

# Boundary-scan Scripting

**CORELIS**  
An EWA Company

A Feature of ScanExpress TPG™

Preferred JTAG Solutions—Acclaimed Technical Support

```
036 addrName = "ADDR";
037 addrPins = "U3.8 U3.7 U3.6 U3.5 U3.97 U3.96 U3.95 U3.94";
038
039 //group the pins together into a group called "ADDR"
040 output = scan_create_group(addrName, addrPins);
041
042 //make sure that there's no problem creating the group
043 if(output != "")
044 {
045     printf("Error grouping pins:\n");
046     printf("%s\n", output);
047     return FAILED;
048 }
049
050 //update the pins
051 scan_update(CHECK_CONFLICT);
052
053 //print out the pins in the group
054 printf("The pins in the group are:\n%s\n", scan_pins_in_group(addrName));
055
056 //flash every single LED
057 size = scan_num_pins_in_group(addrName);
058 OK = 1;
059 mask = 0;
060
061 //turning on LED in order
062 for(i = 1; i <= size; i++)
063 {
064     //set the mask to turn on the LED indicated by i
065     mask = (mask << 1) | OK;
066
067     printf("Turning on light #%i ... ", i);
068     if(set_and_check(addrName, mask) == FAILED)
069     {
070         printf("FAILED!");
071         return FAILED;
072     }
073 }
```

Variable	Type	Value
addrName	string	ADDR
addrPins	string	U3.8 U3.7 U3.6 U3.5 U3.97 U3.96 U3.95 U3.94
mask	integer	1
output	string	

Sometimes static test vectors aren't enough—tests must be adaptive to accommodate specific conditions and applications. **Boundary-scan scripting** brings a new level of test customization to ScanExpress tools, offering an open canvas for users to create custom tests tailored to specific applications.

With boundary-scan scripting, users can automate test scenarios with functions to control boundary-scan pins, access proprietary in-system-programmable components, or call third party applications—all within a ScanExpress Runner test step.

Seasoned programmers and novices alike will find the c-style syntax and integrated debugging environment make script test development a snap.

## Features

- Powerful, easy-to-use C-style scripting syntax with simplified variables and support for branching and looping.
- Integrated script debugger with color-coding, breakpoints, single-step, variable watch window, and output console.
- Dedicated functions for boundary-scan control, data and file manipulation, controller I/O features, session information, and more.
- Debug and generation support is included with the ScanExpress TPG test development software.
- Generated script test steps are fully compatible with the ScanExpress Runner™ boundary-scan test executive.

## Benefits

- **Add test coverage** with custom boundary-scan tests. Script test steps are ideal for structural and functional testing of logic components.
- **Increase integration** by utilizing functions to call third party applications, process data, and read or write to files.
- **Compatible** with Corelis JTAG controllers and the complete Corelis ScanExpress™ family of test products.

## Applications

- **Custom Component Test & Verification** - Create custom boundary-scan tests for accessible components such as EEPROMs, UARTs, DAC/ADCs, RTCs and more.
- **Test Data Management** - Create, access, modify, and print data from files on the fly during test execution.
- **Third Party Applications Integration** - Call third party executable files from within a script to extend the capabilities of any ScanExpress test plan.
- **Proprietary Protocols** - Use raw JTAG scans or boundary-scan IOs to access additional component features and custom protocols.

Learn More: For more information about Corelis products, please visit [www.corelis.com](http://www.corelis.com)

**Boundary-scan Scripting** is a feature of ScanExpress TPG that includes a full featured scripting language, code debugger, and execution capability. The scripting language is based on C and will be familiar to many users. Example scripts demonstrating common applications are included with ScanExpress tools to help users get up and running quickly.

Completed scripts are compiled using the ScanExpress TPG generator and can be executed within the debugger or using the ScanExpress Runner test executive. Script test steps can control boundary-scan I/O, scan the JTAG chain, access controller I/O, process data, and even manipulate data files or execute external programs. A complete list of available functions is presented in the table below.

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## ScanExpress TPG Scripting Built-in Functions<sup>1</sup>

### Boundary-Scan, IO, and Test Related

scan_check_conflict()	scan_pins_in_group()	io_i2c_begin()	get_GPIO()
scan_create_group()	scan_reset()	io_i2c_end()	set_GPIO()
scan_delete_group()	scan_set_value()	io_i2c_write()	execute_ext()
scan_DR()	scan_update()	io_i2c_read()	execute_cvf()
scan_get_value()	scan_i2c_configure()	io_spi_begin()	get_last_diagnostic_info()
scan_infrastructure_test()	scan_i2c_write()	io_spi_end()	
scan_IR()	scan_i2c_read()	io_spi_wrt_rd()	
scan_num_pins_in_group()	get_last_error()	configure_GPIO()	

### General Operations

beep()	printf()	windows_print_file()	get_diagnostic_setting()
delay()	setprogress() / progress()	get_session_operator()	float_array ()
inputbox()	random_integer()	set_session_operator()	int_array ()
promptbox()	seed_random()	get_session_part_number()	string_array ()
addtoini()	get_current_time()	set_session_part_number()	get_g_var()
getfromini()	get_date_time()	get_session_serial_number()	set_g_var()
print()	crc8data()	set_session_serial_number()	

### File-Related Operations

fopen()	fgetline()	freadb8()	fwriteb16()
fclose()	fendoffile()	freadb16()	fwriteb32()
fcloseall()	fnumlines()	freadb32()	fcrc8()
fprintf()	fnumbytes()	fwriteb8()	

### Conversion and String Operations

string_format()	string_right() / right()	character_to_integer() / asc()	integer_to_string_hex16() / int16()
string_compare() / strcmp()	string_mid() / mid()	string_to_integer() / atoi()	integer_to_string_hex32() / int32()
string_concatenate() / strcat()	string_instring() / instr ()	string_hex_to_integer()	integer_to_string_hex64() / int64()
string_substring() / strstr()	string_replace() / replace()	float_to_string() / ftoa()	
string_length() / len()	string_to_float() / atof()	integer_to_string() / itoa()	
string_left() / left()	integer_to_character() / chr()	integer_to_string_hex8() / int8()	

<sup>1</sup>For function descriptions and further specifications, please see the ScanExpress TPG User's Manual.