

## Software Historie

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/**
\mainpage Description : Firmware for ACS-Sources \n
***** \n
** \copyright   : HBS Electronic 2015 \n
** \author      : 2004-2014 Michael Bayer \n
** \author      : 2015- ... M. Hoenig & M. Groessl \n
** \version     :
** Version      : 1.21\n
** Version      : 1.22 / 080205-remove serial echo / 150205 query command response fixed \n
** Version      : 1.23 / 080305-add *opc, *opc? cmd / change *esr?, *stb? \n
** Version      : 1.23 / 080305-add *opc, *opc? cmd / change *esr?, *stb? \n
** Version      : 2.25 / 020505-first complete 3-phase version with keil \n
** Version      : 2.26 / 170505-add ee-write-protect with p1.2 pin          \n
** Version      : 2.27 / \n
** Version      : 2.28 / 220905-p-meas, pf-meas and serial version / change p_con_fact /32 bit overflow by > 3750 W\n
** Version      : 2.28xF / 201005- remove phase and DDS-ON/DDS-OFF by frequenz setting for one-phase-system cause dead time on output-voltage\n
: / needed for 3-phase-system cause phase loose \n
** Version      : 2.29xF / 101106- correct phase setting cause 40 Degree fail to 0 Degree \n
** Version      : 2.30xF / 200607- version correct for phase 1, phase 2 and phase 3 starts by 0 degree by 0, 120, 240 degree on 3-phase system \n
** Version      : 2.30xFP / 160707- alow on 800W source 1000W for 1 minute \n
** Version      : 2.30xFPL / 080708- remove command for VFD-display brightness cause new LCD-display \n
** Version      : 2.30xFPL / 090708- command fix for R S by old style command load, exton, phaseon \n
**              : Change i2c_ee64.s51 - try second time for read/write \n
**              : 2.30.01EFPL fix display delay 250614 \n
**              : 2.30.03EFPL overload -> relais off 211014 \n
** Version      : 3.00 15.July 2015 added reverse power shutdown; extension by external UARTs; modiefied serial command processing \n
**              - Modifikation: I/U/P Faktoren; calc_measure Faktor \n
**              - Extension: I2C-UART interface incl. ext0 interrupt handling \n
**              .
** Version      : 3.01 13.Oct.2015 \n
**              - Fixed display MSG after Load-Button press (input_no_disp == 0) \n
**              - Fixed Grossgeraete: I_RMS & I_MAX (division by 10) \n
**              - Fixed I!: removed (disp_signal = ID_I_ERROR_IC) for values <I because of "disp_signal" variable and error MSG prioritization \n
**              - Extended: For switched off display (input_no_disp =1) clearing of displayed MSG \n
**              .
** Version      : 3.02 21.Oct.2015 \n
**              - Added: Return power command for serial Interface (meas:revpow?) \n
**              - Fixed: Display statusline OFF during sequenz execution \n
**              .
** Version      : 3.03 04.Nov.2015 \n
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\*\* - Fixed: MB2 scaling \n  
 \*\*  
 \*\* Version : 3.04 29.Dez.2015 \n  
 \*\* - Fixed: Phasing from lagging phase (360-input\_dds\_phas\_x) to lead phase (input\_dds\_phas\_x) \n  
 \*\*  
 \*\* Version : 3.05 22.Jan.2016 \n  
 \*\* - Fixed: Display status line off during remote RWL \n  
 \*\*  
 \*\* Version : 3.06 26.Jan.2016 \n  
 \*\* - Fixed: I\_Peak measure for Phase 2 (all phases are affected!)\n  
 \*\*  
 \*\* Version : 3.07 12.Feb.2016 \n  
 \*\* - Added wave modul to serial interface and menu \n  
 \*\*  
 \*\* Version : 3.08 29.Feb.2016 \n  
 \*\* - Fixed power VA comp for MB2 \n  
 \*\* - Fixed status input / output of granular frequency 16\_5 \n  
 \*\* - Added Wave signal relais (Status ON wenn wave != 0) \n  
 \*\*  
 \*\* Version : 3.09 01.Apr.2016 \n  
 \*\* - Adapted Wave loop display status time in function play\_wave\_loop() \n  
 \*\* - Added wave relais activation (15) / deactivation (0) in serial\_wave\_once and serial\_wave\_loop functions\n  
 \*\*  
 \*\* Version : 3.10 12.Apr.2016 \n  
 \*\* - Fixed 3-Phase detection during boot, for non present slave 2 &3 \n  
 \*\* - Added Wave 3 phase (gain) option \n  
 \*\* - Extendend Menu 3 phase WAVE menu \n  
 \*\* - Extendend Menu MAX\_CMD\_COUNT & MAX\_SUBMENU\_CNT \n  
 \*\* - Fixed SOURCE\_SELECT modification during run \n  
 \*\*  
 \*\* Version : 3.11 27.Aug.2016 \n  
 \*\* - Wave player enhancement up to 30 wave files (31 is STILLE!) \n  
 \*\* - Display characters for phase & degree changed for new display model (old display shows now strange charater!) \n  
 \*\*  
 \*\* Version : 3.12 29.Nov.2016 \n  
 \*\* - BUG\_FIX Sequenz timing: Timer0 adjusted to 10ms \n  
 \*\* - Start-Up display screen firmware version added \n  
 \*\*  
 \*\* Version : 3.13 02.Dez.2016 \n  
 \*\* - Q\_MAX Protection cut off  
 \*\* - FU\_MAX Protection cut off

\*\*  
\*\* Version : 3.14 18.Jan.2017 \n  
\*\* - Extension of serial command for reading wave gain  
\*\* - Now shows Wave STOP display menu entry even if wave is start via serial CMD  
\*\*

\*\* Version : 3.15 27.Jan.2017 \n  
\*\* - Fixed startup voltage UAC = 0V Phase 2 u. Phase 2  
\*\* - Fixed startup voltage UDC = 0V Phase 1 u. Phase 2 u. Phase 2  
\*\* - Fixed startup IRMS Phase 2 u. Phase 2 equal to single phase machine!  
\*\*

\*\* Version : 3.16 16.Mar.2017 \n  
\*\* - External UART deactivated! Save Eprom space  
\*\* - Show Wave-Nr from serial input in display and sync with internal variable  
\*\* - Fixed display init (lcd\_i2c.c) to avoid dark display (crash)  
\*\*

\*\* Version : 3.17 16.Apr.2017 \n  
\*\* - Wave player activation timing and gain setup modified  
\*\* - Wave play Once start pulse time adapted; now depends on wave active signal  
  
\*\* - Wave play ONCE & LOOP & STOP function 3 phase adaption  
\*\*

\*\* Version : 3.18 16.June.2017 \n  
\*\* - Wave play time out (dead lock) limit reduced to 18000  
\*\* - Wave player stop for 3 phase system improved  
\*\* - Cleanup code (timer enable / disable)  
\*\* - encapsulation of load relais off function (load\_relais\_off)  
\*\*

\*\* Version : 3.19 26.June.2017 \n  
\*\* - Sequence encapsulation  
\*\* - encapsulation of serial and key input functions  
\*\* - Pre-set removed but LIMITS kept  
\*\* - Info message for active Limits during start up included  
\*\*

\*\* Version : 3.20 27.June.2017 \n  
\*\* - Baud rate setup reorganized and standard baud rate set to 19.200  
\*\* - Baud rate selection extended up to 57.600 Baud  
\*\* - Sequence case 0 DAC I/O removed  
\*\* - Code clean up by analysis!  
\*\*

\*\* Version : 3.21 30.October.2017 \n  
\*\* - FU\_MAX Protection shutdown procedure adapted from load-off

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**          - External AUX display status corrected!
**
** Version  : 3.22 14.December.2017 \n
**          - SW ported to Keil C51 compiler (Linker: BL51)
**          - unused functions deactivated for compiler / linker to reduce binary (hex) size
**          - removed global chr1 variable! Encapsulated local (poi_chr) and interrupt (int_chr) usage
**          - Front panel keys beep with out action (fail beep) removed
**          - AUX-Relay and Phase-Relay switch function encapsulated
**          - Status display output for AUX-Relay and Phase-Relay
**          - Status display output for OPT1 and MB2 (IRg2)
**
** Version  : 3.23 20.März.2018 \n
**          - Load On/Off UDC Bug Phase 1 und 2 (Pio hängt)
**
** Version  : 3.24 15.April.2018 \n
**          - Wave:Stop ohne Funktion.
**          - Ausgabe am PIO zu Kurz, geändert von 3,2ms auf 100ms
**
** Version  : 3.25 01.Juni.2018 \n
**          - Output Regelung UAC and UDC
**          - output_volt_compensation()
**          - Added serial command for output_volt_compensation() : sour:COMPENS and sour:COMPENS?
**          - Added menu entry for output_volt_compensation, synchronized with serial input
**          - Q_POWEROFF_LIMIT_PERCENT
**          - Neue Berechnung von Qvar/Blindleistung. Neues Limit ist: Qvar Quadrat =(VA Quadrat - W Quadrat)
**          - Eingabe Prozentwert (der Maximalleistung) zum Quadrat
**          - 19.Juni 2018 "Rüssel" entfernt.
**
** Version  : 3.26 10.Juli.2018 \n
**          - Hardware protection. Reverse Power protection. Over current protection.
**          - BUG_FIX. Bei Überlastung werden die Spannungen auf "0" gesetzt.
**          - Mit Load-On werden die ursprünglichen Werte wieder gesetzt.
**
** Version  : 3.27 17.Aug.2018 \n
**          - BUG_FIX Granular Function int_to_str_16_5 without reentrant
**
** Version  : 3.28 29.Oct.2018 \n
**          - BUG_FIX Removed Debug output in ser_cmf_freq: "Freq. in Hz set!"
**
** Version  : 3.29 14.Dec.2018 \n
**          - BUG_FIX Q_MAX Protection.

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\*\* - Pmax Einstellung beeinflusste die Q\_max Abschaltung.  
\*\* - Referenzwert von "raw\_max\_power\_ac\_0" auf "raw\_short\_max\_power\_ac\_0" geändert.  
\*\* : 3.29 18.Dec.2018 \n  
\*\* - Nachtrag: raw\_short\_max\_power\_ac\_0 ist der reduzierte Endwert der VA Leistungsmessung  
\*\* - und musste daher auf den Ursprungswert zurückskaliert werden.  
\*\* - BUG\_FIX Frequenzeinstellung bei F größer 2600Hz Zahlenüberlauf  
\*\* - Kalkulation Float Zahl wie bei SMA/Granular  
\*\* - BUG\_FIX Grossgeräte: PMAX Vorgabe, Anzeige PMAX 8.000Kx  
\*\*  
\*\* Version (Beta): 3.30 29.Aug.2019 \n  
\*\* - Stromregelung hinzugefügt output\_current\_compensation() und output\_current\_compensation\_controller()  
\*\* - Verriegelung output\_volt\_compensation mit output\_current\_compensation  
\*\* - Aktiv "CC" im Display  
\*\* : 3.30 31. Oktober 2019 \n  
\*\* - BUG\_FIX "Frequenzausgabe bei Sequenz in Verbindung mit 10 mHz (granular) um Faktor 10 zu klein  
\*\* - inp\_int =buf\_dmt\_to\_int\_HI\_FREQ(ptr\_dat,100,MIN\_IN\_FREQ0,max\_in\_freq0);  
\*\* : 3.30 4.Nov.2019 \n  
\*\* - BUG\_FIX "DC-Spannungsausgabe bei Sequenz, wenn über Frontbedienung keine Sequenznummer  
\*\* - ausgewählt wird"  
\*\* - seq\_cnt =1; // Zeile fehlte nach Revision von "DIS11C"  
\*\* : 3.30 17.Dez.2019 \n  
\*\* - BUG\_FIX "Sprünge beim verändern der Frequenz im 3 Phasenbetrieb entfernt"