



**TECHNOLOGY
SOLUTIONS** UK LTD
part of **HID**

ASCII PROTOCOL SWITCH SAMPLE APPLICATION (.NET DESKTOP)

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Overview

This document describes the ASCII Switch Sample application provided as part of the ASCII 2 Desktop SDK

History

<u>Version</u>	<u>Date</u>	<u>Modifications</u>
1.0	05/11/2013	Document creation

INTRODUCTION

The ASCII Protocol Switch Sample application was developed to provide developers with examples of using the .Net API to command devices that support the Technology Solutions ASCII 2 protocol. This sample builds on the Inventory sample application and demonstrates how to customise the switch actions.

Technology Solutions UHF Readers that support the ASCII 2 protocol support a single and double press trigger action. Where a physical trigger is not available a software switch may still be implemented. This sample demonstrates how to customise the switch behaviour using ASCII commands.

- Each switch action can be defined as off, read, write, inventory, barcode or user
- When the switch action is set to user the trigger action executes a configured ASCII command
- The switch can be set to report when it's state changes
- There is a command to perform a single or double trigger press (software trigger, replicating the user pulling the trigger)

This allows an application to change the default behaviour of the triggers or to turn off any trigger action and to respond to notifications for change of switch state and command the reader independently.

This code sample demonstrates customising and using the switch action.

- Programming the action of the single and/or double press
- Programming the custom user action for each press type
- Receiving trigger change notifications

USING THE APPLICATION

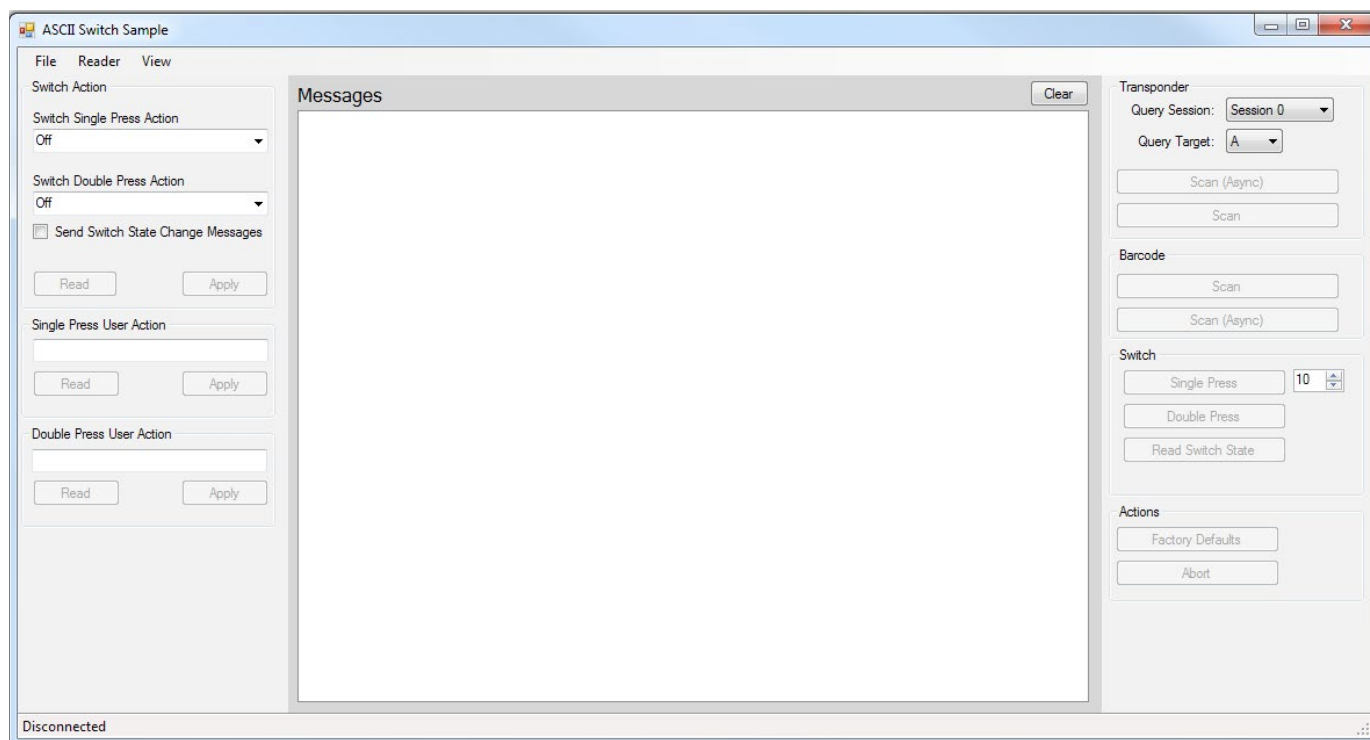


FIGURE 1: The main screen

The main screen (in its default state) is split into three main areas. The left side of the screen has controls to configure the switch actions. The middle section is used to report messages and the right has some general commands as well as some switch specific commands

You can exit the application by closing the window or with File>Exit.

CONNECTING TO THE READER

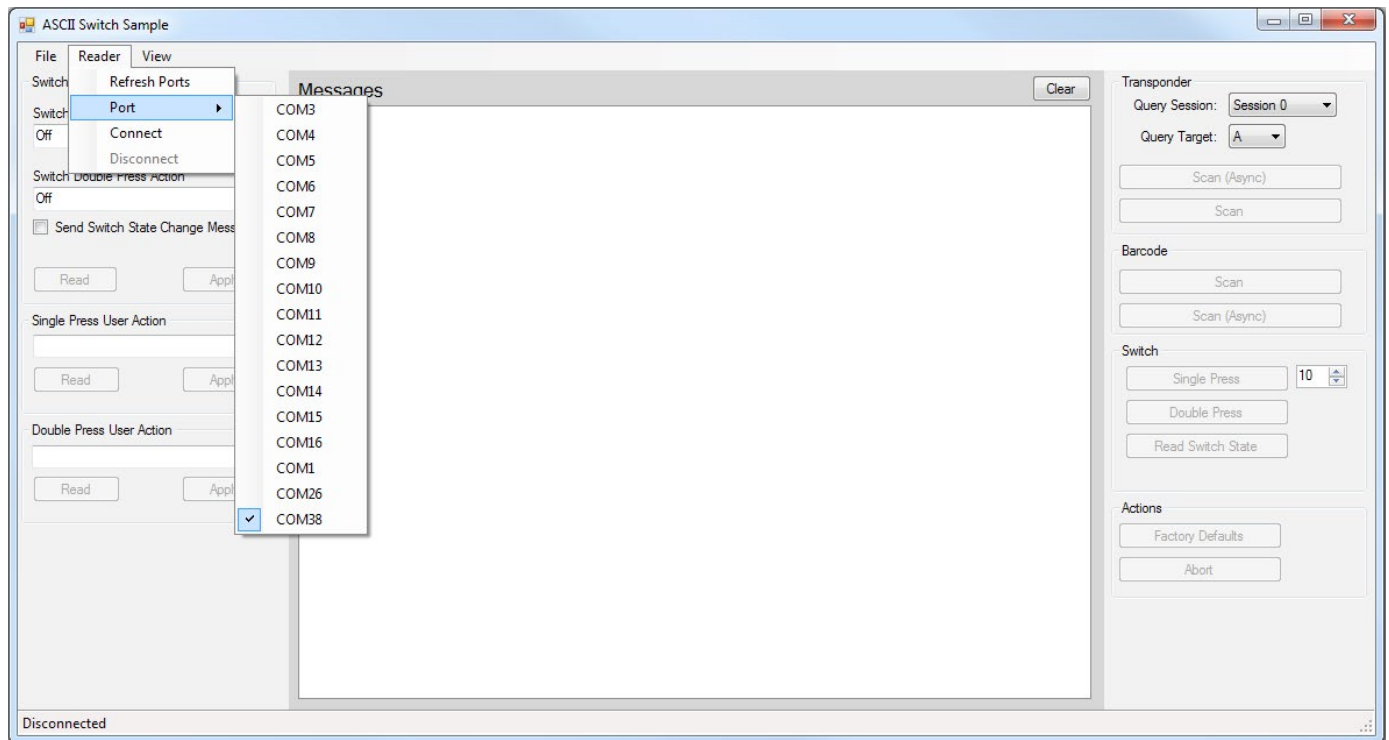


FIGURE 2: Connecting a reader

Readers are connected to the application using a standard serial port. This permits both the USB Desktop (e.g. 1126) and *Bluetooth*® (e.g. 1128) UHF Readers to be used. A list of available com ports are provided in Reader>Port menu. You will need to determine the com port that the reader is connected to. If the port required is not in the port list use Reader>Refresh Ports to refresh the list of available ports.

For *Bluetooth*® readers Windows will associate an incoming and outgoing com port when you pair a Technology Solutions UHF Reader. To establish a *Bluetooth*® connection to the reader you need to select and connect to the outgoing com port. For more information refer to the information in the reader user guide.

For USB readers Windows will associate a USB serial com port to the Technology Solutions UHF Reader as the reader is connected. Refer to the reader user guide for more information.

Once the com port has been selected use the Reader>Connect menu to connect to the com port and the reader. The connection status is shown in the status bar. Reader>Disconnect will disconnect from the reader. Once a reader is connected the controls enable

CONFIGURING THE SWITCH ACTION

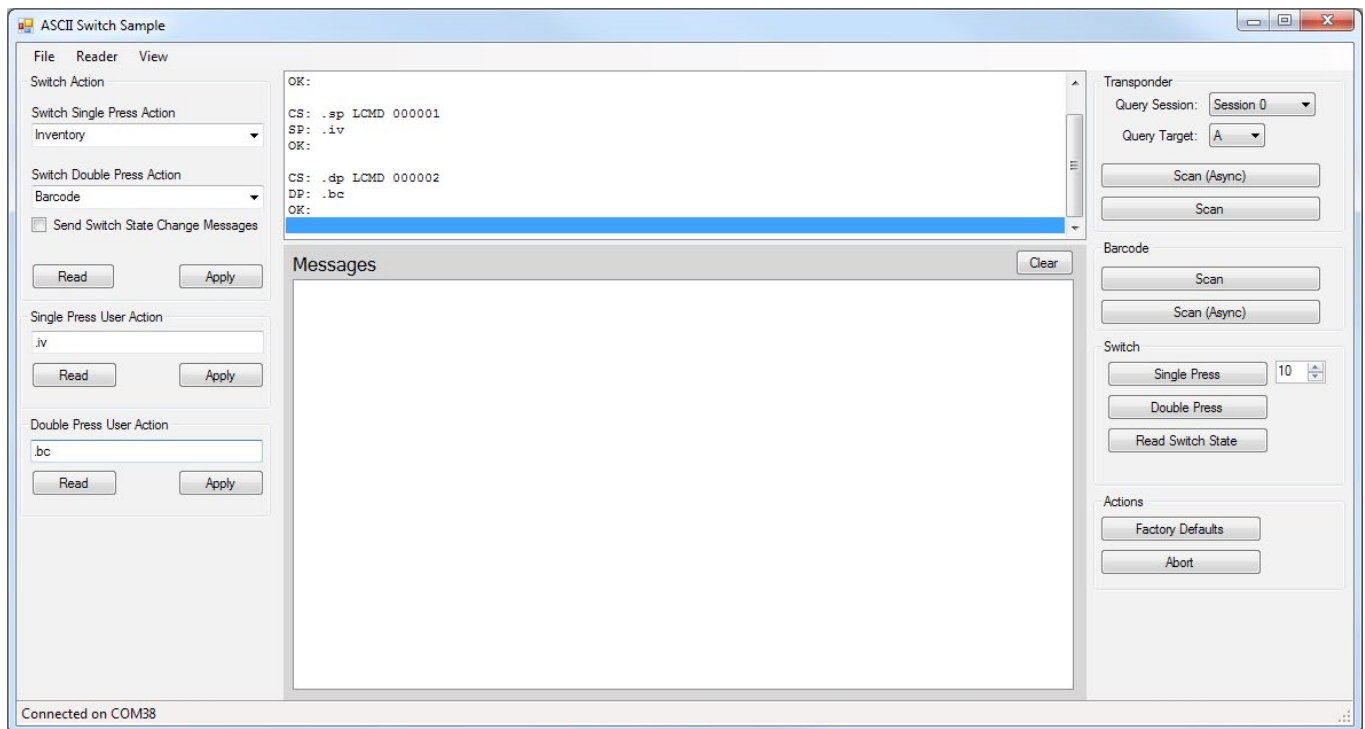


FIGURE 3: Configuring the switch action

The action that the reader performs for a single or a double press can be read or applied using the 'Switch Action' group. There is also a checkbox to enable the asynchronous switch state change notifications. When a press action is set to 'user' the reader executes the corresponding press user action command line that is configured in the 'Single Press User Action' and 'Double Press User Action'.

SWITCH NOTIFICATIONS

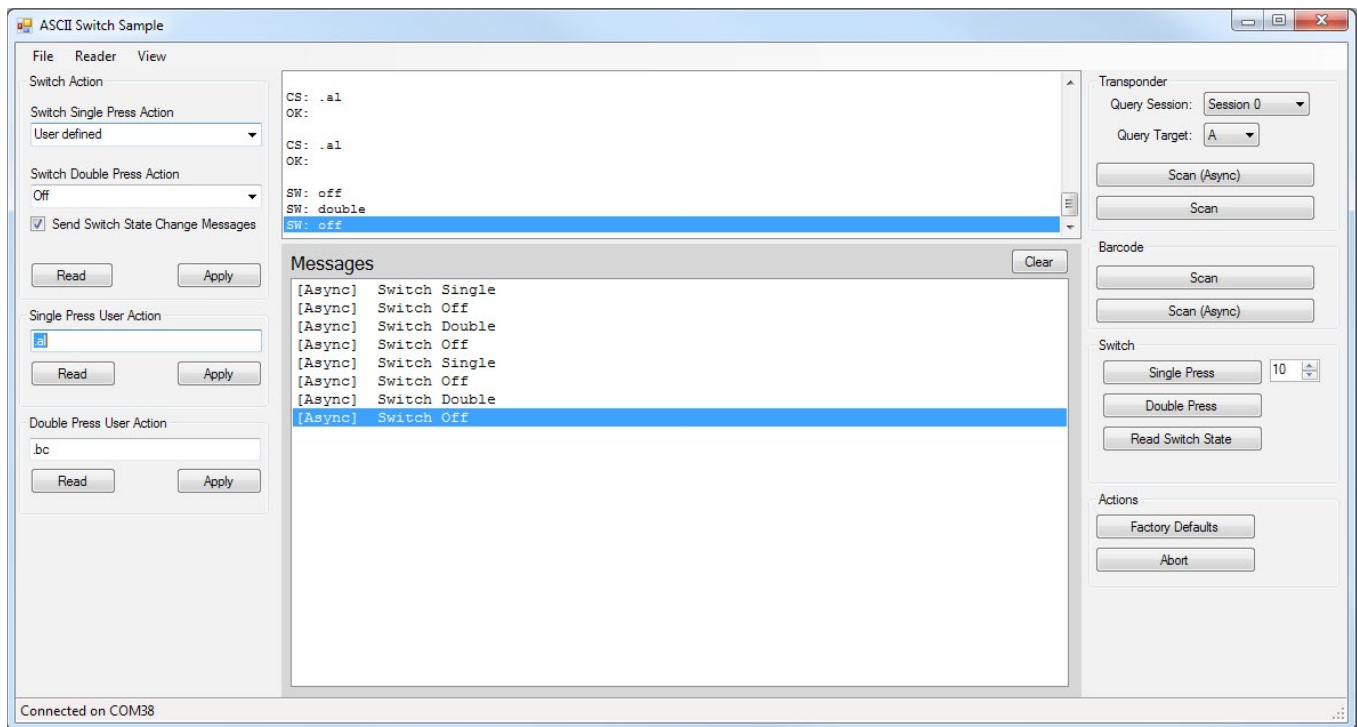


FIGURE 4: Switch notifications

When the reader is configured to report switch state changes a message is sent for each change in switch state. The state changes are captured using a custom responder in the responder chain. Each time the switch changes from single press to off to double press the new state of the switch is reported.

The 'Switch' group on the right hand side provide switch commands. 'Single Press' performs a single press in the same way as if the trigger was activated for a single press (with appropriate notifications). 'Double Press' perform a double press in the same way as if the trigger was activated for a double press. The numeric up down sets the period the switch is activated for in seconds. The abort command (sent using the 'Abort' button in the 'Actions' group) can cancel a switch press. 'Read Switch State' can be used to synchronously read the current switch state as a command rather than capturing the asynchronous notifications.

VIEWING THE ASCII PROTOCOL RESPONSES

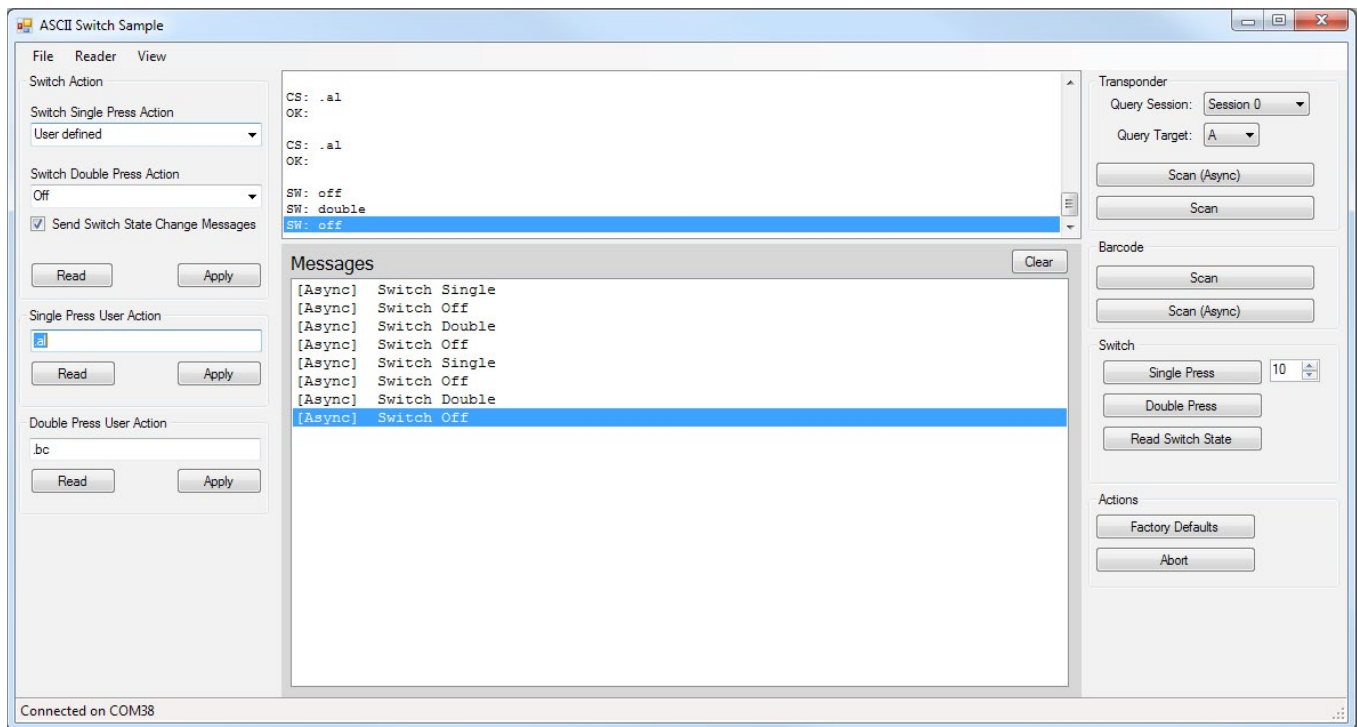


FIGURE 5: The Protocol Response Display (top)

All reader commands in the .Net API provide a convenient method of issuing ASCII commands to the device. To see the raw ASCII command responses for the operations in the sample application use the Protocol Response Display. This can be toggled using the View>Show Protocol Responses menu option.

The Technology Solutions ASCII API has the options to identify a command as a library command and also to index each command sent. This is not required by the reader which has loose parsing requirements but as the reader can echo the command in the response the library uses this feature to determine responses to library commands and specifically indexed commands from responses generated from trigger presses and other means. This can be seen using the Protocol Response Display and comparing the lines prefixed by CS: for commands issued using the on-screen buttons and those arising from trigger operations.

CODE DESCRIPTION

This code sample builds on the simpler Inventory code sample. The functionality of the application is split into view models. The view models are mostly data bound using [System.ComponentModel.INotifyPropertyChanged](#) to reflect changes in values between the view model and the user interface (View / Form). Actions are implemented using [ICommand](#). This simple interface allows an action to be defined and a method to determine whether it can execute. The views can then bind to the [ICommands](#) presented by the view model using the appropriate [CommandBinder](#) instance to bind a [Control](#) to an [ICommand](#). The [ReaderCommand](#) class handles reflecting the [ICommand.CanExecute](#) to the [Enabled](#) property of the bound control. To determine how a function of a button is implemented you can determine the [ICommand](#) the control is bound to in the View (Form) and find the execute delegate for that [ICommand](#) in the corresponding view model.

The [ReaderService](#) handles setting up the connection and communication with the reader via a com port.

The [CommandsViewModel](#) provides [ICommands](#) to action the switch and other general commands.

The [ConnectViewModel](#) handles using the reader service to connect and disconnect from the reader.

The [DisplayResponder](#) is a custom responder to capture all responses from the reader to optionally show on the UI.

The [MainViewModel](#) sets up the responder chain which receives all the responses from the reader and updates the user interface.

The [SwitchActionViewModel](#) provides [ICommands](#) to configure the switch actions.

The [SwitchAsynchronousResponder](#) is a custom responder that is added to the responder chain to capture the asynchronous changes in switch state when enabled.

FURTHER INFORMATION

More information can be found on the Technology Solutions website. The product downloads section of each product requires a free, one time, registration. See "Product Downloads" of the following products to download the document describing the ASCII Protocol and also user manuals for the products.

<http://www.tsl.com/products/1128-bluetooth-handheld-uhf-rfid-reader/>

<http://www.tsl.com/products/1126-desktop-uhf-rfid-reader-with-usb/>

If you have any questions please contact support@tsl.com

ABOUT

ABOUT TSL®



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For over two decades, TSL® has delivered innovative data capture solutions to Fortune 500 companies around the world using a global network of distributors and system integrators. Specialist in-house teams design all aspects of the finished products and software ecosystems, including electronics, firmware, application development tools, RF design and injection mould tooling.

TSL® is an ISO 9001:2015 certified company.



ISO 9001: 2015

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