

AFE-II

Software Change Note

ARFIFF05

Application: ARFIFF05
Application Name: Standard AFE-II application
Manual: DPD01979

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.

ARFIFF05V077

Replaced Application: ARFIFF05V076

Used Firmware version: NXP 5.02

System Software requirement: NXPV205

Released to field:

Used in production:

Changes in new application:

- P2.4.2.6 Default scaling was 0%, changed to 100%. In some cases, user did not notice this and assumed function does not work
- Added new DO for temperature supervision (P2.4.1.22)
 - New parameters related to this:
 - P2.4.4.1 Supervision mode (not used/low limit/high limit)
 - P2.4.4.2 Source for measurement (highest, U, V, W)
 - P2.4.4.3 Limit for supervision (-10..100 C°)
 - P2.4.4.4 Hysteresis setting, initial 1C°

ARFIFF05V076

Replaced Application: ARFIFF05V075
Used Firmware version: NXP 5.02
System Software requirement: NXPV205
Released to field:
Used in production:
Changes in new application:

- Added XY-Plot function for ID control functions
 - P2.9.1.7 Control Mode added selection 6 / XY Plot
 - Added G2.9.1.9. P..1-24

ARFIFF05V075

Replaced Application: ARFIFF05V074

Used Firmware version: NXP 5.02

System Software requirement: NXPV205

Released to field:

Used in production:

Changes in new application:

- Removed P2.2.4 DC Ref Offset from V1.1.3 DC Voltage Ref. monitoring.

ARFIFF05V074

Replaced Application: ARFIFF05V073

Used Firmware version: NXP 5.02

System Software requirement: NXPV205

Released to field:

Used in production:

Changes in new application:

- Added support for Long Data Logger
 - Activated with P3.3 LDL License Key ID1994
- Added identification function P2.1.6 Identification ID631

ARFIFF05V073

Replaced Application: ARFIFF05V070

Used Firmware version: NXP 5.02

System Software requirement: NXPV205

Released to field:

Used in production:

Changes in new application:

- Current limit maximum changed to use different internal variable.
- Firmware interface updated from FW5.01 to FW5.02
- P2.1.3 System Rated Current changed to AFE Rated Current
 - Recommended to keep default to have optimum control.

ARFIFF05V070

Replaced Application: ARFIFF05V069

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
 - P2.3.4.9 Klixon In 1 ID780
 - P2.3.4.10 Klixon In 2 ID781
 - P2.7.7.1 Klixon Response ID782
- Added input switch monitoring F55 Input Switch
 - P2.3.4.11 Input Switch ID1209
 - P2.7.7.3 Input Switch Respond ID785
- Added Ambien temperature monitoring response parameter. F88 Ambien Temp
 - P2.7.7.2 Ambien Temp Respond ID784
- Added P2.4.1.2 Input Inversion ID1091
 - B07 = +128 = INV Input Switch
 - B08 = +256 = INV Klixon input 1
 - B09 = +512 = INV Klixon input 2

ARFIFF05V069

Replaced Application: ARFIFF05V068

Used Firmware version: NXP 5.01

System Software requirement: NXPV203

Released to field:

Used in production:

Changes in new application:

- When selecting Parallel AFE modulator type is not changed anymore to modulator #1, instead Modulator 2 is kept active.
- Grid Converter modulator is active by default P2.6.7.13 is active by default.

ARFIFF05V068

Replaced Application: ARFIFF05V067

Used Firmware version: NXP 5.01

System Software requirement: NXPV203

Released to field:

Used in production:

Changes in new application:

- OPT-BH board may give phantom trip when power unit has no power, fixed.
- Added response parameter for External fault 2 F94
 - P2.7.5.1 External Fault 1
 - P2.7.5.2 External Fault 2
- Run Enable digital input terminal can be selected now also in Run state.
- Added Run Enable response parameter P2.7.1.8
- Added Quick Stop response parameter P2.7.1.7
- Added Cooling monitoring group to Protections
 - P2.7.6.1 Cooling Fault Response
 - P2.7.6.2 Cooling Fault Delay
 - Cooling fault indication added to Fault Word 2 B11

ARFIFF05V067

Replaced Application: ARFIFF05V065

Used Firmware version: NXP 5.01

System Software requirement: NXPV203

Released to field:

Used in production:

Changes in new application:

- Added monitoring signal for DC-Link Current
 - V1.1.17 DC Link Current [A] ID72
 - V1.1.18 DC Link ActCurr [%] ID1158
- Added monitoring group M1.6 PI Control
- Added PI controller for AC Active current and DC-Link current
 - G2.2.5 PIC Function

ARFIFF05V065

Replaced Application: ARFIFF05V063

Used Firmware version: NXP 5.01

System Software requirement: NXPV203

Released to field:

Used in production:

Changes in new application:

- Added P2.6.7.12 DCLinkMeasCalib.
 - Calibration gain for DC-Link voltage measurement, used when high accuracy load balancing is needed between parallel units.

ARFIFF05V064

Replaced Application: ARFIFF05V063
Used Firmware version: NXP4.99
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.

ARFIFF05V063

Replaced Application: ARFIFF05V062
Used Firmware version: NXP4.99
System Software requirement: NXPV202
Released to field:
Used in production:
Changes in new application:

- Output Inversion, added B01: Invert Common Warning.
- Added V1.2.14 Warning ID74
 - Last Active Warning

ARFIFF05V062

Replaced Application: ARFIFF05V061

Used Firmware version: NXP4.99

System Software requirement: NXPV202

Released to field:

Used in production:

Changes in new application:

- F31 IGBT and F41 IGBT faults added to Fault Word 1 b0.
- F56 Measured Temperature 1, F65 Measured Temperature 2 and F71 LCL Temperature added to Fault Word 1 b7.
- F10 Line Synch fault added to Fault Word 1 b8
- F70 LCL Fan fault added to Fault Word 2 b11
- F8 System, F26 Start-Up Prevented and F36 Control Unit were connected to Fault Word 2 b12, corrected to b13 accordingly manual.
- W56 Measured Temperature 1, W65 Measured Temperature 2 and W71 LCL Temperature added to Warning Word 1 b1
- W32 Fan warning and W70 LCL Fan fault added Warning Word b10.

ARFIFF05V061

Replaced Application: ARFIFF05V059

Used Firmware version: NXP4.99

System Software requirement: NXPV202

Released to field:

Used in production:

Changes in new application:

- Changes in V059 caused FB Charging to operate in wrong sequence, fixed.

ARFIFF05V060

Replaced Application: ARFIFF05V059

Used Firmware version: NXP4.99

System Software requirement: NXPV202

Released to field:

Used in production:

Changes in new application:

- **Compatibility note:** Firmware updated to 4.99, requires system software V202, release planned on May, 2020.
 - Specific air cooled units can operate with higher temperature tripping and warning limits.

ARFIFF05V059

Replaced Application: ARFIFF05V058

Used Firmware version: NXP4.91

System Software requirement: NXPV191

Released to field:

Used in production:

Changes in new application:

- FB Profile 1 / Standard was using static start signal, fixed to rising edge.
- Rising edge start command are accepted only if Charge Switch is closed or Drive own Charge control is used.
- Charge Switch going False will send reset command for starts like MCB Feedback going to FALSE.

ARFIFF05V058

Replaced Application: ARFIFF05V057

Used Firmware version: NXP4.91

System Software requirement: NXPV191

Released to field:

Used in production:

Changes in new application:

- Added Status Words D1-D4 for Master Follower system.
- Added Drive Currents D1-D4 for Master Follower system.

ARFIFF05V057

Replaced Application: ARFIFF05V055

Used Firmware version: NXP4.91

System Software requirement: NXPV191

Released to field:

Used in production:

Changes in new application:

- Added function to open MCB at stop command.
- Firmware updated to 4.91 from 4.80
- Parameter automatic backup to keypad disabled.

ARFIFF05V055

Replaced Application: ARFIFF05V052

Used Firmware version: NXP4.80

System Software requirement: NXPV191

Released to field:

Used in production:

Changes in new application:

- Added features for NXC cabinet fast commissioning.
- P2.7.1.6 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.
- Added P2.8.20 FB Control Slot Selector
- Added P2.3.1.14 I/O Term Control
- Added P2.3.1.15 Keypad Control
- Added P2.3.1.16 Fieldbus Control

ARFIF05V052

Replaced Application: ARFIF05V050

Used Firmware version: NXP4.80

System Software requirement: NXPV191

Released to field:

Used in production:

Changes in new application:

- Added OPT-BH temperature sensor protections
 - Added sensor temperature faults F56 and F65
 - Added monitor values Meas Temps 1-6 (IDs 50, 51, 52, 69, 70, 71) and Sensor Max Temp. ID 42
 - Added 16 parameters (IDs 739-746, 764-773) to TempSensors parameter group
- Updates to Data Logger default signals.

ARFIFF05V050

Replaced Application: ARFIFF05V049

Used Firmware version: NXP4.80

System Software requirement: NXPV191

Released to field:

Used in production:

Changes in new application:

- FB Status Word B8 At Reference was not showing DC Reference, fixed.

ARFIFF05V049

Replaced Application: ARFIFF05V048

Used Firmware version: NXP4.80

System Software requirement: NXPV191

Released to field:

Used in production:

Changes in new application:

- Added digital inputs
 - Insulation monitoring
 - Aux Voltage monitoring
 - Main Fuse monitoring
 - Safe stop relay monitoring
 - Arc relay monitoring
 - Earth switch monitoring
 - Ambient temp monitoring
 - Leakage monitoring
- Added warning to all new digital inputs
- Added cabin state word
 - B0 main fuse warning
 - B1 aux voltage warning
 - B2 Safe stop relay warning
 - B3 insulation warning
 - B4 earth switch warning
 - B5 arc relay warning
 - B6 high ambient temp warning
 - B7 leakage warning

ARFIFF05V048

Replaced Application: ARFIFF05V047

Used Firmware version: NXP4.80

System Software requirement: NXPV191

Released to field:

Used in production:

Changes in new application:

- Added P2.3.4.1 Start/Stop Logic.
 - 0 / Static
 - 1 / Rising Edge
 - 2 / Pulse

ARFIF05V047

Replaced Application: ARFIF05V044

Used Firmware version: NXP4.80

System Software requirement: NXPV191

Released to field:

Used in production:

Changes in new application:

- If calculated minimum MCB closed level was below unit minimum close level MCB was not closed even if DC was high enough, fixed.
- External Fault was not connected to Fault Word 2 B6, fixed.
- Pulse MCB control was giving opening command in some power up situations, fixed.

ARFIFF05V044

Replaced Application: ARFIFF05V040

Used Firmware version: NXP4.80

System Software requirement: NXPV191

Released to field:

Used in production:

Changes in new application:

- DIN Force MCB Open did not stop charging command, fixed.
- Added High MCB Close Limit parameter.
 - MCB Closing level can be increased from normal level.
- F8 System Fault will also open MCB immediately.
- DI: MCB Trip state inverted by default. Can be reverted by inversion control.
- Added MCB Control status to FB Status Word B11
- Added MCB Feedback status to FB Status Word B12
- DC Reference Offset was not included when reference was coming from master drive, fixed.

ARFIF05V040

Replaced Application: ARFIF05V039

Used Firmware version: NXP4.80

System Software requirement: NXPV191

Released to field:

Used in production:

Changes in new application:

- Active current limits and power limits separated.
 - Power limits are based on actual grid voltage.
 - 100 % power limit is at nominal current at nominal voltage.
- Added Input Active Current limit parameter.
- Added Output Active Current limit parameter.

ARFIFF05V039

Replaced Application: ARFIFF05V035

Used Firmware version: NXP4.80

System Software requirement: NXPV191

Released to field:

Used in production:

Changes in new application:

- Added Ready to Start signal.
- Minimum Grid Nominal voltage was handled incorrectly, fixed.

ARFIFF05V035

Replaced Application: ARFIFF05V033
Used Firmware version: NXP4.78
System Software requirement: NXPV189
Released to field: 27.4.2016
Used in production:
Changes in new application:

- MCB open command will be given if F64 is happening.

ARFIFF05V033

Replaced Application: ARFIFF05V032

Used Firmware version: NXP4.78

System Software requirement: NXPV189

Released to field: 27.4.2016

Used in production:

Changes in new application:

- Changes to soft synch behavior, few cases first start was made without hardware synchronization, fixed.

ARFIFF05V032

Replaced Application: ARFIFF05V031
Used Firmware version: NXP4.78
System Software requirement: NXPV189
Released to field: 9.3.2016
Used in production:
Changes in new application:

- Added RegenSyncKpStart parameter ID1300

ARFIFF05V031

Replaced Application: ARFIFF05V030

Used Firmware version: NXP4.78

System Software requirement: NXPV189

Released to field: 9.2.2016

Used in production:

Changes in new application:

- On keypad control, pressing stop button for 2 second will open the main circuit breaker.
- On PC Control, pressing Coast Stop on Operating Window will open the main circuit breaker.

ARFIFF05V030

Replaced Application: ARFIFF05V028

Used Firmware version: NXP4.78

System Software requirement: NXPV189

Released to field: 9.2.2016

Used in production:

Changes in new application:

- Monitoring reference Vdc and % values are taken in same point of reference chain.
- Added Final DC Ref monitoring signal, offset included.
- Updates to Data Logger default signals.
- Added Reset parameter for datalogger signals.
- Changes to soft synch behavior, hardware detection is active only in first synchronization attempt.

ARFIFF05V028

Replaced Application: ARFIFF05V025

Used Firmware version: NXP4.78

System Software requirement: NXPV189

Released to field: 28.12.2015

Used in production: 29.12.2015

Changes in new application:

- Warning text for W67 was wrong, fixed.
- Fieldbus fault indications improvements.
- Last Active fault added for monitoring, see fault history to see first fault, if several fault are active at the same time.
- FB Fixed DC Reference needed to FBSpeedReference to be above 5000, changed that fixed references are working always in FB Control.
- Vacon AFE 2 profile implemented.

ARFIFF05V025

Replaced Application: ARFIFF05V024

Used Firmware version: NXP4.78

System Software requirement: NXPV189

Released to field: 10.7.2015

Used in production: 9.9.2015

Changes in new application:

- DC Voltage reference shown also as Vdc
- Added ID Control functions for DIN and Value Control
- **Compatibility Issue:** MCB Force Open inverted. This to follow NXC cabinet default signals.

ARFIFF05V024

Replaced Application: ARFIFF05V021
Used Firmware version: NXP4.78
System Software requirement: NXPV189
Released to field: 12.3.2015
Used in production:
Changes in new application:

- Added G2.6.7 Control Group
 - Capacitor and Inductor Size
 - Dynamic Support Kp
 - Synch Kp and Ti
 - Active Current Kp and Ti
- Selection how MCB is closed.
 - DC Link Voltage
 - DC Link Voltage Or Start Command
 - Start Command

ARFIFF05V021

Replaced Application: ARFIFF05V020

Used Firmware version: NXP4.78

System Software requirement: NXPV189

Released to field:

Used in production:

Changes in new application:

- MCB Close control required too high DC Voltage on low voltage grids, fixed.
- Added DC Reference Offset parameter, used to compensate DC-Link measurement offset.

ARFIFF05V020

Replaced Application: ARFIFF05V019

Used Firmware version: NXP4.78

System Software requirement: NXPV189

Released to field:

Used in production: 4.2.2015

Changes in new application:

- Added several OPT-D7 related monitoring signals
- Logic for THD protection based on OPT-D7 measurements.
- Logic for High Frequency Voltage protection based on OPT-D7 measurements.

ARFIFF05V019

Replaced Application: ARFIFF05V018

Used Firmware version: NXP4.78

System Software requirement: NXPV189

Released to field:

Used in production:

Changes in new application:

- ID44 DC Voltage had two decimals, fixed.
- PC Control only possible when P3.1 Control Place is Keypad.

ARFIFF05V018

Replaced Application: ARFIFF05V017

Used Firmware version: NXP4.78

System Software requirement: NXPV189

Released to field:

Used in production:

Changes in new application:

- DC-Link Voltage ID44 -> ID1108.
- Added DC Voltage ID44, Unfiltered.
- Current -> Total Current ID3
- Added Current ID1113
- AFE Options 2 B9 disabled internally if running, with a delay of 500 ms, to get F10 fault.
 - F10 did not triggered if AFE Options 2 B9 is active when supply was lost. Bug in APFIFF02.
 - Operation in ARFIFF05 will make voltage F92 Supply Voltage fault.
- Now charging fault disabled if command to open MCB is active.