Formulae Used in Alpha

Overnight Return, ris

$$ris = \ln\left(\frac{Open_{s,d}}{Close_{s,d-1}}\right)$$

Intercept, itc or $\beta^0_{s,d}$

$$itc = 1$$

Size, prc or $\beta^1_{s,d}$

$$prc = \ln\left(Close_{s,d-1}\right)$$

Momentum, mom or $\beta^2_{s,d}$

$$mom = \ln\left(\frac{Close_{s,d-1}}{Open_{s,d-1}}\right)$$

Intraday Volatility, hlv or $\beta^3_{s,d}$

$$hlv = \ln\sqrt{\frac{1}{21}\sum_{k=1}^{21}\left(\frac{High_{s,d-k} - Low_{s,d-k}}{Close_{s,d-k}}\right)^2}$$

OR

$$hlv = \ln\sqrt{SMA_{21}\left(\frac{High_{s,d-k} - Low_{s,d-k}}{Close_{s,d-k}}\right)^2}$$

SMA_{21} = Simple Moving Average of 21

(Normalised Mean) Volume, vol or $\beta^4_{s,d}$

$$vol = \ln\left(\frac{1}{21}\sum_{k=1}^{21} Close_{s,d-k}\right)$$

OR

$$vol = \ln\left(SMA_{21}(Close_{s,d-k})\right)$$

Liquidity, liq

$$liq = Close_{s,d-1} \times Volume_{s,d-1}$$

Intraday Return, ir

$$ir = \frac{Close_{s,d}}{Open_{s,d}} - 1$$

Notes:

Both hlv and vol are normalized by subtracting their mean values.
Residual and Weight variables are to be implemented.