Reference Manual

PlantPAx
Process Automation System

Rockwell Automation Library of Process Objects: Operator Prompt (P_Prompt)

Version 3.1





Allen-Bradley • Rockwell Software

Rockwell Automation

Important User Information

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

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The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Rockwell Automation, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

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Throughout this manual, when necessary, we use notes to make you aware of safety considerations.

	**WARNING:** Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death, property damage, or economic loss.
	**ATTENTION:** Identifies information about practices or circumstances that can lead to personal injury or death, property damage, or economic loss. Attentions help you identify a hazard, avoid a hazard, and recognize the consequence.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.

Labels may also be on or inside the equipment to provide specific precautions.

	**SHOCK HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that dangerous voltage may be present.
	**BURN HAZARD:** Labels may be on or inside the equipment, for example, a drive or motor, to alert people that surfaces may reach dangerous temperatures.
	**ARC FLASH HAZARD:** Labels may be on or inside the equipment, for example, a motor control center, to alert people to potential Arc Flash. Arc Flash will cause severe injury or death. Wear proper Personal Protective Equipment (PPE). Follow ALL Regulatory requirements for safe work practices and for Personal Protective Equipment (PPE).

Notes:

This document is updated throughout for version 3.1 of the Rockwell Automation Library of Process Objects. Changes for this revision are marked by change bars shown in the right margin.

Software Compatibility and Content Revision

Table 1 - Summary of Changes

Topic	Page
Changed title from 'PlantPAx® Library of Process Objects' to 'Rockwell Automation Library of Process Objects'	Front Cover
Changed version of Rockwell Automation Library of Process Objects from 3.0 to 3.1	5
Changed references to Knowledgebase Answer ID 62682 to Product Compatibility and Download Center	5, 31
Visualization Files: added Important note concerning the order files are to be imported Types table - added Optional Graphic Displays section to table	31

For the latest compatible software information and to download the Rockwell Automation Library of Process Objects, see the Product Compatibility and Download Center at http://www.rockwellautomation.com/rockwellautomation/support/pcdc.page.

For general library considerations, see Rockwell Automation Library of Process Objects, publication PROCES-RM002.

Additional Resources

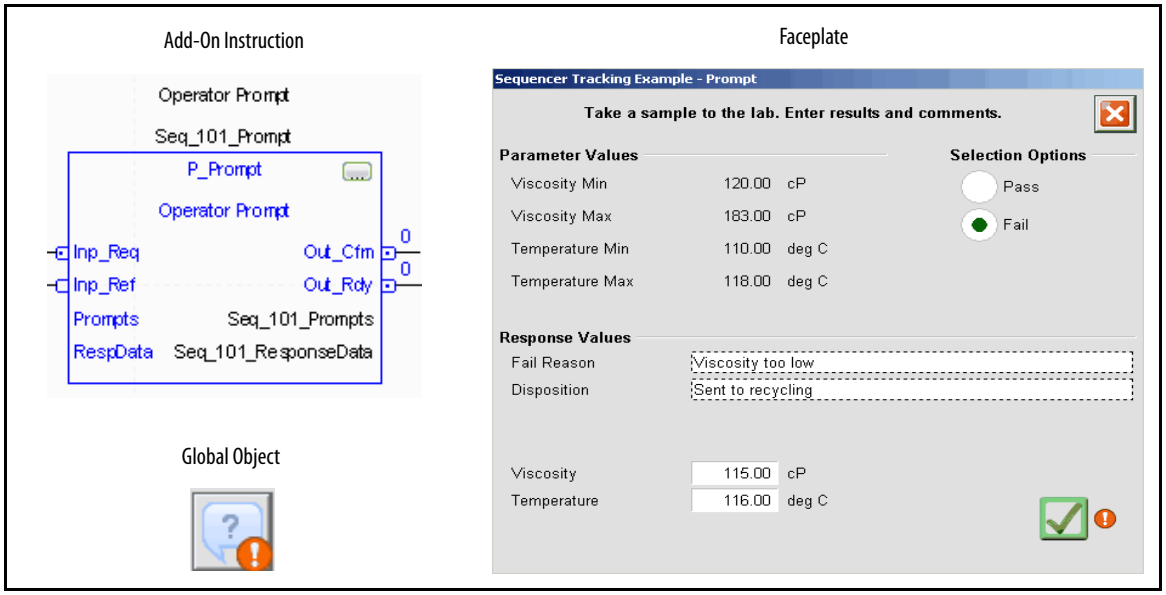
These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
PlantPAx Process Automation System Selection Guide, publication PROCES-SG001	Provides information to assist with equipment procurement for your PlantPAx system.
PlantPAx Process Automation System Reference Manual, publication PROCES-RM001	Provides characterized recommendations for implementing your PlantPAx system.
FactoryTalk® View Machine Edition User Manual, publication VIEWME-UM004	Provides details on how to use this software package for creating an automation application.
FactoryTalk View Site Edition User Manual, publication VIEWSE-UM006	Provides details on how to use this software package for developing and running human-machine interface (HMI) applications.
Logix5000™ Controllers Add-On Instructions Programming Manual, publication 1756-PM010	Provides information for designing, configuring, and programming Add-On Instructions.
For general library considerations, see Rockwell Automation Library of Process Objects, publication PROCES-RM002	Details how to monitor an input condition to raise an alarm. Information includes acknowledging, resetting, inhibiting, and disabling an alarm. Generally the P_Alarm faceplate is accessible from the Alarms tab.
Rockwell Automation Sequencer Object Reference Manual, publication PROCES-RM006	Provides details on how to configure a sequence by using the Sequencer Object.

You can view or download publications at http:/www.rockwellautomation.com/literature/. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

Operator Prompt (P_Prompt)

The P_Prompt (Operator Prompt) Add-On Instruction is a universal mechanism for operator interaction that can be used within a control scheme. The instruction presents an operator with configurable message or data fields and accepts operator response data and confirmation.



Guidelines

The configuration data for a set of prompts are stored in an array of user-defined types (UDTs). Each configured prompt instance is a member of the Prompts array. By referencing different members of the prompt configuration array, the same P_Prompt instruction can be used to access multiple user-prompt combinations, one at a time.

A single prompt can include the following:

- An 82-character message
- Up to four numeric value displays
- Up to four numeric value entries
- Choose one choice among 2...4 options
- Up to four text responses

The RespData tag at the bottom of the P_Prompt function block lets you define where to store operator responses. This tag stores any operator response as a string in the application.

Functional Description

Use a prompt to request input from an operator. The input can be any of the following:

- Acknowledging the prompt
- Viewing and confirming data
- Making a selection
- Entering numeric data
- Entering text data

Do **not** use a prompt in place of an alarm or an alert:

- An alarm, per ANSI/ISA-18.2-2009, is used to notify an operator of an abnormal situation that requires a response
- An alert is used to notify an operator of an abnormal situation that does not require a response
- A prompt requires a response, but does **not** advise of an abnormal situation

	Normal Operation	Abnormal Situation
Operator Response Not Required	Normal values and status	Alert
Operator Response Required	Prompt (P_Prompt)	Alarm (P_Alarm)

Prompt Demonstrations

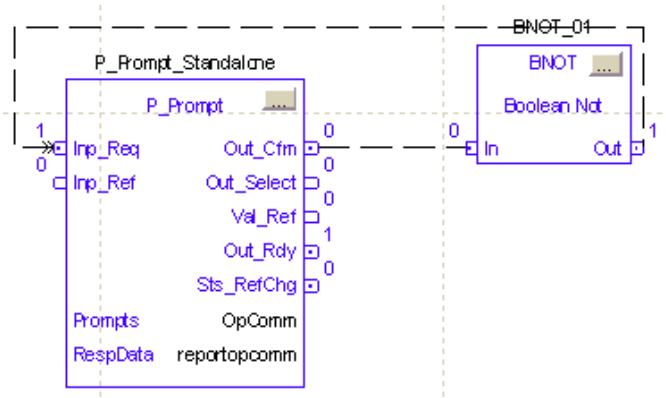
There are two separate demonstrations that show how you can use the prompt functionality:

- Standalone prompt
- Sequencer prompt faceplates (see page 11)

Standalone Prompt

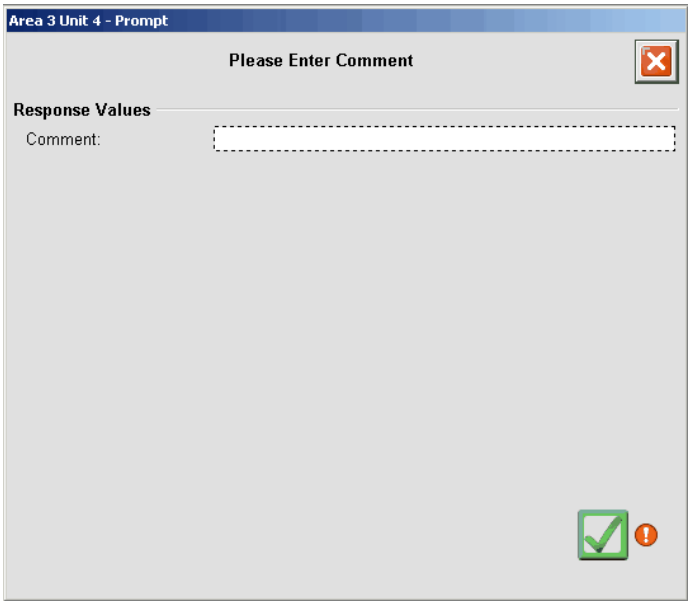
In its simplest form, the P_Prompt instruction provides operator interaction and can be invoked from a number of users. This example shows how to program and configure the P_Prompt instruction to solicit an operator comment.

The example below shows the logic for the Prompt instruction to continually reset to provide for more operator entries.

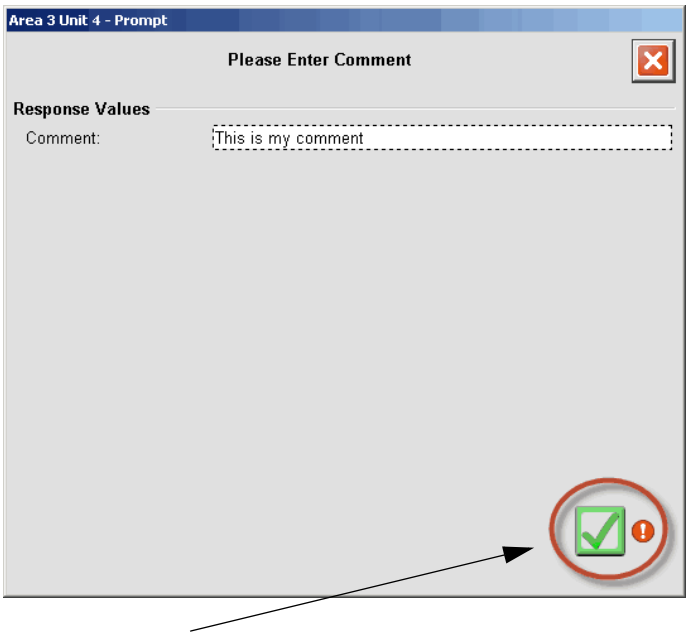


The Inp_Req is set to '1' to buffer the prompt configuration and trigger the prompt. This causes the prompt button  on the FactoryTalk View display to be active.

Click the prompt button to access the prompt faceplate shown below to let the operator enter a comment in the text box.



The Boolean output (Out_Cfm) remains low (0) until the operator clicks the Acknowledge button (green check mark circled below) on the prompt faceplate in the FactoryTalk View client.



Clicking this button on the faceplate causes the boolean output (Out_Cfm) to transition to a one (1).

The function block logic then inverts the Boolean value and feeds it back to the Inp_Req input. When this input goes to zero (0), it causes the output (Out_Cfm) to be reset to zero (0), which reasserts the input again and retriggers the instruction.

The standalone prompt example is achieved by setting the following values in the configuration array element zero [0].

Name	Value
OpComm[0]	{...}
OpComm[0].Cfg_Message	'Please Enter Comment'
OpComm[0].Cfg_Label	'Area 3 Unit 4'
OpComm[0].Cfg_InpValLabel	{...}
OpComm[0].Cfg_DispValLabel	{...}
OpComm[0].Cfg_SelectLabel	{...}
OpComm[0].Cfg_RespLabel	{...}
OpComm[0].Cfg_RespLabel[0]	'Comment:'
OpComm[0].Cfg_RespLabel[1]	''
OpComm[0].Cfg_RespLabel[2]	''
OpComm[0].Cfg_RespLabel[3]	''
OpComm[0].Cfg_DispValEU	{...}
OpComm[0].Cfg_InpValEU	{...}
OpComm[0].Cfg_DispVal	{...}
OpComm[0].Cfg_InpValLoLim	{...}
OpComm[0].Cfg_InpValHiLim	{...}
OpComm[0].Cfg_HasDispVal	0
OpComm[0].Cfg_DispValUsesInp	0
OpComm[0].Cfg_DispValScl	0
OpComm[0].Cfg_DispValVrfy	0
OpComm[0].Cfg_HasSelect	0
OpComm[0].Cfg_SelectDef	0
OpComm[0].Cfg_HasInpVal	0
OpComm[0].Cfg_InpValNotReqd	0
OpComm[0].Cfg_InpValDefMax	0
OpComm[0].Cfg_HasResp	1
OpComm[0].Cfg_RespNotReqd	1
OpComm[0].Cfg_AlertDefeat	1

The desired configuration can be moved into the configuration array from other Logix entities or populated from a P_Prompt configuration display. The P_Prompt configuration display can be called from the global object file (RA-UI) Prompt Objects.ggfx.

For additional information, see the following:

- Standalone programming basics, page 18
- Tag configuration options, page 25

Sequencer Prompt Faceplates

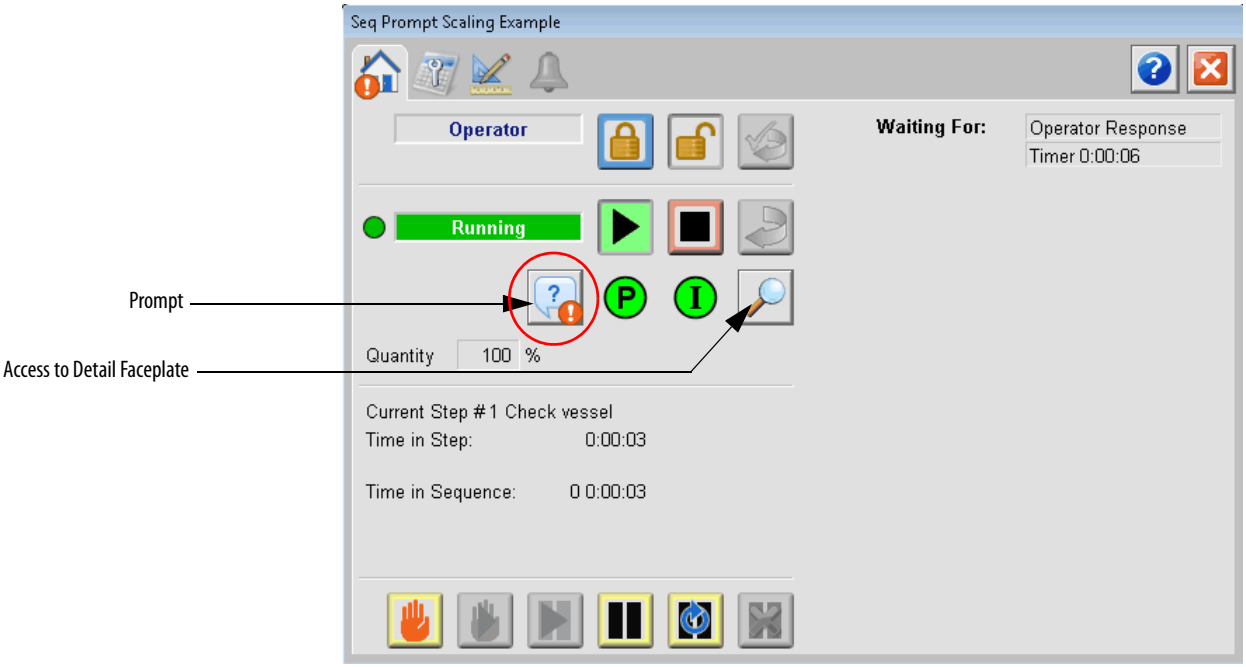
This section illustrates basic prompt functionality by using the Sequencer Object (P_Seq) instruction and faceplates.

IMPORTANT This demonstration uses the Sequencer's Run Time Detail faceplate as an example **only**. You can use the prompt with other tasks and processing tools.

1. After placing the Sequencer's display element into your project, click the object.

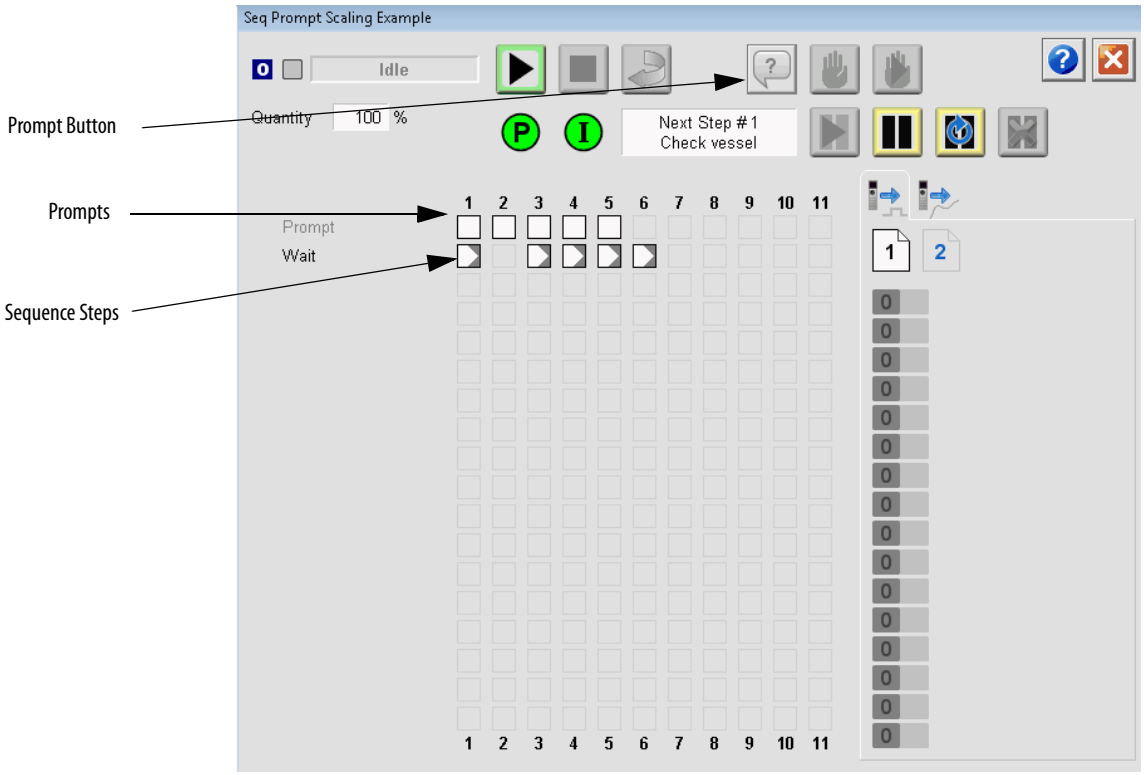
   Our example is Seq Prompt Scaling.

   The Operator tab for the P_Seq instruction appears with buttons, including the Prompt (circled below).



   These same buttons also are available on the Run Time Detail faceplate that visually arranges the progress of the steps and prompts.

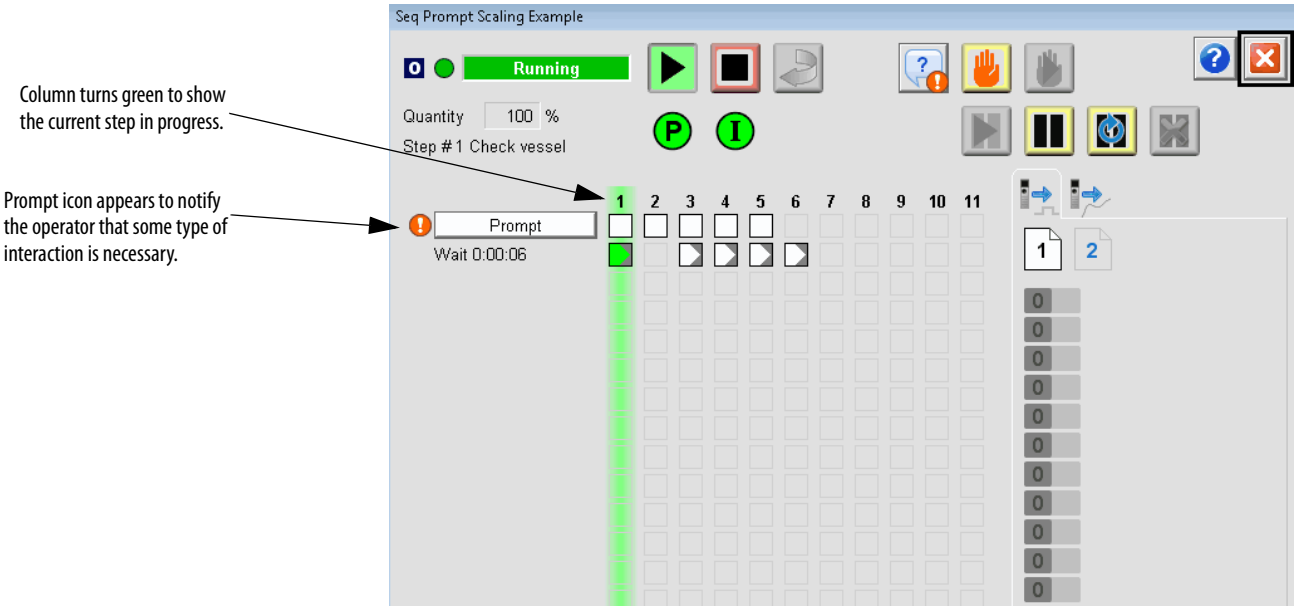
2. Click the magnifying glass button to access the Run Time Detail faceplate.



IMPORTANT The following faceplates show different types of prompts that can be configured for a sequence. Our example shows the prompts in close succession merely as a teaching tool and likely is not the case for your sequence.
See the Sequencer Object Reference Manual, publication PROCES-RM006, for how to configure a sequence by using the Sequencer Object.

3. Click the Start command button.

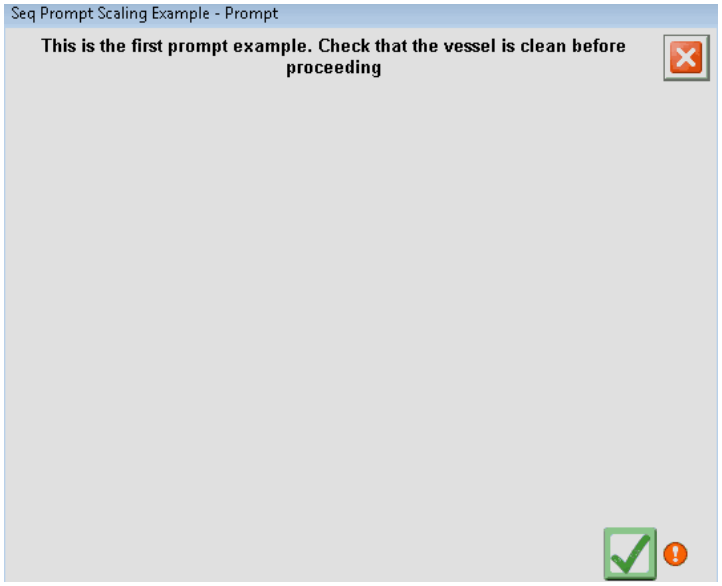
Prompt Example 1



4. Click the Prompt button when it appears during a step.

   You also can click the Prompt button when it is active on the Sequencer's Run Time Detail faceplate or the Operator tab.

   A Prompt window appears to tell the operator what action is necessary.

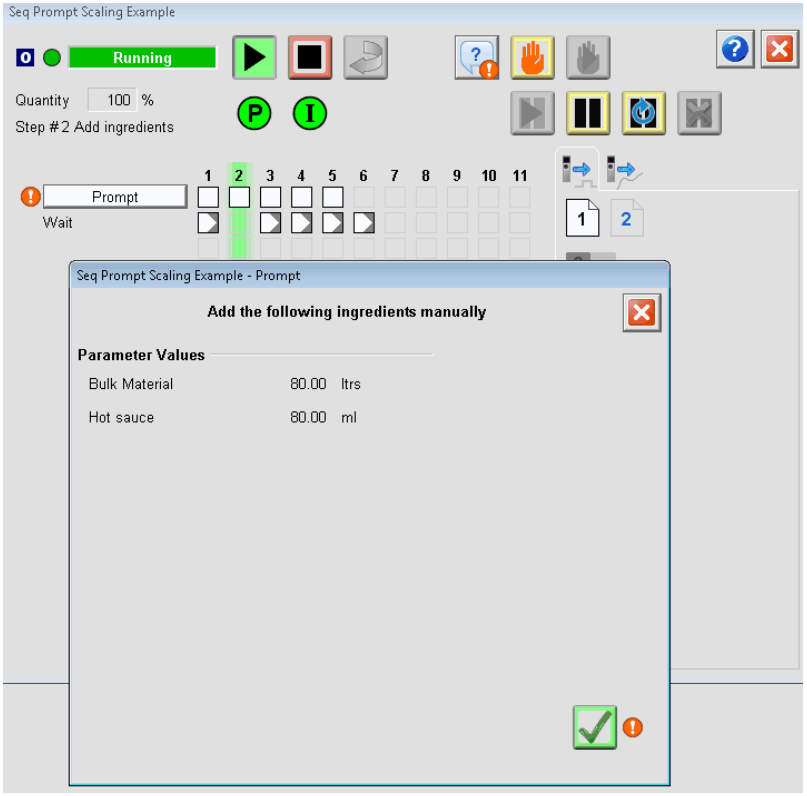


5. Click to acknowledge the prompt.

   The sequence continues until the next configured prompt occurs.

The prompt in Example 2 provides some data in addition to the string used in Example 1.

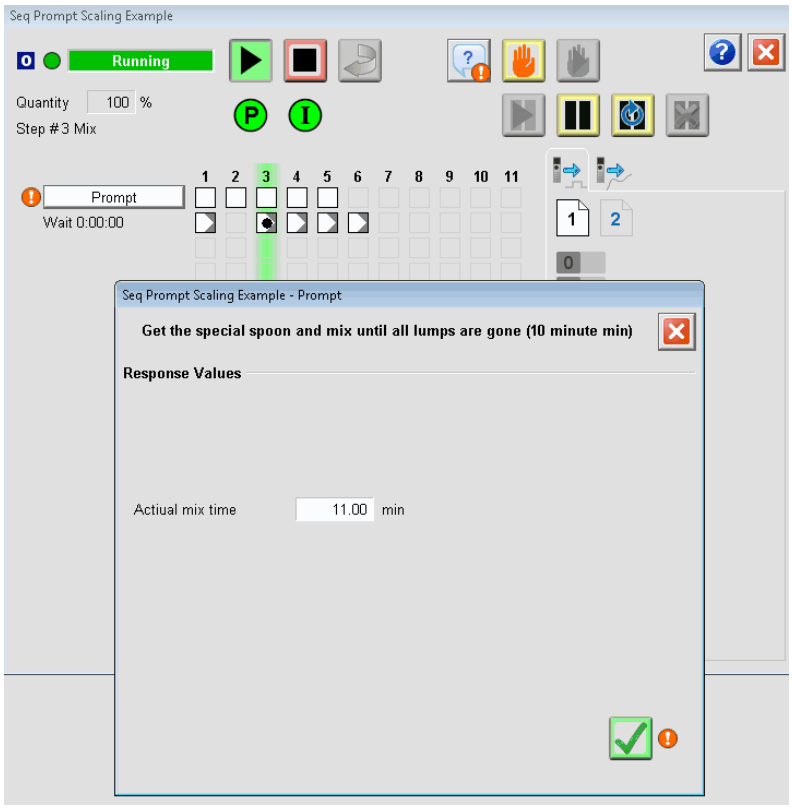
Prompt Example 2



6. Click  to acknowledge the prompt after the ingredients are added.

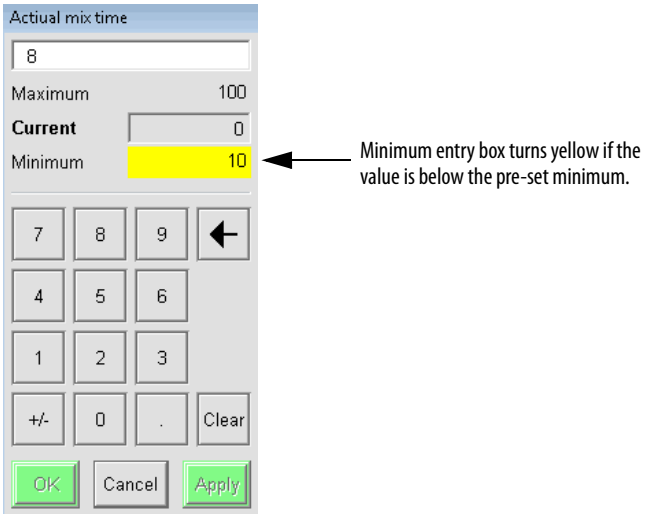
The prompt in Example 3 lets the operator enter data used by the application.

Prompt Example 3



7. Click the text box to enter a value.

   A keypad appears to let you enter a value.



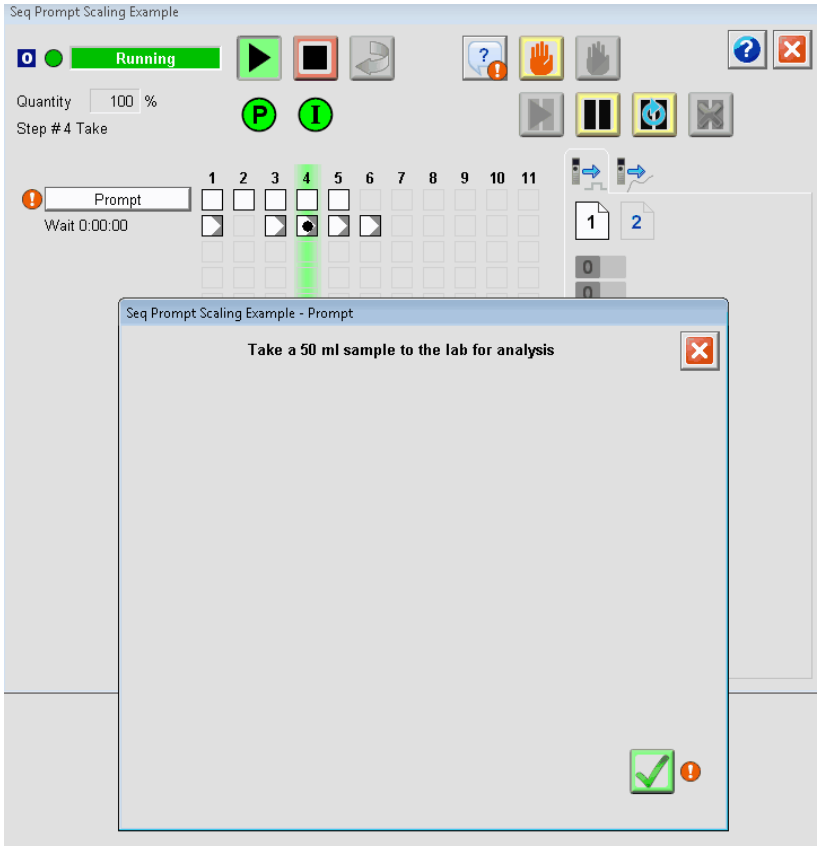
8. Type a value and click OK.

   The value carries over to the prompt display.

9. Click  to acknowledge the prompt.

The prompt in Example 4 shows how you can use different strings for operator interaction.

Prompt Example 4

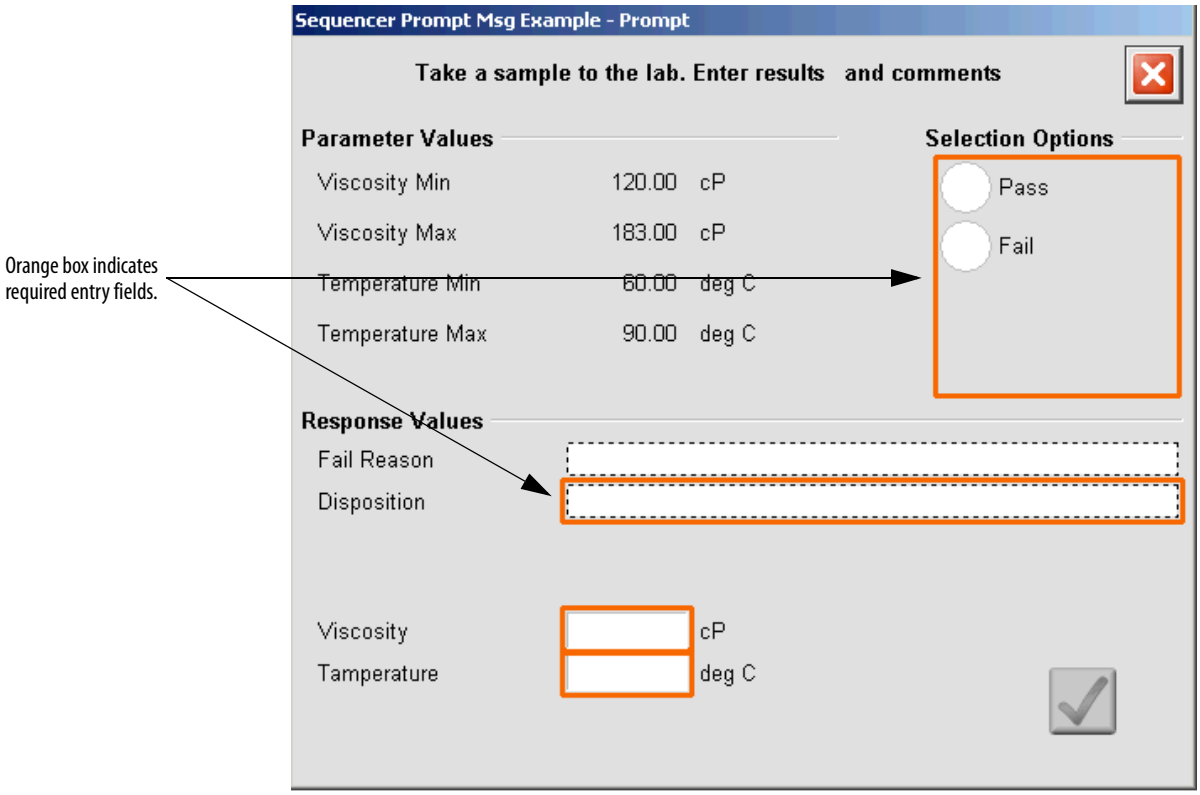


10. Click  to acknowledge you are confirming the prompt.

The prompt in Example 5 provides the operator with several options:

- Basic text display
- Display of application data (with labels and units of measure)
- Set of options, from which they must choose one
- Text boxes for data (with labels)
- Entry boxes for numeric data (with labels and units of measure)

Prompt Example 5



The Selection Options (in the upper right corner) in this example are configured to work with the branching capability of the P_Seq instruction.

For more information on the P_Seq instruction and branching capability, see the Rockwell Automation Sequencer Object Reference Manual, publication PROCES-RM006.

11. Choose one of the following Selection Options:
    - Pass: In this example, clicking Pass ends the sequence.
    - Fail: Sequence branches to the third step after clicking Fail.

See page 30 for how to use the prompt with branching in the Sequencer Object.

Programming Example

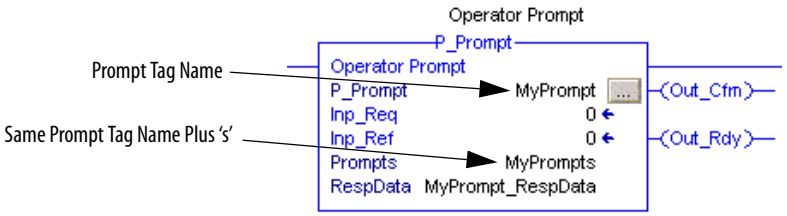
This section includes two basic examples for configuring the P_Prompt instruction: standalone or with the Sequencer Object faceplates.

Configure a Standalone Prompt

The P_Prompt instruction provides the flexibility for configuring a prompt via faceplates or by moving data from some other Logix activity, such as a program or phase. This section describes standalone procedures.

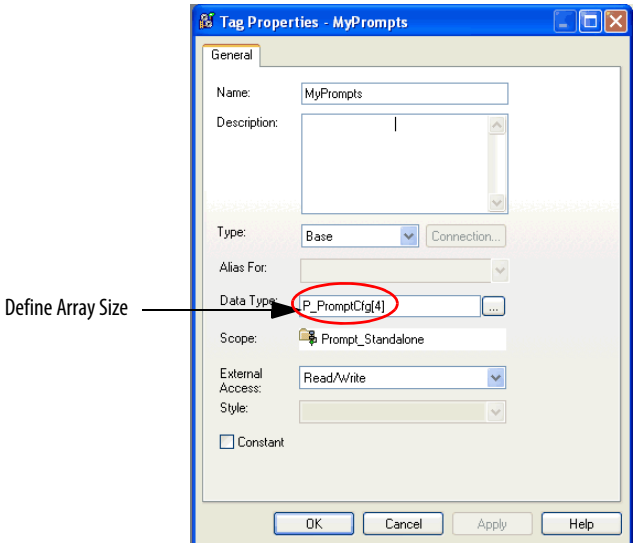
1. Create and name the P_Prompt instruction; our example is 'MyPrompt'.

   The tag name can be any name you want. However, the Prompts tag **must** be the prompt name plus an 's'.

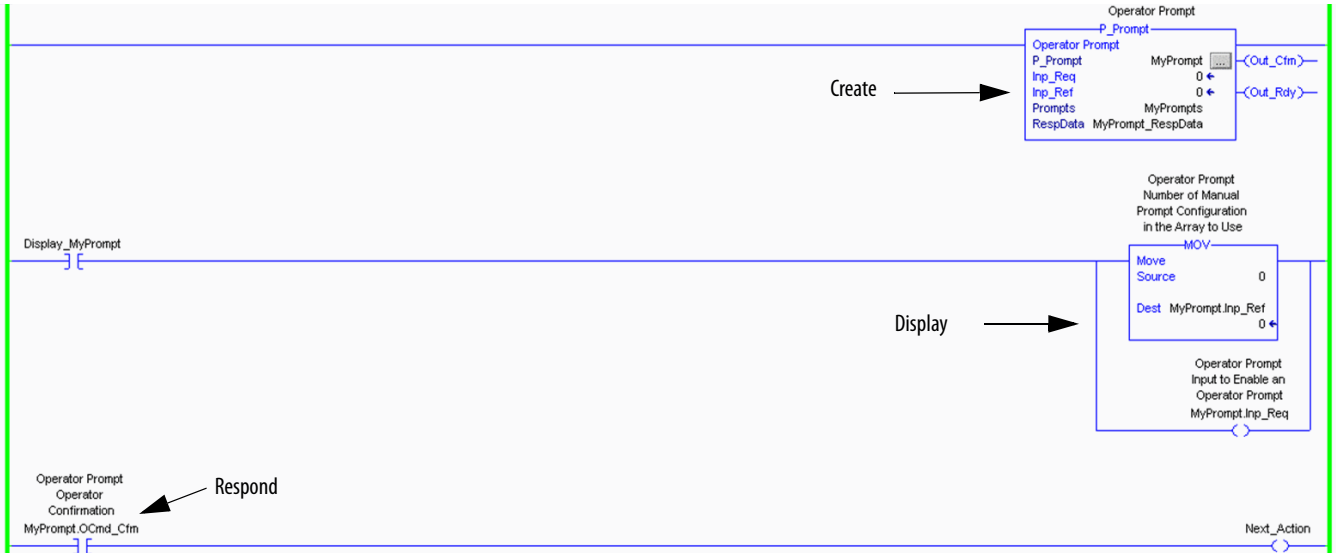


IMPORTANT	It's good practice to also name the RespData tag and the P_PromptTitle tag the same as the prompt name, but it's not a requirement. The P_PromptTitle tag in the Global Objects Parameters Values table (see page page 35) tells the operator what type of interaction is necessary.

2. Right-click MyPrompts and choose Edit Properties to define the prompt array size.
3. On the Tag Properties dialog box, type a number into the bracket of the array tag (P_PromptCfg) to specify a number of prompt instances supported by the instruction.



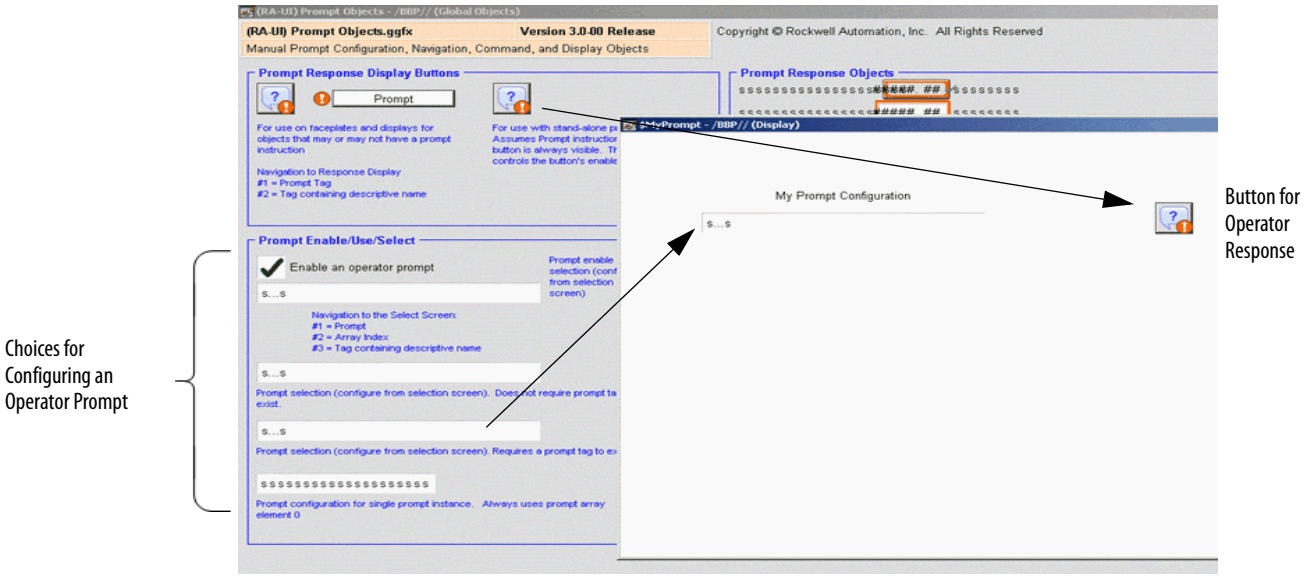
The three rungs of the Ladder Diagram show the minimal amount of effort to set up tags to create, display, and respond to a standalone prompt.



The program logic is shown in standard Ladder Diagram, but you can use Function Block Diagram or Structured Text to program the P_Prompt instruction.

You also have the ability to display many prompt configurations, stored in the Prompts array. These configurations can be built as templates or you can populate data ad hoc from any location.

You develop the prompt configuration by using FactoryTalk View Studio software and the global objects file (RA-UI) Prompt Objects.ggfx.

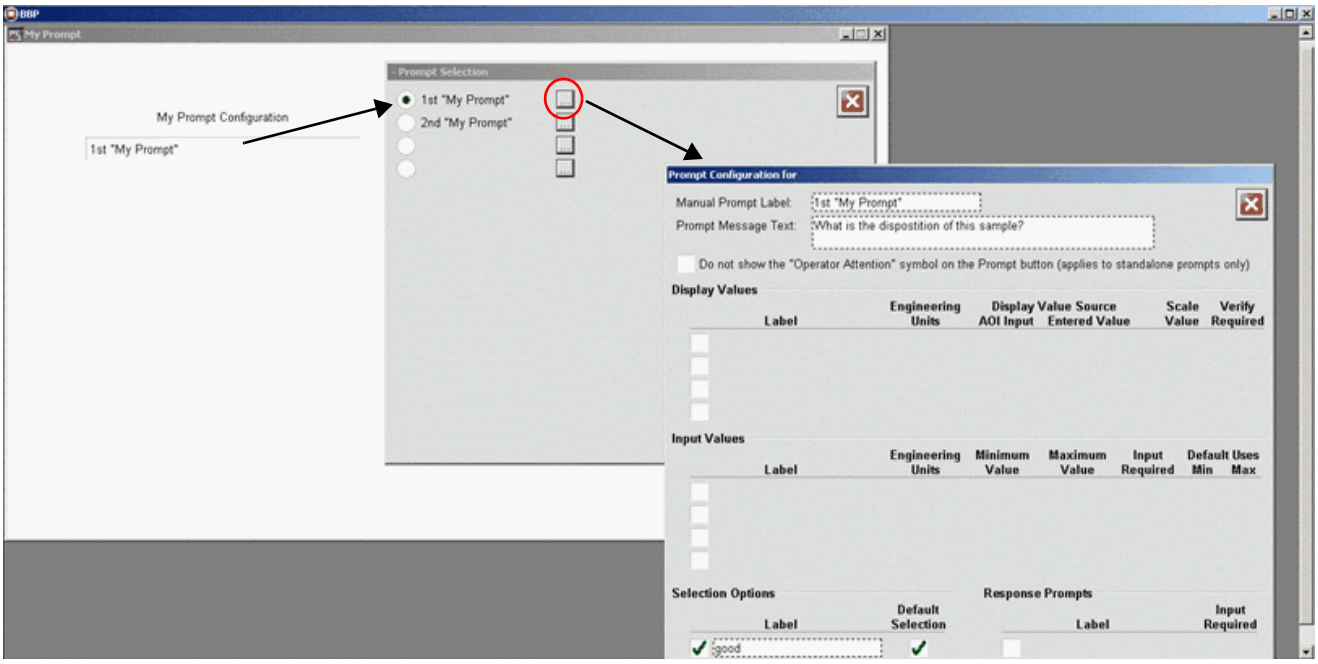


On the bottom, left side of the Prompt Objects folder, there are four choices to configure a prompt text box.

4. Drag and drop the prompt text box into a new workspace and give it a name.

5. Drag and drop the standalone prompt button  into the workspace.

   The illustration shows a series of graphics for how the operator uses each configuration to set up a prompt.



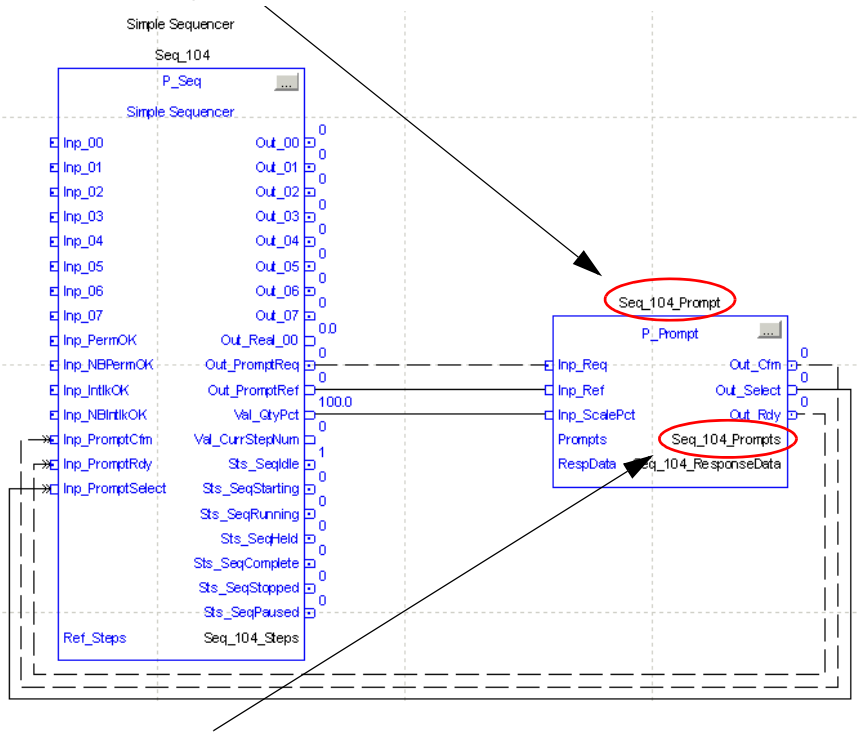
6. Click the Prompt text box to access the Prompt Selection window.
7. Click Browse (button with ellipsis circled above) to access the Prompt Configuration dialog box to define the type of prompt.

   See page 25 for details of the Prompt Configuration dialog box.

Configure the Prompt with the Sequencer Object

This section describes how to configure prompts to use faceplates with the P_Seq instruction.

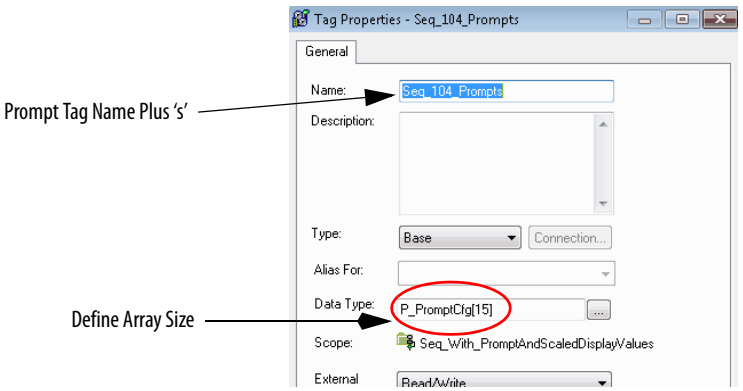
1. Create and name the P_Seq instruction.
2. Create the P_Prompt instruction and name it the Sequencer tag name plus '_Prompt', for example Seq_104_Prompt.



3. Type a name for the Prompts array tag that is the **same** as the Prompt tag name, **plus the letter 's'**. This applies for both a standalone prompt or if you are using the P_Seq instruction.

   In general, with or without the P_Seq instruction, the Prompt faceplates look for configuration data in the Prompts array.

4. Right-click your new Prompts name (example, Seq_104_Prompts) to access the Tag Properties dialog box.



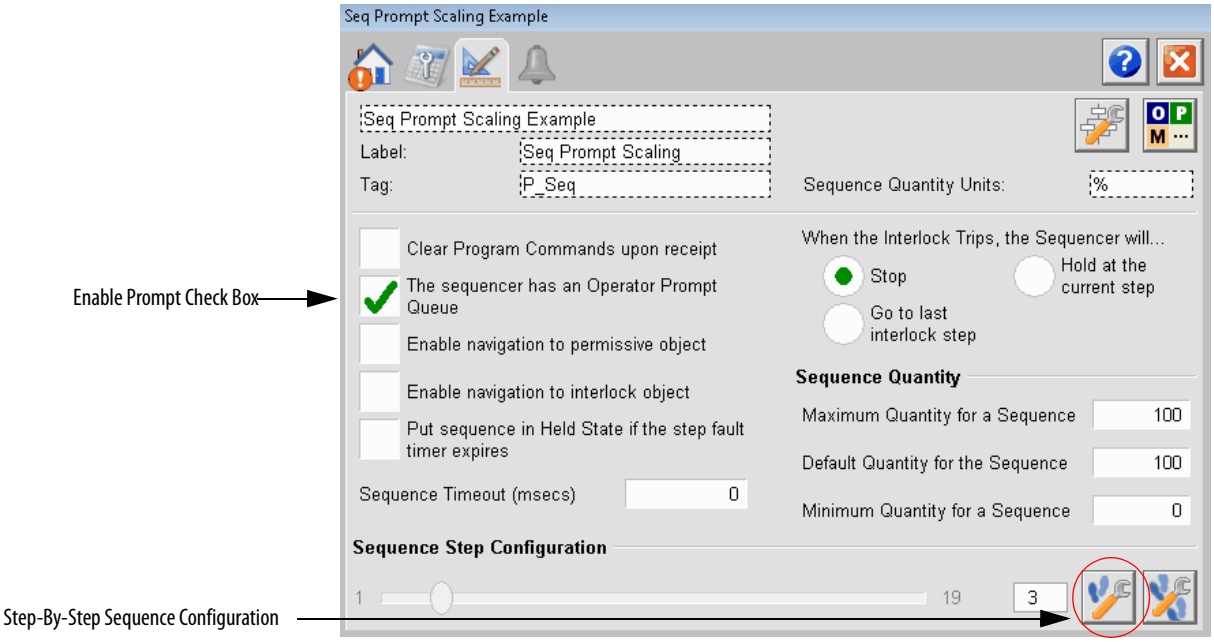
The data type is P_PromptCfg[1].

5. Type a number into the square bracket to create the number of prompt configuration instances you need for your sequence, and click OK.
6. Attach the pins from the P_Prompt instruction to the P_Seq instruction as shown on page 21.
7. Save and download the file.
8. If you make modifications from the HMI, save the .acd file again.

Prompt Configuration Faceplates

Configure the prompts through a set of FactoryTalk View dialog boxes that let you select individual prompts in the prompt array. The Engineering tab of the P_Seq instruction contains checkboxes and buttons to configure a prompt with a step in a sequence.

For details on configuring steps in a sequence, see the Rockwell Automation Sequencer Object Reference Manual, publication PROCES-RM006.



You have the ability to display many prompt configurations, stored in the Prompts array, depending on what type of action is required from the operator in a given step of a sequence. But, in general, the procedures are similar for configuring the prompts.

1. On the Engineering tab, check The sequencer has an Operator Prompt Queue.

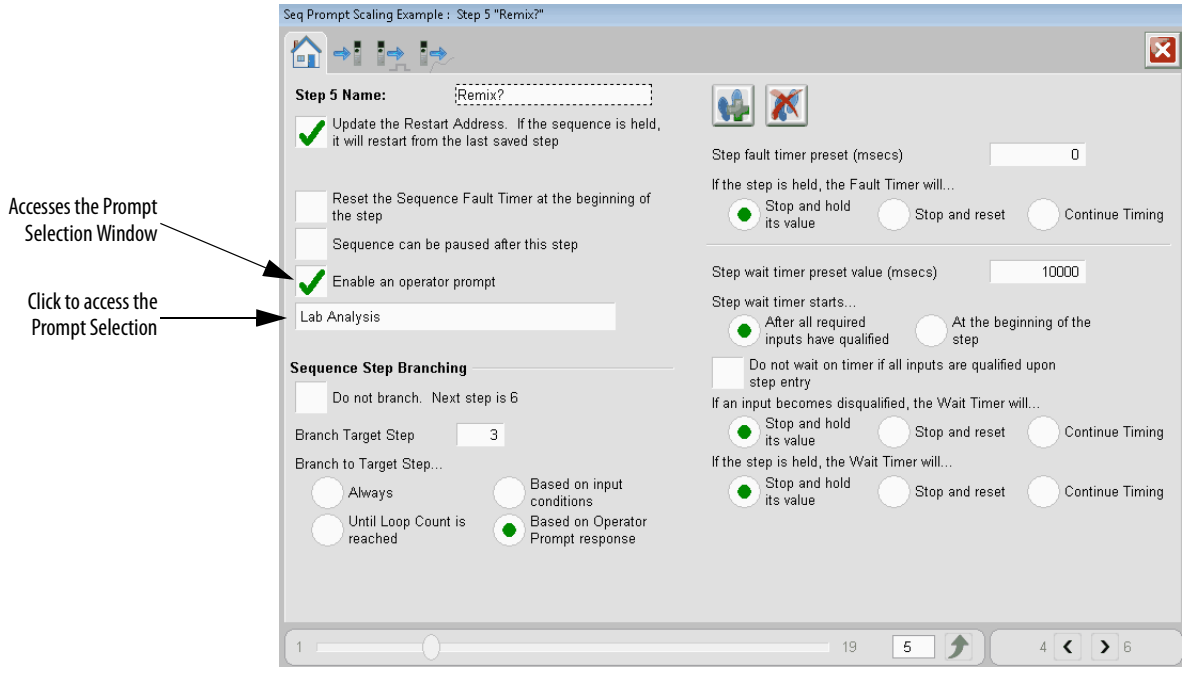
Leave this checkbox blank if the sequence does not use prompts. Note, at this point we are still on the **sequence** config, not the **step** config.

IMPORTANT For a complete description of the Engineering tab, see the Rockwell Automation Sequencer Object Reference Manual, publication PROCES-RM006.

2. At the bottom of the Engineering tab, type the number of the step that is being configured for the prompt.

3. Click the Display Step Config Window  button.

   The Home Step Configuration dialog box appears for the selected step.

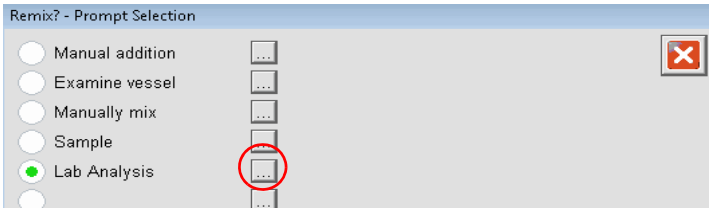


4. Check Enable an operator prompt.

   A blank prompt text box appears.

5. Click the prompt text box.

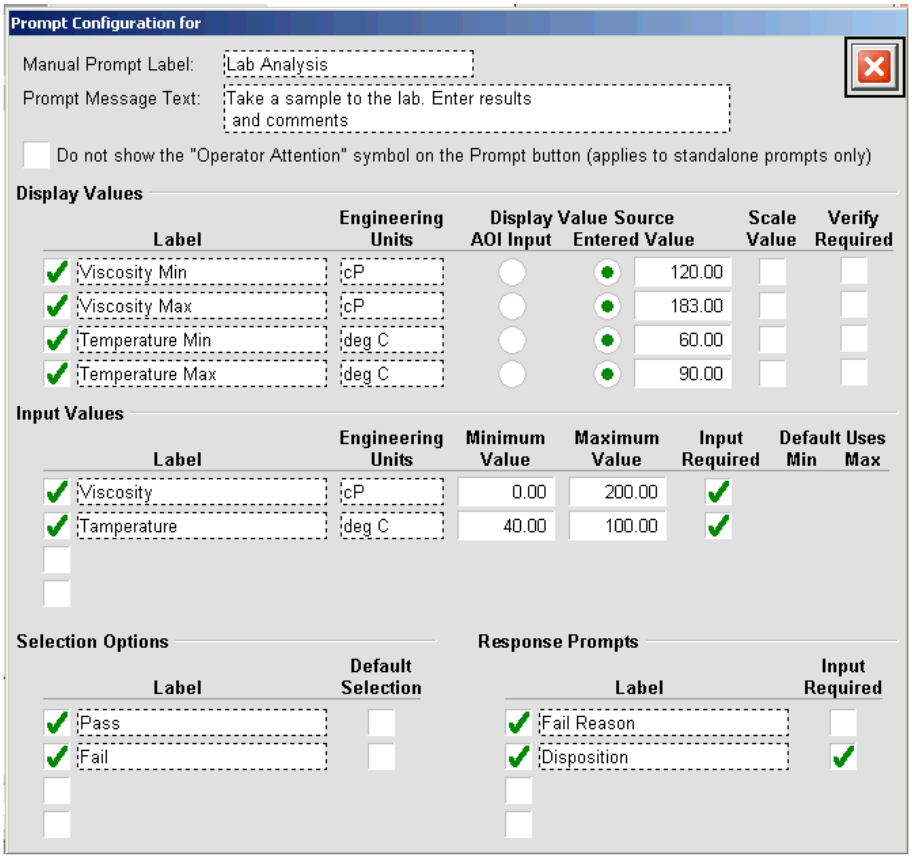
   The Prompt Selection window appears.



6. Click Browse (button with ellipsis circled above) next to a blank row to credate a new prompot configuration. (Click the browse button next to a fill-in row to edit that prompt configuration.)

The Prompt Configuration dialog box appears.

IMPORTANT See pages 37 through 39 for examples of the Display Values, Input Values, and Selection Options on the Prompt Configuration faceplate.



7. Complete the Prompt Configuration dialog box.

Function	Action	Security	Configuration Parameters
Manual Prompt Label	Type a label for the prompt. **IMPORTANT:** Be sure to press Enter or Page Down after typing in a text box to save your work.	Engineering Configuration (Code E)	Cfg_Label
Prompt Message Text	Type a text message that explains to the operator the purpose of this prompt.		Cfg_Message
Do not show the "Operator Attention" symbol on the Prompt button (applies to standalone prompts only)	Check the checkbox to **not** show the operator attention symbol (exclamation point) on the prompt button. 		Cfg_AlertDefeat

TIP For instructional purposes, the dialog box is divided into separate sections to explain Display Values, Input Values, Selection Options, and Response Prompts in the text that follows.

Display Values

Display values create a prompt that shows the operator floating point values in run time. This informs the operator of specific quantities or operating conditions. An Entered Value can be scaled by a programmatic percentage.

Function	Action	Security	Configuration Parameters
Display Value Enable	Check to enable a Label text field.	Engineering Configuration (Code E)	Cfg_HasDispVal
Label	Type a label.		Cfg_DispValLabel
Engineering Units	Type an engineering unit.		Cfg_DispValEU
Display Value Source • 'AOI Input' • Entered Value	Check to either display a value from the prompt 'AOI Input' or the value that you enter in the box that appears.		Cfg_DispValUsesInp
Scale Value	Check to scale the value by the entered value and the Inp_ScalePct. See Scale Value on page 26.		Cfg_DispValScl
Verify Required	Check to require the operator to verify the displayed value.		Cfg_DispValVrfy

Programmatic Display Value Configuration

The following P_Prompt configuration tags provide a programmatic interface to values and functions of the Display Values.

Parameter	Data Type	Description
Cfg_HasDispVal.*x*(1)	BOOL	Bits enable numeric display entries.
Cfg_DispValLabel[x]	STRING_20	Text field for entry label.
Cfg_DispValEU[x]	STRING_8	Engineering units text for entry.
Cfg_DispValUsesInp.*x*	BOOL	1 = Use 'AOI Input'. 0 = Use entered value.
Cfg_DispValScl.*x*	BOOL	1 = Apply scaling to value. 0 = Use value as is.
Cfg_DispValVrfy.*x*	BOOL	1 = User must confirm reading the value.

(1) x = 0…3 for each of the entries.

Programmatic Display Value Parameters

The following P_Prompt parameters are in the Add-On Instruction associated with the Display Values.

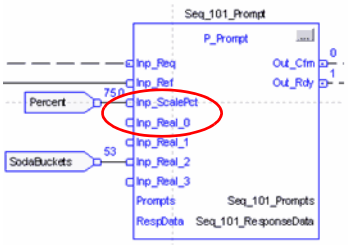
Parameter	Description
Input	Values are buffered when Inp_Req makes a low to high (0…1) transition: • Inp_Real_x -- Input sources used when the 'AOI Input' configuration is chosen. • Inp_ScalePct --Input percent scale used when a field is configured for 'Scale Value'.
Output	None used.
RespData (InOut)	None used.

Scale Value

A scaled input value is calculated by the Inp_ScalePct and the Entered Value in the Display Values section. See the illustrations below.

Display Values

Label	Engineering Units	Display Value Source: AOI Input	Display Value Source: Entered Value	Scale Value	Verify Required
✓ Water	Gals	○	● 400.00	☐	☐
✓ Vegetable Oil	Pints	○	● 100.00	✓	☐
✓ Soda	Bckts	●	○		☐
✓ Hot Sauce	Cups	○	● 20.00	☐	☐



Parameter Values

Water	400.00	Gals
Vegetable Oil	75.00	Pints
Soda	53.00	Bckts
Hot Sauce	20.00	Cups

Entered Value = 100 pints x 0.75 = 75 pints

Unscaled AOI Input = 53 soda buckets (Inp_Real_2)

Input Values

Input values let the operator enter floating point values via the prompt that are used programmatically. Minimum and maximum values are entered for a range. Value entry can be optionally required (default).

Function	Action	Security	Configuration Parameters
Input Value Enable	Check to enable a Label text box.	Engineering Configuration (Code E)	Cfg_HasInpVal
Label	Type a label for the input value.		Cfg_InpValLabel
Engineering Units	Type an engineering unit.		Cfg_InpValEU
Minimum Value	Type a minimum value for the entry.		Cfg_InpValLoLim
Maximum Value	Type a maximum value for the entry.		Cfg_InpValHiLim
Input Required	Check to require an operator to enter a value.		Cfg_InpValNotReqd
Default Uses • Min • Max	If an input is not required, click Minimum or Maximum to be used for the entry.		Cfg_InpValDefMax

Programmatic Input Value Configuration

The following P_Prompt configuration tags provide a programmatic interface to values and functions of the Input Values.

Parameter	Data Type	Description
Cfg_HasInpVal.*x*(1)	BOOL	Bits enable numeric input entries.
Cfg_InpValLabel[x]	STRING_20	Text field for entry label.
Cfg_InpValEU[x]	STRING_8	Engineering units text for entry.
Cfg_InpValLoLim[x]	REAL[4]	Input entry low limit.
Cfg_InpValHiLim[x]	REAL[4]	Input entry high limit.
Cfg_InpValNotReqd.*x*	BOOL	0 = User input is required. 1 = User input is not required.
Cfg_InpValDefMax.*x*	BOOL	0 = Input entry minimum limit. 1 = Input entry maximum limit.

(1) x = 0…3 for each of the entries.

Programmatic Input Value Parameters

The following P_Prompt parameters are in the Add-On Instruction associated with the Input Values.

Parameter	Description
Input	None used.
Output	Parameter values change when you click the green checkbox to confirm. Out_Real_x -- Outputs used for the user entered values.
RespData (InOut)	Field changes when you click the green checkbox to confirm. ResponseData.NumericInput[0-…3] -- Contains the string representation of the entered values.

Selection Options

Selection options let the operator choose one choice from two to four offerings. One of the selections can be designated a default, but none need to be designated as such.

Function	Action	Security	Configuration Parameters
Selection Enable	Check to enable a Label text box.	Engineering Configuration (Code E)	Cfg_HasSelect
Label	Check and type a label for the selection option.		Cfg_SelectLabel
Default Selections	Click to designate a selection as the default.		Cfg_SelectDef

Programmatic Selection Option Configuration

The following P_Prompt configuration tags provide a programmatic interface to values and functions of the Selection Options.

Parameter	Data Type	Description
Cfg_HasSelect.*x*(1)	BOOL	Bits enable numeric selection entries.
Cfg_SelectLabel[x]	STRING_20	Text field for selection label.
Cfg_SelectDef.*x*	BOOL	0 = Entry is not default. 1 = Entry is default.

(1) x = 0…3 for each of the entries.

Programmatic Selection Option Parameters

The following P_Prompt parameters are in the Add-On Instruction associated with the Selection Options.

Parameter	Description
Input	None used.
Output	Parameter value tracks your changes until you click the green checkbox to confirm. Out_Select -- The number of the selection chosen by the user (0…4).
RespData (InOut)	Field changes when you click the green checkbox to confirm. ResponseData.Selection -- Contains the label string of the chosen selection.

Response Prompts

Response prompts let the operator enter string-based information (comments, lot numbers, and so forth). Response entry is required by default, but can be configured as optional.

Function	Action	Security	Configuration Parameters
Response Enable	Check to enable a Label text box.	Normal Production (Batches & Lots) (Code J)	Cfg_HasResp
Label	Check and type a label for the response prompt.		Cfg_RespLabel
Input Required	Check to require an input.		Cfg_RespNotReqd

Programmatic Response Prompt Configuration

The following P_Prompt configuration tags provide a programmatic interface to values and functions of the Response Prompts.

Parameter	Data Type	Description
Cfg_HasResp.*x*(1)	BOOL	Bits enable numeric response entries.
Cfg_RespLabel[x]	STRING_20	Text field for response label.
Cfg_RespNotReqd.*x*	BOOL	0 = User response is required. 1 = User response is not required.

(1) x = 0…3 for each of the entries.

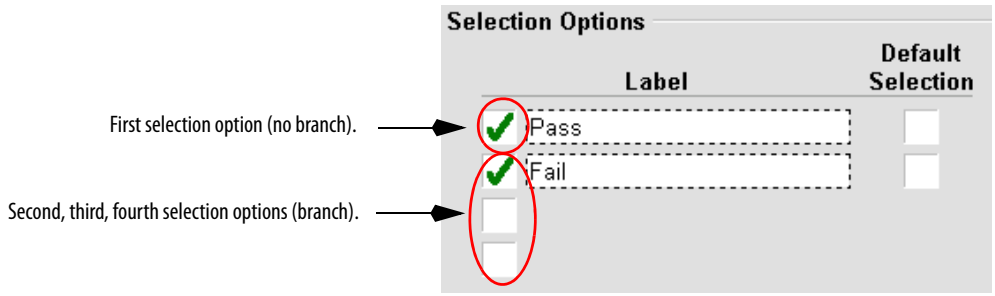
Programmatic Response Prompt Parameters

The following P_Prompt parameters are in the Add-On Instruction associated with the Response Prompts.

Parameter	Description
Input	None used.
Output	None used.
RespData (InOut)	Field changes when the user clicks the green checkbox to confirm. ResponseData.CharInput[0…3] -- Contains the string responses.

Sequencer Branching Configuration

The P_Prompt instruction uses the Selection Options section of the Prompt Configuration dialog box to implement branching in the Sequencer Object instruction. When used this way, the first selection option continues to the next sequential step in the Sequencer; any other selection option causes the Sequencer to take the branch.



IMPORTANT For branch procedures and guidelines, see the Rockwell Automation Sequencer Object Reference Manual, publication PROCES-RM006.

The Out_Select parameter tracks the number of the selection chosen by the user. This output parameter is used by the Sequencer instruction to know whether to take a branch. Any number greater than 1 instructs the Sequencer to branch.

Required Files

The remainder of this document explains the parameters and display elements that comprise the P_Prompt instruction.

Controller File

The P_Prompt_3_1-**00**_AOI.L5X Add-On Instruction must be imported into the controller project to be able to be used in the controller configuration. The service release number (boldfaced) can change as service revisions are created.

Visualization Files

The following files for this Add-On Instruction can be downloaded from the Product Compatibility and Download Center at http://www.rockwellautomation.com/rockwellautomation/support/pcdc.page. .

IMPORTANT Files must be imported in the following order: image files, then global object files, and then graphic files. This order is required to properly configure the visualization files.

Table 2 - P_Prompt Visualization File Types

Application Type	File Type	FactoryTalk View SE Software	FactoryTalk View ME Software	Description
Graphics - Displays	GFX	(RA-BAS) Common-AnalogEdit	N/A	Faceplate used for analog input data entry. The FactoryTalk View ME faceplates use the native analog input data entry so no file is required.
		(RA-UI) P_Prompt-Config	(RA-UI-ME) P_Prompt-Config	Display used to configure the prompt.
		(RA-UI) P_Prompt-Response	(RA-UI-ME) P_Prompt-Response	Display used to enter the prompt response.
Optional		(RA-UI) P_Prompt-Select	(RA-UI-ME) P_Prompt-Select	Display used to select a prompt for the sequence step.
Graphics - Global Objects	GGFX	(RA-BAS) Common Faceplate Objects	(RA-BAS-ME) Common Faceplate Objects	Standard global objects used on Sequencer displays.
		(RA-UI) Prompt Objects	(RA-UI-ME) Prompt Objects	Prompt objects used on Process Object faceplates.
Graphics - Images	PNG	All .png files in the images folder	All .png files in the images folder	These are the common icons used in the global objects and faceplates for all Process Objects. When PNG graphic formats are imported, they are renamed like a BMP file but retain a PNG format.
HMI Tags	CSV	N/A	FTVME_PlantPAxLib_Tags_3_1_**00**.csv(1)	These tags must be imported into the FactoryTalk View ME project to support switching tabs on any Process Object faceplate.

(1) The service release number (boldfaced) can change as service revisions are created.

Controller Code

This section describes the parameter references for this Add-On Instruction.

Prompt InOut Structure

In/Out Parameters	Data Type	Alias For	Description
Prompts	P_PromptCfg[*x*]	None	Prompt instance configuration data (Array must have one or more members).
RespData	P_PromptResp		Structure to hold most recent response data in string format.

Prompt Input Structure

Input parameters include the following:

- Input data elements (Inp_) are typically used to connect field inputs from I/O modules or signals from other objects.
- Commands (PCmd_, OCmd_, MCmd_) are used by program logic, operators, and maintenance personnel to request instruction actions.

Input Parameter	Data Type	Alias For	Default	Description
EnableIn	BOOL		1	**Ladder Diagram:** If the rung-in condition is true, the instruction's Logic routine executes. If the rung-in condition is false, the instruction's EnableInFalse routine executes. **Function Block Diagram:** If true, or not connected, the instruction's Logic routine executes. If the parameter is exposed as a pin and wired, and the pin is false, the instruction's EnableInFalse routine executes. **Structured Text:** No effect. The instruction's Logic routine executes.
Inp_Req			0	1 = Enable button to access operator prompt.
Inp_Ref	DINT		0	Pointer into the prompt configuration array indicating which element to use for the prompt.
Inp_ScalePct	REAL		100.0	Percent by which to scale configured numeric display values.
Inp_Real_0		Inp_Real[0]	0.0	Input real value to display (0).
Inp_Real_1		Inp_Real[1]	0.0	Input real value to display (1).
Inp_Real_2		Inp_Real[2]	0.0	Input real value to display (2).
Inp_Real_3		Inp_Real[3]	0.0	Input real value to display (3).
OCmd_Cfm	BOOL		0	Operator command to confirm and close prompt.

Prompt Output Structure

Output parameters include the following:

- Output data elements (Out_) are the primary outputs of the instruction, typically used by hardware output modules; however, they can be used by other application logic.
- Value data elements (Val_) are numeric outputs of the instruction for use by the HMI. Values also can be used by other application logic or software packages.
- Status data elements (Sts_) are bit outputs of the instruction for use by the HMI. Status bits also can be used by other application logic.
- Error data elements (Err_) are outputs of the instruction that indicate a particular configuration error. If any Err_ bit is set, then the Sts_Err configuration error summary status is set and the Invalid Configuration indicator is displayed on the HMI.
- Ready data elements (Rdy_) are bit outputs of the instruction used by the HMI to enable or disable Command buttons and Setting entry fields.

Output Parameter	Data Type	Alias For	Description
EnableOut	BOOL		Enable Output: The EnableOut signal is not manipulated by this instruction. Its output state always reflects EnableIn Input state.
Out_Cfm			Operator confirmation output. 1 = Operator has entered required data confirmed prompt.
Out_Rdy			1 = Prompt is ready to be displayed.
Out_Select	SINT	OSet_Select	Value of operator response to selector.
Out_Real_0	REAL	Out_Real[0]	Value (REAL) of operator numeric entry (0).
Out_Real_1		Out_Real[1]	Value (REAL) of operator numeric entry (1).
Out_Real_2		Out_Real[2]	Value (REAL) of operator numeric entry (2).
Out_Real_3		Out_Real[3]	Value (REAL) of operator numeric entry (3).
Val_Ref	DINT		Number of the prompt configuration in the array that was used.
Sts_Alert	BOOL		Status for alert breadcrumb.
Sts_RefChg			1 = The Inp_Ref has changed (single scan).
Sts_Err			1 = Error in configuration; see detail bits for reason.
Err_PromptCfgSize			1 = Error in size of an array in the P_PromptCfg UDT definition.
Err_RespDataSize			1 = Error in size of an array in the P_PromptResp UDT definition.
Err_MsgRef			1 = Error in value of Inp_Ref (past end of prompt array).
Rdy_Cfm			1 = Prompt ready for operator confirmation.

Operations

The P_Prompt Add-On Instruction does not use modes, alarms, or simulation.

Display Elements

A display element (global object) is created once and can be referenced multiple times on multiple displays in an application. When changes are made to the original (base) object, the instantiated copies (reference objects) are automatically updated. Use of global objects, in conjunction with tag structures in the ControlLogix® system, aid consistency and save engineering time.

Table 3 - P_Prompt Display Elements Description

Display Element Name	Display Element	Description
GO_PromptButtonSP		Standalone prompt button that assumes the P_Prompt instruction is present and the button is always visible. The Prompt instruction controls the button's enabled state and alert indicator visibility.
GO_PromptButtonWithText		Prompt display indicator for use on faceplates and displays for objects that possibly do not have a prompt instruction.

Status/Quality/Threshold Indicators

One of these symbols appears to the left of the graphic symbol when the described condition is true.

Graphic Symbol	Description
	Invalid configuration if an input is set to an array index that is beyond the end of the array.

TIP When the Invalid Configuration indicator appears, you can find what configuration setting is invalid by following the indicators. Click the graphic symbol to open the faceplate. The Invalid Configuration indicator appears next to the appropriate tab at the top of the faceplate to guide you in finding the configuration error. Once you navigate to the tab, the misconfigured item is flagged with this indicator or appears in a magenta box.

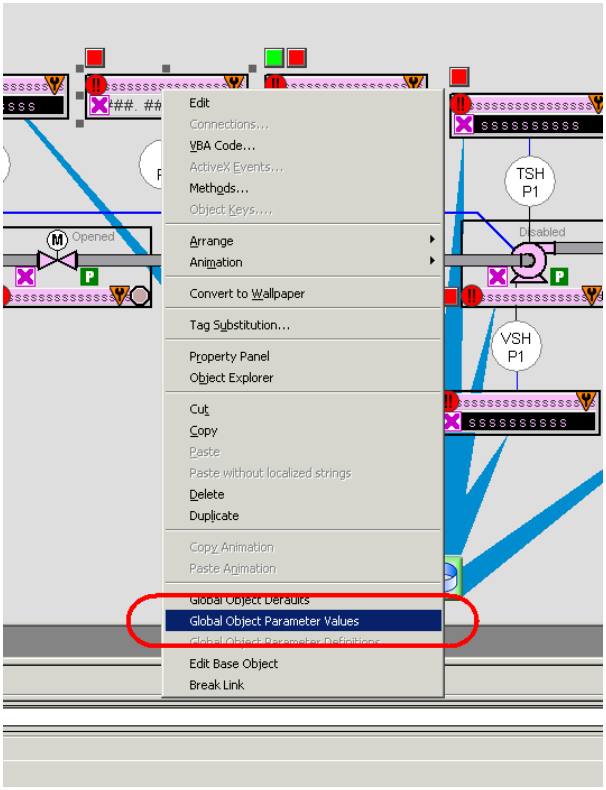
For the P_Prompt object, the Invalid Configuration indicator appears for the following:

- An array in the Prompt Configuration is the wrong size (UDT: P_PromptCfg)
- An array in the Response Data is the wrong size (UDT: P_PromptResp)
- Inp_Ref value points to a Prompt Configuration that is outside of the P_PromptCfg entries

Using Display Elements

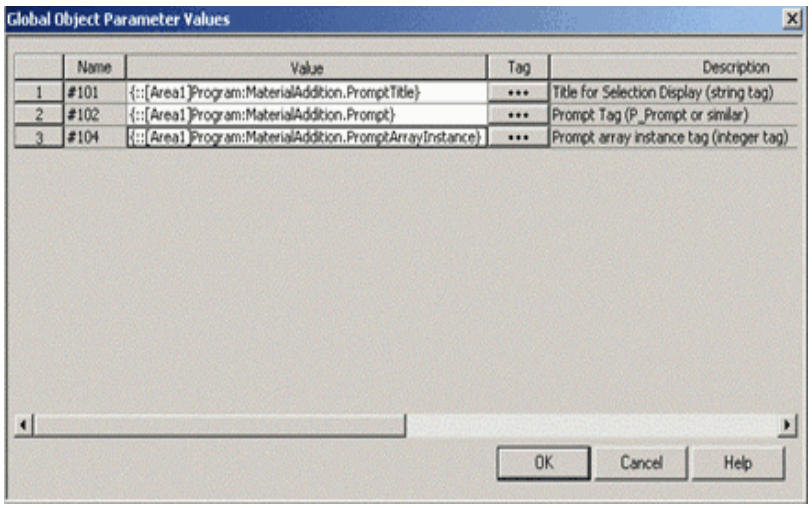
The global objects for P_Prompt can be found in the global object file (RA-UI) Prompt Objects.ggfx. Follow these steps to use a global object.

1. Copy the global object from the global object file and paste it in the display file.



2. In the display, right-click the global object and choose Global Object Parameter Values.

   The Global Object Parameter Values dialog box appears.

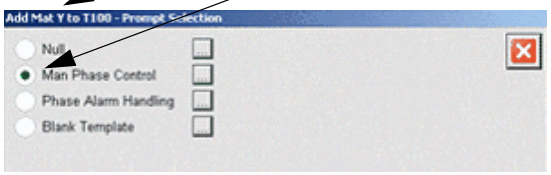


The global object parameters are as follows.

Name	Description	Purpose	Syntax	Tag
#101	Title for Prompt Selection window (string tag)	This tag's value appears at the top of the Prompt Configuration dialog box	{::[shortcut]Program:ProgramName.TagName}	Program scope
			{::[shortcut]TagName}	Controller scope
#102	Prompt tag (P_Prompt or similar)	Reference to the P_Prompt controller tag	{::[shortcut]Program:ProgramName.TagName}	Program scope
			{::[shortcut]TagName}	Controller scope
#104	Prompt array instance tag	This tag's value highlights the prompt selection	{::[shortcut]Program:ProgramName.TagName}	Program scope
			{::[shortcut]TagName}	Controller scope

3. In the Value column, type the tag or value as specified in the Description column. See the examples.

Name	Value	Current Tag Value
#101	{::[Area1]Program:MaterialAddtion.PromptTitle}	Add Mat Y to T100
#102	{::[Area1]Program:MaterialAddtion.Prompt}	
#104	{::[Area1]Program:MaterialAddtion.PromptArrayInstance}	1



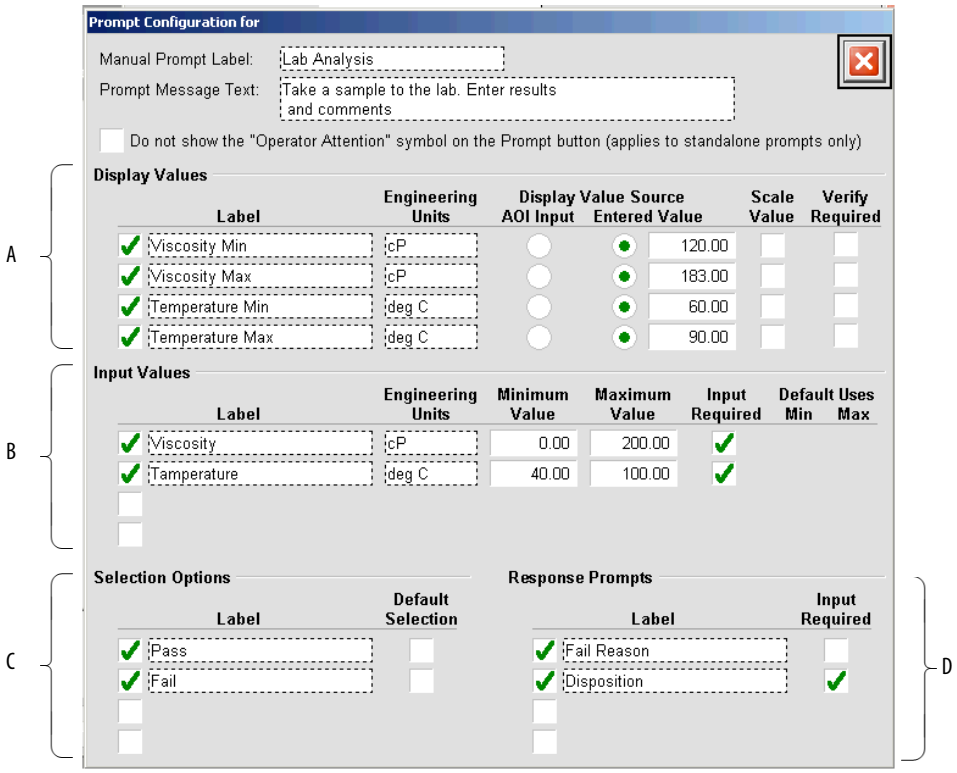
4. On the Global Object Parameter Values dialog box, click OK.

Faceplates

The P_Prompt instruction has three faceplates: Configuration, Response, and Selection.

P_Prompt Configuration

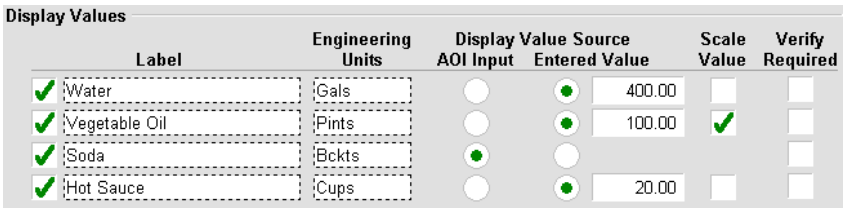
The Prompt Configuration dialog box has four sections to configure a prompt.



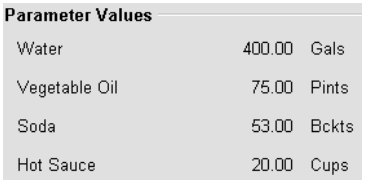
A - Display Values

The source of each value can be a fixed configuration value (default) or programmatic values received on the corresponding instruction input.

Figure 1 - Example Display Value Configuration and Prompt Display



Fixed configuration values can optionally be scaled. See page 25 and page 26 for details.

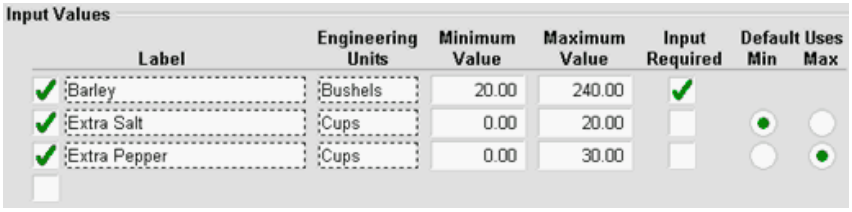


B - Input Values

Value entry can be optionally required (default). If the input is not required, a default of either the minimum or maximum value must be selected.

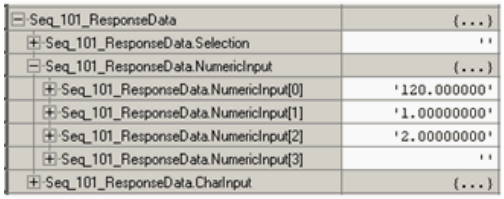
For entry field details, see page 27.

Figure 2 - Example Input Value Configuration and Prompt Display

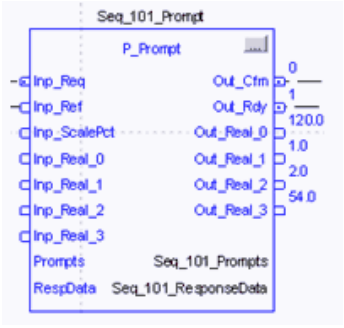


The Acknowledge button (green checkmark) activates when the operator enters a value.

This is an example of Response Data values.



This is an example of the Outputs.

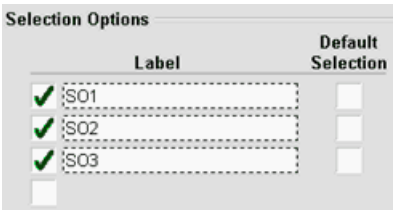


C- Selection Options

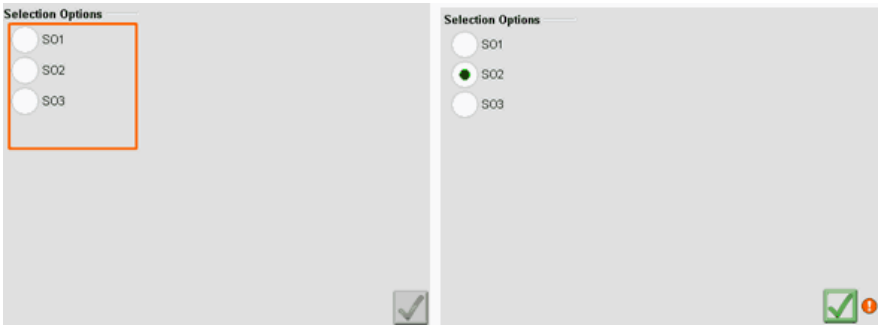
Any one or none of the enabled selections can be designated as the default. If you leave all selections unchecked, the operator is required to make a selection before acknowledging the prompt.

For entry field details, see page 28.

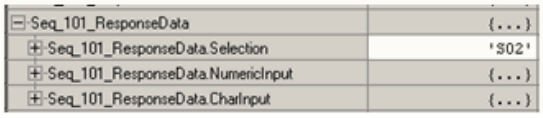
Figure 3 - Example Selection Options Configuration and Prompt Display



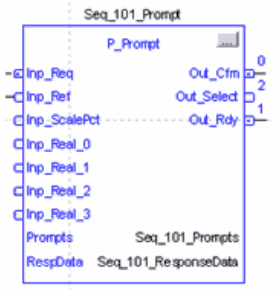
The Acknowledge button (green checkmark) activates when the operator makes a selection.



This is an example of the Response Data value.



This is an example of the Outputs.

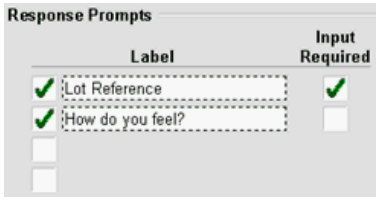


D- Response Prompts

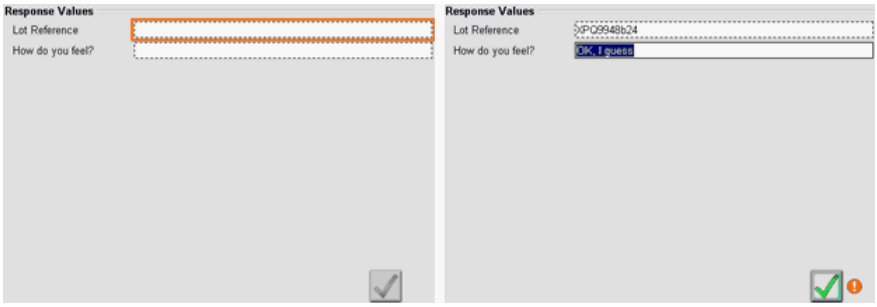
Any of the responses can be designated as Input Required.

For entry field details, see page 29.

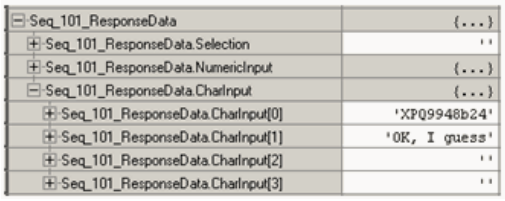
Figure 4 - Example Response Prompts Configuration and Prompt Display



The Acknowledge button (green checkmark) activates when the operator has entered text in all responses designated as Input Required.

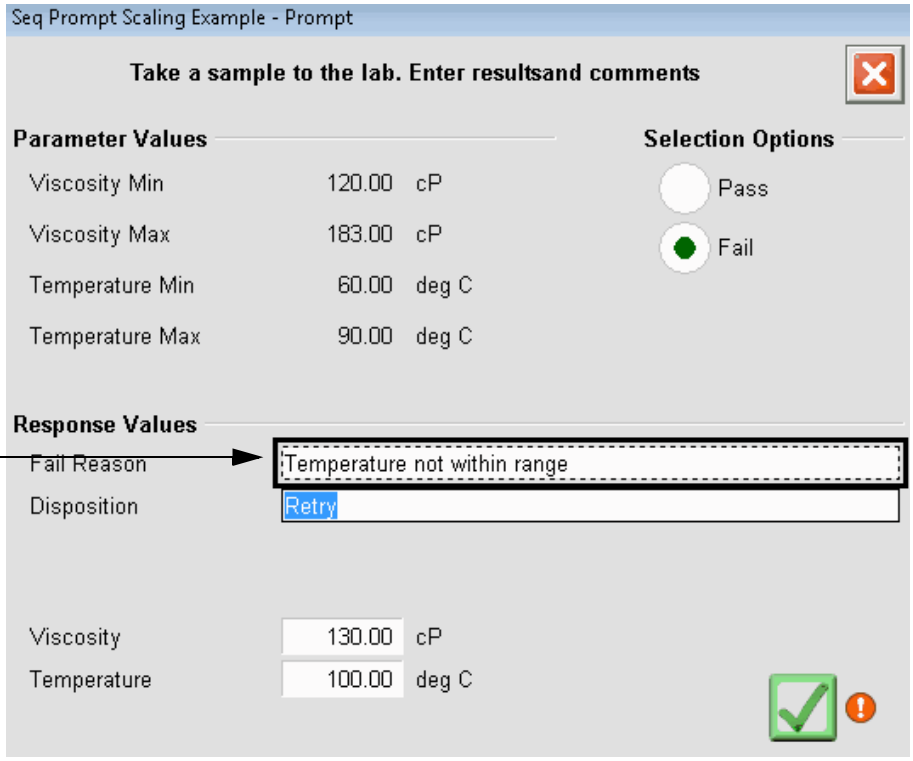


This is an example of the Response Data values.



P_Prompt Response

This dialog box lets the operator review and record data based on the prompt.



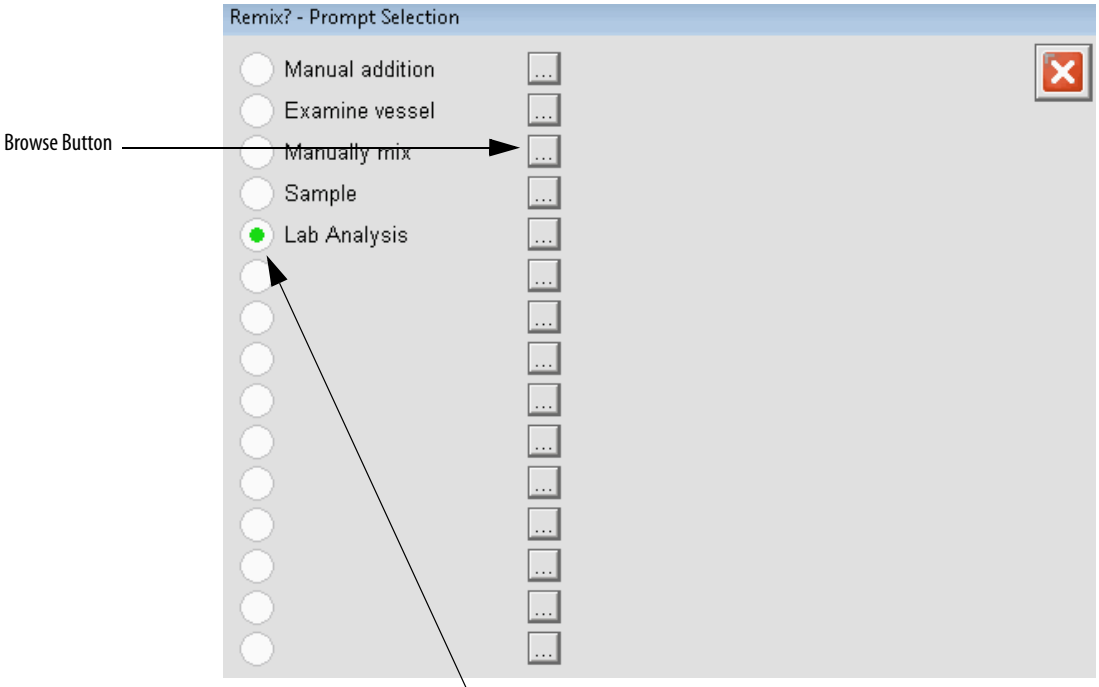
Security code 'J' is required to enter data. Click the green checkmark to confirm.

The Parameter Values, Selection Options, and Response Values are configured on the Prompt Configuration dialog box.

See page 24 for descriptions of the entry boxes on the Prompt Configuration dialog box.

P_Prompt Selection

The Prompt Selection display provides access to the configuration dialog box for a given prompt configuration in the Prompts array by clicking the corresponding Browse button.



The highlighted box (green dot) is determined by the values entered in the #104 tag of the Global Object Parameter Values dialog box.

See page 35 for more information on the Global Objects Parameter Values dialog box.

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At http://www.rockwellautomation.com/support you can find technical and application notes, sample code, and links to software service packs. You can also visit our Support Center at https://rockwellautomation.custhelp.com/ for software updates, support chats and forums, technical information, FAQs, and to sign up for product notification updates.

In addition, we offer multiple support programs for installation, configuration, and troubleshooting. For more information, contact your local distributor or Rockwell Automation representative, or visit http://www.rockwellautomation.com/services/online-phone.

Installation Assistance

If you experience a problem within the first 24 hours of installation, review the information that is contained in this manual. You can contact Customer Support for initial help in getting your product up and running.

United States or Canada	1.440.646.3434
Outside United States or Canada	Use the Worldwide Locator at http://www.rockwellautomation.com/rockwellautomation/support/overview.page, or contact your local Rockwell Automation representative.

New Product Satisfaction Return

Rockwell Automation tests all of its products to help ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

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Your comments will help us serve your documentation needs better. If you have any suggestions on how to improve this document, complete this form, publication RA-DU002, available at http://www.rockwellautomation.com/literature/.

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