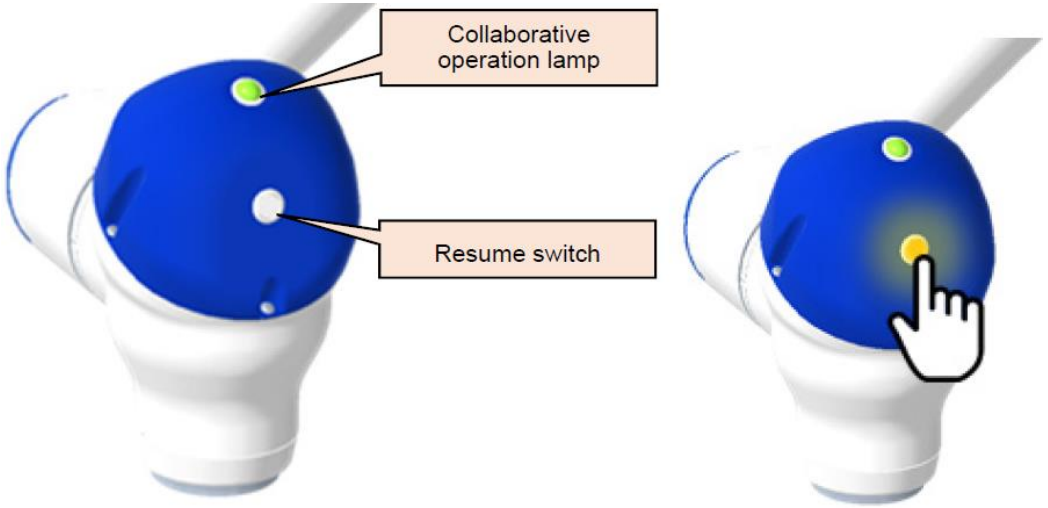
This document captures ideas, experiences, and informal recommendations from the Yaskawa Partner Support team. It is meant to augment – not supersede manuals or documentation from motoman.com. Please contact the Partner Support team at partnersupport@motoman.com for updates or clarification.

Output Collaborative Robot Stop State to Stack Light

Introduction

When collaborative mode is enabled and an external force is detected on the manipulator, it performs a protective stop and/or escape from clamping action and puts the manipulator into a monitored stop state by the functional safety functions. When the robot enters a monitored stop state, the LED for the resume switch turns on.



Collaborative Operation Lamp and Resume Switch (Example for HC10 and HC10DT)

There can be occasions when this may be the only indication the robot has stopped. Depending on the cell layout, guarding obstructions, position of the robot etc. an operator may not notice the robot has stopped or may not be able to see the resume switch. For this purpose, you may want to output this status to a stack light that is more readily visible to an operator. Note: This document assumes the reader is familiar with and capable of making ladder changes and/or wiring to an output. Due to the different controller configurations available, this document will not cover control wiring. Consult partnersupport@motoman.com for your specific configuration.

Finding a signal to use

There are a couple of ways to send this status to an external device, the following is what I have found to be the simplest. #81702 is the control status signal used for the monitored stop state. Fortunately, there is already a rung in the system side of the ladder utilizing this. To verify, search your system side ladder for #41660. Below is a view of the rung you should see using either ladder editor (rung based) or the ladder program (pneumonic) available through the standard teach pendant.

Ladder Editor View

Ladder Program View

```
0101 0025 STR      #81702
0102      AND-NOT  #81703
0103      OUT      #41660
```

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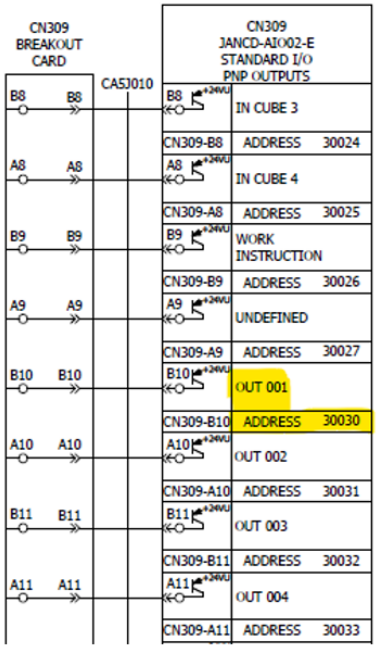
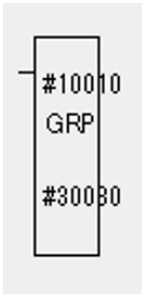
Using the signal

Now we know we can use #41660 to drive the output for the stack light. The stack light can be wired directly the controller or potentially to a plc. Either way will require modifying the User Side of the ladder to make #41660 your STR command and an external output #3xxxx as the OUT/output coil of the rung. Below is an example using Output 1 which has an external output of #30030. In this example, #30030 is already being used in a GRP command. We need to delete the GRP command and insert new rungs breaking this group down to bit level. We are replacing #10010 with #41660 so the monitored stop drives this external output rather than General Purpose Output#1.

System Prints



Ladder Editor Original



Ladder Editor Modified

Note: The above example may not reflect your system. This is not intended as a copy and paste document, contact partnersupport@motoman.com for further assistance.