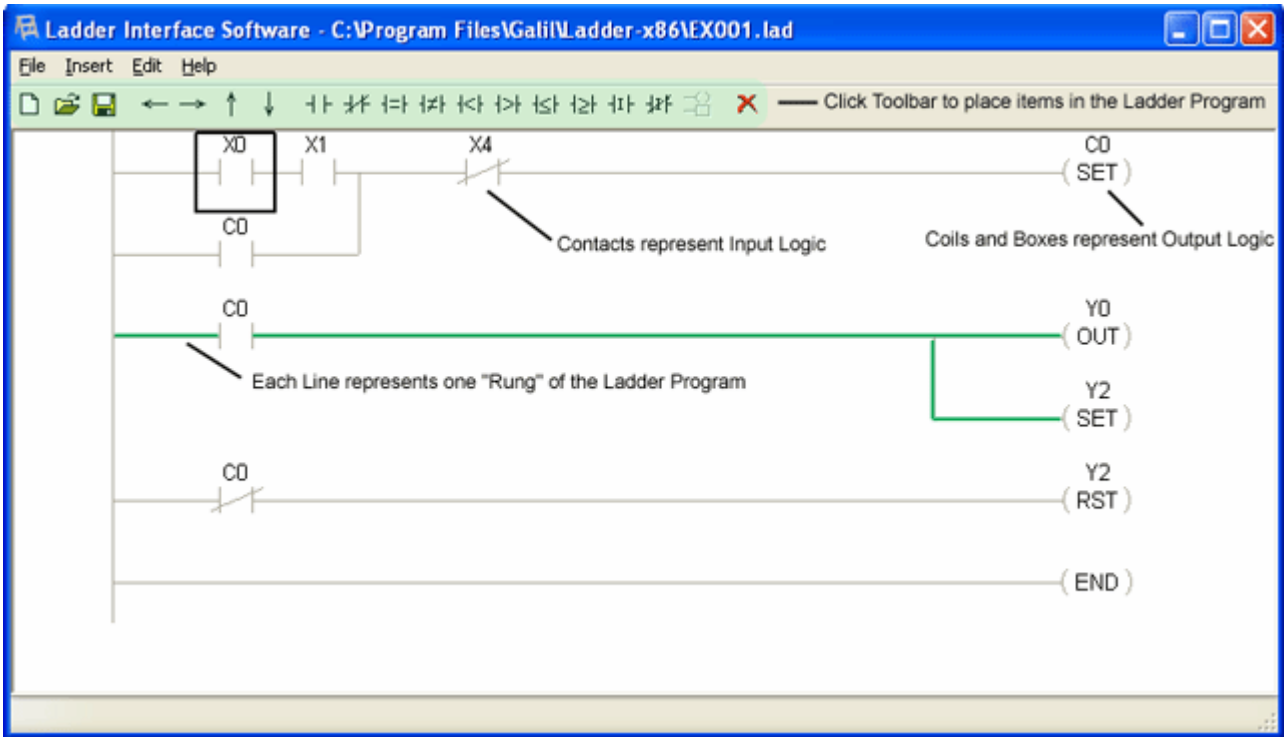
Ladder Interface Software Manual

Version 1.0 beta
01/09

Galil's Ladder Interface Software is a software tool for the RIO-471x0 compact PLC. The software converts a relay Ladder Logic program into code for input into the RIO controller. Ladder Logic is often used by programmable logic controller (PLC) programmers to graphically input I/O logic. While direct RIO programming using Galil's two-letter text instructions allows for flexible coding, it is sometimes easier to determine the I/O logic visually with Ladder Logic. The Ladder Interface Software provides an easy-to-use graphical interface that allows object types for: contacts, coils, control relays, boxes (including timers, counters and data manipulation) and analog I/O. The software generates an RIO program from the specified objects in the flow diagram. In addition to generating optimized code, Galil's Ladder Interface Software automatically adds determinism to the RIO program.



Steps to Running a Ladder Program

1. Open the Ladder Interface software and construct the ladder diagram using contacts, coils and boxes to create the machine logic. Save the Ladder Logic program (.lad)
2. When the ladder logic program is saved, a .dmc file will automatically be created in the same directory. It contains the Galil code for downloading onto the RIO-471x0.
3. To download the .dmc code, you must first install the GalilTools software. To get scope capability, the full version is required, to just download and run a program the free "Lite" version will work
4. After GalilTools is installed, connect to the RIO-471x0 and open the .dmc file that was created.
5. Click the "Execute" button to download the .dmc file and execute the Ladder program. Anytime the Ladder Logic program is changed, the .lad file must be saved. Then a new .dmc file will be created and must be downloaded to the RIO via GalilTools in order for the changes to take effect.

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Memory Map Locations for RIO-471x0

Data	RIO-471x0 Range
Discrete digital inputs	X0 - X15
Discrete digital outputs	Y0 - Y15
Digital output register (16 bits)	V0
Digital input register (16 bits)	V100
Current timer value	V200 - V207
Current counter value	V250 - V257
Analog inputs	V300 - V307
Analog outputs	V400 - V407
User variable space (4.2 format)	V500 - V524
Control relays	C0 - C15
Timers	T0 - T7
Counters	CT0 - CT7
K constants	No limit on total number.Galil 4.2 format (except where noted)

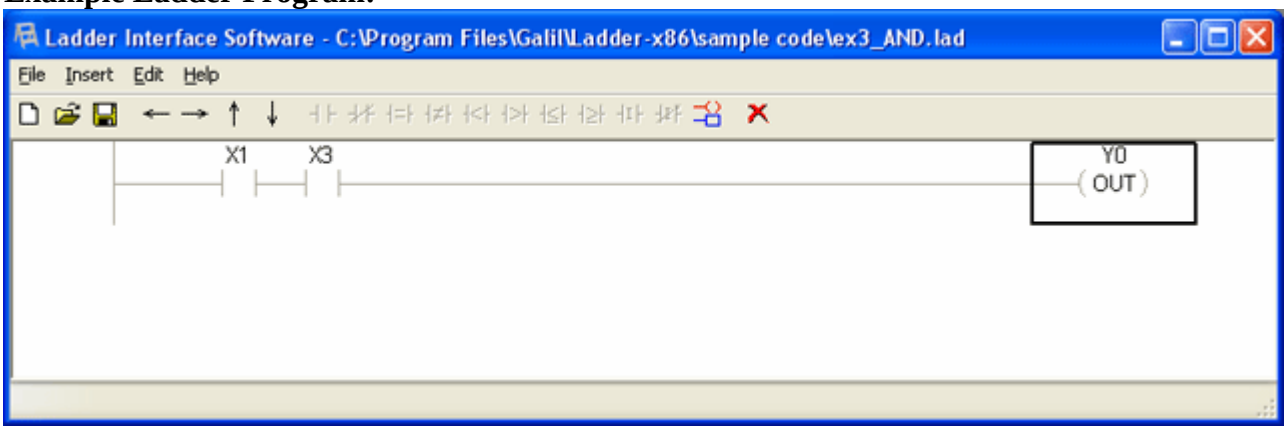
AND - logical AND

Symbol:

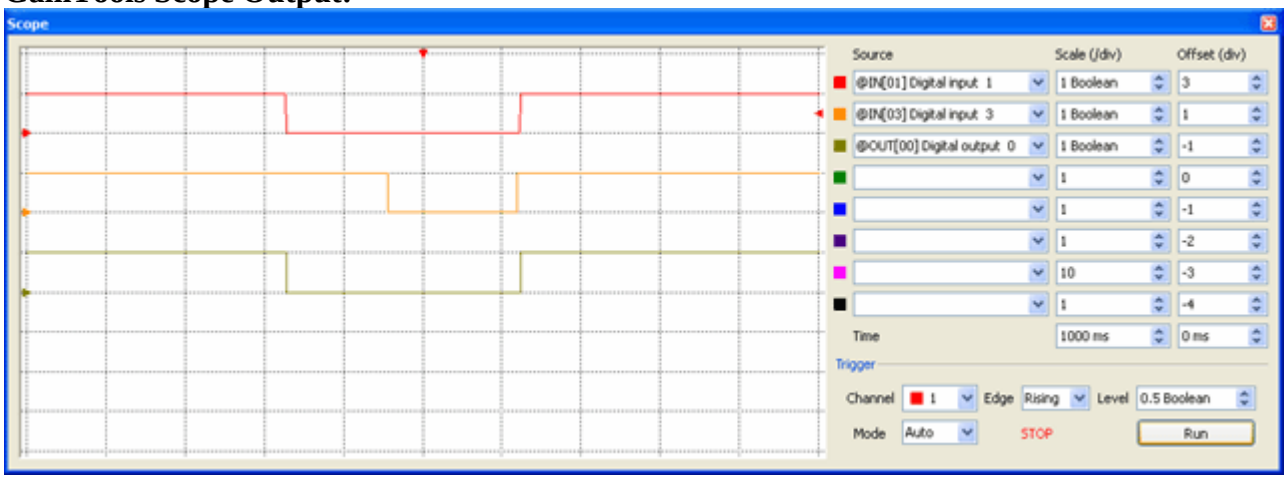
Range:

Description:
AND's multiple elements on a rung. A logical AND compares two inputs. If they are both "TRUE", then the result is "TRUE", otherwise, the result is "FALSE".
Type: Layout

Example Ladder Program:

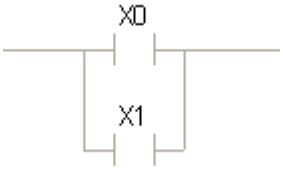


GalilTools Scope Output:



OR - logical OR

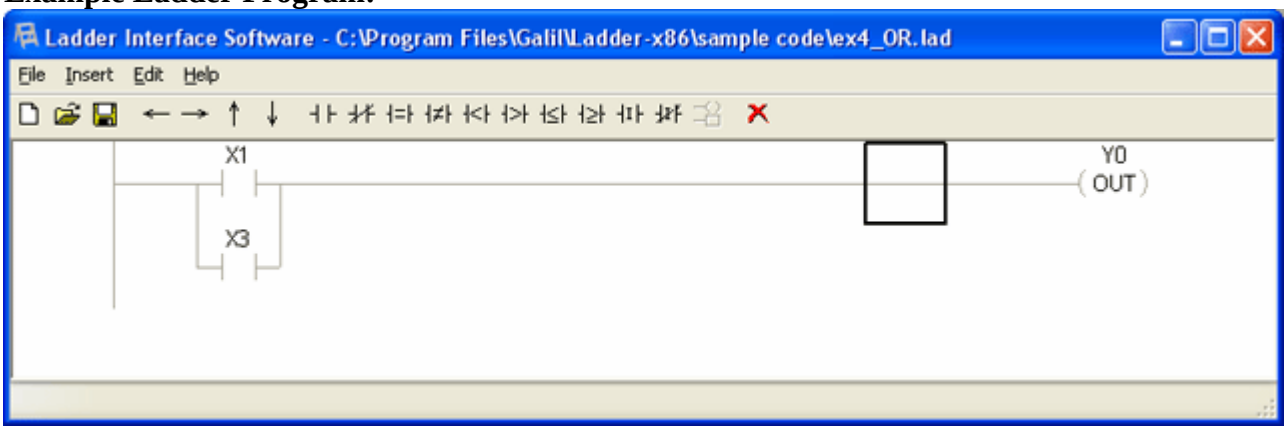
Symbol:



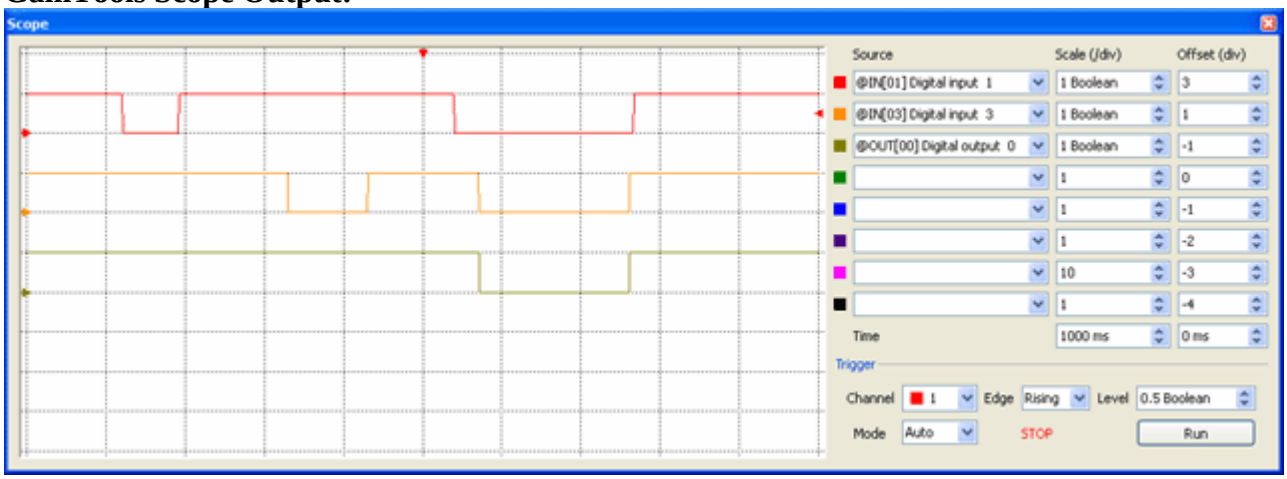
Range:

Description:
OR's multiple elements on a rung. The logical OR compares two inputs. If either or both are TRUE, then the result is TRUE, otherwise, the result is FALSE.
Type: Layout

Example Ladder Program:

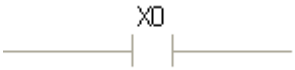


GalilTools Scope Output:



STR - Store - Normally Open

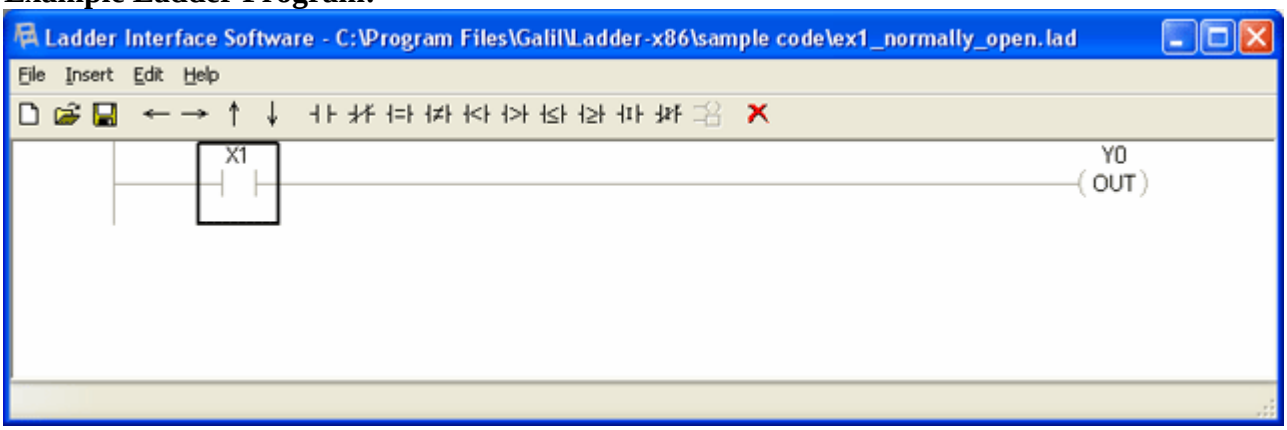
Symbol:



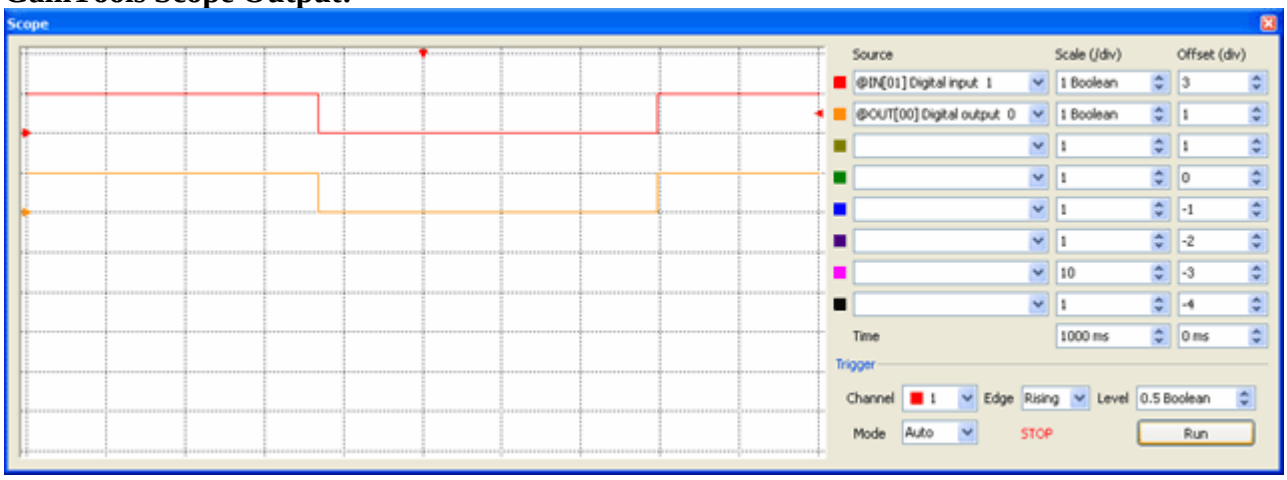
Range:
X0-X15
Y0-Y15
C0-C15
T0-T7
CT0-CT7

Description:
A Normally Open contact evaluates true only when the input is active. In the example below, the digital output Y0 evaluates TRUE when the digital input X1 evaluates TRUE. When X1 evaluates FALSE, likewise Y0 evaluates FALSE.
Type: Contact

Example Ladder Program:

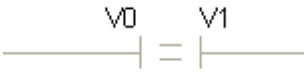


GalilTools Scope Output:



STRE - Equal to

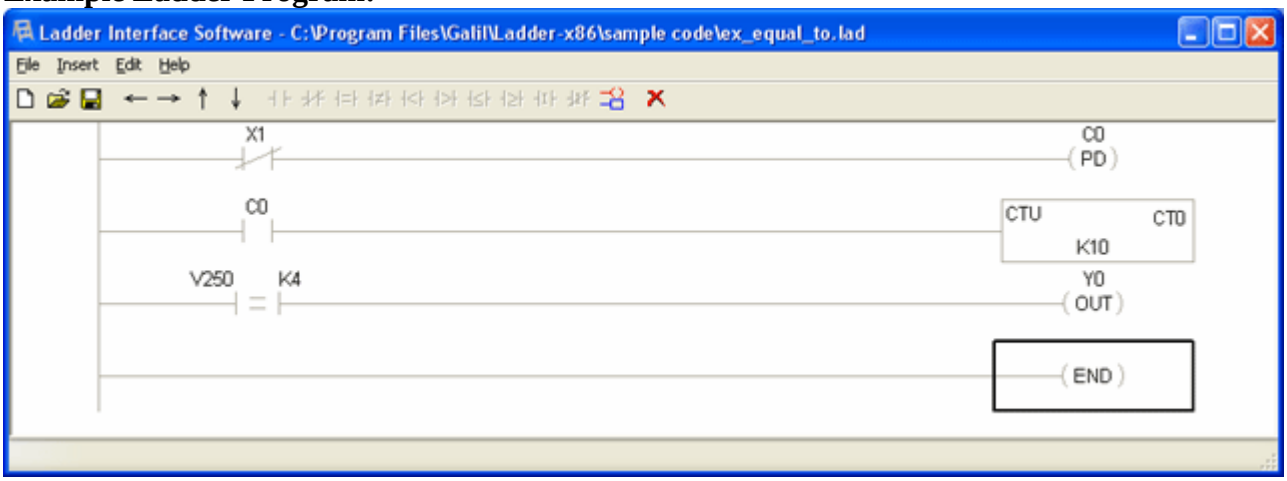
Symbol:



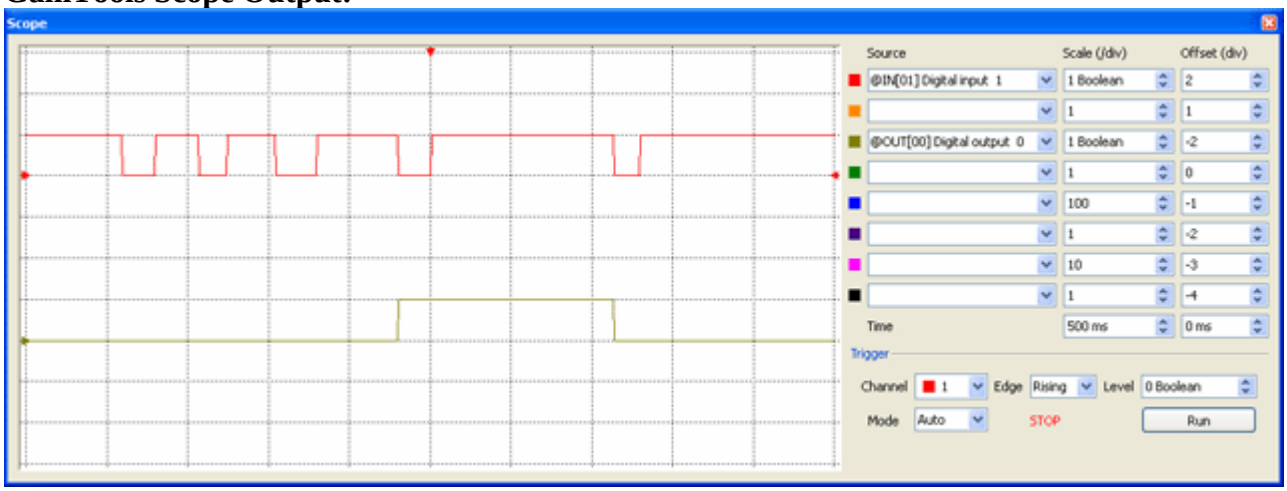
Range:
V0, V100
V200-V207
V250-V257
V300-V307
V400-V407
V500-V524
Knnnn

Description:
Equal to contact compares the two values and outputs TRUE when the values are equal, otherwise it is FALSE
Type: Contact

Example Ladder Program:



GalilTools Scope Output:



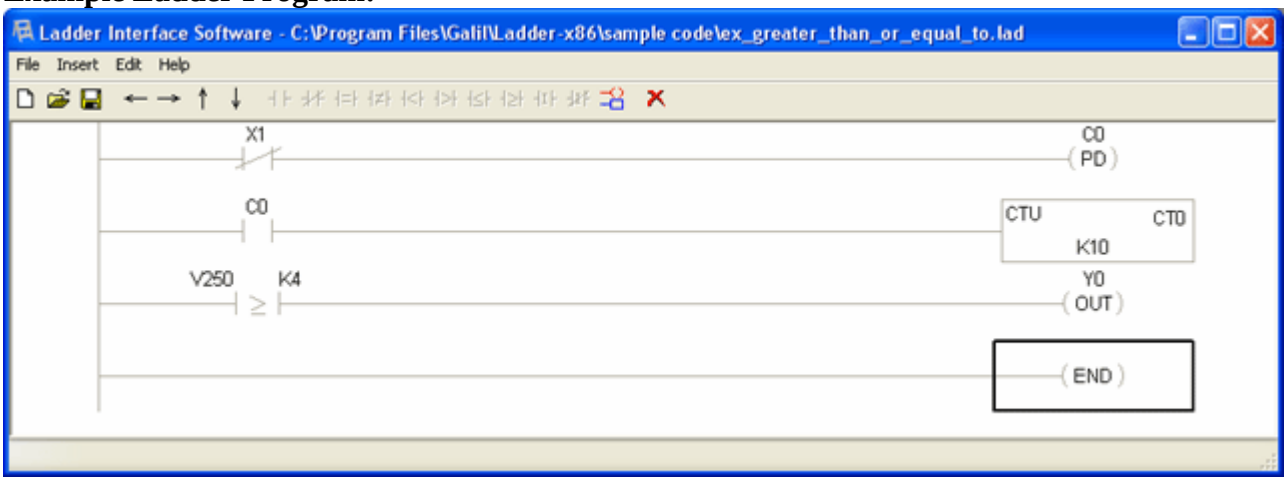
STRGE - Greater than or equal to

Symbol:

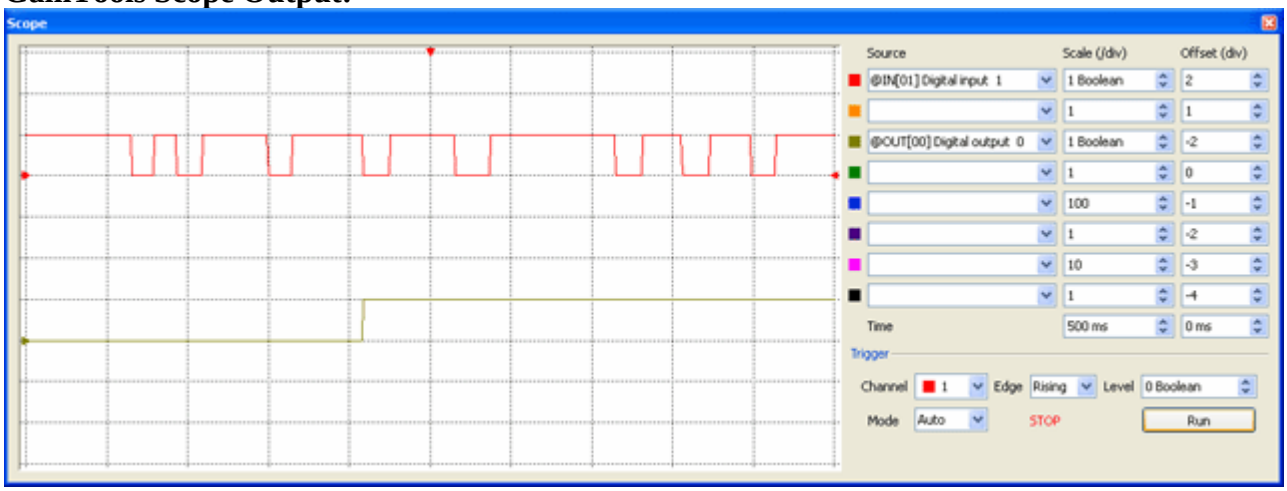
Range:
V0, V100
V200-V207
V250-V257
V300-V307
V400-V407
V500-V524
Knnnn

Description:
Greater than or equal to contact evaluates TRUE if the first value is greater than or equal to the second value
Type: Contact

Example Ladder Program:



GalilTools Scope Output:



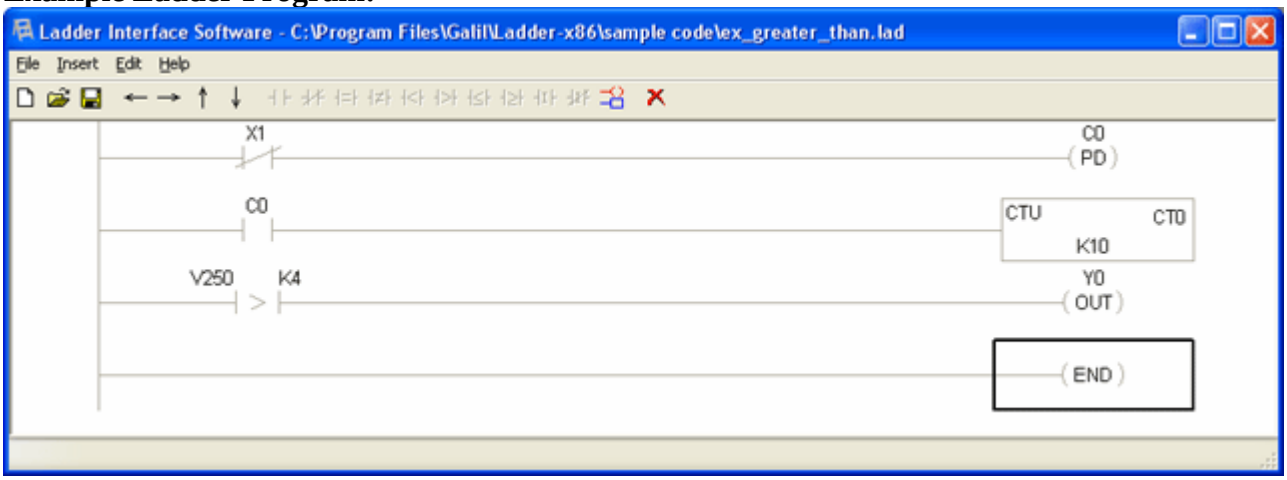
STRGT - Greater than

Symbol:

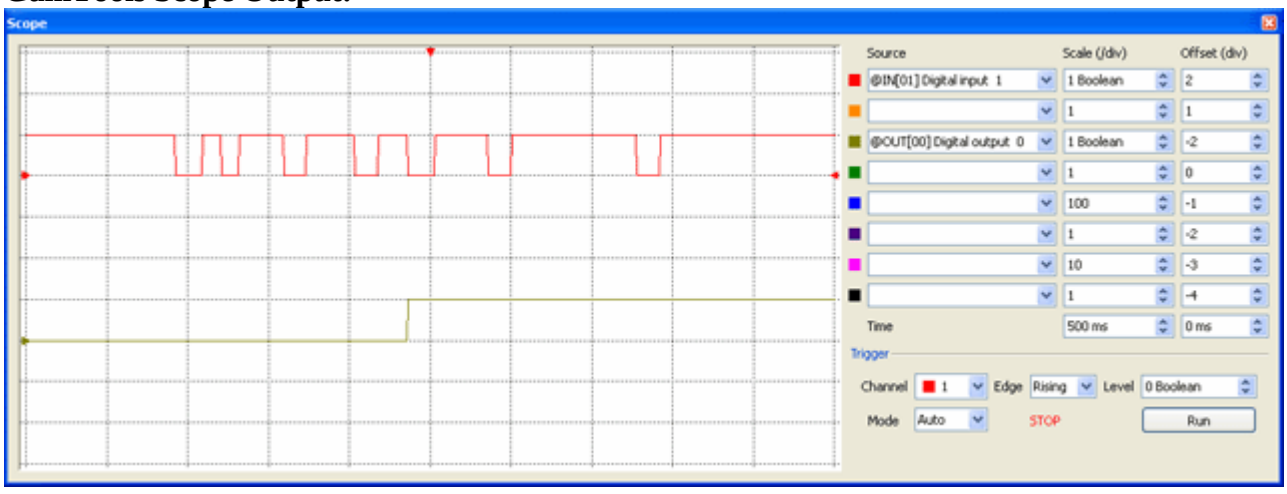
Range:
V0, V100
V200-V207
V250-V257
V300-V307
V400-V407
V500-V524
Knnnn

Description:
Greater than contact evaluates TRUE if the first value is greater than the second value
Type: Contact

Example Ladder Program:



GalilTools Scope Output:



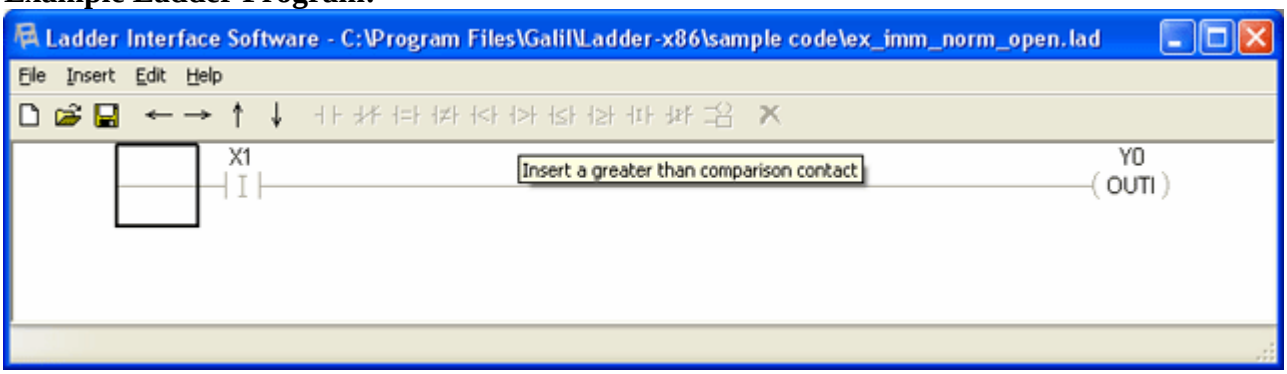
STRI - Store Immediate - Normally Open

Symbol:

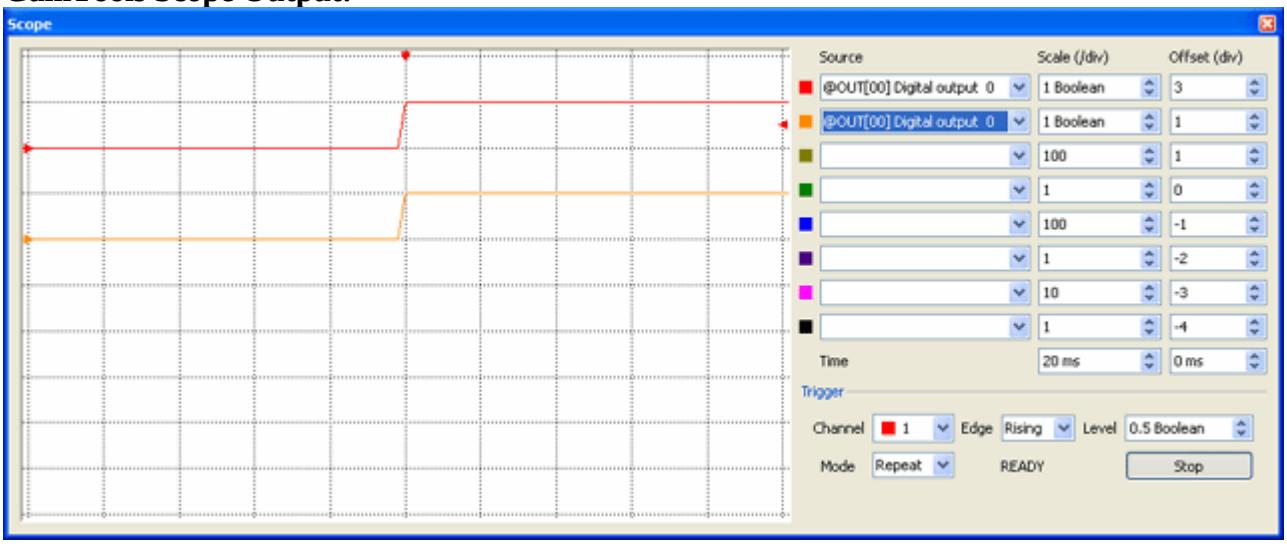
Range:
X0-X15
Y0-Y15
C0-C15
T0-T7
CT0-CT7

Description:
This contact follows the same logic as the standard normally open contact except the input or memory location is read at the time the code executes instead of at the beginning of the scan
Type: Contact

Example Ladder Program:



GalilTools Scope Output:



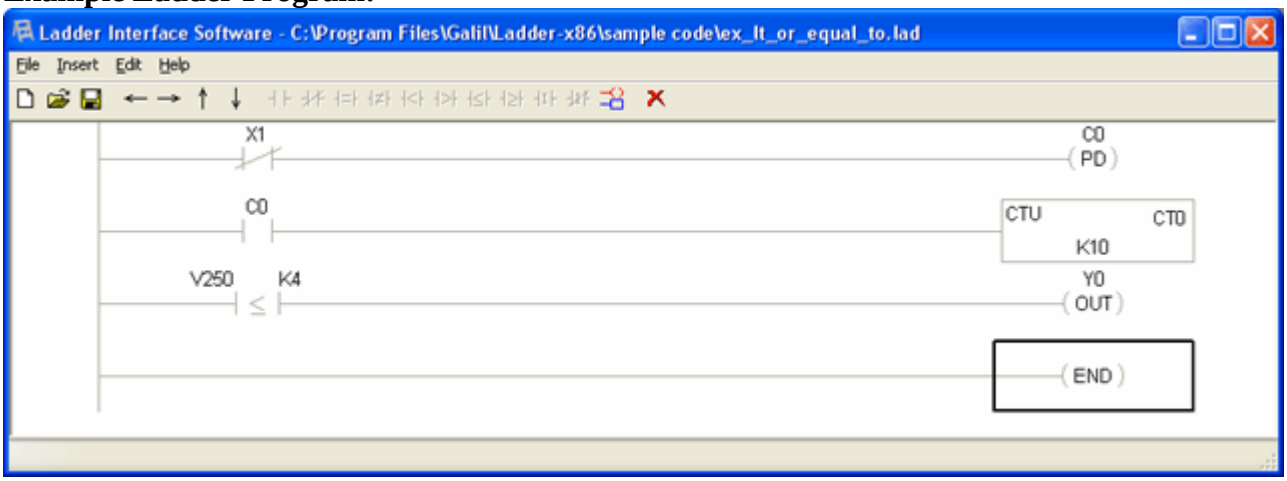
STRLE - Less than or equal to

Symbol:

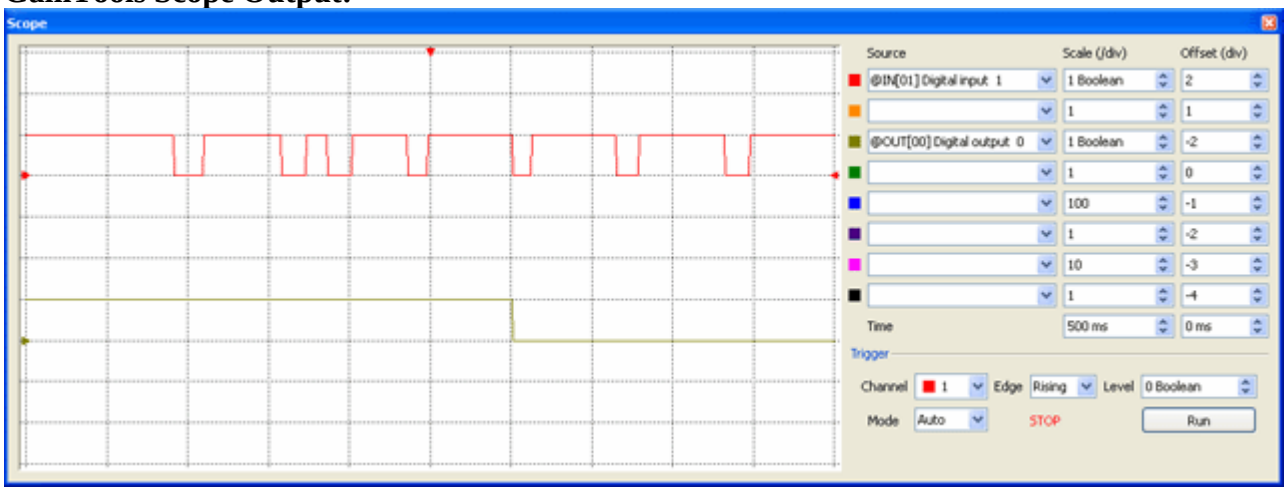
Range:
V0, V100
V200-V207
V250-V257
V300-V307
V400-V407
V500-V524
Knnnn

Description:
Less than or equal to contact evaluates TRUE if the first value is less than or equal to the second value
Type: Contact

Example Ladder Program:



GalilTools Scope Output:



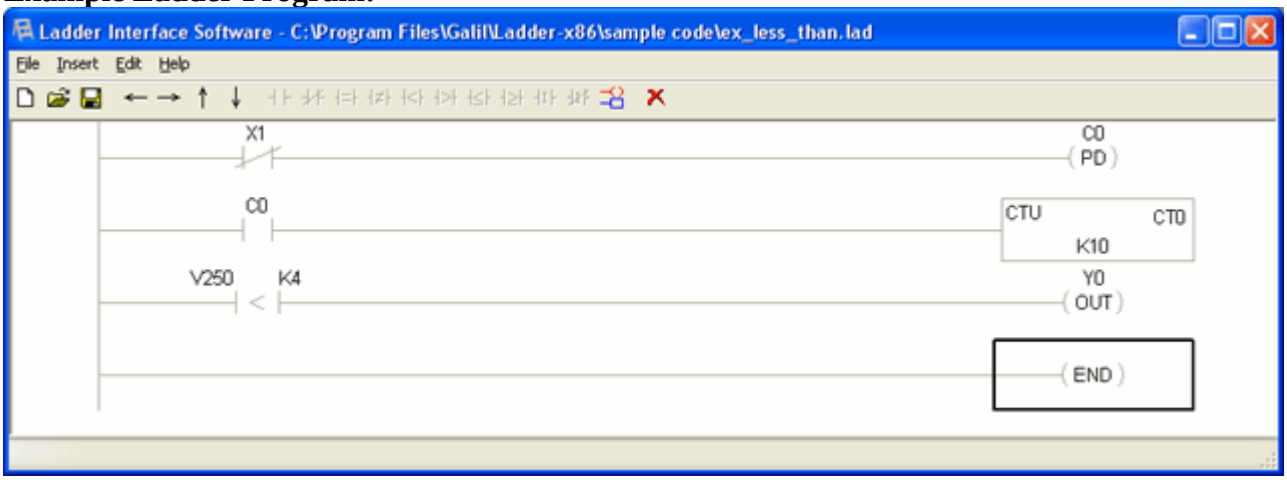
STRLT - Less than

Symbol:

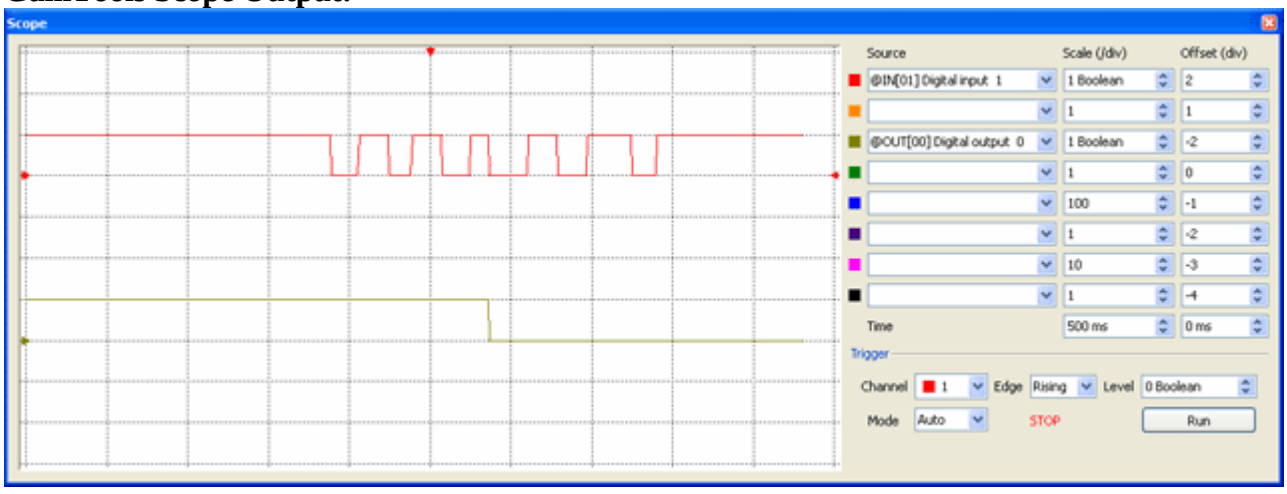
Range:
V0, V100
V200-V207
V250-V257
V300-V307
V400-V407
V500-V524
Knnnn

Description:
Less than contact evaluates TRUE if the first value is less than the second value
Type: Contact

Example Ladder Program:

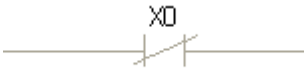


GalilTools Scope Output:



STRN - Store Not - Normally Closed

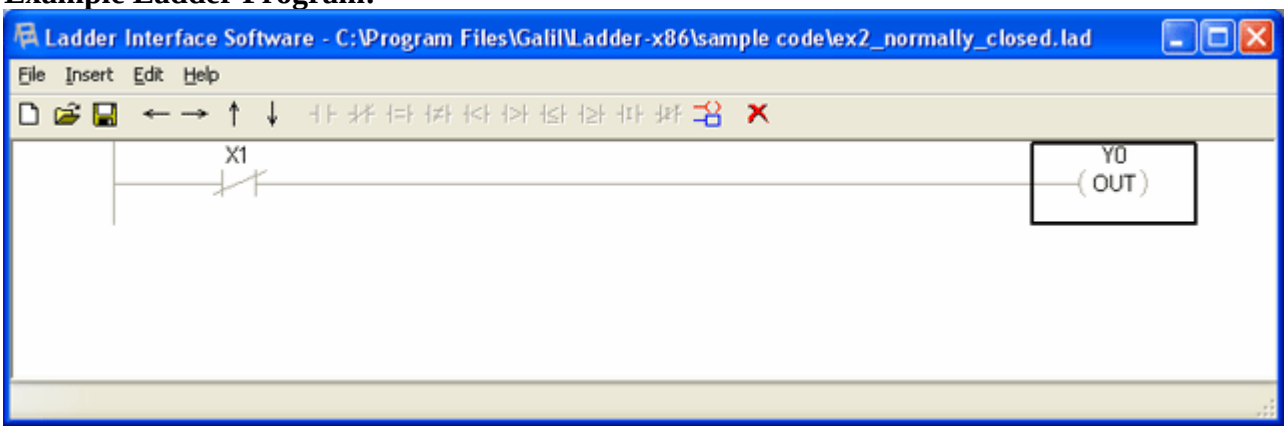
Symbol:



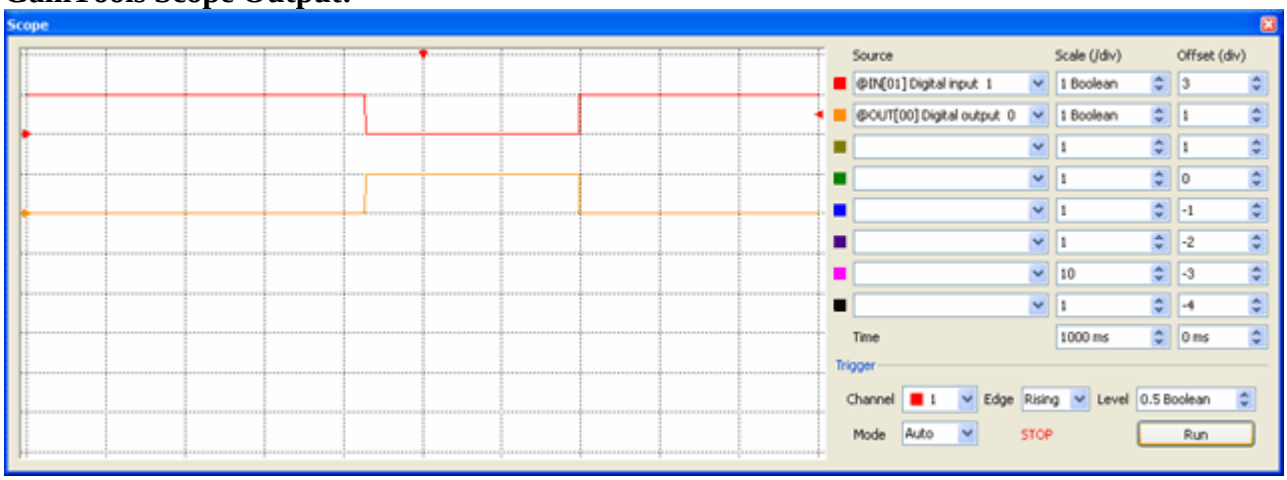
Range:
X0-X15
Y0-Y15
C0-C15
T0-T7
CT0-CT7

Description:
A Normally Closed contact is the logical inversion (or NOT) of a normally open contact. The normally closed contact evaluates true only when the input is NOT active. In the example below, when the digital input X1 evaluates FALSE, the digital output Y0 evaluates TRUE. Likewise, when X1 evaluates TRUE, the output Y0 evaluates FALSE.
Type: Contact

Example Ladder Program:

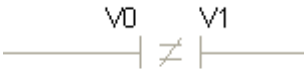


GalilTools Scope Output:



STRNE - Not equal to

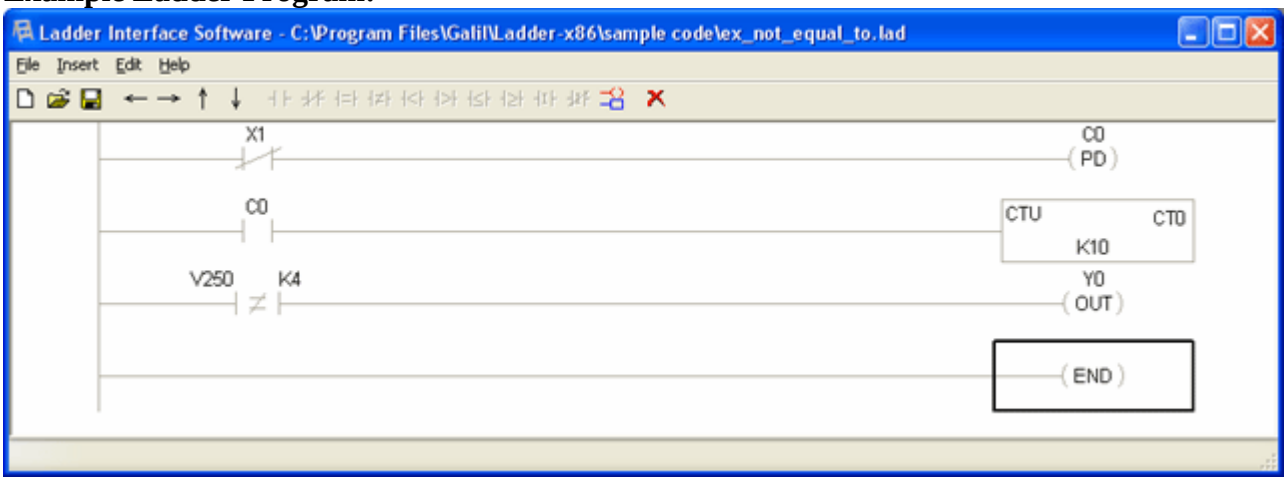
Symbol:



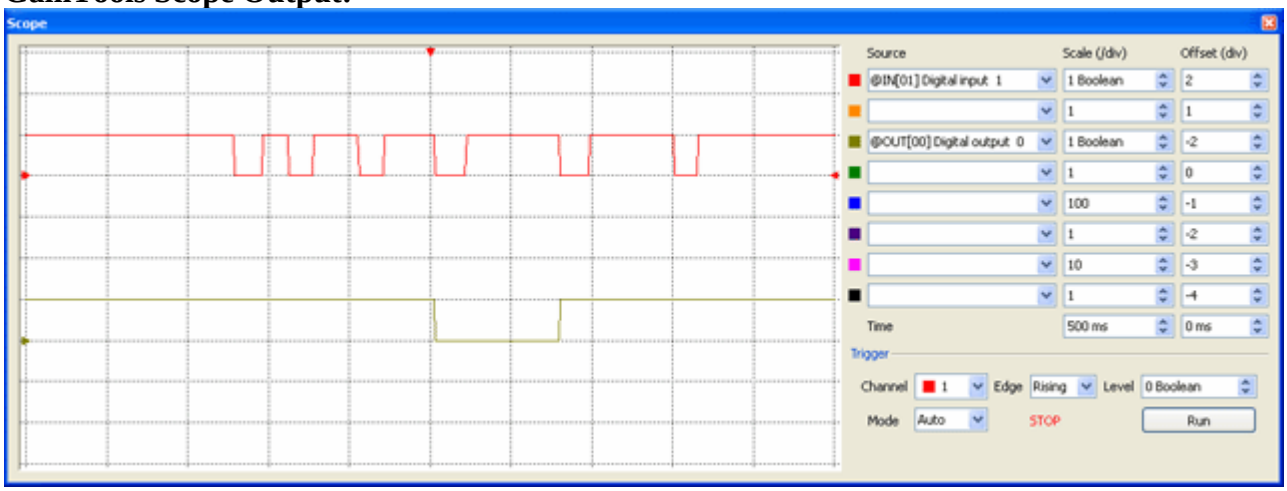
Range:
V0, V100
V200-V207
V250-V257
V300-V307
V400-V407
V500-V524
Knnnn

Description:
Not equal to contact compares the two values and outputs TRUE when the values are not equal, otherwise it is FALSE
Type: Contact

Example Ladder Program:

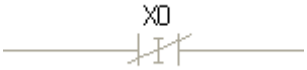


GalilTools Scope Output:



STRNI - Store Immediate - Normally Closed

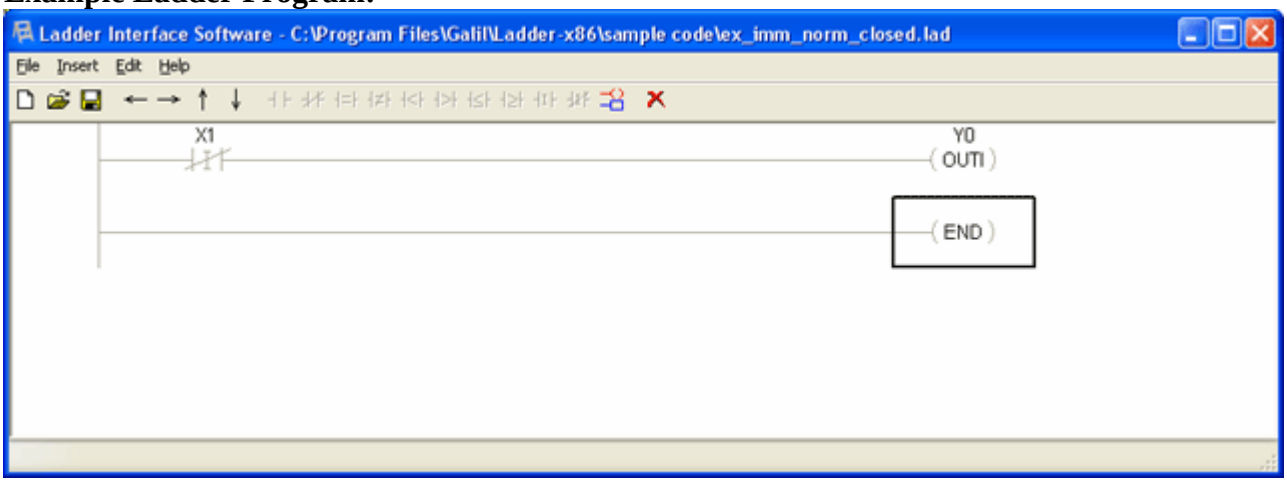
Symbol:



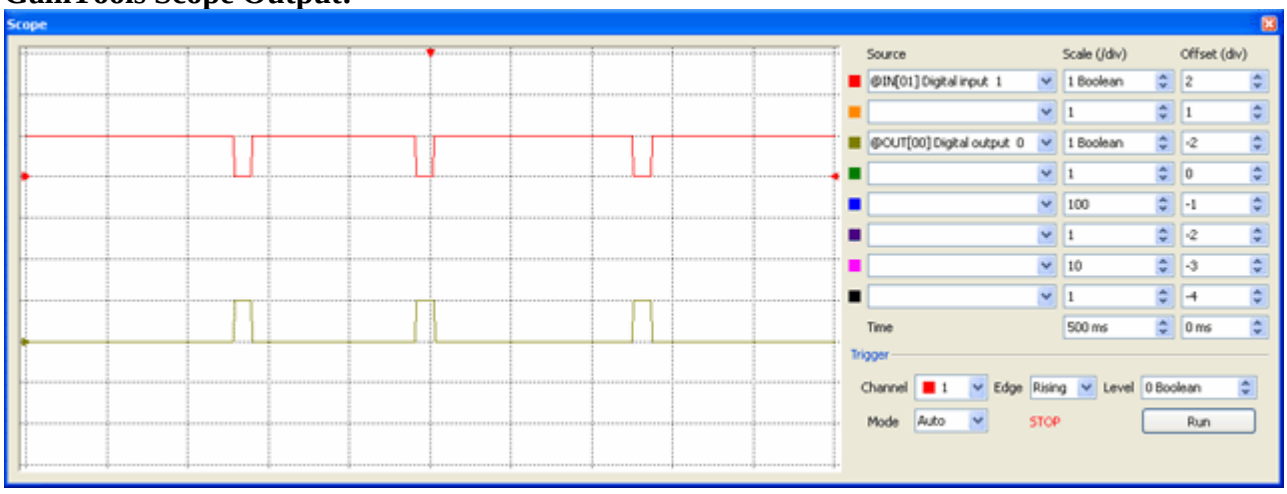
Range:
X0-X15
Y0-Y15
C0-C15
T0-T7
CT0-CT7

Description:
This contact follows the same logic as the standard normally closed contact except the input or memory location is read at the time the code executes instead of at the beginning of the scan
Type: Contact

Example Ladder Program:



GalilTools Scope Output:



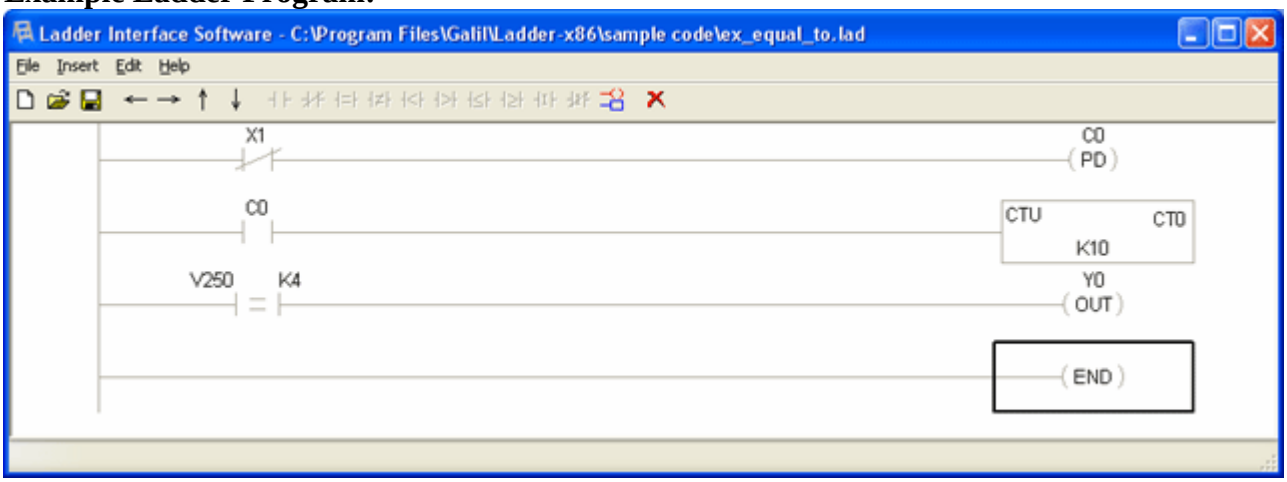
END - Program End

Symbol:

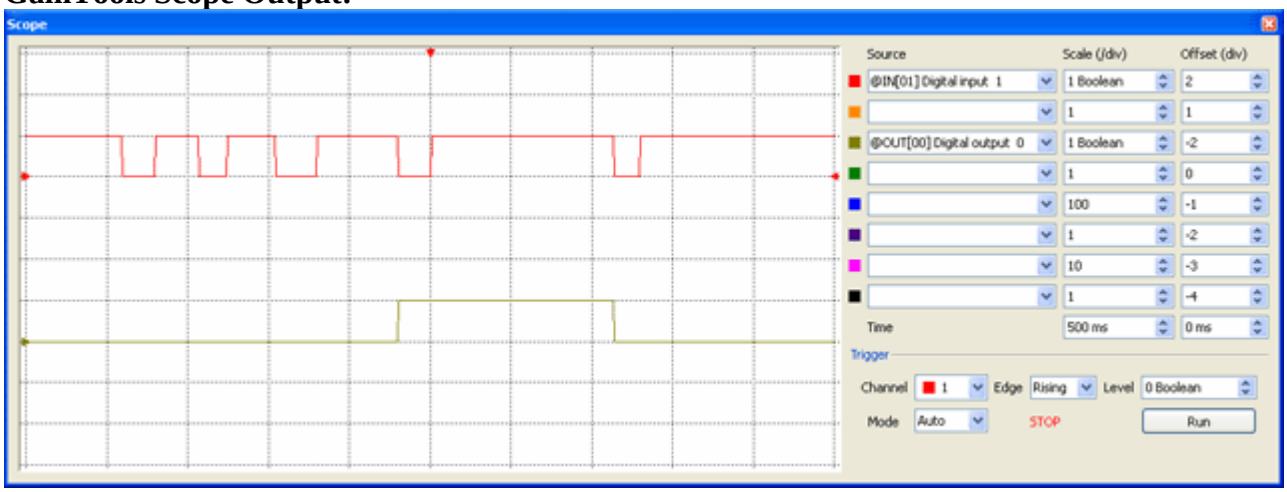
Range:
N/A

Description:
End of Ladder Program
Type: Coil

Example Ladder Program:



GalilTools Scope Output:



NOP - No operation

Symbol:

Range:
N/A

Description:
No operation is performed
Type: Coil

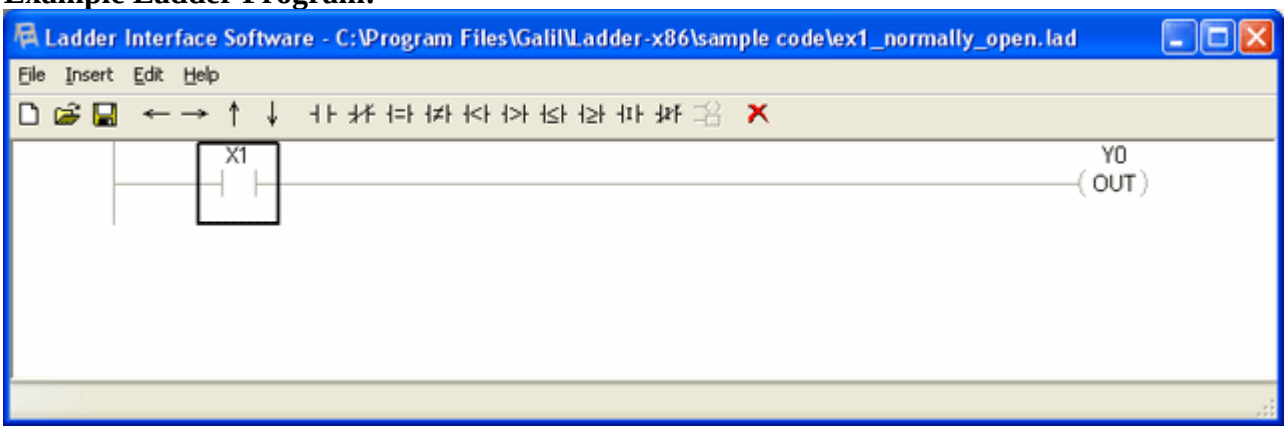
OUT - Output

Symbol:

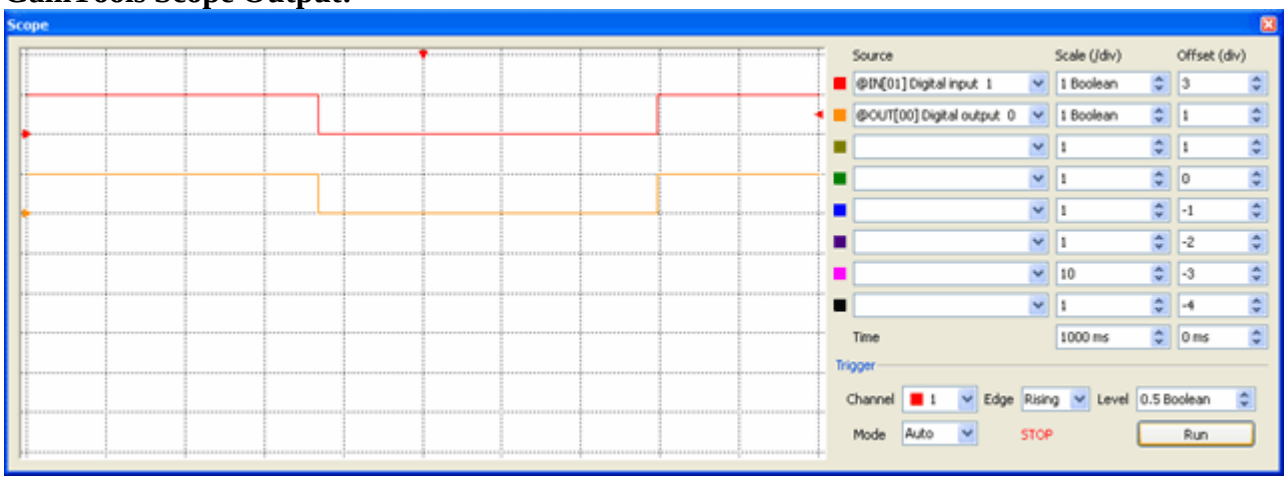
Range:
Y0-Y15
C0-C15

Description:
This outputs the current state of the rung (TRUE or FALSE) to an output bit or memory location. In the example below, the output Y0 follows the same logic states as the input X1. The memory range C0-C15 can also be used to trigger "Control Relays". These act like digital outputs but have no physical outputs associated with them.
Type: Coil

Example Ladder Program:



GalilTools Scope Output:



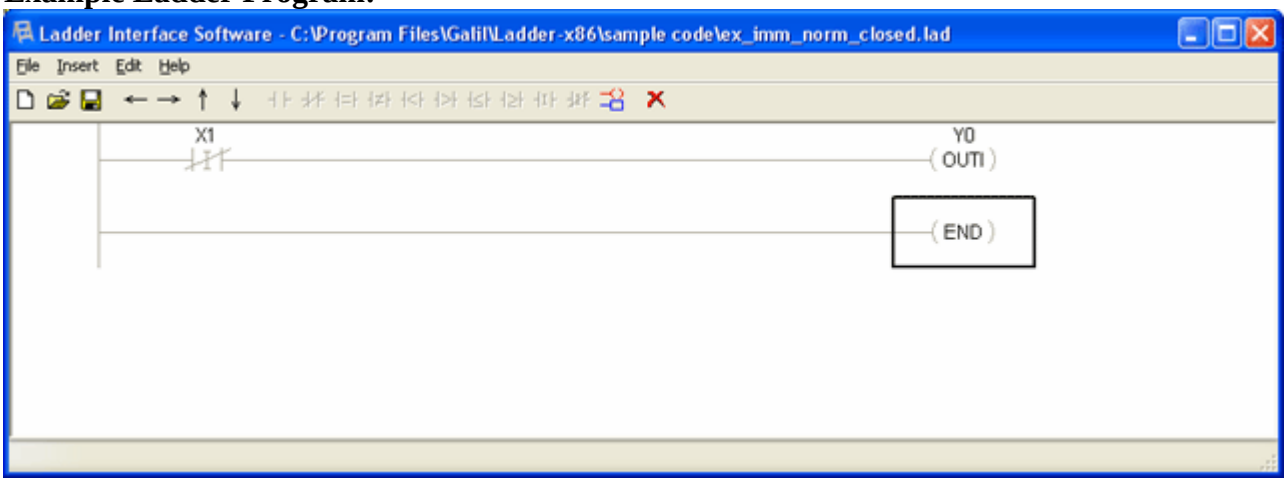
OUTI - Immediate output

Symbol:

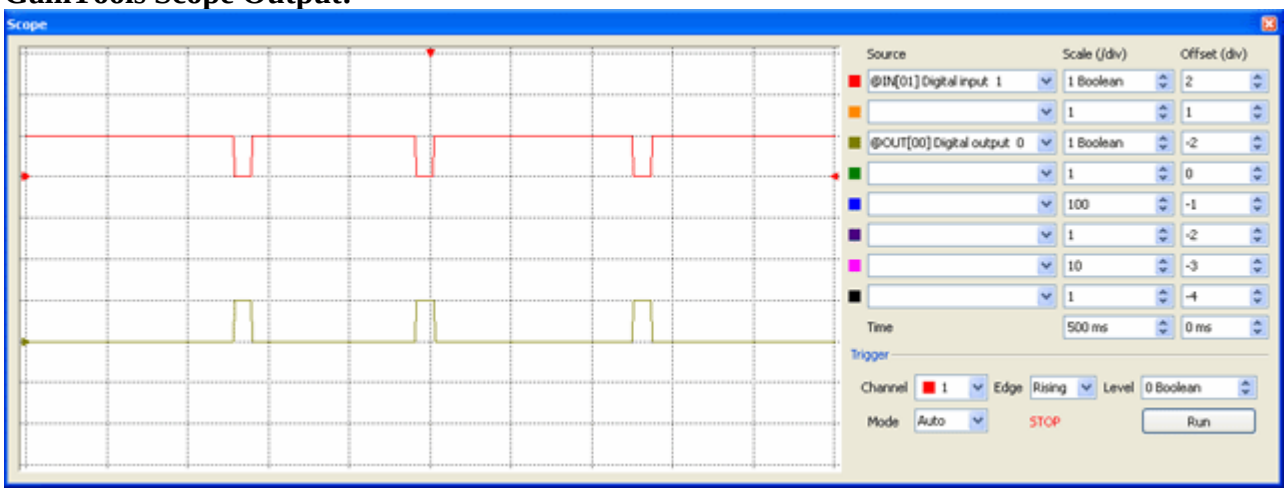
Range:
Y0-Y15
C0-C15

Description:
Similar to the OUT instruction, this coil outputs the current state of the rung but instead of waiting until the end of the scan - it outputs the logic at the time the instruction is executed.
Type: Coil

Example Ladder Program:



GalilTools Scope Output:



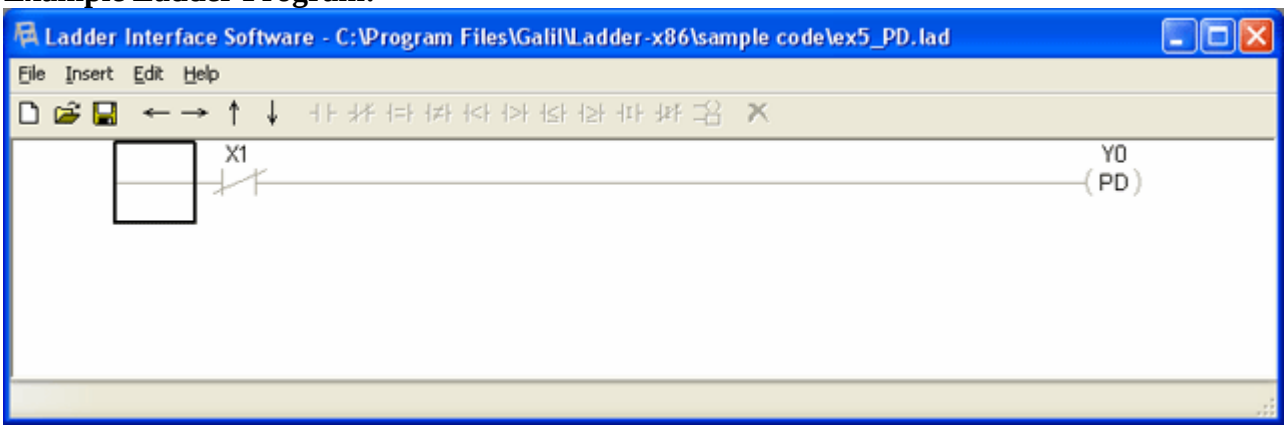
PD - Positive differential output

Symbol:

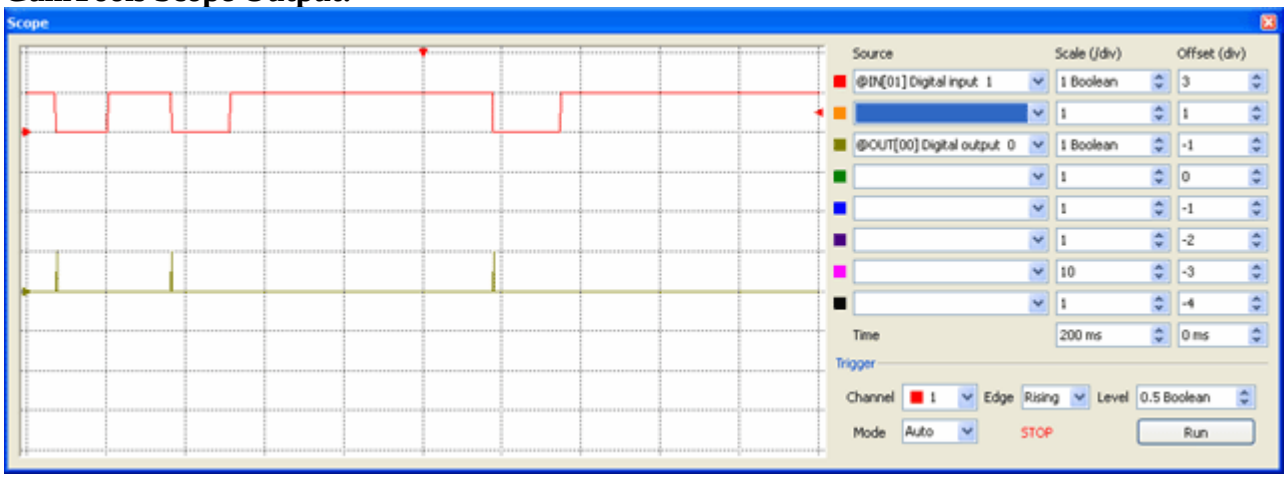
Range:
Y0-Y15
C0-C15

Description:
This coil, upon a FALSE-TRUE transition, will turn TRUE for exactly one scan and then return FALSE. This is sometimes referred to as a "one-shot" coil.
Type: Coil

Example Ladder Program:



GalilTools Scope Output:



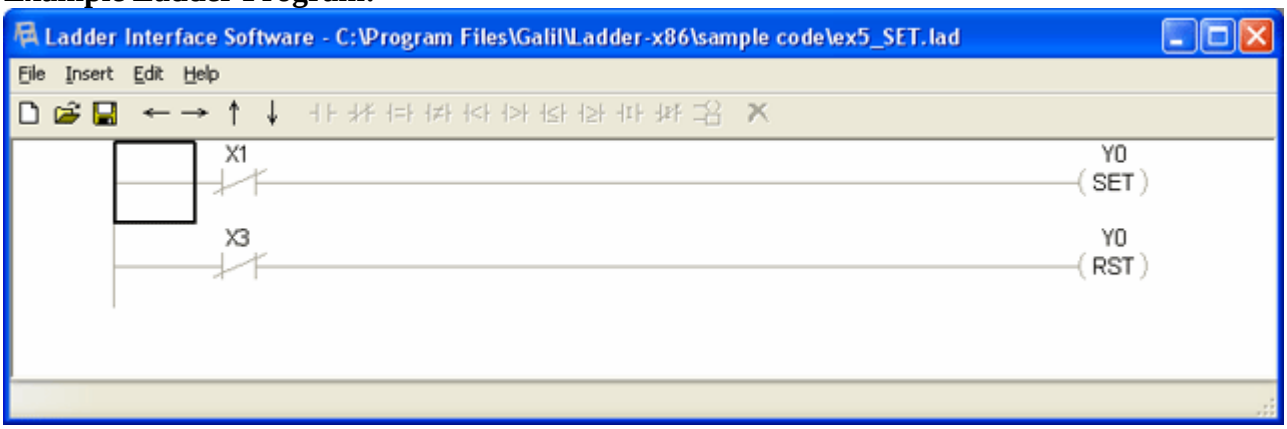
RST - Reset latching output

Symbol:

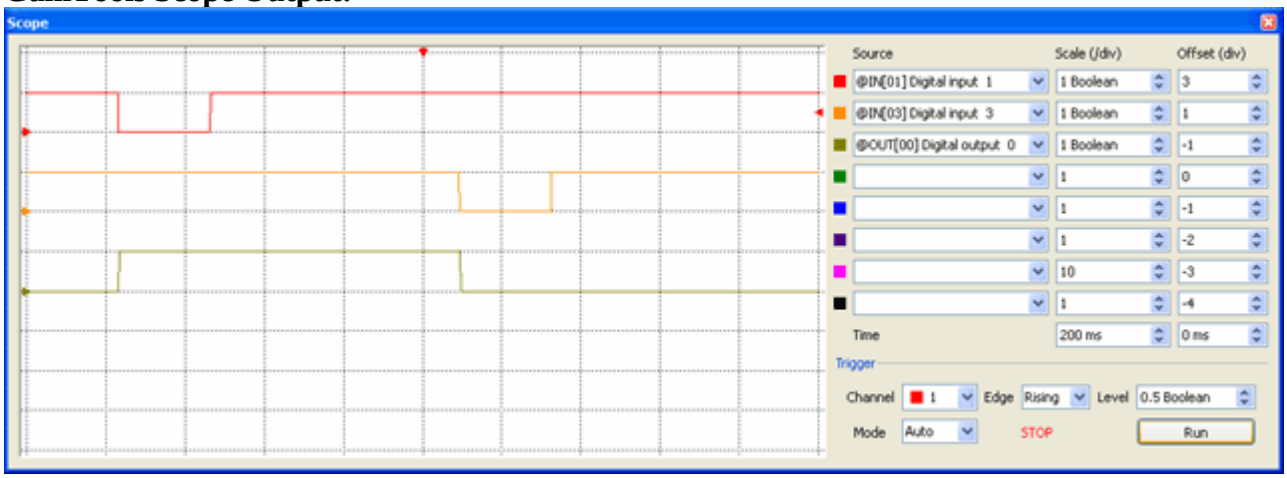
Range:
Y0-Y15
C0-C15

Description:
The RST coil resets a latching output or memory location. Once the location is reset, it is not necessary for the input to stay on.
Type: Coil

Example Ladder Program:



GalilTools Scope Output:



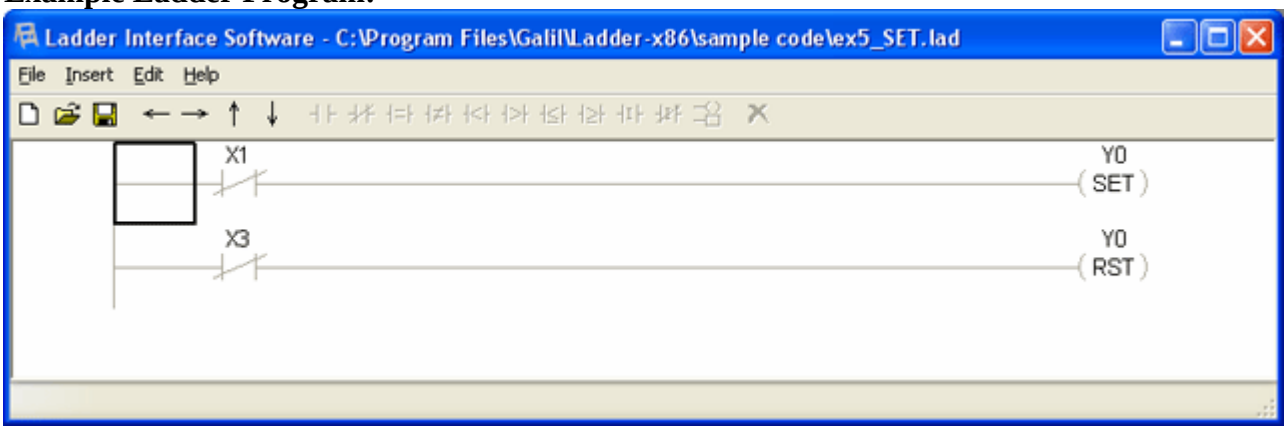
SET - Latching output

Symbol:

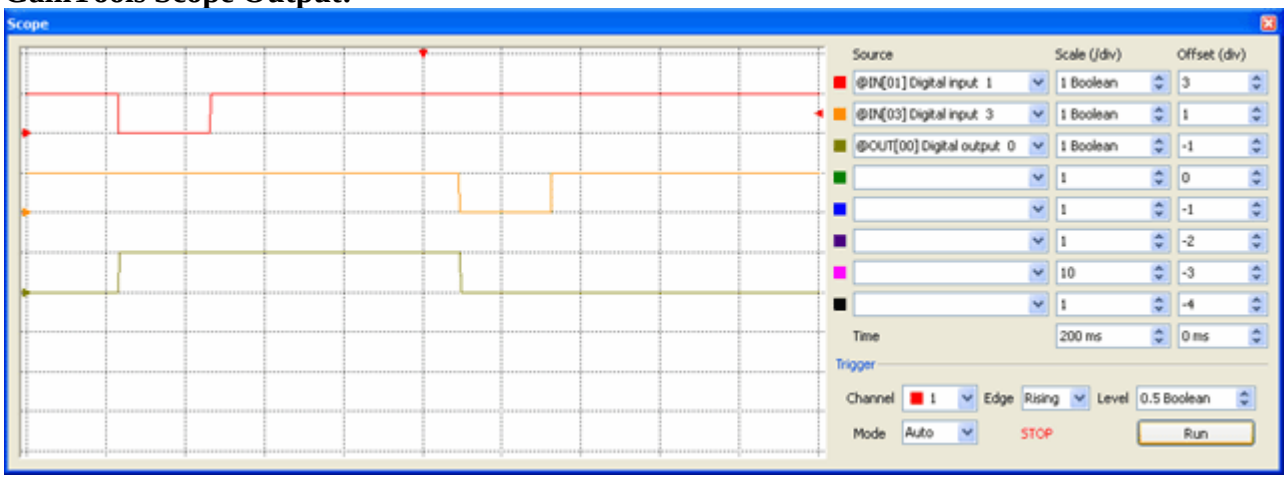
Range:
Y0-Y15
C0-C15

Description:
This coil, upon a FALSE-TRUE transition, will turn TRUE and remain TRUE regardless of following transitions. The SET will only set FALSE upon a FALSE-TRUE transition of the RST coil.
Type: Coil

Example Ladder Program:

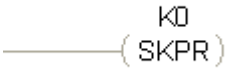


GalilTools Scope Output:



SKPR - Skip Rungs Reset

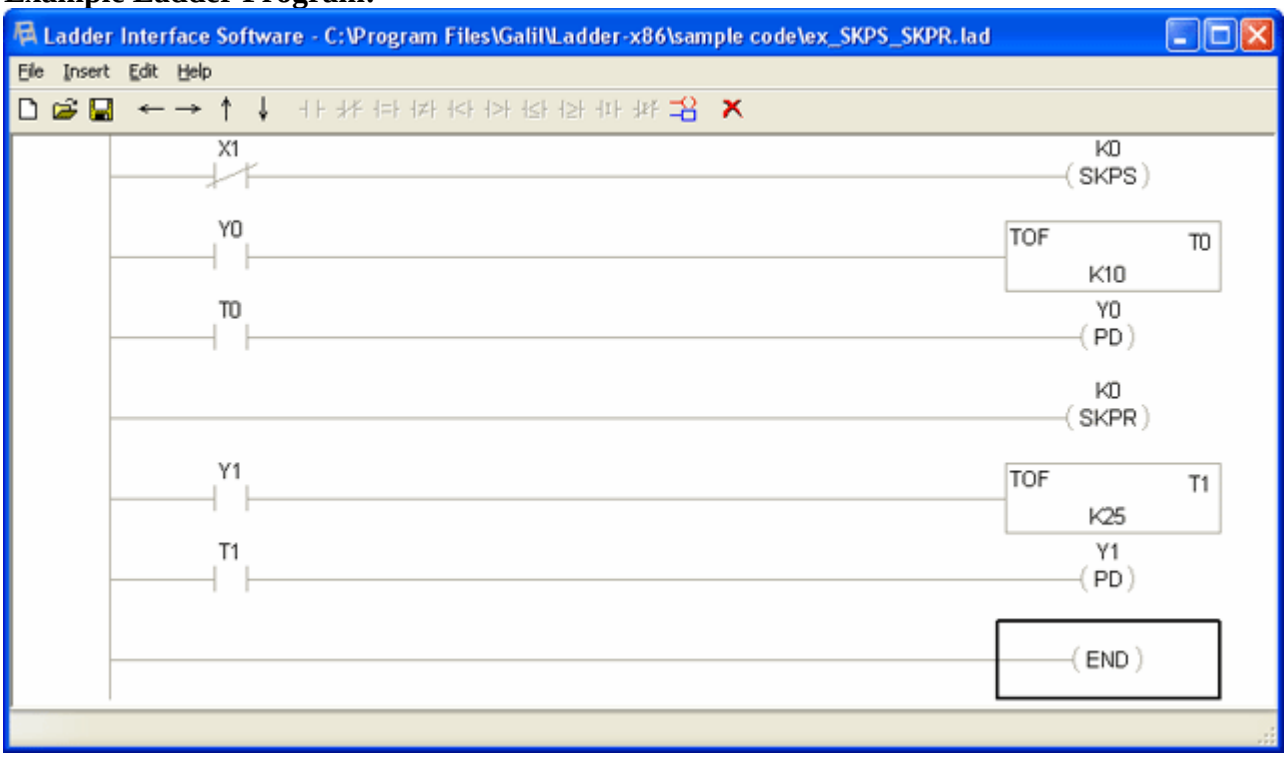
Symbol:



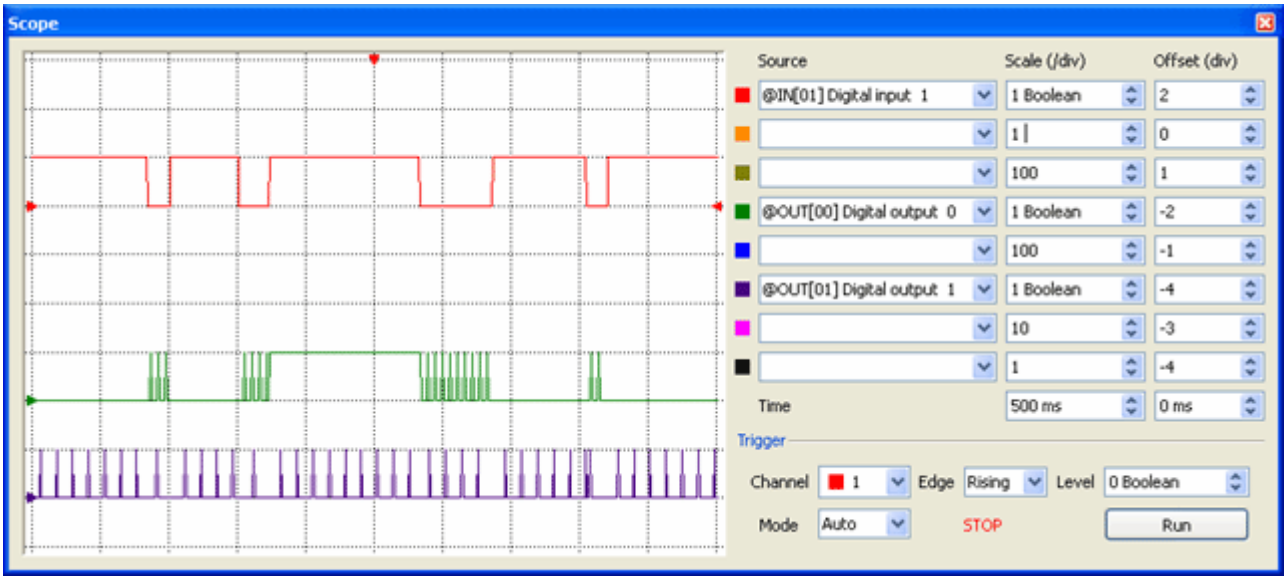
Range:
K0-K3

Description:
The SKPS and SKPR must be used as a pair. When the SKPS is TRUE, it will allow interpretation of all rungs up to the following SKPR. When the SKPS is FALSE, all rungs up to the following SKPR will not be interpreted. Note that while the rungs are not interpreted while SKPS is FALSE, these rungs still count to towards the scan time to insure deterministic timing. The argument K0 is reserved for future use.
Type: Coil

Example Ladder Program:

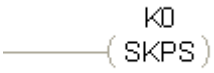


GalilTools Scope Output:


Scope
Source
Scale (/div)
Offset (div)
@IN[01] Digital input 1
1 Boolean
2
1
0
100
1
@OUT[00] Digital output 0
1 Boolean
-2
100
-1
@OUT[01] Digital output 1
1 Boolean
-4
10
-3
1
-4
Time
500 ms
0 ms
Trigger
Channel
1
Edge
Rising
Level
0 Boolean
Mode
Auto
STOP
Run

SKPS - Skip Rungs Set

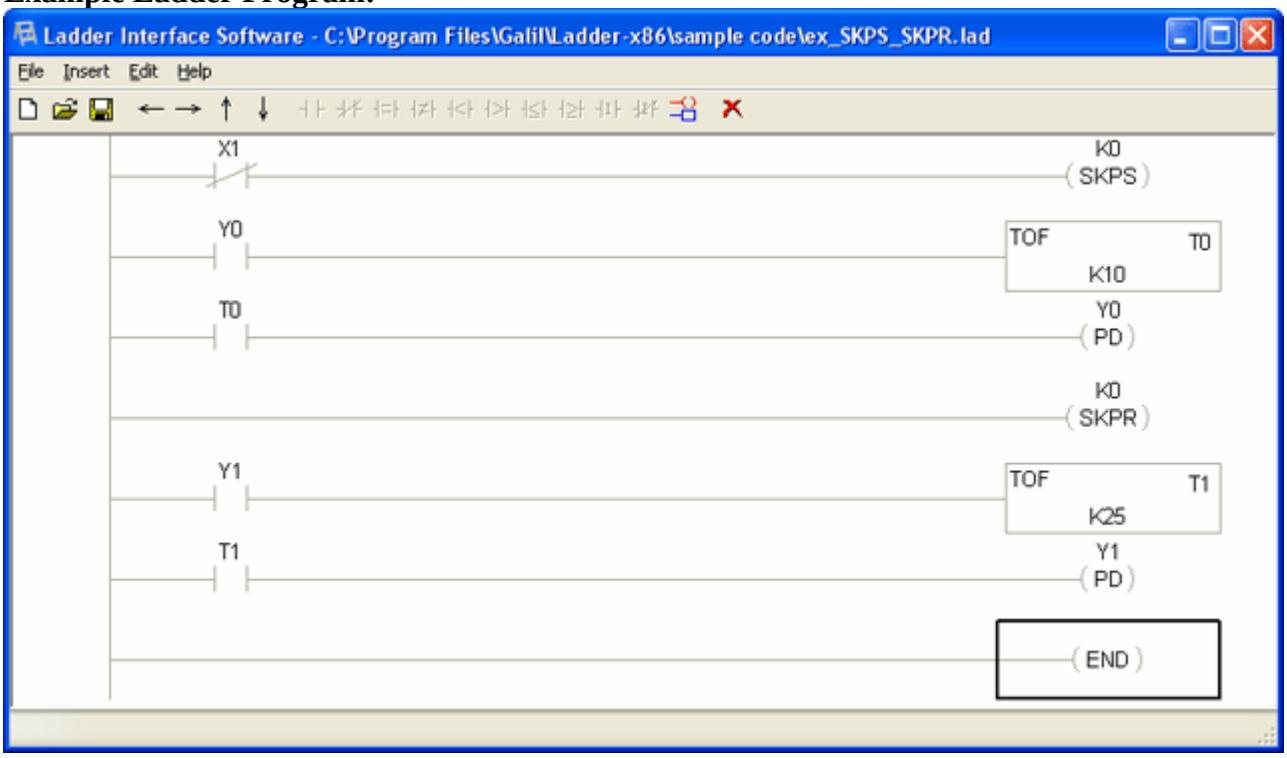
Symbol:



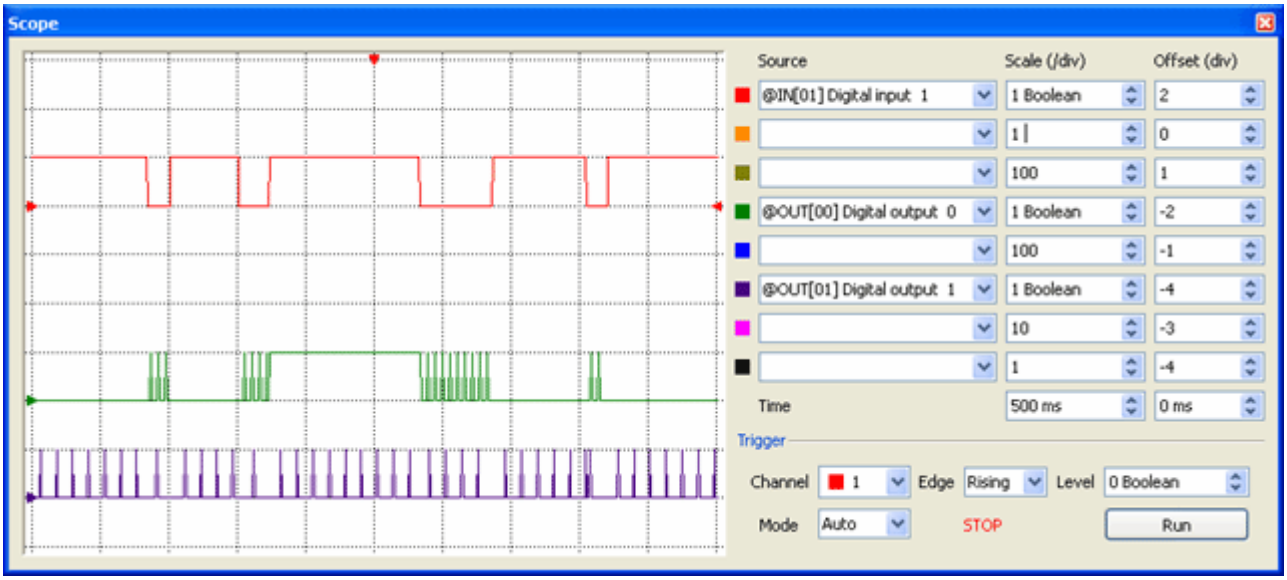
Range:
K0-K3

Description:
The SKPS and SKPR must be used as a pair. When the SKPS is TRUE, it will allow interpretation of all rungs up to the following SKPR. When the SKPS is FALSE, all rungs up to the following SKPR will not be interpreted. Note that while the rungs are not interpreted while SKPS is FALSE, these rungs still count to towards the scan time to insure deterministic timing. The argument K0 is reserved for future use.
Type: Coil

Example Ladder Program:



GalilTools Scope Output:


Scope
Source
Scale (/div)
Offset (div)
@IN[01] Digital input 1
1 Boolean
2
1
0
100
1
@OUT[00] Digital output 0
1 Boolean
-2
100
-1
@OUT[01] Digital output 1
1 Boolean
-4
10
-3
1
-4
Time
500 ms
0 ms
Trigger
Channel
1
Edge
Rising
Level
0 Boolean
Mode
Auto
STOP
Run

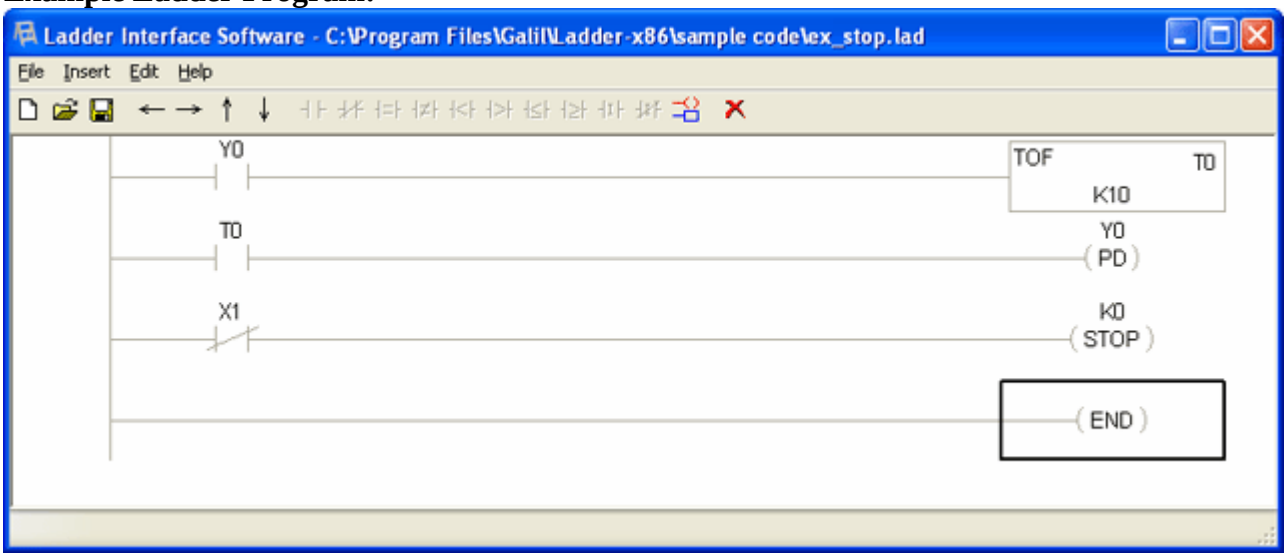
STOP - Program stop

Symbol:

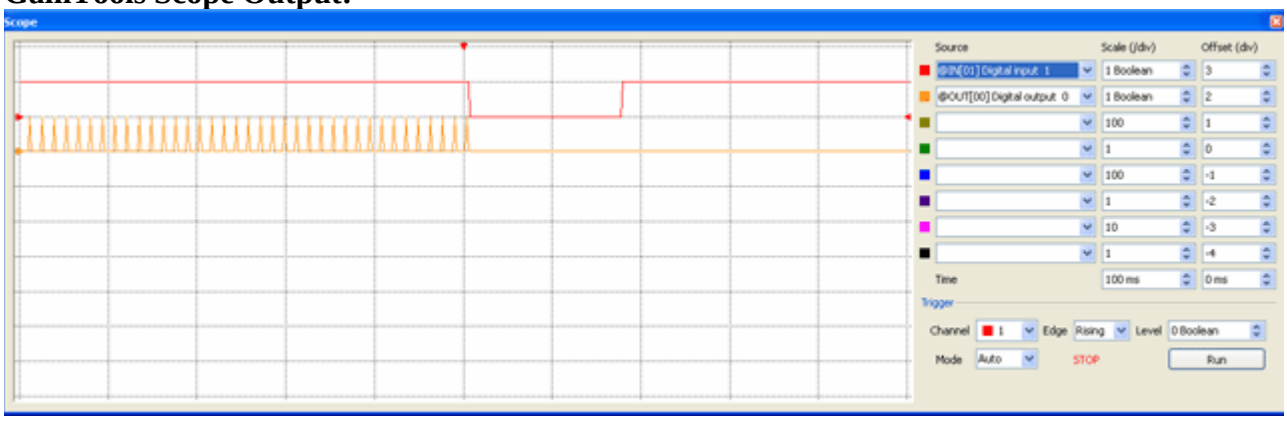
Range:
N/A

Description:
Halts execution of Ladder program. The default argument of K0 halts the main thread. Use Kx where x is the thread number to halt execution of other threads.
Type: Coil

Example Ladder Program:



GalilTools Scope Output:



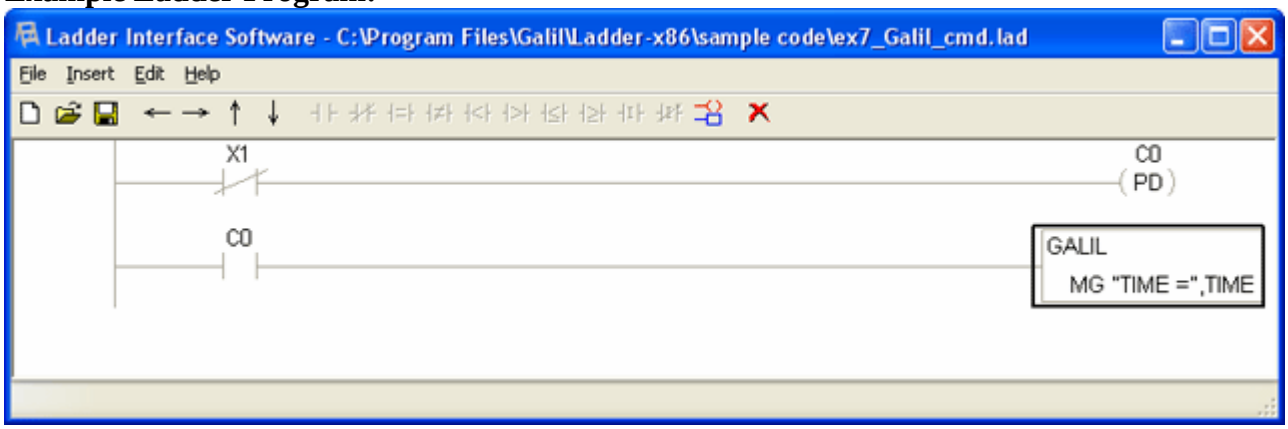
GALIL Cmd - Galil command box

Symbol:

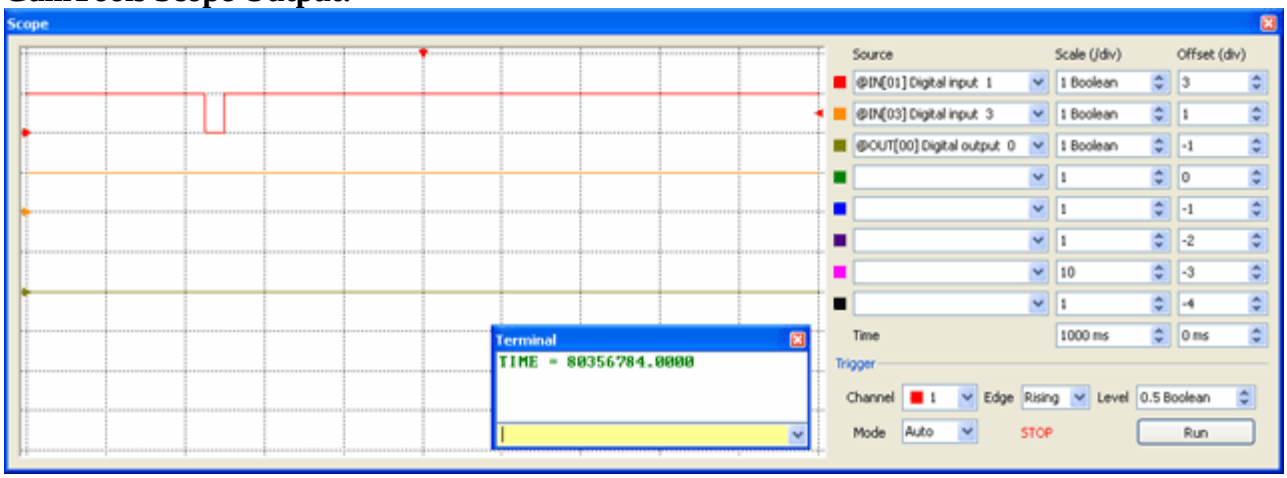
Range:
Cmd is any valid Galil command

Description:
Sends valid Galil command to controller. The command will be sent on every scan that the rung evaluates TRUE therefore the user should take care in what command is being output. If an MG command is used, this will send messages out the communications port and could slow down scan times (especially when using RS-232). A PD (Positive Differential) output should be used in conjunction with this box to only have the command run one time.
Type: Boxes (Special)

Example Ladder Program:



GalilTools Scope Output:



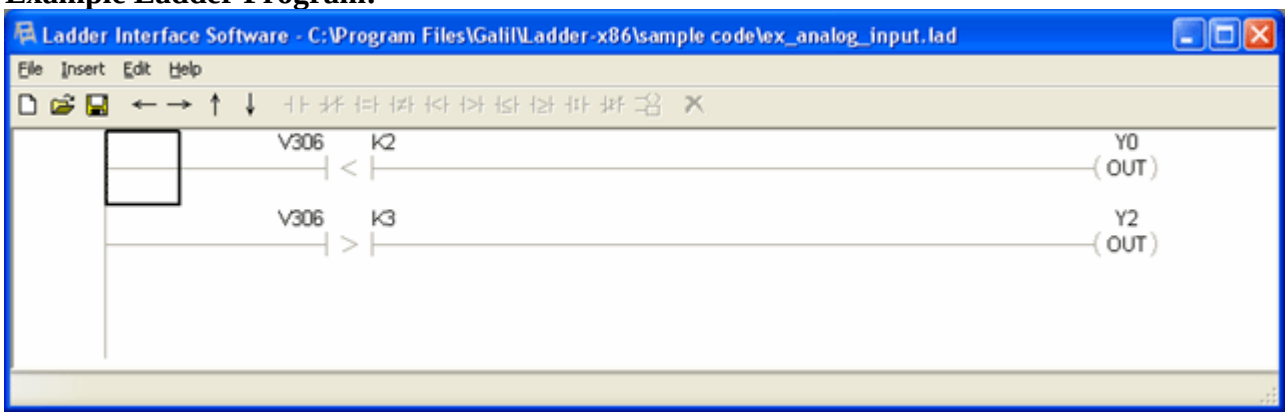
- Analog input

Symbol:

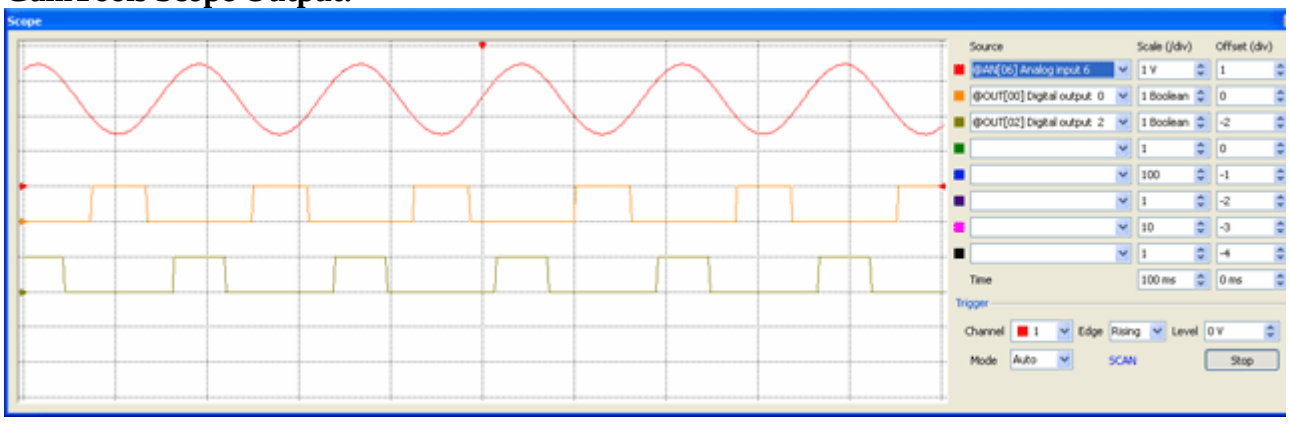
Range:
V300-V307

Description:
Read analog input at a specified variable location. Analog inputs should be accessed on the RIO using V300-V307. In the example below, a sine wave is coming in on the analog input 6 and two comparative contacts are used to set digital outputs Y0 and Y2 when the voltage goes below the constant K2 (2Volts) or above the constant K3 (3Volts).
Type: Boxes (Data manipulation and math functions)

Example Ladder Program:

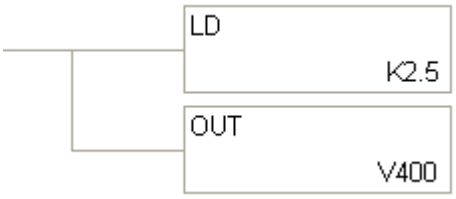


GalilTools Scope Output:



- Analog output

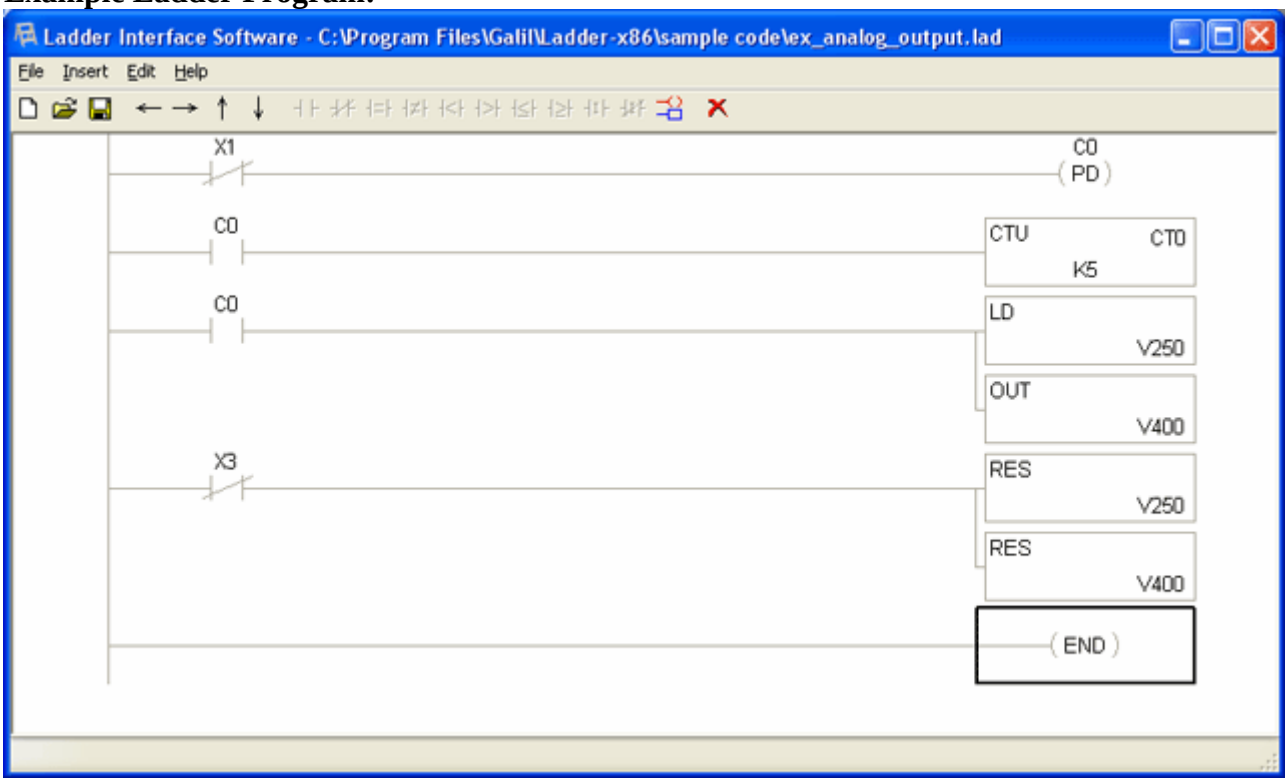
Symbol:



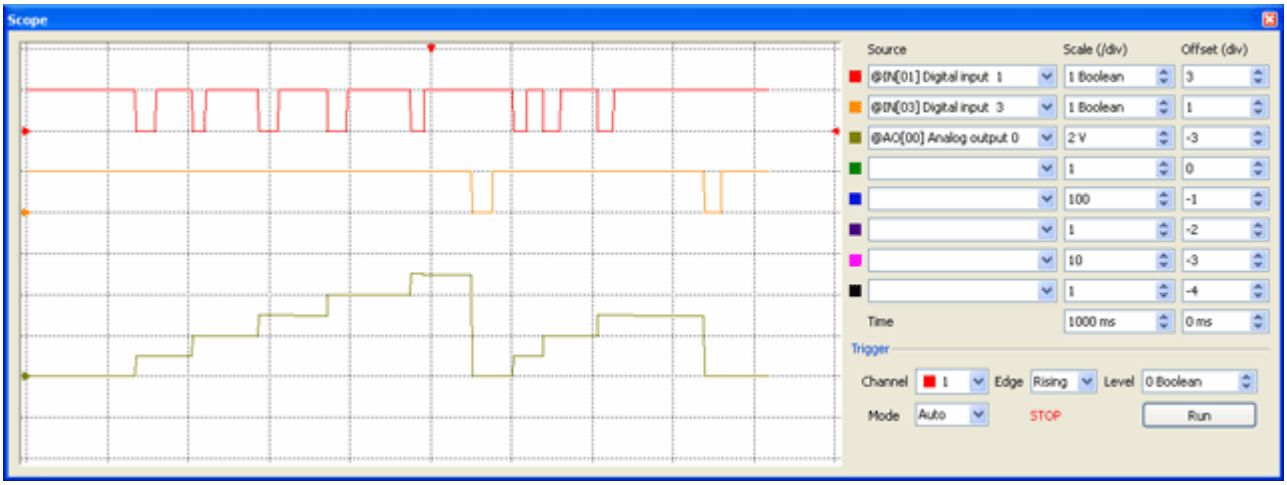
Range:
V400-V407

Description:
Written at specific variable location.
Type: Boxes (Data manipulation and math functions)

Example Ladder Program:



GalilTools Scope Output:


Scope
Source
Scale (/div)
Offset (div)
@DI[01] Digital input 1
1 Boolean
3
@DI[03] Digital input 3
1 Boolean
1
@AO[00] Analog output 0
2 V
-3
1
0
100
-1
1
-2
10
-3
1
-4
Time
1000 ms
0 ms
Trigger
Channel
1
Edge
Rising
Level
0 Boolean
Mode
Auto
STOP
Run

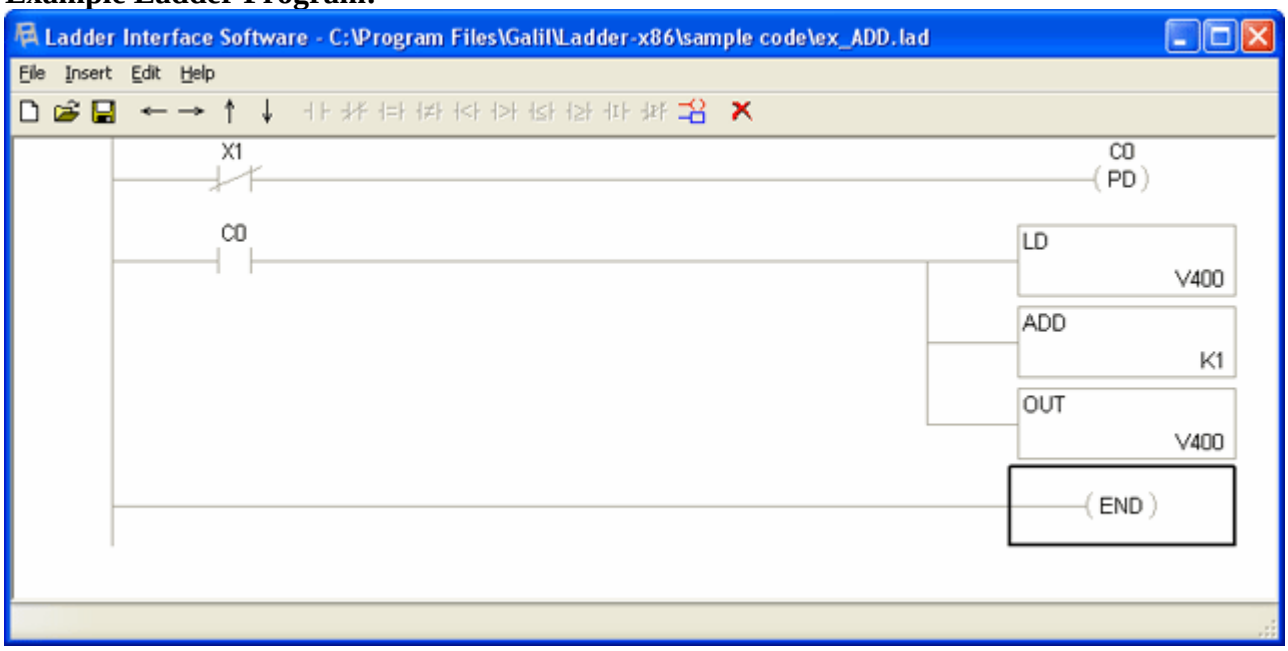
ADD - Add to accumulator

Symbol:

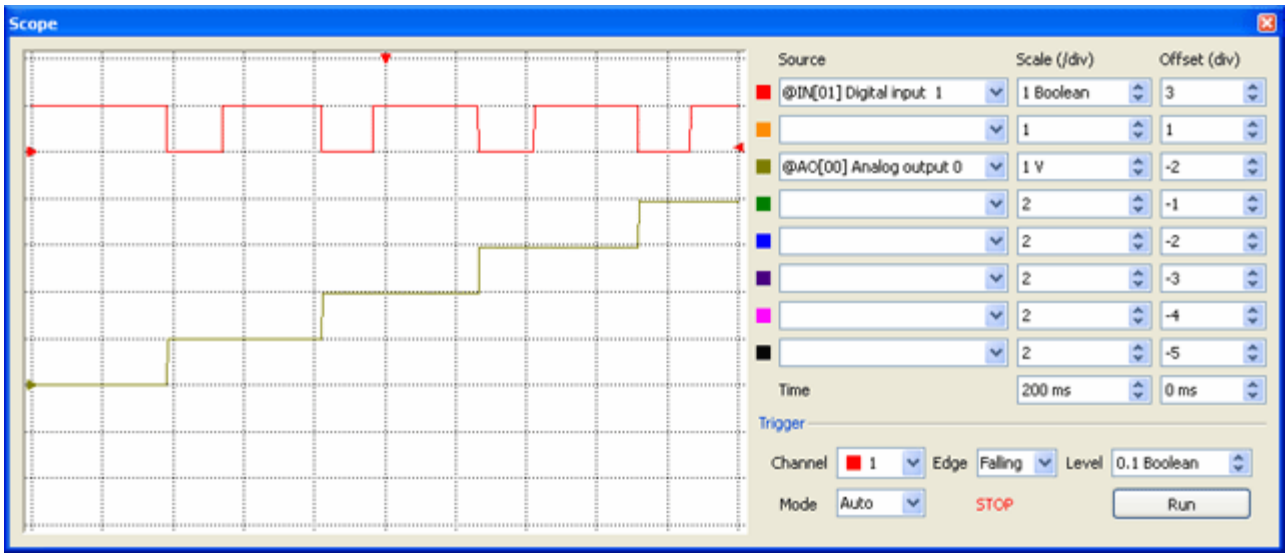
Range:
V0, V100
V200-V207
V250-V257
V300-V307
V400-V407
V500-V524
K0 - Kmax

Description:
Add V variable location or K constant to accumulator value
Type: Boxes (Data manipulation and math functions)

Example Ladder Program:



GalilTools Scope Output:


Scope
Source
Scale (/div)
Offset (div)
@IN[01] Digital input 1
1 Boolean
3
1
1
@AO[00] Analog output 0
1 V
-2
2
-1
2
-2
2
-3
2
-4
2
-5
Time
200 ms
0 ms
Trigger
Channel
1
Edge
Falling
Level
0.1 Boolean
Mode
Auto
STOP
Run

AND - And accumulator

Symbol:

Range:
V0, V100
V200-V207
V250-V257
V300-V307
V400-V407
V500-V524
K0 - Kmax

Description:
AND accumulator value with variable location
Type: Boxes (Data manipulation and math functions)

DEC - Decrement variable value

Symbol:

Range:
V0, V100
V200-V207
V250-V257
V300-V307
V400-V407
V500-V524

Description:
This decrements the value of the V location by 1
Type: Boxes (Data manipulation and math functions)

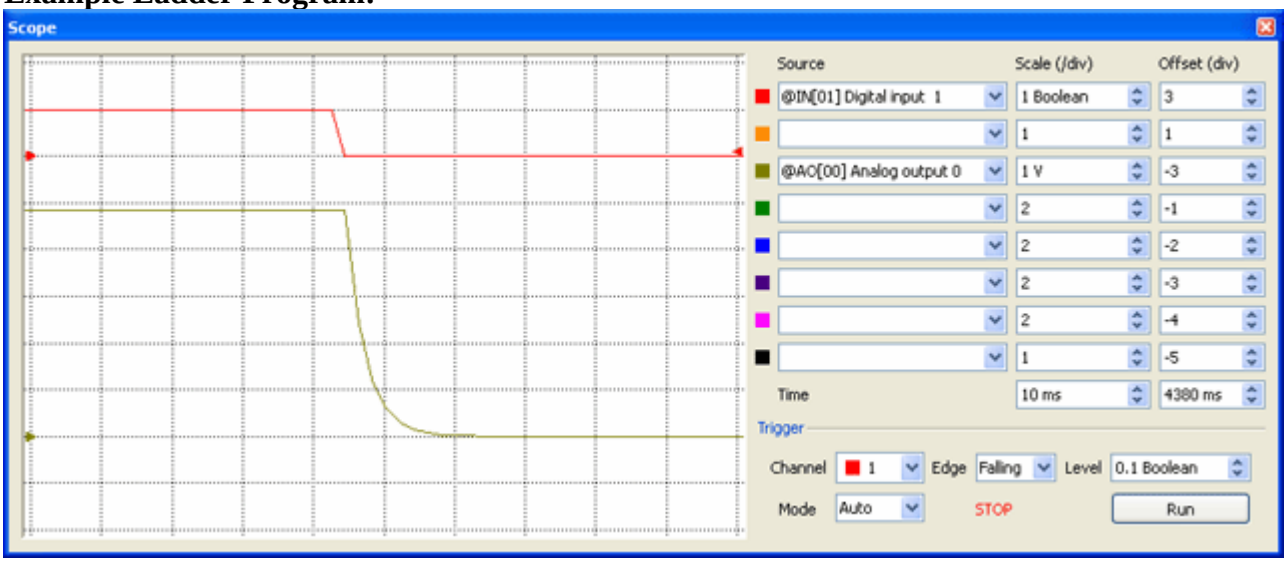
DIV - Divide from accumulator

Symbol:

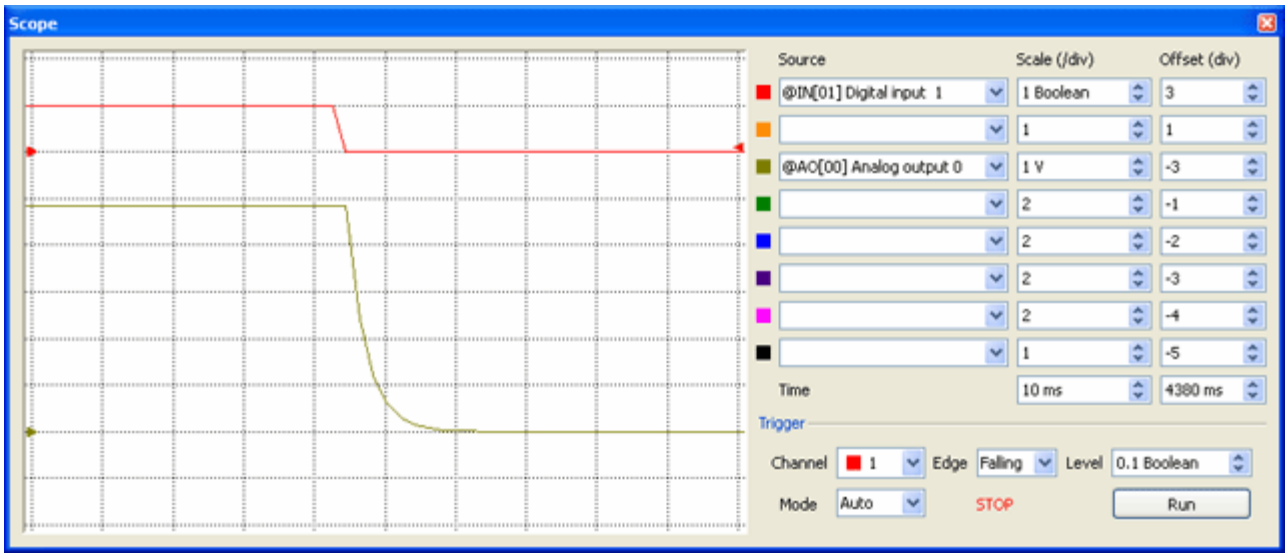
Range:
V0, V100
V200-V207
V250-V257
V300-V307
V400-V407
V500-V524
K0 - Kmax

Description:
Divide accumulator value by V variable location or K constant
Type: Boxes (Data manipulation and math functions)

Example Ladder Program:



GalilTools Scope Output:


Scope
Source
Scale (/div)
Offset (div)
@IN[01] Digital input 1
1 Boolean
3
1
1
@AO[00] Analog output 0
1 V
-3
2
-1
2
-2
2
-3
2
-4
1
-5
Time
10 ms
4380 ms
Trigger
Channel
1
Edge
Falling
Level
0.1 Boolean
Mode
Auto
STOP
Run

INC - Increment variable value

Symbol:

Range:
V0, V100
V200-V207
V250-V257
V300-V307
V400-V407
V500-V524

Description:
This increments the value of the V location by 1
Type: Boxes (Data manipulation and math functions)

INV - Inverse accumulator

Symbol:

Range:
N/A

Description:
Inverse accumulator (1's complement)
Type: Boxes (Data manipulation and math functions)

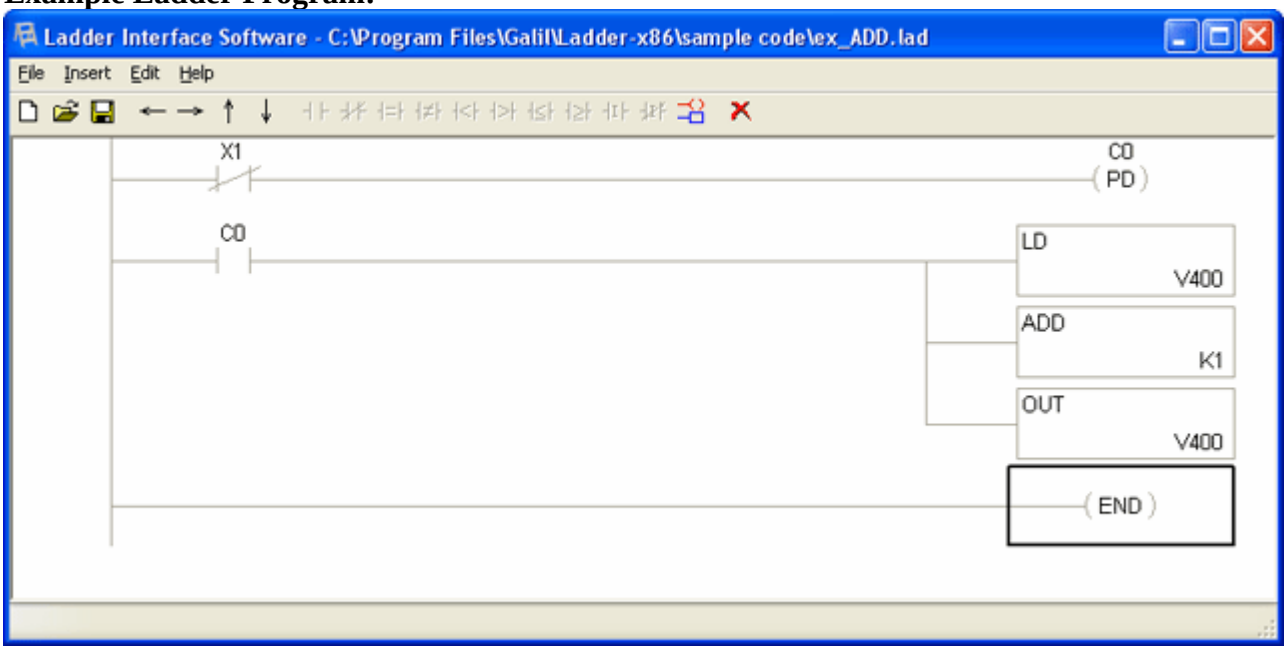
LD - Load accumulator

Symbol:

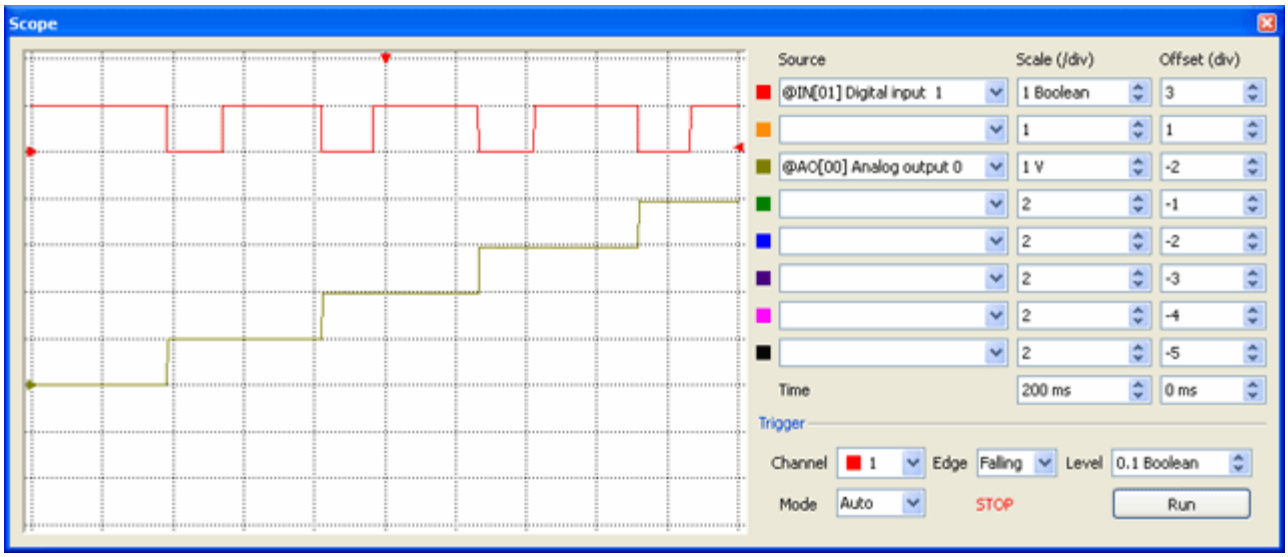
Range:
V0, V100
V200-V207
V250-V257
V300 - V307
V400-V407
V500-V524
K0 - Kmax

Description:
Loads a value into the accumulator
Type: Boxes (Data manipulation and math functions)

Example Ladder Program:



GalilTools Scope Output:


Scope
Source
Scale (/div)
Offset (div)
@IN[01] Digital input 1
1 Boolean
3
1
1
@AO[00] Analog output 0
1 V
-2
2
-1
2
-2
2
-3
2
-4
2
-5
Time
200 ms
0 ms
Trigger
Channel
1
Edge
Falling
Level
0.1 Boolean
Mode
Auto
STOP
Run

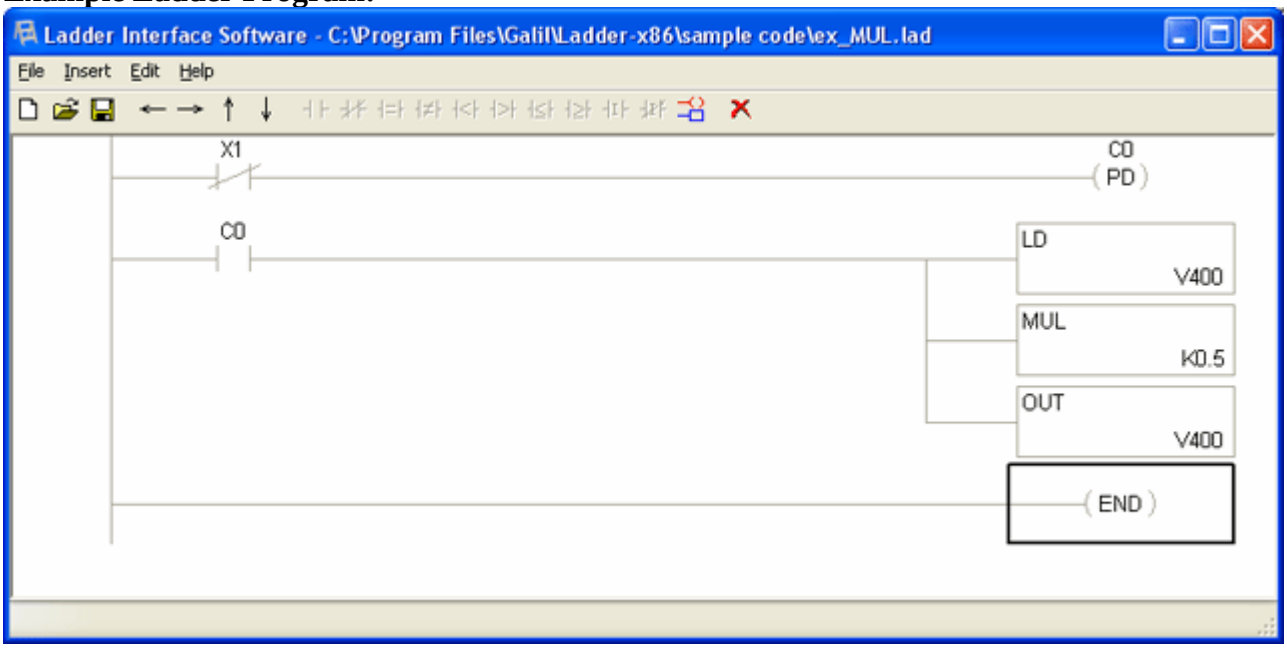
MUL - Multiply from accumulator

Symbol:

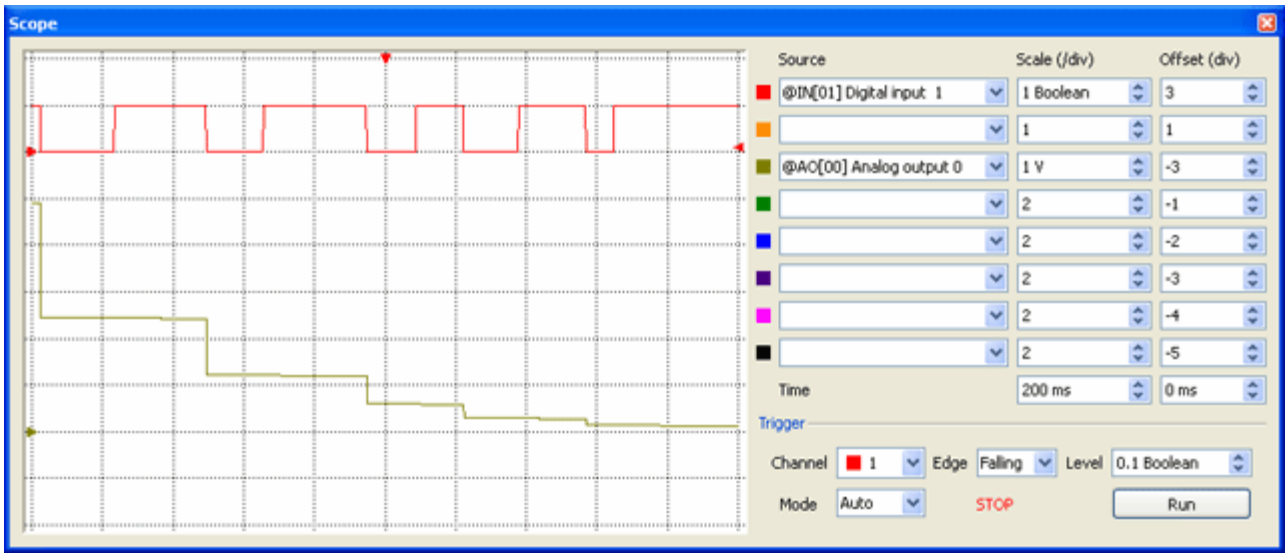
Range:
V0, V100
V200-V207
V250-V257
V300-V307
V400-V407
V500-V524
K0 - Kmax

Description:
Multiply accumulator value by V variable location or K constant
Type: Boxes (Data manipulation and math functions)

Example Ladder Program:



GalilTools Scope Output:


Scope
Source
Scale (/div)
Offset (div)
@IN[01] Digital input 1
1 Boolean
3
1
1
@AO[00] Analog output 0
1 V
-3
2
-1
2
-2
2
-3
2
-4
2
-5
Time
200 ms
0 ms
Trigger
Channel
1
Edge
Falling
Level
0.1 Boolean
Mode
Auto
STOP
Run

OR - Or accumulator

Symbol:

Range:
V0, V100
V200-V207
V250-V257
V300-V307
V400-V407
V500-V524
K0 - Kmax

Description:
Or accumulator value with variable location
Type: Boxes (Data manipulation and math functions)

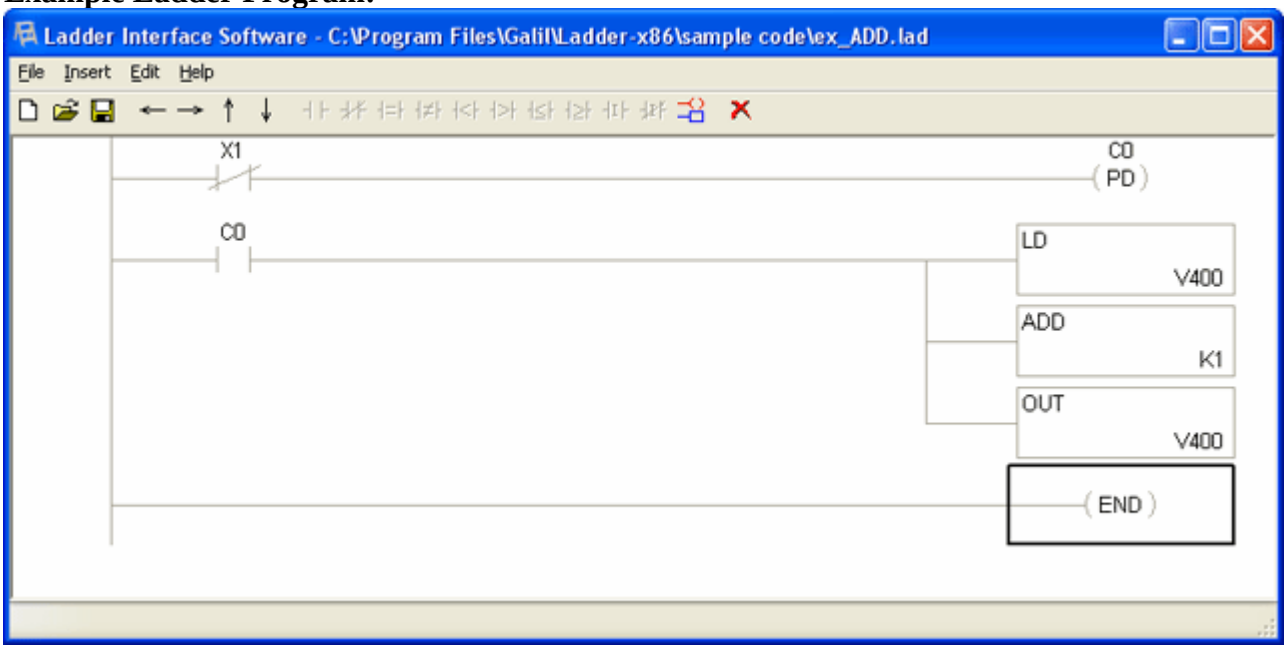
OUT - Output accumulator

Symbol:

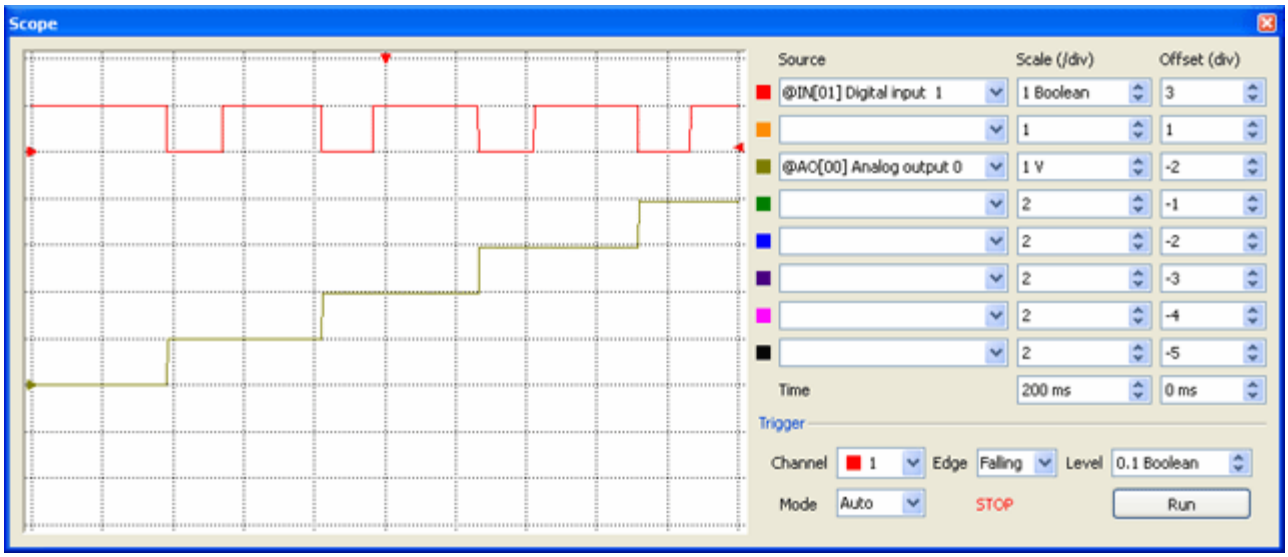
Range:
V0, V100
V200-V207
V250-V257
V300-V307
V400-V407
V500-V524

Description:
Outputs the current value of the accumulator to the specified memory location
Type: Boxes (Data manipulation and math functions)

Example Ladder Program:



GalilTools Scope Output:


Scope
Source
Scale (/div)
Offset (div)
@IN[01] Digital input 1
1 Boolean
3
1
1
@AO[00] Analog output 0
1 V
-2
2
-1
2
-2
2
-3
2
-4
2
-5
Time
200 ms
0 ms
Trigger
Channel
1
Edge
Falling
Level
0.1 Boolean
Mode
Auto
STOP
Run

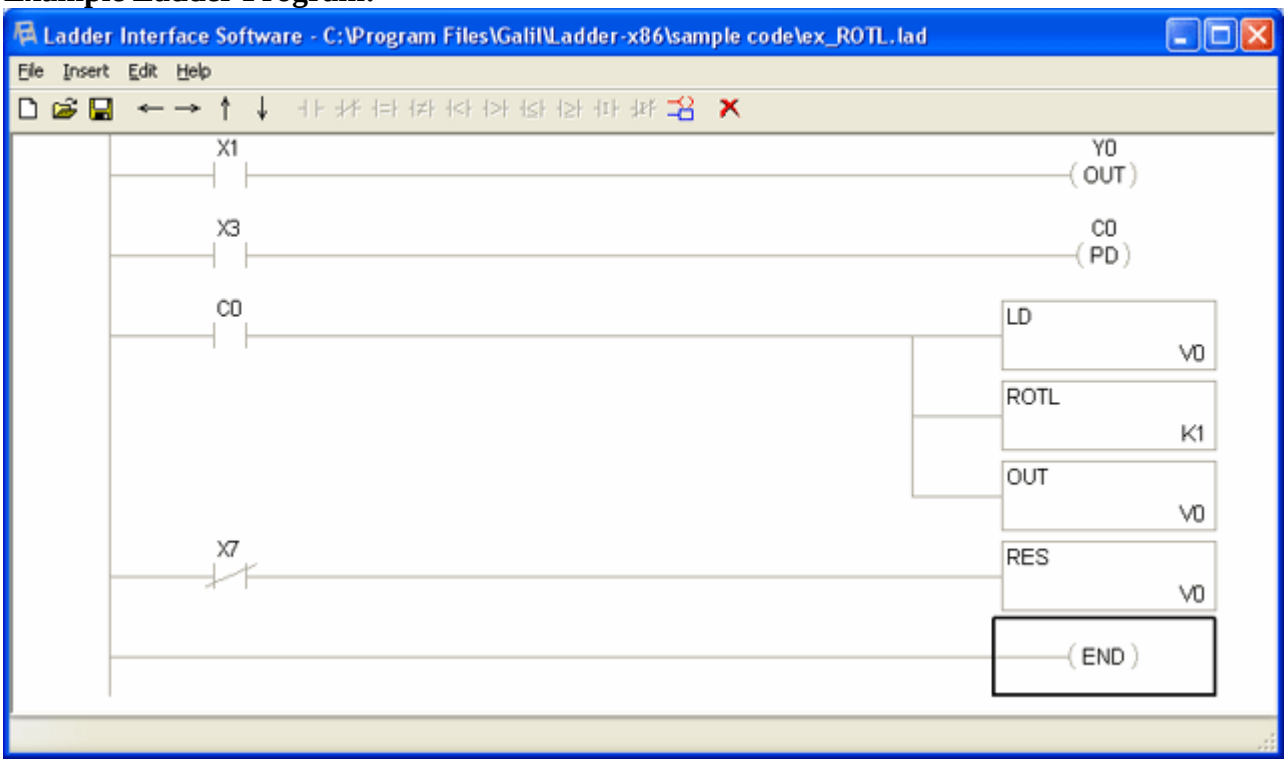
ROTL - Rotate accumulator left

Symbol:

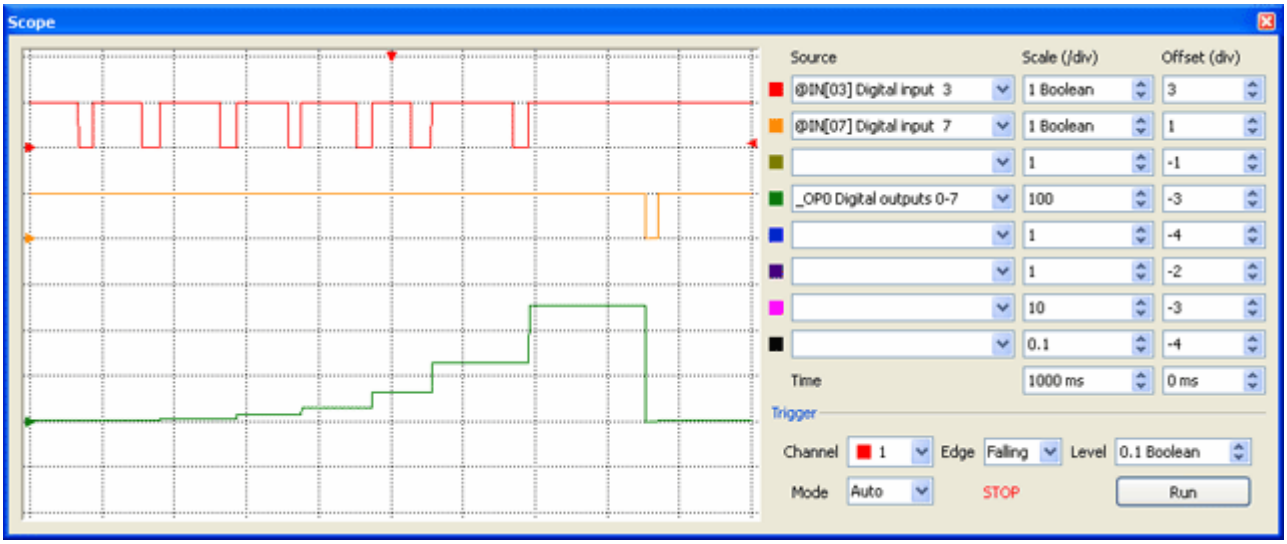
Range:
K1 - K16

Description:
Rotate accumulator left by Knn bits
Type: Boxes (Data manipulation and math functions)

Example Ladder Program:



GalilTools Scope Output:


Scope
Source
Scale (/div)
Offset (div)
@IN[03] Digital input 3
1 Boolean
3
@IN[07] Digital input 7
1 Boolean
1
1
-1
_OP0 Digital outputs 0-7
100
-3
1
-4
1
-2
10
-3
0.1
-4
Time
1000 ms
0 ms
Trigger
Channel
1
Edge
Falling
Level
0.1 Boolean
Mode
Auto
STOP
Run

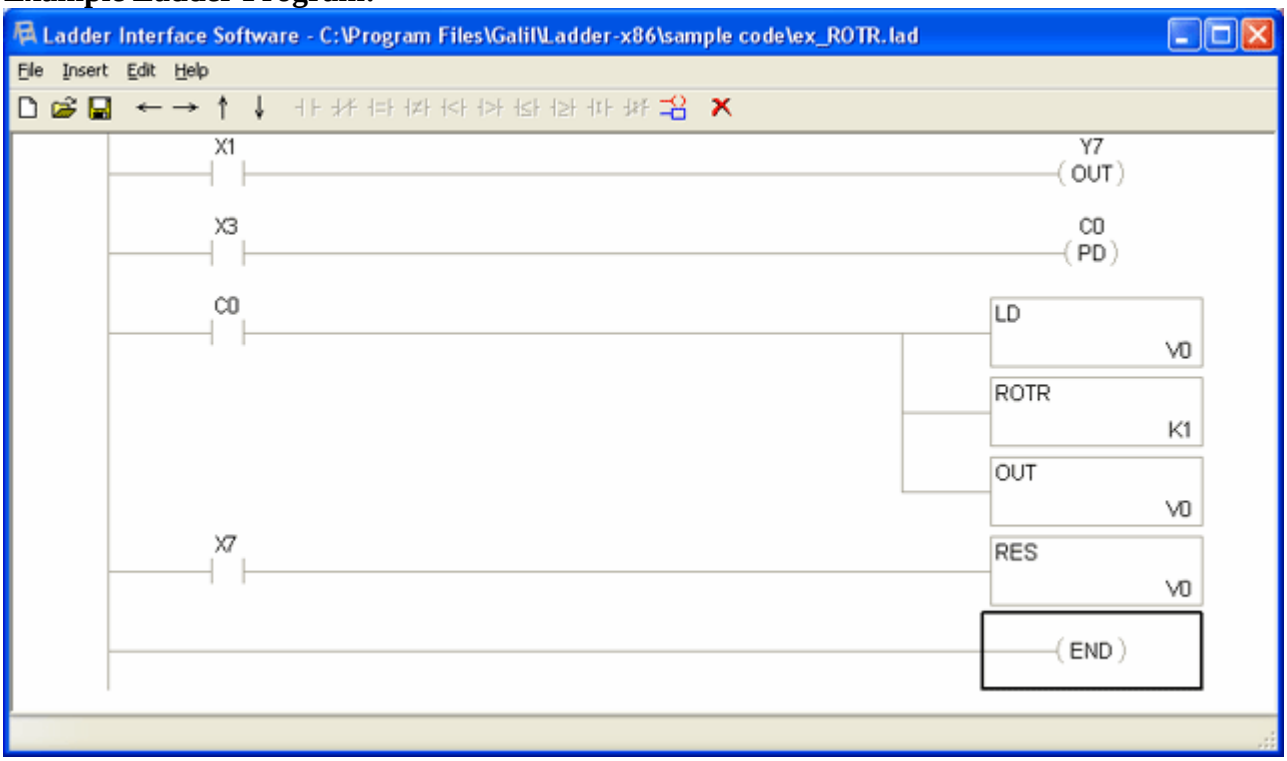
ROTR - Rotate accumulator right

Symbol:

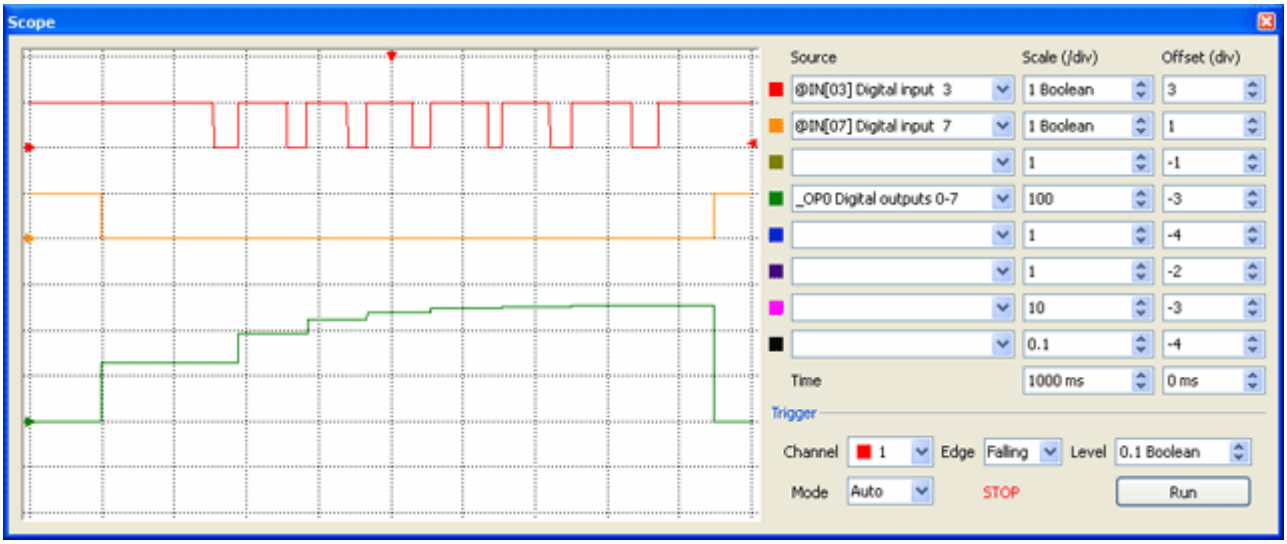
Range:
K1 - K16

Description:
Rotate accumulator right by Knn bits
Type: Boxes (Data manipulation and math functions)

Example Ladder Program:



GalilTools Scope Output:


Scope
Source
Scale (/div)
Offset (div)
@IN[03] Digital input 3
1 Boolean
3
@IN[07] Digital input 7
1 Boolean
1
1
-1
_OP0 Digital outputs 0-7
100
-3
1
-4
1
-2
10
-3
0.1
-4
Time
1000 ms
0 ms
Trigger
Channel
1
Edge
Falling
Level
0.1 Boolean
Mode
Auto
STOP
Run

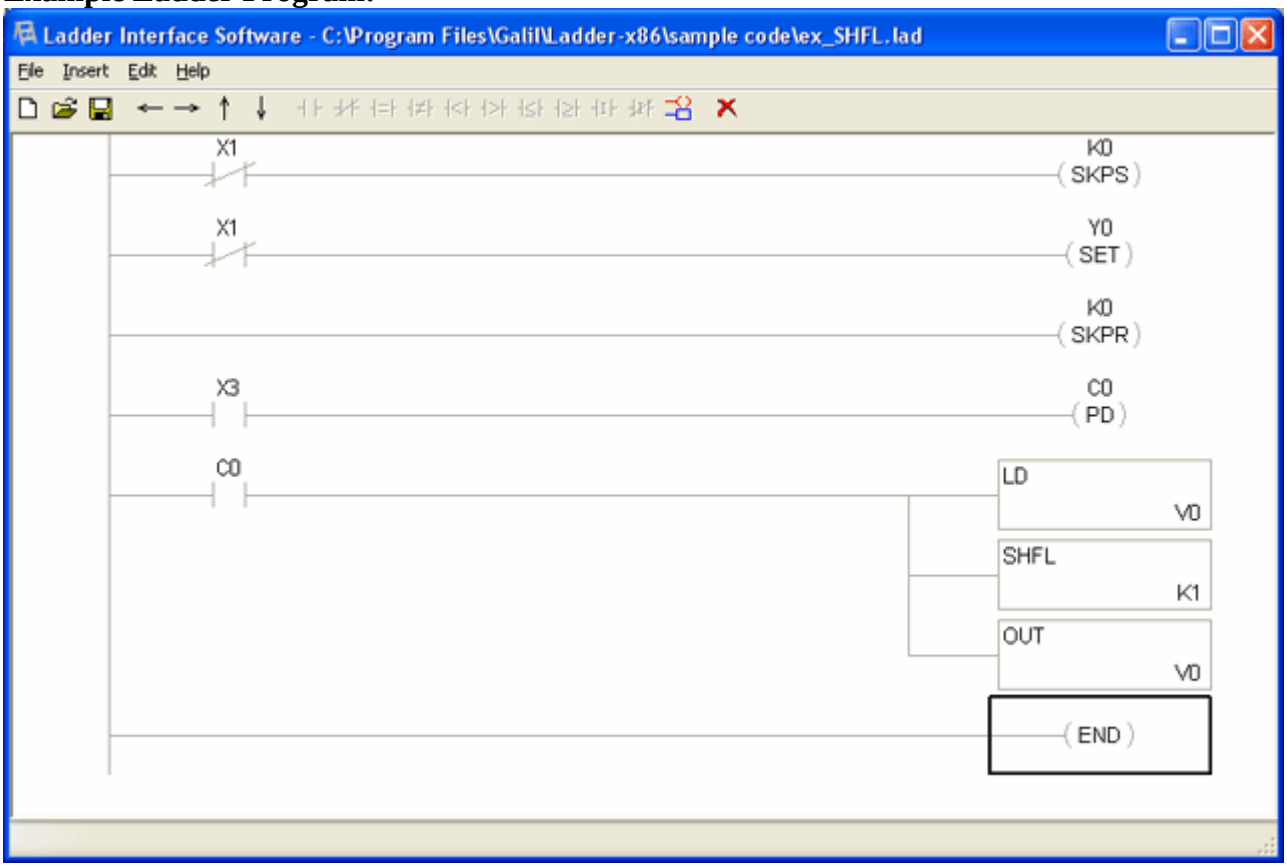
SHFL - Shift accumulator left

Symbol:

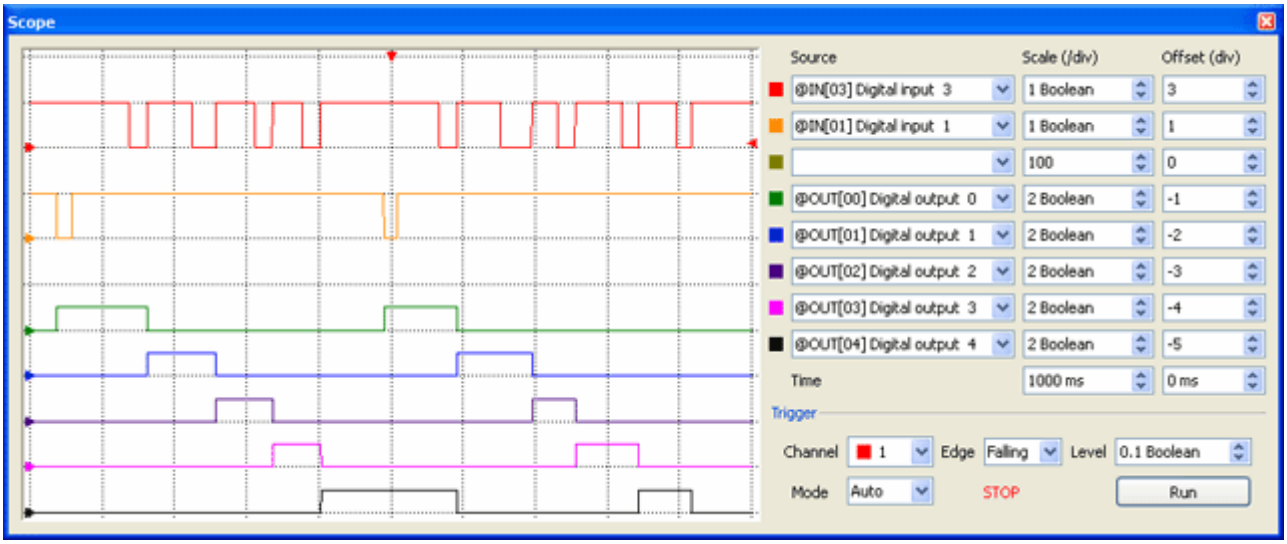
Range:
K1 - K16

Description:
Shift accumulator left by Knn bits
Type: Boxes (Data manipulation and math functions)

Example Ladder Program:



GalilTools Scope Output:


Scope
Source
Scale (/div)
Offset (div)
@IN[03] Digital input 3
1 Boolean
3
@IN[01] Digital input 1
1 Boolean
1
100
0
@OUT[00] Digital output 0
2 Boolean
-1
@OUT[01] Digital output 1
2 Boolean
-2
@OUT[02] Digital output 2
2 Boolean
-3
@OUT[03] Digital output 3
2 Boolean
-4
@OUT[04] Digital output 4
2 Boolean
-5
Time
1000 ms
0 ms
Trigger
Channel
1
Edge
Falling
Level
0.1 Boolean
Mode
Auto
STOP
Run

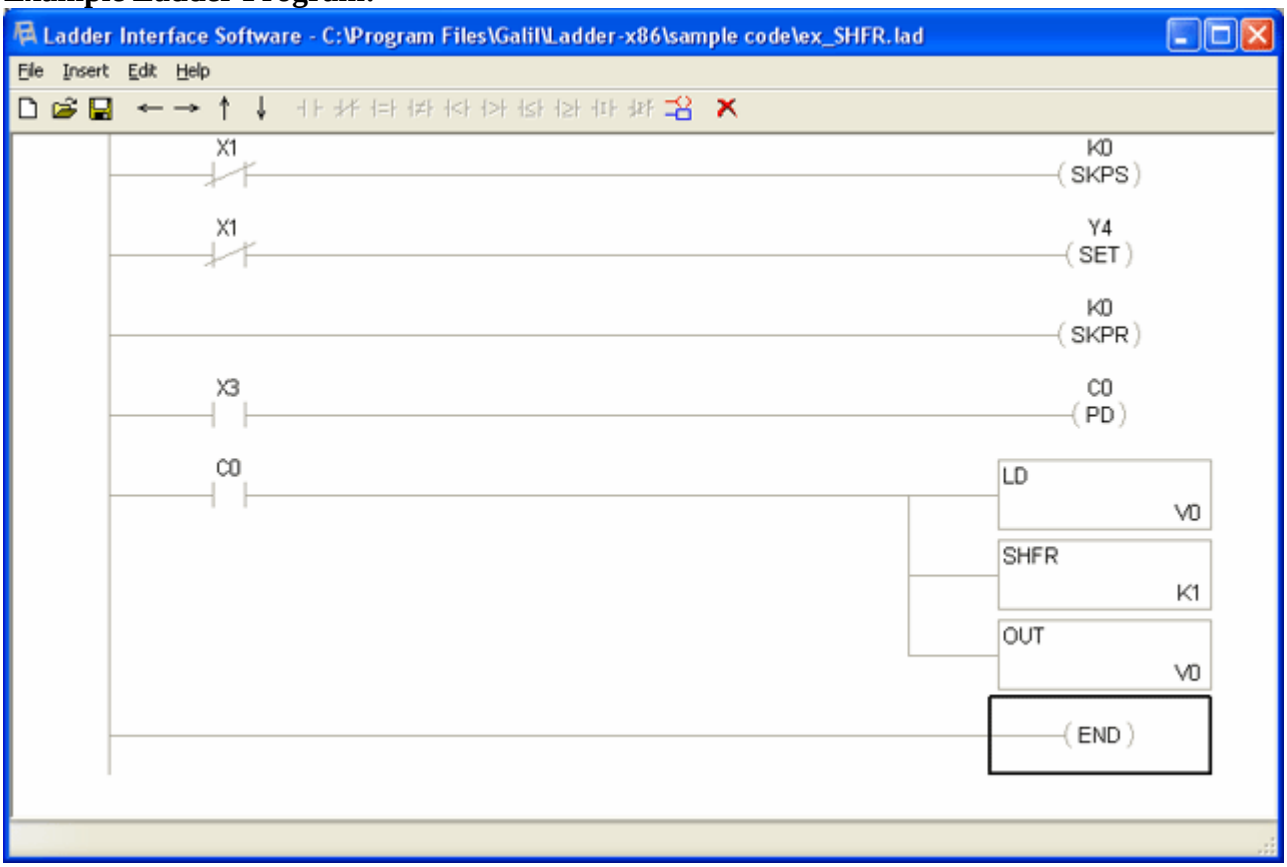
SHFR - Shift accumulator right

Symbol:

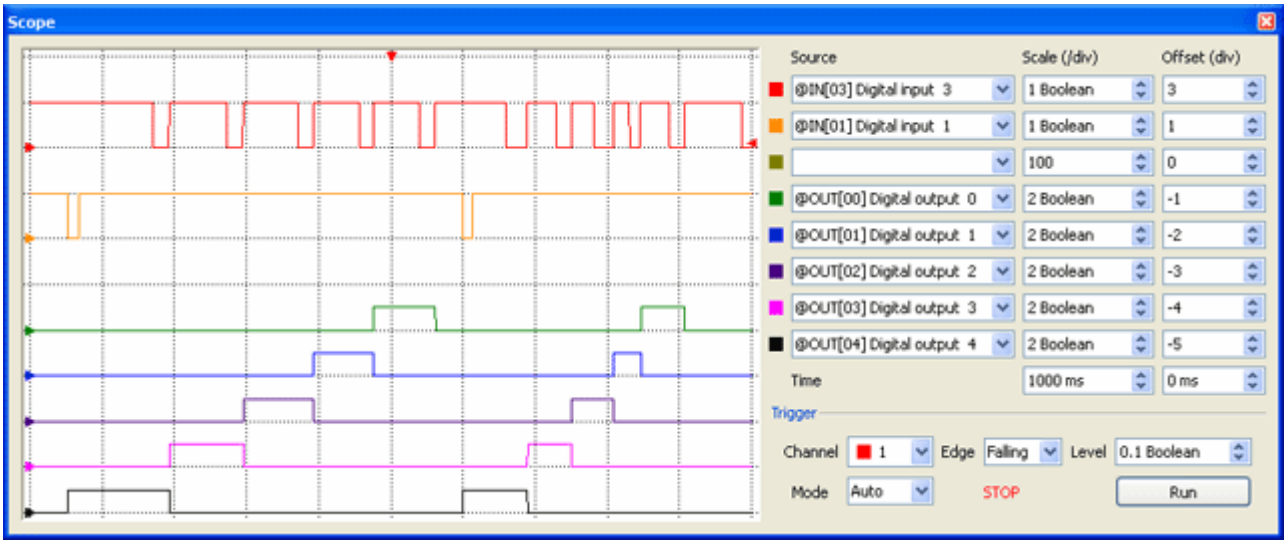
Range:
K1 - K16

Description:
Shift accumulator right by Knn bits
Type: Boxes (Data manipulation and math functions)

Example Ladder Program:



GalilTools Scope Output:


Scope
Source
Scale (/div)
Offset (div)
@IN[03] Digital input 3
1 Boolean
3
@IN[01] Digital input 1
1 Boolean
1
100
0
@OUT[00] Digital output 0
2 Boolean
-1
@OUT[01] Digital output 1
2 Boolean
-2
@OUT[02] Digital output 2
2 Boolean
-3
@OUT[03] Digital output 3
2 Boolean
-4
@OUT[04] Digital output 4
2 Boolean
-5
Time
1000 ms
0 ms
Trigger
Channel
1
Edge
Falling
Level
0.1 Boolean
Mode
Auto
STOP
Run

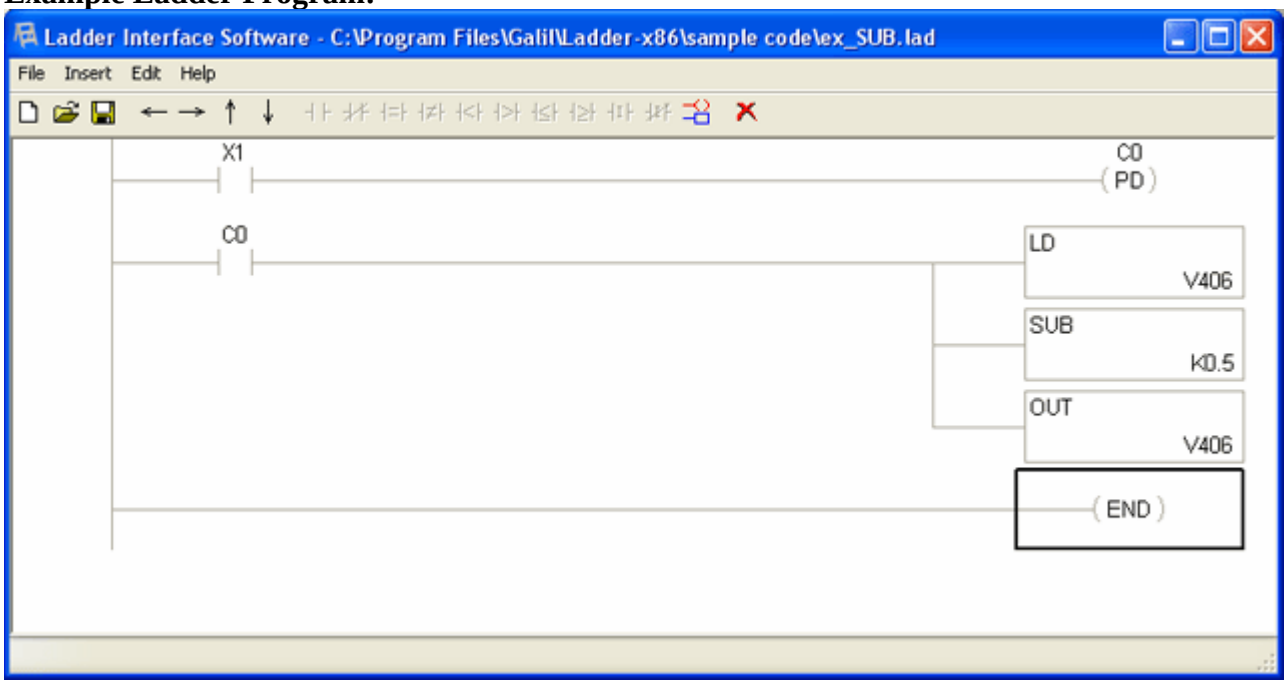
SUB - Subtract from accumulator

Symbol:

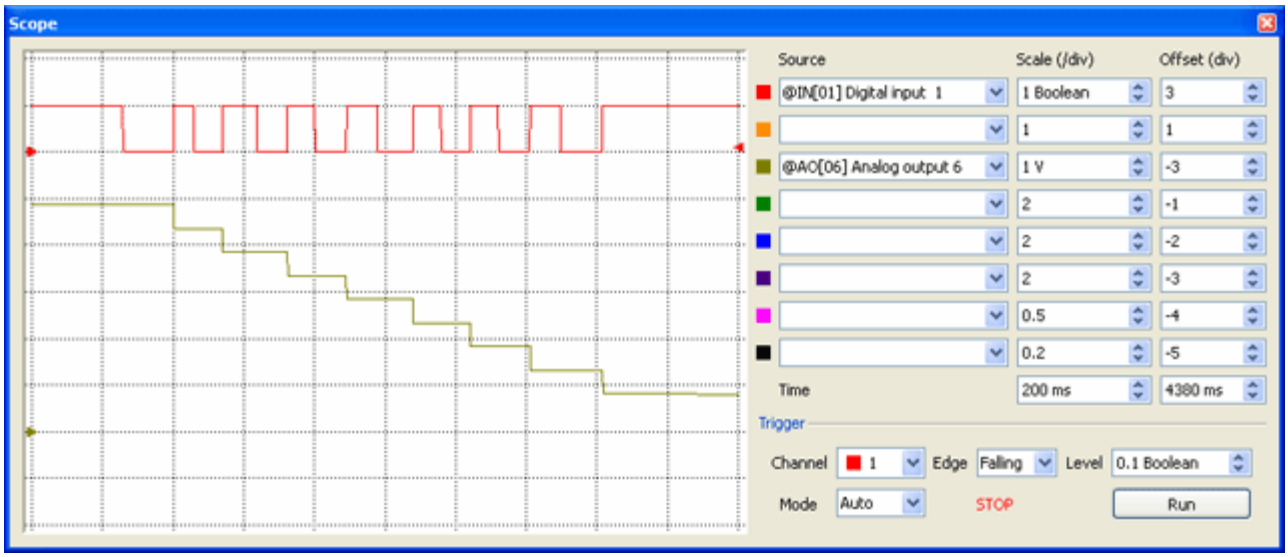
Range:
V0, V100
V200-V207
V250-V257
V300-V307
V400-V407
V500-V524
K0 - Kmax

Description:
Subtract V variable location or K constant from accumulator value
Type: Boxes (Data manipulation and math functions)

Example Ladder Program:



GalilTools Scope Output:


Scope
Source
Scale (/div)
Offset (div)
@IN[01] Digital input 1
1 Boolean
3
1
1
@AO[06] Analog output 6
1 V
-3
2
-1
2
-2
2
-3
0.5
-4
0.2
-5
Time
200 ms
4380 ms
Trigger
Channel
1
Edge
Falling
Level
0.1 Boolean
Mode
Auto
STOP
Run

XOR - Exclusive OR accumulator

Symbol:

Range:
V0, V100
V200-V207
V250-V257
V300-V307
V400-V407
V500-V524
K0 - Kmax

Description:
Exclusive OR evaluates true when inputs are different
Type: Boxes (Data manipulation and math functions)

CTD - Down counter

Symbol:

Range:
CT0-CT7
K0-Kmax

Description:
Upon a FALSE-TRUE transition of a rung, the down counter decrements it's internal counter by one. A preset value is assigned as Kn, where n is an integer value. When the current counter value is greater than the preset value, the counter done bit is set TRUE. Then the current counter value is less than the preset value, the counter done bit is set FALSE.

Note: The CTD may only be used in conjunction with the CTU, and must be the rung directly following the CTU. The CTD and CTU will share the same counter number (ie. CT0) as well as preset value (Kn).
Type: Boxes (Counters/Timers)

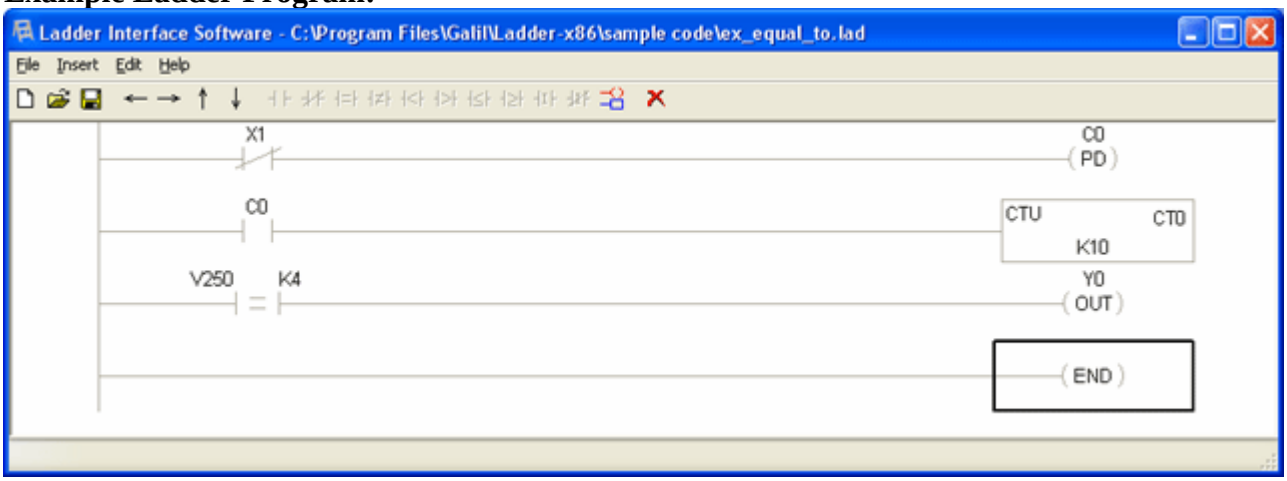
CTU - Up counter

Symbol:

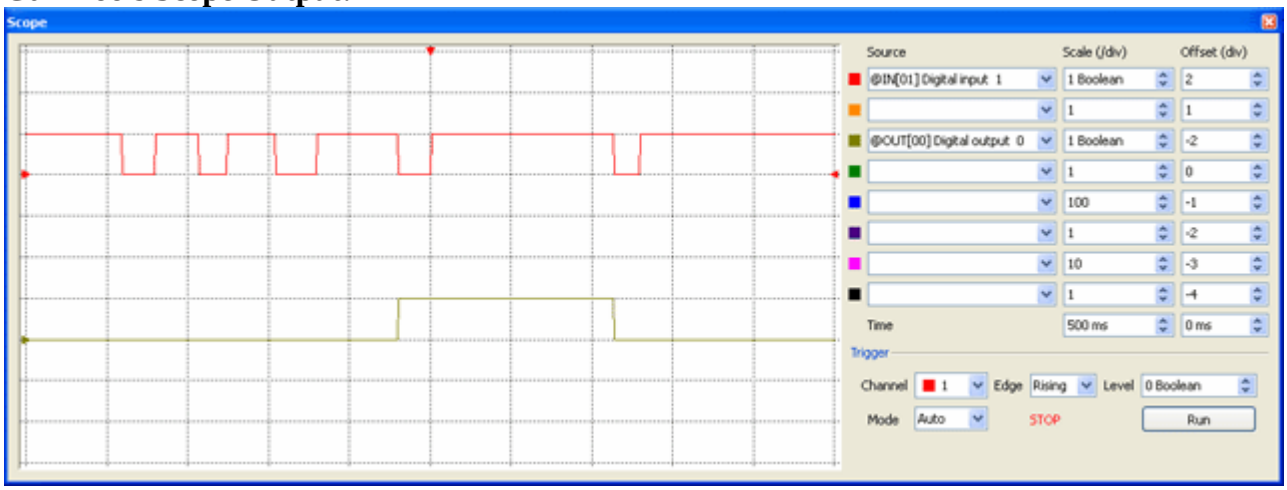
Range:
CT0-CT7
K0-Kmax

Description:
Upon a FALSE-TRUE transition of a rung, the up counter increments it's internal counter by one. A preset value is assigned as Kn, where n is an integer value. When the current counter value exceeds the preset value, the counter done bit is set TRUE. The done bit and current count can be reset by the RES box.
Type: Boxes (Counters/Timers)

Example Ladder Program:



GalilTools Scope Output:



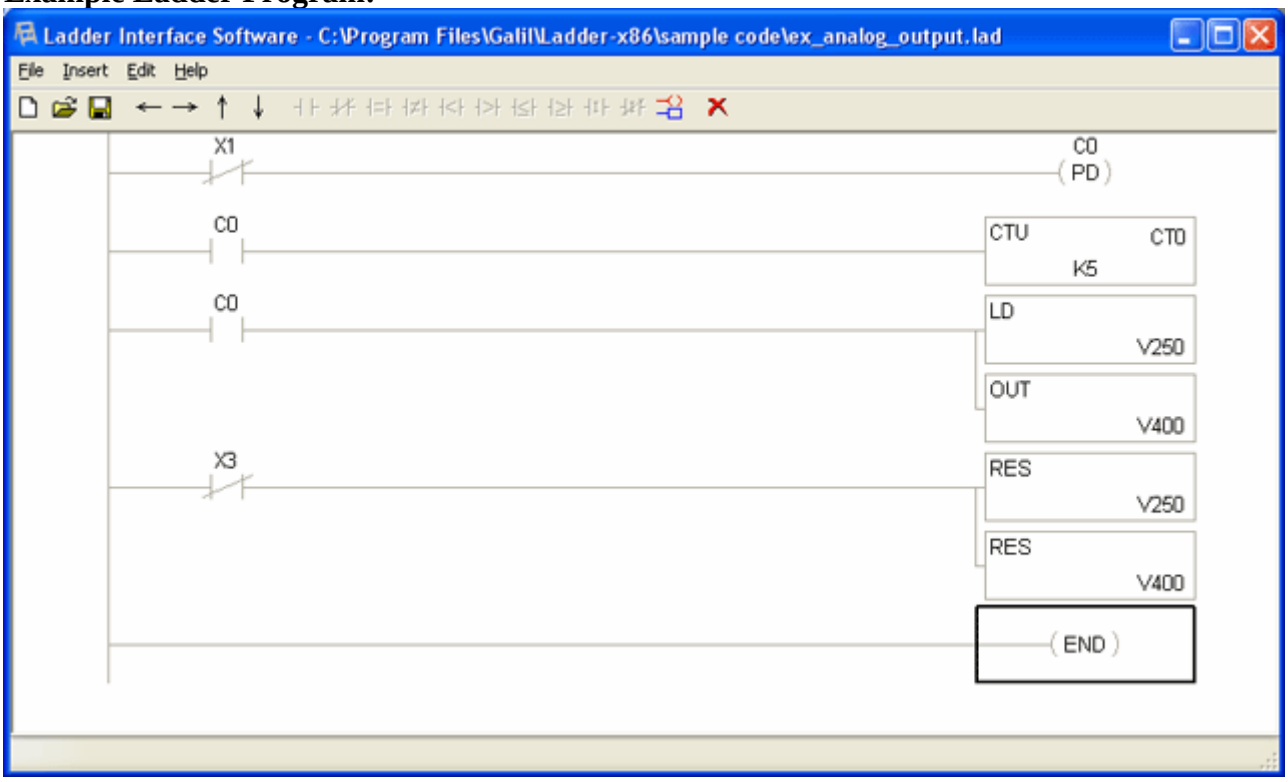
RES - Reset box

Symbol:

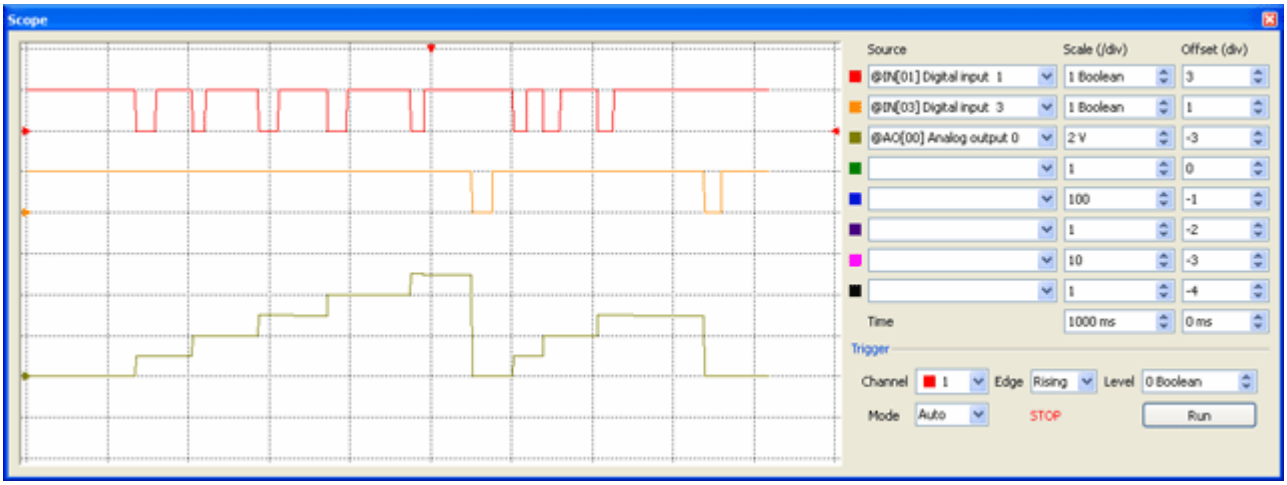
Range:
V0
V200-V207
V250-V257
V400-V407
V500-V524

Description:
The RES box is used to reset variable locations within the ladder code. It can be used to reset the current timer or counter value, or to reset a user variable location (V500-V524). If the RES box is to be used to reset the counter or timer value, it must be placed on the rung directly after the counter or timer it is to effect.
Type: Boxes (Counters/Timers)

Example Ladder Program:



GalilTools Scope Output:


Scope
Source
Scale (/div)
Offset (div)
@DI[01] Digital input 1
1 Boolean
3
@DI[03] Digital input 3
1 Boolean
1
@AO[00] Analog output 0
2 V
-3
1
0
100
-1
1
-2
10
-3
1
-4
Time
1000 ms
0 ms
Trigger
Channel
1
Edge
Rising
Level
0 Boolean
Mode
Auto
STOP
Run

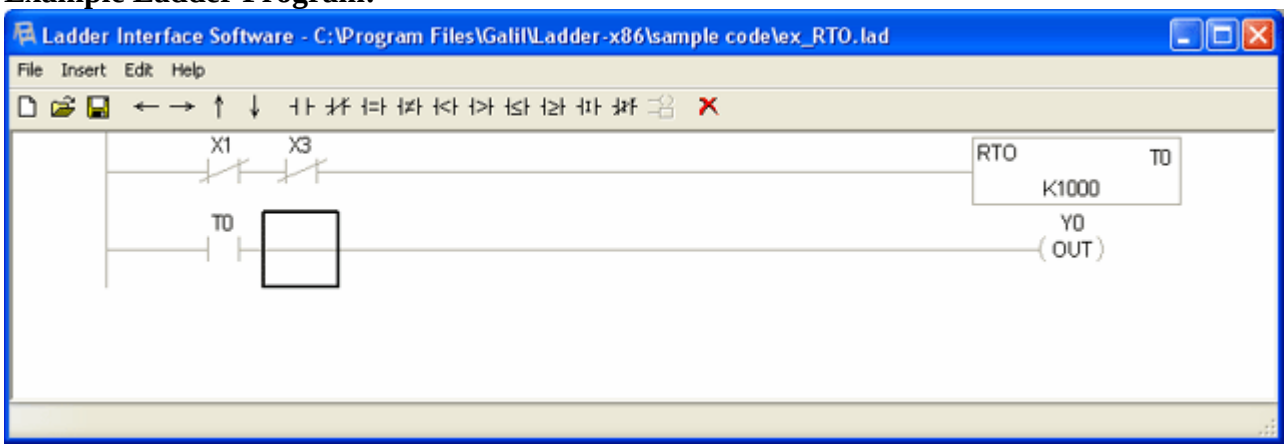
RTO - Accumulating timer

Symbol:

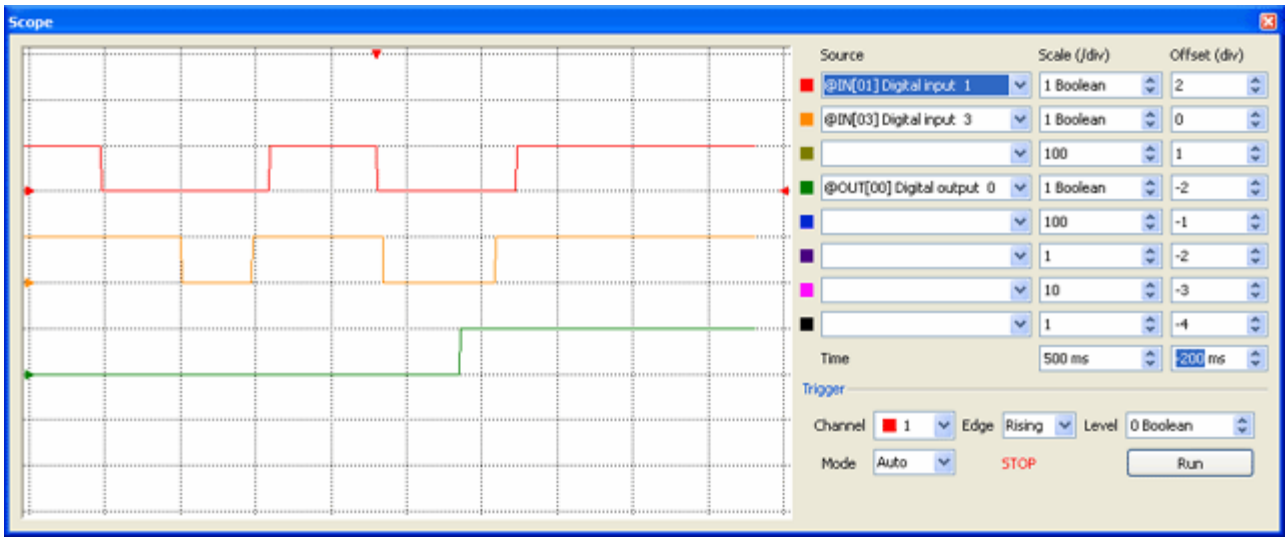
Range:
T0-T7
K0-Kmax

Description:
This timer operates similarly to the On-delay timer. Upon a rung evaluating as TRUE, the timer begins counting in msec. Upon the rung evaluating as FALSE, the timer stops counting, but is not zeroed. The time is retained. On the next rung TRUE condition, the counter continues counting, thereby measuring accumulated TRUE time of the rung. The preset Kn is set to a value in msec. When the accumulated time is greater than the preset value Kn, the done bit is set. Done bit and accumulated time can only be reset by using the RES box.
Type: Boxes (Counters/Timers)

Example Ladder Program:



GalilTools Scope Output:


Scope
Source
Scale (/div)
Offset (div)
@IN[01] Digital input 1
1 Boolean
2
@IN[03] Digital input 3
1 Boolean
0
100
1
@OUT[00] Digital output 0
1 Boolean
-2
100
-1
1
-2
10
-3
1
-4
Time
500 ms
200 ms
Trigger
Channel
1
Edge
Rising
Level
0 Boolean
Mode
Auto
STOP
Run

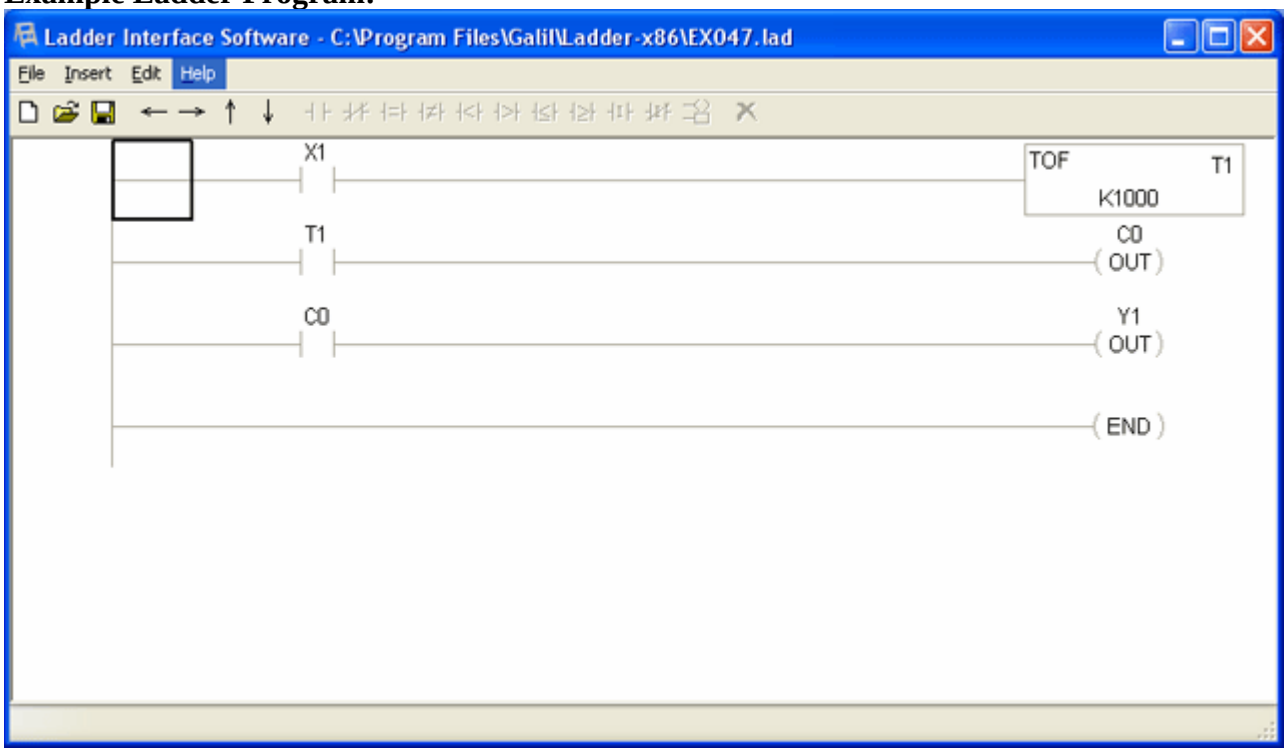
TOF - Off delay timer

Symbol:

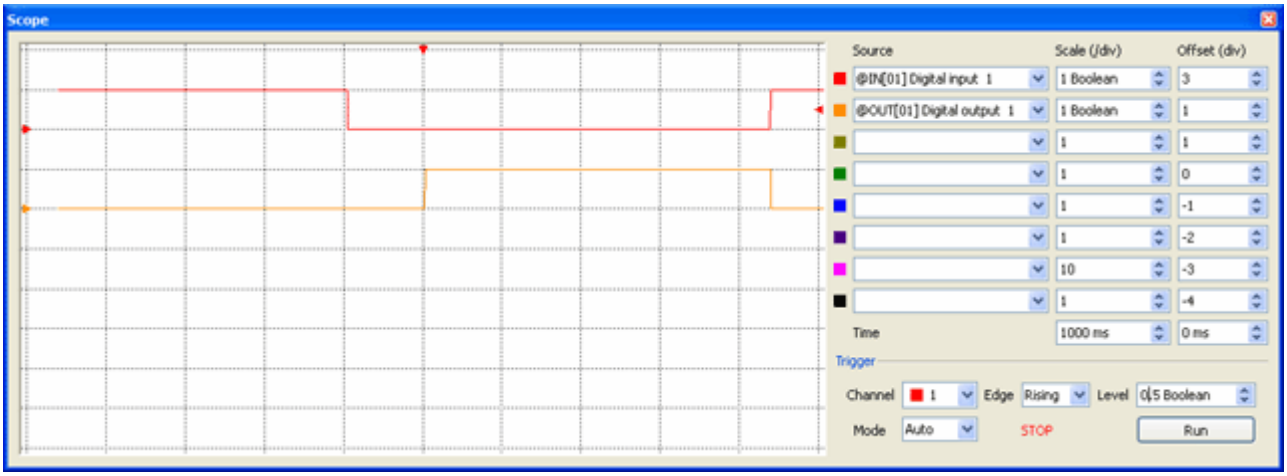
Range:
T0-T7
K0-Kmax

Description:
The Off-delay timer, upon the rung evaluating as FALSE, will begin timing in msec. The timer will remain timing while the rung evaluates as FALSE. A preset value is assigned as Kn, where n is a time in msec. When the current timer value exceeds the preset value Kn AND the rung remains FALSE, the timer done bit Tn will set TRUE. When the rung evaluates as TRUE, the timer is held to 0 and the done bit is FALSE.
Type: Boxes (Counters/Timers)

Example Ladder Program:



GalilTools Scope Output:


Scope
Source
Scale (/div)
Offset (div)
@IN[01] Digital input 1
1 Boolean
3
@OUT[01] Digital output 1
1 Boolean
1
1
1
0
1
-1
1
-2
10
-3
1
-4
Time
1000 ms
0 ms
Trigger
Channel
1
Edge
Rising
Level
0,5 Boolean
Mode
Auto
STOP
Run

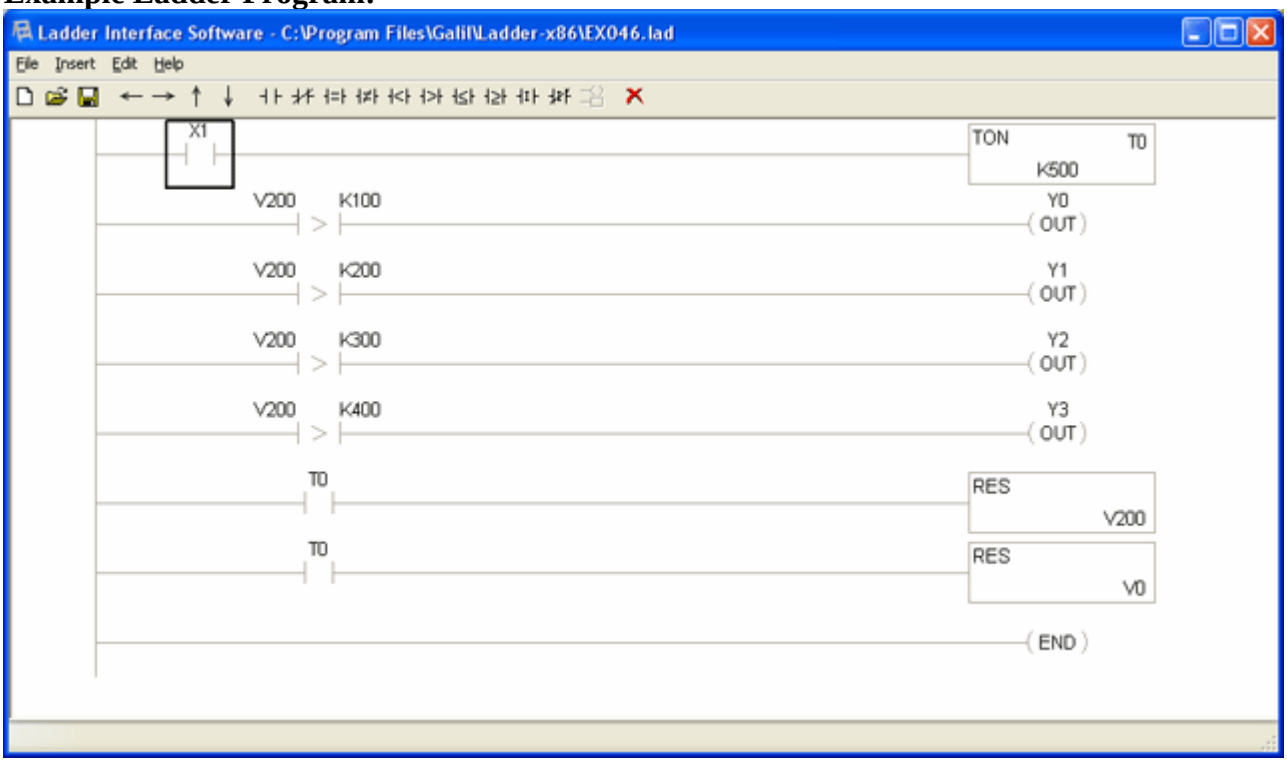
TON - On delay timer

Symbol:

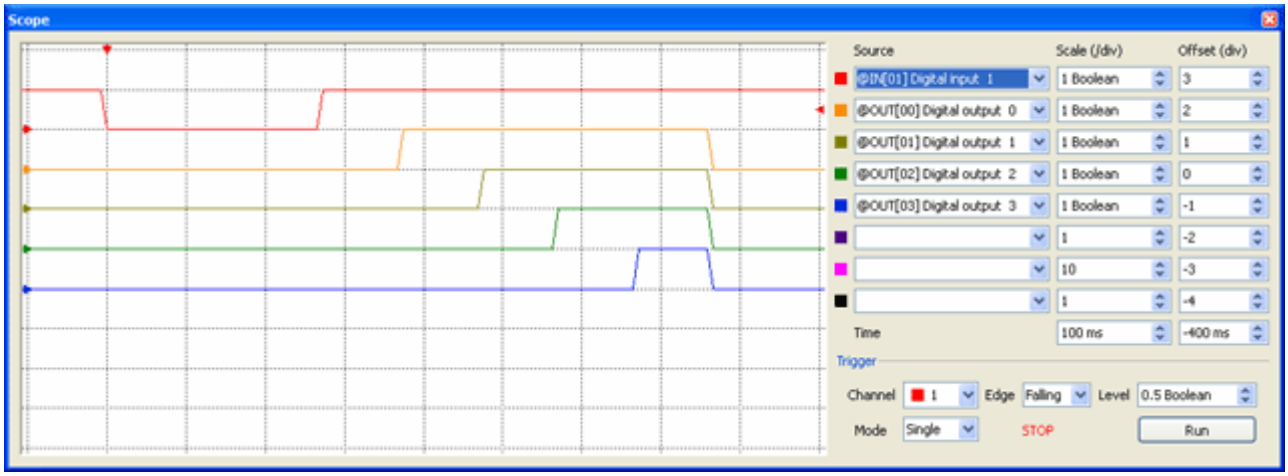
Range:
T0-T7
K0-Kmax

Description:
The On-delay timer, upon the rung evaluating as TRUE, will begin timing in msec. The timer will remain timing while the rung evaluates as TRUE. A preset value is assigned as Kn, where n is a time in msec. When the current timer value exceeds the preset value Kn AND the rung remains TRUE, the timer done bit Tn will set TRUE. When the rung evaluates as FALSE, the timer is held to 0 and the done bit is FALSE.
Type: Boxes (Counters/Timers)

Example Ladder Program:



GalilTools Scope Output:


Scope
Source
Scale (/div)
Offset (div)
@IN[01] Digital input 1
1 Boolean
3
@OUT[00] Digital output 0
1 Boolean
2
@OUT[01] Digital output 1
1 Boolean
1
@OUT[02] Digital output 2
1 Boolean
0
@OUT[03] Digital output 3
1 Boolean
-1
1
-2
10
-3
1
-4
Time
100 ms
-400 ms
Trigger
Channel
1
Edge
Falling
Level
0.5 Boolean
Mode
Single
STOP
Run