

STR-4 Series



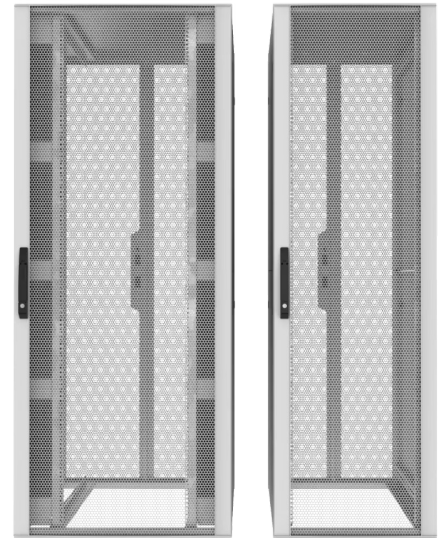
A structural cabinet platform engineered for high-density, seismic, and AI-powered data center environments. The STR-4 Series delivers a complete solution for demanding seismic conditions, critical infrastructure requirements, and the intense power demands of AI workloads.

STR-4 Next Generation Data Center Rack

STR-4 Series is a next-generation structural data center cabinet platform developed for high-density data center infrastructures, AI/GPU systems, telecom network rooms, critical infrastructure facilities, and **Seismic Zone 4** requirements.

Unlike traditional rack cabinets, STR-4 is not only a cabinet that carries IT equipment; it is designed as a **modular infrastructure platform** that addresses high load capacity, seismic resistance targets, advanced airflow management, and dense cabling requirements together.

STR-4, with its reinforced **flat-pack structural frame architecture**, provides logistics and assembly advantages while aiming to deliver high rigidity and structural stability after installation. Thanks to this structure, STR-4 offers a strong solution especially for modern data center environments using heavy server, storage, network switch, AI/GPU, and high-density IT equipment.



The **ultra-high airflow perforated structure with 85% open area** used on the front and rear doors has been developed to increase cooling performance and support the airflow needs of high-density equipment. Modular top, bottom, and side panel options make it possible to create different configurations according to cable entry, airflow control, lashing manager integration, AI-dense cabling, and rack-to-rack transition requirements.

STR-4 Series is positioned beyond the classic “rack cabinet” approach as a **configurable, high-strength, and future-ready cabinet platform** for data center operators, telecom providers, financial institutions, public sector projects, defense, and critical infrastructure applications.

Dimensions and Model Matrix

Height	Width	Depth Options
42U	600 mm	1000 / 1100 / 1200 / 1400 mm
42U	800 mm	1000 / 1100 / 1200 / 1400 mm
46U	600 mm	1000 / 1100 / 1200 / 1400 mm
46U	800 mm	1000 / 1100 / 1200 / 1400 mm
52U	600 mm	1000 / 1100 / 1200 / 1400 mm
52U	800 mm	1000 / 1100 / 1200 / 1400 mm

Core Design Philosophy

STR-4 Series is a **Seismic Zone 4 Ready structural data center cabinet platform** developed for high-density data center, AI/GPU, telecom, finance, public sector, defense, and critical infrastructure applications.

Unlike traditional rack cabinets, STR-4 offers a configurable infrastructure solution for modern data center environments with its flat-pack structural architecture, high load capacity options, high-permeability doors providing 85% open area, modular panel system, and advanced cable management.

STR-4 is positioned in two main versions according to different load and application requirements: **STR-4 3200**, the tested high-density flat-pack cabinet version; and **STR-4 4000**, the heavy-duty upper-tier version focused on AI/GPU, hyperscale, and Seismic Zone 4.

Positioning	STR-4 3200	STR-4 4000
Product category	High-density structural data center cabinet	Heavy-duty seismic-ready structural cabinet
Main use	Enterprise DC, telecom, network, high-density IT infrastructure, AI/GPU, hyperscale, critical infrastructure, Seismic Zone 4 projects	AI/GPU, hyperscale, critical infrastructure, Seismic Zone 4 projects
Load capacity	3200 kg static load	4000 kg static load
Structure type	Flat-pack structural frame architecture	Reinforced flat-pack structural frame architecture
Seismic approach	Suitable for seismic-ready applications	Positioned for Seismic Zone 4 applications
Airflow	Front/rear doors with 85% open area	Front/rear doors with 85% open area
Door system	Single or double high-perforation door	Single or double high-perforation door
Locking system	3-point locking	3-point locking
Top / bottom panel	Modular panel options	Modular panel options
Side panel	Split, transition, hinged, AI/high-density cable-entry options	Split, transition, hinged, AI/high-density cable-entry options
Cable management	Standard / high-density cabling, AI/GPU, lashing manager, rack-to-rack transition	Standard / high-density cabling, AI/GPU, lashing manager, rack-to-rack transition

Standards and Validation

Standard / Reference	Scope
ANSI / EIA/ECA-310-D / EIA/ECA-310-E	19" rack mechanical interface standard, 19" rack dimensions, horizontal/vertical hole spacing, rack opening and panel width
IEC 60297 Series	482.6 mm / 19" mechanical structure standard
BS EN 60297-3-100:2009	English / European equivalent of the IEC 60297-3-100 standard
DIN 41494 Part 1 & 7	Dimensions of electronic equipment rack and cabinet
IEC 61587-1:2022	Environmental requirements, test setups, safety, and static/dynamic load test methodology for cabinets/racks compliant with IEC 60917 / IEC 60297
IEC 61587-2:2011	Seismic tests for cabinets and racks according to IEC 60917 / IEC 60297 series
BS EN 61587-2:2011	European / UK equivalent of IEC 61587-2
ASCE/SEI 7	Minimum design loads for structures, including seismic loads
Telcordia GR-63-CORE / NEBS	Physical protection, environmental, and seismic requirements for telecom equipment
IEC 60529	IP protection classes
IEC 62262	IK mechanical impact resistance
EN IEC 62368-1	Safety requirements for audio/video, information, and communication technology equipment
EN 60950-1	Former IT equipment safety standard
RoHS	Restriction of hazardous substances in electrical/electronic equipment
CE Marking	Declaration of conformity with EU regulations
ISO 9001	Quality management system
ISO 14001	Environmental management system

Main Technical Specifications

STR-4 Series is a modular data center cabinet platform with a flat-pack structural architecture, developed for high-density data centers, AI/GPU, telecom, critical infrastructure, and **Seismic Zone 4** applications. The product is designed with high load capacity, advanced airflow performance, modular panel structure, intensive cable management, and seismic application requirements in mind.

Feature	Description
Product Group	STR-4 Series
Product Type	Seismic Zone 4 Ready Structural Data Center Cabinet Platform
Product Concept	Unlike a standard rack cabinet, a structural infrastructure platform that combines high load capacity, seismic resistance, airflow, and cable management
Structure Type	Flat-pack / demountable structural cabinet architecture
Frame Architecture	Reinforced galvanized structural frame architecture
Assembly Approach	Flat-pack structure provides logistics advantages and is suitable for on-site or factory assembly
Load Capacity Versions	STR-4 3200 and STR-4 4000
STR-4 3200	High-density flat-pack cabinet version tested with 3200 kg static load capacity
STR-4 4000	4000 kg static load capacity heavy-duty / seismic-ready premium version
Seismic Positioning	Structural platform designed for Seismic Zone 4 applications
Seismic Design Approach	Reinforced frame, 3-point locking, panel fastening, anchoring compatibility, and rigid connection concept
Door Air Permeability	Ultra-high air-permeability perforated structure providing 85% open area on the front and rear doors
Front Door Options	Single-leaf or double-leaf high-perforation front door
Rear Door Options	Single-leaf or double-leaf high-perforation rear door

Door Lock System	3-point locking structure in all door lock systems
Lock Options	Keyed handle, coded + keyed handle, push handle, electronic handle
Electronic Lock Readiness	Structure suitable for hidden cable channel, quick connector, and door sensor integration
Side Panel System	Fixed, split/modular, vertically split, hinged, pass-through, and full mesh side panel options
Side Cable Management	Support for lashing manager and dense cable management in 800 mm wide cabinets
AI / GPU Cable Readiness	High-density cable entry, side cable management, and rack-to-rack transition solutions
Top Panel System	Standard top panel with brushed cable entry; modular, sliding, split, chimney-ready, high-sealing, and tool-free options
Bottom Panel System	Open base as standard; closed, brushed entry, modular plate, seismic base, corridor sealing, and cable protection entry options
Central Functional Module	Central functional module options such as fan module, ventilation panel, sensor module, airflow damper, or blank plate
Airflow Management	High-perforation door and panel architecture supporting front intake / rear exhaust airflow
Cable Management	Side cable management, lashing manager, AI high-density entry, brushed entry, and pass-through panel options
19" Compatibility	Structure suitable for standard 19" IT equipment mounting
Height Options	42U / 46U / 52U
Width Options	600 mm / 800 mm
Depth Options	1000 mm / 1100 mm / 1200 mm / 1400 mm
Color Options	RAL 7035, RAL 9005, RAL 7024, RAL 9003 and project-based custom color
Application Areas	AI/GPU, hyperscale, telecom, finance, public sector, defense, critical infrastructure, and high-density data center applications
User-Friendly Accessory Installation	Standard connection points on the frame for accessory installation Easy installation of PDU, cable manager, lashing manager, sensor, and bonding accessories

Ready for Future Upgrades	Suitable structure for adding accessories later and changing configuration
Service-Oriented Design	Fast access during installation, maintenance, and field revisions
Forklift Transport Base	Reinforced bottom transport interface for controlled forklift handling,
Lifting Point Kit	Optional lifting connection points for crane lifting operations
Heavy-Duty Caster Kit	Heavy-duty caster set for movement within the site, optional
Transport Protection Kit	Optional transport protection set for door, panel, and frame protection
Brand-Independent Lock Interface	Structure suitable for integrating electronic locks from different brands
Hidden Cable Routing	Hidden cable path for electronic lock cables
Quick Connection Ready	Quick connection support for door removal/maintenance operations
Door Sensor Ready	Door open/close monitoring sensor integration
Manual Override	Mechanical opening option in case of electronic failure
Rack ID Label Area	Dedicated area on the front door for rack ID / QR code / customer label
Customer Brand Plate	Project-based customer or operator brand label
Row and Asset Label Kit	Data hall row/rack numbering label
High-Current Power Cable Entry	Modular cable exit area suitable for 3×80A 3P power socket/cable passage, High-density PDU, AI/GPU rack, UPS/PDU connections
Modular Power Cable Entry Plate	Project-based cut power cable entry/exit plate. Easy connection for large-diameter power cables
Brush / Foam Power Cable Entry	Brush or foam power cable pass-through that reduces airflow loss
Anchoring-Ready Base	Structure suitable for anchoring accessory connection on the cabinet base
Floor Anchor Bracket Kit	Optional connection bracket for securing the cabinet to the floor
Seismic Load Transfer	Feature that transfers seismic forces to the floor through the base and anchor
Project-Specific Verification	The anchor type and fastening elements should be determined according to the project engineering calculation

Heavy-Duty Hinge System	RDHx Vibration Control and reinforced hinge for heavy RDHx door loads
3-Point Locking	Upper/middle/lower locking that increases RDHx door stability
Door Stopper / Service Lock	Controlled securing when the RDHx door is in the open position
Vibration-Isolating Interface	Interface / pad options that reduce RDHx vibration transmission
Flexible Hose Loop	Service loop that prevents hose kinking when the door opens
Minimum Bend Radius	Preservation of hose and pipe bend radius
Top / Bottom Routing	Water inlet and outlet lines can be routed from the top or bottom
Quick-Connect Zone	Quick-connect area for maintenance and removal operations
Manifold-Ready Interface	Interface preparation suitable for direct-to-chip liquid cooling manifold installation
Supply / Return Routing	Route planning for cooling water supply and return lines
CDU Integration Ready	Structure suitable for cabinet-mounted or row-based CDU connection
Leak Detection Ready	Integration space for a water leak detection sensor
Drip Management	Drip management for potential condensation or leakage
Future AI/GPU Ready	Prepared for high-density AI/GPU rack architectures

Structural Design and Flat-Pack Architecture

Design	STR-4 Series Approach	Description
Structure Type	Flat-pack / knock-down structural cabinet	The product is designed with a flat-pack architecture to provide logistics and assembly advantages.
Main Concept	Structural data center cabinet platform	Unlike a classic rack cabinet, it supports high load, seismic resistance, airflow, and cable management together.
Assembly Structure	Suitable for on-site or factory assembly	Provides the advantage of knocked-down shipment and project-based installation in large projects.
Structural Rigidity	High stability after assembly	Despite being flat-pack, it forms a rigid and solid frame after assembly
Load Transfer	Through the main frame and base	Through the main frame and base
Panel Function	Modular access and cable/airflow management	Doors, side panels, top/bottom panels, and center modules are functional elements rather than load-bearing components.
Seismic Approach	Seismic Zone 4 ready design	It is designed with anchor-compatible base, 3-point locking, and rigid connection principles.
Logistics Advantage	Reduced shipping volume	Provides advantages in export, multi-cabinet shipment, and large-scale deployments.
Service Advantage	Modular panel architecture	Depending on project requirements, top, bottom, side panel, and center module options can be changed.

Door System

The STR-4 Series front and rear doors are designed in a high-perforation structure with an 85% open area ratio to provide strong airflow in high-density data center environments.

The uninterrupted perforated surface, lock system integrated into the side frame, and single/double door options ensure a balanced combination of cooling performance, security, service access, and seismic stability.

Front Door

Type No	Door Type	Code	Technical Description
1	Single-Swing High Airflow Perforated Front Door	PD	Single-swing perforated front door providing 85% open area
2	Double-Swing High Airflow Perforated Front Door	SD	Double-swing perforated front door providing 85% open area

Rear Door

Type No	Door Type	Code	Technical Description
1	Single-Swing High Airflow Perforated Rear Door	RPD	Single-swing perforated rear door providing 85% open area
2	Double-Swing High Airflow Perforated Rear Door	RSD	Double-swing perforated rear door providing 85% open area



Top Cover Options

Type No	Top Cover Type	Code	Technical Description
1	Brushed Top Entry	TB	Standard top panel with brushed cable entry on the right and left sections
2	Modular Top Plate	TMP	Removable multi-entry plates
3	Sliding Top Panel	STP	Adjustable cable entry area
4	Split Top Panel	SPT	Segmented top panel structure
5	Chimney-Ready Top Panel	CRT	Top panel compatible with hot air exhaust / chimney systems
6	High-Sealing Pass-Through Top Entry	HSG	High-sealing cable entry system
7	Tool-Free Entry System	TLE	Tool-free opening cable entry system

Bottom Cover Options

Type No	Bottom Cover Type	Code	Technical Description
0	Open Base	OB	Completely open bottom, unlimited cable entry
1	Closed Bottom Panel	CL	Fully closed sheet metal bottom cover
2	Brushed Cable Entry	BR	Brushed cable pass-through area
3	Modular Cable Entry Plate	MP	Removable modular plates
4	Seismically Reinforced Base	SB	Reinforced base structure
5	Corridor Sealing Bottom Panel	AS	Bottom panel structure that minimizes airflow leakage
6	Cable Protection Entry	CPE	Radius-protected cable entry area

Central Functional Module

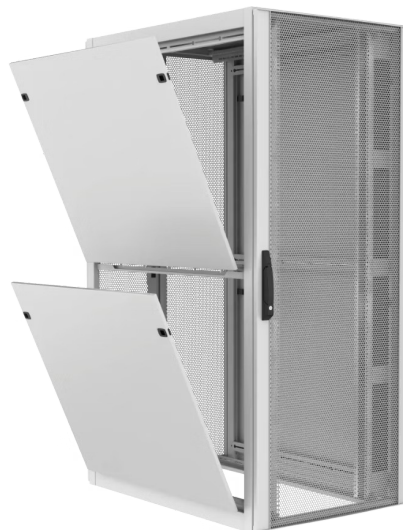
The STR-4 upper and lower panel architecture can be designed to support a functional module area in the center, in addition to the right and left cable entry zones. This area can be configured with active or passive modules depending on the project.

Type No	Module Type	Code	Technical Description	Use Case
1	Blank Plate	BP	Closed center panel	Standard use
2	Ventilation Panel	VP	Passive ventilation panel	Low / medium-density applications
3	Fan Module	FM	Active fan module	Projects requiring additional air exhaust
4	Filtered Vent Panel	FVP	Filtered air passage panel	Areas requiring dust control
5	Cable Drop Channel	CDC	Cable routing / drop channel	High-density cabling
6	Hybrid Panel	HP	Fan + brush or vent + cable combination	Premium applications
7	Sensor Module Plate	SMP	Sensor / IoT module carrier panel	Smart DC / monitoring
8	Airflow Control Damper	ACD	Adjustable airflow direction module	Hyperscale / containment



Side Panel System

Type No	Side Panel Type	Code	Technical Description	Application Area
1	Fixed Side Panel	FP	Standard closed side panel	Standard cabinets
2	Pass-Through Side Panel	TSP	Panel with side cable pass-through areas	Rack-to-rack pass-through, row deployment
3	Row-End Side Panel	HRP	Clean closed panel for corridor head / row end	Row-end applications
4	Hinged Side Panel	HP	Side panel that can be opened like a door with hinges	Projects requiring high maintenance access
5	Split / Modular Side Panel	SMP	Side panel divided into upper-lower or modular sections	47U / 52U, easy service
6	Full Mesh Side Panel	FMS	Perforated / mesh side panel	Special airflow scenarios
7	Binding Manager Side Panel	LMSP	Panel that can integrate a vertical cable binding / routing system on the side area	800 mm cabinets, AI/GPU, high-density cabling
8	Partition Side Panel	PSP	Closed/divider side panel for corridor, row-end, or customer separation	Corridor sealing, row end, colocation, customer segmentation



Cable Management

Feature	Description
Side Cable Management	Integrated cable management areas are supported for cable routing and organization in the side area.
Lashing Manager	Especially in 800 mm wide cabinets, an integration for vertical cable tying and securing is provided.
AI High-Density Cable Entry	Wide or multiple cable pass-through areas are supported for AI/GPU systems and high port-density switch applications.
Rack-to-Rack Pass-Through	Controlled cable transfer can be provided between side-by-side cabinets.
Brushed Entry	A brushed pass-through system can be used to reduce airflow loss at cable entry points.
High-Seal Pass-Through	For hyperscale and airflow-sensitive projects, a pass-through solution with higher sealing performance can be used.
Fiber Bend Radius Protection	Cable routing should be designed to maintain the minimum bend radius for fiber cables.
Power / Data Separation	Vertical and horizontal management areas should be planned to separate power and data cables.

Lock and Access Options

Type No	Lock Type	Code	Technical Description	Application Area
1	Keyed Handle Lock	KL	Standard keyed handle lock	Standard use
2	Mechanical Combination + Key	MCK	Combination lock with password + key	Areas requiring additional security
3	Push Handle	PH	Lockless push mechanism handle	Controlled technical areas
4	Electronic Handle	EH	Electronically controlled lock	Smart DC, colocation, secure access

Cooling and High-Density Thermal Architecture

STR-4 Series is a modular cabinet platform designed to adapt to different thermal requirements, from standard air-cooled data center applications to AI/GPU and high-density cooling scenarios.

The **high-perforation structure providing 85% open area** used in the front and rear doors delivers strong airflow in standard air-cooled applications. In addition, STR-4 can be adapted for projects with higher power density thanks to the optional **rear door heat exchanger, liquid cooling ready interface, high-density cable management, lashing manager, and modular panel architecture**.

Level	Cooling Approach	STR-4 Approach
Level 1 – High-Airflow Cabinet	Air cooling with front/rear 85% perforated doors	Default STR-4 configuration
Level 2 – High-Density Airflow Ready	High airflow + advanced cable management	Lashing manager, side cable management, brush/grommet entries
Level 3 – RDHx Ready	Structure compatible with Rear Door Heat Exchanger integration	Reinforced rear frame, hinge, and water connection preparation
Level 4 – Liquid Cooling Ready	Infrastructure compatible with CDU / chilled water / manifold connections	Project-based liquid cooling interface preparation
Level 5 – Advanced High-Density Cooling	Active RDHx / liquid-assisted cooling	Custom configuration according to the selected cooling equipment

Standard Airflow Design

Feature	Description
Front Door	Supports cold air intake with a high-perforation structure providing 85% open area
Rear Door	Supports hot air exhaust with a structure providing 85% open area
Airflow Direction	Designed according to the front intake / rear exhaust principle
Cable Management	Side cable management and lashing manager are supported so dense cabling does not obstruct airflow
Panel Architecture	Top, bottom, side panel, and center module options can be configured according to airflow control

Rear Door Heat Exchanger Ready Configuration

With the optional **Rear Door Heat Exchanger Ready** configuration, STR-4 is suitable for rear door heat exchanger integration in high-density cooling applications.

Area	Requirement
Rear Frame	Should be reinforced according to RDHx door weight and moment load
Hinge System	Heavy-duty hinges should be used
Locking System	3-point locking structure should be maintained
Water Connection	Supply / return lines should be routed from the top or bottom
Flexible Hose Loop	Service slack should be left to prevent hose bending when the door is opened
Quick Connection	Quick-connect fittings should be considered for easier maintenance and commissioning
Leak Detection	Water leak sensor and drip management are recommended
Condensation Control	Dew point and chilled water temperature should be evaluated on a project basis
Seismic Impact	The heavy RDHx door should also be verified for seismic load and center of gravity

Cooling Capacity Positioning

Cooling Class	Typical Approach	Application
Air-Cooled Cabinet	%85 perforated front/rear door	Standard high-airflow configuration
30–60 kW Class	Passive / active RDHx or advanced airflow	High-density RDHx ready configuration
60–85 kW Class	Advanced RDHx + suitable chilled water infrastructure	Advanced rear door cooling ready
100–160 kW Class	Active RDHx / liquid-assisted cooling / CDU supported structure	Project-specific advanced cooling configuration
120 kW+ AI Rack Class	Direct-to-chip liquid cooling + manifold + CDU	Project-specific liquid cooling architecture

Logistics Data – STR-4 Series

600mm Width

Code	U	Height (mm)	Width (mm)	Depth (mm)	Weight (KG)	Load Capacity (KG)
STR32-42H610.11-1	42	1973	600	1000	83,4	3200
STR32-46H610.11-1	46	2150	600	1000	88,6	3200
STR32-52H610.11-1	52	2416	600	1000	94,8	3200
STR32-42H611.11-1	42	1973	600	1100	87,4	3200
STR32-46H611.11-1	46	2150	600	1100	92,6	3200
STR32-52H611.11-1	52	2416	600	1100	98,8	3200
STR32-42H612.11-1	42	1973	600	1200	91,4	3200
STR32-46H612.11-1	46	2150	600	1200	96,8	3200
STR32-52H612.11-1	52	2416	600	1200	102,8	3200
STR32-42H614.11-1	42	1973	600	1400	101,8	3200
STR32-46H614.11-1	46	2150	600	1400	106,7	3200
STR32-52H614.11-1	52	2416	600	1400	112,3	3200

800mm Width

Code	U	Height (mm)	Width (mm)	Depth (mm)	Weight (KG)	Load Capacity (KG)
STR32-42H810.11-1	42	1973	800	1000	93,4	3200
STR32-46H810.11-1	46	2150	800	1000	99,7	3200
STR32-52H810.11-1	52	2416	800	1000	105,2	3200
STR32-42H811.11-1	42	1973	800	1100	96,9	3200
STR32-46H811.11-1	46	2150	800	1100	103,6	3200
STR32-52H811.11-1	52	2416	800	1100	109,1	3200
STR32-42H812.11-1	42	1973	800	1200	100,9	3200
STR32-46H812.11-1	46	2150	800	1200	107,6	3200
STR32-52H812.11-1	52	2416	800	1200	113,1	3200
STR32-42H814.11-1	42	1973	800	1400	111,4	3200
STR32-46H814.11-1	46	2150	800	1400	118,3	3200
STR32-52H814.11-1	52	2416	800	1400	124,9	3200

Logistics Data – STR-4 Series

600mm Width

Code	U	Height (mm)	Width (mm)	Depth (mm)	Weight (KG)	Load Capacity (KG)
STR40-42H610.11-1	42	1973	600	1000	94,8	4000
STR40-46H610.11-1	46	2150	600	1000	100	4000
STR40-52H610.11-1	52	2416	600	1000	106,2	4000
STR40-42H611.11-1	42	1973	600	1100	98,8	4000
STR40-46H611.11-1	46	2150	600	1000	104	4000
STR40-52H611.11-1	52	2416	600	1100	110,2	4000
STR40-42H612.11-1	42	1973	600	1200	102,8	4000
STR40-46H612.11-1	46	2150	600	1200	108,2	4000
STR40-52H612.11-1	52	2416	600	1200	114,2	4000
STR40-42H614.11-1	42	1973	600	1400	113,2	4000
STR40-46H614.11-1	46	2150	600	1400	118,1	4000
STR40-52H614.11-1	52	2416	600	1400	123,7	4000

800mm Width

Code	U	Height (mm)	Width (mm)	Depth (mm)	Weight (KG)	Load Capacity (KG)
STR40-42H810.11-1	42	1973	800	1000	104,8	4000
STR40-46H810.11-1	46	2150	800	1000	111,1	4000
STR40-52H810.11-1	52	2416	800	1000	116,6	4000
STR40-42H811.11-1	42	1973	800	1100	108,3	4000
STR40-46H811.11-1	46	2150	800	1100	115	4000
STR40-52H811.11-1	52	2416	800	1100	120,5	4000
STR40-42H812.11-1	42	1973	800	1200	112,3	4000
STR40-46H812.11-1	46	2150	800	1200	119	4000
STR40-52H812.11-1	52	2416	800	1200	124,5	4000
STR40-42H814.11-1	42	1973	800	1400	122,8	4000
STR40-46H814.11-1	46	2150	800	1400	129,7	4000
STR40-52H814.11-1	52	2416	800	1400	136,3	4000