

The Loom PLC Card for Mechanical Loom

The most popular trend in circular looms is now towards the mechanical looms with AC Drive for main Motor. So where there is not much requirement of frequent mesh changing, the mechanical Looms are giving good output with less complexity and simple to maintain. The increasing cost of spares and the increasing cost of production have put tremendous pressure on Cost reduction techniques.

Use of technology and innovative methods have lead to provide you a loom PLC card, which will reduce your overall panel cost, add more very useful features and makes it very easy for troubleshooting and maintenance.

The loom PLC card is a 'ALL IN ONE' programmed logic controller with the following features.

- ✚ 24V AC Supply Input.
 - ✚ Very easy to install and replace. 'Plug and Play' type.
 - ✚ START, STOP, INCH logic is implemented. Solid state 24V AC outputs for 'START' & 'INCH' output are provided. This will give long life, because Relays are not used for these two outputs.
 - ✚ The zone lamps are used to distinctively indicate all the three faults, namely Warp break zone fault, weft break and the weft End.
 - ✚ **Warp break:** The Circular loom is divided in zones. Each zone wire is directly connected to PLC card. When warp tape breaks, the lever touches ground rod to generate warp break signal. For **warp break**, individual zone lamp light up until STOP push button is pressed.
 - ✚ **Weft Break:** Our 'Weft Break' (magnetic) Sensor can be directly connected to PLC Card. (Relay PCB card is not required). Other make sensor can also be connected by providing Relay Contact (NO). For **weft break**, all zone lamps light up until STOP push button is pressed.
 - ✚ **Weft end:** Our 'Weft End' (Bobbin) Sensor can be directly connected to PLC Card. (Relay PCB card is not required). Other make sensor can also be connected by providing Relay Contact (NO). For **weft end**, all zone lamps will flash (ON and OFF) 10 times and then light up continuously, until STOP push button is pressed. This is very useful additional feature to identify weft end. Other make sensor can also be connected by providing Relay Contact (NO).
 - ✚ **Clutch disconnection in event of Weft Break:** Normally clutch output is always ON and when weft break occurs the clutch output is switched OFF immediately to stop Take-up (Haul Off). This will avoid gap in fabric when weft tape breaks.
 - ✚ Clutch output from the PLC card is 24V AC. If the clutch is of 24V DC then use bridge rectifier and then connect to 24V DC clutch.
 - ✚ Provision for Both **Star & Delta Contactor Driving** OR command to **Main motor AC drive.**
 - ✚ The **Star to Delta** Timer for 'Change over time' is built in the PLC card and hence no separate physical Timer is required. Timer cost is also saved.
 - ✚ "**Star**" to "**Delta**" change over time is adjustable by setting multi turn trim "POT" as per your requirement. (Minimum 4 Sec. to maximum 30 Sec.)
 - ✚ **Two speed operation:** The inch speed and the normal Run speed can be kept distinctively different and the normal Run ramp up speed can be set at as desired. This feature can be used only if **AC Drive** is used for main motor. While inching, the loom is actually required to rotate at lower speed, so that the operator can check if everything is OK and he need not keep pressing and releasing INCH push button continuously to avoid loom rotating at high speed in inching. This is very useful feature for operator to make loom working smooth, efficient and avoid unnecessary breakages or warp tape smashing while inching operation. In this feature AC Drive setting will be required for '2 input two speed' operation. Additional PCB is required for this.
 - ✚ A power saving feature "**Winder Motor automatic ON/OFF function**" is also specially added to switch off winder motor, when the loom is stopped for longer period.
The fabric roll surface winder mechanical design should be such that when winder motor is stopped, then roll should not rotate reverse. The Automatic Winder ON/OFF feature is selectable through 'winder' Link provided on PCB.
When loom is stopped by pressing STOP push button OR due to occurring of any fault and if loom is not attended for some time, then the Winder Motor is stopped by PLC Card automatically. (This delay time is adjustable by multi turn trim "POT" from 30 seconds to about 3minutes 20 seconds) Pressing 'STOP' OR 'INCH' push button, the winder motor starts immediately and after delay of 3seconds, 'Inching' and 'Run' can be done.
- Winder motor auto OFF/ON feature helps in many ways:**
- ✚ Motor overloading while loom is stopped, is avoided. Motor life increases.
 - ✚ Great amount of power is saved and mechanical wear & tear is avoided.
 - ✚ Emery life increase & scratching on fabric is avoided.

✚ This card is also very useful for old looms, where rewiring of panel is required.

✚ **Setting on PLC Card: (Selection of Optional Functions.)**

Single speed with “STAR DELTA” or AC DRIVE and two speed only with “AC DRIVE” selection: Default is **Single Speed**.

Winder Motor power saving feature selection: Default is “**Automatic Winder ON/OFF selected.**”

Function of selection link’s on PLC card as follows.

OPTIONS	LINKS	Version: LMPLC1.8 (With POT for variable delay setting)
FUNCTION Selection Links	LINK SETTING (Open OR Short)	FUNCTION DESCRIPTION
“STAR/ DELTA” or “AC DRIVE” Single speed OR Two speed only with “AC DRIVE” (Star/Delta not selected)	. . Link open	Star Delta or AC Drive (For regular Single speed operation). Star/Delta delay will be decided by T1 POT (Min. 4 Sec. to Max. 30 Sec.). INCH: Main & Star RUN: STAR: Main & Star DELTA: Main & Delta
	. — Link shorted	For Two speed Operation. AC Drive is Required. Inching at lower speed and Run at full speed. INCH: Main & Star RUN: Only Main
“WINDER” Winder Auto OFF functions: Enable or Disable.	. . Link open	Winder motor Automatic OFF selected. Winder off delay will be decided by T2 POT (Min. 30 Sec. To Max. 3 Min., 20 Sec.).
	. — Link shorted	Winder motor is always 'ON'.

Note: -

1) If you want to use “TWO SPEED” function you will require a two speed operation PCB which is supplied by us. For connections, please refer manual or contact our technical department.

2) Whenever selection are change on PCB, to activate the selection press the Stop Bush button & Release, the selection get activate.

Trouble shooting is very easy and systematic due to input and output LEDs

Input LEDs: Green LEDs are provided for all Input Indications.

Output LEDs: Red LEDs are provided for all Output Indications.

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