

Pneumatic Digital Timer Instructions

For 53.K21.03.00/53.K22.03.00/53.K52.05.00/53.K54.05.00/53.K65.05.10/53.K66.05.10+ ATEX Variants

Smooth functionality and reliable timing can only be guaranteed if the instructions within this document are strictly followed.

Pneumatic pulses are generated and registered on a two-line mechanical display every second or minute. The upper row displays the time elapsed, and the preset value is continuously visible on the lower row.

Pneumatic digital timers are used mainly for industrial machine applications where timing is an essential requirement of a process and used for long periods of cumulative timing when the retention of timing information is necessary. Digital timers retain the last timed value upon loss of air. They are also commonly used in areas where no electrical power is permitted or considered dangerous.

There are two options:

- **Manual pneumatic reset:** The timer starts from zero and times up to a preset value. Input P (mains pressure input) and output A (A connects to P on reaching the pre-set value). Output A is continuous until reset. Time elapsed on the upper row will continue to increment while air is connected to the timing element (port X) until reset.
- **Manual automatic reset:** The timer starts from zero and times up to a preset value. Input P (mains pressure input) and output A (A connects to P on reaching the pre-set value). A single pulsed output (port A) of approximately 300ms to 340ms is generated. Time elapsed on the upper row resets automatically. The process repeats while air is connected to the timing element (port X).

To set the preset values, push down the white lever and increment the display by pushing the adjacent black buttons.

Installation & Mounting

Pneumatic digital timers are intended to be built into the front panel of equipment. Panel cut-out: 52mm x 52mm. Distance between holes: 63mm and fastened with two countersunk M4 screws provided. Please ensure that the panel cut-out is large enough that the timer is not placed under mechanical tension or strain when built in. A rear mounted metal supporting bracket is provided with the timer.

Pneumatic Connections

Digital timers are provided with threaded M5 connections. Input X (input for timing), input Y (input for the reset pulse) [blanked for manual automatic reset option], input P (mains pressure input) and output A (A connects to P on reaching the pre-set value). Please ensure a tight seal is provided by fully inserting tubing and by tightening threads sufficiently providing a proper seal. We recommend the use of self-sealing fittings, this is a fitting that incorporates an NBR sealing ring. We do not recommend the use of thread sealing compounds.

Reset

On reaching a pre-set value, ports A and P are connected - see manual pneumatic reset and manual automatic reset options.

To close pressure to port A and reset the device, press the front reset button or provide a pulse signal to port Y [manual pneumatic reset option only]. Pressure must be removed from the timing input (port X) completely before resetting to avoid jamming, mistiming or irreparable damage to the device. **Note:** Output A cannot be used to reset the device at reset port Y.

Environment

Not suitable for external or harsh environments. Protect from corrosion. General advice is to house within an enclosure or control panel with suitable protection rating or use a protective cover. See accessories.

Air Quality

Clean, dry and oil free air to instrument quality standards. Please note that at low operating/ambient temperatures air filters alone will not be sufficient. Air dryers are recommended to achieve low moisture dew point.

Exhaust

Compressed air will exhaust from this device as part of the operating sequence. This could be sufficient volume and pressure to create risk or introduce problems within an enclosure.

Safety & Warnings

Only competent qualified persons should install, mount, attach hoses, initially operate, maintain, test and disassemble this product. Never disconnect power lines or service the device when the system is powered. This product should only be used for its intended purpose and within the limits and conditions as described. When cleaning or servicing the product, to avoid electrostatic discharges, use a damp anti-static cloth.

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Pneumatic Digital Timer Instructions Continued

Technical Data

Pressure range:	2 to 6 bar
Timing range:	999 or 99999 seconds or minutes. Resolution 1/s or 1/m.
Timing input:	1.8 bar minimum input port X. No pressure on port Y [manual pneumatic reset option only].
Timing/frequency error:	Max. 15% first count pulse. 1/s 2% or 1/min 0.5%.
Reset pulse length:	Input port Y - 180 ms minimum. No pressure on port X [manual pneumatic reset option only].
Reset interval:	50 ms before next timing input port X [manual pneumatic reset option only].
Reset frequency:	One reset per two seconds maximum.
IP rating:	IP40 when connected. IP55 when using a polycarbonate transparent cover.
Temperature range:	0°C to +60°C
Medium temperature:	Maximum 30°C (compressed air temperature).
Mechanical life:	30 x 10 ⁶
Display:	3 or 5 digits (dual line display). (W) 4mm or 3mm x (H) 4mm respectively, white on black background.
Reset:	Manual button reset with pneumatic reset to port Y [manual pneumatic reset option only].
Housing:	Plastic material.

Product Selection

Order Code (No ATEX)	Order Code (+ ATEX)	Display Type
53.K21.03.00	57.K21.03.00.EX	3 digit seconds - manual pneumatic reset
53.K22.03.00	57.K22.03.00.EX	3 digit minutes - manual pneumatic reset
53.K52.05.00	57.K52.05.00.EX	5 digit seconds - manual pneumatic reset
53.K54.05.00	57.K54.05.00.EX	5 digit minutes - manual pneumatic reset
53.K65.05.10	57.K65.05.10.EX	5 digit seconds - manual automatic reset [port Y blanked]
53.K66.05.10	57.K66.05.10.EX	5 digit minutes - manual automatic reset [port Y blanked]

Accessories

Order Code	Description
1405613	Hinged cover with rotary knob
1405614	Hinged cover with lock and key
1405404	Flexible Vestolit cover with silver frame
1405587	Flexible Vestolit cover with black frame

ATEX

As well as standard counting devices which are intrinsically safe, we offer ATEX fully certified, CE-marked pneumatic counting products that comply with the ATEX directives for use within category M2 and group II, zones 1 and 21. See product selection.

ATEX counting products (57.K21.03.00.EX, 57.K22.03.00.EX, 57.K52.05.00.EX, 57.K54.05.00.EX, 57.K65.05.10.EX, 57.K66.05.10.EX) conform to the following standards:

Standard	Classification	Issued
EN ISO 80079-36 EN ISO 80079-37	Ex II 2G Ex h IIB T4 Gb (0°C ≤ Ta ≤ +60°C)	2016
	Ex II 2D Ex h IIB T130°C Db (0°C ≤ Ta ≤ +60°C)	
	Ex I M2 Ex h I Mb (0°C < Ta < 60°C)	

Our declaration of conformity can be downloaded from <https://www.impulseautomation.co.uk/downloads>

Warning: ATEX products should never be used in Zone 0 or Zone 20, as defined in IEC 60079-10-1:2015 and IEC 60079-10-2:2015.

The system builder is responsible for ensuring that the final system meets any hazardous zone, EX or ATEX requirements.

Disclaimer

Impulse Automation Limited accepts no responsibility for the application of this product.

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Instructions

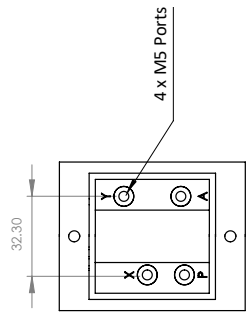
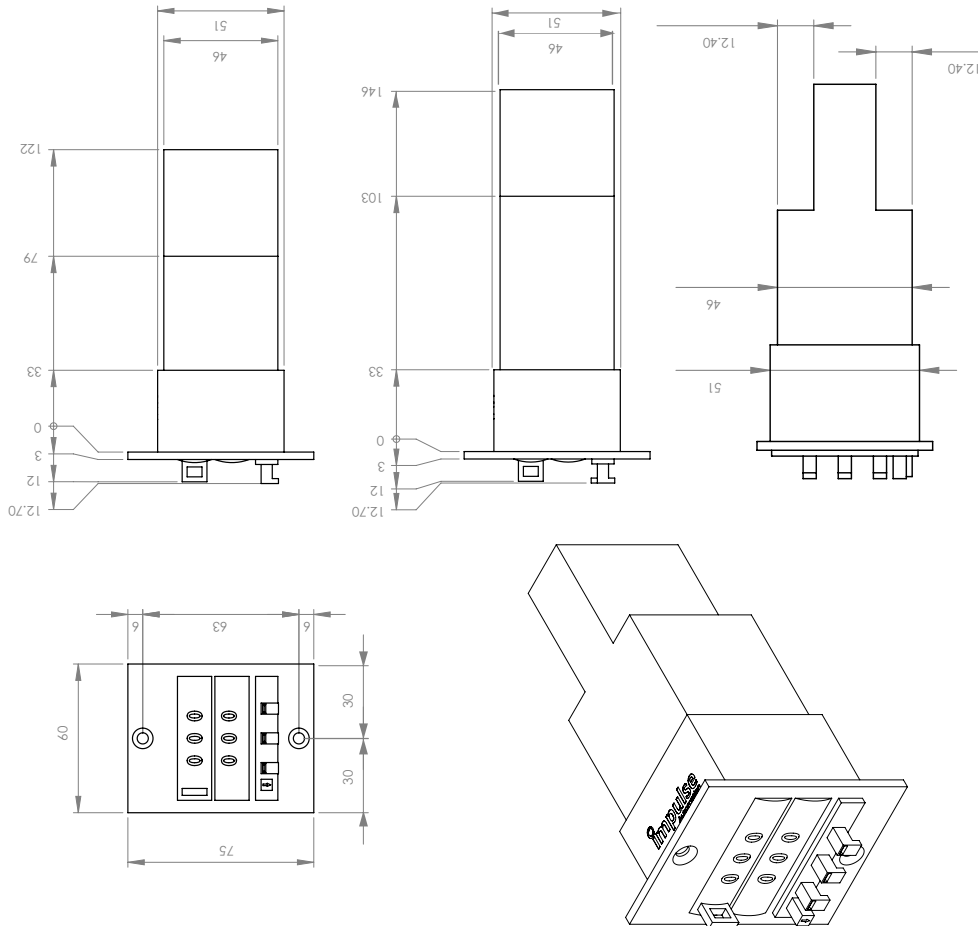
Pneumatic Digital Timer

+ ATEX Models

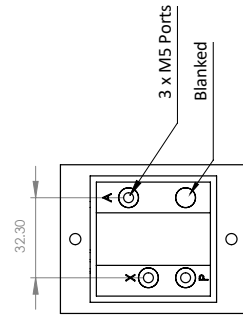


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Pneumatic Digital Timer Drawings



Dimensions and connections manual pneumatic reset.



Dimensions and connections manual automatic reset.

X = Air intake timing element
Y = Pneumatic reset
P = Air intake
A = Output signal

3 digit timer digit size (W) 4mm x (H) 4mm.
5 digit timer digit size (W) 3mm x (H) 4mm.