

遥信数仓表结构

1. Dim_Time (时间维度表)

此表用于存储所有可能的时间粒度信息，方便按时间进行聚合和过滤。您可以预先填充好这张表，或者在数据加载时动态填充。

Column Name (字段名)	Data Type (数据类型)	Description (描述)	Constraints / Index (约束 / 索引)
time_key	INT	主键:时间维度唯一标识符 (例如: YYYYMMDDHHMMSS)	PRIMARY KEY
event_datetime	DATETIME	原始时间戳	NOT NULL, INDEX
year	SMALLINT	年份	NOT NULL
month	SMALLINT	月份	NOT NULL
day	SMALLINT	日期 (天)	NOT NULL
hour	SMALLINT	小时	NOT NULL
minute	SMALLINT	分钟	NOT NULL
second	SMALLINT	秒	NOT NULL
date_ymd	DATE	日期 (YYYY-MM-DD)	NOT NULL
day_of_week	SMALLINT	一周中的第几天 (1=周日, 7=周六)	NOT NULL
week_of_year	SMALLINT	一年中的第几周	NOT NULL
quarter	SMALLINT	季度 (1-4)	NOT NULL

is_weekend	BOOLEAN	是否是周末	NOT NULL
is_holiday	BOOLEAN	是否是节假日 (需自定义逻辑填充)	NOT NULL

2. Dim_XTU (XTU设备维度表)

此表用于存储XTU设备的静态属性。

Column Name (字段名)	Data Type (数据类型)	Description (描述)	Constraints / Index (约束 / 索引)
xtu_key	INT	主键:XTU唯一标识符	PRIMARY KEY
xtu_id	VARCHAR(50)	XTU原始ID (例如: XTU-001)	NOT NULL, UNIQUE
xtu_name	VARCHAR(100)	XTU名称	NOT NULL
xtu_location	VARCHAR(255)	XTU安装位置或地址	NULLABLE
region	VARCHAR(100)	所属区域或变电站	NULLABLE
manufacturer	VARCHAR(100)	制造商	NULLABLE
model	VARCHAR(100)	型号	NULLABLE
commissioning_date	DATE	投运日期	NULLABLE
is_active	BOOLEAN	XTU是否处于活动状态	NOT NULL

3. Dim_FTU (FTU设备维度表)

此表用于存储FTU设备的静态属性，并关联到XTU。

Column Name (字段名)	Data Type (数据类型)	Description (描述)	Constraints / Index (约束 / 索引)
ftu_key	INT	主键:FTU唯一标识符	PRIMARY KEY

ftu_id	VARCHAR(50)	FTU原始ID (例如: FTU-001-A)	NOT NULL, UNIQUE
ftu_name	VARCHAR(100)	FTU名称	NOT NULL
xtu_key	INT	外键: 关联 Dim_XTU 表, 标识所属XTU	NOT NULL, FOREIGN KEY (Dim_XTU.xtu_key)
ftu_location	VARCHAR(255)	FTU安装位置或线路名称	NULLABLE
manufacturer	VARCHAR(100)	制造商	NULLABLE
model	VARCHAR(100)	型号	NULLABLE
install_date	DATE	安装日期	NULLABLE
is_active	BOOLEAN	FTU是否处于活动状态	NOT NULL
device_type	VARCHAR(50)	设备类型 (例如: 馈线终端、环网柜)	NULLABLE
rated_voltage_kv	DECIMAL(5,2)	额定电压 (kV)	NULLABLE

4. Fact_TelemetrySnapshot (遥信快照事实表)

这是核心的事实表, 包含您所有的遥信数据。每行代表一个FTU在特定时间点的所有遥信状态快照。

表名: Fact_TelemetrySnapshot

Column Name (字段名)	Data Type (数据类型)	Description (描述)	Constraints / Index (约束 / 索引)
snapshot_pk	BIGINT	主键: 唯一标识每条快照记录	PRIMARY KEY
time_key	INT	外键: 关联 Dim_Time 表	NOT NULL, FOREIGN KEY

			(Dim_Time.time_key)
ftu_key	INT	外键: 关联 Dim_FTU 表	NOT NULL, FOREIGN KEY (Dim_FTU.ftu_key)
snapshot_timestamp	DATETIME	快照精确时间: 数据采集的原始时间戳	NOT NULL, INDEX (ftu_key, snapshot_timestamp)
remote_status	BOOLEAN	遥信点位: 远方	NOT NULL
local_status	BOOLEAN	遥信点位: 就地	NOT NULL
cabinet_door_position	BOOLEAN	遥信点位: 柜门位置	NOT NULL
signal_reset	BOOLEAN	遥信点位: 信号复归	NOT NULL
ac_power_loss_alarm	BOOLEAN	遥信点位: 交流失电告警	NOT NULL
battery_power_fault	BOOLEAN	遥信点位: 电池电源故障	NOT NULL
battery_undervoltage	BOOLEAN	遥信点位: 电池欠压	NOT NULL
battery_activation_status	BOOLEAN	遥信点位: 电池活化状态	NOT NULL
capacitor_action	BOOLEAN	遥信点位: 电容器动作	NOT NULL
fa_unlock	BOOLEAN	遥信点位: FA解锁	NOT NULL
device_reset	BOOLEAN	遥信点位: 装置复位	NOT NULL
function_master_panel	BOOLEAN	遥信点位: 功能总压板	NOT NULL
maintenance_status_	BOOLEAN	遥信点位: 检修状态压	NOT NULL

panel		板	
non_electric_input_1	BOOLEAN	遥信点位:非电量1开入	NOT NULL
non_electric_input_2	BOOLEAN	遥信点位:非电量2开入	NOT NULL
non_electric_input_3	BOOLEAN	遥信点位:非电量3开入	NOT NULL
non_electric_input_4	BOOLEAN	遥信点位:非电量4开入	NOT NULL
non_electric_input_5	BOOLEAN	遥信点位:非电量5开入	NOT NULL
non_electric_input_6	BOOLEAN	遥信点位:非电量6开入	NOT NULL
non_electric_input_7	BOOLEAN	遥信点位:非电量7开入	NOT NULL
non_electric_input_8	BOOLEAN	遥信点位:非电量8开入	NOT NULL
digital_input_1	BOOLEAN	遥信点位:开入1	NOT NULL
digital_input_2	BOOLEAN	遥信点位:开入2	NOT NULL
digital_input_3	BOOLEAN	遥信点位:开入3	NOT NULL
digital_input_4	BOOLEAN	遥信点位:开入4	NOT NULL
digital_input_5	BOOLEAN	遥信点位:开入5	NOT NULL
digital_input_6	BOOLEAN	遥信点位:开入6	NOT NULL
digital_input_7	BOOLEAN	遥信点位:开入7	NOT NULL
digital_input_8	BOOLEAN	遥信点位:开入8	NOT NULL
signal_reset_and_fa_unlock	BOOLEAN	遥信点位:信号复归+FA解锁	NOT NULL
uab1_overvoltage_alarm	BOOLEAN	遥信点位:Uab1过电压告警	NOT NULL

ubc1_overvoltage_alarm	BOOLEAN	遥信点位:Ubc1过电压告警	NOT NULL
uca1_overvoltage_alarm	BOOLEAN	遥信点位:Uca1过电压告警	NOT NULL
uab1_undervoltage_alarm	BOOLEAN	遥信点位:Uab1低电压告警	NOT NULL
ubc1_undervoltage_alarm	BOOLEAN	遥信点位:Ubc1低电压告警	NOT NULL
uca1_undervoltage_alarm	BOOLEAN	遥信点位:Uca1低电压告警	NOT NULL
uab2_overvoltage_alarm	BOOLEAN	遥信点位:Uab2过电压告警	NOT NULL
ubc2_overvoltage_alarm	BOOLEAN	遥信点位:Ubc2过电压告警	NOT NULL
uca2_overvoltage_alarm	BOOLEAN	遥信点位:Uca2过电压告警	NOT NULL
uab2_undervoltage_alarm	BOOLEAN	遥信点位:Uab2低电压告警	NOT NULL
ubc2_undervoltage_alarm	BOOLEAN	遥信点位:Ubc2低电压告警	NOT NULL
uca2_undervoltage_alarm	BOOLEAN	遥信点位:Uca2低电压告警	NOT NULL
power_module_status	BOOLEAN	遥信点位:电源模块状态	NOT NULL
battery_overvoltage_alarm	BOOLEAN	遥信点位:电池过压告警	NOT NULL
battery_offline_alarm	BOOLEAN	遥信点位:电池离线告警	NOT NULL

battery_reverse_connection_alarm	BOOLEAN	遥信点位: 电池反接告警	NOT NULL
backup_input_ac_power_loss	BOOLEAN	遥信点位: 备用输入交流失电	NOT NULL
battery_capacity_fault	BOOLEAN	遥信点位: 电池容量故障	NOT NULL
ac_power_loss_signal	BOOLEAN	遥信点位: 交流失电信号	NOT NULL
pt1_disconnect	BOOLEAN	遥信点位: PT1断线	NOT NULL
pt2_disconnect	BOOLEAN	遥信点位: PT2断线	NOT NULL
pt1_phase_sequence_abnormal	BOOLEAN	遥信点位: PT1相序异常	NOT NULL
pt2_phase_sequence_abnormal	BOOLEAN	遥信点位: PT2相序异常	NOT NULL
battery_voltage_low	BOOLEAN	遥信点位: 电池电压低	NOT NULL
battery_voltage_high	BOOLEAN	遥信点位: 电池电压高	NOT NULL
dc1_low_voltage_alarm	BOOLEAN	遥信点位: DC1低电压告警	NOT NULL
dc2_low_voltage_alarm	BOOLEAN	遥信点位: DC2低电压告警	NOT NULL
electricity_meter_clear	BOOLEAN	遥信点位: 电度清零	NOT NULL
power_flow_change	BOOLEAN	遥信点位: 潮流变化	NOT NULL
board_fault	BOOLEAN	遥信点位: 板卡故障	NOT NULL
board_communicatio	BOOLEAN	遥信点位: 板卡通信异	NOT NULL

n_abnormal		常	
panel_communication_abnormal	BOOLEAN	遥信点位:面板通信异常	NOT NULL
line_loss_board_communication_abnormal	BOOLEAN	遥信点位:线损板通信异常	NOT NULL
device_hardware_fault	BOOLEAN	遥信点位:装置硬件故障	NOT NULL
device_software_fault	BOOLEAN	遥信点位:装置软件故障	NOT NULL
local_goose_communication_abnormal	BOOLEAN	遥信点位:本机goose通信异常	NOT NULL
goose_data_abnormal	BOOLEAN	遥信点位:goose数据异常	NOT NULL
goose_system_communication_abnormal	BOOLEAN	遥信点位:goose系统通信异常	NOT NULL
iec61850_platform_library_abnormal	BOOLEAN	遥信点位:61850平台库异常	NOT NULL
total_accident	BOOLEAN	遥信点位:事故总	NOT NULL
battery_auto_activation_toggle	BOOLEAN	遥信点位:电池自动活化投退	NOT NULL
backup_power_enabled	BOOLEAN	遥信点位:备用电源投入	NOT NULL
non_electric_trip_1	BOOLEAN	遥信点位:非电量1跳闸	NOT NULL
non_electric_trip_2	BOOLEAN	遥信点位:非电量2跳闸	NOT NULL
non_electric_trip_3	BOOLEAN	遥信点位:非电量3跳闸	NOT NULL

non_electric_trip_4	BOOLEAN	遥信点位:非电量4跳闸	NOT NULL
non_electric_trip_5	BOOLEAN	遥信点位:非电量5跳闸	NOT NULL
non_electric_trip_6	BOOLEAN	遥信点位:非电量6跳闸	NOT NULL
non_electric_trip_7	BOOLEAN	遥信点位:非电量7跳闸	NOT NULL
non_electric_trip_8	BOOLEAN	遥信点位:非电量8跳闸	NOT NULL
non_electric_alarm_1	BOOLEAN	遥信点位:非电量1告警	NOT NULL
non_electric_alarm_2	BOOLEAN	遥信点位:非电量2告警	NOT NULL
non_electric_alarm_3	BOOLEAN	遥信点位:非电量3告警	NOT NULL
non_electric_alarm_4	BOOLEAN	遥信点位:非电量4告警	NOT NULL
non_electric_alarm_5	BOOLEAN	遥信点位:非电量5告警	NOT NULL
non_electric_alarm_6	BOOLEAN	遥信点位:非电量6告警	NOT NULL
non_electric_alarm_7	BOOLEAN	遥信点位:非电量7告警	NOT NULL
non_electric_alarm_8	BOOLEAN	遥信点位:非电量8告警	NOT NULL
serial_port_1_communication_abnormal	BOOLEAN	遥信点位:串口1通信异常	NOT NULL
serial_port_2_communication_abnormal	BOOLEAN	遥信点位:串口2通信异常	NOT NULL
serial_port_3_communication_abnormal	BOOLEAN	遥信点位:串口3通信异常	NOT NULL
serial_port_4_communication_abnormal	BOOLEAN	遥信点位:串口4通信异常	NOT NULL
serial_port_5_communication_abnormal	BOOLEAN	遥信点位:串口5通信异常	NOT NULL

nication_abnormal		常	
serial_port_6_communication_abnormal	BOOLEAN	遥信点位:串口6通信异常	NOT NULL
network_1_communication_abnormal	BOOLEAN	遥信点位:网络1通信异常	NOT NULL
network_2_communication_abnormal	BOOLEAN	遥信点位:网络2通信异常	NOT NULL
cascaded_device_1_abnormal	BOOLEAN	遥信点位:级联装置1异常	NOT NULL
cascaded_device_2_abnormal	BOOLEAN	遥信点位:级联装置2异常	NOT NULL
cascaded_device_3_abnormal	BOOLEAN	遥信点位:级联装置3异常	NOT NULL
cascaded_device_4_abnormal	BOOLEAN	遥信点位:级联装置4异常	NOT NULL
cascaded_device_5_abnormal	BOOLEAN	遥信点位:级联装置5异常	NOT NULL
cascaded_device_6_abnormal	BOOLEAN	遥信点位:级联装置6异常	NOT NULL
cascaded_device_7_abnormal	BOOLEAN	遥信点位:级联装置7异常	NOT NULL
cascaded_device_8_abnormal	BOOLEAN	遥信点位:级联装置8异常	NOT NULL
cascaded_device_9_abnormal	BOOLEAN	遥信点位:级联装置9异常	NOT NULL
cascaded_device_10_abnormal	BOOLEAN	遥信点位:级联装置10异常	NOT NULL

panel_close_command	BOOLEAN	遥信点位:面板合闸	NOT NULL
panel_open_command	BOOLEAN	遥信点位:面板分闸	NOT NULL
parameter_change	BOOLEAN	遥信点位:参数变化	NOT NULL
maintenance_soft_panel_status	BOOLEAN	遥信点位:检修软压板状态	NOT NULL
close_position_input	BOOLEAN	遥信点位:合位开入	NOT NULL
open_position_input	BOOLEAN	遥信点位:分位开入	NOT NULL
isolating_switch	BOOLEAN	遥信点位:隔离刀闸	NOT NULL
earthing_switch	BOOLEAN	遥信点位:接地刀闸	NOT NULL
spring_not_stored_energy	BOOLEAN	遥信点位:弹簧未储能	NOT NULL
spring_stored_energy	BOOLEAN	遥信点位:弹簧已储能	NOT NULL
low_air_pressure	BOOLEAN	遥信点位:气压低	NOT NULL
hq_input	BOOLEAN	遥信点位:HQ开入	NOT NULL
tq_input	BOOLEAN	遥信点位:TQ开入	NOT NULL
source_side_transient_voltage	BOOLEAN	遥信点位:电源侧瞬压	NOT NULL
load_side_transient_voltage	BOOLEAN	遥信点位:负荷侧瞬压	NOT NULL
manual_close	BOOLEAN	遥信点位:手动合闸	NOT NULL
manual_open	BOOLEAN	遥信点位:手动分闸	NOT NULL

disable_fa_and_protection	BOOLEAN	遥信点位:停用FA及保护	NOT NULL
conventional_protection_panel	BOOLEAN	遥信点位:常规保护压板	NOT NULL
reclosing_enabled_panel	BOOLEAN	遥信点位:重合闸投入压板	NOT NULL
feeder_automation_panel	BOOLEAN	遥信点位:馈线自动化压板	NOT NULL
intelligent_distributed_panel	BOOLEAN	遥信点位:智能分布式压板	NOT NULL
interconnection_section_mode	BOOLEAN	遥信点位:联络/分段模式	NOT NULL
switch_remote_control	BOOLEAN	遥信点位:开关远方	NOT NULL
block_reclosing_command	BOOLEAN	遥信点位:闭锁重合闸	NOT NULL
disable_synchronization_panel	BOOLEAN	遥信点位:停用同期压板	NOT NULL
control_circuit_break	BOOLEAN	遥信点位:控制回路断线	NOT NULL
pulse_count_1	BIGINT	遥信点位:脉冲计数1 (推导为计数器类型)	NOT NULL
pulse_count_2	BIGINT	遥信点位:脉冲计数2 (推导为计数器类型)	NOT NULL
local_fa_block_panel	BOOLEAN	遥信点位:就地FA闭锁压板	NOT NULL
disable_decoupling_function_panel	BOOLEAN	遥信点位:停用解列功能压板	NOT NULL

auto_safety_control_panel	BOOLEAN	遥信点位:安全自动控制压板	NOT NULL
total_protection_action	BOOLEAN	遥信点位:保护动作总	NOT NULL
total_fault	BOOLEAN	遥信点位:故障总	NOT NULL
short_circuit_fault	BOOLEAN	遥信点位:短路故障	NOT NULL
ground_fault	BOOLEAN	遥信点位:接地故障	NOT NULL
phase_a_short_circuit_fault	BOOLEAN	遥信点位:A相短路故障	NOT NULL
phase_b_short_circuit_fault	BOOLEAN	遥信点位:B相短路故障	NOT NULL
phase_c_short_circuit_fault	BOOLEAN	遥信点位:C相短路故障	NOT NULL
phase_ab_short_circuit_fault	BOOLEAN	遥信点位:AB相短路故障	NOT NULL
phase_bc_short_circuit_fault	BOOLEAN	遥信点位:BC相短路故障	NOT NULL
phase_ac_short_circuit_fault	BOOLEAN	遥信点位:AC相短路故障	NOT NULL
phase_abc_short_circuit_fault	BOOLEAN	遥信点位:ABC相短路故障	NOT NULL
segmentation_mode	BOOLEAN	遥信点位:分段模式	NOT NULL
tie_line_mode	BOOLEAN	遥信点位:联络模式	NOT NULL
overcurrent_i_stage_action	BOOLEAN	遥信点位:过流I段动作	NOT NULL

overcurrent_i_stage_alarm	BOOLEAN	遥信点位:过流I段告警	NOT NULL
overcurrent_i_stage_a_phase_fault	BOOLEAN	遥信点位:过流I段A相短路故障	NOT NULL
overcurrent_i_stage_b_phase_fault	BOOLEAN	遥信点位:过流I段B相短路故障	NOT NULL
overcurrent_i_stage_c_phase_fault	BOOLEAN	遥信点位:过流I段C相短路故障	NOT NULL
overcurrent_ii_stage_action	BOOLEAN	遥信点位:过流II段动作	NOT NULL
overcurrent_ii_stage_alarm	BOOLEAN	遥信点位:过流II段告警	NOT NULL
overcurrent_ii_stage_a_phase_fault	BOOLEAN	遥信点位:过流II段A相短路故障	NOT NULL
overcurrent_ii_stage_b_phase_fault	BOOLEAN	遥信点位:过流II段B相短路故障	NOT NULL
overcurrent_ii_stage_c_phase_fault	BOOLEAN	遥信点位:过流II段C相短路故障	NOT NULL
overcurrent_iii_stage_action	BOOLEAN	遥信点位:过流III段动作	NOT NULL
overcurrent_iii_stage_alarm	BOOLEAN	遥信点位:过流III段告警	NOT NULL
overcurrent_iii_stage_a_phase_fault	BOOLEAN	遥信点位:过流III段A相短路故障	NOT NULL
overcurrent_iii_stage_b_phase_fault	BOOLEAN	遥信点位:过流III段B相短路故障	NOT NULL
overcurrent_iii_stage_c_phase_fault	BOOLEAN	遥信点位:过流III段C相短路故障	NOT NULL

zero_current_i_stage_action	BOOLEAN	遥信点位:零流I段动作	NOT NULL
zero_current_i_stage_alarm	BOOLEAN	遥信点位:零流I段告警	NOT NULL
zero_current_ii_stage_action	BOOLEAN	遥信点位:零流II段动作	NOT NULL
zero_current_ii_stage_alarm	BOOLEAN	遥信点位:零流II段告警	NOT NULL
small_current_ground_zero_voltage_alarm_1	BOOLEAN	遥信点位:小电流接地零压1告警	NOT NULL
small_current_ground_zero_voltage_alarm_2	BOOLEAN	遥信点位:小电流接地零压2告警	NOT NULL
small_current_ground_start	BOOLEAN	遥信点位:小电流接地启动	NOT NULL
small_current_ground_internal_alarm	BOOLEAN	遥信点位:小电流接地区内告警	NOT NULL
small_current_ground_internal_trip	BOOLEAN	遥信点位:小电流接地区内跳闸	NOT NULL
small_current_ground_external_fault	BOOLEAN	遥信点位:小电流接地区外故障	NOT NULL
small_current_post_acceleration_start	BOOLEAN	遥信点位:小电流后加速启动	NOT NULL
small_current_post_acceleration_action	BOOLEAN	遥信点位:小电流后加速动作	NOT NULL
overcurrent_acceleration_action	BOOLEAN	遥信点位:过流加速动作	NOT NULL

zero_sequence_acceleration_action	BOOLEAN	遥信点位:零序加速动作	NOT NULL
inverse_time_overcurrent_action	BOOLEAN	遥信点位:反时限过流动作	NOT NULL
post_close_fault_overcurrent_action	BOOLEAN	遥信点位:合后故障过流动作	NOT NULL
post_close_fault_overcurrent_ii_stage_action	BOOLEAN	遥信点位:合后故障过流II段动作	NOT NULL
post_close_fault_zero_sequence_action	BOOLEAN	遥信点位:合后故障零序动作	NOT NULL
interphase_overcurrent_alarm	BOOLEAN	遥信点位:相间过流告警	NOT NULL
ground_alarm	BOOLEAN	遥信点位:接地告警	NOT NULL
reclosing_start	BOOLEAN	遥信点位:重合闸启动	NOT NULL
first_reclosing_action	BOOLEAN	遥信点位:一次重合动作	NOT NULL
second_reclosing_action	BOOLEAN	遥信点位:二次重合动作	NOT NULL
third_reclosing_action	BOOLEAN	遥信点位:三次重合动作	NOT NULL
reclosing_blocked_status	BOOLEAN	遥信点位:重合闸闭锁	NOT NULL
high_current_block_reclosing	BOOLEAN	遥信点位:大电流闭锁重合闸	NOT NULL
reclosing_charge_complete	BOOLEAN	遥信点位:重合闸充电完成	NOT NULL

reclosing_reset	BOOLEAN	遥信点位:重合闸复归	NOT NULL
terminate_reclosing_process	BOOLEAN	遥信点位:终止重合闸过程	NOT NULL
zero_sequence_voltage_trip	BOOLEAN	遥信点位:零序电压跳闸	NOT NULL
zero_sequence_voltage_alarm	BOOLEAN	遥信点位:零序电压告警	NOT NULL
inrush_harmonic_block	BOOLEAN	遥信点位:涌流谐波闭锁	NOT NULL
block_closing_command	BOOLEAN	遥信点位:闭锁合闸	NOT NULL
bus_side_voltage_present	BOOLEAN	遥信点位:母线侧有压	NOT NULL
line_side_voltage_present	BOOLEAN	遥信点位:线路侧有压	NOT NULL
double_side_voltage_loss	BOOLEAN	遥信点位:双侧失压	NOT NULL
bus_side_x_block	BOOLEAN	遥信点位:母线侧X闭锁	NOT NULL
line_side_x_block	BOOLEAN	遥信点位:线路侧X闭锁	NOT NULL
bus_side_y_block	BOOLEAN	遥信点位:母线侧Y闭锁	NOT NULL
line_side_y_block	BOOLEAN	遥信点位:线路侧Y闭锁	NOT NULL
bus_side_residual_voltage_block	BOOLEAN	遥信点位:母线侧残压闭锁	NOT NULL

line_side_residual_voltage_block	BOOLEAN	遥信点位:线路侧残压闭锁	NOT NULL
post_close_zero_voltage_action	BOOLEAN	遥信点位:合后零压动作	NOT NULL
pre_close_zero_voltage_block	BOOLEAN	遥信点位:合前零压闭锁	NOT NULL
pre_close_zero_voltage	BOOLEAN	遥信点位:合前零压	NOT NULL
manual_remote_open_block_close	BOOLEAN	遥信点位:手分/遥分闭锁合闸	NOT NULL
manual_remote_close_block_loss_voltage_open	BOOLEAN	遥信点位:手合/遥合闭锁失压分	NOT NULL
dual_power_block_close	BOOLEAN	遥信点位:双电源闭锁合闸	NOT NULL
post_close_fault	BOOLEAN	遥信点位:合后故障	NOT NULL
bus_side_post_close_fault	BOOLEAN	遥信点位:母线侧合后故障	NOT NULL
line_side_post_close_fault	BOOLEAN	遥信点位:线路侧合后故障	NOT NULL
block_loss_voltage_open	BOOLEAN	遥信点位:闭锁失压分闸	NOT NULL

去重与类型推导说明:

1. 遥信点位去重:

- 电池活化状态 (Battery Activation Status) 和 电池活化状态 (Battery Activation Signal): 我认为它们很可能是同一个概念的不同表述, 已统一为 battery_activation_status。如果实际是两个不同的信号, 请您根据实际语义重新添加。
- 开入1-8 (Digital Input 1-8) 和后面出现的 开入1-4 (Digital Input A1-A4): 假设后

者是前者的子集或重复, 已保留 digital_input_1 到 digital_input_8, 并删除 digital_input_a1 到 digital_input_a4。请您核实您的设备规范, 确保没有遗漏独有的点位。

- 联络/分段模式 已拆分为 interconnection_section_mode (联络/分段模式) 和其后续更具体的 segmentation_mode (分段模式) 和 tie_line_mode (联络模式), 以避免歧义。

2. 数据类型推导:

- 绝大多数遥信点位: 根据“开关状态, 值都是布尔类型”的描述, 推导为 **BOOLEAN** 类型。这在大多数现代数据库中都能高效存储(通常映射为1字节的真/假值)。
- 脉冲计数 (**Pulse Count**): 根据其名称“脉冲计数1”、“脉冲计数2”, 推导它们是累积计数值, 因此类型应为 **BIGINT**, 以存储可能较大的计数。

数据库存储建议:

- **BOOLEAN 类型映射**: 在实际数据库中创建表时, BOOLEAN 可能会映射为:
 - **MySQL**: TINYINT(1)
 - **PostgreSQL**: BOOLEAN
 - **SQL Server**: BIT
 - **Oracle**: 通常使用 NUMBER(1) 或 VARCHAR2(1) 结合 CHECK 约束。请根据您的具体数据库系统进行调整。
- **分区 (Partitioning)**: 强烈建议对 Fact_TelemetrySnapshot 表进行时间分区(例如, 按 snapshot_timestamp 的年、月、日进行分区), 以优化查询性能和数据管理。

这个修订后的结构应该更准确、更精简, 并为您的数据分析和机器学习任务提供坚实的基础。