

SECTION 084113: ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

This suggested guide specification has been developed using the current edition of the Construction Specifications Institute (CSI) "Manual of Practice," including the recommendations for the CSI three-part Section Format and the CSI Page Format. Additionally, the development concept and organizational arrangement of the American Institute of Architects (AIA) MasterSpec® Program has been recognized in the preparation of this guide specification. Neither CSI, AIA, USGBC, nor ILFI endorse specific manufacturers and products. The preparation of the guide specification assumes the use of standard contract documents and forms, including the "Conditions of the Contract," published by the AIA.

EDITOR NOTE: Instructions to the editor appear in RED. This style does not exist in the standard CSI template.

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section covers Kawneer Aluminum Entrances, including glass and glazing, door hardware, and components.
- B. Types of Kawneer Aluminum Entrances include:

EDITOR NOTE: Choose Aluminum Entrance type (narrow, medium, or wide) based on project requirements. Delete Aluminum Entrance types that do not apply to this project.

1. AA@250 Thermal Entrance:
 - a. Narrow stile
 - b. Vertical face dimension: 2-1/2" (63.5 mm)
 - c. Depth: 2-1/4" (57.2 mm)
 - d. Moderate traffic applications
2. AA@425 Thermal Entrance:
 - a. Wide stile
 - b. Vertical face dimension: 4-1/4" (108.0 mm)
 - c. Depth: 2-1/4" (57.2 mm)
 - d. High traffic applications
 - e. Related Sections:

EDITOR NOTE: The sections listed below are specified elsewhere. However, Kawneer recommends single-source responsibility for all of these sections as described in the Quality Assurance article below.

3. 072700: Air Barriers
4. 079200: Joint Sealants

5. 083213: Sliding Aluminum-Framed Glass Doors
6. 084313: Aluminum-Framed Storefronts
7. 084329: Sliding Storefronts
8. 084413: Glazed Aluminum Curtain Walls
9. 084433: Sloped Glazing Assemblies
10. 085113: Aluminum Windows
11. 086300: Metal-Framed Skylights
12. 087000: Hardware
13. 088000: Glazing
14. 280000: Electronic Safety and Security

1.3 DEFINITIONS

- A. For fenestration industry standard terminology and definitions, refer to the Fenestration & Glazing Industry Alliance (FGIA) Glossary (AAMA AG-13).

1.4 PERFORMANCE REQUIREMENTS

A. General Performance:

1. Aluminum-framed entrance system shall withstand the effects of the following performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.

B. Wind Loads:

EDITOR NOTE: Provide wind load design pressures in PSF and include applicable building code and year edition.

1. The entrance system shall include anchorage that is capable of withstanding the following wind load design pressures:
 - a. Inward: (_____) psf or (_____) Pa
 - b. Outward: (_____) psf or (_____) Pa
2. The design pressures are based on the (_____) Building Code, (_____) Edition.

C. Air Leakage:

1. For single-acting offset pivot or butt-hung entrances in the closed and locked position, the test specimen shall be tested in accordance with ASTM E 283 at a pressure differential of 1.57 psf (75 Pa) for single doors and pairs of doors.
2. A single 3'0" x 7'0" (915 mm x 2134 mm) entrance door and frame shall not exceed 1.0 cfm/ft².
3. A pair of 6'0" x 7'0" (1830 mm x 2134 mm) entrance doors and frame shall not exceed 1.0 cfm/ft².

D. Uniform Load:

1. A static air design load of 20 psf (958 Pa) shall be applied in the positive and negative direction in accordance with ASTM E 330.
2. There shall be no deflection in excess of L/175 for typical application or L/180 for small-missile and large-missile impact, of the span for small- of any framing member at design load.
3. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

E. Structural-Test Performance:

1. Corner strength shall be tested per the Kawneer dual moment load test procedure and certified by an independent testing laboratory to ensure weld compliance and corner integrity. (Testing procedure and certified test results are available upon request.)

F. Energy Efficiency:

EDITOR NOTE: Refer to thermal transmittance charts in the Architectural Detail Manual in accordance with AAMA 507 for project-specific U-factors, solar heat gain coefficient (SHGC), and visible transmittance (VT). Refer to thermal performance matrix for NFRC values.

1. Thermal transmittance (U-factor):

- a. Thermal transmittance test results in accordance with AAMA 1503 or CSA A440 are based upon 1" (25.4 mm) clear high-performance insulating glass [1/4" (e=0.035, #2), 1/2" warm edge spacer and argon fill gas, 1/4"].
- b. When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than: 0.43 (HP glass) or project-specific (_____) Btu/(hr·ft²·°F) per AAMA 507 or (_____) Btu/(hr·ft²·°F) per NFRC 100.

2. Condensation Resistance Factor (CRF) or Condensation Index (CI):

- a. If using CRF, when tested to AAMA Specification 1503, the CRF shall not be less than 57_{frame} and 71_{glass}(1" low-e insulating glass with warm edge spacer).
- b. If using CI, when tested to CSA A440-00, the CI shall not be less than 48_{frame} and 69_{glass}(1" low-e insulating glass with warm edge spacer).

3. Solar Heat Gain Coefficient(:

- a. Glazed, thermally broken aluminum door and frame shall have a solar heat gain coefficient of no greater than (_____) as determined according to NFRC 200.

G. Sound Transmission Loss:

1. When tested to ASTM E90 and ASTM E1425, the Sound Transmission Class (STC) and Outdoor/Indoor Transmission Class (OITC) shall not be less than:
 - a. STC 32 or OITC 28 based upon 1" (25.4 mm) insulating glass (1/4", 1/2" AS, 1/4")

H. Blast Mitigation Performance:

EDITOR NOTE: Choose blast mitigation performance if required to meet project requirements.

1. Performance shall be tested or proven through analysis to meet ASTM F1642, GSA-TS01, and UFC 04-010.01 performance criteria.
2. The following options are available to meet UFC 04-010-01, B-3.1 Standard 12 for Exterior Doors and Standard 10 for Windows and Skylights:
 - a. Section B-3.1.1 Dynamic analysis
 - b. Section B-3.1.2 Testing
 - c. Section B-3.1.3 ASTM F2248 Design Approach

I. Forced Entry:

1. Performance shall be tested in accordance with AAMA 1304.

J. Environmental Product Declaration (EPD): Shall have an Aluminum Extrusions EPD.

1.5 SUBMITTALS

A. Product Data:

1. For each type of aluminum-framed entrance door indicated, include:
 - a. Construction details
 - b. Material descriptions
 - c. Fabrication methods
 - d. Dimensions of individual components and profiles
 - e. Hardware
 - f. Finishes
 - g. Installation instructions
2. Recycled Content:

EDITOR NOTE: Include these Recycled Content specifications if needed to meet project requirements or for a project that includes Green Building Certifications such as LEED, Living Building Challenge (LBC), etc.

EDITOR NOTE: If Recycled Content requirements are not specified, prime (zero recycled content) aluminum could be supplied.

- a. Provide documentation that aluminum has a minimum of 50% mixed pre- and post-consumer recycled content.
- b. Provide a sample document illustrating project-specific information that will be provided after product shipment.
- c. After product has shipped, provide project-specific recycled content information:
 - 1) Indicate recycled content, including the percentage of pre- and post-consumer recycled content per unit of product.
 - 2) Indicate the relative dollar value of recycled content product to the total dollar value of product included in the project.
 - 3) Indicate the location for recovery of recycled content.
 - 4) Indicate the location of the manufacturing facility.

3. Environmental Product Declaration (EPD):
 - a. Include an Aluminum Extrusions EPD.
- B. Shop Drawings:
 1. Plans
 2. Elevations
 3. Sections
 4. Details
 5. Hardware
 6. Attachments to other work
 7. Operational clearances
 8. Installation details
- C. Samples for Initial Selection:
 1. Provide samples for units with factory-applied color finishes.
 2. Provide samples of hardware and accessories involving color selection.
- D. Samples for Verification:
 1. Provide a verification sample for aluminum-framed entrance doors and required components.
- E. Product Test Reports:
 1. Provide test reports for each type of aluminum-framed entrance door used in the project.
 2. Test reports must be based on evaluation of comprehensive tests performed by a qualified preconstruction testing agency.
 3. Test reports must indicate compliance with performance requirements.
- F. Fabrication Sample:
 1. Provide a fabrication sample of a corner, consisting of a door stile and rail and using full-size components that show details of the following:
 - a. Joinery,
 - b. Glazing
- G. Entrance Door Hardware Schedule:
 1. Schedule shall be prepared by or under the supervision of supplier.
 2. Schedule shall detail fabrication and assembly of entrance door hardware, including procedures and diagrams.
 3. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.

1.6 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer must have successfully installed the same or similar units required for the project and other projects of similar size and scope.

B. Manufacturer Qualifications:

1. Manufacturer must be capable of fabricating aluminum-framed entrance doors and storefronts that meet or exceed the stated performance requirements.
2. Manufacturer must document this performance by the inclusion of test reports and calculations.

C. Source Limitations:

1. Obtain aluminum-framed entrance doors through one source from a single manufacturer.

D. Product Options:

1. Drawings indicate size, profiles, and dimensional requirements of aluminum-framed entrance doors and are based on the specific system indicated. Refer to Division 01 Product Requirements Section. Do not modify size and dimensional requirements.
2. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

E. Mockups:

1. Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
2. Build mockup for the type(s) of swing entrance door(s) indicated, in location(s) shown on drawings.

F. Pre-installation Conference:

1. Conduct conference at project site to comply with requirements in Division 01 Project Management and Coordination Section.

1.7 PROJECT CONDITIONS

A. Field Measurements:

1. Indicate measurements on shop drawings.

1.8 WARRANTY

A. Submit manufacturer's standard warranty for owner's acceptance.

B. Warranty Period:

1. Two years from Date of Substantial Completion of the project provided however that in no event shall the Limited Warranty begin later than six months from date of shipment by manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product:

1. Kawneer Company, Inc.
2. The door stile and rail face dimensions of the _____ entrance door will be as follows:

EDITOR NOTE: Above: Choose and enter the appropriate Thermal Entrance type (AA@250 or AA@425) based on project requirements.

EDITOR NOTE: Below: Delete Aluminum Entrance types that do not apply to this project. The Aluminum Entrance types you retain in this list should match the Aluminum Entrance types you retained in the Summary section of this document.

a. AA@250 Thermal Entrance:

- 1) Vertical face dimension: 2-1/2" (63.5 mm)
- 2) Top Rail: 2-1/2" (63.5 mm)
- 3) Bottom Rail: 3-7/8" (98.4 mm)
- 4) Optional Bottom Rail: 10" (254.0 mm)

b. AA@425 Thermal Entrance:

- 1) Vertical face dimension: 4-1/4" (108.0 mm)
- 2) Top Rail: 4-1/4" (108.0 mm)
- 3) Bottom Rail: 6-1/2" (165.1 mm)
- 4) Optional Bottom Rail: 10" (254.0 mm)

3. Major portions of the door members shall be 0.125" (3.2 mm) nominal thickness.
4. Glazing molding shall be 0.05" (1.3 mm) thick.
5. Glazing gaskets shall be either EPDM elastomeric extrusions or a thermoplastic elastomer.
6. Provide adjustable glass jacks to help center the glass in the door opening.

B. Subject to compliance with requirements, provide a comparable product by the following:

EDITOR NOTE: Provide information below indicating approved alternatives to the basis-of-design product.

1. Manufacturer: (_____)
2. Series: (_____)
3. Profile Dimension: (_____)
4. Performance Grade: (_____)

C. Substitutions:

1. Refer to Division 01 Substitutions Section for procedures and submission requirements.
2. Pre-Contract (Bidding Period) Substitutions:
 - a. Submit written requests ten (10) days prior to bid date.
3. Post-Contract (Construction Period) Substitutions:
 - a. Submit written request in order to avoid installation and construction delays.

4. Product Literature and Drawings:
 - a. Submit product literature and drawings modified to suit specific project requirements and job conditions.
 5. Certificates:
 - a. Submit certificate(s) certifying that the substitute manufacturer (1) attests to adherence to specification requirements for aluminum entrance and storefront system performance criteria, and (2) has been engaged in the design, manufacture, and fabrication of aluminum entrances and storefronts for a period of not less than ten (10) years.
(*Company Name*)
 6. Test Reports:
 - a. Submit test reports verifying compliance with each test requirement required by the project.
 7. Samples:
 - a. Provide samples of typical product sections and finish samples in manufacturer's standard sizes.
- D. Substitution Acceptance:
1. Acceptance will be in written form, either as an addendum or modification.
 2. Acceptance will be documented by a formal change order signed by the owner and contractor.

2.2 MATERIALS

- A. Aluminum Extrusions:
1. Alloy and temper recommended by aluminum-framed entrance door manufacturer for strength, corrosion resistance, and application of required finish.
 2. Not less than 0.090" (2.3 mm) wall thickness at any location for the main frame and door leaf members.
 3. Recycled Content:

EDITOR NOTE: Include these Recycled Content specifications if needed to meet project requirements or for a project that includes Green Building Certifications such as LEED, Living Building Challenge (LBC), etc.

EDITOR NOTE: If Recycled Content requirements are not specified, prime (zero recycled content) aluminum could be supplied.

 - a. Shall have a minimum of 50% mixed pre- and post-consumer recycled content.
 - b. Indicate recycled content, including the percentage of pre- and post-consumer recycled content per unit of product.
 - c. Indicate the relative dollar value of recycled content product to the total dollar value of product included in the project.
 - d. Indicate the location for recovery of recycled content.
 - e. Indicate the location of the manufacturing facility.
- B. Fasteners:
1. Aluminum, nonmagnetic stainless steel or other materials must be non-corrosive and compatible with aluminum members, trim hardware, anchors, and other components.

- C. Anchors, Clips, and Accessories:
 - 1. Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating.
 - 2. Anchors, clips, and accessories shall provide sufficient strength to withstand the design pressure indicated.
- D. Reinforcing Members:
 - 1. Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating.
 - 2. Reinforcing members must provide sufficient strength to withstand the design pressure indicated.
- E. Slide-In-Type Weather-Stripping:
 - 1. Provide woven-pile weather stripping of wool, polypropylene, or nylon pile and resin-impregnated backing fabric.
 - 2. Comply with AAMA 701/702.
- F. Weather Seals:
 - 1. Provide weather stripping with integral barrier fin or fins of semi-rigid, polypropylene sheet or polypropylene-coated material.
 - 2. Comply with AAMA 701/702.

2.3 STOREFRONT ENTRANCE FRAMING SYSTEM

- A. Storefront Entrance Framing:
 - 1. Trifab® VersaGlaze® 451T
 - 2. Trifab® VersaGlaze® 451UT
 - 3. Trifab® VersaGlaze® 601/601T
 - 4. Thermally Broken Entrance Framing:
 - a. Kawneer IsoLock® Thermal Break with a 1/4" (6.4 mm) separation consisting of a two-part chemically curing, high-density polyurethane, which is mechanically and adhesively joined to aluminum storefront sections.
 - b. Thermal break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA505.
- B. Reinforcements:
 - 1. Manufacturer's standard high-strength aluminum with non-staining, non-ferrous shims for aligning system components.
- C. Fasteners and Accessories:
 - 1. Manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories must be compatible with adjacent materials.
 - 2. Where exposed, fasteners and accessories shall be stainless steel.

- D. Perimeter Anchors:
 - 1. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- E. Packing, Shipping, Handling, and Unloading:
 - 1. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- F. Storage and Protection:
 - 1. Store materials so that they are protected from exposure to harmful weather conditions.
 - 2. Handle material and components to avoid damage.
 - 3. Protect material against damage from elements, construction activities, and other hazards before, during, and after installation.

2.4 GLAZING

- A. Glazing shall comply with requirements in Division 08 Glazing Section.
- B. Glazing Gaskets:
 - 1. Manufacturer's standard compression types
 - 2. Replaceable, extruded EPDM rubber
- C. Spacers and Setting Blocks:
 - 1. Manufacturer's standard elastomeric type

2.5 HARDWARE

- A. General Hardware Requirements:
 - 1. Provide manufacturer's standard hardware.
 - 2. Hardware shall be fabricated from aluminum, stainless steel, or other corrosion-resistant material that is compatible with aluminum.
 - 3. Hardware shall be designed to smoothly operate, tightly close, and securely lock aluminum-framed entrance doors.

B. Standard Hardware:

EDITOR NOTE: Revise below for specific hardware for each specific entrance type. To ensure single source responsibility and timely coordination, the Kawneer Company recommends that you include finish hardware requirements in this section. If these requirements must be furnished under the "Finish Hardware" section of the specifications, the following statement should be included: "The finish hardware supplier shall be responsible for furnishing physical hardware to the entrance manufacturer prior to fabrication, and for coordinating hardware delivery requirements with the hardware manufacturer, the general contractor and the entrance manufacturer to ensure the building project is not delayed".

1. Weather-Stripping:
 - a. Meeting stiles on pairs of doors shall be equipped with two lines of weather-stripping using wool pile with polymeric fin.
 - b. The door weathering on a single acting offset pivot or butt hung door and frame (single or pairs) shall be comprised of a thermoplastic elastomer weathering on a tubular shape with a semi-rigid polymeric backing and a wool pile with polymeric fin.
2. Sill Sweep Strips:
 - a. EPDM blade gasket sweep strip in an aluminum extrusion applied to the interior exposed surface of the bottom rail with concealed fasteners (necessary to meet specified performance tests)
3. Threshold:
 - a. Extruded aluminum
 - b. Thermally broken
 - c. Ribbed surface
4. Offset Pivots: () (The EL Offset Pivot is available for access control.)
5. Butt Hinge: ()
 - a. Kawneer® standard is stainless steel with powder coating and non-removable pin (NRP).
 - b. The EL Offset Pivot is available for access control.
6. Continuous Hinge: ()
7. Push/Pull: () style
8. Exit Device: ()
9. Closer: ()
10. Security Lock/Dead Lock:
 - a. Active Leaf: ()
 - b. Inactive Leaf: ()
11. Latch Handle: ()
12. Cylinder(s)/Thumbtum: ()
13. Electric Strike/Strike Keeper: ()

C. Optional Hardware:

EDITOR NOTE: Substitute optional hardware per project requirements.

1. Adams Rite MS 1850A-505 Hookbolt Lock
2. Mortise cylinder, interior or exterior
3. Thumbtum, interior
4. Flush pull

2.6 FABRICATION

- A. Fabricate aluminum-framed entrance doors in sizes indicated.
- B. Include a complete system for assembling components and anchoring doors.
- C. Fabrication requirements:
 - 1. Thermally broken aluminum-framed doors shall be reglazable without dismantling perimeter framing.
 - 2. Door corner construction:
 - a. Mechanical clip fastening
 - b. SIGMA deep-penetration plug welds
 - c. 1" (25.4 mm) long fillet welds inside and outside of all four corners
 - d. Hook-in type glazing stops with EPDM glazing gaskets reinforced with non-stretchable cord
 - 3. Joint construction:
 - a. Accurately fit and secure joints and corners.
 - b. Make joints hairline in appearance.
 - 4. Prepare components with internal reinforcement for door hardware.
 - 5. Arrange fasteners and attachments to conceal from view.
- D. Weather-stripping:
 - 1. Provide weather-stripping locked into extruded grooves in door panels or frames as indicated on manufacturer's drawings and details.

2.7 ALUMINUM FINISHES

- A. Finish designations that are prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. Factory Finishing:
 - 1. Kawneer Permanodic® AA-M10C21A44, AAMA 611, Architectural Class I Color Anodic Coating (Color _____)
 - 2. Kawneer Permanodic® AA-M10C21A41, AAMA 611, Architectural Class I Clear Anodic Coating (Color #14 Clear) (Optional)
 - 3. Kawneer Permanodic® AA-M10C21A31, AAMA 611, Architectural Class II Clear Anodic Coating (Color #17 Clear) (Standard)
 - 4. Kawneer Permafluor™ (70% PVDF), AAMA 2605, Fluoropolymer Coating (Color _____)
 - 5. Kawneer Permadize® (50% PVDF), AAMA 2604, Fluoropolymer Coating (Color _____)
 - 6. Kawneer Permacoat™ AAMA 2604, Powder Coating (Color _____)
 - 7. Other: Manufacturer _____ Type _____ (Color _____)

PART 3 EXECUTION

3.1 EXAMINATION

- A. With installer present, examine openings, substrates, structural support, anchorage, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of work:
 - 1. Verify rough opening dimensions.
 - 2. Verify levelness of sill plate.
 - 3. Verify operational clearances.
 - 4. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components for proper water management.
 - 5. Masonry Surfaces:
 - a. Masonry surfaces must be visibly dry and free of excess mortar, sand, and other construction debris.
 - 6. Wood Frame Walls:
 - a. Wood frame walls must be dry, clean, sound, well nailed, free of voids, and without offsets at joints.
 - b. Ensure that nail heads are driven flush with surfaces in opening and within 3" (76.2 mm) of opening.
 - 7. Metal Surfaces:
 - a. Metal surfaces must be dry and clean (free of grease, oil, dirt, rust, corrosion, and welding slag).
 - b. Ensure that metal surfaces are without sharp edges or offsets at joints.
- B. Proceed with installation only after correcting unsatisfactory conditions.

3.2 INSTALLATION

- A. Set the sill threshold in a bed of sealant, as indicated, for weathertight construction.
- B. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.3 FIELD QUALITY CONTROL

- A. Manufacturer's Field Services:
 - 1. Upon owner's written request, provide periodic site visit by manufacturer's field service representative.

3.4 ADJUSTING, CLEANING, AND PROTECTION

- A. Adjusting: Not applicable.
- B. Protection:
 - 1. Protect installed product's finish surfaces from damage during construction.
- C. Cleaning:
 - 1. Avoid damaging protective coatings and finishes.
 - 2. Clean glass and aluminum surfaces of product immediately after installation.
 - 3. Comply with glass manufacturer's written recommendations for final cleaning and maintenance.
 - 4. Remove non-permanent labels and clean surfaces.
 - 5. Remove excess sealants, glazing materials, dirt, and other substances.
 - 6. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during the construction period.
 - 7. Remove construction debris from project site and legally dispose of debris.

END OF SECTION 084113

NOTES AND DISCLAIMERS

Laws and building and safety codes governing the design and use of Kawneer products, such as glazed entrance, window, and curtain wall products, vary widely. Kawneer does not control the selection of product configurations, operating hardware, or glazing materials, and assumes no responsibility therefor. It is the responsibility of the owner, the specifier, the architect, the general contractor, and the installer and the fabricator/transformer, consistent with their roles, to determine the appropriate materials for a project in strict conformity to all applicable national, regional and local building codes and regulations.

Kawneer reserves the right to change configuration without prior notice when deemed necessary for product improvement.

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