

# Counters

Totalising counters, predetermining counters and totalising timers

## Electromechanical technology

	Totalising counter					
	XBK-T5, XBK-T7			XBK-T6, XBK-T8		XBK-T6 compact
Type	Input	Input	Input	Input	Input	Input
Supply voltage	≐ 24 V	~ 115 V	≐ 48 V	≐ 24 V	~ 115 V	≐ 24 V
Current consumption	70 mA	22 mA	32 mA	110 mA	24 mA	6 mA
Power	1.5 W	2.5 VA	1.5 W	2.5 W	2.75 VA	0.155 W
Inductive proximity sensors/ 3-wire photo-electric sensors				(2)		
Inductive proximity sensors/ 2-wire photo-electric sensors	(1)			(1)		
Relay output photo-electric sensors						
Limit switches/ Pressure switches (volt-free contact)						
Pushbuttons, selector switches (volt-free contact)						
PLCs: relay outputs						
PLCs: solid-state outputs						
ELM Contactors/Relays (up to 18 A)						
PLCs: inputs						
Pilot lights						
	Predetermining counter			Totalising timer		
	XBK-P5			XBK-H7		
Type	Input	Output	Reset	Input	Input	Input
Supply voltage	≐ 24 V	≈ 220 V	≐ 24 V	~ 24 V	~ 115 V	~ 220 V
Current consumption	110 mA	1 A max.	0.5 A	3 mA	5 mA	4 mA
Power	2.5 W	20 VA max.	12 W	0.08 VA	0.56 VA	1 VA
Inductive proximity sensors/ 3-wire photo-electric sensors	(2)					
Inductive proximity sensors/ 2-wire photo-electric sensors	(1)			(4)	(4)	(4)
Relay output photo-electric sensors						
Limit switches/ Pressure switches (volt-free contact)						
Pushbuttons, selector switches (volt-free contact)						
PLCs: relay outputs						
PLCs: solid-state outputs			(3)			
ELM Contactors/Relays (up to 18 A)						
PLCs: inputs						
Pilot lights						
TEGO (Reference of plate)				APD-1A21D44 APD-1A31D44	APD-1A21D44 APD-1A31D44	APD-1A21D44 APD-1A31D44

(1) Possible if volt drop < 2.4 V (otherwise, boost the supply)

(2) Incompatible with sensors or photocells with protection against overloads < 110 mA

(3) Possible if output current > 0.5 A

(4) Possible with 22 kΩ (2.5 W) resistor fitted in parallel

 Compatible  Not compatible or not applicable

# Counters

Totalising counters, predetermining counters and totalising timers

## Electronic technology

Type	Totalising counter + Totalising timer		Predetermining counter				
	XBK-T8, XBK-H8		XBK-P6				
Type	Input	Reset to zero	Inputs	Relay output	Solid-state output		Sensor supply
Supply voltage	–	–	–	–	≡ 24 V	~ 220 V	~ 115 V or ~ 230 V
Voltage	State "1" > ≡ 5 V State "0" < ≡ 0.7 V	State "0" < ≡ 0.7 V	State "1" > ≡ 8 V State "0" < ≡ 2 V	≡ 5 V min. ≡ 30 V ~ 250 V	≡ 12-24 V	≡ 12-30 V	≡ 12-30 V
Resistance	50 kΩ	–	–	–	–	–	–
Current	–	–	10 mA max.	10 mA min. 1 A max.	10 mA max.	10 mA max.	50 mA max.
Inductive proximity sensors/ 3-wire photo-electric sensors							(7)
Inductive proximity sensors/ 2-wire photo-electric sensors	(1)	(1)	(3)				(7)
Relay output photo-electric sensors	(2)	(2)					(7)
Limit switches/ Pressure switches (volt-free contact)	(2)	(2)					
Pushbuttons, selector switches (volt-free contact)	(2)	(2)					
PLCs: relay outputs	(2)	(2)					
PLCs: solid-state outputs			(4)				
ELM Contactors/Relays (up to 18 A)	(2)	(2)					
PLCs: Inputs				(5)			
Pilot lights						(6)	
TEGO (Reference of plate)	APD-1A21D24 APD-1A31D24	APD-1A21D24 APD-1A31D24	APD-1A21D44 APD-1A31D44	APD-1A21D44 APD-1A31D44	APD-1A21D44 APD-1A31D44	APD-1A21D44 APD-1A31D44	APD-1A21D44 APD-1A31D44

(1) Possible with 680 Ω resistor fitted in parallel

(2) Low current switching contacts recommended

(3) Possible with 10 kΩ resistor fitted in parallel

(4) Possible if leakage current at state "0" < 0.5 mA

(5) Possible if input current > 10 mA

(6) Possible if input current < 10 mA

(7) Possible if current consumption < 50 mA

 Compatible  Not compatible or not applicable

# Zelio Count - counters

Electromechanical preset counters, 5 digits

<b>Counter type</b>		<b>XBK P5 preset counters</b>	
<b>Display type</b>		<b>Mechanical</b>	
<b>Characteristics</b>			
<b>Function</b>		Preset counters	
<b>Supply voltage</b>	<b>V</b>	--- 24 ± 10 %	
<b>Consumption</b>	<b>W</b>	2.5	
<b>Counting frequency</b>	<b>Hz</b>	25	
<b>Number of digits</b>		5	
<b>Display capacity</b>		99999	
<b>Digit height</b>	<b>mm</b>	4	
<b>Number of presets</b>		1	
<b>Preset display</b>		Adding (continuous) or subtracting (non continuous)	
<b>Counting mode</b>		Adding or subtracting	
<b>Reset</b>		Adding from zero or subtracting from the preset value	
<b>Reset type</b>		Manual or manual and electrical	
<b>Type of input signals</b>		Contact (20 VA/220 V/1 A max)	
<b>Output type</b>		Contact (volt-free)	
<b>Connection</b>		By AMP lugs on a connection box	
<b>Environment</b>			
<b>Conforming to standards</b>		EN 50081-2 and EN 50082-2, EN 61010	
<b>Product certifications</b>		XBK P5●●●D●●M : CSA (pending) XBK P5●●●U●●M : UL/CSA (pending)	
<b>Temperature</b>	Operation	<b>°C</b>	- 10...+ 50
	Storage	<b>°C</b>	- 40...+ 85
<b>Degree of protection</b>	Conforming to IEC 529		IP 40
<b>Vibration resistance</b>	Conforming to IEC 68-2-6		5 gn (10 to 150 Hz)
<b>Shock resistance</b>	Conforming to IEC 68-2-27		30 gn (6 ms)
<b>Protection against electric shocks</b>	Conforming to IEC 536		Class II
<b>Mounting and fixing</b>		Removable and flush-mounting Fixing by screws on front panel	

# Zelio Count - counters

Electromechanical preset counters, 5 digits

## References



XBK P50100D00M

Supply voltage	Number of display digits	Counting frequency	Number of presets	Reset type	Reference	Weight
V		Hz				kg
<b>Subtracting preset counters with mechanical display</b>						
24	5	25	1	Manual	<b>XBK P50100D10M</b>	0.200

Manual and electrical **XBK P50100D20M** 0.240



XBK P50100U00M

<b>Adding preset counters with mechanical display</b>						
24	5	25	1	Manual	<b>XBK P50100U10M</b>	0.200

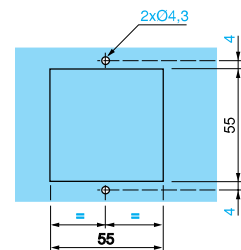
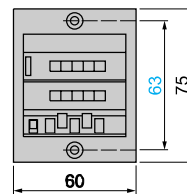
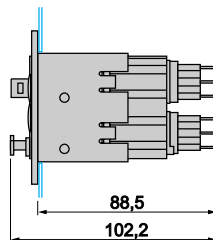
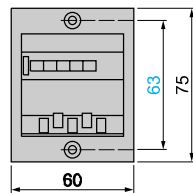
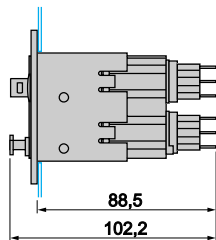
Manual and electrical **XBK P50100U20M** 0.240

## Dimensions

XBK P50100D00M

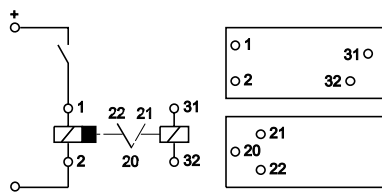
XBK P50100U00M

Common flush-mounting



## Schemes

XBK P50100D00M, XBK P50100U00M



# Zelio Count - counters

Electronic preselection and multifunction counters, 48 x 48, 6 digits, LCD or LED

Counter type		Preselection XBK P6
Display type		LCD or LED
<b>Characteristics</b>		
Functions	Multifunction	Counter, 'Batch' counter, totalising counter, tachometer and chronometer
Supply voltage	V	--- 24 or ~ 230 ± 10 % or ~ 115 ± 10 %
Sensor supply voltage		--- 12 to 24 (50 mA max) for XBK P6●●30G32E or XBK P6●●30G31E
Consumption		150 mA --- 24 V, 50mA ~ 230 V or ~ 115 V
Counting frequency	Hz	5000 (2500 for bi-directional counting)
Number of digits		6
Display capacity		999999
Digit height	mm	7.6 (LED) or 9 (LCD)
Number of presets		1 or 2
Preset display		Non continuous
Counting mode		5 programmable modes : - single counter input, - single counter with phase discriminator, - differential inputs, - summing inputs, - counting direction inputs. (Counter input resistance 5 kΩ)
Reset		2 modes : reset to zero and reset to preset value
Reset type		Manual, electrical and automatic
Output type		Relay, changeover (response time 5 ms) : --- 5 V < U <sub>c</sub> < --- 30 V ~ 5 V < U <sub>c</sub> < ~ 250 V 10 mA < I < 1 A Transistor PNP : --- 12...24 V, 10 mA max
Connection		Screw terminal block
Minimum duration of counting pulse	ms	17 at 30 Hz 0.1 at 5 KHz
<b>Environment</b>		
Conforming to standards		EN 50081-2 and EN 50082-2, EN 61010
Product certifications		UL, C-UL (pending)
Temperature	Operation	°C - 0...+ 50
	Storage	°C - 20...+ 70
Degree of protection	Conforming to IEC 529	IP 65
Vibration resistance	Conforming to IEC 68-2-6	1 gn (10 to 150 Hz)
Shock resistance	Conforming to IEC 68-2-27	10 gn (18 ms)
Protection against electric shocks	Conforming to IEC 536	Class II
Mounting and fixing		Flush-mounting unit and fixing by a self-locking clamp with setscrews

# Zelio Count - counters

Electronic preselection and multifunction counters, 48 x 48, 6 digits, LCD or LED

## References



XBK P61●30G3●E

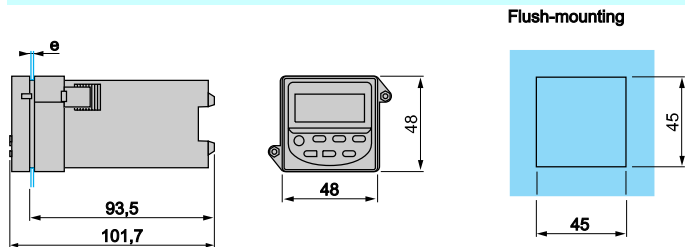


XBK P62●30G3●E

Supply voltage	Number of display digits	Counting frequency	Number of presets	Reference	Weight
V		kHz			kg
<b>Manual, electrical and automatic reset</b>					
<b>Preselection counters with LCD display</b>					
~ 24	6	5	1	<b>XBK P61130G30E</b>	0.150
			2	<b>XBK P61230G30E</b>	0.150
~ 115	6	5	1	<b>XBK P61130G31E</b>	0.250
			2	<b>XBK P61230G31E</b>	0.250
~ 230	6	5	1	<b>XBK P61130G32E</b>	0.250
			2	<b>XBK P61230G32E</b>	0.250
<b>Preselection counters with LED display</b>					
~ 24	6	5	1	<b>XBK P62130G30E</b>	0.150
			2	<b>XBK P62230G30E</b>	0.150
~ 230	6	5	1	<b>XBK P62130G32E</b>	0.250
			2	<b>XBK P62230G32E</b>	0.250

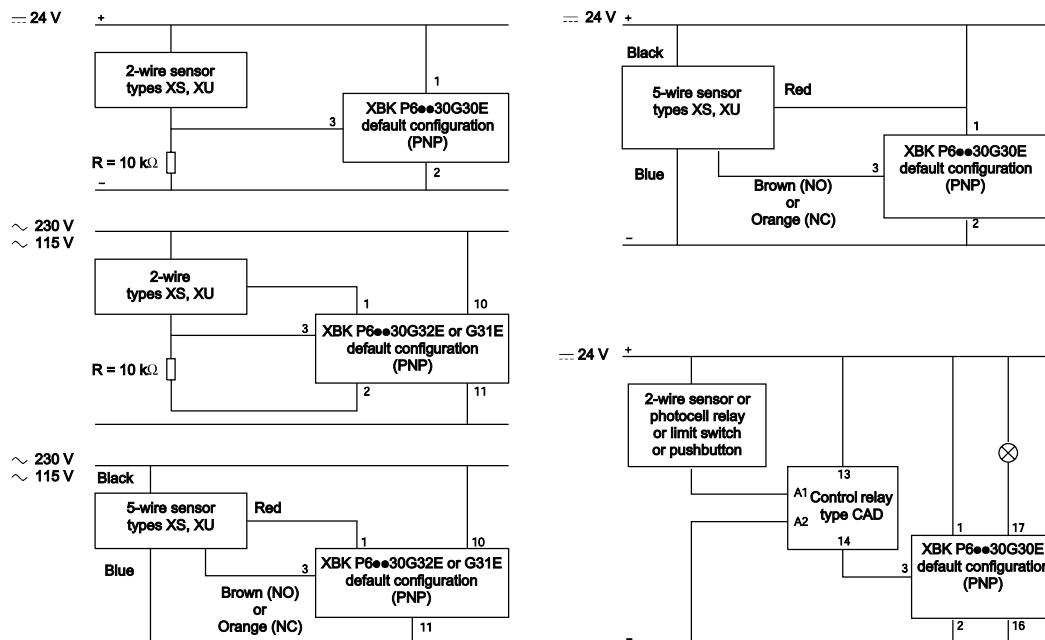
## Dimensions

### XBK P6●●30G3●E



## Schemes

### XBK P6●●30G3●E



# Zelio Count - counters

Electromechanical totalising counters,  
5 to 8 digits

<b>Counter type</b>		<b>XBK T totalising counters</b>
<b>Display type</b>		<b>Mechanical</b>
<b>Characteristics</b>		
<b>Functions</b>		Totalising counters with mechanical display
<b>Supply voltage</b>	<b>V</b>	A 24 ± 10 % A 48 ± 10 % ? 115 ± 10 %
<b>Consumption</b>	<b>W/VA</b>	XBK T50000U10M and XBK T50000U08M and XBK T70000U00M : 1.5 XBK T50000U11M and XBK T60000U10M and XBK T80000U00M : 2.5 XBK T60000U11M : 2.75 XBK T60000U00M : 0.155
<b>Counting frequency</b>	<b>Hz</b>	10, 20, 25
<b>Backup capacity</b>		Permanent
<b>Number of digits</b>		5, 6, 7 or 8
<b>Setting accuracy</b>		99999...99999999
<b>Digit height</b>	<b>mm</b>	4
<b>Counting mode</b>		Adding
<b>Reset to zero</b>		With or without
<b>Reset type</b>		Manual
<b>Inputs</b>	Function	Counting
	Type	Contact
<b>Mechanical life in millions of pulses</b>		10 except XBK T60000U10M and XBK T80000U00M : 200
<b>Environment</b>		
<b>Conforming to standards</b>		EN 50081-2, EN 50082-2
<b>Product certifications</b>		UL, CSA (pending) (except XBK T60000U00M)
<b>Temperature</b>	Operation	°C - 10...+ 50 except XBK T60000U00M : - 10...+ 70
	Storage	°C -20...+ 60 except XBK T60000U00M : - 40...+ 85
<b>Degree of protection</b>	Conforming to IEC 529	IP 40 except XBK T60000U00M : IP 65
<b>Vibration resistance</b>	Conforming to IEC 68-2-6	5 gn (10 to 150 Hz)
<b>Shock resistance</b>	Conforming to IEC 68-2-27	30 gn (6 ms)
<b>Protection against electric shocks</b>	Conforming to IEC 536	Class II
<b>Mounting and fixing</b>		Flush-mounting
<b>Connection</b>		By AMP lugs on a connection box

# Zelio Count - counters

Electromechanical totalising counters,  
5 to 8 digits

## References

Supply voltage V	Number of display digits	Counting frequency Hz	Reset type	Reference	Weight
					kg
<b>Totalising counters with mechanical display</b>					
24	5	20	Manual	<b>XBK T50000U10M</b>	0.100
	6	25	Without	<b>XBK T60000U00M</b>	0.030
25	25	25	Manual	<b>XBK T60000U10M</b>	0.150
	7	20	Without	<b>XBK T70000U00M</b>	0.100
28	8	25	Without	<b>XBK T80000U00M</b>	0.150
	5	20	Without	<b>XBK T50000U08M</b>	0.100
115	5	10	Manual	<b>XBK T50000U11M</b>	0.100
	6	10	Manual	<b>XBK T60000U11M</b>	0.030

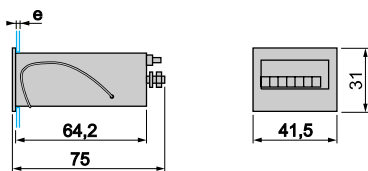
## Dimensions

**XBK T50000U●●M, XBK T70000U00M**

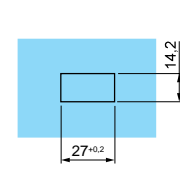
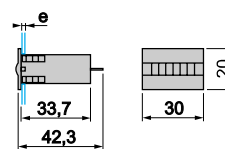
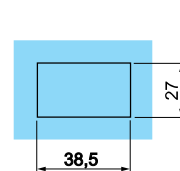
Flush-mounting

**XBK T60000U00M**

Flush-mounting



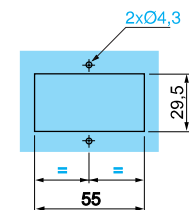
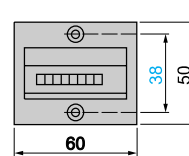
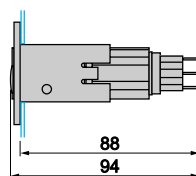
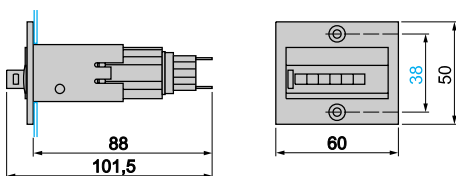
e : panel thickness, 1 mm < e < 2.5 mm



**XBK T60000U1●M**

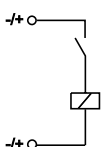
**XBK T80000U00M**

Common flush-mounting

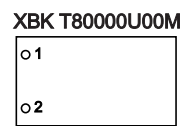
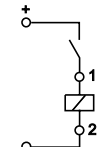
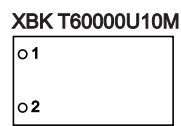
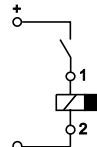


## Schemes

**XBK T50000U●●M, XBK T70000U00M**



**XBK T80000U00M, XBK T60000U1●M**





# Counters

Totalising counters, predetermining counters and totalising timers

Device type			Totalising counter XBK-T		Totalising timer XBK-H	
Display type			Mechanical	LCD	Mechanical	LCD
<b>Environment</b>						
Conformity to standards			EN 50081-2, EN 50082-2	EN 50081-2, EN 50082-2, EN 61010	EN 50081-2, EN 50082-2, VDE 0435	EN 50081-2, EN 50082-2, EN 61010
Product certifications			UL, CSA (pending) (except XBK-T60000U00M)	UL, C-UL (pending)	UL, CSA (pending)	UL, C-UL (pending)
Temperature	For operation	°C	- 10...+ 50 except XBK-T60000U00M: - 10...+ 70	- 10...+ 50		
	For storage	°C	- 20...+ 60 except XBK-T60000U00M: - 40...+ 85	- 25...+ 70	- 20...+ 60	
Degree of protection conforming to IEC 529			IP 40 except XBK-T60000U00M: IP 65	IP 54	IP 65	IP 54
Vibration resistance conforming to IEC 68-2-6			5 gn (10 to 150 Hz)	1 gn (10 to 150 Hz)	3 gn (10 to 150 Hz)	1 gn (10 to 150 Hz)
Shock resistance conforming to IEC 68-2-27			30 gn (6 ms)	10 gn (18 ms)	30 gn (11 ms)	10 gn (18 ms)
Electric shock protection			Class II conforming IEC 536			
Mounting and fixing			Flush mounting element	Flush mounting unit fixed by a clamp	Flush mounting unit fixed by a self-locking clamp	
Connection			By AMP lugs on a cable connector	On screw terminal block		
<b>Characteristics</b>						
Supply voltage		V	A 24 ± 10% A 48 ± 10% ? 115 ± 10%	Battery	? 24 ± 10% 50 Hz ? 115 ± 10% 50 Hz ? 230 ± 10% 50 Hz	Battery
Consumption		W/VA	XBK-T50000U10M, XBK-T50000U08M and XBK-T70000U00M: 1.5 XBK-T50000U11M: 2.5 XBK-T60000U10M and XBK-T80000U00M: 2.5 XBK-T60000U11M: 2.75 XBK-T60000U00M: 0.155	–	XBK-T70000001M: 0.56 XBK-T70000002M: 1 XBK-T70000004M: 0.08	–
Counting frequency		Hz	10, 20, 25	7500	–	
Back-up capacity			Permanent	7 years	Permanent	7 years
Number of digits			5, 6, 7 or 8	8	7	8
Precision of display			99999... 99999999	99999999	99999.99 h	999999.99 h
Character height		mm	4	7	5	7
Counting mode			Adding	Adding (Input resistance: 50 Ω)	Adding 1/100 of an hour	
Reset to zero			With or without	With	Without	With
Type of reset to zero			Manual	Manual with electric locking	–	Manual with electric locking
Inputs	Function		Count		Enable	
	Type		Contact	Transistor: PNP ≥ 8 V or NPN ≤ 0.7 V	Contact	Transistor: PNP ≥ 8 V or NPN ≤ 0.7 V
	Amplitude	V	–	± 40 V max.	–	± 40 V max.
Mechanical durability			10 million pulses, except XBK-T60000U10M and XBK-T80000U00M: 200 million	–	–	–
Minimum duration of pulse		ms	–	15 at 30 Hz, 0.07 at 7.5 kHz	–	–

# Counters

Totalising counters, predetermining counters and totalising timers

Device type			XBK-P5	XBK-P6
Display type			Mechanical	LED or LCD
<b>Environment</b>				
Conformity to standards			EN 50081-2 and EN 50082-2, EN 61010	
Product certifications			XBK-P5LLLDLLM: CSA (pending) XBK-P5LLLUULLM: UL/CSA (pending)	UL, C-UL (pending)
Temperature	For operation	°C	- 10...+ 50	0...+ 50
	For storage	°C	- 40...+ 85	- 20...+ 70
Degree of protection conforming to IEC 529			IP 40	IP 65
Vibration resistance conforming to IEC 68-2-6			5 gn (10 to 150 Hz)	1 gn (10 to 150 Hz) conforming to IEC 68-2-6
Shock resistance conforming to IEC 68-2-27			30 gn (6 ms)	10 gn (18 ms) conforming to IEC 68-2-27
Electric shock protection			Class II conforming IEC 536	
Mounting and fixing			Removable flush mounting element Fixing by screws on front plate	Flush mounting unit with fixing by self-locking clamp using needle screws
<b>Characteristics</b>				
Supply voltage		V	A 24 ± 10%	A 24 or ? 230 ± 10% or ? 115 ± 10%
Sensor supply voltage		V	None	A 12 to 24 (50 mA max.) for XBK-P6LL30G32E or XBK-P6LL30G31E
Consumption			2.5 W	150 mA A 24 V, 50 mA ? 230 or ? 115 V
Counting frequency		Hz	25	5000 (2500 on bidirectional counting)
Number of digits			5	6
Display capacity			99999	999999
Character height		mm	4	7.6 (LED) or 9 (LCD)
Number of presets			1	1 or 2
Display of the preset			Adding (continuous) or subtracting (non continuous)	Non continuous
Counting mode			Adding or subtracting	5 programmable modes: - single counter input, - single counter with phase discriminator, - differential inputs, - summing inputs, - counting direction input. (Counter input resistance 5 kΩ)
Reset			Adding from zero Subtracting from the preset value	2 modes: reset to zero and reset to the preset value
Type of reset			Manual or manual and electric	Manual, electric and automatic
Type of input signals			Contact (20 VA/220 V/1 A max.)	Transistor: PNP ≥ 8 V or NPN ≤ 2 V Amplitude ± 40 V max.
Type of outputs			Contact (volt-free)	Changeover relay (response time 5 ms): A 5 V < U <sub>c</sub> < A 30 V ? 5 V < U <sub>c</sub> < ? 250 V 10 mA < I < 1 A PNP transistor: A 12...24 V, 10 mA max.
Connection			By AMP lugs on a cable connector	On screw terminal block
Minimum duration of counting pulse		ms	-	17 at 30 Hz 0.1 at 5 KHz

# Counters

## Totalising counters, predetermining counters and totalising timers

### Introduction

XBK counters associated with detection products (photo-electric or inductive sensors, limit switches) or dialogue products (pushbuttons, selector switches, etc.) can be used to provide a complementary automation system function: **counting**.

### Functions

XBK counters complement the Magelis range of display units and operator dialogue terminals by offering simple display and entry functions. They are in perfect synergy with Telemecanique detection and human-machine dialogue products.

### Technology

The offer comprises two technologies: electromechanical and electronic. The electromechanical type is used for slow counting applications, in the region of tens of Hertz, whereas the electronic type is suitable for counting frequencies of around a kilo Hertz.

These two technologies can be subdivided into three distinct families:

- **totalising counters,**
- **predetermining counters,**
- **totalising timers.**

These three families contain products with varying characteristics:

- display capacity,
- type and number of outputs,
- types of input,
- reset to zero option,
- adding, subtracting, bidirectional or programmable counting mode,
- display in hundredths of an hour (totalising timers).

This enables the products to be more application specific.

# Counters

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### Applications

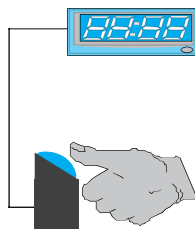
#### Totalising counters

These are used for counting events from electrical pulses or contacts. The value is displayed and updated in increments on each new pulse.

**Application:** counting the number of parts.

**In automatic mode:** the totalising counter performs this operation in conjunction with a photo-electric sensor, inductive sensor or limit switch, which detects the passing of a part and translates this by adding one unit to the number of parts counted by the totalising counter.

**In manual mode:** the totalising counter performs this operation in conjunction with a pushbutton. A press on the button adds one more unit to the value displayed. This system can be used with a ticket distributor or a manual assembly station.



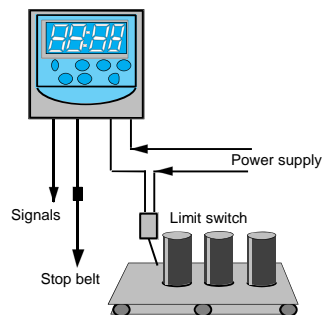
#### Predetermining counters

These are used for counting events from electrical pulses or contacts. The value is displayed and updated in increments or decrements on each new pulse.

They can be used to enter a preset value manually. When this predefined value is reached, they send an electrical signal. Predetermining counters can be adding or subtracting.

**Applications:** upcounting or downcounting the number of parts.

The predetermining counter counts the number of parts in the same way as a totaliser. When the selected value is reached, the predetermining counter, in conjunction with the various sensors, sends a signal to trigger actions such as stopping a machine or conveyor belt.



#### Totalising timers

These are used to count and display the time, with a precision of a hundredth of an hour.

**Applications:** they can be used to measure the duration of an action or the use of a machine.

