Dual Technology Ceiling Mount Sensor

The LOS-CDT Series dual technology ceiling-mount sensors can integrate into Lutron® systems or function as stand-alone controls using a Lutron® power pack. The technology eliminates manual sensitivity and timer adjustments during installation and over the life of the product.

Features

- Intelligent, continually adapting sensor
- Ultrasonic (US) combined with Passive Infrared (PIR) sensing provide high sensitivity, high noise immunity, and excellent false tripping immunity
- Suited for complex environments that are difficult to control with single-technology sensors
- Snap-locks to ceiling-mounted cover plate
- Non-Volatile Memory: settings saved in protected memory are not lost during power outages
- 500 ft² to 2000 ft² (46 m² to 186 m²) coverage when mounted on an 8 ft to 12 ft (2.4 m to 3.7 m) ceiling
- Affords choice of turning lights off or dimming to a preset level in the unoccupied state when integrated with a Lutron® system.

Models Available

Model	Color	Coverage	Field of View
LOS-CDT-500-WH	White	500 ft² (46 m²)	180°
LOS-CDT-500R-WH	White	500 ft² (46 m²)	180°
LOS-CDT-1000-WH	White	1000 ft² (93 m²)	180°
LOS-CDT-1000R-WH	White	1000 ft² (93 m²)	180°
LOS-CDT-2000-WH	White	2000 ft² (186 m²)	360°
LOS-CDT-2000R-WH	White	2000 ft² (186 m²)	360°

Self-Adaptive Feature

The LOS-CDT Series sensors combine both Ultrasonic (US) motion detection for maximum sensitivity and Passive Infrared (PIR) motion detection for false triggering immunity. The self-adapting internal microprocessor analyzes the composite sum of both signals to eliminate time-consuming adjustments and callbacks found in non-intelligent sensors.

Specifications

Regulatory Approvals

• UL® and cUL® listed

Power

• Operating voltage: 20 – 24 V⎓, IEC PELV/NEC® Class 2
• Operating current: 33 mA nominal
• Control output: 20 – 24 V⎓ active high logic control signal with short-circuit protection, open collector when unoccupied

Environment

• Temperature: 32 °F to 104 °F (0 °C to 40 °C)
• Relative humidity: less than 95%, non-condensing
• For indoor use only

Timer Adjustment

• Automatic mode: Continually adapting sensor automatically adjusts settings to the space
• Manual mode: 8 to 30 minutes
• Test mode: 8 seconds

LED Lamp

• Red: infrared motion detected
• Green: ultrasonic motion detected

Housing

• Rugged, high-impact, injection-molded plastic
• Color-coded leads 6 in (15 cm)

Adaptive Functions

• Installation: 60 minutes
• Learning: 4 weeks for response to error conditions, air current adaptation, and timer optimization
• Post-learning occupancy periods
  —24 hour circadian occupancy periods learned
  —Weekly occupancy periods learned
• Adjustments in post-learning period
  —Generally occupied periods
    (threshold = high-sensitivity mode)
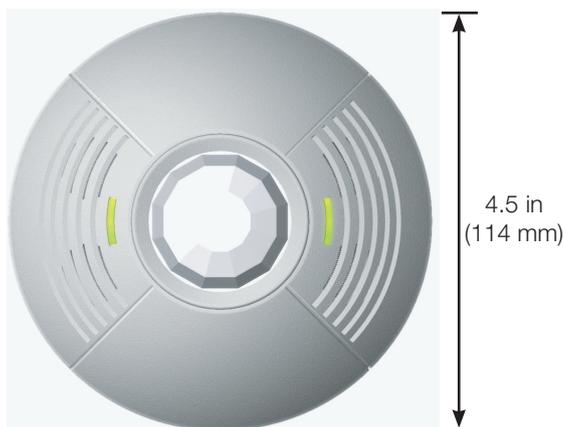 —Generally unoccupied periods
    (threshold = miser mode)

Contact Rating (R Models only)
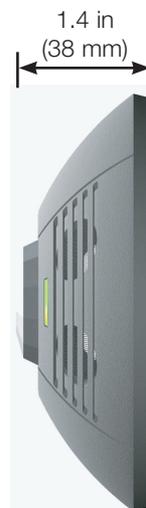
• SPDT 500 mA rated at 24 V⎓ isolated relay

Photo Cell (R Models only)

• Prevents light from turning on when there is sufficient natural light
• Sensitivity: 0 lx to 1000 lx adjustable

Dimensions

Front View

4.5 in
(114 mm)

1.4 in
(38 mm)

Side View

Job Name:	Model Numbers:
Job Number:	

Wiring: System Control

Power packs may be required when interfaced to Lutron® lighting control systems. If more than 1 occupancy sensor is connected to the same input, a power pack is required. A maximum of 3 occupancy sensors can be connected to the same input. If more than 3 sensors are required per input, use one of the following models: LOS-CDT-500R-WH, LOS-CDT-1000R-WH, or LOS-CDT-2000R-WH.
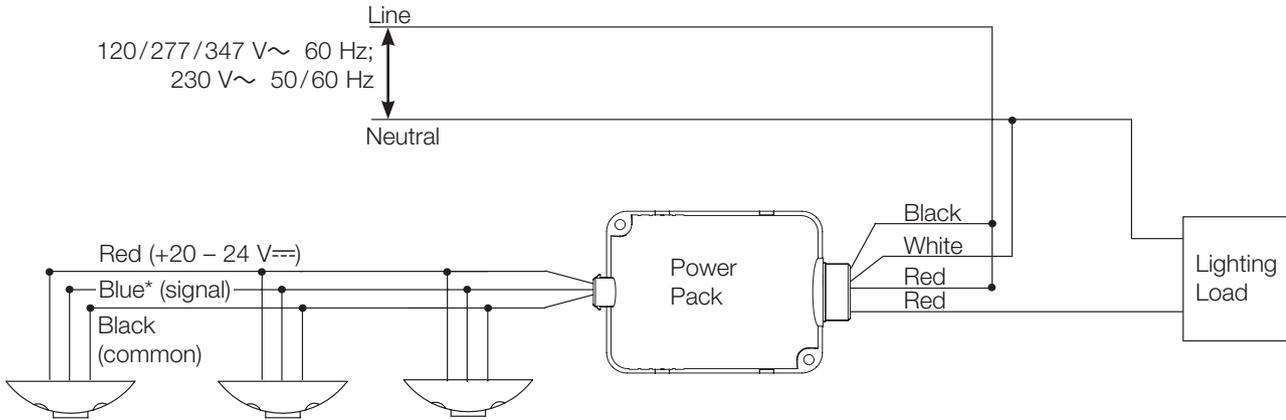
Power Supply Options

Lutron® Lighting Control System	Power Pack Required?
Digital microWATT™	No
EcoSystem®	No
Energi Savr Node™	No*
GRAFIK 5000™/6000®/7000™	No, when used with seeTouch® wallstations with occupancy sensor connections.
GRAFIK Eye® 3000/4000	Yes
GRAFIK Eye® QS	No*
HomeWorks®	Yes
HomeWorks® QS	No*
LCP128™	No, when used with seeTouch® wallstations with occupancy sensor connections.
microWATT®	No
Quantum®	No*
RadioRA®	Yes
RadioRA® 2	Yes
Softswitch128®	No, when used with seeTouch® wallstations with occupancy sensor connections.

* Some system components do not supply external power for occupancy sensors. Refer to individual product specifications for more information.
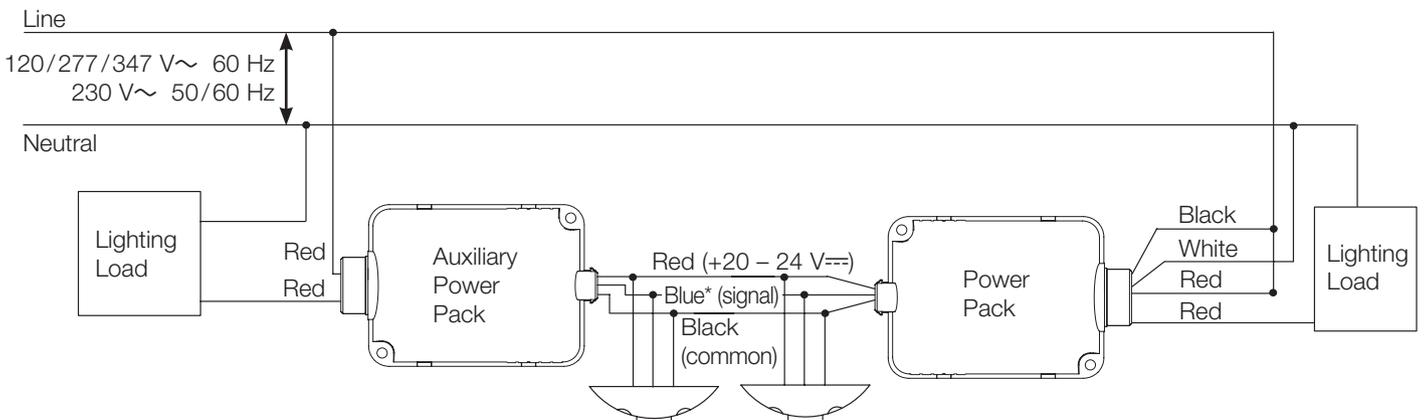
Job Name:	Model Numbers:
Job Number:	

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Wiring: Stand-Alone Control

1 to 3 Sensors with Power Pack

Line

120/277/347 V∼ 60 Hz;
230 V∼ 50/60 Hz

Neutral

Red (+20 – 24 V⎓)

Blue* (signal)

Black
(common)

Power
Pack

Black
White
Red
Red

Lighting
Load

NOTE: Maximum 3 occupancy sensors.

Switching Multiple Loads with Auxiliary Power Packs

Line

120/277/347 V∼ 60 Hz
230 V∼ 50/60 Hz

Neutral

Lighting
Load

Red
Red

Auxiliary
Power
Pack

Red (+20 – 24 V⎓)

Blue* (signal)

Black
(common)

Power
Pack

Black
White
Red
Red

Lighting
Load

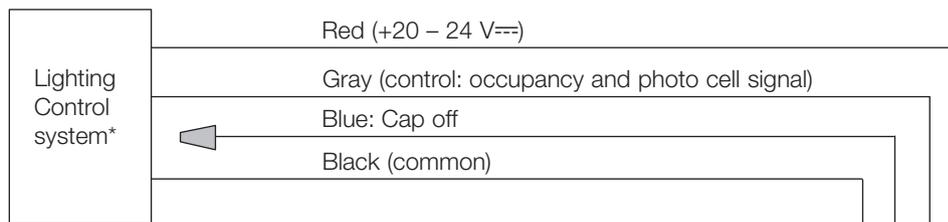NOTE: Maximum of 3 devices total (occupancy sensors and auxiliary power packs) can be connected to a power pack.

*Use gray wire for LOS-CDT-500R-WH, LOS-CDT-1000R-WH, and LOS-CDT-2000R-WH.

Job Name:	Model Numbers:
Job Number:	

Wiring

Relay Model Option

LOS-CDT-500R-WH, LOS-CDT-1000R-WH, and LOS-CDT-2000R-WH only

Lighting Control system*

Red (+20 – 24 V⎓)

Gray (control: occupancy and photo cell signal)

Blue: Cap off

Black (common)

Gray wire logic with photo cell active:

Room First Occupied	
Light level	Lights
Below set value	Turn on
Above set value	Remain off

During Occupancy	
Light level	Lights
Falls below set value	Turn on
Moves above set value	Remain on

*May require power pack

Yellow/White (NO)

Black/White (NC)

Blue/White (Relay, Common)
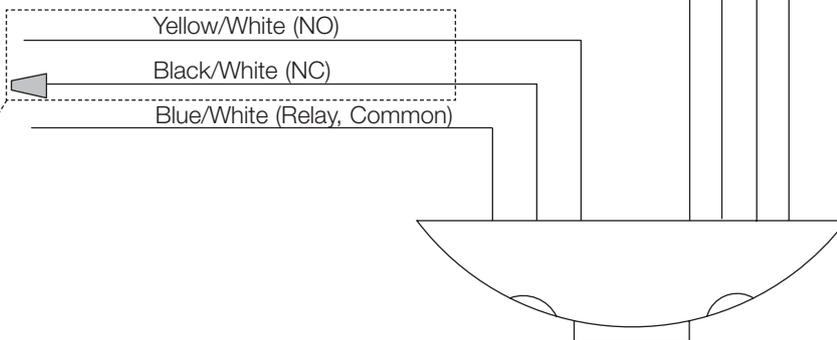
Choose wire based on functionality):
- Yellow/White: NO (normally open)
  Open: Unoccupied
  Closed: Occupied
- Black/White: NC (normally closed)
  Open: Occupied
  Closed: Unoccupied
  Cap off unused wire.

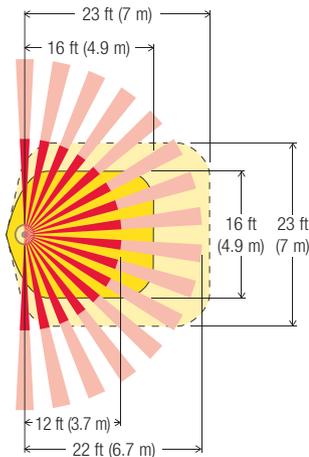| Job Name:	Model Numbers:
Job Number:	

Installation

Sensor Setup

- Sensor setup is available as a service by Lutron. For more information see the **Sensor Layout and Tuning** service document (Lutron® P/N 3601235).
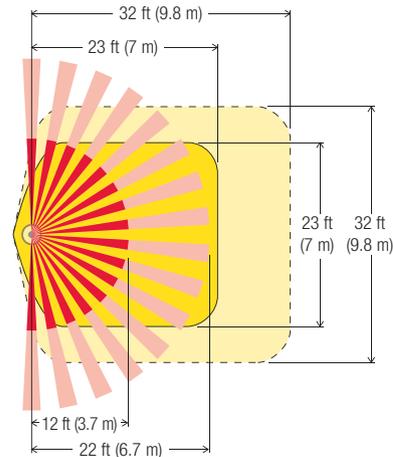
Sensor Placement

- Mount the sensor so the grilles face the open portion of the room and are not facing a nearby wall, window, or other obstructing object.
- Do not place sensor within 6 ft (1.8 m) of air vents, air handlers, windows, fans, etc., as this may cause false triggering.
- If installing a 180° occupancy sensor (500 and 1000 models), place the sensor on the same wall as the doorway so that traffic in a hallway will not affect the sensor; otherwise, place in center of room.
- Closely follow the diagrams shown concerning major and minor motion coverage. The sensor can detect major motion (e.g. person taking a half-step) at a greater distance than it can detect minor motion (e.g. writing at a desk or reading a book).
- Decrease total coverage area by 15% for "soft" rooms (e.g. heavy draperies or thick carpeting).
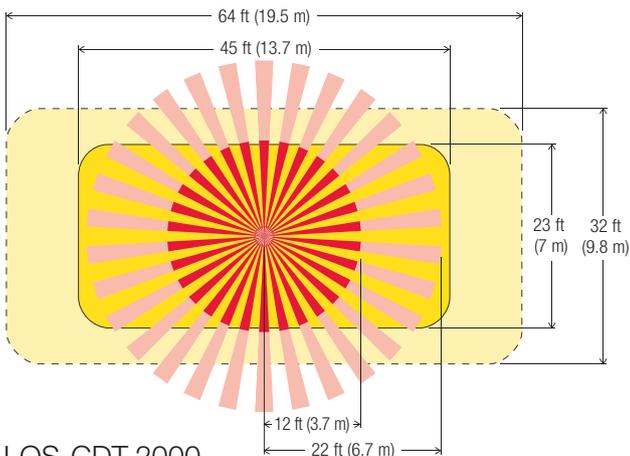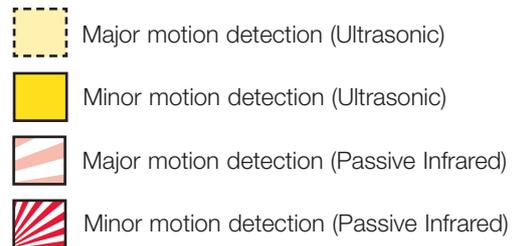
Range Diagrams


LOS-CDT-500

LOS-CDT-1000

LOS-CDT-2000

Major motion detection (Ultrasonic)

Minor motion detection (Ultrasonic)

Major motion detection (Passive Infrared)

Minor motion detection (Passive Infrared)

| Job Name:	Model Numbers:
Job Number:	

Mounting

Normal Mounting

Twist and lock threaded mounting post onto cover plate. Drill through ceiling tile with assembly, using cutter end of the threaded mounting post. Secure with washer and nut.
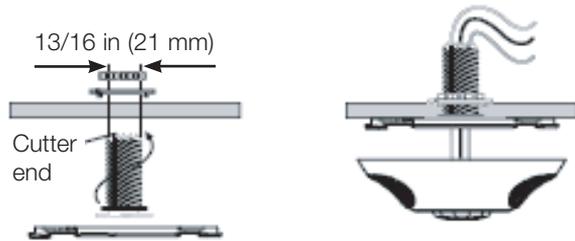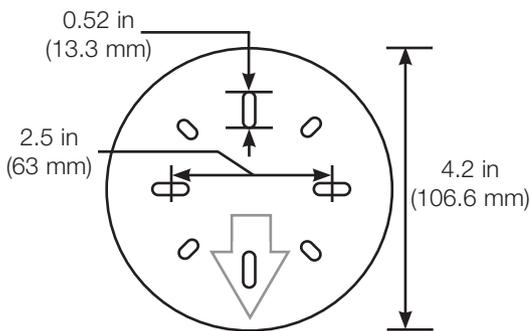
Mounting to Non-Standard Ceiling or Fixture

Mount twist-lock cover plate using mounting screws, nuts, and washers (included). Drill/punch wire routing hole through ceiling tile at center of cover plate.
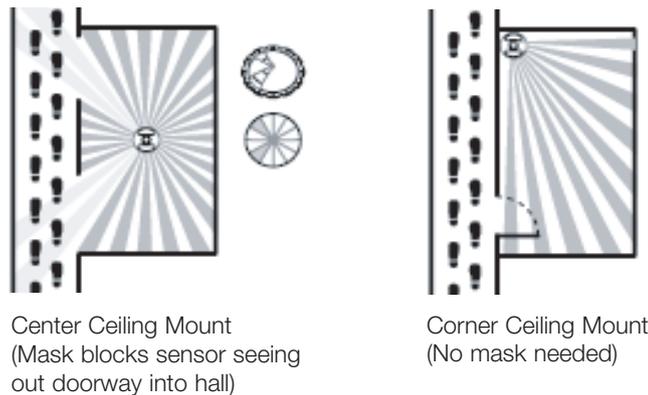
13/16 in (21 mm)

Cutter end
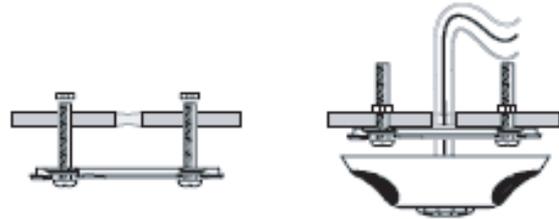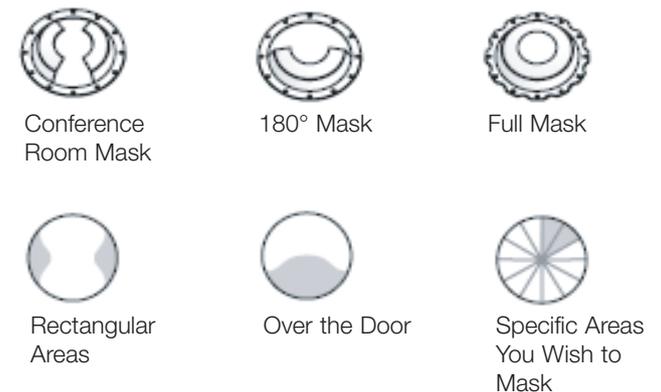
Mounting Plate Dimensions

0.52 in (13.3 mm)

2.5 in (63 mm)

4.2 in (106.6 mm)

Wire Lengths

Number of Sensors	1	2	3	1	2	1
Number of Auxiliary Power Packs	0	0	0	1	1	2
22 AWG	750 ft	375 ft	250 ft	375 ft	250 ft	250 ft
0.5 mm²	365 m	180 m	120 m	90 m	120 m	120 m
20 AWG	1200 ft	600 ft	400 ft	600 ft	400 ft	400 ft
0.75 mm²	730 m	365 m	240 m	365 m	240 m	365 m
18 AWG	2400 ft	1200 ft	800 ft	1200 ft	800 ft	800 ft

Using the Infrared Mask

Center Ceiling Mount
(Mask blocks sensor seeing out doorway into hall)

Corner Ceiling Mount
(No mask needed)

Typical Mask Patterns

Conference Room Mask

180° Mask

Full Mask

Rectangular Areas

Over the Door

Specific Areas You Wish to Mask

Job Name:	Model Numbers:
Job Number:	

Sensor Adjustments

Override Settings

A	Off (Default)	On
Auto/Manual — 1	Automatic (Normal)	Manual on/off (Override)
Threshold — 2	Auto Threshold Adjustment	High Sensitivity (Low turn-on threshold)
LED Motion Indicator — 3	Lights indicate motion	Disable LED Indicator
Reset Learned Settings — 4	Retain Settings (Normal)	Erase all learned settings; Restart Learning (Toggle On)

OFF | ON

B	Off (Default)	On
Strong Airflow Compensation — 1	Disable Compensation (Normal)	Enable Compensation
Over Doorway Installation — 2	No (Normal)	Yes (Use increased turn-on threshold)
Timer Adjust — 3	Adjust Timer Automatically	Use Manual Setting (No adjustment)
Auto Sensitivity — 4	Adjust Sensitivity Automatically	Adjust Sensitivity Manually

OFF | ON

Timer Test Mode

1. Remove the retainer cover.

2. Rotate the black timer adjustment knob to about midway (12 o'clock).

3. Return setting to minimum setting (full CCW).
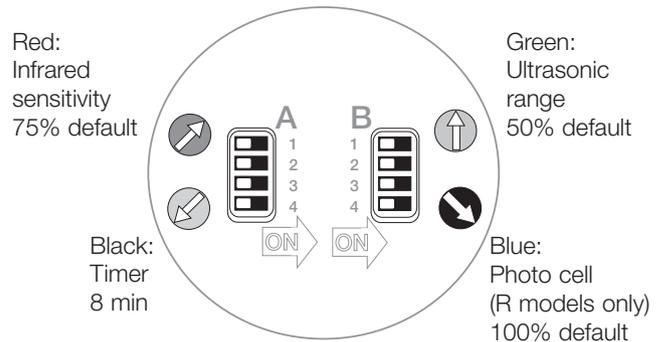
Factory Settings   12 o'clock   Full CCW

NOTE: The timer will remain in the 8 second test mode for 1 hour, then automatically reset to 8 minutes.

4. To manually take the timer out of the 8 second test mode, turn the timer adjustment approximately 1/16 in (1.5 mm) clockwise to make the setting slightly above minimum (just above the 8 minute setting).

Factory Settings

Red:
Infrared
sensitivity
75% default

Green:
Ultrasonic
range
50% default

Black:
Timer
8 min

Blue:
Photo cell
(R models only)
100% default

Continued on next page...

Job Name:	Model Numbers:
Job Number:	

Sensor Adjustments *(continued)*

Adjusting the "Lights Not On" Level
LOS-CDT-500R-WH, LOS-CDT-1000R-WH, and LOS-CDT-2000R-WH only

1. Place timer in Test Mode (see page 8).
2. Set photo cell to maximum. Turn the blue knob full clockwise (lights on no matter how bright the natural light is), then about 30° counterclockwise.
3. Check for Lights-Out. Move from underneath the sensor, and remain still until the lights turn off. Move around normally to turn the light on.
4. Adjust to desired level. If lights remain off, adjust the blue knob another 30° counterclockwise and repeat step 3 until the lights turn on.
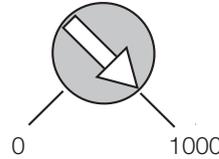
   NOTE: Set blue knob to 100% to disable photo cell functionality and leave secondary dry contact closure output functionality intact.
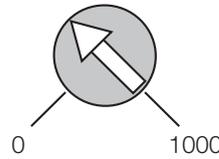
Control Settings (Blue Knob)
LOS-CDT-500R-WH, LOS-CDT-1000R-WH, and LOS-CDT-2000R-WH only

0   1000
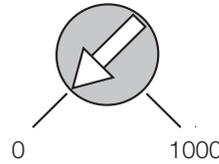
Minimum (low):
Lights will never come on, even though room is occupied.

0   1000

Maximum (high):
Photo cell has no effect on operation (factory setting).

0   1000

Normal:
200 lx to 600 lx is normal range.

Job Name:	Model Numbers:
Job Number:	