DL06 IBox Instructions
PLC User Manual Supplement

Manual Number: DL06-IBOX-S

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Overview

The Ibox Instructions listed in this supplement are in addition to the Standard RLL Instructions found in Chapter 5 of the DL06 User Manual. These new instructions are available when using *Direct*SOFT5 to program your DL06 PLC (the DL06 CPU requires firmware version v2.10 or later to use the new features in *Direct*SOFT5). For more information on *Direct*SOFT5 and to download our Free version, please visit our Web site at: www.automationdirect.com

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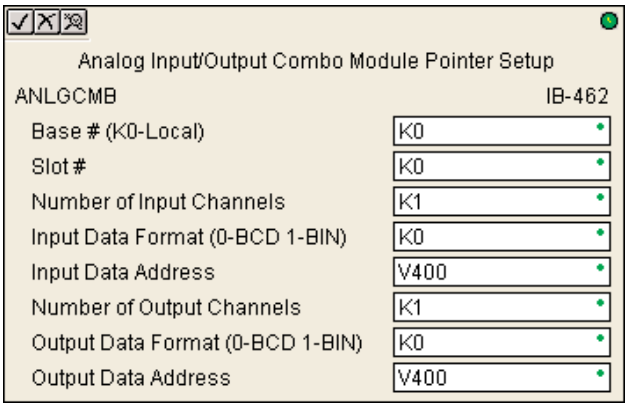
Analog Input/Output Combo Module Pointer Setup (ANLGCMB) (IB-462)

DS5	Used
HPP	N/A

The Analog Input/Output Combo Module Pointer Setup instruction generates the logic to configure the pointer method for an analog input/output combination module on the first PLC scan following a Program to Run transition.

The ANLGCMB IBox instruction determines the data format and Pointer addresses based on the CPU type, the Base# and the module Slot#.



The Input Data Address is the starting location in user V-memory where the analog input data values will be stored, one location for each input channel enabled.

The Output Data Address is the starting location in user V-memory where the analog output data values will be placed by ladder code or external device, one location for each output channel enabled.

Since the IBox logic only executes on the first scan, the instruction cannot have any input logic.

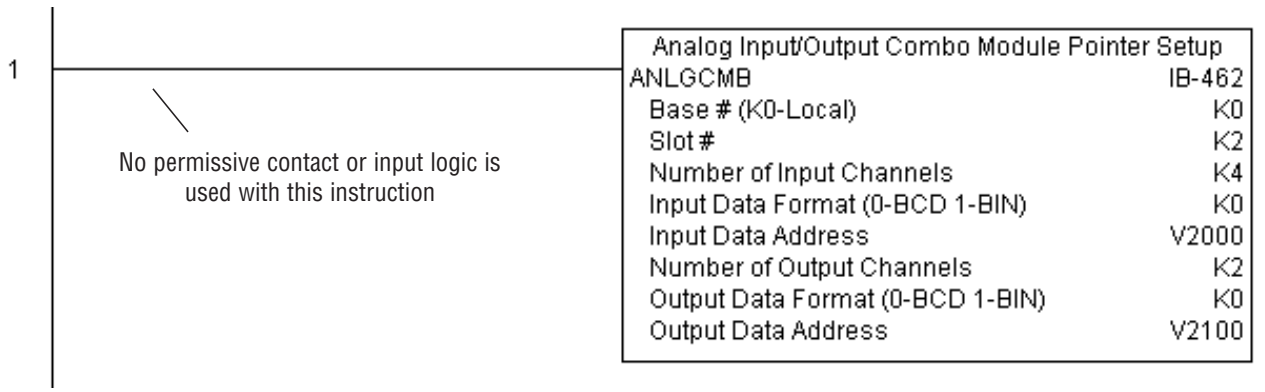
ANLGCMB Parameters

- Base # (K0-Local): must be 0 for DL06 PLC
- Slot #: specifies which PLC option slot is occupied by the analog module (1–4)
- Number of Input Channels: specifies the number of analog input channels to scan
- Input Data Format (0-BCD 1-BIN): specifies the analog input data format (BCD or Binary) - the binary format may be used for displaying data on some OI panels
- Input Data Address: specifies the starting V-memory location that will be used to store the analog input data
- Number of Output Channels: specifies the number of analog output channels that will be used
- Output Data Format (0-BCD 1-BIN): specifies the format of the analog output data (BCD or Binary)
- Output Data Address: specifies the starting V-memory location that will be used to source the analog output data

Parameter	DL06 Range
Base # (K0-Local) . . . . . K	K0 (local base only)
Slot # . . . . . K	K1-4
Number of Input Channels . . . . . K	K1-8
Input Data Format (0-BCD 1-BIN) . . . . . K	BCD: K0; Binary: K1
Input Data Address V	See DL06 V-memory map - Data Words
Number of Output Channels . . . . . K	K1-8
Output Data Format (0-BCD 1-BIN) . . . . . K	BCD: K0; Binary: K1
Output Data Address V	See DL06 V-memory map - Data Words

ANLGCMB Example

In the following example, the ANLGCMB instruction is used to setup the pointer method for an analog I/O combination module that is installed in option slot 2. Four input channels are enabled and the analog data will be written to V2000 - V2003 in BCD format. Two output channels are enabled and the analog values will be read from V2100 - V2101 in BCD format.



Analog Input Module Pointer Setup (ANLGIN) (IB-460)

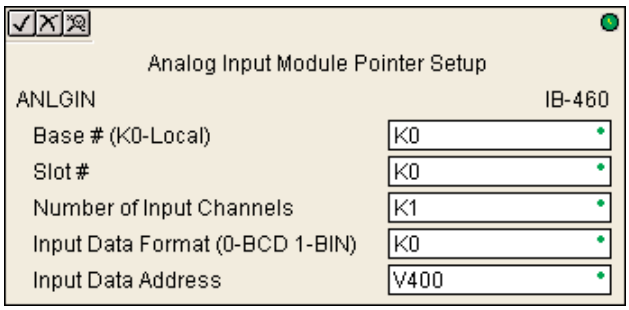
DS5	Used
HPP	N/A

Analog Input Module Pointer Setup generates the logic to configure the pointer method for one analog input module on the first PLC scan following a Program to Run transition.

This IBox determines the data format and Pointer addresses based on the CPU type, the Base#, and the Slot#.

The Input Data Address is the starting location in user V-memory where the analog input data values will be stored, one location for each input channel enabled.

Since this logic only executes on the first scan, this IBox cannot have any input logic.



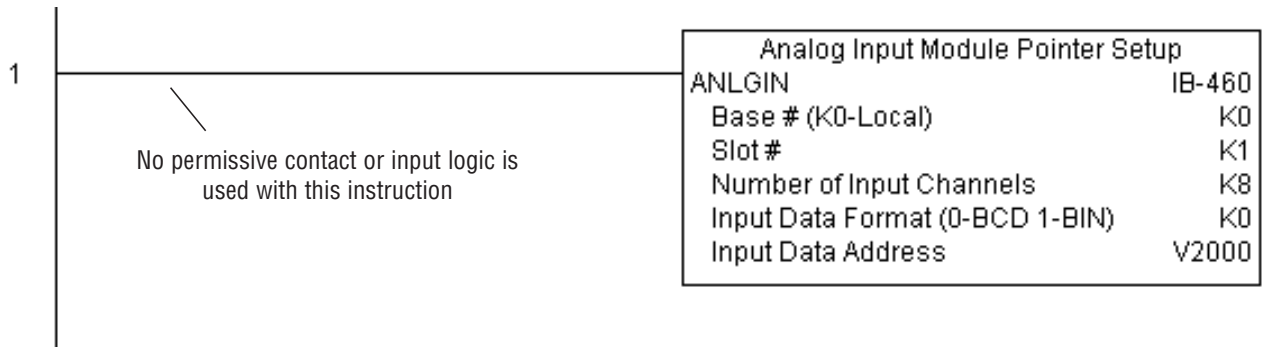
ANLGIN Parameters

- Base # (K0-Local): must be 0 for DL06 PLC
- Slot #: specifies which PLC option slot is occupied by the analog module (1–4)
- Number of Input Channels: specifies the number of input channels to scan
- Input Data Format (0-BCD 1-BIN): specifies the analog input data format (BCD or Binary) - the binary format may be used for displaying data on some OI panels
- Input Data Address: specifies the starting V-memory location that will be used to store the analog input data

Parameter	DL06 Range
Base # (K0-Local) . . . . . K	K0 (local base only)
Slot # . . . . . K	K1-4
Number of Input Channels . . . . . K	K1-8
Input Data Format (0-BCD 1-BIN) . . . . . K	BCD: K0; Binary: K1
Input Data Address V	See DL06 V-memory map - Data Words

ANLGIN Example

In the following example, the ANLGIN instruction is used to setup the pointer method for an analog input module that is installed in option slot 1. Eight input channels are enabled and the analog data will be written to V2000 - V2007 in BCD format.



Analog Output Module Pointer Setup (ANLGOUT) (IB-461)

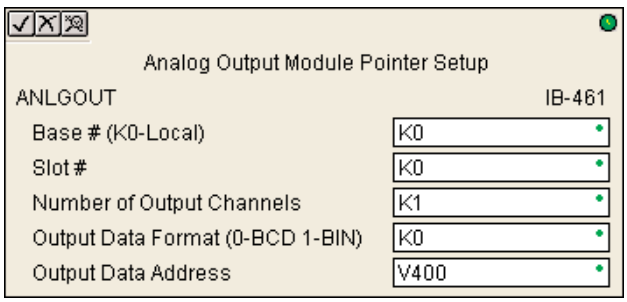
DS5	Used
HPP	N/A

Analog Output Module Pointer Setup generates the logic to configure the pointer method for one analog output module on the first PLC scan following a Program to Run transition.

This IBox determines the data format and Pointer addresses based on the CPU type, the Base#, and the Slot#.

The Output Data Address is the starting location in user V-memory where the analog output data values will be placed by ladder code or external device, one location for each output channel enabled.

Since this logic only executes on the first scan, this IBox cannot have any input logic.



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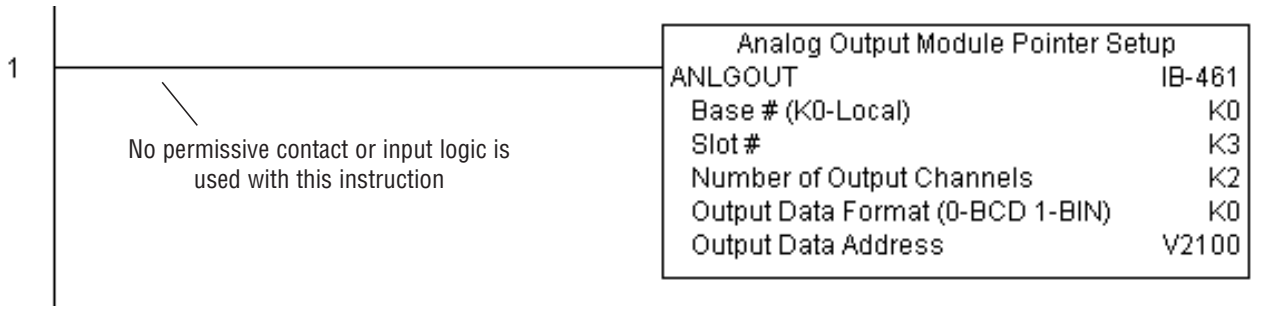
ANLGOUT Parameters

- Base # (K0-Local): must be 0 for DL06 PLC
- Slot #: specifies which PLC option slot is occupied by the analog module (1–4)
- Number of Output Channels: specifies the number of analog output channels that will be used
- Output Data Format (0-BCD 1-BIN): specifies the format of the analog output data (BCD or Binary)
- Output Data Address: specifies the starting V-memory location that will be used to source the analog output data

Parameter	DL06 Range
Base # (K0-Local) . . . . . K	K0 (local base only)
Slot # . . . . . K	K1-4
Number of Output Channels . . . . . K	K1-8
Output Data Format (0-BCD 1-BIN). . . . . K	BCD: K0; Binary: K1
Output Data Address V	See DL06 V-memory map - Data Words

ANLGOUT Example

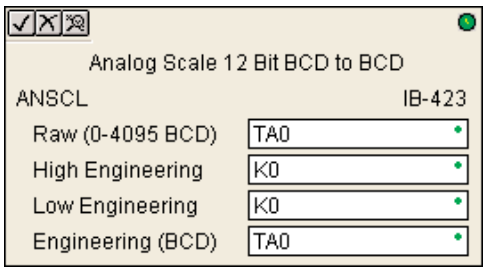
In the following example, the ANLGOUT instruction is used to setup the pointer method for an analog output module that is installed in option slot 3. Two output channels are enabled and the analog data will be read from V2100 - V2101 in BCD format.



Analog Scale 12 Bit BCD to BCD (ANSCL) (IB-423)

DS5	Used
HPP	N/A

Analog Scale 12 Bit BCD to BCD scales a 12 bit BCD analog value (0-4095 BCD) into BCD engineering units. You specify the engineering unit high value (when raw is 4095), and the engineering low value (when raw is 0), and the output V memory address you want the to place the scaled engineering unit value. The engineering units are generated as BCD and can be the full range of 0 to 9999 (see ANSCLB - Analog Scale 12 Bit Binary to Binary if your raw units are in Binary format).



Note that this IBox only works with unipolar unsigned raw values. It does NOT work with bipolar or sign plus magnitude raw values.

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ANSCL Parameters

- Raw (0-4095 BCD): specifies the V-memory location of the unipolar unsigned raw 0-4095 unscaled value
- High Engineering: specifies the high engineering value when the raw input is 4095
- Low Engineering: specifies the low engineering value when the raw input is 0
- Engineering (BCD): specifies the V-memory location where the scaled engineering BCD value will be placed

Parameter	DL06 Range
Raw (0-4095 BCD) . . . . . V,P	See DL06 V-memory map - Data Words
High Engineering . . . . . K	K0-9999
Low Engineering . . . . . K	K0-9999
Engineering (BCD) . . . . . V,P	See DL06 V-memory map - Data Words

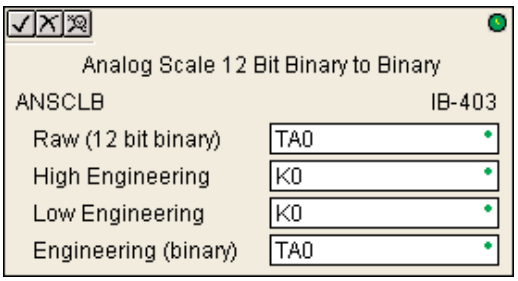
ANSCL Example

In the following example, the ANSCL instruction is used to scale a raw value (0-4095 BCD) that is in V2000. The engineering scaling range is set 0-100 (low engineering value - high engineering value). The scaled value will be placed in V2100 in BCD format.

Analog Scale 12 Bit Binary to Binary (ANSCLB) (IB-403)

DS5	Used
HPP	N/A

Analog Scale 12 Bit Binary to Binary scales a 12 bit binary analog value (0-4095 decimal) into binary (decimal) engineering units. You specify the engineering unit high value (when raw is 4095), and the engineering low value (when raw is 0), and the output V memory address you want to place the scaled engineering unit value. The engineering units are generated as binary and can be the full range of 0 to 65535 (see ANSCL - Analog Scale 12 Bit BCD to BCD if your raw units are in BCD format).



Note that this IBox only works with unipolar unsigned raw values. It does NOT work with bipolar, sign plus magnitude, or signed 2's complement raw values.

ANSCLB Parameters

- Raw (12 bit binary): specifies the V-memory location of the unipolar unsigned raw decimal unscaled value (12 bit binary = 0-4095 decimal)
- High Engineering: specifies the high engineering value when the raw input is 4095 decimal
- Low Engineering: specifies the low engineering value when the raw input is 0 decimal
- Engineering (binary): specifies the V-memory location where the scaled engineering decimal value will be placed

Parameter	DL06 Range
Raw (12 bit binary) . . . . . V,P	See DL06 V-memory map - Data Words
High Engineering . . . . . K	K0-65535
Low Engineering . . . . . K	K0-65535
Engineering (binary) . . . . . V,P	See DL06 V-memory map - Data Words

ANSCLB Example

In the following example, the ANSCLB instruction is used to scale a raw value (0-4095 binary) that is in V2000. The engineering scaling range is set 0-1000 (low engineering value - high engineering value). The scaled value will be placed in V2100 in binary format.

Filter Over Time - BCD (FILTER) (IB-422)

DS5	Used
HPP	N/A

Filter Over Time BCD will perform a first-order filter on the Raw Data on a defined time interval. The equation is:

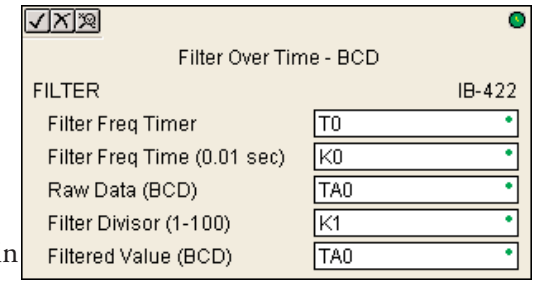
New = Old + [(Raw - Old) / FDC]
where,

New: New Filtered Value

Old: Old Filtered Value

FDC: Filter Divisor Constant

Raw: Raw Data



The Filter Divisor Constant is an integer in the range K1 to K100, such that if it equaled K1 then no filtering would be done.

The rate at which the calculation is performed is specified by time in hundredths of a second (0.01 seconds) as the Filter Freq Time parameter. Note that this Timer instruction is embedded in the IBox and must NOT be used anywhere else in your program. Power flow controls whether the calculation is enabled. If it is disabled, the Filter Value is not updated. On the first scan from Program to Run mode, the Filter Value is initialized to 0 to give the calculation a consistent starting point.

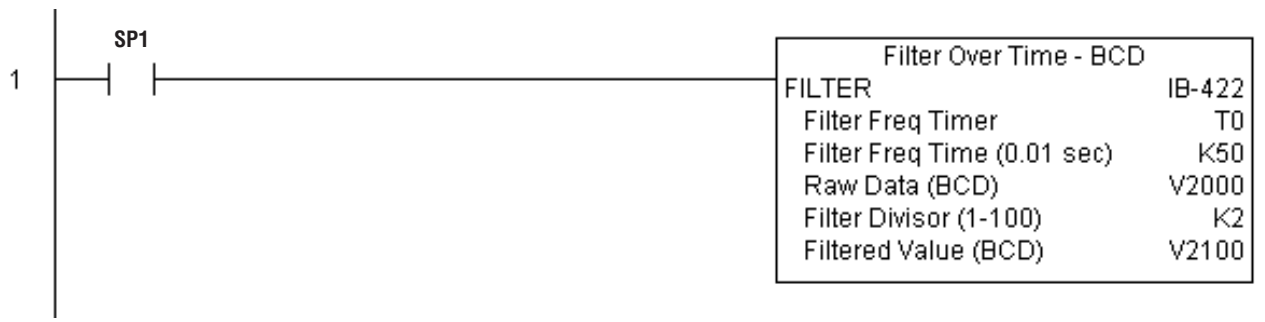
FILTER Parameters

- Filter Frequency Timer: specifies the Timer (T) number which is used by the Filter instruction
- Filter Frequency Time (0.01sec): specifies the rate at which the calculation is performed
- Raw Data (BCD): specifies the V-memory location of the raw unfiltered BCD value
- Filter Divisor (1-100): this constant used to control the filtering effect. A larger value will increase the smoothing effect of the filter. A value of 1 results with no filtering.
- Filtered Value (BCD): specifies the V-memory location where the filtered BCD value will be placed

Parameter	DL06 Range
Filter Frequency Timer . . . . . T	T0-377
Filter Frequency Time (0.01 sec) . . . . . K	K0-9999
Raw Data (BCD) V	See DL06 V-memory map - Data Words
Filter Divisor (1-100) . . . . . K	K1-100
Filtered Value (BCD) V	See DL06 V-memory map - Data Words

FILTER Example

In the following example, the Filter instruction is used to filter a BCD value that is in V2000. Timer(T0) is set to 0.5 sec, the rate at which the filter calculation will be performed. The filter constant is set to 2. A larger value will increase the smoothing effect of the filter. A value of 1 results with no filtering. The filtered value will be placed in V2100.



Filter Over Time - Binary (FILTERB) (IB-402)

DS5	Used
HPP	N/A

Filter Over Time in Binary (decimal) will perform a first-order filter on the Raw Data on a defined time interval. The equation is

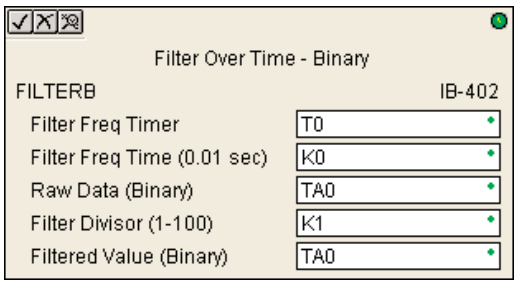
New = Old + [(Raw - Old) / FDC] where

New: New Filtered Value

Old: Old Filtered Value

FDC: Filter Divisor Constant

Raw: Raw Data



The Filter Divisor Constant is an integer in the range K1 to K100, such that if it equaled K1 then no filtering would be done.

The rate at which the calculation is performed is specified by time in hundredths of a second (0.01 seconds) as the Filter Freq Time parameter. Note that this Timer instruction is embedded in the IBox and must NOT be used anywhere else in your program. Power flow controls whether the calculation is enabled. If it is disabled, the Filter Value is not updated. On the first scan from Program to Run mode, the Filter Value is initialized to 0 to give the calculation a consistent starting point.

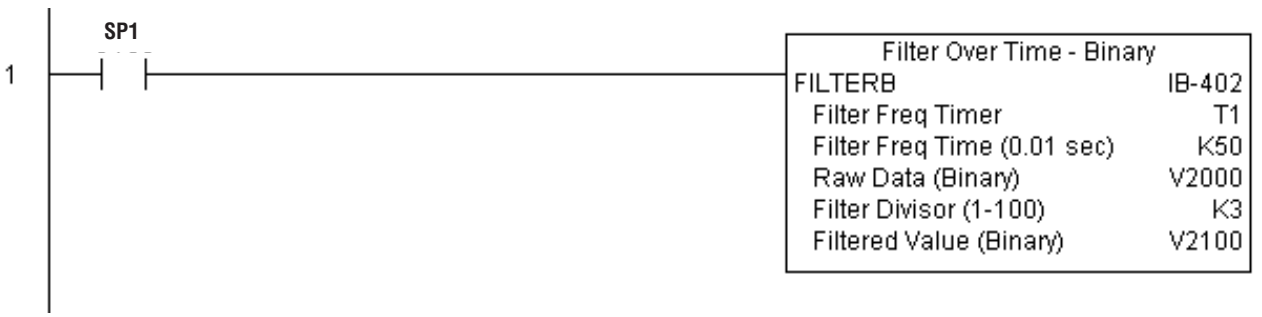
FILTERB Parameters

- Filter Frequency Timer: specifies the Timer (T) number which is used by the Filter instruction
- Filter Frequency Time (0.01sec): specifies the rate at which the calculation is performed
- Raw Data (Binary): specifies the V-memory location of the raw unfiltered binary (decimal) value
- Filter Divisor (1-100): this constant used to control the filtering effect. A larger value will increase the smoothing effect of the filter. A value of 1 results with no filtering.
- Filtered Value (Binary): specifies the V-memory location where the filtered binary (decimal) value will be placed

Parameter	DL06 Range
Filter Frequency Timer . . . . . T	T0-377
Filter Frequency Time (0.01 sec) . . . . . K	K0-9999
Raw Data (Binary) V	See DL06 V-memory map - Data Words
Filter Divisor (1-100) . . . . . K	K1-100
Filtered Value (Binary) V	See DL06 V-memory map - Data Words

FILTERB Example

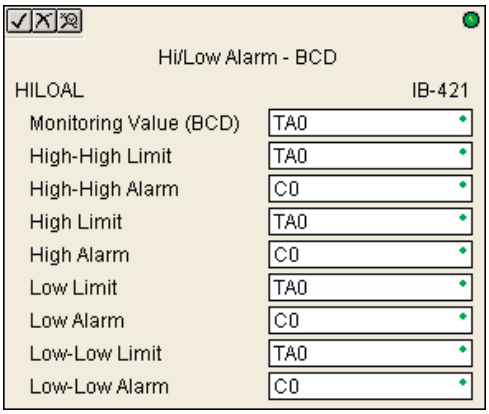
In the following example, the FILTERB instruction is used to filter a binary value that is in V2000. Timer(T1) is set to 0.5 sec, the rate at which the filter calculation will be performed. The filter constant is set to 3. A larger value will increase the smoothing effect of the filter. A value of 1 results with no filtering. The filtered value will be placed in V2100



Hi/Low Alarm - BCD (HILOAL) (IB-421)

DS5	Used
HPP	N/A

Hi/Low Alarm - BCD monitors a BCD value V memory location and sets four possible alarm states, High-High, High, Low, and Low-Low whenever the IBox has power flow. You enter the alarm thresholds as constant K BCD values (K0-K9999) and/or BCD value V memory locations.



You must ensure that threshold limits are valid, that is HH >= H > L >= LL. Note that when the High-High or Low-Low alarm condition is true, that the High and Low alarms will also be set, respectively. This means you may use the same threshold limit and same alarm bit for the High-High and the High alarms in case you only need one "High" alarm. Also note that the boundary conditions are inclusive. That is, if the Low boundary is K50, and the Low-Low boundary is K10, and if the Monitoring Value equals 10, then the Low Alarm AND the Low-Low alarm will both be ON. If there is no power flow to the IBox, then all alarm bits will be turned off regardless of the value of the Monitoring Value parameter.

S

HILOAL Parameters

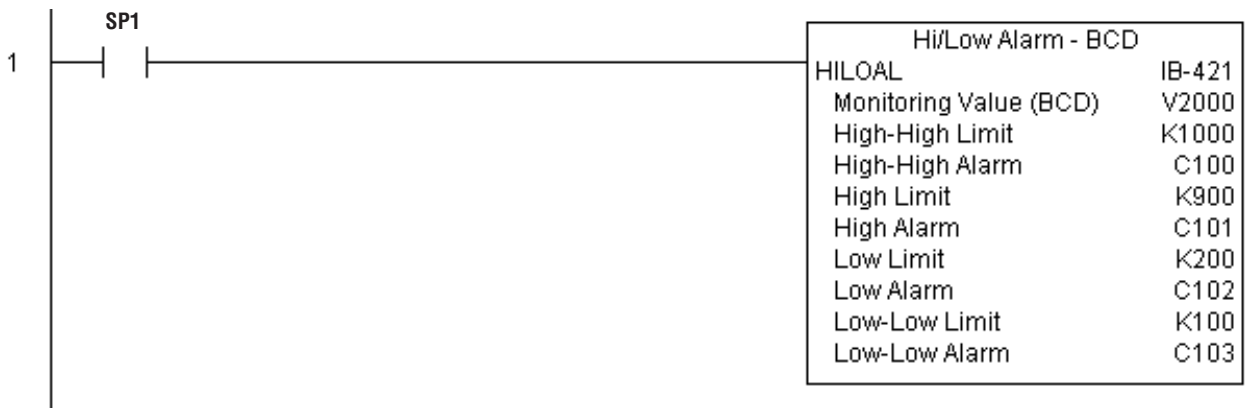
- Monitoring Value (BCD): specifies the V-memory location of the BCD value to be monitored
- High-High Limit: V-memory location or constant specifies the high-high alarm limit
- High-High Alarm: On when the high-high limit is reached
- High Limit: V-memory location or constant specifies the high alarm limit
- High Alarm: On when the high limit is reached
- Low Limit: V-memory location or constant specifies the low alarm limit
- Low Alarm: On when the low limit is reached
- Low-Low Limit: V-memory location or constant specifies the low-low alarm limit
- Low-Low Alarm: On when the low-low limit is reached

Parameter	DL06 Range
Monitoring Value (BCD) V	See DL06 V-memory map - Data Words
High-High Limit . . . . . V, K	K0-9999; or see DL06 V-memory map - Data Words
High-High Alarm . . . . . X, Y, C, GX,GY, B	See DL06 V-memory map
High Limit . . . . . V, K	K0-9999; or see DL06 V-memory map - Data Words
High Alarm. . . . . X, Y, C, GX,GY, B	See DL06 V-memory map
Low Limit . . . . . V, K	K0-9999; or see DL06 V-memory map - Data Words
Low Alarm . . . . . X, Y, C, GX,GY,B	See DL06 V-memory map
Low-Low Limit . . . . . V, K	K0-9999; or see DL06 V-memory map - Data Words
Low-Low Alarm . . . . . X, Y, C, GX,GY, B	See DL06 V-memory map

HILOAL Example

In the following example, the HILOAL instruction is used to monitor a BCD value that is in V2000. If the value in V2000 meets/exceeds the high limit of K900, C101 will turn on. If the value continues to increase to meet/exceed the high-high limit, C100 will turn on. Both bits would be on in this case. The high and high-high limits and alarms can be set to the same value if one "high" limit or alarm is desired to be used.

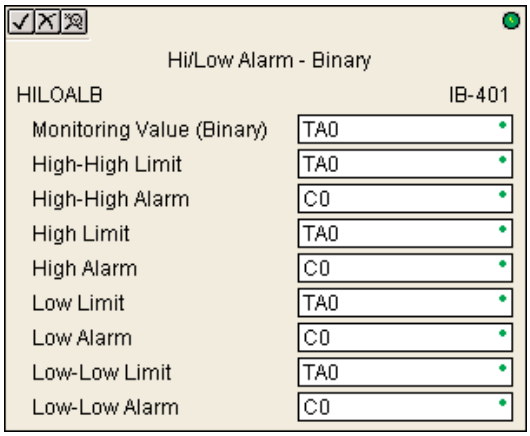
If the value in V2000 meets or falls below the low limit of K200, C102 will turn on. If the value continues to decrease to meet or fall below the low-low limit of K100, C103 will turn on. Both bits would be on in this case. The low and low-low limits and alarms can be set to the same value if one "low" limit or alarm is desired to be used.



Hi/Low Alarm - Binary (HILOALB) (IB-401)

DS5	Used
HPP	N/A

Hi/Low Alarm - Binary monitors a binary (decimal) V memory location and sets four possible alarm states, High-High, High, Low, and Low-Low whenever the IBox has power flow. You enter the alarm thresholds as constant K decimal values (K0-K65535) and/or binary (decimal) V memory locations.



You must ensure that threshold limits are valid, that is HH >= H > L >= LL. Note that when the High-High or Low-Low alarm condition is true, that the High and Low alarms will also be set, respectively. This means you may use the same threshold limit and same alarm bit for the High-High and the High alarms in case you only need one "High" alarm. Also note that the boundary conditions are inclusive. That is, if the Low boundary is K50, and the Low-Low boundary is K10, and if the Monitoring Value equals 10, then the Low Alarm AND the Low-Low alarm will both be ON. If there is no power flow to the IBox, then all alarm bits will be turned off regardless of the value of the Monitoring Value parameter.

S

HILOALB Parameters

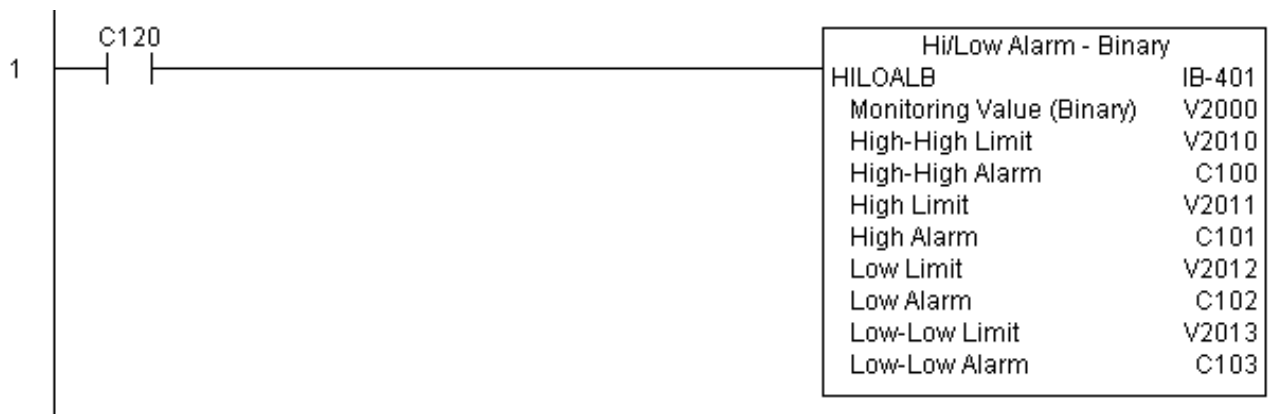
- Monitoring Value (Binary): specifies the V-memory location of the Binary value to be monitored
- High-High Limit: V-memory location or constant specifies the high-high alarm limit
- High-High Alarm: On when the high-high limit is reached
- High Limit: V-memory location or constant specifies the high alarm limit
- High Alarm: On when the high limit is reached
- Low Limit: V-memory location or constant specifies the low alarm limit
- Low Alarm: On when the low limit is reached
- Low-Low Limit: V-memory location or constant specifies the low-low alarm limit
- Low-Low Alarm: On when the low-low limit is reached

Parameter	DL06 Range
Monitoring Value (Binary) V	See DL06 V-memory map - Data Words
High-High Limit . . . . . V, K	K0-65535; or see DL06 V-memory map - Data Words
High-High Alarm . . . . . X, Y, C, GX,GY, B	See DL06 V-memory map
High Limit . . . . . V, K	K0-65535; or see DL06 V-memory map - Data Words
High Alarm. . . . . X, Y, C, GX,GY, B	See DL06 V-memory map
Low Limit . . . . . V, K	K0-65535; or see DL06 V-memory map - Data Words
Low Alarm . . . . . X, Y, C, GX,GY,B	See DL06 V-memory map
Low-Low Limit . . . . . V, K	K0-65535; or see DL06 V-memory map - Data Words
Low-Low Alarm . . . . . X, Y, C, GX,GY, B	See DL06 V-memory map

HILOALB Example

In the following example, the HILOALB instruction is used to monitor a binary value that is in V2000. If the value in V2000 meets/exceeds the high limit of the binary value in V2011, C101 will turn on. If the value continues to increase to meet/exceed the high-high limit value in V2010, C100 will turn on. Both bits would be on in this case. The high and high-high limits and alarms can be set to the same V-memory location/value if one "high" limit or alarm is desired to be used.

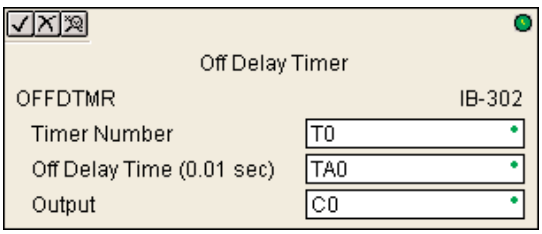
If the value in V2000 meets or falls below the low limit of the binary value in V2012, C102 will turn on. If the value continues to decrease to meet or fall below the low-low limit in V2013, C103 will turn on. Both bits would be on in this case. The low and low-low limits and alarms can be set to the same V-memory location/value if one "low" limit or alarm is desired to be used.



Off Delay Timer (OFFDTMR) (IB-302)

DS5	Used
HPP	N/A

Off Delay Timer will delay the "turning off" of the Output parameter by the specified Off Delay Time (in hundredths of a second) based on the power flow into the IBox. Once the IBox receives power, the Output bit will turn on immediately. When the power flow to the IBox turns off, the Output bit WILL REMAIN ON for the specified amount of time (in hundredths of a second). Once the Off Delay Time has expired, the output will turn Off. If the power flow to the IBox comes back on BEFORE the Off Delay Time, then the timer is RESET and the Output will remain On - so you must continuously have NO power flow to the IBox for AT LEAST the specified Off Delay Time before the Output will turn Off.



This IBox utilizes a Timer resource (TMRF), which cannot be used anywhere else in your program.

OFFDTMR Parameters

- Timer Number: specifies the Timer(TMRF) number which is used by the OFFDTMR instruction
- Off Delay Time (0.01sec): specifies how long the Output will remain on once power flow to the Ibox is removed
- Output: specifies the output that will be delayed “turning off” by the Off Delay Time.

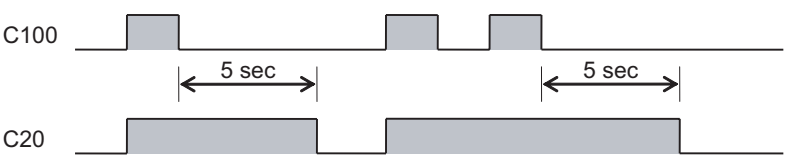
Parameter	DL06 Range
Timer Number . . . . . T	T0-377
Off Delay Time . . . . . K,V	K0-9999; See DL06 V-memory map - Data Words
Output . . . . . X, Y, C, GX,GY, B	See DL06 V-memory map

OFFDTMR Example

In the following example, the OFFDTMR instruction is used to delay the "turning off"of output C20. Timer 2 (T2) is set to 5 seconds, the "off-delay" period.

When C100 turns on, C20 turns on and will remain on while C100 is on. When C100 turns off, C20 will remain for the specified Off Delay Time (5s), and then turn off.

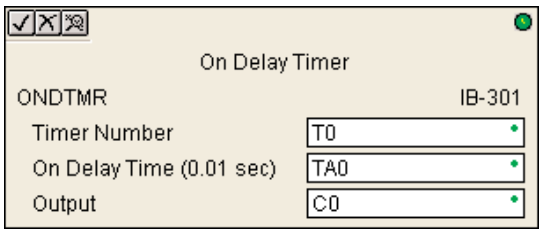
Example timing diagram



On Delay Timer (ONDTMR) (IB-301)

DS5	Used
HPP	N/A

On Delay Timer will delay the "turning on" of the Output parameter by the specified amount of time (in hundredths of a second) based on the power flow into the IBox. Once the IBox loses power, the Output is turned off immediately. If the power flow turns off BEFORE the On Delay Time, then the timer is RESET and the Output is never turned on, so you must have continuous power flow to the IBox for at least the specified On Delay Time before the Output turns On.



This IBox utilizes a Timer resource (TMRF), which cannot be used anywhere else in your program.

S

ONDTMR Parameters

- Timer Number: specifies the Timer(TMRF) number which is used by the ONDTMR instruction
- On Delay Time (0.01sec): specifies how long the Output will remain on once power flow to the Ibox is removed
- Output: specifies the output that will be delayed “turning on” by the On Delay Time.

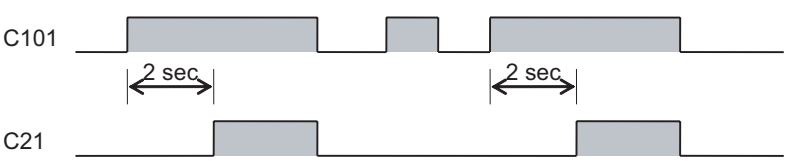
Parameter	DL06 Range
Timer Number . . . . . T	T0-377
On Delay Time . . . . . K,V	K0-9999; See DL06 V-memory map - Data Words
Output . . . . . X, Y, C, GX,GY, B	See DL06 V-memory map

ONDTMR Example

In the following example, the ONDTMR instruction is used to delay the "turning on" of output C21. Timer 1 (T1) is set to 2 seconds, the "on-delay" period.

When C101 turns on, C21 is delayed turning on by 2 seconds. When C101 turns off, C21 turns off immediately.

Example timing diagram



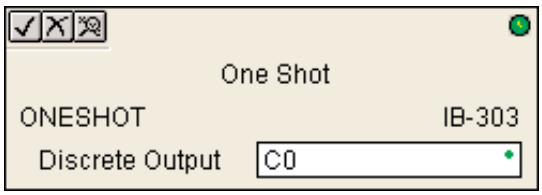
One Shot (ONESHOT) (IB-303)

DS5	Used
HPP	N/A

One Shot will turn on the given bit output parameter for one scan on an OFF to ON transition of the power flow into the IBox. This IBox is simply a different name for the PD Coil (Positive Differential).

ONESHOT Parameters

- Discrete Output: specifies the output that will be on for one scan



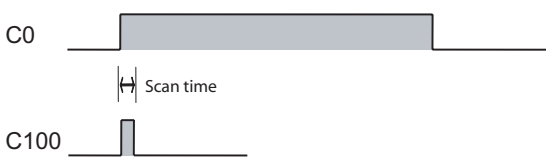
S

Parameter	DL06 Range
Discrete Output . . . . . X, Y, C	See DL06 V-memory map

ONESHOT Example

In the following example, the ONESHOT instruction is used to turn C100 on for one PLC scan after C0 goes from an off to on transition. The input logic must produce an off to on transition to execute the One Shot instruction.

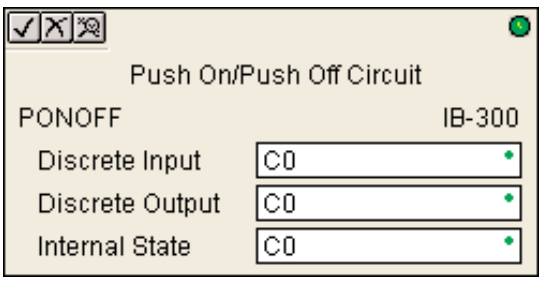
Example timing diagram



Push On / Push Off Circuit (PONOFF) (IB-300)

DS5	Used
HPP	N/A

Push On/Push Off Circuit toggles an output state whenever its input power flow transitions from off to on. Requires an extra bit parameter for scan-to-scan state information. This extra bit must NOT be used anywhere else in the program. This is also known as a "flip-flop circuit".



PONOFF Parameters

- Discrete Input: specifies the input that will toggle the specified output
- Discrete Output: specifies the output that will be "turned on/off" or toggled
- Internal State: specifies a work bit that is used by the instruction

Parameter	DL06 Range
Discrete Input . . . . X,Y,C,S,T,CT,GX,GY,SP,B,PB	See DL06 V-memory map
Discrete Output . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Internal State . . . . . X, Y, C	See DL06 V-memory map

PONOFF Example

In the following example, the PONOFF instruction is used to control the on and off states of the output C20 with a single input C10. When C10 is pressed once, C20 turns on. When C10 is pressed again, C20 turns off. C100 is an internal bit used by the instruction.

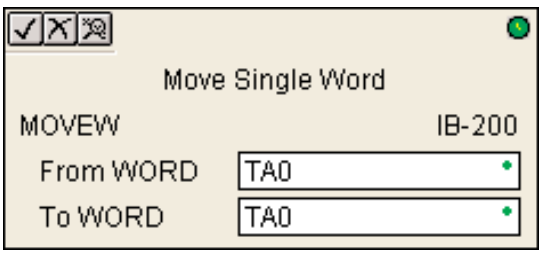
Move Single Word (MOVEW) (IB-200)

DS5	Used
HPP	N/A

Move Single Word moves (copies) a word to a memory location directly or indirectly via a pointer, either as a HEX constant, from a memory location, or indirectly through a pointer

MOVEW Parameters

- From WORD: specifies the word that will be moved to another location
- To WORD: specifies the location where the "From WORD" will be move to



S

Parameter	DL06 Range
From WORD . . . . . V,P,K	K0-FFFF; See DL06 V-memory map - Data Words
To WORD. . . . . V,P	See DL06 V-memory map - Data Words

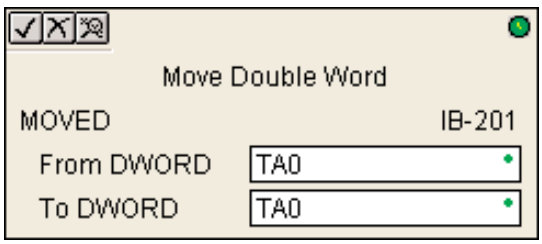
MOVEW Example

In the following example, the MOVEW instruction is used to move 16-bits of data from V2000 to V3000 when C100 turns on.

Move Double Word (MOVED) (IB-201)

DS5	Used
HPP	N/A

Move Double Word moves (copies) a double word to two consecutive memory locations directly or indirectly via a pointer, either as a double HEX constant, from a double memory location, or indirectly through a pointer to a double memory location.



MOVED Parameters

- From DWORD: specifies the double word that will be moved to another location
- To DWORD: specifies the location where the "From DWORD" will be move to

Parameter	DL06 Range
From DWORD . . . . . V,P,K	K0-FFFFFFFF; See DL06 V-memory map - Data Words
To DWORD . . . . . V,P	See DL06 V-memory map - Data Words

MOVED Example

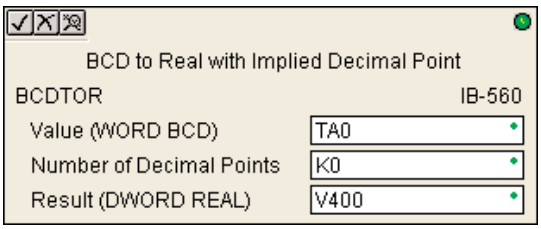
In the following example, the MOVED instruction is used to move 32-bits of data from V2000 and V2001 to V3000 and V3001 when C100 turns on.

BCD to Real with Implied Decimal Point (BCDTOR) (IB-560)

DS5	Used
HPP	N/A

BCD to Real with Implied Decimal Point converts the given 4 digit WORD BCD value to a Real number, with the implied number of decimal points (K0-K4).

For example, BCDTOR K1234 with an implied number of decimal points equal to K1, would yield R123.4



BCDTOR Parameters

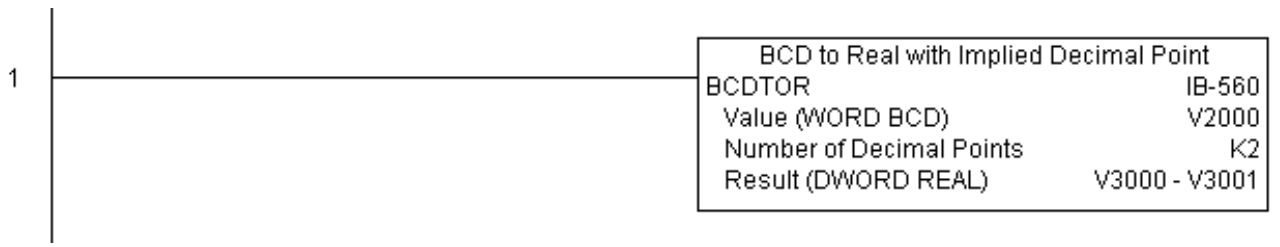
- Value (WORD BCD): specifies the word or constant that will be converted to a Real number
- Number of Decimal Points: specifies the number of implied decimal points in the Result DWORD
- Result (DWORD REAL): specifies the location where the Real number will be placed

Parameter	DL06 Range
Value (WORD BCD) . . . . . V,P,K	K0-9999; See DL06 V-memory map - Data Words
Number of Decimal Points . . . . . K	K0-4
Result (DWORD REAL) V	See DL06 V-memory map - Data Words

BCDTOR Example

In the following example, the BCDTOR instruction is used to convert the 16-bit data in V2000 from a 4-digit BCD data format to a 32-bit REAL (floating point) data format and stored into V3000 and V3001.

K2 in the Number of Decimal Points implies the data will have two digits to the right of the decimal point.

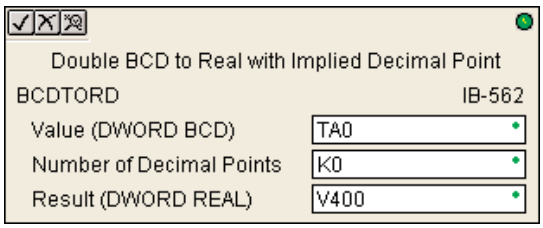


Double BCD to Real with Implied Decimal Point (BCDTORD) (IB-562)

DS5	Used
HPP	N/A

Double BCD to Real with Implied Decimal Point converts the given 8 digit DWORD BCD value to a Real number, given an implied number of decimal points (K0-K8).

For example, BCDTORD K12345678 with an implied number of decimal points equal to K5, would yield R123.45678



BCDTORD Parameters

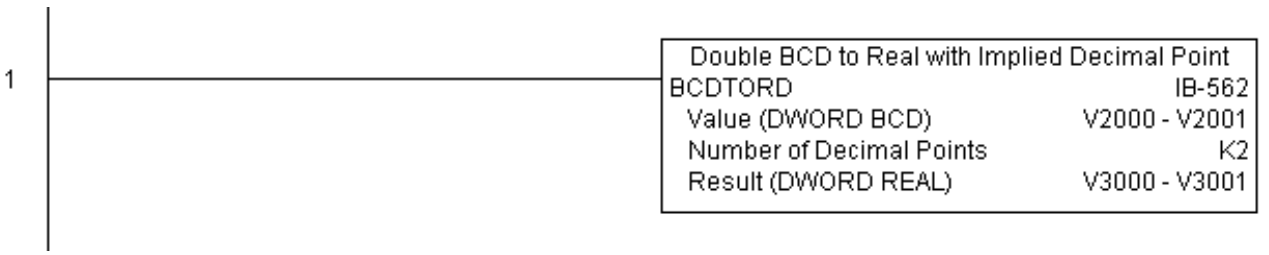
- Value (DWORD BCD): specifies the Dword or constant that will be converted to a Real number
- Number of Decimal Points: specifies the number of implied decimal points in the Result DWORD
- Result (DWORD REAL): specifies the location where the Real number will be placed

Parameter	DL06 Range
Value (DWORD BCD) . . . . . V,P,K	K0-99999999; See DL06 V-memory map - Data Words
Number of Decimal Points . . . . . K	K0-8
Result (DWORD REAL) V	See DL06 V-memory map - Data Words

BCDTORD Example

In the following example, the BCDTORD instruction is used to convert the 32-bit data in V2000 from an 8-digit BCD data format to a 32-bit REAL (floating point) data format and stored into V3000 and V3001.

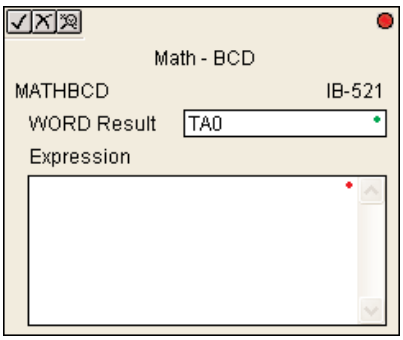
K2 in the Number of Decimal Points implies the data will have two digits to the right of the decimal point.



Math - BCD (MATHBCD) (IB-521)

DS5	Used
HPP	N/A

Math - BCD Format lets you enter complex mathematical expressions like you would in Visual Basic, Excel, or C++ to do complex calculations, nesting parentheses up to 4 levels deep. In addition to + - * /, you can do Modulo (% aka Remainder), Bit-wise And (&) Or (|) Xor (^), and some BCD functions - Convert to BCD (BCD), Convert to Binary (BIN), BCD Complement (BCDCPL), Convert from Gray Code (GRAY), Invert Bits (INV), and BCD/HEX to Seven Segment Display (SEG).



Example: ((V2000 + V2001) / (V2003 - K100)) * GRAY(V3000 & K001F)

Every V-memory reference MUST be to a single word BCD formatted value. Intermediate results can go up to 32 bit values, but as long as the final result fits in a 16 bit BCD word, the calculation is valid. Typical example of this is scaling using multiply then divide, (V2000 * K1000) / K4095. The multiply term most likely will exceed 9999 but fits within 32 bits. The divide operation will divide 4095 into the 32-bit accumulator, yielding a result that will always fit in 16 bits.

You can reference binary V-memory values by using the BCD conversion function on a V memory location but NOT an expression. That is BCD(V2000) is okay and will convert V2000 from Binary to BCD, but BCD(V2000 + V3000) will add V2000 as BCD, to V3000 as BCD, then interpret the result as Binary and convert it to BCD - NOT GOOD.

Also, the final result is a 16 bit BCD number and so you could do BIN around the entire operation to store the result as Binary.

MATHBCD Parameters

- WORD Result: specifies the location where the BCD result of the mathematical expression will be placed (result must fit into 16 bit single V-memory location)
- Expression: specifies the mathematical expression to be executed and the result is stored in specified WORD Result. Each V-memory location used in the expression must be in BCD format.

Parameter	DL06 Range
WORD Result V	See DL06 V-memory map - Data Words
Expression	Text

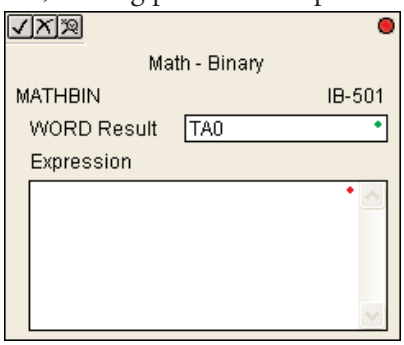
MATHBCD Example

In the following example, the MATHBCD instruction is used to calculate the math expression which multiplies the BCD value in V1200 by 1000 then divides by 4095 and loads the resulting value in V2000.

Math - Binary (MATHBIN) (IB-501)

DS5	Used
HPP	N/A

Math - Binary Format lets you enter complex mathematical expressions like you would in Visual Basic, Excel, or C++ to do complex calculations, nesting parentheses up to 4 levels deep. In addition to + - * /, you can do Modulo (% aka Remainder), Shift Right (>>) and Shift Left (<<), Bit-wise And (&) Or (|) Xor (^), and some binary functions - Convert to BCD (BCD), Convert to Binary (BIN), Decode Bits (DECO), Encode Bits (ENCO), Invert Bits (INV), HEX to Seven Segment Display (SEG), and Sum Bits (SUM).



Example: ((V2000 + V2001) / (V2003 - K10)) * SUM(V3000 & K001F)

Every V-memory reference MUST be to a single word binary formatted value. Intermediate results can go up to 32 bit values, but as long as the final result fits in a 16 bit binary word, the calculation is valid. Typical example of this is scaling using multiply then divide, (V2000 * K1000) / K4095. The multiply term most likely will exceed 65535 but fits within 32 bits. The divide operation will divide 4095 into the 32-bit accumulator, yielding a result that will always fit in 16 bits.

You can reference BCD V memory values by using the BIN conversion function on a V-memory location but NOT an expression. That is, BIN(V2000) is okay and will convert V2000 from BCD to Binary, but BIN(V2000 + V3000) will add V2000 as Binary, to V3000 as Binary, then interpret the result as BCD and convert it to Binary - NOT GOOD.

Also, the final result is a 16 bit binary number and so you could do BCD around the entire operation to store the result as BCD.

MATHBIN Parameters

- WORD Result: specifies the location where the binary result of the mathematical expression will be placed (result must fit into 16 bit single V-memory location)
- Expression: specifies the mathematical expression to be executed and the result is stored in specified WORD Result. Each V-memory location used in the expression must be in binary format.

Parameter	DL06 Range
WORD Result V	See DL06 V-memory map - Data Words
Expression	Text

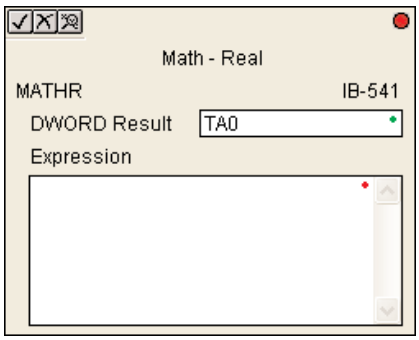
MATHBIN Example

In the following example, the MATHBIN instruction is used to calculate the math expression which multiplies the Binary value in V1200 by 1000 then divides by 4095 and loads the resulting value in V2000.

Math - Real (MATHR) (IB-541)

DS5	Used
HPP	N/A

Math - Real Format lets you enter complex mathematical expressions like you would in Visual Basic, Excel, or C++ to do complex calculations, nesting parentheses up to 4 levels deep. In addition to + - * /, you can do Bit-wise And (&) Or (|) Xor (^), and many Real functions - Arc Cosine (ACOSR), Arc Sine (ASINR), Arc Tangent (ATANR), Cosine (COSR), Convert Radians to Degrees (DEGR), Invert Bits (INV), Convert Degrees to Radians (RADR), HEX to Seven Segment Display (SEG), Sine (SINR), Square Root (SQRTR), Tangent (TANR).



Example: ((V2000 + V2002) / (V2004 - R2.5)) * SINR(RADR(V3000 / R10.0))

Every V-memory reference MUST be able to fit into a double word Real formatted value.

MATHR Parameters

- DWORD Result: specifies the location where the Real result of the mathematical expression will be placed (result must fit into a double word Real formatted location)
- Expression: specifies the mathematical expression to be executed and the result is stored in specified DWORD Result location. Each V-memory location used in the expression must be in Real format.

Parameter	DL06 Range
DWORD Result V	See DL06 V-memory map - Data Words
Expression	Text

MATHR Example

In the following example, the MATHR instruction is used to calculate the math expression which multiplies the REAL (floating point) value in V1200 by 10.5 then divides by 2.7 and loads the resulting 32-bit value in V2000 and V2001.

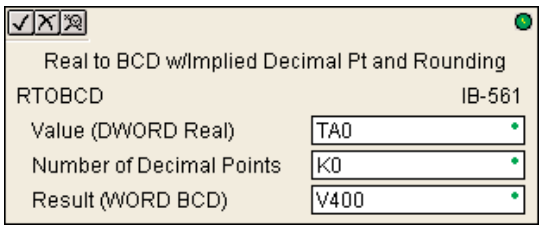
Real to BCD with Implied Decimal Point and Rounding (RTOBCD) (IB-561)

DS5	Used
HPP	N/A

Real to BCD with Implied Decimal Point and Rounding converts the absolute value of the given Real number to a 4 digit BCD number, compensating for an implied number of decimal points (K0-K4) and performs rounding.

For example, RTOBCD R56.74 with an implied number of decimal points equal to K1, would yield 567 BCD. If the implied number of decimal points was 0, then the function would yield 57 BCD (note that it rounded up).

If the Real number is negative, the Result will equal its positive, absolute value.



S

RTOBCD Parameters

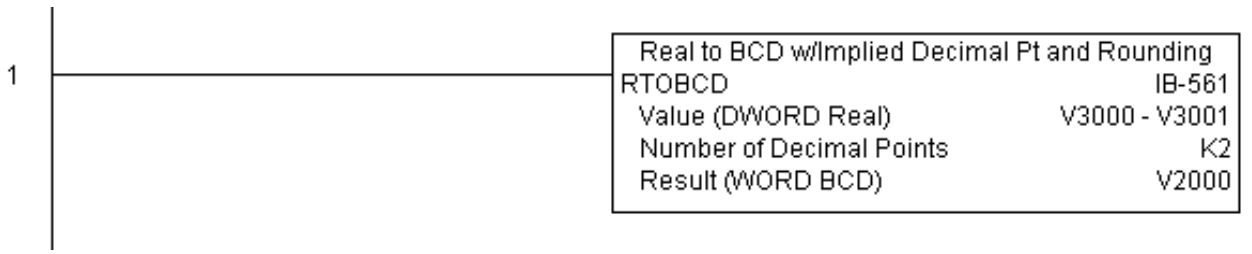
- Value (DWORD Real): specifies the Real Dword location or number that will be converted and rounded to a BCD number with decimal points
- Number of Decimal Points: specifies the number of implied decimal points in the Result WORD
- Result (WORD BCD): specifies the location where the rounded/implied decimal points BCD value will be placed

Parameter	DL06 Range
Value (DWORD Real) . . . . . V,P,R	R ; See DL06 V-memory map - Data Words
Number of Decimal Points . . . . . K	K0-4
Result (WORD BCD) V	See DL06 V-memory map - Data Words

RTOBCD Example

In the following example, the RTOBCD instruction is used to convert the 32-bit REAL (floating point) data format in V3000 and V3001 to the 4-digit BCD data format and stored in V2000.

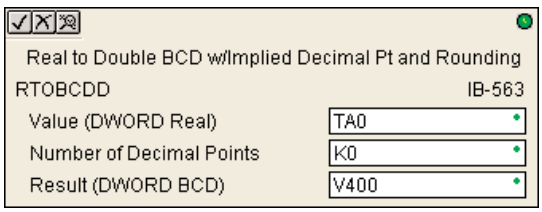
K2 in the Number of Decimal Points implies the data will have two implied decimal points.



Real to Double BCD with Implied Decimal Point and Rounding (RTOBCDD) (IB-563)

DS5	Used
HPP	N/A

Real to Double BCD with Implied Decimal Point and Rounding converts the absolute value of the given Real number to an 8 digit DWORD BCD number, compensating for an implied number of decimal points (K0-K8) and performs rounding.



For example, RTOBCDD R38156.74 with an implied number of decimal points equal to K1, would yield 381567 BCD. If the implied number of decimal points was 0, then the function would yield 38157 BCD (note that it rounded up).

If the Real number is negative, the Result will equal its positive, absolute value.

RTOBCDD Parameters

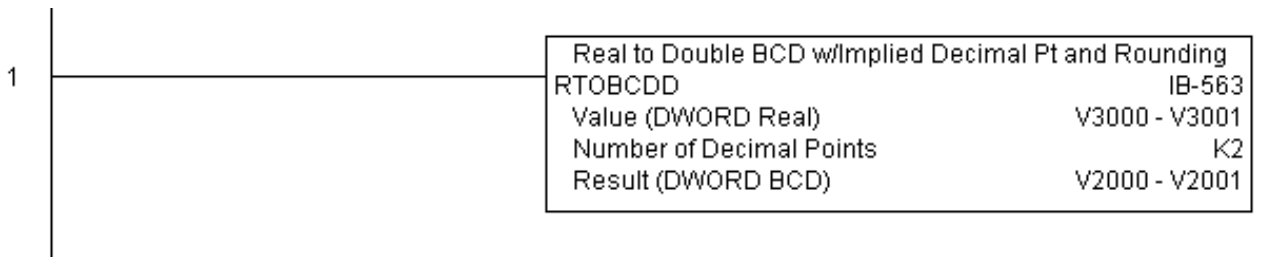
- Value (DWORD Real): specifies the Dword Real number that will be converted and rounded to a BCD number with decimal points
- Number of Decimal Points: specifies the number of implied decimal points in the Result DWORD
- Result (DWORD BCD): specifies the location where the rounded/implied decimal points DWORD BCD value will be placed

Parameter	DL06 Range
Value (DWORD Real) . . . . . V,P,R	R ; See DL06 V-memory map - Data Words
Number of Decimal Points . . . . . K	K0-8
Result (DWORD BCD) V	See DL06 V-memory map - Data Words

RTOBCDD Example

In the following example, the RTOBCDD instruction is used to convert the 32-bit REAL (floating point) data format in V3000 and V3001 to the 8-digit BCD data format and stored in V2000 and V2001.

K2 in the Number of Decimal Points implies the data will have two implied decimal points.



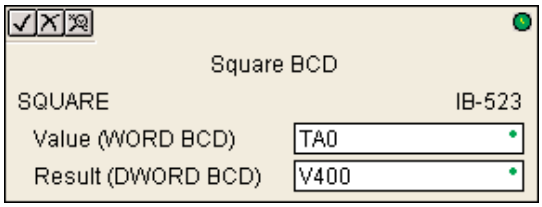
Square BCD (SQUARE) (IB-523)

DS5	Used
HPP	N/A

Square BCD squares the given 4-digit WORD BCD number and writes it in as an 8-digit DWORD BCD result.

SQUARE Parameters

- Value (WORD BCD): specifies the BCD Word or constant that will be squared
- Result (DWORD BCD): specifies the location where the squared DWORD BCD value will be placed

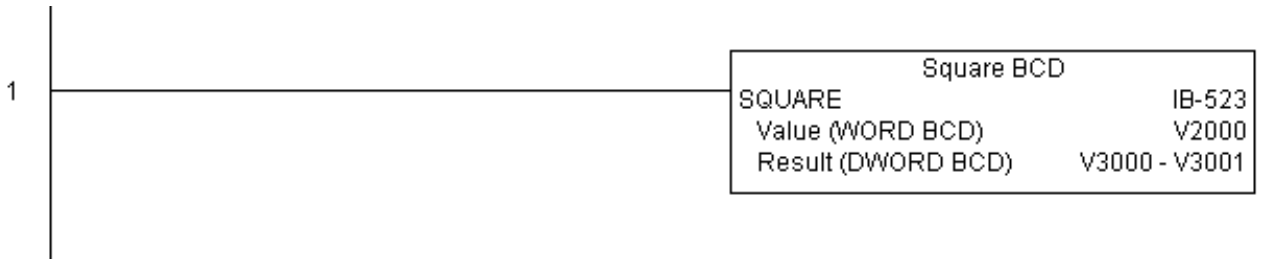


S

Parameter	DL06 Range
Value (WORD BCD) . . . . . V,P,K	K0-9999 ; See DL06 V-memory map - Data Words
Result (DWORD BCD) V	See DL06 V-memory map - Data Words

SQUARE Example

In the following example, the SQUARE instruction is used to square the 4-digit BCD value in V2000 and store the 8-digit double word BCD result in V3000 and V3001



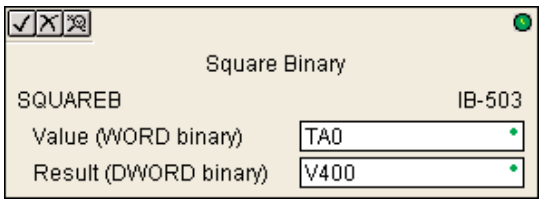
Square Binary (SQUAREB) (IB-503)

DS5	Used
HPP	N/A

Square Binary squares the given 16-bit WORD Binary number and writes it as a 32-bit DWORD Binary result.

SQUAREB Parameters

- Value (WORD Binary): specifies the binary Word or constant that will be squared
- Result (DWORD Binary): specifies the location where the squared DWORD binary value will be placed

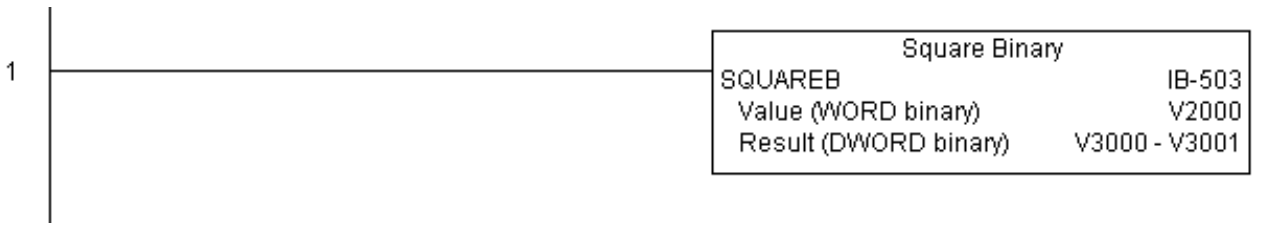


S

Parameter	DL06 Range
Value (WORD Binary) . . . . . V,P,K	K0-65535; See DL06 V-memory map - Data Words
Result (DWORD Binary) V	See DL06 V-memory map - Data Words

SQUAREB Example

In the following example, the SQUAREB instruction is used to square the single word Binary value in V2000 and store the 8-digit double word Binary result in V3000 and V3001.



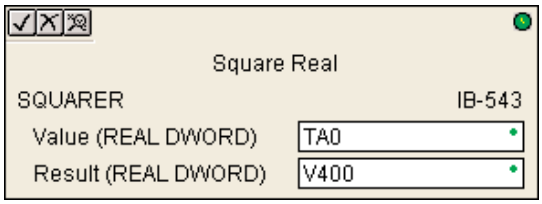
Square Real (SQUARER) (IB-543)

DS5	Used
HPP	N/A

Square Real squares the given REAL DWORD number and writes it to a REAL DWORD result.

SQUARER Parameters

- Value (REAL DWORD): specifies the Real DWORD location or number that will be squared
- Result (REAL DWORD): specifies the location where the squared Real DWORD value will be placed

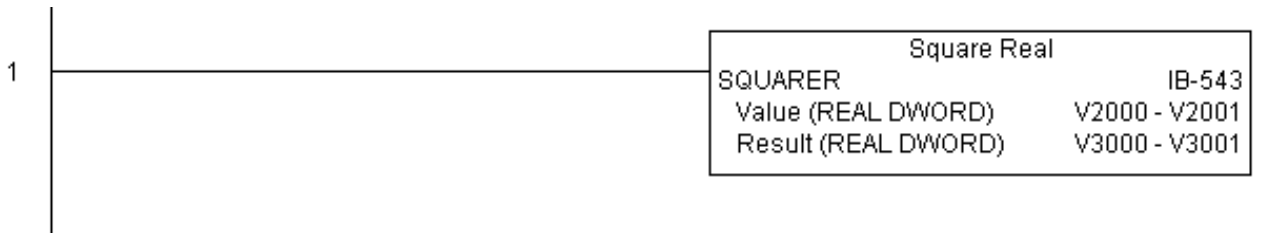


S

Parameter	DL06 Range
Value (REAL DWORD) . . . . . V,P,R	R ; See DL06 V-memory map - Data Words
Result (REAL DWORD) V	See DL06 V-memory map - Data Words

SQUARER Example

In the following example, the SQUARER instruction is used to square the 32-bit floating point REAL value in V2000 and V2001 and store the REAL value result in V3000 and V3001.



S

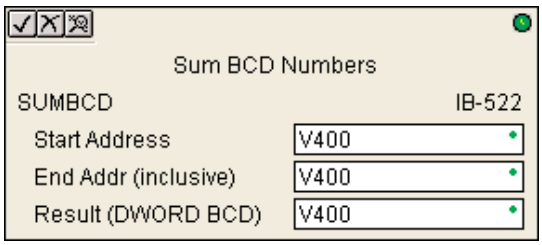
Sum BCD Numbers (SUMBCD) (IB-522)

DS5	Used
HPP	N/A

Sum BCD Numbers sums up a list of consecutive 4-digit WORD BCD numbers into an 8-digit DWORD BCD result.

You specify the group's starting and ending V- memory addresses (inclusive). When enabled, this instruction will add up all the numbers in the group (so you may want to place a differential contact driving the enable).

SUMBCD could be used as the first part of calculating an average.



S

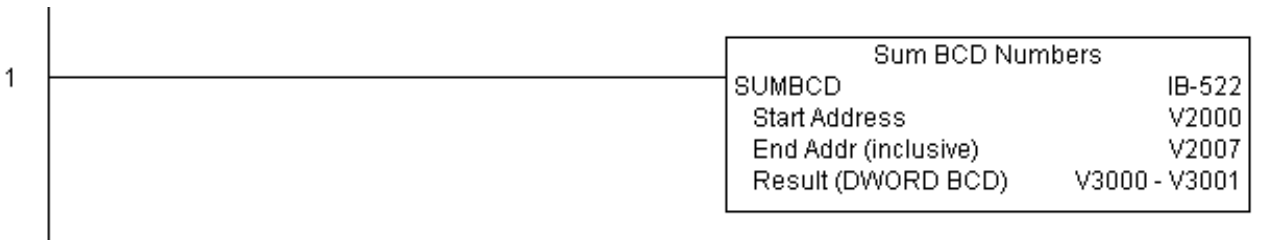
SUMBCD Parameters

- Start Address: specifies the starting address of a block of V-memory location values to be added together (BCD)
- End Addr (inclusive): specifies the ending address of a block of V-memory location values to be added together (BCD)
- Result (DWORD BCD): specifies the location where the sum of the block of V-memory BCD values will be placed

Parameter	DL06 Range
Start Address V	See DL06 V-memory map - Data Words
End Address (inclusive) V	See DL06 V-memory map - Data Words
Result (DWORD BCD) V	See DL06 V-memory map - Data Words

SUMBCD Example

In the following example, the SUMBCD instruction is used to total the sum of all BCD values in words V2000 thru V2007 and store the resulting 8-digit double word BCD value in V3000 and V3001.



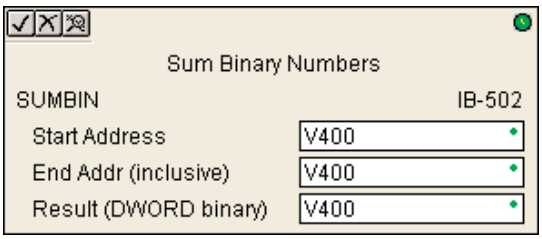
Sum Binary Numbers (SUMBIN) (IB-502)

DS5	Used
HPP	N/A

Sum Binary Numbers sums up a list of consecutive 16-bit WORD Binary numbers into a 32-bit DWORD binary result.

You specify the group's starting and ending V- memory addresses (inclusive). When enabled, this instruction will add up all the numbers in the group (so you may want to place a differential contact driving the enable).

SUMBIN could be used as the first part of calculating an average.



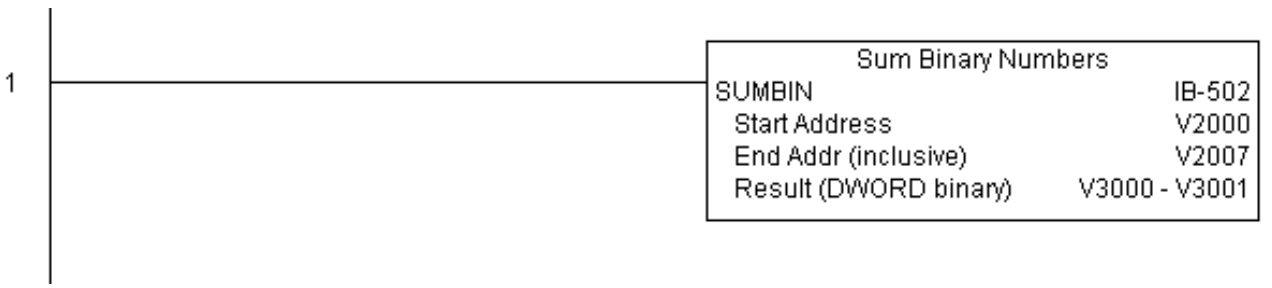
SUMBIN Parameters

- Start Address: specifies the starting address of a block of V-memory location values to be added together (Binary)
- End Addr (inclusive): specifies the ending address of a block of V-memory location values to be added together (Binary)
- Result (DWORD Binary): specifies the location where the sum of the block of V-memory binary values will be placed

Parameter	DL06 Range
Start Address V	See DL06 V-memory map - Data Words
End Address (inclusive) V	See DL06 V-memory map - Data Words
Result (DWORD Binary) V	See DL06 V-memory map - Data Words

SUMBIN Example

In the following example, the SUMBIN instruction is used to total the sum of all Binary values in words V2000 thru V2007 and store the resulting 8-digit double word Binary value in V3000 and V3001.

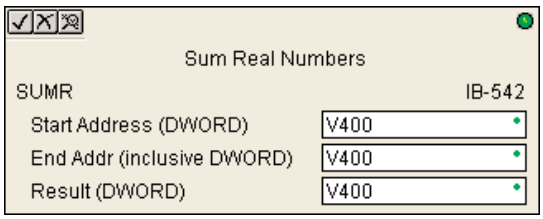


Sum Real Numbers (SUMR) (IB-542)

DS5	Used
HPP	N/A

Sum Real Numbers sums up a list of consecutive REAL DWORD numbers into a REAL DWORD result.

You specify the group's starting and ending V- memory addresses (inclusive).



Remember that Real numbers are DWORDs and occupy 2 words of V memory each, so the number of Real values summed up is equal to half the number of memory locations. Note that the End Address can be EITHER word of the 2 word ending address, for example, if you wanted to add the 4 Real numbers stored in V2000 thru V2007 (V2000, V2002, V2004, and V2006), you can specify V2006 OR V2007 for the ending address and you will get the same result.

When enabled, this instruction will add up all the numbers in the group (so you may want to place a differential contact driving the enable).

SUMR could be used as the first part of calculating an average.

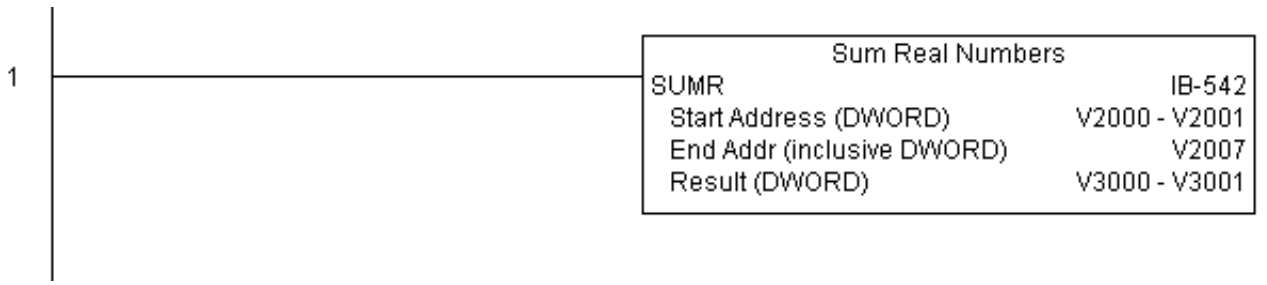
SUMR Parameters

- Start Address (DWORD): specifies the starting address of a block of V-memory location values to be added together (Real)
- End Addr (inclusive) (DWORD): specifies the ending address of a block of V-memory location values to be added together (Real)
- Result (DWORD): specifies the location where the sum of the block of V-memory Real values will be placed

Parameter	DL06 Range
Start Address (inclusive DWORD) V	See DL06 V-memory map - Data Words
End Address (inclusive DWORD) V	See DL06 V-memory map - Data Words
Result (DWORD) V	See DL06 V-memory map - Data Words

SUMR Example

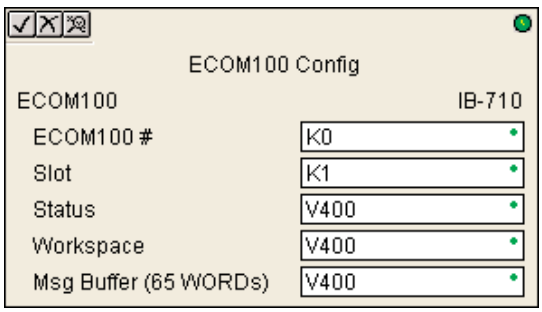
In the following example, the SUMR instruction is used to total the sum of all floating point REAL number values in words V2000 thru V2007 and store the resulting 32-bit floating point REAL number value in V3000 and V3001.



ECOM100 Configuration (ECOM100) (IB-710)

DS5	Used
HPP	N/A

ECOM100 Configuration defines all the common information for one specific ECOM100 module which is used by the other ECOM100 IBoxes; for example, ECRX - ECOM100 Network Read , ECEMAIL - ECOM100 Send EMail, ECIPSUP - ECOM100 IP Setup, etc.



You MUST have the ECOM100 Configuration IBox at the top of your ladder/stage program with any other configuration IBoxes. The Message Buffer parameter specifies the starting address of a 65 WORD buffer. This is 101 Octal addresses (e.g. V1400 thru V1500).

If you have more than one ECOM100 in your PLC, you must have a different ECOM100 Configuration IBox for EACH ECOM100 module in your system that utilizes any ECOM IBox instructions.

The Workspace and Status parameters and the entire Message Buffer are internal, private registers used by the ECOM100 Configuration IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

In order for MOST ECOM100 IBoxes to function, you must turn ON dip switch 7 on the ECOM100 circuit board. You can keep dip switch 7 off if you are ONLY using ECOM100 Network Read and Write IBoxes (ECRX, ECWX).

ECOM100 Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Slot: specifies the option slot the module occupies
- Status: specifies a V-memory location that will be used by the instruction
- Workspace: specifies a V-memory location that will be used by the instruction
- Msg Buffer: specifies the starting address of a 65 word buffer that will be used by the module for configuration

Parameter	DL06 Range
ECOM100# . . . . . K	K0-255
Slot . . . . . K	K1-4
Status V	See DL06 V-memory map - Data Words
Workspace V	See DL06 V-memory map - Data Words
Msg Buffer (65 words used) V	See DL06 V-memory map - Data Words

ECOM100 Example

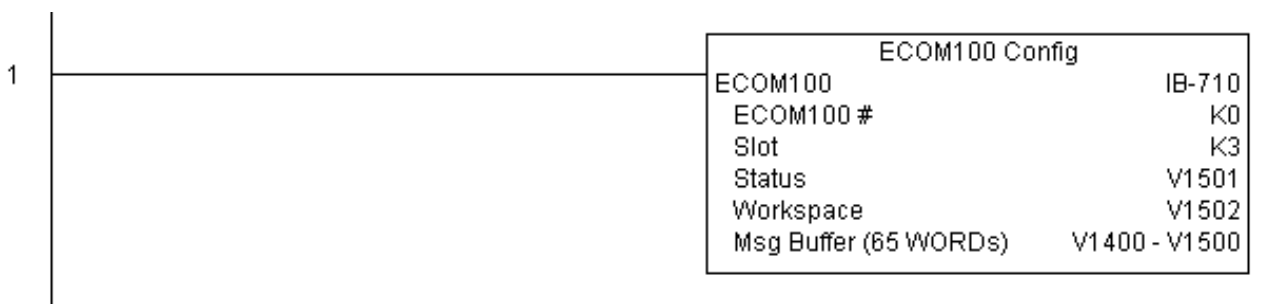
The ECOM100 Config IBox coordinates all of the interaction with other ECOM100 based IBoxes (ECxxxx). You must have an ECOM100 Config IBox for each ECOM100 module in your system. Configuration IBoxes must be at the top of your program and must execute every scan.

This IBox defines ECOM100# K0 to be in slot 3. Any ECOM100 IBoxes that need to reference this specific module (such as ECEMAIL, ECRX, ...) would enter K0 for their ECOM100# parameter.

The Status register is for reporting any completion or error information to other ECOM100 IBoxes. This V memory register must not be used anywhere else in the entire program.

The Workspace register is used to maintain state information about the ECOM100, along with proper sharing and interlocking with the other ECOM100 IBoxes in the program. This V memory register must not be used anywhere else in the entire program.

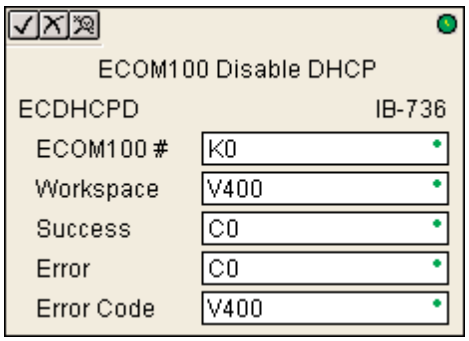
The Message Buffer of 65 words (130 bytes) is a common pool of memory that is used by other ECOM100 IBoxes (such as ECEMAIL). This way, you can have a bunch of ECEMAIL IBoxes, but only need 1 common buffer for generating and sending each EMail. These V memory registers must not be used anywhere else in your entire program.



ECOM100 Disable DHCP (ECDHCPD) (IB-736)

DS5	Used
HPP	N/A

ECOM100 Disable DHCP will setup the ECOM100 to use its internal TCP/IP settings on a leading edge transition to the IBox. To configure the ECOM100's TCP/IP settings manually, use the NetEdit3 utility, or you can do it programmatically from your PLC program using the ECOM100 IP Setup (ECIPSUP), or the individual ECOM100 IBoxes: ECOM Write IP Address (ECWRIP), ECOM Write Gateway Address (ECWRGWA), and ECOM100 Write Subnet Mask (ECWRSNM).



The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Either the Success or Error bit parameter will turn on once the command is complete. If there is an error, the Error Code parameter will report an ECOM100 error code (less than 100), or a PLC logic error (greater than 1000).

The "Disable DHCP" setting is stored in Flash-ROM in the ECOM100 and the execution of this IBox will disable the ECOM100 module for at least a half second until it writes the Flash-ROM. Therefore, it is HIGHLY RECOMMENDED that you only execute this IBox ONCE, on first scan. Since it requires a LEADING edge to execute, use a NORMALLY CLOSED SP0 (STR NOT First Scan) to drive the power flow to the IBox.

In order for this ECOM100 IBox to function, you must turn ON dip switch 7 on the ECOM100 circuit board.

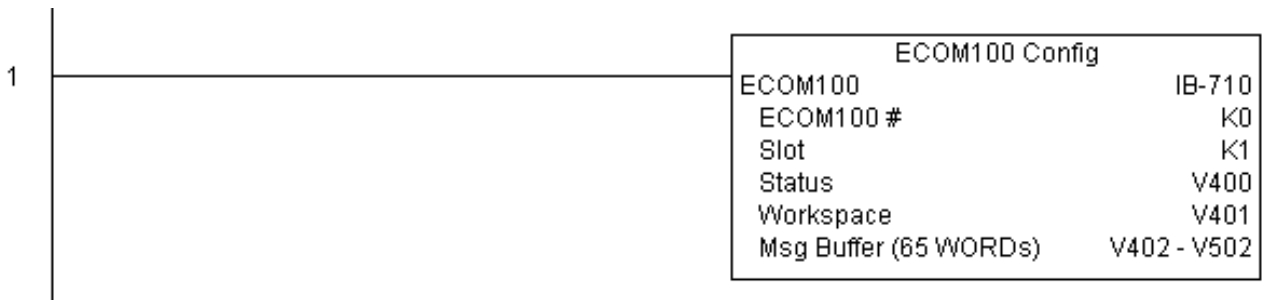
ECDHCPD Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed
- Error Code: specifies the location where the Error Code will be written

Parameter	DL06 Range
ECOM100# . . . . . K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error Code V	See DL06 V-memory map - Data Words

ECDHCPD Example

Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module. V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.

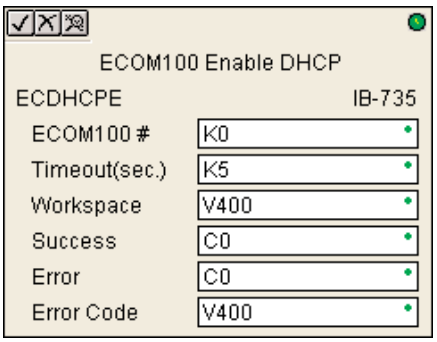


Rung 2: On the 2nd scan, disable DHCP in the ECOM100. DHCP is the same protocol used by PCs for using a DHCP Server to automatically assign the ECOM100's IP Address, Gateway Address, and Subnet Mask. Typically disabling DHCP is done by assigning a hard-coded IP Address either in NetEdit or using one of the ECOM100 IP Setup IBoxes, but this IBox allows you to disable DHCP in the ECOM100 using your ladder program. The ECDHCPD is leading edge triggered, not power-flow driven (similar to a counter input leg). The command to disable DHCP will be sent to the ECOM100 whenever the power flow into the IBox goes from OFF to ON. If successful, turn on C100. If there is a failure, turn on C101. If it fails, you can look at V2000 for the specific error code.

ECOM100 Enable DHCP (ECDHCPE) (IB-735)

DS5	Used
HPP	N/A

ECOM100 Enable DHCP will tell the ECOM100 to obtain its TCP/IP setup from a DHCP Server on a leading edge transition to the IBox.



The IBox will be successful once the ECOM100 has received its TCP/IP settings from the DHCP server. Since it is possible for the DHCP server to be unavailable, a Timeout parameter is provided so that the IBox can complete, but with an Error (Error Code = 1004 decimal).

See also the ECOM100 IP Setup (ECIPSUP) IBox 717 to directly setup ALL of the TCP/IP parameters in a single instruction - IP Address, Subnet Mask, and Gateway Address.

The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Either the Success or Error bit parameter will turn on once the command is complete. If there is an error, the Error Code parameter will report an ECOM100 error code (less than 100), or a PLC logic error (greater than 1000).

The "Enable DHCP" setting is stored in Flash-ROM in the ECOM100 and the execution of this IBox will disable the ECOM100 module for at least a half second until it writes the Flash-ROM. Therefore, it is HIGHLY RECOMMENDED that you only execute this IBox ONCE, on first scan. Since it requires a LEADING edge to execute, use a NORMALLY CLOSED SP0 (STR NOT First Scan) to drive the power flow to the IBox.

In order for this ECOM100 IBox to function, you must turn ON dip switch 7 on the ECOM100 circuit board.

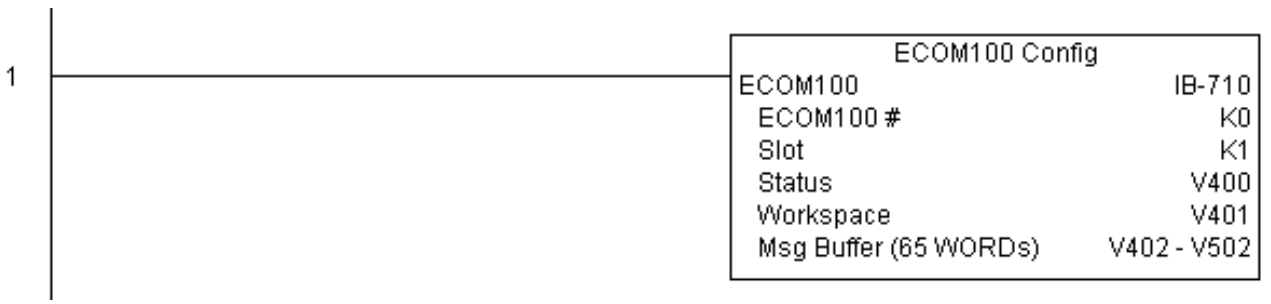
ECDHCPE Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Timeout(sec): specifies a timeout period so that the instruction may have time to complete
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed
- Error Code: specifies the location where the Error Code will be written

Parameter	DL06 Range
ECOM100# . . . . . K	K0-255
Timeout (sec) . . . . . K	K5-127
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error Code V	See DL06 V-memory map - Data Words

ECDHCPE Example

Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.

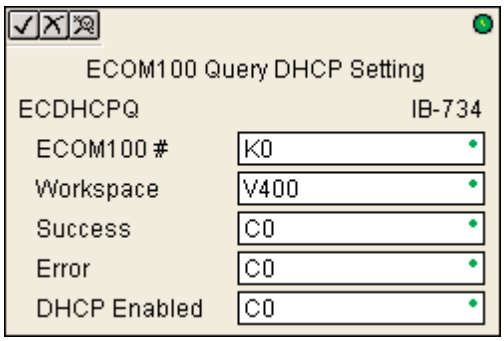


Rung 2: On the 2nd scan, enable DHCP in the ECOM100. DHCP is the same protocol used by PCs for using a DHCP Server to automatically assign the ECOM100's IP Address, Gateway Address, and Subnet Mask. Typically this is done using NetEdit, but this IBox allows you to enable DHCP in the ECOM100 using your ladder program. The ECDHCPE is leading edge triggered, not power-flow driven (similar to a counter input leg). The commands to enable DHCP will be sent to the ECOM100 whenever the power flow into the IBox goes from OFF to ON. The ECDHCPE does more than just set the bit to enable DHCP in the ECOM100, but it then polls the ECOM100 once every second to see if the ECOM100 has found a DHCP server and has a valid IP Address. Therefore, a timeout parameter is needed in case the ECOM100 cannot find a DHCP server. If a timeout does occur, the Error bit will turn on and the error code will be 1005 decimal. The Success bit will turn on only if the ECOM100 finds a DHCP Server and is assigned a valid IP Address. If successful, turn on C100. If there is a failure, turn on C101. If it fails, you can look at V2000 for the specific error code.

ECOM100 Query DHCP Setting (ECDHCPQ) (IB-734)

DS5	Used
HPP	N/A

ECOM100 Query DHCP Setting will determine if DHCP is enabled in the ECOM100 on a leading edge transition to the IBox. The DHCP Enabled bit parameter will be ON if DHCP is enabled, OFF if disabled.



The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Either the Success or Error bit parameter will turn on once the command is complete.

In order for this ECOM100 IBox to function, you must turn ON dip switch 7 on the ECOM100 circuit board.

S

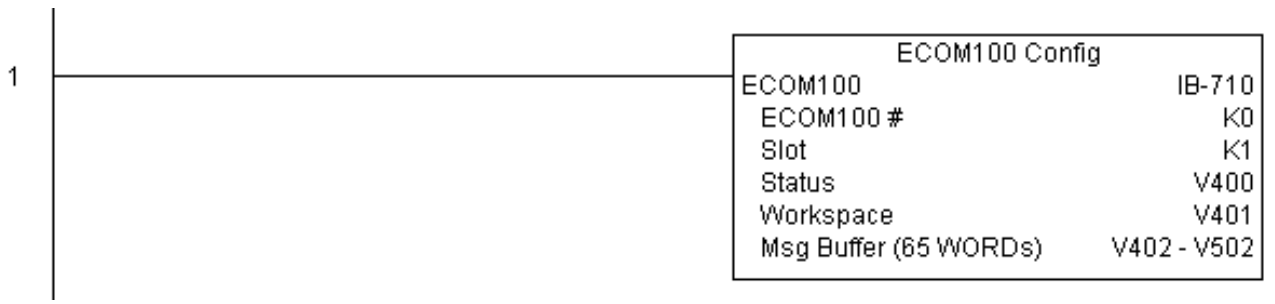
ECDHCPQ Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the instruction is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed
- DHCP Enabled: specifies a bit that will turn on if the ECOM100's DHCP is enabled or remain off if disabled - after instruction query, be sure to check the state of the Success/Error bit state along with DHCP Enabled bit state to confirm a successful module query

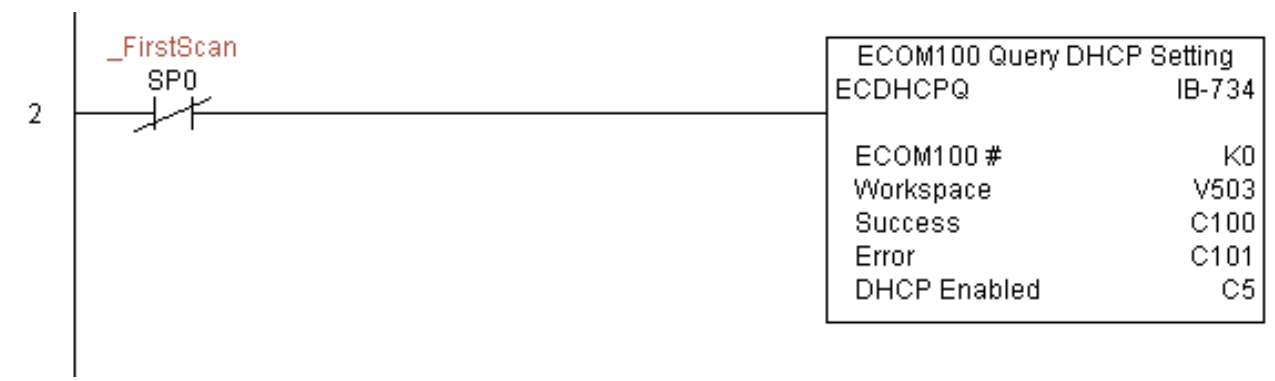
Parameter	DL06 Range
ECOM100# . . . . . K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
DHCP Enabled . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map

ECDHCPQ Example

Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.



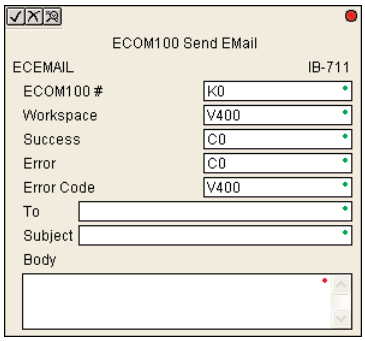
Rung 2: On the 2nd scan, read whether DHCP is enabled or disabled in the ECOM100 and store it in C5. DHCP is the same protocol used by PCs for using a DHCP Server to automatically assign the ECOM100's IP Address, Gateway Address, and Subnet Mask. The ECDHCPQ is leading edge triggered, not power-flow driven (similar to a counter input leg). The command to read (Query) whether DHCP is enabled or not will be sent to the ECOM100 whenever the power flow into the IBox goes from OFF to ON. If successful, turn on C100. If there is a failure, turn on C101.



ECOM100 Send E-mail (ECEMAIL) (IB-711)

DS5	Used
HPP	N/A

ECOM100 Send EMail, on a leading edge transition, will behave as an EMail client and send an SMTP request to your SMTP Server to send the EMail message to the EMail addresses in the To: field and also to those listed in the Cc: list hard coded in the ECOM100. It will send the SMTP request based on the specified ECOM100#, which corresponds to a specific unique ECOM100 Configuration (ECOM100) at the top of your program.



The Body: field supports what the PRINT and VPRINT instructions support for text and embedded variables, allowing you to embed real-time data in your EMail (e.g. "V2000 = " V2000:B).

The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Either the Success or Error bit parameter will turn on once the request is complete. If there is an error, the Error Code parameter will report an ECOM100 error code (less than 100), an SMPT protocol error (between 100 and 999), or a PLC logic error (greater than 1000).

Since the ECOM100 is only an EMail Client and requires access to an SMTP Server, you MUST have the SMTP parameters configured properly in the ECOM100 via the ECOM100's Home Page and/or the EMail Setup instruction (ECEMSUP). To get to the ECOM100's Home Page, use your favorite Internet browser and browse to the ECOM100's IP Address, e.g. http://192.168.12.86

You are limited to approximately 100 characters of message data for the entire instruction, including the To: Subject: and Body: fields. To save space, the ECOM100 supports a hard coded list of EMail addresses for the Carbon Copy field (cc:) so that you can configure those IN the ECOM100, and keep the To: field small (or even empty), to leave more room for the Subject: and Body: fields.

In order for this ECOM100 IBox to function, you must turn ON dip switch 7 on the ECOM100 circuit board.

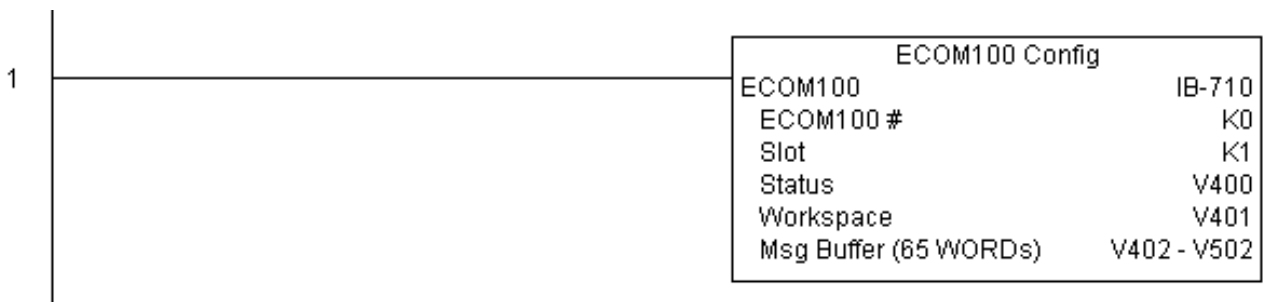
ECEMAIL Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed
- Error Code: specifies the location where the Error Code will be written
- To: specifies an E-mail address that the message will be sent to
- Subject: subject of the e-mail message
- Body: supports what the PRINT and VPRINT instructions support for text and embedded variables, allowing you to embed real-time data in the EMail message

Parameter	DL06 Range
ECOM100# . . . . . K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error Code V	See DL06 V-memory map
To:	Text
Subject:	Text
Body:	See PRINT and VPRINT instructions

ECEMAIL Example

Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.



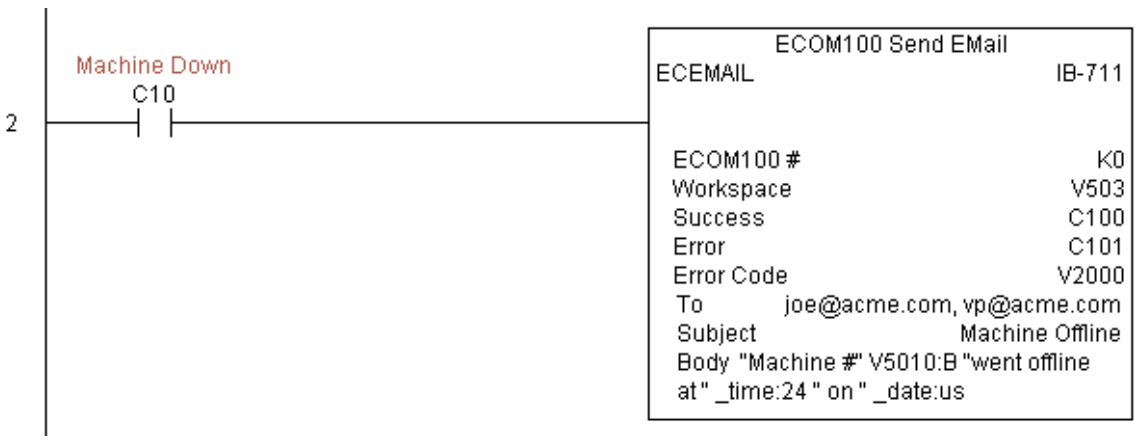
(example continued on next page)

ECEMAIL Example (con't)

Rung 2: When a machine goes down, send an email to Joe in maintenance and to the VP over production showing what machine is down along with the date/time stamp of when it went down.

The ECEMAIL is leading edge triggered, not power-flow driven (similar to a counter input leg). An email will be sent whenever the power flow into the IBox goes from OFF to ON. This helps prevent self inflicted spamming.

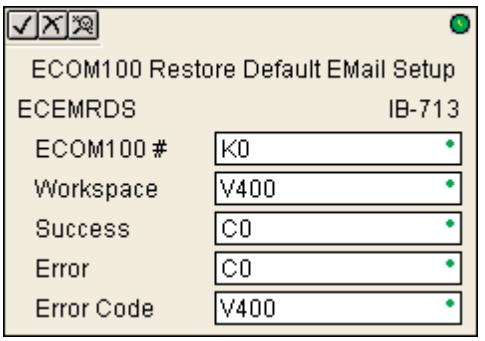
If the EMail is sent, turn on C100. If there is a failure, turn on C101. If it fails, you can look at V2000 for the SMTP error code or other possible error codes.



ECOM100 Restore Default E-mail Setup (ECEMRDS) (IB-713)

DS5	Used
HPP	N/A

ECOM100 Restore Default EMail Setup, on a leading edge transition, will restore the original EMail Setup data stored in the ECOM100 back to the working copy based on the specified ECOM100#, which corresponds to a specific unique ECOM100 Configuration (ECOM100) at the top of your program.



When the ECOM100 is first powered up, it copies the EMail setup data stored in ROM to the working copy in RAM. You can then modify this working copy from your program using the ECOM100 EMail Setup (ECEMSUP) IBox. After modifying the working copy, you can later restore the original setup data via your program by using this IBox.

The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Either the Success or Error bit parameter will turn on once the command is complete. If there is an error, the Error Code parameter will report an ECOM100 error code (less than 100), or a PLC logic error (greater than 1000).

In order for this ECOM100 IBox to function, you must turn ON dip switch 7 on the ECOM100 circuit board.

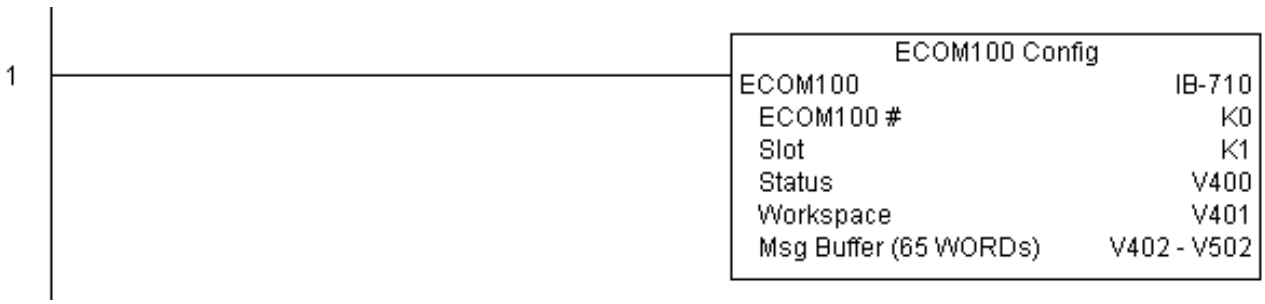
ECEMRDS Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed
- Error Code: specifies the location where the Error Code will be written

Parameter	DL06 Range
ECOM100# . . . . . K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error Code V	See DL06 V-memory map - Data Words

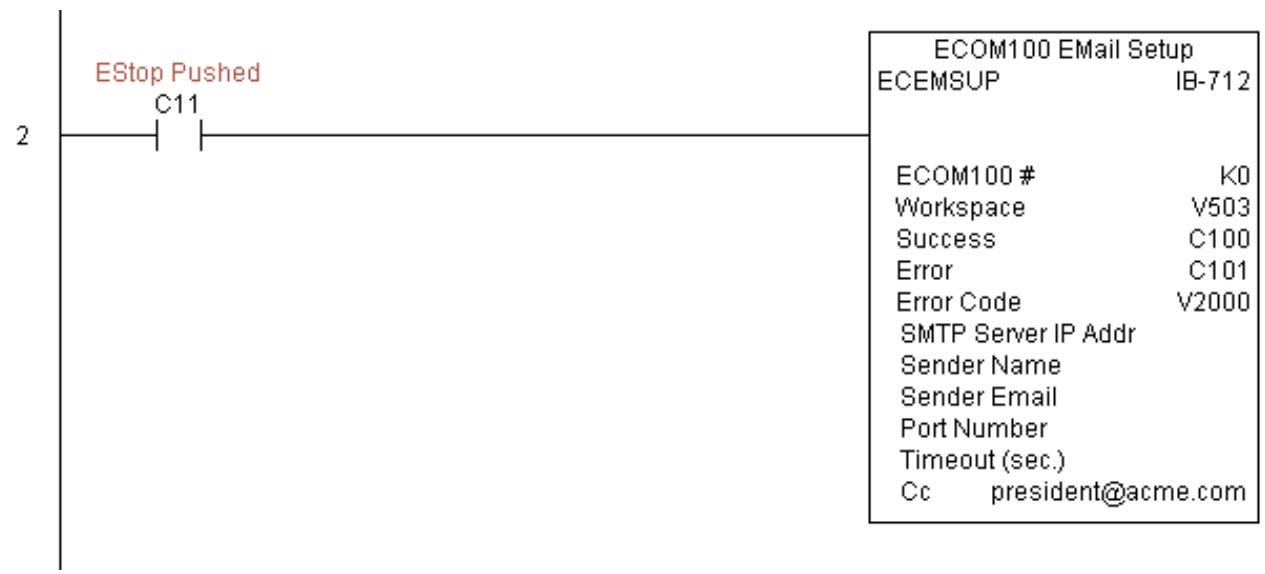
ECEMRDS Example

Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.



Rung 2: Whenever an EStop is pushed, ensure that president of the company gets copies of all EMails being sent.

The ECOM100 EMail Setup IBox allows you to set/change the SMTP EMail settings stored in the ECOM100.



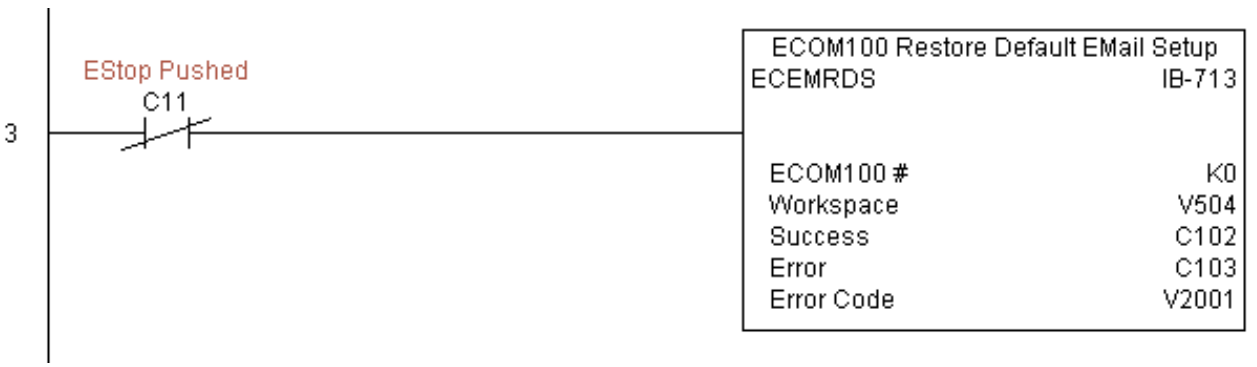
(example continued on next page)

ECEMRDS Example (con't)

Rung 3: Once the EStop is pulled out, take the president off the cc: list by restoring the default EMail setup in the ECOM100.

The ECEMRDS is leading edge triggered, not power-flow driven (similar to a counter input leg). The ROM based EMail configuration stored in the ECOM100 will be copied over the "working copy" whenever the power flow into the IBox goes from OFF to ON (the working copy can be changed by using the ECEMSUP IBox).

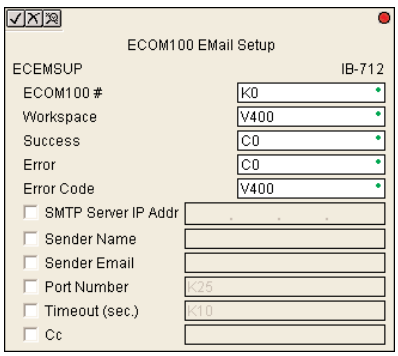
If successful, turn on C102. If there is a failure, turn on C103. If it fails, you can look at V2001 for the specific error code.



ECOM100 E-mail Setup (ECEMSUP) (IB-712)

DS5	Used
HPP	N/A

ECOM100 EMail Setup, on a leading edge transition, will modify the working copy of the EMail setup currently in the ECOM100 based on the specified ECOM100#, which corresponds to a specific unique ECOM100 Configuration (ECOM100) at the top of your program.



You may pick and choose any or all fields to be modified using this instruction. Note that these changes are cumulative: if you execute multiple ECOM100 EMail Setup IBoxes, then all of the changes are made in the order they are executed. Also note that you can restore the original ECOM100 EMail Setup that is stored in the ECOM100 to the working copy by using the ECOM100 Restore Default EMail Setup (ECEMRDS) IBox.

The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Either the Success or Error bit parameter will turn on once the command is complete. If there is an error, the Error Code parameter will report an ECOM100 error code (less than 100), or a PLC logic error (greater than 1000).

You are limited to approximately 100 characters/bytes of setup data for the entire instruction. So if needed, you could divide the entire setup across multiple ECEMSUP IBoxes on a field-by-field basis, for example do the Carbon Copy (cc:) field in one ECEMSUP IBox and the remaining setup parameters in another.

In order for this ECOM100 IBox to function, you must turn ON dip switch 7 on the ECOM100 circuit board.

ECEMSUP Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed
- Error Code: specifies the location where the Error Code will be written
- SMTP Server IP Addr: optional parameter that specifies the IP Address of the SMTP Server on the ECOM100's network
- Sender Name: optional parameter that specifies the sender name that will appear in the "From:" field to those who receive the e-mail
- Sender EMail: optional parameter that specifies the sender EMail address that will appear in the "From:" field to those who receive the e-mail

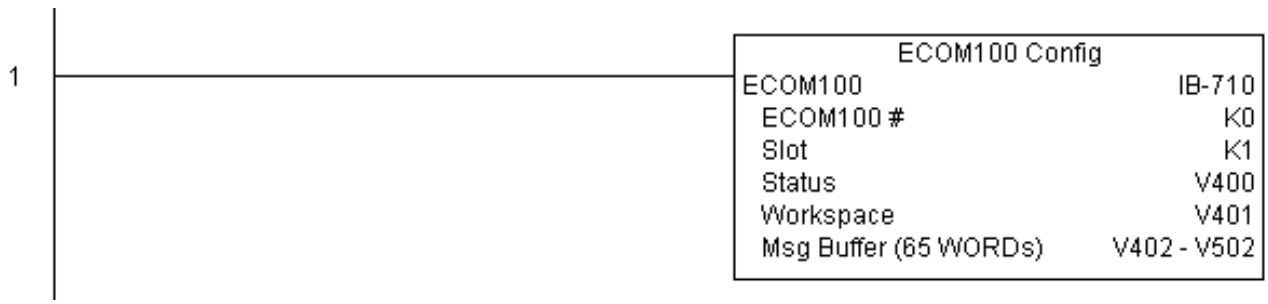
ECEMSUP Parameters (con't)

- Port Number: optional parameter that specifies the TCP/IP Port Number to send SMTP requests; usually this does not to be configured (see your network administrator for information on this setting)
- Timeout (sec): optional parameter that specifies the number of seconds to wait for the SMTP Server to send the EMail to all the recipients
- Cc: optional parameter that specifies a list of "carbon copy" Email addresses to send all EMails to

Parameter	DL06 Range
ECOM100# . . . . . K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error Code V	See DL06 V-memory map - Data Words

ECEMSUP Example

Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.



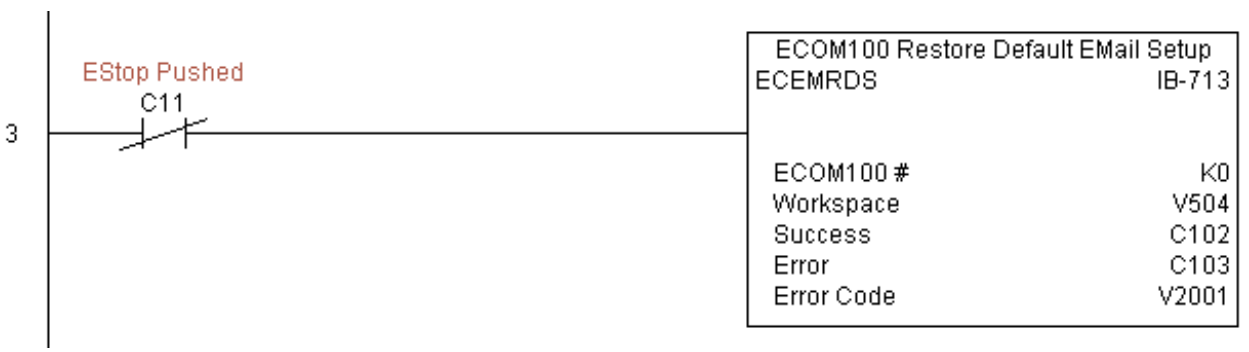
(example continued on next page)

ECEMSUP Example (con't)

Rung 2: Whenever an EStop is pushed, ensure that president of the company gets copies of all EMails being sent.The ECOM100 EMail Setup IBox allows you to set/change the SMTP EMail settings stored in the ECOM100. The ECEMSUP is leading edge triggered, not power-flow driven (similar to a counter input leg). At power-up, the ROM based EMail configuration stored in the ECOM100 is copied to a RAM based "working copy". You can change this working copy by using the ECEMSUP IBox. To restore the original ROM based configuration, use the Restore Default EMail Setup ECEMRDS IBox.

If successful, turn on C100. If there is a failure, turn on C101. If it fails, you can look at V2000 for the specific error code.

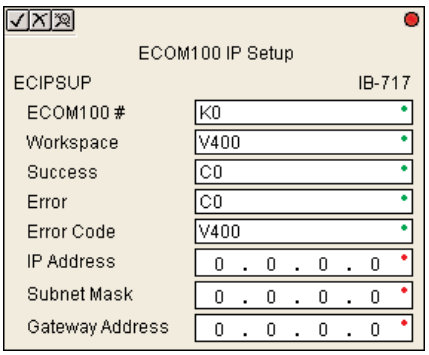
Rung 3: Once the EStop is pulled out, take the president off the cc: list by restoring the default EMail setup in the ECOM100.



ECOM100 IP Setup (ECIPSUP) (IB-717)

DS5	Used
HPP	N/A

ECOM100 IP Setup will configure the three TCP/IP parameters in the ECOM100: IP Address, Subnet Mask, and Gateway Address, on a leading edge transition to the IBox. The ECOM100 is specified by the ECOM100#, which corresponds to a specific unique ECOM100 Configuration (ECOM100) IBox at the top of your program.



The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Either the Success or Error bit parameter will turn on once the command is complete. If there is an error, the Error Code parameter will report an ECOM100 error code (less than 100), or a PLC logic error (greater than 1000).

This setup data is stored in Flash-ROM in the ECOM100 and will disable the ECOM100 module for at least a half second until it writes the Flash-ROM. Therefore, it is HIGHLY RECOMMENDED that you only execute this IBox ONCE on first scan. Since it requires a LEADING edge to execute, use a NORMALLY CLOSED SP0 (NOT First Scan) to drive the power flow to the IBox.

In order for this ECOM100 IBox to function, you must turn ON dip switch 7 on the ECOM100 circuit board.

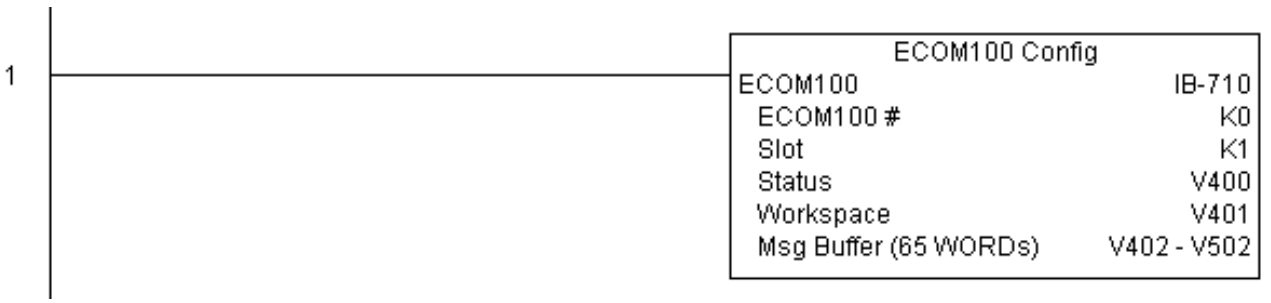
ECIPSUP Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed
- Error Code: specifies the location where the Error Code will be written
- IP Address: specifies the module's IP Address
- Subnet Mask: specifies the Subnet Mask for the module to use
- Gateway Address: specifies the Gateway Address for the module to use

Parameter	DL06 Range
ECOM100# . . . . . K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error Code V	See DL06 V-memory map - Data Words
IP Address . . . . . IP Address	0.0.0.1. to 255.255.255.254
Subnet Mask Address . . . . . IP Address Mask	0.0.0.1. to 255.255.255.254
Gateway Address . . . . . IP Address	0.0.0.1. to 255.255.255.254

ECIPSUP Example

Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.



Rung 2: On the 2nd scan, configure all of the TCP/IP parameters in the ECOM100:

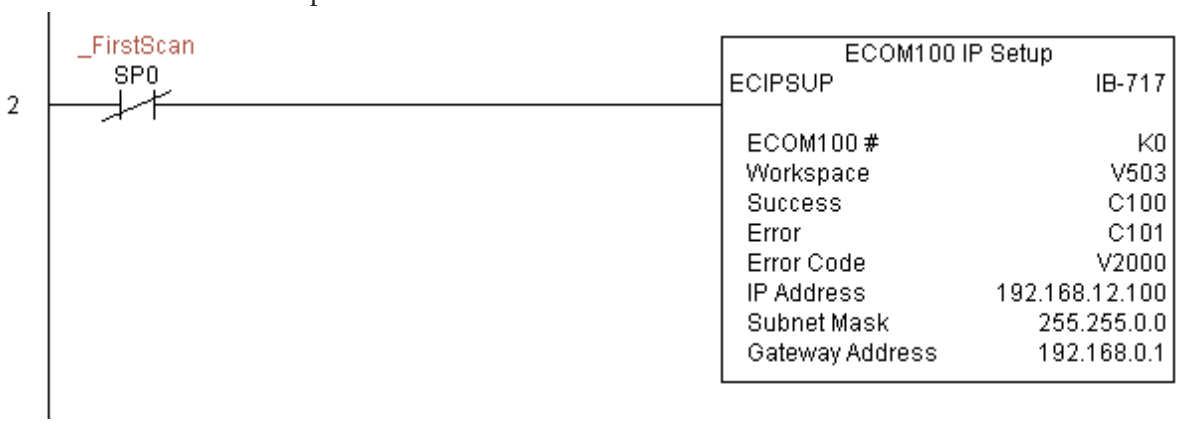
IP Address: 192.168. 12.100

Subnet Mask: 255.255. 0. 0

Gateway Address: 192.168. 0. 1

The ECIPSUP is leading edge triggered, not power-flow driven (similar to a counter input leg). The command to write the TCP/IP configuration parameters will be sent to the ECOM100 whenever the power flow into the IBox goes from OFF to ON.

If successful, turn on C100. If there is a failure, turn on C101. If it fails, you can look at V2000 for the specific error code.



ECOM100 Read Description (ECRDDES) (IB-726)

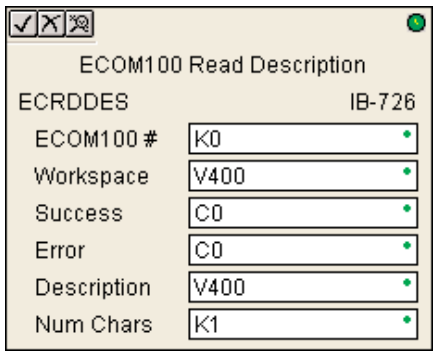
DS5	Used
HPP	N/A

ECOM100 Read Description will read the ECOM100's Description field up to the number of specified characters on a leading edge transition to the IBox.

The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Either the Success or Error bit parameter will turn on once the command is complete.

In order for this ECOM100 IBox to function, you must turn ON dip switch 7 on the ECOM100 circuit board.



S

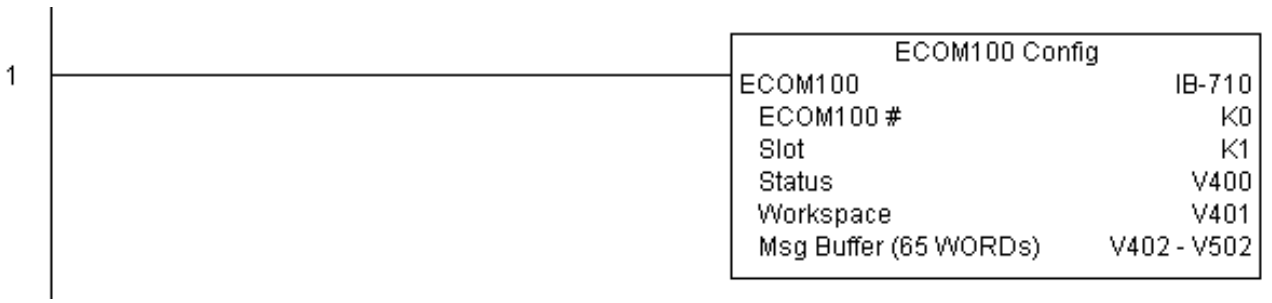
ECRDDES Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed
- Description: specifies the starting buffer location where the ECOM100's Module Name will be placed
- Num Char: specifies the number of characters (bytes) to read from the ECOM100's Description field

Parameter	DL06 Range
ECOM100# . . . . . K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Description V	See DL06 V-memory map - Data Words
Num Chars . . . . . K	K1-128

ECRDDES Example

Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.



Rung 2: On the 2nd scan, read the Module Description of the ECOM100 and store it in V3000 thru V3007 (16 characters). This text can be displayed by an HMI.

The ECRDDES is leading edge triggered, not power-flow driven (similar to a counter input leg). The command to read the module description will be sent to the ECOM100 whenever the power flow into the IBox goes from OFF to ON.

If successful, turn on C100. If there is a failure, turn on C101.

ECOM100 Read Gateway Address (ECRDGWA) (IB-730)

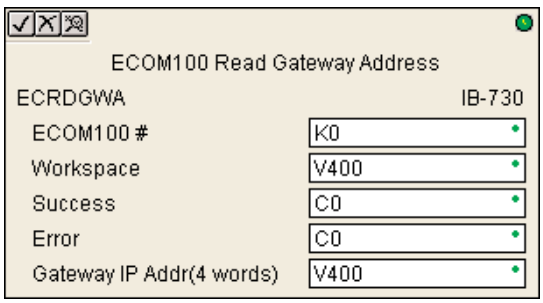
DS5	Used
HPP	N/A

ECOM100 Read Gateway Address will read the 4 parts of the Gateway IP address and store them in 4 consecutive V Memory locations in decimal format, on a leading edge transition to the IBox.

The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Either the Success or Error bit parameter will turn on once the command is complete.

In order for this ECOM100 IBox to function, you must turn ON dip switch 7 on the ECOM100 circuit board.



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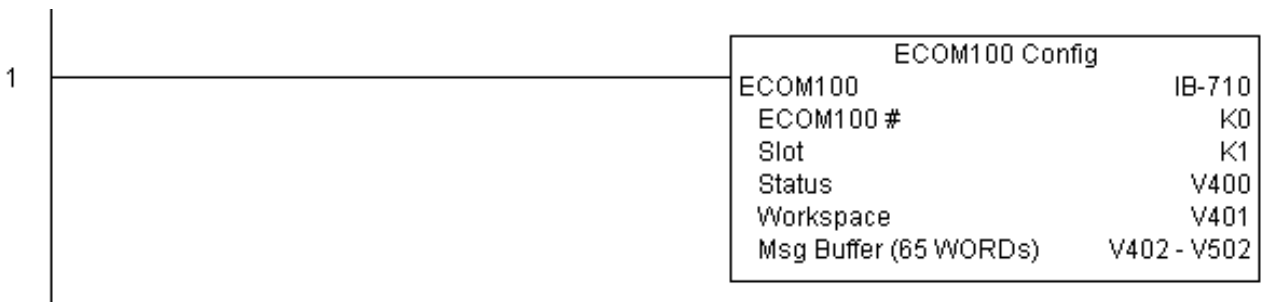
ECRDGWA Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed
- Gateway IP Addr: specifies the starting address where the ECOM100's Gateway Address will be placed in 4 consecutive V-memory locations

Parameter	DL06 Range
ECOM100# . . . . . K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Gateway IP Address (4 Words) V	See DL06 V-memory map - Data Words

ECRDGWA Example

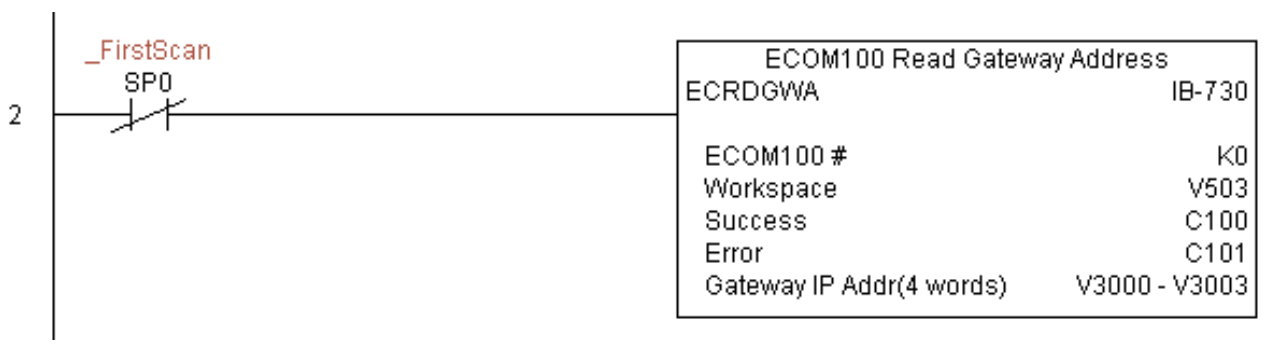
Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.



Rung 2: On the 2nd scan, read the Gateway Address of the ECOM100 and store it in V3000 thru V3003 (4 decimal numbers). The ECOM100's Gateway Address could be displayed by an HMI.

The ECRDGWA is leading edge triggered, not power-flow driven (similar to a counter input leg). The command to read the Gateway Address will be sent to the ECOM100 whenever the power flow into the IBox goes from OFF to ON.

If successful, turn on C100. If there is a failure, turn on C101.



ECOM100 Read IP Address (ECRDIP) (IB-722)

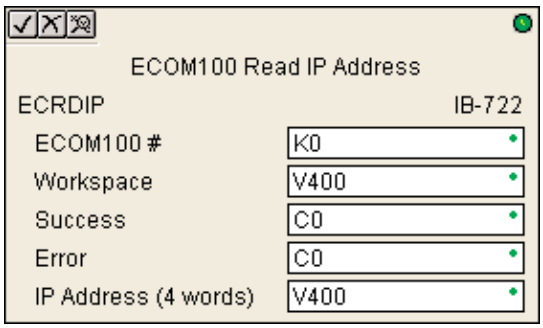
DS5	Used
HPP	N/A

ECOM100 Read IP Address will read the 4 parts of the IP address and store them in 4 consecutive V Memory locations in decimal format, on a leading edge transition to the IBox.

The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Either the Success or Error bit parameter will turn on once the command is complete.

In order for this ECOM100 IBox to function, you must turn ON dip switch 7 on the ECOM100 circuit board.



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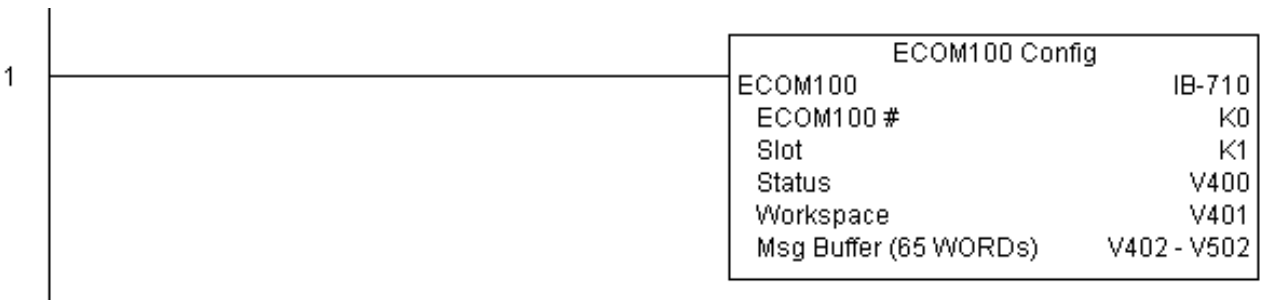
ECRDIP Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed
- IP Address: specifies the starting address where the ECOM100's IP Address will be placed in 4 consecutive V-memory locations

Parameter	DL06 Range
ECOM100# . . . . . K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
IP Address (4 Words) V	See DL06 V-memory map - Data Words

ECRDIP Example

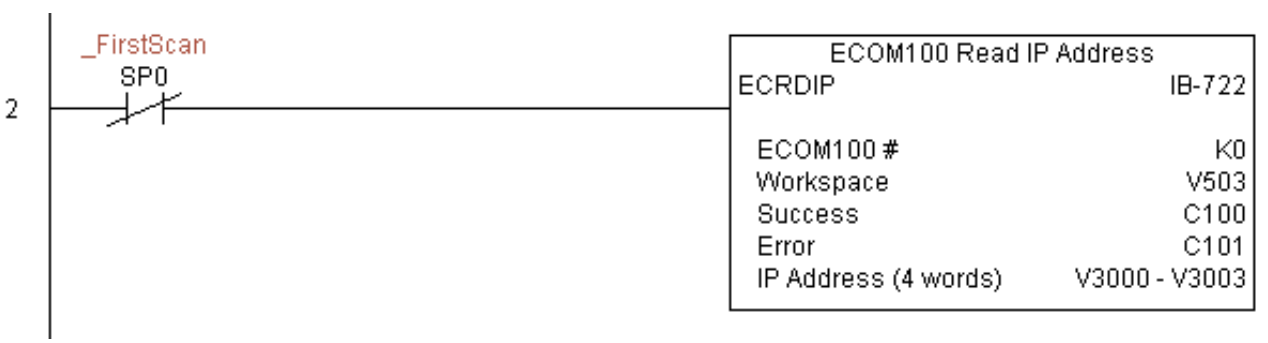
Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.



Rung 2: On the 2nd scan, read the IP Address of the ECOM100 and store it in V3000 thru V3003 (4 decimal numbers). The ECOM100's IP Address could be displayed by an HMI.

The ECRDIP is leading edge triggered, not power-flow driven (similar to a counter input leg). The command to read the IP Address will be sent to the ECOM100 whenever the power flow into the IBox goes from OFF to ON.

If successful, turn on C100. If there is a failure, turn on C101.



ECOM100 Read Module ID (ECRDMID) (IB-720)

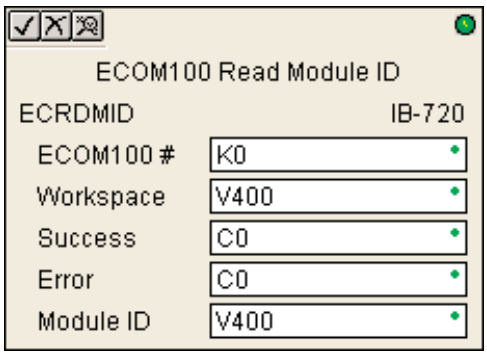
DS5	Used
HPP	N/A

ECOM100 Read Module ID will read the binary (decimal) WORD sized Module ID on a leading edge transition to the IBox.

The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Either the Success or Error bit parameter will turn on once the command is complete.

In order for this ECOM100 IBox to function, you must turn ON dip switch 7 on the ECOM100 circuit board.



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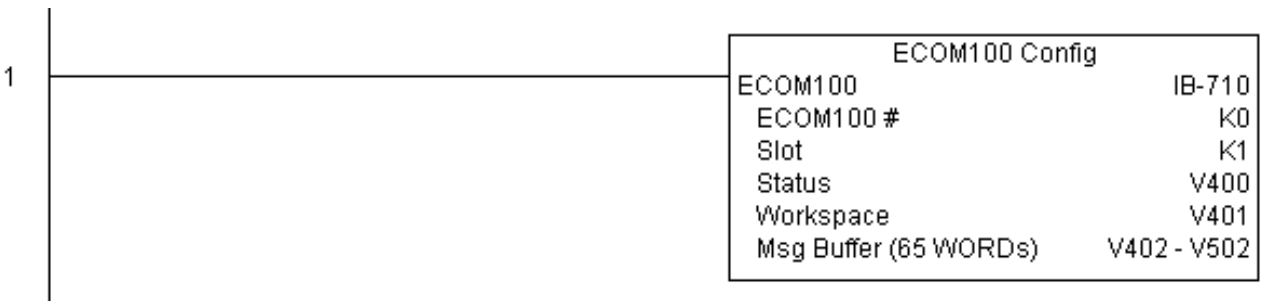
ECRDMID Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed
- Module ID: specifies the location where the ECOM100's Module ID (decimal) will be placed

Parameter	DL06 Range
ECOM100# . . . . . K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Module ID. V	See DL06 V-memory map - Data Words

ECRDMID Example

Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.



Rung 2: On the 2nd scan, read the Module ID of the ECOM100 and store it in V2000.

The ECRDMID is leading edge triggered, not power-flow driven (similar to a counter input leg). The command to read the module ID will be sent to the ECOM100 whenever the power flow into the IBox goes from OFF to ON.

If successful, turn on C100. If there is a failure, turn on C101.

ECOM100 Read Module Name (ECRDNAM) (IB-724)

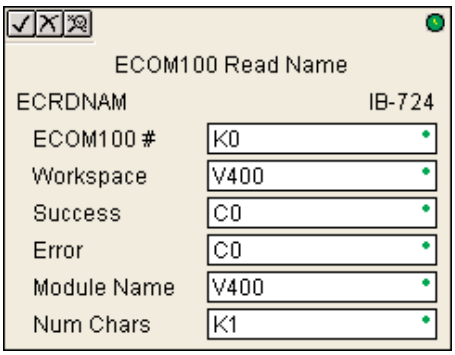
DS5	Used
HPP	N/A

ECOM100 Read Name will read the Module Name up to the number of specified characters on a leading edge transition to the IBox.

The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Either the Success or Error bit parameter will turn on once the command is complete.

In order for this ECOM100 IBox to function, you must turn ON dip switch 7 on the ECOM100 circuit board.



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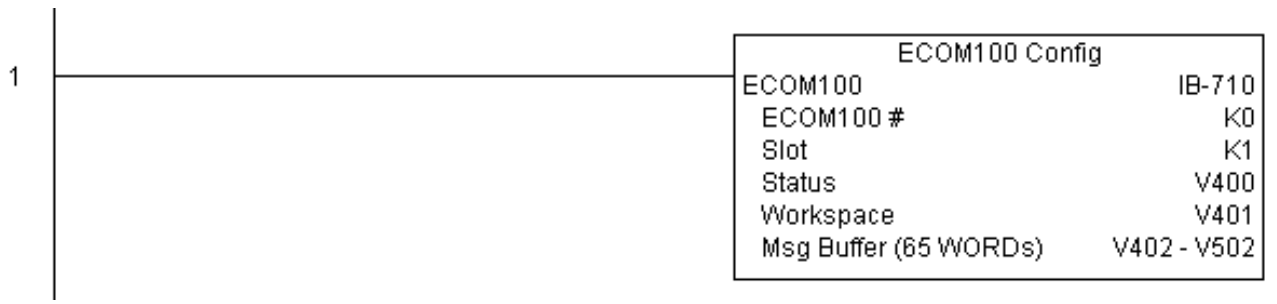
ECRDNAM Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed
- Module Name: specifies the starting buffer location where the ECOM100's Module Name will be placed
- Num Chars: specifies the number of characters (bytes) to read from the ECOM100's Name field

Parameter	DL06 Range
ECOM100# . . . . . K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Module Name V	See DL06 V-memory map - Data Words
Num Chars . . . . . K	K1-128

ECRDNAM Example

Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.



Rung 2: On the 2nd scan, read the Module Name of the ECOM100 and store it in V3000 thru V3003 (8 characters). This text can be displayed by an HMI.

The ECRDNAM is leading edge triggered, not power-flow driven (similar to a counter input leg). The command to read the module name will be sent to the ECOM100 whenever the power flow into the IBox goes from OFF to ON.

If successful, turn on C100. If there is a failure, turn on C101.

ECOM100 Read Subnet Mask (ECRDSNM) (IB-732)

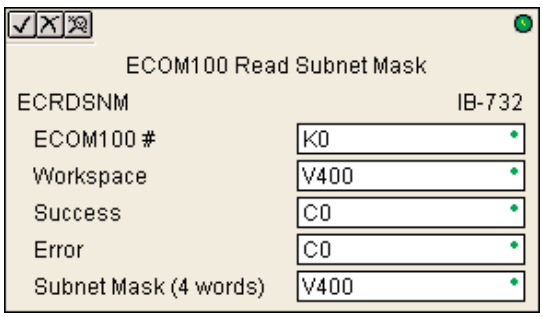
DS5	Used
HPP	N/A

ECOM100 Read Subnet Mask will read the 4 parts of the Subnet Mask and store them in 4 consecutive V Memory locations in decimal format, on a leading edge transition to the IBox.

The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Either the Success or Error bit parameter will turn on once the command is complete.

In order for this ECOM100 IBox to function, you must turn ON dip switch 7 on the ECOM100 circuit board.



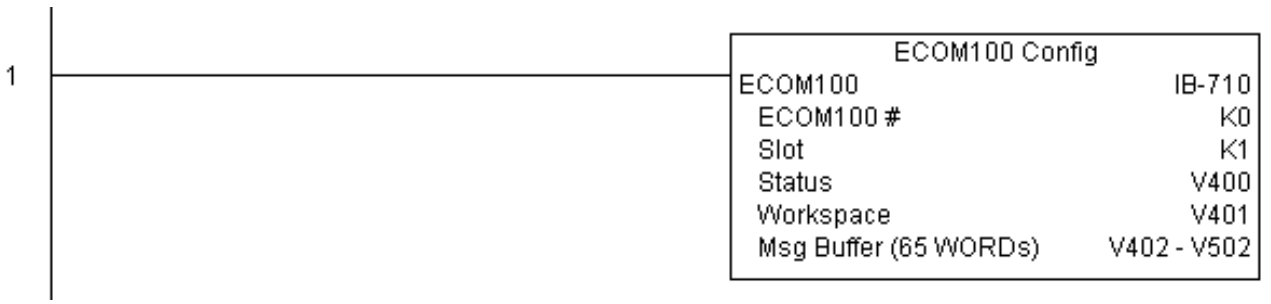
ECRDSNM Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed
- Subnet Mask: specifies the starting address where the ECOM100's Subnet Mask will be placed in 4 consecutive V-memory locations

Parameter	DL06 Range
ECOM100# . . . . . K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Subnet Mask (4 Words) V	See DL06 V-memory map - Data Words

ECRDSNM Example

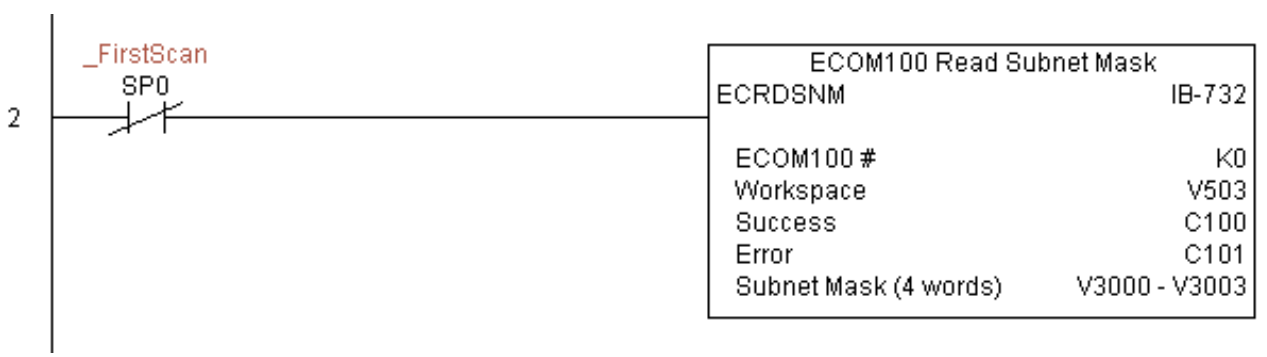
Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.



Rung 2: On the 2nd scan, read the Subnet Mask of the ECOM100 and store it in V3000 thru V3003 (4 decimal numbers). The ECOM100's Subnet Mask could be displayed by an HMI.

The ECRDSNM is leading edge triggered, not power-flow driven (similar to a counter input leg). The command to read the Subnet Mask will be sent to the ECOM100 whenever the power flow into the IBox goes from OFF to ON.

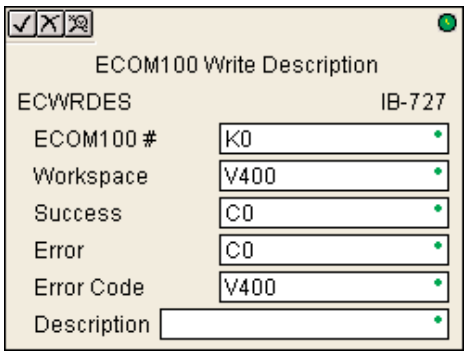
If successful, turn on C100. If there is a failure, turn on C101.



ECOM100 Write Description (ECWRDES) (IB-727)

DS5	Used
HPP	N/A

ECOM100 Write Description will write the given Description to the ECOM100 module on a leading edge transition to the IBox. If you use a dollar sign ($) or double quote ("), use the PRINT/VPRINT escape sequence of TWO dollar signs ($$) for a single dollar sign or dollar sign-double quote ($") for a double quote character.



The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Either the Success or Error bit parameter will turn on once the command is complete. If there is an error, the Error Code parameter will report an ECOM100 error code (less than 100), or a PLC logic error (greater than 1000).

The Description is stored in Flash-ROM in the ECOM100 and the execution of this IBox will disable the ECOM100 module for at least a half second until it writes the Flash-ROM. Therefore, it is HIGHLY RECOMMENDED that you only execute this IBox ONCE on first scan. Since it requires a LEADING edge to execute, use a NORMALLY CLOSED SP0 (STR NOT First Scan) to drive the power flow to the IBox.

In order for this ECOM100 IBox to function, you must turn ON dip switch 7 on the ECOM100 circuit board.

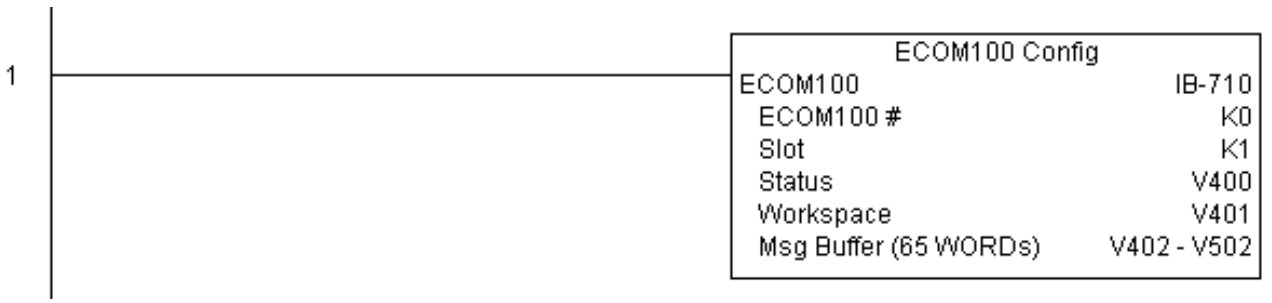
ECWRDES Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed
- Error Code: specifies the location where the Error Code will be written
- Description: specifies the Description that will be written to the module

Parameter	DL06 Range
ECOM100# . . . . . K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error Code V	See DL06 V-memory map - Data Words
Description	Text

ECWRDES Example

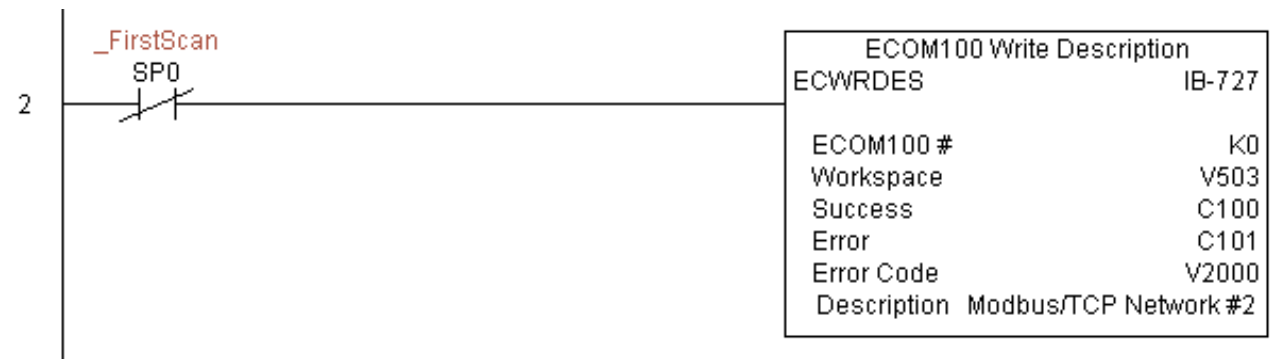
Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.



Rung 2: On the 2nd scan, set the Module Description of the ECOM100. Typically this is done using NetEdit, but this IBox allows you to configure the module description in the ECOM100 using your ladder program.

The EWRDES is leading edge triggered, not power-flow driven (similar to a counter input leg). The command to write the module description will be sent to the ECOM100 whenever the power flow into the IBox goes from OFF to ON.

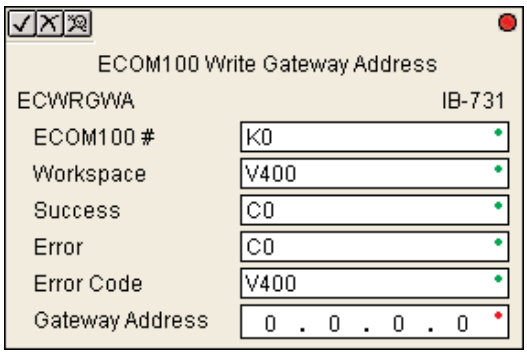
If successful, turn on C100. If there is a failure, turn on C101. If it fails, you can look at V2000 for the specific error code.



ECOM100 Write Gateway Address (ECWRGWA) (IB-731)

DS5	Used
HPP	N/A

ECOM100 Write Gateway Address will write the given Gateway IP Address to the ECOM100 module on a leading edge transition to the IBox. See also ECOM100 IP Setup (ECIPSUP) IBox 717 to setup ALL of the TCP/IP parameters in a single instruction - IP Address, Subnet Mask, and Gateway Address.



The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Either the Success or Error bit parameter will turn on once the command is complete. If there is an error, the Error Code parameter will report an ECOM100 error code (less than 100), or a PLC logic error (greater than 1000).

The Gateway Address is stored in Flash-ROM in the ECOM100 and the execution of this IBox will disable the ECOM100 module for at least a half second until it writes the Flash-ROM. Therefore, it is HIGHLY RECOMMENDED that you only execute this IBox ONCE, on first scan. Since it requires a LEADING edge to execute, use a NORMALLY CLOSED SP0 (STR NOT First Scan) to drive the power flow to the IBox.

In order for this ECOM100 IBox to function, you must turn ON dip switch 7 on the ECOM100 circuit board.

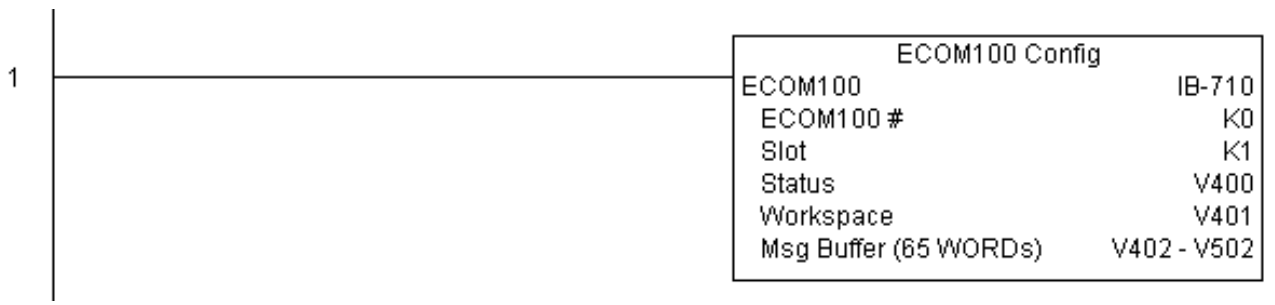
ECWRGWA Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed
- Error Code: specifies the location where the Error Code will be written
- Gateway Address: specifies the Gateway IP Address that will be written to the module

Parameter	DL06 Range
ECOM100# ..... K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Success ..... X,Y,C,GX,GY,B	See DL06 V-memory map
Error ..... X,Y,C,GX,GY,B	See DL06 V-memory map
Error Code V	See DL06 V-memory map - Data Words
Gateway Address	0.0.0.1. to 255.255.255.254

ECWRGWA Example

Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.

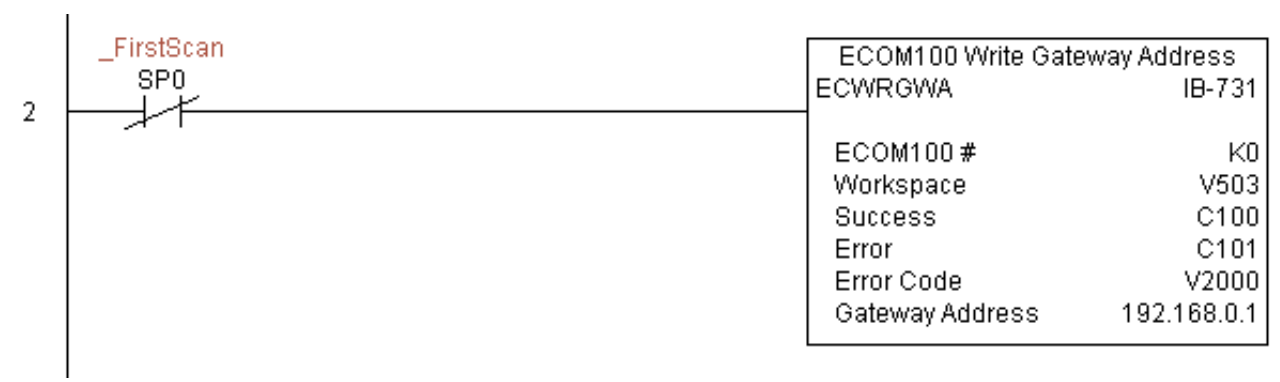


Rung 2: On the 2nd scan, assign the Gateway Address of the ECOM100 to 192.168.0.1

The ECWRGWA is leading edge triggered, not power-flow driven (similar to a counter input leg). The command to write the Gateway Address will be sent to the ECOM100 whenever the power flow into the IBox goes from OFF to ON.

If successful, turn on C100. If there is a failure, turn on C101. If it fails, you can look at V2000 for the specific error code.

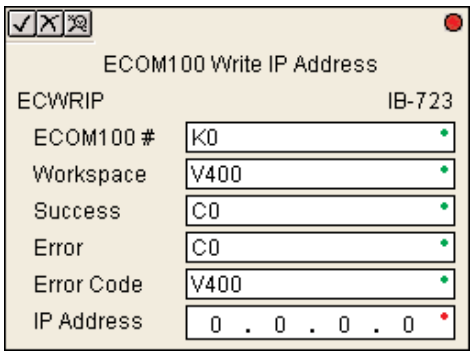
To configure all of the ECOM100 TCP/IP parameters in one IBox, see the ECOM100 IP Setup (ECIPSUP) IBox.



ECOM100 Write IP Address (ECWRIP) (IB-723)

DS5	Used
HPP	N/A

ECOM100 Write IP Address will write the given IP Address to the ECOM100 module on a leading edge transition to the IBox. See also ECOM100 IP Setup (ECIPSUP) IBox 717 to setup ALL of the TCP/IP parameters in a single instruction - IP Address, Subnet Mask, and Gateway Address.



The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Either the Success or Error bit parameter will turn on once the command is complete. If there is an error, the Error Code parameter will report an ECOM100 error code (less than 100), or a PLC logic error (greater than 1000).

The IP Address is stored in Flash-ROM in the ECOM100 and the execution of this IBox will disable the ECOM100 module for at least a half second until it writes the Flash-ROM. Therefore, it is HIGHLY RECOMMENDED that you only execute this IBox ONCE on first scan. Since it requires a LEADING edge to execute, use a NORMALLY CLOSED SP0 (STR NOT First Scan) to drive the power flow to the IBox.

In order for this ECOM100 IBox to function, you must turn ON dip switch 7 on the ECOM100 circuit board.

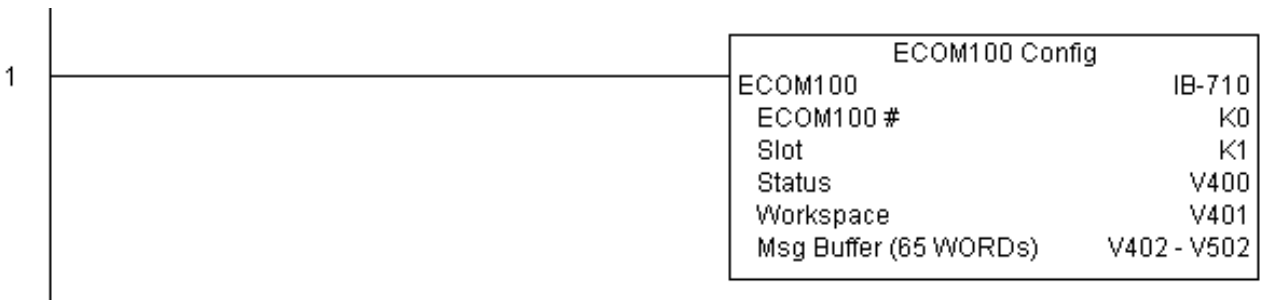
ECWRIP Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed
- Error Code: specifies the location where the Error Code will be written
- IP Address: specifies the IP Address that will be written to the module

Parameter	DL06 Range
ECOM100# ..... K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Success ..... X,Y,C,GX,GY,B	See DL06 V-memory map
Error ..... X,Y,C,GX,GY,B	See DL06 V-memory map
Error Code V	See DL06 V-memory map - Data Words
IP Address	0.0.0.1. to 255.255.255.254

ECWRIP Example

Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.



Rung 2: On the 2nd scan, assign the IP Address of the ECOM100 to 192.168.12.100

The ECWRIP is leading edge triggered, not power-flow driven (similar to a counter input leg). The command to write the IP Address will be sent to the ECOM100 whenever the power flow into the IBox goes from OFF to ON.

If successful, turn on C100. If there is a failure, turn on C101. If it fails, you can look at V2000 for the specific error code.

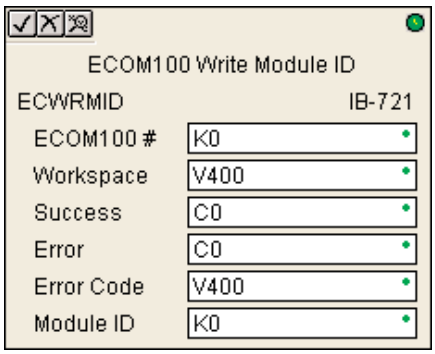
To configure all of the ECOM100 TCP/IP parameters in one IBox, see the ECOM100 IP Setup (ECIPSUP) IBox.

ECOM100 Write Module ID (ECWRMID) (IB-721)

DS5	Used
HPP	N/A

ECOM100 Write Module ID will write the given Module ID on a leading edge transition to the IBox

If the Module ID is set in the hardware using the dipswitches, this IBox will fail and return error code 1005 (decimal).



The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Either the Success or Error bit parameter will turn on once the command is complete. If there is an error, the Error Code parameter will report an ECOM100 error code (less than 100), or a PLC logic error (greater than 1000).

The Module ID is stored in Flash-ROM in the ECOM100 and the execution of this IBox will disable the ECOM100 module for at least a half second until it writes the Flash-ROM. Therefore, it is HIGHLY RECOMMENDED that you only execute this IBox ONCE on first scan. Since it requires a LEADING edge to execute, use a NORMALLY CLOSED SP0 (STR NOT First Scan) to drive the power flow to the IBox.

In order for this ECOM100 IBox to function, you must turn ON dip switch 7 on the ECOM100 circuit board.

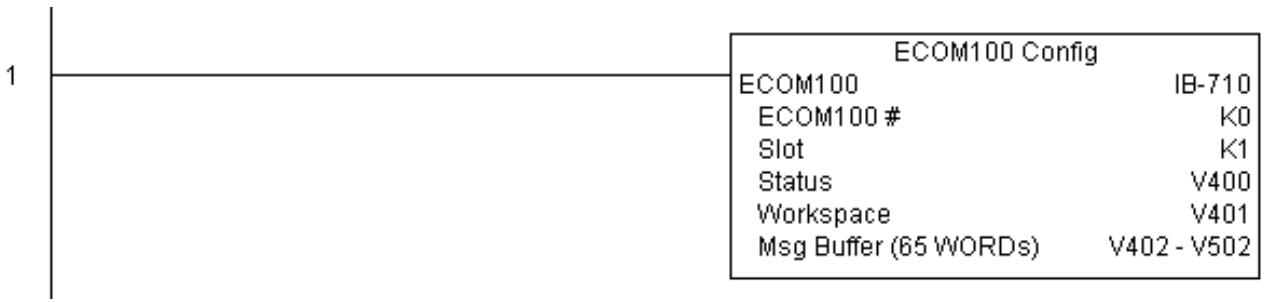
ECWRMID Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed
- Error Code: specifies the location where the Error Code will be written
- Module ID: specifies the Module ID that will be written to the module

Parameter	DL06 Range
ECOM100# ..... K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Success ..... X,Y,C,GX,GY,B	See DL06 V-memory map
Error ..... X,Y,C,GX,GY,B	See DL06 V-memory map
Error Code V	See DL06 V-memory map - Data Words
Module ID	K0-65535

ECWRMID Example

Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.



Rung 2: On the 2nd scan, set the Module ID of the ECOM100. Typically this is done using NetEdit, but this IBox allows you to configure the module ID of the ECOM100 using your ladder program.

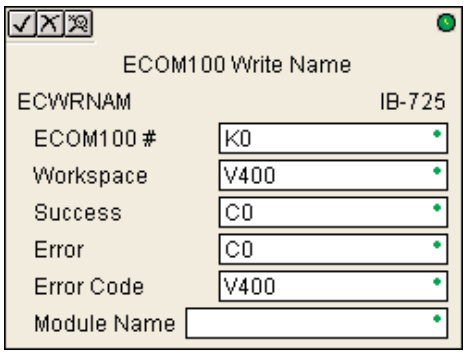
The EWRMID is leading edge triggered, not power-flow driven (similar to a counter input leg). The command to write the module ID will be sent to the ECOM100 whenever the power flow into the IBox goes from OFF to ON.

If successful, turn on C100. If there is a failure, turn on C101. If it fails, you can look at V2000 for the specific error code.

ECOM100 Write Name (ECWRNAM) (IB-725)

DS5	Used
HPP	N/A

ECOM100 Write Name will write the given Name to the ECOM100 module on a leading edge transition to the IBox. If you use a dollar sign ($) or double quote ("), use the PRINT/VPRINT escape sequence of TWO dollar signs ($$) for a single dollar sign or dollar sign-double quote ($") for a double quote character.



The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Either the Success or Error bit parameter will turn on once the command is complete. If there is an error, the Error Code parameter will report an ECOM100 error code (less than 100), or a PLC logic error (greater than 1000).

The Name is stored in Flash-ROM in the ECOM100 and the execution of this IBox will disable the ECOM100 module for at least a half second until it writes the Flash-ROM. Therefore, it is HIGHLY RECOMMENDED that you only execute this IBox ONCE on first scan. Since it requires a LEADING edge to execute, use a NORMALLY CLOSED SP0 (STR NOT First Scan) to drive the power flow to the IBox.

In order for this ECOM100 IBox to function, you must turn ON dip switch 7 on the ECOM100 circuit board.

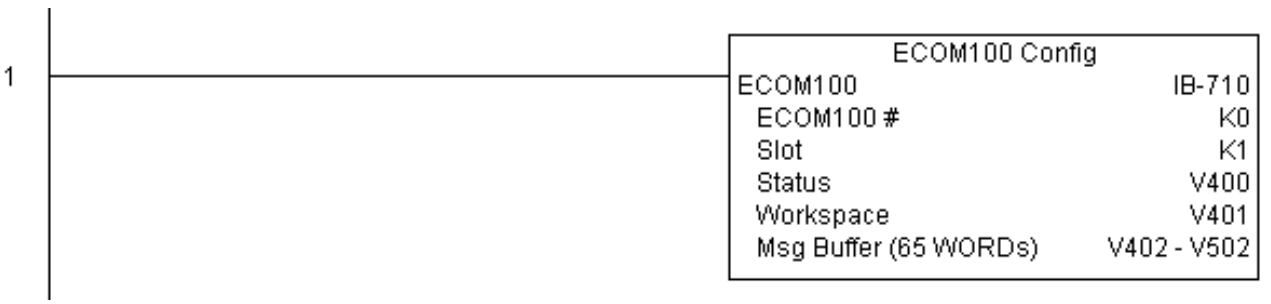
ECWRNAM Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed
- Error Code: specifies the location where the Error Code will be written
- Module Name: specifies the Name that will be written to the module

Parameter	DL06 Range
ECOM100# . . . . . K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error Code V	See DL06 V-memory map - Data Words
Module Name	Text

ECWRNAM Example

Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.



Rung 2: On the 2nd scan, set the Module Name of the ECOM100. Typically this is done using NetEdit, but this IBox allows you to configure the module name of the ECOM100 using your ladder program.

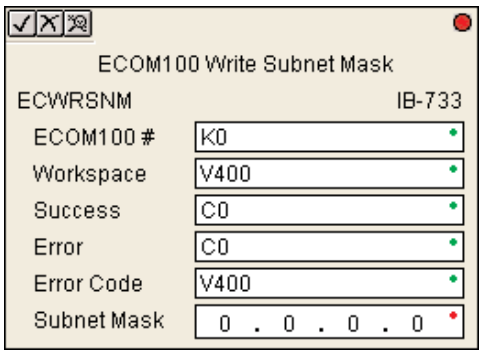
The EWRNAM is leading edge triggered, not power-flow driven (similar to a counter input leg). The command to write the module name will be sent to the ECOM100 whenever the power flow into the IBox goes from OFF to ON.

If successful, turn on C100. If there is a failure, turn on C101. If it fails, you can look at V2000 for the specific error code.

ECOM100 Write Subnet Mask (ECWRSNM) (IB-733)

DS5	Used
HPP	N/A

ECOM100 Write Subnet Mask will write the given Subnet Mask to the ECOM100 module on a leading edge transition to the IBox. See also ECOM100 IP Setup (ECIPSUP) IBox 717 to setup ALL of the TCP/IP parameters in a single instruction - IP Address, Subnet Mask, and Gateway Address.



The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Either the Success or Error bit parameter will turn on once the command is complete. If there is an error, the Error Code parameter will report an ECOM100 error code (less than 100), or a PLC logic error (greater than 1000).

The Subnet Mask is stored in Flash-ROM in the ECOM100 and the execution of this IBox will disable the ECOM100 module for at least a half second until it writes the Flash-ROM. Therefore, it is HIGHLY RECOMMENDED that you only execute this IBox ONCE on first scan. Since it requires a LEADING edge to execute, use a NORMALLY CLOSED SP0 (STR NOT First Scan) to drive the power flow to the IBox.

In order for this ECOM100 IBox to function, you must turn ON dip switch 7 on the ECOM100 circuit board.

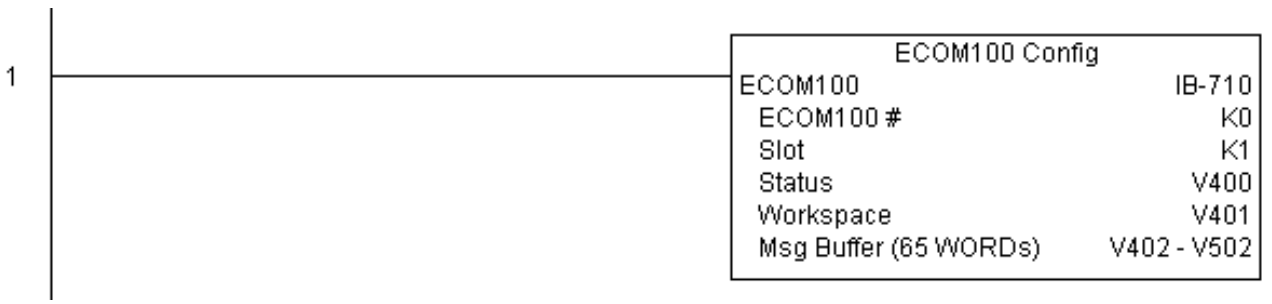
ECWRSNM Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed
- Error Code: specifies the location where the Error Code will be written
- Subnet Mask: specifies the Subnet Mask that will be written to the module

Parameter	DL06 Range
ECOM100# . . . . . K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error Code V	See DL06 V-memory map - Data Words
Subnet Mask	Masked IP Address

ECWRSNM Example

Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.



Rung 2: On the 2nd scan, assign the Subnet Mask of the ECOM100 to 255.255.0.0

The ECWRSNM is leading edge triggered, not power-flow driven (similar to a counter input leg). The command to write the Subnet Mask will be sent to the ECOM100 whenever the power flow into the IBox goes from OFF to ON.

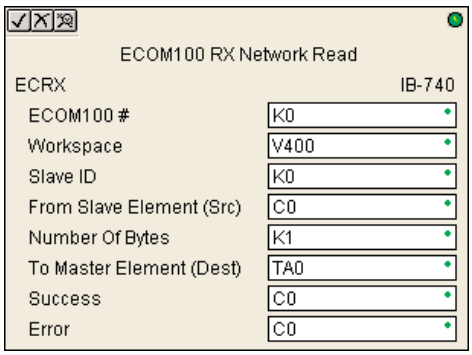
If successful, turn on C100. If there is a failure, turn on C101. If it fails, you can look at V2000 for the specific error code.

To configure all of the ECOM100 TCP/IP parameters in one IBox, see the ECOM100 IP Setup (ECIPSUP) IBox.

ECOM100 RX Network Read (ECRX) (IB-740)

DS5	Used
HPP	N/A

ECOM100 RX Network Read performs the RX instruction with built-in interlocking with all other ECOM100 RX (ECRX) and ECOM100 WX (ECWX) IBoxes in your program to simplify communications networking. It will perform the RX on the specified ECOM100#'s network, which corresponds to a specific unique ECOM100 Configuration (ECOM100) IBox at the top of your program.



The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Whenever this IBox has power, it will read element data from the specified slave into the given destination V memory buffer, giving other ECOM100 RX and ECOM100 WX IBoxes on that ECOM100# network a chance to execute.

For example, if you wish to read and write data continuously from 5 different slaves, you can have all of these ECRX and ECWX instructions in ONE RUNG driven by SP1 (Always On). They will execute round-robin style, automatically.

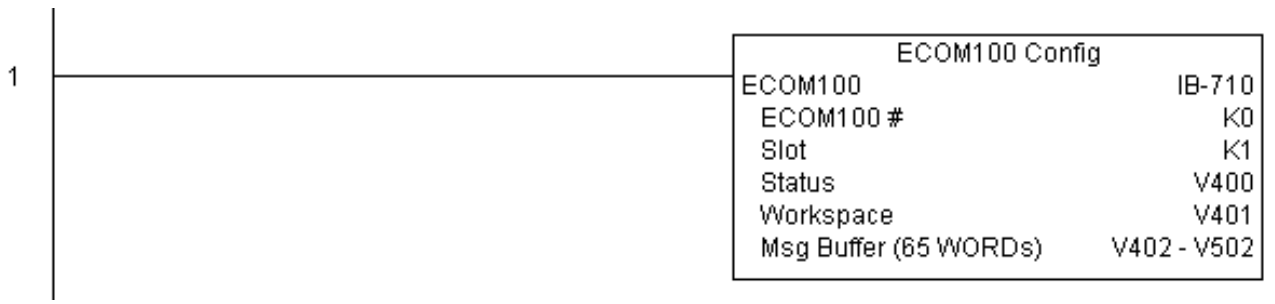
ECRX Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Slave ID: specifies the slave ECOM(100) PLC that will be targeted by the ECRX instruction
- From Slave Element (Src): specifies the slave address of the data to be read
- Number of Bytes: specifies the number of bytes to read from the slave ECOM(100) PLC
- To Master Element (Dest): specifies the location where the slave data will be placed in the master ECOM100 PLC
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed

Parameter	DL06 Range
ECOM100# . . . . . K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Slave ID . . . . . K	K0-90
From Slave Element (Src) X,Y,C,S,T,CT,GX,GY,V	See DL06 V-memory map
Number of Bytes . . . . . K	K1-128
To Master Element (Dest) V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map

ECRX Example

Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.



(example continued on next page)

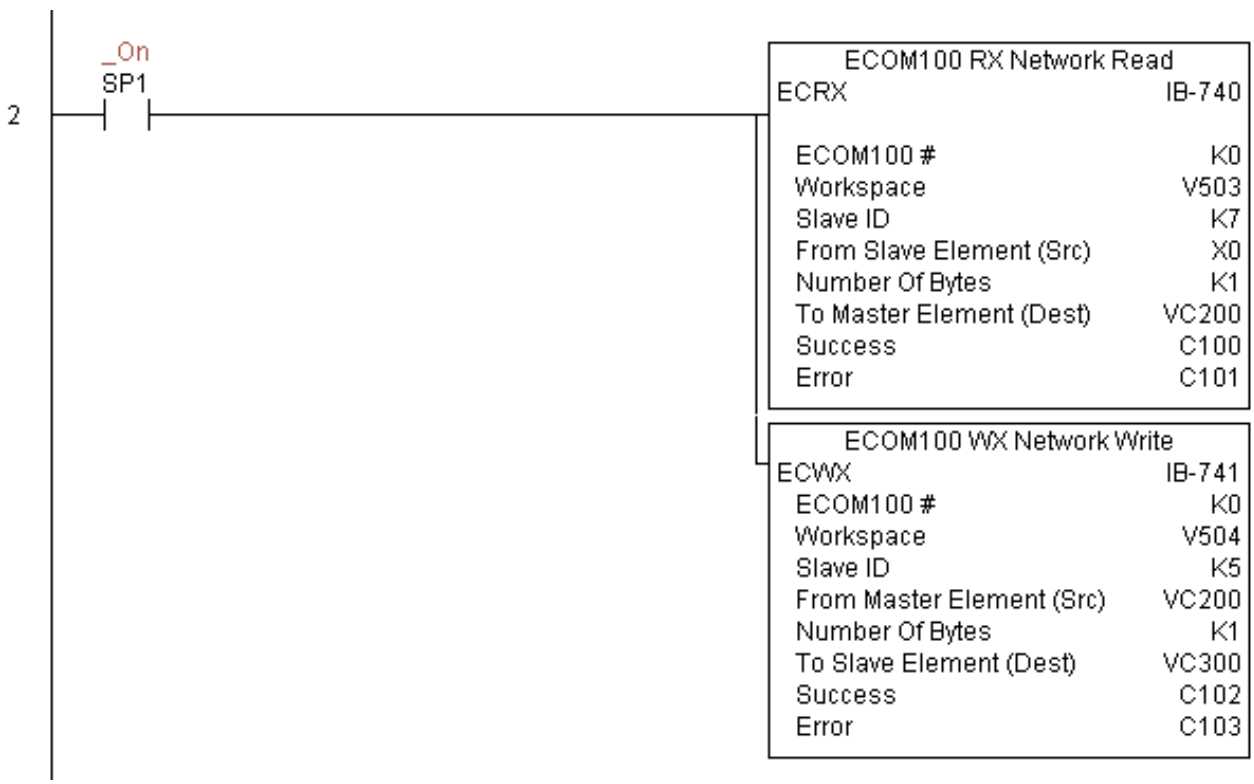
ECRX Example (con't)

Rung 2: Using ECOM100# K0, read X0-X7 from Slave K7 and write them to slave K5 as fast as possible. Store them in this local PLC in C200-C207, and write them to C300-C307 in slave K5.

Both the ECRX and ECWX work with the ECOM100 Config IBox to simplify all networking by handling all of the interlocks and proper resource sharing. They also provide very simplified error reporting. You no longer need to worry about any SP "busy bits" or "error bits", or what slot number a module is in, or have any counters or shift registers or any other interlocks for resource management.

In this example, SP1 (always ON) is driving both the ECRX and ECWX IBoxes in the same rung. On the scan that the Network Read completes, the Network Write will start that same scan. As soon as the Network Write completes, any pending operations below it in the program would get a turn. If there are no pending ECOM100 IBoxes below the ECWX, then the very next scan the ECRX would start its request again.

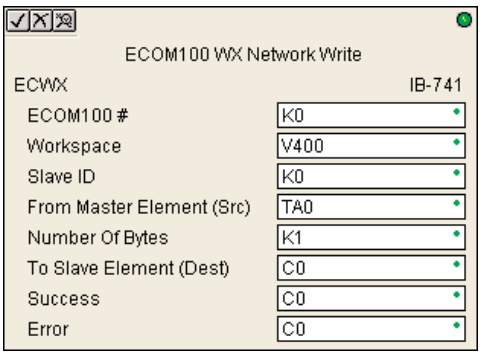
Using the ECRX and ECWX for all of your ECOM100 network reads and writes is the fastest the PLC can do networking. For local Serial Ports, DCM modules, or the original ECOM modules, use the NETCFG and NETRX/NETWX IBoxes.



ECOM100 WX Network Write(ECWX) (IB-741)

DS5	Used
HPP	N/A

ECOM100 WX Network Write performs the WX instruction with built-in interlocking with all other ECOM100 RX (ECRX) and ECOM100 WX (ECWX) IBoxes in your program to simplify communications networking. It will perform the WX on the specified ECOM100#'s network, which corresponds to a specific unique ECOM100 Configuration (ECOM100) IBox at the top of your program.



The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Whenever this IBox has power, it will write data from the master's V memory buffer to the specified slave starting with the given slave element, giving other ECOM100 RX and ECOM100 WX IBoxes on that ECOM100# network a chance to execute.

For example, if you wish to read and write data continuously from 5 different slaves, you can have all of these ECRX and ECWX instructions in ONE RUNG driven by SP1 (Always On). They will execute round-robin style, automatically.

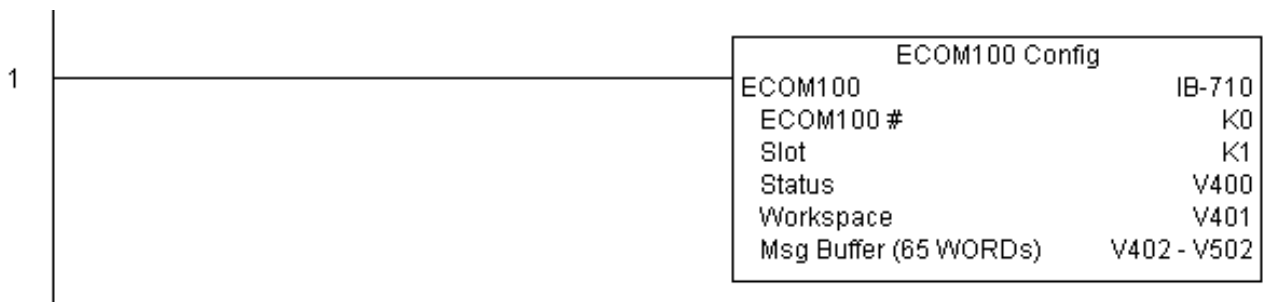
ECWX Parameters

- ECOM100#: this is a logical number associated with this specific ECOM100 module in the specified slot. All other ECxxxx IBoxes that need to reference this ECOM100 module must reference this logical number
- Workspace: specifies a V-memory location that will be used by the instruction
- Slave ID: specifies the slave ECOM(100) PLC that will be targeted by the ECWX instruction
- From Master Element (Src): specifies the location in the master ECOM100 PLC where the data will be sourced from
- Number of Bytes: specifies the number of bytes to write to the slave ECOM(100) PLC
- To Slave Element (Dest): specifies the slave address the data will be written to
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed

Parameter	DL06 Range
ECOM100# . . . . . K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Slave ID . . . . . K	K0-90
From Master Element (Src) V	See DL06 V-memory map - Data Words
Number of Bytes . . . . . K	K1-128
To Slave Element (Dest) . . X,Y,C,S,T,CT,GX,GY,V	See DL06 V-memory map
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map

ECWX Example

Rung 1: The ECOM100 Config IBox is responsible for coordination/interlocking of all ECOM100 type IBoxes for one specific ECOM100 module. Tag the ECOM100 in slot 1 as ECOM100# K0. All other ECxxxx IBoxes refer to this module # as K0. If you need to move the module in the base to a different slot, then you only need to change this one IBox. V400 is used as a global result status register for the other ECxxxx IBoxes using this specific ECOM100 module.V401 is used to coordinate/interlock the logic in all of the other ECxxxx IBoxes using this specific ECOM100 module. V402-V502 is a common 130 byte buffer available for use by the other ECxxxx IBoxes using this specific ECOM100 module.



(example continued on next page)

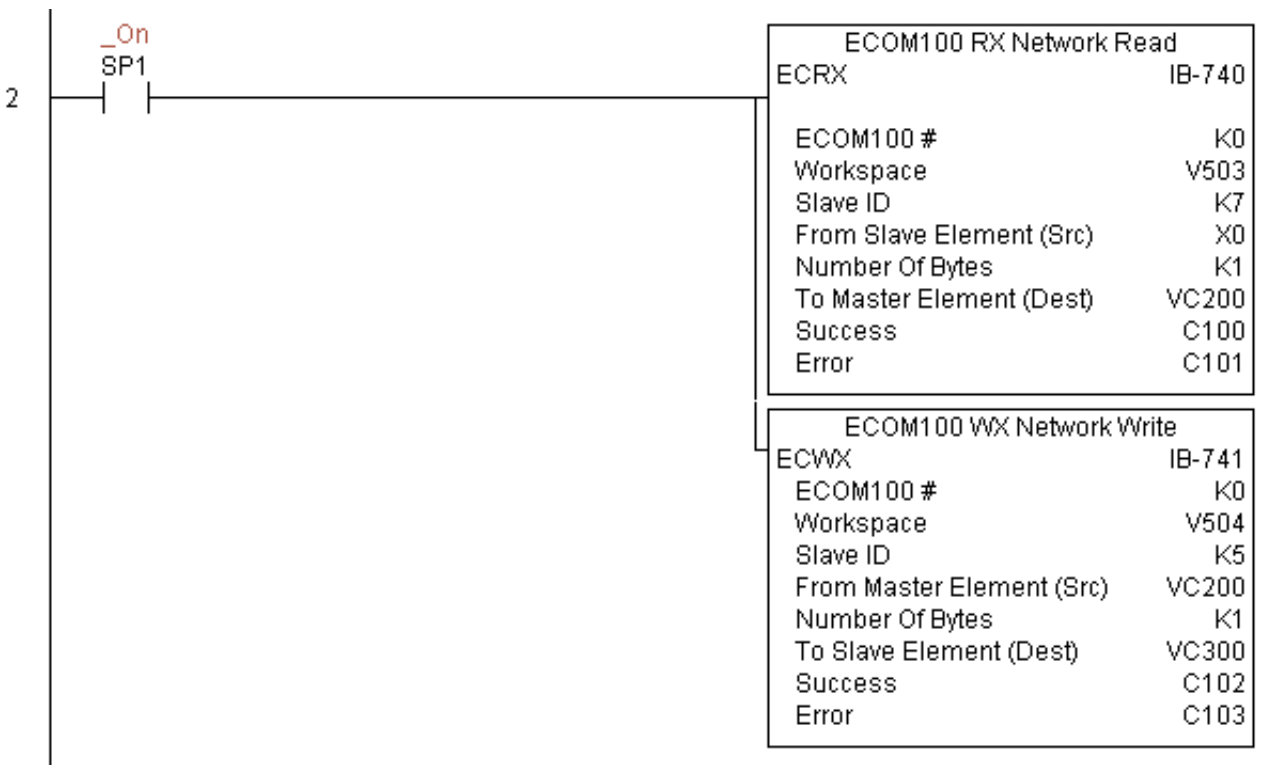
ECWX Example (con't)

Rung 2: Using ECOM100# K0, read X0-X7 from Slave K7 and write them to slave K5 as fast as possible. Store them in this local PLC in C200-C207, and write them to C300-C307 in slave K5.

Both the ECRX and ECWX work with the ECOM100 Config IBox to simplify all networking by handling all of the interlocks and proper resource sharing. They also provide very simplified error reporting. You no longer need to worry about any SP "busy bits" or "error bits", or what slot number a module is in, or have any counters or shift registers or any other interlocks for resource management.

In this example, SP1 (always ON) is driving both the ECRX and ECWX IBoxes in the same rung. On the scan that the Network Read completes, the Network Write will start that same scan. As soon as the Network Write completes, any pending operations below it in the program would get a turn. If there are no pending ECOM100 IBoxes below the ECWX, then the very next scan the ECRX would start its request again.

Using the ECRX and ECWX for all of your ECOM100 network reads and writes is the fastest the PLC can do networking. For local Serial Ports, DCM modules, or the original ECOM modules, use the NETCFG and NETRX/NETWX IBoxes.

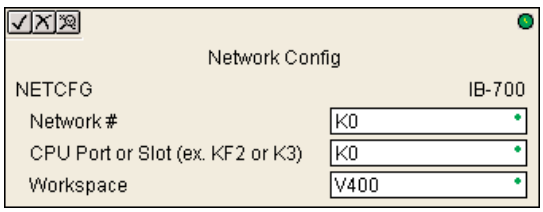


NETCFG Network Configuration (NETCFG) (IB-700)

DS5	Used
HPP	N/A

Network Config defines all the common information necessary for performing RX/WX Networking using the NETRX and NETWX IBox instructions via a local CPU serial port, DCM or ECOM module.

You must have the Network Config instruction at the top of your ladder/stage program with any other configuration IBoxes.



If you use more than one local serial port, DCM or ECOM in your PLC for RX/WX Networking, you must have a different Network Config instruction for EACH RX/WX network in your system that utilizes any NETRX/NETWX IBox instructions.

The Workspace parameter is an internal, private register used by the Network Config IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

The 2nd parameter "CPU Port or Slot" is the same value as in the high byte of the first LD instruction if you were coding the RX or WX rung yourself. This value is CPU and port specific (check your PLC manual), but possible values include KF2 for local CPU serial port 2 of an 06, K3 for a DCM or ECOM in slot 3 of a local 205 base, or K37 for a DCM in a 405 expansion base 3, slot 7.

NETCFG Parameters

- Network#: specifies a unique # for each ECOM(100) or DCM network to use
- CPU Port or Slot: specifies the CPU port number or slot number of DCM/ECOM(100) used
- Workspace: specifies a V-memory location that will be used by the instruction

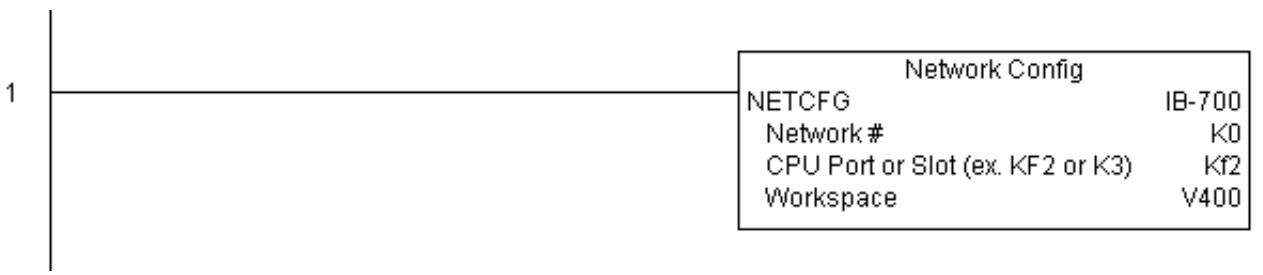
Parameter	DL06 Range
Network# . . . . . K	K0-255
CPU Port or Slot . . . . . K	K0-FF
Workspace V	See DL06 V-memory map - Data Words

NETCFG Example

The Network Configuration IBox coordinates all of the interaction with other Network IBoxes (NETRX/NETWX). You must have a Network Configuration IBox for each serial port network, DCM module network, or original ECOM module network in your system. Configuration IBoxes must be at the top of your program and must execute every scan.

This IBox defines Network# K0 to be for the local CPU serial port #2 (KF2). For local CPU serial ports or DCM/ECOM modules, use the same value you would use in the most significant byte of the first LD instruction in a normal RX/WX rung to reference the port or module. Any NETRX or NETWX IBoxes that need to reference this specific network would enter K0 for their Network# parameter.

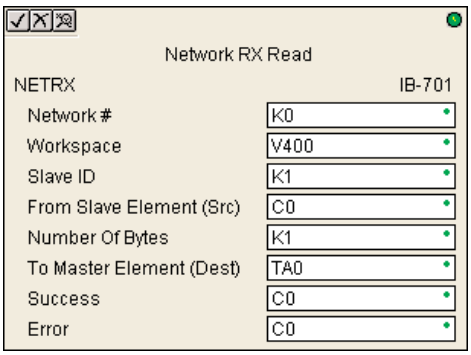
The Workspace register is used to maintain state information about the port or module, along with proper sharing and interlocking with the other NETRX and NETWX IBoxes in the program. This V memory register must not be used anywhere else in the entire program.



Network RX Read (NETRX) (IB-701)

DS5	Used
HPP	N/A

Network RX Read performs the RX instruction with built-in interlocking with all other Network RX (NETRX) and Network WX (NETWX) IBoxes in your program to simplify communications networking. It will perform the RX on the specified Network #, which corresponds to a specific unique Network Configuration (NETCFG) at the top of your program.



The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Whenever this IBox has power, it will read element data from the specified slave into the given destination V memory buffer, giving other Network RX and Network WX IBoxes on that Network # a chance to execute.

For example, if you wish to read and write data continuously from 5 different slaves, you can have all of these NETRX and NETWX instructions in ONE RUNG driven by SP1 (Always On). They will execute round-robin style, automatically.

NETRX Parameters

- Network#: specifies the (CPU port's, DCM's, ECOM's) Network # defined by the NETCFG instruction
- Workspace: specifies a V-memory location that will be used by the instruction
- Slave ID: specifies the slave PLC that will be targeted by the NETRX instruction
- From Slave Element (Src): specifies the slave address of the data to be read
- Number of Bytes: specifies the number of bytes to read from the slave device
- To Master Element (Dest): specifies the location where the slave data will be placed in the master PLC
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed

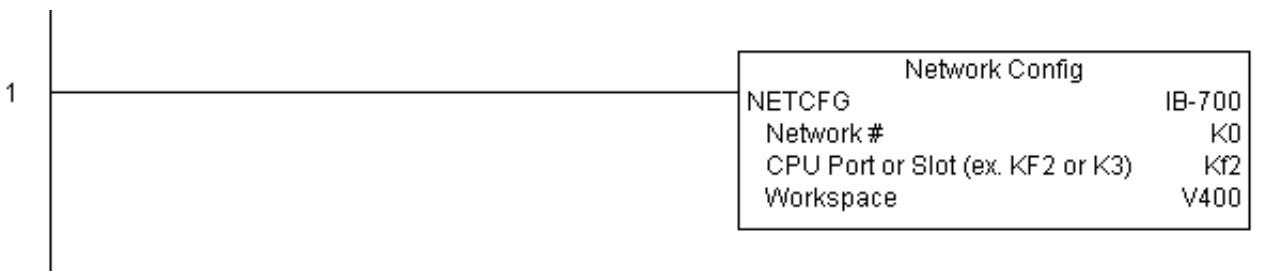
Parameter	DL06 Range
Network# . . . . . K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Slave ID . . . . . K	K0-90
From Slave Element (Src) X,Y,C,S,T,CT,GX,GY,V	See DL06 V-memory map
Number of Bytes . . . . . K	K1-128
To Master Element (Dest) V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map

NETRX Example

Rung 1: The Network Configuration IBox coordinates all of the interaction with other Network IBoxes (NETRX/NETWX). You must have a Network Configuration IBox for each serial port network, DCM module network, or original ECOM module network in your system. Configuration IBoxes must be at the top of your program and must execute every scan.

This IBox defines Network# K0 to be for the local CPU serial port #2 (KF2). For local CPU serial ports or DCM/ECOM modules, use the same value you would use in the most significant byte of the first LD instruction in a normal RX/WX rung to reference the port or module. Any NETRX or NETWX IBoxes that need to reference this specific network would enter K0 for their Network# parameter.

The Workspace register is used to maintain state information about the port or module, along with proper sharing and interlocking with the other NETRX and NETWX IBoxes in the program. This V memory register must not be used anywhere else in the entire program.



(example continued on next page)

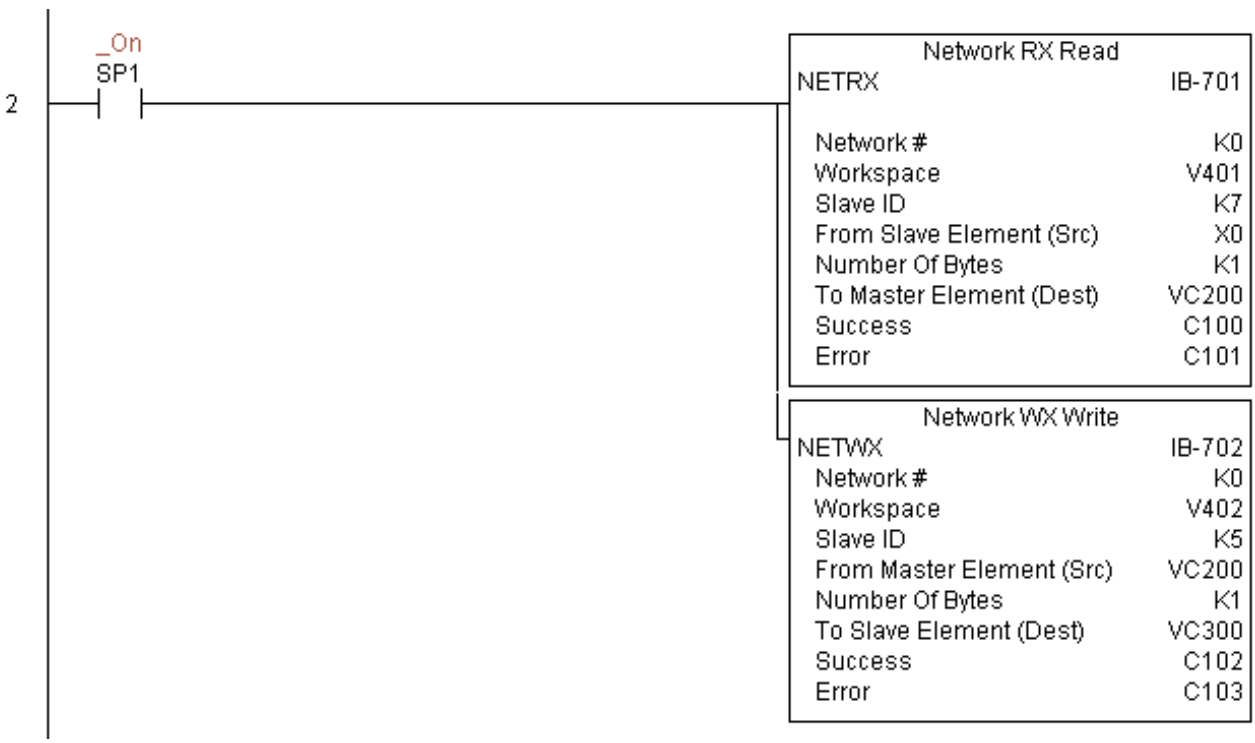
NETRX Example (con't)

Rung 2: Using Network# K0, read X0-X7 from Slave K7 and write them to slave K5 as fast as possible. Store them in this local PLC in C200-C207, and write them to C300-C307 in slave K5.

Both the NETRX and NETWX work with the Network Config IBox to simplify all networking by handling all of the interlocks and proper resource sharing. They also provide very simplified error reporting. You no longer need to worry about any SP "busy bits" or "error bits", or what port number or slot number a module is in, or have any counters or shift registers or any other interlocks for resource management.

In this example, SP1 (always ON) is driving both the NETRX and NETWX IBoxes in the same rung. On the scan that the Network Read completes, the Network Write will start that same scan. As soon as the Network Write completes, any pending operations below it in the program would get a turn. If there are no pending NETRX or NETWX IBoxes below this IBox, then the very next scan the NETRX would start its request again.

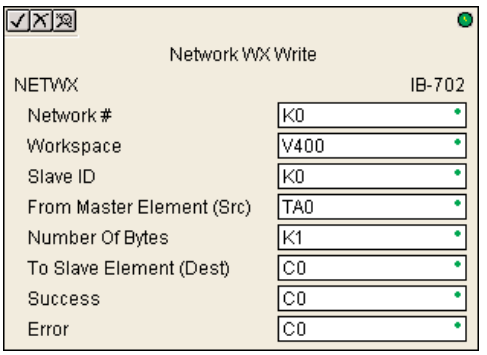
Using the NETRX and NETWX for all of your serial port, DCM, or original ECOM network reads and writes is the fastest the PLC can do networking. For ECOM100 modules, use the ECOM100 and ECRX/ECWX IBoxes.



Network WX Write (NETWX) (IB-702)

DS5	Used
HPP	N/A

Network WX Write performs the WX instruction with built-in interlocking with all other Network RX (NETRX) and Network WX (NETWX) IBoxes in your program to simplify communications networking. It will perform the WX on the specified Network #, which corresponds to a specific unique Network Configuration (NETCFG) at the top of your program.



The Workspace parameter is an internal, private register used by this IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

Whenever this IBox has power, it will write data from the master's V memory buffer to the specified slave starting with the given slave element, giving other Network RX and Network WX IBoxes on that Network # a chance to execute.

For example, if you wish to read and write data continuously from 5 different slaves, you can have all of these NETRX and NETWX instructions in ONE RUNG driven by SP1 (Always On). They will execute round-robin style, automatically.

NETWX Parameters

- Network#: specifies the (CPU port's, DCM's, ECOM's) Network # defined by the NETCFG instruction
- Workspace: specifies a V-memory location that will be used by the instruction
- Slave ID: specifies the slave PLC that will be targeted by the NETWX instruction
- From Master Element (Src): specifies the location in the master PLC where the data will be sourced from
- Number of Bytes: specifies the number of bytes to write to the slave PLC
- To Slave Element (Dest): specifies the slave address the data will be written to
- Success: specifies a bit that will turn on once the request is completed successfully
- Error: specifies a bit that will turn on if the instruction is not successfully completed

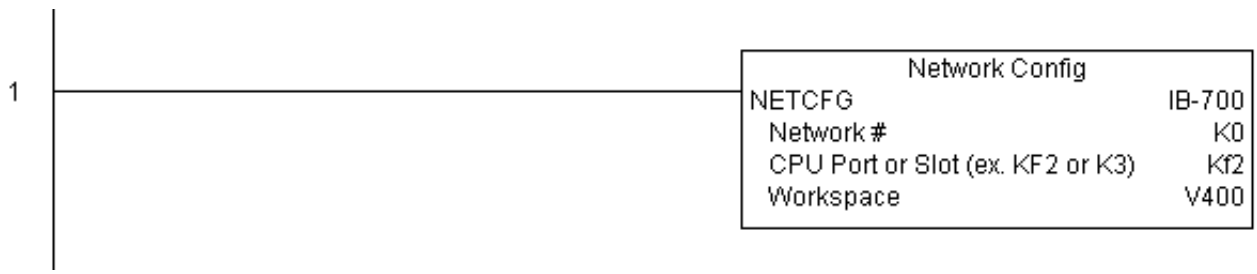
Parameter	DL06 Range
Network# . . . . . K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Slave ID . . . . . K	K0-90
From Master Element (Src) V	See DL06 V-memory map - Data Words
Number of Bytes . . . . . K	K1-128
To Slave Element (Dest) . . X,Y,C,S,T,CT,GX,GY,V	See DL06 V-memory map
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map

NETWX Example

Rung 1: The Network Configuration IBox coordinates all of the interaction with other Network IBoxes (NETRX/NETWX). You must have a Network Configuration IBox for each serial port network, DCM module network, or original ECOM module network in your system. Configuration IBoxes must be at the top of your program and must execute every scan.

This IBox defines Network# K0 to be for the local CPU serial port #2 (KF2). For local CPU serial ports or DCM/ECOM modules, use the same value you would use in the most significant byte of the first LD instruction in a normal RX/WX rung to reference the port or module. Any NETRX or NETWX IBoxes that need to reference this specific network would enter K0 for their Network# parameter.

The Workspace register is used to maintain state information about the port or module, along with proper sharing and interlocking with the other NETRX and NETWX IBoxes in the program. This V memory register must not be used anywhere else in the entire program.



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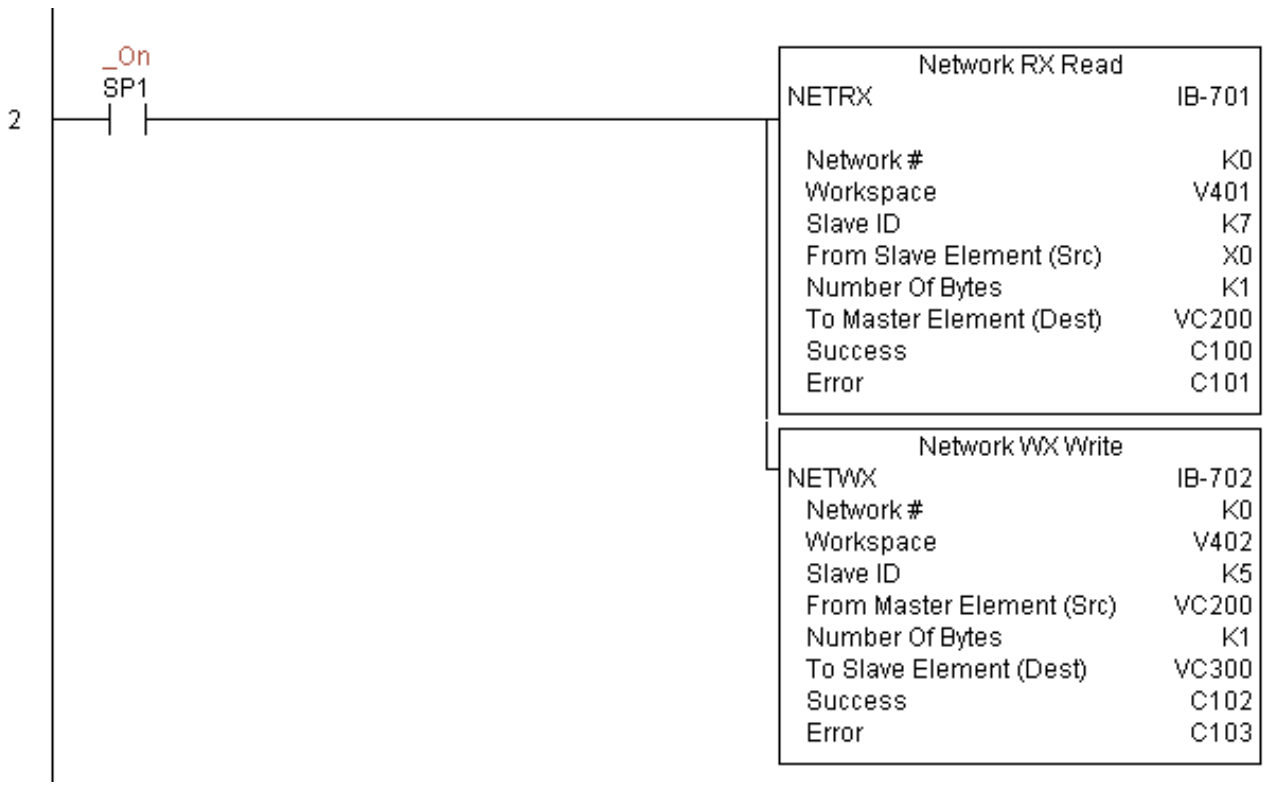
NETWX Example (con't)

Rung 2: Using Network# K0, read X0-X7 from Slave K7 and write them to slave K5 as fast as possible. Store them in this local PLC in C200-C207, and write them to C300-C307 in slave K5.

Both the NETRX and NETWX work with the Network Config IBox to simplify all networking by handling all of the interlocks and proper resource sharing. They also provide very simplified error reporting. You no longer need to worry about any SP "busy bits" or "error bits", or what port number or slot number a module is in, or have any counters or shift registers or any other interlocks for resource management.

In this example, SP1 (always ON) is driving both the NETRX and NETWX IBoxes in the same rung. On the scan that the Network Read completes, the Network Write will start that same scan. As soon as the Network Write completes, any pending operations below it in the program would get a turn. If there are no pending NETRX or NETWX IBoxes below this IBox, then the very next scan the NETRX would start its request again.

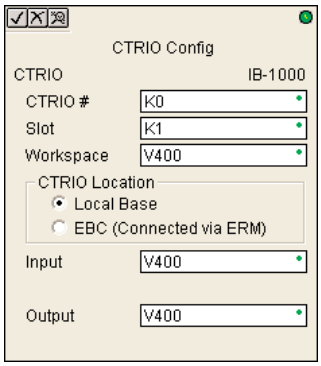
Using the NETRX and NETWX for all of your serial port, DCM, or original ECOM network reads and writes is the fastest the PLC can do networking. For ECOM100 modules, use the ECOM100 and ECRX/ECWX IBoxes.



CTRIO Configuration (CTRIO) (IB-1000)

DS5	Used
HPP	N/A

CTRIO Config defines all the common information for one specific CTRIO module which is used by the other CTRIO IBox instructions (for example, CTRLDPR - CTRIO Load Profile, CTREDRL - CTRIO Edit and Reload Preset Table, CTRRTLM - CTRIO Run to Limit Mode, ...).



The Input/Output parameters for this instruction can be copied directly from the CTRIO Workbench configuration for this CTRIO module. Since the behavior is slightly different when the CTRIO module is in an EBC Base via an ERM, you must specify whether the CTRIO module is in a local base or in an EBC base. The DL06 PLC only supports local base operation at this time.

You must have the CTRIO Config IBox at the top of your ladder/stage program along with any other configuration IBoxes.

If you have more than one CTRIO in your PLC, you must have a different CTRIO Config IBox for EACH CTRIO module in your system that utilizes any CTRIO IBox instructions. Each CTRIO Config IBox must have a UNIQUE CTRIO# value. This is how the CTRIO IBoxes differentiate between the different CTRIO modules in your system.

The Workspace parameter is an internal, private register used by the CTRIO Config IBox and MUST BE UNIQUE in this one instruction and MUST NOT be used anywhere else in your program.

CTRIO Parameters

- CTRIO#: specifies a specific CTRIO module based on a user defined number
- Slot: specifies which PLC option slot the CTRIO module occupies
- Workspace: specifies a V-memory location that will be used by the instruction
- CTRIO Location: specifies where the module is located (local base only for DL06)
- Input: This needs to be set to the same V-memory register as is specified in CTRIO Workbench as 'Starting V address for inputs' for this unique CTRIO.
- Output: This needs to be set to the same V-memory register as is specified in CTRIO Workbench as 'Starting V address for outputs' for this unique CTRIO.

Parameter	DL06 Range
CTRIO# . . . . . K	K0-255
Slot . . . . . K	K1-4
Workspace V	See DL06 V-memory map - Data Words
Input V	See DL06 V-memory map - Data Words
Output V	See DL06 V-memory map - Data Words

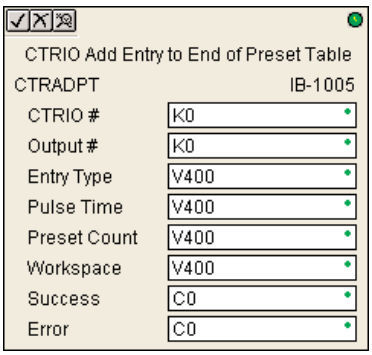
CTRIO Example

Rung 1: This sets up the CTRIO card in slot 2 of the local base. Each CTRIO in the system will need a separate CTRIO I-box before any CTRxxxx I-boxes can be used for them. The CTRIO has been configured to use V2000 through V2025 for its input data, and V2030 through V2061 for its output data.

CTRIO Add Entry to End of Preset Table (CTRADPT) (IB-1005)

DS5	Used
HPP	N/A

CTRIO Add Entry to End of Preset Table, on a leading edge transition to this IBox, will append an entry to the end of a memory based Preset Table on a specific CTRIO Output resource. This IBox will take more than 1 PLC scan to execute. Either the Success or Error bit will turn on when the command is complete. If the Error Bit is on, you can use the CTRIO Read Error Code (CTRRDER) IBox to get extended error information.



Entry Type:

K0: Set

K1: Reset

K2: Pulse On (uses Pulse Time)

K3: Pulse Off (uses Pulse Time)

K4: Toggle

K5: Reset Count

Note that the Pulse Time parameter is ignored by some Entry Types.

The Workspace register is for internal use by this IBox instruction and MUST NOT be used anywhere else in your program.

CTRAPT Parameters

- CTRIO#: specifies a specific CTRIO module based on a user defined number (see CTRIO Config)
- Output#: specifies a CTRIO output to be used by the instruction
- Entry Type: specifies the Entry Type to be added to the end of a Preset Table
- Pulse Time: specifies a pulse time for the Pulse On and Pulse Off Entry Types
- Preset Count: specifies an initial count value to begin at after Reset
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the instruction has successfully completed
- Error: specifies a bit that will turn on if the instruction does not complete successfully

Parameter	DL06 Range
CTRIO# . . . . . K	K0-255
Output# . . . . . K	K0-3
Entry Type . . . . . V,K	K0-5; See DL06 V-memory map - Data Words
Pulse Time . . . . . V,K	K0-65535; See DL06 V-memory map - Data Words
Preset Count . . . . . V,K	K0-2147434528; See DL06 V-memory map
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map

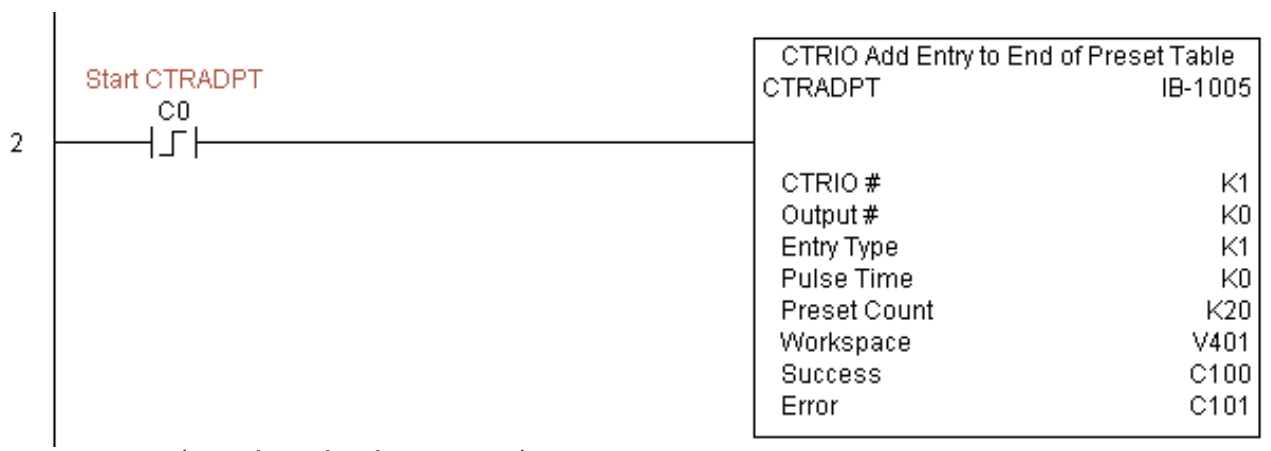
CTRADPT Example

Rung 1: This sets up the CTRIO card in slot 2 of the local base. Each CTRIO in the system will need a separate CTRIO I-box before any CTRxxxx I-boxes can be used for them. The CTRIO has been configured to use V2000 through V2025 for its input data, and V2030 through V2061 for its output data.

Rung 2: This rung is a sample method for enabling the CTRADPT command. A C-bit is used to allow the programmer to control the command from Data View for testing purposes.

Turning on C0 will cause the CTRADPT instruction to add a new preset to the preset table for output #0 on the CTRIO in slot 2. The new preset will be a command to RESET (entry type K1=reset), pulse time is left at zero as the reset type does not use this, and the count at which it will reset will be 20.

Operating procedure for this example code is to load the CTRADPT_ex1.cwb file to your CTRIO, then enter the code shown here, change to RUN mode, enable output #0 by turning on C2 in Data View, turn encoder on CTRIO to value above 10 and output #0 light will come on and stay on for all counts past 10. Now reset the counter with C1, enable C0 to execute CTRADPT command to add a reset for output #0 at a count of 20, turn on C2 to enable output #0, then turn encoder to value of 10+ (output #0 should turn on) and then continue on to count of 20+ (output #0 should turn off).



(example continued on next page)

CTRADPT Example (con't)

Rung 3: This rung allows the programmer to reset the counter from the ladder logic.

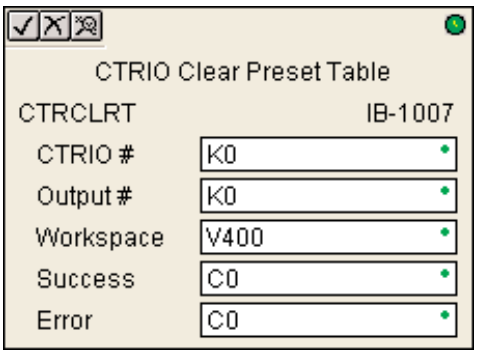
Rung 4: This rung allows the operator to enable output #0 from the ladder code.

CTRIO Clear Preset Table (CTRCLRT) (IB-1007)

DS5	Used
HPP	N/A

CTRIO Clear Preset Table will clear the RAM based Preset Table on a leading edge transition to this IBox. This IBox will take more than 1 PLC scan to execute. Either the Success or Error bit will turn on when the command is complete. If the Error Bit is on, you can use the CTRIO Read Error Code (CTRRDER) IBox to get extended error information.

The Workspace register is for internal use by this IBox instruction and MUST NOT be used anywhere else in your program.



S

CTRCLRT Parameters

- CTRIO#: specifies a specific CTRIO module based on a user defined number (see CTRIO Config)
- Output#: specifies a CTRIO output to be used by the instruction
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the instruction has successfully completed
- Error: specifies a bit that will turn on if the instruction does not complete successfully

Parameter	DL06 Range
CTRIO# . . . . . K	K0-255
Output# . . . . . K	K0-3
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map

CTRCLRT Example

Rung 1: This sets up the CTRIO card in slot 2 of the local base. Each CTRIO in the system will need a separate CTRIO I-box before any CTRxxxx I-boxes can be used for them. The CTRIO has been configured to use V2000 through V2025 for its input data, and V2030 through V2061 for its output data.

Rung 2: This rung is a sample method for enabling the CTRCLRT command. A C-bit is used to allow the programmer to control the command from Data View for testing purposes.

Turning on C0 will cause the CTRCLRT instruction to clear the preset table for output #0 on the CTRIO in slot 2.

Operating procedure for this example code is to load the CTRCLRT_ex1.cwb file to your CTRIO, then enter the code shown here, change to RUN mode, enable output #0 by turning on C2 in Data View, turn encoder on CTRIO to value above 10 and output #0 light will come on and stay on until a count of 20 is reached, where it will turn off. Now reset the counter with C1, enable C0 to execute CTRCLRT command to clear the preset table, turn on C2 to enable output #0, then turn encoder to value of 10+ (output #0 should NOT turn

(example continued on next page)

CTRCLRT Example (con't)

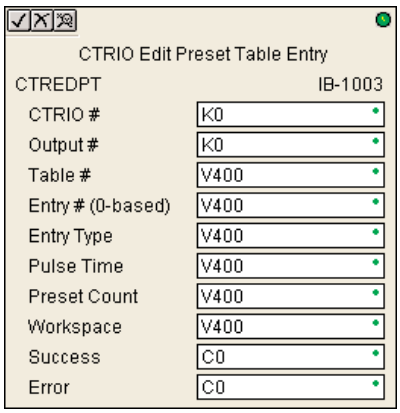
Rung 3: This rung allows the programmer to reset the counter from the ladder logic.

Rung 4: This rung allows the operator to enable output #0 from the ladder code.

CTRIO Edit Preset Table Entry (CTREDPT) (IB-1003)

DS5	Used
HPP	N/A

CTRIO Edit Preset Table Entry, on a leading edge transition to this IBox, will edit a single entry in a Preset Table on a specific CTRIO Output resource. This IBox is good if you are editing more than one entry in a file at a time. If you wish to do just one edit and then reload the table immediately, see the CTRIO Edit and Reload Preset Table Entry (CTREDRL) IBox. This IBox will take more than 1 PLC scan to execute. Either the Success or Error bit will turn on when the command is complete. If the Error Bit is on, you can use the CTRIO Read Error Code (CTRRDER) IBox to get extended error information.



Entry Type:

K0: Set

K1: Reset

K2: Pulse On (uses Pulse Time)

K3: Pulse Off (uses Pulse Time)

K4: Toggle

K5: Reset Count

Note that the Pulse Time parameter is ignored by some Entry Types.

The Workspace register is for internal use by this IBox instruction and MUST NOT be used anywhere else in your program.

CTREDPT Parameters

- CTRIO#: specifies a specific CTRIO module based on a user defined number (see CTRIO Config Ibox)
- Output#: specifies a CTRIO output to be used by the instruction
- Table#: specifies the Table number of which an Entry is to be edited
- Entry#: specifies the Entry location in the Preset Table to be edited
- Entry Type: specifies the Entry Type to add during the edit
- Pulse Time: specifies a pulse time for the Pulse On and Pulse Off Entry Types
- Preset Count: specifies an initial count value to begin at after Reset
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the instruction has successfully completed
- Error: specifies a bit that will turn on if the instruction does not complete successfully

Parameter	DL06 Range
CTRIO# . . . . . K	K0-255
Output# . . . . . K	K0-3
Table# . . . . . V,K	K0-255; See DL06 V-memory map - Data Words
Entry# . . . . . V,K	K0-255; See DL06 V-memory map - Data Words
Entry Type . . . . . V,K	K0-5; See DL06 V-memory map - Data Words
Pulse Time . . . . . V,K	K0-65535; See DL06 V-memory map - Data Words
Preset Count . . . . . V,K	K0-2147434528; See DL06 V-memory map
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map

S

CTREDPT Example

Rung 1: This sets up the CTRIO card in slot 2 of the local base. Each CTRIO in the system will need a separate CTRIO I-box before any CTRxxxx I-boxes can be used for them. The CTRIO has been configured to use V2000 through V2025 for its input data, and V2030 through V2061 for its output data.

(example continued on next page)

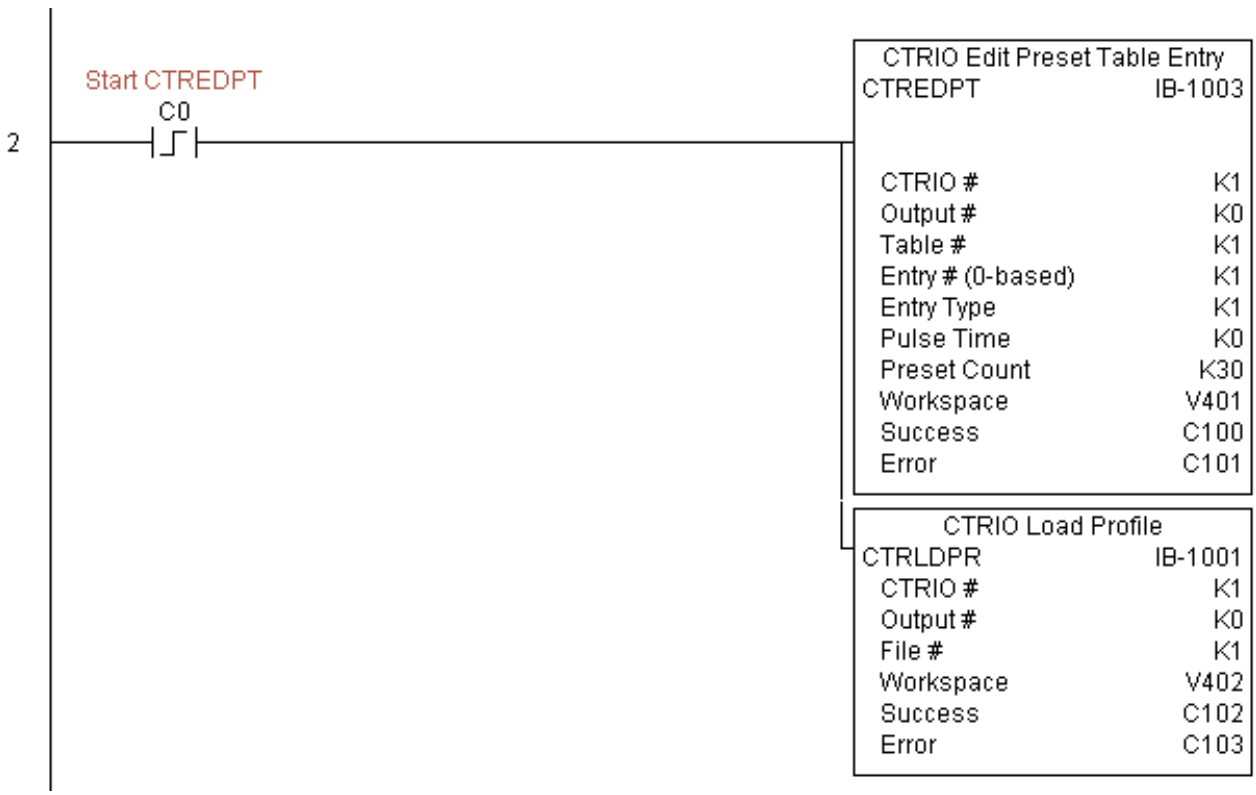
CTREDPT Example (con't)

Rung 2: This rung is a sample method for enabling the CTREDPT command. A C-bit is used to allow the programmer to control the command from Data View for testing purposes.

Turning on C0 will cause the CTREDPT instruction to change the second preset from a reset at a count of 20 to a reset at a count of 30 for output #0 on the CTRIO in slot 2.

Operating procedure for this example code is to load the CTREDPT_ex1.cwb file to your CTRIO, then enter the code shown here, change to RUN mode, enable output #0 by turning on C2 in Data View, turn encoder on CTRIO to value above 10 and output #0 light will come on and stay on until a count of 20 is reached, where it will turn off. Now reset the counter with C1, enable C0 to execute CTREDPT command to change the second preset, turn on C2 to enable output #0, then turn encoder to value of 10+ (output #0 should turn on) and then continue past a count of 30 (output #0 should turn off).

Note that we must also reload the profile after changing the preset(s), this is why the CTRLDPR command follows the CTREDPT command in this example.



(example continued on next page)

CTREDPT Example (con't)

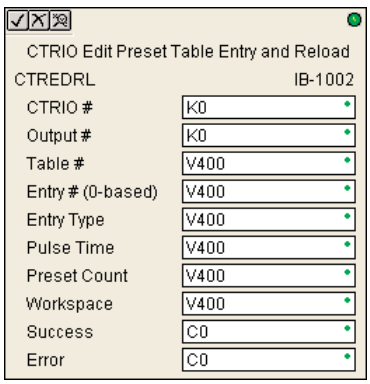
Rung 3: This rung allows the programmer to reset the counter from the ladder logic.

Rung 4: This rung allows the operator to enable output #0 from the ladder code.

CTRIO Edit Preset Table Entry and Reload (CTREDRL) (IB-1002)

DS5	Used
HPP	N/A

CTRIO Edit Preset Table Entry and Reload, on a leading edge transition to this IBox, will perform this dual operation to a CTRIO Output resource in one CTRIO command. This IBox will take more than 1 PLC scan to execute. Either the Success or Error bit will turn on when the command is complete. If the Error Bit is on, you can use the CTRIO Read Error Code (CTRRDER) IBox to get extended error information.



Entry Type:

K0: Set

K1: Reset

K2: Pulse On (uses Pulse Time)

K3: Pulse Off (uses Pulse Time)

K4: Toggle

K5: Reset Count

Note that the Pulse Time parameter is ignored by some Entry Types.

The Workspace register is for internal use by this IBox instruction and MUST NOT be used anywhere else in your program.

CTREDRL Parameters

- CTRIO#: specifies a specific CTRIO module based on a user defined number (see CTRIO Config Ibox)
- Output#: specifies a CTRIO output to be used by the instruction
- Table#: specifies the Table number of which an Entry is to be edited
- Entry#: specifies the Entry location in the Preset Table to be edited
- Entry Type: specifies the Entry Type to add during the edit
- Pulse Time: specifies a pulse time for the Pulse On and Pulse Off Entry Types
- Preset Count: specifies an initial count value to begin at after Reset
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the instruction has successfully completed
- Error: specifies a bit that will turn on if the instruction does not complete successfully

Parameter	DL06 Range
CTRIO# . . . . . K	K0-255
Output# . . . . . K	K0-3
Table# . . . . . V,K	K0-255; See DL06 V-memory map - Data Words
Entry# . . . . . V,K	K0-255; See DL06 V-memory map - Data Words
Entry Type . . . . . V,K	K0-5; See DL06 V-memory map - Data Words
Pulse Time . . . . . V,K	K0-65535; See DL06 V-memory map - Data Words
Preset Count . . . . . V,K	K0-2147434528; See DL06 V-memory map
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map

CTREDRL Example

Rung 1: This sets up the CTRIO card in slot 2 of the local base. Each CTRIO in the system will need a separate CTRIO I-box before any CTRxxxx I-boxes can be used for them. The CTRIO has been configured to use V2000 through V2025 for its input data, and V2030 through V2061 for its output data.

(example continued on next page)

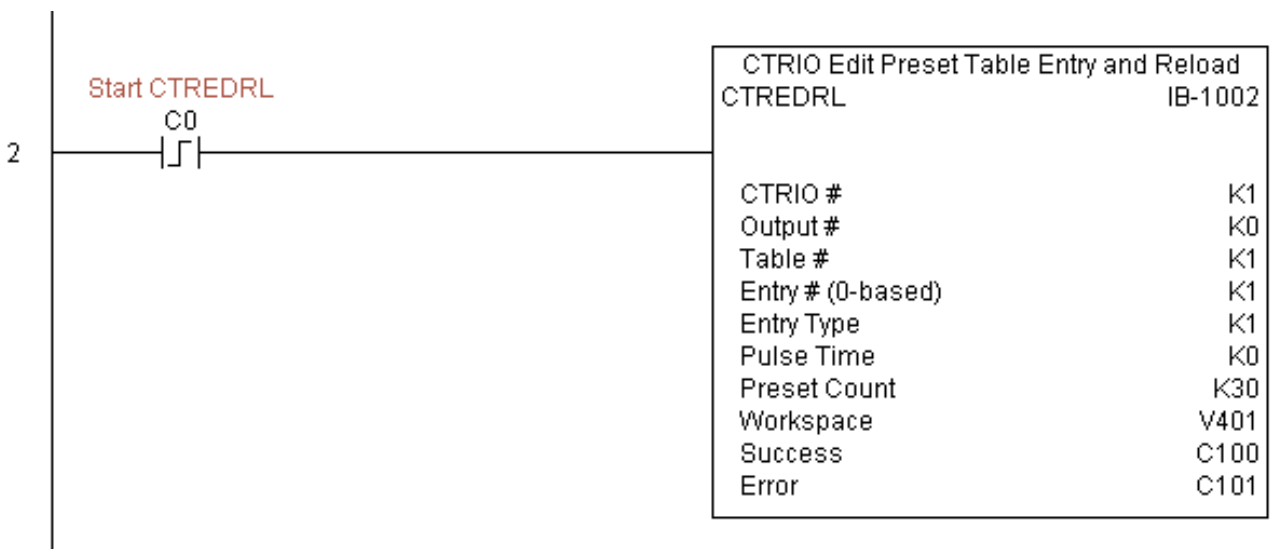
CTREDRL Example (con't)

Rung 2: This rung is a sample method for enabling the CTREDRL command. A C-bit is used to allow the programmer to control the command from Data View for testing purposes.

Turning on C0 will cause the CTREDRL instruction to change the second preset in file 1 from a reset at a value of 20 to a reset at a value of 30.

Operating procedure for this example code is to load the CTREDRL_ex1.cwb file to your CTRIO, then enter the code shown here, change to RUN mode, enable output #0 by turning on C2 in Data View, turn encoder on CTRIO to value above 10 and output #0 light will come on, continue to a count above 20 and the output #0 light will turn off. Now reset the counter with C1, enable C0 to execute CTREDRL command to change the second preset count value to 30, then turn encoder to value of 10+ (output #0 should turn on) and continue on to a value of 30+ and the output #0 light will turn off.

Note that it is not necessary to reload this file separately, however, the command can only change one value at a time.



(example continued on next page)

CTREDRL Example (con't)

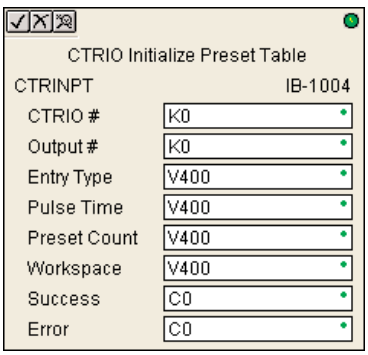
Rung 3: This rung allows the programmer to reset the counter from the ladder logic.

Rung 4: This rung allows the operator to enable output #0 from the ladder code.

CTRIO Initialize Preset Table (CTRINPT) (IB-1004)

DS5	Used
HPP	N/A

CTRIO Initialize Preset Table, on a leading edge transition to this IBox, will create a single entry Preset Table in memory but not as a file, on a specific CTRIO Output resource. This IBox will take more than 1 PLC scan to execute. Either the Success or Error bit will turn on when the command is complete. If the Error Bit is on, you can use the CTRIO Read Error Code (CTRRDER) IBox to get extended error information.



Entry Type:

K0: Set

K1: Reset

K2: Pulse On (uses Pulse Time)

K3: Pulse Off (uses Pulse Time)

K4: Toggle

K5: Reset Count

Note that the Pulse Time parameter is ignored by some Entry Types.

The Workspace register is for internal use by this IBox instruction and MUST NOT be used anywhere else in your program.

CTRINPT Parameters

- CTRIO#: specifies a specific CTRIO module based on a user defined number (see CTRIO Config Ibox)
- Output#: specifies a CTRIO output to be used by the instruction
- Entry Type: specifies the Entry Type to add during the edit
- Pulse Time: specifies a pulse time for the Pulse On and Pulse Off Entry Types
- Preset Count: specifies an initial count value to begin at after Reset
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the instruction has successfully completed
- Error: specifies a bit that will turn on if the instruction does not complete successfully

Parameter	DL06 Range
CTRIO# . . . . . K	K0-255
Output# . . . . . K	K0-3
Entry Type . . . . . V,K	K0-5; See DL06 V-memory map - Data Words
Pulse Time . . . . . V,K	K0-65535; See DL06 V-memory map - Data Words
Preset Count . . . . . V,K	K0-2147434528; See DL06 V-memory map
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map

CTRINPT Example

Rung 1: This sets up the CTRIO card in slot 2 of the local base. Each CTRIO in the system will need a separate CTRIO I-box before any CTRxxxx I-boxes can be used for them. The CTRIO has been configured to use V2000 through V2025 for its input data, and V2030 through V2061 for its output data.

(example continued on next page)

CTRINPT Example (con't)

Rung 2: This rung is a sample method for enabling the CTRINPT command. A C-bit is used to allow the programmer to control the command from Data View for testing purposes.

Turning on C0 will cause the CTRINPT instruction to create a single entry preset table, but not as a file, and use it for the output #0. In this case the single preset will be a set at a count of 15 for output #0.

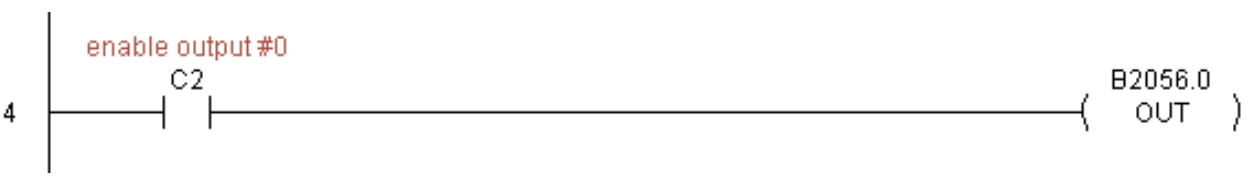
Operating procedure for this example code is to load the CTRINPT_ex1.cwb file to your CTRIO, then enter the code shown here, change to RUN mode, enable output #0 by turning on C2 in Data View, turn encoder on CTRIO to value above 15 and output #0 light will not come on. Now reset the counter with C1, enable C0 to execute CTRINPT command to create a single preset table with a preset to set output#0 at a count of 15, then turn encoder to value of 15+ (output #0 should turn on).

(example continued on next page)

CTRINPT Example (con't)

Rung 3: This rung allows the programmer to reset the counter from the ladder logic.

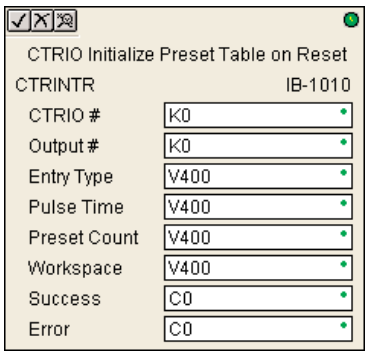
Rung 4: This rung allows the operator to enable output #0 from the ladder code.



CTRIO Initialize Preset Table (CTRINTR) (IB-1010)

DS5	Used
HPP	N/A

CTRIO Initialize Preset Table, on a leading edge transition to this IBox, will create a single entry Preset Table in memory but not as a file, on a specific CTRIO Output resource.This IBox will take more than 1 PLC scan to execute. Either the Success or Error bit will turn on when the command is complete. If the Error Bit is on, you can use the CTRIO Read Error Code (CTRRDER) IBox to get extended error information.



Entry Type:

K0: Set

K1: Reset

K2: Pulse On (uses Pulse Time)

K3: Pulse Off (uses Pulse Time)

K4: Toggle

K5: Reset Count

Note that the Pulse Time parameter is ignored by some Entry Types.

The Workspace register is for internal use by this IBox instruction and MUST NOT be used anywhere else in your program.

CTRINTR Parameters

- CTRIO#: specifies a specific CTRIO module based on a user defined number (see CTRIO Config Ibox)
- Output#: specifies a CTRIO output to be used by the instruction
- Entry Type: specifies the Entry Type to add during the edit
- Pulse Time: specifies a pulse time for the Pulse On and Pulse Off Entry Types
- Preset Count: specifies an initial count value to begin at after Reset
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the instruction has successfully completed
- Error: specifies a bit that will turn on if the instruction does not complete successfully

Parameter	DL06 Range
CTRIO# . . . . . K	K0-255
Output# . . . . . K	K0-3
Entry Type . . . . . V,K	K0-5; See DL06 V-memory map - Data Words
Pulse Time . . . . . V,K	K0-65535; See DL06 V-memory map - Data Words
Preset Count . . . . . V,K	K0-2147434528; See DL06 V-memory map
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map

CTRINTR Example

Rung 1: This sets up the CTRIO card in slot 2 of the local base. Each CTRIO in the system will need a separate CTRIO I-box before any CTRxxxx I-boxes can be used for them. The CTRIO has been configured to use V2000 through V2025 for its input data, and V2030 through V2061 for its output data.

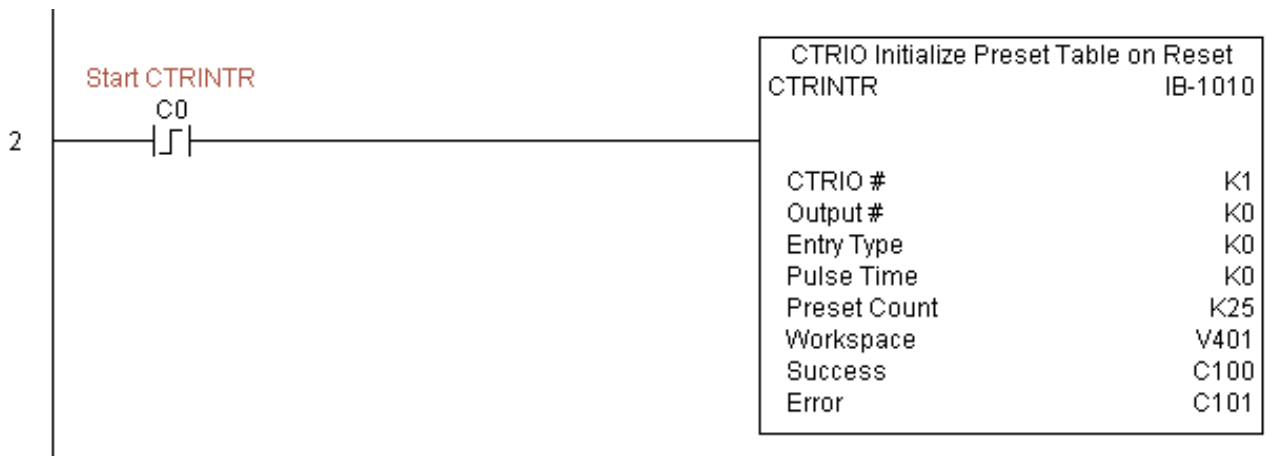
(example continued on next page)

CTRINTR Example (con't)

Rung 2: This rung is a sample method for enabling the CTRINTR command. A C-bit is used to allow the programmer to control the command from Data View for testing purposes.

Turning on C0 will cause the CTRINTR instruction to create a single entry preset table, but not as a file, and use it for output #0, the new preset will be loaded when the current count is reset. In this case the single preset will be a set at a count of 25 for output #0.

Operating procedure for this example code is to load the CTRINTR_ex1.cwb file to your CTRIO, then enter the code shown here, change to RUN mode, enable output #0 by turning on C2 in Data View, turn encoder on CTRIO to value above 10 and output #0 light will come on. Now turn on C0 to execute the CTRINTR command, reset the counter with C1, then turn encoder to value of 25+ (output #0 should turn on).



(example continued on next page)

CTRINTR Example (con't)

Rung 3: This rung allows the programmer to reset the counter from the ladder logic.

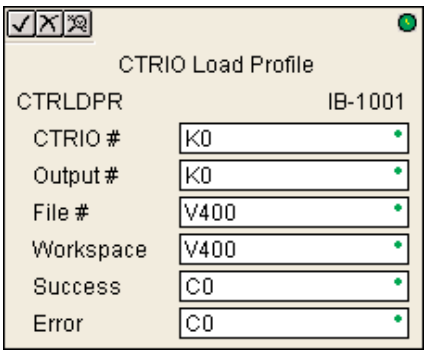
Rung 4: This rung allows the operator to enable output #0 from the ladder code.

CTRIO Load Profile (CTRLDPR) (IB-1001)

DS5	Used
HPP	N/A

CTRIO Load Profile loads a CTRIO Profile File to a CTRIO Output resource on a leading edge transition to this IBox. This IBox will take more than 1 PLC scan to execute. Either the Success or Error bit will turn on when the command is complete. If the Error Bit is on, you can use the CTRIO Read Error Code (CTRRDER) IBox to get extended error information.

The Workspace register is for internal use by this IBox instruction and MUST NOT be used anywhere else in your program.



S

CTRLDPR Parameters

- CTRIO#: specifies a specific CTRIO module based on a user defined number (see CTRIO Config)
- Output#: specifies a CTRIO output to be used by the instruction
- File#: specifies a CTRIO profile File number to be loaded
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the instruction has successfully completed
- Error: specifies a bit that will turn on if the instruction does not complete successfully

Parameter	DL06 Range
CTRIO# . . . . . K	K0-255
Output# . . . . . K	K0-3
File# . . . . . V,K	K0-255; See DL06 V-memory map - Data Words
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map

CTRLDPR Example

Rung 1: This sets up the CTRIO card in slot 2 of the local base. Each CTRIO in the system will need a separate CTRIO I-box before any CTRxxxx I-boxes can be used for them. The CTRIO has been configured to use V2000 through V2025 for its input data, and V2030 through V2061 for its output data.

Rung 2: This CTRIO Load Profile IBox will load File #1 into the working memory of Output 0 in CTRIO #1. This example program requires that you load CTRLDPR_IBox.cwb into your Hx-CTRIO module.

(example continued on next page)

CTRLDPR Example (con't)

Rung 3: If the file is successfully loaded, set Profile_Loaded.

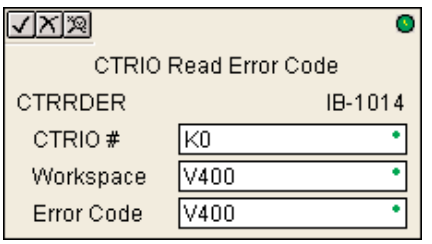
S

CTRIO Read Error (CTRRDER) (IB-1014)

DS5	Used
HPP	N/A

CTRIO Read Error Code will get the decimal error code value from the CTRIO module (listed below) and place it into the given Error Code register, on a leading edge transition to the IBox

Since the Error Code in the CTRIO is only maintained until another CTRIO command is given, you must use this instruction immediately after the CTRIO IBox that reports an error via its Error bit parameter.



The Workspace register is for internal use by this IBox instruction and MUST NOT be used anywhere else in your program.

Error Codes:

0: No Error

100: Specified command code is unknown or unsupported

101: File number not found in the file system

102: File type is incorrect for specified output function

103: Profile type is unknown

104: Specified input is not configured as a limit on this output

105: Specified limit input edge is out of range

106: Specified input function is unconfigured or invalid

107: Specified input function number is out of range

108: Specified preset function is invalid

109: Preset table is full

110: Specified Table entry is out of range

111: Specified register number is out of range

112: Specified register is an unconfigured input or output

2001: Error reading Error Code - cannot access CTRIO via ERM

CTRRDER Parameters

- CTRIO#: specifies a specific CTRIO module based on a user defined number (see CTRIO Config)
- Workspace: specifies a V-memory location that will be used by the instruction
- Error Code: specifies the location where the Error Code will be written

Parameter	DL06 Range
CTRIO# ..... K	K0-255
Workspace V	See DL06 V-memory map - Data Words
Error Code V	See DL06 V-memory map - Data Words

CTRRDER Example

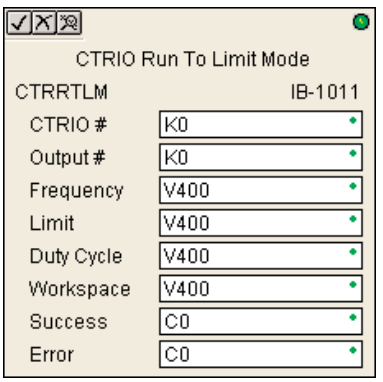
Rung 1: This sets up the CTRIO card in slot 2 of the local base. Each CTRIO in the system will need a separate CTRIO I-box before any CTRxxxx I-boxes can be used for them. The CTRIO has been configured to use V2000 through V2025 for its input data, and V2030 through V2061 for its output data.

Rung 2: This CTRIO Read Error Code IBox will read the Extended Error information from CTRIO #1. This example program requires that you load CTRRDER_IBox.cwb into your Hx-CTRIO module.

CTRIO Run to Limit Mode (CTRRTLM) (IB-1011)

DS5	Used
HPP	N/A

CTRIO Run To Limit Mode, on a leading edge transition to this IBox, loads the Run to Limit command and given parameters on a specific Output resource. The CTRIO's Input(s) must be configured as Limit(s) for this function to work.



Valid Hexadecimal Limit Values:

K00 - Rising Edge of Ch1/C

K10 - Falling Edge of Ch1/C

K20 - Both Edges of Ch1/C

K01 - Rising Edge of Ch1/D

K11 - Falling Edge of Ch1/D

K21 - Both Edges of Ch1/D

K02 - Rising Edge of Ch2/C

K12 - Falling Edge of Ch2/C

K22 - Both Edges of Ch2/C

K03 - Rising Edge of Ch2/D

K13 - Falling Edge of Ch2/D

K23 - Both Edges of Ch2/D

This IBox will take more than 1 PLC scan to execute. Either the Success or Error bit will turn on when the command is complete. If the Error Bit is on, you can use the CTRIO Read Error Code (CTRRDER) IBox to get extended error information.

The Workspace register is for internal use by this IBox instruction and MUST NOT be used anywhere else in your program.

CTRRTLM Parameters

- CTRIO#: specifies a specific CTRIO module based on a user defined number (see CTRIO Config Ibox)
- Output#: specifies a CTRIO output to be used by the instruction
- Frequency: specifies the output pulse rate (20Hz - 20KHz)
- Limit: the CTRIO's Input(s) must be configured as Limit(s) for this function to operate
- Duty Cycle: specifies the % of on time versus off time. This is a hex number. Default of 0 is 50%, also entering 50 will yield 50%. 50% duty cycle is defined as on half the time and off half the time
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the instruction has successfully completed
- Error: specifies a bit that will turn on if the instruction does not complete successfully

Parameter	DL06 Range
CTRIO# . . . . . K	K0-255
Output# . . . . . K	K0-3
Frequency . . . . . V,K	K20-20000; See DL06 V-memory map - Data Words
Limit . . . . . V,K	K0-FF; See DL06 V-memory map - Data Words
Duty Cycle . . . . . V,K	K0-99; See DL06 V-memory map - Data Words
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map

CTRRTLM Example

Rung 1: This sets up the CTRIO card in slot 2 of the local base. Each CTRIO in the system will need a separate CTRIO I-box before any CTRxxxx I-boxes can be used for them. The CTRIO has been configured to use V2000 through V2025 for its input data, and V2030 through V2061 for its output data.

Rung 2: This CTRIO Run To Limit Mode IBox sets up Output #0 in CTRIO #1 to output pulses at a Frequency of 1000 Hz until Llimit #0 comes on. This example program requires that you load CTRRTLM_IBox.cwb into your Hx-CTRIO module.

(example continued on next page)

CTRRTLM Example (con't)

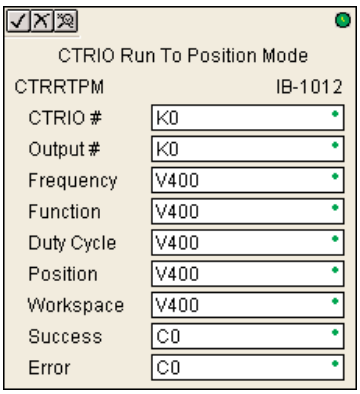
Rung 3: If the Run To Limit Mode parameters are OK, set the Direction Bit and Enable the output.

S

CTRIO Run to Position Mode (CTRRTPM) (IB-1012)

DS5	Used
HPP	N/A

CTRIO Run To Position Mode, on a leading edge transition to this IBox, loads the Run to Position command and given parameters on a specific Output resource.



Valid Function Values are:

00: Less Than Ch1/Fn1

10: Greater Than Ch1/Fn1

01: Less Than Ch1/Fn2

11: Greater Than Ch1/Fn2

02: Less Than Ch2/Fn1

12: Greater Than Ch2/Fn1

03: Less Than Ch2/Fn2

13: Greater Than Ch2/Fn2

This IBox will take more than 1 PLC scan to execute. Either the Success or Error bit will turn on when the command is complete. If the Error Bit is on, you can use the CTRIO Read Error Code (CTRRDER) IBox to get extended error information.

The Workspace register is for internal use by this IBox instruction and MUST NOT be used anywhere else in your program.

CTRRTPM Parameters

- CTRIO#: specifies a specific CTRIO module based on a user defined number (see CTRIO Config Ibox)
- Output#: specifies a CTRIO output to be used by the instruction
- Frequency: specifies the output pulse rate (20Hz - 20KHz)
- Duty Cycle: specifies the % of on time versus off time. This is a hex number. Default of 0 is 50%, also entering 50 will yield 50%. 50% duty cycle is defined as on half the time and off half the time
- Position: specifies the count value, as measured on the encoder input, at which the output pulse train will be turned off
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the instruction has successfully completed
- Error: specifies a bit that will turn on if the instruction does not complete successfully

Parameter	DL06 Range
CTRIO# . . . . . K	K0-255
Output# . . . . . K	K0-3
Frequency . . . . . V,K	K20-20000; See DL06 V-memory map - Data Words
Duty Cycle . . . . . V,K	K0-99; See DL06 V-memory map
Position . . . . . V,K	K0-2147434528; See DL06 V-memory map
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map

CTRRTPM Example

Rung 1: This sets up the CTRIO card in slot 2 of the local base. Each CTRIO in the system will need a separate CTRIO I-box before any CTRxxxx I-boxes can be used for them. The CTRIO has been configured to use V2000 through V2025 for its input data, and V2030 through V2061 for its output data.

(example continued on next page)

CTRRTPM Example (con't)

Rung 2: This CTRIO Run To Position Mode IBox sets up Output #0 in CTRIO #1 to output pulses at a Frequency of 1000 Hz, use the 'Greater than Ch1/Fn1' comparison operator, until the input position of 1500 is reached. This example program requires that you load CTRRTPM_IBox.cwb into your Hx-CTRIO module.

Rung 3: If the Run To Position Mode parameters are OK, set the Direction Bit and Enable the output.

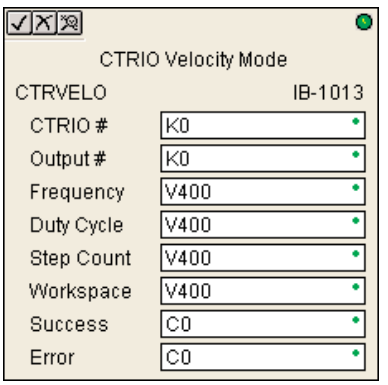
CTRIO Velocity Mode (CTRVELO) (IB-1013)

DS5	Used
HPP	N/A

CTRIO Velocity Mode loads the Velocity command and given parameters on a specific Output resource on a leading edge transition to this IBox.

This IBox will take more than 1 PLC scan to execute. Either the Success or Error bit will turn on when the command is complete. If the Error Bit is on, you can use the CTRIO Read Error Code (CTRRDER) IBox to get extended error information.

The Workspace register is for internal use by this IBox instruction and MUST NOT be used anywhere else in your program.



CTRVELO Parameters

- CTRIO#: specifies a specific CTRIO module based on a user defined number (see CTRIO Config Ibox)
- Output#: specifies a CTRIO output to be used by the instruction
- Frequency: specifies the output pulse rate (20Hz - 20KHz)
- Duty Cycle: specifies the % of on time versus off time. This is a hex number. Default of 0 is 50%, also entering 50 will yield 50%. 50% duty cycle is defined as on half the time and off half the time
- Step Count: specifies the target position as a 32-bit Hex number, a value of Kffffffff will cause the profile to run continuously as long as the output is enabled
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the instruction has successfully completed
- Error: specifies a bit that will turn on if the instruction does not complete successfully

Parameter	DL06 Range
CTRIO# . . . . . K	K0-255
Output# . . . . . K	K0-3
Frequency . . . . . V,K	K20-20000; See DL06 V-memory map - Data Words
Duty Cycle . . . . . V,K	K0-99; See DL06 V-memory map
Step Count . . . . . V,K	K0-2147434528; See DL06 V-memory map
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map

CTRVELO Example

Rung 1: This sets up the CTRIO card in slot 2 of the local base. Each CTRIO in the system will need a separate CTRIO I-box before any CTRxxxx I-boxes can be used for them. The CTRIO has been configured to use V2000 through V2025 for its input data, and V2030 through V2061 for its output data.

Rung 2: This CTRIO Velocity Mode IBox sets up Output #0 in CTRIO #1 to output 10,000 pulses at a Frequency of 1000 Hz. This example program requires that you load CTRVELO_IBox.cwb into your Hx-CTRIO module.

(example continued on next page)

CTRVELO Example (con't)

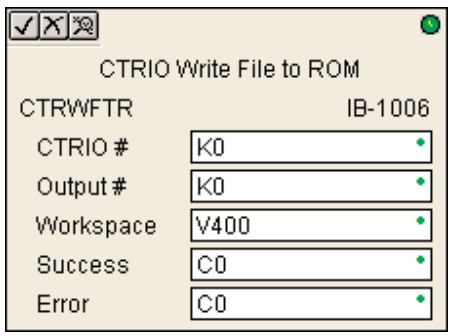
Rung 3: If the Velocity Mode parameters are OK, set the Direction Bit and Enable the output.

CTRIO Write File to ROM (CTRWFTR) (IB-1006)

DS5	Used
HPP	N/A

CTRIO Write File to ROM writes the runtime changes made to a loaded CTRIO Preset Table back to Flash ROM on a leading edge transition to this IBox. This IBox will take more than 1 PLC scan to execute. Either the Success or Error bit will turn on when the command is complete. If the Error Bit is on, you can use the CTRIO Read Error Code (CTRRDER) IBox to get extended error information.

The Workspace register is for internal use by this IBox instruction and MUST NOT be used anywhere else in your program.



CTRWFTR Parameters

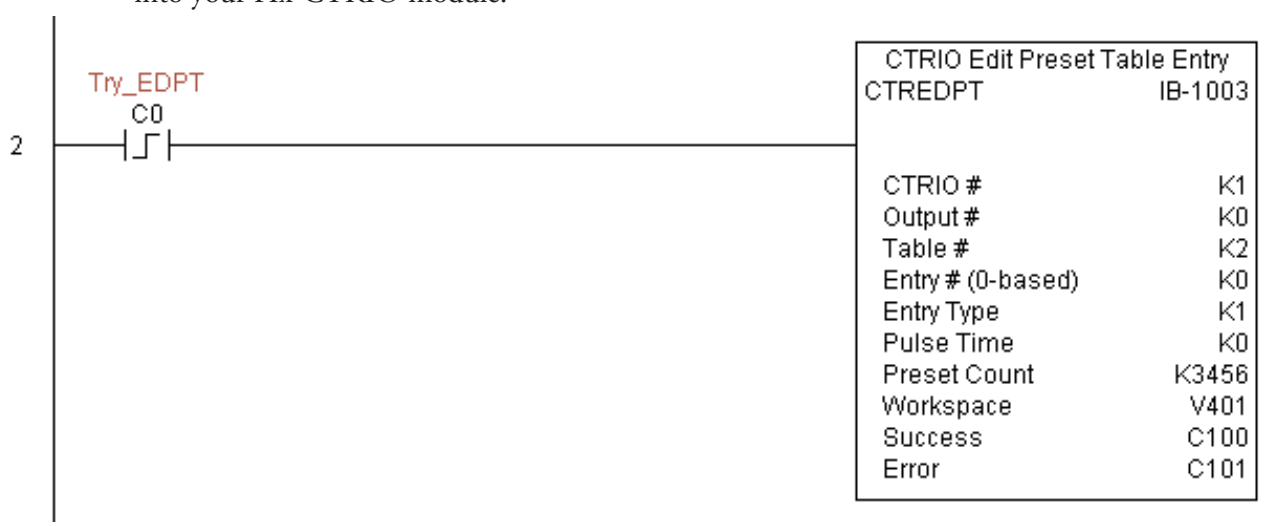
- CTRIO#: specifies a specific CTRIO module based on a user defined number (see CTRIO Config Ibox)
- Output#: specifies a CTRIO output to be used by the instruction
- Workspace: specifies a V-memory location that will be used by the instruction
- Success: specifies a bit that will turn on once the instruction has successfully completed
- Error: specifies a bit that will turn on if the instruction does not complete successfully

Parameter	DL06 Range
CTRIO# . . . . . K	K0-255
Output# . . . . . K	K0-3
Workspace V	See DL06 V-memory map - Data Words
Success . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map
Error . . . . . X,Y,C,GX,GY,B	See DL06 V-memory map

CTRWFTR Example

Rung 1: This sets up the CTRIO card in slot 2 of the local base. Each CTRIO in the system will need a separate CTRIO I-box before any CTRxxxx I-boxes can be used for them. The CTRIO has been configured to use V2000 through V2025 for its input data, and V2030 through V2061 for its output data.

Rung 2: This CTRIO Edit Preset Table Entry IBox will change Entry 0 in Table #2 to be a RESET at Count 3456. This example program requires that you load CTRWFTR_IBox.cwb into your Hx-CTRIO module.



(example continued on next page)

CTRWFTR Example (con't)

Rung 3: If the file is successfully edited, use a Write File To ROM IBox to save the edited table back to the CTRIO's ROM, thereby making the changes retentive.

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