

DLP-300 EFEM

(Dual Load Port Equipment Front End Module)

An Equipment Front End Module (EFEM), a mainstay of semiconductor automation, transports product (silicon wafers or quartz photomasks) between ultra-clean storage carriers and a variety of processing, measurement, and testing systems. The EFEM contains the key components needed to unload product, deliver it to the parent tool for processing and return the product to its carrier upon completion.

The DLP-300 EFEM is designed to be used with an existing OEM GEM base system and can be configured to handle a variety of wafers sizes from a maximum of 2 load ports to 2 load locks. In addition, Angled Transfer Chambers or process modules connect directly to the rear of the DLP-300.

The DLP-300 hardware supports up to two load ports, an atmospheric robot with end effector, a power system with safety circuits, a fan filter unit, a user interface, an aligner, frame, and skins.

The base configuration accepts open cassette load ports for 150mm and 200mm wafers, SMIF load ports for 200mm wafers and FOUPs for 300mm wafers. These load ports are designed to automatically detect the loaded transport wafer carrier size with its presence sensors or Infopad.

The system implements unit level software that communicates with the components within the DLP-300 (robots, load ports, aligner, valves, fans etc.) However, the OEM is responsible for integrating the communication with their platform.

The DLP-300 supports the following benefits and features:

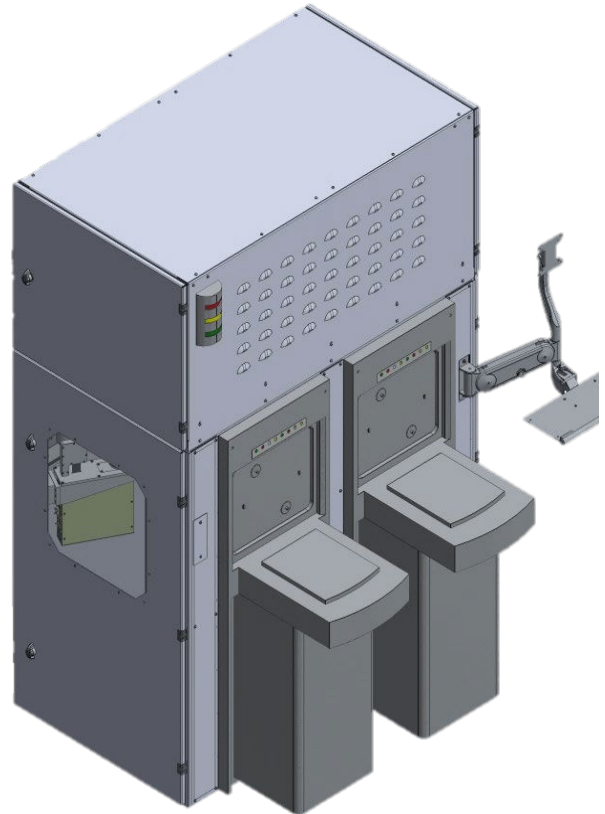
- Stand-alone or Thru-Wall configurations
- HEPA & ULPA Fan filter unit Options available
- Up to 2 Load Ports
- Up to 2 Load Locks
- Easy to use with Software to support robots, load ports, aligner, valves as part of configuration.



DLP-300 EFEM

FEATURES

- Designed to interface with an existing OEM GEM base system
- Capable of supporting -
 - ✓ Up to TWO Load Ports
 - ✓ Up to TWO Load Locks
 - ✓ An Atmospheric Robot with End Effector
 - ✓ An Aligner
 - ✓ Angled Transfer Chambers or Process Chambers
- Load ports capable of accepting open cassette load ports for 150mm and 200mm wafers, SMIF load ports for 200mm wafers and FOUPs for 300mm wafers
- Unit level software to communicate with the components within the EFEM (robots, load ports, valves, fans etc.)



OPTIONS

- Stand-alone or Thru-Wall Configuration
- Fan Filter Unit
- Up to two SEMI compliant 150mm/200mm Open Cassette and SMIF load ports
- Up to two SEMI compliant 300mm FOUP load ports
- User interface adjustable for sitting and standing
- Design Standard – HEPA Filter ISO Clean Room Class 3
- Design Standard – ULPA Filter ISO Clean Room Class 1

DLP-300 Specifications

The table below describes the basic features of the HA DLP-300 Equipment Front End Module.

EFEM Specifications	
Feature	Specification
General	
Dimensions	Width: 1377 mm (54.2") Depth- Enclosure Only: 760.0mm (31.34") Depth- Enclosure with CLP installed: 1241.1mm (48.9") Height: 2034.5mm (80.1")
Operating/Storage Temps	20°C to 30°C
Wafer Sizes	100, 125, 150, 200, 300mm Standard SEMI M1
Throughput	
Max Processing	> 60 wafers per hour (no process delay with vacuum end effector)
MCBF	> 5 x 10 ⁵ transfers
MTTR	< 2 Hours
Wafer Breakage Rate (non-warped wafers only)	> 5x10 ⁵
MTTR	< 2 Hours
Environment	
Upon Request	ISO Class 3 and Class 1 configuration options available.
FFU ULPA Option	ISO Class 1 per ISO-14644-1 during wafer transfer and under static condition
FFU ULPA Option	ULPA/PTFE Filter catches 99.99995% MPPS of particles 0.12 microns and above. PTFE Filter with integrated ionization & dual LED "Lumifilter" light bars is ISO Class 1 compatible.
NO FFU Option	Mini-environment cleanliness is dependent upon installation environment cleanliness.
Regulatory Compliance	
SEMI S2	
SEMI S8	
CE	

Aligner Specifications

The chart below describes the basic feature specifications of the HA-75/76 Aligner.

Aligner Specifications	
Feature	Specification
Vacuum Performance	< 2 x 10 ⁻⁸ Torr Base Pressure
Substrate Temperature Limit*	300 °C
Control Interface	RS-232 and Ethernet
Power	24VDC @ 2.0 Amps
Maximum Wafer Placement Error**	± 3.5 mm
Rotational Alignment Repeatability	0.3° (3σ)
Centering Repeatability (output coordinates)	< 0.051 mm (3σ)
MCBF	> 3 x 10 ⁶ Cycles
Weight	4.2 kg
Wafer Sizes	100 - 200mm

KEY
*Can support substrates at higher temperatures upon request, changes to standard aligner configurations may affect performance specifications.
**Wafer placement onto the aligner, larger wafer placement errors will result in reduced repeatability as specified.

Robot Specifications

The chart below describes the basic feature specifications of the ISEL TA13S24HD Robot.

Robot Specifications	
Feature	Specification
Repeatability	T: $\pm 0.02^\circ$ R: ± 0.03 mm Z: ± 0.03 mm
Working Range	Z: 10", 13", 17" Radial: 16", 21", 24" Theta: 450°
Payload	2.75 kg
Maximum Speed	T: $360^\circ/s$ R: 1,000 mm/s Z: 450 mm/s
Power Supply	110 / 230 V AC
Main Interface	RS-232 [DB9] Option: Ethernet [RJ-45]
Peripheral Interface	RS-485 [RJ-45], RJ-11

