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INSTRUCTION AND MAINTENANCE MANUAL
FOR
TECHTROL 8-CHANNEL SCANNER. ' T-SCN'

(Document No. : MAN / TSCN / Rev. O1 / 09 - 2010.)

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We are glad to know that you are using a reliable ' Techtrol Product '. For proper and safe functioning of the same, we suggest you to go through this Manual carefully before installing our instrument.

INTRODUCTION & WORKING :

TSCN - Techtrol 8-Channel Scanner can be used with various Transmitters. TSCN works on 4 to 20 mA / 1 to 5VDC input signal from transmitters. This analog input is converted into digital data by A to D converter. A microprocessor then calibrates the input and controls the output functions of the display & relays as per configuration.

FEATURES :

- A** A 16 X 2 Dot matrix backlit LCD Display.
- B** Two character process identification.
- C** Engineering unit selection in programming.
- D** Two Level alarm generation and display [HH, LL]. Alarm set points are programmable.
- E** Relay outputs 8 nos.(or upto 16 on request) independently configurable on alarms or latching type ; set & reset.

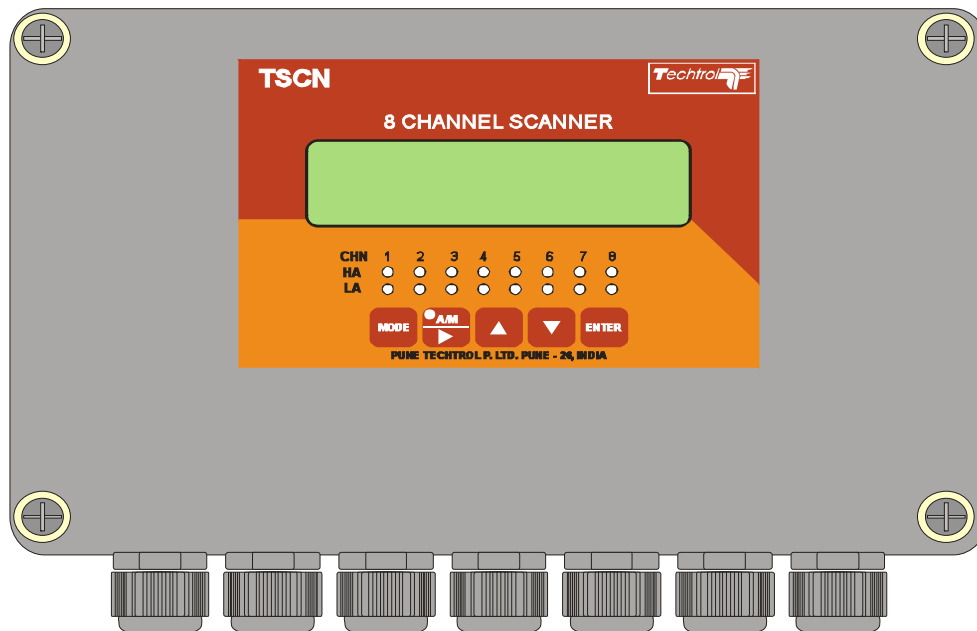
SPECIFICATIONS :

1	CIRCUITRY	MICROCONTROLLER BASED
2	INPUT	4-20 mA (as per the module selection)
3	OUTPUT	(1) Relay Contact rating 5A @ 230VAC (2) Optional RS 232 / RS 485
4	DISPLAY	16 X 2 Dot matrix backlit LCD Display.
5	PROGRAMMING	Using 5 function keys Mode, Next (Shift), Up (Increment), Down (Decrement), Enter
6	PROTECTION	Optical Isolation for Inputs/Outputs. Lightening Protection using MOV's.
7	SUPPLY	90 - 270 VAC
8	ENCLOSURE	Panel mounting :144 X 96 X 200 mm Wall mounting :260 X 160 X 90 mm

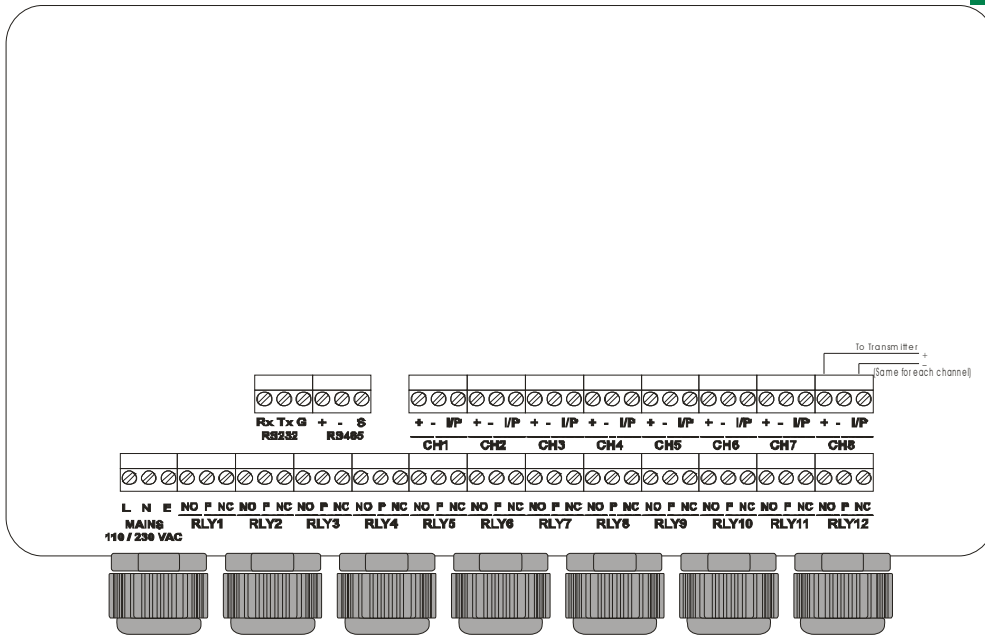
CONSTRUCTION & OPERATION :

MECHANICAL - TSCN is a panel mountable instrument (144X 96 X 200 mm) housed in an Al. extruded section. A wall mounting version is also available in Glass Polyester Enclosure of the size of 260 x 160 x 90 mm.

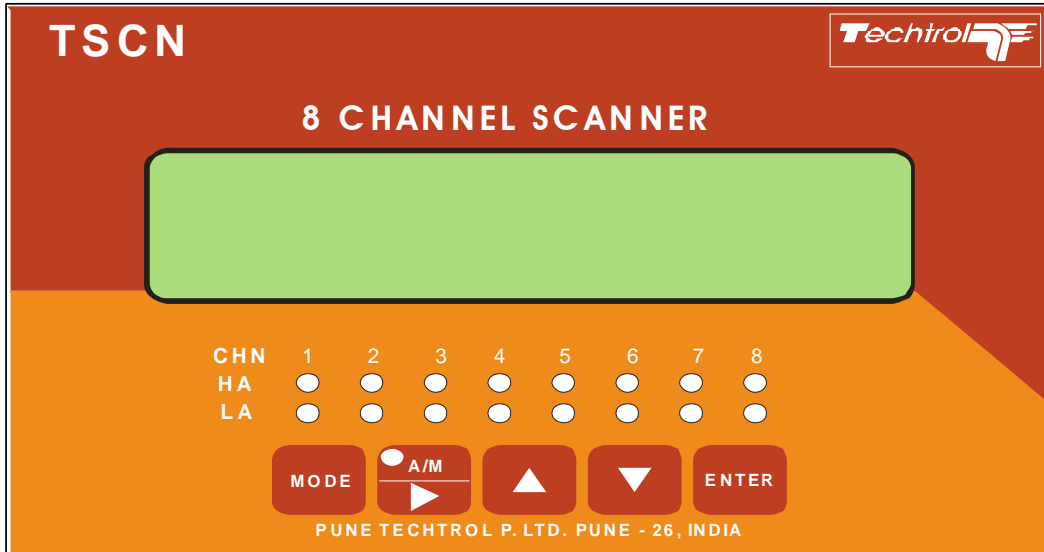
Front Panel (Wall Mtg.)



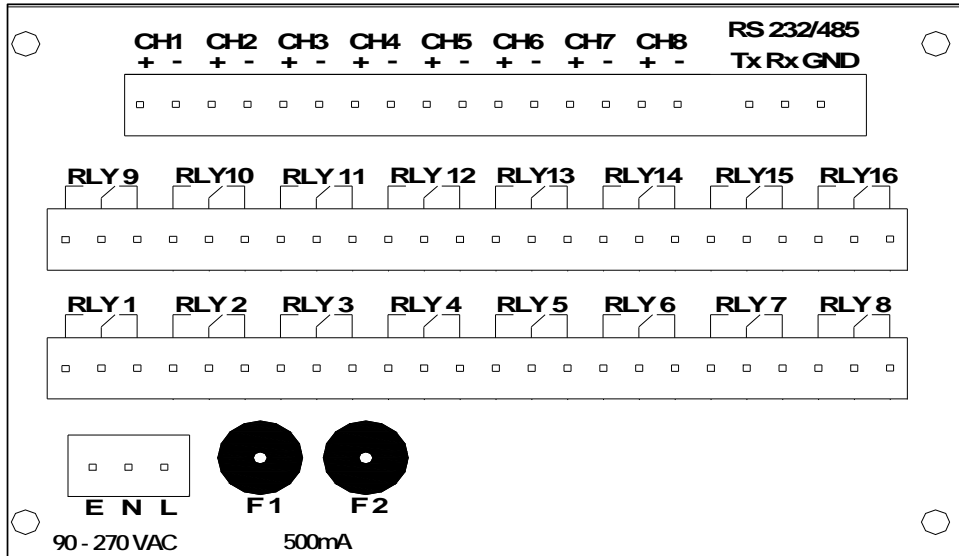
Terminal Details For Wall mounting Type TSCN



Front Panel (Panel Mtg.)



Terminal Details For Panel mounting Type TSCN



KEYS - Five keys provided for programming & to configure data as follows,



Mode Key - Press this key for programe / configure data.



Next (Shift) Key - In program mode this key is used to select next menu or shift right character while entering (editing) the data.



Up (Inc) Key - In programe mode this key is used to increment selected charcter data.



Down (Dec) Key - In programe mode this key is used to decrement selected charcter data.



Enter Key - Key is used to enter parameter & go to run mode.

FUNCTIONAL & PROGRAMMING DETAILS :

RUN MODE :

In run mode the data on display module can be viewed as
 Display line 1 - Indicates Tank no.(channel no.) & Level data.
 Display line 2 - 1st 11 character field displays volume data.

C	H	:	0	1		L	:	X	X	X	X	X		m	m
V	:	1	0	5	4	1	2	3	L	t					



Press NEXT to toggle Auto/Manual mode.

C	H	:	0	2		L	:	X	X	X	X	X		m	m
V	:	1	0	5	4	1	2	3	L	t					



UP (INC) key is used to increment Tank/Ch.no. in manual mode.



DOWN (DEC) key is used to decrement Tank/Ch.no.in manual mode.

C	H	:	0	8		L	:	X	X	X	X	X		m	m
V	:	1	0	5	4	1	2	3	L	t					

PROGRAM MODE :



Press Mode Key for programming.

Using four key combinations password is assigned

E	n	t	e	r		P	a	s	s	_	w	o	r	d	
P	a	s	W	r	d	:	*	*	*	*					

Enter password, if pass-word is correct, continue the programming.

If wrong Pass-word then return to Run mode.

W	r	o	n	g		P	a	s	s	_	w	o	r	d	
.

Menu 1 - This menu is used to configure ScanTime & no.of channels.

M	e	n	u	1	.	.		D	i	s	p	l	a	y	
P	a	r	a	m	e	t	e	r	s						



Press NEXT to display MENU - 2.



Press UP to display previous MENU-1

P	r	g		D	i	s	p	l	a	y		S	c	a	n
T	i	m	e	:				x	x		s	e	c		












Press ENTER key to configure Scan Time & No. of channels

NEXT,UP & DOWN key is used to modify the digits.

P	r	g		N	o	.		o	f		C	h	n	s	
N	o	.	o	f		C	h	s	:	x	x				

Menu 2 - Press ENTER key to configure the Baud Rate.

-  Press Next to display MENU-3.
-  Press UP to display previous MENU-1.
-  Press ENTER key to configure the Baud Rate
-  Press ENTER key to configure the Device ID.
NEXT,UP & DOWN key is used to modify the digts.
-  Press ENTER key to configure the Modbus polling scan rate.
-  Press ENTER key to configure the Modbus polling response time-out.
-  Press ENTER key to configure the Modbus starting address in HEX format.
-  Press ENTER key to configure the Modbus length in HEX format.
NEXT,UP & DOWN key is used to modify the digts.
-  Press ENTER to configure Channel No.
NEXT,UP & DOWN key is used to modify the digts.

M	e	n	u	2	.	.	C	o	m	P	o	r	t	1
P	a	r	a	m	e	t	e	r	s					

M	e	n	u	2	.	.	C	o	m	P	o	r	t	1
B	a	u	d	R	a	t	e	:		x	x	x	x	

M	e	n	u	2	.	.	M	o	d	b	u	s		
D	e	v	i	c	e	I	D	:	x	x				

M	B	P	o	l	l	i	n	g	S	c	a	n		
R	a	t	e	:		x	x	x	x	x	m	s		










P	o	l	l	R	e	s	p	T	i	m	e			
O	u	t	:			x	x	x	x	x	m	s		

M	B	S	t	a	r	t	A	d	d	r	e	s	s	
H	e	x	:			x	x	x	x					

M	o	d	b	u	s	L	e	n	g	t	h			
H	e	x	:			x	x							

C	o	n	f	i	g	u	r	e	:	C	h	N	o	
C	h	.	N	o	.	:		x	x					

Menu 3 - Configure Level Range. Bottom offset, Level Unit, Volume Unit and Tank number.

-  Press NEXT to Display MENU - 4.
-  Press UP to display previous MENU-2.
-  Press ENTER to configure level range in mm.
NEXT, UP & DOWN keys are used to select & modify the digit.
-  Press ENTER to configure Bottom offset.
-  UP (INC) key is used to modify the sign.
-  Press ENTER key to configure Level bottom offset in mm. NEXT, UP & DOWN keys are used to select & modify the digit.
-  Press ENTER key to configure Level unit. UP key is used to toggle the units % / mm / cm / mtrs.
-  Press ENTER key to configure Volume unit. UP key is used to toggle the units % / Ltrs / KL / m3.
-  Press ENTER key to configure Tank No.
NEXT, UP & DOWN keys are used to select & modify the digit.

M	e	n	u	3				:	C	H	:	x	x		
M	H	,	B	O	F	,	U	n	i	t	s	,	T	N	o

M	e	n	u	3				:	C	H	:	x	x	
L	R	a	n	g	e	:	x	x	x	x	m	m		

M	e	n	u	3				:	C	H	:	x	x	
B	O	f	f	s	:						+			





M	e	n	u	3				:	C	H	:	x	x	
B	O	f	f	s	:	x	x	x	x	x	m	m		

M	e	n	u	3				:	C	H	:	x	x	
L	e	v	e	l	U	n	i	t						


M	e	n	u	3				:	C	H	:	x	x	
V	o	l	U	n	i	t								

M	e	n	u	3				:	C	H	:	x	x	
T	k	.	N	o	.	:	X	X	X	X	X			



Menu 4 - Level Alarms set point values can be programmed using this menu.

-  Press NEXT key to display MENU-5
-  Press UP to display previous MENU-3.
-  Press ENTER key to configure Level alarm
-  For default value press ENTER or Press NEXT key to programe the level alarm independetly


M	e	n	u	4	.	.	.					C	H	x	x
A	l	a	r	m	s	e	t		p	o	i	n	t		

-  Press ENTER key to configure level alarm- HH alarm set point in mm .

M	e	n	u	4	.	.	.					C	H	x	x
	H	H	S	E	T	:	X	X	X	X		m	m		

-  NEXT (SHIFT) key is used to select digit
-  UP (INC) key is used to modify the digit.






M	e	n	u	4	.	.	.					C	H	x	x
	L	L	S	E	T	:	X	X	X	X		m	m		

-  DOWN (DEC) key is used to decrement the digit

M	e	n	u	4	.	.	.					C	H	x	x
		L	H	y	s	:			X	X		m	m		

Same logic is followed for all channels.

Menu 5 - This is Calibration Menu.

-  Press NEXT key to display Menu 6
-  Press UP to display previous MENU-4.
-  Continue calibration menu if pass-word is correct. If wrong Pass-word then return to next menu.- 6
-  Feed 4mA input from calibrator , display will show cal zero counts, press ENTER to set.
-  Feed 20mA input from calibrator,display will show cal span counts, press ENTER to set.






M	e	n	u	5	.	.	.								
C	a	l	Z	e	r	o	S	p	a	n					

M	e	n	u	5	.	.	Z	/	S	:	C	H			
p	a	s	w	r	d	:	x	x	x	x					

Z	e	r	o	C	o	u	n	t	x	x	x	x	x		
P	r	e	s	s	E	N	T	t	o	s	e	t			

S	p	a	n	C	o	u	n	t	x	x	x	x	x		
P	r	e	s	s	E	N	T	t	o	s	e	t			

Menu 6 - This menu is used to enter Volume Strap Table for linear & non - linear tanks. Level interval in mm is entered first. Then the respective Volume is entered for each strap level. The strap level starting with 0 mm is incremented as per the strap level interval programmed. Volume entered between two points is linearly interpolated for level values between two points. Note that each volume entry is automatically saved in nonvolatile memory.

-  Press NEXT key to display MENU -7.
-  Press UP to display previous MENU-5.
-  Press ENTER key to enter strap level intervals. NEXT, UP & DOWN keys are used to select & modify the digit.
-  Press ENTER key to enter Volume in Ltrs for any strap level. NEXT, UP & DOWN keys are used to select & modify the digit.
-  Mode key is used to Escape from this menu.

M	e	n	u	6	.	.	.	.			
v	o	l	u	m	e	s	t	r	a	p	.	.	.		

C	H	x	x	V	o	l	u	m	e	S	t	r	a	p	
L		I	n	t	:		x	x	x	x		m	m		

S	t	r	a	p		L	:	x	x	x	x		m	m	
V	o	l	:		x	x	x	x	x	x	x		L	t	r

Menu 7 - This menu is used to save programmed data in nonvolatile memory.



Press NEXT key to repeat Menu 1.

M	e	n	u	7	.	.	.	.	.	.	.	.	.	.	.	.	.
S	a	v	e		p	r	o	g	.	D	a	t	a				?



Mode key is used to return next menu without save.



Press ENTER key to save and return to Relay programming menu.

Menu 8 - Using this menu each relay can be configured either on HH / LL level Alarms or Latch for selected channel

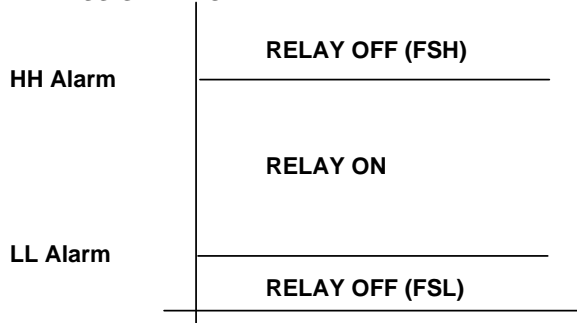


Press NEXT key to return to next menu 9.

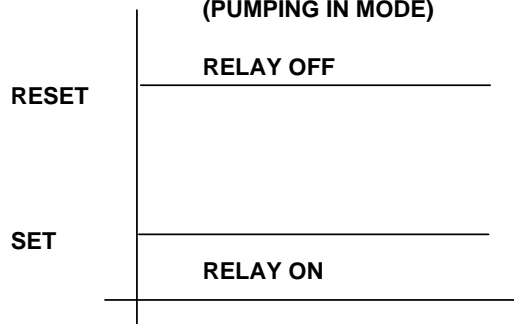
Relay can be configured on latch mode by setting set & reset values in mm for Pumping in or Pumping out modes or NO - OFF Valve Operation. If the relay is configured on HH alarm, relay is energised in normal mode & de-energised whenever level is \geq HH set point (FSH operation). Hysteresis is applicable for relay pickup. If the relay is configured on LL alarm, relay is energised in normal mode & deenergised whenever level is \leq LL set point (FSL operation). Hysteresis is applicable for relay pickup.

If the relay is configured on latch mode & if Set value is $>$ Reset value then the relay is energised when Level is \geq Set value & de-energised when Level is \leq Reset value. If Set value is $<$ Reset value then the relay is energised when Level is \leq Set value & de-energised when Level \geq Reset value.

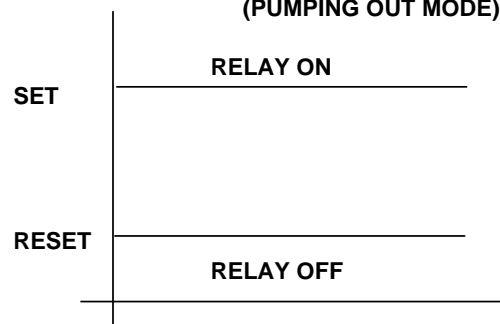
RELAY ASSIGNED TO ALARM




RELAY ASSIGNED TO LATCH (PUMPING IN MODE)




RELAY ASSIGNED TO LATCH (PUMPING OUT MODE)





 Press ENTER key to configure the relay in Default condition or press NEXT key for relay programming
In default condition all 8 relays will operate on HH level alarm set point of each channel.

M	e	n	u	8										
R	e	l	a	y		p	r	o	g	r	a	m	i	n	g			

 Press ENTER key to configure Relay 1 NEXT, UP & DOWN keys are used to select & modify the Ch.no.


R	0	1	,	C	H												
C	h	.	N	O	:	x	x										

 Press ENTER key to
Configure relay on ALARM / LATCH


 UP (INC) key is used to toggle the
Alarm / Latch

R	0	1	,	C	H		x	x									
A	l	a	r	m													


 Press ENTER key to select.


 UP (INC) key is used to toggle the
HH / LL

R	0	1	,	C	H		x	x	,	A	l	a	r	m			
A	l	a	r	m	:					H	H						

 Press ENTER key to configure Relay 2
NEXT, UP & DOWN keys are used to
select & modify the Channel no


R	0	2	,	C	H												
C	h	.	N	O	:	x	x										

 Press ENTER key to select
Configure relay on ALARM / LATCH


 UP (INC) key is used to toggle the
Alarm / Latch

R	0	2	,	C	H		x	x									
L	a	t	c	h	:												

 Press ENTER key to select.

 Press ENTER key to select.
NEXT, UP & DOWN keys are used to
select & modify the digits.

R	0	2	,	C	H		x	x	,	L	a	t	c	h			
						S	e	t	:	x	x	x	x	x	m	m	


 Press ENTER key to select.
NEXT, UP & DOWN keys are used to
select & modify the digits.

R	0	2	,	C	H		x	x	,	L	a	t	c	h				
						R	e	s	e	t	:	x	x	x	x	x	m	m

 Press ENTER key to select.

Same logic is followed for remaining relays.
It will save the relay programming & go to run menu.

Menu 9 - Using this menu, Password can be changed.

 Press NEXT key to return to Run Mode without
changing the password.
Press ENTER key to change password.

M	e	n	u	9										
C	h	a	n	g	e		p	a	s	s	w	o	r	d	?			

Enter the password using four key combination.

E	n	t															
P	a	s	W	r	d	:											

E	n	t															
P	a	s	W	r	d	:											

6 TROUBLE SHOOTING -

Fault / Defect		Cause & Remedy	
1	No Back lit & Message appears on Display	a	Check mains & fuses.
2	No change in Level	a	Check Level transmitter / 4 - 20 mA, 1 to 5 V
		b	Check if calibration is correct .
		c	Check Level Range Value is properly programmed .
3	Alarms generation faulty	a	Check Level Alarm Set points & Hysteresis programmed properly.
4	Relay operation faulty	a	Check Relay Configuration is correct.
		b	Relay is faulty
		c	Fault is due to 2 and or 3
5	Volume reading faulty	a	Check Volume strap entry is correct
		b	Fault is due to 2