VACON®

Marine Application
Software Change Note
APFIFF09

Application: APFIFF09
Application Name: Marine application
Application Manual: DPD01667

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.

APFIFF09V187

Replaced Application: APFIFF09V184
Used Firmware version: NXP4.90
System Software requirement: NXPV196
Released to field: -
Used in production: -
Changes in new application:

- Extended support for Process Data In and Out variables from 8 to 16.
    - PD 9-16 are available if a fieldbus option board with 16 PD support is inserted to option board slots D or E.
    - The use of PD variables 9-16 is enabled with the Fieldbus parameter P2.13.37 Control Slot Selector.
- Datalogger defaults updates.

VACON®

APFIFF09V184

Replaced Application:	APFIFF09V183
Used Firmware version:	NXP4.83 (V192)
System Software requirement:	NXPV195 (Recommendation)
Released to field:	-
Used in production:	-
Changes in new application:	

- Some situation OPT-AF status was not indicating correctly, fixed.
- DTC identification added to PMSM when Ident all is selected.

VACON®

APFIFF09V183

Replaced Application:	APFIFF09V177
Used Firmware version:	NXP4.83 (V192)
System Software requirement:	NXPV195 (Recommendation)
Released to field:	15.2.2018
Used in production:	-
Changes in new application:	

- Added sensorless control

- Added Encoder Response Warn; To OL

- Ident All for IM will include also DTC Identification

- Identification warning gives a sub code, Ident Fail number

APFIFF09V182

Replaced Application: APFIFF09V177
Used Firmware version: NXP4.83 (V192)
System Software requirement: NXPV195 (Recommendation)
Released to field: -
Used in production: -
Changes in new application:

- Added MotorPower_kW for monitoring ID79

- New selections for 4 mA and fieldbus fault responses.

- Added motor selection SRM

- Parameter Group U/f Settings changed to Open Loop

    o Added I/f start to Open Loop Group. Implemented also for induction motor NXP00002V195.

- F14 Unit temperature in Fault Word was not from Fault block, was not visible when making simulated fault, fixed.

- Safe Torque Off added to warning Word 1.B5.

- Added F42/W42 Brake Resistor fault to Fault Word 1.B9

- Added F12/W12 Brake Chopperto Fault Word 2.B7

- Control Options B14 do not disable Drive Synch if drive is not in Current Follower mode.

APFIFF09V177

Replaced Application:	APFIFF09V174
Used Firmware version:	NXP4.83
System Software requirement:	NXPV192
Released to field:	-
Used in production:	-

Changes in new application:

- Added parameter to select encoder fault mode.

- Added parameter Over Load Minimum input.

- Added two new identification modes.

APFIFF09V174

Replaced Application:　　　　　APFIFF09V173
Used Firmware version:　　　　NXP4.83
System Software requirement:　NXPV192
Released to field:　　　　　　　8.6.2017
Used in production:　　　　　　-
Changes in new application:

- Added Closed Loop mode status to Status Word 2 B1

VACON®

APFIFF09V173

Replaced Application: APFIFF09V172
Used Firmware version: NXP4.83
System Software requirement: NXPV192
Released to field: 8.6.2017
Used in production: -
Changes in new application:

- Added Identification Fail information for monitoring (ID98).

- Brake control waited Follower brake status after certain sequences while operating as a single drive, fixed.

APFIFF09V172

Replaced Application: APFIFF09V171
Used Firmware version: NXP4.83
System Software requirement: NXPV192
Released to field: 27.3.2017
Used in production: -
Changes in new application:

- Start location B run enable did not work for start logic 2 and 7, fixed.

- Added P2.15.14.1 Stop Torque Release Time

- Datalogger signals changed depending on motor type and control mode.

- Added P2.12.14 Reset Datalogger

APFIFF09V171

Replaced Application: APFIFF09V170
Used Firmware version: NXP4.83
System Software requirement: NXPV192
Released to field: 16.3.2017
Used in production: -
Changes in new application:

- Control Options B14 disables Drive Synch, needed to activate in some cases when current follower function is used.

APFIFF09V170

Replaced Application: APFIFF09V169
Used Firmware version: NXP4.83
System Software requirement: NXPV192
Released to field: 26.1.2017
Used in production: -
Changes in new application:

- Firmware interface updated to NXP4.83.

- AuxStatusWord.B10 shows also if torque control mode is selected in open loop control.

APFIFF09V169

Replaced Application: APFIFF09V168
Used Firmware version: NXP4.81
System Software requirement: NXPV192
Released to field: 26.10.2016
Used in production: 26.10.2016
Changes in new application:

- Power reference speed direction automatic update function added to Control Options 2.B01 when starting to rotating motor is done in power control (torque control) mode.

    o When torque select is "RampOutput" and shaft was rotating opposite direction compared to reference direction, actual speed was going back to zero when ramp output was going through zero.

- Software F1 Over Current was making ramping stop in certain cases, fixed.

VACON®

APFIFF09V168

Replaced Application: APFIFF09V165
Used Firmware version: NXP4.81
System Software requirement: NXPV192
Released to field: 1.7.2016
Used in production: -
Changes in new application:

- MotPot function has new selection "StopReg;Fout". This makes a DigiPot functionality.

- Firmware interface update.

- Added "P2.8.8.12 FlyStAccFreqLim"

- Added "P2.12.5.11 OverCurrTripLim"

- Added "P2.8.6.21 EncIdRunMode"

- Added "P2.8.9.28 ID Run Curr. Kp"

APFIFF09V165

Replaced Application: APFIFF09V164
Used Firmware version: NXP4.76
System Software requirement: NXPV189
Released to field: 15.2.2016
Used in production: 15.2.2015
Changes in new application:

- Added Voltage Margin parameter

- Added Voltage Drop parameter

- Limited user possibility to change parameters is certain cases.

APFIFF09V164

Replaced Application: APFIFF09V163
Used Firmware version: NXP4.76
System Software requirement: NXPV189
Released to field:
Used in production:
Changes in new application:

- Rotor Flux as monitoring value.

- Added ABS values for torque supervision.

APFIFF09V163

Replaced Application: APFIFF09V160
Used Firmware version: NXP4.76
System Software requirement: NXPV189
Released to field:
Used in production:
Changes in new application:

- P2.5.6.6 and P2.5.7.6 have the same text, fixed.

- Generator side torque follower was using limit from motoring side in some cases, fixed.

- Torque follower separated from torque limit ramp function, both can be used separately.

- Giving negative value to torque limit ramp rate will remove ramping.

    o Torque Ramp rate default -1 %.

- Giving negative value to power limit ramp rate will remove ramping.

    o Power ramp rate default -1 %.

- Added Status Word 2

    o B00 = Value Control SR state.

- Activating power limit ramp rate caused to power limit ramp from zero, fixed.

- In fieldbus board ByPass mode actual speed was always positive, fixed.

VACON ®

APFIFF09V160

Replaced Application:	APFIFF09V159
Used Firmware version:	NXP4.76
System Software requirement:	NXPV189
Released to field:	9.9.2015
Used in production:	9.9.2015

Changes in new application:

- Flying Start tuning parameters added.

APFIFF09V159

Replaced Application: APFIFF09V157
Used Firmware version: NXP4.76
System Software requirement: NXPV189
Released to field: 9.6.2015
Used in production: 9.6.2015
Changes in new application:

- Torque limit follower has new option to follow generator side.

- In master follower system follower did not start if drive was not a Ramp follower and start stop mode was "As Master", fixed. Bug present since V147.

VACON®

APFIFF09V157

Replaced Application: APFIFF09V156
Used Firmware version: NXP4.76
System Software requirement: NXPV189
Released to field: 13.5.2015
Used in production: 13.5.2015
Changes in new application:

- Motor nominal speed minimum changed to 5 rpm

- Torque reference chain interpolator changed automatically based on reference location.

- V155 changes removed to allow further changes with released system softwares.

APFIFF09V156

Replaced Application: APFIFF09V155
Used Firmware version: NXP4.81
System Software requirement: NXPV192 (Note)
Released to field: 21.4.2015
Used in production:
Changes in new application:

- Added software level over current trip function F1 A4

- Added parameter for minimum flying start frequency.

APFIFF09V155

Replaced Application: APFIFF09V152
Used Firmware version: NXP4.75
System Software requirement: NXPV188
Released to field:
Used in production:
Changes in new application:

- Added section for Fieldbus fault to activate quick stop.

- In DriveSynch operation some follower faults triggered master fault on fault reset even if follower was mend to stay in fault and other drives to stay operational.

- Changes in Datalogger default settings.

APFIFF09V152

Replaced Application: APFIFF09V151
Used Firmware version: NXP4.75
System Software requirement: NXPV188
Released to field:
Used in production:
Changes in new application:

- Several changes to monitoring value limits, helps NCDrive use.

- Internal motor temperature compensation is not activated automatically if drive is in DriveSynch operation.

- Operation Hours added.

- W14 Unit Temperature simulation signal did not active DO indication, fixed.

VACON®

APFIFF09V151

Replaced Application: APFIFF09V148
Used Firmware version: NXP4.74
System Software requirement: NXPV188
Released to field:
Used in production:
Changes in new application:

- Updated monitoring groups and signals (SIA-II compatibility).

- Source Code converter to Vacon Programming.

- Several code improvements due better compiler.

- Updates to parameters grouping, some parameters are doubled in parameter three for usability.

- More accurate information in application level Status Word.

    o Signals taken from more informative place.

- Encoder 2 frequency as monitoring value ID53

APFIFF09V148

Replaced Application: APFIFF09V147
Used Firmware version: NXP4.74
System Software requirement: NXPV188
Released to field:
Used in production:
Changes in new application:

- Added RR Enable digital input

- 4 mA fault and warning were not visible in Fault Word 1 nor in Warning Word 1

- Added Roll-Back Control parameters

APFIFF09V147

Replaced Application: APFIFF09V146
Used Firmware version: NXP4.74
System Software requirement: NXPV187
Released to field: March 14, 2014
Used in production:
Changes in new application:

- Continuing FBD to ST work

- PMSM selection will set:

  - Switching Frequency to 3,6 kHz if higher.

  - Modulator type to 1 if 0.

- Brake Chopper Active in Status Word B10.

- Quick Stop: RAMP, did not make ramp stop if normal stop function was Coasting, fixed.

- State Machine: Profidrive:

  - FB Control Word B0 will make ramp stop.

  - FB Control B1 will make always coasting stop.

- FBActualSpeed selection by default changed to 1.

  - 0 / Calculated to 1 / Actual.

    - 0 / Ramp Controller Output

    - 1 / OL: Calculated Speed. CL: Measured Speed.

- FB Actual Speed calculation uses now frequency [Hz] instead of speed [rpm], this is more accurate in high pole number motors.

- FBActualSpeedMode by default 1

APFIFF09V146

Replaced Application: APFIFF09V144
Used Firmware version: NXP4.74
System Software requirement: NXPV187
Released to field: January 22, 2014
Used in production:
Changes in new application:

- Added own ramp time for Quick Stop function.

- Start-Up Wizard disabled.

VACON®

APFIFF09V144

Replaced Application:	APFIFF09V138
Used Firmware version:	NXP4.74
System Software requirement:	NXPV187
Released to field:	December 10, 2013
Used in production:	January 8, 2014

Changes in new application:

- Improvements to identification handling on application level.

- Added filtering parameters for AI1 and AI2 signals, existing ones are for frequency reference chain only.

- Default switching frequency limited to 3,6 kHz.

- When magnetization current was given before identification run, U/f curve were supposed to set accordingly. This was not happening, Magnetization current were replaced with estimated magnetization current, fixed.

APFIFF09V138

Replaced Application: APFIFF09V137
System Software requirement: NXPV185
Used in production: September, 2013
Changes in new application:

- Added V: Shaft Frequency, previously V: Enc 1 Frequency, this is the frequency used by system software in closed loop control.

- Changed V: Enc 1 Frequency, to be direct monitoring from encoder board. No need of changes on PLC if already used.

APFIFF09V137

Replaced Application: APFIFF09V135
System Software requirement: NXPV185
Used in production: August, 2013
Changes in new application:

- Status Word was not using final brake open command status, fixed. Fieldbus control was missing from status.

- Brake speed limit was reset from Drive Run Status; this caused error in speed release function in some cases. Brake speed release function uses now actual brake control status.

APFIFF09V135

Replaced Application: APFIFF09V134
System Software requirement: NXPV185
Used in production: -
Changes in new application:

- Added status of active parameter set to Status Word B9. High when Set 2 is active.

VACON®

APFIFF09V134

Replaced Application: APFIFF09V131
System Software requirement: NXPV185
Used in production: April. 2013
Changes in new application:

- Joystick reference was not limited correctly by Pos and Neg frequency limits, fixed.

- Added PT100 fault and warning bits to FW10 and WW10.

- Added Frequency Delta as monitoring value.

APFIFF09V131

Replaced Application: APFIFF09V130
System Software requirement: NXPV185
Used in production: Feb. 2013
Changes in new application:

- Changes to default operation:

    o By default ramp generator is updated when in closed loop control change from torque control to speed control is made.

    o By default follow encoder frequency in limiting situation is active.

- Analogue output did not have function 20 / Drive Output Power. Function was available for AO2, AO3 and AO4.

APFIFF09V130

Replaced Application: APFIFF09V129
System Software requirement: NXPV185
Used in production:
Changes in new application:

- This version uses NXP3 V185 system software processor load reduction feature.

- More selection in Cooling Fault Response parameter.
    - 0= Stop State: No Action, Run State: Warning
    - 1= Stop State: Warning, Run State: Warning
    - 2= Stop State: Warning, Run State: Fault
    - 3= Stop State: No Action, Run State: Fault

- Cooling fault is not stored to fault history when drive is in stop state or no Run Request has been given.

- Cooling fault delay is started from zero when drive start or start command is received. Before fault was generated immediately if cooling input was low on stop state and start command was issued.

APFIFF09V129

Replaced Application: APFIFF09V128
System Software requirement: NXPV184
Used in production:
Changes in new application:

- Added inversion bits for Generator Torque Lim and Motoring Torque Lim digital inputs to P2.4.7.1 INV Commands.

APFIFF09V128

Replaced Application: APFIFF09V127
System Software requirement: NXPV184
Used in production:
Changes in new application:

- On V108 during minor code clean up: One line of code were removed that caused drive to lose Ready status if follower drive was not ramp follower and Follower stop function was 2 "As Master", fixed.

- Master – Follower brake control improvements.

    o **Compatibility Issue:** Earlier version, when operating in Ramp Follower mode, follower brake control closed the brake after master drive was in stop state. Now brake is closed in this mode at the same time as master drive is closing the brake.

    o Drive Synch follower brake control will use master drive brake control status.

    o Added parameter P2.11.5 MF Brake Logic to select brake functionality in follower drive. Also if selection 2 is made in master, drive will wait follower brake status before sending speed release command to follower drive.

VACON®

APFIFF09V127

Replaced Application: APFIFF09V126
System Software requirement: NXPV183
Used in production:
Changes in new application:

- Added MONO timer to Free DIN Delay function.

- Added over load function where input signal can be selected between Current, Torque and Power.

- Added function to detect if no motor is connected.

  - Current < 10 % of motor nominal at FreqOut > 10 Hz

APFIFF09V126

Replaced Application: APFIFF09V125
System Software requirement: NXPV183
Used in production:
Changes in new application:

- Added function that enables to add delay function to any digital input function.

APFIFF09V125

Replaced Application: APFIFF09V124
System Software requirement: NXPV183
Used in production:
Changes in new application:

- Added three digital inputs.

  o Start Place A/B

  o Start Signal 1B

  o Start Signal 2B

APFIFF09V124

Replaced Application: APFIFF09V123
System Software requirement: NXPV183
Used in production:
Changes in new application:

- Added Earth Fault Warning bit to warning world

APFIFF09V123

Replaced Application: APFIFF09V120
System Software requirement: NXPV183
Used in production:
Changes in new application:

- Added more comments to NCDrive help function. Select parameter text and press "F1"

- **Compatibility Issue** - Speed error monitoring status bits are moved from Fault Word 2 to Fault Word 10 B0 and from Warning Word 1 to Warning Word 10 B0.

APFIFF09V121

Replaced Application: APFIFF09V120
System Software requirement: NXPV183
Used in production:
Changes in new application:

- Added Speed Error fault and warning bits to fault and warning words.

VACON®

APFIFF09V120

Replaced Application: APFIFF09V119
System Software requirement: NXPV183
Used in production:
Changes in new application:

- Added over temperature warning and fault to fault simulation word B7 & B8 (F14). Warning bit needs to be active that fault will come in simulation. If fault bit is left active drive will go fault state at warning limit when drive temperature will rice to warning level.

- **Compatibility Issue** - Temperature measurement board 2 has own response parameter.

APFIFF09V119

Replaced Application: APFIFF09V118
System Software requirement: NXPV183
Used in production:
Changes in new application:

- It took few start attempts before 4 mA fault was reset permanently, fixed.

- Analogue input 2 4 mA monitoring was given faster than analogue input 1, fixed to same time.

- Added F8 System Fault to Fault Word 2 B13

- Added Power On and Energy counter for monitoring for fieldbus, not as keypad monitoring signals.

APFIFF09V118

Replaced Application: APFIFF09V115
System Software requirement: NXPV183
Used in production:
Changes in new application:

- 4 mA bit in warning word was not functioning, fixed.

- Flux off delay function was not disabled when Quick stop with ramp was done, fixed.

- Motor Regulator Status as monitoring signal ID77

- Separate warning and fault limits for PT100 channels, activated when warning limit is different than zero.

- Added tuning parameters for encoder fault detection.

APFIFF09V115

Replaced Application: APFIFF09V114
System Software requirement: NXPV183
Used in production:
Changes in new application:

- Added support for OPT-BH heat measurement board.

- Temperature measurement now monitors short-cut and broken cable. Gives sub code A2 and A3 respectively; these will be only warnings.

- Added a new digital input which saves active parameter set. Note that function will work only if parameter set selection is A.1 or higher.

VACON®

APFIFF09V114

Replaced Application: APFIFF09V113
System Software requirement: NXPV183
Used in production: February, 2012 (17.2)
Changes in new application:

- Added analogue output function 20 / Drive output power, scaled with Motor Nom Power parameter.

- Delayed outputs has possibility to select ID.Bit to DO, Selection 28 / ID.Bit

- Added encoder fault information to Fault Word Bit 2

- Added ID Control DO2

APFIFF09V113

Replaced Application:	APFIFF09V112
System Software requirement:	NXPV183
Used in production:	January, 2012 (23.1)

Changes in new application:

- Added PIC Control function.

- Added Fault Simulation Word.

APFIFF09V112

Replaced Application: APFIFF09V111
System Software requirement: NXPV183
Used in production: November, 2011 (16.11)
Changes in new application:

- When fast profibus mode is used B15 is not updated in fixed control word, added logic that will disable process data locking if fast profibus mode is used.

- Restart delay minimum limit is set to 1 ms so that there will be no problem with init task, if set to zero value will be taken from firmware on power up.

- Added Flux Stab Coeff

APFIFF09V111

Replaced Application: APFIFF09V110
System Software requirement: NXPV183
Used in production: October, 2011 (07.10)
Changes in new application:

- Added current follower function

- Application data sending is disabled to master if SBLastId is higher than four.

- Added FW1.B0 Output Phase supervision

- Added OL under voltage reference selection

- Added OL under voltage reference value

- Added CL under voltage reference

VACON®

APFIFF09V110

Replaced Application: APFIFF09V109
System Software requirement: NXPV183
Used in production: Aug 12, 2011 (12.08)
Changes in new application:

- Joystick function changed for frequency reference so that it will support 4-20 mA.

- Dead zone function for torque was subtracted from final reference when input was at maximum, fixed.

- AI dead zone do not affect anymore to torque reference. Use dead zone parameter in Torque Control group.

APFIFF09V109

Replaced Application: APFIFF09V108
System Software requirement: NXPV182
Used in production: June 28, 2011 (28.06)
Changes in new application:

- Added master control word for monitoring

- Resettable warning will go low for 1 s if different warning becomes active.

- Added separate fault numbers for External Fault 1 and external fault 2

- Inversion for external fault added to Inversion control

- Added start mode where start and stop are both rising pulses.

APFIFF09V108

Replaced Application: APFIFF09V107
Used Firmware version:
System Software requirement: NXPV181
Released to field: June 14, 2011
Used in production:
Changes in new application:

- Added possibility to connect Value control function to AO, selection 19.

- Added two more DIN ID Control functions.

- Minor code clean up.

VACON®

APFIFF09V107

Replaced Application:	APFIFF09V106
Used Firmware version:	
System Software requirement:	NXPV180
Released to field:	Feb 18, 2011
Used in production:	Feb 18, 2011
Changes in new application:	

- PMSM Identification encoder ID run changed to only encoder identification.

- SB Last ID added also to application level, value copied also to option board and other way round when changed.

APFIFF09V106

Replaced Application: APFIFF09V105
Used Firmware version:
System Software requirement: NXPV180
Released to field: Dec 14, 2010
Used in production:
Changes in new application:

- Fixed issue of limiting switching frequency when drive synch is activated.

- Added motoring and generator torque limit for DIN control.

APFIFF09V105

Replaced Application: APFIFF09V104
Used Firmware version:
System Software requirement: NXPV179
Released to field: Nov 2, 2010
Used in production:
Changes in new application:

- Thermistor warning added to warning word B1

- Load drooping removal function 2 did not work correctly, fixed.

- Added scaling for fieldbus reference.

- Added emergency stop function.

- MCStatus Word had wrong ID, fixed 68 -> 64, P2.13.19 GSW ID default changed to 64.

- Added profibus Status word ID 65

- Added ProfiDrive profile in application level, activated by ProfiBus Mode 2/ProfiDrive

- Added interpolator function, automatically set to 1 ms internally if ramp follower function is used.

APFIFF09V104

Replaced Application: APFIFF09V103
Used Firmware version:
System Software requirement: NXPV179
Released to field: Oct 6, 2010
Used in production:
Changes in new application:

- Default torque limit and power limit ramp rate increased 10000 %/s

- MotorCurrent D1 shows always own power unit current value and works also in single drive operation.

VACON®

APFIFF09V103

Replaced Application: APFIFF09V102
Used Firmware version:
System Software requirement: NXPV178
Released to field: May 6, 2010
Used in production: June 28, 2010
Changes in new application:

- Monitoring value "MotorCurrent D1" is updated also when drive is operating in standard master follower mode.

- Open Loop Torque/Power limit function did not take minimum from P2.6.3.2 Motoring Torque Limit, only minimum from P2.6.2.3 MotoringPowerLimit and P2.6.3.1 Torque limit. This malfunction did not affect closed loop control.

APFIFF09V102

Replaced Application: APFIFF09V101
Used Firmware version:
System Software requirement: NXPV178
Released to field: April 20, 2010
Used in production:
Changes in new application:

- Minimum limit for closed loop under voltage controller lowered to 83 %.

VACON®

APFIFF09V101

Replaced Application:	APFIFF09V100
Used Firmware version:	
System Software requirement:	NXPV178
Released to field:	March 29, 2010
Used in production:	
Changes in new application:	

- New application, based on PreMarine application APFIF129V096.