

# 8100 Product Series Firmware Release Notes

## Remark

This document contains the firmware release notes for all products of the 8100 product series.

## Changes

Product	Changes	Current firmware version	Previous firmware version
FG8101G01		v0200	v0200
FG8101G02		v0200	v0200
FG8701G01	X	v1300	v1204
FG8701G02	X	v1300	v1204
FG8701G03	X	v1300	v1204
FG8702D01	X	v1300	v1204
FG8702G01	X	v1300	v1204
FG8702G02	X	v1300	v1204
FG8702G03	X	v1300	v1204
FG8702G04	X	v1300	v1204
FG8702G05	X	v1300	v1204
FG8702G06	X	v1300	v1204
FG8702G11	X	v1300	v1204
FG8702G12	X	v1300	v1204
FG8702G13	X	v1300	v1204
FG8702G14	X	v1300	v1204
FG8702G15	X	v1300	v1204
FG8800M00	X	v1300	v1204
FG8800M01	X	v1300	v1204
FG8801F02	X	v1300	v1204
FG8801N02	X	v1300	v1204
FG8802S00		v0400	v0400
FG8802S01		v0400	v0400
FG8802S02		v0400	v0400
FG8802S20		v0400	v0400
FG8803S02		v0400	v0400
FG8803S20		v0400	v0400

FG8901P01	X	v0202	v0201
FG8901P02	X	v0202	v0201
FG8901P03	X	v0202	v0201
FG8901P04	X	v0202	v0201
FG8901P06	X	v0202	v0201

## FG8101Gxx Firmware Release Notes

Firmware Version	Changes
v0200	Added: LED blinking action for system indication
v0109	Improvement: Fan speed evaluation has been improved
v0108	Improvement: Display representation while leap second event  Improvement: Local time representation after a reboot
v0107	Improvement: Display shows “H” for holdover mode instead of “C” for crystal mode
v0106	Improvement: Changed display default configuration, to same behaviour as in v0104  Improvement: Support of different display behaviours (permanent on or timeout based)
v0105	Bugfix: Fixed issue with negative time zone offset on display
v0104	First released firmware version

## FG8702D01 Firmware Release Notes

Firmware Version	Changes
v1300	Added: New update procedure for future firmware version v2000  Improvement: Threshold of antenna short circuit detection adapted  Bugfix: Values of Max. accuracy clamping dropdown were not shown in extension cards  Bugfix: EMAIL monitoring
v1204	Improvement: Update of FG8702D01 as extension board stabilized
v1203	No changes, only firmware version increased
v1202	Improvement: Firmware update stability
v1201	Bugfix: Incorrect display of HW timestamping error in active events
v1200	First released firmware version

## FG870xGxx Firmware Release Notes

Firmware Version	Changes
v1300	<p>Added: New update procedure for future firmware version v2000</p> <p>Added: Security feature Galileo OSNMA for Revision C boards with high precision dual-band L1/L5/E5a GNSS receiver (FG8701G01, FG8702G11, FG8702G12, FG8702G13; affects only GNSS2 on FG8701G03, FG8702G04, FG8702G05, FG8702G06, FG8702G15)</p> <p>Added: PTP Extended functionality "Use Padding TLVs"</p> <p>Bugfix: Values of Max. accuracy clamping dropdown were not shown in extension boards</p> <p>Bugfix: EMAIL monitoring</p>
v1204	Improvement: Update of FG8702D01 as extension board stabilized
v1203	Bugfix: Faulty default configuration with PTP as time source
v1202	<p>Added: GNSS 2 as sync source in default configuration for boards with two GNSS receivers</p> <p>Improvement: Firmware update stability</p>
v1201	Bugfix: Incorrect display of HW timestamping error in active events
v1200	<p>Added: Support of FG8702D01</p> <p>Added: Action to download compatible SNMP MIB</p> <p>Added: Action to reset GNSS receiver</p> <p>Added: Active event if software version of system is not compatible with management card</p> <p>Added: Automatic restart of GNSS receiver when it blocks reception due to massive spoofing detection, because spoofing handling is performed on the application level</p> <p>Improvement: Configuration of GNSS receiver that supports NAVIC</p> <p>Improvement: Calculation of CPU performance</p> <p>Improvement: Internal logging</p>

	<p>Improvement: Fixed a potential issue that could cause startup failure</p> <p>Bugfix: Faulty report of software module error in event log</p> <p>Bugfix: LDAP for SSH login method</p>
v1101	<p>Added: Configuration for syslog port</p> <p>Added: Action for GNSS receiver debugging</p> <p>Improvement: Miscommunication handling of GNSS receiver</p> <p>Improvement / Bugfix: Internal memory handling</p> <p>Bugfix: Correction of satellite ID representation in <b>huma</b></p>
v1100	<p>Added: Support of FG8800M01</p> <p>Added: Monitoring events for system status (ST200) and board status (ST201) changes</p> <p>Added: LED blinking action for board position indication</p> <p>Added: Information if board needs to be rebooted after config has been applied</p> <p>Added: Board performance status page</p> <p>Added: Correction value for time and status byte 1 in SINEC H1</p> <p>Added: Activate buttons for timezone offset and daylight saving time in system</p> <p>Added: North velocity, east velocity, down velocity, ground speed, heading of motion, height above ellipsoid and height above mean sea level in GNSS status, GNSS2 status and SNMP MIB</p> <p>Improvement: Added "@" as valid character for username and password</p> <p>Improvement: Cyber security hardening</p> <p>Improvement: SNMP stability for non-valid OIDs</p> <p>Improvement: Minimum character length of security name in SNMPv3 and SNMPv3 traps set to one character, maximum character length set to 32 characters</p> <p>Improvement: Jamming thresholds adjusted</p> <p>Improvement: Antenna short circuit detection thresholds adjusted</p> <p>Improvement: Startup procedure</p>

	<p>Improvement: Removed priority1 and priority2 in PTP client configuration</p> <p>Bugfix: DST handling for specific begin day and end day constellations</p>
v1001	<p>Improvement: Fixed a potential issue that could cause startup failure</p> <p>Improvement: SNMP stability</p> <p>Bugfix: FG8101Gxx is consistently included in system reboot process</p>
v1000	<p>Added: Additional status values for PRP, Bonding and ETH interfaces</p> <p>Added: Action to clear network interface status counters</p> <p>Added: Additional status values for PTP as sync source</p> <p>Added: Additional status values for PTP as time service</p> <p>Added: Maximum accuracy clamping for PTP as time service</p> <p>Added: Configuration to redirect from HTTP to HTTPS</p> <p>Added: Configurable event for the network firewall triggered when configurable amount of network packets are blocked within a configurable time (NW203)</p> <p>Added: Configuration value for receiver jamming indication in advanced receiver settings for boards with standard and high precision GNSS receivers</p> <p>Added: Action to ping an IP address</p> <p>Added: Configuration to disable ETH interfaces</p> <p>Added: Active event shown if system uses default configuration when management board has been reequipped from none-management position to a management position</p> <p>Added: Configuration to close status relay permanently after device is started</p> <p>Added: Hint shown if unavailable interfaces are used for services</p> <p>Added: Snowflake symbol for freezed boards in <b>huma</b> aside</p> <p>Improvement: Cyber security hardening</p> <p>Improvement: GNSS status page restructured</p> <p>Improvement: Sync module communication and frequency control moved to sync setting general status</p> <p>Improvement: Deactivated all permission in default configuration for VIEWER role which leads to a disabled viewer user in default configuration</p>

	Bugfix: Removed fourth GNSS configuration setting in boards with maximum precision GNSS receivers
v0900	<p>Added: Support of FG8101G02</p> <p>Added: Support of FG8701G01, FG8701G02 and FG8701G03</p> <p>Added: Configurable event for successful user login (AC405)</p> <p>Added: SNMPv3 traps</p> <p>Added: Ignore UDP checksum, overwrite 0.0.0.0 source IP, enable VLAN ID appending, enable VLAN filter and PTP over PRP with 2 instances in PTP extended functionalities</p> <p>Added: Action for capturing network packets on ETH interfaces</p> <p>Added: Configuration of minimum needed satellites and minimum needed C/N0 in advanced satellites settings for GNSS</p> <p>Added: Sync source data of FG870xGxx has been added to display pages of FG8101G0x</p> <p>Improvement: Representation of GNSS reception quality. Satellite Quality is now represented as C/N0 in dBHz</p> <p>Improvement: Login names with format "name.surname" are permitted</p> <p>Improvement: Login names with only numbers are permitted</p> <p>Improvement: LDAP server certificates can be removed</p> <p>Bugfix: Network firewall rules for PTP with a PRP-interface were fixed</p>
v0800	<p>Added: FG8702G04, FG8702G05, FG8702G06, FG8702G11, FG8702G12, FG8702G13, FG8702G14 and FG8702G15 support</p> <p>Added: PTP v2.0 compatibility mode</p> <p>Added: Action to set current number of leap seconds</p> <p>Added: SNMP MIB values for GNSS2 (gnss2SatTracked, gnss2JammingState, gnss2SpoofingState, gnss2AntennaOpenDetected, gnss2AntennaShortCircuitDetected)</p> <p>Added: Status information about the current number of leap seconds</p> <p>Improvement: Additional information about network status (duplex, speed, auto-negotiation)</p> <p>Improvement: Remote IPs of firewall rules can be set with CIDR-notation</p>



	<p>Bugfix: huma®-access with PRP via RedBox fixed</p> <p>Bugfix: PTP with IPv4/E2E via PRP fixed</p>
v0701	No changes, only firmware version increased
v0700	<p>Added: Support of SINEC H1 time service (this feature requires an activation key)</p> <p>Added: Support for PTP Profile ITU-T G8275.1</p> <p>Improvement: PTP time service configuration per network interface</p> <p>Improvement: PTP time service output for UTC and arbitrary time in addition to TAI</p> <p>Improvement: Minimum sync accuracy configuration for PTP</p> <p>Improvement: SYSLOG support for up to 32 servers</p> <p>Improvement: SNMP v2 and v3 can now be enabled / disabled separately</p> <p>Improvement: Scalar values of the SNMP MIB can now be requested with trailing .0</p> <p>Improvement: SNMP boardsVarTable index can now be added at the end of the OID</p> <p>Improvement: SNMP MIB entries timeServiceNtpStratum, gnssAntennaOpenDetected and gnssAntennaShortCircuitDetected added</p> <p>Improvement: SNMP response time improved</p> <p>Improvement: NTP time service output configuration for UTC, STD or LOC</p> <p>Improvement: Support for increased number of 200 VLAN configurations</p> <p>Improvement: Improved representation of active events</p> <p>Improvement: PTP operation during simulation mode</p> <p>Bugfix: Removed possible problems in the leap second handling</p> <p>Bugfix: Removed a bug that caused problems, when DHCP was enabled but no DHCP server was reachable</p>
v0601	Improvement: LED behaviour of FG8802S02 in huma®
v0600	<p>Added: FG8801F02 support</p> <p>Added: NTS (RFC 8915) support</p>

	<p>Added: Trusted certificate support</p> <p>Improvement: Every “crystal” text changed to “holdover”</p> <p>Improvement: Update of card cover images</p> <p>Improvement: Antenna short circuit detection improved</p>
v0502	<p>Added: Synchronization Setting for stepping when offset <math>\geq 100\text{ms}</math></p> <p>Added: NTP Configuration - Holdover operation (Specific stratum while holdover, Always output NTP)</p> <p>Improvement: Set time is now also possible in normal operation mode (before it was only possible in simulation mode)</p> <p>Improvement: NTP behaviour with execute time jump</p>
v0501	<p>Added: FG8803S02 and FG8803S20 support</p> <p>Added: Immediate PTP service start configuration</p> <p>Added: PTP clock class 6 simulation mode</p> <p>Improvement: SNMPv3 MIB-2 Support</p> <p>Improvement: Removed 30s SNMP value caching</p> <p>Improvement: Feature to update whole system with one update file</p>
v0201	<p>Added DNS as service option in network firewall rules</p> <p>Bugfix: Fixed simulation mode issue</p> <p>Bugfix: Fixed RADIUS PAP with local as fallback</p>
v0200	<p>Added FG8802S00, FG8802S01, FG8802S02, FG8802S20 and FG8901P06 support</p> <p>Added GNSS firewall feature</p> <p>Added LI8100A04 and LI8100A05 support</p> <p>SIMATIC time service can now be configured for two broadcast addresses</p> <p>Reworked SNMP MIB</p> <p>Improved synchronization</p> <p>Improved bus communication</p>

v0106	Bugfix: Fixed synchronisation issue
v0103	First released firmware version

## FG8800M0x Firmware Release Notes

Firmware Version	Changes
v1300	Added: New update procedure for future firmware version v2000  Bugfix: Values of Max. accuracy clamping dropdown were not shown in extension boards  Bugfix: EMAIL monitoring
v1204	Improvement: Update of FG8702D01 as extension board stabilized
v1203	No changes, only firmware version increased
v1202	Improvement: Firmware update stability
v1201	Bugfix: Incorrect display of HW timestamping error in active events
v1200	Added: Support of FG8702D01  Added: Action to download compatible SNMP MIB  Added: Active event if software version of system is not compatible with management card  Improvement: Calculation of CPU performance  Improvement: Internal logging  Improvement: Fixed a potential issue that could cause startup failure  Bugfix: Faulty report of software module error in event log  Bugfix: LDAP for SSH login method
v1101	Added: Configuration for syslog port  Improvement / Bugfix: Internal memory handling
v1100	Added: Support of FG8800M01  Added: Monitoring events for system status (ST200) and board status (ST201) changes  Added: LED blinking action for board position indication

	<p>Added: Board performance status page</p> <p>Added: Information if board needs to be rebooted after config has been applied</p> <p>Added: Correction value for time and status byte 1 in SINEC H1</p> <p>Added: Activate buttons for timezone offset and daylight saving time in system</p> <p>Improvement: Added "@" as valid character for username and password</p> <p>Improvement: Cyber security hardening</p> <p>Improvement: SNMP stability for non-valid OIDs</p> <p>Improvement: Startup procedure</p> <p>Improvement: Minimum character length of security name in SNMPv3 and SNMPv3 traps set to one character, maximum character length set to 32 characters</p>
v1001	<p>Improvement: Fixed a potential issue that could cause startup failure</p> <p>Improvement: SNMP stability</p> <p>Bugfix: FG8101Gxx is consistently included in system reboot process</p>
v1000	<p>Added: Additional status values for PRP, Bonding and ETH interfaces</p> <p>Added: Action to clear network interface status counters</p> <p>Added: Configuration to redirect from HTTP to HTTPS</p> <p>Added: Configurable event for the network firewall triggered when configurable amount of network packets are blocked within a configurable time (NW203)</p> <p>Added: Action to ping an IP address</p> <p>Added: Configuration to disable ETH interfaces</p> <p>Added: Active event shown if system uses default configuration when management board has been reequipped from none-management position to a management position</p> <p>Added: Configuration to close status relay permanently after device is started</p> <p>Added: Hint shown if unavailable interfaces are used for services</p> <p>Added: Snowflake symbol for freezed boards in <b>huma</b> aside</p> <p>Improvement: Cyber security hardening</p>

	Improvement: Deactivated all permission in default configuration for VIEWER role which leads to a disabled viewer user in default configuration
v0900	<p>Added: Support of FG8101G02</p> <p>Added: Support of FG8701G01, FG8701G02 and FG8701G03</p> <p>Added: Configurable event for successful user login (AC405)</p> <p>Added: SNMPv3 traps</p> <p>Added: Action for capturing network packets on ETH interfaces</p> <p>Added: Configuration of minimum needed satellites and minimum needed C/N0 in advanced satellites settings for GNSS</p> <p>Added: Sync source data of FG870xGxx has been added to display pages of FG8101G0x</p> <p>Improvement: Representation of GNSS reception quality. Satellite Quality is now represented as C/N0 in dBHz</p> <p>Improvement: Login names with format "name.surname" are permitted</p> <p>Improvement: Login names with only numbers are permitted</p> <p>Improvement: LDAP server certificates can be removed</p>
v0800	<p>Added: FG8702G04, FG8702G05, FG8702G06, FG8702G11, FG8702G12, FG8702G13, FG8702G14 and FG8702G15 support</p> <p>Added: SNMP MIB values for GNSS2 (gnss2SatTracked, gnss2JammingState, gnss2SpoofingState, gnss2AntennaOpenDetected, gnss2AntennaShortCircuitDetected)</p> <p>Added: Status information about the current number of leap seconds</p> <p>Improvement: Additional information about network status (duplex, speed, auto-negotiation)</p> <p>Improvement: Remote IPs of firewall rules can be set with CIDR-notation</p> <p>Bugfix: huma®-access with PRP via RedBox fixed</p>
v0701	No changes, only firmware version increased
v0700	<p>Added: Support of SINEC H1 time service (this feature requires an activation key)</p> <p>Improvement: SYSLOG support for up to 32 servers</p> <p>Improvement: SNMP v2 and v3 can now be enabled / disabled separately</p>

	<p>Improvement: Scalar values of the SNMP MIB can now be requested with trailing .0</p> <p>Improvement: SNMP boardsVarTable index can now be added at the end of the OID</p> <p>Improvement: SNMP MIB entries timeServiceNtpStratum, gnssAntennaOpenDetected and gnssAntennaShortCircuitDetected added</p> <p>Improvement: SNMP response time improved</p> <p>Improvement: NTP time service output configuration for UTC, STD or LOC</p> <p>Improvement: Support for increased number of 200 VLAN configurations</p> <p>Improvement: Improved representation of active events</p> <p>Bugfix: Removed possible problems in the leap second handling</p> <p>Bugfix: Removed a bug that caused problems, when DHCP was enabled but no DHCP server was reachable</p>
v0601	Improvement: LED behaviour for FG8802S02 in huma®
v0600	<p>Added: FG8801F02 support</p> <p>Added: NTS (RFC 8915) support</p> <p>Added: Trusted certificate support</p> <p>Added: Synchronization setting for stepping when offset &gt;= 100ms</p> <p>Improvement: Every "crystal" text changed to "holdover"</p> <p>Improvement: Update of card cover images</p>
v0501	First released firmware version

## FG8801F02 Firmware Release Notes

Firmware Version	Changes
v1300	<p>Added: New update procedure for future firmware version v2000</p> <p>Added: PTP Extended functionality "Use Padding TLVs"</p> <p>Bugfix: Values of Max. accuracy clamping dropdown were not shown in extension boards</p>
v1204	No changes, only firmware version increased
v1203	No changes, only firmware version increased
v1202	No changes, only firmware version increased
v1201	Bugfix: Incorrect display of HW timestamping error in boards
v1200	<p>Improvement: Calculation of CPU performance</p> <p>Improvement: Internal logging</p> <p>Improvement: Fixed a potential issue that could cause startup failure</p> <p>Bugfix: Faulty report of software module error in event log</p>
v1101	Improvement / Bugfix: Internal memory handling
v1100	<p>Added: LED blinking action for board position indication</p> <p>Added: Board performance status page</p> <p>Added: Correction value for time and status byte 1 in SINEC H1</p> <p>Improvement: Startup procedure</p> <p>Bugfix: Operation modes of Bonding and PRP were not applied. IMPORTANT: Differences between the operation modes of prp0/bond0 to eth0/eth1 may affect uplink connectivity</p>
v1001	<p>Improvement: Fixed a potential issue that could cause startup failure</p> <p>Improvement: SNMP stability</p>



	Bugfix: FG8101Gxx is consistently included in system reboot process
v1000	<p>Added: Additional status values for PRP, Bonding and ETH interfaces</p> <p>Added: Action to clear network interface status counters</p> <p>Added: Additional status values for PTP as time service</p> <p>Added: Maximum accuracy clamping for PTP as time service</p> <p>Added: Action to ping an IP address</p> <p>Added: Configuration to disable ETH interfaces</p> <p>Added: Hint shown if unavailable interfaces are used for services</p> <p>Improvement: Sync module communication and frequency control moved to sync setting general status</p>
v0900	<p>Added: Ignore UDP checksum, overwrite 0.0.0.0 source IP, enable VLAN ID appending, enable VLAN filter and PTP over PRP with 2 instances in PTP extended functionalities</p> <p>Added: Action for capturing network packets on ETH interfaces</p>
v0800	<p>Added: PTP v2.0 compatibility mode</p> <p>Added: Status information about the current number of leap seconds</p> <p>Improvement: Additional information about network status (duplex, speed, auto-negotiation)</p> <p>Improvement: Remote IPs of firewall rules can be set with CIDR-notation</p> <p>Bugfix: Uplink-detection of FG9000F02 SFP-module after power reset fixed</p> <p>Bugfix: PTP with IPv4/E2E via PRP fixed</p>
v0701	Bugfix: hopf FG9000F02 support
v0700	<p>Added: Support for 100Mbit SFP modules</p> <p>Added: Support of SINEC H1 time service (this feature requires an activation key)</p> <p>Added: Support for PTP Profile ITU-T G8275.1</p> <p>Improvement: PTP time service configuration per network interface</p> <p>Improvement: PTP time service output for UTC and arbitrary time in addition to TAI</p>

	<p>Improvement: Minimum sync accuracy configuration for PTP</p> <p>Improvement: NTP time service output configuration for UTC, STD or LOC</p> <p>Improvement: Support for increased number of 200 VLAN configurations</p> <p>Improvement: Improved representation of active events</p> <p>Improvement: PTP operation during simulation mode</p> <p>Bugfix: Removed possible problems in the leap second handling</p> <p>Bugfix: Removed a bug that caused problems, when DHCP was enabled but no DHCP server was reachable</p>
v0601	No changes, only firmware version increased
v0600	First released firmware version

## FG8801N02 Firmware Release Notes

Firmware Version	Changes
v1300	<p>Added: New update procedure for future firmware version v2000</p> <p>Added: PTP Extended functionality "Use Padding TLVs"</p> <p>Bugfix: Values of Max. accuracy clamping dropdown were not shown in extension boards</p>
v1204	No changes, only firmware version increased
v1203	No changes, only firmware version increased
v1202	No changes, only firmware version increased
v1201	Bugfix: Incorrect display of HW timestamping error in active events
v1200	<p>Improvement: Calculation of CPU performance</p> <p>Improvement: Internal logging</p> <p>Improvement: Fixed a potential issue that could cause startup failure</p> <p>Bugfix: Faulty report of software module error in event log</p>
v1101	Improvement / Bugfix: Internal memory handling
v1100	<p>Added: LED blinking action for board position indication</p> <p>Added: Board performance status page</p> <p>Added: Correction value for time and status byte 1 in SINEC H1</p> <p>Improvement: Startup procedure</p>
v1001	<p>Improvement: Fixed a potential issue that could cause startup failure</p> <p>Improvement: SNMP stability</p> <p>Bugfix: FG8101Gxx is consistently included in system reboot process</p>
v1000	Added: Additional status values for PRP, Bonding and ETH interfaces

	<p>Added: Action to clear network interface status counters</p> <p>Added: Additional status values for PTP as time service</p> <p>Added: Maximum accuracy clamping for PTP as time service</p> <p>Added: Action to ping an IP address</p> <p>Added: Configuration to disable ETH interfaces</p> <p>Added: Hint shown if unavailable interfaces are used for services</p> <p>Improvement: Sync module communication and frequency control moved to sync setting general status</p>
v0900	<p>Added: Ignore UDP checksum, overwrite 0.0.0.0 source IP, enable VLAN ID appending, enable VLAN filter and PTP over PRP with 2 instances in PTP extended functionalities</p> <p>Added: Action for capturing network packets on ETH interfaces</p>
v0800	<p>Added: PTP v2.0 compatibility mode</p> <p>Added: Status information about the current number of leap seconds</p> <p>Improvement: Additional information about network status (duplex, speed, auto-negotiation)</p> <p>Improvement: Remote IPs of firewall rules can be set with CIDR-notation</p> <p>Bugfix: PTP with IPv4/E2E via PRP fixed</p>
v0701	<p>No changes, only firmware version increased</p>
v0700	<p>Added: Support of SINEC H1 time service (this feature requires an activation key)</p> <p>Added: Support for PTP Profile ITU-T G8275.1</p> <p>Improvement: PTP time service configuration per network interface</p> <p>Improvement: PTP time service output for UTC and arbitrary time in addition to TAI</p> <p>Improvement: Minimum sync accuracy configuration for PTP</p> <p>Improvement: NTP time service output configuration for UTC, STD or LOC</p> <p>Improvement: Support for increased number of 200 VLAN configurations</p> <p>Improvement: Improved representation of active events</p>

	<p>Improvement: PTP operation during simulation mode</p> <p>Bugfix: Removed possible problems in the leap second handling</p> <p>Bugfix: Removed a bug that caused problems, when DHCP was enabled but no DHCP server was reachable</p>
v0601	No changes, only firmware version increased
v0600	<p>Added: NTS (RFC 8915) support</p> <p>Added: Trusted certificate support</p> <p>Added: Synchronization setting for stepping when offset <math>\geq 100\text{ms}</math></p>
v0502	<p>Added: NTP Configuration - Holdover operation (Specific stratum while holdover, Always output NTP)</p> <p>Improvement: NTP behaviour with execute time jump</p>
v0501	<p>Improvement: Internal communication improved</p> <p>Added: Immediate PTP service start configuration</p> <p>Added: PTP clock class 6 simulation mode</p>
v0201	Added DNS as service option in network firewall rules
v0200	<p>SIMATIC time service can now be configured for two broadcast addresses</p> <p>Events and alarms are forwarded to the management board for distribution</p> <p>Improved synchronization</p> <p>Improved bus communication</p>
v0106	Bugfix: Fixed synchronisation issue
v0104	First released firmware version

## FG8802Sxx Firmware Release Notes

Firmware Version	Changes
v0400	Added: LED blinking action for board position indication  Improvement: DCF SIMEAS R modification outputs a 50ms pulse in 59 <sup>th</sup> second  Bugfix: Change of day, month and year in DCF
v0300	Added: DCF output with optional SIMEAS R modification  Added: Status information about the current number of leap seconds  Improvement: Leap second behaviour
v0200	Added: Synchronization setting for stepping when offset $\geq 100$ ms  Improvement: Overcurrent detection improved
v0100	First released firmware version

## FG8803Sxx Firmware Release Notes

Firmware Version	Changes
v0400	Added: LED blinking action for board position indication
v0300	Added: Support of ION 7550 string Added: Status information about the current number of leap seconds Improvement: Leap second behaviour
v0200	Added: Synchronization setting for stepping when offset $\geq 100\text{ms}$ Bugfix: Statusbits in Hopf Time Universal string adjusted Bugfix: Character 25 in SAT1703 string adjusted Bugfix: Characters 13 and 14 in IEC-103 string adjusted
v0100	First released firmware version

## FG8901Pxx Firmware Release Notes

Firmware Version	Changes
v0202	Added: Input voltage monitoring for each individual power connector on DC-PSUs
v0201	Bugfix: Internal status data communication fixed
v0200	Added: LED blinking action for board position indication
v0102	First released firmware version