

**YASKAWA**

# YRC 1000 Ethernet IP Device Setup – SMC EX600

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Motoman Robotics Division

# YRC EtherNet IP Device Setup

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## 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

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- 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

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- 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.

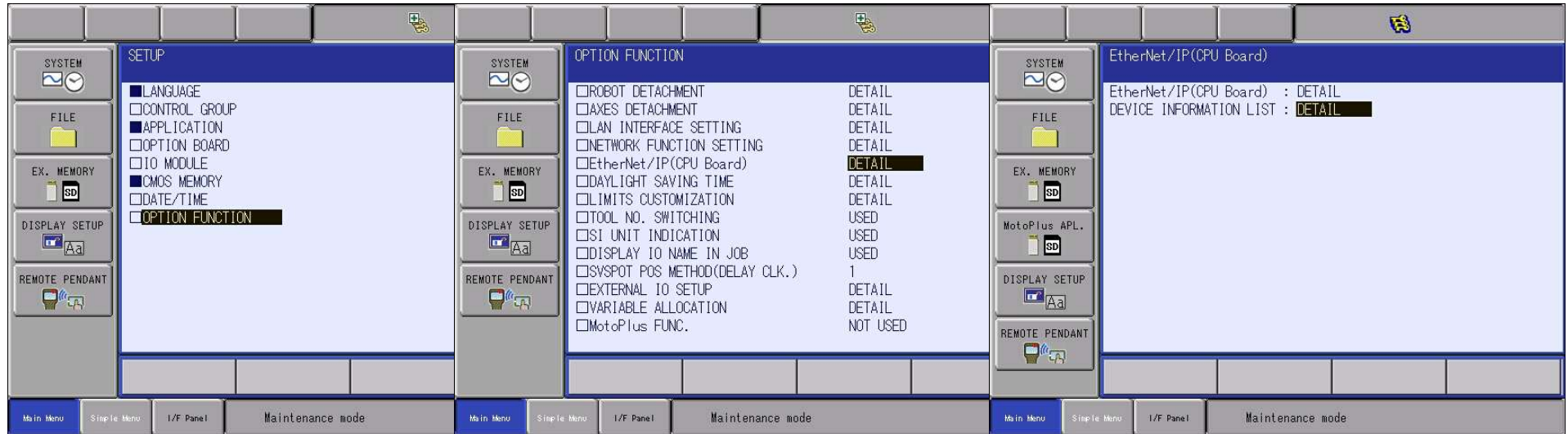
There are 3 types of assembly instances

- 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



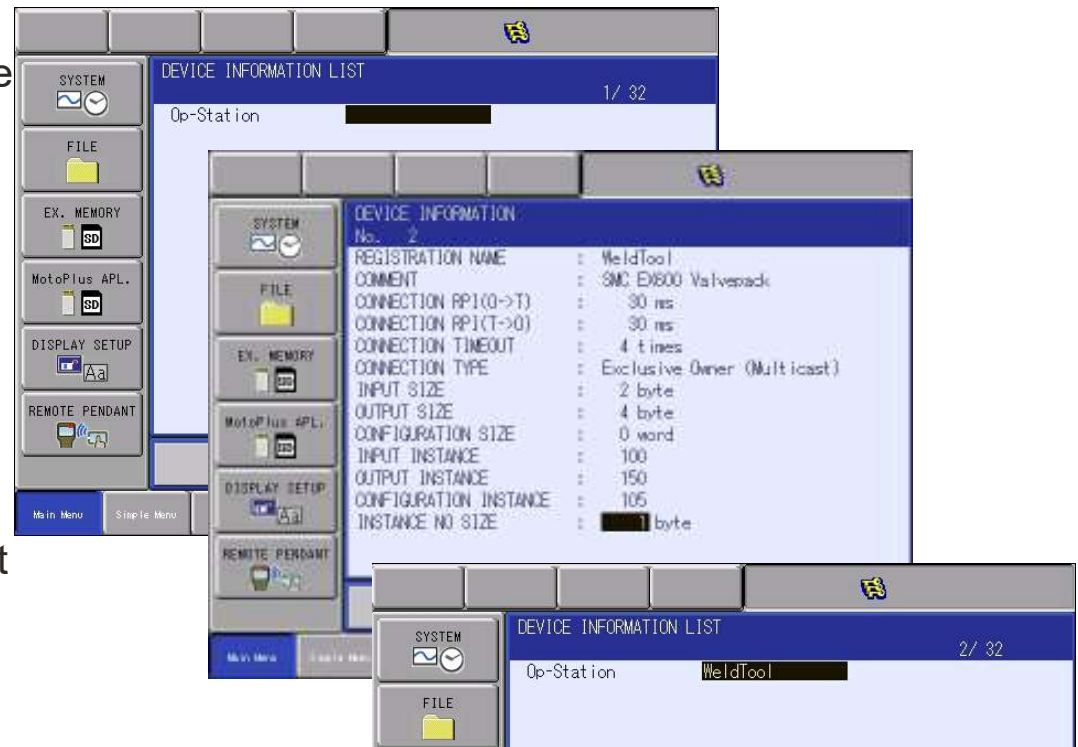
- Reboot controller to maintenance mode
- Change security mode to Safety Mode
  - Password – 5555555555555555
- Select option function
- Select EtherNet/IP (CPU Board)
- Select device information list – Detail



**Device EDS not required for YRC1000 Setup**

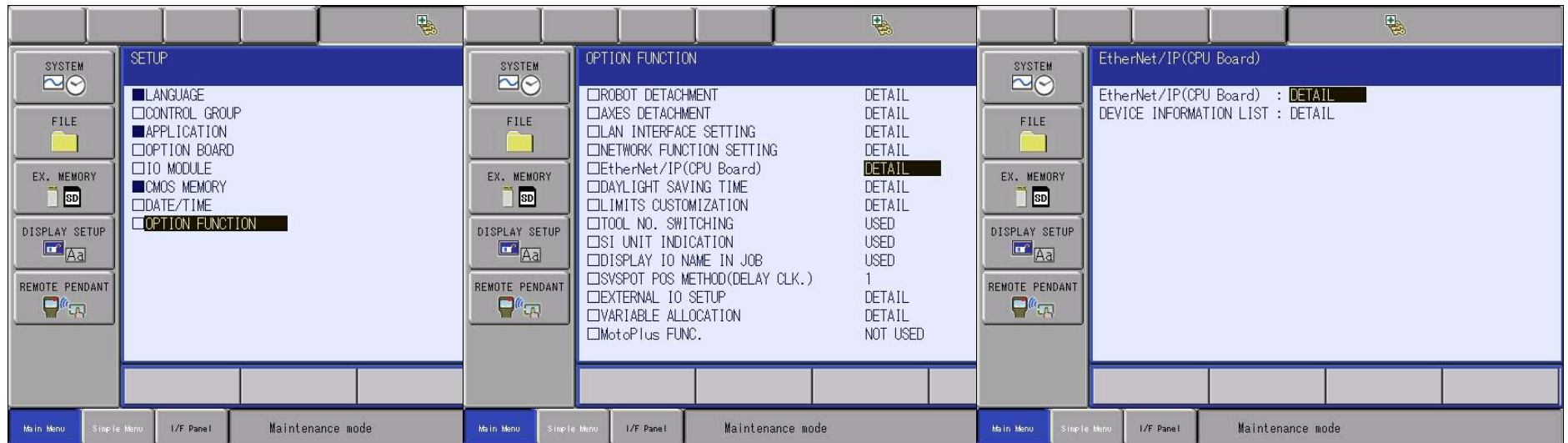
# YRC ethernet IP Device Setup – Add device to device list

- 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



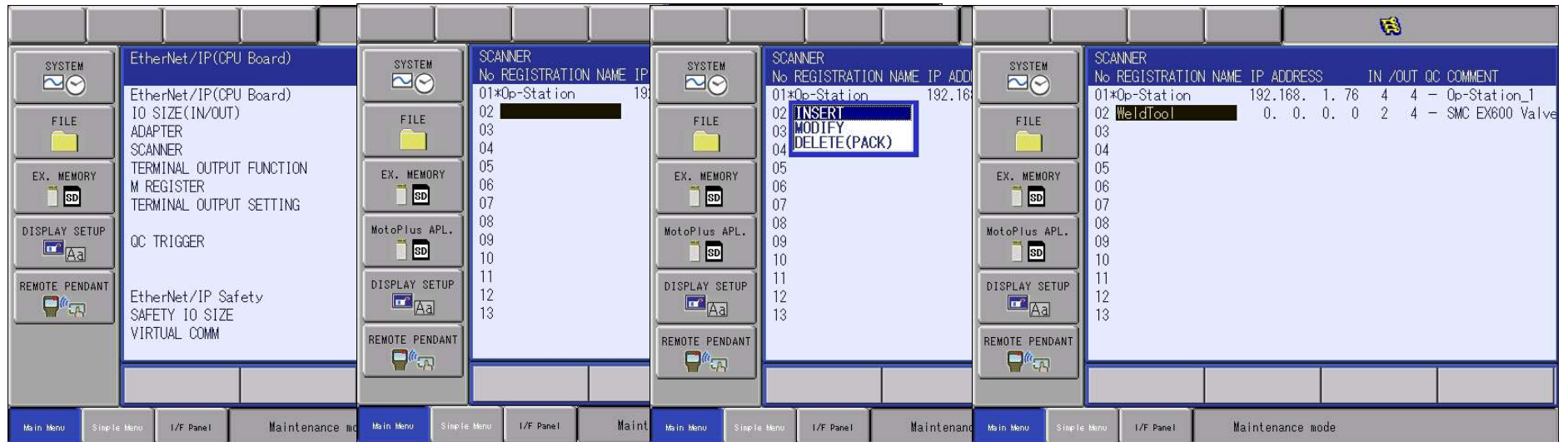
**A device input instance is the scanner's output Instance.**

# YRC ethernet IP Device Setup – Add device to scanlist



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

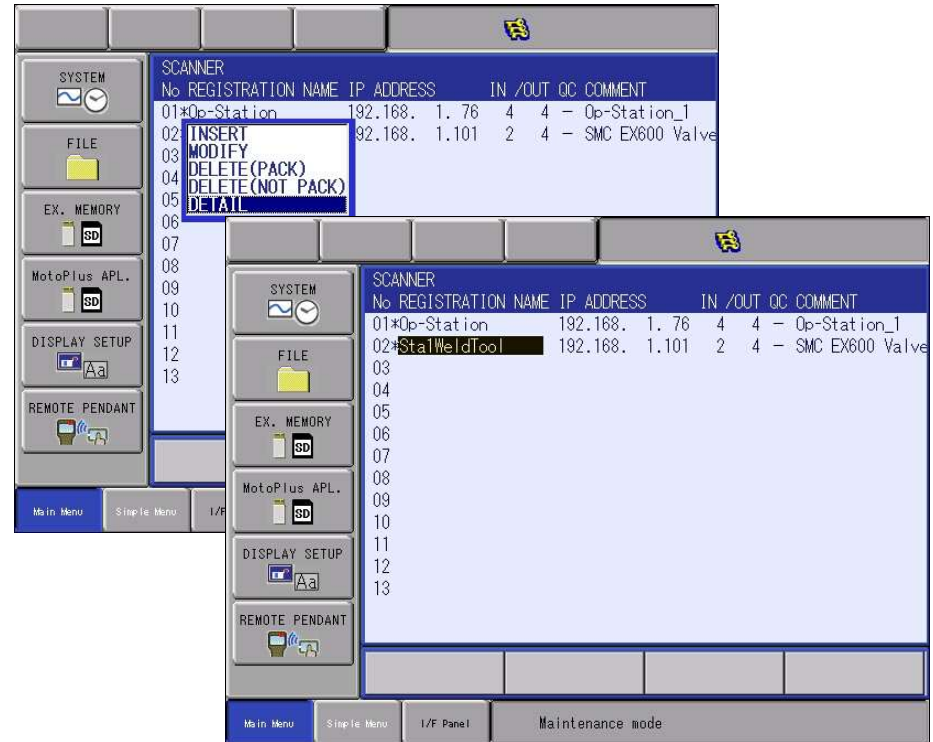
# YRC ethernet IP Device Setup – Add device to scan list



- 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)

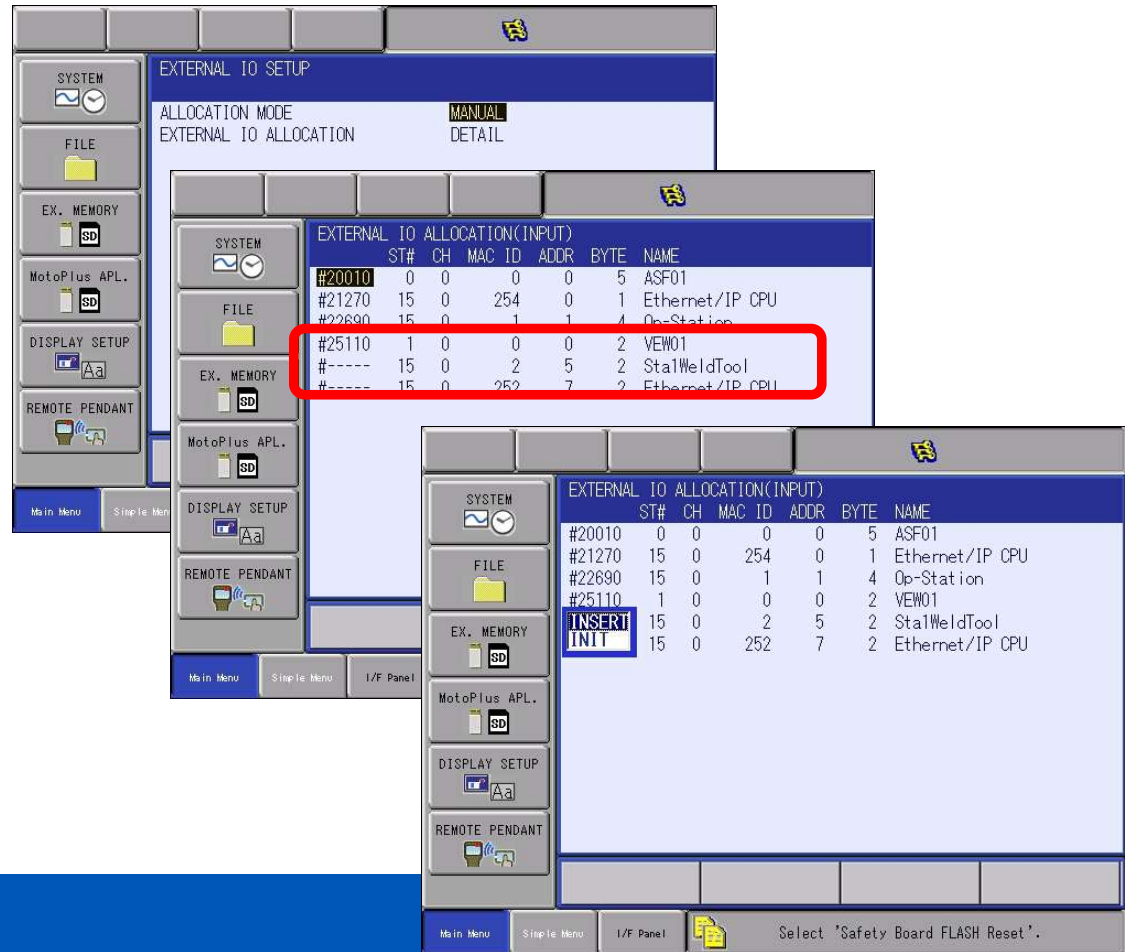
# YRC ethernet IP Device Setup – Add device scanlist

- 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
  - 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 Sta1WedITool
  - 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.

The image shows two screenshots of the YRC I/O allocation screen. The top screenshot shows the 'EXTERNAL IO ALLOCATION(OUTPUT)' table with the following data:

ST#	CH	MAC ID	ADDR	BYTE	NAME
#30010	0	0	0	0	5 ASF01
#30280	15	0	2	5	2 WeldFixture1
#31270	15	0	254	0	1 Ethernet/IP CPU
#32690	15	0	1	1	4 Op-Station
#35110	1	0	0	0	2 VEW01
#----	15	0	2	7	2 WeldFixture1

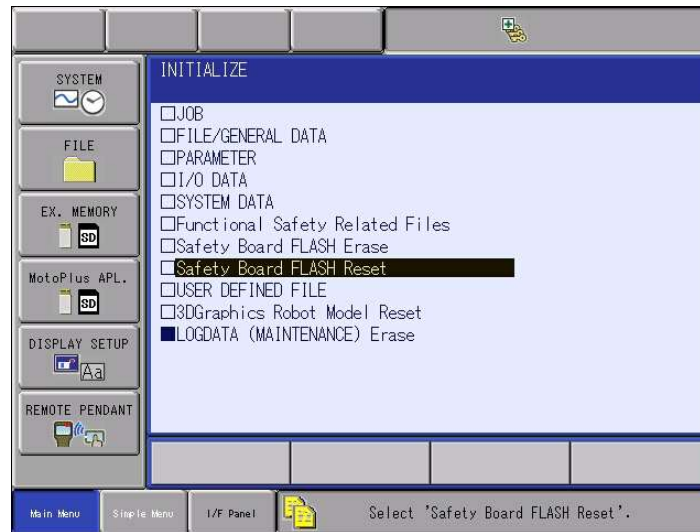
The bottom screenshot shows the same table after editing the top 'WeldFixture1' entry. The 'BYTE' column for the top entry is now 4:

ST#	CH	MAC ID	ADDR	BYTE	NAME
#30010	0	0	0	0	5 ASF01
#30280	15	0	2	5	4 WeldFixture1
#31270	15	0	254	0	1 Ethernet/IP CPU
#32690	15	0	1	1	4 Op-Station
#35110	1	0	0	0	2 VEW01

The interface includes a sidebar with buttons for SYSTEM, FILE, EX. MEMORY, MotoPlus APL., DISPLAY SETUP, and REMOTE PENDANT. The bottom status bar shows 'Main Menu', 'Step In Menu', 'I/F Panel', and a message: 'Select 'Safety Board FLASH Reset'.'

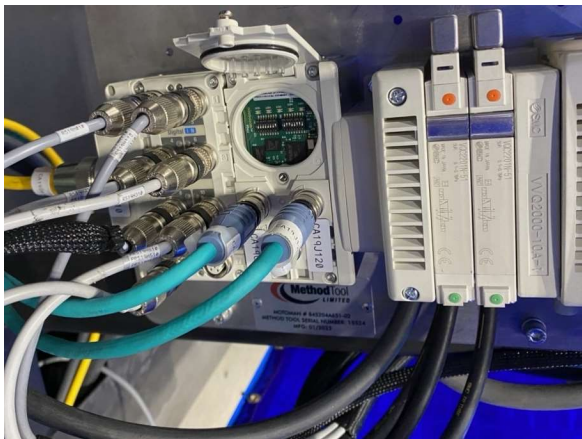
# YRC ethernet IP Device Setup – I/O allocation

- 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
	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	Reverse Control mode

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

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

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

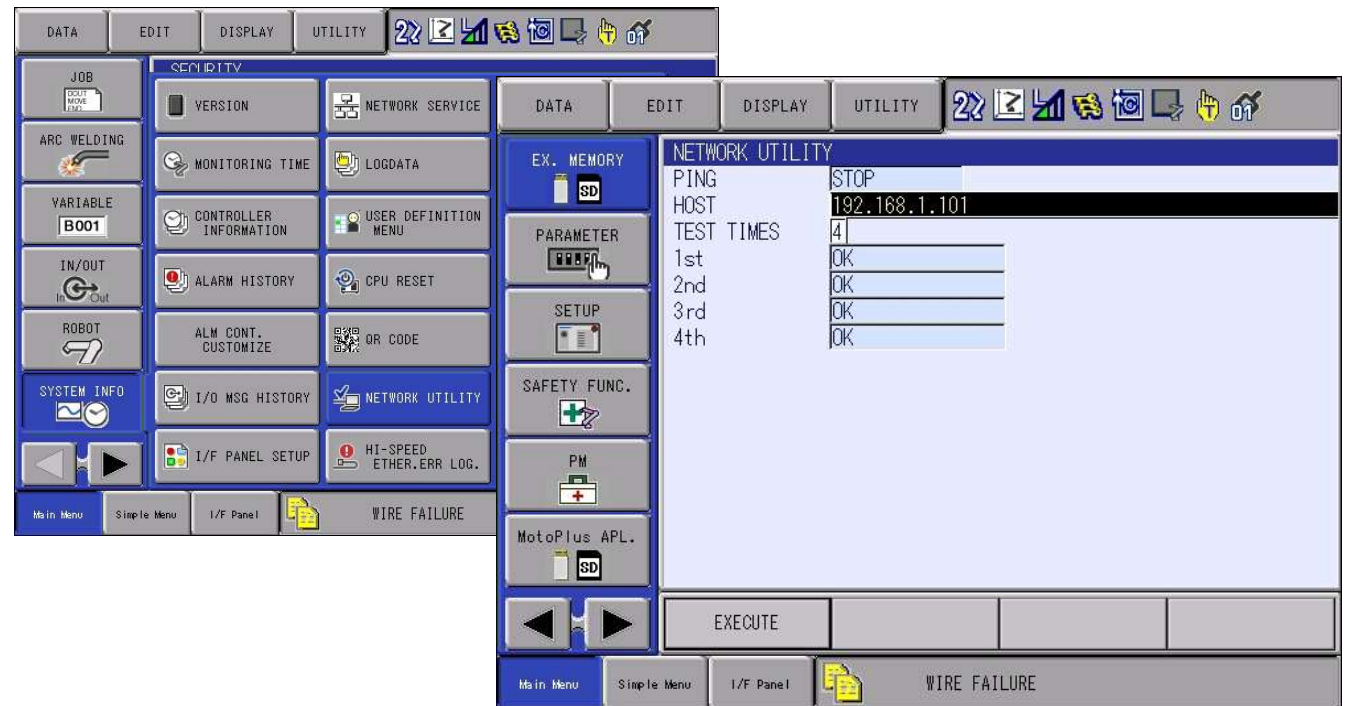
\*Switch for diagnosis: Allocates the diagnostic data to the input data.

Settings1	Mode	Content	Diagnostic size set for the input
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

# EtherNet IP Device Setup – Verify Hardware Connection

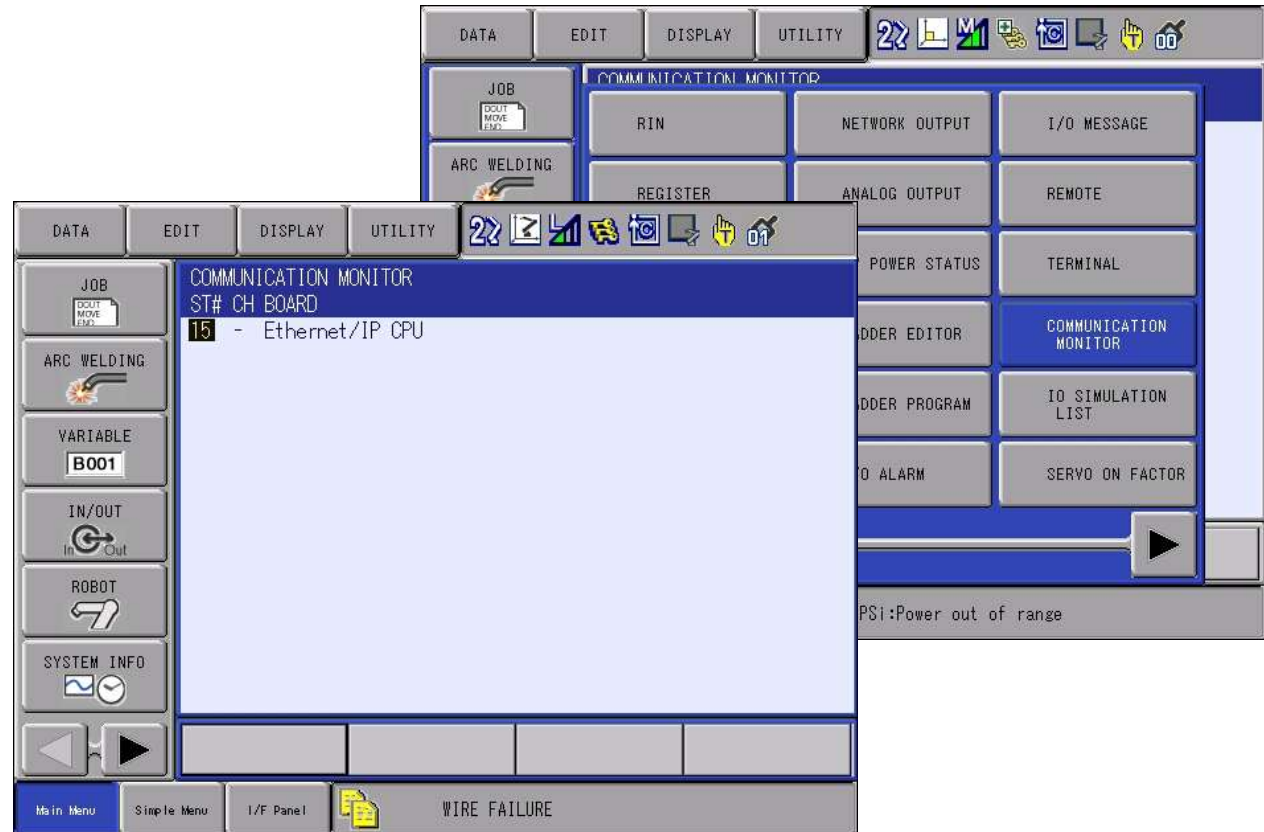
- Change security mode to management mode
- Under system info, select the network utility
- Enter device IP address in the HOST box
- Press the execute button
- Hardware connection is good when there is an “OK” result
- Verify Ethernet cable to device when “NG” result is displayed.



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, cursor 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)

The screenshot shows the 'COMMUNICATION MONITOR (DETAIL)' screen for ST#15 Ethernet/IP CPU. A table lists communication details for various devices, with the 'STS' column highlighted in red. The table data is as follows:

NO	S/A	TYPE	STS	IPAddress	REGISTRATION NAME
000	SCN	-	-		
001	ADP	EXON	OK	92.168. 1. 76	Op-Station
002	ADP	EXON	OK	92.168. 1.101	WeldFixture1
003	ADP	EXON	OK	92.168. 1.102	WeldFixture2
004	ADP	EXON	OK	92.168. 1.103	GripperEOAT

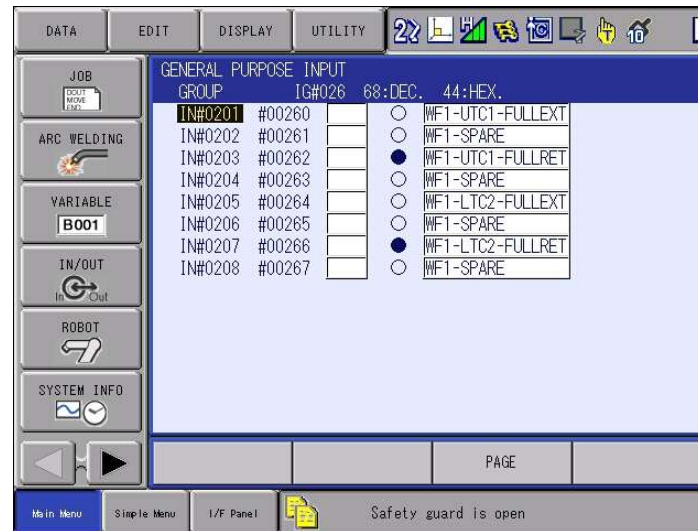
Below the table, a diagnostic message is displayed for 'No. 4 ADP ForwardOpen Response':

```
Gen STS Ext STS Message  
0x01 0x0127 INVALID ORIGINATOR TO TARGET SIZE
```

A red text overlay on the diagnostic message reads: "The GripperEOAT manifold (SMC EX600) did not have power to the outputs. Pins were not connected."

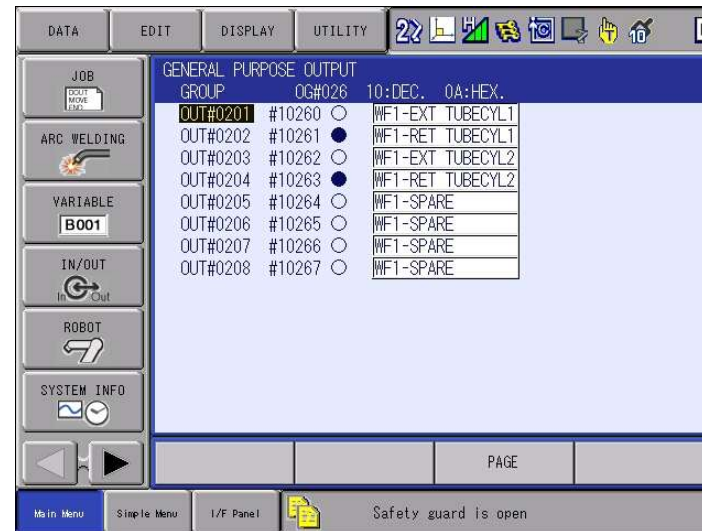
# EtherNet IP Device Setup – Test I/O

- 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
- Cursor 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

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- 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

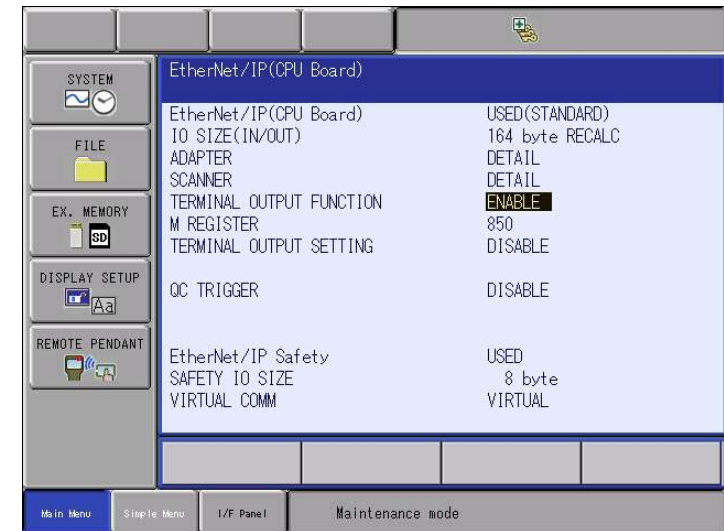
## M850

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

Scanner Slot Number

## M851

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



Manual 178651-1CD Section 4.10

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