

# ET SERIES ELECTRONIC SEQUENTIAL CONTROLLER

## Operating & Maintenance Instructions



ET series timers are designed to control the operation of diaphragm valves used to clean reverse jet filters. The timers control both the interval between pulses and the duration of the pulse and ensure that the valves are energised in strict rotation. An external DP signal can be used to automatically start/stop the pulsing to maintain a constant pressure drop across the bag filter.

### General Specification

Power Supply	: 110/220 V, 50-60 Hz ( $\pm 15\%$ ) standard (other voltages on request)
Max Output Power	: 50 VA instantaneous
Output Voltage	: 24 V DC or AC, 110 or 220 V AC (voltage to be specified)
Protection	: 1 mains fuse (3)
Protection rating	: IP65
Operation temperature	: -10 °C to 50 °C +15 °F to 125 °F
Signals	: – LED to show next output to be energised (8) – pulse indication LED (7)
Operating Modes AUTO/MAN (4)	: MAN - Manual setting of pause interval by the potentiometer (10) AUTO Setting of pause interval by the trimmer (9) The timer is connected to a differential pressure controller Filter is cleaned on system demand.
Time Setting	: – Pulse to energise solenoid: 0.05 - 1 sec. - Set with trimmer (6) – Manual pause: 2-60 sec. - Set with potentiometer (10) – Automatic pause: With REMOTE contact 'ON' timer will pulse every 6-20 sec. adjustable with trimmer (9).
Connections	: – Power supply to fixed terminals (2) (0-110-220 Volt) – Outputs to detachable terminal connector (s) (12)
Outputs	: The timers are available in several models for up to 40 outputs. Slave units with extra outputs can then be added. When fewer outputs than the maximum for each model are connected, the internal logic automatically detects this and skips to the next available output.

### Installation

1. Mount the unit using the fixing holes located beneath the cover screws. Hole centre dimensions are given on the attached drawings.
2. Check supply voltage and connect supply cables to relevant terminals (2) via cable gland provided. (Use max 1.5mm<sup>2</sup> cable).
3. Check that output voltage (11) corresponds to coil voltage required and connect outputs to terminal(s) (12) via cable gland provided. (Terminal (12) is detachable to simplify connection).
4. Output voltage is galvanically separated from the supply. Where possible output cables to the solenoids should be run in conduit remote from large or static-producing loads.
5. If used, connect the differential pressure device to REMOTE terminals (5).

## Operation

### INITIAL START-UP

1. Confirm supply voltage corresponds to terminals (2) used.
2. Set switch (4) to MAN.
3. Set Pulse Duration trimmer (6) to approx 25% of full rotation.
4. Set Pulse Frequency control (10) to 5-10 sec.
5. Switch (1) ON.
  - Output LED (8) corresponding to the next output to be pulsed lights up.
  - Pulse LED (7) lights for duration of pulse.
  - Next output LED (8) in sequence lights, until pulsed.
6. Allow system to run through complete cycle to confirm all connections have been properly made and everything is functioning correctly.

### Optimum time settings

#### 1. PULSE DURATION (trimmer (6))

It is necessary to assess the best pulse time by means of tests on the filter under operational conditions (**typical times vary between 0.15 and 0.25 sec**). It should be remembered that the time setting must allow the passage of enough air to fully clean the filter bags. Too short a pulse, though apparently cheaper, may not shake the filters enough, thus forcing the user to increase the frequency of cleaning to compensate and consequently increasing air consumption. Too long a pulse is a direct waste of compressed air.

If a differential control is used skip next instruction (2).

#### 2. PAUSE (STANDSTILL) TIME (control (10)): Manual setting.

The frequency of cleaning must be set to maintain obstruction within acceptable limits. In order to set this value accurately, it is necessary to use a differential pressure gauge connected to the filter between the clean and dirty sides. If there are no particular filter manufacturers instructions on setting, the pause time should be adjusted to give a differential pressure drop with time that does not exceed 100 mm of H<sub>2</sub>O.

It must be remembered that an excessive frequency of cleaning brings about:

- a waste of compressed air and energy
- mechanical stress to bags
- stress to solenoid valves
- more wear to the compressors
- more deterioration of the bags, with consequent increase in maintenance
- more pollution: **90% of a filter emissions occur during cleaning.**

#### 3. PAUSE (STANDSTILL) TIME (control (9)): Automatic setting.

The timer is connected to a differential pressure controller, which sends an on-off signal and starts the timer when the pressure drop in the filter goes over a preset level.

The pulse frequency is preset by the trimmer (9) between 6 and 20 sec.

The connection is made to the REMOTE (5) terminals and the length should not exceed 15 meters, protected by conduit or separated from any supply cables (mains/motors).

Switch (4) to AUTO to allow DP to control the pulse.

## Options

Et timers can be provided with a special interface for automatic setting of the cleaning frequency, which guarantees the best use of the filter in any circumstances.

The timer is connected to a differential pressure controller, which sends a proportional signal based on the degree of clogging of the filter bags. The trimmer (9) is excluded.



[illegible]

\* Depth 100 mm

- \* Weight: 1.0 kg
- \* Depth 100 mm

NO.	Part Description	NO.	Part Description
1.	Main switch	7.	Pulse LED (normally off)
2.	Power supply terminals	8.	Output LED (lighted on the preset output)
3.	Main fuse	9.	Auto pause trimmer
4.	Man-Auto switch	10.	Manual pause control
5.	Connectors for optional differential pressure switch	11.	Output voltage plate
6.	Pulse duration time adjustment trimmer	12.	Detachable terminals for output connection

## Checks and maintenance

The ET timers do not require routine periodical maintenance .However, this does not exclude the possibility of faults occurring. If the device does not work properly, proceed as follows:

### — FAULT

- \* Pulse LED (7) is OFF/  
No output LED (8) is ON
- \* Pulse LED (7) is OFF  
LED (8) is ON on 1 output  
THE timer generates no pulses
- \* The LED's indicate normal  
operation but one or more  
outputs are skipped
- \* Timer is working but cyclical  
progression of the outputs  
does not occur

### — POSSIBLE CAUSE

- \* Defective mains fuse
- \* AUTO/MAN switch (4)  
set on AUTO
- \* Fault in the electronic circuit  
of the basic panel
- \* I.C.555 defective
- \* Interruption of the pause  
potentiometer
- \* Outputs disconnected
- \* Fault in electronic circuit  
of basic panel
- \* ERD 8 card is defective

### — ACTION

- \* Replace the fuse
- \* Re-set to MAN
- \* Replace the basic panel or  
return the faulty device to Mecair
- \* Check external connections  
and loads
- \* Replace card or return unit  
to Mecair

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