Operating Instruction Manual For 5 Way Micro Controller Based Sequential Timer

Model : mps1wd-5 # 1

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OPERATING INSTRUCTIONS OF 5 WAY MICRO CONTROLLER BASED SEQ. TIMER

MODEL : mps1wd-5#1

I. OPERATION OF TIMER TO CONTROL THE SEQUENTIAL OPERATION OF PULSE TYPE SOLENOID VALVES:

The sequential operation of the micro controller controls the solenoid valve `ON' Time and `OFF' Time which in turn allows the compressed air to be injected into the filter bags for cleaning purpose. There is a time base (clock) which generates the clock pulses for the operation of the timer. These clock pulses are shaped and processed through CMOS circuitry to get required pulse for triac firing circuit. These triacs in turn control the solenoid valves. the clock pulses are adjustable to get the required `ON' and `0FF' duration.

II. CONNECTING THE TIMER TO MAIN POWER SUPPLY :

Refer the PCB wiring Diagram No. X' , Dt.0 -0 -200 at the end of this manual (The ident is printed on the PCB as well). The legends used in this are detailed below (From Left To Right) :

2 WAY TERMINAL STRIP (TB4)

PR-SW (P1):
D.P. SWITCH CONTACT (USE N/C CONTACT)
PR-SW (P2):

(IF PRESSURE SWITCH INTERLOCK IS NOT REQUIRED, THE TERMINALS P1, P2 MUST BE SHORTED.)

3 WAY TERMINAL STRIP: (TB1) (CONNECTION FROM LEFT TO RIGHT)

1 : N/O Connection of Relay Output

2 : POLE Connection of Relay Output FOR FEED BACK RELAY O/P

3 : N/C Connection of Relay Output

3 WAY TERMINAL STRIP: (**TB2)** (CONNECTION FROM LEFT TO RIGHT)

PH : Phase / Live connection of mains supply (230V AC)

N : Neutral / Cold connection of mains supply

COM : Solenoid common connection.

6 WAY TERMINAL STRIP: (**TB3)** (CONNECTION FROM LEFT TO RIGHT)

1 : Output through power semiconductor for Valve No. 1

2 : Output through power semiconductor for Valve No. 2

3 : Output through power semiconductor for Valve No. 3

4 : Output through power semiconductor for Valve No. 4

5 : Output through power semiconductor for Valve No. 5

6 : Spare for 5 No. O/P

Once these are understood thoroughly, open the front cover of the equipment by loosening two wing Nuts provided. By using Knockout gland plate for input & output connections for suitable wire. If the Pressure Switch Connections are not required or not utilized, do not make any change in the connections with the Timer provided. But if it is not so then connect it as shown in the Diagram provided. (IF PRESSURE SWITCH INTERLOCK IS NOT REQUIRED, THE TERMINALS P1, P2 MUST BE SHORTED.)

W A R N I N G :

PHASE (LIVE) must be connected to Electrical Phase of the Power Supply . This should be observed strictly otherwise equipment will give shocks if any portion of the circuitry is touched by bare hands). `N' must be connected to Electrical `N' or Cold connection.

III. SETTING THE ON TIME AND OFF TIME DURATION :

`ON' TIME SETTING KNOB (Red / Grey Colour Knob) DURATION SETTABLE :

20 mSec. To 200 mSec.

`OFF' TIME SETTING KNOB (Blue / Black Colour Knob) DURATION SETTING :

2 Secs. To 60 Secs.

IV. SELECTING NUMBER OF WAYS REQUIRED :

This is done by setting the flying lead of the programming system to the required No. of channel required at the output i.e. for 5 way output reset lead (Yellow / Red / Blue) to 3th Pin and for 5 Way to 5th Pin and so on.

V. AUTO/MANUAL MANUAL PULSING PUSH BUTTON.

Manual pulsing of outputs can be done by MANUAL P.B switch. The output of each solenoid valve can be checked sequentially by using PUSH BUTTON (P.B.) provided switch on PCB. (top center of PCB). At time of manual pulsing, you should keep "OFF TIME" pot on maximum position. After finishing manual pulsing Timer automatically goes to Auto Mode (pl. check OFF TIME which you required)

V. ON DEMAND PULSING (REMOTE ON/OFF CONTROL) :

P1, P2 Terminals (TB 4) on sequential controller stops functioning when contact at P1, P2 closes. Sequence continues from point where it had stopped when contact reopens.

VI. FUNCTION INDICATOR OPERATIONS :

Function Indicator LEDs are very useful version of this sequence controller. They indicate both status and functioning of the sequence controlling triacs as well as solenoid valves. Following Table describes the complete operation if these LEDs and how useful it is to diagnosis the triacs and solenoids.

SR. NO.	DESCRIPTION	LED ON (FLASHES SEQUENTIALLY)	LED OFF	REMARKS
1.	Solenoids connected o/p are OK	Yes	-	-
2.	Triacs work properly with each clock pulse (with solenoid conn.)	Yes	-	-
3.	Triacs short circuited (but solenoid is OK).	-	-	LED ON continuously & brightly.
4.	Triacs open (but solenoid is OK).	-	-	(No flashing LED).
5.	Open solenoid coil or solenoid connection.	Yes	-	No faint glow.
6.	Short circuit in solenoid coil.	-	-	Fuse will blowout

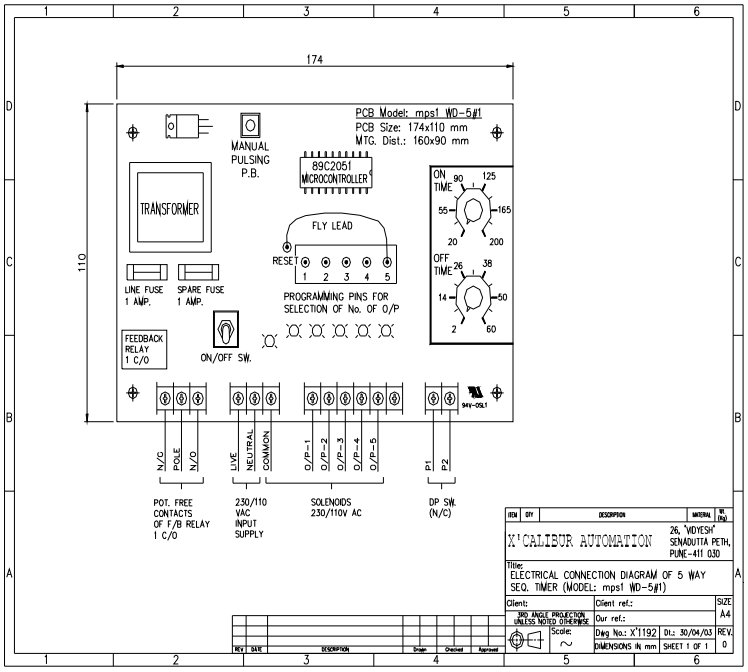
VII. FAULT FINDING AND REMEDIES :

SR. NO.	FAULT	CAUSE	CORRECTION / ACTION
1.	Power switch ON but Neon (Mains) and controller not working.	1. Check 1 Amp. fuse. 2. Loose mains connections.	1. Replace fuse if faulty. 2. Do firm connections.
2.	**Power ON mains LED glows but controller not working**	**Check 1 Amp. fuse.**	**Replace if faulty or tighten fuse cap firmly**.
3.	Equipment give shocks when touched to electronic parts.	Electrical PH & N are not connected properly.	Connect PH To PH and N To N (COLD).
4.	1 Amp. fuse F1 blows off frequently.	Short circuit in solenoid or solenoid line	Clear any short circuit or replace faulty solenoid by new one.
5.	Solenoids not firing	Faulty solenoid i.e. open coil	See Function Indicator LED of that channel

BRIEF TECHNICAL SPECIFICATION FOR 5 WAY MICRO CONTROLLER BASED SEQUENTIAL TIMER CARD

1. ITEM	5 WAY Micro Controller Base Sequential Timer Card
2. MODEL	MpS1WD-5#1
3. APPLICATION	TO PROVIDE TIMED SEQ. ENERGISATION OF PILOT SOLENOID VALVE
4. DETAIL OF CONTROLLER (PCB)	
4.1 INPUT SUPPLY	110V AC or 220V AC *, 50 or 60 Hz.
4.2 INPUT FUSE (ENCLOSED TYPE)	1 Amp. 110, 220V AC, (GLASS 20mm)
4.3 ON TIME	20 TO 200 MILLISECONDS
4.4 OFF TIME	2 TO 60 SECONDS.
4.5 NUMBER OF SEQ. STEPS	1 TO 10 ADJ. through Flying Lead
4.6 TEMP. RANGE OPERATION	0 TO 55o C
4.7 CURRENT RATING PER SEQ.:	
a) MAXIMUM INRUSH CURRENT	10 Amps.
b) MAX. CONTINUOUS CURRENT	2 Amps. (1", 2 Nos. (Max. of Solenoid Valves per channel **)
4.8 MAINS ISOLATION SWITCH	PROVIDED ON PCB
4.9 ON DEMAND CONTROL (PRESSURE SW. CONTACT)	PR. SW. TERMINALS (P1, P2) SEQUENCE CONTROLLER STOPS WHEN CONTACT AT PR.SW. OPENS. (PR. LED GLOWS, & CLOCK LED STEADY ON) SEQ. CONTINUES FROM POINT WHERE IT HAD STOPPED, WHEN CONTACT RE-CLOSES.
4.10 LED VISUAL INDICATIONS:	
a) POWER ON INDICATION	1 No. LED (5mm - RED COLOR)
b) OUTPUT ON INDICATION	10 Nos. LED (5mm - RED COLOR)
C) ON DEMAND MODE	1No. LED (5mm - RED COLOR)
d) MANUAL PULSING	1No. LED (5mm - RED COLOR)
5. MANUAL PULSING	FACILITY PROVIDED (P.B. SW.)
6. FEED BACK RELAY	POTENTIAL FREE CONTACT, 5A @230 V AC
7. PCB DETAILS:	SINGLE SIDE, GREEN MASKED, IDENT, WITH ANTI CORROSIVE SPRAY COATING.
a) P.C.B. DIMENSIONS	174 (L) x 110mm (W)
b) P.C.B. MOUNTING SIZE	160(L) x 90(W) mm (MOUNTING HOLES 4 Nos. 4mm)
8. ENCLOSURE DETAILS **(Optional Extra)**	TYPE- IP-55, SIEMENS GREY POWDER COATED (MOC: M.S. CRCA 1.6 Thk.) WALL MOUNTED.
9. TEST CERTIFICATE	ONE COPY WITH EACH CONTROLLER
10. MAKE	X'CALIBUR AUTOMATION, PUNE-30

Note : * Supplied as 110V AC only or 220V AC only.
** Only Solenoid Makes of X'CALIBUR, ASCO, GOYEN CONTROLS, MECAIR AND AVCON must be used which are pulse duty Bag Filter application Solenoids.


174
110
PCB Model: mps1 WD-5#1
PCB Size: 174x110 mm
MTG. Dist.: 160x90 mm
MANUAL PULSING P.B.
89C2051 MICROCONTROLLER
TRANSFORMER
FLY LEAD
RESET
1 2 3 4 5
ON TIME
90 125 55 165 20 200
OFF TIME
26 38 14 50 2 60
LINE FUSE 1 AMP.
SPARE FUSE 1 AMP.
PROGRAMMING PINS FOR SELECTION OF No. OF O/P
FEEDBACK RELAY 1 C/O
ON/OFF SW.
N/C
POLE
N/O
LIVE
NEUTRAL
COMMON
O/P-1
O/P-2
O/P-3
O/P-4
O/P-5
P1
P2
POT. FREE CONTACTS OF F/B RELAY 1 C/O
230/110 VAC INPUT SUPPLY
SOLENOIDS 230/110V AC
DP SW. (N/C)
ITEM
QTY
DESCRIPTION
MATERIAL
WT. (kg)
X'CALIBUR AUTOMATION
26, 'VIDYESH' SENADUTTA PETH, PUNE-411 030
Title:
ELECTRICAL CONNECTION DIAGRAM OF 5 WAY SEQ. TIMER (MODEL: mps1 WD-5#1)
Client:
Client ref.:
SIZE
A4
3RD ANGLE PROJECTION UNLESS NOTED OTHERWISE
Our ref.:
Scale:
Dwg No.: X'1192
Dt.: 30/04/03
REV.
DIMENSIONS IN mm
SHEET 1 OF 1
0
REV
DATE
DESCRIPTION
Drawn
Checked
Approved