

Hardware Device Naming Standard

Consistent identification across drawings and control systems

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1 Purpose and scope

Assign one stable device identity and carry it through electrical drawings, panel labels, bills of material, PLC and HMI documentation, and project records. The device register is the authoritative source for assigned identities and approved abbreviations.

This standard applies to new control panels, field devices, modifications, and contractor deliverables. Existing identifiers remain valid until a documented migration is approved. It defines internal naming conventions; equipment selection, wiring, ratings, and safety design are governed by the applicable engineering requirements.

2 Core requirements

- Each physical device receives a unique Device ID within its equipment scope. Each site-wide identity includes the equipment scope.
- The same Device ID appears on the drawing, physical label, register, and BOM instance reference. Software uses a compatible form of that identity.
- Device IDs describe device class and identity. Descriptions explain service, location, and function.
- Keep hardware identity separate from wire numbers, terminal numbers, PLC addresses, IP addresses, and catalog numbers.
- Never reuse a retired Device ID for unrelated equipment. Record replacements, removals, and changes in the device register.

Document number reservation

CE-STD-HDN-001 is the subject-specific identifier for this document. The document owner may map it into the existing CE-STD sequence before release; retain a cross-reference to this identifier.

3 Device ID structure

Use EQUIPMENT-PANEL-CLASSNNN for panel-mounted devices and EQUIPMENT-FLD-CLASSNNN for field devices. NNN is a three-digit sequential number from 001 to 999. Equipment and panel codes are assigned in the register before devices are numbered.

Element	Rule	Example
Equipment	Approved line, skid, or machine scope; uppercase letters and digits	L05 or RO01
Panel	P plus two digits; FLD for field devices	P01 or FLD
Class	Approved hardware abbreviation from Sections 4 and 5	PLC, IR, PE
Sequence	Unique within equipment plus class; do not restart in each panel	001, 002, 003

Use	Device ID	Meaning
Panel controller	L05-P01-PLC001	Line 5, panel 1, controller 1
Interposing relay	L05-P01-IR001	Line 5 interface relay 1
Field photoeye	L05-FLD-PE001	Line 5 photoeye 1
Field solenoid	L05-FLD-SOL001	Line 5 solenoid valve 1
Second panel supply	L05-P02-PS002	Line 5 power supply 2

Short labels and related components

A local drawing or label may show PLC001 or IR001 when the equipment and panel scope are clearly shown on the same drawing or panel. The register stores the full Device ID. Use the full identity for cross-panel and cross-machine references.

Use terminal notation after a colon, such as L05-P01-TB001:12 or L05-P01-IR001:A1. Contact references use the actual manufacturer terminal identifiers. Do not invent universal relay pin numbers.

A relay socket or coil suppressor may be recorded as a child accessory of IR001 with a distinct BOM line. Independently labeled or maintained accessories receive their own approved Device ID. Assembly parents and children must not duplicate quantity counts.

Stable identity rules

Leave assigned sequences unchanged when devices are added. A like-for-like replacement retains its Device ID and records its new manufacturer, catalog number, and serial number. A relocation changes the panel segment while retaining the class sequence; store the previous full ID as an alias and update all affected references. A change of function requires engineering review before deciding whether to retain identity.

4 Primary device abbreviations

These codes are the approved local meanings. Use the code according to the installed device function. Vendor terminology does not override the register.

Code	Device class	Application rule
PLC	Programmable logic controller	Controller CPU; record platform and model separately.
PS	Power supply	AC to DC control power supply.
CB	Circuit breaker	Branch or main breaker; main function goes in description.
FU	Fuse	Individual fuse; class and rating are register fields.
CR	Control relay	General-purpose relay without a dedicated class below.
IR	Interposing relay	Relay assigned to interface a PLC or control signal to a load.
TB	Terminal block group	Identifies terminal strip or assembly; position follows a colon.
PDB	Power distribution block	Distribution component or assembly.
VFD	Variable frequency drive	Motor variable-speed drive.
OL	Overload relay	Motor overload protection device.
MTR	Electric motor	Motor itself; starter and drive have separate IDs.
SW	Switch	General or selector switch; never use for Ethernet switch.
PB	Pushbutton	General command button; use EST for emergency-stop devices.
LT	Light	Single pilot light or panel light; service goes in description.
PE	Photoelectric sensor	Photoeye only in Device IDs; protective earth uses its drawing symbol.
SOL	Solenoid valve or actuator coil	Record whether ID represents complete valve or separate coil.

Relay classification

Ice-cube describes a relay housing style, not a separate functional class. An ice-cube relay used to interface a PLC output is IR; one used for general control is CR. Slim interface relays follow the same rule. Use TR for timing, SR for safety, and SSR for solid-state switching.

Names that must not collide

Use ESW for Ethernet switches and SW for operator or mechanical switches. Use FU for the fuse and FB for its holder. LT identifies one light; SL identifies a multicolor stack-light assembly. Preserve legacy AV and SV identifiers as aliases until their functions and device types are verified.

5 Extended device abbreviations

Code	Device class	Code	Device class
UPS	Uninterruptible power supply	XFMR	Control transformer
DCC	DC to DC converter	FB	Fuse block or holder
SP	Supplementary protector	SPD	Surge protection device
TR	Timing relay	SR	Safety relay
SSR	Solid-state relay	KM	Contactors
MS	Motor starter assembly	SS	Soft starter
MPCB	Motor protection breaker	DS	Disconnect switch
ESW	Industrial Ethernet switch	COM	Communication module
GW	Protocol gateway	MC	Media converter
RIO	Remote I/O station	DI	Digital input module
DO	Digital output module	AI	Analog input module
AO	Analog output module	AIO	Combined analog I/O module
HMI	Human machine interface	EST	Emergency-stop device
SL	Stack-light assembly	HN	Horn or buzzer
PRX	Proximity sensor	TX	Signal transmitter
ISO	Signal isolator	SC	Signal conditioner
ISB	Intrinsic safety barrier	GB	Ground bus
NB	Neutral bus	FAN	Panel or filter fan
HTR	Panel heater	TSTAT	Thermostat
REC	Service receptacle	CG	Cable gland
GS	Grounding strap	DR	DIN rail section
WD	Wire duct section	SPARE	Reserved position only

Assembly and infrastructure treatment

Use RIO for a remote station and separate module IDs for maintainable I/O modules. Each module record links to its station, adapter, or controller and identifies its slot. A starter assembly may be MS001 with child KM001 and OL001 records when those components are separately labeled.

Number rail, duct, glands, and straps only when individual tracking is useful or required by the project. Otherwise list them as bulk BOM materials with location, size, and quantity. SPARE is a reserved position designation, not an installed device identity.

Adding a new abbreviation

The document owner verifies that the new code has one clear meaning, adds its definition to the register and revision log, and communicates the change before use. Contractor-specific codes require an approved mapping. Do not use the same code for different device classes.

6 PLC and HMI naming

Use the full Device ID as the base of a software reference. Replace hyphens with underscores and append a signal suffix. Example: L05-FLD-PE001 becomes L05_FLD_PE001_Blocked. Use letters, digits, and underscores only; begin with a letter. Keep names short enough for the target software and verify its limits during implementation.

Suffix	Meaning	Example
Cmd	Program command to a device	L05_FLD_SOL001_Cmd
Req	Operator or sequence request	L05_FLD_SOL001_Req
Fb	Actual feedback from a separate signal	L05_FLD_SOL001_OpenFb
Sts	Status derived or reported by device	L05_P01_VFD001_RunSts
Fault	Active fault condition	L05_P01_VFD001_Fault
PV	Measured process value	RO01_FLD_TX001_PV
SP	Setpoint variable suffix	RO01_FLD_TX001_HighSP
PB	HMI command bit suffix	L05_P01_PLC001_ResetPB
Blocked	True means beam is blocked	L05_FLD_PE001_Blocked

Studio 5000 and other symbolic platforms

Map raw I/O to readable tags in a dedicated mapping routine. Store the exact module address separately, for example Local:2:I.Data.15 where supported by the installed module. An output command is not proof that a relay or valve operated; use actual feedback or label the indication as commanded status.

RSLogix 500 and address based systems

Keep the real address unchanged unless the approved logic change requires remapping. O:2/15, I:1/0, and B3:0/0 are addresses, not hardware IDs. Record Device ID, signal name, address, and description in the mapping register. Enter a compatible symbol if supported; otherwise use the full identity in the address description. Avoid truncations that produce duplicate symbols.

Example: Device ID L05-P01-IR001; signal L05_P01_IR001_Cmd; output address O:2/15 only after confirming the installed output module and channel. HMI indication text: Can stop relay commanded. Do not show Relay energized unless actual feedback confirms it.

Operator facing descriptions

Use plain descriptions on HMI screens, such as Line 5 outfeed photoeye blocked. Include the Device ID in diagnostics and alarm details. Distinguish physical device PB001 from an HMI ResetPB bit. Document signal polarity explicitly: raw input ON, normalized meaning, normal condition, and alarm condition.

7 Cross reference and device register

Maintain one record per assigned physical device, plus linked records for each relevant signal. The full Device ID is the matching key between tools. A manufacturer part number may repeat; a physical Device ID must not.

Record fields	Required content
Identity and service	Full Device ID; local label; description; equipment; panel or field location; class; status; legacy aliases.
Hardware	Manufacturer; catalog number; revision; serial number when tracked; voltage; applicable ratings; accessory or parent links.
Electrical documentation	Drawing number and sheet; reference location; terminal strip and position; wire numbers; panel layout reference.
Controls and network	PLC name; routine or program reference; rack and slot; channel; address; signal name and datatype; polarity; IP address when applicable.
Commercial and project	BOM line or instance reference; quantity; project or ticket ID; quotation line; replacement or upgrade status; responsible engineer.
Lifecycle	Assigned date; revision; commissioning result; current firmware or software version when relevant; previous ID; retirement date.

Worked example across all systems

System	Entry for the same interposing relay
Device register	L05-P01-IR001 Can stop interface relay 24 VDC coil
Electrical schematic	IR001 shown in scoped Line 5 panel P01 drawing; actual coil terminals recorded
Physical panel label	IR001, with panel identity L05-P01 clearly marked
BOM	Relay catalog number plus instance L05-P01-IR001; socket on linked accessory line
PLC mapping	L05_P01_IR001_Cmd mapped to O:2/15 after I/O verification
HMI diagnostics	Can stop relay commanded IR001
Project record	Line 5 can stop modification linked to L05-P01-IR001

BOM quantities and terminal groups

A consolidated BOM row may list several Device IDs using the same catalog number, with quantity equal to the number of installed instances. TB001 identifies a terminal group; TB001:01 and TB001:02 identify positions. Record the component quantities and bridge accessories separately so the group ID does not obscure purchasing quantities.

8 Implementation and change control

Assign and verify a new device

1. Confirm equipment scope and panel or field location. Reserve the next available class sequence in the device register.
2. Enter service description, manufacturer information, ratings, and parent or accessory relationships. Link the project or support ticket.
3. Apply the Device ID to the schematic, layout, BOM instance, and physical label. Add I/O addresses, terminal positions, and wire references.
4. Create software names using underscores and the documented signal suffix. Confirm address, datatype, polarity, and HMI text.
5. Review the references before installation. During commissioning, verify that the installed label and observed signal match the register.
6. Update as-built records and release the revised register with the approved project documentation.

Introduce the standard into an existing system

Inventory existing device names first. Keep an Old ID to New ID mapping and preserve legacy aliases. Use the convention for new devices immediately after adoption. Rename existing software references only through an approved change that covers PLC logic, HMI references, alarms, trends, recipes, reports, and external clients. Confirm all dependencies and restore points before downloading changed programs.

Roles and release checks

Role	Responsibility
Controls engineer	Reserve IDs, maintain mappings, and verify PLC and HMI references.
Panel designer or contractor	Use assigned IDs on drawings, layouts, labels, and BOMs.
Installer or technician	Match physical labels to drawings and report discrepancies.
Engineering approver	Approve deviations and release revisions for use.

- No duplicate full Device IDs or conflicting abbreviation meanings.
- No unmatched drawing, BOM, panel label, software, or project references.
- I/O addresses and terminal numbers match installed hardware.
- Legacy mappings, additions, replacements, and retirements are documented.
- Register and as-built documentation are stored with the released project.

Revision history

Revision	Date	Change
0	2026-10-07	Initial issue of naming rules, abbreviation register, software mapping, and implementation process.