

GUTOR		Modification Information (MI)			
Part:	0P116XAA	XXW I/F BOARD XXX VDC EMC REINFORCED		Reg. No.	0P116XAA-MI
Prepared by:	HPN	Date:	18.01.2022	Rev. No.	01
Approved by:	MAE	Rev. Date:		Page:	1 / 2

Rev.	Date	Initials	Remark
1	18.01.2022	HPN	Initial

Conclusion

According to the following checked points, the new XXW Interface Boards 0P1161AA-0P1165AA fit in form and function with the former boards 0P2405x-0P2408x. In Table 1, the part numbers for the former XXW Interface Boards and the new replacement XXW Interface Boards are shown.

Seismic	0P1161AA-0P1165AA has the same seismic behavior as former 0P2405x-0P2408x boards.
EMC	0P1161AA-0P1165AA has better EMC behavior than 0P2405x-0P2408x. The new design has better noise rejection performance on the DC Measurement circuit.
Mechanic	The outer dimensions, location, and diameter of the mounting holes of 0P1161AA-0P1165AA are the same as 0P2405x-0P2408x. Connectors stay the same.
Electric	0P1161AA-0P1165AA provides the same functionality as by 0P2405x-0P2408x. The DC Measurement circuit is improved to have better noise rejection performance. The DC Measurement resistance values are reduced to eliminate the risk of noise coupling due to transients and spike voltages. Additional filtering is added to the circuit to improve performance against external disturbance.
other	0P1161AA-0P1165AA does fulfill the same standards as 0P2405x-0P2408x. 0P1161AA-0P1165AA are conformal coated.

What has changed?

On the DC Measurement Circuit, improvements are made to improve performance against noise and external disturbances.

An RC filter is added to the supply circuit of the OP-AMP (IC001) to avoid possible coupling from the $\pm 12V$ to the DC measurement.

The resistor values used in the DC Measurement circuit are reduced to have better noise immunity and better common-mode rejection. Additional filter capacitors are added (C204-C205) to improve the noise rejection performance of the board.

The diodes V001 and V004 are removed to measurement error due to leakage current.

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Why the change?

The DC Voltage measurement circuit was susceptible to noise due to the very high resistance values used for the measurement. Since the Main Controller regulates the DC Bus voltage by observing the output of the DC measurement circuit from the Interface board, it is crucial to provide a stable output voltage. This voltage is also used for system and battery protection (High- Low DC Warning/Shut down). With the new interface board, the noise immunity of this circuitry is improved to have better Common Mode Rejection and disturbance rejection performance.

Which part can be replaced by the new part?

The new XXW Interface Boards 0P1161AA-0P1165AA will be used in replacement to the former boards 0P2405x-0P2408x.

Please find the following table as guidance, “x” stands as a variable for the letter revision:

Table 1 XXW Interface Board Replacement Table

Former XXW Interface Boards:	New EMC Reinforced XXW Interface Boards:
0P2405x (220VDC)	0P1161AA (220VDC)
0P2406x (110/125VDC)	0P1162AA (110/125VDC)
0P2407x (400VDC)	0P1163AA (400VDC)
0P2408x (48/60VDC)	0P1164AA (48/60VDC)
UNC1-640-0087 Extended DC Range (220VDC_EXT)	0P1165AA Extended DC Range (220VDC_EXT)

What has to be considered with the new part?

The replacement of the new interface boards is backward compatible. When the Interface boards on-site are replaced with new Interface Boards, the calibration should be done.