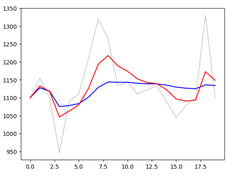
SMA & EMA Indicator

In [7]:
```
import pandas as pd
from datetime import datetime
import matplotlib.pyplot as plt

df = pd.read_csv('Desktop/stockdata.csv')

df['pnl'] = (df['Close'] - df['Open'])*df['Quantity']

#df['SMA']=df['pnl'].rolling(window=3).mean()
df['SMA']=df['pnl'].expanding().mean()
df['EMA']=df['pnl'].ewm(span=5).mean()

df['pnl'].plot(c='lightgrey')
df['SMA'].plot(c='blue')
df['EMA'].plot(c='red')

plt.show
df
```

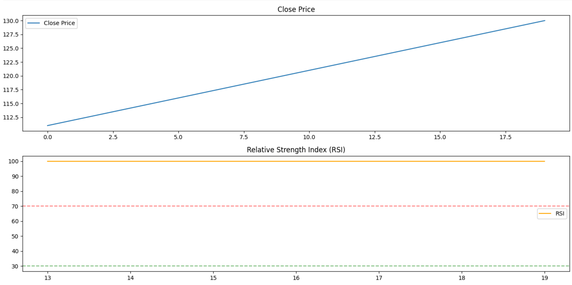
Out[7]:

	Unnamed: 0	Date	Open	High	Low	Close	Quantity	pnl	SMA	EMA
0	0	1/1/2024	100	102	96	111	100	1100	1100.000000	1100.000000
1	1	1/2/2024	101	103	99	112	105	1155	1127.500000	1133.000000
2	2	1/3/2024	102	104	100	113	100	1100	1118.333333	1117.366421
3	3	1/4/2024	103	105	101	114	86	946	1075.250000	1046.184615
4	4	1/5/2024	104	106	102	115	99	1089	1078.000000	1062.620853
5	5	1/6/2024	105	107	103	116	101	1111	1083.500000	1080.299248
6	6	1/7/2024	106	108	104	117	110	1210	1101.571429	1126.220495
7	7	1/8/2024	107	109	105	118	120	1320	1128.875000	1193.436320
8	8	1/9/2024	108	110	106	119	115	1265	1144.000000	1217.927964
9	9	1/10/2024	109	111	107	120	103	1133	1142.900000	1189.119052
10	10	1/11/2024	110	112	108	121	104	1144	1143.000000	1173.903460
11	11	1/12/2024	111	113	109	122	101	1111	1140.333333	1152.772779
12	12	1/13/2024	112	114	110	123	102	1122	1138.923077	1142.462208
13	13	1/14/2024	113	115	111	124	103	1133	1138.500000	1139.297297
14	14	1/15/2024	114	116	112	125	99	1089	1135.200000	1122.493156
15	15	1/16/2024	115	117	113	126	95	1045	1129.562500	1096.622718
16	16	1/17/2024	116	118	114	127	98	1078	1126.529412	1090.408839
17	17	1/18/2024	117	119	115	128	100	1100	1125.055556	1093.608057
18	18	1/19/2024	118	120	116	129	121	1331	1135.894737	1172.774416
19	19	1/20/2024	119	121	117	130	100	1100	1134.100000	1148.506980



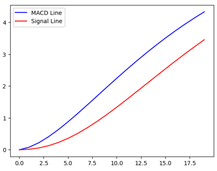
RSI Indicator

In [23]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt

def calculate_rsi(data, window=14):
    delta = data.diff()
    gain = (delta.where(delta > 0, 0)).rolling(window=window).mean()
    loss = (-delta.where(delta < 0, 0)).rolling(window=window).mean()

    rs = gain / loss
    rsi = 100 - (100 / (1 + rs))

    return rsi

data = pd.read_csv('Desktop/stockdata.csv')

data['RSI'] = calculate_rsi(data['Close'])

plt.figure(figsize=(14, 7))

plt.subplot(2, 1, 1)
plt.plot(data['Close'], label='Close Price')
plt.title('Close Price')
plt.legend()

plt.subplot(2, 1, 2)
plt.plot(data['RSI'], label='RSI', color='orange')
plt.axhline(70, color='red', linestyle='--', alpha=0.5)
plt.axhline(30, color='green', linestyle='--', alpha=0.5)
plt.title('Relative Strength Index (RSI)')
plt.legend()

plt.tight_layout()
plt.show()
```



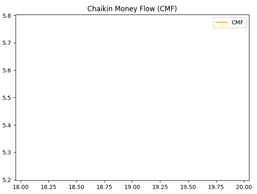
MCAD Indicator

In [39]:
```
import pandas as pd
import matplotlib.pyplot as plt

def calculate_macd(data, short_window=12, long_window=26, signal_window=9):

    short_ema = data.ewm(span=short_window, adjust=False).mean()
    long_ema = data.ewm(span=long_window, adjust=False).mean()

    macd_line = short_ema - long_ema

    signal_line = macd_line.ewm(span=signal_window, adjust=False).mean()

    macd_histogram = macd_line - signal_line

    return macd_line, signal_line, macd_histogram

data = pd.read_csv('Desktop/stockdata.csv')

data['MACD_Line'], data['Signal_Line'], data['MACD_Histogram'] = calculate_macd(data['Close'])

plt.plot(data['MACD_Line'], label='MACD Line', color='blue')
plt.plot(data['Signal_Line'], label='Signal Line', color='red')
plt.legend()
plt.show()
```



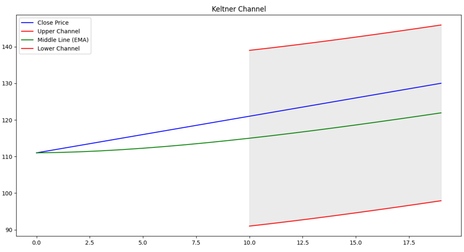
Cs-mfi Indicator

In [53]:
```
import pandas as pd
import matplotlib.pyplot as plt

def calculate_cmf(data, window=20):
    mf_multiplier = ((data['Close'] - data['Low']) - (data['High'] - data['Close'])) / (data['High'] - data['Low'])
    mf_multiplier = mf_multiplier.fillna(0)
    mf_volume = mf_multiplier * data['Quantity']
    cmf = mf_volume.rolling(window=window).sum() / data['Quantity'].rolling(window=window).sum()
    return cmf

data = pd.read_csv('Desktop/stockdata.csv')

data['CMF'] = calculate_cmf(data)

plt.plot(data['CMF'], label='CMF', color='orange')
plt.title('Chaikin Money Flow (CMF)')
plt.legend()
plt.tight_layout()
plt.show()
```



Kelter channel

In [55]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt

def calculate_keltner_channel(data, ema_period=20, atr_period=10, atr_multiplier=2):

    ema = data['Close'].ewm(span=ema_period, adjust=False).mean()
    high_low = data['High'] - data['Low']
    high_close = np.abs(data['High'] - data['Close'].shift())
    low_close = np.abs(data['Low'] - data['Close'].shift())
    tr = high_low.combine(high_close, np.maximum).combine(low_close, np.maximum)

    atr = tr.rolling(window=atr_period).mean()

    middle_line = ema
    upper_line = middle_line + (atr_multiplier * atr)
    lower_line = middle_line - (atr_multiplier * atr)

    keltner_channel = pd.DataFrame({
        'Upper': upper_line,
        'Middle': middle_line,
        'Lower': lower_line
    })

    return keltner_channel

data = pd.read_csv('Desktop/stockdata.csv')

required_columns = ['High', 'Low', 'Close']
if not all(column in data.columns for column in required_columns):
    raise ValueError("The data does not contain the necessary columns: 'High', 'Low', 'Close'.")

keltner_channel = calculate_keltner_channel(data)
data = data.join(keltner_channel)

plt.figure(figsize=(14, 7))

plt.plot(data['Close'], label='Close Price', color='blue')
plt.plot(data['Upper'], label='Upper Channel', color='red')
plt.plot(data['Middle'], label='Middle Line (EMA)', color='green')
plt.plot(data['Lower'], label='Lower Channel', color='red')

plt.fill_between(data.index, data['Upper'], data['Lower'], color='lightgrey', alpha=0.4)

plt.title('Keltner Channel')
plt.legend()
plt.show()
```


Keltner Channel
Close Price
Upper Channel
Middle Line (EMA)
Lower Channel
140
130
120
110
100
90
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5