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

BOBBIN SENSOR

- INSTRUCTION MANUAL
- PACKING LIST
- TEST REPORT
- WARRANTY CERTIFICATE

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

INSTRUCTION MANUAL FOR BOBBIN SENSOR

Introduction: The circular Loom used in woven sack industry has 4-8 shuttle bobbins which provides the weft tapes to circular fabric. If this tape breaks, the fabric is wasted as it contains lots of missing tapes. Our Magnetic sensor has been used widely to detect these types of breaks and avoiding the wastage of fabric. However there has been great demand for detection of near empty condition of shuttle bobbin, so that bobbin can be changed before it is completely empty. This results in zero defect fabric, minimum wastage of tape and more efficient use of manpower. Usually to achieve this, all the shuttle bobbins are replaced at once, even if they are not empty. This results in lot of tape wastage on' Not so empty bobbins'. Our bobbin sensor is designed to detect the near empty condition of bobbin. When the sensor detects the near empty condition of bobbin, the sensor stops the loom, so that only that particular bobbin can be changed. This not only results in Zero defects Fabric, but also Zero wastage on bobbins also.

Description: The bobbin sensor is a highly sophisticated and state of the art sensor to detect when shuttle bobbin nears empty condition. The sensor is based on Infra Red to detect the presence of tape on bobbin, and a powerful, fast microprocessor which calculates various timing and detects the near empty bobbin and sends the trip signal to relay PCB. The relay PCB stops the loom by opening the NC contact which is in series with Loom Stop button or so. As the sensing mechanism is based on infra red principal, color of shuttle bobbin tape and base color of empty bobbin may affect the performance of sensor. However sensor will work faithfully on Light color tape and all mild steel bobbins(empty bobbins Blackish in color and non shining).

Bobbin sensor of M3 version can be fitted on any type of loom namely 4 shuttle, 6 shuttle, 8 shuttle etc.. No separate programming is now required.

'SELF TEST feature is added to check tripping circuit of bobbin sensor and LEDs. On every power ON to bobbin sensor, the LED flashing sequence will be white LED ON, then Red LED ON and then white LED ON again .This flashing on Power ON indicates that sensor is working and while the Red LED is ON for a short time, in effect the RELAY on Relay PCB will be also ON at that moment. This is the 'self test' by bobbin sensor where it checks both the LEDs, and the output connection of sensor up to relay PCB.

Installation and Setting: The installation and setting is fairly straightforward, and can be done by electrician / fitter. Please follow following instructions:

Electrical: Install the Relay PCB in Loom control panel and connect a 24 Volt AC supply, to terminal marked "24VAC"

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

Note:

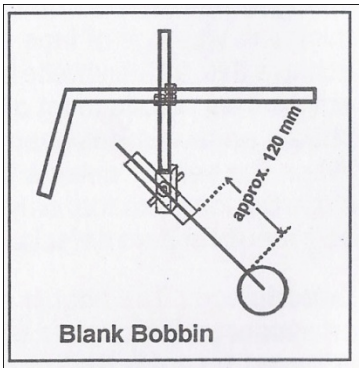
- For loom with Loom Controller and 24VDC supply, a small, inline and cost effective alternative of PNP or NPN PCB is available. In that case Relay PCB is not required. Please contact us for more details.

- Connect 3 wires of sensor to relay PCB. The color code are marked On relay PCB. Red wire: 12 V DC, Green wire: Trip signal output, Blackwire: OVDC.

- Connect NC & Common contacts on Relay PCB in series with STOP Push button circuit wiring.

Mechanical / Sensor Fitting:

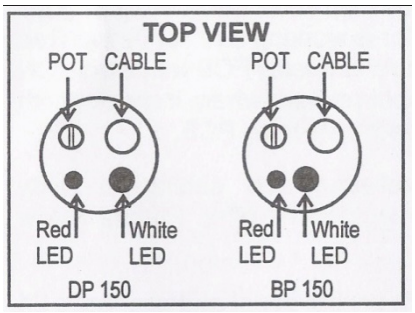
Different looms may require different types of clamp set. We normally supply a commonly required "L" Type three piece Clamp Set.



- Install the universal joint on 20 mm Ring support rod. Ensure that this joint is in horizontal position. (**Note:** For loom manufacturer, we strongly recommend to use fixed type clamping for Bobbin Sensor, so that whenever fabric size changes, re-setting of sensor is not required.)

- Insert the sensor in sensor clamp so that sensor is facing towards bobbin at an angle of 45 degree approximately and distance between sensor front to empty bobbin surface is approximately 120 mm. It is most important to focus the sensor towards centre (axis) of empty bobbin. The sensor must be firmly fitted. Sensor must be focused between the warp tapes, i.e. warp tapes should not interfere sensor working.

- Put small bobbin (1-2 mm of tape) on all shuttles. Bring each bobbin under the sensor and check white LED on sensor lights up. Once all bobbins are sensed, (Bobbin sense indication by white LED on sensor) now run the loom. The white LED on sensor will light up continuously after 2- 3 rotations of loom indicating that all shuttles are sensed correctly. Run the loom continuously.

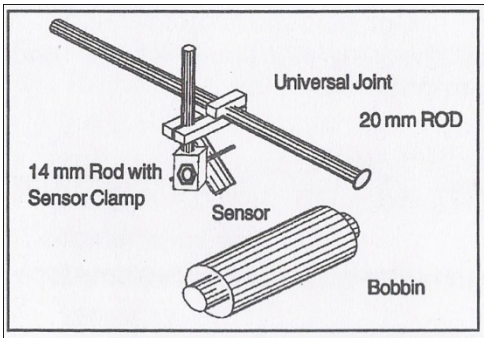


When any bobbin gets near empty, the white LED will flash for some moment and then the red LED on sensor will light up and loom will stop if relay wiring is done correctly. If operator ignores this and runs the loom again, the white LED will flash for 2-3 rotations of loom and then stop the loom again. Thus If one of the shuttle bobbin is 'empty' OR 'sensor is not set properly' and the loom is attempted to start, the bobbin sensor will generate the stop signal and stop the loom, even on repeated attempts in this condition.

Replace the bobbin with normal size bobbin and then one by one check for all bobbins. The sensor should stop loom on each bobbin when they are in near empty condition. Properly set sensor should not sense the 'near empty' bobbin.

- While loom is running, and the white LED is continuously ON, and then if the white LED flashes, it indicates one of the bobbin is not sensed. This indication is very useful in setting of sensor. This flashing also occurs just before tripping (stop) signal is generated from bobbin sensor in near empty condition.

- Now your sensor is ready for operation and will stop the loom faithfully, when any of the bobbins goes to near empty condition. In case the loom dose not stop when the bobbin is near empty, go to troubleshoot section.



LED Indicators: There are two LEDs on the bobbin sensor and two LEDs on relay PCB. The function of these LEDs are described as below:

LED ON RELAY PCB:

- **Red LED**:-This LED will light up for about 2 second when the sensor detects an near empty bobbin and generate a stop signal (on Green wire). Normally this LED should be OFF while loom is running.
- **Green LED:** This LED indicate that 24 volt AC and the 12V DC supply is present. Normally Green LED should be always ON while power is ON.

LED ON SENSOR:

- **White LED:** This LED lights up when a bobbin is under the sensor and it is sensed. (When bobbin comes under sensor, this LED lights up). During normal operation when loom is running , this LED will be ON continuously indicating that all the shuttles are sensed and no shuttle is near empty. If the white LED flashes while loom is running, it indicates that one of the bobbin is not sensed or it is near empty or completely empty. In this condition a stop signal will be generated by bobbin sensor and the loom will be stopped. If this is not the case please refer to troubleshooting section.

- **Red LED:** During normal loom running condition, when white LED is ON, and if any of the bobbins is near empty condition ,this LED will be ON briefly for approximately 2 seconds and will stop the loom by giving signal to relay PCB. The loom should stop immediately after the stop signal is generated. If loom do not stop please refer to troubleshooting section.

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

TROUBLESHOOTING: When the sensor fails to detect the near empty bobbin, kindly refer following for fault diagnosis:

No LED lights upon either Relay Board or Sensor:

- Check if 24 volt AC is coming on Relay PCB. If 24V AC Input is ok then check fuse and 12V DC.

White LED on Sensor does not light up when bobbin comes under it:

- Clean the sensor window (Glass cover in front of sensor) by cleaning cloth.
- Set the distances between sensor and blank bobbin to approx. 120mm or less as required as per tape color and focus it correctly to the centre of bobbin. Sensor should be tightened firmly.

White LED does not light up continuously after loom started and Stops the loom every time the loom is started:

- One of bobbin is near empty or empty.
- Sensor setting may be disturbed. Set the sensor again properly by following the procedure.

Red LED light up when bobbin is near empty, but Loom does not stop:

- Check cable connection from sensor to Relay PCB.
- Check if relay operates properly.

Loom stops before bobbin is near empty:

- Increase the sensing distance by rotating the POT on Bobbin sensor clockwise by a turn and check again. Repeat if required. When Color of Tape is changed, the sensing distance setting by "POT setting" is required.

Loom does not stop even if bobbin is near empty:

- Decrease the sensing distance by rotating the POT on Bobbin sensor anti clockwise by a turn and check again. Repeat if required. When Colour of Tape is changed, the sensing distance setting by "POT setting" is required.

Loom Stops every time with in 2 - 3 rotations after Start command:

- Check if any bobbin is near empty condition.
- Check if all bobbins are sensed properly.
- If all bobbins are sensed properly, white LED should glow continously.

Precautions and Maintenance: With following precaution and maintenance, bobbin sensor will give trouble free service for years.

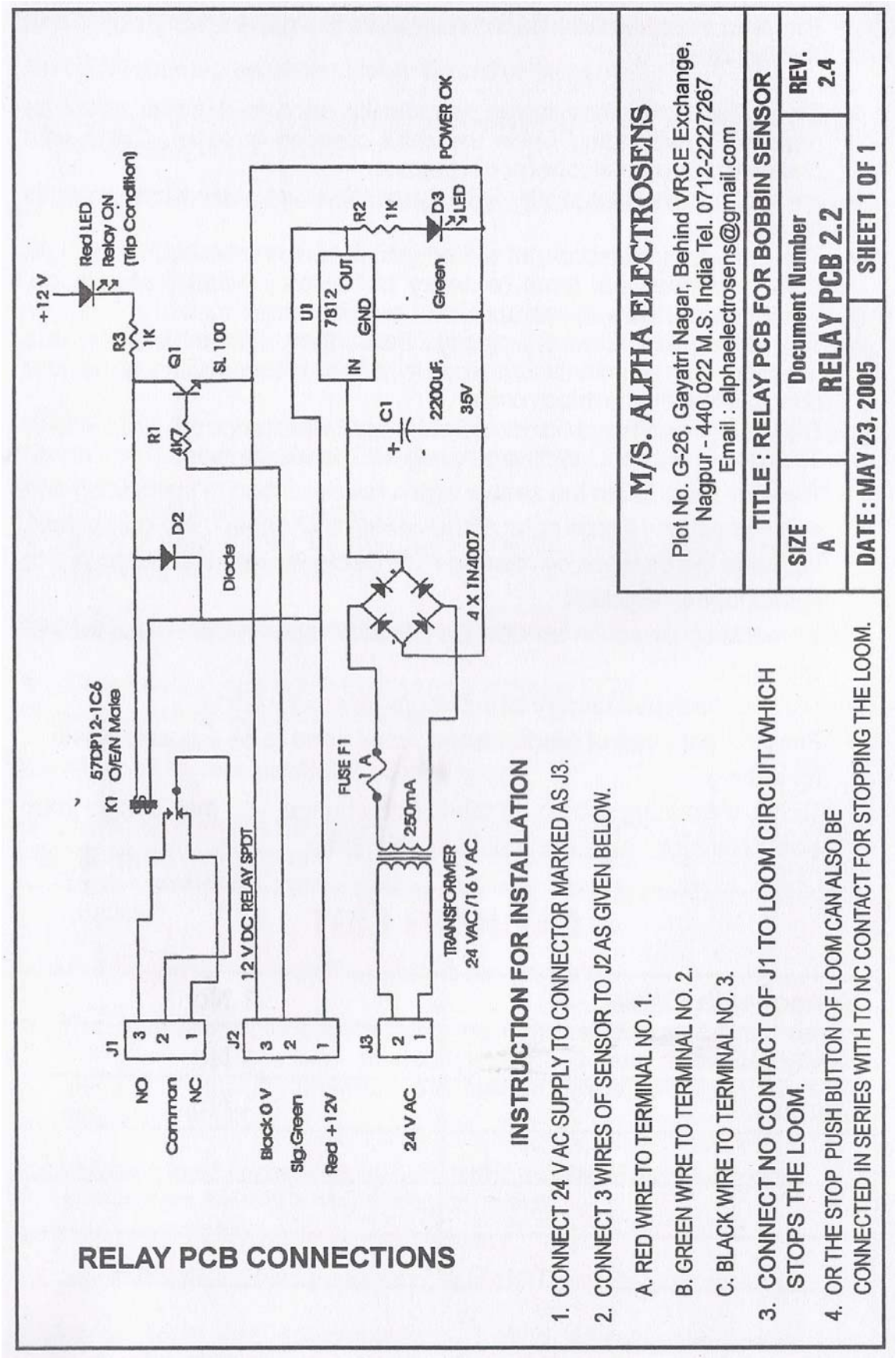
BETA COMPUTRONICS PVT. LTD.
10/1, IT Park, Parsodi, Nagpur 440 022, MS, India
Phone-91-712-2227125, 91-712-2240122 Fax - 91-712-2242596
Email : betacompngp@gmail.com Website : http://www.betacomp.com

Take care to adjust the distance 120mm, around 45 degree angle, focused at bobbin centre axis between the gap in warp tapes and firmly fitted.

- Clean the front glass cover periodically once in 4 hours or so as required, depending upon the dust creation in loom. Clean with cleaning cloth and alcohol or oil remover.
- Always ensure that white LED is continuously ON when loom is running.
- The sensor is based on Infra Red principle. Presence of strong light from incandescent lamp (ordinary bulbs) may affect performance. Please avoid these lamps and use tube lights only.
- The sensor may not work properly if the surface of bobbin is shiny, as is the case with aluminum bobbins. Avoid aluminum bobbin or powder coat them with mat black color. Blackish non shining Mild steel Bobbins will work properly.
- The sensor may not function properly with dark color tape. You may have to set the sensor again (as described in installation and setting section) if tape color of the bobbin is changed. For darker tape increase the distance by rotating POT clockwise and check again. For lighter tapes, reverse it.
- Do not drop diesel on sensor. Do not stick tape on front glass face of sensor.
- Always check periodically all nuts/bolts for sensor fitting.
- For different sizes of fabric, sensor may need to be adjusted again for setting.
- To Avoid frequent setting on fabric size change, you may design your own fixed type clamp suitable to your loom.

PACKING LIST	
Sensor with Cable	1 No.
Relay P.C.B.	1 No.
Manual	1 No.
Packed By	Checked By

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



INSTRUCTION FOR INSTALLATION

1. CONNECT 24 V AC SUPPLY TO CONNECTOR MARKED AS J3.
2. CONNECT 3 WIRES OF SENSOR TO J2 AS GIVEN BELOW.
   A. RED WIRE TO TERMINAL NO. 1.
   B. GREEN WIRE TO TERMINAL NO. 2.
   C. BLACK WIRE TO TERMINAL NO. 3.
3. CONNECT NO CONTACT OF J1 TO LOOM CIRCUIT WHICH STOPS THE LOOM.
4. OR THE STOP PUSH BUTTON OF LOOM CAN ALSO BE CONNECTED IN SERIES WITH TO NC CONTACT FOR STOPPING THE LOOM.

M/S. ALPHA ELECTROSENS

Plot No. G-26, Gayatri Nagar, Behind VRCE Exchange,
Nagpur - 440 022 M.S. India Tel. 0712-2227267
Email : alphaelectrosens@gmail.com

TITLE : RELAY PCB FOR BOBBIN SENSOR

SIZE	Document Number	REV.
A	RELAY PCB 2.2	2.4

DATE : MAY 23, 2005	SHEET 1 OF 1

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

WARRANTY CERTIFICATE

Customer : _____

Address : _____

Sensor Type : _____ Sr. No.: _____

Date of Delivery : _____

Warranty expires on : _____

Terms of Warranty

1. Alpha Electrosens Nagpur (hereinafter referred to a A.E.) offers warranty on its products against any manufacturing defects and /or faulty material / workmanship strictly for a period of 6 months from the date of delivery. Under no circumstances, shall there be any extension in warranty period either because the sensor is partly used / unused or because the sensor might have been nonfunctional due to any reason whatsoever.
2. Warranty does not include / cover plastic parts, ceramics, cables etc. against damage due to mishandling, breakage, alteration and normal wear & tear. The replacement of these parts will be at the sole discretion of A.E. even during warranty period.
3. The defective part will be either replaced or repaired by A.E. or their authorised dealer. Whether to replace or repair a defective part will be left to the sole descretion of A.E. The replaced part will become property of A.E.
4. For installation and warranty servicing of weft break sensor at locations where AE does not have its office or dealer, travelling and other out of pocket expenses for each visit of the engineer will be charged extra. Alternatively during the warranty period, defective part must be sent to A.E. for repair / replacement on both ways freight paid basis.
5. This warranty extends only to problems arising out of normal functioning of the sensor and does not cover breakdown or services or spares cost arising out of whether partly or wholly, misuse of the equipment, abuse, tampering, negligence, mishandling modification or alternation in the circuitry / mechanical assemblies or its use under environmental conditions either not prescribed or suitable for electronic equipment warranty exclude breakdown or services or spares cost arising out of circumstances not considered as normal by A.E. or their dealer, The warranty speficially exclude damage cause due to fire, theft, riots, accidents and other exceptional circumstances, for which seperate insurance coverage is advised.
6. AE's liability udner this warranty, notwithstanding any thing to the contrary of the clauses, is restricted to ensuring that the equipment is in good working order and not other liability whether expressed or implied.
7. The warranty is confined to repairs or replacement of the defective parts only and does not cover any consequential or resulting liability, damage or loss. Furthermore, it shall in no case extend to pay of any monetary consideration or replacement of return of the sensor.
8. The warranty shall be null and void if the equipment is inspected and / or attempted to be repaired by any persons or organisation or agency other than A.E, or their authorised dealer.
9. Any dispute arising out of this warranty shall be subject to the jurisdiction of the court within the city only.

Authorised Signatory

M/S. ALPHA ELECTROSENS

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

TEST REPORT FOR BOBBIN SENSOR

Serial Number		Model	
Year of Manufr.		Date of Despatch	
Customer		Date of Testing	
SHUTTLES		Order Reference	

SENSOR TEST

	At Maximum Sensitivity		At Minimum Sensitivity		At Dispach Seting Sensitivity	
	ON	OFF	ON	OFF	ON	OFF
White						
Green						
Blue						
Blank						

OTHER DETAILS

Sensor Diameter		Operating Voltage	
Sensor Length		Operating Current (max) MA	
Cable Length		Dynamic Test (White LED)	

RELAY PCB

Type		Input Voltage AC	
Relay Make		Transformer Make	
Fuse	1 A	AC Current (MA)	
Additional Delay		DC Voltage (Volts)	

TESTED BY **APPROVED BY**