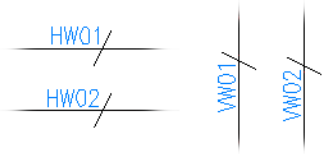
Overview of symbol naming conventions

AutoCAD Electrical depends on a specific naming convention to enable some of its automation features to work. Though not mandatory, follow the naming convention outlined in the following section if you create new AutoCAD Electrical-smart symbols for use with AutoCAD Electrical. Custom symbols can take full advantage of the AutoCAD Electrical features.

Cable Marker Symbols



AutoCAD Electrical cable conductor marker symbols follow this convention:

- The first character is "H" or "V" for horizontal wire or vertical wire insertion.
- The next two characters are "W0." A zero (0) means that the symbol does not trigger a wire number change through it.
- The fourth character is either 1 or 2: "1" for parent marker or "2" for child marker.
- The remaining characters are not specified.

Examples:

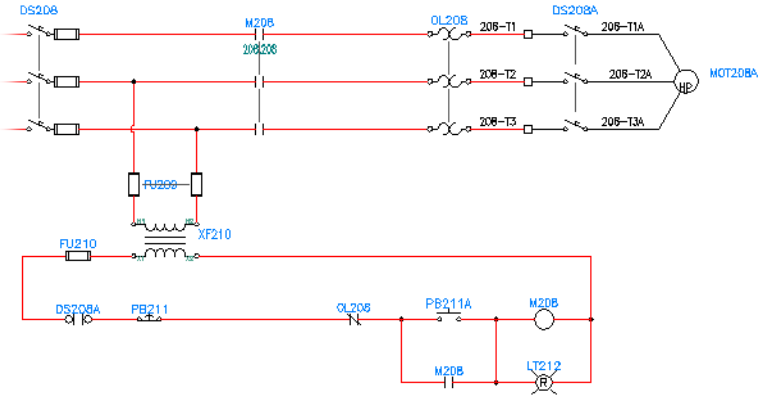
HW01.dwg	Parent cable conductor marker, horizontal wire insertion
HW02.dwg	Child cable marker, horizontal wire insertion
VW01.dwg	Parent cable conductor marker, vertical wire insertion
VW02.dwg	Child cable marker, vertical wire insertion

Components - General

Schematic components such as relays, switches, pilot lights, and discrete motor control devices (but not PLC I/O symbols) follow this naming convention:

- 32-character block name maximum, first character is either "H" or "V" for horizontal or vertical wire insertion.

- The next two characters are reserved for family type (for example, PB for push buttons, CR for control relays, LS for limit switches). A zero (0) as the second character of the family type (for example, a 0 in the overall symbol name) means that the symbol does not trigger a wire number change through it. (For example, T0 for terminals, W0 for cable markers, C0 for connectors.)
- The fourth character is generally a 1 or a 2: 2 for child contacts and 1 for everything else (parent or standalone component).
- If the symbol is a contact, then the fifth character is a 1 for normally open, 2 for normally closed.
- The remaining characters are not specified. They are used to keep names unique.



Examples:

HCR1.dwg	Control relay coil, horizontal rung insertion
VCR1.dwg	Control relay coil, vertical rung insertion
HCR21.dwg	Horizontal relay contact, N.O.
HCR22.dwg	Horizontal relay contact, N.C.
HCR22T.dwg	Horizontal relay contact, N.C., with in-line terminal numbers
VPB11.dwg	Vertical push button, parent contact, N.O.
VPB21.dwg	Vertical push button, child contact, N.O.

HLS11.dwg	Horizontal limit switch, parent, N.O.
HLS11H.dwg	Horizontal limit switch, parent, N.O. Held closed
VLT1RP.dwg	Vertical pilot light, red, press-to-test
HW01.dwg	Horizontal cable marker, no wire number change through it

Component Location Mark Symbols

AutoCAD Electrical expects the location symbol names to begin with the characters "WDXX."

Configuration and Ladder Master Line Reference Symbols

AutoCAD Electrical expects to find these block inserts:

WD_M.dwg	Block insert consisting of about 50 invisible attributes. They carry the settings of the drawing.
WD_PNLM.dwg	Optional block insert consisting of several invisible attributes. They carry the settings of the drawing for panel layout functions.
WD_MLRH.dwg	Block insert that carries the first line reference number of a ladder and additional information such as rung spacing and ladder length.
WD_MLRV.dwg	Same as previous symbol, but for a ladder that lies on its side.
WD_MLRHX.dwg	Optional, user-defined alternative to WD_MLRH.dwg. AutoCAD Electrical uses this symbol name when you select 'User Block' from the Line Reference Numbers subdialog box of the Drawing Properties ➤ Drawing Format dialog box (on the Drawing Properties ➤ Drawing Format dialog box, Format Referencing section, select Reference Numbers and click Setup).
WD_MLRVX.dwg	Same as previous symbol, but for a ladder that lies on its side.

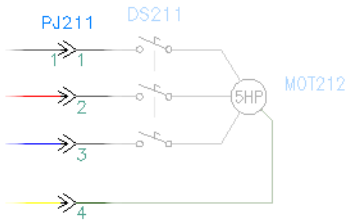
Note: The ladder line reference block used by AutoCAD Electrical is determined by the ladder reference configuration selected in the Format Referencing section of the Drawing Properties ➤ Drawing Format dialog box.

Connector Symbols

- The first character is "H" or "V" for horizontal or vertical orientation.
- The next two characters are "CN" for connector.
- The fourth character is either 1 or 2: 1 for parent or 2 for child.
- The fifth character is "_"
- The sixth character is 1-9 for the style number.
- The seventh character:
  (Combo) specifies the plug or jack ID: P = Plug, J = Jack (Receptacle)

  (Only) specifies the wire direction: 1 = right, 2 = top, 4 = left; and 8 = bottom.

- The eighth character is either "P" or "J": P = Plug, J = Jack (Receptacle)



Examples:

HCN1_14P.dwg	Horizontal parent - single (plug) wiring connects from left or bottom
VCN2_18P.dwg	Vertical child - single (plug) wiring connects from left or bottom
HCN1_11J.dwg	Horizontal parent - single (receptacle) wiring connects from right or top
VCN2_12P.dwg	Vertical child - single (plug) wiring connects from right or top

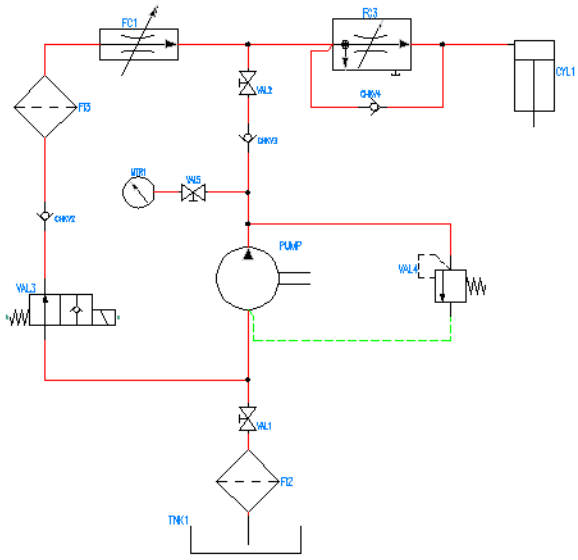
Upon completion of the parametric build connector, a unique new block definition is created. Each connector is labeled with a unique naming convention within the same project.

HCN1_14P_nnn	Horizontal connector; where "nnn" is a random number for uniqueness
VCN1_18P_nnn	Vertical connector; where "nnn" is a random number for uniqueness

Hydraulic Symbols

The maximum number of characters for the block name is 32.

- The first character is "H" or "V" for horizontal wire or vertical.
- The next two characters are the first two letters of the family name (for example, FI for filters, CY for cylinders, PM for pumps). See Overview of Hydraulic and P&ID symbols for a list of symbol family names.
- The fourth character is "1" for hydraulic symbols - stand-alone component.
- Use "_" and enter a meaningful name corresponding to the symbol.



Example:

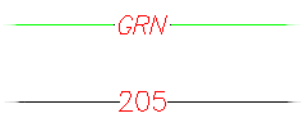
HCYL1_plunger_cyl.dwg	Horizontal standalone cylinder; plunger_cyl is the meaningful name for the symbol

Inline Wire Marker Symbols

Construct dumb inline wire marker symbols with a tiny piece of "pigtail" line entity at each connection point. It can be small, but it must be present for AutoCAD Electrical to correctly "see" the in-line inserted block as it traces the wire network. Inline wire marker symbols follow this naming convention:

- The first character is "H" or "V" for horizontal wire or vertical wire insertion.

- The next three characters are "T0_"
- The remaining characters are undefined.

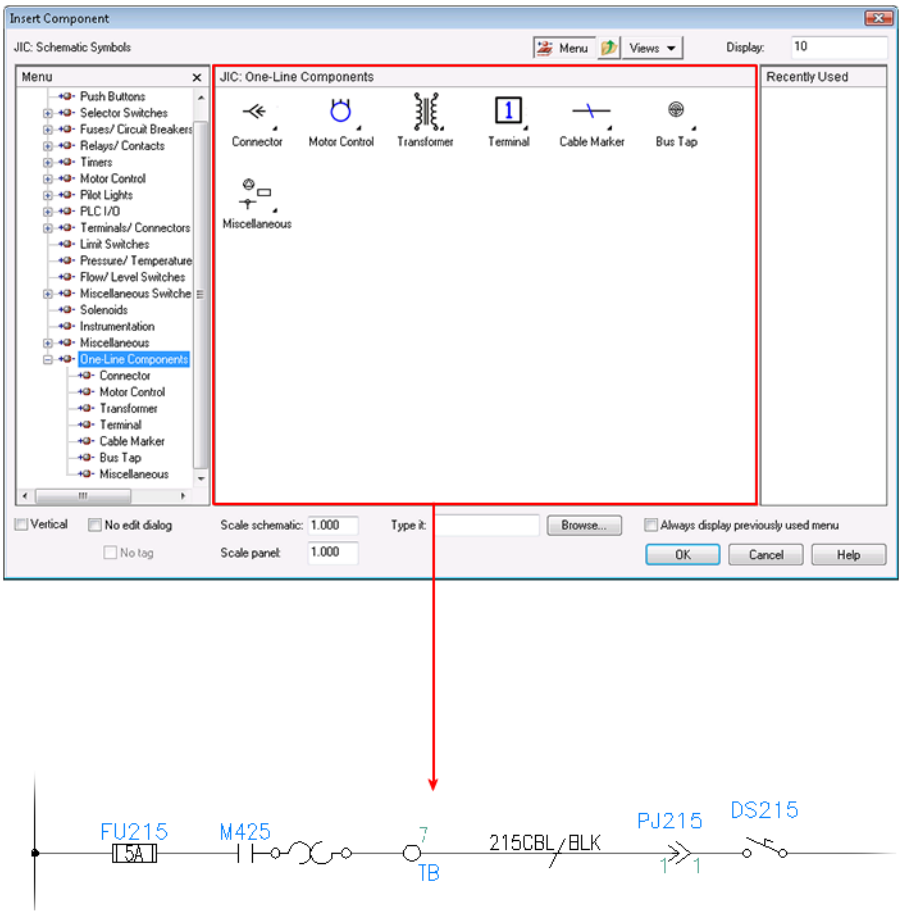


Example:

HT0_RED.dwg	"RED" inline marker, horizontal wire insert

One-line Symbols

One-line symbols follow the same naming convention as schematic parent and child symbols. To make the symbol names unique, the one-line symbol block names have a "1-" suffix. However, the symbol name does not define the symbol as a one-line symbol. A one-line symbol is defined by the existence of a WDTYPE attribute with a value of "1-" on the symbol, or a value of "1-1" for a one-line bus-tap symbol.



The bus-tap symbol can have two functions:

- Provide an anchor point for the one-line circuit representation that begins at this location.
- Break into the one-line bus where the circuit connects.
  On a dual circuit one-line template, there are three bus-tap symbols. One at the normal point where the circuit ties into the bus. There is another version of the symbol on each of the two circuit "legs", each marking the point where that part of the dual circuit starts. These bus-tap symbols allow various reports to report accurately on a one-line circuit, whether a single circuit or a dual circuit representation.

The following bus-tap symbols are supplied:

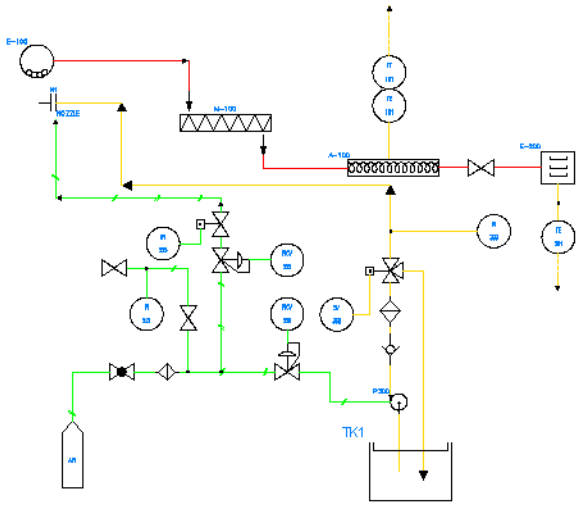
- HDV1_BT_1-.dwg - with "dot" for horizontal one-line circuit
- VDV1_BT_1-.dwg - with "dot" for vertical one-line circuit
- HDV1_BTT_1-.dwg - "tee" connection for dual horizontal circuit
- VDV1_BTT_1-.dwg - "tee" connection for dual vertical circuit
- HDV1_BTL_1-.dwg - "corner" connection for dual horizontal circuit
- VDV1_BTL_1-.dwg - "corner" connection for dual vertical circuit

  Note: A WDTYPE attribute with a "1-1" value, identifies a bus-tap symbol.

P&ID Symbols

The maximum number of characters for the block name is 32.

- The first character is "H" or "V" for horizontal wire or vertical.
- The next two characters are the first two letters of the family name (for example, GV for diaphragm valves, IN for instruments, N for nozzles). See Overview of Hydraulic and P&ID symbols for a list of symbol family names.
- The fourth character is "1" for P&ID symbols - stand-alone component.
- Use "_" and enter a meaningful name corresponding to the symbol.

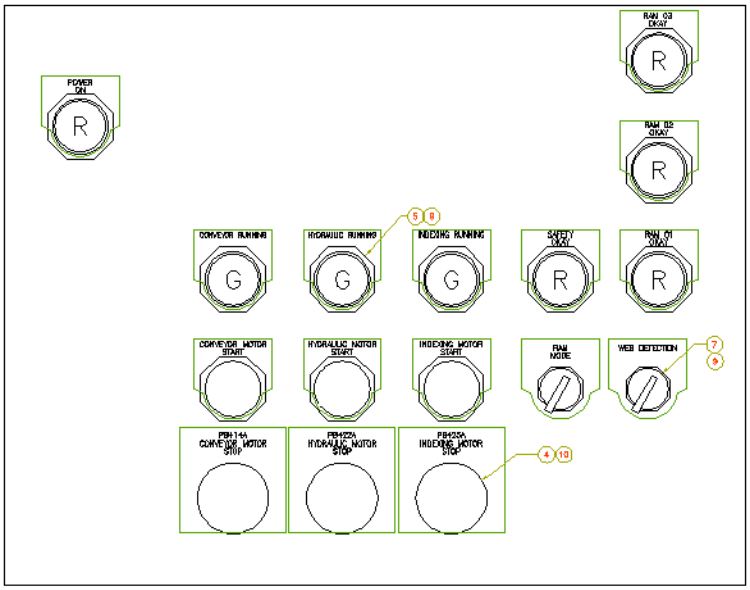


Example:

VTK1_ver_tank.dwg	Vertical standalone cyclone; ver_tank is the meaningful name for the symbol

Panel Layout Footprint Symbols

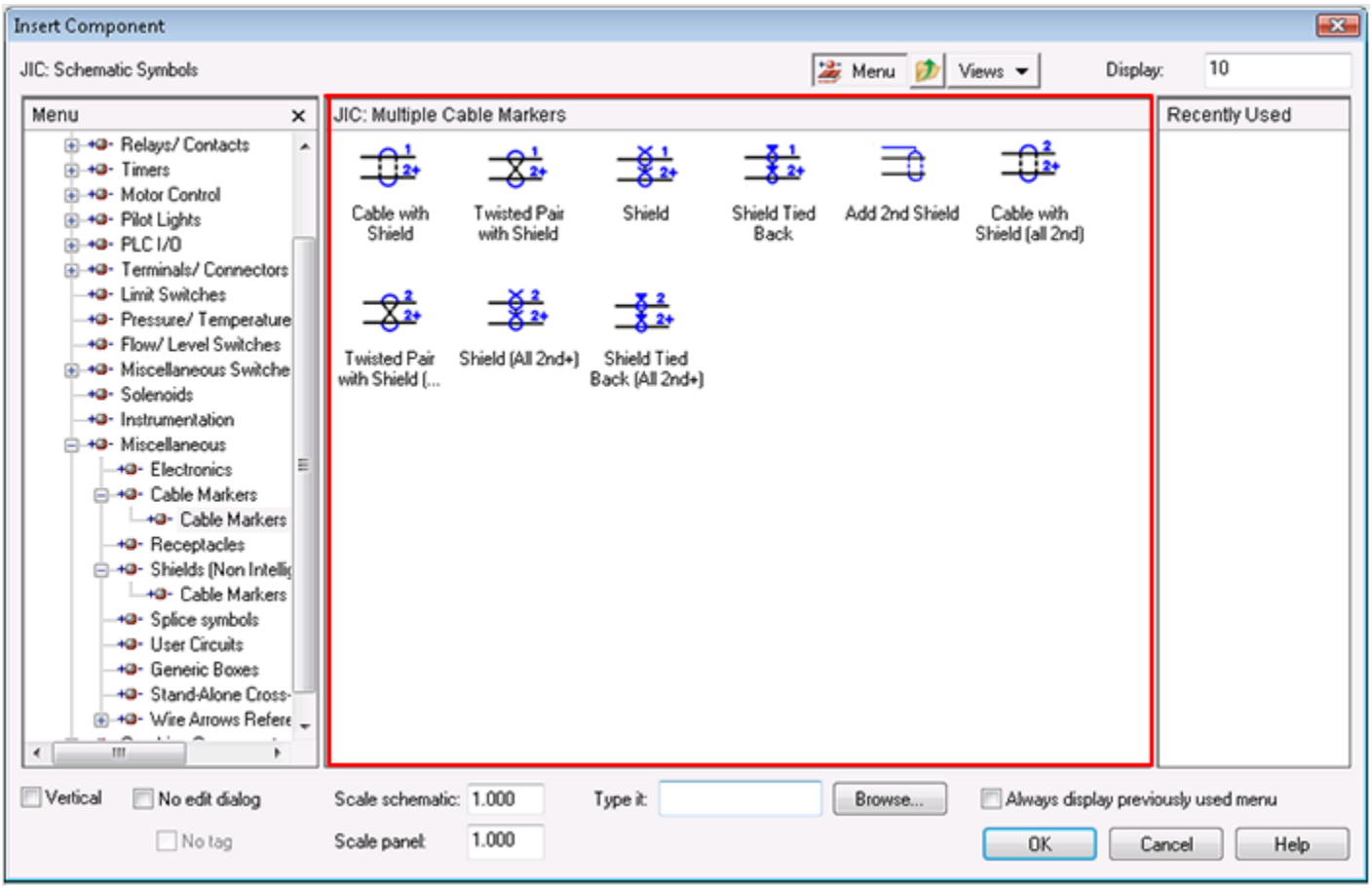
There is not a required naming convention to follow, but the name must adhere to the AutoCAD 32-character block name limit.



Parametric Twisted Pair Symbols

A parametrically generated twisted pair representation consists to two instances of the same symbol (there are no parent/child versions). This symbol must carry attribute ACE_FLAG with a value of "3." Parametric twisted pair symbols follow this naming convention:

- The first four characters are "HT0_" or "VT0_" for horizontal or vertical parametric symbols.
- The remaining characters can be anything (default is set to "TW")

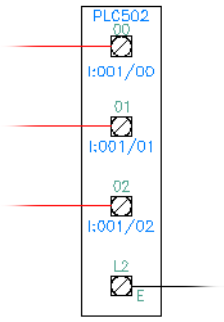


Examples:

HT0_TW.dwg	Horizontal parametric connector symbol
VT0_TW.dwg	Vertical parametric connector symbol

PLC I/O Parametric Build Symbols

These symbols begin with "HP" or "VP" (horizontal rung versus vertical) followed by a digit 1 through 9. The digit corresponds to the selected PLC module style or look. (1 through 5 are provided in the AutoCAD Electrical library, 6 through 9 can be user-defined).



Plug/Jack Connector Pin Symbols

AutoCAD Electrical connector symbols follow this convention:

- The first character is "H" or "V" for horizontal wire or vertical wire insertion.
- The next two characters are "C0" if the connector does not trigger a wire number change through it. (The "0" means that the wire number does not change, or "CN" if the connector DOES trigger a wire number change.)
- The fourth character is either 1 or 2: 1 for parent marker or a 2 for child marker.
- The remaining characters are not specified.

Splice Symbols

Splices follow this naming convention:

- The first four characters are "HSP1" or "VSP1" for horizontal or vertical splices.
- The fifth through seventh characters are "001", "002", "003," and so on.

Examples:

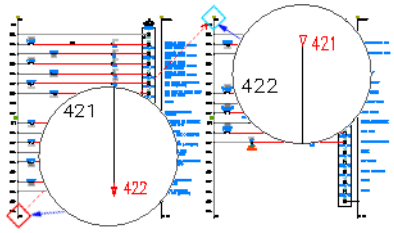
HSP1001.dwg	Horizontal splice #1
VSP1001.dwg	Vertical splice #1

HSP1003.dwg Horizontal splice #3

Source/Destination Wire Signal Arrow Symbols

AutoCAD Electrical wire signal arrow symbols follow this convention:

- The first four characters of these symbol names are either "HA?S" for source signal arrows or "HA?D" for destination symbol arrows. The "?" character is the arrow style digit (1 through 4 are provided in the AutoCAD Electrical library and 5 through 9 can be user-defined).
- Characters 5 through 11 can be user-defined.



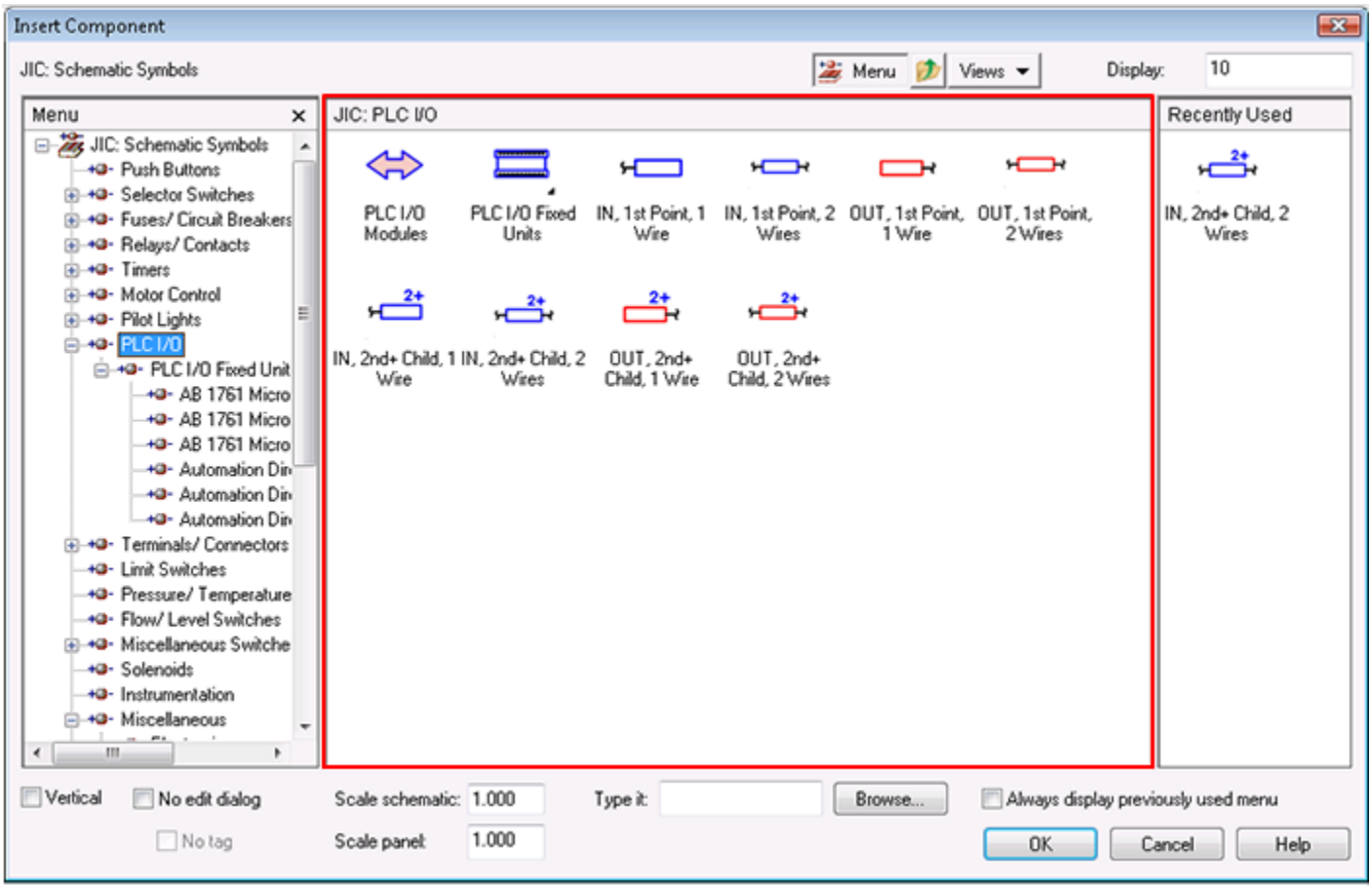
You can create your own arrow styles using these unused digits (for example, HA5S... and HA5D...). For example, copy Autodesk\Acade {version}\Libs\jic1\ha1s*.dwg to ha5s*.dwg and Autodesk\Acade {version}\Libs\jic1\ha1d*.dwg to ha5d*.dwg. Access each copied arrow symbols in AutoCAD and edit to suit. Then, to access your new arrow style, set the default arrow style to "5" in the Drawing Properties ➤ Styles dialog box.

Standalone Cross-reference Symbols:

Same naming convention as the Source/Destination Signal symbols (that is, HA?S* and HA?D*) but without a WIRENO attribute present on the symbol.

Stand-alone PLC I/O Point Symbols

These symbols begin with "PLCIO" and can be up to 32 characters long. There is no naming convention referenced by AutoCAD Electrical other than the "PLCIO" prefix.



Examples:

PLCIO50E1761-L16AWA.dwg	AB 1761 model L16-AWA with 0.5 unit rung spacing
PLCIOI1T.dwg	Standalone input point, single wire connection

Standalone Terminal Symbols

Stand-alone terminals follow this naming convention:

- The first two characters are "HT."
- The third character is "0" if the wire number does not change through the terminal, "1" if the terminal symbol should trigger a wire number change.
- The fourth character is an underscore (_) if the terminal carries no attributes for AutoCAD Electrical to process (such as a dumb, unannotated terminal symbol). Otherwise, the fourth through eighth character positions of the symbol file name are user-defined.

Examples:

HT0001.dwg	Square terminal with annotation, wire number does not change
HT1001.dwg	Same as previous symbol, but wire number changes through the terminal
HT0_01.dwg	Dumb, square terminal with no annotation, no wire number change

User-defined Symbols

AutoCAD Electrical user-defined symbols follow this convention:

- The first character is "H" or "V" for horizontal wire or vertical wire insertion.
- The next two characters are "ZA" through "ZZ."
- The remaining characters can be user-defined.

Wire Dot Symbols

AutoCAD Electrical expects this symbol name to be "WDDOT.dwg."

Wire Number Symbols

An AutoCAD Electrical wire number is a block insert consisting of a single wire number attribute. The origin of the block insert lies on its wire with the wire number attribute floating above, below, or off to the side of the insertion point of the block.

Examples:

WD_WNH.dwg	Wire number for horizontal wire insertion
WD_WNV.dwg	Wire number for vertical wire insertion
WD_WCH.dwg	Extra wire number copy for horizontal wire
WD_WCV.dwg	Extra wire number copy for vertical wire

AutoCAD Electrical also supports inline wire numbers that follow the value of the main wire number. An inline wire marker has a block name that follows that of a terminal symbol that does not trigger a wire number change.

Examples:

HT0_W1.dwg	Inline wire number marker, horizontal wire insertion, short wire number
HT0_W3.dwg	Inline wire number marker, horizontal wire insertion, longer wire number
VT0_W1.dwg	Inline wire number marker, vertical wire insertion, short wire number
VT0_W2.dwg	Inline wire number, vertical wire insertion, medium wire width, vertical wire insertion

Family type

The second and third characters of the symbol name are reserved for family type (for example, PB for push buttons, CR for control relays, LS for limit switches). The family type can be used to determine the catalog lookup table name and the tag name for a component. The library symbols supplied with AutoCAD Electrical use the following family types.

Family Type	Description
AM	Ammeters
AN	Buzzers, horns, bells
BA	Batteries
BV	Ball Valves
C0, CN	Connectors/pins
CA	Capacitors
CB	Circuit breakers
CR	Control relays

DB	Distribution blocks
DI	Diodes
DN	Device networks
DR	Drives
DS	Disconnect switches
DV	Device boxes
EN	Enclosures/hardware
FL	Level switches
FM	Frequency meters
FS	Flow sensors
FT	Foot switches
FU	Fuses
GV	Gate valves
LR	Latching relays
LS	Limit switches

LT	Lights, pilot lights
LV	Globe valves
MO	Motors
MS	Motor starters/contactors
OL	Overloads
PB	Push buttons
PC	Pull cord switches
PE	Photo switches
PG	A-plug switches
PM	Power meters
PS	Pressure switches
PW	Power supplies
PX	Proximity switches
RE	Resistors
SP	Splices

SS	Selector switches
SU	Surge suppressors
SV	Solenoids
SW, TG	Toggle switches
T0, T1	Terminals
TC	Thermocouples
TD	Timer relays
TS	Temperature switches
VM	Volt meters
VR	Variable resistors
WO	Cables, multi-conductor cables
XF	Transformers