Total Control Services Limited
Prosect House
North Farm Road
Tunbridge Wells
Kent
TN2 3DN
www.total-control.co.uk

BMS Discription of operations for control of the the new district heat exchanger at UCL Wilkens Terrace

J10553 – UCL Wilkins Terrace

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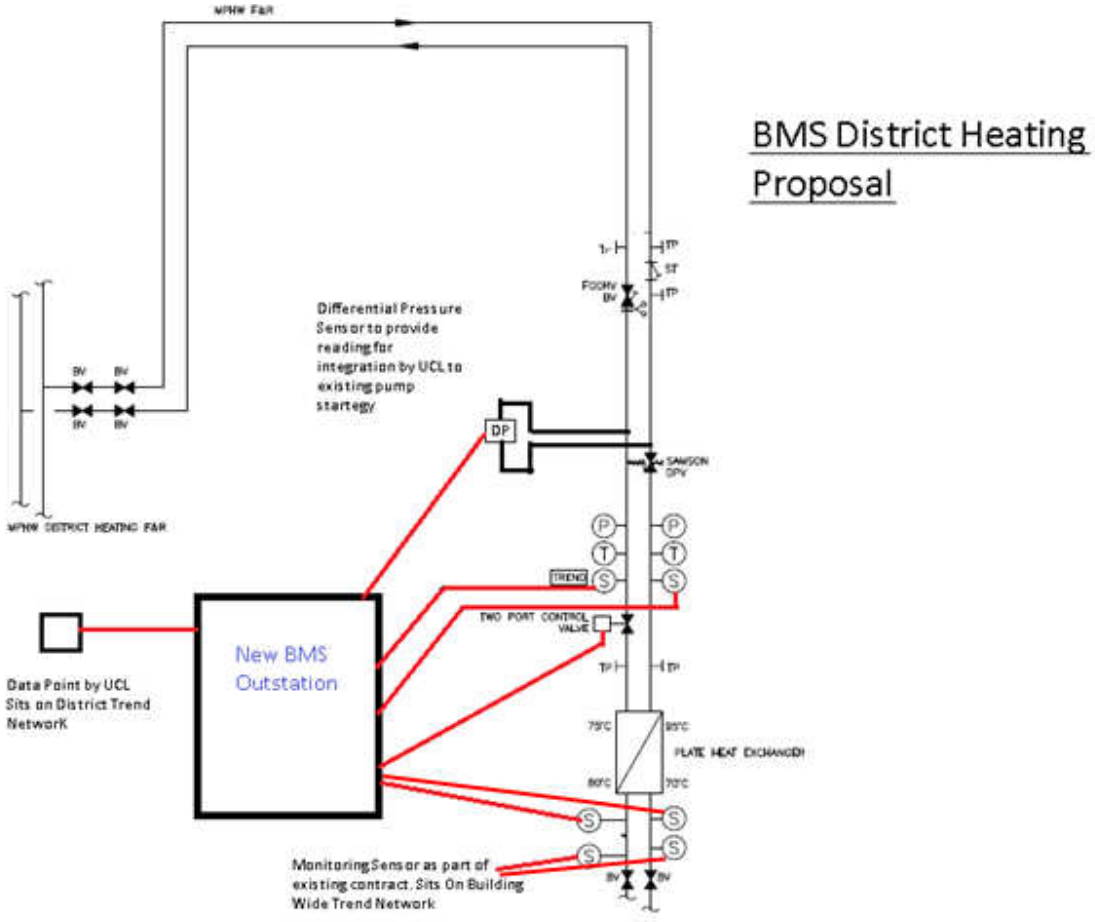
Overview

A new outstation will be provided within the existing district heating plantroom, this will be located near to the newly installed plate heat exchanger. The outstation will be powered by a local 13 A spur and will hold all the necessary transformers, MCB's and consumeables to power a IQ4 Trend controller. This Trend controller will provide all the necessary inputs and outputs for the field controls required to operate the plate heat exchanger. The controller will hold the required software and will be be networked back to the district heating Head End via Network point provided by UCL. A graphic will be updated at this head end to allow user adjustents of the new outstation.



Primary Circuit Monitoring

Flow Sensor – A Trend immersion sensor has been provided to monitor the flow temperature onto the plate heat exchanger.

Return Sensor – A Trend immersion sensor has been provided to monitor the return temperature from the plate heat exchanger.

A differential pressure sensor will be provided to monitor the pressure before the plate heat exchanger. This pressure reading can be used by UCL to modify the existing control circuit for the district heating pump speed.

Secondary Circuit Monitoring

Flow Sensor – A Trend immersion sensor has been provided to monitor the flow temperature onto the plate heat exchanger.

Return Sensor – A Trend immersion sensor has been provided to monitor the return temperature from the plate heat exchanger.

Temperature Control

A two port control valve has been provided to regulate the flow onto the plate heat exchanger. The valve position is modulated dependant on the demand as calculated by comparing the secondary flow temp to the secondary flow Setpoint (95degC adjustable).

Timeclock control

This district heating control will be enabled by the starting of any timeclock within Wilkens terrace being active.

Heat Meter

This heat meter is not required as all secondary circuits are subsequently sub-metered.

Trendlogs

Trendlogs will be setup for the following;

Differential Pressure Sensor

Primary Flow Temp

Primary Return Temp

Secondary Flow Temp

Secondary Return Temp

Alarms

Alarms will be setup for the following;

Differential Pressure Sensor out of limits

Primary Flow Temp sensor out of limits

Primary Return Temp sensor out of limits

Secondary Flow Temp sensor out of limits

Secondary Return Temp sensor out of limits

TOTAL CONTROL
PROJECTS MAINTENANCE ENERGY

PROJECT

J10553 - D4

SCHEMATIC WIRING DIAGRAM
AND FIELD WIRING FOR

UCL WILKINS TERRACE

BASEMENT PLANT ROOM

HEAT EXCHANGER CONTROL ENCLOSURE

CLIENT

MECHANICAL SERVICES LTD

TOTAL CONTROL SERVICES LTD
PROSPECT HOUSE
NORTH FARM ROAD
TUNBRIDGE WELLS
KENT
TN2 3DN

PROJECTS/ENERGY: +44 (0)1892 557727
MAINTENANCE: +44 (0)1892 557727
FAX: +44 (0)1892 519543
EMAIL: info@total-control.co.uk
www.total-control.co.uk

DESIGN APPROVED BY :- CRAIG VEALE

REV 2.01

TECHNICAL & CONSTRUCTION NOTES

MAINS AC : 50HZ
RATED VOLTAGE OF AUX CONTACTS : 24-230VAC
AMBIENT TEMPERATURE : 45C MAX
ENCLOSURE CLASS :
INTERNAL : IP2X
EXTERNAL : IP54
EARTH CONNECTION : TN-S
FAULT LEVEL : <6KA
MINIMUM POWER WIRING : 2.5MM²
MINIMUM CONTROL WIRING : 0.5MM²
POWER CABLES ARE FITTED WITH CORD END FERRULES , OR LUGS,
DEPENDING ON SIZE AND TYPE OF CONNECTION.
CONTROL CABLES ARE FITTED WITH CRIMPS OF PIN OR FORK,
DEPENDING ON SIZE AND TYPE OF CONNECTION.
ALL CONTROL CABLES ARE IDENTIFIED AT EACH END, CABLE
IDENTIFICATION NUMBER IS SHOWN ON THE WIRING DIAGRAM.
PANEL FINISH IS BEIGE TEXTURED - RAL7035
CONTROL LABLES ARE ENGRAVED FORMICA
BLACK ON WHITE BACKGROUND.
WARNING LABELS ARE ENGRAVED FORMICA
BLACK ON YELLOW BACKGROUND.

WIRING COLOURS

WIRING SHALL BE NORMALLY CODED AS FOLLOWS :

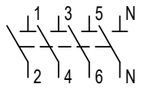
L1	400VAC	BN	BROWN
L2	400VAC	BK	BLACK
L3	400VAC	GY	GREY
N	230VAC NEUTRAL	BL	BLUE
CCT	24VAC	WH	WHITE
CCT	24VDC	PK	PINK
CCT	0-10VDC	OR	ORANGE
CCT	0-12VDC	VT	VIOLET
VFCS	VFCS	WH	WHITE

EQUIPMENT

THE FOLLOWING MANUFACTURERS ARE USED :

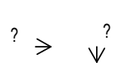
ISOLATORS	ABB
FUSE SWITCHES	ABB
MCBS / MCCBS	ABB
TERMINALS	WIELAND
LAMPS	CHANA
SWITCHES	IDEC
TIME DELAY RELAYS	OMRON
CONTROL RELAYS	OMRON

KEY TO TOTAL CONTROL SERVICES : STANDARD WIRING DRAWING SYMBOLS



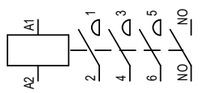
TYPICAL ISOLATOR


TYPICAL TRANSFORMER

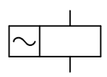


CROSS SHEET WIRING REFERENCE


TYPICAL TERMINALS

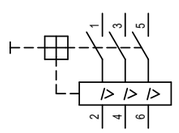


TYPICAL CONTACTOR


AC RELAY


INDICATES SHEILDED CABLE


ELECTRO THERMAL LINK



TYPICAL BREAKER

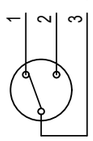

DC RELAY


ALARM BELL


TYPICAL LAMP OR INDICATOR


THREE PHASE MCB


NORMALLY CLOSED CONTACT

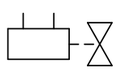


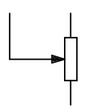
AIR / LIQUID FLOW SWITCH


TYPICAL HEATER

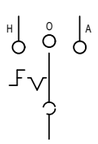

ILUMINATED PUSH BUTTON


NORMALLY OPEN CONTACT

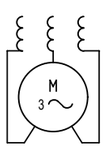

TYPICAL VALVE OR ACTUATOR


TYPICAL POTENTIOMETER

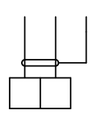

KNOCK OFF BUTTON



TYPICAL ROTARY SWITCH



TYPICAL MOTOR


TYPICAL SENSOR

REVISION HISTORY

DATE	DRAWN	REMARKS
13/10/2016	JMS	DRAFT ISSUE
14/10/2016	JMS	COMMENT CHANGES
14/10/2016	CBH	APPROVED FOR MANUFACTURE
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TOTAL CONTROL
PROJECTS MAINTENANCE ENERGY

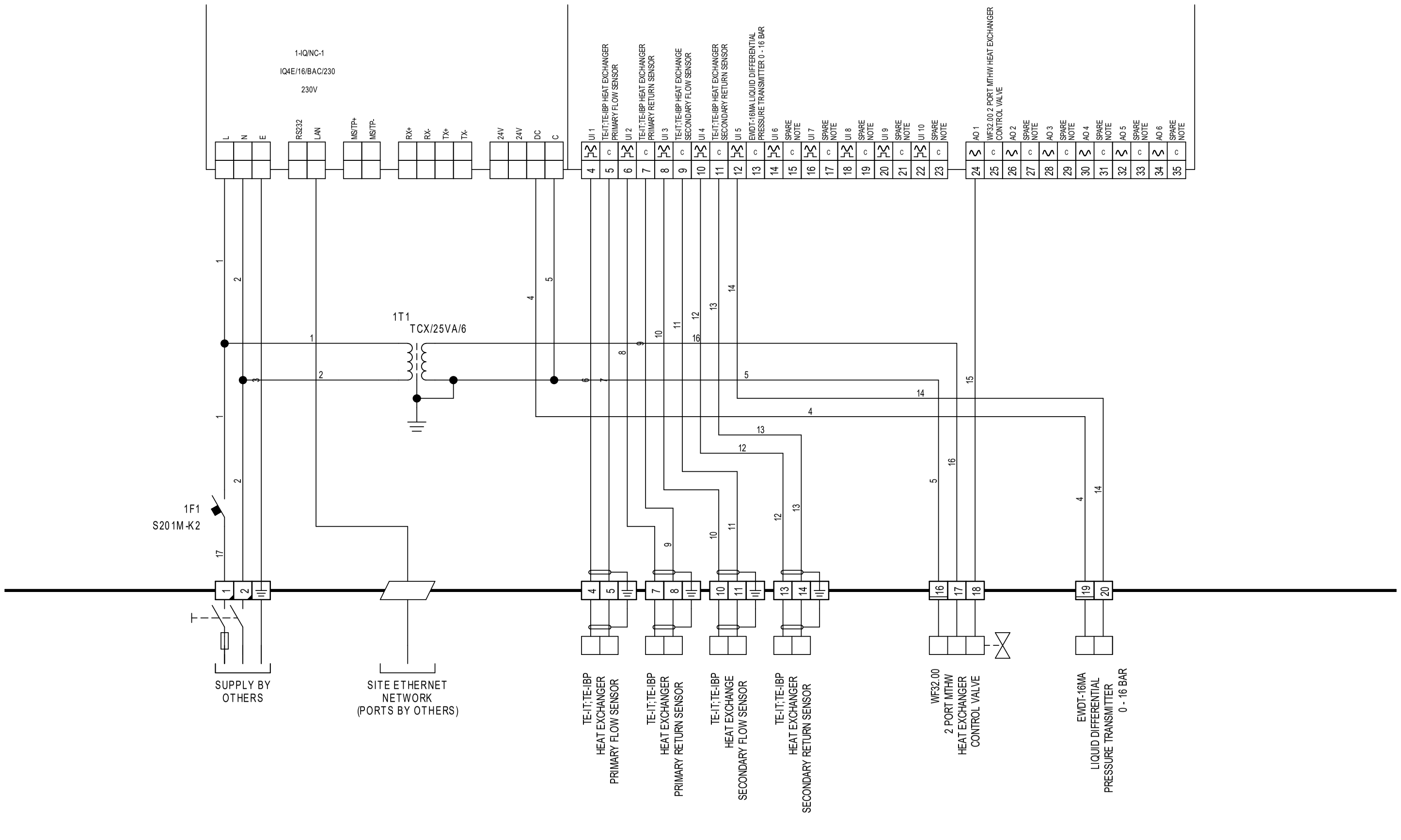
PROSPECT HOUSE
NORTH FARM ROAD
TUNBRIDGE WELLS
KENT
TN2 3DN

Title: UCL WILKINS TERRACE
BASEMENT PLANT ROOM

Client: MECHANICAL SERVICES LTD

Drawing No: J10553 - D4

Drawn by: JMS | Date: 14/10/2016 11:50:55 | Rev: MANUFACTURE | Page: 2 | Of: 2



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Drawn by: JMS

Date: 14/10/2016 11:52:08

Rev: MANUFACTURE

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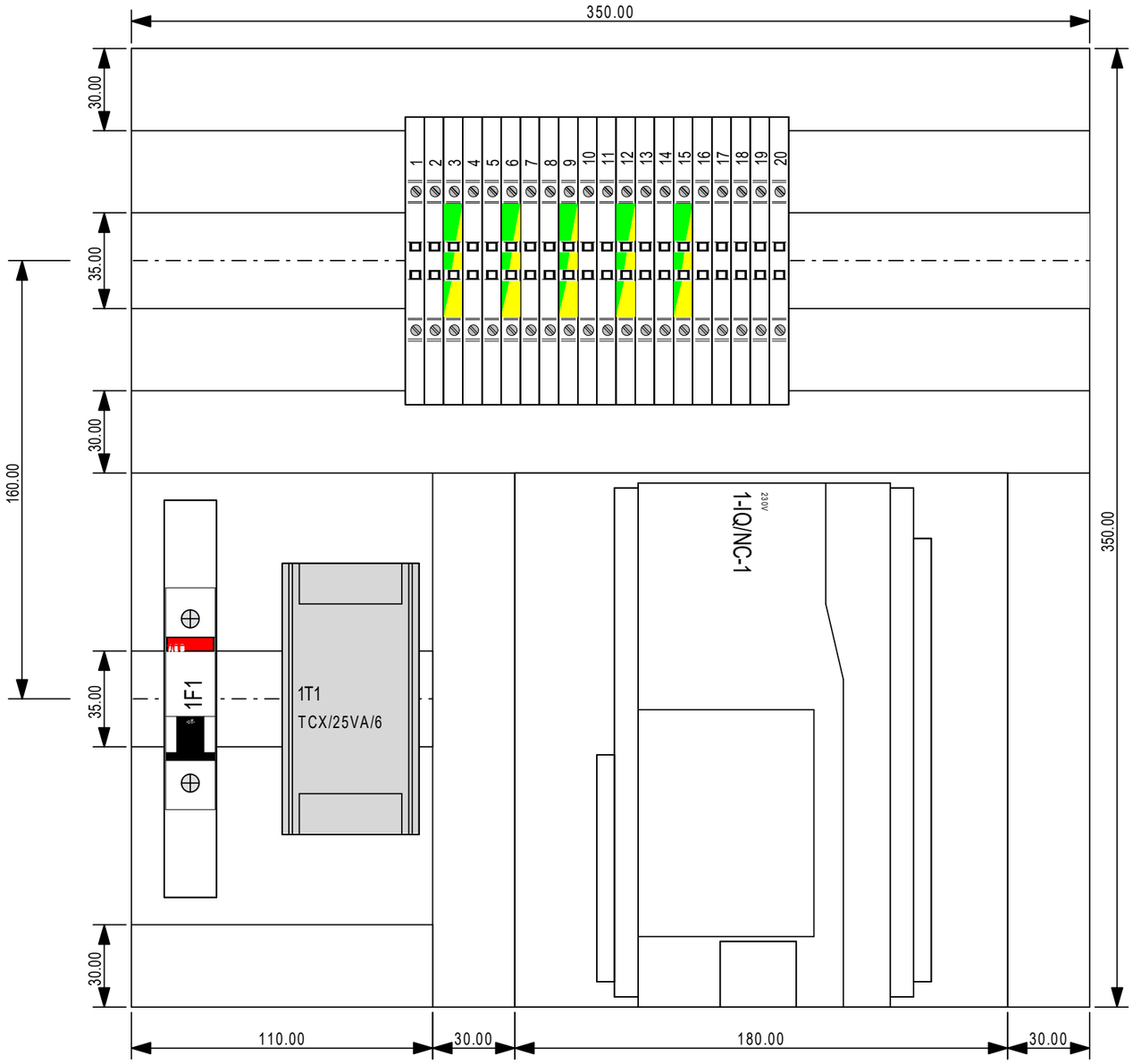
Of: 1



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ST4420

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Drawn by:	Date:	Rev:	Page:	Of:
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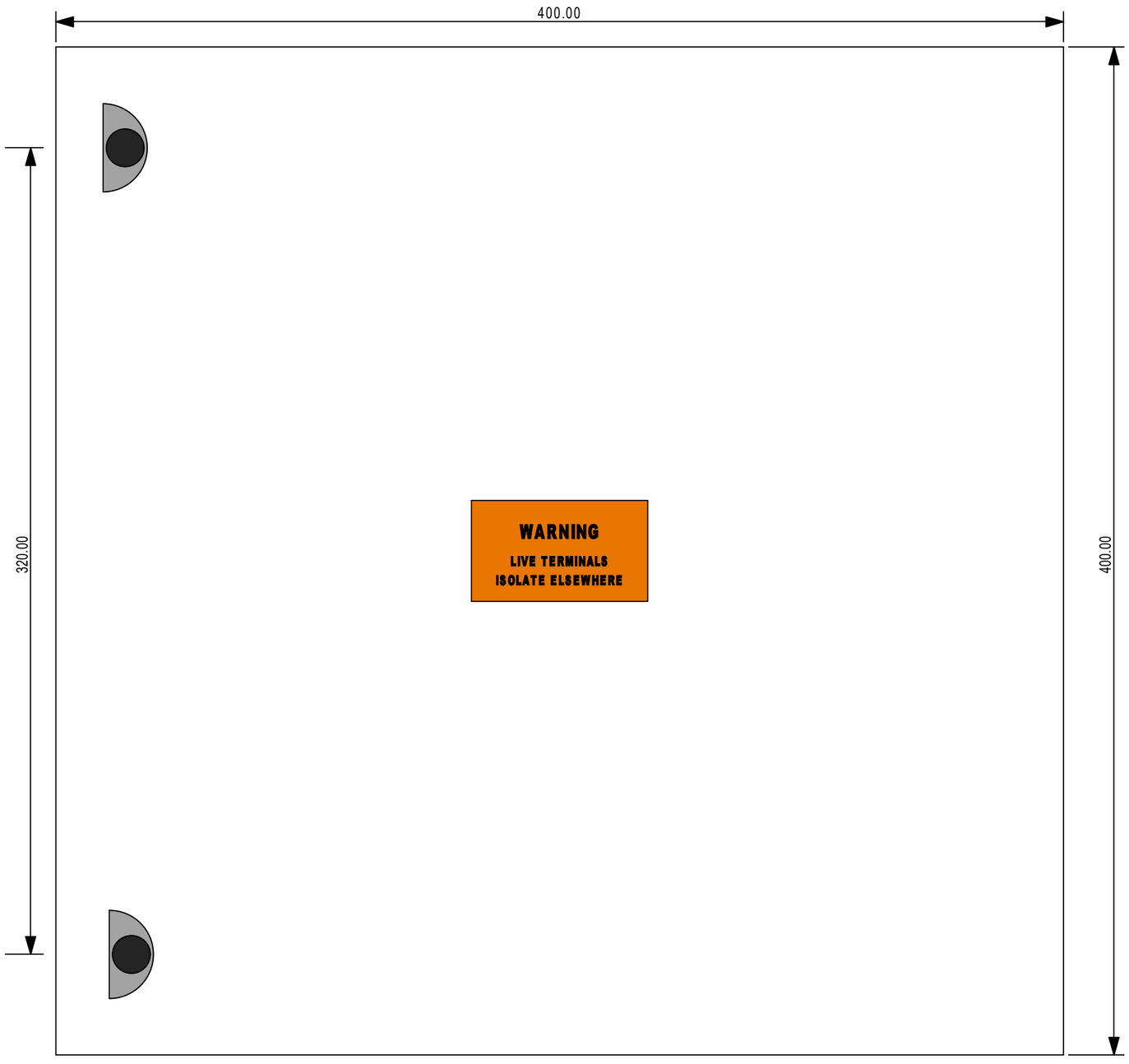

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ST4420

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JMS	14/10/2016 11:50:55	MANUFACTURE	2	2