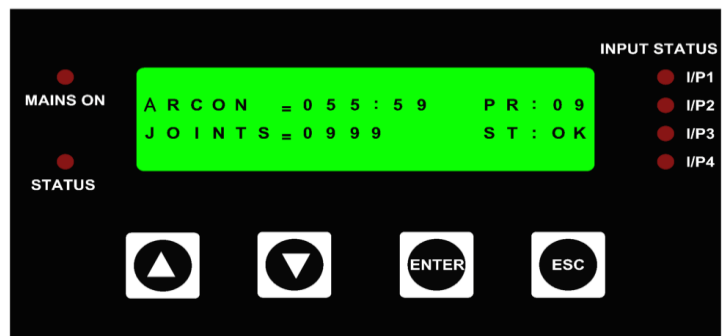# ARC ON TIME MEASURING UNIT WITH WELD JOINT COUNTER

Many times the welding job consists of number of joints and counting of such joints becomes very important to ensure the job is completed as per the requirements and no joint is missed out. Without going into big automation and complex system for counting number of joints as per jobs, a simple add on standalone unit can do this. Following article gives information about how this unit works and how it can be used for individual's application.

This unit can store sixteen different jobs with their respective number of joints. Individual job can be selected by binary input which can be given from external switches or PLC binary output. This unit has to be connected to output terminals of Welding power source and with the help of binary input, job stored at particular location (Program number) has to selected to start the number of joint counting.
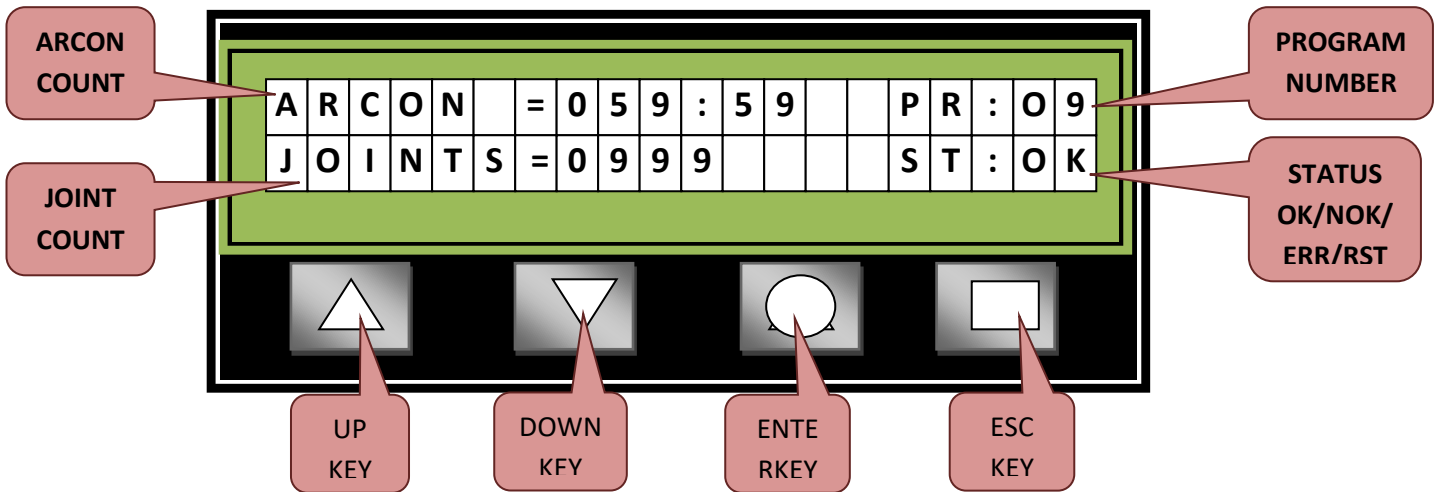

Actual Unit

Front Panel for ARC on timer and joint counting unit

Default screen during welding, Display will show the actual arc on time, number of joints which have been counted after resetting the unit and program number against which unit will give ok/not ok status.

ARCON					=	0	5	9	:	5	9			P	R	:	O	9
J	O	I	N	T	S	=	0	9	9	9				S	T	:	O	K

Labels: ARCON COUNT, JOINT COUNT, PROGRAM NUMBER, STATUS OK/NOK/ERR/RST

Keys: UP KEY, DOWN KFY, ENTERKEY, ESC KEY

Start Counting:-

Before start the counting of joints & arc on time counts has to be clear by user. Previous counts/garbage will be get erased by resetting the unit by pressing 'ENTER' key with password.
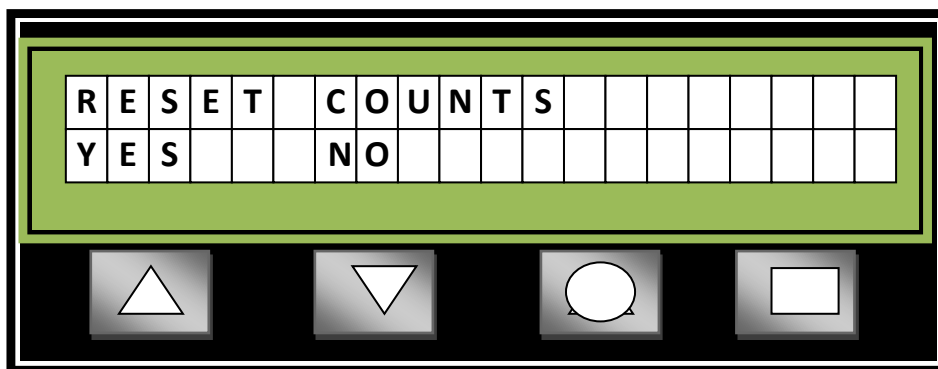
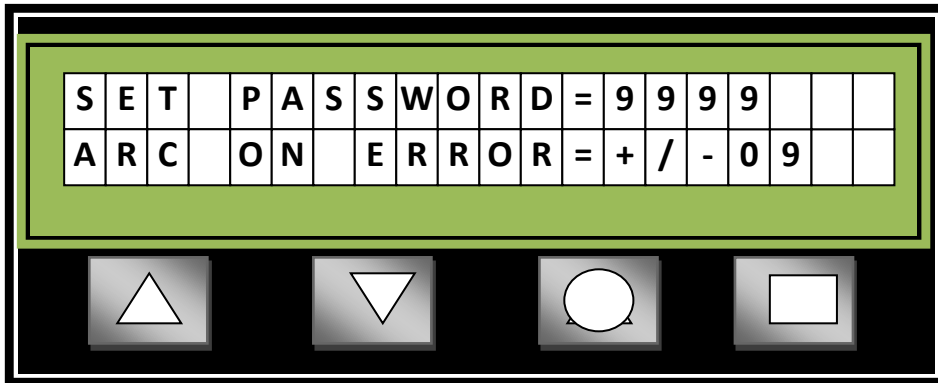| R	E	S	E	T		C	O	U	N	T	S							
Y	E	S				N	O											

If yes, front panel will ask to enter the password to reset the counts. User by using up down key can enter the password & will be check by set key.

If NO, front will come out from password entry mode & will display default screen.

P	A	S	S	W	O	R	D	=	X	X	X	X						
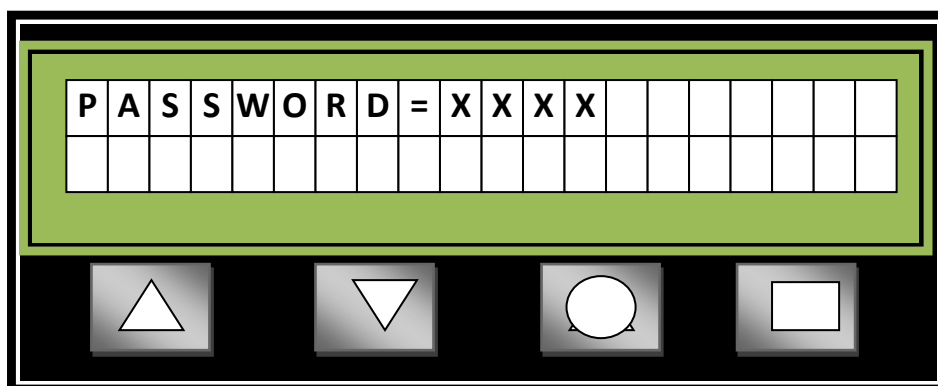
Set or Change the password:-

User can change or reset the password by operating the keys from front panel.

S	E	T		P	A	S	S	W	O	R	D	=	9	9	9	9		
A	R	C		O	N		E	R	R	O	R	=	+	/	-	0	9	

To reset the password (if user forgot the password):-

User can flush all the data stored in EEPROM by pressing set key continuously for 20 seconds. It will clear all passwords with all the counts as well as all the programs which are stored by user.

Weld joint ok or not ok status:-

Unit will continuously monitor the entered number of joints & measured number of joint. When both are equal it will compare the measured arc on time with entered arc on time (with+/- hysteresis count) & result will be get indicate be glowing green/red lamp.

(Note:-Joint count will be counted only when welding current is flowing above 50A & arcing time must be more than one second)

To save 16 different programs of Target Joint Counts & Target ARC ON counts in memory:-

Press up & down keys continuously for 2 seconds, then unit will be going into program mode.

A	R	C	O	N			=	0	5	9	:	5	9			P	R	:	O	5
J	O	I	N	T	S	=	0	9	9	9						P	R	O	G	M
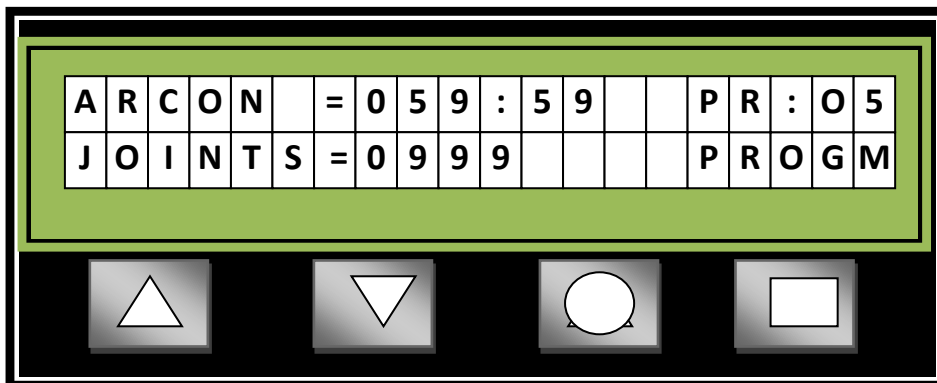
By default program location & program mode will be get blinked. By using Up/Down key user can edit the memory location to view or edit the joint & Arc on time counts.

By using ENTER key user rotate the edit cursor

Memory location→Joints count→Arc on counts→memory location

If program location is blinking, by using Up/Down key user can edit the memory location from 00 to 16 to view or edit the joint & Arc on time counts.

If joint counter is blinking, by using Up/Down key user can edit the joint counts from 000 to 9999.

If arc on counter is blinking, by using Up/Down key user can edit the arc on time counts from 00:00 to 999:59 min:sec.

For Save & Exit from program mode press ESC key continuously for 2 seconds. Unit will save all programs & will get exit automatically & will display the default screen.

Selection of saved program from memory for comparison with running job:-

User can select the program by applying 4 digital inputs continuously of voltage level 0VDC or 24VDC. As per that binary combination program will get reloaded from memory to main code to compare the joint & Arc on time counts.

Input A	Input B	Input C	Input D	Memory Location
0	0	0	0	1
0	0	0	1	2
0	0	1	0	3
0	0	1	1	4
0	1	0	0	5
0	1	0	1	6
0	1	1	0	7
0	1	1	1	8
1	0	0	0	9
1	0	0	1	10
1	0	1	0	11
1	0	1	1	12
1	1	0	0	13
1	1	0	1	14
1	1	1	0	15
1	1	1	1	16

Technical specification of unit :-

Sr. No.	Parameters	Range
1	Input Supply (2 Ø)	0-415VAC
2	Display	LCD Display (20x2)
3	Up, Down & resetting password using keys	Tact Switches
4	Arc on time	000:00 to 999:59 Unit:- min:sec

5	Joints counts	0000-9999
4	Voltage Measurement (using Voltage Isolator)	0-100VDC
5	Current Measurement (using Hall sensor)	0-400A
6	Password for resetting Arc on timer count	Yes (0000-9999)
7	Setting of new password facility	Yes
8	Previous welding joint OK/NOT OK compared with program stored in memory.	Led indication/Potential free contact (Maximum rating 1A/230VAC)
9	Memory location to save different Joint Count Target.	16 memory Locations
10	Memory location to save different ARC ON Target.	16 memory Locations
11	Digital binary inputs to select different programs	4 numbers.
12	Voltage levels of digital binary inputs.	Continuous 0 or 24VDC (Potential free inputs maximum rating 100ma/100VDC)

This unit is useful where single welder is working on individual job having number of joints.

In such cases this unit is a simple tool to monitor the numbers of joints and arc on time which is nothing but monitoring quality and productivity for that individual job.