



BETA COMPUTRONICS PVT. LTD.

10/1, IT Park, Parsodi, Nagpur 440 022, MS, India

Phone-91-712-2227125, 91-712-2240122 Fax - 91-712-2242596

Email : betacompngp@gmail.com Website : <http://www.betacomp.com>

OPERATING MANUAL LOOM MONITOR

LMM 6.32C

Version Date:- 30.07. 2010

**LOOM MONITOR MODEL LMM 6.32**

GENERAL- The circular loom is an important machine in plastic and Textile industry. The quality and quantity of the final product largely depends on these machine, hence it becomes absolutely necessary to monitor & control certain parameters around the clock. However every plant has large number of looms and it is not possible for supervisor/ engineer to stand on each loom to monitor these parameters and take corrective measure. Our Loom monitor just serves this purpose.

DESCRIPTION -

The complete system comprise of following.

Packing list-

- | | |
|---|------|
| a) Loom Monitor Box | -1NO |
| b) 15 – pin D- Type connector with 2.5 meter, 12 core shielded cable | -1NO |
| c) Proximity Switch (10/12mm Diameter, PNP) with 6 meter, 3 core shielded cable | -1NO |
| d) Manual and writing diagram | -1NO |

MONITOR-

The Loom monitor is housed in extruded aluminum box. On the front there is a large LCD2X16 Character display and a membrane keypad with 4 keys . On the back side there is a 15 pin 'D' type connector for terminating various signal & 24v AC input supply , LED to indicate the status signal , 3pin connector for proximity switch ,key lock to prevent unauthorized access and a protection fuse . The heart of the Monitor is a signal chip Micro-controller. The Monitor also has Real Time Clock with memory, which will retain the data in the event of power failure.The data can be retained for 10 years. The input signal to the Monitor is optically isolated to ensure adequate protection to Monitor from external disturbance . The LCD display is backlit to facilitate the easy reading in the night. The input power supply to monitor is 24 volt AC .which is easily available in Loom control panel. The shift changeover is done automatically by the micro controller . The Loom monitor should be kept powered round the clock.

PROXIMITY SWITCH :- The loom Monitor is supplied with standard PNP type proximity switch (12mm in diameter and 4mm sensing distance) which teeth of the teeth gear mounted on the shaft of Nip roller. The installation of proximity switch is very easy and requires no drilling . The 'z' clamp which holds the Proximity switch is attached to the frame by fitting it to the right side bolt of Nip Roller bearing block. The pulses sensed by proximity switch are fed to loom monitor which calculates the production.

Following steps are involved to calibrate the loom Monitor for accurate measurement of production:

1. Measure accurately circumference of the nip roller over which fabric rolls.
2. Measure number of teeth of the gear mounted on Nip roller shaft.
3. Calculate the "Length Factor " parameter value as per given formula.
4. Enter this value in "length Factor" parameter of Loom Monitor.

$$\text{Length factor} = \frac{\text{circumference of Nip roller in mm}}{\text{No. of teeth}} \times 16$$

If you find any error in measured value and actual value, then check for following things:

1. Whenever loom stops Nip roller should not rotate in reverse direction , i.e. fabric should not get loose.
2. Depending upon positive or negative errors, decrease or increase respectively the Loom Factor and again check for errors.



These adjustments are required to be done once at the time of installation or whenever Nip roller emery paper is changed or is changed.

INSTALLATION- The Loom Monitor can be installed in main panel or on a separate plate provided with . Following connections are to be terminated on back connector (at the backside Details of 15 'D' type connector are as follows :

Description	15 pin D Type (M) connector	Purpose
24 volts Ac supply	13,14 Red, Orange	Power supply
	3,4	Not used
Weft Break signal (input)	10 , 8 - Gray , Violet	To records Weft breaks
Wrap break signal (input)	9 , 8 - Brown, Pink	To record warp breaks
Cut length signal (input)	1,2,15. 1-NC Blue ,2-com Black , 15-NO Green	Relay contact for stopping loom and indication
Loom On signal (input)	11 , 8 -Yellow ,White	NC when loom is running
3 Pin connector	1-+0v Black ,2-signal Green 3-+24v Red	Pulses from proximity switch

Before switching on power supply to monitor please check following:

- 1 check the complete wiring as per wiring diagram supplied.
- 2 Now switch on the 24v AC supply to Loom Monitor , the LCD panel should show some parameter.
- 3 Use Arrow Key to navigate through all the parameters.
- 4 Use C key and Arrow key to change the parameter value . Many of the parameters can not be changed as these are calculated.

SETTINGS : The Loom Monitor has following setting and should be done only after understanding the function.

Setting are required for parameters --- Length factor ,Roll length , Shift A time , Shift B time Shift C Time, Weft Density, Loom Number, Fabric code.

All the parameter are explained below in detail .

PASSWORD- It is used to prevent the unauthorized access. To change setting of following parameters values password setting is required.

- a) Length Factor
- b) Roll Length
- c) Current Time
- d) Fabric code
- e) Loom Number
- f) Weft Density
- g) Shift A Time
- h) Shift B Time
- i) Shift C Time

Note :- Password is used from 6.30 version. (Key lock is removed & password is added.)

**KEY FUNCTIONS:-**

The Loom Monitor has a large two line 16 character LCD display and 4 membrane type switches on the front panel. The functions of these switches are as follows.

- ↑ The key will move the display up by one parameter. This key is also used when any parameter is to be changed (see below). By pressing this key along with C key the value of Parameter will increase.
- ↓ The key will move the display down by one parameter. This key is also used when any parameter is to be changed (see below). By pressing this key along with C key the value of parameter will decrease.
- C** This key is used for changing the value of parameter along with arrow keys. This key is also used along with R key Master Reset i.e. to reset all the parameters (with / without clock reset). (Password setting is required for master reset.)
Set password & then master reset.
- R** To reset all the parameters (Master reset without clock reset) press C and R simultaneously and recycle 24 Volt AC power supply to Monitor.
(Password setting is required for master reset.)Set password & then master reset.

To reset all parameters along with Clock, press C, and keys ↓ and recycle the 24 VAC supply.
(Password setting is required for master reset.) Set password & then master reset.

Parameter – The display will show number of parameter , which are explained as follows:

00. **Length Factor** – Loom Monitor is calibrated to measure production accurately using this parameter. This parameter is locked by key lock and can not be changed by operator if in locked position. This calibration is needed to be done while installation and whenever Nip roller emery paper is changed or gear is changed.
01. **Roll Length** – The roll length can be set from 1 meters to 10000 in step of 1 meter. It is used to stop the particular roll length. Default value 100.000 meter. Ex. If you want roll of 1000-meter length ,then set roll length factor 1000 meter by pressing C &UP or DOWN Keys. After 999 internal relay activates. This relay can be used for indication and also to STOP the loom. The loom will restart only when R key is pressed. To stop the loom, use NC contact of relay in series with stop push button of the loom. When Roll Length feature is not used, Set Roll Length =0.
02. **Fabric Code-** This parameter can be used to code related to type of fabric being produced on the loom. This parameter is for display only.
03. **Loom No.-** Assign your own loom number here. This parameter is for display only.
04. **Weft Density:** - The actual weft density of the fabric being produced should be entered in this parameter. This parameter is used in calculating pick per minute
05. **Current time-** The current time can be changed using up/down keys. Keeping 'c' key pressed the up arrow key will increase the Min. reading and Down arrow key will increase the Hr (HOUR) reading. This current time together with set shift time is used for detection of shift change. The production and other data will be automatically updated to respectively shift.



06. **Password** – For changing any parameter setting ,the password must be set to 225 and then parameters setting can be changed, 60 seconds (1 minute) after any last change, the password will reset to "0" (disable) . To change any parameter setting again, repeat above procedure.
Key switch is not provided (not used if already provided) in LMM 6.30C version.
For master reset with "C & R" key or "C, R & ↓ key , password setting is required.
 07. **Shift A Time** – The start of shift A Time should be set in this parameter. The end time of shift is the start time shift B.
 08. **Shift B Time** – The start of shift B time should be set in this parameter. The end time of B shift is the start time of shifts C in 3 shift system or start of A shift in 2 shift system.
 09. **Shift C Time** – When 3 shift system is used, C shift is use. The start time of C shift should be set in this parameter.
In 2 shift system C shift is not applicable. Please refer the note below.
- Note:- In 2 shift system only A &B shifts are used . For this , C shift time should be set 24:00 in this case C shift is not applicable.
10. **Current Roll Length:-** This parameter is used to measure the length of the current fabric roll being produced . For this function 'roll length' parameter should be set and roll should be cut when 'current roll length 'equals 'roll length'.
 11. **Total production :-** This parameter will show the total production since last reset of the monitor with C & R key or C ,R ,& down key.
 12. **Pick Per Minute :-** This parameter displays instantaneous pick per minute (Tapes per minute) of the running loom. For correct display of pick per minute accurate weft density of fabric running should be entered in weft density parameter . Accurate setting of length factor parameter is also essential.
 13. **Current weft Delay-** This parameter will indicate time lost for the weft breakage's in current shift.
 14. **Current warp Delay-** This parameter will indicate time lost for the wrap breakage's in current shift.
 15. **Current Weft Break-** This parameter will show the No. weft breakage's in current shift.
 16. **Current Warp Break-** This parameter will show the No. Wrap breakage's in current shift.
 17. **Current Production** – This parameter will indicate production in current shift.
 18. **Current Efficiency** – This parameter will indicate % Efficiency in current shift.
 19. **Weft Delay A shift** – This parameter will indicate time lost for the weft breakage in last A shift.
 20. **Warp Delay A Shift-** This parameter ill indicate time lost for the warp breakage's in last A shift.



21. **Weft Break A Shift-** This parameter will indicate the Total Number of Weft breakage's in last A shift.
22. **Warp Break A Shift-** This parameter will indicate the Total Number of Warp breakage's in last A shift.
23. **Production A shift –** This parameter will indicate total production in last A shift.
24. **Efficiency A Shift-** This parameter will indicate % Efficiency of last A shift.
25. **Weft Delay B Shift-** This parameter will indicate time lost for the weft breakage in last B shift.
26. **Warp Delay B Shift –** This parameter will indicate time lost for the warp breakage 's in last B shift.
27. **Weft Break B Shift-** This parameter will indicate the Total Number of Weft breakage's in last B shift.
28. **Wrap Break B Shift-** This parameter will indicate the Total Number of Warp breakage's in last B shift.
29. **Production B Shift –** This parameter will indicate total production in last B shift.
30. **Efficiency B Shift-** This parameter will indicate % Efficiency of last B shift.
31. **Weft Delay C Shift-** This parameter will indicate time lost for the weft breakage in last C shift.
32. **Warp Delay C shift-** This parameter will indicate time lost for the warp breakage's in last C shift.
33. **Weft Break C Shift-** This parameter will indicate the Total Number of Weft breakage's in last C shift.
34. **Warp Break C Shift-** This parameter will indicate the Total Number of Wrap breakage's in last C shift.
35. **Production C shift-** This parameter will indicate total production in last C shift.
36. **Efficiency C Shift-** This parameter will indicate % Efficiency of last C shift.
37. **Production in mm:-** The total production reading is divided in 2 parameter . The integer part in meters is displayed in total production parameter, and the fractional part in mm is displayed in production in mm .
For ex. 24.007 meter production is displayed as Total production = 24 meters & production in mm=7 mili meters

**PARAMETER LIST**

This is the parameter list programmed in the monitor. The list shows the parameter name , unit, maximum value, minimum value, and lastly decimal location. The first digit of this indicates the number of digit before decimal point and second digit shows the number of digit after the decimal point.

PARAMETER NAME	UNIT	MIN VALUE	MAX VALUE	Master Reset Factory Setting
Length Factor	Mm x 16/th	10	1000	208
Roll Length	Meter	0	10,000	100
Fabric Code	Code	1	10,000	100
Loom Number	Code	32	240	100
Weft Density	Tape/inch	2.0	20.0	10.0
Current Time	Hr :Min	00:00	23:59	00:00
password				
Shift A Time	Hr :Min	01:00	21:59	06:00
Shift B Time	Hr :Min	02:00	22:59	14:00
Shift C Time	Hr :Min	03:00	24:00	22:00
Current Roll Length	Meter.			00
Total Production	Meter.		99,999	00
Pick Per Minute	Nos.			00
Current Weft Delay	Hr :min			00
Current Warp Delay	Hr :min			00
Current Weft Break	Nos.			00
Current Warp Break	Nos			00
Current Production	Mtr.			00
Current Efficiency	Percent			00
Weft Delay A Shift	Hr :Min			00
Warp Delay A Shift	Hr :Min			00
Weft Break A Shift	NO.S.			00
Warp Break A Shift	NO.S.			00
Production A Shift	Meter.			00
Efficiency A Shift	Percent			00
Weft Delay B Shift	Hr :Min			00
Warp Delay B Shift	Hr :Min			00
Weft Break B Shift	Nos.			00
Warp Break B Shift	Nos.			00
Production B Shift	Meters			00
Efficiency B Shift	Percent			00
Weft Delay C Shift	Hr :Min			00
Warp Delay C Shift	Hr :Min			00
Weft Break C Shift	No.			00
Warp Break C Shift	No.			00
Production C Shift	Meters			00
Efficiency C Shift	Percent			00
Production in MM	Mil mtr.			00

Loom Monitor Version : LMM 6.30 Dt. 17/9/08 Updated on 11.07.2009

Note:- Due to continuous product improvement , specifications are subject to change WITHOUT NOTICE.



Important Note:-

- 1) Hardware change are 6.26 :89C52 pin 15 disconnected from RTC (DS12C887/BQ3287) pin 13.89C52 pin 28 connected to RTC pin no. 13 for LMM 6.26, this change is required.
- 2) TL7705 : Pin No.1 :1uf/ 35V changed to 2.2uf/63V +ve to Pin No1
Pin No3 : 10uf change to 1uf/35V Tant. +ve to Pin No 3.
- 3) Maximum Total production that can be recorded is 99,999 meters. After that it resets to 00 and again counts further.
- 4) Whenever 89C52 programmed IC and RTC (DS12C887 or BQ 3287) is changed, it is required to master reset.

For further information please contact,

Beta Computronics Pvt Ltd.
10/1 IT Park, Parsodi,
Nagpur -440022 India.
Web site - <http://betacomp.com>
Tel – +91-712-227125, 2240122
Fax- +91-712-2242596.
Email – mukund@betacomp.com