$$G_{PR}(z) = \frac{B0 + B1\, z^{-1} + B2\, z^{-2}}{A0 + A1\, z^{-1} + A2\, z^{-2}}.$$

$$G_{PR}(z) = \frac{(K_p + K_p\omega^2 + K_i) + (2K_p\omega^2 - 2K_p) z^{-1} + (K_p + K_p\omega^2 - K_i) z^{-2}}{(1+\omega^2) + (2\omega^2 - 2) z^{-1} + (1+\omega^2) z^{-2}}.$$

$$= \frac{\frac{(K_p + K_p\omega^2 + K_i)}{(1+\omega^2)} + \frac{(2K_p\omega^2 - 2K_p)}{(1+\omega^2)} z^{-1} + \frac{(K_p + K_p\omega^2 - K_i)}{(1+\omega^2)} z^{-2}}{1 + \frac{(2\omega^2 - 2)}{(1+\omega^2)} z^{-1} + \frac{(1+\omega^2)}{(1+\omega^2)} z^{-2}}.$$

$$G_{PR}(z) = \frac{\left(K_p + \frac{K_i}{(1+\omega^2)}\right) + \frac{2K_p(\omega^2 - 1)}{(1+\omega^2)} z^{-1} + \left(K_p - \frac{K_i}{(1+\omega^2)}\right) z^{-2}}{1 + 2\frac{(\omega^2 - 1)}{(1+\omega^2)} z^{-1} + z^{-2}}.$$

the Solar lib ~~module~~ 2p2z module uses.

$$\frac{U(z)}{\varepsilon(z)} = \frac{b_2 z^{-2} + b_1 z^{-1} + b_0}{1 - a_1 z^{-1} - a_2 z^{-2}}.$$

$$\Rightarrow \quad a_1 = -2\frac{(\omega^2 - 1)}{(1+\omega^2)}, \quad a_2 = -1$$

$$b_2 = \left(K_p - \frac{K_i}{(1+\omega^2)}\right), \quad b_1 = 2K_p\frac{(\omega^2 - 1)}{(1+\omega^2)} = -2K_p a_1$$

$$, \quad b_0 = \left(K_p + \frac{K_i}{(1+\omega^2)}\right)$$