

X-ray inspection systems Dymond S and D

Safety and quality for upright product packaging



! Benefits

- Reliable inspection with a high throughput
- Maximum safety through multi-sided radioscopy (Dymond D) opens up new possibilities in product design
- Seamless integration and installation
- Quick and easy cleaning thanks to the hygienic design
- Industry 4.0 ready

The Dymond S and Dymond D side shooters offer reliable detection of foreign objects in tall, upright packaging. The compact hygienic design, interfaces and reliable image processing at high speeds allow for efficient integration into automated production processes.

Uncompromising safety for canned goods, Tetra Paks, glass jars & more

- ! For **maximum product quality and safety** the Dymond S and D offer reliable detection of foreign objects, such as metal, glass, stone and various plastics.
- ! Features also include **fill level monitoring and separation** of damaged packaging.
- ! The compact size and hygienic design ensure **easy installation, operation, maintenance and cleaning.**
- ! **Flexible communication** across SPC@Enterprise, OPC-UA, Modbus and Ethernet supports **Industry 4.0** processes.

The right solution for all of these applications:



Statistics



Fill quantity control



Foreign object detection

Technical specifications

X-ray inspection systems Dymond S and D

Available with
OPC-UA and
connection to
SPC@Enterprise
(optional)

All Dymond S systems feature the following as standard

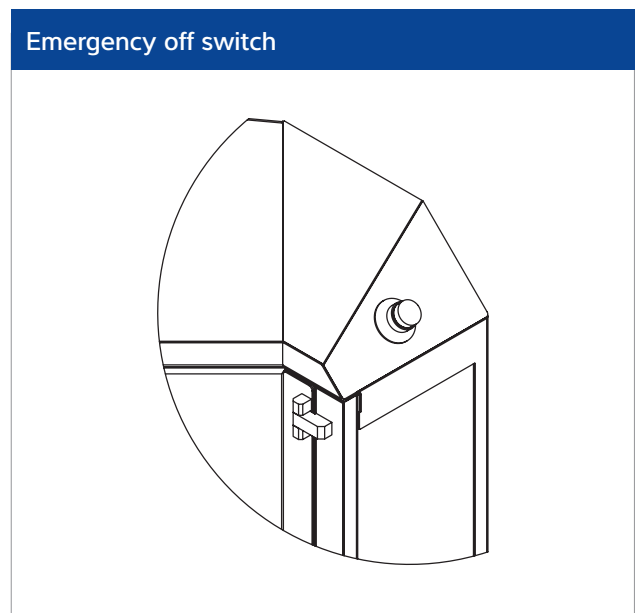
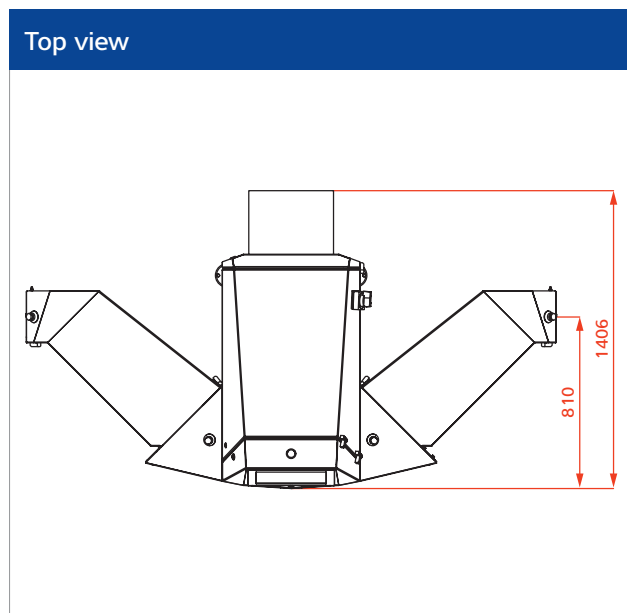
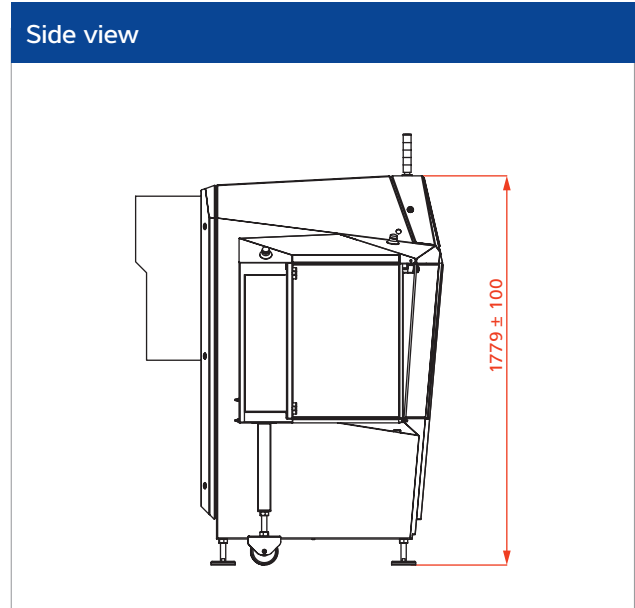
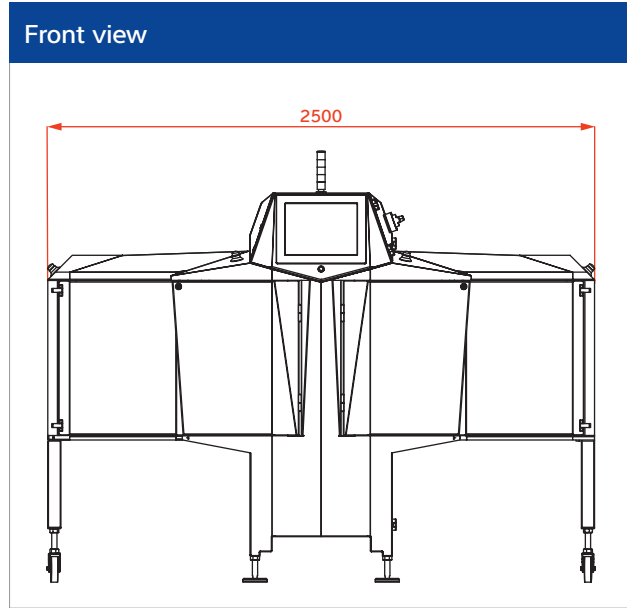
- integrated Nema 4X cooler for easy cleaning
- 500 W Monoblock generator for high throughput and low installation and maintenance costs
- chicane for product guiding and shielding

Dymond D systems are always equipped with a customised product feeder, chicane and shielding device (turnkey solution).

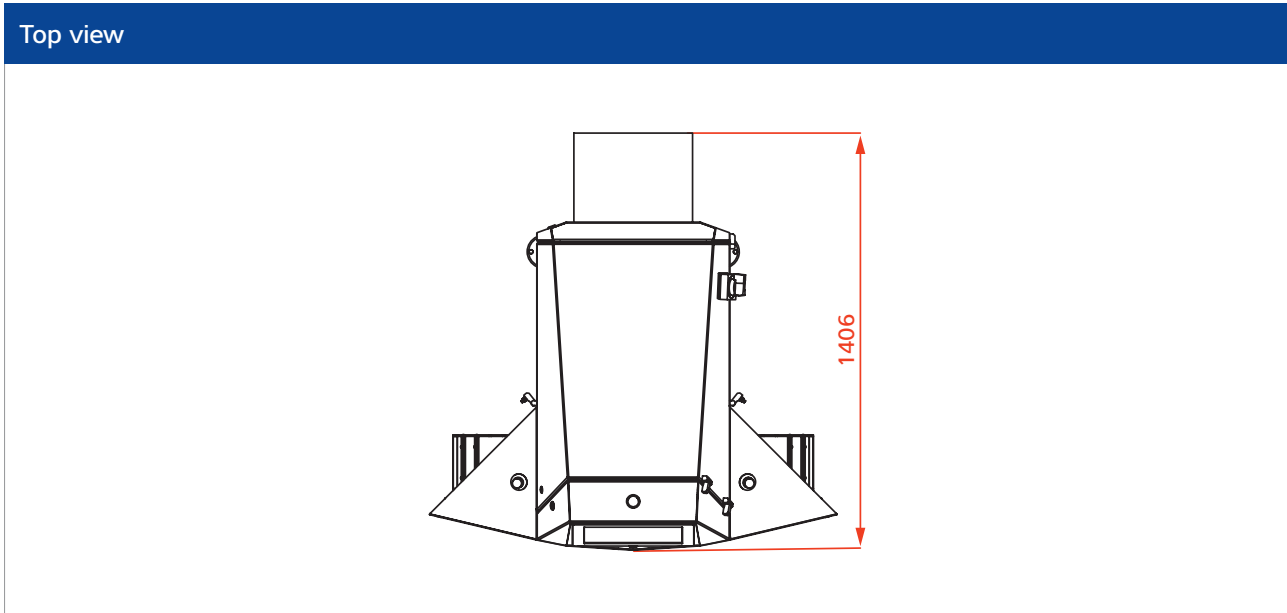
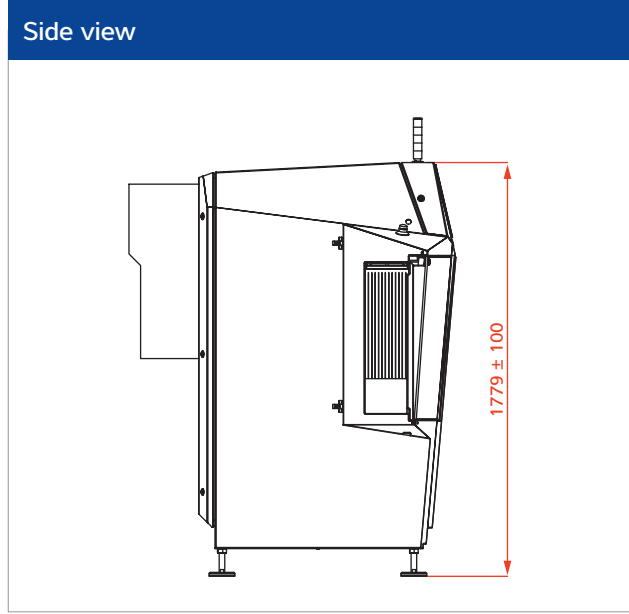
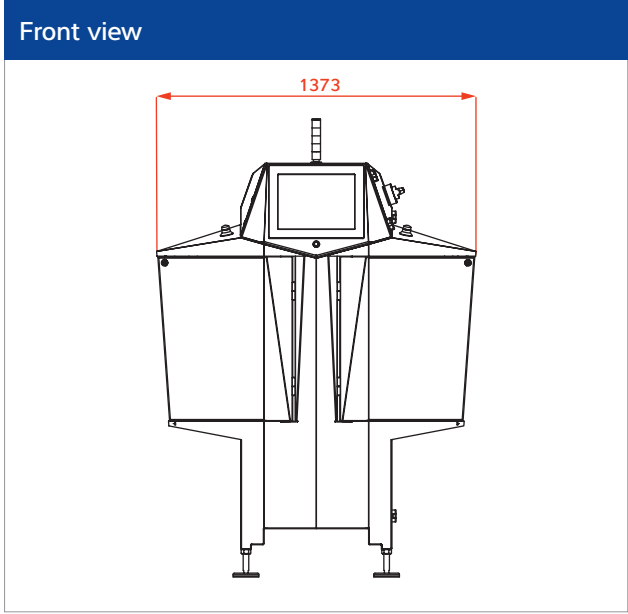
Parameters	Dymond S	Dymond D
X-ray power	80 kV, 6 mA	2 × 90 kV, 9 mA (double-beam technology)
Detector resolution	0.8 mm (standard) or 0.4 mm (optional)	0.4 mm
Belt speed (infeed)	Up to 90/90 m/min	Up to 60/120 m/min
Approvals	CE, UL508A	CE, UL508A
Safety locks	SIL 3. Category IV PL E, magnetic	SIL 3. Category IV PL E, magnetic
User interface	15-inch touchscreen	21.5-inch touchscreen
Operating temperature	+5°C to 38°C	+5°C to +35 °C
Machine cooling	1,100 W air cooling for the interior	– 1,500 W IP34 air cooling (standard) or – 1,900 W Nema 4X air cooling (optional) – 4.3 kW external water cooling (closed circuit)
Relative air humidity	20% to 90% no condensation	20% to 90% no condensation
Digital outputs	Available	Available
USB port	Yes	Yes
Network connection	Ethernet	Ethernet
Compressed air	5.5 to 6.9 bar Rejector or reject mechanism. (for separator)	4 to 6.9 bar (for separator and X-ray aperture)
Radiation protection	FDA CFR 21 part 1020,40 (additional regional certifications available from the factory)	FDA CFR 21 part 1020,40 (additional regional certifications available from the factory)
International protection class	External housing: Nema 4X Inspection tunnel: IP65	External housing: IP34 (standard), Nema 4X (optional) Inspection tunnel: IP65
Electrical supply	230 V _{AC} ±10% 50/60 Hz / max. 25 A	230 V _{AC} ±10% 50/60 Hz / max. 41 A
Weight (standard configuration)	700 kg	1,400 kg
Conveyor belt height	800–1,100 mm	740–1,060 mm

Technical diagrams

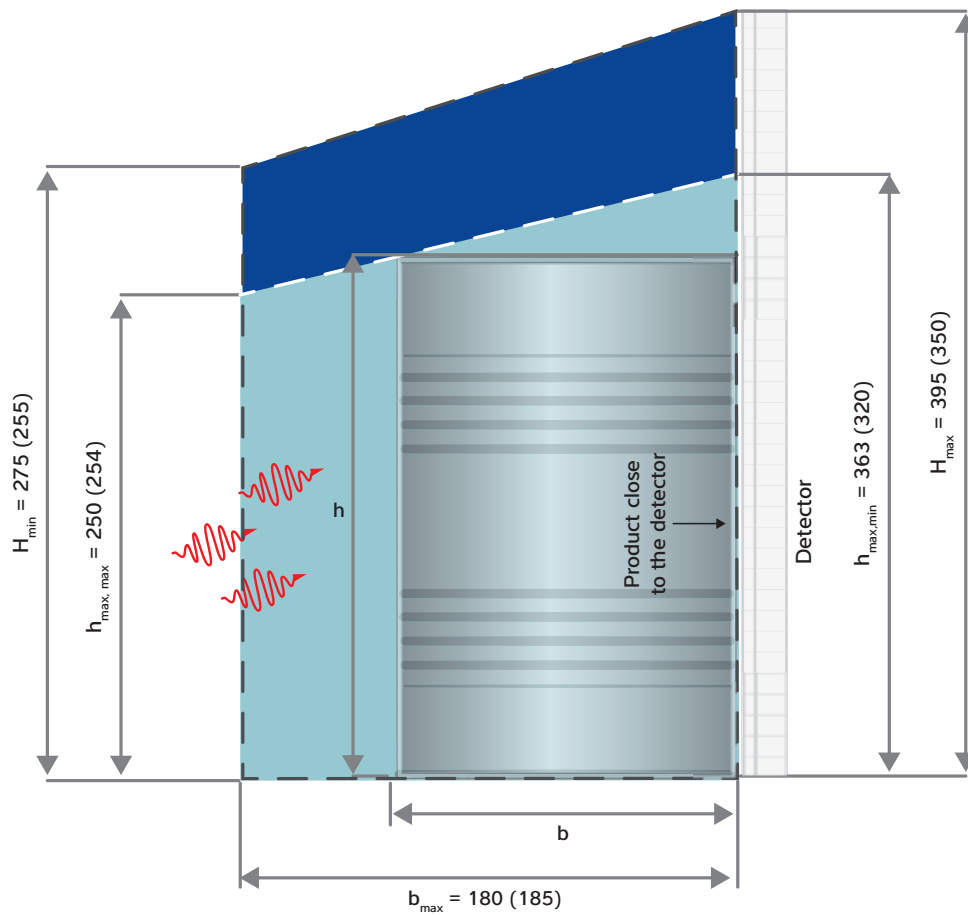
Dymond S – with chicane (standard)



Dymond S – without chicane (optional)



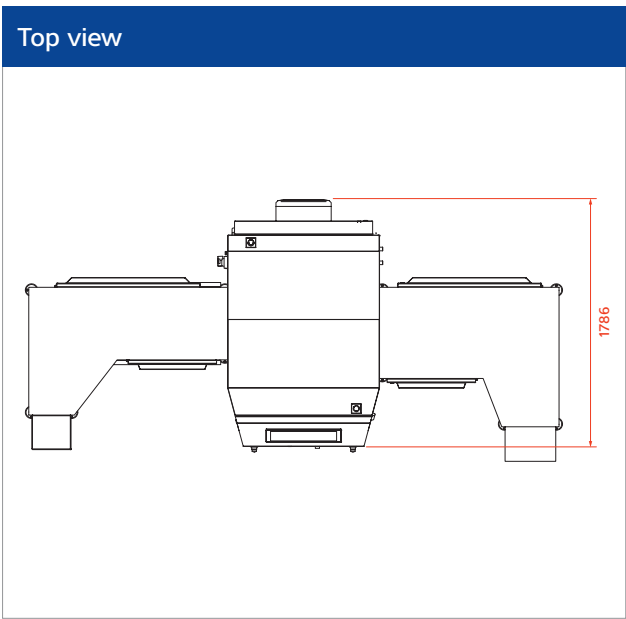
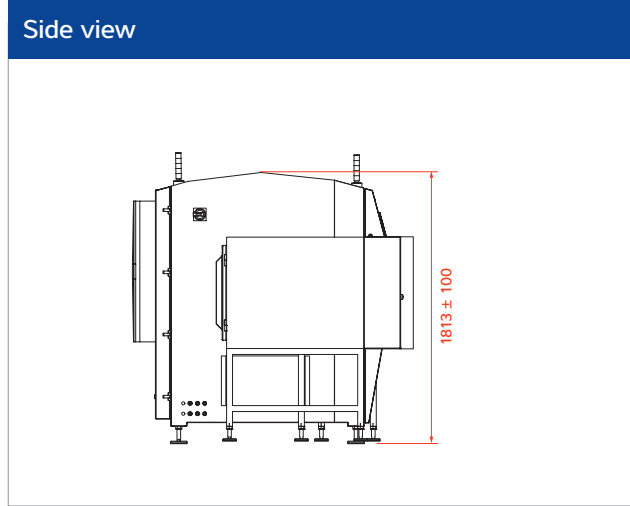
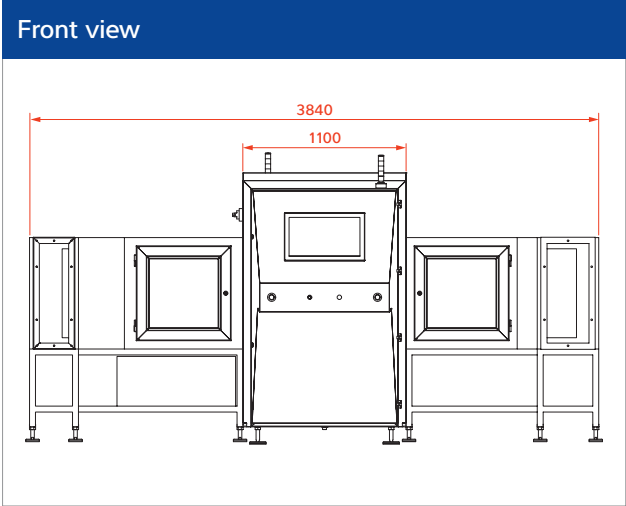
Useful range of the X-ray beam



- h: Product height
- w: Product width
- w_{max} : Maximum product width (= beam width)
- $h_{max, max}$: Maximum product height at maximum width
- $h_{max, min}$: Maximum product height at minimum width
- H_{min}, H_{max} : Maximum and minimum beam height

Values for Dymond S (values for Dymond D) in mm

Dymond D – example with chicane



Dymond S and D – in-line inspection for product quality and integrity

The side shooters ensure reliable horizontal inspection and come with additional quality assurance functions. Foreign objects made of metal, glass, stone, bone and various plastics are detected in product packaging and eliminated from the production line. In addition, a wide range of standard features ensure product integrity and quality, such as:



Completeness check



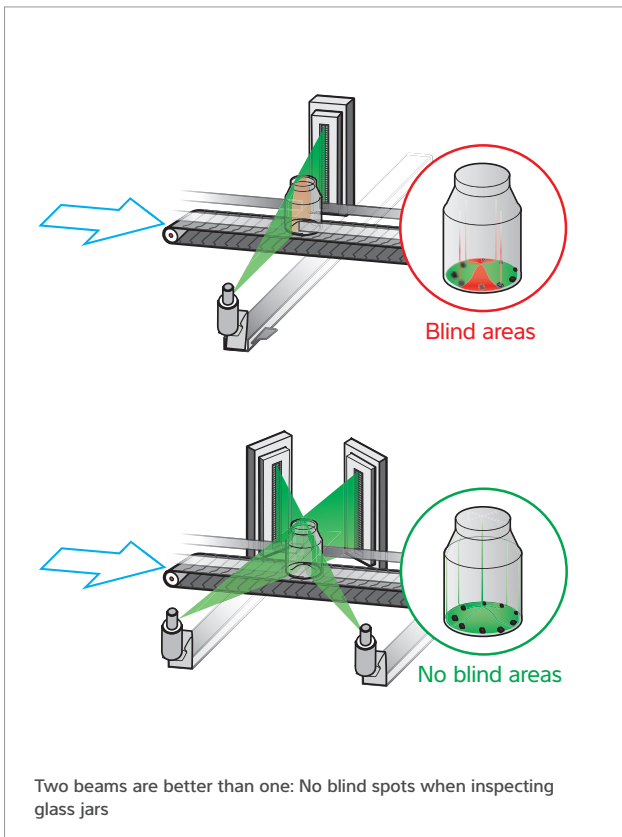
Separation of damaged packaging



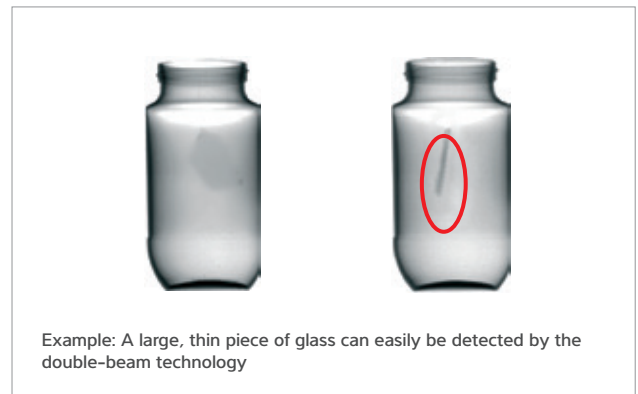
Fill level monitoring

Dymond D – increased safety thanks to multi-sided radioscapy

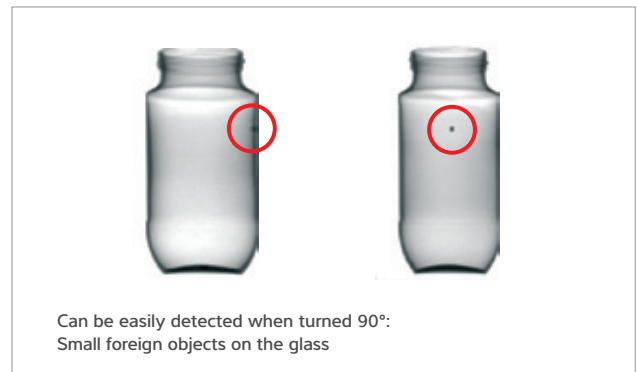
Dymond D eliminates blind areas and screening uncertainties thanks to double-beam technology with multi-sided radioscapy. This ensures the reliable detection of contaminants under the cap, on the edge of jars and on the bottom of jars, as well as flat foreign objects (including glass in glass).



Side shooter with single beam vs side shooter with double beam



Glass-in-glass detection



Foreign objects near the edge

Options

X-ray inspection systems Dymond S and D

A wide range of options increase your possibilities

- Remote servicing
- Acoustic signal emitter
- Connection to SPC@Enterprise
- OPC-UA interface
- Variant without chicane for existing customer designs
- Chicane with cover (custom-built)
- Turnkey solution with segmentation, separators and more (custom-built)
- Service contracts
- Extended warranty

Industry 4.0 ready

Dymond S and D connectivity

Available with
OPC-UA and
connection to
SPC@Enterprise
(optional)

For systematic monitoring and analysis of machine and line output, side shooter range systems can be quickly and easily integrated into your production process.

We offer interfaces for

- SPC@Enterprise
- OPC-UA
- Modbus
- Ethernet



SPC@Enterprise by Minebea Intec converts metrics into valuable information which helps to ensure product quality and safety and an increase in productivity.

The products and solutions presented in this data sheet make major contributions in the following sectors:



The technical data given serves as a product description only and should not be understood as guaranteed properties in the legal sense.

Specifications subject to change without notice.
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