

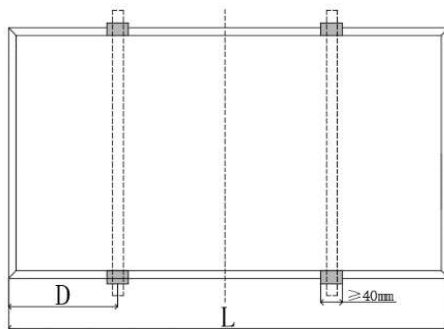
January 25th, 2021

Additional mounting methods (monofacial modules)

Amendment 1 Version 1.92 to "20210115 LONGi Solar Installation Manual for PV Modules V10 [..].pdf"

The following methods describe achievable loads to LONGi photovoltaic modules by methods. Pressure (+) indicate push/snow loads while negative pressure (-) indicate pull/wind loads. These static loads are test loads. Required safety factors for systems should be in line with EN 1991-X-X standard series. Outside Europe or if EN 1991-X is not applicable you may use safety factor 1.5 as indicated in IEC 61215-X for system design loads.

Method 1a (4 clamps long frame):



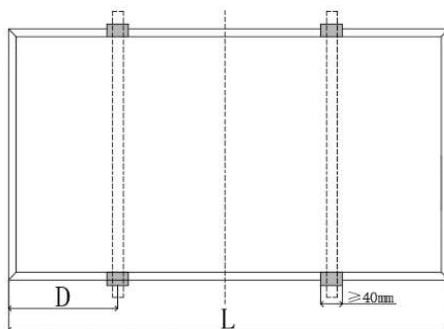
Dimension D [mm]	Loads [Pa.]
$20 \leq D \leq L/4 - 50$	+2.400 -2.400
$L/4 - 50 \leq D \leq L/4 + 50$ (recommended)	+5.400 -2.400
$L/4 + 50 \leq D \leq 625\text{mm}$	+2.400 -2.400

Applicable for modules

LR4-**60** YYY ZZZ M

YYY=HPH, HPB, HIH, HIB

ZZZ=Nominal Power



Dimension D [mm]	Standard Frame Loads [Pa.]	Enforced Frame* Loads [Pa.]
$20 \leq D \leq 150$	+1.200 -1.200	+1.600 -1.600
$150 \leq D \leq 350$	+2.400 -2.400	+2.400 -2.400
$350 \leq D \leq 450$ (recommended)	+5.400 -2.400	+5.400 -2.400
$L/4+50 \leq D \leq 778$	+2.400 -2.400	+2.400 -2.400

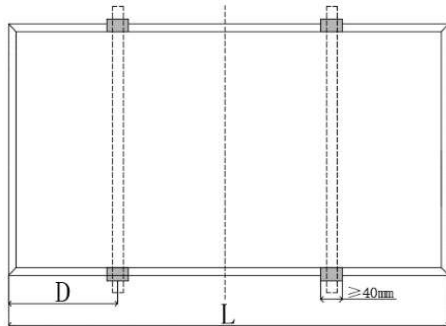
*** optimized product / needs to be ordered explicitly**

Applicable for modules

LR4-**72** YYY ZZZ M

YYY = HPH, HIH

ZZZ=Nominal Power



Dimension D [mm]	Loads [Pa.]
$250 \leq D \leq 350$	+2.400 -1.800
$350 \leq D \leq 450$ (recommended)	+5.400 -2.400
$450 \leq D \leq 550$	+2.400 -1.800

Applicable for modules

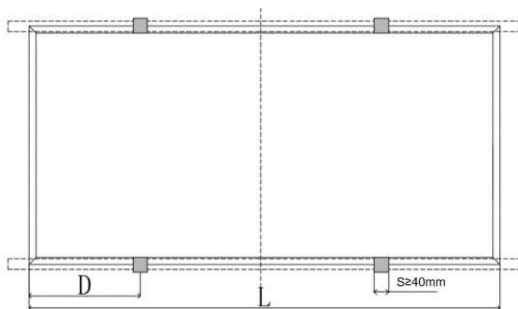
LR5-**66** YYY ZZZ M

YYY = HPH, HIH

ZZZ=Nominal Power

LR5-**72** YYY ZZZ M

Method 1b (4 clamps long frame):



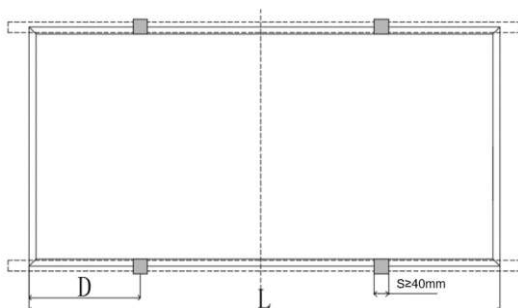
Dimension D [mm]	Loads [Pa.]
$20 \leq D \leq 625$	+2.400 -2.400

Applicable for modules

LR4-**60** YYY ZZZ M

YYY=HPH, HPB, HIH, HIB

ZZZ=Nominal Power



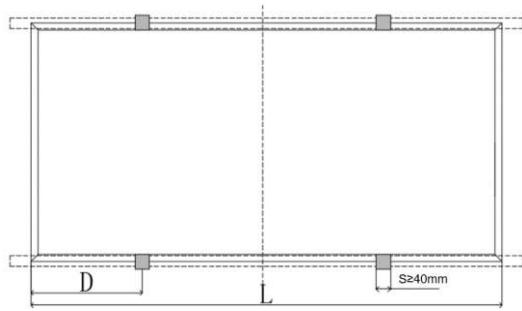
Dimension D [mm]	Loads [Pa.]
$20 \leq D \leq 150$	+1.200 -1.200
$150 \leq D \leq 350$	+2.400 -2.400
$350 \leq D \leq 450$ (recommended)	+2.400 -2.400
$450 \leq D \leq 778$	+2.400 -2.400

Applicable for modules

LR4-**72** YYY ZZZ M

YYY=HPH, HIH

ZZZ=Nominal Power



Dimension D [mm]	Loads [Pa.]
$250 \leq D \leq 350$	+2.400 -1.800
$350 \leq D \leq 450$ (recommended)	+2.400 -2.400
$450 \leq D \leq 600$	+2.400 -1.800

Applicable for modules

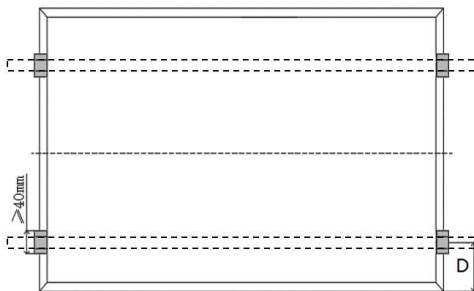
LR5-**66** YYY ZZZ M

YYY=HPH, HIH

ZZZ=Nominal Power

LR5-**72** YYY ZZZ M

Method 2a (4 clamps short frame):



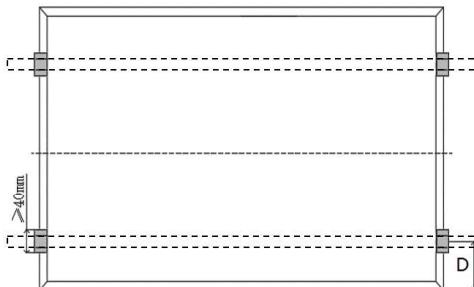
Dimension D [mm]	Loads [Pa.]
$20 \leq D \leq 150$	+2.400 -1.800
$150 \leq D \leq 250$ (recommended)	+2.400 -2.400

Applicable for modules

LR4-**60** YYY ZZZ M

YYY=HPH, HPB, HIH, HIB

ZZZ=Nominal Power



Dimension D [mm]	Standard Frame Loads [Pa.]	Enforced Frame* Loads [Pa.]
$20 \leq D \leq 150$	Not supported	+1.600 -1.600
$150 \leq D \leq 250$ (recommended)	Not supported	+1.600 -1.600

*** optimized product / needs to be ordered explicitly**

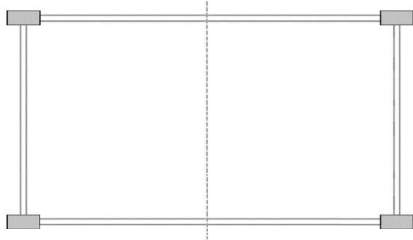
Applicable for modules

LR4-**72** YYY ZZZ M

YYY=HPH, HIH

ZZZ=Nominal Power

Method 3 (4 clamps long frame edge):



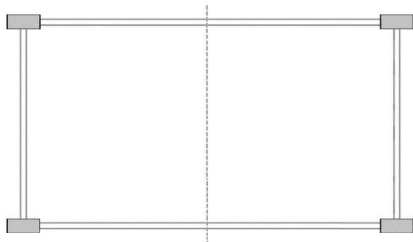
Dimension D [mm]	Loads [Pa.]
0 (min. clamp contact 100mm)	+2.400 -1.800

Applicable for modules

LR4-**60** YYY ZZZ M

YYY=HPH, HPB, HIH, HIB

ZZZ=Nominal Power



Dimension D [mm]	Standard Frame Loads [Pa.]	Enforced Frame* Loads [Pa.]
0 (min. clamp contact 100mm)	Not supported	+1.600 -1.600

*** optimized product / needs to be ordered explicitly**

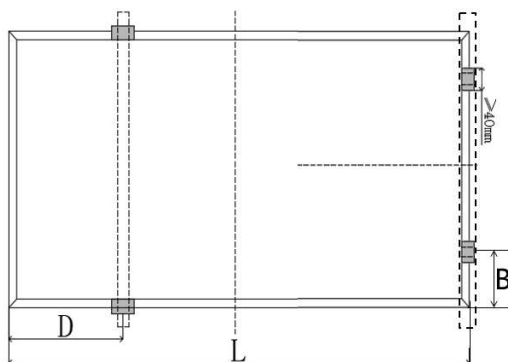
Applicable for modules

LR4-**72** YYY ZZZ M

YYY=HPH, HIH

ZZZ=Nominal Power

Method 4 (2 clamps each long and short frame):



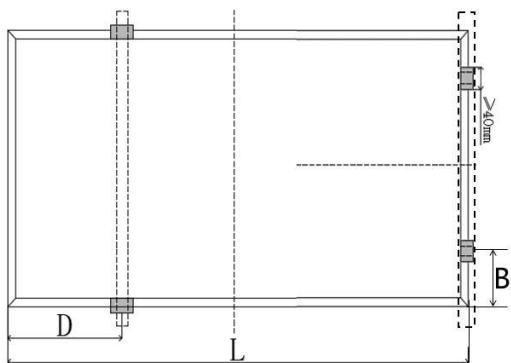
Dimension D [mm]	Dimension B [mm]	Loads[Pa.]
$L/4 - 50 \leq D \leq L/4 + 50$	$150 \leq B \leq 250$	+2.400 -2.400

Applicable for modules

LR4-**60** YYY ZZZ M

YYY=HPH, HPB, HIH, HIB

ZZZ=Nominal Power



Dimension D [mm]	Dimension B [mm]	Loads [Pa.]
$L/4 - 50 \leq D \leq L/4 + 50$	$150 \leq B \leq 250$	+2.400 -2.400

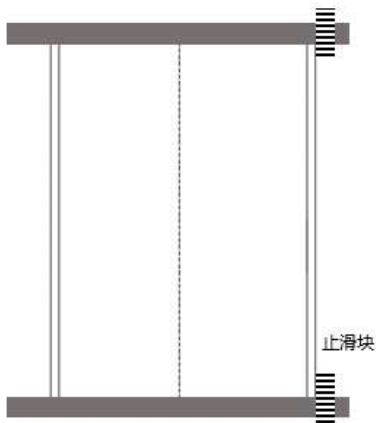
Applicable for modules

LR4-72 YYY ZZZ M

YYY=HPH, HIH

ZZZ=Nominal Power

Method 5a (lay in system short frame):



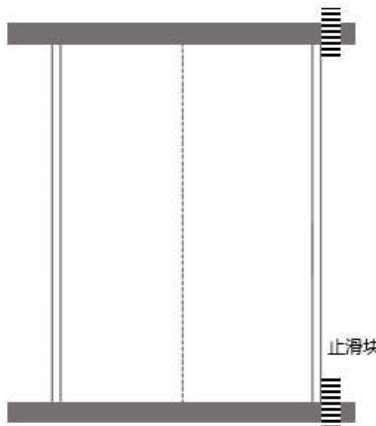
Dimension D [mm]	Loads [Pa.]
n/a (lay-in system)	+2.400 -2.400

Applicable for modules

LR4-60 YYY ZZZ M

YYY=HPH, HPB, HIH, HIB

ZZZ=Nominal Power



Dimension D [mm]	Standard Frame Loads [Pa.]	Enforced Frame* Loads [Pa.]
n/a (lay-in system) (not recommended)	Not supported	+1.600 -1.600

* optimized product / needs to be ordered explicitly

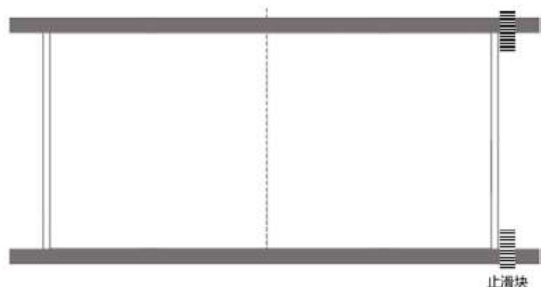
Applicable for modules

LR4-72 YYY ZZZ M

YYY=HPH, HIH

ZZZ=Nominal Power

Method 5b (lay in system long frame):



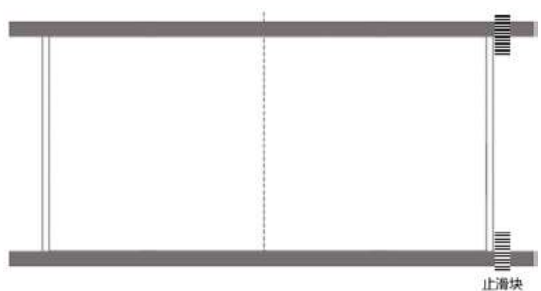
Dimension D [mm]	Loads [Pa.]
n/a (lay-in system)	+2.400 -2.400

Applicable for modules

LR4-**60** YYZ ZZZ M

YYY=HPH, HPB, HIH, HIB

ZZZ=Nominal Power



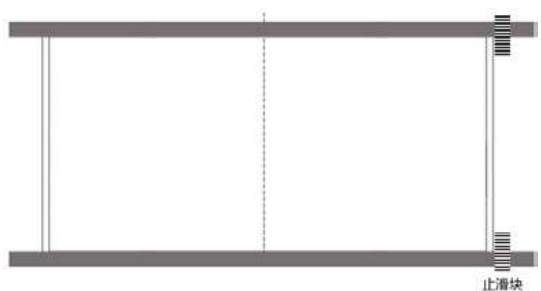
Dimension D [mm]	Loads [Pa.]
n/a (lay-in system)	+2.400 -2.400

Applicable for modules

LR4-**72** YYZ ZZZ M

YYY=HPH, HIH

ZZZ=Nominal Power



Dimension D [mm]	Loads [Pa.]
n/a (lay-in system)	+2.400 -2.400

Applicable for modules

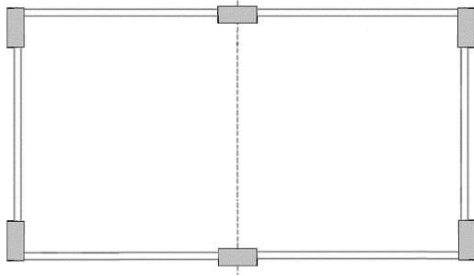
LR5-**66** YYZ ZZZ M

YYY=HPH, HIH

ZZZ=Nominal Power

LR5-**72** YYZ ZZZ M

Method 6 (six point clamping, 2 clamps each short side corner plus 1 clamps each long center):



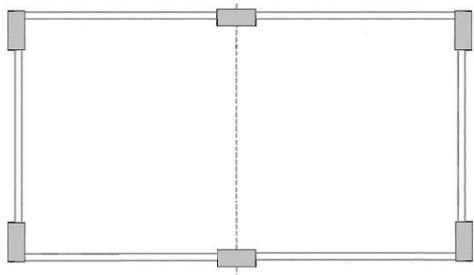
Short Side Clamp [mm]	Long Side Clamp [mm]	Loads [Pa.]
$0 \leq D \leq 250$	$L/2 - 50 \leq D \leq L/2 + 50$	+3.600 -2.400

Applicable for modules

LR4-**60** YYY ZZZ M

YYY=HPH, HPB, HIH, HIB

ZZZ=Nominal Power



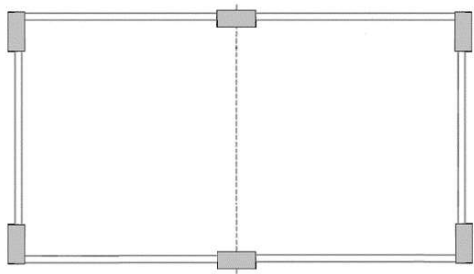
Short Side Clamp [mm]	Long Side Clamp [mm]	Loads [Pa.]
$0 \leq D \leq 250$	$L/2 - 50 \leq D \leq L/2 + 50$	+2.400 -2.400

Applicable for modules

LR4-**72** YYY ZZZ M

YYY=HPH, HIH

ZZZ=Nominal Power



Short Side Clamp [mm]	Long Side Clamp [mm]	Loads [Pa.]
$0 \leq D \leq 250$	$L/2 - 50 \leq D \leq L/2 + 50$	+2.400 -2.400

Applicable for modules

LR5-**66** YYY ZZZ M

YYY=HPH, HIH

ZZZ=Nominal Power

LR5-**72** YYY ZZZ M

Important note for method 6:

Middle support must be clamped / fixed to the PV module frame. A loose middle support is insufficient and would reduce pull forces as described in method 2 to 1.200 Pa.

General Notes:

- Given loads are test loads the product physically withstands. Design loads are test loads divided by 1.5 (safety factor).
- This document applies to framed glass-foil constructions with 3.2 mm glass only!
- For HiMO4 72 Cell modules there is two frame versions available! Please check your mounting load requirements.
- For bifacial mounting methods please refer to Amendment 2.
- Clamp length of minimum 60mm is recommended.
- Photovoltaic modules are in process of permanent optimization. Please make sure you always have latest version of installation manual and amendments on hand when designing a system.



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