

PAT DS350

Microtec MkII Light Control Module Input Connection

Deriving input signals to the Microtec MkII Light Control Module from the PAT DS350

Before you begin.

Read through and thoroughly understand the instructions before starting. The Microtec MkII Light Control Module overview available on our website provides more detailed information that may assist you when connecting and configuring your module. Specific instructions for connecting your warning light to the module outputs are also available on the Microtec web site to make the task quick and easy.

If your module is a latching (Thiess specification) unit it should be connected exactly the same as a standard unit. Ensure easy access to the front panel during crane use and beware of the time delays and latching function when performing final tests.

Disclaimer

Microtec products are warranted against defects in materials and workmanship for a period of 12 months from the date of purchase. Microtec will at its discretion repair or replace defective goods within the warranty period. The warranty excludes failures caused by incorrect connection or poor workmanship on the part of the installer. The users exclusive remedy and the suppliers sole liability is limited to refund of the purchase price or replacement of any product shown to be otherwise than as warranted. The supplier will not be liable for incidental or consequential damages of any kind.

These Instructions.

The following instructions detail the **input connections only** to the Microtec MkII light control module for a specific crane / computer type. For details of input connections for a different crane / computer see the specific instructions for that machine or use the "overview" for customised installations.

Reasonable care is exercised in the preparation of these instructions, but variations in machine build may impact the accuracy from time to time and are beyond our control. These instructions should be used by suitably competent personnel for guidance only.

These instructions should be read in conjunction with the Microtec MkII Light Control Module overview for detailed description of connections, specifications, and configuration.

For details of output connections to Microtec and many other types of external warning light, visit our website at www.microteceng.com.au

Preliminary.

Set up the crane and check that the crane systems are fully functional and overload cut out devices function as prescribed by the manufacturer. Check the satisfactory operation of override switches and indicators.

External Warning Light / Output Connections.

Begin by installing a suitable warning light and buzzer to the crane exterior. Microtec manufactures several versions designed for reliability & ease of use with the light control module, see our website for details. Run the connecting cable inside to the Light Control Module. There are many external warning lights available and the Light Control Module is fully compatible in the vast majority of cases. Simple connection details for the most commonly used light fittings are available at www.microteceng.com.au

Input Connections.

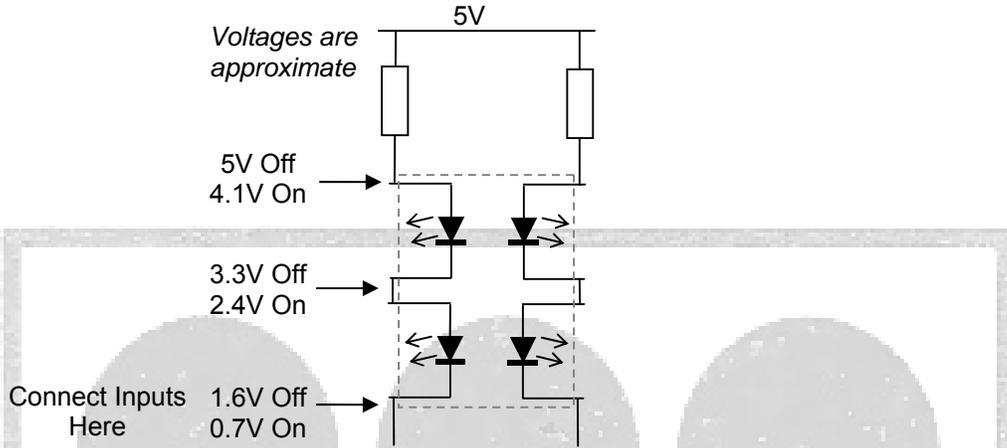
The Light Control Module requires electrical inputs from the machine to activate the outputs. Some signals that may be required are:

- 90% load or Pre Warning
- 100% load or Motion Cut
- All potentially unsafe overrides
- Anti two block / overhoist alarm

Possible connection points from which these signals may be derived are detailed in table 1. Begin by verifying the change in voltage for the given function at the prescribed connection points with a volt meter. When sure of the connections isolate or disconnect the batteries before commencing electrical work.

Table 1 Signal Connections

Light Module Input connection <i>Fig 2.</i>	Function	Connection Point, Position, Description. <i>Variations in display type may require adaptation of these basic instructions. Where wiring diagrams are available connection to the main computer terminals is possible and preferable. Some displays may be fitted with globes instead of LED's simplifying connection.</i>
1	90%	Remove the computer display unit from the dash or housing and remove the rear case to expose the electronics. Drill a hole in the rear case ensuring that no metal particles enter the electronics and fit the hole with an appropriate grommet to facilitate the entry of the signal wires. Four wires are required to tap into the front panel warning LED's, lighter gauge wires are strongly recommended for this (eg. Telephone or bell wire) as the solder terminations will be easier and neater. Firstly the tap point of each LED must be identified. Each LED is actually a pack of four individual LED's with eight pins. The LED's are connected in 2 series strings of 2 LED's connected to permanent 5V at one end through a resistor. When the LED is turned on by the electronics the other end of the chain is connected to GND through a transistor, it is this point that we will tap into. GND the negative probe of a volt meter and identify the switched GND point on the "!" indicator LED as shown below by measuring the voltages. Connect this point to the Light Control Module Input terminal 1. It is good practice to install a 4 pole in line connector into the signal wire to allow easy removal of the computer.
2	100%	Repeat the steps above to identify the correct tap point for the "STOP" indicator LED. The connection point will most likely be in the same relative position on each LED. Connect this point to the Light Control Module Input terminal 2.
3	Override	Repeat the steps above to identify the correct tap point for the "Override" indicator LED. The connection point will most likely be in the same relative position on each LED. Connect this point to the Light Control Module Input terminal 3.
4	2 Block	Repeat the steps above to identify the correct tap point for the "2 Block" indicator LED. The connection point will most likely be in the same relative position on each LED. Connect this point to the Light Control Module Input terminal 4.
5	Not Used	Not Connected
6	Not Used	Not Connected
24V	Supply 12 or 24V	Depending upon crane wiring the 12/24V supply into the Light Control Module may be tapped from the DS350 computer supply or the crane / travel switch. When the supply to the computer is maintained in travel mode the supply must be taken from the crane / travel mode switch. Fuse the supply at 3A.
GND	Supply GND	Connect a new wire to a reliable chassis earth point on the crane. Terminate the wire to Supply GND terminal of the Light Control Module.



Input sensitivity.

The input sensitivity of the light control module inputs should be set to the values in Table 3. For more information on configuration see Microtec MkII Light Control Module overview.

Table 3.

ON	■	■	■	■			■	■
OFF					■	■		
	1	2	3	4	5	6	Mode	

Settings

Input Polarity

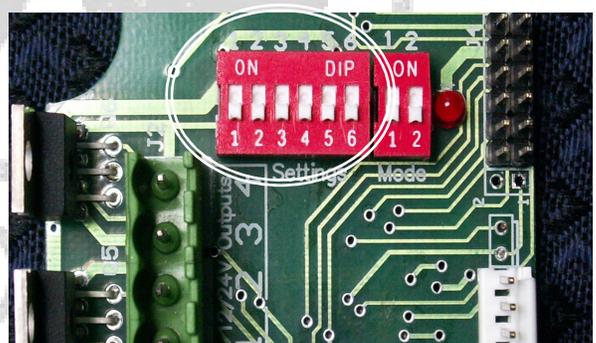
On completion of the wiring the normal input polarity of the Light Control Module must be set as follows:

Table 4

ON	■	■	■	■			■	■
OFF					■	■		
	1	2	3	4	5	6	Mode	

Settings

Fig. 1



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Pull Up Resistors

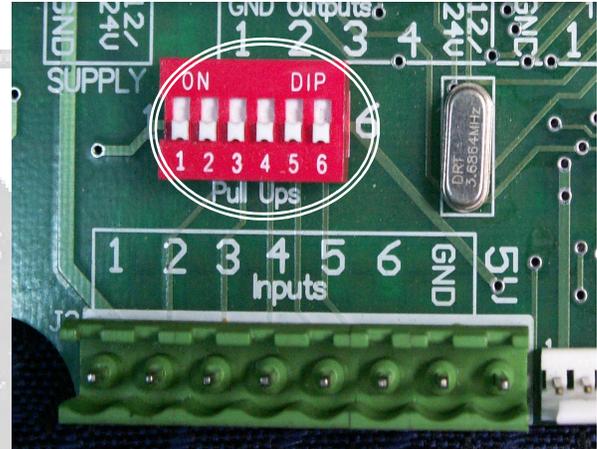
The Pull Up resistors should be set on the Light Control Module as follows:

Table 5

ON						
OFF	■	■	■	■	■	■
	1	2	3	4	5	6

Pull Ups

Fig. 2



Functional tests.

On completion of the electrical work functional tests should be conducted to verify the performance of the system. Set up the crane in a normal working state and ensure that no overrides are active. Providing that the values prescribed in Table 2 were correct and the Input Polarity DIP switches agree with Table 4 the warning light should be Green.

If the warning light does not settle at green check the troubleshooting section below.

- Impose or simulate a 90% load on the crane, the warning light should show Amber.
- Impose or simulate a 100% load on the crane that causes a motion cut, the warning light should show Red and sound the buzzer. Return the crane to a safe (Green) working range.
- Carefully overwind each winch to impose a 2 blocked state on the crane. In each case the warning light should show Red and sound the buzzer. Return the crane to a safe (Green) working range.
- Activate each override switch with inputs to the light control module in turn. In each case the warning light should show Red and sound the buzzer. Return the crane to a safe (Green) working range.

If all of the above states test OK the cables may be tidied and the covers replaced.

Troubleshooting

Check the input voltages with the crane in a safe, normal working state. If any voltages differ from those in table 2, check that all overrides are off and double check your connections. If incorrect operation continues check that your input configurations agree with the appropriate sections above.

Table 2.

Light Control Module Input connection No. <i>Fig 2.</i>	Reading with volt meter with respect to GND, Crane in safe state.
1	1.6V
2	1.6V
3	1.6V
4	1.6V
5	X
6	X

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