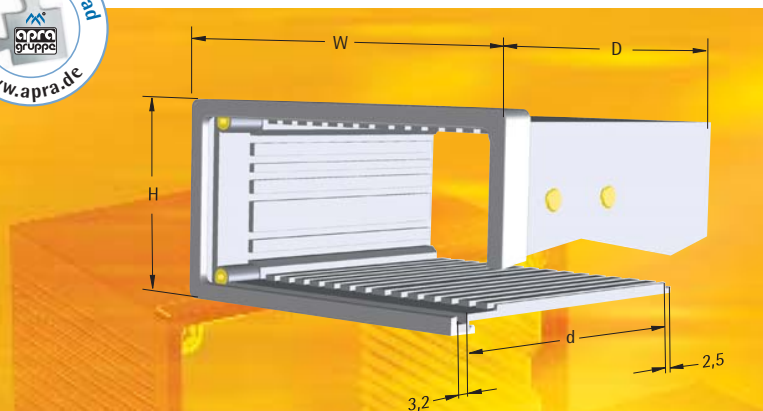


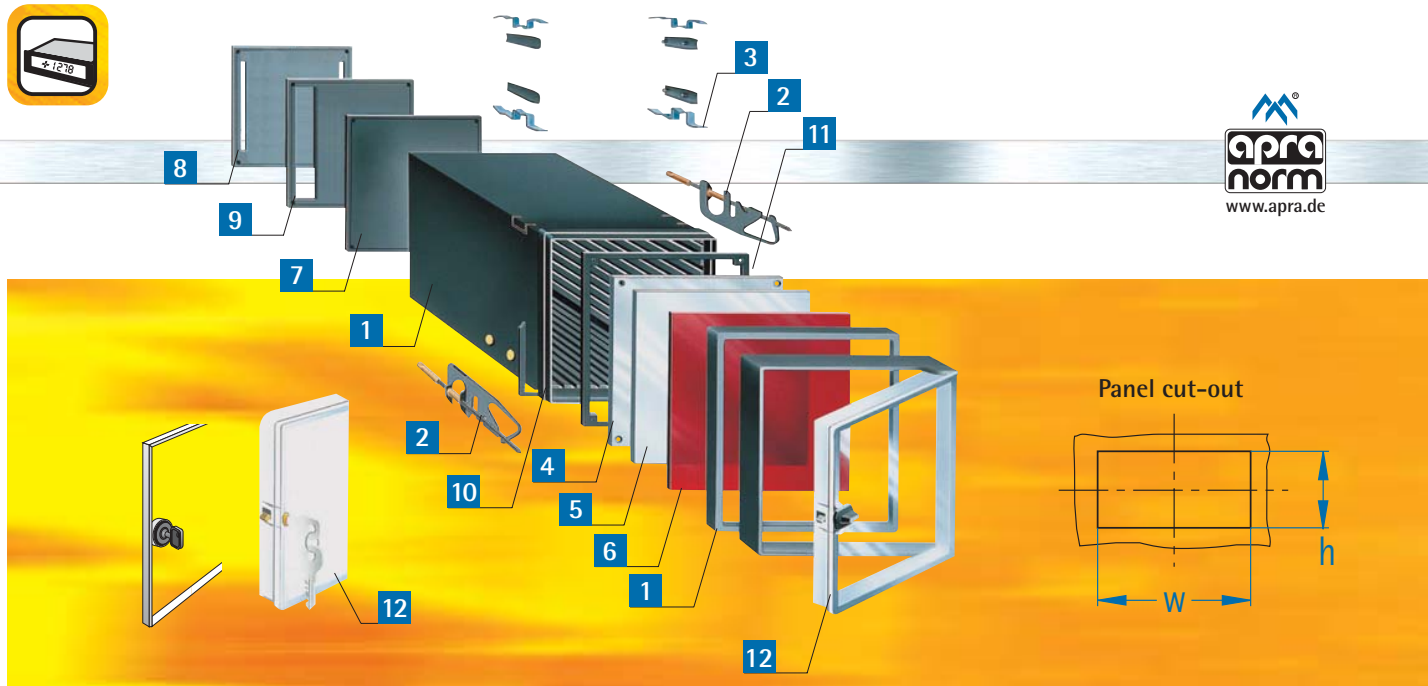
W mm	H mm	D (approx.) mm	d (approx.) mm	Case (acc. to IEC 61554)		Fixing clamp (choice)	Panel Clip Case		Cover plate Aluminium 1,5 mm	
				Standard	with corner webs		Standard	with corner webs		
				1a (p.14)	1b (p.14)	2 (p.14)	3a (p.15)	3b (p.15)	4 (p.15)	
<b>48 x 24</b>										
		60,0	53,0	445-440	-	440-001	441-440	-	-	
		82,5	75,5	445-441	-	440-005	441-441	-	-	
		107,0	100,0	445-444	-	440-019	441-444	-	-	
<b>48 x 48</b>										
		60,5	53,5	445-120	-	440-001 440-005 440-019	441-120	-	445-130	
		82,5	75,5	445-121	-		441-121	-	445-130	
		116,5	109,5	445-122	-		441-122	-	445-130	
		138,5	131,5	445-123	-		441-123	-	445-130	
		107,0	100,0	445-124	-		441-124	-	445-130	
		163,0	156,0	445-125	-		441-125	-	445-130	
<b>72 x 24</b>										
		60,0	53,0	445-420	-	440-001	441-420	-	-	
		82,5	75,5	445-421	-	440-005	441-421	-	-	
		107,0	100,0	445-424	-	440-019	441-424	-	-	
<b>72 x 36</b>										
		60,5	53,5	445-040	-	440-001 440-005 440-019	441-040	-	445-050	
		82,5	75,5	445-041	-		441-041	-	445-050	
		116,5	109,5	445-042	-		441-042	-	445-050	
		107,0	100,0	445-044	-		441-044	-	445-050	



Case size		Panel cut-out			
W	H	w	perm. dev.	h	perm. dev.
mm	mm	mm	mm	mm	mm
48	24	45	+ 0.6	22.2	+ 0.3
48	48	45	+ 0.6	45	+ 0.6
72	24	68	+ 0.7	22.2	+ 0.3
72	36	68	+ 0.7	33	+ 0.6



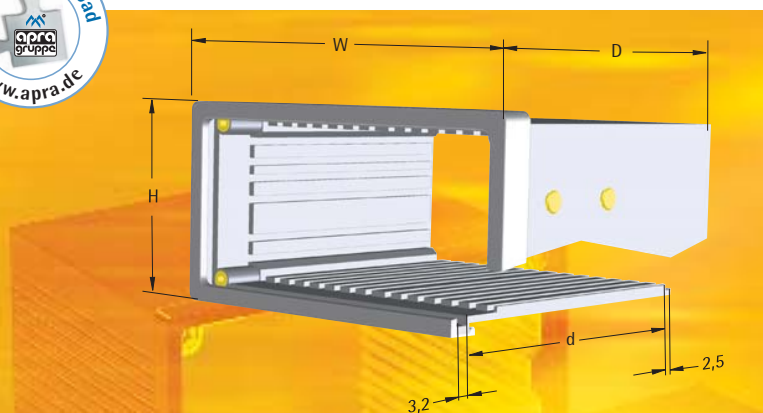
Panel Aluminium 1,5 mm	Filter screen Plexiglas® red: - 09 Makrolon® transparent: -05	Rear panel			Sealing		Transparent door with frame	
		closed	with slots	for terminals	between case and panel	behind front panel	with lock	with sash fastener
5 (p.15)	6 (p.15)	7	8	9	10	11	12 (p.16)	12 (p.16)
445-451	445-452-xx	445-453-01	445-453-02	-	448-445-01	-	-	-
445-451	445-452-xx	445-453-01	445-453-02	-	448-445-01	-	-	-
445-451	445-452-xx	445-453-01	445-453-02	-	448-445-01	-	-	-
445-131	445-132-xx	445-133-01	445-133-02	445-133-03	445-135-01	445-135-02	-	-
445-131	445-132-xx	445-133-01	445-133-02	445-133-03	445-135-01	445-135-02	-	-
445-131	445-132-xx	445-133-01	445-133-02	445-133-03	445-135-01	445-135-02	-	-
445-131	445-132-xx	445-133-01	445-133-02	445-133-03	445-135-01	445-135-02	-	-
445-131	445-132-xx	445-133-01	445-133-02	445-133-03	445-135-01	445-135-02	-	-
445-431	445-432-xx	445-433-01	445-433-02	-	448-425-01	-	-	-
445-431	445-432-xx	445-433-01	445-433-02	-	448-425-01	-	-	-
445-431	445-432-xx	445-433-01	445-433-02	-	448-425-01	-	-	-
445-051	445-052-xx	445-053-01	445-053-02	445-053-03	445-055-01	-	-	-
445-051	445-052-xx	445-053-01	445-053-02	445-053-03	445-055-01	-	-	-
445-051	445-052-xx	445-053-01	445-053-02	445-053-03	445-055-01	-	-	-
445-051	445-052-xx	445-053-01	445-053-02	445-053-03	445-055-01	-	-	-



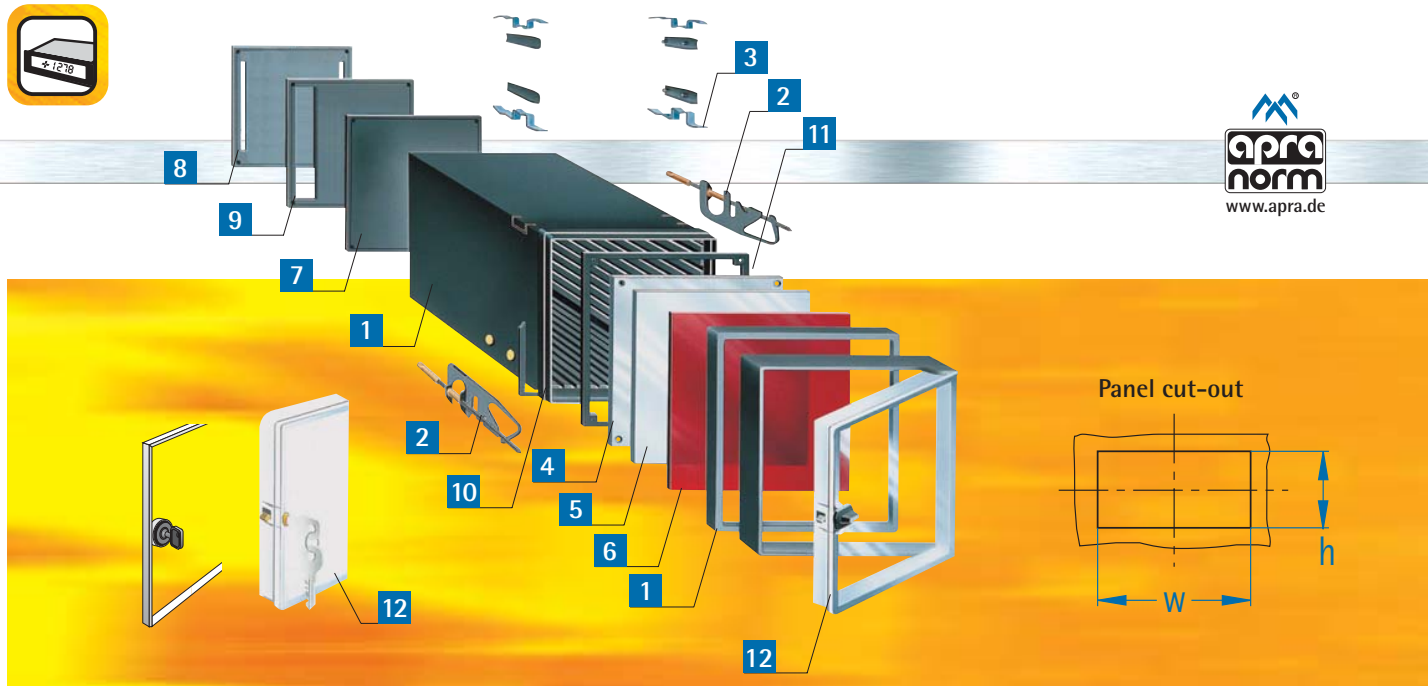
W mm	H mm	D (approx.) mm	d (approx.) mm	Case (acc. to IEC 61554)		Fixing clamp (choice) 2 (p.14)	Panel Clip Case		Cover plate Aluminium 1,5 mm 4 (p.15)	
				Standard 1a (p.14)	with corner webs 1b (p.14)		Standard 3a (p.15)	with corner webs 3b (p.15)		
<b>72 x 48</b>										
	60,5	53,5	445-140	-	440-001 440-005 440-019	-	-	445-150		
	82,5	75,5	445-141	-		-	445-150			
	116,5	109,5	445-142	-		-	445-150			
	107,0	100,0	445-144	-		-	445-150			
<b>72 x 72</b>										
	44,0	35,5	-	-	440-001 440-005 440-019	441-227	-	445-230		
	60,5	53,5	445-220	445-220-30		441-220	441-220-30	445-230		
	82,5	75,5	445-221	445-221-30		441-221	441-221-30	445-230		
	116,5	109,5	445-222	445-222-30		441-222	441-222-30	445-230		
	138,5	131,5	445-223	445-223-30		441-223	441-223-30	445-230		
	107,0	100,0	445-224	445-224-30		441-224	441-224-30	445-230		
	163,0	156,0	445-225	445-225-30		441-225	441-225-30	445-230		
	209,0	201,0	445-226	445-226-30		441-226	441-226-30	445-230		
<b>96 x 24</b>										
	60,5	53,5	445-100	-	440-001 440-005 440-019	441-100	-	-		
	82,5	75,5	445-101	-		441-101	-	-		
	116,5	109,5	445-102	-		441-102	-	-		
	107,0	100,0	445-104	-		441-104	-	-		
<b>96 x 48</b>										
	44,0	35,5	-	-	440-001 440-005 440-019	441-767	-	-		
	60,5	53,5	445-160	445-160-30		441-160	441-160-30	445-170		
	82,5	75,5	445-161	445-161-30		441-161	441-161-30	445-170		
	116,5	109,5	445-162	445-162-30		441-162	441-162-30	445-170		
	138,5	131,5	445-163	445-163-30		441-163	441-163-30	445-170		
	107,0	100,0	445-164	445-164-30		441-164	441-164-30	445-170		
	163,0	156,0	445-165	445-165-30		441-165	441-165-30	445-170		



Case size		Panel cut-out			
W	H	w	perm. dev.	h	perm. dev.
mm	mm	mm	mm	mm	mm
72	48	68	+ 0.7	45	+ 0.6
72	72	68	+ 0.7	68	+ 0.7
96	24	92	+ 0.8	22.2	+ 0.3
96	48	92	+ 0.8	45	+ 0.6



Panel Aluminium 1,5 mm <b>5</b> (p.15)	Filter screen Plexiglas® red: - 09 Makrolon® transparent: -05 <b>6</b> (p.15)	Rear panel		Sealing between case and panel <b>10</b>	Transparent door with frame			
		closed <b>7</b>	with slots for terminals <b>8</b>		behind front panel <b>11</b>	with lock with sash fastener <b>12</b> (p.16)		
445-151	445-152-xx	445-153-01	445-153-02	445-153-03	-	-	-	-
445-151	445-152-xx	445-153-01	445-153-02	445-153-03	-	-	-	-
445-151	445-152-xx	445-153-01	445-153-02	445-153-03	-	-	-	-
445-151	445-152-xx	445-153-01	445-153-02	445-153-03	-	-	-	-
445-231	445-232-xx	445-233-01	445-233-02	445-233-03	445-235-01	445-235-02	446-030-01	446-030-02
445-231	445-232-xx	445-233-01	445-233-02	445-233-03	445-235-01	445-235-02	446-030-01	446-030-02
445-231	445-232-xx	445-233-01	445-233-02	445-233-03	445-235-01	445-235-02	446-030-01	446-030-02
445-231	445-232-xx	445-233-01	445-233-02	445-233-03	445-235-01	445-235-02	446-030-01	446-030-02
445-231	445-232-xx	445-233-01	445-233-02	445-233-03	445-235-01	445-235-02	446-030-01	446-030-02
445-231	445-232-xx	445-233-01	445-233-02	445-233-03	445-235-01	445-235-02	446-030-01	446-030-02
445-231	445-232-xx	445-233-01	445-233-02	445-233-03	445-235-01	445-235-02	446-030-01	446-030-02
445-111	445-112-xx	445-113-01	445-113-02	-	448-115-01	-	-	-
445-111	445-112-xx	445-113-01	445-113-02	-	448-115-01	-	-	-
445-111	445-112-xx	445-113-01	445-113-02	-	448-115-01	-	-	-
445-111	445-112-xx	445-113-01	445-113-02	-	448-115-01	-	-	-
445-171	445-172-xx	445-173-01	445-173-02	445-173-03	445-175-01	445-175-02	446-090-01	446-090-02
445-171	445-172-xx	445-173-01	445-173-02	445-173-03	445-175-01	445-175-02	446-090-01	446-090-02
445-171	445-172-xx	445-173-01	445-173-02	445-173-03	445-175-01	445-175-02	446-090-01	446-090-02
445-171	445-172-xx	445-173-01	445-173-02	445-173-03	445-175-01	445-175-02	446-090-01	446-090-02
445-171	445-172-xx	445-173-01	445-173-02	445-173-03	445-175-01	445-175-02	446-090-01	446-090-02
445-171	445-172-xx	445-173-01	445-173-02	445-173-03	445-175-01	445-175-02	446-090-01	446-090-02
445-171	445-172-xx	445-173-01	445-173-02	445-173-03	445-175-01	445-175-02	446-090-01	446-090-02

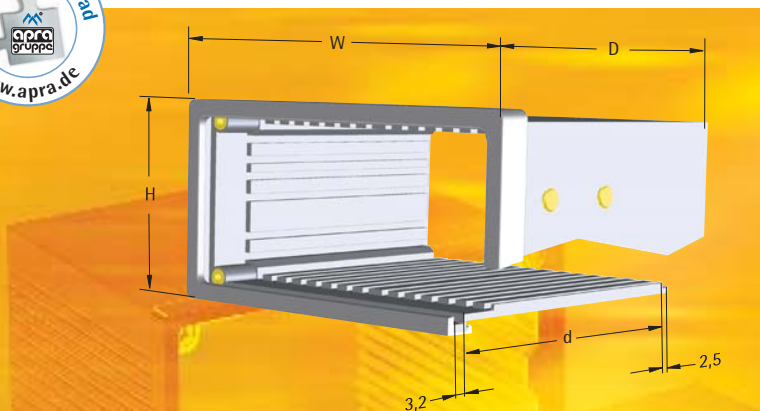


W mm	H mm	D (approx.) mm	d (approx.) mm	Case (acc. to IEC 61554)		Fixing clamp (choice)	Panel Clip Case		Cover plate Aluminium 1,5 mm	
				Standard <b>1a</b> (p.14)	with corner webs <b>1b</b> (p.14)		Standard <b>3a</b> (p.15)	with corner webs <b>3b</b> (p.15)		
<b>96 x 48</b>										
	60,5	53,5	445-760	445-760-30	440-001 440-005 440-019	441-760	441-760-30	445-170		
	82,5	75,5	445-761	445-761-30		441-761	441-761-30	445-170		
	116,5	109,5	445-762	445-762-30		441-762	441-762-30	445-170		
	138,5	131,5	445-763	445-763-30		441-763	441-763-30	445-170		
	107,0	100,0	445-764	445-764-30		441-764	441-764-30	445-170		
	163,0	156,0	445-765	445-765-30		441-765	441-765-30	445-170		
<b>96 x 72</b>										
	60,5	53,5	445-240	-	440-001 440-005 440-019	-	-	445-250		
	82,5	75,5	445-241	-		-	-	445-250		
	116,5	109,5	445-242	-		-	-	445-250		
	138,5	131,5	445-243	-		-	-	445-250		
	107,0	100,0	445-244	-		-	-	445-250		
	163,0	156,0	445-245	-		-	-	445-250		
209,0	201,0	445-246	-	-	-	445-250				
<b>96 x 96</b>										
	44,0	36,0	-	-	440-001 440-005 443-001	441-307	441-307-30	445-310		
	60,5	53,5	445-300	445-300-30		441-300	441-300-30	445-310		
	82,5	75,5	445-301	445-301-30		441-301	441-301-30	445-310		
	116,5	109,5	445-302	445-302-30		441-302	441-302-30	445-310		
	138,5	131,5	445-303	445-303-30		441-303	441-303-30	445-310		
	107,0	100,0	445-304	445-304-30		441-304	441-304-30	445-310		
	163,0	156,0	445-305	445-305-30		441-305	441-305-30	445-310		
	209,0	201,0	445-306	445-306-30		441-306	441-306-30	445-310		
<b>144 x 48</b>										
	60,5	53,5	445-180	445-180-30	440-001 440-005 443-001	441-180	441-180-30	445-190		
	82,5	75,5	445-181	445-181-30		441-181	441-181-30	445-190		
	116,5	109,5	445-182	445-182-30		441-182	441-182-30	445-190		
	138,5	131,5	445-183	445-183-30		441-183	441-183-30	445-190		
	107,0	100,0	445-184	445-184-30		441-184	441-184-30	445-190		
	163,0	156,0	445-185	445-185-30		441-185	441-185-30	445-190		
	209,0	201,0	445-186	445-186-30		441-186	441-186-30	445-190		

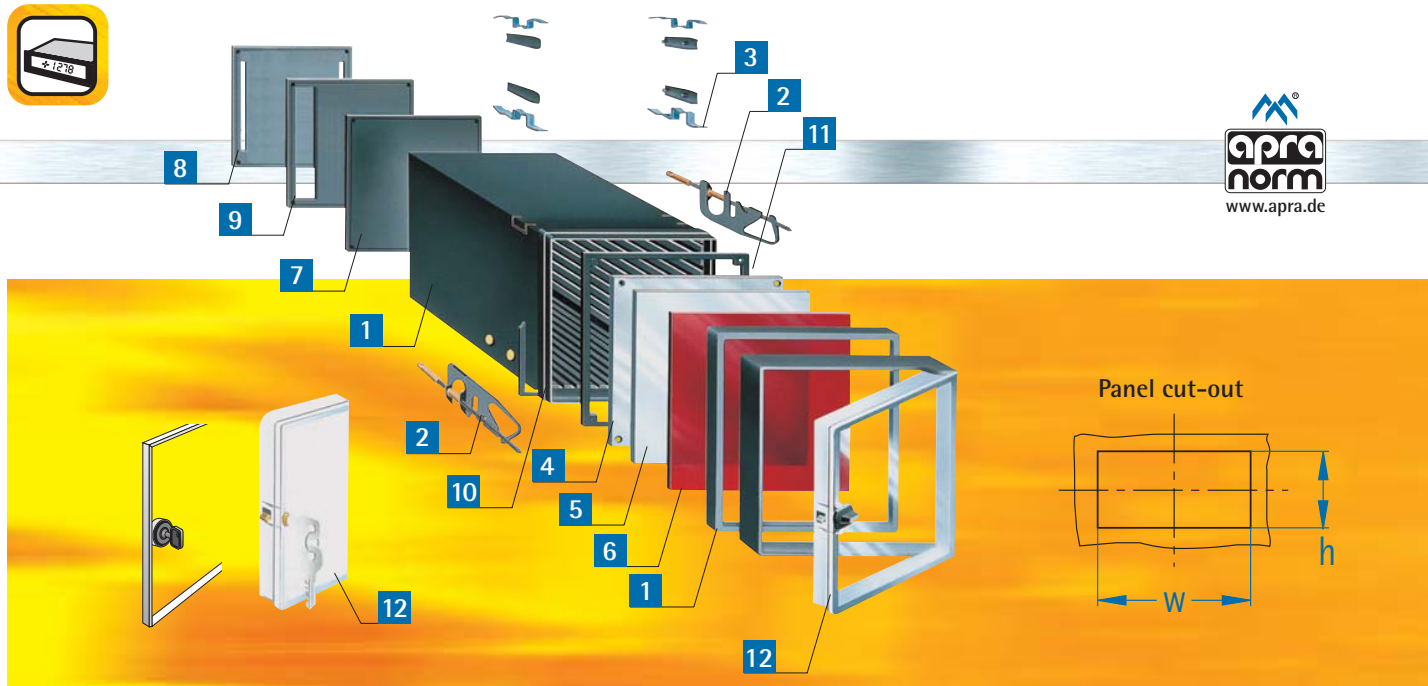




Case size		Panel cut-out			
W	H	w	perm. dev.	h	perm. dev.
mm	mm	mm	mm	mm	mm
96	48	92	+ 0.8	45	+ 0.6
96	72	92	+ 0.8	68	+ 0.7
96	96	92	+ 0.8	92	+ 0.8
144	48	138	+ 1.0	45	+ 0.6



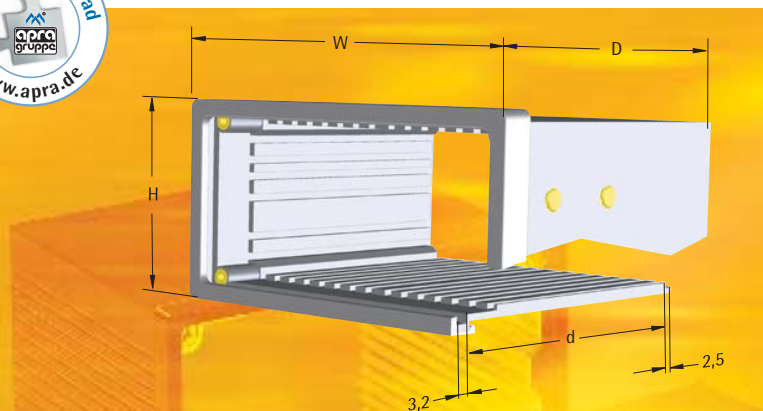
Panel Aluminium 1,5 mm  5 (p.15)	Filter screen Plexiglas® red: - 09 Makrolon® transparent: -05  6 (p.15)	Rear panel			Sealing		Transparent door with frame	
		closed  7	with slots  8	for terminals  9	between case and panel  10	behind front panel  11	with lock  12 (p.16)	with sash fastener  12 (p.16)
445-171	445-172-xx	445-173-01	445-173-02	445-173-03	445-175-01	445-175-02	446-090-01	446-090-02
445-171	445-172-xx	445-173-01	445-173-02	445-173-03	445-175-01	445-175-02	446-090-01	446-090-02
445-171	445-172-xx	445-173-01	445-173-02	445-173-03	445-175-01	445-175-02	446-090-01	446-090-02
445-171	445-172-xx	445-173-01	445-173-02	445-173-03	445-175-01	445-175-02	446-090-01	446-090-02
445-171	445-172-xx	445-173-01	445-173-02	445-173-03	445-175-01	445-175-02	446-090-01	446-090-02
445-171	445-172-xx	445-173-01	445-173-02	445-173-03	445-175-01	445-175-02	446-090-01	446-090-02
445-251	445-252-xx	445-253-01	445-253-02	445-253-03	445-255-01	445-255-02	-	-
445-251	445-252-xx	445-253-01	445-253-02	445-253-03	445-255-01	445-255-02	-	-
445-251	445-252-xx	445-253-01	445-253-02	445-253-03	445-255-01	445-255-02	-	-
445-251	445-252-xx	445-253-01	445-253-02	445-253-03	445-255-01	445-255-02	-	-
445-251	445-252-xx	445-253-01	445-253-02	445-253-03	445-255-01	445-255-02	-	-
445-251	445-252-xx	445-253-01	445-253-02	445-253-03	445-255-01	445-255-02	-	-
445-311	445-312-xx	445-313-01	445-313-02	445-313-03	445-315-05	445-315-02	446-040-01	446-040-02
445-311	445-312-xx	445-313-01	445-313-02	445-313-03	445-315-05	445-315-02	446-040-01	446-040-02
445-311	445-312-xx	445-313-01	445-313-02	445-313-03	445-315-05	445-315-02	446-040-01	446-040-02
445-311	445-312-xx	445-313-01	445-313-02	445-313-03	445-315-05	445-315-02	446-040-01	446-040-02
445-311	445-312-xx	445-313-01	445-313-02	445-313-03	445-315-05	445-315-02	446-040-01	446-040-02
445-311	445-312-xx	445-313-01	445-313-02	445-313-03	445-315-05	445-315-02	446-040-01	446-040-02
445-311	445-312-xx	445-313-01	445-313-02	445-313-03	445-315-05	445-315-02	446-040-01	446-040-02
445-311	445-312-xx	445-313-01	445-313-02	445-313-03	445-315-05	445-315-02	446-040-01	446-040-02
445-191	445-192-xx	445-193-01	445-193-02	445-193-03	445-195-01	445-195-02	-	-
445-191	445-192-xx	445-193-01	445-193-02	445-193-03	445-195-01	445-195-02	-	-
445-191	445-192-xx	445-193-01	445-193-02	445-193-03	445-195-01	445-195-02	-	-
445-191	445-192-xx	445-193-01	445-193-02	445-193-03	445-195-01	445-195-02	-	-
445-191	445-192-xx	445-193-01	445-193-02	445-193-03	445-195-01	445-195-02	-	-
445-191	445-192-xx	445-193-01	445-193-02	445-193-03	445-195-01	445-195-02	-	-
445-191	445-192-xx	445-193-01	445-193-02	445-193-03	445-195-01	445-195-02	-	-



W mm	H mm	D (approx.) mm	d (approx.) mm	Case (acc. to IEC 61554)		Fixing clamp (choice) 2 (p.14)	Panel Clip Case		Cover plate Aluminium 1,5 mm 4 (p.15)	
				Standard 1a (p.14)	with corner webs 1b (p.14)		Standard 3a (p.15)	with corner webs 3b (p.15)		
<b>144 x 72</b>										
	44,0	36	-	-	440-001 440-005 440-019	441-267	-	445-270		
	60,5	53,5	445-260	445-260-30		441-260	441-260-30	445-270		
	82,5	75,5	445-261	445-261-30		441-261	441-261-30	445-270		
	116,5	109,5	445-262	445-262-30		441-262	441-262-30	445-270		
	138,5	131,5	445-263	445-263-30		441-263	441-263-30	445-270		
	107,0	100,0	445-264	445-264-30		441-264	441-264-30	445-270		
	163,0	156,0	445-265	445-265-30		441-265	441-265-30	445-270		
	209,0	201,0	445-266	445-266-30		441-266	441-266-30	445-270		
<b>144 x 96</b>										
	44,0	36	-	-	440-001 440-005 440-019	441-327	-	445-330		
	60,5	53,5	445-320	445-320-30		441-320	441-320-30	445-330		
	82,5	75,5	445-321	445-321-30		441-321	441-321-30	445-330		
	116,5	109,5	445-322	445-322-30		441-322	441-322-30	445-330		
	138,5	131,5	445-323	445-323-30		441-323	441-323-30	445-330		
	107,0	100,0	445-324	445-324-30		441-324	441-324-30	445-330		
	163,0	156,0	445-325	445-325-30		441-325	441-325-30	445-330		
	209,0	201,0	445-326	445-326-30		441-326	441-326-30	445-330		
<b>144 x 144</b>										
	44,0	36,0	-	-	440-001 440-005 443-001	441-367	441-367-30	445-370		
	60,5	53,0	445-360	445-360-30		441-360	441-360-30	445-370		
	82,5	75,5	445-361	445-361-30		441-361	441-361-30	445-370		
	116,5	109,5	445-362	445-362-30		441-362	441-362-30	445-370		
	138,5	131,5	445-363	445-363-30		441-363	441-363-30	445-370		
	107,0	100,0	445-364	445-364-30		441-364	441-364-30	445-370		
	163,0	156,0	445-365	445-365-30		441-365	441-365-30	445-370		
	209,0	201,0	445-366	445-366-30		441-366	441-366-30	445-370		
<b>192 x 72</b>										
	60,5	53,5	445-280	-	440-001 440-005 443-001	441-280	-	445-290		
	82,5	75,5	445-281	-		441-281	-	445-290		
	116,5	109,5	445-282	-		441-282	-	445-290		
	138,5	131,5	445-283	-		441-283	-	445-290		
	107,0	100,0	445-284	-		441-284	-	445-290		
	163,0	156,0	445-285	-		441-285	-	445-290		
	209,0	201,0	445-286	-		441-286	-	445-290		



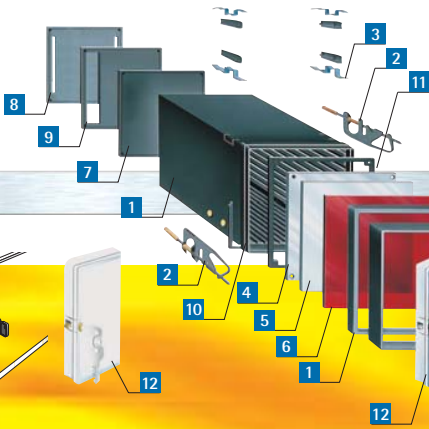
Case size		Panel cut-out			
W	H	w	perm. dev.	h	perm. dev.
mm	mm	mm	mm	mm	mm
144	72	138	+ 1.0	68	+ 0.7
144	96	138	+ 1.0	92	+ 0.8
144	144	138	+ 1.0	138	+ 1.0
192	72	186	+ 1.1	68	+ 0.7



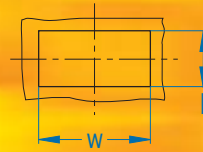
Panel	Filter screen		Rear panel		Sealing		Transparent door with frame	
Aluminium 1,5 mm	Plexiglas® red: - 09 Makrolon® transparent: -05	closed	with slots	for terminals	between case and panel	behind front panel	with lock	with sash fastener
<b>5</b> (p.15)	<b>6</b> (p.15)	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b> (p.16)	<b>12</b> (p.16)
445-271	445-272-xx	445-273-01	445-273-02	445-273-03	445-275-10	445-275-02	446-100-01	446-100-02
445-271	445-272-xx	445-273-01	445-273-02	445-273-03	445-275-10	445-275-02	446-100-01	446-100-02
445-271	445-272-xx	445-273-01	445-273-02	445-273-03	445-275-10	445-275-02	446-100-01	446-100-02
445-271	445-272-xx	445-273-01	445-273-02	445-273-03	445-275-10	445-275-02	446-100-01	446-100-02
445-271	445-272-xx	445-273-01	445-273-02	445-273-03	445-275-10	445-275-02	446-100-01	446-100-02
445-271	445-272-xx	445-273-01	445-273-02	445-273-03	445-275-10	445-275-02	446-100-01	446-100-02
445-271	445-272-xx	445-273-01	445-273-02	445-273-03	445-275-10	445-275-02	446-100-01	446-100-02
445-271	445-272-xx	445-273-01	445-273-02	445-273-03	445-275-10	445-275-02	446-100-01	446-100-02
445-331	445-332-xx	445-333-01	445-333-02	445-333-03	445-335-05	445-335-02	44-6150-01	44-6150-02
445-331	445-332-xx	445-333-01	445-333-02	445-333-03	445-335-05	445-335-02	44-6150-01	44-6150-02
445-331	445-332-xx	445-333-01	445-333-02	445-333-03	445-335-05	445-335-02	44-6150-01	44-6150-02
445-331	445-332-xx	445-333-01	445-333-02	445-333-03	445-335-05	445-335-02	44-6150-01	44-6150-02
445-331	445-332-xx	445-333-01	445-333-02	445-333-03	445-335-05	445-335-02	44-6150-01	44-6150-02
445-331	445-332-xx	445-333-01	445-333-02	445-333-03	445-335-05	445-335-02	44-6150-01	44-6150-02
445-331	445-332-xx	445-333-01	445-333-02	445-333-03	445-335-05	445-335-02	44-6150-01	44-6150-02
445-371	445-372-xx	<b>Available rear panels for size 144x144:</b>			445-375-10	445-375-02	446-050-01	446-050-02
445-371	445-372-xx	• closed (445-373-01)			445-375-10	445-375-02	446-050-01	446-050-02
445-371	445-372-xx	• with slots (445-373-02)			445-375-10	445-375-02	446-050-01	446-050-02
445-371	445-372-xx	• with slots for terminal (445-373-03)			445-375-10	445-375-02	446-050-01	446-050-02
445-371	445-372-xx	• <b>NEW:</b> rear panel with top for bigger components like transformers or relays (445-373-04)			445-375-10	445-375-02	446-050-01	446-050-02
445-371	445-372-xx				445-375-10	445-375-02	446-050-01	446-050-02
445-371	445-372-xx				445-375-10	445-375-02	446-050-01	446-050-02
445-371	445-372-xx				445-375-10	445-375-02	446-050-01	446-050-02
445-371	445-372-xx				445-375-10	445-375-02	446-050-01	446-050-02
445-291	445-292-xx	445-293-01	445-293-02	-	445-295-01	445-295-02	-	-
445-291	445-292-xx	445-293-01	445-293-02	-	445-295-01	445-295-02	-	-
445-291	445-292-xx	445-293-01	445-293-02	-	445-295-01	445-295-02	-	-
445-291	445-292-xx	445-293-01	445-293-02	-	445-295-01	445-295-02	-	-
445-291	445-292-xx	445-293-01	445-293-02	-	445-295-01	445-295-02	-	-
445-291	445-292-xx	445-293-01	445-293-02	-	445-295-01	445-295-02	-	-
445-291	445-292-xx	445-293-01	445-293-02	-	445-295-01	445-295-02	-	-







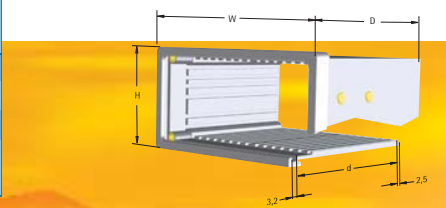
Panel cut-out



W mm	H mm	D (approx.) mm	d (approx.) mm	Case (acc. to IEC 61554)		Fixing clamp (choice)	Panel Clip Case		Cover plate Aluminium 1,5 mm	
				Standard	with corner webs		Standard	with corner webs		
				1a (p.14)	1b (p.14)	2 (p.14)	3a (p.15)	3b (p.15)	4 (p.15)	
<b>192 x 96</b>										
		60,5	53,5	445-340	445-340-30	440-001 443-001 443-002	-	-	445-350	
		82,5	75,5	445-341	445-341-30		-	-	445-350	
		116,5	109,5	445-342	445-342-30		-	-	445-350	
		138,5	131,5	445-343	445-343-30		-	-	445-350	
		107,0	100,0	445-344	445-344-30		-	-	445-350	
		163,0	156,0	445-345	445-345-30		-	-	445-350	
		209,0	201,0	445-346	445-346-30		-	-	445-350	
<b>192 x 144</b>										
		60,5	53,5	445-380	445-380-30	440-001 443-001 443-002	-	-	445-390	
		82,5	75,5	445-381	445-381-30		-	-	445-390	
		116,5	109,5	445-382	445-382-30		-	-	445-390	
		138,5	131,5	445-383	445-383-30		-	-	445-390	
		107,0	100,0	445-384	445-384-30		-	-	445-390	
		163,0	156,0	445-385	445-385-30		-	-	445-390	
		209,0	201,0	445-386	445-386-30		-	-	445-390	
<b>288 x 72</b>										
		60,5	53,5	445-460	-	440-001 443-001 443-002	441-460	-	445-470	
		82,5	75,5	445-461	-		441-461	-	445-470	
		116,5	109,5	445-462	-		441-462	-	445-470	
		138,5	131,5	445-463	-		441-463	-	445-470	
		107,0	100,0	445-464	-		441-464	-	445-470	
		163,0	156,0	445-465	-		441-465	-	445-470	
		209,0	201,0	445-466	-		441-466	-	445-470	
<b>288 x 96</b>										
		60,5	53,5	445-600	445-600-30	440-001	-	-	445-610	
		82,5	75,5	445-601	445-601-30	440-005	-	-	445-610	
<b>288 x 144</b>										
		60,5	53,5	445-480	-	440-001 443-001 443-002	441-480	-	445-490	
		82,5	75,5	445-481	-		-	-	445-490	
		116,5	109,5	445-482	-		-	-	445-490	
		138,5	131,5	445-483	-		-	-	445-490	
		107,0	100,0	445-484	-		-	-	445-490	
		163,0	156,0	445-485	-		-	-	445-490	
		209,0	201,0	445-486	-		-	-	445-490	



Case size		Panel cut-out			
W mm	H mm	w mm	perm. dev. mm	h mm	perm. dev. mm
192	96	186	+ 1.1	92	+ 0.8
192	144	186	+ 1.1	138	+ 1.0
288	72	282	+ 1.1	68	+ 0.7
288	96	282	+ 1.1	92	+ 0.8
288	144	282	+ 1.1	138	+ 1.0



Panel Aluminium 1,5 mm  5 (p.15)	Filter screen Plexiglas® red: - 09 Makrolon® transparent: -05  6 (p.15)	closed  7	Rear panel with slots for terminals  8	9	Sealing between case and panel  10	behind front panel  11	Transparent door with frame with lock  12 (p.16)	with sash fastener  12 (p.16)
445-351	445-352-xx	445-353-01	445-353-02	445-353-03	445-355-01	445-355-02	446-110-01	446-110-02
445-351	445-352-xx	445-353-01	445-353-02	445-353-03	445-355-01	445-355-02	446-110-01	446-110-02
445-351	445-352-xx	445-353-01	445-353-02	445-353-03	445-355-01	445-355-02	446-110-01	446-110-02
445-351	445-352-xx	445-353-01	445-353-02	445-353-03	445-355-01	445-355-02	446-110-01	446-110-02
445-351	445-352-xx	445-353-01	445-353-02	445-353-03	445-355-01	445-355-02	446-110-01	446-110-02
445-351	445-352-xx	445-353-01	445-353-02	445-353-03	445-355-01	445-355-02	446-110-01	446-110-02
445-351	445-352-xx	445-353-01	445-353-02	445-353-03	445-355-01	445-355-02	446-110-01	446-110-02
445-391	445-392-xx	445-393-01	445-393-02	445-393-03	445-395-01	445-395-02	446-120-01	446-120-02
445-391	445-392-xx	445-393-01	445-393-02	445-393-03	445-395-01	445-395-02	446-120-01	446-120-02
445-391	445-392-xx	445-393-01	445-393-02	445-393-03	445-395-01	445-395-02	446-120-01	446-120-02
445-391	445-392-xx	445-393-01	445-393-02	445-393-03	445-395-01	445-395-02	446-120-01	446-120-02
445-391	445-392-xx	445-393-01	445-393-02	445-393-03	445-395-01	445-395-02	446-120-01	446-120-02
445-391	445-392-xx	445-393-01	445-393-02	445-393-03	445-395-01	445-395-02	446-120-01	446-120-02
445-471	445-472-xx	445-473-01	-	-	-	-	-	-
445-471	445-472-xx	445-473-01	-	-	-	-	-	-
445-471	445-472-xx	445-473-01	-	-	-	-	-	-
445-471	445-472-xx	445-473-01	-	-	-	-	-	-
445-471	445-472-xx	445-473-01	-	-	-	-	-	-
445-471	445-472-xx	445-473-01	-	-	-	-	-	-
445-471	445-472-xx	445-473-01	-	-	-	-	-	-
445-611	445-612-xx	445-613-01	-	-	-	-	-	-
445-611	445-612-xx	445-613-01	-	-	-	-	-	-
445-491	445-492-xx	445-493-01	-	-	445-495-05	-	446-130-01	446-130-02
445-491	445-492-xx	445-493-01	-	-	445-495-05	-	446-130-01	446-130-02
445-491	445-492-xx	445-493-01	-	-	445-495-05	-	446-130-01	446-130-02
445-491	445-492-xx	445-493-01	-	-	445-495-05	-	446-130-01	446-130-02
445-491	445-492-xx	445-493-01	-	-	445-495-05	-	446-130-01	446-130-02
445-491	445-492-xx	445-493-01	-	-	445-495-05	-	446-130-01	446-130-02
445-491	445-492-xx	445-493-01	-	-	445-495-05	-	446-130-01	446-130-02



**1 Case acc. to IEC 61554**

**Material:**

**Case:**

Noryl SE1, GFN2, 701 black

**Front frame:**

Lexan 920 black

The part number of the cases can be found starting on pages 4 to 13!

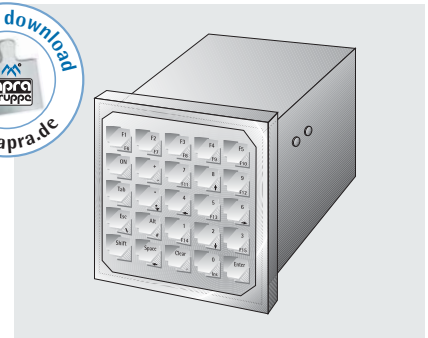
**2 Fixing clamps**

- fixing clamps for assembling the cases to the panel

**1a Standard case**



**1b Case with corner webs**



- optical appealing solution
- protection against electrostatic discharge for shielded enclosure

**2a Light fixing clamp**



- for lighter cases
- with threaded pin M2.5 x 50

**Order no.**  
440-005

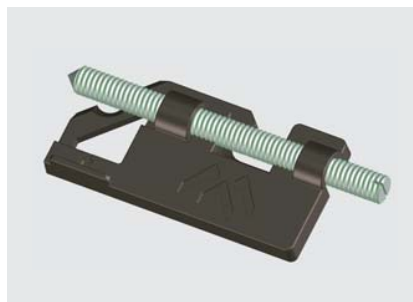
**2b Heavy-duty fixing clamp**



- approx. 190mm long
- M5 threaded rod with pressure piece

**Order no.**  
443-002

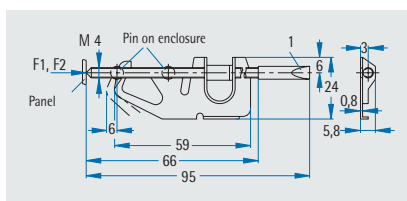
**2c Model B Miba (acc. to DIN 43835)**



- light-weight plastic construction
- M4 threaded rod

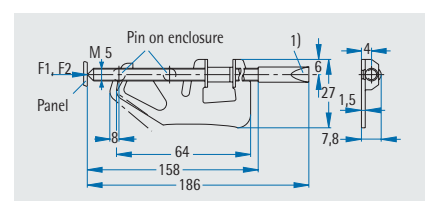
**Order no.**  
440-019

**2d Model B (acc. to DIN 43835)**



**Order no.**  
440-001

**2e Model C (acc. to DIN 43835)**



**Order no.**  
443-001



### 3 Panel Clip Case

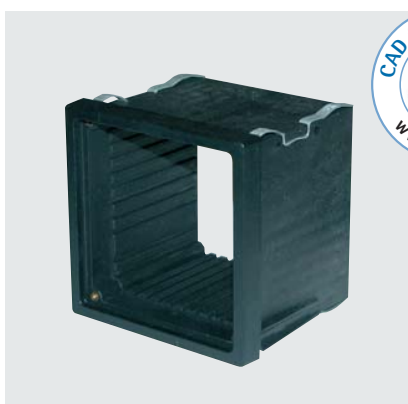
- patented by apra-norm
- fixing clamps are eliminated
- simple attachment by clipping it into the panel

**Material:**

Case: Noryl SE1, GFN2, 701 black  
Front frame: Lexan 920 black

The part number of the cases can be found starting on pages 4 to 13.

### 3a Standard case



### 3b Case with corner webs



### 4/5 Cover plate / Front panel

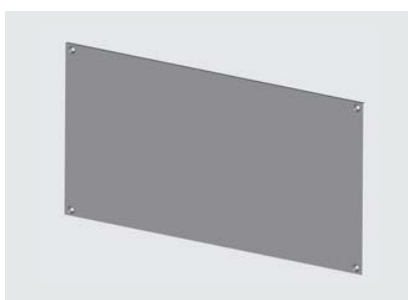
- front panels with 4 mounting holes
- mounting material included

**Material:**

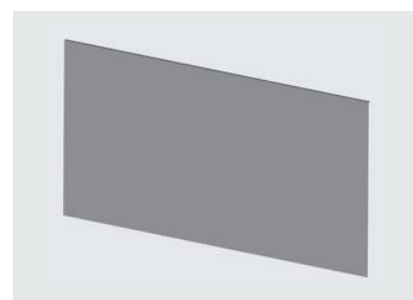
Aluminium 1,5 mm, anodised

The part number of the cases can be found starting on pages 4 to 13.

### 4 Cover plate



### 5 Front panel



### 6 Filter screens

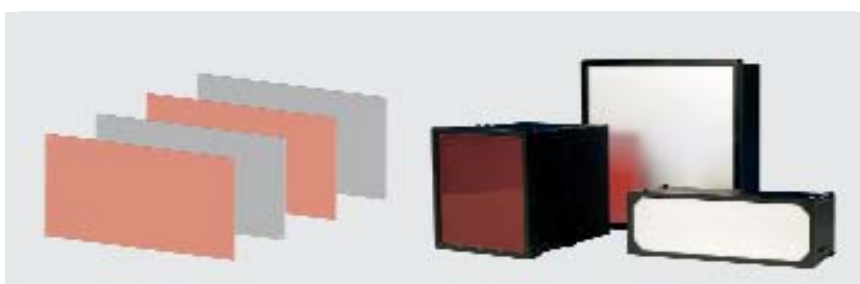
- with or without mounting holes

**Material:**

Plexiglas® red 502,  
Makrolon® transparent

The part number of the filter screens can be found on pages 4 to 13. To order, replace „-XX“ with the corresponding two digits of the adjacent chart.

\*minimum order quantity = 100 pieces



Material	Thickness mm	Blanks without holes: last digits	Blanks with 4 mounting holes: last digits
Makrolon® transparent	3 ± 0,5	-05	-15*
Plexiglas® red 502	3 ± 0,5	-09	-10*

### Moulded sealings IP 65

- new sealing for panel instrument cases acc. to IEC 61554
- the very special design allows to adjust slight unevenness of the panel and ensures to achieve IP protection 65 between enclosure and switchboard panel

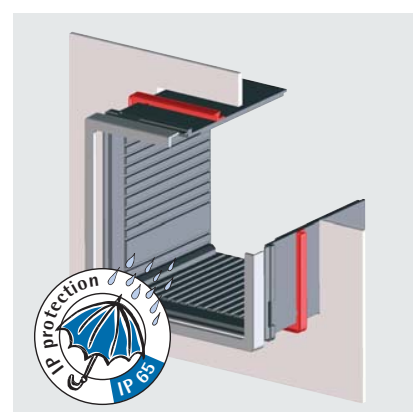
**Material:** SEPS

**Degree of protection:** IP 65 between enclosure and switchboard panel

Further sizes projected - please contact us!

Dimensions W x H mm	Order no.
48 x 24 mm	448-445-01
72 x 24 mm	448-425-01
96 x 24 mm	448-115-01
96 x 48 mm	445-175-10
96 x 72 mm	445-255-05
96 x 96 mm	445-315-05
144 x 72 mm	445-275-10
144 x 96 mm	445-335-05
144 x 144 mm	445-375-10
288 x 144 mm	445-495-05

Matching sealings for the norm-case enclosure (page 22) can be found on pages 22 and 23!





**12** Transparent door with frame

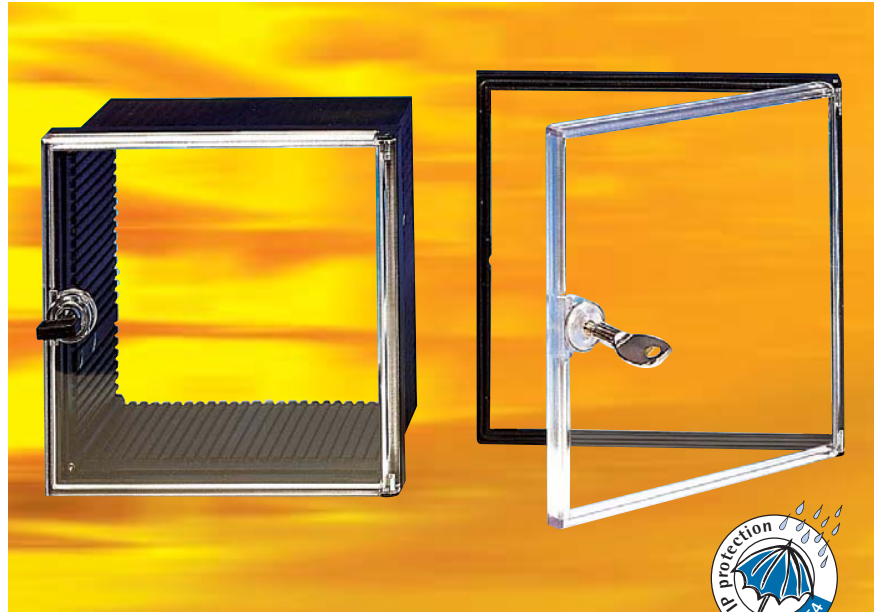
- for panel instrument cases acc. to IEC 61554
- can be mounted to the enclosure instead of a front frame
- high fitting accuracy and perfect sealing
- clear, high-quality glass
- high-grade materials ensure optimal impact strength and dimensional stability even in extreme temperatures.

**Material:**

Polycarbonate, listed acc. to UL 94 V-0

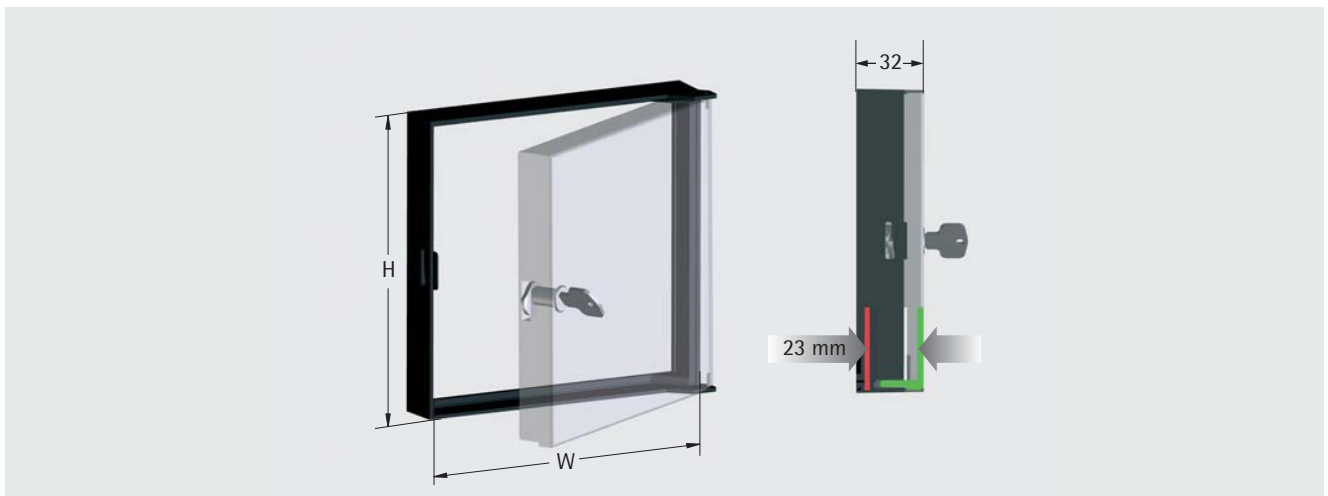
**Degree of protection:**

IP 54



After mounting, the door cannot be removed without applying force.

**A** Transparent door with frame



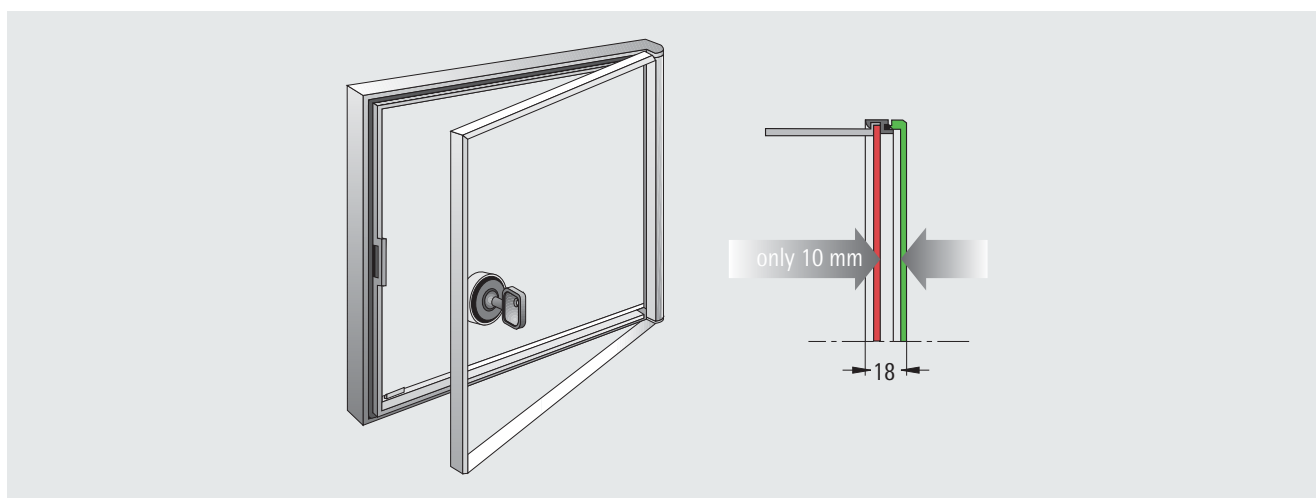
clear height between front panel and inside of the door = 23 mm

W x H mm	Degree of protection	A1 Transparent door with frame and lock (lockable)	A2 Transparent door with frame and plastic sash fastener
72 x 144	IP 54	446-100-01	446-100-02
72 x 72	IP 54	446-030-01	446-030-02
96 x 144	IP 54	446-150-01	446-150-02
96 x 48	IP 54	446-090-01	446-090-02
96 x 96	IP 54	446-040-01	446-040-02
144 x 144	IP 54	446-050-01	446-050-02
192 x 144	IP 54	446-120-01	446-120-02
192 x 96	IP 54	446-110-01	446-110-02
288 x 144	IP 54	446-130-01	446-130-02





**B** Flat transparent door with frame



clear height between front panel and inside of the door = 10 mm

W x H mm	Degree of protection	B1 Flat transparent door with frame and lock (lockable)	B2 Flat transparent door with frame and plastic sash fastener
144 x 144	IP 54	447-050-01	447-050-02

**13** Transparent door with mounting brackets

- high tensile and impact strength, door frame reinforced with glass fibre
- excellent electrical and dielectric properties
- excellent light permeability of transparent doors
- optimum dimensional stability
- heat distortion temperature per DIN 53461: 135 °C
- **optional sealing** between transparent door and panel available  
(**Material:** foam rubber black, 3 mm thick, self-adhesive on both sides)

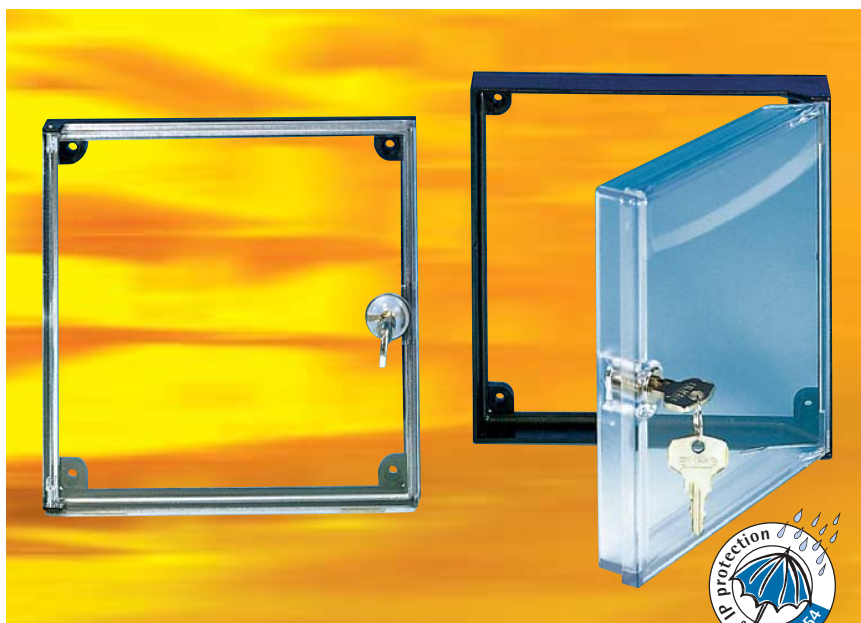
**Material:**

Polycarbonate, listed acc. to UL 94 V-0

**Degree of protection:**

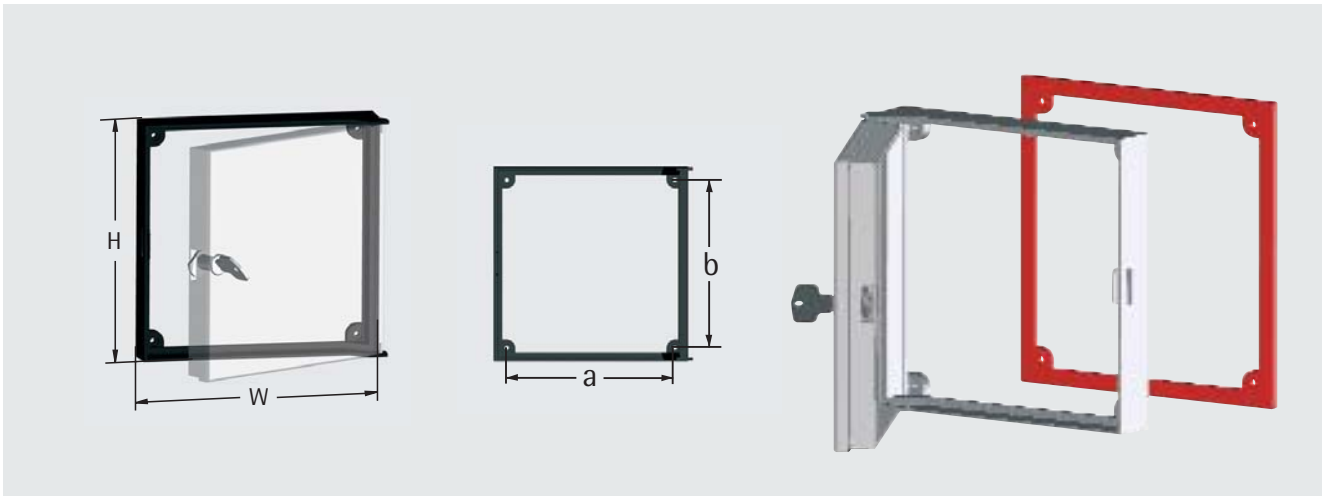
IP 54

Other sizes on request. Please ask us!





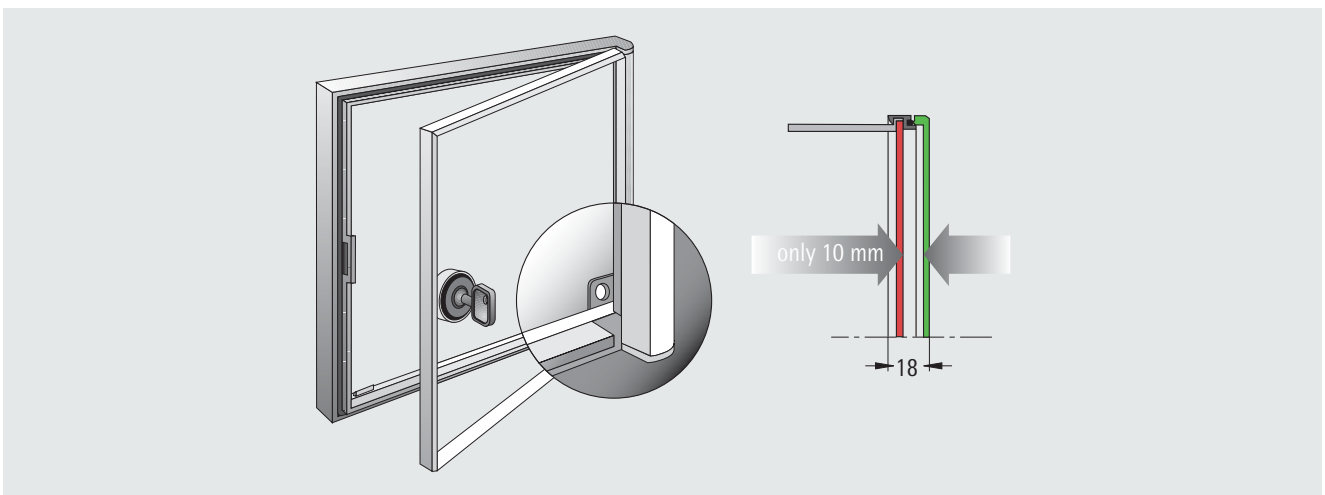
**A** Transparent door with mounting brackets



clear height between front panel and inside of the door = 23 mm

W x H mm	Degree of protection	Hole pattern a x b mm	A1 Transparent door with mounting brackets and lock (lockable)	A2 Transparent door with mounting brackets and plastic sash fastener	Sealing between frame and case
72 x 144	IP 54	52,5 x 125,6	446-100-04	446-100-05	-
72 x 72	IP 54	51,6 x 51,3	446-030-04	446-030-05	-
96 x 144	IP 54	76,9 x 125,1	446-150-04	446-150-05	446-150-10
96 x 48	IP 54	76,9 x 28,8	446-090-04	446-090-05	-
96 x 96	IP 54	77,2 x 76,8	446-040-04	446-040-05	446-040-10
144 x 144	IP 54	125,9 x 125,3	446-050-04	446-050-05	446-050-10
192 x 144	IP 54	173,3 x 125,1	446-120-04	446-120-05	446-120-10
192 x 96	IP 54	173,3 x 76,9	446-110-04	446-110-05	446-110-10
288 x 144	IP 54	269,5 x 125,1	446-130-04	446-130-05	446-130-10

**B** Flat transparent door with mounting brackets



clear height between front panel and inside of the door = 10 mm

W x H mm	Degree of protection	Hole pattern a x b mm	B1 Flat transparent door with mounting brackets and lock (lockable)	B2 Flat transparent door with mounting brackets and plastic sash fastener
144 x 144	IP 54	125,5 x 125,5	447-050-04	447-050-05

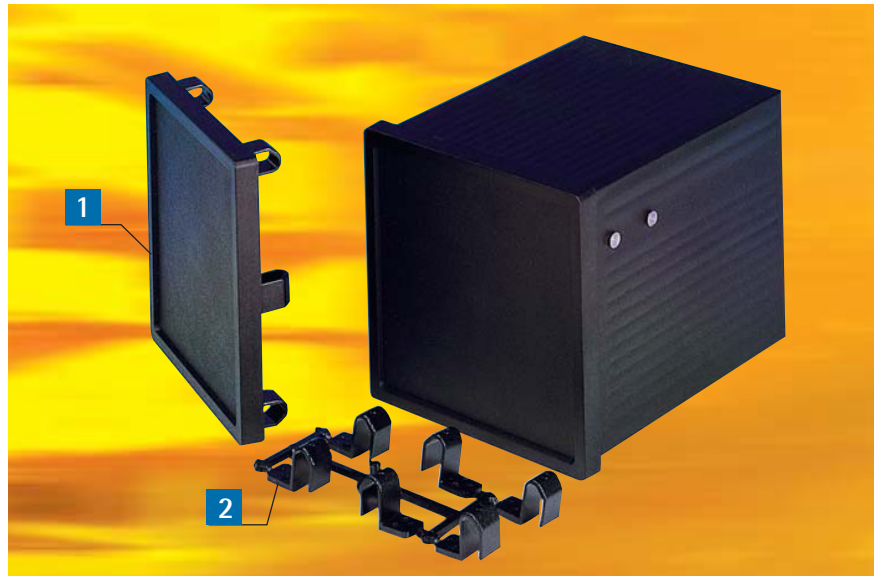


### Blind cover

- to cover unused panel cut-outs
- can also serve as a solid front frame for DIN enclosures

### Material:

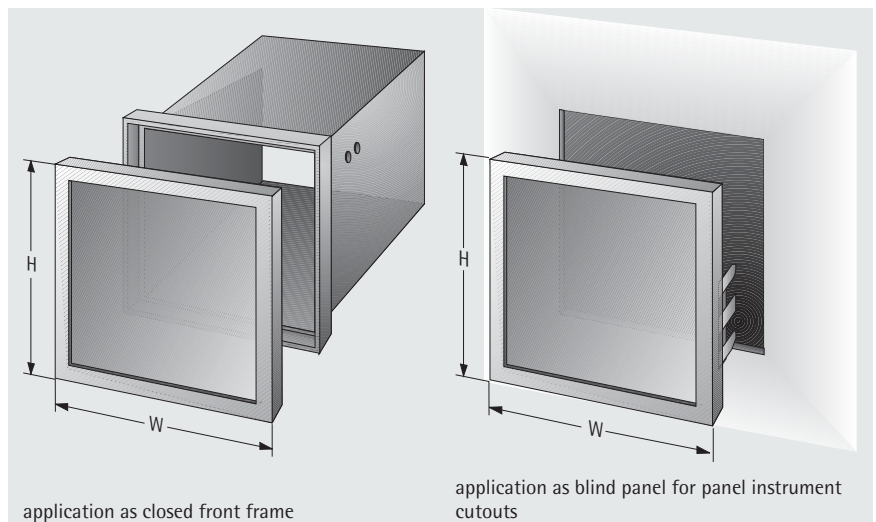
Lexan 141R, 701 black



### Delivery

Item	Pc.	Description
1	1	Cover
2	6	Clip springs

W mm	H mm	Order no.
48	24	448-457-00
96	24	448-117-00
48	48	445-137
72	36	445-077
72	72	445-237
96	48	445-177
96	96	445-317
144	72	445-277
144	96	445-337-00
144	144	445-377



### Machining for front panels, rear panels and cases

- as a special customer service, we can treat rear panels, front panels and enclosures according to your specifications using modern CNC-controlled processing machines. An outline is all we need!
- rear panels or enclosures with customer-specified cut-outs, holes or vents can be manufactured at low cost thanks to our modular tool system.
- even individual tools built according to the customer's design or 3D data (igs, stp, sat) are no problem for us.



We will be pleased to advise you! Just call us: +49 (0) 65 92 / 204-0



### Front foils and keypad technology

- individual adaption of all elements to your requirements
- composed of 4 layer foils:
  - mounting foil
  - distance foil
  - contact foil
  - decor foil
- different types of switching elements/buttons (see f. 2)
  - flat (without embossment)
  - ball element
  - flat (with embossment)
  - metal snap slice
- surface varieties of upper decor foil:
  - microstructure
  - glossy
  - mattfinished
  - anti scratches
  - all colours acc. to RAL
- embossment type of decor foil:
  - flat embossment
  - ball segments
  - frame embossment
  - others
- PCB connection by
  - NON ZIF 1.25 (straight/angled)
  - NON ZIF 2.54 (straight/angled)
  - Crimpflex F 2.54
  - Others
- EMC shielding (also area of display by transparent screen)
- can be assembled with LCD, LED and SMD-LED:
  - single-colour (red, green, yellow, white)
  - two-colour (red/green)
- pockets and cut-outs for individual components possible
- silk-screening inside of the foil possible
- excellent chemical resistance

#### Material:

Polycarbonate or Polyester

#### Degree of protection:

possible up to IP 65

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