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For accurate Switching · Control · Counting

Hours Counters
A.C.; D.C. Quartz

BW
BG
BWS

- Large digits 4.4 mm high
- Universal connection
- Fast fixing by ratchet clamp
- Modular plug-in system
- Tactile feel re-set
- Key lock re-set
- High accuracy provided by quartz D.C. version
- Electrical connections finger proof in accordance with VBG 4 (BW 40.X7)

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Hugo Müller GmbH · Elektrotechnik

Sturmbühlstraße 145-149 · D-78054 VS-Schwenningen · Telefon 07720/31081 · Telefax 07720/31083

Elapsed time counters   BW 40

for panel mounting
Alternating Current

Special features

- Large format numerals: 4.4 mm in height
- Quick-fix retaining clip
- Easy to connect – screw terminals accessible from rear
- Attachments for other cutouts
- Ring seal for IP 54 – also seals front panel cutout
- UL model on application
- Cable connection on application

Technical Data

Supply voltages (Please state when ordering)	230 V, 50 Hz or 115 V, 50 Hz or 24 V, 50 Hz
Other voltages	on request
Optional frequency	60 Hz
Voltage tolerance	± 15%
Power consumption	approx 1 VA
Counter capacity	99999 h
Accuracy of reading	0.01 h
Numeral height	4.4 mm
Numeral colour	white, decimal figures red
Operation indicator	fast-running wheel
Permitted ambient temperature	−15°...+55°C
Enclosure	self-extinguishing thermoplastic, black
Switchboard flush mounting	housing to DIN 43700
Type of connection	Universal: Screw, soldered and 6.3 x 0.8 mm AMP plug-type connections
Type of protection	Terminals IP 20 Front IP 50 to DIN 40050 (with ring seal 101.003.004 IP 54)
Class of protection	II when fitted in accordance with regulations

Accessories

Retaining bracket for fixing to wall or distribution board	692.006.014
Terminal cover for retaining bracket	003.007.003
Trim 55 x 55 mm	109.003.004
Mask 72 x 72 mm	190.004.004
Mask Ø 72 (for flush mounting-Ø 60 mm)	190.008.004
Mask Ø 72 (for flush mounting-Ø 50.5 mm)	190.009.004
Ring seal for IP 54	101.003.004
Ratchet clamp for BW 40.28	101.001.004

Hours Counters
General technical information

Use Hours counters are used to monitor and control many different types of machinery:	**Hours run**	To monitor working hours.
	Standstill time	Machine down-time or time out of use can be monitored.
	Guarantee period	Manufacturers who offer guarantee periods can easily monitor this.
	Service intervals	Unecessary wear and tear and expensive repairs can be avoided by monitoring time between maintenance.
	Working hours	Companies whose staff work flexi-time can monitor work hours and efficiency.
Types and applications	**Counter without reset**	For tamper-proof monitoring of hours run.
	Counter with reset ·	For monitoring service intervals, where the meter can be returned to zero after servicing. Key lock reset also available for extra security.
Technical details	**A.C. Type**	Types BW 40.X6, BW 30 and BW 70 are driven by a well proven, low noise hysteresis motor. Type BW 40.X7, is driven by a rotating magnet motor, type BW 22 by a well proven low noise, single direction, rotating magnet motor (no reverse lock mechanism necessary). Advantages of these types of motor include long life, fast, secure start, and no accummulated time loss resulting from action of reverse lock.
	D.C. type	The frequency for the step motor is controlled by Quartz crystal (highest time accuracy) and is applied to the motor by an extremely stable electronic circuit. All motors drive the digit rolls through maintenance free gears.
	Re-set to zero	The re-setable types BW 22 and BG 22 feature a newly designed construction which enables the digits to be reset at any time during the running period. This is achieved by disengaging the digits rolls from the drive mechanism for as long as the reset button is depressed. Reset button has tactile-feel mechanism. Unintentional re-set can be avoided by simple adjustment to lock out the reset button. Unauthorized re-set can be avoided by use of key lock types.

Connection details   h = Hours Counter   V = Equipment to be monitored

Measurements   All measurements in mm   Subject to alternation without notice.

Hours Counters
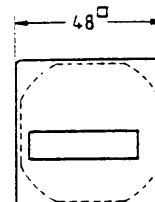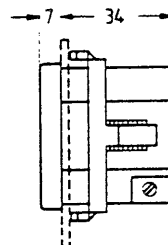Housing to DIN 43 700
A.C. = BW 40
D.C. Quartz = BG 40

BW 40.X7
BG 40.X7

BW 40 . 17 ~ ⓊL approved
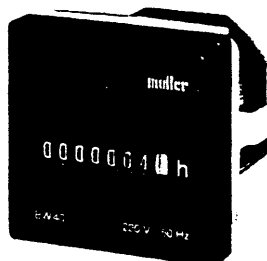**BG 40 . 17 –**

Front plate 48 x 48 mm

Including fixing clip
Universal connection

Panel cut-out 46 ⁼

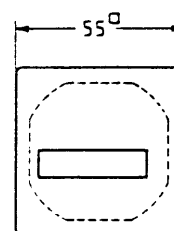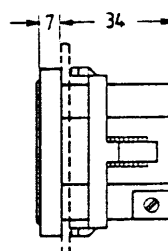Terminals finger proof to VBG 4
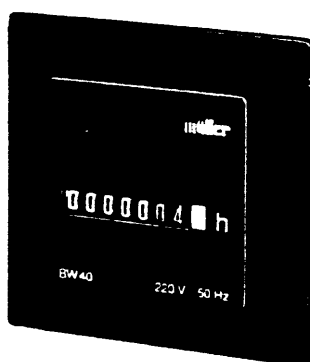

BW 40 . 27 ~
BG 40 . 27 –

Front plate
with 55 x 55 mm bezel

Including fixing clip
Universal connection

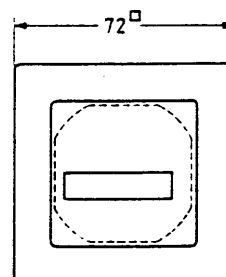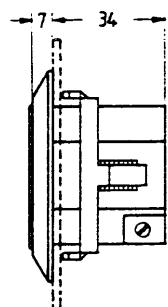Panel cut-out
46 ⁼ or Ø 50.5

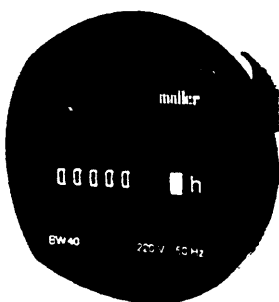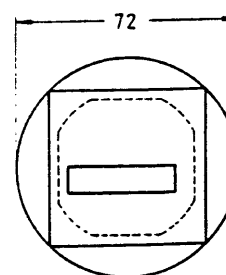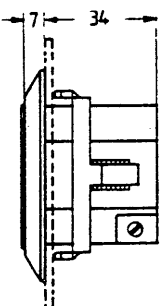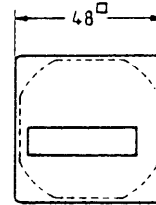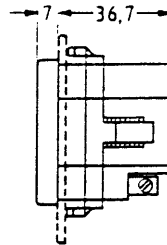Terminals finger proof to VBG 4

BW 40 . 37 ~
BG 40 . 37 –

Front plate
with 72 x 72 mm bezel

Including fixing clip
Universal connection

Panel cut-out
46 ⁼ or Ø 50.5

Terminals finger proof to VGB 4

BW 40 . 57 ~
BG 40 . 57 –

Front plate
with Ø 72 mm bezel

Including fixing clip
Universal connection

Panel cut-out Ø 60

Terminals finger proof VBG 4

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Hours Counters
Housing to DIN 43 700
A.C. = BW 40
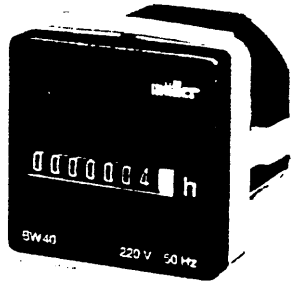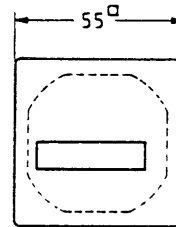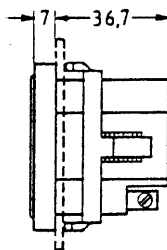D.C. Quartz = BG 40

BW 40.X6
BG 40.X6

BW 40 . 16 ~

Front plate 48 x 48 mm

Including fixing clip
Universal connection

Panel cut-out 46 □

Low noise

BW 40 . 26 ~

Front plate
with 55 x 55 mm bezel

Including fixing clip
Universal connection
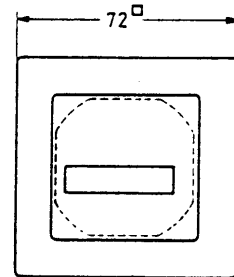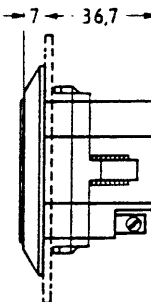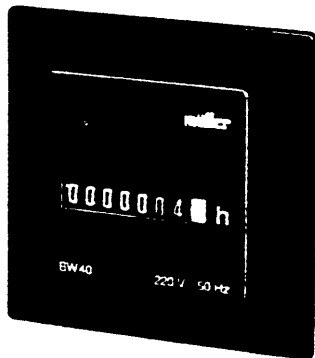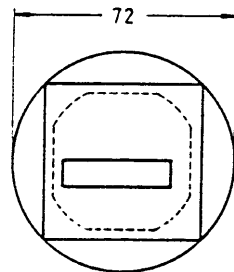
Panel cut-out
46 □ or Ø 50.5

Low noise

BW 40 . 36 ~

Front plate
with 72 x 72 mm bezel

Including fixing clip
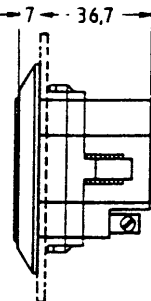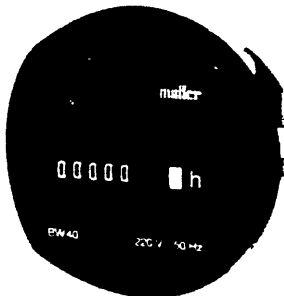Universal connection

Panel cut-out
46 □ or Ø 50.5

Low noise

BW 40 . 56 ~

Front plate
with Ø 72 mm bezel

Including fixing clip
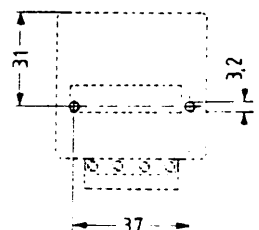Universal connection

Panel cut-out Ø 60

Low noise

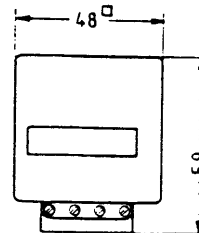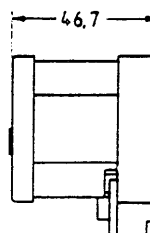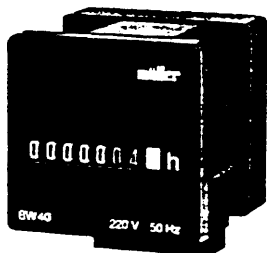**BW 40 . 86 ~**
BG 40 . 86 ‒

Counter for wall mounting
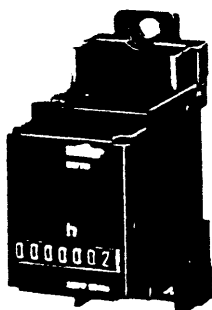
with plug-in base

Low noise

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Hours Counters
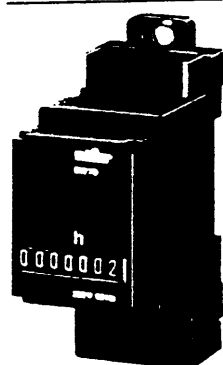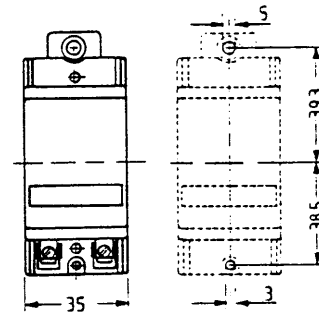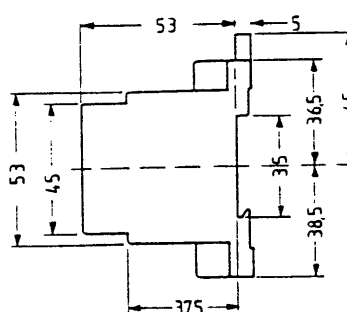### A.C. types BW 70
D.C. types BG 70

Housing style to DIN 43 880 for modular distribution panel applications.

BW 70 . 16 ~
BG 70 . 16 –

Counter for mounting 45 x 35 mm

with universal connection

BW 70 . 86 ~
BG 70 . 86 –

Counter 45 x 35 mm

with universal connection
with terminal cover

Technical data

Name of types	BW 40 BW 70 A.C.-devices	BG 40.X7 D.C.-Quartz-devices	BG 40.X6 BG 70 D.C.-Quartz-devices
Voltages Special voltages Special frequenzies Other voltages Voltage tolerance	24 V, 110/115 V, 220 V; 50 Hz – 60 Hz on request ± 15 %	12 . . . 48 V D.C. 5 . . . 24 V, 36 . . . 110 V D.C. – on request ± 10 %	12 . . . 24 V D.C. 36 . . . 80 V, 110 V D.C. – on request ± 10 %
Power consumption	1.5 W	approx. 20 mW at 12 V D.C.	approx. 80 mW at 12 V D.C.
Universal connection	screw-, solder- and AMP-fast on 6.3 x 0.8	screw-, solder- and AMP-fast on 6.3 x 0.8	screw-, solder- and AMP-fast on 6.3 x 0.8
Ambient temperature Extended temperature range	−15° . . . +50 ° C on request	−15 ° C . . . +60 ° C on request	−10 ° C . . . +50 ° C on request
Colour of case	black	black	black
Metering capacity Reading accuracy Height of digits Colour of digits Decimal digits	100 000 hours 0.01 hours 4.4 mm white red	100 000 hours 0.1 hours 4.4 mm white red	100 000 hours 0.01 hours 4.4 mm white red
Display	fast running	fast running	fast running
Case Protection class according to DIN 40050	fully insulated IP 50 (front)	fully insulated IP 50 (front)	fully insulated IP 50 (front)
Further versions	front splash proof IP 54 (front) BW 40 wire connection UL approved types	front splash proof IP 54 (front) BG 40 wire connection	front splash proof IP 54 (front) BG 40 wire connection
Date for orders	name of types: BW . . . voltage: . . . V . . . . Hz further version: . . .	name of types: BG . . . voltage: . . . V D.C. further version: . . .	name of types: BG . . . voltage: . . . V D.C. further version: . . .
Example	BW 40 . 26: 220 V . 50 Hz	BG 40 . 17: 12 . . 48 V D.C.	BG 40 . 26: 12 . . . 24 V D.C.

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Hours Counters
without reset: A.C. BW 30, D.C. BG 30
with reset: A.C. BW 22, D.C. BG 22

BW 30 . 16 ~	
BG 30 . 16 −	
without reset	
with fixing clip universal connection	
BW 22 . 15 ~	
BG 22 . 15 −	
with reset	

panel cut out 50 x 25

BW 30 . 26 ~	
BG 30 . 26 −	
without reset	
plug-in unit solder wire connection	
BW 22 . 25 ~	
BG 22 . 25 −	
with reset	

BW 30 . 36 ~	
BG 30 . 36 −	
without reset	
with plug-in base solder wire connection and AMP 2.8 x 0.8	
BW 22 . 35 ~	
BG 22 . 35 −	
with reset	

panel cut out 50 x 25

BW 30 . 46 ~	
BG 30 . 46 −	
with reset	
with frontframe solder wire connection and AMP 2.8 x 0.8	
BW 22 . 45 ~	
BG 22 . 45 −	
with reset	

panel cut out 54 x 29

BW 30 . 56 ~	
BG 30 . 56 −	
with reset	
with frontplate universal connection	
BW 22 . 55 ~	
BG 22 . 55 −	
with reset	

panel cut out 50 x 25

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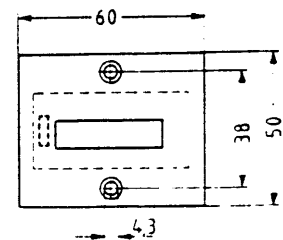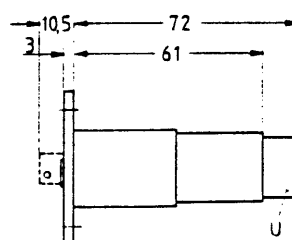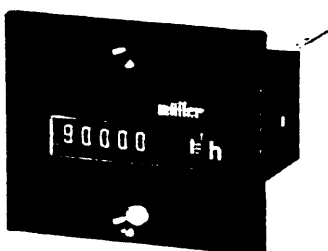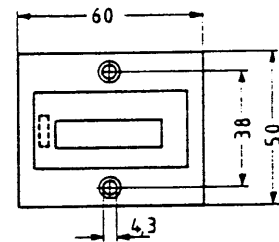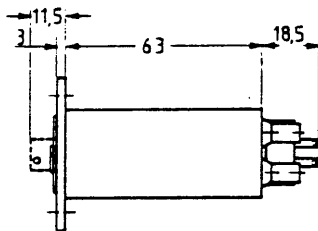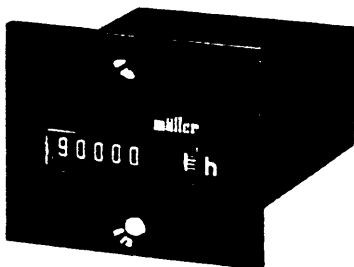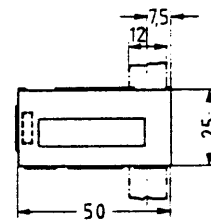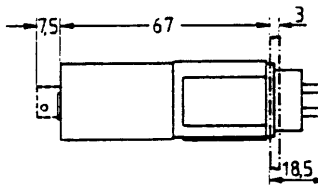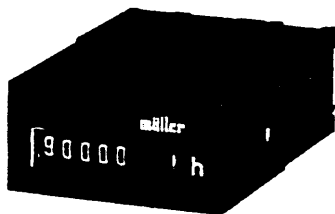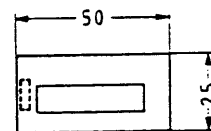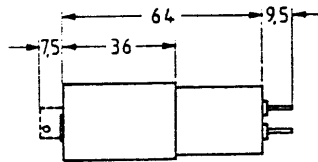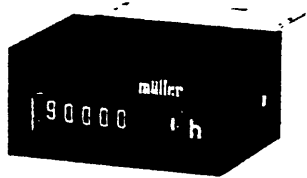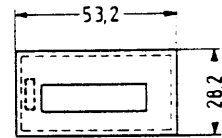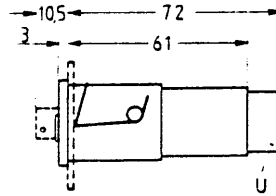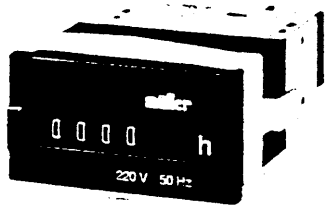
Hours Counters
without reset: A.C. BW 30, D.C. BG 22
with reset: A.C. BW 22, D.C. BG 22

Techncal data

| Name of types	BW 30 BW 22 A.C. types	BG 30 BG 22 D.C. Quartz types
without reset with press-reset	BW 30 BW 22	BG 30 BG 22
Voltages Special voltages Special frequencies Other voltages Voltage tolerance	24 V, 110/115 V; 220 V, 50 Hz − 60 Hz on request ± 15 %	12 . . . 24 V D.C. 36 . . . 80 V, 110 V D.C. − on request ± 10 %
Power consumption without reset with press-reset	1.5 VA 1.5 VA	80 mW (at 12 V D.C.) 80 mW (at 12 V D.C.)
Universal connection	screw-, solder- and AMP-fast on 6.3 x 0.8	screw-, solder- and AMP-fast on 6.3 x 0.8
Ambient temperature Extended temperature range	−15 ° . . . +50 ° C on request	−10 ° . . . +50 ° C on request
Colour of case	black	black
Metering capacity without reset with press-reset Reading accuracy Height of digits Colour of digits Decimal digits	100 000 hours 10 000 hours 0.01 hours 4.4 mm white red	100 000 hours 10 000 hours 0.01 hours 4.4 mm white red
Running display without reset	fast running	fast running
Case Protection class according to DIN 40 050 BW 30 BW 22 Glass	fully insulated IP 52 (front) IP 50 (front) sealed	fully insulated IP 52 (front) IP 50 (front) sealed
Further versions all versions	UL approved types flying lead outer case grey	outer case grey
With press-reset Metering capacity	100 000 hours (00000.0 h) or 1000 hours (000.0 h) key reset	100 000 hours (00000.0 h) or 1000 hours (000.0 h) key reset

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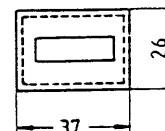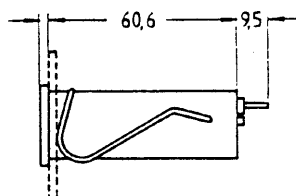## Hours Counters
A.C. BW 10
D.C. Quartz BG 10

BW 10
BG 10
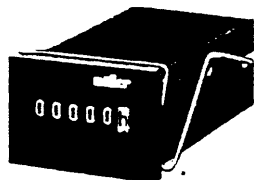
BW 10.11 ~	
BG 10.11 –	
Front plate 37 x 26 mm	
with fixing clip	
Circular pins ∅ 1.5	
Panel cut-out 22 x 33.3	
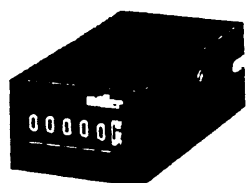
BW 10.21 ~	
BG 10.21 –	
plug-in or	
solder connection	
BW 10.81 ~	
BG 10.81 –	
Base mounting (now shown)	
Flying lead 0.5 m long	
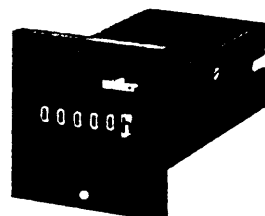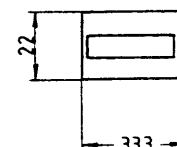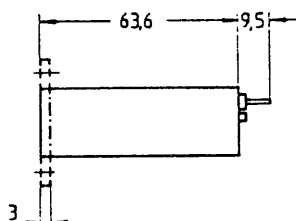
BW 10.51 ~	
BG 10.51 –	
Front plate 39 x 40 mm	
Round pins ∅ 1.5 mm	
Panel cut-out 22 x 33.3	
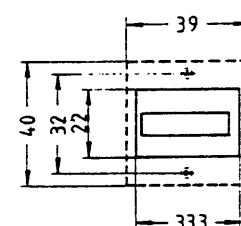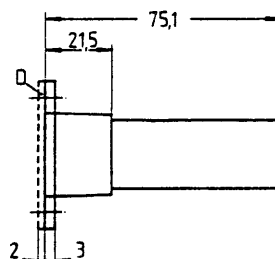
Technical data

Name of types	BW 10 A.C. types	BG 10 D.C. Quartz types
Voltages	24 V, 110 V, 220 V; 50 Hz	12 ... 24 V D.C.
Special frequencies	60 Hz	–
Other voltages	on request	on request
Voltage tolerances	± 15 %	± 10 %
Power consumption	2 VA	85 mW (at 12 V D.C.) 170 mW (at 24 V D.C.)
Ambient temperature	–10° ... +50 °C	–10° ... +50 °C
Extended temperature range	on request	on request
Colour of case	black	black
Metering capacity	100 000 hours	100 000 hours
Reading accuracy	1 hour	1 hour
Height of digit	4 mm	4 mm
Colour of digit	white	white
Running display	red	red
Case	fully insulated	fully insulated
Protection class according to DIN 40 050	IP 52 (front)	IP 52 (front)

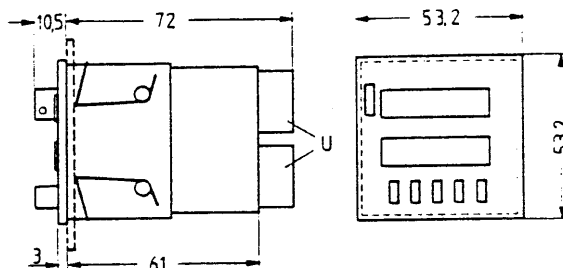

Hours Counters
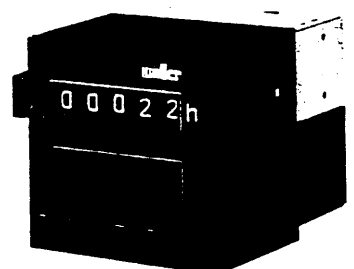with preselection
count down
A.C. BWS 22
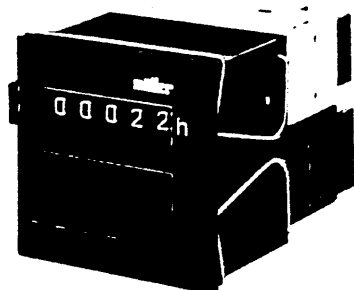
BWS 22 . 15

front panel

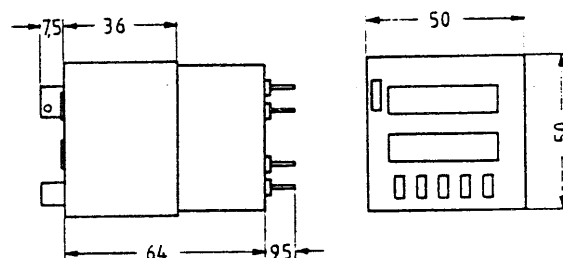with clip fixing
with universal connection

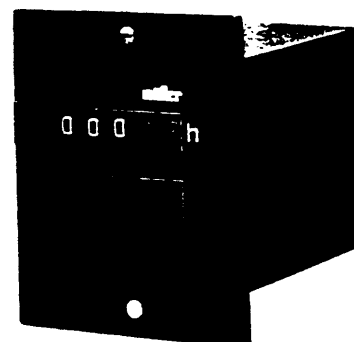panel cut out 50 x 50

BWS 22 . 25

plug-in unit with solder
wire connection

BWS 22 . 35

with plug-in base (no diagram)
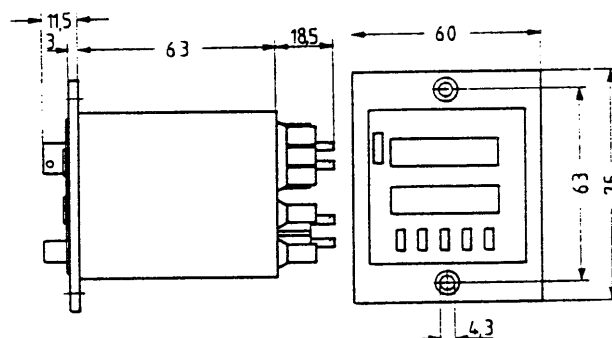with solder wire connection
and AMP 2.8 x 0.8

panel cut out 50 x 50

BWS 22 . 45

with front frame
with solder wire connection
and AMP 2.8 x 0.8

panel cut out 54 x 54

Technical data

Name of types	BWS 22 A.C. types
Voltages	24 V, 110/115 V, 220 V; 50 Hz
Special frequencies	60 Hz
Other voltages	on request
Voltage tolerance	± 10 %
Power consumption	1.5 W
Ambient temperature	−10 ° . . . +50 ° C
Colour of case	black
Min. preselection time	0.01 h
Max. preselection time	999.9 h
Reading accuracy	0.01 h
Switchpoint	at 000.00 h
Precontact and other switchpoints	on request
Height of digits	4.4 mm
Colour of digits	white
Decimal digits	red
Switch max. switching capacity	one change-over 2 A at max. 220 V A.C. (30 W D.C.)
Case	fully insulated
Protection class according to DIN 40 050	IP 41 (front)

1. Operation and release
The counter counts down from preselected time to zero, it opens the contact (continuous contact) at zero, i.e. the contact is maintained if the counter keeps on operating.
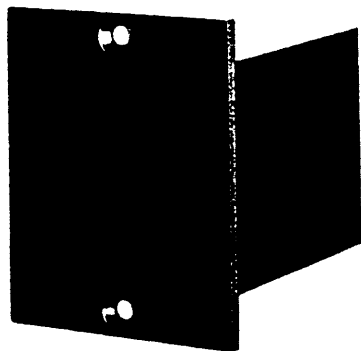
2. Preselection
Press the reset button, then set the time requested. After releasing the reset button, the preselection buttons are locked.
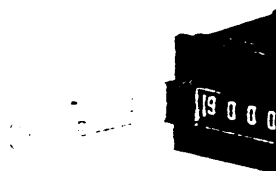
3. Reset and Repetition
By pressing the reset button the counter drums are put back to the time set and the contact goes back to its starting position.
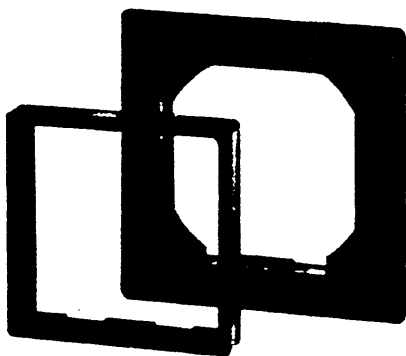
Accessories to Hours Counter

190 . 002 . 002

front frame

for BWS 22.25 or for
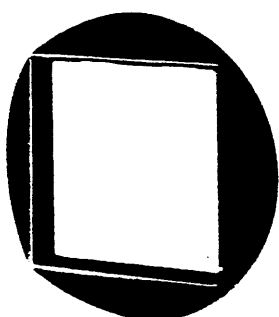counter-combinations
BW/BG 30.26.3000
BW/BG 22.25.3000
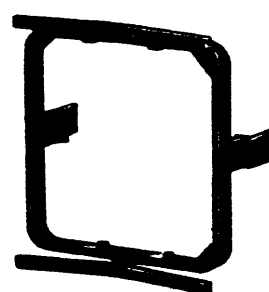
672 . 001 . 004

key

for BW 22 . . . and BG 22 . . .

190 . 003 . 004

frame 55 x 55

190 · 004 · 004
mask 72 x 72

panel cut out ∅ 51 or 46 x 46

for BW 40
and BG 40

692 . 003 . 014

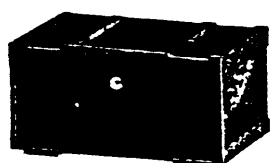plug-in socket

for BW 40 . . . and BG 40 . . .

190 . 009 . 004

mask ∅ 72

panel cut out 46 x 46 or ∅ 51

190 . 008 . 004
panel cut out ∅ 60

for BW 40 and BG 40

715 . 003 . 003

ratched clamp

for BW 40 . . . and BG 40 . . .

003 . 001 . 104

terminal cover, with screw

for BW 70 . . . and BG 70 . . .

692 . 001 . 014

plug-in base

for BW 30 . . . . BG 30 . . . .
BW 22 . . . . BG 22 . . .