

Home

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EditNew Page

# Welcome to the LibShift595Arduino wiki!

This library is intended to simply controlling cascaded 595 shift registers.

## Arduino sample code:

```
#include <LibShift595Arduino.h>

#define NumberOfRegisters 2
#define LatchPin          4
#define ClockPin           3
#define DataPin            2

// Instantiate the shift register object
Shift595Arduino MyShiftReg(DataPin, ClockPin, LatchPin, NumberOfRegisters);

void setup()
{
    MyShiftReg.Setup();
}

void loop()
{
    myShiftRegister.auto_update = false;
    myShiftRegister.OffAllRegisters();
    myShiftRegister.OnSingleAllRegisters(7);
    myShiftRegister.OnSingleAllRegisters(12);
    myShiftRegister.Update();
    delay(1000);
}
```


▼ Pages1


Home


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## Help:

### Shift register allocation and initialization::

#### Shift595Arduino(int datapin, int clockpin, int latchpin, int nbregisters=1);

```
/*
Allocation function:
    - datapin: specifies the Arduino pin connected to the 595 data input
    - clockpin: specifies the Arduino pin connected to the 595 clock input
    - latchpin: specifies the Arduino pin connected to the 595 latch output
    - nbregisters: specifies the number of cascaded registers. Default is 1.

ex: Shift595Arduino myShiftRegister(2, 3, 4, 2);
*/
```

**boolean Setup();**

```
/*
Setup function:
  Inits the Arduino pins.
  This function must be called in the setup()
  function of the Arduino program.

ex: myShiftRegister.Setup();
*/
```



***Shift register actions::***



**boolean OffRegister(int reg\_index);**

```
/*
Turn Off ('0') values of a specifc register:
  - reg_index: specify a register index.

ex: myShiftRegister.OffRegister(1);
*/
```

**boolean OffAllRegisters();**

```
/*
Turn Off ('0') values of all registers.

ex: myShiftRegister.OffAllRegisters();
*/
```

**boolean OnRegister(int reg\_index);**

```
/*
turn On ('1') values of a specifc register:
  - reg_index: specify a register index.

ex: myShiftRegister.OnRegister(1);
*/
```

**boolean OnAllRegisters();**

```
/*
Turn On ('1') values of all registers.

ex: myShiftRegister.OnAllRegisters();
*/
```

**boolean OnSingleRegister(int position, int reg\_index);**

```
/*
Turn On ('1') value at a specific position of a specific register:

  - position:  position of the value to turn on.
                position must be beetween 0 and 7.
  - reg_index: specify a register index.

ex: myShiftRegister.OnSingleRegister(3, 1);
*/
```

**boolean OnSingleAllRegisters(int position);**

```
/*
Turn On ('1') value at a specific position among all registers:

    - position:    position of the value to turn on.
                   position must be beetween 0 and 8 x number_of_registers-1.

ex: myShiftRegister.OnSingleAllRegisters(12);
*/
```

**boolean OnSingleEachRegisters(int position);**

```
/*
Turn On ('1') value at a specific position for each register:

    - position:    position of the value to turn on.
                   position must be beetween 0 and 7.

ex: myShiftRegister.OnSingleEachRegisters(4);
*/
```

**boolean OffSingleRegister(int position, int reg\_index);**

```
/*
Turn Off ('0') value at a specific position of a specific register:

    - position:    position of the value to turn off.
                   position must be beetween 0 and 7.
    - reg_index:   specify a register index.

ex: myShiftRegister.OffSingleRegister(3, 1);
*/
```

**boolean OffSingleAllRegisters(int position);**

```
/*
Turn Off ('0') value at a specific position among all registers:

    - position:    position of the value to turn off
                   position must be beetween 0 and 8 x number_of_registers-1.

ex: myShiftRegister.OffSingleAllRegisters(12);
*/
```

**boolean OffSingleEachRegisters(int position);**

```
/*
Turn Off ('0') value at a specific position for each register:

    - position:    position of the value to turn off.
                   position must be beetween 0 and 7.

ex: myShiftRegister.OffSingleEachRegisters(4);
*/
```

**boolean OnSingleOnlyRegister(int position, int reg\_index);**

```
/*
Turn On ('1') value at a specific position of a specific register,
and Turn Off all other values for this register:
```

- position: position of the value to turn on.  
position must be between 0 and 7.
- reg\_index: specify a register index.

```
ex: myShiftRegister.OnSingleOnlyRegister(3, 1);  
*/
```

### **boolean OnSingleOnlyAllRegisters(int position);**

```
/*  
Turn On ('1') value at a specific position among all registers,  
and Turn Off all other values:  
  
- position: position of the value to turn on.  
position must be between 0 and 8 x number_of_registers-1.  
  
ex: myShiftRegister.OnSingleOnlyAllRegisters(12);  
*/
```

### **boolean OnSingleOnlyEachRegisters(int position);**

```
/*  
Turn On ('1') value at a specific position for each register,  
and Turn Off all other values:  
  
- position: position of the value to turn on.  
position must be between 0 and 7.  
  
ex: myShiftRegister.OnSingleOnlyEachRegisters(4);  
*/
```

### **boolean OffSingleOnlyRegister(int position, int reg\_index);**

```
/*  
Turn Off ('0') value at a specific position of a specific register,  
and Turn On all other values for this register:  
  
- position: position of the value to turn off.  
position must be between 0 and 7.  
- reg_index: specify a register index.  
  
ex: myShiftRegister.OffSingleOnlyRegister(3, 1);  
*/
```

### **boolean OffSingleOnlyAllRegisters(int position);**

```
/*  
Turn Off ('0') value at a specific position among all registers,  
and Turn On all other values:  
  
- position: position of the value to turn off  
position must be between 0 and 8 x number_of_registers-1.  
  
ex: myShiftRegister.OffSingleOnlyAllRegisters(12);  
*/
```

### **boolean OffSingleEachRegisters(int position);**

```
/*  
Turn Off ('0') value at a specific position for each register,  
and Turn On all other values:
```

- position: position of the value to turn off.  
position must be between 0 and 7.

```
ex: myShiftRegister.OffSingleOnlyEachRegisters(4);  
*/
```

**boolean ShiftLeftRegister(boolean circular, int reg\_index);**

**boolean ShiftLeftAllRegisters(boolean circular);**

**boolean ShiftLeftEachRegisters(boolean circular);**

**boolean ShiftRightRegister(boolean circular, int reg\_index);**

**boolean ShiftRightAllRegisters(boolean circular);**

**boolean ShiftRightEachRegisters(boolean circular);**

**boolean NegateRegister(int reg\_index);**

```
/*  
Negate values of a specific register. On values are turned Off,  
Off values are turned On:  
  
- reg_index: specify a register index.  
  
ex: myShiftRegister.NegateRegister(1);  
*/
```

**boolean NegateAllRegisters();**

```
/*  
Negate values of all registers.  
  
ex: myShiftRegister.NegateAllRegisters();  
*/
```

**boolean Update();**

```
/*  
Update register state. Register output pins are updated  
to their current values.  
  
ex: myShiftRegister.Update();  
*/
```

**boolean Blink(int iter, int delay\_val);**

```
/*  
Update Off then update to their current values the  
output pins of the registers.  
  
- iter: number of blinks.  
- delay_val: blink delay in milliseconds.  
  
ex: myShiftRegister.Blink(5, 100);  
*/
```

**boolean TestSequence();**

```
/*  
Run a test sequence for N cascaded registers with LEDs.
```

- Turn On all LEDs
- Blink LEDs 5 times @ 100ms
- Turn Off all LEDs
- Turn On 3 LEDs
- Shift the 3 LEDs positions to the left x times
- Turn On / Off groups of 8 LEDs in alternance
- Switch On / Off LED states in alternance

```
ex: myShiftRegister.TestSequence();  
*/
```

## ***Shift register parameters::***

### **boolean verbose;**

```
/*  
Enable/Disable verbose output.  
When enabled, each operation outpus a string with its name.  
Default value is false.
```

```
ex: myShiftRegister.verbose = true  
*/
```

### **boolean auto\_update;**

```
/*  
Enable/Disable register state auto update.  
When enabled, each action updates values of the registers' output pins,  
then wait some amount of time defined by the update_delay value.  
When disabled, registers' output pins remain unchanged until  
an explicit call to Update().  
Default value is true.
```

```
ex: myShiftRegister.auto_update = false;  
    myShiftRegister.OffAllRegisters();  
    myShiftRegister.OnSingleAllRegisters(7);  
    myShiftRegister.OnSingleAllRegisters(12);  
    myShiftRegister.Update();  
    delay(1000);  
*/
```

### **int update\_delay;**

```
/*  
Set the amount of time, in milliseconds, an action auto update  
is maintained before returning.  
Default value is 0.
```

```
ex: myShiftRegister.update_delay = 250;  
*/
```



