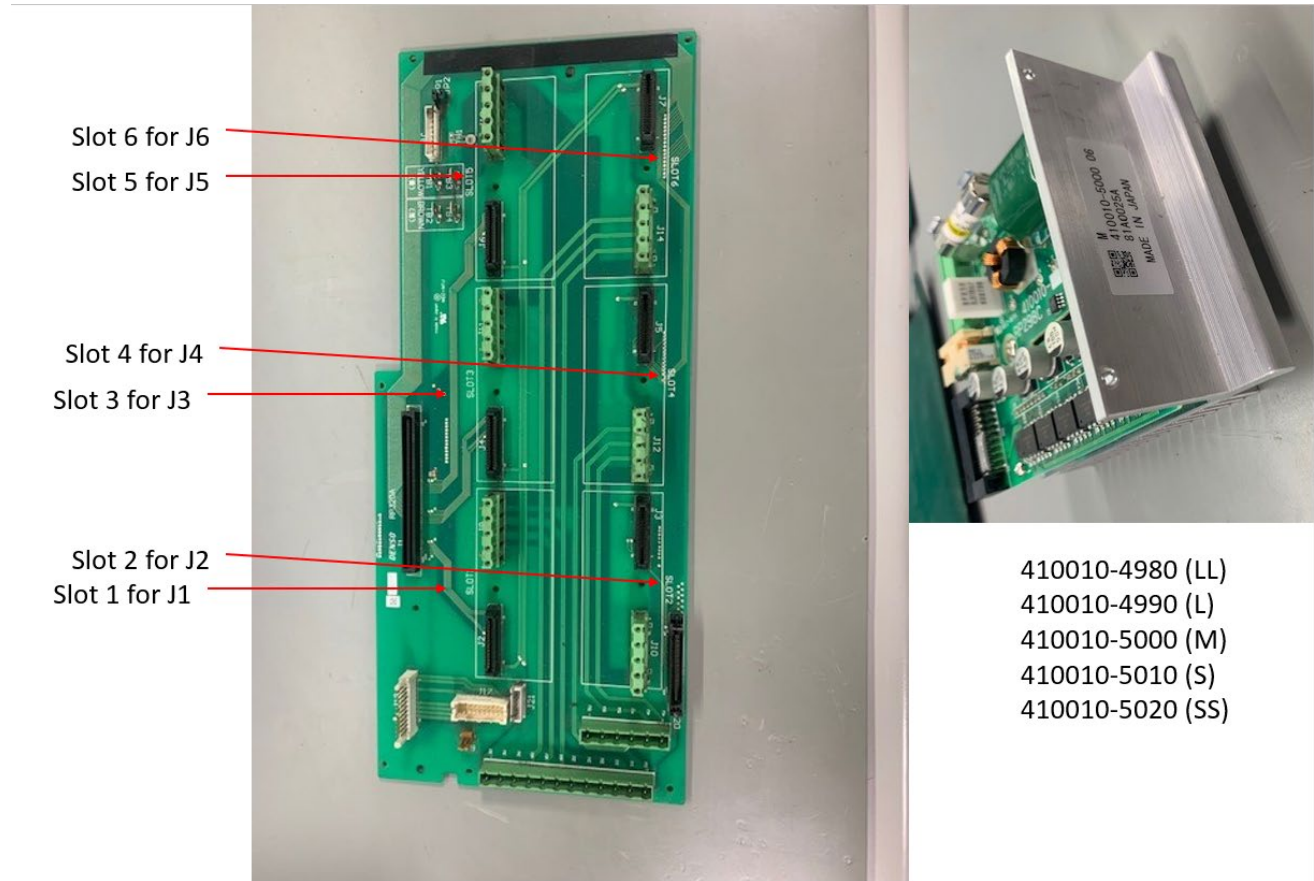
Step 2 Verify with the following chart that the IPM boards are correct for the robot type you selected.



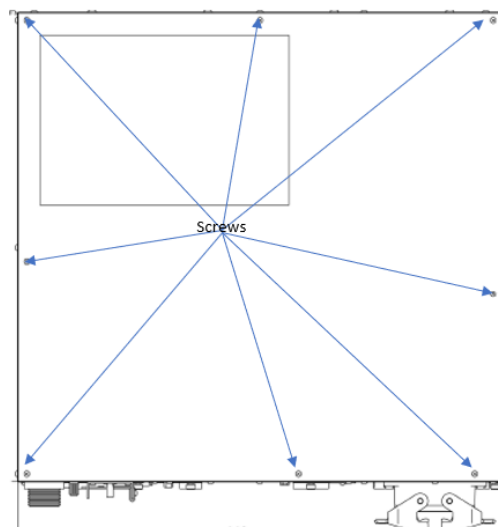
Robot series	SLOT	SLOT 6	SLOT 5	SLOT 4	SLOT 3	SLOT 2	SLOT 1
VM-G	Joint #	6	5	4	3	1	2
	IPM model	SS	SS	SS	S	L	M
	Motor capacity (W)	100	200	200	400	1500	750
VS-050/060	Joint #	6	5	4	3	2	1
	IPM model	SS	SS	SS	SS	S	S
	Motor capacity (W)	50	50	50	150	200	400
VS-068/087	Joint #	6	5	4	3	2	1
	IPM model	SS	SS	SS	S	L	L
	Motor capacity (W)	80	100	200	400	750	1000
VS-G	Joint #	6	5	4	3	2	1
	IPM model	SS	SS	SS	S	S	M
	Motor capacity (W)	50	80	100	200	400	750
VP-G	Joint #	6	5	4	3	2	1
	IPM model	SS	SS	SS	SS	SS	SS
	Motor capacity (W)	30	30	30	50	80	80
HM-G	Joint #	--	--	4	3	2	1
	IPM model	--	--	M	M	L	LL
	Motor capacity (W)	--	--	300	300	600	1000
HS-G	Joint #	--	--	4	3	2	1
	IPM model	--	--	S	S	M	L
	Motor capacity (W)	--	--	150	200	400	750
XYC-G	Joint #	--	--	4	3	2	1
	IPM model	--	--	SS	S	S	S
	Motor capacity (W)	--	--	100	200	200	400
XR-G	Joint #	--	--	4	3	2	1
	IPM model	--	--	SS	S	S	M (S) *
	Motor capacity (W)	--	--	50	400	400	750(400) *

Note: The "--" in the above table denotes no board installed.

Step 3 The part number for each are supplied in the picture below. This concludes the controller internal setup.

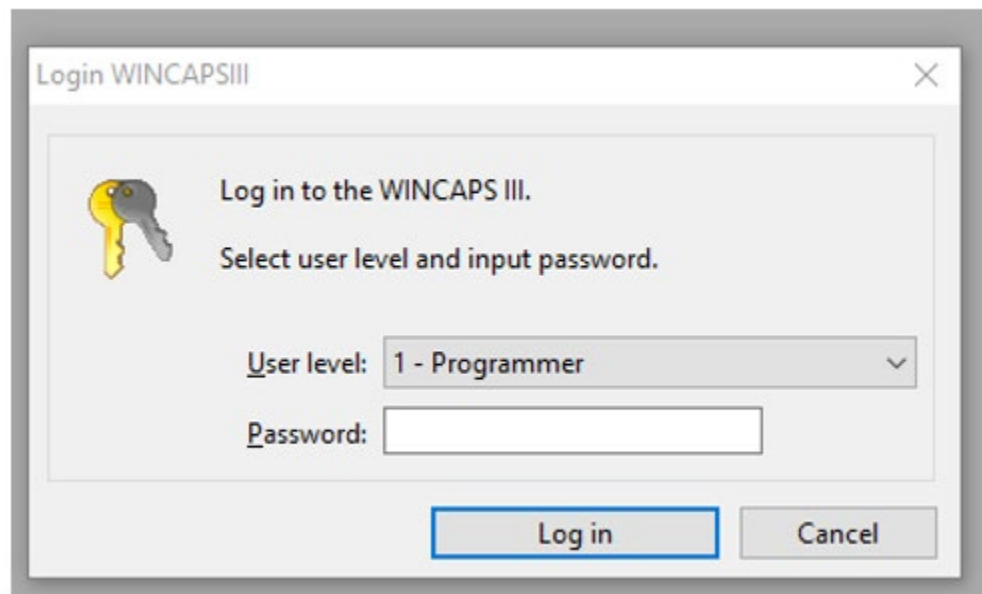
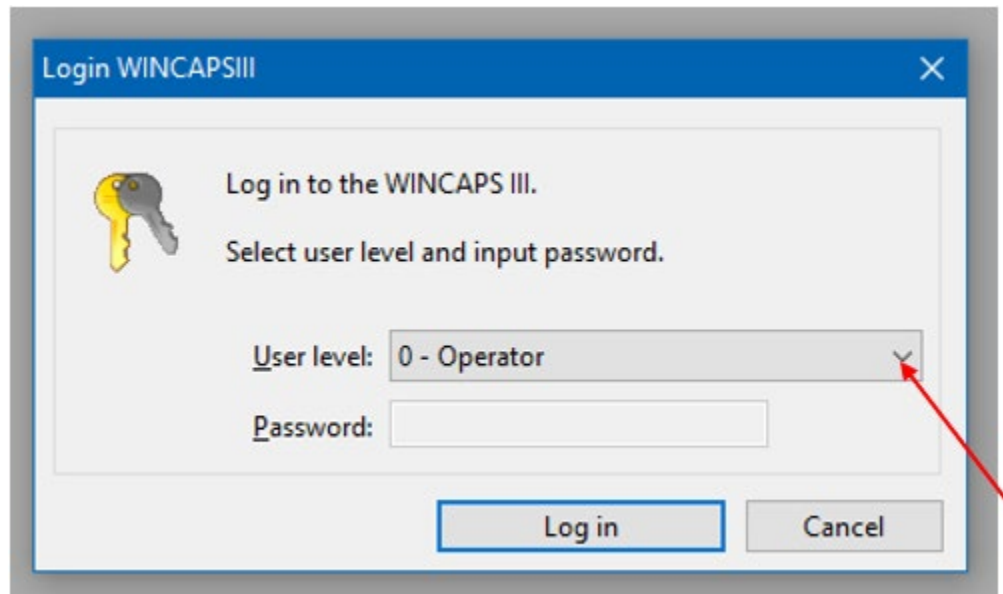


Step 4 Secure the top cover with the (8) cover screws and a #2 Phillips Screwdriver.

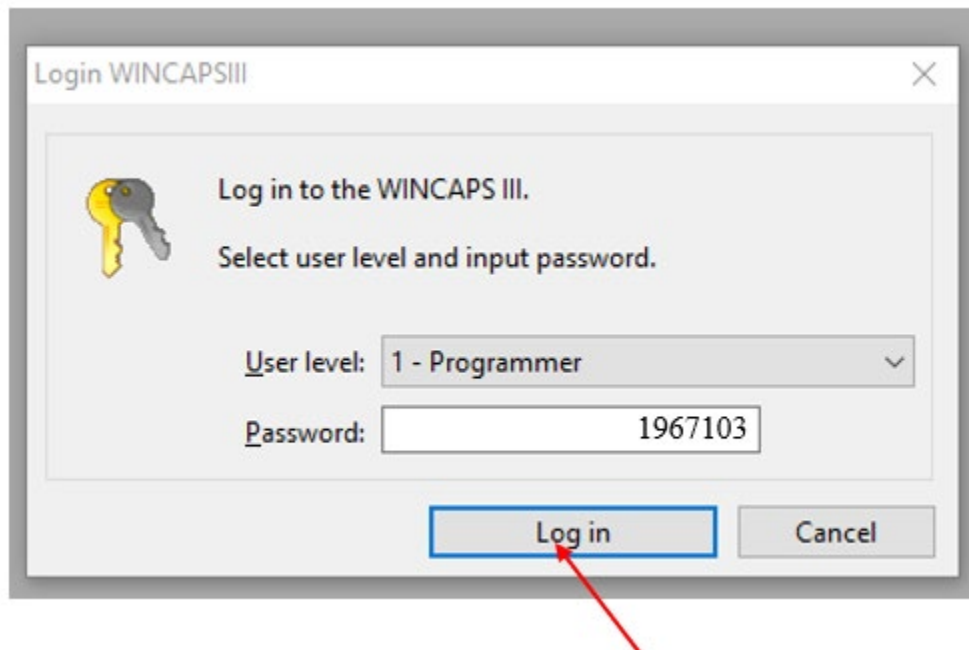


5. Computer Setup

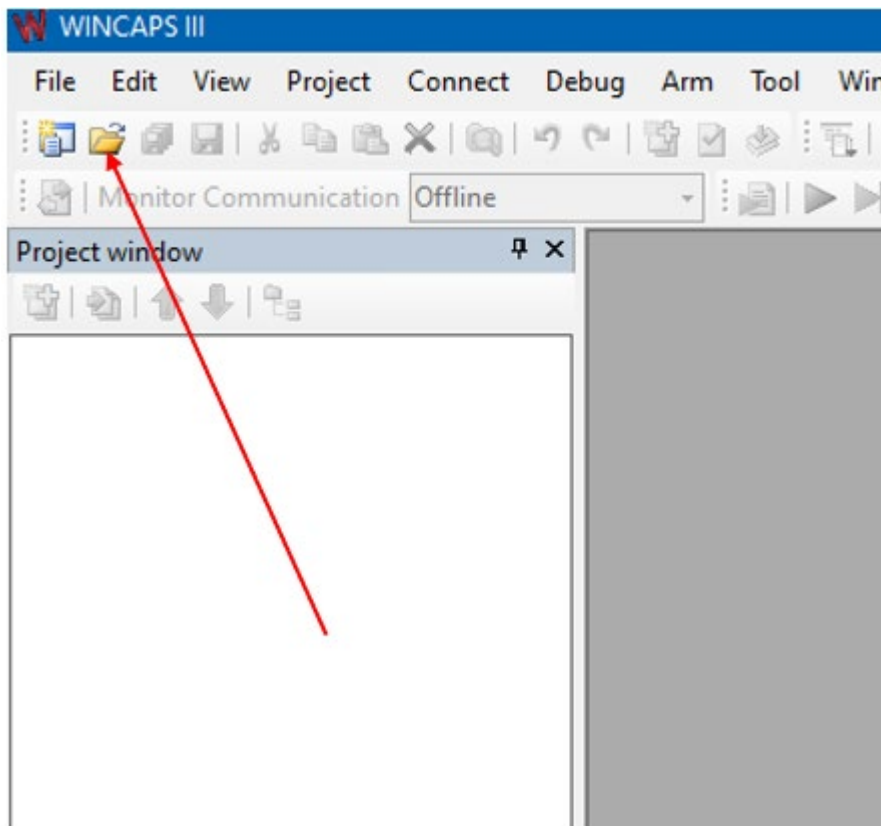
Step 1- Open Wincaps III. On the first screen use the drop-down menu to select “PROGRAMMER”



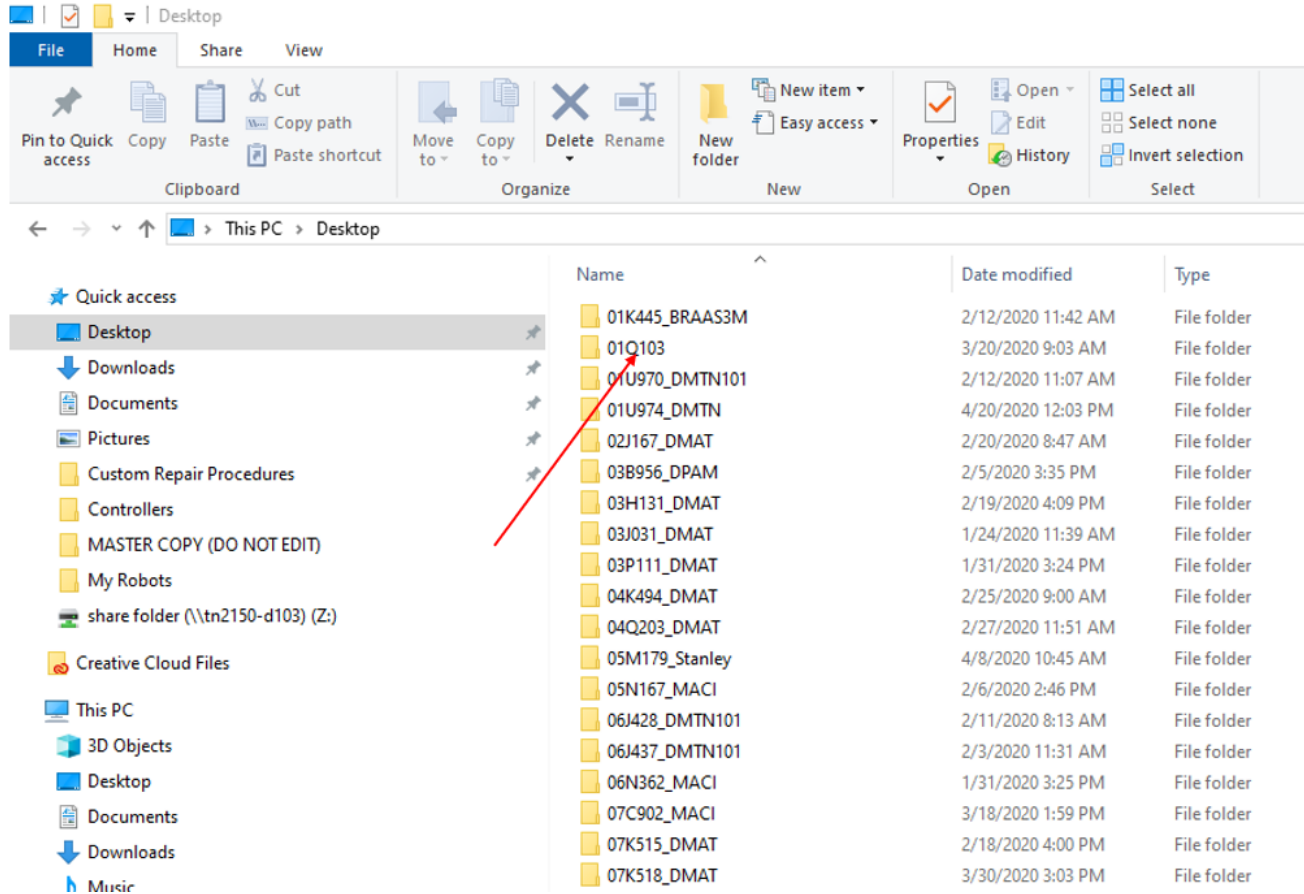
Step 2- Enter the password 1967103 into the password text field, and click Log in.



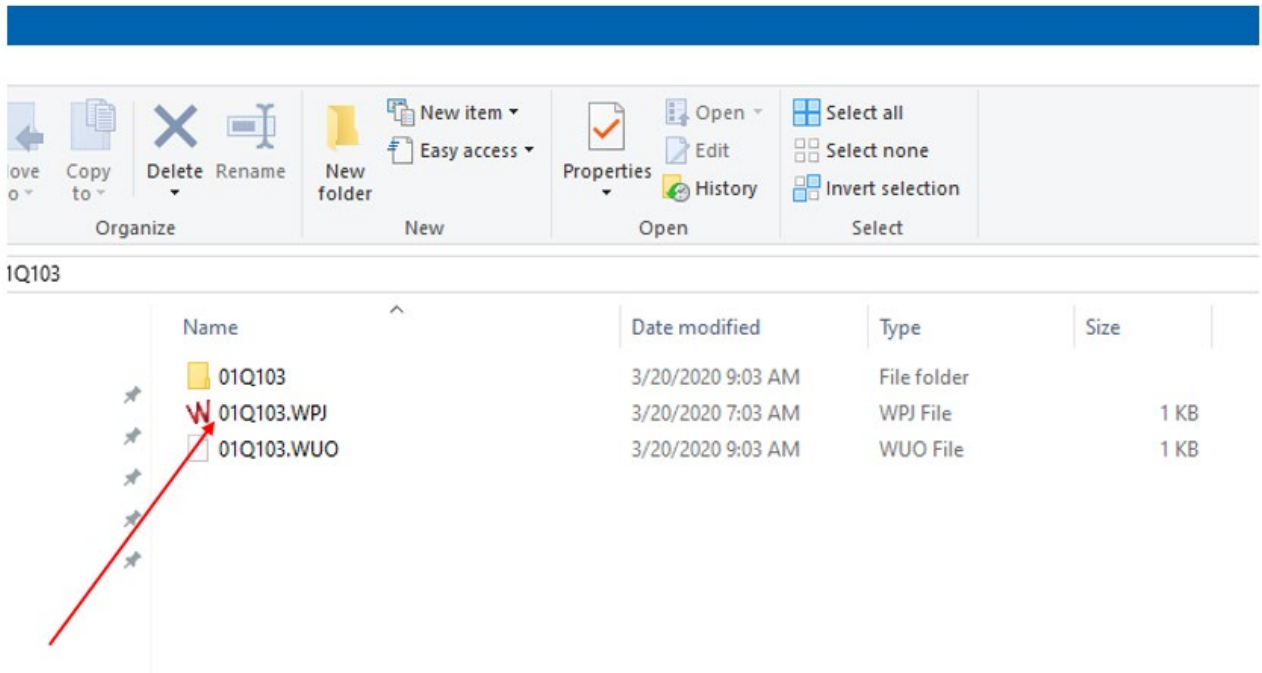
Step 3- Next choose “Open” from the “FILE” menu or click the icon as shown below.



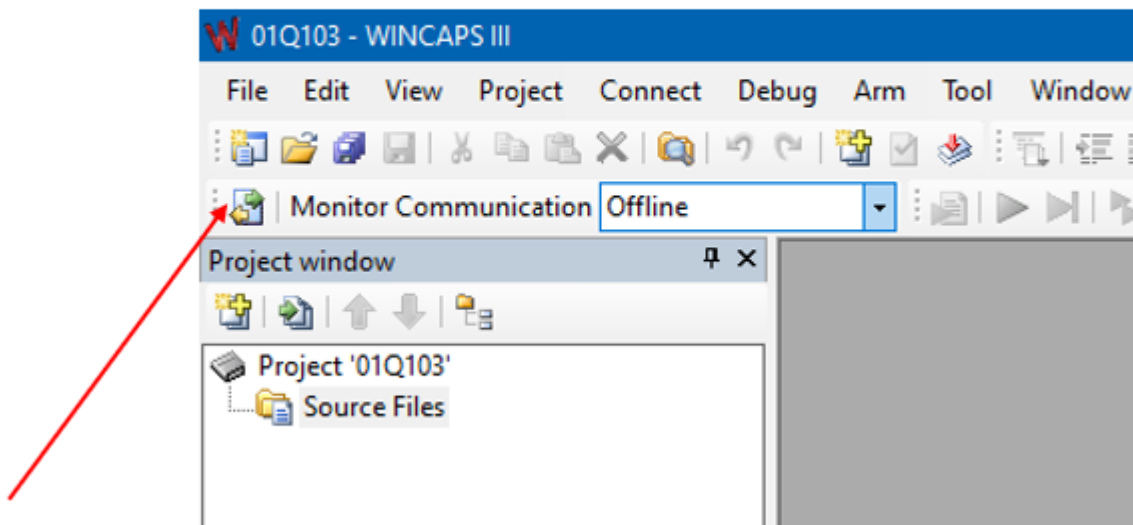
Step 4- Go to the location of the backup you made of the old controller.



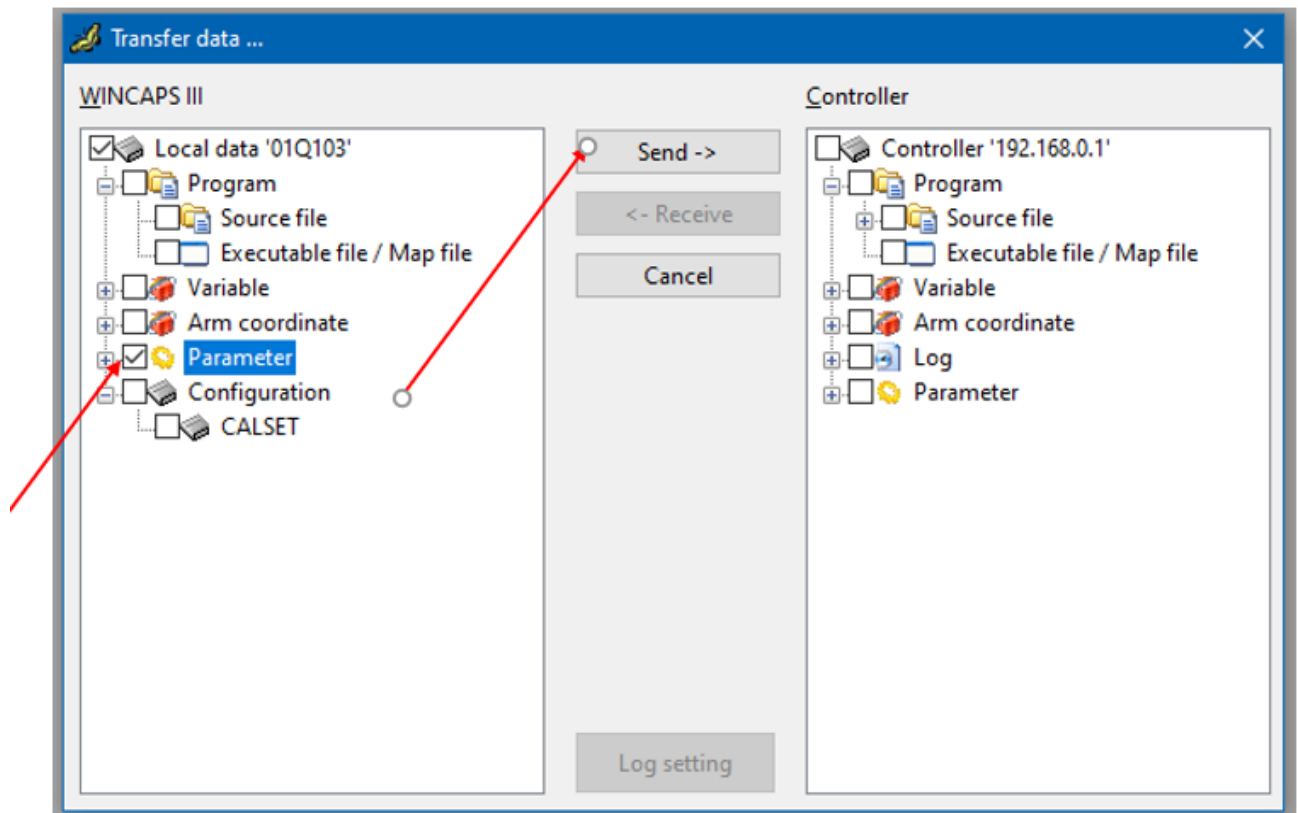
Step 5- Open the WPJ file.



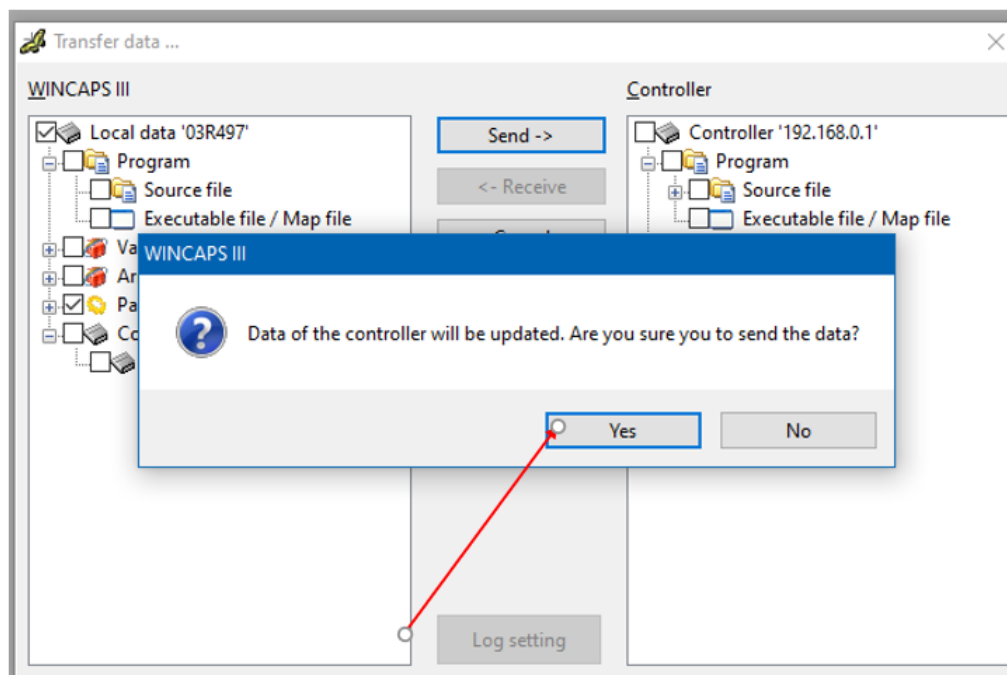
Step 6- Choose "Connect" then "Transfer Data" or select the Icon showed below.



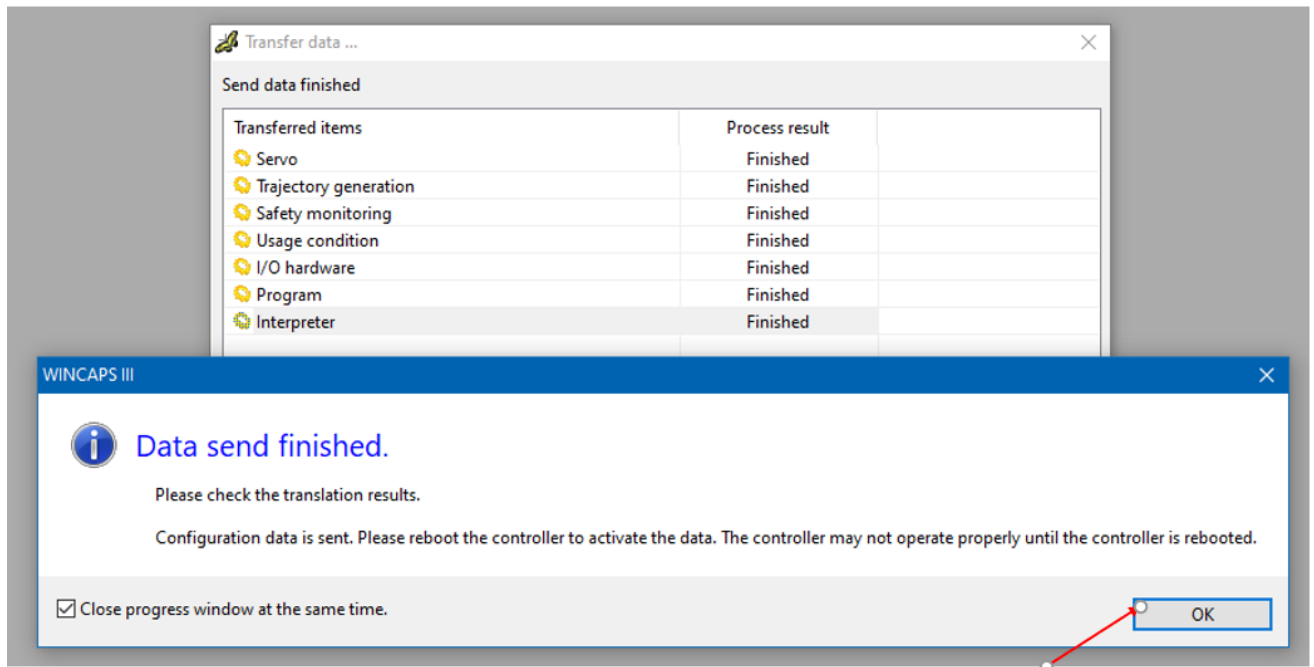
Step 7- Select parameters from the left side menu and then choose Send ->



Step 8- A popup will appear stating “Data of the controller will be updated...” click Yes

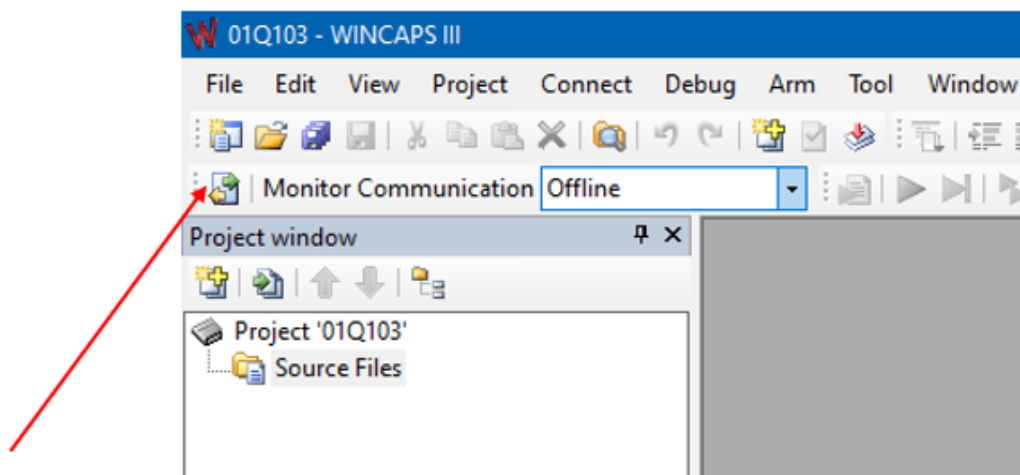


Step 9- Once Data send finished appears click OK

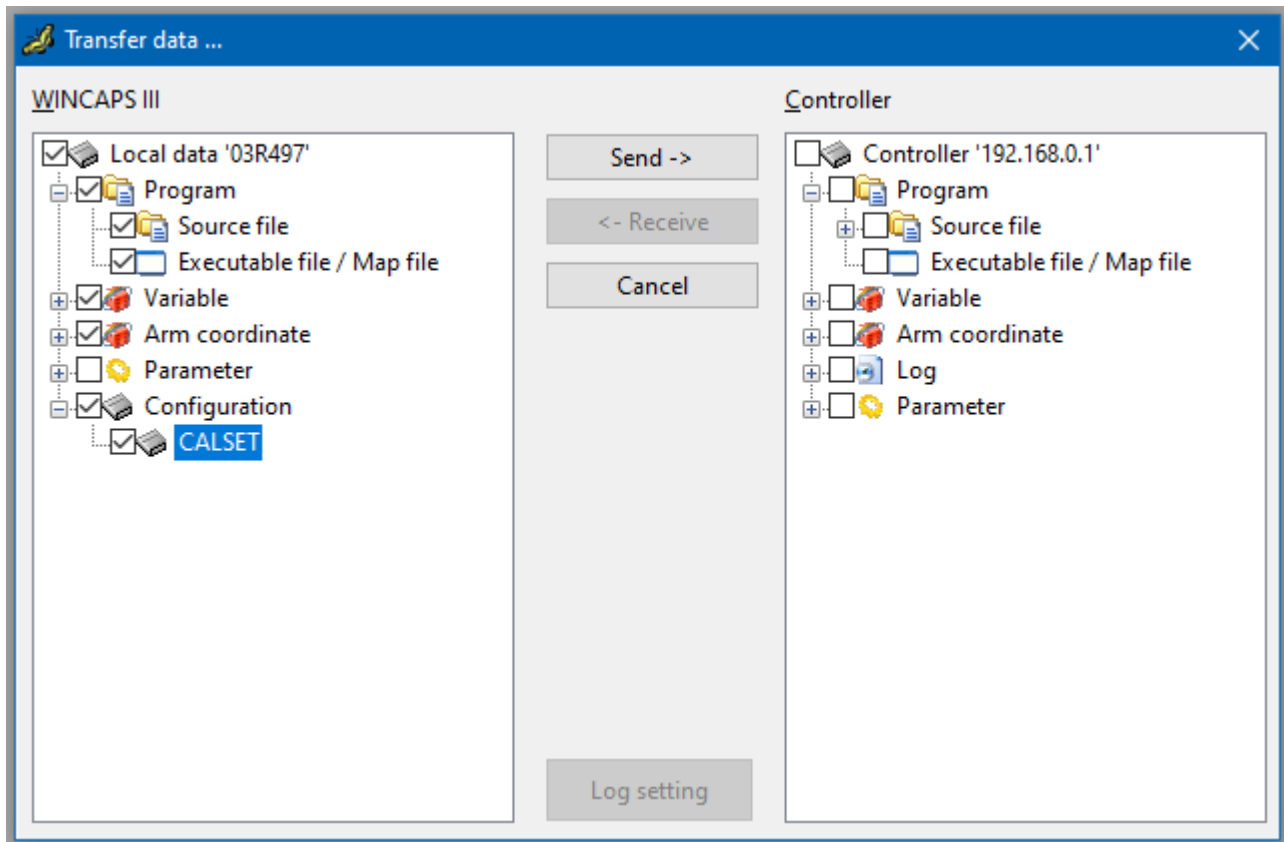


Step 10- Cycle power to the controller.

Step 11- Return to transfer data either under connect list or the following icon



Step 12-Select all options but Parameter and click Send. Note a popup will appear when you click on Calset that says “Are you sure to send Calset” click yes. Then click Send.



Step 13-After data send is complete the following message box will appear. Click OK and this window and the progress window will disappear. You have completed the RC7 robot type change and exchange.

