Crane Control
Software Change Note
APFIFF20

Application: APFIFF20
Application Name: Crane Control application
Manual: DPD01974

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.

APFIFF20V104

Replaced Application: APFIFF20V102
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- Added P2.2.10.4 MotPotDirChanRes ID1811 0=No, 1=Yes

  - Resets Motor Potentiometer Reference to Minimum Frequency when in direction change FreqRampOut goes below Min Freq.

APFIFF20V103

Replaced Application: APFIFF20V102
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- Added V1.30.5 Used Ramp Time ID1859, ramp time calculated from rope length.

APFIFF20V102

Replaced Application: APFIFF20V099
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- P2.20.4 SDI Reaction removed; Safety board does not support SDI.

- P2.8.6.2 TorqueStabDamp limited to 999.

    o Value 1000 was causing frequency to increase at certain cases.

- OPT-BH was giving short circuit warning before reading from option board has stabilized on 24 Vdc power up, fixed.

APFIFF20V099

Replaced Application: APFIFF20V098
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- VNXC-1523 - PCR: APFIFF20 Crane: add support for 16pd and quick stop as reaction to fieldbus fault

APFIFF20V098

Replaced Application: APFIFF20V096
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- It was possible to get License Fault in power up situation even if correct license has been given, fixed.

APFIFF20V096

Replaced Application: APFIFF20V091
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- Added Time Scale selection for delayed digital outputs.

- Rope length calculation was in mm, fixed to cm.

APFIFF20V093

Replaced Application:	APFIFF20V091
Used Firmware version:	NXP 4.91
System Software requirement:	NXP V196
Released to field:	-
Used in production:	**-**

Changes in new application:

- In tandem operation when brake is closed the position correction controller is forced to zero.

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APFIFF20V091

Replaced Application: APFIFF20V090
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- Parameter P2.4.7.1 Inversion control
    - Added B06 to invert Quick Stop digital input.

APFIFF20V090

Replaced Application: APFIFF20V089
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- Parameter relocations
    - Manual updated

- New Datalogger reset handling
    - Auto
    - Reset To Auto
    - SW Default
    - Auto Fast
    - No Change

APFIFF20V089

Replaced Application: APFIFF20V086
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- Added selection how the rope length is handled in the drive.

APFIFF20V088

Replaced Application:	APFIFF20V086
Used Firmware version:	NXP 4.91
System Software requirement:	NXP V196
Released to field:	-
Used in production:	**-**
Changes in new application:	

- Entering Rope Length in Single drive operation did not work.

- Added Drive Synch function.

APFIFF20V087

Replaced Application: APFIFF20V086
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- Added rope length calculation.

    o Rope length can be set to maximum by digital input

    o Rope length can be set to zero by digital input

    o Rope length is kept in memory over power down.

- Rope length can be send over system bus to trolley and bridge drives.

APFIFF20V086

Replaced Application: APFIFF20V085
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- When Follower is in Ramp follower mode it will send End Limit Digital information to master and master will make the stop.

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APFIFF20V085

Replaced Application: APFIFF20V084
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- F74 Follower fault did not have coasting option in a code, parameter had, added.

- Ramp follower did not go to Flux Off delay when master did, fixed.

  o Requires system software V201

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APFIFF20V084

Replaced Application:	APFIFF20V083
Used Firmware version:	NXP 4.91
System Software requirement:	NXP V196
Released to field:	-
Used in production:	**-**
Changes in new application:	

- Added P2.15.14.2 Stop Torque Release Time ID1858

- BrakeStatusWord B0; CL_Flux_Ready will follow only and directly RotorFlux.

  - MXStatus.B7 was not reset if Flux Was below ready level thus enabling brake opening in certain cases when Rotor Flux was still below 90 %.

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APFIFF20V08

Replaced Application: APFIFF20V079
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- Brake Slipping F83 status added:

    o Fault Word 10 B5

    o Warning Word 10 B5

- Added Warning Word 10 B6, indicating that closed loop chas changed to sensorless control F43 S14

- Brake Status Word

    o Added B12 Brake Slipping signal. Shows slipping detection before warning itself has been triggered.

    o Added B13 Quick Stop Active.

- Added parameter to reset Datalogger settings.

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APFIFF20V082

Replaced Application: APFIFF20V079
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- Joystick reverse did not work other than IO Control place, fixed.

- Added several monitoring signals for Functional Safety.

- Analogue references filtering time was not correctly in all reference input modes, fixed.

- DTC Identification improvements for induction motor.

    o Requires system software NXPV200.

- Automatic Start Angle Identification will work also motor type 2 and 4.

- Added C-Slot support for Advanced Safety option board.

- Automatic panel parameter backup function disabled.

APFIFF20V079

Replaced Application: APFIFF20V077
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- Load Floating time above 32,00 s was not stopping the modulation after the time delay.

  - Maximum load floating time limited to 32 s.

- NonReadyCauses and PreventMCReady added as monitoring values

APFIFF20V077

Replaced Application: APFIFF20V074
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: 28.5.2019
Used in production: -
Changes in new application:

- Added Run state lock for Encoder Superv.

- Added P2.15.12.4 RollBack Kp 2

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APFIFF20V074

Replaced Application: APFIFF20V072
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: 19.3.2019
Used in production: **-**
Changes in new application:

- Par set change was making a fieldbus fault, fixed.

APFIFF20V072

Replaced Application: APFIFF20V070
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- Shock load protection was using wrong parameter value, fixed.

- Master-Follower System Drive 3 brake control was not synchronized to master drive, fixed.

- FB Control Word going to zero was not triggering fieldbus fault, fixed.

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APFIFF20V070

Replaced Application: APFIFF20V069
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- Brake Slipping warning and DO stays active until Reset is pressed.

- Anti-Swing renamed and moved to correct place G2.21.

APFIFF20V069

Replaced Application:	APFIFF20V068
Used Firmware version:	NXP 4.91
System Software requirement:	NXP V196
Released to field:	-
Used in production:	**-**
Changes in new application:	

- Reverse direction was not working in certain situations when ProfiDrive profile was used, fixed.

APFIFF20V068

Replaced Application: APFIFF20V067
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- Brake Slipping was not activating in next stop if mechanical brake problem was not corrected.

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APFIFF20V067

Replaced Application: APFIFF20V061
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- Added anti-swing mode 4.

- Development version of Load Estimation.

- Development version of Functional Safety.

- Development version of Slack Rope prevention.

- Development version of Shock Load prevention.

- Added INV Commands B5; Invert Maximum Frequency 2 Digital input.

- Brake Slipping reference lock was not reset from rising edge start command while warning was active, fixed.

- In Closed Loop control inching reference was not accepted, fixed.

- Identification warning will give ident fail as a sub code.

- DataLogger signal updates.

APFIFF20V061

Replaced Application: APFIFF20V058
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- Added several Low Speed Positioning modes for testing purposes.

    o Recommended to use Mode 3.

- License Key status was not updated, fixed.

APFIFF20V058

Replaced Application:　　　　　APFIFF20V055
Used Firmware version:　　　　NXP 4.91
System Software requirement: NXP V196
Released to field:　　　　　　 -
Used in production:　　　　　　**-**
Changes in new application:

- Added Low Speed Positioning Function P2.8.11.7

    o Anti-Swing disabled in certain selectable conditions.

- Added possibility to disable Anti-Swing function when End Limits switches are activated.

- Added digital input to disable Anti-Swing.

APFIFF20V055

Replaced Application: APFIFF20V054
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- Firmware updated to NXP 4.91, requires system software version NXPV196.

APFIFF20V054

Replaced Application: APFIFF20V053
Used Firmware version: NXP 4.90
System Software requirement: NXP V195
Released to field: -
Used in production: **-**
Changes in new application:

- Added function that will reset IO rising edge start command when master follower mode is changed by digital input.

APFIFF20V053

Replaced Application: APFIFF20V052
Used Firmware version: NXP 4.90
System Software requirement: NXP V195
Released to field: -
Used in production: **-**
Changes in new application:

- Firmware downgraded to be able to use application in released system software NXPV195.

APFIFF20V052

Replaced Application: APFIFF20V051
Used Firmware version: NXP 4.91
System Software requirement: NXP V196
Released to field: -
Used in production: **-**
Changes in new application:

- Master-Follower reference changed by default 19 / Master Ramp.

- Wrong license code was giving F8 System Fault, fixed. Gives now F72 License Key.

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APFIFF20V051

Replaced Application: APFIFF20V049
Used Firmware version: NXP 4.91
System Software requirement: -
Released to field: -
Used in production: **-**
Changes in new application:

- Identification function for brake mechanical delays, only for closed loop control.

- Added parameter to force control place to system bus in case drive is follower.

- Added digital input to force control place to system bus.

APFIFF20V049

Replaced Application: APFIFF20V048
Used Firmware version: NXP 4.91
System Software requirement: -
Released to field: -
Used in production: **-**
Changes in new application:

- Over Speed protection added.

- Removed Brake Open status from Speed Error function.

    o Speed Error works also without brake control active.

- Default tripping limits increased for Speed Error, was too sensitive.

APFIFF20V048

Replaced Application: APFIFF20V040
Used Firmware version: NXP 4.83
System Software requirement: NXP3 V195
Released to field: -
Used in production: **-**
Changes in new application:

- Tandem Function was affecting also master reference, fixed.

- Shaft Angle name changed to Encoder Angle.

  - Shaft Angle is for Sensorless.

- Added Brake Slipping test function.

- Added Preset Speed 0, Base Reference when Preset Speeds are used and main reference input.

- Speed Limits for Main Reference redesigned.

  - Joystick Reference uses not Speed Share for direction change.

APFIFF20V040

Replaced Application: APFIFF20V037
Used Firmware version: NXP 4.83
System Software requirement: NXP3 V195
Released to field: -
Used in production: **-**
Changes in new application:

- Added encoder fault response to change from Closed Loop control to Sensorless control.

- Added Dead Time Compensation identification run.
    - Also Ls Voltage Drop identification.

APFIFF20V037

Replaced Application: APFIFF20V036
Used Firmware version: NXP 4.83
System Software requirement: NXP3 V195
Released to field: -
Used in production: **-**
Changes in new application:

- New logic for motor current monitoring for opening and closing the brake if no current to motor.

- Speed Error will give coasting stop and closed the brake in case error is three times set limit.

- Minimum frequency handling separately for starting and stopping in sensorless control.

APFIFF20V036

Replaced Application: APFIFF20V034
Used Firmware version: NXP 4.83
System Software requirement: NXP3 V195
Released to field: -
Used in production: **-**
Changes in new application:

- Added DI function for end limit speeds.

- Improvements for Brake Control for sensorless control.

- Speed Error monitoring for sensorless control.

- If Speed Error triple of set parameter immediate fault without delay.

APFIFF20V034

Replaced Application: APFIFF20V033
Used Firmware version: NXP 4.83
System Software requirement: NXP3 V195
Released to field: -
Used in production: **-**
Changes in new application:

- Motor Control Mode parameter removed, replaced with MC Mode parameter
    - Open Loop
    - Closed Loop
    - Sensorless
    - AOL Control

- Added Brake Control parameter initial calculations for sensorless control.

APFIFF20V033

Replaced Application: APFIFF20V029
Used Firmware version: NXP 4.83
System Software requirement: NXP3 V195
Released to field: -
Used in production: **-**
Changes in new application:

- Added response parameter for encoder fault.

- Tandem operation (Shaft Synchronization) development.

- Default setting changed
    - P 2.8.10.10 VoltageCorr. K
    - P 2.8.7.2 TorqStabDamp
    - P 2.8.7.1 TorqStabGain
- Added Voltage Dropp identification group.

APFIFF20V029

Replaced Application: APFIFF20V024
Used Firmware version: NXP 4.83
System Software requirement: NXP3 V195
Released to field: -
Used in production: **-**
Changes in new application:

- Minimum frequency was written also from system software side, this was conflicting with minimum frequency handling on application side and make drive to run against the brake, fixed.

- Preset speed are moved to normal reference chain. I.e. Preset speed reference can be selected as a reference location.

- Speed Error was closing the brake regardless what was selected response, fixed.

- Added own parameter for I/f activation, moved I/f setting to Open Loop group. IM I/f support added to system software V195.

APFIFF20V024

Replaced Application: APFIFF20V023
Used Firmware version: NXP 4.83
System Software requirement: NXP3 V192
Released to field: -
Used in production: **-**
Changes in new application:

- Load floating times started from stop command, fixed to be after zero frequency level is reached.

- Dynamic minimum frequency was active in open loop control before any Brake ID runs were made, fixed.

APFIFF20V023

Replaced Application: APFIFF20V022
Used Firmware version: NXP 4.83
System Software requirement: NXP3 V192
Released to field: 19.1.2017
Used in production: **-**
Changes in new application:

- Unrealistic parameter settings gave unusable result in Crane ID function, values are now limited/checked against multiple variables or are left unchanged if input variables are outside expected range.

- Magnetization current is updated with calculated value if only stand still identification is made and magnetization current has not been given.

APFIFF20V022

Replaced Application: APFIFF20V020
Used Firmware version: NXP 4.83
System Software requirement: NXP3 V192
Released to field: 18.1.2017
Used in production: **-**
Changes in new application:

- Default setting changes.

- Parameter grouping changes.

- Parameter name changes.

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APFIFF20V020

Replaced Application:	APFIFF20Vxxx
Used Firmware version:	NXP 4.80
System Software requirement:	NXP3 V191
Released to field:	5.1.2017
Used in production:	-

Changes in new application:

- Master Follower was not working correctly, fixed.

- Brake fault was in 100 ms time level, moved to 10 ms time level.

- Brake slipping delay changed from 20 ms to 100 to allow some jittering.

- Brake slipping was monitored against brake control signal, changed to brake state estimate signal.

- Brake feedback signals are handled with own delay parameters. (>1 s delay in feedback signal compared to when mechanically open). If zero mechanical delays are used.

- Added Crane ID function for horizontal movement.

  o Holding brake and no hoisting load requirements.