

Grid Converter Software Change Note ARFIFF03

Application: ARFIFF03
Application Name: Grid Converter application
Manual: DPD01599

AFE DriveSynch License: AFE Drive synch operation needs an approved license. Ask Technical License request form from Tech Support well before commissioning will take place, as soon as possible after drives serial numbers are known.

Update Note 1: This application parameters are not kept backwards compatible if new features or improvements would be difficult to implement by doing so. Read this change note and chapter "Compatibility issues in parameters between versions" from manual before updating the application.

Update Note 2: It's recommended to use compare function for parameter changes when updating application, especially in cases when version number change is considerably high. Application is constantly developed; this includes changing parameter default values, and if parameters are directly downloaded to drive improved default values may be lost.

Update Note 3: If OPT-D7 PI voltage control is needed in uGrid mode do not use versions V082 or V083.

There is ARFIQ139V001 Double Grid Converter based on ARFIFF03V106, configured as a 1st application in drive memory.

There is ARFIQ139V002 Double Grid Converter based on ARFIFF03V128, configured as a 1st application in drive memory.

There is ARFIQ139V004 Double Grid Converter based on ARFIFF03V178, configured as a 1st application in drive memory.

ARFIFF03V196

Replaced Application:	ARFIFF03V195
Used Firmware version:	NXP 5.03
System Software requirement:	NXPV210
Released to field:	7.8.2025
Used in production:	-
Changes in new application:	

- New option to charge fault response, external charge protection can be disabled by selecting Fault Mode 2.

ARFIFF03V195

Replaced Application:	ARFIFF03V194
Used Firmware version:	NXP 5.03
System Software requirement:	NXPV210
Released to field:	7.8.2025
Used in production:	-
Changes in new application:	

- Added P2.7.11.7 Synch. Ti Start, ID 4529.

ARFIFF03V194

Replaced Application:	ARFIFF03V193
Used Firmware version:	NXP 5.03
System Software requirement:	NXPV206
Released to field:	-
Used in production:	-
Changes in new application:	

- Added V1.2.19 Limit Regulators ID77

ARFIFF03V193

Replaced Application:	ARFIFF03V192
Used Firmware version:	NXP 5.03
System Software requirement:	NXPV206
Released to field:	-
Used in production:	-
Changes in new application:	

- Software jumper activated for all master-follower modes.
- PIDTestLib updated from 050 to 052

ARFIFF03V192

Replaced Application:	ARFIFF03V191
Used Firmware version:	NXP 5.03
System Software requirement:	NXPV206
Released to field:	-
Used in production:	-
Changes in new application:	

- F74 Follower fault is always coming with other faults, fixed.

ARFIFF03V191

Replaced Application: ARFIFF03V189
Used Firmware version: NXP 5.03
System Software requirement: NXPV206
Released to field: -
Used in production: -
Changes in new application:

- Firmware interface update to 5.03
- Added ID numbers to firmware variables to allow access through fieldbus.
 - 4521 Unit Temp 1 U-phase temperature. If star then power1
 - 4522 Unit Temp 2 V-phase temperature. If star then power1
 - 4523 Unit Temp 3 W-phase temperature. If star then power1
 - 4524 Unit Temp 4 Card temperature. If star then power1
 - 4525 Unit Temp 5 U-phase temperature of power2
 - 4526 Unit Temp 6 V-phase temperature of power2
 - 4527 Unit Temp 7 W-phase temperature of power2
 - 4528 Unit Temp 8 Card temperature of power2

ARFIFF03V190

Replaced Application:	ARFIFF03V189
Used Firmware version:	NXP 5.02
System Software requirement:	NXPV205
Released to field:	-
Used in production:	-
Changes in new application:	

- F64 MCB Fault was giving some cases wrong sub cod, fixed.

ARFIFF03V189

Replaced Application: ARFIFF03V188
Used Firmware version: NXP 5.02
System Software requirement: NXPV205
Released to field: -
Used in production: -
Changes in new application:

- Added G2.6.12 Charge Fail
- P2.9.12.2 Max Charge Time moved to G2.6.12 from G2.9.1
- Added P2.9.12.1 ChargeFaultRespon. ID1522

ARFIFF03V188

Replaced Application: ARFIFF03V187
Used Firmware version: NXP 5.02
System Software requirement: NXPV205
Released to field: -
Used in production: -
Changes in new application:

- P2.7.8 Control Options 1 B7 will disable FB FreqUp/FreqDown and FB VoltageUp/VoltageDown bits on FB fault.

ARFIFF03V187

Replaced Application: ARFIFF03V185
Used Firmware version: NXP 5.02
System Software requirement: NXPV205
Released to field: -
Used in production: -
Changes in new application:

- Added parameter set function digital input P2.4.2.31 Param Set1/Set2 ID496.
- F59 SB Comm Fault was not connected to Fault Word 1 B13, fixed.
- P2.7.8 Control Options 1 B0 will change monitoring signals V1.7.5-7 Line Voltages (rms) from slightly filtered signal to highly filtered signals.

ARFIFF03V185

Replaced Application:	ARFIFF03V184
Used Firmware version:	NXP 5.02
System Software requirement:	NXPV205
Released to field:	-
Used in production:	-
Changes in new application:	

- Added V1.7.5 Line L1-L2 ID3203
- Added V1.7.6 Line L2-L3 ID3204
- Added V1.7.7 Line L3-L1 ID3205

ARFIFF03V184

Replaced Application:	ARFIFF03V183
Used Firmware version:	NXP 5.02
System Software requirement:	NXPV205
Released to field:	-
Used in production:	-
Changes in new application:	

- Added P2.7.11.16 DC Voltage Error Band Stop Frequency ID1312

ARFIFF03V183

Replaced Application:	ARFIFF03V182
Used Firmware version:	NXP 5.02
System Software requirement:	NXPV205
Released to field:	-
Used in production:	-
Changes in new application:	

- Added P2.7.11.15 Restart Delay ID1424 Default 500 ms
- Coolin fault function did not follow response parameter, fixed.

ARFIFF03V182

Replaced Application:	ARFIFF03V181
Used Firmware version:	NXP 5.02
System Software requirement:	NXPV205
Released to field:	-
Used in production:	-
Changes in new application:	

- Added P2.8.5 Follower Fault ID1542
- Added P2.2.3.5 DC Ref Mode ID1718
 - Select if Power PI Controller follows Actual DC Voltage
 - Added P2.2.3.3 DCV PI Power Follower Ramp Rate ID1678
 - Removed DC Voltage Ref filtering time.

ARFIFF03V181

Replaced Application:	ARFIFF03V179
Used Firmware version:	NXP 5.02
System Software requirement:	NXPV205
Released to field:	-
Used in production:	-
Changes in new application:	

- Transformer magnetization, if grid returned after starting, the drive did not synchronize to grid, fixed.

ARFIFF03V180

Replaced Application:	ARFIFF03V178
Used Firmware version:	NXP 5.02
System Software requirement:	NXPV205
Released to field:	-
Used in production:	-
Changes in new application:	

- Since V177 drive did not stay in run state when Enable MCB Close signal was removed while Control Options 2 B0 was active.
 - Fixed, drive stays in run state.
- If P2.5.7.6 MCB Mech. delay was in use the sync process was ended after the delay even if MCB Close Enable was not active. i.e. MCB was still open and drive did not stay in synch, fixed.

ARFIFF03V178

Replaced Application: ARFIFF03V177
Used Firmware version: NXP 5.02
System Software requirement: NXPV205
Released to field: -
Used in production: -
Changes in new application:

- Some cases when coming from master follower mode back to single mode, drive did not get ready state because DC-Link Voltage measurement kept showing zero voltage while DC was at nominal level, fixed.
- Added V1.1.16 Status Word 2 ID89
 - B0: Status of the ID Value Control.

ARFIFF03V177

Replaced Application: ARFIFF03V176
Used Firmware version: NXP 5.02
System Software requirement: NXPV205
Released to field: -
Used in production: -
Changes in new application:

- With transformer magnetization function it was possible that drive stopped due to signal timing without any indication. Added F64 A7 fault indication when MCB Feedback is missing after P2.5.7.6 MCB Mech. Delay time has passed.

ARFIFF03V176

Replaced Application: ARFIFF03V175
Used Firmware version: NXP 5.02
System Software requirement: NXPV205
Released to field: -
Used in production: -
Changes in new application:

- Added V1.1.16 Non Ready Cause ID1661
- Added V1.1.17 Prevent MC Ready ID1609

ARFIFF03V175

Replaced Application: ARFIFF03V174
Used Firmware version: NXP 5.02
System Software requirement: NXPV205
Released to field: -
Used in production: -
Changes in new application:

- When drive is DriveSynch follower monitoring for F70 Supply Voltage and F73 Supply Frequency are disabled.
- Added 500 ms monitoring delay for D7 measurements when using transformer magnetization function.
 - Timer start when MCB feedback is received. This prevents F92 & F93 warnings on black starts.

ARFIFF03V174

Replaced Application:	ARFIFF03V173
Used Firmware version:	NXP 5.02
System Software requirement:	NXPV205
Released to field:	-
Used in production:	-
Changes in new application:	

- Added P2.14.7.3 DO1 On Delay
- Added P2.14.7.4 DO1 Off Delay
- Added P2.14.7.5 DO1 ID Control
- When using MCB pulse control together with transformer magnetization function and P2.7.9 Control Options 2 B9 (512) closing pulse length was so short that external holding circuit may not have time to react, fixed.

ARFIFF03V173

Replaced Application: ARFIFF03V172
Used Firmware version: NXP 5.02
System Software requirement: NXPV205
Released to field: -
Used in production: -
Changes in new application:

- Added selection 3 / Act+NoGrid to magnetization function, Will close MCB when there is no grid measurement on OPT-D7. i.e. bypassing synchronization phase.
- While MCB feedback is missing OPT-D7 start synchronization is disabled.
 - Was increasing voltage without ramp when OPT-D7 was seeing voltage thus voltage was not ramped up for the transformer.
- Fault F92 D7 Voltage is disabled until there is feedback from the MCB.
- Fault F93 D7 Frequency is disabled until there is feedback from the MCB
- OPT-D7 frequency limits increased to 85 % and 115 % in G2.16.5

ARFIFF03V172

Replaced Application: ARFIFF03V171
Used Firmware version: NXP 5.02
System Software requirement: NXPV205
Released to field: -
Used in production: -
Changes in new application:

- Transformer magnetization function did not stop synchronization automatically when MCB was closed, fixed.
 - Setting P2.3.3 Transf. Magnet. to zero after synchronization bypassed the issue.

ARFIFF03V171

Replaced Application: ARFIFF03V170
Used Firmware version: NXP 5.02
System Software requirement: NXPV205
Released to field: -
Used in production: -
Changes in new application:

- Transformer magnetization function synchronization part is started after voltage rise time + 500 ms. With long voltage rise times MCB was closed too early
- Short Circuit warning with OPT-BH board when powered with 24 Vdc, fixed.

ARFIFF03V170

Replaced Application: ARFIFF03V169
Used Firmware version: NXP 5.02
System Software requirement: NXPV205
Released to field: -
Used in production: -
Changes in new application:

- Delayed output ID.Bit maximums changed to 4000.15 from 2000.15
- FB Digital Input connection in Digital Output maximum changed from 2000 to 4000
- In FieldBus group SW B1x ID.Bit maximum changed from 2000 to 4000
- Added support for NX8, DCNomVoltage = 963 Vdc.
 - Some DC voltage maximum values are changed based on unit voltage class.

ARFIFF03V169

Replaced Application:	ARFIFF03V168
Used Firmware version:	NXP 5.02
System Software requirement:	NXPV205
Released to field:	-
Used in production:	-
Changes in new application:	

- Charging command was not activating when Transformer magnetization function was used, fixed.
- Zero Q Function has wrong internal Gain and Ti, fixed.

ARFIFF03V168

Replaced Application:	ARFIFF03V167
Used Firmware version:	NXP 5.02
System Software requirement:	NXPV205
Released to field:	-
Used in production:	-
Changes in new application:	

- When using MF Modes 1 & 2 Drive did not close MCB breaker, fixed.

ARFIFF03V167

Replaced Application: ARFIFF03V166
Used Firmware version: NXP 5.02
System Software requirement: NXPV203
Released to field: -
Used in production: -
Changes in new application:

- Transformer magnetization and external NET synchronization are now separate logic.
 - Added P2.5.7.6 MCB Mechanical Close Delay
 - P2.3.3 Transformer Magnetization Commissioning mode will not close the MCB.
 - MCB feedback was not considered in the logic, fixed.

ARFIFF03V166

Replaced Application: ARFIFF03V165
Used Firmware version: NXP 5.02
System Software requirement: NXPV203
Released to field: -
Used in production: -
Changes in new application:

- Added parameter P2.2.6.15 KeepCurrLimMaxAdjust
 - This function will reduce reactive current to keep current below current limit when grid has over or under voltage.
 - There is ramp rate function for certain reactive functions. This limit function will affect after the ramp giving fast response.
- **Compatibility note:** OPT-D7 Measurement OK is no longer from grid warning limit but limits defined in G2.16.5
 - Limits also widened.
- Firmware updated from 5.01 to 5.02
- Internal DC Voltage Reference is separated from Grid Nom Voltage.
 - If you are monitoring FW:DCVoltageReference, this is now related to UnitNomDCVoltage.
- AFE Options 1 B10 active by default. B10 = Parallel uGrid mode
- AFE Options 2 B11 active by default. B11 = New controller for uGrid short circuit mode

ARFIFF03V165

Replaced Application:	ARFIFF03V164
Used Firmware version:	NXP 5.01
System Software requirement:	NXPV203
Released to field:	-
Used in production:	-
Changes in new application:	

- When actual MCB feedback was used drive stop momentarily when using transformer magnetization function, fixed.
 - Use P2.12.6 Contactor delay to extent time when MCB internal status is kept High while waiting MCB actual feedback.

ARFIFF03V164

Replaced Application: ARFIFF03V163
Used Firmware version: NXP 5.01
System Software requirement: NXPV203
Released to field: -
Used in production: -
Changes in new application:

- Added two Klixon inputs F66 Klixon
 - P2.4.2.27 Klixon In 1 ID780
 - P2.4.2.28 Klixon In 2 ID781
 - P2.9.1.15 Klixon Response ID782
- Added input switch monitoring F55 Input Switch
 - P2.4.2.29 Input Switch ID1209
 - P2.9.1.17 Input Switch Respond ID785
- Added Ambien temperature monitoring. F88 Ambien Temp
 - P2.4.2.30 Ambien Temp ID783
 - P2.9.1.16 Ambien Temp Respond ID784
- **Compatibility note**
 - [External Grid Synchronization in system software V205](#)

ARFIFF03V163

Replaced Application: ARFIFF03V162
Used Firmware version: NXP 5.01
System Software requirement: NXPV203
Released to field: -
Used in production: -
Changes in new application:

- Added transformer magnetization function
 - P2.3.3 Transf. Magnet ID1966
- [Magnetize and synchronize the transformer](#)

ARFIFF03V162

Replaced Application: ARFIFF03V161
Used Firmware version: NXP 5.01
System Software requirement: NXPV203
Released to field: -
Used in production: -
Changes in new application:

- DC Voltage Reference is limited by Over and Under voltage references/limits.
- P2.9.3.2 Earth fault warning limit added.
- Added P3.5-7 Multi-Monitor item selection by ID number.
- Added response selection No Action for P2.9.1.8 Quick Stop Response. Quick Stop is executed regardless of this parameter settings.
- External fault 2 F81 added to Fault Word 2 B6.
- Added parameter to select Run Enable DI response P2.9.1.15 Run Enable Indication.
- Added V1.2.18 Crest Factor
- Added Cooling monitoring response parameter to new parameter group
 - G2.9.11 Cooling monitor
 - Cooling fault added to Fault Word 2 B11

ARFIFF03V161

Replaced Application:	ARFIFF03V160
Used Firmware version:	NXP 5.01
System Software requirement:	NXPV203
Released to field:	-
Used in production:	-
Changes in new application:	

- P2.1.8 Parallel AFE parameter did not set correctly internal setting, fixed.
 - Wrong setting affects version V160.

ARFIFF03V160

Replaced Application: ARFIFF03V159
Used Firmware version: NXP 5.01
System Software requirement: NXPV203
Released to field: -
Used in production: -
Changes in new application:

- Enabled 2 s current for liquid cooled units.
 - Use 15 % margin for liquid cooled units.

I _{SCC}	Default	Max P2.6.1.4 = 0	Max P2.6.1.4 = 1
Current Limit Air Cooled	I _L	I _H * 1,50	I _s
Current Limit Liquid Cooled	I _{th}	I _{th} * 1,05	I _{th} * 1,25

- MCB Feedback by default DI.A4
- Added new State Machine P2.10.35 Selection 3, new functions including:
 - B1: MCB Breaker closing enable
 - Also opening when setting Control Options 2 B0
 - B2: Quick Stop
 - B4: Output power limit to zero.
 - B5: Disable increase of power.
 - B6: Input power limit to zero.
- Added new default in FB Status Word for bits B11 trough B14
 - B11: MCB is controlled to be closed.
 - B12: MCB Feedback, High = Closed
 - B14: Charging Control is active.
- Added P2.7.5 AFEOptions 4
- Added Advanced Options to G2.7.11 Control
- P2.6.1.4 HighFreqCurrLim name changed to BridgeCurr.Limit
 - Manual explanation updated.
- Added parameter to enable reverse rotation P3.4

ARFIFF03V159

Replaced Application:	ARFIFF03V158
Used Firmware version:	NXP 5.01
System Software requirement:	NXPV203
Released to field:	-
Used in production:	-
Changes in new application:	

- Added DC-Link Measurement Gain Calibration parameter.
 - Used to fine tune DC-Link measurement between parallel units.

ARFIFF03V158

Replaced Application:	ARFIFF03V157
Used Firmware version:	NXP 4.99
System Software requirement:	NXPV202
Released to field:	-
Used in production:	-
Changes in new application:	

- Datalogger will be triggered in all drives if datalogger is triggered in on of the drives in system bus.

ARFIFF03V157

Replaced Application:	ARFIFF03V155
Used Firmware version:	NXP 4.99
System Software requirement:	NXPV202
Released to field:	-
Used in production:	-
Changes in new application:	

- Charging control was stopped already from MCB control signals, resetting is done now from MCB Feedback signal.

ARFIFF03V156

Replaced Application:	ARFIFF03V155
Used Firmware version:	NXP4.99
System Software requirement:	NXPV202
Released to field:	-
Used in production:	-
Changes in new application:	

- Output Frequency monitoring function was monitoring low limit from Line Frequency, fixed.
- RegenCurrentLimit Min/Max had incorrect limiting on application side, Fixed. Limited from -300...0 and 0...+300 respectively.
- P2.11.1 Control Mode 5 was same as selection 4, Selection 5 changed to uGrid-AFE.

ARFIFF03V155

Replaced Application:	ARFIFF03V154
Used Firmware version:	NXP4.99
System Software requirement:	NXPV202
Released to field:	-
Used in production:	-
Changes in new application:	

- Added Control Options 2 B09; When using MCB pulse control pulse length is extended to be MCB Fault delay. Pulse cancelled when feedback is coming or any reason that MCB open command is executed.
- 690 Vac unit possible ready level levered to 540 Vdc.

ARFIFF03V154

Replaced Application: ARFIFF03V151
Used Firmware version: NXP4.99
System Software requirement: NXPV202
Released to field: 9.6.2020
Used in production: -
Changes in new application:

- Voltage MotPot Reset was not working, fixed.
- **Compatibility note:** Firmware updated to 4.99, requires system software V202, released 4.6.2020.
- Temperature tripping limit increased in certain units.
 - Air cooled 690 Vac units with current ratings:
 - 125, 144 170, 208, 261, 325, 385, 416, 460, 502, 590, 650, 750, 820, 920, 1030, 1180, 1500, 1900, 2250.
 - Air cooled 500 Vac units with current ratings:
 - 168, 205, 261, 300, 385, 460, 520, 590, 650, 730, 820, 920, 1030, 1150, 1300, 1450, 1770, 2150, 2700.
- Added Reactive MotPot reset function, No reset and reset on stop.
- Added parameters for dc ripple compensation
- Added P2.7.11.9 Mod#2 Opt. DPWM
 - Enabled by default for software modulator #2. Takes benefit of software modulator #1 and software modulator #2 when software modulator #2 is selected.
 - This option is available when with system software V202 or newer.
 - Default modulator: Software Modulator #2
- Analogue Output functions harmonization.
 - **Compatibility note:** P2.5.7.2 and P2.5.7.3 FreqScaleMinAO and FreqScaleMaxAO parameters removed.
 - **Compatibility note:** Analogue output function 12 operation changed. Shows now frequency error to set grid frequency.
 - Selection 6 in analogue outputs was Reactive current, was supposed to be active current bidirectional, fixed.
 - Added analogue output selection 14 bidirectional reactive current.

ARFIFF03V151

Replaced Application: ARFIFF03V149
Used Firmware version: NXP4.94
System Software requirement: NXPV201
Released to field: -
Used in production: -
Changes in new application:

- DO: D7 synchronized and Close Net Contactor stay in high state when External grid synchronization is disabled while outputs were high.
 - Fixed, outputs are forced low state when function is disabled.
- Added two ID.Bit To DO functions. G2.14.7/8
 - Possibility select any bit from any word and conned to digital output.
- Added Voltage Control Bits to FB uGrid Control Word
 - B7: Voltage Down
 - B8: Voltage Up
 - B9: Reset Voltage MotPot
- F80 Charge Fault added to Fault Word 2 B1 (ID1173)

ARFIFF03V149

Replaced Application: ARFIFF03V141
Used Firmware version: NXP4.92
System Software requirement: NXPV196
Released to field: -
Used in production: -
Changes in new application:

- Zero Q Control area is now own parameter, no longer tied to Voltage Droop parameter.
- Added tuning parameters for over current controller uGrid mode.
 - P2.6.4.4 Current Limit Kp
 - P2.6.4.5 Current Limit Ti
- Zero Q Control output sum was limited by Source Voltage warning limits, Zero Q Control output is added outside this limitation, thus limited entirely by P2.2.6.14 Zero Q Max Adjust.
- Start Zero Q was disabled if voltage control was active, this disable is removed.
- Zero Q Control starting point is defined by Zero Q start function. This removed Reactive on start until PI controller has removed the voltage difference.
- DC Voltage limit Controller and uGrid Current limit controller defaults changes.

ARFIFF03V146

Replaced Application: ARFIFF03V141

Used Firmware version: NXP4.92

System Software requirement: NXPV196

Released to field: -

Used in production: -

Changes in new application:

- Changes to datalogger default signals.
- Residual voltage limit needed to activate separately for three phase faults.
 - Activation with Control Options 2 B7
- Under Voltage limit maximum limit increased.
- Added Under and Over voltage controller Kp and Ti parameters.

ARFIFF03V141

Replaced Application: ARFIFF03V137

Used Firmware version: NXP4.92

System Software requirement: NXPV196

Released to field: -

Used in production: -

Changes in new application:

- F80 DC Charge will give also fault when DC-Link voltage is above fault level but below MCB Closing level more than the charging time.

ARFIFF03V137

Replaced Application: ARFIFF03V136
Used Firmware version: NXP4.92
System Software requirement: NXPV196
Released to field: -
Used in production: -
Changes in new application:

- Automatic parameter back-up to keypad disabled.

ARFIFF03V136

Replaced Application: ARFIFF03V134

Used Firmware version: NXP4.92

System Software requirement: NXPV196

Released to field: -

Used in production: -

Changes in new application:

- Added V1.2.17 DC-Link Current [A] ID72
- Added V1.2.18 DC-Link ActCurr [%] ID1158
- Added Status Word B11, Short Circuit Mode Active.
 - Requires NXPV201
- If unsupported P2.10.38 Control Slot Select was requested system load may have increased. Now selection is set internally only once.
- Added Power PI controller for AFE mode.
 - Active Current Controller
 - DC-Link Current Controller.

ARFIFF03V135

Replaced Application: ARFIFF03V133

Used Firmware version: NXP4.92

System Software requirement: NXPV196

Released to field: -

Used in production: -

Changes in new application:

- Parameter lock was missing from few parameters, added.
- F97 Signal fault has option to trigger fault also in stop state.

ARFIFF03V133

Replaced Application: ARFIFF03V132

Used Firmware version: NXP4.92

System Software requirement: NXPV196

Released to field: -

Used in production: -

Changes in new application:

- Added Signal fault function. Select a signal that is monitoring for high and low limit, gives fault or warning depending on fault response selection. G2.14.6 Signal Fault.

ARFIFF03V132

Replaced Application: ARFIFF03V131

Used Firmware version: NXP4.92

System Software requirement: NXPV196

Released to field: -

Used in production: -

Changes in new application:

- Added FB Analogue Output, was missing as monitoring variable, was in AO functions.
- MCB Close mode 3 is not reset when back to 0-2 modes, fixed.
- Added OPT-BH Support.
- MotPot Hz/Power reset modes added, AFE Mode, AFE or Stop.
- Added Phase Current monitoring.

ARFIFF03V131

Replaced Application: ARFIFF03V129

Used Firmware version: NXP4.92

System Software requirement: NXPV196

Released to field: -

Used in production: -

Changes in new application:

- Added software over current trip limit (F1 S4) P2.6.1.8 OverCurrTripLim.
- F91 Short Circuit will also require that voltage is below P2.6.1.5 SC Voltage Level before situation is considered short circuit.

ARFIFF03V129

Replaced Application: ARFIFF03V128

Used Firmware version: NXP4.92

System Software requirement: NXPV196

Released to field: -

Used in production: -

Changes in new application:

- Development: Vacon AFE 2 Fieldbus profile.
- Added MCB Close function 3; FB Control Word B0 can also close the MCB.
- W91 was still given when F91 was disabled, fixed.

ARFIFF03V128

Replaced Application: ARFIFF03V126

Used Firmware version: NXP4.92

System Software requirement: NXPV196

Released to field: -

Used in production: -

Changes in new application:

- **Minor compatibility issue:** P2.7.8 Control Options2 B1 is no longer available, this has been replaced with P2.9.1.15 FaultWarnIndicat parameter.
 - Fault and Warning indication to fieldbus and DO
 - Static signal, as long as warning or fault is active
 - New fault or warning toggles signal for one second.
 - Signal toggles in new fault or warning and status needs to be reset to get signal down.

ARFIFF03V126

Replaced Application: ARFIFF03V124
Used Firmware version: NXP4.92
System Software requirement: NXPV196
Released to field: -
Used in production: -
Changes in new application:

- More accurate and faster voltage controller for island operation.
- Updates to Data Logger default signals.

ARFIFF03V124

Replaced Application:	ARFIFF03V122
Used Firmware version:	NXP4.92
System Software requirement:	NXPV196
Released to field:	10.4.2018
Used in production:	-
Changes in new application:	

- Voltage Low Limit Warning limit for stopping the drive is only possible in AFE mode. See Control Options 1 B11.

ARFIFF03V122

Replaced Application: ARFIFF03V121
Used Firmware version: NXP4.92
System Software requirement: NXPV196
Released to field: -
Used in production: -
Changes in new application:

- Added support for 16 fieldbus process data variables
 - Variables 9-16 are visible if a fieldbus board with 16 PD support is inserted in slot D or E.
 - Variables 9-16 can be taken into use by selecting a 16 PD support fieldbus control mode with parameter P2.10.38 Control Slot Selector.

ARFIFF03V121

Replaced Application: ARFIFF03V119

Used Firmware version: NXP4.90

System Software requirement: NXPV196

Released to field: -

Used in production: -

Changes in new application:

- Added Control Options 2 B5; Double sampling
 - Reduces current measurement aliasing, needed e.g. in battery system when zero current reference needs to be accurate.
- Added Current Measurement offset identification.

ARFIFF03V119

Replaced Application: ARFIFF03V117

Used Firmware version: NXP4.90

System Software requirement: NXPV195

Released to field: -

Used in production: -

Changes in new application:

- Added AFE Options 3, P2.7.4 ID1466
- Added THD monitoring and HF RMS voltage monitoring.
- Active power drooping can be set to zero.
- Control Options 2 B5 will activate double sampling of current measurement.
- Keep zero Q recoded to have actual PI controller.
 - Disabled when voltage controller is active.
 - Disabled in Island mode.
 - Needs to be disabled by upper system if running in uGrid mode and grid is true Island.
- CL Voltage controller is disabled when synchronization to external grid is active, D7 measurement is not on controlled grid.

ARFIFF03V117

Replaced Application: ARFIFF03V116

Used Firmware version: NXP4.90

System Software requirement: NXPV195

Released to field: -

Used in production: -

Changes in new application:

- Firmware updated to V4.90
- Signal changes in default data logger settings.
- F14 Unit Temperature warning and fault did not come from fault block, fault simulation did not give DO signal or FB Fault Word signal, fixed.
- Control Options 2 B1 has option to give pulse in case new fault or working comes while previous one is still active.

ARFIFF03V116

Replaced Application: ARFIFF03V115

Used Firmware version: NXP4.80

System Software requirement: NXPV191

Released to field: -

Used in production: -

Changes in new application:

- Added function to start and keep reactive current zero “Start Voltage Mode”, with possibility to reset Start Voltage mode with definable time delay.

ARFIFF03V115

Replaced Application: ARFIFF03V114

Used Firmware version: NXP4.80

System Software requirement: NXPV191

Released to field: -

Used in production: -

Changes in new application:

- Added power limit, considers voltage variations and adjusts internally Active Current limits accordingly to keep constant power.
- Active current limits parameters moved to Current Limit group.
- MCB pulse control was giving open command always in power up, fixed.

ARFIFF03V114

Replaced Application:	ARFIFF03V113
Used Firmware version:	NXP4.80
System Software requirement:	NXPV191
Released to field:	29.6.2017
Used in production:	-
Changes in new application:	

- If MotPot reactive current reference digital input was left high, internal counter continued count till MotPot reactive current reference jumped opposite limit, fixed.
- Added parameter to limit reactive current given by MotPot function.

ARFIFF03V113

Replaced Application: ARFIFF03V111
Used Firmware version: NXP4.80
System Software requirement: NXPV191
Released to field: 19.5.2017
Used in production: -
Changes in new application:

- If MotPot voltage digital input was left high internal counter continued count till MotPot voltage reference jumped opposite limit, fixed.
- Added DC-Link Voltage Kp and Ti
- In smaller units power up the internal charging circuit close limit was not updated to correct level early enough, fixed.

ARFIFF03V111

Replaced Application: ARFIFF03V109
Used Firmware version: NXP4.80
System Software requirement: NXPV191
Released to field: 10.3.2017
Used in production: -
Changes in new application:

- AFE Options 1 by default 544
- CO2.B04; disable blackout prevention function for uGrid operation.
- Added Synch Kp and Ti
- Removed unsupported Master-Follower functions.

ARFIFF03V109

Replaced Application: ARFIFF03V108

Used Firmware version: NXP4.80

System Software requirement: NXPV191

Released to field: 10.3.2017

Used in production: -

Changes in new application:

- Added MotPot reset function for frequency.
- Added MotPot reset function for voltage.
- Only first start synchronization to grid is made with soft synch, if activated.

ARFIFF03V108

Replaced Application: ARFIFF03V106

Used Firmware version: NXP4.80

System Software requirement: NXPV191

Released to field: 13.12.2016

Used in production: -

Changes in new application:

- Inversion possibility for Enable CB Close signal.
- Control Options 2.B00 Enable CB Close will open CB without need to discharge DC-Link.
- Inductor Size and Losses defaults changed to smaller.

ARFIFF03V106

Replaced Application: ARFIFF03V104

Used Firmware version: NXP4.80

System Software requirement: NXPV191

Released to field:

Used in production: 8.12.2016

Changes in new application:

- MCB open command will be given if F64 is happening.
- Parameter order and grouping changed related to NET contactor.

ARFIFF03V104

Replaced Application: ARFIFF03V102

Used Firmware version: NXP4.80

System Software requirement: NXPV191

Released to field:

Used in production: -

Changes in new application:

- License fault is given only when connection to Power Unit has been verified.

ARFIFF03V102

Replaced Application:	ARFIFF03V101
Used Firmware version:	NXP4.80
System Software requirement:	NXPV191
Released to field:	
Used in production:	-
Changes in new application:	

- Added 4 mA fault function.

ARFIFF03V101

Replaced Application: ARFIFF03V100

Used Firmware version: NXP4.80

System Software requirement: NXPV191

Released to field: 6.4.2016

Used in production: 6.4.2016

Changes in new application:

- Pressing stop button for 3 seconds in keypad control, will open the MCB.
- Status Word B9 did not work when MCB pulse control was used, fixed.

ARFIFF03V100

Replaced Application: ARFIFF03V098

Used Firmware version: NXP4.80

System Software requirement: NXPV191

Released to field: 19.2.2016

Used in production: 3.3.2016

Changes in new application:

- While MCB2 feedback was high, charging was started on start command, fixed.
- Added DC Reference offset parameter.
- Parameter grouping and order changes.

ARFIFF03V098

Replaced Application: ARFIFF03V097

Used Firmware version: NXP4.80

System Software requirement: NXPV191

Released to field: 22.12.2015

Used in production:

Changes in new application:

- Data Logger reset was not stored to EEPROM, fixed.
- Added Over Load Protection function F83

ARFIFF03V097

Replaced Application: ARFIFF03V094

Used Firmware version: NXP4.80

System Software requirement: NXPV191

Released to field: 9.9.2015

Used in production: 9.9.2015

Changes in new application:

- Some parameters did not have parameter lock, fixed.
- F91 Short Circuit added to Fault Word 1 B03 (Motor Stall).
- W91 Short Circuit added to Warning Word 1 B00 (Motor Stall).

ARFIFF03V094

Replaced Application: ARFIFF03V093
Used Firmware version: NXP4.72
System Software requirement: NXPV189 (Note)
Released to field: 28.5.2015
Used in production:
Changes in new application:

- Removed: Added software level over current trip function F1 S3. To allow further development with released system software.
- Limit to enable FB Control for DC-Link voltage increased from 5,00 % to 20,00 %.

ARFIFF03V093

Replaced Application: ARFIFF03V092
Used Firmware version: NXP4.81
System Software requirement: NXPV192 (Note)
Released to field: 26.5.2015
Used in production:
Changes in new application:

- Added software level over current trip function F1 S3.

ARFIFF03V092

Replaced Application: ARFIFF03V091

Used Firmware version: NXP4.78

System Software requirement: NXPV189

Released to field: 1.4.2015

Used in production:

Changes in new application:

- Auto Start function removed.
- PC Control can be activated only when P3.1 Control Place is Keypad.
- P2.1.1 Grid Nom. Voltage limits increased to suite situation when grid voltage after transformer is other than unit AC voltage range.
- Synchronized to OPT-D7 added to FB uGrid SW1.B12
- Power control (Frequency Up/Down) bits added to FB Micro Grid CW1 B4 & B5
- Changes to some default values to give better performance with default settings.
- **Major Compatibility Issue:** P2.1.7 System Nom. DC is initialized to unit nominal DC value.
 - 500 Vac unit: 675 Vdc
 - 690 Vac unit: 931 Vdc
 - When transformer ratio was given other than 1:1 MCB closing limit and DC-Link Voltage reference had values based on grid voltage after transformer. This was causing reference handling problems when given AC values were in range of different voltage class unit.
 - DC Voltage Reference in AFE mode is based always to System Nom DC parameter.

ARFIFF03V091

Replaced Application: ARFIFF03V090

Used Firmware version: NXP4.78

System Software requirement: NXPV189

Released to field: 28.11.2014

Used in production:

Changes in new application:

- Several improvements to fault handling.
- Start Delay is also connected to Restart Delay.

ARFIFF03V090

Replaced Application: ARFIFF03V089

Used Firmware version: NXP4.78

System Software requirement: NXPV189

Released to field: 6.11.2014

Used in production: 6.11.2014

Changes in new application:

- Inductor Losses default 15,0 %
- Sub codes for F91 Short circuit:
 - A1: Code given V089 and older.
 - A2: Bi Phase
 - A3: Three Phase
 - Warning if limit is reached.
- Voltage compensation parameters moved to AC Voltage Reference Group
- Frequency Doop Offset moved to Power/Freq Ref Group.

ARFIFF03V089

Replaced Application: ARFIFF03V088

Used Firmware version: NXP4.78

System Software requirement: NXPV189

Released to field: 22.10.2014

Used in production: 22.10.2014

Changes in new application:

- In island mode, if voltage correction and Grid Voltage PI was used at the same time, grid voltage reference was wrong, fixed.
- If more than 500 ms voltage rise time was used drive was tripping to voltage limits, VoltageRiseTime is added to default 500 ms monitoring delay before grid protection functions are activated.
- Acceleration rate changed from 100,0 s to 25,0 s that it does not limit Frequency Reference MotPot function rate 0,5 Hz by default (now 2,00 Hz/s).
- **Compatibility Issue:** Voltage MotPot is adjusting now field weakening point voltage. Units have been changed from [V] to [%]. This enables more accurate adjustment and adjustment rate.
- Frequency Mot Pot Up and Down is disabled if frequency reference reach high or low warning limits. If DI was active while limit was reached reference was unresponsive until over shoot was removed by adjusting frequency to opposite direction.
- Parameter grouping changes.

ARFIFF03V088

Replaced Application: ARFIFF03V087

Used Firmware version: NXP4.78

System Software requirement: NXPV189

Released to field: 21.10.2014

Used in production:

Changes in new application:

- Added parameters to simulate diesel generator set mechanical time constant and speed controller.

ARFIFF03V087

Replaced Application: ARFIFF03V085

Used Firmware version: NXP4.75

System Software requirement: NXPV188

Released to field: 20.10.2014

Used in production:

Changes in new application:

- DC Voltage Reference ramp rate function is bypassed when in stop state, island mode or uGrid mode.
- **Minor Compatibility Issue:** FB Actual Speed signal changed to use Filtered DC-Link Voltage signal (ID1108) instead of unfiltered DC Voltage signal.
- Isochronous operation, if OPT-D7 measurements go outside warning limit Grid Nominal Frequency is used as reference.
- Unit Temperature Warning W14 simulation signal did not activate DO: Unit Temperature Warning, fixed.

ARFIFF03V085

Replaced Application: ARFIFF03V084

Used Firmware version: NXP4.75

System Software requirement: NXPV188

Released to field: 25.6.2014

Used in production:

Changes in new application:

- Added application sub codes for F64 MCB State Fault
 - A1: Code given by V084 and older versions.
 - A2: MCB Open while requested close (delayed).
 - A3: MCB Closed while requested open (delayed).
 - A4: MCB Opening while run state (Immediately).
- Some diagnostic and protection functions improvements.

ARFIFF03V084

Replaced Application:	ARFIFF03V082
Used Firmware version:	NXP4.75
System Software requirement:	NXPV188
Released to field:	10.6.2014
Used in production:	19.6.2014
Changes in new application:	

- Fixed uGrid mode OPT-D7 PI Voltage regulation function.

ARFIFF03V082

Replaced Application: ARFIFF03V081

Used Firmware version: NXP4.75

System Software requirement: NXPV188

Released to field: 15.4.2014

Used in production:

Changes in new application:

- Default data logger signals are set from application, more suitable for Grid Converter use.
- Added filtered DC-Link Voltage monitoring signal.

ARFIFF03V081

Replaced Application: ARFIFF03V080

Used Firmware version: NXP4.75

System Software requirement: NXPV188

Released to field: 26.3.2014

Used in production:

Changes in new application:

- **Compatibility Issue:** Parameters "PID Activation" and "FreqScaleMinAO" had same ID1807. "FreqScaleMinAO" DI changed to ID1809.
- Added "System Nom. DC" parameter. Some cases DC voltage is not determined by AC side voltage. E.g. Generator side may have PMSM that nominal voltage is 500 Vac while grid is 400 Vac.
- Added 4 mA protection functions.
- **Major Compatibility Issue:** Fieldbus State Machine
 - See full details from latest manual.
 - Not Used -> Basic, As in Fieldbus manual
 - Standard -> NEW Standard, Application level, this was < V081 Basic, as in fieldbus manual.
 - FB Status and FB Control word modified to be more suitable for AFE use, following idea of ProfiDrive standard.
- Added fault response parameter (F94) for high reactive current situation. Fixed limit 110,0 %.

ARFIFF03V080

Replaced Application: ARFIFF03V077

Used Firmware version: NXP4.75

System Software requirement: NXPV188

Released to field: 27.2.2014

Used in production:

Changes in new application:

- MCB was not closed in some situations from start command even if selected to do so, fixed.
- **Minor compatibility issue:** Monitoring and parameter values unified with other premium drive applications.
- Possibility to select FB Actual Speed to PLC master by ID number. Default ID44, Unfiltered DC Voltage.
- Added DI function to enable MCB Close.
- F73 was triggered also from F93 protection, fixed.
- Close MCB At Start changed to MCB Close Mode with an options of:
 - From DC Voltage
 - From DC Voltage or from start command
 - From Start command.

ARFIFF03V077

Replaced Application: ARFIFF03V073

Used Firmware version: NXP4.75

System Software requirement: NXPV188

Released to field: 29.1.2014

Used in production: 29.1.2014

Changes in new application:

- Some parameters did not go to drive from old parameter file, fixed. Note the recommendation from Update Note 1!
- Start Up Wizard disabled.
- Added parameter for ramp range.
- Analogue Input 2 was giving 4 mA fault faster than Analogue Input 1, fixed.
- Voltage Correction from open loop voltage controller was included in closed loop voltage control, fixed.
- Added Grid Status Word.
- Added several protection functions
 - Grid Frequency protection from output frequency and from OPT-D7
 - Output voltage protection.
 - Grid Voltage protection from OPT-D7
- Added voltage PI controller for uGrid operation mode.

ARFIFF03V072

Replaced Application: ARFIFF03V071

Used Firmware version: NXP4.75

System Software requirement: NXPV187

Released to field: 4.12.2013

Used in production: 10.12.2013

Changes in new application:

- Fault F91 Short Circuit disabled if short circuit time is zero and high current limit is not active. Was preventing operation against normal current limit.
- Added Digital Inputs to change active control place.
- FB uGrid CW bits 11 – 15 can now be connected to any parameter by ID number.