CHECK OF OVERTEMPERATURE INSIDE 46 RANGE UNIVERSAL BOARDS

For boards, it is possible to use the calculation method explained in paragraph 10.10.4.2 of Standard EN 61439-1, IEC 61439-1.
To facilitate the thermal check of the 46 range boards in the latter case, Gewiss has prepared a set of tables (on the next page) for every board version and size; these tables show the maximum dispersible power values inside every type of shell, on the basis of the consequential maximum internal overtemperature of the air. The parameters of the dispersible power in the various configurations were obtained from both laboratory tests carried out according to the method described in paragraph 10.10.4.2 of Standard EN 61439-1 (and subsequently verified according to paragraph 10.10.4.3 of Standard EN 61439-1), and the calculation method indicated in Standard IEC 60890.

The tables are valid when the following parameters are respected:
a) sum of board input current no greater than:
   a1. 1600A (if all the requisites listed below are respected);
   a2. 630A (if the requisites indicated in points 2 - 6 below are respected);
b) maximum rated frequency of the board no greater than 60 Hz;
c) sufficiently even distribution of the devices inside the board;
d) rated current of each circuit no greater than 80% of the free air current (I_{th}) of the devices installed along the circuit itself (bear in mind that for modular devices, the free air current (I_{th}) usually coincides with the rated current (I_n) of the devices themselves);
e) mechanical parts and devices installed so as not to prevent free air circulation;
f) no conductor section less than that indicated in IEC 60364-5-52;
g) for shells with ventilation openings, the section of the air output openings must be at least 1.1 times the section of the input openings;
h) no more than three horizontal divisions for each board or board section;
i) for shells with compartments and natural ventilation, the section of the ventilation openings in each partition must be equal to at least 50% of the horizontal section of the compartment.

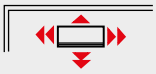
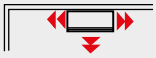
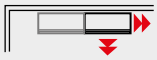
The check is carried out on the basis of the following points:
1) definition of the board installation conditions: single board exposed on every side, or single surface-mounting board, etc;
2) identification of the overtemperature allowed for the board, according to the maximum operating temperature of the devices to be installed in it;
3) determination of the P_{dix} of the board (taking into account the dispersible power of the active devices to be installed in the board);
4) identification of the board (LxHxD) with dispersible power P_{dq}, according to the conditions determined in points 1 and 2, plus the P_{dix} already determined in point 3.

GWPBT-Q software

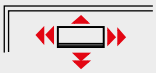
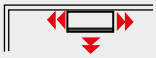
To speed up the calculation, check, certification and budgeting of Gewiss boards, there is the GWPBT-Q software available in the special Gewiss Software CD or which can be downloaded directly from the website www.gewiss.com.

DISPERSIBLE POWERS OF THE 46 RANGE BOARDS (PDQ)

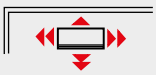
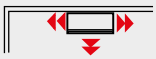
44 CEP BOARDS

			 Single board exposed on all sides					 Single surface-mounting board					 Single board with corner walls, or first/last combined board					Central board of combined row					Board placed in niche				
Overtemperature Δt (°K)			**20**	**25**	**30**	**35**	**40**	**20**	**25**	**30**	**35**	**40**	**20**	**25**	**30**	**35**	**40**	**20**	**25**	**30**	**35**	**40**	**20**	**25**	**30**	**35**	**40**
B (mm)	**H (mm)**	**P (mm)**	**Maximum dispersible power (W)**																								
200	254	135	7	9	12	15	17	6	9	11	14	16	5	7	10	12	14	5	7	9	11	13	4	6	9	11	12
236	316	135	8	11	14	17	19	7	10	13	16	18	6	9	12	14	16	6	9	11	13	15	5	8	10	12	13
316	396	160	11	15	20	25	30	9	13	17	22	26	9	12	16	20	24	8	11	15	19	23	7	10	14	18	21
396	474	160	18	24	30	36	42	16	21	26	32	37	14	19	23	29	33	13	18	22	27	31	13	17	21	26	29

46 QP boards

			 Single board exposed on all sides					 Single surface-mounting board					Single board with corner walls, or first/last combined board					Central board of combined row					Board placed in niche				
Overtemperature Δt (°K)			**20**	**25**	**30**	**35**	**40**	**20**	**25**	**30**	**35**	**40**	**20**	**25**	**30**	**35**	**40**	**20**	**25**	**30**	**35**	**40**	**20**	**25**	**30**	**35**	**40**
B (mm)	**H (mm)**	**P (mm)**	**Maximum dispersible power (W)**																								
250	300	160	13	17	21	25	30	11	14	18	22	26	10	13	16	20	23	9	11	15	18	22	8	11	14	17	20
310	425	160	18	24	31	36	44	16	21	27	33	40	15	19	25	30	36	14	17	24	29	34	12	16	20	24	30
405	500	200	24	32	41	50	59	22	30	38	46	55	21	28	36	44	52	18	25	32	39	46	16	22	28	34	40
405	650	200	34	46	57	69	82	29	39	49	59	70	27	36	45	54	65	25	33	42	50	60	23	31	39	47	56
515	650	250	50	66	81	98	115	46	60	74	89	105	43	57	70	84	99	41	54	66	79	93	36	48	58	70	84
585	800	300	67	90	112	134	157	61	81	101	121	142	55	74	93	111	132	53	70	87	105	123	47	64	78	94	110
800	1060	350	102	135	170	204	239	92	122	153	184	216	76	101	127	152	179	74	99	123	149	175	66	87	110	132	156

46 QM / QX boards

			 Single board exposed on all sides					 Single surface-mounting board					Single board with corner walls, or first/last combined board					Central board of combined row					Board placed in niche				
Overtemperature Δt (°K)			**20**	**25**	**30**	**35**	**40**	**20**	**25**	**30**	**35**	**40**	**20**	**25**	**30**	**35**	**40**	**20**	**25**	**30**	**35**	**40**	**20**	**25**	**30**	**35**	**40**
B (mm)	**H (mm)**	**P (mm)**	**Maximum dispersible power (W)**																								
250	300	160	17	23	28	34	41	15	20	25	30	36	13	18	22	27	32	12	16	20	24	29	11	15	19	22	27
310	425	160	22	32	40	48	58	20	29	36	44	53	18	26	33	40	48	17	25	31	38	45	15	21	27	32	39
405	500	200	36	48	59	71	84	34	45	55	66	78	32	42	52	62	73	28	37	45	55	65	25	33	41	48	58
405	650	200	47	61	74	91	108	40	52	64	78	92	37	48	59	71	85	34	44	54	66	79	32	41	51	62	74
515	650	250	61	83	102	123	143	56	75	93	112	131	53	70	87	106	124	50	67	83	100	117	44	60	73	89	104
585	800	300	69	90	114	141	169	63	81	103	127	152	57	74	94	116	140	54	70	89	110	132	49	63	80	98	118
800	1060	350	116	155	192	230	268	105	140	173	207	242	87	116	143	172	200	85	113	139	168	195	75	101	124	149	174

For technical information contact the Technical Assistance Service or visit gewiss.com

46 QP - WATERTIGHT POLYESTER BOARDS FIBER GLASS CHARGED - IP66

TECHNICAL CHARACTERISTICS (-)

Standard: EN 61439-1 (CEI 17-113); EN 61439-2 (CEI 17-114); EN 60439-1 (CEI 17-13/1); EN 62208 (CEI 17-87); IEC EN 606070-1 (CEI 23-48); IEC EN 60670-24 (CEI 23-49) (*)

Degree of protection: IP66

Protection against indirect contact: double insulation - ⧈ (•)

Installation temperature: max. +60°C; min. -25°C

Maximum rated operating voltage (Ue): 690V

Rated insulation voltage (Ui): 1000V (in both AC and DC)

Material: polyester reinforced with fibreglass, halogen-free in accordance with EN 60754-2 (CEI EN 50267-2-2)

Impact resistance: Boards with blank door: IK10 according to EN62262 ed EN61439-1
Boards with trasparent door: casse IK10 according to EN62262 ed EN61439-1

Heat resistance: thermo-pressure with ball 200°C

Resistance to abnormal heat and fire: Glow wire test 960°C for blank door versions;
Glow wire test 650°C for versions with door with window

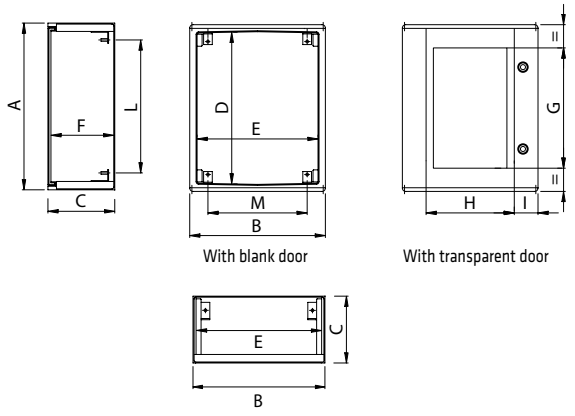
(•) Complete insulation, in compliance with the EN 61140 Standard, obtained by using GW 46 446 and GW 46 451 fixing brackets.
(-) The technical and functional characteristics are referred to only one installation in a vertical position
For the working of the boards take all protective measures and procedures desribed in the user guide.
(*) Enclosure type: GP (CEI 23-51) and PD

BEHAVIOUR WITH CHEMICAL AND ATMOSPHERIC AGENTS

Saline solution	Acids		Bases		Solvents				Mineral oil	UV rays
	Concentrated	Diluted	Concentrated	Diluted	Hexane	Benzol	Acetone	Ethyl alcohol		
Resistant	Limited resistance	Limited resistance	Limited resistance	Limited resistance	Limited resistance	Limited resistance	Not resistant	Limited resistance	Resistant	Resistant

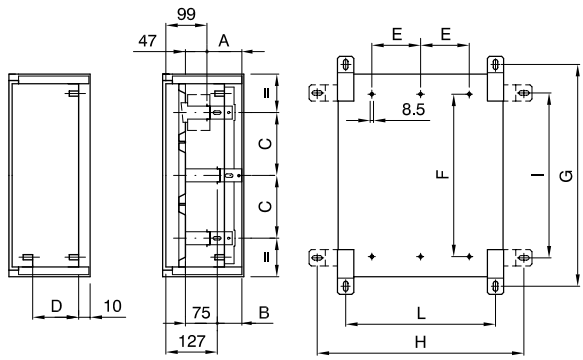
Dimension tables

BOARDS



Board Code	GW 46 001F GW 46 201F	GW 46 002F GW 46 202F	GW 46 003F GW 46 203F	GW 46 004F GW 46 204F	GW 46 005F GW 46 205F	GW 46 006F GW 46 206F	GW 46 007F GW 46 207F
A	300	424	499	649	649	799	1060
B	250	313	406	406	514	586	777
C	160	160	200	200	250	300	350
D	251	375	450	600	600	750	1000
E	206	269	362	362	470	542	722
F	154	154	194	194	244	294	342
G	205	310	360	510	510	650	827
H	140	169	264	264	380	440	577
I	71	71	71	71	71	71	100
L	203	327	402	552	552	702	952
M	141	202	297	297	405	477	657

Adjustment and fixing centre distances for watertight polyester boards



Board Code	GW 46 001F GW 46 201F	GW 46 002F GW 46 202F	GW 46 003F GW 46 203F	GW 46 004F GW 46 204F	GW 46 005F GW 46 205F	GW 46 006F GW 46 206F	GW 46 007F GW 46 207F
A	-	55	95	95	145	195	245
B	-	27	67	67	117	167	217
C	-	125	150	150	150	150	200
D	85	85	125	125	175	225	275
E	53	84.5	131	131	184	221	307
F	185	309	384	534	470	620	860
G	348	472	547	697	695	845	1088
H	311	374	467	467	573	643	819
I	208	332	407	557	557	705	948
L	171	234	327	327	433	507	679

For technical information contact the Technical Assistance Service or visit gewiss.com

46 QM - METAL WATERTIGHT BOARDS - IP55

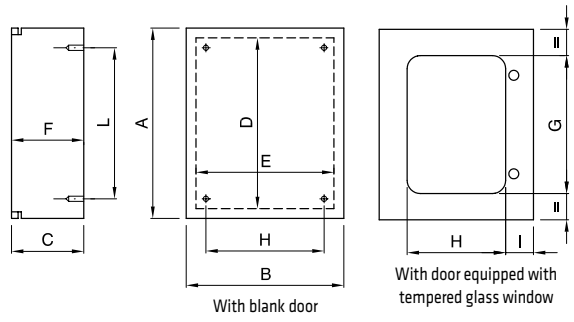
TECHNICAL CHARACTERISTICS	
Standard: EN 61439-1 (CEI 17-113); EN 61439-2 (CEI 17-114); EN 60439-1 (CEI 17-13/1); EN 62208 (CEI 17-87); IEC EN 606070-1 (CEI 23-48); IEC EN 60670-24 (CEI 23-49) (*)	Impact resistance: Boards with blank door IK10 secondo EN62262 Boards with glass door IK08 secondo EN62262
Degree of protection: IP55	Maximum rated operating voltage (Ue): 690V
Protection against indirect contact: metal shell pre-arranged with earth terminal	Material: sheet metal from 10/10 to 15/10, painted with epoxy-polyester powders Applications: for indoor use
Installation temperature: max. +60°C; min. -25°C	

(-) The technical and functional characteristics are referred to only one installation in a vertical position
(*) Enclosure type: GP (CEI 23-51) and PD

BEHAVIOUR WITH CHEMICAL AND ATMOSPHERIC AGENTS										
Saline solution	**Acids**		**Bases**		**Solvents**				**Mineral oil**	**UV rays**
	Concentrated	**Diluted**	**Concentrated**	**Diluted**	**Hexane**	**Benzol**	**Acetone**	**Ethyl alcohol**		
Limited resistance	Limited resistance	Limited resistance	Not resistant	Not resistant	Resistant	Limited resistance	Not resistant	Resistant	Resistant	Resistant

Dimension tables

BOARDS

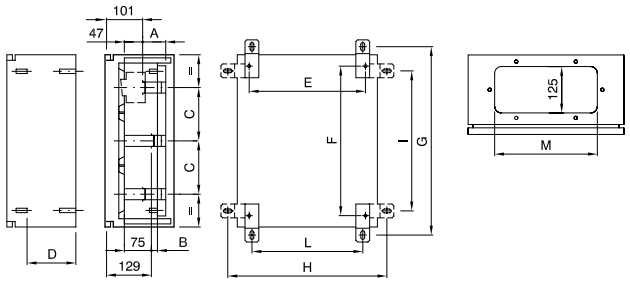


With blank door

With door equipped with tempered glass window

Board Code	GW 46 031 -	GW 46 032 GW 46 232	GW 46 033 GW 46 233	GW 46 034 GW 46 234	GW 46 035 GW 46 235	GW 46 036 GW 46 236	GW 46 037 GW 46 237
A	296	420	495	645	645	795	1045
B	246	309	402	402	510	582	762
C	160	160	200	200	250	300	350
D	256	380	455	605	605	755	1005
E	206	269	362	362	470	542	722
F	157	157	197	197	247	297	347
G	205	310	360	510	510	650	827
H	140	169	264	264	380	440	577
I	71	71	71	71	71	71	100
L	203	327	402	552	552	702	952
M	141	202	297	297	405	477	657

Adjustment and fixing distance centres for metal watertight boards



Board Code	GW 46 031 -	GW 46 032 GW 46 232	GW 46 033 GW 46 233	GW 46 034 GW 46 234	GW 46 035 GW 46 235	GW 46 036 GW 46 236	GW 46 037 GW 46 237
A	-	55	95	95	145	195	245
B	-	27	67	67	117	167	217
C	-	125	150	150	150	150	200
D	65	65	65	65	200	250	300
E	191	254	347	347	453	527	699
F	228	352	427	577	577	725	968
G	348	472	547	697	695	845	1088
H	311	374	467	467	573	643	819
I	208	332	407	557	557	705	948
L	171	234	327	327	433	507	679
M	-	-	-	270	270	335	335

For technical information contact the Technical Assistance Service or visit gewiss.com

46 QX - STAINLESS STEEL WATERTIGHT BOARDS - IP55

TECHNICAL CHARACTERISTICS (-)	
Standard: EN 61439-1 (CEI 17-113); EN 61439-2 (CEI 17-114); EN 60439-1 (CEI 17-13/1); EN 62208 (CEI 17-87); IEC EN 606070-1 (CEI 23-48); IEC EN 60670-24 (CEI 23-49) (*)	Maximum rated operating voltage (Ue): 690V
Degree of protection: IP55	Material: stainless steel from 10/10 to 15/10 (e.g. AISI 304)
Indirect contact protection: metal shell pre-arranged with earth terminal	Impact resistance: IK10 in accordance with EN 62262
Installation temperature: max. +60°C; min. -25°C	Applications: for indoor use, in areas that are frequently cleaned with water jets

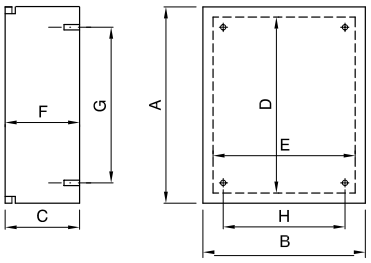
(-) The technical and functional characteristics are referred to only one installation in a vertical position
(*) Enclosure type: GP (CEI 23-51) and PD

BEHAVIOUR WITH CHEMICAL AND ATMOSPHERIC AGENTS

Saline solution	Acids		Bases		Solvents				Mineral oil	UV rays
	Concentrated	Diluted	Concentrated	Diluted	Hexane	Benzol	Acetone	Ethyl alcohol		
Limited resistance	Non Resistant	Limited resistance	Limited resistance	Limited resistance	Resistant	Resistant	Resistant	Resistant	Resistant	Resistant

Dimension tables

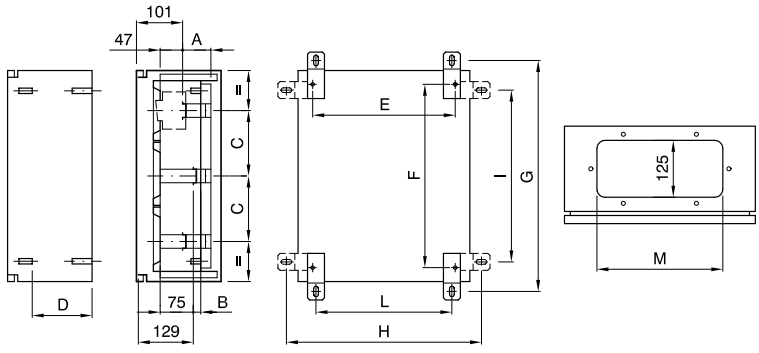
BOARDS



With blank door

Board Code	GW 46 052	GW 46 054	GW 46 056
A	420	645	795
B	309	402	582
C	160	200	300
D	380	605	755
E	269	362	542
F	157	197	297
G	327	552	702
H	202	297	477

Adjustment and fixing distance centres for watertight boards in satin-finish stainless steel

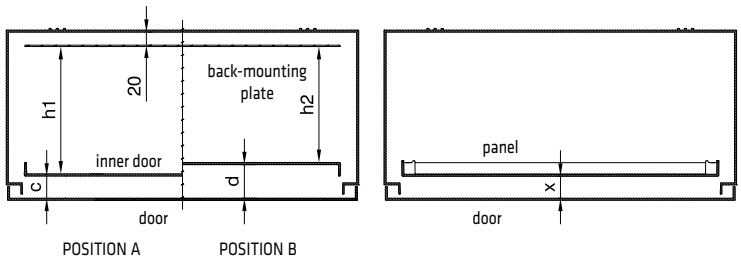


Board Code	GW 46 052	GW 46 054	GW 46 056
A	55	95	195
B	27	67	167
C	125	150	150
D	65	65	250
E	254	347	527
F	352	577	725
G	472	697	845
H	374	467	643
I	332	557	705
L	234	327	507
M	-	270	335

46 QP - QM - QX

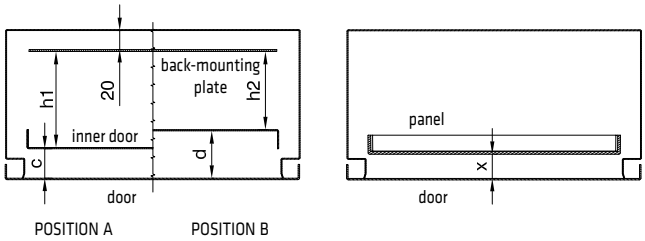
Dimension tables

46 QP: DISTANCES BETWEEN DOOR, INNER DOOR, BACK-MOUNTING PLATE AND PANEL



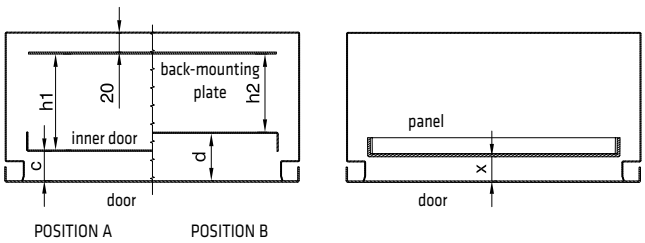
Board dimensions	With inner door				With panels
	Position A		Position B		X
	c	h1	d	h2	min
310x425	32	96	49	79	32
405x500	32	136	49	119	32
405x650	32	136	49	119	32
515x650	32	186	49	169	32
585x800	32	236	49	219	32
800x1060	37	277	69	248	37

46 QM: DISTANCES BETWEEN DOOR, INNER DOOR, BACK-MOUNTING PLATE AND PANEL



Board dimensions	With inner door				With panels	
	Position A		Position B		X	
	c	h1	d	h2	min	max
310x425	31	102	50	83	22	67
405x500	31	142	50	123	25	33
405x650	31	142	50	123	25	33
515x650	31	191	50	172	35	116
585x800	31	241	50	222	35	166
800x1060	31	295	60	266	35	216

46 QX: DISTANCES BETWEEN DOOR, INNER DOOR, BACK-MOUNTING PLATE AND PANEL

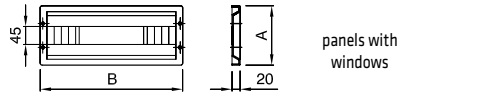


Board dimensions	With inner door				With panels	
	Position A		Position B		X	
	c	h1	d	h2	min	max
310x425	31	102	50	83	22	67
405x650	31	142	50	123	25	33
585x800	31	241	50	222	35	166

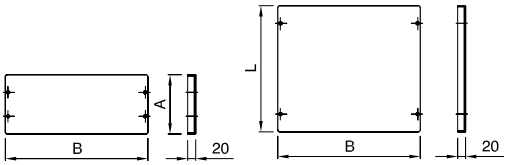
46 QP - QM - QX - COMMON COMPLEMENTARY ITEMS

Dimension tables

FRONT CONFIGURATION

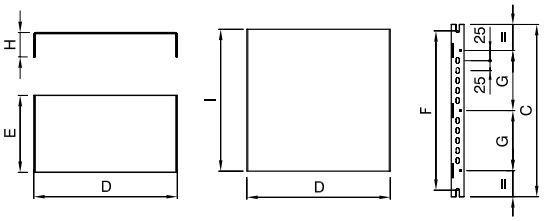


panels with windows



1-module high blank panels

2-module high blank panels



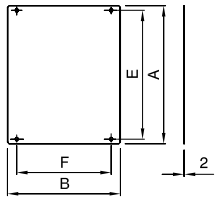
solid plates with 1-module height

solid plates with 2-module height

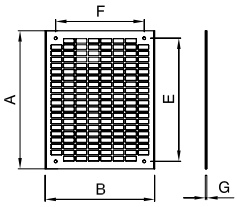
uprights

Panels with windows	-	GW 46 420 F	GW 46 421 F	GW 46 421 F	GW 46 422 F	GW 46 423 F	GW 46 424 F
Single blank panels	-	GW 46 425 F	GW 46 426 F	GW 46 426 F	GW 46 427 F	GW 46 428 F	GW 46 429 F
Double blank panels	-	GW 46 475 F	GW 46 476 F	GW 46 476 F	GW 46 477 F	GW 46 478 F	GW 46 479 F
Uprights	-	GW 46 435 F	GW 46 436 F	GW 46 437 F	GW 46 437 F	GW 46 438 F	GW 46 439 F
Single solid plates	-	GW 46 540	GW 46 541	GW 46 541	GW 46 542	GW 46 543	GW 46 544
Double solid plates	-	GW 46 580	GW 46 581	GW 46 581	GW 46 582	GW 46 583	GW 46 584
For boards with dimensions LxH (mm)	300 x 250	425 x 310	500 x 405	650 x 405	650 x 515	800 x 585	1060 x 800
Number of modules	-	12	18	18	24	28	36
A	-	124	149	149	149	149	199
B	-	265	358	358	466	538	718
C	-	355	430	580	580	730	980
D	-	170	265	265	373	445	625
E	-	116	142	142	142	142	190
F	-	327	402	552	552	702	952
G	-	125	150	150	150	150	200
H	-	40	45	45	45	45	45
I	-	241	292	292	292	292	390
L	-	249	299	299	299	299	399

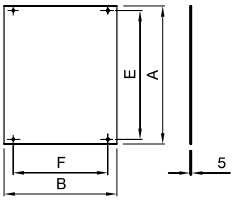
INTERNAL CONFIGURATION



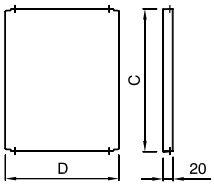
steel plates



steel perforated plates



insulating material plates



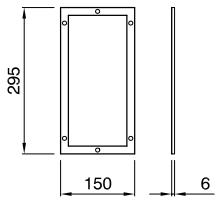
insulating inner door / metal inner door

Steel plates	GW 46 401	GW 46 402	GW 46 403	GW 46 404	GW 46 405	GW 46 406	GW 46 407
Perforated plates	GW 46 461	GW 46 462	GW 46 463	GW 46 464	GW 46 465	GW 46 466	GW 46 467
Insulated plates	GW 46 408	GW 46 409	GW 46 410	GW 46 411	GW 46 412	GW 46 413	-
Insulating inner door	-	GW 46 414	GW 46 415	GW 46 416	GW 46 417	GW 46 418	GW 46 419
Metal inner door	-	GW 46 564	GW 46 565	GW 46 566	GW 46 567	GW 46 568	GW 46 569
For boards LxH (mm)	300 x 250	425 x 310	500 x 405	650 x 405	650 x 515	800 x 585	1060 x 800
A	235	359	434	584	584	734	984
B	199	260	355	355	463	535	715
C	-	370	445	595	595	745	995
D	-	264	357	357	465	537	712
E	203	327	402	552	552	702	952
F	141	202	297	297	405	477	657
G	1.5	2	2	2	2	2	2

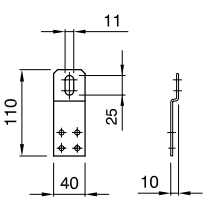
MAXIMUM ALLOWABLE LOADS ON BACK-MOUNTING PLATES INSTALLED IN BOARDS OF 46 RANGE (kg)

Board size LxHxD (mm)	QP	QM	QX	Plate code	Plate type
250x300x160	50	42		GW 46 401	Steel
	35	35		GW 46 461	Perforated
	35	35		GW 46 408	Insulating
310x425x160	70	65	65	GW 46 402	Steel
	40	40	40	GW 46 462	Perforated
	70	65	65	GW 46 409	Insulating
405x500x200	110	65		GW 46 403	Steel
	90	65		GW 46 463	Perforated
	90	65		GW 46 410	Insulating
405x650x200	110	65	65	GW 46 404	Steel
	75	65	65	GW 46 464	Perforated
	80	65	65	GW 46 411	Insulating
515x650x250	130	115		GW 46 405	Steel
	95	95		GW 46 465	Perforated
	80	80		GW 46 412	Insulating
585x800x300	155	135	135	GW 46 406	Steel
	95	95	95	GW 46 466	Perforated
	95	95	95	GW 46 413	Insulating
800x1060x350	245	215		GW 46 407	Steel
	120	120		GW 46 467	Perforated

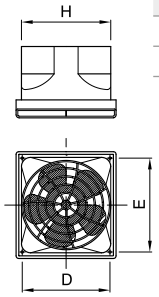
COMPLEMENTARY ITEMS

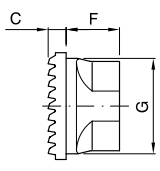


GW 46 449

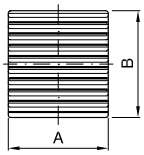


GW 46 446 - GW 46 451





GW 46 448



Code	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)
GW 46 448	131	141	23.5	115	123	70	125	117
GW 46 471	131	141	23.5	115	123	-	-	-

For technical information contact the Technical Assistance Service or visit gewiss.com

44 CEP - WATERTIGHT BOARDS IN GWPLAST 120 - GWT 650°C - IP55

TECHNICAL CHARACTERISTICS (-)	
Standard: EN 61439-1 (CEI 17-113); EN 61439-2 (CEI 17-114); EN 60439-1 (CEI 17-13/1); IEC EN 606070-1 (CEI 23-48); IEC EN 60670-24 (CEI 23-49) (*)	Maximum rated operating voltage (Ue): 750V
Degree of protection: IP55	Material: GW PLAST 120, halogen-free in accordance with EN 60754-2 (CEI EN 50267-2-2)
Protection against indirect contact: double insulation - ⧈ (•)	Impact resistance: IK08 in accordance with EN 62262
Installation temperature: max. +60°C; min. -25°C	Heat resistance: thermo-pressure with ball 110°C
Maximum rated insulation voltage (Ui): 750V	Resistance to abnormal heat and fire: Glow wire test 650°C

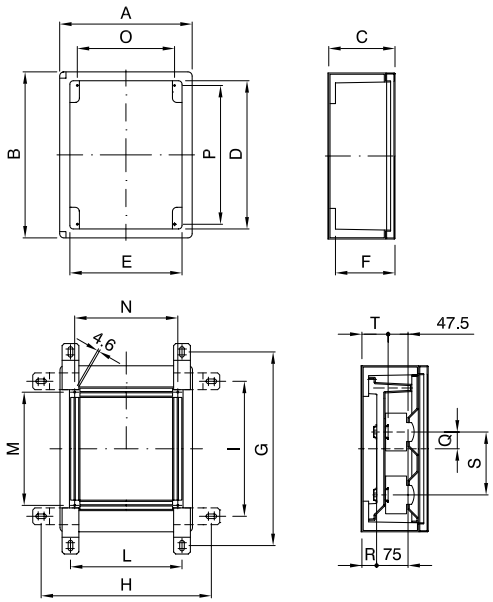
(•) Complete insulation, in accordance with EN 61140 Standard, obtainable with screwcaps or GW 44 621 / GW 46 446 / GW 46 451 fixing brackets.
(-) The technical and functional characteristics are referred to only one installation in a vertical position
(*) Enclosure type: GP (CEI 23-51) and PD

BEHAVIOUR WITH CHEMICAL AND ATMOSPHERIC AGENTS

Saline solution	Acids		Bases		Solvents				Mineral oil	UV rays
	Concentrated	Diluted	Concentrated	Diluted	Hexane	Benzol	Acetone	Ethyl alcohol		
Resistant	Limited resistance	Limited resistance	Limited resistance	Limited resistance	Limited resistance	Not resistant	Not resistant	Limited resistance	Limited resistance	Limited resistance

Dimension tables

BOARDS



Board Code	GW 44 808 GW 44 818	GW 44 809 GW 44 819	GW 44 810 GW 44 820	GW 44 811 GW 44 821
A	200	236	316	396
B	254	316	396	474
C	135	135	160	160
D	211.5	273.5	353.5	431.5
E	151.5	187.5	267.5	347.5
F	127.5	127.5	140	140
G	321	383	463	541
H	290	326	406	486
I	181	243	323	401
L	150	186	266	346
M	129	191	271	349
N	130	166	246	326
O	116	152	232	312
P	189	251	331	409
Q	-	40	40	75
R	-	27	35	35
S	-	150	150	150
T	-	54.5	62.5	62.5

BACK-MOUNTING PLATES

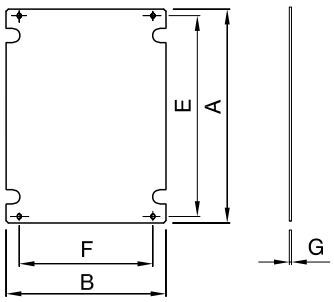


Plate	A	B	E	F	G	Board
GW 44 636	205.5	145.5	189	118	1.5	GW 44 808
GW 44 646					4	GW 44 818
GW 44 637	267.5	181.5	251	152	1.5	GW 44 809
GW 44 647					4	GW 44 819
GW 44 638	347.5	261.5	331	232	2	GW 44 810
GW 44 648					4	GW 44 820
GW 44 639	425.5	341.5	409	312	2	GW 44 811
GW 44 649					4	GW 44 821

For technical information contact the Technical Assistance Service or visit gewiss.com

GWPBT-Q:
Software for the sizing and cost estimate of LV systems and enclosures/boards

The GWPBT-Q software is a fundamental aid to facilitate and speed up checks into the conformity of the boards with Standard CEI 23-51.

It allows you to check the overtemperature limits (with the relative printout of the conformity declaration) and, at the same time, permits you to draw up the cost estimates.

Additional information for PD enclosures:

1. Install in a DIN rail device board with a voltage and rated current less than those of the enclosures.
2. Enclosures tested with protection devices which comply with Standards EN 60898-1, EN 61008-2-1 and EN 61009-2-1.
3. Use DIN rail connection devices that are suitable for use with the sections and with the number of input and output cables.
4. For the installation of the devices, follow the directions and warnings provided in the specific sheet for each component of the enclosure.
5. Ensure that the live parts cannot be accessed once installed.
6. When carrying out the wiring operation, take care to maintain adequate isolation distances.
7. Comply with local system standards.