A unique 3D fourfold interpenetrated metal-organic framework, [Co(L)(H$_2$O)$_2$]·H$_2$O (I), has been synthesized by the solvothermal reaction of H$_2$L with Co(NO$_3$)$_2$·6H$_2$O (H$_2$L = 5-(isonicotinamido)isophthalic acid). Compound I crystallizes in the monoclinic space group $P2_1/c$, with the cell parameters: $a = 81301(8)$, $b = 107711(11)$, $c = 167697(16)$ Å, $\beta = 92.656(2)^\circ$, $V = 14669(3)$ Å$^3$, $R_1 = 0.0325$ and $wR_2 = 0.0833$. Its framework has (10,3)-b topology, where the cobalt atoms are alternately bridged by the pyridyl and the carboxylate groups of the L$^2^-$ ligands into a three-dimensional network. Compound I displays antiferromagnetic interactions. Above 40 K, $\chi_m^{-1}$ obeys the Curie-Weiss law with $C = 3.28$ emu K mol$^{-1}$ and $\Theta = -0.66$ K.

Key words: Cobalt(II), Metal-organic Framework, Crystal Structure, Magnetic Property