

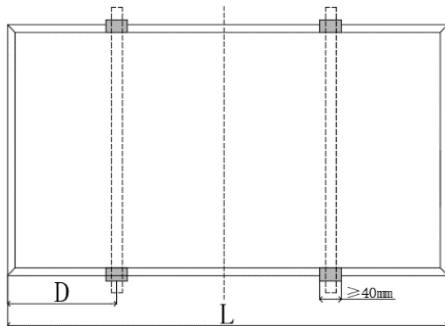
December 19th, 2019

Additional mounting methods (monofacial modules)

Amendment 1 to "20190822 LONGI Solar Installation Manual for PV Modules-V1-02.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. If not applicable you may use safety factor 1.5 as indicated in IEC 61215-X for design loads.

Method 1 (4 clamps long frame):

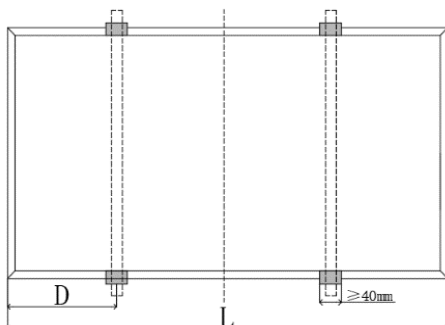


Dimension D [mm]	Loads [Pa.]
$0 \leq D \leq L/4 - 50$	+2.400 -2.400
$L/4 - 50 \leq D \leq L/4 + 50$ (recommended)	+5.400 -2.400
$L/4 + 50 \leq D \leq 625\text{mm}$	+2.400 -2.400

Applicable for modules

LR6-XX YYY ZZZ M XX=**60** YYY=PB, PE, PH, HPH, HPB, HIH, HIB ZZZ=Nominal Power

LR4-XX YYY ZZZ M



Dimension D [mm]	Loads [Pa.]
$0 \leq D \leq L/4 - 50$	+2.400 -2.400
$L/4 - 50 \leq D \leq L/4 + 50$ (recommended)	+5.400 -2.400
$L/4 + 50 \leq D \leq 778\text{mm}$	+2.400 -2.400

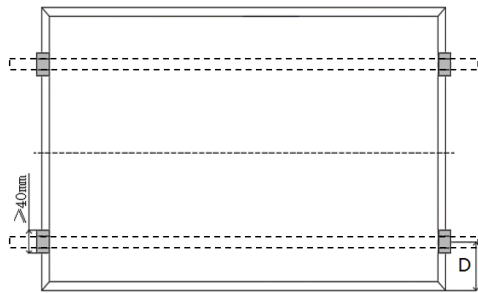
Applicable for modules

LR6-XX YYY ZZZ M XX=**72** YYY = PE, PH, HPH, HIH

ZZZ=Nominal Power

LR4-XX YYY ZZZ M

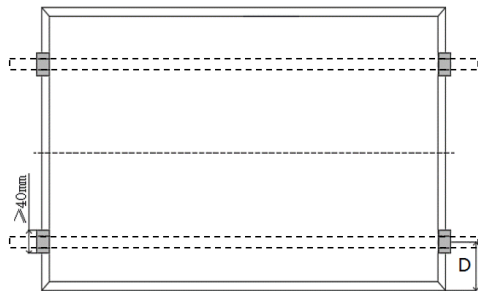
Method 2 (4 clamps short frame):



Dimension D [mm]	Loads [Pa.]
$0 \leq D \leq 150$	+2.400 -1.800
$150 \leq D \leq 250$ (recommended)	+2.400 -2.400

Applicable for modules

LR6-XX YYY ZZZ M XX=**60** YYY=PB, PE, PH, HPH, HPB, HIH, HIB ZZZ=Nominal Power
LR4-XX YYY ZZZ M

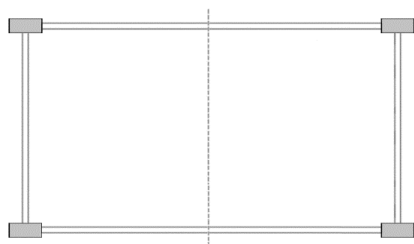


Dimension D [mm]	Loads [Pa.]
$0 \leq D \leq 150$	+1.200 -1.200
$150 \leq D \leq 250$ (recommended)	+1.200 -1.200

Applicable for modules

LR6-XX YYY ZZZ M XX=**72** YYY=PE, PH, HPH, HIH ZZZ=Nominal Power
LR4-XX YYY ZZZ M

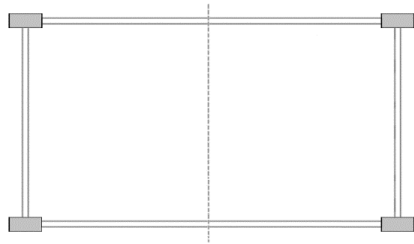
Method 3 (4 clamps long frame edge):



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

Applicable for modules

LR6-XX YYY ZZZ M XX=**60** YYY=PB, PE, PH, HPH, HPB, HIH, HIB ZZZ=Nominal Power
LR4-XX YYY ZZZ M



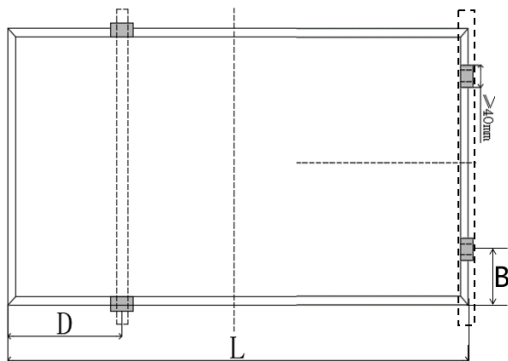
Dimension D [mm]	Loads [Pa.]
0 (min. clamp length 100mm)	+1.200 -1.200

Applicable for modules

LR6-XX YYY ZZZ M XX=**72** YYY=PB, PE, PH, HPH, HPB, HIH, HIB ZZZ=Nominal Power

LR4-XX YYY ZZZ M

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

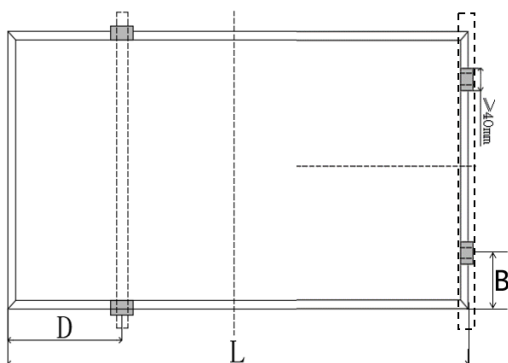


Dimension D [mm]	Dimension B [mm]	Loads [Pa.]
$L/4-50 \leq D \leq L/4+50$	$150 \leq B \leq 250$	+2.400 -2.400

Applicable for modules

LR6-XX YYY ZZZ M XX=**60** YYY=PB, PE, PH, HPH, HPB, HIH, HIB ZZZ=Nominal Power

LR4-XX YYY ZZZ M



Dimension D [mm]	Dimension B [mm]	Loads [Pa.]
$L/4-50 \leq D \leq L/4+50$	$150 \leq B \leq 250$	+1.600 -1.600

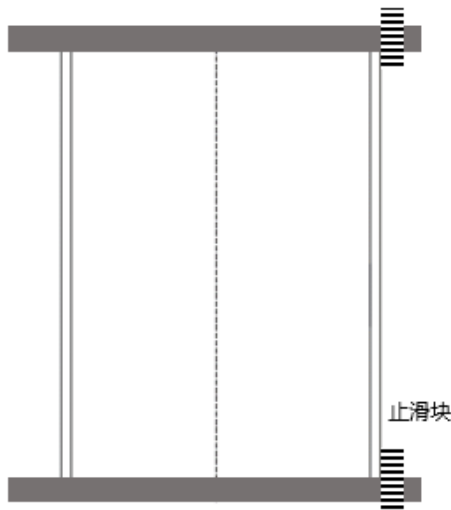
Applicable for modules

LR6-XX YYY ZZZ M XX=**72** YYY=PE, PH, HPH, HIH

ZZZ=Nominal Power

LR4-XX YYY ZZZ M

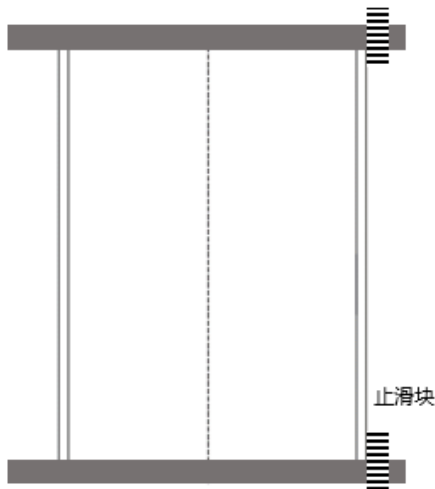
Method 5a (lay in system short frame):



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

Applicable for modules

LR6-XX YYY ZZZ M XX=**60** YYY=PB, PE, PH, HPH, HPB, HIH, HIB ZZZ=Nominal Power
LR4-XX YYY ZZZ M

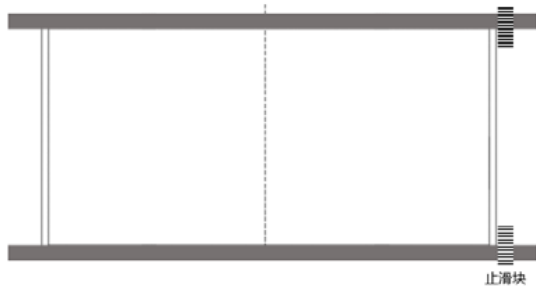


Dimension D [mm]	Loads [Pa.]
n/a (lay-in system)	+1.200 -1.200

Applicable for modules

LR6-XX YYY ZZZ M XX=**72** YYY=PE, PH, HPH, HIH ZZZ=Nominal Power
LR4-XX YYY ZZZ M

Method 5b (lay in system long frame):

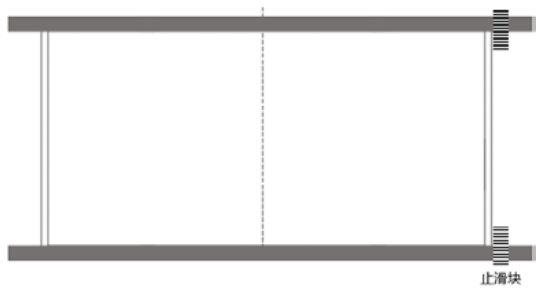


Dimension D [mm]	Loads [Pa.]
n/a (lay-in system)	+5.400 -2.400

Applicable for modules

LR6-XX YYY ZZZ M XX=**60** YYY=PB, PE, PH, HPH, HPB, HIH, HIB ZZZ=Nominal Power

LR4-XX YYY ZZZ M



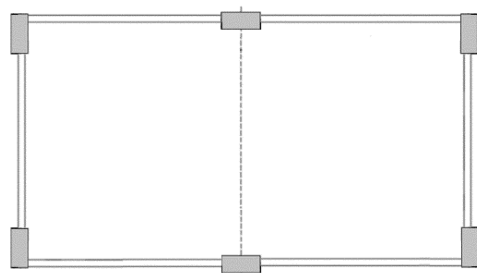
Dimension D [mm]	Loads [Pa.]
n/a (lay-in system)	+3.600 -2.400

Applicable for modules

LR6-XX YYY ZZZ M XX=**72** YYY=PE, PH, HPH, HIH ZZZ=Nominal Power

LR4-XX YYY ZZZ M

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

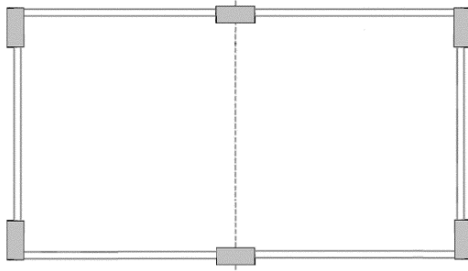


Short Side Clamp [mm]	Long Side Clamp [mm]	Loads [Pa.]
$0 \leq D \leq 250$	$L/2-50 \leq D \leq L/2+50$	+3.600 -2.400

Applicable for modules

LR6-XX YYY ZZZ M XX=**60** YYY=PB, PE, PH, HPH, HPB, HIH, HIB ZZZ=Nominal Power

LR4-XX YYY ZZZ M



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

LR6-XX YYY ZZZ M XX=**72** YYY=PE, PH, HPH, HIH

ZZZ=Nominal Power

LR4-XX 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 Pa pull forces as described in method 2 to 1.200 Pa.

General Note:

Given loads are test loads the product physically withstands. Design loads are test loads divided by 1.5 (safety factor).

i.A. Winfried Wahl

Chief Engineer, Head of Product Management