DOCUMENT
IEC 61131-3 compliance statement
LADV-CS

PROJECT
Wartens LADV virtual PLCs
Rev 1.0

IEC 61131-3 compliance statement

The parts of IEC 61131-3 the LADV Structured Text compiler and runtime implement, and the values of the parameters the standard leaves to the implementer.

Document	IEC 61131-3 compliance statement
Code	LADV-CS
Revision	1.0, 1 November 2026
Firmware	V1.0.0
Issued by	Wartens, makers of LADX

> This is a statement by Wartens of what LADV implements. It is not a certification by PLCopen or by any test body.

1. Languages

Language	Status
Structured Text (ST)	Implemented, as described below
Ladder Diagram (LD)	The LADX ladder dialect: contacts, coils, latches, one-shots, timers, counters, compares, math, JSR
Function Block Diagram (FBD)	Not implemented
Sequential Function Chart (SFC)	Not implemented
Instruction List (IL)	Not implemented; deprecated in the third edition

2. Structured Text features

Feature	Status
Elementary types: BOOL, SINT to ULINT, BYTE to LWORD, REAL, LREAL, TIME, LTIME, DATE, TOD, DT, STRING, WSTRING, CHAR, WCHAR	Implemented
Typed, based and duration literals	Implemented
Enumerations, subranges, arrays (multi-dimensional), structures, nested initialisation	Implemented
Variable sections VAR, VAR_INPUT, VAR_OUTPUT, VAR_IN_OUT, VAR_TEMP, VAR_GLOBAL	Implemented
RETAIN, NON_RETAIN, CONSTANT, AT with direct addresses	Implemented
FUNCTION, FUNCTION_BLOCK, PROGRAM; formal and informal calls; output assignment with =>	Implemented
IF, CASE with lists and ranges, FOR, WHILE, REPEAT, EXIT, CONTINUE, RETURN	Implemented
Bit access, x.3	Implemented
CONFIGURATION, RESOURCE, TASK with INTERVAL, SINGLE and PRIORITY; PROGRAM WITH	Implemented

Feature	Status
Standard functions and function blocks	Implemented; listed in LADV-IR-ST
Classes, methods, interfaces, properties	Not implemented
REF_TO and dereferencing	Not implemented
Namespaces	Not implemented
Actions and SFC elements in ST source	Not implemented

3. Implementation-dependent parameters

Parameter	LADV
Maximum identifier length	64 characters, case-insensitive
Default and maximum STRING length	80 characters by default, STRING[n] up to 1024
Integer overflow	Wraps, two's complement, at the width of the type (INT 32767 + 1 = -32768)
LINT, ULINT and LWORD range	Exact to 53 bits (plus or minus 9,007,199,254,740,991), saturating beyond
REAL and LREAL	IEC 60559 single and double precision
REAL to integer conversion	Rounds half to even (IEC 60559 default); TRUNC truncates
Integer division	Truncates toward zero; MOD takes the sign of the dividend
Integer division by zero	Faults the controller with code F310 and the line number; outputs go off
REAL division by zero	Gives infinity or NaN as IEC 60559 defines; no fault
Array index out of range	Faults the controller with code F311 and the line number
TIME and LTIME	TIME: signed 32-bit milliseconds. LTIME: milliseconds with fractions to 1 ns
DATE, TOD, DT	Milliseconds since 1970-01-01 (UTC); TOD to 1 ms
Timer resolution	The interval of the task that calls the timer
Task scheduling	Non-preemptive. At each tick the due tasks run in priority order (0 is highest), then declaration order
Default task	One cyclic task at the program's scan time, 100 ms unless set
Warm restart (STOP to RUN)	RETAIN variables keep their values on retentive CPUs; all others take their initial values
Cold restart	Every variable, RETAIN included, takes its initial value
Watchdog	A tick that takes longer than the CPU's watchdog time faults the controller (F300)
Loop protection	Checked against the watchdog every 1,024 statements, so an endless loop faults rather than hangs
Maximum array size	65,536 elements
Direct addresses	%IXb.n and %QXb.n are digital channel 8b+n; %IWn and %QWn are analog channel n; %M is internal memory
Analog range	0 to 1000 is 0.0 to 100.0 percent across the LADV line

4. Checks at compile time

Undeclared names, with the nearest declared name suggested; type mismatches, with the conversion to use; literals out of range for their type; assignments to constants and inputs; unknown functions and block inputs; recursion; EXIT and CONTINUE outside a loop; two variables at one address.