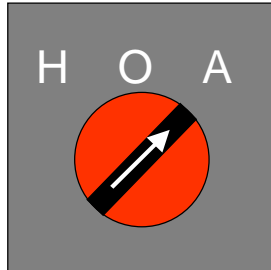




HC900 Hybrid Controller

When you need more than just discrete control

Hand-Off-Auto Function Block – Product Note



Background:

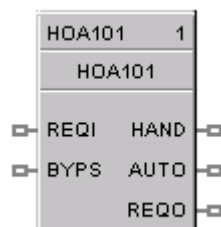
Hand-Off-Auto (HOA) stations are commonly used on control panels today in a variety of industries to allow operators and maintenance personnel to override the control actions of the primary control system during abnormal conditions or to allow equipment maintenance. Because of the safety implications of performing maintenance on equipment under HOA control, these control stations are typically “hard-wired” switches mounted external from the primary control system. Because of physical distances, some installations may remote mount HOA stations near the actual equipment being controlled to facilitate maintenance. Although typically not as secure as a physical override switch, some installations may provide HOA functionality within the primary control system to allow operators to take override actions during periods of abnormal operation. Another use of HOA functionality when provided in a control system is to allow manual override of remote installations, either by a serial communication link, modem, radio or other type of interface. In these installation the field device may be manually controlled until a problem is corrected or until maintenance personnel can visit the site.

Problem:

When an external hard-wired HOA switch is used to provide override control of a system element, indication of the override action in the primary control system is frequently necessary to alert operators and to facilitate back-up control strategies of dependent equipment. When control action is assumed by an external override switch, having the primary control system turn its outputs off is also desirable to prevent unwanted voltages from being present on portions of the external systems. When HOA functionality is included in the control system it may be a stand-alone function within the system or it may be used in conjunction with an external HOA station. The primary control system should also provide facilities to determine if HOA functionality is permitted from the primary control system, from remote locations or from local external switches only. Regardless of the override source, proper indication of the status of the external element is required.

Solution:

The HC900 Hand-Off-Auto (HOA) function block provides appropriate interface connections and functional performance to support both hard-wired external HOA switches and/or internal HOA override control.

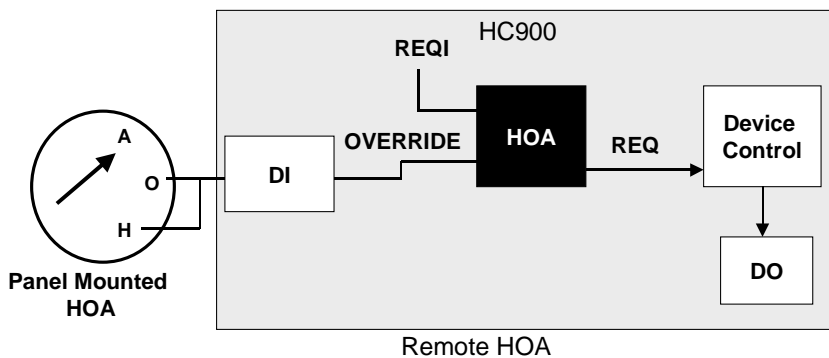
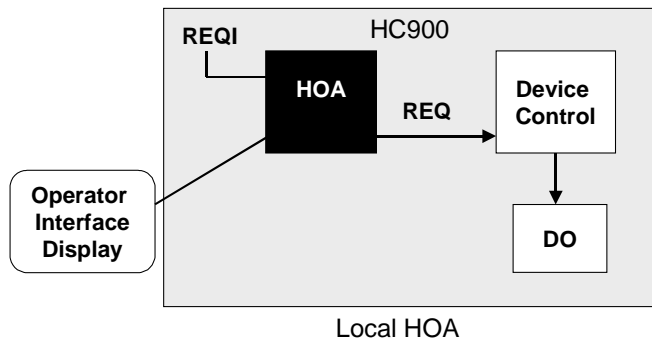


Dedicated displays are provided in the operator interface to facilitate monitoring external override actions or to provide local override capability. Up to 4 HOA displays are supported in the operator interface, each with up to four (4) HOA function blocks for a total of 16 HOA stations per controller.

HAND/OFF AUTO SWITCHES		
TAG45678 RUNNING	HOATAG1 AUTO	F1
TAG45678 STOP	HOATAG2 BYPASS	F2
TAG45678 RUNNING	HOATAG3 HAND	F3
TAG45678 STOPPING	HOATAG4 OFF	F4
ALARM D MESSAGE TEXT S HZ RUN		

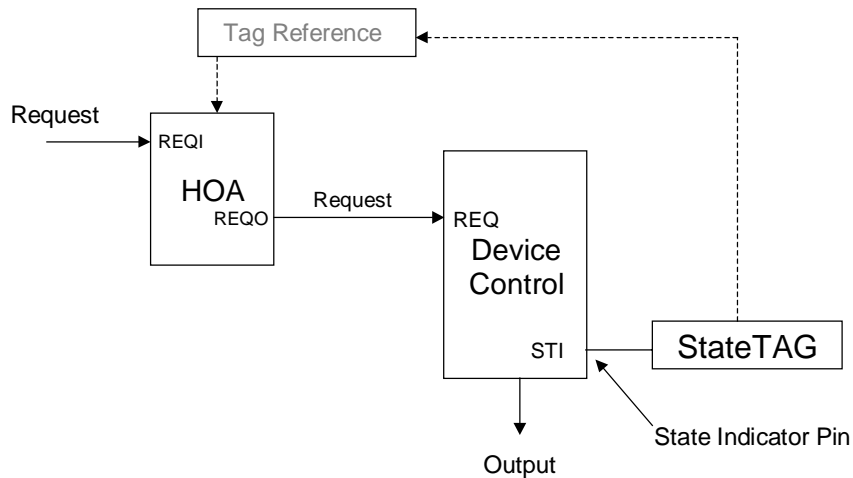
SET HAND/OFF/AUTO SWITCH	
HOATAG1	
CURRENT STATE	AUTO
CHANGE SOURCE	LOCAL
SET STATE	OFF
	AUTO
	HAND
ALARM D MESSAGE TEXT S HZ RUN	

A digital input to the function block accepts a signal from an external device to indicate that local control action is being bypassed by external HOA control. When the bypass input is ON, the function block output turns OFF and the HOA control status of the display indicates BYPASS. The source of HOA control can be LOCAL (HC900 control system only), REMOTE (external HOA switch only) or both. The HOA function block also provides Modbus addresses for the needed control functions to support remote access when required.



HOA used with Device Control

The HOA function block is often used in conjunction with a Device Control function block to turn an external element ON or OFF. When the Device Control block is used, the status output of the block can be used by the HOA function block display to provide additional status information. A signal tag connected to the State Indicator pin of the Device Control block can be referenced in the HOA function block to allow state monitoring from the HOA display screen.



Monitoring Device Control with Hand-OFF-AUTO Display

Summary:

The Hand-Off-Auto function of the HC900 Hybrid Controller provides an easy to implement, easy to use interface for a variety of override control scenarios. When combined with the other equipment control function blocks of the HC900 controller such as the Stage block, ramp block, alternator block and device control block, the resulting total performance far exceeds the performance sum of the individual functions.