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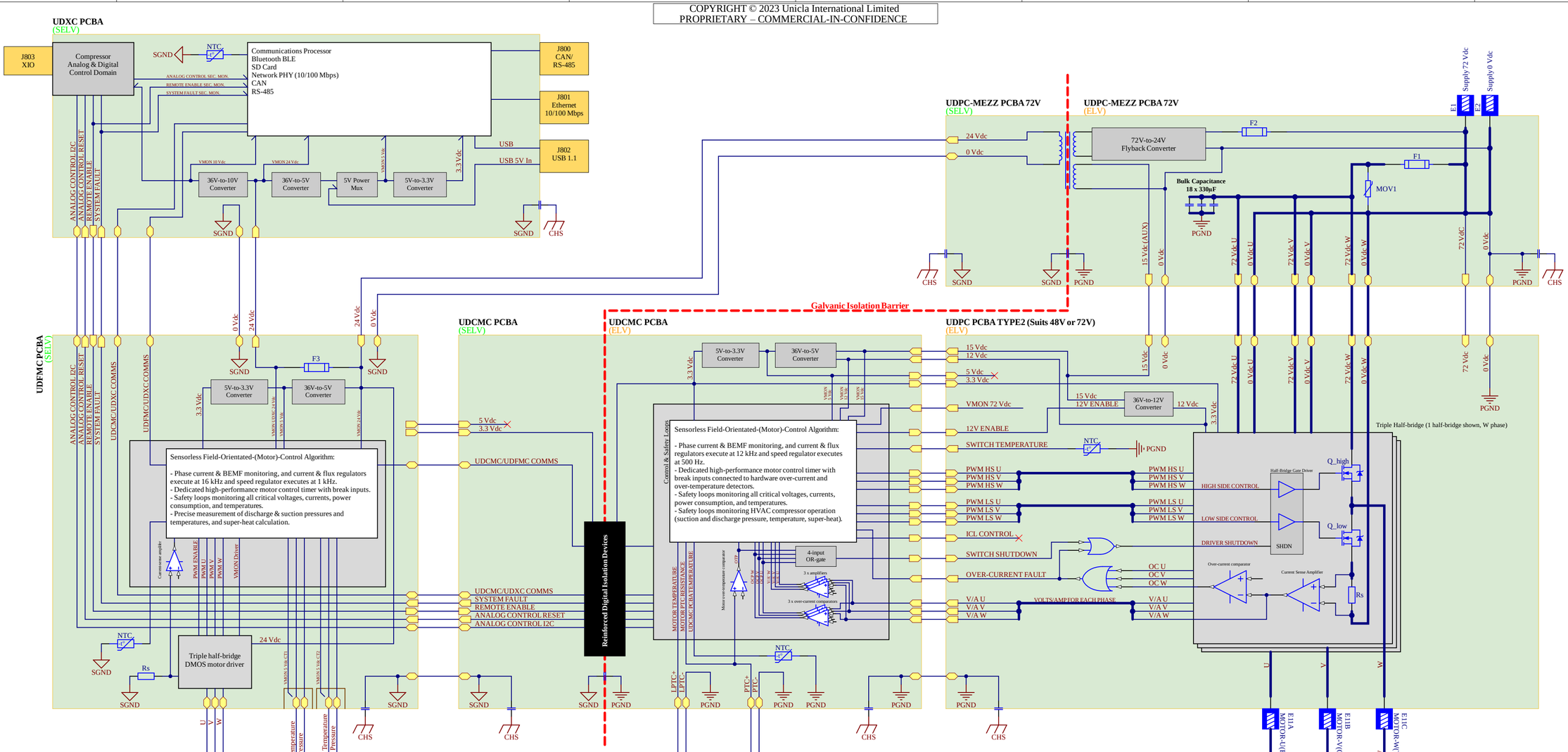
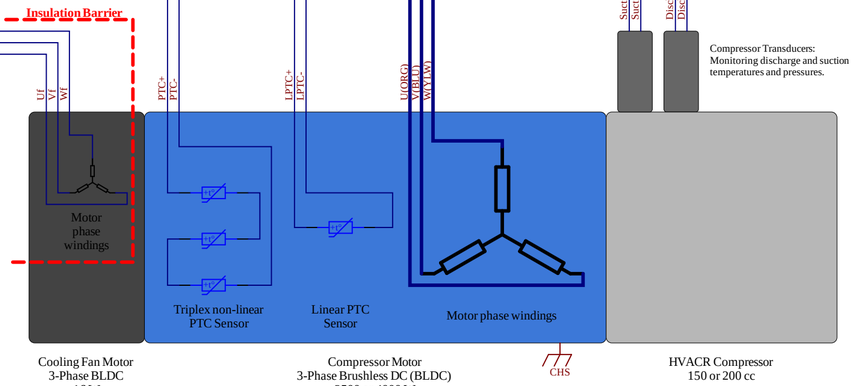
PROPRIETARY – COMMERCIAL-IN-CONFIDENCE





LS: Low-Side
HS: High-Side
ICL: Inrush Current Limit(ing)
NTC: Negative Temperature Coefficient (Resistive Temperature Sensor)
OC: Over-Current (Fault)
PCBA: Printed Circuit Board Assembly
PTC: Positive Temperature Coefficient (Resistive Temperature Sensor)
PWM: Pulse Width Modulation
V/A: Volts/Amp (Measurement of Current)

LV: Voltage Classification (Low Voltage)
ELV: Voltage Classification (Extra Low Voltage)
SELV: Voltage Classification (Safety Extra Low Voltage)

UDCMC: eDrive Compressor Motor Controller
UDFMC: eDrive Fan Motor Controller
UDPC: eDrive Power Card
UDPC-MEZZ: eDrive Power Card Mezzanine (48 Vdc & 72 Vdc only)
UDXC: eDrive Communication and Interface Card

72 Volt 150 model (3000W) eDrive Compressor
Applicable model: UD150-72 V
Nominal supply:
- Voltage: 60 – 84 Vdc
- Power: 3000 W
- Current: 42 A

Integrated motor safety:
Maximum continuous power consumption is 4.0 kW. If this is exceeded for a continuous period of 10 seconds, the motor is stopped, and a restart is attempted following an idle period (typically 2 minutes). If power consumption exceeds 4.5 kW, the motor is immediately stopped, and a restart is attempted following an idle period (typically 2 minutes). The number of restarts is limited in number, after which time operator intervention is required.
The values of 4.0 kW, 4.5 kW, and 10 seconds, can be configured to suit the application.

Maximum Continuous Current (MCC):
55.5 A @ 72 Vdc, 66.6 A @ 60 Vdc

Service Duty:
Ambient Temperature < 45°C
Ambient Temperature < 55°C
(refer Unicla Operations Manual for additional requirements)

Motor Thermal Protection:
Two, independent systems provide motor thermal protection:
1. Linear PTC (embedded into stator windings). This is used to monitor the temperature of the motor. The motor is stopped at 120°C, and restarts at 90°C.
2. Triplex non-linear PTC (embedded into stator windings), connected to a dedicated circuit that disables motor operation. Motor is stopped at 130°C.

LRA (Locked Rotor Amperage):
The nature of BLDC Field Orientated Control means that a locked rotor scenario is not possible. The current, flux, and speed regulator control loops continuously monitor the operation of the motor and flag a fault condition if the motor is not rotating. Power delivery to the motor is stopped.

Enclosure class :
Controller housing & motor IP55

72 Volt 200 model (4500W) eDrive Compressor
Applicable models: UDF150-72 V, UD200-72 V
Nominal supply:
- Voltage: 60 – 84 Vdc
- Power: 4500 W
- Current: 62.5 A

Integrated motor safety:
Maximum continuous power consumption is 5.0 kW. If this is exceeded for a continuous period of 10 seconds, the motor is stopped, and a restart is attempted following an idle period (typically 2 minutes). If power consumption exceeds 5.5 kW, the motor is immediately stopped, and a restart is attempted following an idle period (typically 2 minutes). The number of restarts is limited in number, after which time operator intervention is required.
The values of 5.0 kW, 5.5 kW, and 10 seconds, can be configured to suit the application.

Maximum Continuous Current (MCC):
69.5 A @ 72 Vdc, 83.3 A @ 60 Vdc

Service Duty:
Ambient Temperature < 45°C
Ambient Temperature < 55°C
(refer Unicla Operations Manual for additional requirements)

Motor Thermal Protection:
Two, independent systems provide motor thermal protection:
1. Linear PTC (embedded into stator windings). This is used to monitor the temperature of the motor. The motor is stopped at 120°C, and restarts at 90°C.
2. Triplex non-linear PTC (embedded into stator windings), connected to a dedicated circuit that disables motor operation. Motor is stopped at 130°C.

LRA (Locked Rotor Amperage):
The nature of BLDC Field Orientated Control means that a locked rotor scenario is not possible. The current, flux, and speed regulator control loops continuously monitor the operation of the motor and flag a fault condition if the motor is not rotating. Power delivery to the motor is stopped.

Enclosure class :
Controller housing & motor IP55

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Title:	***eDrive Safety Features Diagram - 72V***		Unicla Cat No. T2203_V2
Project:	*eDrive Safety Features Diagram 72V.PrjPcb*		*Unicla International Limited* *14 Motorway Circuit* *Ormeau* *QLD, 4208* *Australia*
Engineer:	Matthew Dyhrberg	Size: A2	
Modified Date:	29/05/2023	Sheet: 1 of 1	
Revision:	01		
File:	T2203_Unicla_eDrive_Safety_Features_Diagram_72V.SchDoc		