YASKAWA

YRC 1000
Ethernet IP
Device Setup – SMC EX600

Feb 28, 2023

Yaskawa America, Inc.
Motoman Robotics Division

YRC EtherNet IP Device Setup

Assumptions

- Robot IP address is setup (192.168.1.31) for Lan2
- Robot Ethernet/IP CPU board is enabled (Yaskawa Mode)

YRC EtherNet IP Device Setup

- Define device attributes
- Add device to device list
- Add device to scan list
- I/O allocation
- Set device IP address
- Verify hardware connection
- Verify device communication
- Test I/O
- Files
- Device Communication Status

YRC ethernet IP Device Setup – Define Device

- See device manuals for information
  - EDS contains this information
- Required information
  - Input instance
  - Input size
  - Output instance
  - Output size
  - Configuration Instance
  - Configuration Size
- Additional Information
  - Manufacturer ID
  - Device ID
  - Revision

What is an assembly instance? An assembly instance is a group of I/O and configuration data.

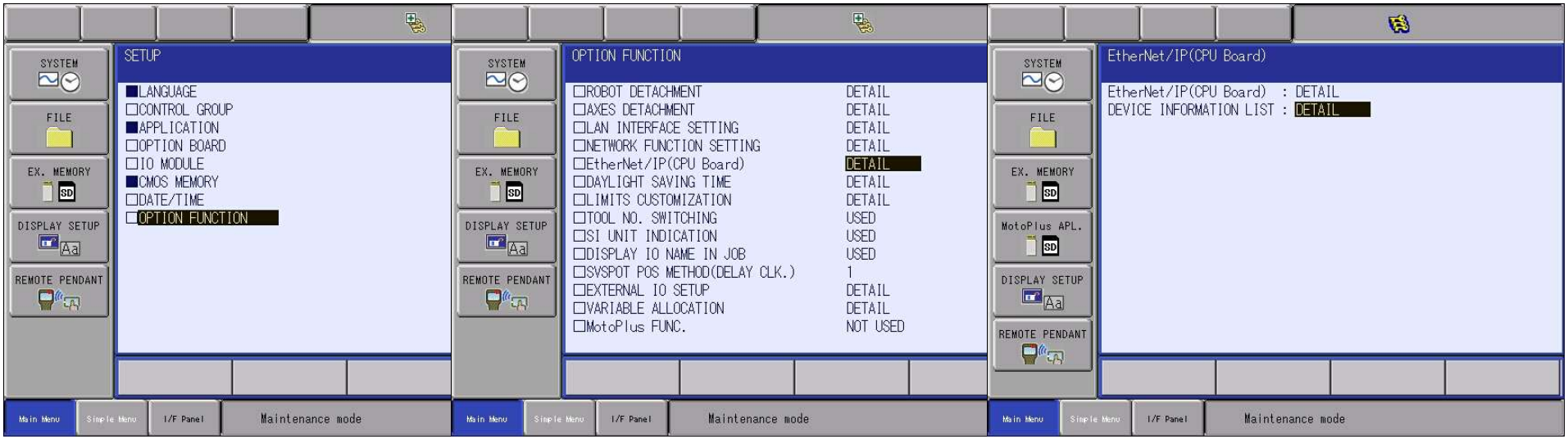
There are 3 types of assembly instances

- Input
- Output
- Configuration

For example, A Yaskawa V1000 drive has many Output assembly instances.

- Output Instance 20 – basic speed control
- Output Instance 21 – extended speed control
- Output Instance 22 – speed and torque control

Add device to device list – SMCEX600 Example

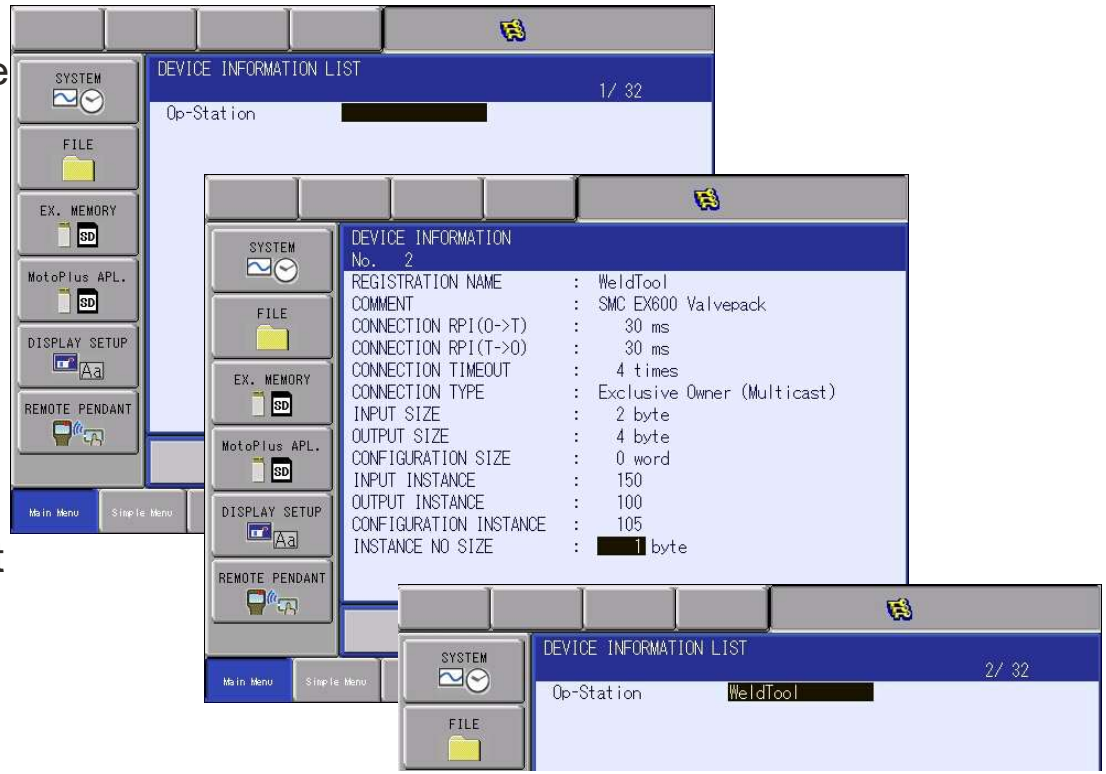


- Reboot controller to maintenance mode
- Change security mode to Safety Mode
  - Password – 5555555555555555
- Select option function
- Select EtherNet/IP (CPU Board)
- Select device information list – Detail

Device EDS not required for YRC1000 Setup

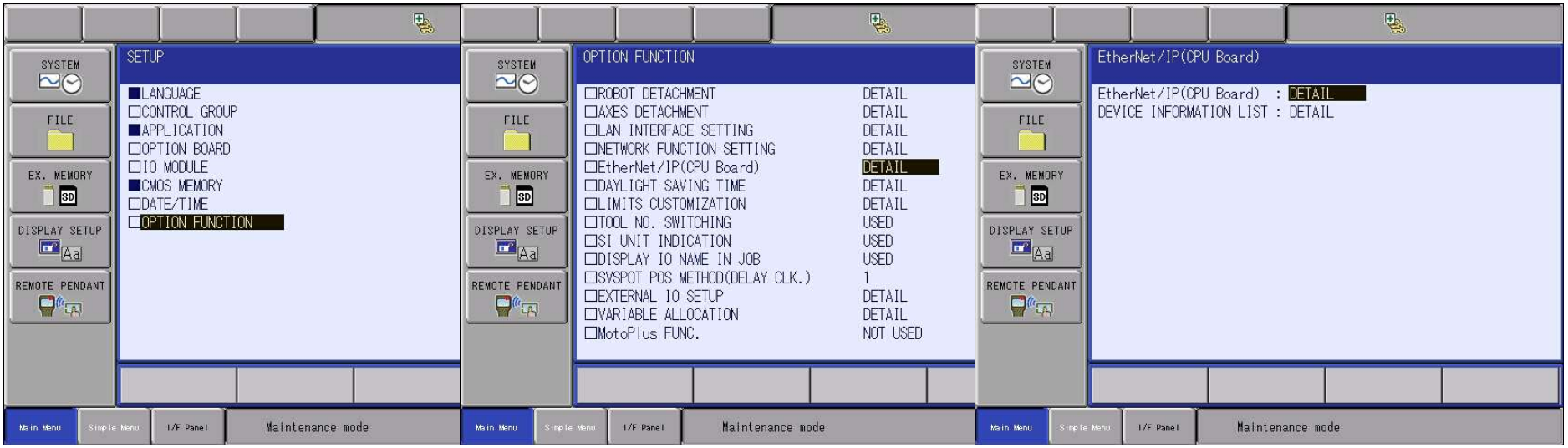
YRC ethernet IP Device Setup – Add device to device list

- Select an open space
- Enter the device Information from manufacture
  - Registration name – name to appear in scanlist
  - Connection RPI – Device Update rate, system dependent. A good starting point is 30ms. More devices is system may require larger rates per device
  - Connection type – Exclusive owner
  - Input instance
  - Input size – EX600 configuration dependent (1 input module in this example)
  - Output instance
  - Output size
  - Configuration Instance
  - Configuration Size



A device input instance is the scanner's output Instance.

YRC ethernet IP Device Setup – Add device to scanlist



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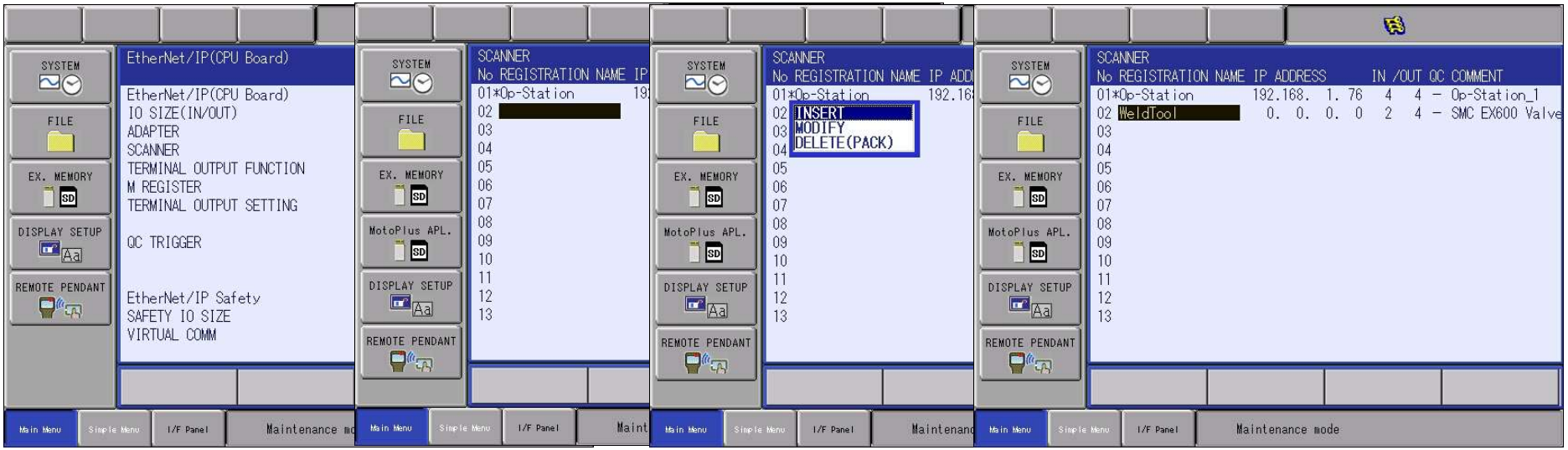
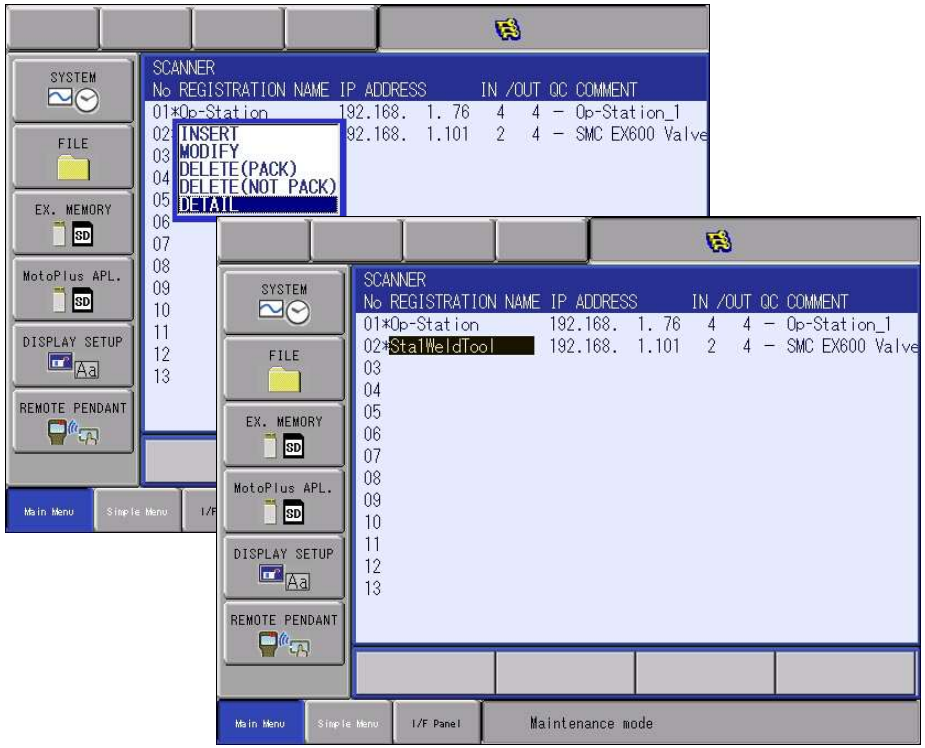
YRC ethernet IP Device Setup – Add device to scan list



- Select scanner
- Select scanner slot for device (1-16)
- Select Insert
- Pick device from device list
- Set Ip Address for device (and quick connect if functionality is required/available)

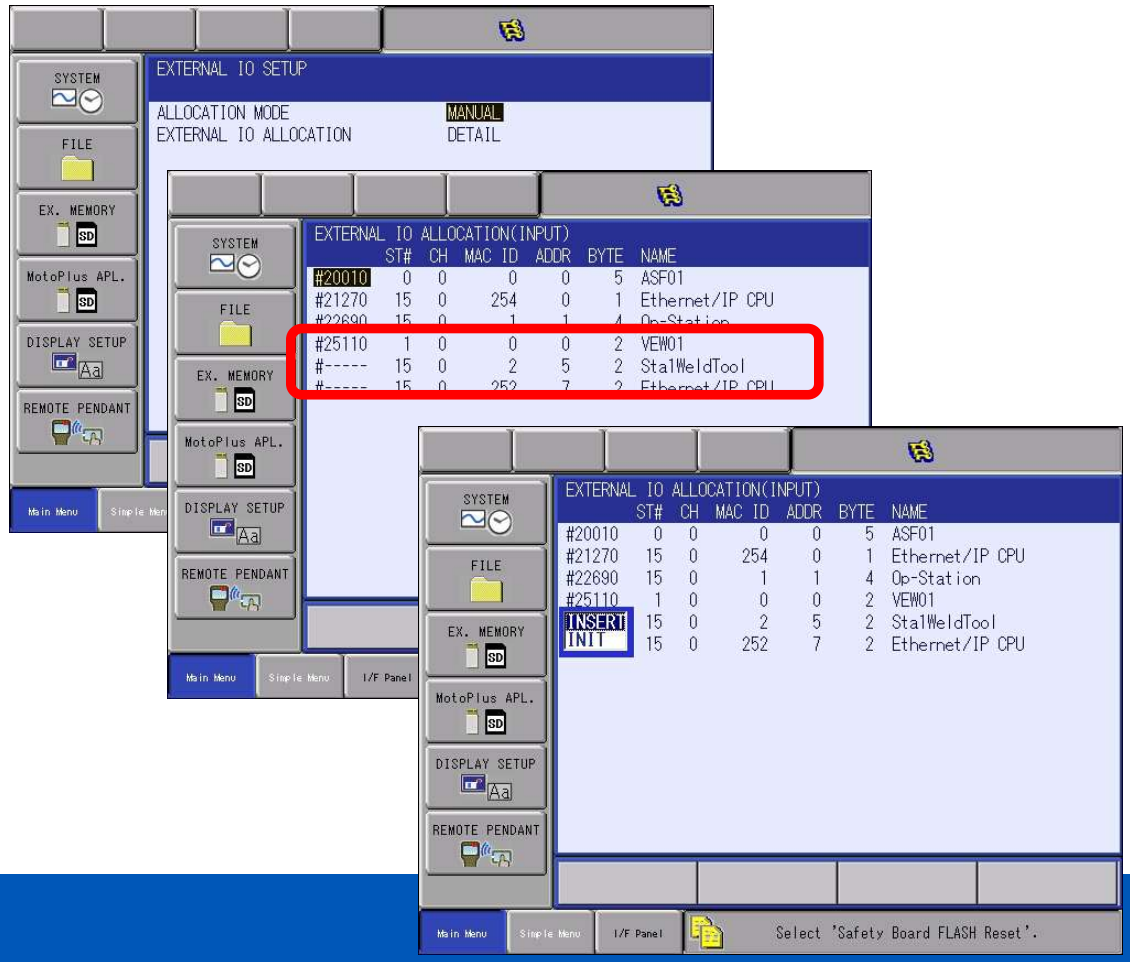
YRC ethernet IP Device Setup – Add device scanlist

- After a device is in the scan list, the device detail can be changed.
  - Change comments for multiple devices with the same configuration (WeldTool1, Weldtool2)
  - Change offset for inputs. This removes status in most cases from the inputs. For example – VIPA 40I/O
- When device detail are change from the device list, an * appears next to the name. In this case the comment was changed to Sta1WeldTool



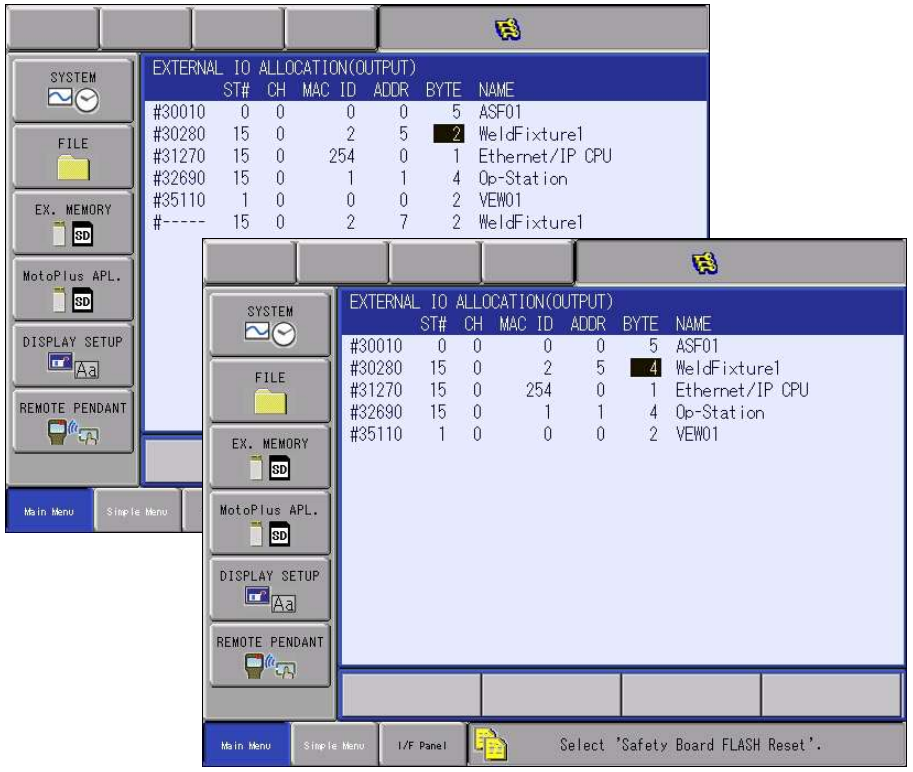
YRC ethernet IP Device Setup – I/O allocation

- Allows assignment of device to specific external inputs / outputs.
- Devices mapping
  - Device1 starting at In/Out 201
  - Device2 starting at In/Out 401
  - Device3 starting at In/Out 601
- Select manual allocation mode
- Select external IO allocation detail
- Initialize input allocation if required
  - Select an ext input address, then Init
    - 20280 starts at general input 201
    - 20530 starts at general input 401
    - 20780 starts at general input 601



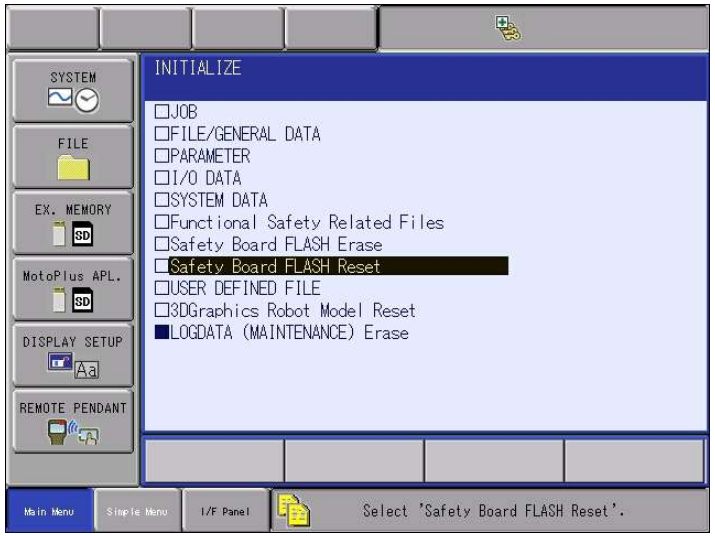
YRC ethernet IP Device Setup – I/O allocation

- Assign Sta1WeldTool Outputs
  - Select dashes in front of Sta1WedlTool
  - Select insert
  - Enter 30280 (for general Output 201)
    - Notice there are now two entries for Weld fixture 1. Select the top entry and enter the rest of the inputs. In this case, change the byte to 4.



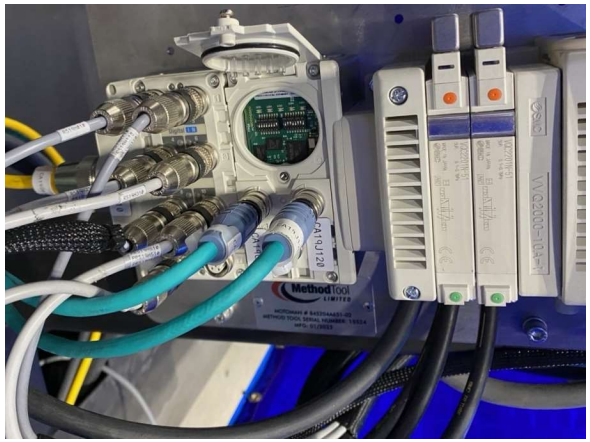
YRC ethernet IP Device Setup – I/O allocation

- Flash Reset



YRC ethernet IP Device Setup – Set Device IP Address

- SMCEx600 – Set Dip Switches
  - Settings1 – 8 On, 1-7 Off
  - Settings2 – 1,2,5,6 On 3,4,7,8 Off
- 192.168.1.101
- Plug in ethernet / power cables
- Cycle power on the device



Setting and Adjustment

•IP address setting switch

Settings1	Settings2								IP address
8	1	2	3	4	5	6	7	8	
OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	192.168.0.1
:	:	:	:	:	:	:	:	:	:
OFF	OFF	ON	ON	ON	ON	ON	ON	ON	192.168.0.254
ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	192.168.1.1
:	:	:	:	:	:	:	:	:	:
ON	OFF	ON	ON	ON	ON	ON	ON	ON	192.168.1.254
ON/OFF	ON	ON	ON	ON	ON	ON	ON	ON	DHCP mode
ON/OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Remote Control mode

•HOLD/CLEAR switch: Sets the output status when the fieldbus has a communication error or is in idling state.

Settings1	Content
1	
OFF	Output is OFF. (default setting)
ON	Holds the output.

*: This switch can be enabled and disabled by parameter.

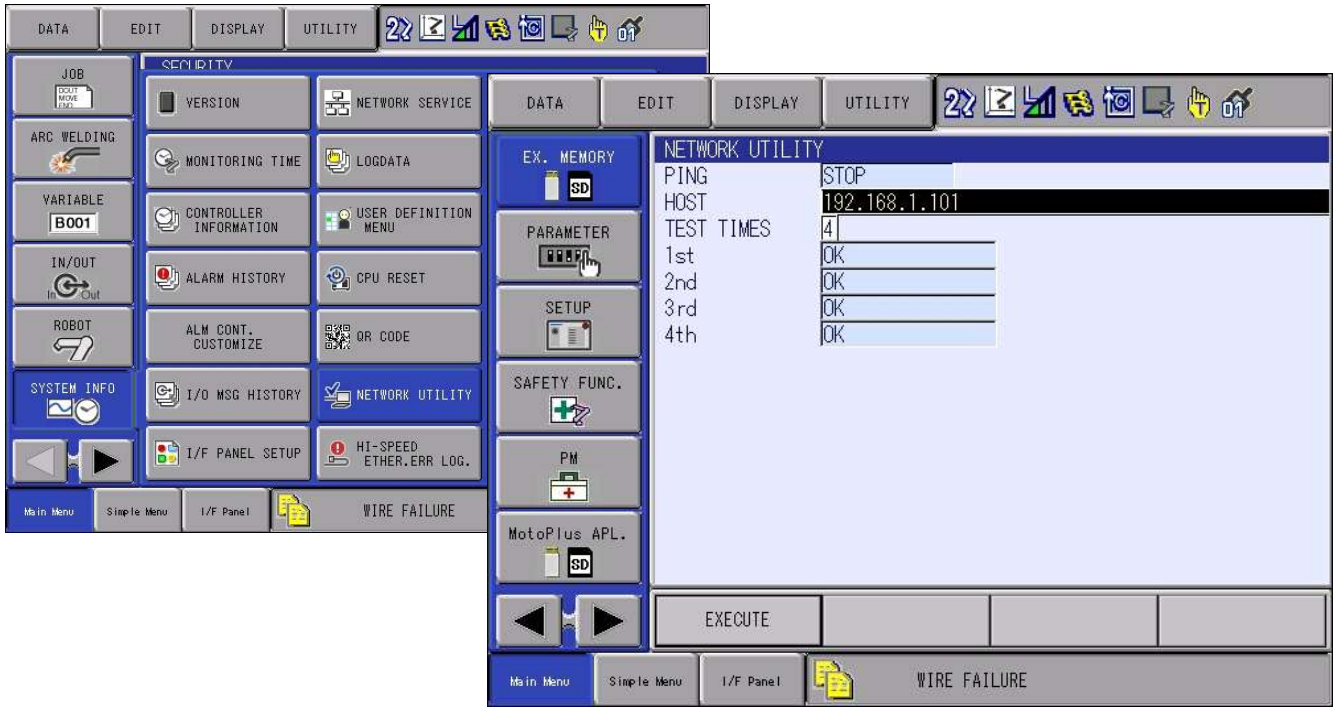
•Switch for diagnosis: Allocates the diagnostic data to the input data.

Settings1	Mode	Content	Diagnostic size set for the input
2			
OFF	0	Input data only (default setting)	0 byte
ON	1	Input data + System diagnosis + Unit diagnosis	4 byte

Refer to the SMC website (URL http://www.smcworld.com) for more information about setting and adjustment.

EtherNet IP Device Setup – Verify Hardware Connection

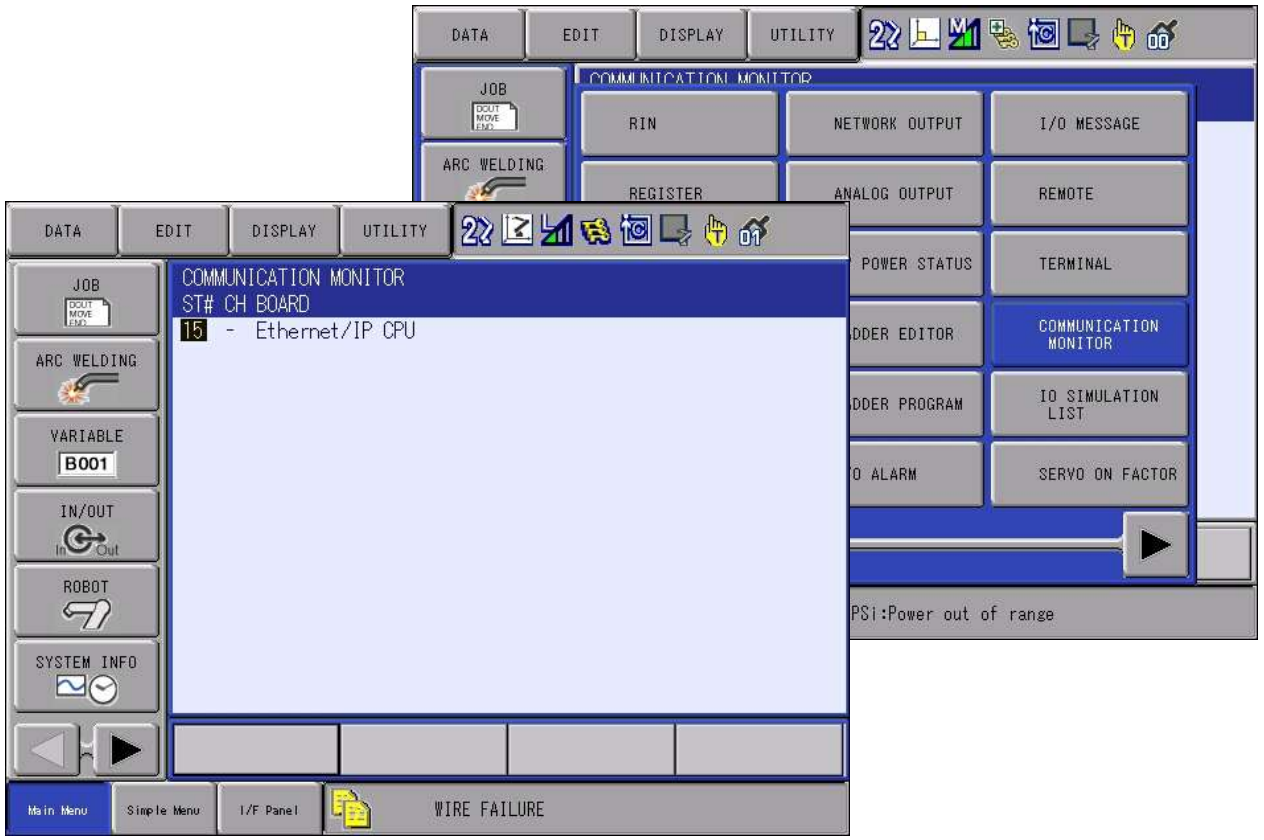
- Change security mode to management mode
- Under system info, select the network utility
- Enter device IP address in the HOST box
- Press the execute button
- Hardware connection is good when there is an “OK” result
- Verify Ethernet cable to device when “NG” result is displayed.



Similar to using a PC cmd prompt to ping a device

EtherNet IP Device Setup – Verify Device Communication

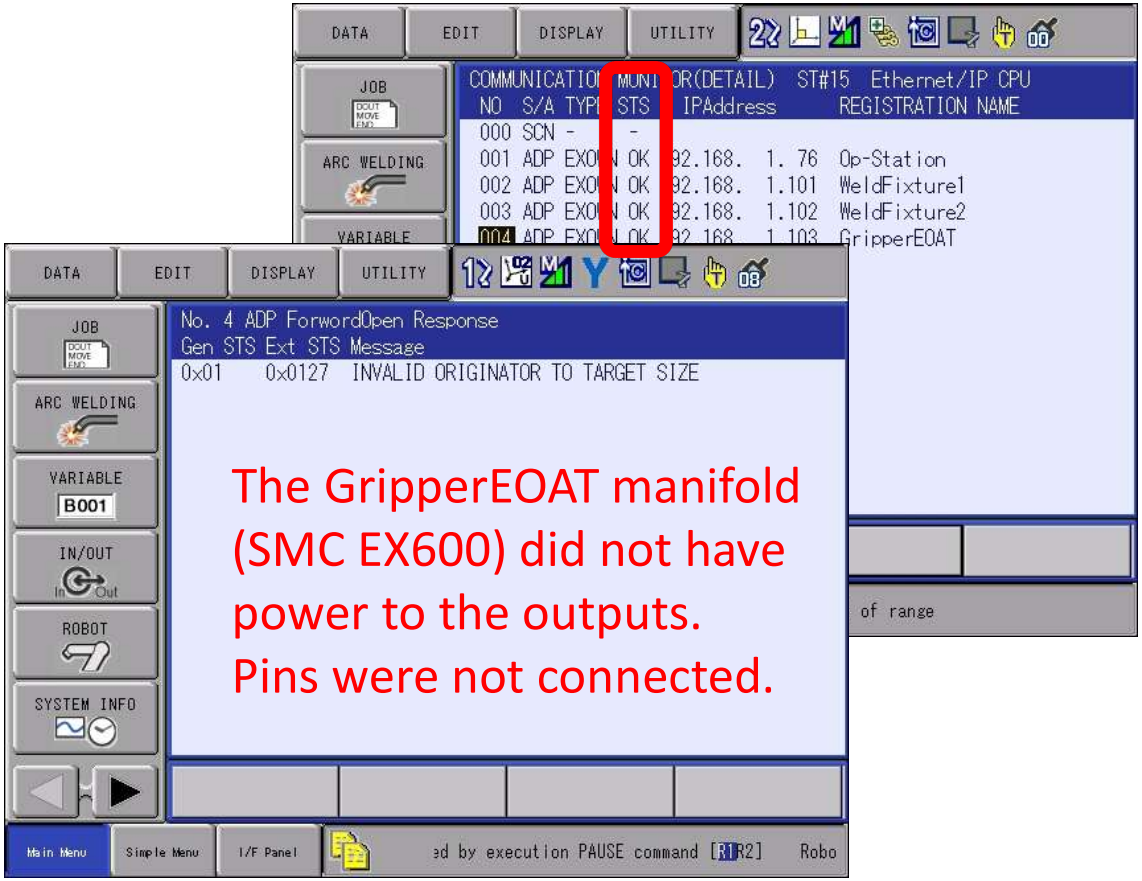
- Change security mode to management mode
- Under In/Out, select communication monitor
- Select ST# - 15 Ethernet/IP CPU
- Device Scanlist is displayed



EtherNet IP Device Setup – Verify Device Communication

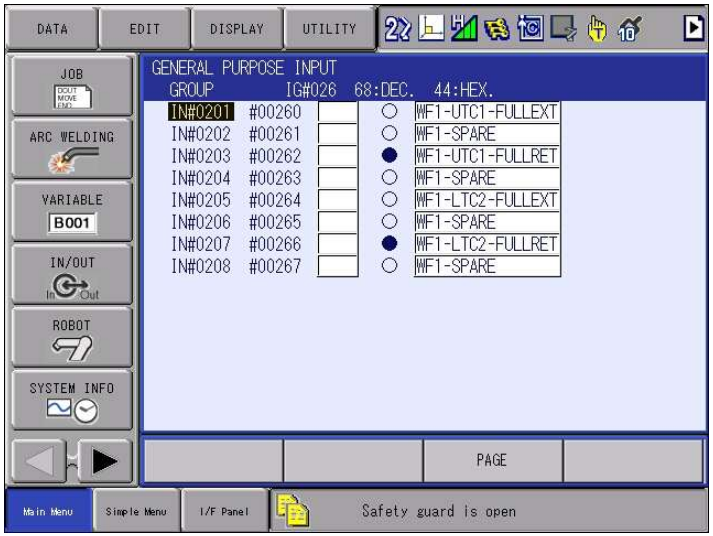
- Communication status is displayed in the STS column
- If NG, curser to the device and press select for diagnostic information

Troubleshooting: Verify device I/O size in setup, ensure power is on all components in the device (both inputs and outputs)



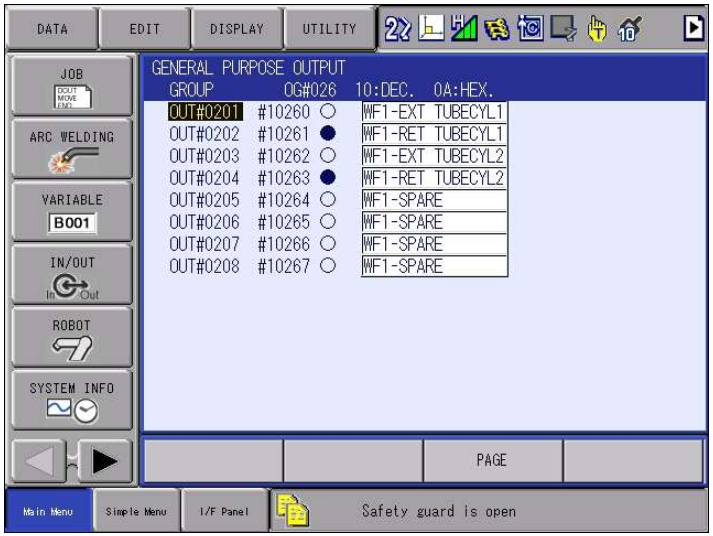
EtherNet IP Device Setup – Test I/O

- From the In/Out menu, select general purpose inputs
- Select an input number and type 201
- Indicator will be solid when input is on



EtherNet IP Device Setup – Test I/O

- From the In/Out menu, select general purpose outputs
- Select an output number and type 201
- Curser to indicator
- Press pendant interlock and select buttons at the same time in teach mode to turn on/off output.

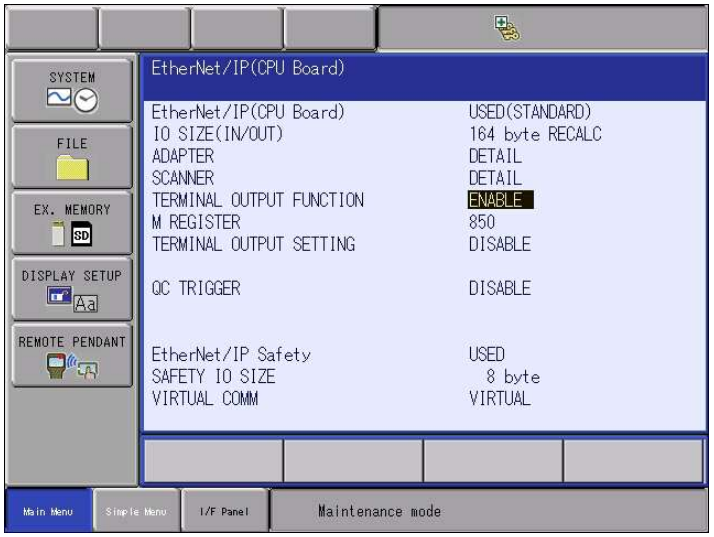


EtherNet IP Device Setup – Files

- IPNETCFG – Stores IP address of the robot
- EIOALLOC – Stores I/O allocation
- ETHERIP – Stores the scanlist and device info
  - Can not load an ETHERIP to a new controller without having the same size as the file to be loaded.
  - Create a sample device on robot controller that is the same size as the one being loaded.

EtherNet IP Device Setup – Device Com Status

- Terminal output function assigns com status of scanner slots to M registers.
- YAS2.43.00A-00 or later software
- Com fault is on / Com Ok is off



M850

No. 16	No. 15	No. 14	No. 13	No. 12	No. 11	No. 10	No. 9	No. 8	No. 7	No. 6	No. 5	No. 4	No. 3	No. 2	No. 1

Scanner Slot Number

M851

No. 32	No. 31	No. 30	No. 29	No. 28	No. 27	No. 26	No. 25	No. 24	No. 23	No. 22	No. 21	No. 20	No. 19	No. 18	No. 17

Manual 178651-1CD Section 4.10

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