ARFIFF02 AFE-I
Application Software Release Note

Application: ARFIFF02
Application Name: Active Front End Application (AFE-I)
Manual: DPD01599

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.

ARFIFF02V152

Replaced Application: ARFIFF02V150
Used Firmware version: NXP4.99
System Software requirement: NXPV202
Released to field:
Used in production:
Changes in new application:

- 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.

ARFIFF02V151

Replaced Application: ARFIFF02V150
Used Firmware version: NXP4.90
System Software requirement: NXPV195
Released to field:
Used in production:
Changes in new application:

- Automatic parameter backup to keypad disabled.

ARFIFF02V150

Replaced Application: ARFIFF02V149
Used Firmware version: NXP4.90
System Software requirement: NXPV195
Released to field:
Used in production:
Changes in new application:

- Startup Wizard disabled.

ARFIFF02V149

Replaced Application: ARFIFF02V147
Used Firmware version: NXP4.76
System Software requirement: NXPV189
Released to field:
Used in production:
Changes in new application:

- Added Status Word B5: Fault or AutoResetFault
- Added Supply Voltage to Datalogger signals.
- Added DataLoggerTriggerWord
- F80 Charge fault came some cases unnecessarily, fixed.

ARFIFF02V147

Replaced application: ARFIFF02V143
System software requirement: NXP00002V188
Used in production:
Changes in new application:

- Parameter name and description updates.
- Added Regen Options 2
- Datalogger reset function did not store settings to EEPROM, fixed.

ARFIFF02V143

Replaced application: ARFIFF02V142
System software requirement: NXP00002V188
Used in production:
Changes in new application:

- Internal F64 fault force MCB open command is disabled when auto reset for F64 is enabled. Some cases caused to MCB open and close periodically.
    - Auto Reset for F64 is enabled by Control Options B13, this will change operation to V138 lever regarding auto reset functionality.

ARFIFF02V142

Replaced application: ARFIFF02V141
System software requirement: NXP00002V188
Used in production:
Changes in new application:

- Control Options 2 removed from parameters.
- Fault Trial function time limit increased to 320 s.
- Max Charging time increased to 60 s.

ARFIFF02V141

Replaced application: ARFIFF02V139
System software requirement: NXP00002V188
Used in production:
Changes in new application:

- Added sub codes for F64 MCBStateFault
  - A1: Code given by V139 and older versions.
  - A2: MCB open while controller close.
  - A3: MCB closed while controlled open.
  - A4: MCB opened externally while AFE unit was in run state. Will trigger Datalogger. Warning only since V139.

ARFIFF02V139

Replaced application: ARFIFF02V138
System software requirement: NXP00002V188
Used in production:
Changes in new application:

- F64 MCBStateFault response for breaker opening in run state changed to warning for hardware compatibility reasons.
- F64 MCBStateFault will force MCB open.
    - Operation can be returned V138 level by Control Options B13 in V143 and later.

ARFIFF02V138

Replaced application: ARFIFF02V137
System software requirement: NXP00002V188
Used in production:
Changes in new application:

- F64 MCBStateFault triggered immediately if MCB feedback is lost while drive modulating, i.e. breaker opens before stop command has been given to AFE unit.

ARFIFF02V137

Replaced application: ARFIFF02V136
System software requirement: NXP00002V188
Used in production:
Changes in new application:

- F64 MCBStateFault is not reset automatically when feedback status becomes correct after fault has been triggered.
  - Added Control Options B13 = Enable Auto Reset of F64 MCBStateFault.
  - Removed Control Options B10 = Disable Auto Reset of F64 MCBStateFault.
- Over current response parameter removed.
- F1 Over Current, F31 IGBT HW and F41 IGBT SW fault will open main circuit breaker immediately.
- Default setting for DataLogger changed to be more suitable for AFE diagnostic.

ARFIFF02V136

Replaced application: ARFIFF02V135
System software requirement: NXP00002V185
Used in production:
Changes in new application:

- Minimum of 3 s delay is used when drive is used without feedback signal from MCC breaker.
- DeadTimeHwCompensation enabled by default. Possibility to disable with Control Options 1 B12.
- F73 functionality removed based on field feedback.

ARFIFF02V135

Replaced application: ARFIFF02V134
System software requirement: NXP00002V185
Used in production:
Changes in new application:

- When MCC Breaker is defined to open at any fault, auto reset of F64 is disabled.
- Added Control Options B10 = Disable Auto reset of fault F64 MCC State Fault.
    - V137 this operation has been set as default operation. F64 is not automatically reset. Auto reset can be activated by Control Options B13 since V137.

ARFIFF02V134

Replaced application: ARFIFF02V133
System software requirement: NXP00002V185
Used in production: August, 2013
Changes in new application:

- F1 Over Current, F31 and F41 IGBT over temperature faults will open main contactor by default. P2.8.1.4 OverCurrent Resp 3 / Fault, DC Off.
- Response times for F1 Over Current, F31 and F41 IGBT over temperature faults to open main circuit breaker is now handled faster time level.
- Added supply voltage limit parameters. P2.5.4.1 & P2.5.4.2. If limit exceeded F73 triggered.

ARFIFF02V133

Replaced application: ARFIFF02V131
System software requirement: NXP00002V185
Used in production: April, 2013
Changes in new application:

- Some cases AFE restart delay was not used, fixed.
- Fixed some parameter names and manual descriptions.

ARFIFF02V131

Replaced application: ARFIFF02V130
System software requirement: NXP00002V185
Used in production: Jan, 2013
Changes in new application:

- This version uses NXP3 V185 system software processor load reduction feature.
- Added FB Communication fault response parameter.
- Added FB Watch Dog delay parameter.
- Added Control Slot Selector parameter.

ARFIFF02V130

Replaced application: ARFIFF02V129
System software requirement: NXP00002V184
Used in production: Oct, 2012
Changes in new application:

- LCL temperature and LCL Fan monitoring names changed to correspond hardware wiring names. Added support second LCL temperature monitoring.

ARFIFF02V129

Replaced application: ARFIFF02V126
System software requirement: NXP00002V184
Used in production: Oct, 2012
Changes in new application:

- Possible to set earth fault delay time.
- Minor code structure changes
- Modulator type by default to Software 1

ARFIFF02V126

Replaced application: ARFIFF02V125
System software requirement: NXP00002V177
Used in production: Sep, 2012
Changes in new application:

- MCC Open fault changed to MCC State Fault and given also when MCC state indicated that breaker is closed while open command has been given.
- P2.3.1.4 Main Cont Ack selection "Not Used" is removed from selections.

ARFIFF02V125

Replaced application: ARFIFF02V124
System software requirement: NXP00002V177
Used in production: May, 2012
Changes in new application:

- Added fault simulation word
- LCL Fan fault is monitored only when ChargeSWState is closed.

ARFIFF02V124

Replaced application: ARFIFF02V123
System software requirement: NXP00002V177
Used in production: May, 2012
Changes in new application:

- Added more strong requirement for RO2 use / MCC Control.
- Added cooling fault function.
- Drooping set to 3 % when parallel AFE selected
- New parameter order
- New manual

ARFIFF02V123

Replaced application: ARFIFF02V120
System software requirement: NXP00002V177
Used in production: January, 2012
Changes in new application:

- Added support for OPT-CP Profinet board
- Added support for OPT-CQ Ethernet/IP board

ARFIFF02V120

Replaced application: ARFIFF02V119
System software requirement: NXP00002V177
Used in production: July, 2011
Changes in new application:

- F32 Cooling Fan, added response parameter: Warning, Fault, Fault & DC Off.
- F32 Warning information added to AW.B10. Same as F70 Warning LCL Fan with DI signal.
- F70 fault information added to FW2.B11. Same as F32 Fan Cooling fault.
- LCL Fan Fault response had selection Fault & DC Off but this was not coded to application, fixed.
- LCL temperature fault is not anymore connected to Warning word bit.

ARFIFF02V119

Replaced application: ARFIFF02V117
System software requirement: NXP00002V177
Used in production: July, 2011
Changes in new application:

- PT100 warning or fault were not connected to fault or warning word, fixed.
- Added rising edge for IO fault reset. Was causing situation where fault would not be visible if DIN fault reset was active all the time
- LCL temperature fault is also connected to Warning word bit.
- F32 changed to be Fault was a warning.

ARFIFF02V117

Replaced application: ARFIFF02V116
System software requirement: NXP00002V177
Used in production: April, 2011
Changes in new application:

- Added support for languages: English, Deutsch, Español and Francais

ARFIFF02V116

Replaced application: ARFIFF02V115
System software requirement: NXP00002V177
Used in production: May, 2010
Changes in new application:

- Added new charging control logic. DO selection 8. When start command is given drive will start chargin DC link. In case of Fieldbus control MCW.B0 will start the charging.
- Added support for Modbus/TCP.
- PT100 selection 2-6 were forcing AO to 10 mA, fixed .

ARFIFF02V115

Replaced application: ARFIFF02V114
System software requirement: NXP00002V177
Used in production: December, 2009
Changes in new application:

- RegenOptions B5 and B9 activated by default
- Modulator type by default to Software 3

ARFIFF02V114

Replaced application: ARFIFF02V112
System software requirement: NXP00002V177
Used in production: July, 2009
Changes in new application:

- Software modulation 4 possibility
- Added DIN ID Control function

ARFIFF02V112

Replaced application: ARFIFF02V110
System software requirement: NXP00002V170
Used in production: April, 2009
Changes in new application:

- Added support for PT-100 board (OPT-B8)
- RO2 Main contactor control parameter visible but not editable.
- Floating DC Command was not activated, fixed.

ARFIFF02V110

Replaced application: ARFIFF02V108
System software requirement: NXP00002V170
Used in production: September, 2008
Changes in new application:

- Added parameter that response for FAN monitoring can be selected.
- Added parameter that if any fault is active Main Contactor can be opened.
- DeviceNet fieldbus support added.

ARFIFF02V108

Replaced application: ARFIFF02V107
System software requirement: NXP00002V170
Used in production: September, 2007
Changes in new application:

- Main contactor fault delay parameter P2.7.14 added. It defines a time which is waited between main contactor close command and acknowledge signal.

ARFIFF02V107

Replaced application: ARFIFF02V103
System software requirement: NXP00002V170
Used in production: June, 2007
Changes in new application:

- Name of the Drive Control group changed to Control
- Text LCL changed to Input Filter
- P2.4.12 Capacitor size and P2.4.13 Inductor size removed.
- Name of the parameter group Master Follower changed to AFE IN PARALLEL
- Parameter Drooping moved from Control group to AFE IN PARALLEL group
- Startup delay parameter moved to AFE IN PARALLEL parameter group.
- A signal Overtemperature added to digital output DO1 and RO1 (choice 10).
- Master Follower parameters removed.
- Keypad communication fault (F52) removed.
- Parameter Main contactor On Delay added. Default is 400ms
- Analog input parameters added.
- Reactive current reference can be given through analog input
- Default value of ModIndexLimit changed from 97% to 100%.
- RatedLineCurrent parameter added to Control group.
- Name of the Supply Voltage parameter changed to RatedLineVoltage.
- AutoStopLevel parameter (RegenTorqueThreshold) added to Basic Parameters group.

ARFIFF02V103

Replaced application: ARFIEN01V116
System software requirement: NXP00002V155
Used in production: July 6, 2006
Changes in new application:

- Default value for switching frequency (P2.4.15) set to 3,6 kHz.
- Main contactor (MCCB) control changed.
- Default value for Control options (P2.4.18) set 32 (Disable 5th order harmonic compensation).
- If supply voltage was lowered and then highered Charge SW was opened still in lower level.
- Added DC Low function for:
  - PT100
  - LCL Overtemperature
  - Thermistor
  - OverCurrent
  - OverVoltage
  - External fault
- Bit Drive Over Temperature added to Warning word
- Overtemperature in application level changed to Warning. System Software will make a fault when limit is reached.
- Default value for Modulation index limit (P2.4.20) changed to 97%
- Default value for Modulator type (P2.4.19) set to 3 (software modulator)
- Multimonitor added.
- Added B5 support
  - C1:Fault, C2: Warning, C3: AFE over temp
- Default value for R01 control set to 2 (Running).
- Added possibility to control digital output D01 from fieldbus.
- Initial values of parameters P2.6.2, P2.6.5 and P2.6.6 changed
  - P2.6.2 PB Out2 ID: 1163 --> 1174 (AuxStatusWord --> Alarm Word 1)
  - P2.6.5 PB Out5 ID: 1171 --> 56
  - P2.6.6 PB Out6 ID: 0 ---> 57
- Default response to LCL overtemperature fault changed to Fault, DC off
- Fault reset zero selection changed TRUE ---> FALSE
- Fault text for HW IGBT fault added (fault 31).
- Response to IGBT faults changed (31 & 41) to be the same than in overcurrent fault
  - 2 = Fault
  - 3 = Fault, DC Off
- Auto restart settings of over current fault are used also to IGBT faults.
- Response to Drive Over temperature fault added. Default is 3 = Fault, DC Off
- Fault text for keypad communication fault (F52) added.
- IGBT HW temp fault added to Fault word bit 9.
- Name of the fieldbus parameter group changed from Data mapping to Fieldbus. Name of the Parameter changed (same as in Multi Purpose application).
- Added input to Run Request, Force Main Contactor open and Main contactor acknowledge signals.