easyRelay Ladder Logic Symbol and Parameter Reference:

How the easy500/700 programming symbols and parameters are displayed on the Programmable Relay's display verses the easySoft programming software

Powering Business Worldwide

Application Summary

This application note provides a reference for the terminologies, symbols, and parameters used in the easySoft-Basic/easySoft-Pro ANSI/CSA display type and the display interface of the easy500/700 Programmable Relay.

Products and Revisions

Vendor	Product	Applicable Revision	Tested Revision
Eaton	easySoft-Basic	6	6.90
Eaton	easySoft-Pro	6	6.90
Eaton	EASY512-DC-RC	All	08
Eaton	EASY719-DC-RC	All	03

Supporting Documentation

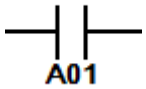
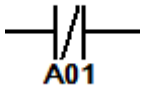
Manual Name	Reference Number
Control Relay easy500, easy700	MN05013003Z-EN

Application Details

On the following page are two tables representing the contact and coil symbols used in the easy Programmable Relay display interface and easySoft-Basic/easySoft-Pro ANSI/CSA display respectively. Each row contains a link to a section of the document that gives a detailed cross-reference for the terminologies, symbols, and parameters used for each method of programming the device. At the bottom of each section is a link that returns to the original table to look up the next contact or coil.

Switching contact	N/O	N/C	easy500	easy700
Analog value comparator function relay	A	$\bar{A}$	Ai...Ai6	Ai...Ai6
Counter function relays	C	$\bar{C}$	Ci...Ci6	Ci...Ci6
Text marker function relay	D	$\bar{D}$	Di...Di6	Di...Di6
Week time switch function relay	H	$\bar{H}$	Hi...H8	Hi...H8
easy input terminal	I	$\bar{I}$	Ii...I8	Ii...Ii2
0 signal			Ii3	Ii3
Expansion status			–	Ii4
Short-Circuit/Overload			Ii6	Ii5...Ii6
Markers, (auxiliary relay)	M	$\bar{M}$	Mi...Mi6	Mi...Mi6
Markers (auxiliary relay)	N	$\bar{N}$	Ni...Ni6	Ni...Ni6
Operating Hours Counter	O	$\bar{O}$	Oi...O4	Oi...O4
Cursor button	P	$\bar{P}$	Pi...P4	Pi...P4
easy output	Q	$\bar{Q}$	Qi...Q4	Qi...Q8
Input terminal for expansion unit	R	$\bar{R}$	–	Ri...Ri2
Short-circuit/overload with expansion	R	$\bar{R}$	–	Ri5...Ri6
easy output (expansion or S auxiliary marker)	S	$\bar{S}$	Si...S8 (as marker)	Si...S8
Timer function relays	T	$\bar{T}$	Ti...Ti6	Ti...Ti6
Jump label	:	–	:i...:8	:i...:8
Year Time Switch	Y	$\bar{Y}$	Yi...Y8	Yi...Y8
Master reset, (central reset)	Z	$\bar{Z}$	Zi...Z3	Zi...Z3

- I - Input basic unit
- R - Input expansion device
- Q - Output basic unit
- S - Output expansion device
- M - Marker
- N - Marker
- P - P buttons
- : - Jump
- A - Analog comparator/threshold value switch
- C - Counter relay
- D - Text display
- H - 7-day time switch
- O - Operating hours counter
- T - Timing relay
- Y - Year time switch
- Z - Master reset

easySoft-Basic Representation	easyRelay Display Representation
A – Analog comparator/threshold value switch	Analog value
	A1
	$\bar{A}1$

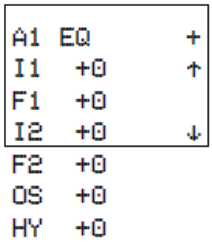


Table 12: Parameter display and parameter set for analog value comparator:

Ai	Analog value comparator function relay 1
EQ	Equal mode The function relay has the following modes: • LT: less than • LE: less than/equal to • EQ: equal to • GE: greater than/equal to • GT:greater than
+	+ appears in the PARAMETER menu. – does not appear in the PARAMETER menu
Ii	Comparison value 1 (positive value I7, I8, I11, I12, actual value T1 to T16, C1 to C16)
Fi	Gain factor for Ii (Ii = Fi x actual value at I1); F1 = positive value from 0 to 9999
I2	Comparison value 2 (positive value I7, I8, I11, I12, actual value T1 to T16, C1 to C16)
F2	Gain factor for I2 (I2 = F2 x actual value at I2); F2 = positive value from 0 to 9999
OS	Offset for the value of Ii (Ii = OS + actual value at I1); OS = positive value from 0 to 9999
HY	Switching hysteresis for value I2 Value HY applies both to positive and negative hysteresis. • I2 = Actual value at I2 + HY; • I2 = Actual value at I2 - HY; • HY= positive value from 0 to 9999

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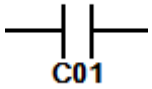
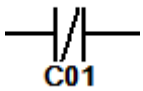
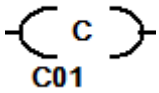
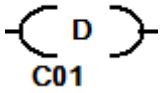
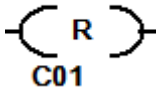
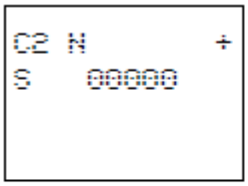
easySoft-Basic Representation	easyRelay Display Representation
C – Counter relay	Counter function relays
	C1
	$\overline{C}1$
	CC1
	DC1
	RC1



C2	Counter function relay number 2
N	• Mode N: up/down counter • Mode H: high-speed up/down counter • Mode F: frequency counter
+	• + appears in the PARAMETER menu. • – does not appear in the PARAMETER menu
S	Setpoint, constant from 00000 to 32000

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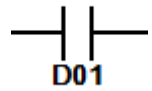
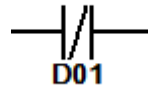
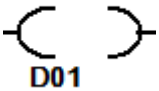
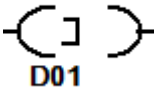
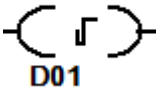
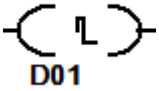
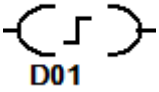
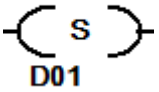
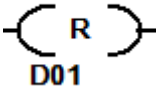
easySoft-Basic Representation	easyRelay Display Representation
Text display	Text marker function relays
	D1
	$\overline{D1}$
	[D1
	]D1
	⌊D1
	⌈D1
	⌋D1
	SD1
	RD1

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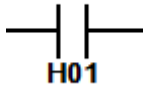
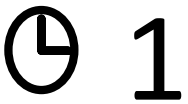
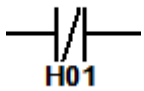
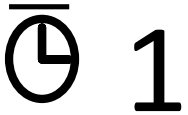
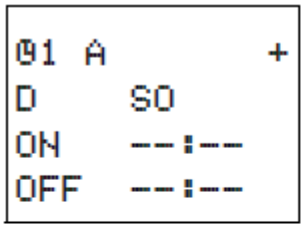
easySoft-Basic Representation	easyRelay Display Representation
H – 7-day time switch	Week time switch function relay
	
	



B1	weekly timer function relay 1
A,B, C,D	Time switch channels
+	• + appears in the PARAMETER menu, • – does not appear in the PARAMETER menu
D	Day setting, from -- to --
ON	Closing delay
OFF	Off time

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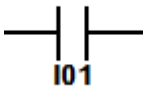
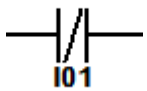
easySoft-Basic Representation	easyRelay Display Representation
Input basic unit	easy input terminal
	
	

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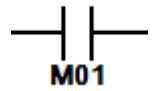
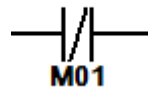
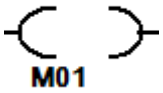
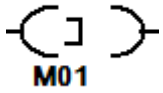
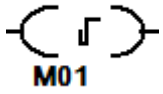
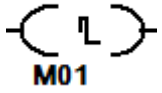
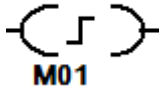
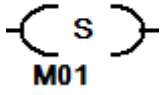
easySoft-Basic Representation	easyRelay Display Representation
M - Marker	Markers (auxiliary relay)
	M1
	$\overline{M}1$
	[M1
	]M1
	⌊M1
	⌈M1
	⌋M1
	SM1
	RM1

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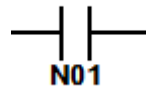
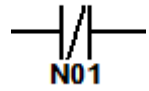
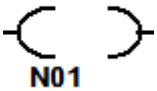
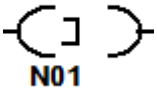
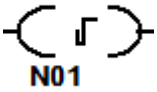
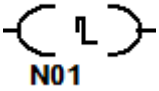
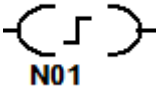
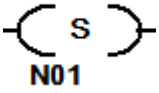
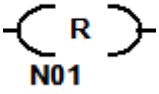
easySoft-Basic Representation	easyRelay Display Representation
N - Marker	Markers (auxiliary relay)
	N1
	$\bar{N}1$
	[N1
	]N1
	⌊N1
	⌈N1
	⌋N1
	SN1
	RN1

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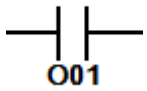
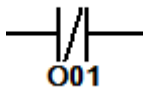
easySoft-Basic Representation	easyRelay Display Representation
O – Operating hours counter	Operating hours counter
	O1
	$\overline{O1}$
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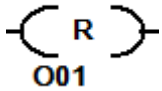
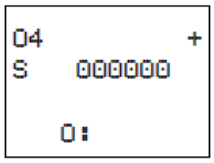
	RO1



Parameter display and parameter set for the operating hours counter function block:

O4	Operating hours counter number 4
+	• + appears in the parameter display • – appears in the parameter display
S	Setpoint in hours
O:	Actual value of the operating hours counter [h]

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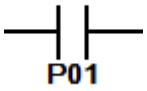
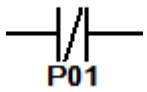
easySoft-Basic Representation	easyRelay Display Representation
P - P buttons	Cursor button
	P1
	$\overline{P1}$

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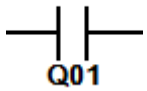
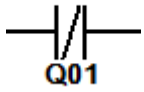
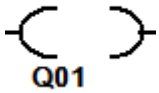
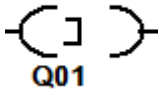
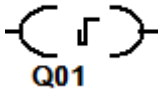
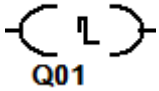
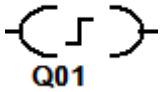
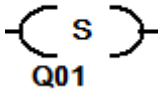
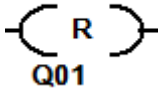
easySoft-Basic Representation	easyRelay Display Representation
Q – Output basic unit	easy output
	Q1
	$\bar{Q}1$
	[Q1
	]Q1
	⌊Q1
	⌈Q1
	⌋Q1
	SQ1
	RQ1

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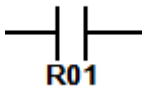
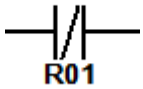
easySoft-Basic Representation	easyRelay Display Representation
R – Input expansion device	Input terminal for expansion unit
	R1
	$\overline{R}1$

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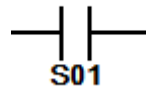
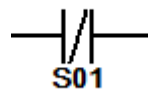
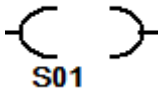
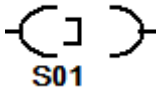
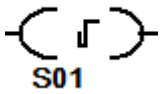
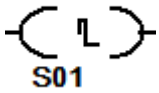
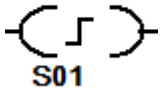
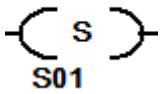
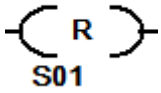
easySoft-Basic Representation	easyRelay Display Representation
S – Output expansion device	easy output (expansion or S auxiliary marker)
	S1
	$\overline{S1}$
	[S1
	]S1
	⌊S1
	⌋S1
	⌈S1
	SS1
	RS1

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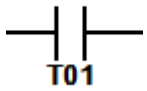
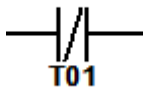
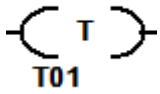
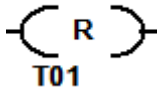
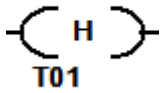
easySoft-Basic Representation	easyRelay Display Representation
T - Timing relay	Timer function relays
	T1
	$\overline{T}$1
	TT1
	RT1
	HT1

```
T1 X    S  +
I1  00.00
I2  00.00
  T:
```

T1	Timing relay number 1
X	On-time mode
S	Time range in seconds
+	• + appears in the PARAMETER menu. • – does not appear in the PARAMETER menu
I1	Time setpoint 1: • Positive value via constant or variable from I7, I8, I11, I12 (analog inputs). • Variable via actual value T1 to T16, C1 to C16.
I2	Time setpoint 2 (with timing relay with 2 setpoints): • Positive value via constant or variable from I7, I8, I11, I12 (analog inputs). • Variable via actual value T1 to T16, C1 to C16.
T:	Display of actual value in RUN mode

Parameters	Time range and setpoint time	Resolution
S 00.000	Seconds: 0.00 to 99,990 s	10 ms
M:S 00:00	Minutes: Seconds 00:00 to 99:59	1 s
H:M 00:00	Hours: Minutes, 00:00 to 99:59	1 min.

Parameters	Switch function
X	On-delayed switching
?X	On-delayed switching with random time range
■	Off-delayed switching
?■	Off-delayed switching with random time range
X■	On- and off-delayed, two time setpoints
?X■	On- and off-delayed switching with random time, 2 time setpoints
⎍	Single pulse switching
⠿	Flash switching, mark-to-space ratio = 1:1, 2 time setpoints
⠿	Flash switching, mark-to-space ratio = 1:1, 2 time setpoints

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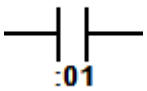
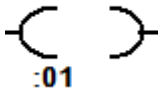
easySoft-Basic Representation	easyRelay Display Representation
: - Jump	easy input terminal
	:1
	[:1

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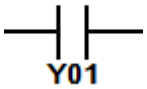
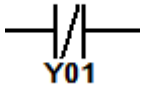
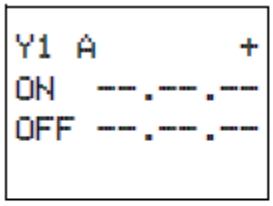
easySoft-Basic Representation	easyRelay Display Representation
Y – Year time switch	Year Time Switch
	Y1
	$\bar{Y}1$



Yi	Year time switch function relay 1
A,B, C,D	Time switch channels
+	• + appears in the PARAMETER menu. • – does not appear in the PARAMETER menu
ON	On date: day, month, year (two-digit 2010 = 10)
OFF	Off date: day, month, year (two-digit 2011 = 11)

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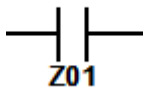
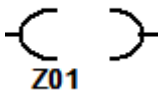
easySoft-Basic Representation	easyRelay Display Representation
Z – Master reset	Master reset, (central reset)
	Z1
	[Z1

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Additional Help

In the event additional help is needed:

In the US or Canada: please contact the Technical Resource Center at 1-877-ETN-CARE or 1-877-326-2273.

Location	Contact
United States	Technical Resource Center at 1-877-ETN-CARE or 1-877-326-2273.
Canada	
Europe	

All other supporting documentation is located on the Eaton web site at www.eaton.com

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