

# Siemens S7 Statement List (STL)

by category

Bit logic	
<b>A</b>	And
<b>AN</b>	And Not
<b>O</b>	Or
<b>ON</b>	Or Not
<b>X</b>	Exclusive Or
<b>XN</b>	Exclusive Or Not
<b>FN</b>	Edge Negative
<b>FP</b>	Edge Positive
<b>( )</b>	Nesting
<b>=</b>	Assign
<b>R</b>	Reset
<b>S</b>	Set
<b>NOT</b>	Negate RLO
<b>SET</b>	Set RLO (=1)
<b>CLR</b>	Clear RLO (=0)
<b>SAVE</b>	Save RLO in BR Register

Convert	
<b>BTI</b>	BCD to Integer
<b>ITB</b>	Integer to BCD
<b>BTD</b>	BCD to Integer
<b>ITD</b>	Integer to Double Integer
<b>DTB</b>	Double Integer to BCD
<b>DTR</b>	Double Integer to Floating-Point
<b>INVI</b>	Ones Complement Integer
<b>INVD</b>	Ones Complement Double Integer
<b>NEGI</b>	Twos Complement Integer
<b>NEGD</b>	Twos Complement Double Integer
<b>NEGR</b>	Negate Floating-Point Number
<b>CAW</b>	Change Byte Sequence in ACC1 Word
<b>CAD</b>	Change Byte Sequence in ACC1 Double
<b>RND</b>	Round
<b>TRUNC</b>	Truncate
<b>RND-</b>	Round to Lower Double Integer
<b>RND+</b>	Round to Upper Double Integer

Note: For Compare and Math	
<b>I</b>	Integer (16 bit)
<b>D</b>	Double Integer (32 bit)
<b>R</b>	Real - Floating Point (32 bit)

Compare <i>if true RLO = 1</i>	
<b>==I ==D</b>	ACC2 is equal to ACC1
<b>&lt;&gt;I &lt;&gt;D</b>	ACC2 is not equal to ACC1
<b>&gt;I &gt;D</b>	ACC2 is greater then to ACC1
<b>&gt;=I &gt;=D</b>	ACC2 is greater then equal to ACC1
<b>&lt;I &lt;D</b>	ACC2 is less then to ACC1
<b>&lt;=I &lt;=D</b>	ACC2 is less then equal to ACC1

Math	
<b>+</b>	Add Integer Constant (16, 32-Bit)
<b>+I +D</b>	Add ACC1 and ACC2
<b>-I -D</b>	Subtract ACC1 from ACC2
<b>*I *D</b>	Multiply ACC1 and ACC2
<b>/I /D</b>	Divide ACC2 by ACC1
<b>MOD</b>	Division Remainder Double Integer

Floating Point Math	
<b>ABS</b>	Absolute Value
<b>ACOS</b>	Arc Cosine
<b>ASIN</b>	Arc Sine
<b>ATAN</b>	Arc Tangent
<b>COS</b>	Cosine of Angles
<b>EXP</b>	Exponential Value
<b>LN</b>	Natural Logarithm
<b>SIN</b>	Sine of Angles
<b>SQR</b>	Square
<b>SQRT</b>	Square Root
<b>TAN</b>	Tangent of Angles

Word logic	
<b>AW</b>	AND Word
<b>AD</b>	AND Double Word
<b>OW</b>	OR Word
<b>OD</b>	OR Double Word
<b>XOW</b>	Exclusive Or Word
<b>XOD</b>	Exclusive Or Double Word

Shift/Rotate	
<b>SSI</b>	Shift Sign Integer
<b>SSD</b>	Shift Sign Double Integer
<b>SLW</b>	Shift Left Word
<b>SRW</b>	Shift Right Word
<b>SLD</b>	Shift Left Double Word
<b>SRD</b>	Shift Right Double Word
<b>RLD</b>	Rotate Left Double Word
<b>RRD</b>	Rotate Right Double Word
<b>RLDA</b>	Rotate ACC1 Left via CC 1
<b>RRDA</b>	Rotate ACC1 Right via CC 1

Accumulator	
<b>TAK</b>	Toggle ACC1 with ACC2
<b>POP</b>	Pop accumulators
<b>PUSH</b>	Push accumulators
<b>ENT</b>	Enter ACC Stack
<b>LEAVE</b>	Leave ACC Stack
<b>DEC</b>	Decrement ACC
<b>INC</b>	Increment ACC
<b>+AR1</b>	Add ACC1 to Address Register 1
<b>+AR2</b>	Add ACC1 to Address Register 2
<b>BLD</b>	Program Display Instruction (Null)
<b>NOP 0</b>	Null Instruction

Formats	
<b>B#</b>	Byte (8 bit)
<b>W#</b>	Word (16 bit)
<b>L#</b>	Long (32 bit)
<b>S5Time#</b>	S5 Time (2H46M30S0MS)
<b>T#</b>	IEC Time (24D20H31M23S648MS)
<b>D#</b>	IEC Date (2007-10-28)
<b>TOD#</b>	Time of Day (23:59:59.999)
<b>C#</b>	BCD
<b>P#</b>	Pointer Address
<b>2#</b>	Binary
<b>16#</b>	Hexadecimal
<b>#Symbol</b>	Local stack variable
<b>//</b>	Comment

Program Control	
<b>CALL</b>	Call FC, FB, SFC, SFB <i>Example parameter passing</i> <b>CALL FC1 or FB1, DB1</b> PARAM1 := I0.0 PARAM2 := "Example".Test
<b>CC</b>	Conditional Call
<b>UC</b>	Unconditional Call
<b>BE</b>	Block End
<b>BEC</b>	Block End Conditional
<b>BEU</b>	Block End Unconditional
<b>MCR (</b>	Save RLO in MCR Stack, Begin MCR
<b>)MCR</b>	End MCR
<b>MCRA</b>	Activate MCR
<b>MCRD</b>	Deactivate MCR

Jumps	
<b>JU</b>	Jump Unconditional
<b>JL</b>	Jump to Labels
<b>JC</b>	Jump if RLO = 1
<b>JCN</b>	Jump if RLO = 0
<b>JCB</b>	Jump if RLO = 1 with BR
<b>JNB</b>	Jump if RLO = 0 with BR
<b>JBI</b>	Jump if BR = 1
<b>JNBI</b>	Jump if BR = 0
<b>JO</b>	Jump if OV = 1
<b>JOS</b>	Jump if OS = 1
<b>JZ</b>	Jump if Zero
<b>JN</b>	Jump if Not Zero
<b>JP</b>	Jump if Plus
<b>JM</b>	Jump if Minus
<b>JPZ</b>	Jump if Plus or Zero
<b>JMZ</b>	Jump if Minus or Zero
<b>JUO</b>	Jump if Unordered
<b>LOOP</b>	Loop

Data Blocks	
<b>OPN</b>	Open a Data Block
<b>CDB</b>	Exchange Shared DB and Instance DB
<b>L DBLG</b>	Load Length of Shared DB in ACC1
<b>L DBNO</b>	Load Number of Shared DB in ACC1
<b>L DILG</b>	Load Length of Instance DB in ACC1
<b>L DINO</b>	Load Number of Instance DB in ACC1

Load	
<b>L</b>	Load
<b>L STW</b>	Load Status Word into ACC1
<b>LAR1</b>	Load Address Register 1 from ACC1
<b>LAR1 &lt;D&gt;</b>	Load Address Register 1 with Double Integer (32-Bit Pointer)
<b>LAR1 AR2</b>	Load Address Register 1 from Address Register 2
<b>LAR2</b>	Load Address Register 2 from ACC1
<b>LAR2 &lt;D&gt;</b>	Load Address Register 2 with Double Integer (32-Bit Pointer)
<b>CAR</b>	Exchange Address Register 1 with Address Register 2

Transfer	
<b>T</b>	Transfer
<b>T STW</b>	Transfer ACC1 into Status Word
<b>TAR1</b>	Transfer Address Register 1 to ACC1
<b>TAR1 &lt;D&gt;</b>	Transfer Address Register 1 to Destination (32- Bit Pointer)
<b>TAR1 AR2</b>	Transfer Address Register 1 to Address Register 2
<b>TAR2</b>	Transfer Address Register 2 to ACC1
<b>TAR2 &lt;D&gt;</b>	Transfer Address Register 2 to Destination (32- Bit Pointer)

Timers/Counters (0 to 255)	
<b>FR</b>	Enable Timer/Counter (Free)
<b>L</b>	Load Current Timer/Counter Value into ACC1 as Integer (i.e. L T 32)
<b>LC</b>	Load Current Timer/Counter Value into ACC1 as BCD (i.e. LC T 32)
<b>R</b>	Reset Timer/Counter
<b>S</b>	Set Counter Preset Value (i.e. S C 15)
<b>SD</b>	On-Delay Timer
<b>SS</b>	Retentive On-Delay Timer
<b>SP</b>	Pulse Timer
<b>SF</b>	Off-Delay Timer
<b>SE</b>	Extended Pulse Timer
<b>CD</b>	Counter Down
<b>CU</b>	Counter Up

OBs	
<b>1</b>	Main Program Scan
<b>10-17</b>	Time of Day
<b>20-23</b>	Time Delay
<b>30-38</b>	Cyclic (Periodic)
<b>40-47</b>	Hardware
<b>80</b>	Time Error
<b>81</b>	Power Supply Error
<b>82</b>	Diagnostic Interrupt
<b>83</b>	Insert/Remove Module Interrupt
<b>84</b>	CPU Hardware Fault
<b>85</b>	Program Cycle Error
<b>86</b>	Rack Failure - Missing Profibus device
<b>87</b>	Communication Error
<b>100</b>	Warm restart
<b>101</b>	Hot restart
<b>102</b>	Cold restart
<b>121</b>	Programming Error
<b>122</b>	I/O Access Error



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