Light controllers have inputs for collecting data from sensors, usually by receiving sensor messages (see Section 4.2).

Light controllers also have settings that are represented as Light Control Setting states exposed via lighting control models (see Section 6.5).

Outputs from light controllers are represented as states that are bound to other states within an element. For example, a controller that controls light level has its output state bound with the Light Lightness Linear state (see Section 6.1.2.1).

6.2.2 Light Lightness Controller

The Light Lightness Controller controls lightness of an element implementing a Light Lightness Server model through a binding with the Light Lightness Linear state of an element (see Section 6.1.2.1). Figure 6.4 Illustrates the principles of operation of a Light Lightness Controller.

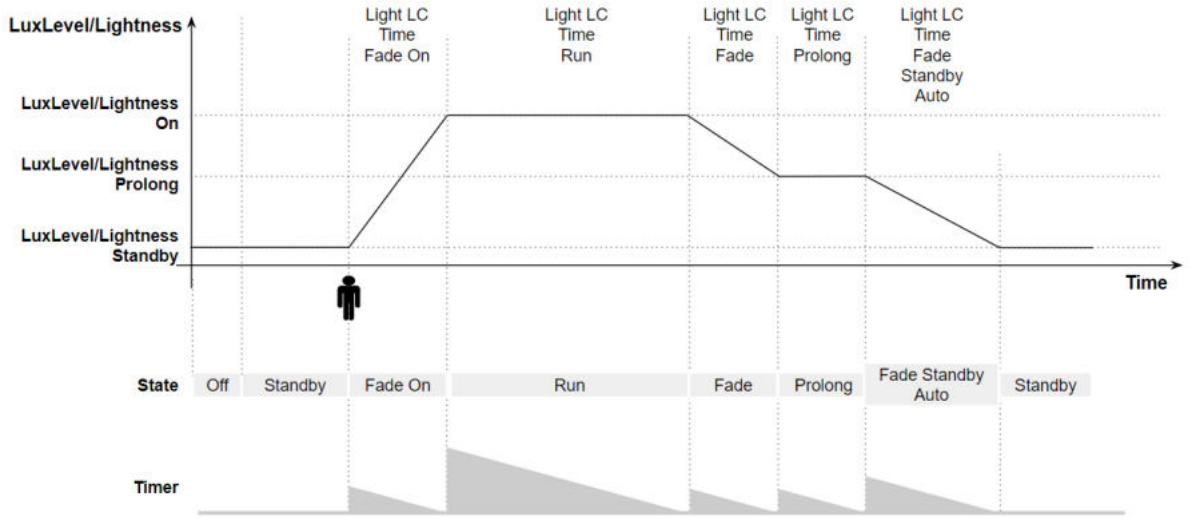

Figure 6.4: Operation of a Light Lightness Controller

The controller has eight states of operation:

1. Off – the controller is turned off and does not control lighting
2. Standby – the controller is turned on and awaits an event from an occupancy sensor or a manual switch
3. Fade On – the controller has been triggered and gradually transitions to the Run state, gradually dimming the lights up.
4. Run – the lights are on and the timer counts down (but may be retriggered by a sensor or a switch event)
5. Fade – the Run timer has expired and the controller gradually transitions to the Prolong state
6. Prolong – the lights are at a lower level and the timer counts down (but may be retriggered by a sensor or a switch event)
7. Fade Standby Auto – the controller gradually returns to the Standby state
8. Fade Standby Manual – the controller gradually returns to the Standby state after external event

In the Standby, Run, and Prolong states, the light level may be a preset level or a level stabilized with an ambient light level sensor.

Figure 6.5 illustrates a structure of a Light Lightness Controller.

The controller has 5 inputs to the Light LC State Machine (see Section 6.2.5): Mode, Timer, Occupancy Mode, Occupancy and Light OnOff, and one input to the Light LC PI Feedback Regulator: Ambient LuxLevel Level.

The Mode input is represented by the Light LC Mode state (see Section 6.2.3.1). The state is controlled by Light LC Mode messages (see Section 6.3.5.1). The state is bound to the Light Lightness Linear state and changes when there is an unsolicited change of the bound Light Lightness Linear state.

The Timer is managed by the state machine. It is set to a starting value (time in seconds) and counts down to zero.

The Occupancy Mode input is represented by the Light LC Occupancy Mode state (see Section 6.2.3.2). The state is controlled by Light LC Occupancy Mode messages (see Section 6.3.5.2).

The Occupancy Input is represented by the Light LC Occupancy state (see Section 6.2.3.4) and accepts data reported by one or more sensors reporting the Occupancy Property [5] with Sensor Status messages (see Section 4.2.14).

The Light OnOff input is represented by the Light LC Light OnOff state and Light LC State Machine Light OnOff state (see Section 6.2.3.3). The Light LC Light OnOff state is controlled by Light LC Light OnOff messages (see Section 6.3.5.3). The Light LC State Machine Light OnOff state is changed by the Light LC State Machine (see Section 6.2.5).

The Ambient LuxLevel Input value represents the value of the Light LC Ambient LuxLevel state (see Section 6.2.3.5).

The Output from the Light LC Controller is the Light LC Linear Output state (see Section 6.2.3.6) that is conditionally bound to the Light Lightness Linear state of an element (see Section 6.1.2.1).

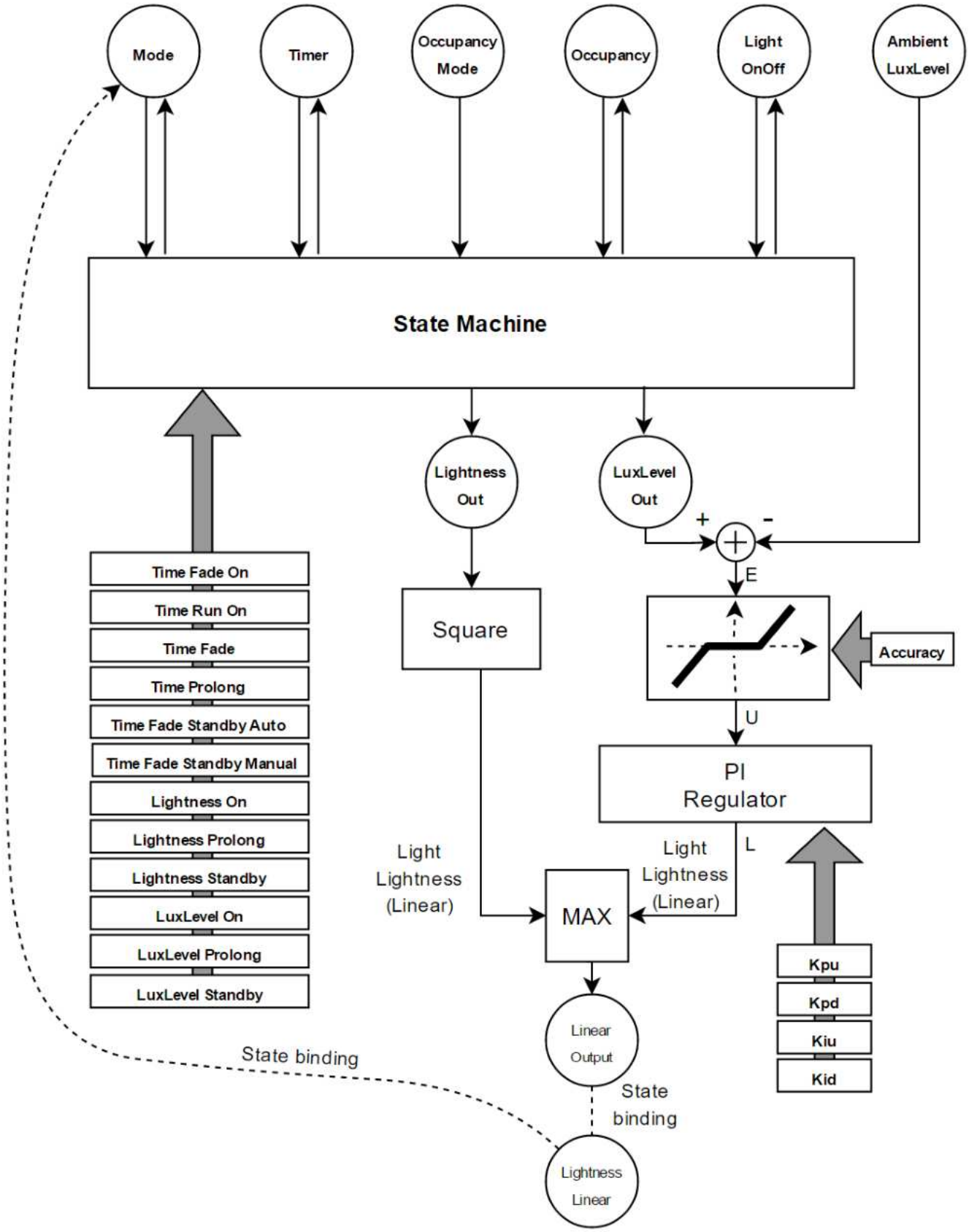

Figure 6.5: Light Lightness Controller structure