

REVISION HISTORY RECORD					
REV	ECO #	DATE	DESCRIPTION OF CHANGE	REVISED BY	APPROVED BY
AA-1		12-22-2016	- Initial Release	RP ALMEDA	RA. CRUZ
AA-2		04-03-2017	<ul style="list-style-type: none"> <li>- Change ALL "PMBUS" wording to command.</li> <li>- Delete "0x"</li> <li>- Section 2: Add Module Code SW v04.12.00</li> <li>- Section 3: Add ISOCOMM SW v03.04.00 and v03.05.00</li> <li>- Section 4: Update compatibility due to new Module SW and ISOCOMM SW.</li> <li>- Appendix B, Add Model rev for modules that used Module SW v04.12.00</li> </ul>	RP ALMEDA	RA. CRUZ

PROPRIETARY, CONFIDENTIAL and/or TRADE SECRET MATERIAL -- NOT OPEN TO PUBLIC  
 DO NOT SCAN, COPY OR DISTRIBUTE WITHOUT WRITTEN AUTHORIZATION FROM  
**ARTESYN EMBEDDED TECHNOLOGIES, INC.**  
 ©2017 ARTESYN EMBEDDED TECHNOLOGIES, INC. ALL RIGHTS RESERVED  
 This document, and the information it contains, are the property of  
 ARTESYN EMBEDDED TECHNOLOGIES, INC. and are protected by law.  
 Both must be held in strictest confidence at all times.  
 No license or right to copy, use or disclose this document, or the information it contains,  
 is granted either expressly or by implication.

A printed version of this document is an uncontrolled copy

**TABLE OF CONTENTS**

<b><u>Title</u></b>	<b><u>Page</u></b>
1 Document Overview	3
2 iHP MODULE SW Changes	4
3 iHP RACK ISOCOMM SW Changes	7
4 iHP RACK ISOCOMM and iHP MODULE Compatibility	12
5 REcommendation for old units in the field.	15
Appendix A. iHP RACK Model Revision SW	16
Appendix B. iHP Module Revision SW	17

## **1 DOCUMENT OVERVIEW**

This document is intended for iHP FAE.

This document list down the additional functionality and improvement of each software version for iHP Module and ISOCOMM SW.

This document also states the compatibility of the iHP RACK ISOCOMM and iHP Module.

This document will serve as a reference for iHP FAE.

## 2 IHP MODULE SW CHANGES

SW Version	Change type	Change Description	Remarks
V04.12.00	New Command	Add BCh Module Command enable/disable variable switching frequency.	
	Module Command Update	Updated command 52h bit1 to enable/disable IREF value saving	
		Command B1h will now accept commands during VPROG	Function for VPROG rescaling
		Command B2h will now accept commands during IPROG	Function for IPROG rescaling
	Command Issue Resolve	45h value corrected from "00h" to "80h"	To reflect correct module response.
	New Features		
	Solved Items Firmware Bugs	Short circuit Fault (latch) will reflect to D0h.	This will trigger Module Sync-off (if enable).
		Add power limit function for DCS & ACS	
		Resolve issue on IPROG rise time does not follow user setting	
		M_FAULT signal now properly asserts during short circuit fault (latch)	
		ISHARE configuration updates for every change in Output Voltage during DVS.	
		M_FAULT signal will not de-assert when user turn-off the Module via Hardware or SW command.	
	Firmware Improvements	-If DCS and 52h is 01h, IREF will become 0A for every initial power-up -If DCS and 52h is 03h, IREF will retain the same value every initial power-up. User needs to send save command.	
		Module to send high priority data to ISOCOMM during fault condition	
		Toggling of M_ENABLE & M_INHIBIT# signal should also clear fault registers and D0h value, and enable the output.	
	Bootloading Compatibility	Compatible to v04.10.00 and V04.11.00 <b>but need to send again mode change command.</b>	V04.09.00 and lower cannot be bootloaded
	Restriction		
V04.11.00	New Command	None	
	Module Command Update	None	
	Command Issue Resolve	None	
	New Features	Added power limit during AVS (3KW)	
	Solved Items Firmware Bugs	None	
	Firmware Improvements	None	
	Bootloading	Compatible to unit with SW v04.10.00	V04.09.00 and lower cannot be

	Compatibility		bootloaded
	Restriction	<b>Code cannot be used on 250V Modules.</b>	<b>Causes output voltage ripple to increase significantly at high loads</b>
V04.10.00	New Command	None	
	Module Command Update	Removed password requirement for Module Command B8h write command	
		Update B1h for adjustable voltage clamp during DCS & ACS	
	Command Issue Resolve	None	
	New Features	Add latch type short circuit protection	
		Add VrefLow & IrefLow checking during DSP initialization to turn-off module when either VREF or IREF value is 0	If Module will be commanded Vref to 0V (DVS) or IREF to 0V (DCS), Module will enter Standby Mode.
	Solved Items Firmware Bugs	Spikes observed on output voltage during AVS operation when output voltage is below 20% of rated voltage, regardless of load.	- Remove improvements on PWM initialization which addresses the narrow pulses during standby mode - Related to Freescale DSP fractional PWM errata
		CAN communication issue fix	Fix the occurrence of Module sometimes doesn't reply to ISOCOMM during write command
	Firmware Improvements	Output voltage rise time to follow Module Command B5h setting during AVS	
		Enabled WGEN during blanking period during standby for faster discharge of output voltage	To ensure output voltage is properly discharged at no load or light load conditions when turn-off
Reset OVP Blanking timer when valid B1h write command is received			
CC limit calculation accuracy improvement			
Bootloading Compatibility	Not compatible to unit with lower SW version.	V04.09.00 and lower cannot be bootloaded	
Restriction	None		
V04.05.00	New Command	None	
	Module Command Update	None	
	Command Issue Resolve	None	
	New Features	None	
	Solved Items Firmware Bugs	Observed very narrow pulses on DC-DC drive when Module is in standby	Disable PWM during DSP initialization, and enable it after PCSI initialization
		Compatible for 24V module	
	Firmware Improvements	None	
	Bootloading Compatibility	Compatible to unit with SW v04.04.00 And v04.03.00	
Restriction	None		
V04.04.00	New Command	Added BBh command for software reset	
	Module Command Update	D0h bit2 revised to exclude G_ENABLE	
	Command Issue	None	

	Resolve		
	New Features	None	
	Solved Items Firmware Bugs	None	
	Firmware Improvements	None	
	Bootloading Compatibility	Compatible to unit with SW v04.03.00	
	Restriction	<b>Code cannot be used on 24V Module</b>	<b>- Sync Rect drive may become stuck high and damage the Module</b>
	V04.03.00	New Command	None
Module Command Update		D0h bit2 added to show when Module is in standby	Monitors G_ENABLE, M_ENABLE, M_INHIBIT#, & Module Command 01h command
		B2h = 02 during mode change to DVS or AVS, module enters standby, & D0h bit3 is asserted	Will require DSP reset for the Module to turn-on again
		Extend control table for capacitive & LED compensation sets	
Command Issue Resolve		B5h & B6h not properly linked to voltage & current rise time setting for capacitive and LED compensation	Risetime setting is reset during compensation change CAP/LED
New Features		None	
Solved Items Firmware Bugs		Module output voltage not discharged properly during light load to no load condition	
Firmware Improvements		OC fault upper & lower limits & OV fault lower limit now configurable via E4h register (not accessible by user)	
Bootloading Compatibility		None	
Restriction		<b>Code cannot be used on 24V Module</b>	<b>- Sync Rect drive may become stuck high and damage the Module</b>

### 3 IHP RACK ISOCOMM SW CHANGES

SW Version	Change type	Change Description	Remarks
V03.05.00	New Command	ISOCOMM Command B8h – Batch command to implement Module Load Type change.	
		ISOCOMM to support New Module Commands D8h - VPROG_LOW_LEVEL D9h - IPROG_LOW_LEVEL DAh - VREF_MAX_LIMIT DBh - IREF_MAX_LIMIT BCh - SW_FREQ_ADJ_EN	
	Command Update	PFC Command 80h –STATUS_MFR_SPECIFIC is now 1 byte.	
	New Features	Support Group write module command B7h - SET_IO_ACTIVE_LEVEL_LOGIC B8h - SET_MODULE_LOAD TYPE B9h – WIRE IMPEDANCE BAh - ANALOG_FILTER_ENABLE	
		Support Group Read module command 9Ah - Manufacture Model B9h – WIRE IMPEDANCE	
		ISOCOMM Webtool to support ISOCOMM Bootload	
	Solved Items Firmware Bugs	ISOCOMM to discard CAN communication command to write to a specific module when module belongs to a group.	
		Auto Save of module setting was disabled.	User needs to send ISOCOMM SAVE Command to Module in order to retain the changes in the Module setting.
		ISOCOMM Command D7h flags CML address when Address data is incorrect.	
		Solve issue on Group command write Issue is group command write was send serial Fix by sending command simultaneously.	
		Solve Issue on Sending PFC CLEAR Fault. Fix by eliminating the needs to disable ISOCOMM Write Protect when sending Clear Fault to PFC.	
		PFC Status will be updated after pressing front panel switch of iHP RACK.	
	Firmware Improvements	Improvement made on the internal CAN to prevent any possibility of Internal CAN Hang-up.	
		Remove Fan max duty cycle setting from WebTool.	
		Change ISOCOMM WebTool RACK Section “Wait for Power Switch” to “Start up Sequence”. “Start-up Sequence” choices - Wait for power Switch. - Straight-on - Wait for Software command.	
Bootloading	ISOCOMM lower SW version can be updated to	Each model, 24kW and 12kW iHP	

	Compatibility	v03.05.00	<b>Rack have its own Bootload File. Do not interchange the Bootload file.</b>
	Restriction		
V03.04.00	New Command	ISOCOMM to support below Module commands: B3: PCSI FA: RESTORE_FACTORY_CALIB D6: MODULE_SAVE FB: READ_CONVREF_FILTER	Module commands for Calibration
	Command Update		
	New Features	ISOCOMM to support 12kW iHP RACK	<b>First ISOCOMM SW for 12kW iHP RACK</b>
	Solved Items Firmware Bugs	Solve RS485 hang when receive wrong address.	
	Firmware Improvements	Polling rate for Digital control module is set to 8msecs. Polling rate for Analog control module is set to 25msec	
		WebTool change name from Ambient Temp OTP to Internal Ambient Temp OTP	
	Bootloading Compatibility	<b>Not compatible to iHP RACK 24kW with SW version v03.03.00 and below</b>	<b>-Cannot be used on 24kW iHP RACK due to Fan Control Setting.</b>
Restriction	<b>Cannot be used on 24kW iHP RACK</b>	<b>-Cannot be used on 24kW iHP RACK due to Fan Control Setting.</b>	
V03.03.00	New Command	Supports Module Command D4h and E3h	
	ISOCOMM Command Update		
	Command Issue Resolve	D3h, B5h, B6h addressing issue Fix	
		Remove CAN/RS485 address 7 in the ISOCOMM WebTool selection.	CAN/RS485 address 7 is for CAN/RS485 broadcast address.
		Internal Polling Rate for Module Analog operation is set to 17msec.	
	New Features	RACK SYNC in MFR specific status if fault occur	
		Serial number to add in WebTool home page.	
	Solved Items Firmware Bugs	Fix issue on Fan1 and Fan2 Fan Fault during Continuous AC Recycle	
		Fix issue on Internal Ambient OTP during - 20degC operation.	
		ISOCOMM reports Module COMMS FAULT during Module change mode operation	During Module change mode operation, Module will be commanded to re-initialize. ISOCOMM will not communicate to Module after Module re-initialization.
		Module Turns on when changing mode even if there is an AC_FAIL	
Firmware Improvements	Increase ambient otp to 62degC		
	Module webtool page to have one save button		
Bootloading	ISOCOMM lower SW version can be updated to		



	Compatibility	v03.03.00	
	Restriction		
V03.00.00	New Command	Added ISOCOMM Command DFh - GROUP_CONFIG	Command returns the group configuration of the rack.
		Add ISOCOMM COMMAND FBh To connect external CAN to internal CAN	Command to connect External CAN to Internal CAN used for Debugging.
		Add Module Command Code E4h in supported command (direct)	
		Add Module Command F6 CAL_RAW_READ	To be used in Module Calibration via ISOCOMM
		Add New Module Command BBh and BAh	BBh for Module Software Reset BAh for Module Analog filter
		Add Module Command 53h and 54h for Modules	For Module short circuit protection.
	ISOCOMM Command Update	ISOCOM D3h command, to change Batch command due to new Module SW	Added Module Reset in ISOCOMM Command D3h
		Remove save command in ISOCOMM Command B5h and B6h.	
	Command Issue Resolve	Fix Issue on B5 and B6 Batch command.	
		Write Sequence of Group Module Change Mode/Vrise Time/Irise Time Thru Isocomm	
	New Features	One Fault Shutdown should Trigger when Reg D0h Bit 2 is asserted	Module D0h Bit2 is a new Function of the Module. Bit 2 asserted means Module was commanded to turn off via Module HW and Operational Command. RACK's Global EN will not assert D0h Bit2.
		New LED response due to added Bit 2 of Reg D0h of modules	
		One Fault shutdown SW default is ENABLE	
		Group address expansion to 7 address	
		Add Password to access webtool	User Name: admin Password: rtsn1234!
		Replace Name of "One Fault Shutdown" to "Module Synchronize Off" in ISOCOMM WebTool.	
		Add Module Command B7h and B8h of modules to module group initialization	
		Add Fan_EN signal from Isocomm	
		Isocomm Multi-Rack Operation via Ethernet ISOCOMM will send save to module regardless of High Line or Low Line Input or AC fail.	
		Module Command D0 is now monitored in the BF command.	
		RS485 is now functional	
	Solved Items Firmware Bugs	Solve Module and PFC Bootloading filename issue	
		Solve LAN Reset not saving after recycle of AC	
		Solve CML does not flag when using CAN Interface	
		Glitching of DC_OK and Global EN in STBY SW	
		Some Commands are not working in External CAN Interface	
	Firmware Improvements	ISOCOM to Schedule Module WRITE Command to Internal CAN	

	Bootloading Compatibility	ISOCOMM lower SW version can be update to v03.00.00		
	Restriction			
v02.09.00	New Command	ISOCOMM added support to module commands CMD_SET_IO_ACTIVE_LEVEL_LOGIC (B7) CMD_SET_MODULE_LOAD_TYPE (B8) CMD_SET_WIRE_IMPEDANCE (B9) CMD_READ_VOR (ED)		
	ISOCOMM Command Update			
	Command Issue Resolve	Solve issue on ISOCOMM Command B0h (FRU) using CAN and RS485 communication.		
	New Features			
	Solved Items			
	Firmware Bugs			
	Firmware Improvements			
	Bootloading Compatibility	ISOCOMM lower SW version can be update to v02.09.00		
Restriction	<b>Cannot be used on iHP RACK with Model Rev. CC and above. Cannot be used to iHP RACK with 3P Low Line Config</b>	<b>This is due to added function of FAN_EN in iHP Rack Rev CC and above.</b>		
v02.08.00	New Command	ISOCOMM Additional Module Commands D3h, D7h, B5h and B6h		
	ISOCOMM Command Update			
	Command Issue Resolve			
	New Features	Add Ambient OTP in WebTool. Ambient OTP is also configurable		
		Add CAN and RS485 communication address		
		Automatic internal polling rate adjust when at least one module is in Analog mode (voltage or current).		
		Implement Fan Pulsing during Standby		
		Remove Auto recover for Fan Fault		
		Add "Maintenance" for ISOCOMM Reset in WebTool.		
		Add checking of all important settings when a module is included in the Group. If not the same, modules will not turn-on.		
		One Fault Shutdown auto-recover for auto recover fault of ISOCOMM,PFC, or Module		
		Updated code to auto-save only during high line.		
		Internal Polling rate to 30msec		
	Solved Items	Fixed Bugs when modules fails to bootload for the first time.		
Fixed ISOCOMM Hang up issue when STBY SW was pressed continuously.				
Firmware	Major Improvements on Internal CAN			

	Improvements	communication.	
		Fix Front Panel LED issues.	
		ISOCOMM to check for Bootloading Identifier on the Code before Bootloading.	To prevent loading PFC code to Module and vice versa.
	Bootloading Compatibility	ISOCOMM lower SW version can be update to v02.08.00	
Restriction	<b>Cannot be used on iHP RACK with Model Rev. CC and above.</b> <b>Cannot be used to iHP RACK with 3P Low Line Config</b>	<b>This is due to added function of FAN_EN in iHP Rack Rev CC and above.</b>	

#### 4 IHP RACK ISOCOMM AND IHP MODULE COMPATIBILITY

Module SW	Module Change code that affects ISOCOMM	ISOCOMM SW v03.05.00
04.12.00	Added BCh command Enable/Disable variable frequency. Module will send high priority data via Internal Comms during module fault.	<p>Module Auto Save configuration was disabled.</p> <p>User needs to send ISOCOMM SAVE Command to Module in order to retain the changes in the Module setting.</p>
04.11.00	Change will not affect ISOCOMM	
04.10.00	Added 53h and 54h for module short circuit CAN Communication issue fix	
04.05.00	Added FBh command for reading for calibration of VPROG and IPROG	
04.04.00	Added BBh software reset during calibration and Mode change	
04.03.00	Added BAh Vprog and lprog filter. Added D0h bit 2 to show module in STANDBY MODE.	

Module SW	Module Change code that affects ISOCOMM	ISOCOM SW v03.04.00
04.12.00	Added BCh command Enable/Disable variable frequency. Module will send high priority data via Internal Comms during module fault.	<p>ISOCOMM cannot support new Module Command from v04.12.00 and above.</p> <p>First ISOCOMM SW to support Module calibration.</p>
04.11.00	Change will not affect ISOCOMM	
04.10.00	Added 53h and 54h for module short circuit CAN Communication issue fix	
04.05.00	Added FBh command for reading for calibration of VPROG and IPROG	
04.04.00	Added BBh software reset during calibration and Mode change	
04.03.00	Added BAh Vprog and lprog filter. Added D0h bit 2 to show module in STANDBY MODE.	

Module SW	Module Change code that affects ISOCOMM	ISOCOM SW v03.03.00
04.12.00	Added BCh command Enable/Disable variable frequency. Module will send high priority data via Internal Comms during module fault.	<p>If polling rate is updated (Digital 10ms Analog 25ms), Compatible.</p> <p>If polling rate is not updated (Digital 5ms Analog 17ms), User can experience Internal CAN comms failure</p> <p>ISOCOMM cannot support new Module Command from v04.12.00 and above.</p>
04.11.00	Change will not affect ISOCOMM	
04.10.00	Added 53h and 54h for module short circuit CAN Communication issue fix	
04.05.00	Added FBh command for reading for calibration of VPROG and IPROG	
04.04.00	Added BBh software reset during calibration and Mode change	
04.03.00	Added BAh Vprog and Iprog filter. Added D0h bit 2 to show module in STANDBY MODE.	

Module SW	Module Change code that affects ISOCOMM	ISOCOM SW v03.00.00
04.12.00	Added BCh command Enable/Disable variable frequency. Module will send high priority data via Internal Comms during module fault.	Module can be commanded to change mode using ISOCOMM Command D3h only.
04.11.00	Change will not affect ISOCOMM	Module can be power up with below major deviation
04.10.00	Added 53h and 54h for module short circuit CAN Communication issue fix	<ul style="list-style-type: none"> <li>- Module CML during Module change Mode command due to ISOCOMM short delay</li> <li>- User can experience CAN Comms Fault due to polling issue.</li> </ul>
04.05.00	Added FBh command for reading for calibration of VPROG and IPROG	<ul style="list-style-type: none"> <li>- Module Turns on when changing mode even if there is an AC_FAIL</li> </ul>
04.04.00	Added BBh software reset during calibration and Mode change	<ul style="list-style-type: none"> <li>- ISOCOMM cannot support new Module Command from v04.12.00 and above.</li> </ul>
04.03.00	Added BAh Vprog and Iprog filter. Added D0h bit 2 to show module in STANDBY MODE.	<p>Module can be commanded to change mode using ISOCOMM Command D3h only.</p> <p>Module can be power up with below major deviation</p> <ul style="list-style-type: none"> <li>- Module CML when user send ISOCOMM Command D3h (Module Config change) due to module unsupported commands (BBh reset command)</li> <li>- User can experience CAN Comms Fault.</li> </ul>

Module SW	Module Change code that affects ISOCOMM	ISOCOM SW v02.09.00
04.12.00	Added BCh command Enable/Disable variable frequency. Module will send high priority data via Internal Comms during module fault.	<p>Module can be power up with below major deviation</p> <ul style="list-style-type: none"> <li>- User can experience CAN Comms Fault due to polling issue.</li> <li>- During Module Change mode, Rack should undergo AC recycle in order for the changes to take into effect.</li> <li>- Cannot support Module Command BBh, BAh, 53h and 54h</li> <li>- Module Sync Off cannot react when module was commanded to turn-off by user.</li> <li>- Module D0h will be included in the slotted command. It will take several polling cycle before the Module D0h will be refresh in the ISOCOMM.</li> <li>- Any new Module commands after Module SW v04.03.00 will not be supported by ISOCOMM. Except for Module Command D0h.</li> </ul>
04.11.00	Change will not affect ISOCOMM	
04.10.00	Added 53h and 54h for module short circuit CAN Communication issue fix	
04.05.00	Added FBh command for reading for calibration of VPROG and IPROG	
04.04.00	Added BBh software reset during calibration and Mode change	
04.03.00	Added BAh Vprog and Iprog filter. Added D0h bit 2 to show module in STANDBY MODE.	

Module SW	Module Change code that affects ISOCOMM	ISOCOM SW v02.08.00
04.12.00	Added BCh command Enable/Disable variable frequency. Module will send high priority data via Internal Comms during module fault.	<p>Module can be power up with below major deviation</p> <ul style="list-style-type: none"> <li>- User can experience CAN Comms Fault due to polling issue.</li> <li>- During Module Change mode, Rack should undergo AC recycle in order for the changes to take into effect.</li> <li>- Cannot support Module command BBh, BAh, 53h, B7h, B8h, B9h, EDh and 54h</li> <li>- Module Sync Off cannot react when module was commanded to turn-off by user.</li> <li>- Module D0h will be included in the slotted command. It will take several polling cycle before the Module command D0h will be refresh in the ISOCOMM.</li> <li>- Any new Module commands after Module SW v04.03.00 will not be supported by ISOCOMM. Except for Module Command D0h.</li> </ul>
04.11.00	Change will not affect ISOCOMM	
04.10.00	Added 53h and 54h for module short circuit CAN Communication issue fix	
04.05.00	Added FBh command for reading for calibration of VPROG and IPROG	
04.04.00	Added BBh software reset during calibration and Mode change	
04.03.00	Added BAh Vprog and Iprog filter. Added D0h bit 2 to show module in STANDBY MODE.	

## **5 RECOMMENDATION FOR OLD UNITS IN THE FIELD.**

### ISOCOMM Code

- Update ISOCOMM SW to v03.03.00 and update polling rate or to the latest ISOCOMM SW.

### Module Code

- Recommended to use Software version is v04.10.00 and above.
- Anything below v04.10.00 is recommended to be replace.

Appendix A. iHP RACK Model Revision SW

iHP RACK Model Rev	iHP Rack Build Stage	ISOCOMM Code	PRI CTRL Code
Rev BV	DVT2	02.08.00	02.06.00
Rev CB	DVT3	02.09.00	02.07.00
Rev CC	DVT4	03.00.00	02.08.00
Rev CH	Pilot	03.03.00	02.10.00
Rev CN	Pilot	03.03.00	02.12.00



Appendix B. iHP Module Revision SW

Build Stage	24V Module	BOM Rev	Remarks
EVT1			
EVT2			
DVT	2.00	BM	
DVT2	3.04	CB	
DVT2	3.06	CC	
DVT2	3.09	CP	
DVT2	4.02	CX	
DVT3	4.05	CY	
MSB	4.11	EC	
PILOT	4.11	EK	
MP			

Build Stage	48V Module	BOM Rev	Remarks
EVT1			
EVT2			
DVT1.1	2.05	BZ	
DVT1.2	2.09	CA	
DVT1.2	2.12	CC	
DVT2	3.02	CH	
	3.03	CH	
	3.06	CM	
DVT3	3.07	CR	
DVT3	3.09	CT	
	4.01	CZ	-
	4.02	EB	-
DVT4	4.04	EJ	
	4.11	EM	

Build Stage	80V Module	BOM Rev	Remarks
EVT	3.01	BC	
DVT	3.06	BH	
	3.07	BN	
	3.08	BP	
DVT	3.09	BR	
DVT2	4.01	CA	
DVT2	4.02	CB	
PILOT	4.04	CR	-
	4.04	CT	
MP	4.11	CU	

Build Stage	125V Module	BOM Rev	Remarks
EVT1	1.04	CJ	
DVT1	3.01	CK	
DVT2	3.03	CN	
DVT2	3.03	CP	
DVT2	3.04	CT	
DVT2	3.05	CU	
DVT3	3.07	EC	
DVT3	3.08	EE	
DVT3	3.09	EF	
DVT3	4.02	ER	
DVT4	4.04	EX	
MSB	4.11	FA	
PILOT	4.11	FC	-

Build Stage	250V Module	BOM Rev	Remarks
EVT	3.01	AZ	
	3.06	BA	
	4.02	BT	
DVT	4.04	BU	
DVTUp	4.11	CA	
PILOT	4.10	CF	
MP	4.10	CH	
MP	4.12	CK	