digraph G {

compound=true;

fontname="Arial";

node [shape=box, style="rounded,filled", fontname="Arial"];

edge [fontname="Arial", fontsize=10];

// 1. 最高層的指揮中心：n8n

subgraph cluster\_orchestrator {

label="指揮調度中心 (Orchestrator)";

bgcolor="#E3F2FD"; // Light Blue

n8n [label="n8n Cloud Workflow", shape=cylinder, fillcolor="#FFCDD2"];

}

// 2. 數據層：獨立的數據管道與中央資料庫

subgraph cluster\_data\_layer {

label="數據層 (Data Layer)";

bgcolor="#E8F5E9"; // Light Green

subgraph cluster\_data\_source {

label="原始數據源";

style=filled;

fillcolor=white;

"Binance API" [shape=cloud];

"MT5 Terminal" [shape=desktop];

}

"數據管道模組.py" [label="數據管道模組\n(Data Pipeline Module)", shape=cds, fillcolor="#C5E1A5"];

"中央 SQLite 資料庫" [label="中央 SQLite 資料庫\n(Central SQLite DB)", shape=database, fillcolor="#FFF9C4"];

}

// 3. 核心應用層：Python 專案

subgraph cluster\_application\_layer {

label="核心應用層 (Python Project)";

bgcolor="#F3E5F5"; // Light Purple

subgraph cluster\_infra {

label="基礎建設模組";

style=filled;

fillcolor=white;

"設定檔讀取模組.py" [shape=note, fillcolor="#F5F5F5"];

"資料庫管理模組.py" [shape=note, fillcolor="#F5F5F5"];

"資安管理模組.py" [shape=note, fillcolor="#F5F5F5"];

}

"訓練主控.py" [label="訓練主控 (常駐服務)\n(Main Training Control)", shape=Mdiamond, fillcolor="#D1C4E9"];

"22個核心模組" [label="22個核心演算法模組\n(Core Algorithm Modules)", shape=component, fillcolor="#E1BEE7", style=dashed];

}

// 4. 監控與反饋層

subgraph cluster\_feedback\_layer {

label="監控與反饋層 (Monitoring & Feedback)";

bgcolor="#FFF3E0"; // Light Orange

"GUI介面模組.py" [shape=display, fillcolor="#FFE0B2"];

"推播通知模組.py" [label="Telegram\n推播通知", shape=comment, fillcolor="#FFCCBC"];

}

// 主要流程與數據流

n8n -> "數據管道模組.py" [lhead=cluster\_data\_layer, label="定時觸發\n(定時備份)"];

"MT5 Terminal" -> "數據管道模組.py" [label=" 導出CSV\n(檔案交換)"];

"Binance API" -> "數據管道模組.py" [label=" 獲取K棒"];

"數據管道模組.py" -> "中央 SQLite 資料庫" [label="寫入標準化數據"];

n8n -> "訓練主控.py" [style=dashed, label="手動/緊急觸發\n(e.g., Kill-Switch)"];

"訓練主控.py" -> "資料庫管理模組.py" [label="讀取數據/寫入結果"];

"資料庫管理模組.py" -> "中央 SQLite 資料庫" [dir=both];

"訓練主控.py" -> "22個核心模組" [label="呼叫演算法"];

"訓練主控.py" -> "設定檔讀取模組.py";

"訓練主控.py" -> "資安管理模組.py";

"GUI介面模組.py" -> "資料庫管理模組.py" [label="讀取狀態/績效"];

"推播通知模組.py" -> "資料庫管理模組.py" [label="讀取狀態/績效"];

}

