Parameters MICROMASTER 420

This Parameter List must only be used together with the Operating Instructions or the Reference Manual of the MICROMASTER 420. Especially pay attention to all the warnings and Notices and Notes contaned in that manual.

Table of Contents

1 Introduction to MICROMASTER System Parameters 2

2 Parameter overview in functional groups 4

3 Parameter Description 11

1 Introduction to MICROMASTER System Parameters

The layout of the parameter description is as follows.

1 Par number	2 Parameter name			9 Min:	12 Level:
	3 CStat:	5 Datatype	7 Unit:	10 Def:	2
	4 P-Group:	6 active:	8 Quick Comm:	11 Max:	
	13	Description:			

1. **Parameter number**
   Indicates the relevant parameter number. The numbers used are 4-digit numbers in the range 0000 to 9999. Numbers prefixed with an “r” indicate that the parameter is a “read-only” parameter, which displays a particular value but cannot be changed directly by specifying a different value via this parameter number (in such cases, dashes “-“ are entered at the points “Unit”, “Min”, “Def” and “Max” in the header of the parameter description.
   All other parameters are prefixed with a “P”. The values of these parameters can be changed directly in the range indicated by the “Min” and “Max” settings in the header and “Possible settings” section (see item 10 below).
2. **Parameter name**
   Indicates the name of the relevant parameter
   Certain parameter names include the following abbreviated prefixes: BI, BO, CI, and CO followed by a colon.

   These abbreviations have the following meanings:

BI	=	Binector input, i.e. parameter selects the source of a binary signal
BO	=	Binector output, i.e. parameter connects as a binary signal
CI	=	Connector input, i.e. parameter selects the source of an analog signal
CO	=	Connector output, i.e. parameter connects as an analog signal
CO/BO	=	Connector/Binector output, i.e. parameter connects as an analog signal and/or as a binary signal

Note

A separate description on how to interpret and use the BICO technology is given in the MICROMASTER MM420 Reference Manual.

3. **CStat**
   Commissioning status of the parameter. Three states are possible Commissioning C
   Ready to run U
   “Run T
   This indicates when the parameter can be changed. One, two or all three states may be specified. If all three states are specified, this means that it is possible to change this parameter setting in all three inverter states
4. **P-Group**
   Indicates the functional group of the particular parameter (see Section entitled “Functional grouping of parameters” in this “Introduction to MICROMASTER System Parameters”).
   Section A.7 below provides a table showing the parameters arranged according to their functional grouping.

Note

Parameter P0004 (parameter filter) acts as a filter and focuses access to parameters according to the functional group selected.

5. **Datatype**
   The data types available are shown in the table below. The notation used in the

MICROMASTER MM4 Inverter Series is listed in Column 1, while the corresponding notation applicable to the MASTERDRIVES Series is listed in Column 2. Column 3
provides the meaning, which is identical in each case.

Notation	Meaning
U16	16-bit unsigned
U32	32-bit unsigned
I16	16-bit integer
I32	32-bit integer
Float	Floating point

6. **Active**
   Indicates whether
   - Immediately changes to the parameter values take effective immediately after they have been entered, or
   - Cornfirm the “P” button on the operator panel (BOP or AOP) must be pressed before the changes take effect.
7. **Unit**
   Indicates the unit of measure applicable to the settable values
8. **QuickComm**
   Indicates whether or not (Yes or No) a parameter can only be changed during quick commissioning, i.e. when P0010 (parameter groups for commissioning) is set to 1 (quick commissioning).
9. **Min**
   Indicates the minimum value to which the parameter can be set.
10. **Def**
    Indicates the default value, i.e. the value which applies if the user does not specify a particular value for the parameter.
11. **Max**
    Indicates the maximum value to which the parameter can be set.
12. **Level**
    Indicates the level of user access. There are four access levels: Standard, Extended, Expert and Service. The number of parameters that appear in each functional group depends on the access level set in P0003 (user access level).
13. **Description**
    The parameter description ma yconsist of the following sections and contents:

Description:	Brief explanation of the parameter function.
Diagram:	Where applicable, diagram to illustrate the effects of parameters on a characteristic curve, for example
Possible settings	Listing of possible settings
Common settings:	Listing of most common settings, if the complete listing would contain toomuch items
Example:	Optional example of the effects of a particular parameter setting.
Dependency:	Any conditions that must be satisfied in connection with this parameter. Also any particular effects, which this parameter has on other parameter(s) or .
Warning / Caution / Notice / Note	Important information which must be heeded to prevent personal injury or damage to equipment/specific information which should be heed in order to avoid problems or may helpful to the user
More details:	Any sources of more detailed information concerning the particular parameter.

2 Parameter overview in functional groups

The tables below provide an overview of the parameters available for the MICROMASTER 420 arranged according to functional groups.

Quick commissioning (P0010=1)

No	Name	Access level	Cstat
P0100	Europe / North America	1	C
P0300	Select motor type	2	C
P0304	Motor voltage rating	1	C
P0305	Motor current rating	1	C
P0307	Motor power rating	1	C
P0308	Motor cosPhi rating	2	C
P0309	Motor efficiency rating	2	C
P0310	Motor frequency rating	1	C
P0311	Motor speed rating	1	C
P0320	Motor magnetizing current	3	CT
P0335	Motor cooling	2	CT
P0640	Motor overload factor [%]	2	CUT
P0700	Selection of command source	1	CT
P1000	Selection of frequency setpoint	1	CT
P1080	Min. speed	1	CUT
P1082	Max. speed	1	CT
P1120	Ramp-up time	1	CUT
P1121	Ramp-down time	1	CUT
P1135	OFF3 ramp-down time	2	CUT
P1300	Control mode	2	CT
P1910	Select motor data identification	2	CT
P3900	End of quick commissioning	1	C

When P0010=1 is chosen, P0003 (user access level) can be used to select the parameters to be accessed. This parameter also allows selection of a user-defined parameter list for quick commissioning.

At the end of the quick commissioning sequence, set P3900 = 1 to carry out the necessary motor calculations and clear all other parameters (not included in P0010=1) to their default settings.

Note
This applies only in Quick Commissioning mode.

Reset to Factory default

To reset all parameters to the factory default settings; the following parameters should be set as follows:

Set P0010=30.

Set P0970=1.

Note
The reset process takes approximately 10 seconds to complete. Reset to Factory default

Functional groups

No	Name	Access level	C-Stat
ADC and DAC			
r0750	Number of ADCs	3	-
r0752	Act. input of ADC [V] or	2	-
P0753	Smooth time ADC	3	CUT
r0754	Act. ADC value after scaling [%]	2	-
r0755	CO: Act. ADC after scal. [4000h]	2	-
P0756	Type of ADC	2	CT
P0757	Value x1 of ADC-scaling	2	CUT
P0758	Value y1 of ADC-scaling	2	CUT
P0759	Value x2 of ADC-scaling	2	CUT
P0760	Value y2 of ADC-scaling	2	CUT
P0761	Width of ADC deadband	2	CUT
P0762	Delay for loss of signal action	3	CUT
P0770	Number of DACs	3	-
P0771	CI: DAC	2	CUT
P0773	Smooth time DAC	3	CUT
r0774	Act. DAC value [V] or	2	-
P0776	Type of DAC	3	CT
P0777	Value x1 of DAC-scaling	2	CUT
P0778	Value y1 of DAC-scaling	2	CUT
P0779	Value x2 of DAC-scaling	2	CUT
P0780	Value y2 of DAC-scaling	2	CUT
P0781	Width of DAC deadband	2	CUT
Alarms / warnings / monitoring			
r0947	Last fault code	2	-
r0948	Fault time	3	-
P0952	Total number of faults	3	CT
P2100	Alarm number stop reaction	3	CT
P2101	Stop reaction value	3	CT
r2110	Warning number	2	-
P2111	Total number of warnings	3	CT
r2114	Run time counter	3	-
P2115	AOP real time clock	3	CT
P2150	Hysteresis speed n_hys	3	CUT
P2155	Threshold speed n_1	3	CUT
P2156	Delay time f1	3	CUT
P2164	Hysteresis speed.-deviation	3	CUT
P2167	Switch-off speed n_off	3	CUT
P2168	Delay Toff (inverter switch-off)	3	CUT
P2170	Threshold current I,thresh	3	CUT
P2171	Delay time current	3	CUT
P2172	Threshold voltage Vdc,thresh	3	CUT
P2173	Delay time Vdc	3	CUT
P2179	Current limit for no load ident.	3	CUT
P2180	Delay time for no load ident.	3	CUT
r2197	CO/BO: Status word 1 of monitor	2	-
Communication			
P0918	CB address	2	CT
P0927	Parameter changeable via	2	CUT
r0964	Firmware version data	3	-
r0967	Control word 1	3	-
r0968	Status word 1	3	-
P0971	Transfer data from RAM to EEPROM	3	CUT
P2000	Reference frequency	2	CT
P2001	Reference voltage	3	CT

No	Name	Access level	C-Stat
P2002	Reference current	3	CT
P2003	Reference torque	3	CT
P2009	USS normalization	3	CT
P2010	USS baudrate	2	CUT
P2011	USS address	2	CUT
P2012	USS PZD length	3	CUT
P2013	USS PKW length	3	CUT
P2014	USS telegram off time	3	CT
r2015	CO: PZD from BOP-Link (USS)	3	-
P2016	CI: PZD to BOP-Link (USS)	3	CT
P2018	CO: PZD from COM-Link (USS)	3	-
P2019	CI: PZD to COM-Link (USS)	3	CT
r2024	USS error-free telegrams	3	-
r2025	USS rejected telegrams	3	-
r2026	USS character frame error	3	-
r2027	USS overrun error	3	-
r2028	USS parity error	3	-
r2029	USS start not identified	3	-
r2030	USS BCC error	3	-
r2031	USS length error	3	-
r2032	BO: CtrlWrd1 from BOP-Link (USS)	3	-
r2033	BO: CtrlWrd2 from BOP-Link (USS)	3	-
r2036	BO: CtrlWrd1 from COM-Link (USS)	3	-
r2037	BO: CtrlWrd2 from COM-Link (USS)	3	-
P2040	CB telegram off time	3	CT
P2041	CB parameter	3	CT
r2050	CO: PZD from CB	3	-
r2051	CI: PZD to CB	3	CT
r2053	CB identification	3	-
r2054	CB diagnosis	3	-
r2090	BO: Control word 1 from CB	3	-
r2091	BO: Control word 2 from CB	3	-
Commands / binary I/O			
r0000	Drive display	1	
r0002	Drive state		
r0019	CO/BO: BOP control word	3	-
r0052	CO/BO: Status word 1	2	-
r0053	CO/BO: Status word 2	2	-
r0054	CO/BO: Control word 1	3	-
r0055	CO/BO: Control word 2	3	-
P0700	Selection of command source	1	CT
P0701	Function of digital input1	2	CT
P0702	Function of digital input2	2	CT
P0703	Function of digital input3	2	CT
P0704	Function of digital input4	2	CT
P0719	Selection of cmd. & freq. setp.	3	CT
r0720	Number of digital inputs	3	-
r0722	CO/BO: Binary input values	2	-
P0724	Debounce time for digital inputs	3	CT
P0725	PNP / NPN digital inputs	3	CT
r0730	Number of digital outputs	3	-
P0731	BI: Function of digital output	2	CUT
r0747	CO/BO: State of digital outputs	3	-
P0748	Invert digital outputs	3	CUT
P0800	BI: Download parameter set 0	3	CT
P0801	BI: Download parameter set 1	3	CT
P0840	BI: ON/OFF1	3	CT
P0842	BI: ON/OFF1 reverse	3	CT

No	Name	Access level	C-Stat
P0844	BI: 1. OFF2	3	CT
P0845	BI: 2. OFF2	3	CT
P0848	BI: 1. OFF3	3	CT
P0849	BI: 2. OFF3	3	CT
P0852	BI: Pulse enable	3	CT
P1020	BI: Fixed freq. selection Bit 0	3	CT
P1021	BI: Fixed freq. selection Bit 1	3	CT
P1022	BI: Fixed freq. selection Bit 2	3	CT
P1035	BI: Enable MOP (UP-command)	3	CT
P1036	BI: Enable MOP (DOWN-command)	3	CT
P1055	BI: Enable JOG right	3	CT
P1056	BI: Enable JOG left	3	CT
P1074	BI: Disable additional setpoint	3	CUT
P1110	BI: Inhibit neg. freq. setpoint	3	CT
P1113	BI: Reverse	3	CT
P1124	BI: Enable JOG ramp times	3	CT
P1230	BI: Enable DC braking	3	CUT
P2103	BI: 1. Faults acknowledgement	3	CT
P2104	BI: 2. Faults acknowledgement	3	CT
P2106	BI: External fault	3	CT
P2220	BI: Fixed PID setp. select Bit 0	3	CT
P2221	BI: Fixed PID setp. select Bit 1	3	CT
P2222	BI: Fixed PID setp. select Bit 2	3	CT
P2235	BI: Enable PID-MOP (UP-cmd)	3	CT
P2236	BI: Enable PID-MOP (DOWN-cmd)	3	CT
Motor control			
r0020	CO: Act. speed setpoint	3	-
r0021	CO: Act. speed	2	-
r0022	Act. rotor speed	3	-
r0024	CO: Act. output frequency	3	-
r0025	CO: Act. output voltage	2	-
r0027	CO: Act. output current	2	-
r0056	CO/BO: Status of motor control	2	-
r0067	CO: Act. drive current limit	3	-
r0071	CO: Max. output voltage	3	-
r0086	CO: Act. active current	3	-
P1300	Control mode	2	CT
P1310	Continuous boost	2	CUT
P1311	Acceleration boost	2	CUT
P1312	Starting boost	2	CUT
P1316	Boost end frequency	3	CUT
P1320	Programmable V/F freq. coord. 1	3	CT
P1321	Programmable V/F volt. coord. 1	3	CUT
P1322	Programmable V/F freq. coord. 2	3	CT
P1323	Programmable V/F volt. coord. 2	3	CUT
P1324	Programmable V/F freq. coord. 3	3	CT
P1325	Programmable V/F volt. coord. 3	3	CUT
P1333	Start frequency for FCC	3	CUT
P1335	Slip compensation	2	CUT
P1336	Slip limit	2	CUT
r1337	CO: Slip frequency	3	-
P1338	Resonance damping gain V/F	3	CUT
P1340	Imax controller prop. gain	3	CUT
P1341	Imax controller integral time	3	CUT
r1343	CO: Imax controller freq. output	3	-
r1344	CO: Imax controller volt. output	3	-
P1350	Voltage soft start	3	CUT
Drive features			

No	Name	Access level	C-Stat
P0005	Display selection	2	CUT
P0006	Display mode	3	CUT
P0007	Backlight delay time	3	CUT
P0011	Lock for user defined parameter	3	CUT
P0012	Key for user defined parameter	3	CUT
P0013	User defined parameter	3	CUT
P1200	Flying restart	2	CUT
P1202	Motor-current: Flying start	3	CUT
P1203	Search rate: Flying start	3	CUT
P1210	Automatic restart	2	CUT
P1211	Number of restart attempts	3	CUT
P1215	Holding brake enable	2	T
P1216	Holding brake release delay	2	T
P1217	Holding time after ramp down	2	T
P1232	DC braking current	2	CUT
P1233	Duration of DC braking	2	CUT
P1236	Compound braking current	2	CUT
P1237	Dynamic braking duty cycle	2	CUT
P1240	Configuration of Vdc controller	3	CT
r1242	CO: Switch-on level of Vdc-max	3	-
P1243	Dynamic factor of Vdc-max	3	CUT
P1253	Vdc-controller output limitation	3	CUT
P1254	Auto detect Vdc switch-on levels	3	CT
Inverter			
r0018	Firmware version	1	-
r0026	CO: Act. DC-link voltage	2	-
r0034	Motor thermal protection (I2t)	2	-
r0037	CO: Drive temperature	3	-
r0039	CO: Energy consumpt. meter [kWh]	2	-
P0040	Reset energy consumption meter	2	CT
r0200	Act. power stack code number	3	-
P0201	Power stack code number	3	C
r0203	Act. power stack type	3	-
r0204	Power stack features	3	-
r0206	Rated drive power or	2	-
r0207	Rated drive current	2	-
r0208	Rated drive voltage	2	-
P0210	Supply voltage	3	CT
r0231	Max. cable length	3	-
P0290	Drive overload reaction	3	CT
P0291	Config. of inverter protection	3	CT
P0292	Drive overload warning	3	CUT
P1800	Pulse frequency	2	CUT
r1801	CO: Act. switching frequency	3	-
P1802	Modulator mode	3	CUT
P1820	Reverse output phase sequence	2	CT
Motor			
P0300	Select motor type	2	C
P0304	Motor voltage rating	1	C
P0305	Motor current rating	1	C
P0307	Motor power rating	1	C
P0308	Motor cosPhi rating	2	C
P0309	Motor efficiency rating	2	C
P0310	Motor frequency rating	1	C
P0311	Motor speed rating	1	C
r0313	Motor pole pairs	3	-
P0320	Motor magnetizing current	3	CT
r0330	Rated motor slip	3	-

No	Name	Access level	C-Stat
r0331	Rated magnetisation current	3	-
r0332	Rated power factor	3	-
P0335	Motor cooling	2	CT
P0340	Calculation of motor parameters	2	CT
P0344	Motor weight	3	CUT
P0346	Magnetization time	3	CUT
P0347	Demagnetization time	3	CUT
P0350	Stator resistance (line-to-line)	2	CUT
r0384	Rotor time constant	3	-
r0395	Total stator resistance [%]	3	-
P0610	Motor I2t temperature reaction	3	CT
P0611	Motor I2t time constant	3	CT
P0614	Motor I2t overload warning time	3	CT
P0640	Motor overload factor [%]	2	CUT
P1910	Select motor data identification	2	CT
r1912	Identified stator resistance	2	CUT
Setpoint channel / RFG			
P1000	Selection of frequency setpoint	1	CT
P1001	Fixed frequency 1	2	CUT
P1002	Fixed frequency 2	2	CUT
P1003	Fixed frequency 3	2	CUT
P1004	Fixed frequency 4	2	CUT
P1005	Fixed frequency 5	2	CUT
P1006	Fixed frequency 6	2	CUT
P1007	Fixed frequency 7	2	CUT
P1016	Fixed frequency mode - Bit 0	3	CT
P1017	Fixed frequency mode - Bit 1	3	CT
P1018	Fixed frequency mode - Bit 2	3	CT
r1024	CO: Act. fixed frequency	3	-
P1031	Setpoint memory of the MOP	2	CUT
P1032	Inhibit reverse direction of MOP	2	CT
P1040	Setpoint of the MOP	2	CUT
r1050	CO: Act. Output freq. of the MOP	3	-
P1058	JOG frequency right	2	CUT
P1059	JOG frequency left	2	CUT
P1060	JOG ramp-up time	2	CUT
P1061	JOG ramp-down time	2	CUT
P1070	CI: Main setpoint	3	CT
P1071	CI: Main setpoint scaling	3	CT
P1075	CI: Additional setpoint	3	CT
P1076	CI: Additional setpoint scaling	3	CT
r1078	CO: Total frequency setpoint	3	-
r1079	CO: Selected frequency setpoint	3	-
P1080	Min. speed	1	CUT
P1082	Max. speed	1	CT
P1091	Skip frequency 1	3	CUT
P1092	Skip frequency 2	3	CUT
P1093	Skip frequency 3	3	CUT
P1094	Skip frequency 4	3	CUT
P1101	Skip frequency bandwidth	3	CUT
r1114	CO: Freq. setp. after dir. ctrl.	3	-
r1119	CO: Freq. setp. before RFG input	3	-
P1120	Ramp-up time	1	CUT
P1121	Ramp-down time	1	CUT
P1130	Ramp-up initial rounding time	2	CUT
P1131	Ramp-up final rounding time	2	CUT
P1132	Ramp-down initial rounding time	2	CUT
P1133	Ramp-down final rounding time	2	CUT

No	Name	Access level	C-Stat
P1134	Rounding type	2	CUT
P1135	OFF3 ramp-down time	2	CUT
r1170	CO: Speed setpoint	3	-
Technology controller			
P2200	BI: Enable PID controller	2	CT
P2201	Fixed PID setpoint 1	2	CUT
P2202	Fixed PID setpoint 2	2	CUT
P2203	Fixed PID setpoint 3	2	CUT
P2204	Fixed PID setpoint 4	2	CUT
P2205	Fixed PID setpoint 5	2	CUT
P2206	Fixed PID setpoint 6	2	CUT
P2207	Fixed PID setpoint 7	2	CUT
P2216	Fixed PID setpoint mode - Bit 0	3	CT
P2217	Fixed PID setpoint mode - Bit 1	3	CT
P2218	Fixed PID setpoint mode - Bit 2	3	CT
r2224	CO: Act. fixed PID setpoint	2	-
P2231	Setpoint memory of PID-MOP	2	CUT
P2232	Inhibit rev. direct. of PID-MOP	2	CT
P2240	Setpoint of PID-MOP	2	CUT
P2250	CO: Output setpoint of PID-MOP	2	-
P2253	CI: PID setpoint	2	CUT
P2254	CI: PID trim source	3	CUT
P2255	PID setpoint gain factor	3	CUT
P2256	PID trim gain factor	3	CUT
P2257	Ramp-up time for PID setpoint	2	CUT
P2258	Ramp-down time for PID setpoint	2	CUT
r2260	CO: Act. PID setpoint	2	-
P2261	PID setpoint filter timeconstant	3	CUT
P2262	CO: Act. PID filtered setpoint	3	-
P2264	CI: PID feedback	2	CUT
P2265	PID feedback filter timeconstant	2	CUT
r2266	CO: PID filtered feedback	2	-
P2267	Max. value for PID feedback	3	CUT
P2268	Min. value for PID feedback	3	CUT
P2269	Gain applied to PID feedback	3	CUT
P2270	PID feedback function selector	3	CUT
P2271	PID tranducer type	2	CUT
r2272	CO: PID scaled feedback	2	-
r2273	CO: PID error	2	-
P2280	PID proportional gain	2	CUT
P2285	PID integral time	2	CUT
P2291	PID output upper limit	2	CUT
P2292	PID output lower limit	2	CUT
P2293	Ramp-up /-down time of PID limit	3	CUT
r2294	CO: Act. PID output	2	-

3 Parameter Description

r0000 **Drive display** Level: 1

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	-	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays the user selected output as defined in P0005.

Note:

Pressing the "Fn" button for 2 seconds allows the user to view the values of DC link voltage, output current, output frequency, and chosen r0000 setting (defined in P0005).

r0002 **Drive state** Level: 2

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	COMMANDS	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays actual drive state.

Dependency:

State 3 visible only while precharging DC link, and when externally powered communications board is fitted.

Possible Settings:

0	Commissioning mode (P0010 != 0)
1	Ready to run
2	Fault
3	Starting (DC-link precharging)
4	Running
5	Stopping (ramping down)

P0003 **User access level** Level: 1

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	ALWAYS	**active:** Immediately	**QuickComm.** -	**Def:**	1
				Max:	4

Defines user access level to parameter sets. The default setting (standard) is sufficient for most simple applications.

Possible Settings:

0	User defined parameter list - see P0013 for details on use
1	Standard: Allows access into most frequently used parameters.
2	Extended: Allows extended access e.g. to inverter I/O functions.
3	Expert: For expert use only.
4	Service: Only for use by authorized service personal - password protected.

P0004 **Parameter filter** Level: 1

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	ALWAYS	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	22

Filters available parameters according to functionality to enable a more focussed approach to commissioning.

Example:

P0004 = 22 specifies that only PID parameters will be visible.

Dependency:

Parameters marked "Quick Comm: Yes" in the parameter header can only be set when P0010 = 1 (Quick Commissioning).

Possible Settings:

0	All parameters
2	Inverter
3	Motor
7	Commands, binary I/O
8	ADC and DAC
10	Setpoint channel / RFG
12	Drive features
13	Motor control
20	Communication
21	Alarms / warnings / monitoring
22	Technology controller (e.g. PID)

Note:

The inverter will start with any setting of P0004.

P0005 **Display selection** Level: 2

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	FUNC	**active:** Immediately	**QuickComm.** -	**Def:**	21
				Max:	4000

Selects display for parameter r0000 (drive display).

21	Actual frequency
25	Output voltage
26	DC link voltage
27	Output current

Notice:
These settings refer to read only parameter numbers ("rxxxx").

P0006 **Display mode** Level: **3**

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	FUNC	**active:** Immediately	**QuickComm.** -	**Def:**	2
				Max:	4

Defines mode of display for r0000 (drive display).

Possible Settings:

0 In Ready state alternate between setpoint and output freq. In run display output freq.
1 In Ready state display setpoint. In run display output freq.
2 In Ready state alternate between P0004 value and output freq. In run display P0004 value
3 In Ready state alternate between r0002 value and output freq. In run display P0002 value
4 In all states just display P0004

Note:
When inverter is not running, the display alternates between the values for "Not Running" and "Running". Per default, the setpoint and actual frequency values are displayed alternately.

P0007 **Backlight delay time** Level: **3**

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	FUNC	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	2000

Defines time period after which the backlight display turns off if no operator keys have been pressed.

Value:
P0007 = 0 : Backlight always on (default state)
P0007 = 1-2000 : Number of seconds after which the backlight will turn off

P0010 **Commissioning parameter filter** Level: **1**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	ALWAYS	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	30

Filters parameters so that only those related to a particular functional group are selected.

Dependency:
Reset to 0 for inverter to run.
P0003 (user access level) also determines access to parameters.

Possible Settings:

0 Ready
1 Quick commissioning
2 Inverter
29 Download
30 Factory setting

Note:
If P3900 is not 0 (0 is the default value), this parameter is automatically reset to 0.

P0011 **Lock for user defined parameter** Level: **3**

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	FUNC	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	65535

Details:
See parameter P0013 (user defined parameter)

P0012 **Key for user defined parameter** Level: **3**

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	FUNC	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	65535

Details:
See parameter P0013 (user defined parameter).

P0013[20] **User defined parameter** Level: **3**

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	FUNC	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	65535

Defines a limited set of parameters to which the end user will have access.
Instructions for use: Step 1: Set P0003 = 3 (expert user) Step 2: Go to P0013 indices 0 to 16 (user list) Step 3: Enter into P0013 index 0 to 16 the parameters required to be visible in the user-defined list. The following values are fixed and cannot be changed: - P0013 index 19 = 12 (key for user defined parameter) - P0013 index 18 = 10 (commissioning parameter filter) - P0013 index 17 = 3 (user access level) Step 4: Set P0003 = 0 to activate the user defined parameter.

Dependency:
First, set P0011 ("lock") to a different value than P0012 ("key") to prevent changes to user-defined parameter. Then, set P0003 to 0 to activate the user-defined list.
When locked and the user-defined parameter is activated, the only way to exit the user-defined parameter (and view other parameters) is to set P0012 ("key") to the value in P0011 ("lock").

Note:
Alternatively, set P0010 = 30 (commissioning parameter filter = factory setting) and P0970 = 1 (factory reset) to perform a complete factory reset.
The default values of P0011 ("lock") and P0012 ("key") are the same.

r0018 **Firmware version** Level: **1**

CStat:	-	**Datatype:** Float	**Unit:** -	**Min:**	-
P-Group:	INVERTER	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays version number of installed firmware.

r0019 **CO/BO: BOP control word** Level: **3**

CStat: - **Datatype:** U16 **Unit:** - **Min:** - **Def:** - **Max:** -

P-Group: COMMANDS **active:** - **QuickComm.** -

Displays status of operator panel commands.
The settings below are used as the "source" codes for keypad control when connecting to BICO input parameters.

Bitfields:

Bit00	ON/OFF1	0	NO
		1	YES
Bit01	OFF2: Electrical stop	0	YES
		1	NO
Bit02	OFF3: Fast stop	0	YES
		1	NO
Bit08	JOG right	0	NO
		1	YES
Bit09	JOG left	0	NO
		1	YES
Bit11	Reverse (setpoint inversion)	0	NO
		1	YES
Bit13	Motorpoti (MOP) up	0	NO
		1	YES
Bit14	Motorpoti (MOP) down	0	NO
		1	YES

Note:

When BICO technology is used to allocate functions to panel buttons, this parameter displays the actual status of the relevant command.
The following functions can be "connected" to individual buttons:
ON/OFF1, OFF2, JOG, REVERSE, INCREASE, DECREASE

r0020 **CO: Act. frequency setpoint** Level: **3**

CStat: - **Datatype:** Float **Unit:** Hz **Min:** - **Def:** - **Max:** -

P-Group: CONTROL **active:** - **QuickComm.** -

Displays actual frequency setpoint (input from ramp function generator).

r0021 **CO: Act. frequency** Level: **2**

CStat: - **Datatype:** Float **Unit:** Hz **Min:** - **Def:** - **Max:** -

P-Group: CONTROL **active:** - **QuickComm.** -

Displays actual inverter output frequency (r0024) excluding slip compensation, resonance damping and frequency limitation.

r0022 **Act. rotor speed** Level: **3**

CStat: - **Datatype:** Float **Unit:** 1/min **Min:** - **Def:** - **Max:** -

P-Group: CONTROL **active:** - **QuickComm.** -

Displays calculated rotor speed based on inverter output frequency [Hz] x 120 / number of poles.

Note:

This calculation makes no allowance for load-dependent slip.

r0024 **CO: Act. output frequency** Level: **3**

CStat: - **Datatype:** Float **Unit:** Hz **Min:** - **Def:** - **Max:** -

P-Group: CONTROL **active:** - **QuickComm.** -

Displays actual output frequency. Slip compensation, resonance damping and frequency limitation are included.

r0025 **CO: Act. output voltage** Level: **2**

CStat: - **Datatype:** Float **Unit:** V **Min:** - **Def:** - **Max:** -

P-Group: CONTROL **active:** - **QuickComm.** -

Displays [rms] voltage applied to motor.

r0026 **CO: Act. DC-link voltage** Level: **2**

CStat: - **Datatype:** Float **Unit:** V **Min:** - **Def:** - **Max:** -

P-Group: INVERTER **active:** - **QuickComm.** -

Displays DC-link voltage.

r0027 **CO: Act. output current** Level: **2**

CStat: - **Datatype:** Float **Unit:** A **Min:** - **Def:** - **Max:** -

P-Group: CONTROL **active:** - **QuickComm.** -

Displays [rms] value of motor current [A].

r0034 **CO: Motor temperature (i2t)** Level: **2**

CStat: - **Datatype:** Float **Unit:** % **Min:** - **Def:** - **Max:** -

P-Group: MOTOR **active:** - **QuickComm.** -

Displays calculated motor temperature (i2t model) as [%] of the maximum permissible value.

Note:

A value of 100 % means that the motor has reached its maximum permissible operating temperature. In this case, the motor will attempt to reduce the motor loading as defined in P0610 (motor I2t temperature reaction).

r0037 **CO: Drive temperature [°C]** Level: **3**

CStat: - **Datatype:** Float **Unit:** °C **Min:** - **Def:** - **Max:** -

P-Group: INVERTER **active:** - **QuickComm.** -

Displays internal inverter heatsink temperature.

r0039	**CO: Energy consumpt. meter [kWh]**			**Min:** -	Level: **2**
	CStat: -	**Datatype:** Float	**Unit:** kWh	**Def:** -	
	P-Group: INVERTER	**active:** -	**QuickComm.** -	**Max:** -	

Displays electrical energy used by drive since display was last reset (see P0040 - reset energy consumption meter).

Dependency:

Value is reset when P3900 = 1 (end quick commissioning), P0970 = 1 (factory reset) or P0040 = 1 (reset energy consumption meter).

P0040	**Reset energy consumption meter**			**Min:** 0	Level: **2**
	CStat: CT	**Datatype:** U16	**Unit:** -	**Def:** 0	
	P-Group: INVERTER	**active:** Immediately	**QuickComm.** -	**Max:** 1	

Resets value of parameter r0039 (energy consumption meter) to zero.

Value:

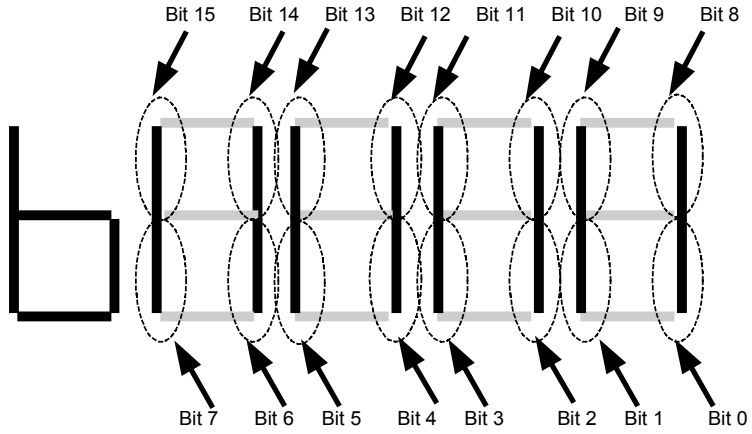
0 = No reset
1 = Reset r0039 to 0

Dependency:

No reset until "P" is pressed.

r0052	CO/BO: Status word 1			Min: -	Level:
	CStat: -	Datatype: U16	Unit: -	Def: -	2
	P-Group: COMMANDS	active: -	QuickComm. -	Max: -	

Displays first active status word of inverter (bit format) and can be used to diagnose inverter status. The display segments for the status word are shown in the diagram below.



Bitfields:

Bit00	Drive ready	0	NO
		1	YES
Bit01	Drive ready to run	0	NO
		1	YES
Bit02	Drive running	0	NO
		1	YES
Bit03	Drive fault active	0	NO
		1	YES
Bit04	OFF2 active	0	YES
		1	NO
Bit05	OFF3 active	0	YES
		1	NO
Bit06	Switch on inhibit active	0	NO
		1	YES
Bit07	Drive warning active	0	NO
		1	YES
Bit08	Deviation setp. / act. value	0	YES
		1	NO
Bit09	PZD control	0	NO
		1	YES
Bit10	Maximum frequency reached	0	NO
		1	YES
Bit11	Warning: Motor current limit	0	YES
		1	NO
Bit12	Motor holding brake active	0	NO
		1	YES
Bit13	Motor overload	0	YES
		1	NO
Bit14	Motor runs direction right	0	NO
		1	YES
Bit15	Inverter overload	0	YES
		1	NO

Note:

Output of Bit3 (Fault) will be inverted on digital output (Low = Fault, High = No Fault).

r0053 **CO/BO: Status word 2** Level: **2**

CStat: - **Datatype:** U16 **Unit:** - **Min:** -
P-Group: COMMANDS **active:** - **QuickComm.** - **Def:** -
Max: -

Displays second status word of inverter (in bit format).

Details:

See seven-segment display in r0052 (status word 1)

Bitfields:

Bit00	DC brake active	0	NO
		1	YES
Bit01	Act. freq. > P2167	0	NO
		1	YES
Bit02	Act. freq. > P1080	0	NO
		1	YES
Bit03	Act. current >= P2170	0	NO
		1	YES
Bit04	Act. freq. > P2155	0	NO
		1	YES
Bit05	Act. freq. <= P2155	0	NO
		1	YES
Bit06	Act. freq. >= setpoint	0	NO
		1	YES
Bit07	Act. voltage < P2172	0	NO
		1	YES
Bit08	Act. voltage > P2172	0	NO
		1	YES
Bit10	PID output < P2291	0	NO
		1	YES
Bit11	PID output >= P2291	0	NO
		1	YES
Bit14	Download data set 0 from AOP	0	NO
		1	YES
Bit15	Download data set 1 from AOP	0	NO
		1	YES

r0054 **CO/BO: Control word 1** Level: **3**

CStat: - **Datatype:** U16 **Unit:** - **Min:** -
P-Group: COMMANDS **active:** - **QuickComm.** - **Def:** -
Max: -

Displays first control word of inverter and can be used to diagnose which commands are active.

Details:

See seven-segment display in r0052 (status word 1)

Bitfields:

Bit00	ON/OFF1	0	NO
		1	YES
Bit01	OFF2: Electrical stop	0	YES
		1	NO
Bit02	OFF3: Fast stop	0	YES
		1	NO
Bit03	Pulse enable	0	NO
		1	YES
Bit04	RFG enable	0	NO
		1	YES
Bit05	RFG start	0	NO
		1	YES
Bit06	Setpoint enable	0	NO
		1	YES
Bit07	Fault acknowledge	0	NO
		1	YES
Bit08	JOG right	0	NO
		1	YES
Bit09	JOG left	0	NO
		1	YES
Bit10	Control from PLC	0	NO
		1	YES
Bit11	Reverse (setpoint inversion)	0	NO
		1	YES
Bit13	Motorpoti (MOP) up	0	NO
		1	YES
Bit14	Motorpoti (MOP) down	0	NO
		1	YES
Bit15	Local / Remote	0	NO
		1	YES

r0055 **CO/BO: Control word 2** Level: **3**

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	COMMANDS	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays second control word of inverter and can be used to diagnose which commands are active.

Details:

See seven-segment display in r0052 (status word 1)

Bitfields:

Bit00	Fixed frequency Bit 0	0	NO
		1	YES
Bit01	Fixed frequency Bit 1	0	NO
		1	YES
Bit02	Fixed frequency Bit 2	0	NO
		1	YES
Bit08	PID release	0	NO
		1	YES
Bit09	DC brake enable	0	NO
		1	YES
Bit13	External fault 1	0	YES
		1	NO

r0056 **CO/BO: Status of motor control** Level: **2**

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	CONTROL	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays status of motor control (MM420: V/F status), which can be used to diagnose inverter status.

Details:

See seven-segment display in r0052 (status word 1)

Bitfields:

Bit00	Init. control finished	0	NO
		1	YES
Bit01	Motor demagnetizing finished	0	NO
		1	YES
Bit02	Pulses enabled	0	NO
		1	YES
Bit03	Voltage soft start select	0	NO
		1	YES
Bit04	Motor excitation finished	0	NO
		1	YES
Bit05	Starting boost active	0	NO
		1	YES
Bit06	Acceleration boost active	0	NO
		1	YES
Bit07	Frequency is negative	0	NO
		1	YES
Bit08	Field weakening active	0	NO
		1	YES
Bit09	Volts setpoint limited	0	NO
		1	YES
Bit10	Slip frequency limited	0	NO
		1	YES
Bit11	F_out > F_max Freq. limited	0	NO
		1	YES
Bit12	Phase reversal selected	0	NO
		1	YES
Bit13	I-max controller active	0	NO
		1	YES
Bit14	Vdc-max controller active	0	NO
		1	YES
Bit15	Vdc-min controller active	0	NO
		1	YES

r0067 **CO: Act. drive current limit** Level: **3**

CStat:	-	**Datatype:** Float	**Unit:** A	**Min:**	-
P-Group:	CONTROL	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays valid maximum output current of drive.
This value is influenced by P0660 (max. output current), the derating characteristics and the thermal motor and drive protection.

Dependency:

P0610 (motor I2t temperature reaction) defines reaction when limit is reached.

Note:

The value is always 3 % higher than the calculated limit in order to account for current ripple.
Normally, current limit = rated motor current (P0305) x motor current limit (P0640).
It is less than or equal to 150 % of rated drive current (r0207).
The current limit may be reduced if the motor thermal model calculation indicates that overheating will occur.

r0071 **CO: Max. output voltage** Level: 3

CStat:	-	**Datatype:** Float	**Unit:** V	**Min:**	-
P-Group:	CONTROL	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays maximum output voltage.

Dependency:

Actual maximum output voltage depends on the actual input supply voltage.

r0086 **CO: Act. active current** Level: 3

CStat:	-	**Datatype:** Float	**Unit:** A	**Min:**	-
P-Group:	CONTROL	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays active (real part) of motor current.

P0100 **Europe / North America** Level: 1

CStat:	C	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	QUICK	**active:** Immediately	**QuickComm. Y**	**Def:**	0
				Max:	2

Determines whether power settings (e.g. nominal rating plate power - P0307) are expressed in [kW] or [hp]. The default settings for the nominal rating plate frequency (P0310) and maximum motor frequency (P1082) are also set automatically here, in addition to reference frequency (P2000).

Dependency:

Stop drive first (i.e. disable all pulses) before you change this parameter.
P0010 = 1 (commissioning mode) enables changes to be made.
Changing P0100 (operation for Europe / North America) resets all rated motor parameters as well as other parameters that depend on the rated motor parameters (see P0340 - calculation of motor parameters).

Possible Settings:

0 Europe [kW], frequency default 50 [Hz]
1 North America [hp], frequency default 60 [Hz]
2 North America [kW], frequency default 60 [Hz]

Notice:

Setting the [kW]/[hp] DIP switch under the operator panel will overwrite P0100 settings 0 or 1 at power-up. Setting 2 will not be overwritten.

r0200 **Act. power stack code number** Level: 3

CStat:	-	**Datatype:** U32	**Unit:** -	**Min:**	-
P-Group:	INVERTER	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Identifies hardware variant as shown in table below.

Code	Order Number
1	6SE6420-2UC11-2AA0
2	6SE6420-2UC12-5AA0
3	6SE6420-2UC13-7AA0
4	6SE6420-2UC15-5AA0
5	6SE6420-2UC17-5AA0
6	6SE6420-2UC21-1BA0
7	6SE6420-2UC21-5BA0
8	6SE6420-2UC22-2BA0
9	6SE6420-2UC23-0CA0
10	6SE6420-2UC24-0CA0
11	6SE6420-2UC25-5CA0
12	6SE6420-2AB11-2AA0
13	6SE6420-2AB12-5AA0
14	6SE6420-2AB13-7AA0
15	6SE6420-2AB15-5AA0
16	6SE6420-2AB17-5AA0
17	6SE6420-2AB21-1BA0
18	6SE6420-2AB21-5BA0
19	6SE6420-2AB22-2BA0
20	6SE6420-2AB23-0CA0

Code	Order Number
21	6SE6420-2AC23-0CA0
22	6SE6420-2AC24-0CA0
23	6SE6420-2AC25-5CA0
24	6SE6420-2UD13-7AA0
25	6SE6420-2UD15-5AA0
26	6SE6420-2UD17-5AA0
27	6SE6420-2UD21-1AA0
28	6SE6420-2UD21-5AA0
29	6SE6420-2UD22-2BA0
30	6SE6420-2UD23-0BA0
31	6SE6420-2UD24-0BA0
32	6SE6420-2UD25-5CA0
33	6SE6420-2UD27-5CA0
34	6SE6420-2UD31-1CA0
35	6SE6420-2AD22-2BA0
36	6SE6420-2AD23-0BA0
37	6SE6420-2AD24-0BA0
38	6SE6420-2AD25-5CA0
39	6SE6420-2AD27-5CA0
40	6SE6420-2AD31-1CA0

Notice:

0 indicates that no power stack has been identified.

P0201 **Power stack code number** Level: 3

CStat:	C	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	INVERTER	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	65535

Confirms actual power stack identified.

r0203 **Act. power stack type** Level: 3

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	INVERTER	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Type number of actual power stack identified.

Possible Settings:

1 MICROMASTER 420
2 MICROMASTER 440
3 MICRO- / COMBIMASTER 411
4 MICROMASTER 410
5 SED
6 MICROMASTER 430

r0204 **Power stack features** Level: 3

CStat:	-	**Datatype:** U32	**Unit:** -	**Min:**	-
P-Group:	INVERTER	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays hardware features of power stack.

Bitfields:

Bit00	DC input voltage	0	NO
		1	YES
Bit01	RFI filter	0	NO
		1	YES

Note:

0 indicates that no power stack has been identified.

r0206 **Rated drive power [kW] or [hp]** Level: 2

CStat:	-	**Datatype:** Float	**Unit:** -	**Min:**	-
P-Group:	INVERTER	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays nominal rated motor power from inverter.

Note:

Value is displayed in [kW] or [hp] depending on setting for P0100 (operation for Europe / North America).

r0207 **Rated drive current** Level: 2

CStat:	-	**Datatype:** Float	**Unit:** A	**Min:**	-
P-Group:	INVERTER	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays maximum continuous output current of inverter.

r0208 **Rated drive voltage** Level: 2

CStat:	-	**Datatype:** U32	**Unit:** V	**Min:**	-
P-Group:	INVERTER	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays nominal AC supply voltage of inverter.

Value:

230 = 200 - 240 V +/- 10 %
400 = 400 - 480 V +/- 10 %

P0210 **Supply voltage** Level: 3

CStat:	CT	**Datatype:** U16	**Unit:** V	**Min:**	0
P-Group:	INVERTER	**active:** Cornfirm	**QuickComm.** -	**Def:**	230
				Max:	1000

Optimizes Vdc controller, which extends the ramp-down time if regenerative energy from motor would otherwise cause DC link overvoltage trips.
Reducing the value enables controller to cut in earlier and reduce the risk of overvoltage.

Value:

Converter (AC/AC): [rms] value of the line AC voltage
Inverter (DC/AC): input direct voltage

Dependency:

Set P1254 ("Auto detect Vdc switch-on levels") = 0. Cut-in levels for Vdc-controller and compound braking are then derived directly from P0210 (supply voltage).

Vdc_max_on = $1.15 * \sqrt{2} * V_{mains}$

Compound braking switch-on level = $1.13 * \sqrt{2} + V_{mains}$

Note:

If mains voltage is higher than value entered, automatic deactivation of the Vdc controller may occur to avoid acceleration of the motor. An alarm will be issued in this case.

r0231[2] **Max. cable length** Level: 3

CStat:	-	**Datatype:** U16	**Unit:** m	**Min:**	-
P-Group:	INVERTER	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Indexed parameter to display maximum allowable cable length between drive and motor.

Index:

r0231[0] : Max. allowed unscreened cable length
r0231[1] : Max. allowed screened cable length

Notice:

For full EMC compliance, the screened cable must not exceed 25 m in length when an EMC filter is fitted.

P0290 **Drive overload reaction** Level: 3

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	INVERTER	**active:** Immediately	**QuickComm.** -	**Def:**	2
				Max:	3

Selects reaction of inverter to an internal over-temperature.

Possible Settings:

0 Reduce output frequency (usually only effective on variable torque appl.)
1 Trip (F0004)
2 Reduce pulse frequency and output frequency
3 Reduce pulse frequency then trip (F0004)

Notice:

A trip will always result eventually, if the action taken does not sufficiently reduce internal temperature.
The pulse frequency is normally only reduced if it is higher than 2 kHz (see P0291 - configuration of inverter protection)

P0291 **Config. of inverter protection** Level: **3**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	INVERTER	**active:** Cornfirm	**QuickComm.** -	**Def:**	1
				Max:	1

Control bit for enabling/disabling automatic pulse frequency reduction at output frequencies below 2 Hz.

Bitfields:

```
Bit00   Pulse freq reduced below 2Hz          0    NO
                                              1    YES
```

P0292 **Drive overload warning** Level: **3**

CStat:	CUT	**Datatype:** U16	**Unit:** °C	**Min:**	0
P-Group:	INVERTER	**active:** Immediately	**QuickComm.** -	**Def:**	15
				Max:	25

Defines temperature difference (in [°C]) between inverter over-temperature trip and warning thresholds.

P0300 **Select motor type** Level: **2**

CStat:	C	**Datatype:** U16	**Unit:** -	**Min:**	1
P-Group:	MOTOR	**active:** Immediately	**QuickComm.** Y	**Def:**	1
				Max:	2

Selects motor type.
This parameter is required during commissioning to select motor type and optimize inverter performance.
Most motors are asynchronous; if in doubt, use the formula below.
(P0310 * 60) / P0311
If the result is a whole number, the motor is synchronous.

Dependency:

Changeable only when P0010 = 1 (quick commissioning).
If synchronous motor is selected, the following functions are not available:
Power factor (P0308)
Motor efficiency (P0309)
Magnetization time (P0346 (Level 3)
Demagnetization time (P0347 (Level 3)
Flying start (P1200, P1202 (Level 3), P1203 (Level 3))
DC braking (P1230 (Level 3), P1232, P1233)
Slip compensation (P1335)
Slip limit (P1336)
Motor magnetizing current (P0320 (Level 3), P0330, P0331, P0332, P0384)

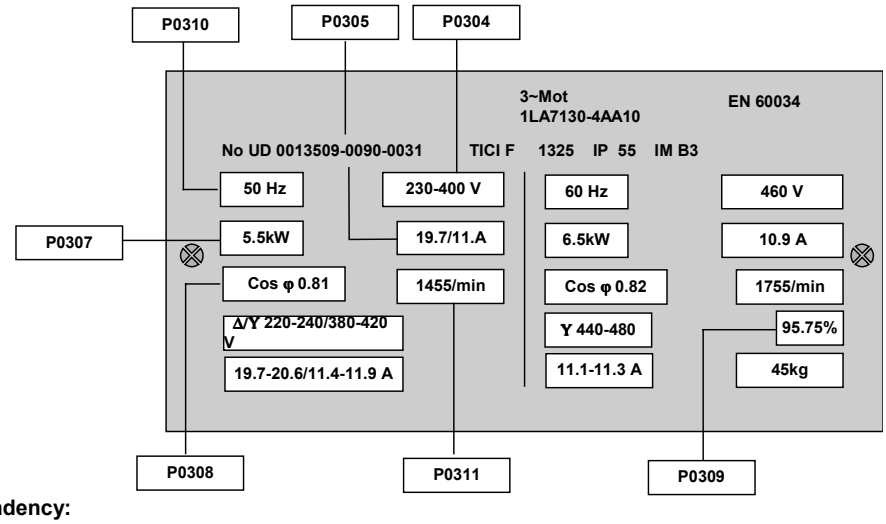
Possible Settings:

1 Asynchronous motor
2 Synchronous motor

P0304 **Rated motor voltage** Level: **1**

CStat:	C	**Datatype:** U16	**Unit:** V	**Min:**	10
P-Group:	MOTOR	**active:** Immediately	**QuickComm.** Y	**Def:**	230
				Max:	2000

Nominal motor voltage [V] from rating plate. Following diagram shows a typical rating plate with the locations of the relevant motor data.



Dependency:

Changeable only when P0010 = 1 (quick commissioning).

P0305 **Rated motor current** Level: **1**

CStat:	C	**Datatype:** Float	**Unit:** A	**Min:**	0.01
P-Group:	MOTOR	**active:** Immediately	**QuickComm.** Y	**Def:**	3.25
				Max:	10000.00

Nominal motor current [A] from rating plate - see diagram P0304.

Dependency:

Changeable only when P0010 = 1.

Note:

Maximum value is defined as 2 times inverter rated current (r0207).
Minimum value is defined as 1/32 times inverter rated current (r0207).

P0307 **Rated motor power** Level: **1**

CStat:	C	**Datatype:** Float	**Unit:** -	**Min:**	0.01
P-Group:	MOTOR	**active:** Immediately	**QuickComm.** Y	**Def:**	0.75
				Max:	2000.00

Nominal motor power [kW] from rating plate.

Dependency:

If P0100 = 1, values will be in [hp] - see diagram P0304 (rating plate).
Changeable only when P0010 = 1.

P0308 **Rated motor cosPhi** Level: **2**

CStat:	C	**Datatype:** Float	**Unit:** -	**Min:**	0.000
P-Group:	MOTOR	**active:** Immediately	**QuickComm.** Y	**Def:**	0.000
				Max:	1.000

Nominal motor power factor (cosPhi) from rating plate - see diagram P0304.

Dependency:

Changeable only when P0010 = 1.
Visible only when P0100 = 0 or 2, (motor power entered in [kW]).
Setting 0 causes internal calculation of value (see r0332).

P0309 **Rated motor efficiency** Level: **2**

CStat:	C	**Datatype:** Float	**Unit:** %	**Min:**	0.0
P-Group:	MOTOR	**active:** Immediately	**QuickComm.** Y	**Def:**	0.0
				Max:	99.9

Nominal motor efficiency [%] from rating plate.

Dependency:

Changeable only when P0010 = 1.
Visible only when P0100 = 1, (i.e. motor power entered in [hp]).
Setting 0 causes internal calculation of value (see r0332).

Details:

See diagram in P0304 (rating plate)

P0310 **Rated motor frequency** Level: **1**

CStat:	C	**Datatype:** Float	**Unit:** Hz	**Min:**	12.00
P-Group:	MOTOR	**active:** Immediately	**QuickComm.** Y	**Def:**	50.00
				Max:	650.00

Nominal motor frequency [Hz] from rating plate.

Dependency:

Changeable only when P0010 = 1.
Pole pair number recalculated automatically if parameter is changed.

Details:

See diagram in P0304 (rating plate)

P0311 **Rated motor speed** Level: **1**

CStat:	C	**Datatype:** U16	**Unit:** 1/min	**Min:**	0
P-Group:	MOTOR	**active:** Immediately	**QuickComm.** Y	**Def:**	0
				Max:	40000

Nominal motor speed [rpm] from rating plate.

Dependency:

Changeable only when P0010 = 1.
Setting 0 causes internal calculation of value.
Required for vector control and V/F control with speed controller.
Slip compensation in V/F control requires rated motor speed for correct operation.
Pole pair number recalculated automatically if parameter is changed. \DEPENDENCY>

Details:

See diagram in P0304 (rating plate)

r0313 **Motor pole pairs** Level: **3**

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	MOTOR	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays number of motor pole pairs that the inverter is currently using for internal calculations.

Dependency:

Recalculated automatically when P0310 (rated motor frequency) or P0311 (rated motor speed) is changed.

Value:

1 = 2-pole motor
2 = 4-pole motor
etc.

P0320 **Motor magnetizing current** Level: **3**

CStat:	CT	**Datatype:** Float	**Unit:** %	**Min:**	0.0
P-Group:	MOTOR	**active:** Cornfirm	**QuickComm.** Y	**Def:**	0.0
				Max:	99.0

Defines motor magnetization current as [%] of full load current.

Dependency:

Setting 0 causes calculation by P0340 = 1 (data entered from rating plate) or by P3900 = 1 or 2 (end of quick commissioning).

r0330 **Rated motor slip** Level: **3**

CStat:	-	**Datatype:** Float	**Unit:** %	**Min:**	-
P-Group:	MOTOR	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays nominal motor slip (in [%]) based on nominal motor frequency (P0310) and nominal motor speed (P0311).

r0331 **Rated magnetization current** Level: **3**

CStat:	-	**Datatype:** Float	**Unit:** A	**Min:**	-
P-Group:	MOTOR	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays calculated magnetizing current of motor in [A].

r0332 **Rated power factor** Level: **3**

CStat:	-	**Datatype:** Float	**Unit:** -	**Min:**	-
P-Group:	MOTOR	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays power factor for motor

Dependency:

Value is calculated internally if P0308 (rated motor cosPhi) set to 0; otherwise, value entered in P0398 is displayed.

P0335 **Motor cooling** Level: **2**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	MOTOR	**active:** Immediately	**QuickComm.** Y	**Def:**	0
				Max:	1

Selects motor cooling system used.

Possible Settings:

0 Self-cooled: Using shaft mounted fan attached to motor
1 Force-cooled: Using separately powered cooling fan

Notice:

Motors of series 1LA1 and 1LA8 have an internal fan. This internal fan must not be confused with the fan at the end of the motor shaft.

P0340 **Calculation of motor parameters** Level: **2**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	MOTOR	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	1

Calculates various motor parameters, including
1. Motor weight P0344 (Level 3)
2. Stator resistance P0350 (Level 2)
3. Magnetization time P0346 (Level 3)
4. Demagnetization time P0347 (Level 3)
5. Reference frequency P2000 (Level 2)
6. Reference current P2002 (Level 3).

Possible Settings:

0 No calculation
1 Complete parameterization

Note:

This parameter is required during commissioning to optimize inverter performance.

P0344 **Motor weight** Level: **3**

CStat:	CUT	**Datatype:** Float	**Unit:** kg	**Min:**	1.0
P-Group:	MOTOR	**active:** Cornfirm	**QuickComm.** -	**Def:**	9.4
				Max:	6500.0

Specifies motor weight [kg].

Note:

This value is used in the motor thermal model.
It is normally calculated automatically from P0340 (motor parameters) but can also be entered manually.

P0346 **Magnetization time** Level: **3**

CStat:	CUT	**Datatype:** Float	**Unit:** s	**Min:**	0.000
P-Group:	MOTOR	**active:** Cornfirm	**QuickComm.** -	**Def:**	1.000
				Max:	20.000

Sets magnetization time [s], i.e. waiting time between pulse enable and start of ramp-up. Motor magnetization builds up during this time.
Magnetization time is normally calculated automatically from the motor data and corresponds to the rotor time constant (r0384).

Note:

If boost settings are higher than 100 %, magnetization may be reduced.

Notice:

An excessive reduction of this time can result in insufficient motor magnetization.

P0347 **Demagnetization time** Level: **3**

CStat:	CUT	**Datatype:** Float	**Unit:** s	**Min:**	0.000
P-Group:	MOTOR	**active:** Cornfirm	**QuickComm.** -	**Def:**	1.000
				Max:	20.000

Changes time allowed after OFF2 / fault condition, before pulses can be re-enabled.

Note:

The demagnetization time is approximately 2.5 x rotor time constant (r0384) in seconds.

Notice:

Not active following a normally completed ramp-down, e.g. after OFF1 or JOG.
Overcurrent trips will occur if the time is decreased excessively.

P0350 **Stator resistance (line-to-line)** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** Ohm	**Min:**	0.00001
P-Group:	MOTOR	**active:** Cornfirm	**QuickComm.** -	**Def:**	4.0
				Max:	2000.0

Stator resistance value in [Ohms] for connected motor (from line-to-line). There are three ways to determine the value for this parameter:
1. Calculate using P0340 = 1 (data entered from rating plate), P3900 = 1,2 or 3 (end of quick commissioning)
2. Measure using P1910 = 1 (motor data identification - value for stator resistance is overwritten)
3. Measurement manually using an Ohmmeter.

Note:
The value entered in P0350 (stator resistance) is the one obtained by the method last used.

r0384 **Rotor time constant** Level: **3**

CStat:	-	**Datatype:** Float	**Unit:** ms	**Min:**	-
P-Group:	MOTOR	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays calculated rotor time constant [ms].

r0395 **Total stator resistance [%]** Level: **3**

CStat:	-	**Datatype:** Float	**Unit:** %	**Min:**	-
P-Group:	MOTOR	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Stator resistance of motor as [%] of combined stator/cable resistance.

Notice:
Values greater than 25 % tend to produce excessive motor slip. Check rated motor speed [rpm] value (P0311) or check that motor cable is not too long.

P0610 **Motor I2t temperature reaction** Level: **3**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	MOTOR	**active:** Immediately	**QuickComm.** -	**Def:**	2
				Max:	2

Defines reaction when motor I2t reaches warning threshold.

Dependency:
Trip level = P0614 (motor I2t overload warning level) * 110%

Possible Settings:

0	No reaction, warning only
1	Warning and Imax reduction (results in reduced output freq.)
2	Warning and trip (F0011)

P0611 **Motor I2t time constant** Level: **2**

CStat:	CT	**Datatype:** U16	**Unit:** s	**Min:**	0
P-Group:	MOTOR	**active:** Cornfirm	**QuickComm.** -	**Def:**	100
				Max:	16000

Defines motor thermal time constant and is calculated automatically from the motor data (see P0340).

Notice:
A larger number increases the time taken for the calculated motor temperature to change.

P0614 **Motor I2t overload warning level** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** %	**Min:**	0.0
P-Group:	MOTOR	**active:** Immediately	**QuickComm.** -	**Def:**	100.0
				Max:	400.0

Defines the [%] value at which warning A0511 (inverter overtemperature) is generated.
Inverter I2t calculation is used to estimate a maximum tolerable period (i.e. without overheating) for inverter overload. The I2t calculation value is deemed = 100% when this maximum tolerable period is reached (see r0034).

Dependency:
A motor over-temperature trip (F0011) is produced at 110% of this level.

P0640 **Motor overload factor [%]** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** %	**Min:**	0.0
P-Group:	MOTOR	**active:** Cornfirm	**QuickComm.** Y	**Def:**	150.0
				Max:	400.0

Defines instantaneous motor current limit as [%] of nominal motor current.

Dependency:
Limited to 150 % of the nominal inverter current (r0207) or to 400 % of motor current (whichever is the lower).

P0700 **Selection of command source** Level: **1**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** Y	**Def:**	2
				Max:	6

Selects digital command source.

Possible Settings:

0	Factory default setting
1	BOP / AOP (keypad)
2	Terminal
4	USS on BOP link
5	USS on COM link
6	CB on COM link

Note:
Changing this parameter resets (to default) all settings on item selected. For example: Changing form 1 to 2 resets all digital inputs to default settings.

P0701 **Function of digital input1** Level: **2**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	1
				Max:	99

Selects function of digital input 1.

Dependency:

Requires P0700 (command source) or P3900 (end of quick commissioning) = 1, 2 or P0970 (factory reset) = 1 to reset.

Possible Settings:

0	Digital input disabled
1	ON/OFF1
2	ON reverse /OFF1
3	OFF2 - coast to standstill
4	OFF3 - quick ramp-down
9	Fault acknowledge
10	JOG right
11	JOG left
12	Reverse
13	MOP up (increase freq.)
14	MOP down (decrease freq.)
15	Fixed setpoint (binary coded)
16	Fixed setpoint + ON (binary coded)
17	Fixed setpoint (binary coded decimal (BCD))
21	Local/remote
25	DC brake enable
29	External trip
33	Disable additional freq setpoint
99	Enable BICO parameterization

Notice:

Setting 99 (BICO) for expert use only.

P0702 **Function of digital input2** Level: **2**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	12
				Max:	99

Selects function of digital input 2.

Details:

See P0701.

Possible Settings:

0	Digital input disabled
1	ON/OFF1
2	ON reverse /OFF1
3	OFF2 - coast to standstill
4	OFF3 - quick ramp-down
9	Fault acknowledge
10	JOG right
11	JOG left
12	Reverse
13	MOP up (increase freq.)
14	MOP down (decrease freq.)
15	Fixed setpoint (binary coded)
16	Fixed setpoint + ON (binary coded)
17	Fixed setpoint (binary coded decimal (BCD))
21	Local/remote
25	DC brake enable
29	External trip
33	Disable additional freq setpoint
99	Enable BICO parameterization

P0703	**Function of digital input3**			**Min:**	0	Level:
	CStat: CT	**Datatype:** U16	**Unit:** -	**Def:**	9	**2**
	P-Group: COMMANDS	**active:** Immediately	**QuickComm.** -	**Max:**	99	

Selects function of digital input 3.

Details:

See P0701.

Possible Settings:

0	Digital input disabled
1	ON/OFF1
2	ON reverse /OFF1
3	OFF2 - coast to standstill
4	OFF3 - quick ramp-down
9	Fault acknowledge
10	JOG right
11	JOG left
12	Reverse
13	MOP up (increase freq.)
14	MOP down (decrease freq.)
15	Fixed setpoint (binary coded)
16	Fixed setpoint + ON (binary coded)
17	Fixed setpoint (binary coded decimal (BCD))
21	Local/remote
25	DC brake enable
29	External trip
33	Disable additional freq setpoint
99	Enable BICO parameterization

P0704	**Function of digital input4**			**Min:**	0	Level:
	CStat: CT	**Datatype:** U16	**Unit:** -	**Def:**	0	**2**
	P-Group: COMMANDS	**active:** Immediately	**QuickComm.** -	**Max:**	99	

Selects function of digital input 4 (via analog input).

Details:

See P0701.

Possible Settings:

0	Digital input disabled
1	ON/OFF1
2	ON reverse /OFF1
3	OFF2 - coast to standstill
4	OFF3 - quick ramp-down
9	Fault acknowledge
10	JOG right
11	JOG left
12	Reverse
13	MOP up (increase freq.)
14	MOP down (decrease freq.)
15	Fixed setpoint (binary coded)
16	Fixed setpoint + ON (binary coded)
17	Fixed setpoint (binary coded decimal (BCD))
21	Local/remote
25	DC brake enable
29	External trip
33	Disable additional freq setpoint
99	Enable BICO parameterization

Notice:

Signals above 4 V are active, signals below 1.6 V are inactive.

P0719[2] Selection of cmd. & freq. setp. Level: **3**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	66

Central switch to select control command source for inverter. Switch command and setpoint source between free programmable BICO parameters and fixed command/setpoint profiles. Command and setpoint source can be changed independently. The tens digit chooses the command source and the units digit chooses the setpoint source.
The two indices of this parameter are used for local/remote switching. The local/remote signal switches between these settings. The default setting is 0 for the first index, which means the normal parameterization is active. The second index is Control via BOP. Activating the local/remote signal will then switch to BOP.

Possible Settings:

0	Cmd = BICO parameter	Setpoint = BICO parameter
1	Cmd = BICO parameter	Setpoint = MOP setpoint
2	Cmd = BICO parameter	Setpoint = Analog setpoint
3	Cmd = BICO parameter	Setpoint = Fixed frequency
4	Cmd = BICO parameter	Setpoint = USS on BOP link
5	Cmd = BICO parameter	Setpoint = USS on COM link
6	Cmd = BICO parameter	Setpoint = CB on COM link
10	Cmd = BOP	Setpoint = BICO parameter
11	Cmd = BOP	Setpoint = MOP setpoint
12	Cmd = BOP	Setpoint = Analog setpoint
13	Cmd = BOP	Setpoint = Fixed frequency
14	Cmd = BOP	Setpoint = USS on BOP link
15	Cmd = BOP	Setpoint = USS on COM link
16	Cmd = BOP	Setpoint = CB on COM link
20	Cmd = Terminals	Setpoint = BICO parameter
21	Cmd = Terminals	Setpoint = MOP setpoint
22	Cmd = Terminals	Setpoint = Analog setpoint
23	Cmd = Terminals	Setpoint = Fixed frequency
24	Cmd = Terminals	Setpoint = USS on BOP link
25	Cmd = Terminals	Setpoint = USS on COM link
26	Cmd = Terminals	Setpoint = CB on COM link
40	Cmd = USS on BOP link	Setpoint = BICO parameter
41	Cmd = USS on BOP link	Setpoint = MOP setpoint
42	Cmd = USS on BOP link	Setpoint = Analog setpoint
43	Cmd = USS on BOP link	Setpoint = Fixed frequency
44	Cmd = USS on BOP link	Setpoint = USS on BOP link
45	Cmd = USS on BOP link	Setpoint = USS on COM link
46	Cmd = USS on BOP link	Setpoint = CB on COM link
50	Cmd = USS on COM link	Setpoint = BICO parameter
51	Cmd = USS on COM link	Setpoint = MOP setpoint
52	Cmd = USS on COM link	Setpoint = Analog setpoint
53	Cmd = USS on COM link	Setpoint = Fixed frequency
54	Cmd = USS on COM link	Setpoint = USS on BOP link
55	Cmd = USS on COM link	Setpoint = USS on COM link
56	Cmd = USS on COM link	Setpoint = CB on COM link
60	Cmd = CB on COM link	Setpoint = BICO parameter
61	Cmd = CB on COM link	Setpoint = MOP setpoint
62	Cmd = CB on COM link	Setpoint = Analog setpoint
63	Cmd = CB on COM link	Setpoint = Fixed frequency
64	Cmd = CB on COM link	Setpoint = USS on BOP link
65	Cmd = CB on COM link	Setpoint = USS on COM link
66	Cmd = CB on COM link	Setpoint = CB on COM link

Index:

P0719[0] : 1st Control source (Remote)
P0719[1] : 2nd Control source (Local)

Note:

Prevously made BICO conenctions are not changed.

r0720 Number of digital inputs Level: **3**

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	COMMANDS	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays number of digital inputs.

r0722 **CO/BO: Binary input values** Level: **2**

CStat: - **Datatype:** U16 **Unit:** - **Min:** -
P-Group: COMMANDS **active:** - **QuickComm.** - **Def:** - **Max:** -

Displays status of digital inputs.

Bitfields:

Bit00	Digital input 1	0	OFF
		1	ON
Bit01	Digital input 2	0	OFF
		1	ON
Bit02	Digital input 3	0	OFF
		1	ON
Bit03	Digital input 4 (via ADC)	0	OFF
		1	ON

Note:

Segment is lit when signal is active.

P0724 **Debounce time for digital inputs** Level: **3**

CStat: CT **Datatype:** U16 **Unit:** - **Min:** 0
P-Group: COMMANDS **active:** Cornfirm **QuickComm.** - **Def:** 3 **Max:** 3

Defines debounce time (filtering time) used for digital inputs.

Possible Settings:

0 No debounce time
1 2.5 ms debounce time
2 8.2 ms debounce time
3 12.3 ms debounce time

P0725 **PNP / NPN digital inputs** Level: **3**

CStat: CT **Datatype:** U16 **Unit:** - **Min:** 0
P-Group: COMMANDS **active:** Cornfirm **QuickComm.** - **Def:** 1 **Max:** 1

Switches between active high (PNP) and active low (NPN).

Value:

NPN: Terminals 5/6/7 must be connected via terminal 9 (O V).
PNP: Terminals 5/6/7 must be connected via terminal 8 (24 V).

Possible Settings:

0 NPN mode ==> low active
1 PNP mode ==> high active

r0730 **Number of digital outputs** Level: **3**

CStat: - **Datatype:** U16 **Unit:** - **Min:** -
P-Group: COMMANDS **active:** - **QuickComm.** - **Def:** - **Max:** -

Displays number of digital outputs (relays).

P0731 **BI: Function of digital output** Level: **2**

CStat: CUT **Datatype:** U32 **Unit:** - **Min:** 0:0
P-Group: COMMANDS **active:** Immediately **QuickComm.** - **Def:** 52:3 **Max:** 4000:0

Defines source of digital output.

Most Common Settings:

52.0	"Inverter ready"	0	Closed
52.1	"Inverter ready to run"	0	Closed
52.2	"Inverter running"	0	Closed
52.3	"Inverter fault active"	0	Closed
52.4	"OFF2 active"	1	Closed
52.5	"OFF3 active"	1	Closed
52.6	"Switch on inhibit active"	0	Closed
52.7	"Inverter warning active"	0	Closed
52.8	"Deviation setpoint/actual value"	1	Closed
52.9	"PZD control (Process Data Control)"	0	Closed
52.A	"Maximum frequency reached"	0	Closed
52.B	"Warning: Motor current limit"	1	Closed
52.C	"Motor holding brake (MHB) active"	0	Closed
52.D	"Motor overload"	1	Closed
52.E	"Motor running direction right"	0	Closed
52.F	"Inverter overload"	1	Closed
53.0	"DC brake active"	0	Closed
53.1	"Inverter freq. less switch off limit"	0	Closed
53.2	"Inverter freq. less minimum freq."	0	Closed
53.3	"Current greater or equal than limit"	0	Closed
53.4	"Act. freq. greater comparison freq."	0	Closed
53.5	"Act. freq. less comparison freq."	0	Closed
53.6	"Act. freq. greater/equal setpoint"	0	Closed
53.7	"Voltage less than threshold"	0	Closed
53.8	"Voltage greater than threshold"	0	Closed
53.A	"PID output at lower limit (P2292)"	0	Closed
53.B	"PID output at upper limit (P2291)"	0	Closed

Note:
Other settings are possible in "Expert" mode (see P0003 - user access level).

r0747 **CO/BO: State of digital outputs** Level: **3**

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	COMMANDS	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays status of digital outputs (also includes inversion of digital outputs via P0748).

Dependency:

Bit 0 0 = relay de-energized / contacts open
1 = relay energized / contacts closed

Bitfields:

Bit00	Digital output 1 energized	0	NO
		1	YES

P0748 **Invert digital outputs** Level: **3**

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	1

Defines high and low states of relay for a given function.

Bitfields:

Bit00	Invert digital output 1	0	NO
		1	YES

r0750 **Number of ADCs** Level: **3**

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	TERMINAL	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays number of analog inputs (ADCs) available.

r0752 **Act. input of ADC [V]** Level: **2**

CStat:	-	**Datatype:** Float	**Unit:** -	**Min:**	-
P-Group:	TERMINAL	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays smoothed analog input value in volts before the characteristic block.

P0753 **Smooth time ADC** Level: **3**

CStat:	CUT	**Datatype:** U16	**Unit:** ms	**Min:**	0
P-Group:	TERMINAL	**active:** Immediately	**QuickComm.** -	**Def:**	3
				Max:	10000

Defines filter time (PT1 filter) in [ms] for analog input.
<DEPENDECNCY>

0 = No filtering

Notice:
Increasing this time (smooth) reduces jitter on display (separate point!) and analog setpoint but slows the response to the analog input.

r0754 **Act. ADC value after scaling [%]** Level: **2**

CStat:	-	**Datatype:** Float	**Unit:** %	**Min:**	-
P-Group:	TERMINAL	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Shows smoothed value of analog input in [%] after scaling block.

Dependency:
P0757 to P0760 define range (ADC scaling)

r0755 **CO: Act. ADC after scal. [4000h]** Level: **2**

CStat:	-	**Datatype:** I16	**Unit:** -	**Min:**	-
P-Group:	TERMINAL	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays analog input, scaled using ASPmin and ASPmax.
Analog setpoint (ASP) from the analog scaling block can vary from min. analog setpoint (ASPmin) to a max. analog setpoint (ASPmax) as shown in P0757 (ADC scaling).
The largest magnitude (value without sign) of ASPmin and ASPmax defines the scaling of 16384.

Example:
ASPmin = 300 %, ASPmax = 100 % then 16384 represents 300 %. This parameter will vary from 5461 to 16364
ASPmin = -200 %, ASPmax = 100 % then 16384 represents 200 %. This parameter will vary from -16384 to +8192

Note:
This value is used as an input to analog BICO connectors.
ASPmax represents the highest analog setpoint (this may be at 10 V)
ASPmin represents the lowest analog setpoint (this may be at 0 V)

P0756 **Type of ADC** Level: **2**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	TERMINAL	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	1

Defines type of analog input (ADC) and also enables analog input monitoring.

Dependency:

Function disabled if analog scaling block programmed to output negative setpoints (see P0757 to P0760).

Possible Settings:

0 Unipolar voltage input (0 to +10 [V])
1 Unipolar voltage input with monitoring (0 to 10 [V])

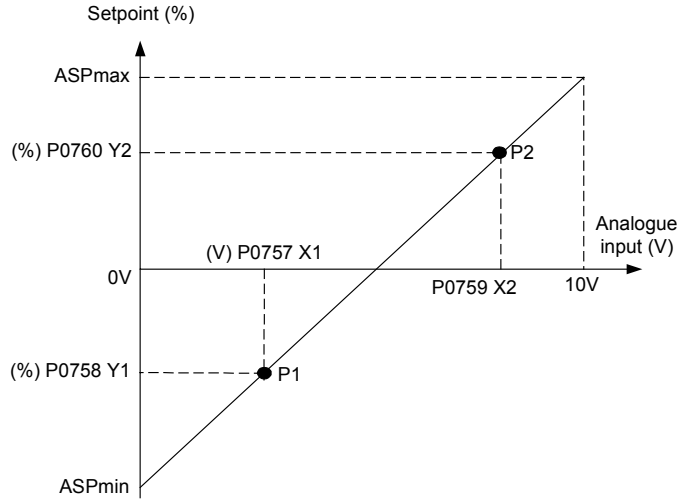
Notice:

When monitoring is enabled and a deadband defined (P0761), a fault condition will be generated (F0080) if the analog input voltage falls below 50 % of the deadband voltage.

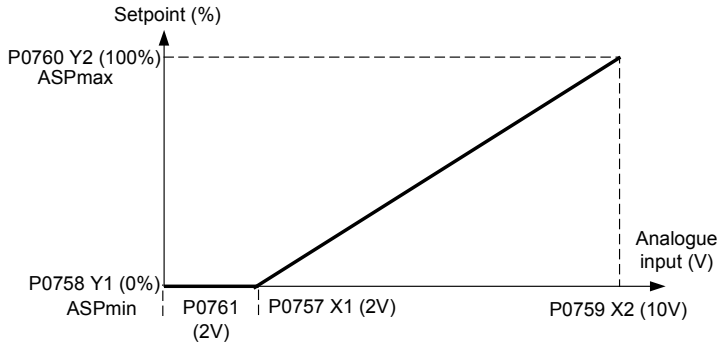
P0757 **Value x1 of ADC-scaling** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** V	**Min:**	0
P-Group:	TERMINAL	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	10

Parameters P0757 - P0760 configure the input scaling as shown in the diagrams below:



Alternative options:



Where: Analog setpoints represent a [%] of the normalized frequency in P2000. Analog setpoints may be larger than 100 % ASPmax represents highest analog setpoint (this may be at 10 V). ASPmin represents lowest analog setpoint (this may be at 0 V). Default values provide a scaling of 0 V = 0 %, and 10 V = 100 %.

P0758 **Value y1 of ADC-scaling** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** %	**Min:**	-99999.9
P-Group:	TERMINAL	**active:** Immediately	**QuickComm.** -	**Def:**	0.0
				Max:	99999.9

Sets value of Y1 as described in P0757 (ADC scaling)

P0759 **Value x2 of ADC-scaling** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** V	**Min:**	0
P-Group:	TERMINAL	**active:** Immediately	**QuickComm.** -	**Def:**	10
				Max:	10

Sets value of X2 as described in P0757 (ADC scaling)

P0760 **Value y2 of ADC-scaling** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** %	**Min:**	-99999.9
P-Group:	TERMINAL	**active:** Immediately	**QuickComm.** -	**Def:**	100.0
				Max:	99999.9

Sets value of Y2 as described in P0757 (ADC scaling)

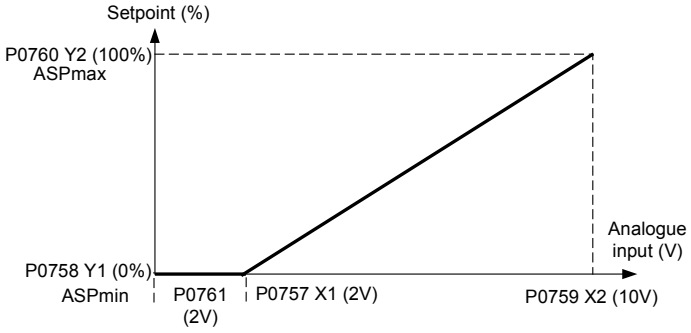
P0761 **Width of ADC deadband** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** V	**Min:**	0
P-Group:	TERMINAL	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	10

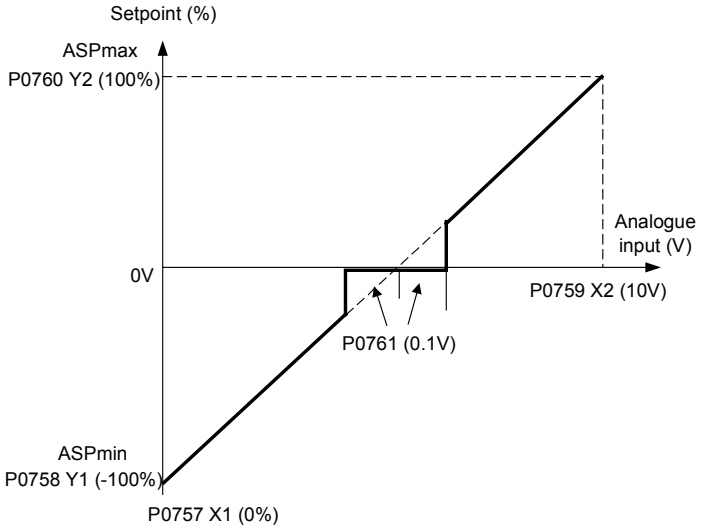
Defines width of deadband on analog input. The diagrams below explain its use

Example:

ADC value 2 to 10 V (0 to 50 Hz) The above example produces a 2 to 10 V analog input (0 to 50 Hz) P0757 = 2 V P0761 = 2 V P2000 = 50 Hz



ADC value 2 to 10 V (-50 to +50 Hz) The above example produces a 2 to 10 V analog input (-50 to +50 Hz) with center zero and a "holding point" 0.2 V wide. P0758 = -100 % P0761 = 0.1 (0.1 V to each side of center)



Dependency:

0 = no deadband active.

Notice:

Deadband starts from 0 V to value of P0761, if both values of P0758 and P0760 (y-coordinates of ADC-scaling) are positive or negative respectively. However, deadband is active in both directions from point of intersection (x-axis with ADC-scaling curve), if sign of P0758 and P0760 are opposite.
Fmin (P1080) should be zero when using center zero setup. There is no hysterisis at the end of the deadband.

P0762 **Delay for loss of signal action** Level: **3**

CStat:	CUT	**Datatype:** U16	**Unit:** ms	**Min:**	0
P-Group:	TERMINAL	**active:** Cornfirm	**QuickComm.** -	**Def:**	10
				Max:	10000

Defines time delay between loss of analog setpoint and appearance of fault code F0080.

Note:

Expert users can choose the desired reaction to F0080 (default is OFF2).

r0770 **Number of DACs** Level: **3**

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	TERMINAL	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays number of analog outputs (DACs) available.

Note:

Always set to 1 on MM420.

P0771 **CI: DAC** Level: **2**

CStat:	CUT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	TERMINAL	**active:** Immediately	**QuickComm.** -	**Def:**	21:0
				Max:	4000:0

Defines function of the 0 - 20 [mA] analog output (DAC).

Most Common Settings:

21	CO: Act. frequency	(scaled to P2000)
24	CO: Act. output frequency	(scaled to P2000)
25	CO: Act. output voltage	(scaled to P2001)

26	CO: Act. DC-link voltage	(scaled to P2001)
27	CO: Act. output current	(scaled to P2002)

Details:

Other values in relevant parameter descriptions.

P0773 **Smooth time DAC** — Level: **3**

CStat:	CUT	**Datatype:** U16	**Unit:** ms	**Min:**	0
P-Group:	TERMINAL	**active:** Immediately	**QuickComm.** -	**Def:**	2
				Max:	1000

Defines smoothing time [ms] for analog output signal. This parameter enables the input of the DAC to be smoothed using a PT1 filter. This parameter enables smoothing for DAC input using a PT1 filter.

Dependency:

0.0 deactivates filter.

r0774 **Act. DAC value [mA]** — Level: **2**

CStat:	-	**Datatype:** Float	**Unit:** -	**Min:**	-
P-Group:	TERMINAL	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Shows value of analog output in [V] or [mA] after filtering and scaling.

P0776 **Type of DAC** — Level: **3**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	TERMINAL	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	0

Defines type of analog output (DAC).

Possible Settings:

0 Current output

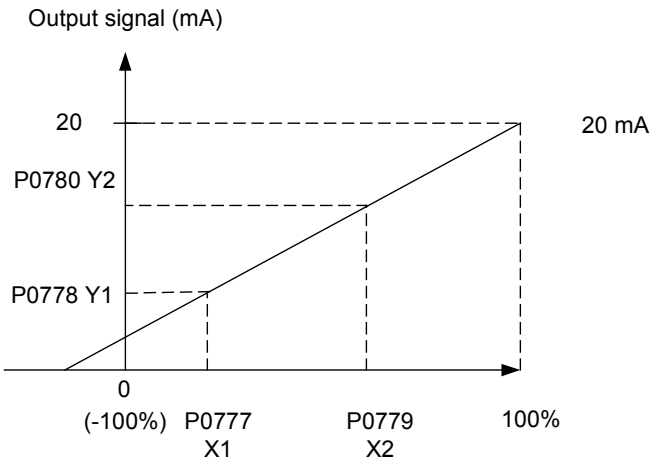
Note:

Only index setting [0] (current output) is possible on MM420.

P0777 **Value x1 of DAC-scaling** — Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** %	**Min:**	-99999.0
P-Group:	TERMINAL	**active:** Immediately	**QuickComm.** -	**Def:**	0.0
				Max:	99999.0

Defines x1 output characteristic. Scaling block is responsible for adjustment of output value defined in P0771 (DAC connector input).
Parameters of DAC scaling block (P0777 ... P0781) work as follows:



Where

Points P1 (x1, y1) and P2 (x2, y2) can be chosen freely.

Example:

The default values of the scaling block provides a scaling of
P1: 0.0 % = 0 [mA] or [V] and P2: 100.0 % = 20 [mA] or [V].

P0778 **Value y1 of DAC-scaling** — Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** -	**Min:**	0
P-Group:	TERMINAL	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	20

Defines y1 of output characteristic.

P0779 **Value x2 of DAC-scaling** — Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** %	**Min:**	-99999.0
P-Group:	TERMINAL	**active:** Immediately	**QuickComm.** -	**Def:**	100.0
				Max:	99999.0

Defines x2 of output characteristic.

P0780 **Value y2 of DAC-scaling** — Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** -	**Min:**	0
P-Group:	TERMINAL	**active:** Immediately	**QuickComm.** -	**Def:**	20
				Max:	20

Defines y2 of output characteristic.

P0781 **Width of DAC deadband** — Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** -	**Min:**	0
P-Group:	TERMINAL	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	20

Sets width of dead-band in [mA] for analog output.

P0800	BI: Download parameter set 0			Min:	0:0	Level:
	CStat: CT	Datatype: U32	Unit: -	Def:	0:0	3
	P-Group: COMMANDS	active: Immediately	QuickComm. -	Max:	4000:0	

Defines source of command to start download of parameter set 0 from attached AOP. The first three digits describe the parameter number of the command source, the last digit refers to the bit setting for that parameter.

Most Common Settings:

722.0 = Digital input 1 (requires P0701 to be set to 99, BICO)
722.1 = Digital input 2 (requires P0702 to be set to 99, BICO)
722.2 = Digital input 3 (requires P0703 to be set to 99, BICO)

Note:

Signal of digital input:
0 = No download
1 = Start download parameter set 0 from AOP.

P0801	BI: Download parameter set 1			Min:	0:0	Level:
	CStat: CT	Datatype: U32	Unit: -	Def:	0:0	3
	P-Group: COMMANDS	active: Immediately	QuickComm. -	Max:	4000:0	

Defines sources of command to start download of parameter set 1 from attached AOP. The first three digits describe the parameter number of the command source, the last digit refers to the bit setting for that parameter.
722.0 = Digital input 1 (requires P0701 to be set to 99)
722.1 = Digital input 2 (requires P0702 to be set to 99)
722.2 = Digital input 3 (requires P0703 to be set to 99)

Note:

Signal of digital input:
0 = No download
1 = Start download parameter set 1 from AOP.

P0810	BI: CDS bit0 (Local / Remote)			Min:	0:0	Level:
	CStat: CUT	Datatype: U32	Unit: -	Def:	0:0	2
	P-Group: COMMANDS	active: Immediately	QuickComm. -	Max:	4095:0	

Selects command source from which to read Bit 0 for selecting a BICO data set (see control word 1, Bit 15).

Note:

Bit 1 is also relevant for BICO data set selection.

P0840	BI: ON/OFF1			Min:	0:0	Level:
	CStat: CT	Datatype: U32	Unit: -	Def:	722:0	3
	P-Group: COMMANDS	active: Immediately	QuickComm. -	Max:	4000:0	

Allows ON/OFF1 command source to be selected using BICO. The first three digits describe the parameter number of the command source; the last digit denotes the bit setting for that parameter.

Most Common Settings:

722.0 = Digital input 1 (requires P0701 to be set to 99)
722.1 = Digital input 2 (requires P0702 to be set to 99)
722.2 = Digital input 3 (requires P0703 to be set to 99)
722.3 = Digital input 4 (using ADC, requires P0704 to be set to 99)
19.0 = ON/OFF1 via BOP/AOP

Dependency:

Active only when P0719 = 0 (remote selection of command/setpoint source).
BICO requires P0700 set to 2 (enable BICO).
The default setting (ON right) is digital input 1 (722.0). Alternative source possible only when function of digital input 1 is changed (via P0701) before changing value of P0840.

P0842	BI: ON/OFF1 reverse			Min:	0:0	Level:
	CStat: CT	Datatype: U32	Unit: -	Def:	0:0	3
	P-Group: COMMANDS	active: Immediately	QuickComm. -	Max:	4000:0	

Allows ON/OFF1 reverse command source to be selected using BICO. The first three digits describe the parameter number of the command source and the last digit denotes the bit setting for that parameter.

Most Common Settings:

722.0 = Digital input 1 (requires P0701 to be set to 99)
722.1 = Digital input 2 (requires P0702 to be set to 99)
722.2 = Digital input 3 (requires P0703 to be set to 99)
722.3 = Digital input 4 (using ADC, requires P0704 to be set to 99)
19.0 = ON/OFF1 via BOP/AOP

Dependency:
Active only when P0719 = 0 (remote selection of command/setpoint source).

P0844	**BI: 1. OFF2**					Level:
	CStat: CT	**Datatype:** U32	**Unit:** -	**Min:** 0:0		**3**
	P-Group: COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:** 1:0	**Max:** 4000:0	

Defines first source of OFF2 when P0719 = 0 (BICO). The first three digits describe the parameter number of the command source and the last digit denotes the bit setting for that parameter.

Most Common Settings:

722.0 = Digital input 1 (requires P0701 to be set to 99)
722.1 = Digital input 2 (requires P0702 to be set to 99)
722.2 = Digital input 3 (requires P0703 to be set to 99)
722.3 = Digital input 4 (using ADC, requires P0704 to be set to 99)
19.1 = OFF2: Electrical stop via BOP/AOP

Dependency:
Active only when P0719 = 0 (remote selection of command/setpoint source).
If one of the digital inputs is selected for OFF2, the inverter will not run unless the digital input is active.

Note:
OFF2 means immediate pulse-disabling; the motor is coasting. OFF2 is low-active, i.e. :
0 = Pulse disabling.
1 = Operating condition.

P0845	**BI: 2. OFF2**					Level:
	CStat: CT	**Datatype:** U32	**Unit:** -	**Min:** 0:0		**3**
	P-Group: COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:** 19:1	**Max:** 4000:0	

Defines second source of OFF2 when P0719 = 0 (BICO). The first three digits describe the parameter number of the command source and the last digit denotes the bit setting for that parameter.

Most Common Settings:

722.0 = Digital input 1 (requires P0701 to be set to 99)
722.1 = Digital input 2 (requires P0702 to be set to 99)
722.2 = Digital input 3 (requires P0703 to be set to 99)
722.3 = Digital input 4 (using ADC, requires P0704 to be set to 99)
19.1 = OFF2: Electrical stop via BOP/AOP

Dependency:
Active only when P0719 = 0 (remote selection of command/setpoint source).
If one of the digital inputs is selected for OFF2, the inverter will not run unless the digital input is active.

Note:
OFF2 means immediate pulse-disabling; the motor is coasting. OFF2 is low-active, i.e. :
0 = Pulse disabling.
1 = Operating condition.

P0848	**BI: 1. OFF3**					Level:
	CStat: CT	**Datatype:** U32	**Unit:** -	**Min:** 0:0		**3**
	P-Group: COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:** 1:0	**Max:** 4000:0	

Defines first source of OFF3 when P0719 = 0 (BICO). The first three digits describe the parameter number of the command source and the last digit denotes the bit setting for that parameter.

Most Common Settings:

722.0 = Digital input 1 (requires P0701 to be set to 99)
722.1 = Digital input 2 (requires P0702 to be set to 99)
722.2 = Digital input 3 (requires P0703 to be set to 99)
722.3 = Digital input 4 (using ADC, requires P0704 to be set to 99)
19.2 = OFF3: Fast stop via BOP/AOP

Dependency:
Active only when P0719 = 0 (remote selection of command/setpoint source).
If one of the digital inputs is selected for OFF3, the inverter will not run unless the digital input is active.

Note:
OFF3 means fast ramp-down to 0.
OFF3 is low-active, i.e.
0 = Ramp-down.
1 = Operating condition.

P0849 **BI: 2. OFF3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	1:0
				Max:	4000:0

Level: **3**

Defines second source of OFF3 when P0719 = 0 (BICO). The first three digits describe the parameter number of the command source and the last digit denotes the bit setting for that parameter.

Most Common Settings:

722.0 = Digital input 1 (requires P0701 to be set to 99)
722.1 = Digital input 2 (requires P0702 to be set to 99)
722.2 = Digital input 3 (requires P0703 to be set to 99)
722.3 = Digital input 4 (using ADC, requires P0704 to be set to 99)
19.2 = OFF3: Fast stop via BOP/AOP

Dependency:

Active only when P0719 = 0 (remote selection of command/setpoint source).
If one of the digital inputs is selected for OFF3, the inverter will not run unless the digital input is active.

Note:

OFF3 means fast ramp-down to 0.
OFF3 is low-active, i.e.
0 = Ramp-down.
1 = Operating condition.

P0852 **BI: Pulse enable**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	1:0
				Max:	4000:0

Level: **3**

Defines source of pulse enable/disable signal.

Most Common Settings:

722.0 = Digital input 1
722.1 = Digital input 2
722.2 = Digital input 3

Dependency:

Active only when P0719 = 0 (remote selection of command/setpoint source).

Details:

Settings available for this parameter refer to parameter numbers that are labelled as "Connector" parameters ("CO:"). Full details are given at the relevant parameter descriptions.

P0918 **CB address**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	COMM	**active:** Immediately	**QuickComm.** -	**Def:**	3
				Max:	65535

Level: **2**

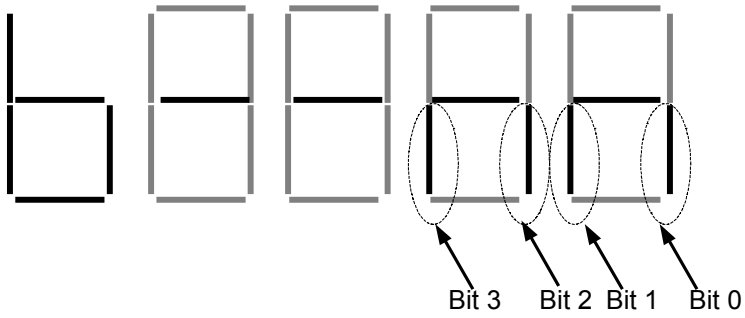
Defines address of CB (communication board) or address of the other option modules.
There are two ways to set the bus address:
1 via DIP switches on the PROFIBUS module
2 via a user-entered value

Note:

Possible PROFIBUS settings:
1 ... 125
0, 126, 127 are not allowed
The following applies when a PROFIBUS module is used:
DIP switch = 0 Address defined in P0918 (CB address) is valid
DIP switch not = 0 DIP switch setting has priority and P0918 indicates DIP switch setting.

P0927	**Parameter changeable via**			**Min:** 0	Level:
	CStat: CUT	**Datatype:** U16	**Unit:** -	**Def:** 15	**2**
	P-Group: COMM	**active:** Immediately	**QuickComm.** -	**Max:** 15	

Specifies the interfaces which can be used to change parameters. This is a binary parameter displayed as follows per default:



Example:

"b - - n n" (bits 0, 1, 2 and 3 set) in the default setting means that parameters can be changed via any interface "b - - r n" (bits 0, 1 and 3 set) would specify that parameters can be changed via PROFIBUS/CB, BOP and USS on COM link (RS485 USS) but not via USS on BOP link (RS232)

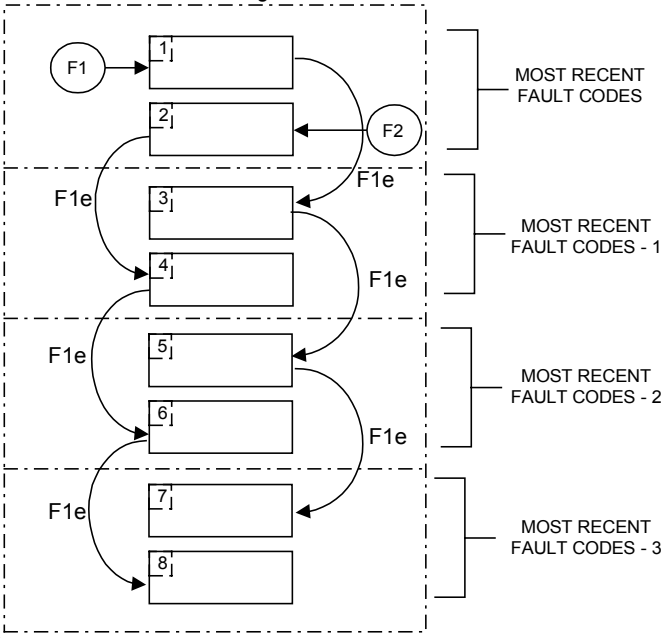
Bitfields:

Bit00	PROFIBUS / CB	0	NO
		1	YES
Bit01	BOP	0	NO
		1	YES
Bit02	USS on BOP link	0	NO
		1	YES
Bit03	USS on COM link	0	NO
		1	YES

r0947[8]	**Last fault code**			**Min:** -	Level:
	CStat: -	**Datatype:** U16	**Unit:** -	**Def:** -	**2**
	P-Group: ALARMS	**active:** -	**QuickComm.** -	**Max:** -	

Displays the fault history according to the diagram below

where: "F1" is the first active fault (not yet acknowledged). "F2" is the second active fault (not yet acknowledged). "F1e" is the occurrence of the fault acknowledgement for F1 & F2 This moves the value in the 2 indices down to the next pair of indices, where they are stored. Indices 0 & 1 contain the active faults. When faults are acknowledged, Indices 0 & 1 are reset to 0.



Example:

If the inverter trips on undervoltage and then receives an external trip before the undervoltage is acknowledged, you will obtain:
Index 0 = 3 Undervoltage
Index 1 = 85 External trip
Whenever a fault in index 0 is acknowledged (F1e), the fault history shifts as indicated in the diagram above.

Dependency:

Index 2 used only if second fault occurs before first fault is acknowledged.

Details:

See fault codes in Section 6.

Index:

r0947[0] : Recent fault trip --, faults 1 to 2
r0947[2] : Recent fault trip -1, faults 3 to 4
r0947[4] : Recent fault trip -2, faults 5 to 6
r0947[6] : Recent fault trip -3, faults 7 to 8

r0948[12]	**Fault time**			**Min:** -	Level:
	CStat: -	**Datatype:** U16	**Unit:** -	**Def:** -	**3**
	P-Group: ALARMS	**active:** -	**QuickComm.** -	**Max:** -	

Time stamp to indicate when the fault has occurred. P2114 or P2115 are the possible sources of the time stamp.

Example:

The time is taken from P2115 (real time clock) if this parameter has been updated with the real time. If not, P2114 (run-time counter) is used.

Dependency:

P2115 can be updated via AOP, PC-tool, Simivos etc. However, to do this they must provide time/date in the specified format.

Index:

r0948[0] : Recent fault trip --, fault time seconds+minutes
r0948[1] : Recent fault trip --, fault time hours+days
r0948[2] : Recent fault trip --, fault time month+year
r0948[3] : Recent fault trip -1, fault time seconds+minutes
r0948[4] : Recent fault trip -1, fault time hours+days
r0948[5] : Recent fault trip -1, fault time month+year
r0948[6] : Recent fault trip -2, fault time seconds+minutes
r0948[7] : Recent fault trip -2, fault time hours+days
r0948[8] : Recent fault trip -2, fault time month+year
r0948[9] : Recent fault trip -3, fault time seconds+minutes
r0948[10] : Recent fault trip -3, fault time hours+days
r0948[11] : Recent fault trip -3, fault time month+year

P0952	**Total number of faults**			**Min:** 0	Level:
	CStat: CT	**Datatype:** U16	**Unit:** -	**Def:** 0	**3**
	P-Group: ALARMS	**active:** Immediately	**QuickComm.** -	**Max:** 8	

Displays number of faults stored in P0947 (last fault code).

Dependency:

Setting 0 resets fault history (changing to 0 also resets parameter P0948 - fault time).

r0964[5]	**Firmware version data**			**Min:** -	Level:
	CStat: -	**Datatype:** U16	**Unit:** -	**Def:** -	**3**
	P-Group: COMM	**active:** -	**QuickComm.** -	**Max:** -	

Firmware version data.

Example:

r0964[4] = 507 means 5th July.

Index:

r0964[0] : Company (Siemens = 42)
r0964[1] : Product type
r0964[2] : Firmware version
r0964[3] : Firmware date (year)
r0964[4] : Firmware date (day/month)

r0967 **Control word 1** Level: **3**

CStat: - **Datatype:** U16 **Unit:** - **Min:** -
P-Group: COMM **active:** - **QuickComm.** - **Def:** - **Max:** -

Displays control word 1.

Bitfields:

Bit00	ON/OFF1	0	NO
		1	YES
Bit01	OFF2: Electrical stop	0	YES
		1	NO
Bit02	OFF3: Fast stop	0	YES
		1	NO
Bit03	Pulse enable	0	NO
		1	YES
Bit04	RFG enable	0	NO
		1	YES
Bit05	RFG start	0	NO
		1	YES
Bit06	Setpoint enable	0	NO
		1	YES
Bit07	Fault acknowledge	0	NO
		1	YES
Bit08	JOG right	0	NO
		1	YES
Bit09	JOG left	0	NO
		1	YES
Bit10	Control from PLC	0	NO
		1	YES
Bit11	Reverse (setpoint inversion)	0	NO
		1	YES
Bit13	Motorpoti (MOP) up	0	NO
		1	YES
Bit14	Motorpoti (MOP) down	0	NO
		1	YES
Bit15	Local / Remote	0	NO
		1	YES

r0968 **Status word 1** Level: **3**

CStat: - **Datatype:** U16 **Unit:** - **Min:** -
P-Group: COMM **active:** - **QuickComm.** - **Def:** - **Max:** -

Displays active status word of inverter (in binary) and can be used to diagnose which commands are active.

Bitfields:

Bit00	Drive ready	0	NO
		1	YES
Bit01	Drive ready to run	0	NO
		1	YES
Bit02	Drive running	0	NO
		1	YES
Bit03	Drive fault active	0	NO
		1	YES
Bit04	OFF2 active	0	YES
		1	NO
Bit05	OFF3 active	0	YES
		1	NO
Bit06	Switch on inhibit active	0	NO
		1	YES
Bit07	Drive warning active	0	NO
		1	YES
Bit08	Deviation setp. / act. value	0	YES
		1	NO
Bit09	PZD control	0	NO
		1	YES
Bit10	Maximum frequency reached	0	NO
		1	YES
Bit11	Warning: Motor current limit	0	YES
		1	NO
Bit12	Motor holding brake active	0	NO
		1	YES
Bit13	Motor overload	0	YES
		1	NO
Bit14	Motor runs direction right	0	NO
		1	YES
Bit15	Inverter overload	0	YES
		1	NO

P0970 **Factory reset** Level: **1**

CStat:	C	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	PAR_RESET	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	1

P0970 = 1 resets all parameters to their default values.

Dependency:

First set P0010 = 30 (factory settings)
Stop drive (i.e. disable all pulses) before you can reset parameters to default values.

Possible Settings:

0 No parameter reset
1 Start parameter reset

Note:

The following parameters retain their values after a factory reset:
P0918 (CB address), P2010 (USS baud rate) and P2011 (USS address)

P0971 **Transfer data from RAM to EEPROM** Level: **3**

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	COMM	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	1

Transfers values from RAM to EEPROM when set to 1.

Note:

All values in RAM are transferred to EEPROM.
Parameter is automatically reset to 0 (default) after successful transfer.

P1000 **Selection of frequency setpoint** Level: **1**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	SETPOINT	**active:** Immediately	**QuickComm.** Y	**Def:**	2
				Max:	66

Selects frequency setpoint source. In the table of possible settings below, the main setpoint is selected from the least significant digit (i.e., 0 to 6) and any additional setpoint from the most significant digit (i.e., x0 through to x6).

Example:

Setting 12 selects main setpoint (2) derived from analog input with additional setpoint (1) taken from the MOP.

Most Common Settings:

1 "Motor potentiometer (MOP) setpoint"
2 "Analog input"
3 "Fixed frequency setpoint"
4 "USS via RS232"
5 "USS via RS485 terminals"
6 "Optional communication board"

Other settings including an additional setpoint can be selected using the table above.

Possible Settings:

0	No main setpoint
1	MOP setpoint
2	Analog setpoint
3	Fixed frequency
4	USS on BOP link
5	USS on COM link
6	CB on COM link
10	No main setpoint + MOP setpoint
11	MOP setpoint + MOP setpoint
12	Analog setpoint + MOP setpoint
13	Fixed frequency + MOP setpoint
14	USS on BOP link + MOP setpoint
15	USS on COM link + MOP setpoint
16	CB on COM link + MOP setpoint
20	No main setpoint + Analog setpoint
21	MOP setpoint + Analog setpoint
22	Analog setpoint + Analog setpoint
23	Fixed frequency + Analog setpoint
24	USS on BOP link + Analog setpoint
25	USS on COM link + Analog setpoint
26	CB on COM link + Analog setpoint
30	No main setpoint + Fixed frequency
31	MOP setpoint + Fixed frequency
32	Analog setpoint + Fixed frequency
33	Fixed frequency + Fixed frequency
34	USS on BOP link + Fixed frequency
35	USS on COM link + Fixed frequency
36	CB on COM link + Fixed frequency
40	No main setpoint + USS on BOP link
41	MOP setpoint + USS on BOP link
42	Analog setpoint + USS on BOP link
43	Fixed frequency + USS on BOP link
44	USS on BOP link + USS on BOP link
45	USS on COM link + USS on BOP link
46	CB on COM linkCOM link + USS on BOP link
50	No main setpoint + USS on COM link
51	MOP setpoint + USS on COM link
52	Analog setpoint + USS on COM link
53	Fixed frequency + USS on COM link
54	USS on BOP link + USS on COM link
55	USS on COM link + USS on COM link
56	CB on COM link + USS on COM link
60	No main setpoint + CB on COM link
61	MOP setpoint + CB on COM link
62	Analog setpoint + CB on COM link
63	Fixed frequency + CB on COM link
64	USS on BOP link + CB on COM link
65	USS on COM link + CB on COM link
66	CB on COM link + CB on COM link

Note:

Single digits denote main setpoints that have no additional setpoint.

P1001 **Fixed frequency 1** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** Hz	**Min:**	-650.00
P-Group:	SETPOINT	**active:** Cornfirm	**QuickComm.** -	**Def:**	0.00
				Max:	650.00

Defines fixed frequency setpoint 1.
There are 3 types of fixed frequencies:
1. Direct selection
2. Direct selection + ON command
3. Binary coded selection + ON command
1. Direct selection (P0701 - P0703 = 15)
In this mode of operation 1 digital input selects 1 fixed frequency.
If several inputs are active together, the selected frequencies are summed. E.g. (FF1 + FF2 + FF3).
2. Direct selection + ON command (P0701 - P0703 = 16)
The fixed frequency selection combines the fixed frequencies with an ON command. In this mode of operation 1 digital input selects 1 fixed frequency.
If several inputs are active together, the selected frequencies are summed.
E.g. (FF1 + FF2 + FF3).
3. Binary coded selection + ON command (P0701 - P0703 = 17)
Up to 7 fixed frequencies can be selected using this method. The fixedfrequencies are selected according to the following table:

Dependency:
Select fixed frequency operation using P1000.
Inverter requires ON command to start in the case of direct selection (P0701 - P0703 = 15)

Note:
Fixed frequencies can be selected using the digital inputs, and can also be combined with an ON command.

P1002 **Fixed frequency 2** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** Hz	**Min:**	-650.00
P-Group:	SETPOINT	**active:** Cornfirm	**QuickComm.** -	**Def:**	5.00
				Max:	650.00

Defines fixed frequency setpoint 2.

Details:
See parameter P1001 (fixed frequency 1).

P1003 **Fixed frequency 3** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** Hz	**Min:**	-650.00
P-Group:	SETPOINT	**active:** Cornfirm	**QuickComm.** -	**Def:**	10.00
				Max:	650.00

Defines fixed frequency setpoint 3.

Details:
See parameter P1001 (fixed frequency 1).

P1004 **Fixed frequency 4** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** Hz	**Min:**	-650.00
P-Group:	SETPOINT	**active:** Cornfirm	**QuickComm.** -	**Def:**	15.00
				Max:	650.00

Defines fixed frequency setpoint 4.

Details:
See parameter P1001 (fixed frequency 1).

P1005 **Fixed frequency 5** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** Hz	**Min:**	-650.00
P-Group:	SETPOINT	**active:** Cornfirm	**QuickComm.** -	**Def:**	20.00
				Max:	650.00

Defines fixed frequency setpoint 5.

Details:
See parameter P1001 (fixed frequency 1).

P1006 **Fixed frequency 6** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** Hz	**Min:**	-650.00
P-Group:	SETPOINT	**active:** Cornfirm	**QuickComm.** -	**Def:**	25.00
				Max:	650.00

Defines fixed frequency setpoint 6.

Details:
See parameter P1001 (fixed frequency 1).

P1007 **Fixed frequency 7** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** Hz	**Min:**	-650.00
P-Group:	SETPOINT	**active:** Cornfirm	**QuickComm.** -	**Def:**	30.00
				Max:	650.00

Defines fixed frequency setpoint 7.

Details:
See parameter P1001 (fixed frequency 1).

P1016	**Fixed frequency mode - Bit 0**			**Min:**	1	Level:
	CStat: CT	**Datatype:** U16	**Unit:** -	**Def:**	1	**3**
	P-Group: SETPOINT	**active:** Immediately	**QuickComm.** -	**Max:**	3	

Fixed frequencies can be selected in three different modes. Parameter P1016 defines the mode of selection Bit 0.

Possible Settings:

1 Selection of fixed frequency is binary coded
2 Selection of fixed frequency is binary coded + ON
3 Selection of fixed frequency is binary coded decimal (BCD)

Note:

Most Common Settings:

Binary coded:

	Selection Bit2	Selection Bit1	Selection Bit0
FF 1	0	0	1
FF 2	0	1	0
FF 3	1	0	0
FF 1 + FF 2	0	1	1
.	.	.	.
.	.	.	.
FF 1 + FF 2 + FF 3	1	1	1

Binary coded decimal (BCD):

	Selection Bit2	Selection Bit1	Selection Bit0
FF 1	0	0	1
FF 2	0	1	0
FF 3	0	1	1
FF 4	1	0	0
.	.	.	.
.	.	.	.
FF 7	1	1	1

where: FF denotes fixed frequency.

P1017	**Fixed frequency mode - Bit 1**			**Min:**	1	Level:
	CStat: CT	**Datatype:** U16	**Unit:** -	**Def:**	1	**3**
	P-Group: SETPOINT	**active:** Immediately	**QuickComm.** -	**Max:**	3	

Fixed frequencies can be selected in three different modes. Parameter P1017 defines the mode of selection Bit 1.

Possible Settings:

1 Selection of fixed frequency is binary coded
2 Selection of fixed frequency is binary coded + ON
3 Selection of fixed frequency is binary coded decimal (BCD)

Note:

Most Common Settings:

Binary coded:

	Selection Bit2	Selection Bit1	Selection Bit0
FF 1	0	0	1
FF 2	0	1	0
FF 3	1	0	0
FF 1 + FF 2	0	1	1
.	.	.	.
.	.	.	.
FF 1 + FF 2 + FF 3	1	1	1

Binary coded decimal (BCD):

	Selection Bit2	Selection Bit1	Selection Bit0
FF 1	0	0	1
FF 2	0	1	0
FF 3	0	1	1
FF 4	1	0	0
.	.	.	.
.	.	.	.
FF 7	1	1	1

where: FF denotes fixed frequency.

P1018 **Fixed frequency mode - Bit 2** Level: **3**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	1
P-Group:	SETPOINT	**active:** Immediately	**QuickComm.** -	**Def:**	1
				Max:	3

Fixed frequencies can be selected in three different modes. Parameter P1018 defines the mode of selection Bit 2.

Possible Settings:

1 Selection of fixed frequency is binary coded
2 Selection of fixed frequency is binary coded + ON
3 Selection of fixed frequency is binary coded decimal (BCD)

Note:

Most Common Settings:

Binary coded:

	Selection Bit2	Selection Bit1	Selection Bit0
FF 1	0	0	1
FF 2	0	1	0
FF 3	1	0	0
FF 1 + FF 2	0	1	1
.	.	.	.
.	.	.	.
FF 1 + FF 2 + FF 3	1	1	1

Binary coded decimal (BCD):

	Selection Bit2	Selection Bit1	Selection Bit0
FF 1	0	0	1
FF 2	0	1	0
FF 3	0	1	1
FF 4	1	0	0
.	.	.	.
.	.	.	.
FF 7	1	1	1

where: FF denotes fixed frequency.

P1020 **BI: Fixed freq. selection Bit 0** Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	0:0
				Max:	4000:0

Defines origin of fixed frequency selection.

Most Common Settings:

P1020 = 722.0 ==> Digital input 1
P1021 = 722.1 ==> Digital input 2
P1022 = 722.2 ==> Digital input 3

Dependency:

Accessible only if P0701 - P0703 = 99 (function of digital inputs = BICO)

P1021 **BI: Fixed freq. selection Bit 1** Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	0:0
				Max:	4000:0

Defines origin of fixed frequency selection.

Most Common Settings:

P1020 = 722.0 ==> Digital input 1
P1021 = 722.1 ==> Digital input 2
P1022 = 722.2 ==> Digital input 3

Dependency:

Accessible only if P0701 - P0703 = 99 (function of digital inputs = BICO)

P1022 **BI: Fixed freq. selection Bit 2** Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	0:0
				Max:	4000:0

Defines origin of fixed frequency selection.

Most Common Settings:

P1020 = 722.0 ==> Digital input 1
P1021 = 722.1 ==> Digital input 2
P1022 = 722.2 ==> Digital input 3

Dependency:

Accessible only if P0701 - P0703 = 99 (function of digital inputs = BICO)

r1024 **CO: Act. fixed frequency** Level: **3**

CStat:	-	**Datatype:** Float	**Unit:** Hz	**Min:**	-
P-Group:	SETPOINT	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays sum total of selected fixed frequencies.

P1031 **Setpoint memory of the MOP** Level: **2**

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	SETPOINT	**active:** Cornfirm	**QuickComm.** -	**Def:**	0
				Max:	1

Saves last motor potentiometer (MOP) setpoint that was active before OFF command or power down.

Possible Settings:

0 OFF: MOP setpoint will not be stored
1 OFF: MOP setpoint will be stored (P1040 is updated)

Note:

On next ON command, motor potentiometer (MOP) setpoint will be the saved value in parameter P1040 (setpoint of the MOP).

P1032 **Inhibit reverse direction of MOP** Level: **2**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	SETPOINT	**active:** Immediately	**QuickComm.** -	**Def:**	1
				Max:	1

Inhibits reverse setpoint selection

Dependency:

Motor potentiometer (MOP, P1040) must be chosen as main setpoint or additional setpoint (using P1000).

Possible Settings:

0 Reserve direction is allowed
1 Reserve direction inhibited

Note:

It is possible to change motor direction using the MOP setpoint (increase / decrease frequency either by using digital inputs or BOP/AOP keypad up / down).

P1035 **BI: Enable MOP (UP-command)** Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	19:13
				Max:	4000:0

Defines source for motor potentiometer (MOP) setpoint increase frequency.

Most Common Settings:

722.0 = Digital input 1
722.1 = Digital input 2
722.2 = Digital input 3
19.13 = MOP up via BOP/AOP

P1036 **BI: Enable MOP (DOWN-command)** Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	19:14
				Max:	4000:0

Defines source for motor potentiometer (MOP) setpoint decrease frequency.

Most Common Settings:

722.0 = Digital input 1
722.1 = Digital input 2
722.2 = Digital input 3
19.14 = MOP down via BOP/AOP

P1040 **Setpoint of the MOP** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** Hz	**Min:**	-650.00
P-Group:	SETPOINT	**active:** Cornfirm	**QuickComm.** -	**Def:**	5.00
				Max:	650.00

Determines setpoint for motor potentiometer (MOP) control (P1000 = 1).

Note:

If motor potentiometer (MOP) setpoint is selected either as main setpoint or additional setpoint, the reverse direction will be inhibited by default of P1032 (inhibit reverse direction of MOP).
To re-enable reverse direction, set P1032 = 0.

r1050 **CO: Act. Output freq. of the MOP** Level: **3**

CStat:	-	**Datatype:** Float	**Unit:** Hz	**Min:**	-
P-Group:	SETPOINT	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays output frequency of motor potentiometer setpoint ([Hz]).

P1055 **BI: Enable JOG right** Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	0:0
				Max:	4000:0

Defines source of JOG right when P0719 = 0 (remote selection of command/setpoint source).

Most Common Settings:

722.0 = Digital input 1
722.1 = Digital input 2
722.2 = Digital input 3
19.8 = JOG right via BOP/AOP

P1056	BI: Enable JOG left			Min:	0:0	Level:
	CStat: CT	Datatype: U32	Unit: -	Def:	0:0	3
	P-Group: COMMANDS	active: Immediately	QuickComm. -	Max:	4000:0	

Defines source of JOG left when P0719 = 0 (remote selection of command/setpoint source).

Most Common Settings:

722.0 = Digital input 1
722.1 = Digital input 2
722.2 = Digital input 3
19.9 = JOG left via BOP/AOP

P1058	JOG frequency right			Min:	0.00	Level:
	CStat: CUT	Datatype: Float	Unit: Hz	Def:	5.00	2
	P-Group: SETPOINT	active: Cornfirm	QuickComm. -	Max:	650.00	

Jogging advances the motor speed by small amounts. The JOG buttons uses a non-latching switch on one of the digital inputs to control the motor speed.
While JOG right is selected, this parameter determines the frequency at which the inverter will run.

Dependency:

P1060 and P1061 set up and down ramp times respectively for jogging.

P1059	JOG frequency left			Min:	0.00	Level:
	CStat: CUT	Datatype: Float	Unit: Hz	Def:	5.00	2
	P-Group: SETPOINT	active: Cornfirm	QuickComm. -	Max:	650.00	

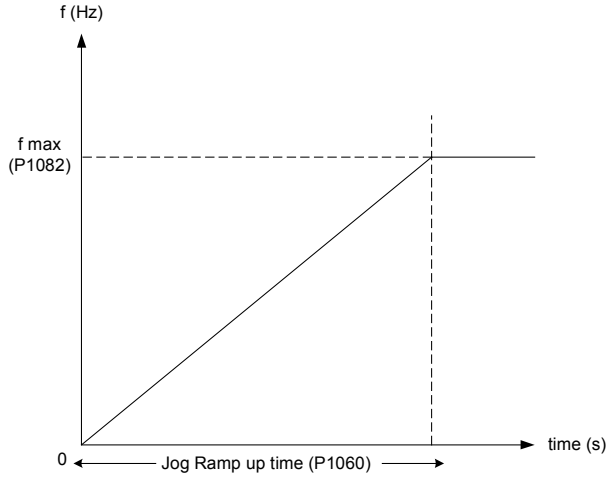
While JOG left is selected, this parameter determines the frequency at which the inverter will run.

Dependency:

P1060 and P1061 set up and down ramp times respectively for jogging.

P1060	JOG ramp-up time			Min:	0.00	Level:
	CStat: CUT	Datatype: Float	Unit: s	Def:	10.00	2
	P-Group: SETPOINT	active: Immediately	QuickComm. -	Max:	650.00	

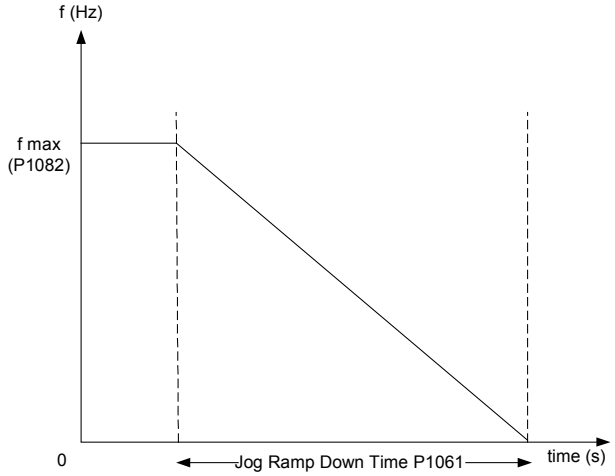
Sets ramp-up time. This is the time used while jogging or when P1124 (enable JOG ramp times) is active.



P1061 **JOG ramp-down time** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** s	**Min:**	0.00
P-Group:	SETPOINT	**active:** Immediately	**QuickComm.** -	**Def:**	10.00
				Max:	650.00

Sets ramp-down time. This is the time used while jogging or when P1124 (enable JOOG ramp times) is active.



P1070 **CI: Main setpoint** Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	SETPOINT	**active:** Immediately	**QuickComm.** -	**Def:**	755:0
				Max:	4000:0

Defines source of main setpoint.

Most Common Settings:

755 = Analog input 1 setpoint
1024 = Fixed frequency setpoint
1050 = Motor potentiometer (MOP) setpoint

P1071 **CI: Main setpoint scaling** Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	SETPOINT	**active:** Immediately	**QuickComm.** -	**Def:**	1:0
				Max:	4000:0

Defines source of the main setpoint scaling.

Most Common Settings:

755 = Analog input 1 setpoint
1024 = Fixed frequency setpoint
1050 = Motor potentiometer (MOP) setpoint

P1074 **BI: Disable additional setpoint** Level: **3**

CStat:	CUT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	0:0
				Max:	4000:0

Disables additional setpoint

Most Common Settings:

722.0 = Digital input 1
722.1 = Digital input 2
722.2 = Digital input 3
722.3 = Digital input 4 (via analog input)

P1075 **CI: Additional setpoint** Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	SETPOINT	**active:** Immediately	**QuickComm.** -	**Def:**	0:0
				Max:	4000:0

Defines source of the additional setpoint (to be added to main setpoint).

Most Common Settings:

755 = Analog input 1 setpoint
1024 = Fixed frequency setpoint
1050 = Motor potentiometer (MOP) setpoint

Level: **3**

P1076 **CI: Additional setpoint scaling**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	SETPOINT	**active:** Immediately	**QuickComm.** -	**Def:**	1:0
				Max:	4000:0

Defines source of scaling for additional setpoint (to be added to main setpoint).

Most Common Settings:

1 = scaling of 1.0 (100%)

755 = Analog input 1 Setpoint

1024 = Fixed Frequency Setpoint

1050 = MOP Setpoint

r1078 **CO: Total frequency setpoint** Level: **3**

CStat:	-	**Datatype:** Float	**Unit:** Hz	**Min:**	-
P-Group:	SETPOINT	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays sum of main and additional setpoints in [Hz].

r1079 **CO: Selected frequency setpoint** Level: **3**

CStat:	-	**Datatype:** Float	**Unit:** Hz	**Min:**	-
P-Group:	SETPOINT	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays selected frequency setpoint.
Following frequency setpoints can be selected: Total frequency setpoint r1078 JOG frequency right P1058 JOG frequency left P1059

Dependency:

P1055 (BI: Enable JOG right) or P1056 (BI: Enable JOG left) define command source of JOG right or JOG left respectively.

Note:

P1055 = 0 and P1056 = 0 ==> Total frequency setpoint is selected.

P1080 **Min. frequency** Level: **1**

CStat:	CUT	**Datatype:** Float	**Unit:** Hz	**Min:**	0.00
P-Group:	SETPOINT	**active:** Cornfirm	**QuickComm.** Y	**Def:**	0.00
				Max:	650.00

Sets minimum motor frequency [Hz] at which motor will run irrespective of frequency setpoint.

Note:

Value set here is valid both for clockwise and for anticlockwise rotation.
Under certain conditions (e.g. ramping, current limiting), motor can run below minimum frequency.

P1082 **Max. frequency** Level: **1**

CStat:	CT	**Datatype:** Float	**Unit:** Hz	**Min:**	0.00
P-Group:	SETPOINT	**active:** Immediately	**QuickComm.** Y	**Def:**	50.00
				Max:	650.00

Sets maximum motor frequency [Hz] at which motor will run irrespective of the frequency setpoint.

Note:

The value set here is valid for both clockwise and anticlockwise rotation.
The maximum output frequency of inverter can be exceeded if one of the following is active:

Slip compensation = $f\max + fslip\_comp\ \max$

or

Flying restart = $f\max + fslip\_nom$

Notice:

Maximum motor speed is subject to mechanical limitations. Generally, maximum motor frequency should not exceed 3 * nominal rating plate motor frequency.

P1091 **Skip frequency 1** Level: **3**

CStat:	CUT	**Datatype:** Float	**Unit:** Hz	**Min:**	0.00
P-Group:	SETPOINT	**active:** Cornfirm	**QuickComm.** -	**Def:**	0.00
				Max:	650.00

Avoids effects of mechanical resonance and suppresses frequencies within +/- P1101 (skip frequency bandwidth).

Notice:

Stationary operation is not possible within the suppressed frequency range; the range is merely passed through (on the ramp).
For example, if P1091 = 10 Hz and P1101 = 2 Hz, it is not possible to operate continuously between 10 Hz +/- 2 Hz (i.e. between 8 and 12 Hz).

P1092 **Skip frequency 2** Level: **3**

CStat:	CUT	**Datatype:** Float	**Unit:** Hz	**Min:**	0.00
P-Group:	SETPOINT	**active:** Cornfirm	**QuickComm.** -	**Def:**	0.00
				Max:	650.00

Details:

See P1091 (skip frequency 1).

P1093 **Skip frequency 3** Level: **3**

CStat:	CUT	**Datatype:** Float	**Unit:** Hz	**Min:**	0.00
P-Group:	SETPOINT	**active:** Cornfirm	**QuickComm.** -	**Def:**	0.00
				Max:	650.00

Details:

See P1091 (skip frequency 1).

P1094 **Skip frequency 4** Level: **3**

CStat:	CUT	**Datatype:** Float	**Unit:** Hz	**Min:**	0.00
P-Group:	SETPOINT	**active:** Cornfirm	**QuickComm.** -	**Def:**	0.00
				Max:	650.00

Details:

See P1091 (skip frequency 1).

P1101 **Skip frequency bandwidth** Level: **3**

CStat:	CUT	**Datatype:** Float	**Unit:** Hz	**Min:**	0.00
P-Group:	SETPOINT	**active:** Cornfirm	**QuickComm.** -	**Def:**	2.00
				Max:	10.00

Delivers frequency bandwidth to be applied to skip frequencies (in [Hz]).

Details:

See P1091 (skip frequency 1).

P1110 **BI: Inhibit neg. freq. setpoint** Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	0:0
				Max:	4000:0

Inhibits direction reversal, thus preventing a negative setpoint from causing motor from running in reverse. Instead, it will run at minimun frequency (P1080) in the normal direction.

Most Common Settings:

0	=	Disabled
1	=	Enabled
722.0	=	Digital input 1
722.1	=	Digital input 2
722.2	=	Digital input 3
19.11	=	Keypad

Note:

It is possible to disable all reverse commands (i.e. the command is ignored). To do this, set P0719 = 0 and define the command sources (P1113) individually.

Notice:

This function does not disable the "reverse" command function; rather, a reverse command causes motor to run in the normal direction as described above.

P1113 **BI: Reverse** Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	722:1
				Max:	4000:0

Defines source of reverse command used when P0719 = 0 (remote selection of command/setpoint source).

Most Common Settings:

722.0	=	Digital input 1
722.1	=	Digital input 2
722.2	=	Digital input 3
19.11	=	Reverse via BOP/AOP

r1114 **CO: Freq. setp. after dir. ctrl.** Level: **3**

CStat:	-	**Datatype:** Float	**Unit:** Hz	**Min:**	-
P-Group:	SETPOINT	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays setpoint frequency after change of direction

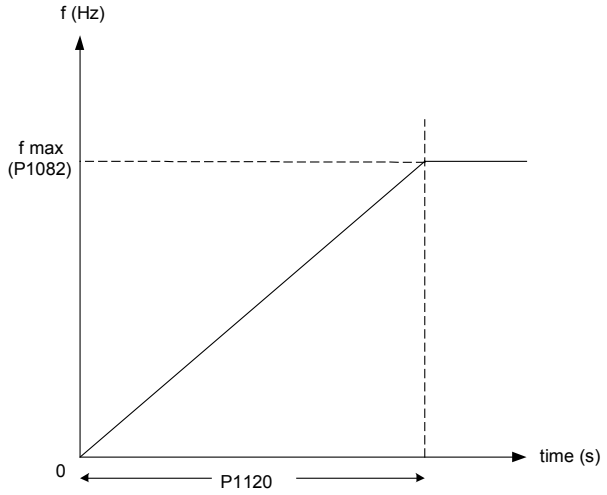
r1119 **CO: Freq. setp. before RFG input** Level: **3**

CStat:	-	**Datatype:** Float	**Unit:** Hz	**Min:**	-
P-Group:	SETPOINT	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays output frequency after modification by other functions, e.g. BI: Inhibit neg. freq. setpoint (P1110) or skip frequencies, f_min, f_max, limitations, etc.

P1120	Ramp-up time				Min:	0.00	Level:
	CStat:	CUT	Datatype: Float	Unit: s	Def:	10.00	1
	P-Group:	SETPOINT	active: Immediately	QuickComm. Y	Max:	650.00	

Time taken for motor to accelerate from standstill up to maximum motor frequency (P1082) when no rounding is used.



Setting the ramp-up time too short can cause the inverter to trip (overcurrent).

Dependency:

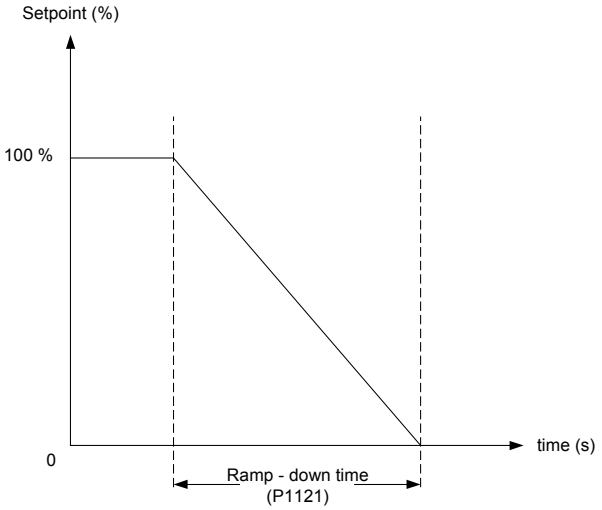
Changes to ramp-up or ramp-down times not active until "P" key pressed.

Note:

If an external frequency setpoint with set ramp rates is used (e.g. from a PLC), the best way to achieve optimum drive performance is to set ramp times in P1120 and P1121 slightly shorter than those of the PLC.

P1121	Ramp-down time				Min:	0.00	Level:
	CStat:	CUT	Datatype: Float	Unit: s	Def:	10.00	1
	P-Group:	SETPOINT	active: Immediately	QuickComm. Y	Max:	650.00	

Time taken for motor to decelerate from maximum motor frequency (P1082) down to standstill when no rounding is used.



Dependency:

Changes to ramp-up or ramp-down times not active until "P" key pressed.

Notice:

Setting the ramp-down time too short can cause the inverter to trip (overcurrent (F0001) / overvoltage (F0002)).

P1124	BI: Enable JOG ramp times				Min:	0:0	Level:
	CStat:	CT	Datatype: U32	Unit: -	Def:	0:0	3
	P-Group:	COMMANDS	active: Immediately	QuickComm. -	Max:	4000:0	

Defines source for switching between jog ramp times and normal ramp times.

Most Common Settings:

722.0 = Digital input 1

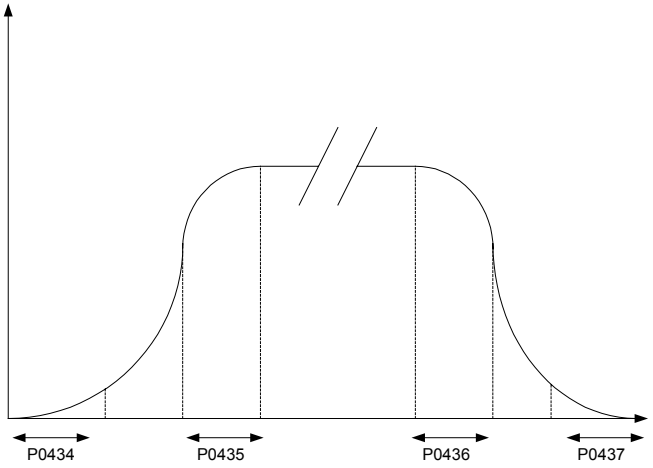
722.1 = Digital input 2

722.2 = Digital input 3

P1130 **Ramp-up initial rounding time** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** s	**Min:**	0.00
P-Group:	SETPOINT	**active:** Immediately	**QuickComm.** -	**Def:**	0.00
				Max:	40.00

Defines initial smoothing time in seconds as shown on the diagram below.



where:

$$Tup\ total = \tfrac{1}{2}P1130 + X * P1120 + \tfrac{1}{2}P1131$$

$$Tdown\ total = \tfrac{1}{2}P1130 + X * P1121 + \tfrac{1}{2}P1133$$

$$X \qquad \Delta f = X * f_{\max}$$

P1131 **Ramp-up final rounding time** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** s	**Min:**	0.00
P-Group:	SETPOINT	**active:** Immediately	**QuickComm.** -	**Def:**	0.00
				Max:	40.00

Defines smoothing time at end of ramp-up as shown in P1130 (ramp-up initial rounding time).

P1132 **Ramp-down initial rounding time** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** s	**Min:**	0.00
P-Group:	SETPOINT	**active:** Immediately	**QuickComm.** -	**Def:**	0.00
				Max:	40.00

Defines smoothing time at start of ramp-down as shown in P1130 (ramp-up initial rounding time).

P1133 **Ramp-down final rounding time** Level: **2**

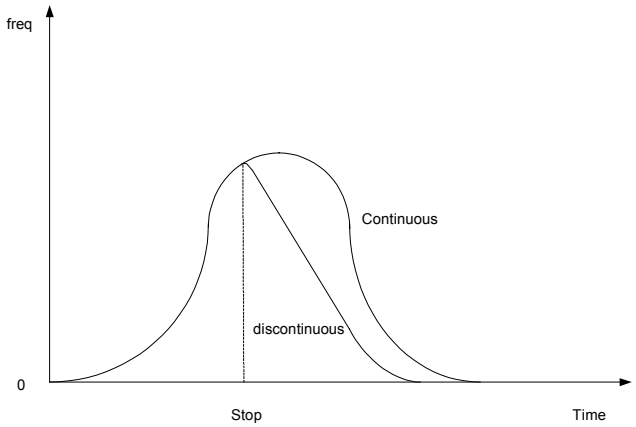
CStat:	CUT	**Datatype:** Float	**Unit:** s	**Min:**	0.00
P-Group:	SETPOINT	**active:** Immediately	**QuickComm.** -	**Def:**	0.00
				Max:	40.00

Defines smoothing time at end of ramp-down as shown in P1130 (ramp-up initial rounding time).

P1134 **Rounding type** Level: **2**

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	SETPOINT	**active:** Cornfirm	**QuickComm.** -	**Def:**	0
				Max:	1

Defines smoothing response to OFF commands or setpoint reduction.



Dependency:

No effect until total smoothing time > 0 s.

Possible Settings:

0 Continuous smoothing
1 Discontinuous smoothing

P1135	OFF3 ramp-down time				Min:	0.00	Level:
	CStat:	CUT	Datatype: Float	Unit: s	Def:	5.00	2
	P-Group:	SETPOINT	active: Immediately	QuickComm. Y	Max:	650.00	

Defines ramp-down time from maximum frequency to standstill for OFF3 command.

Note:

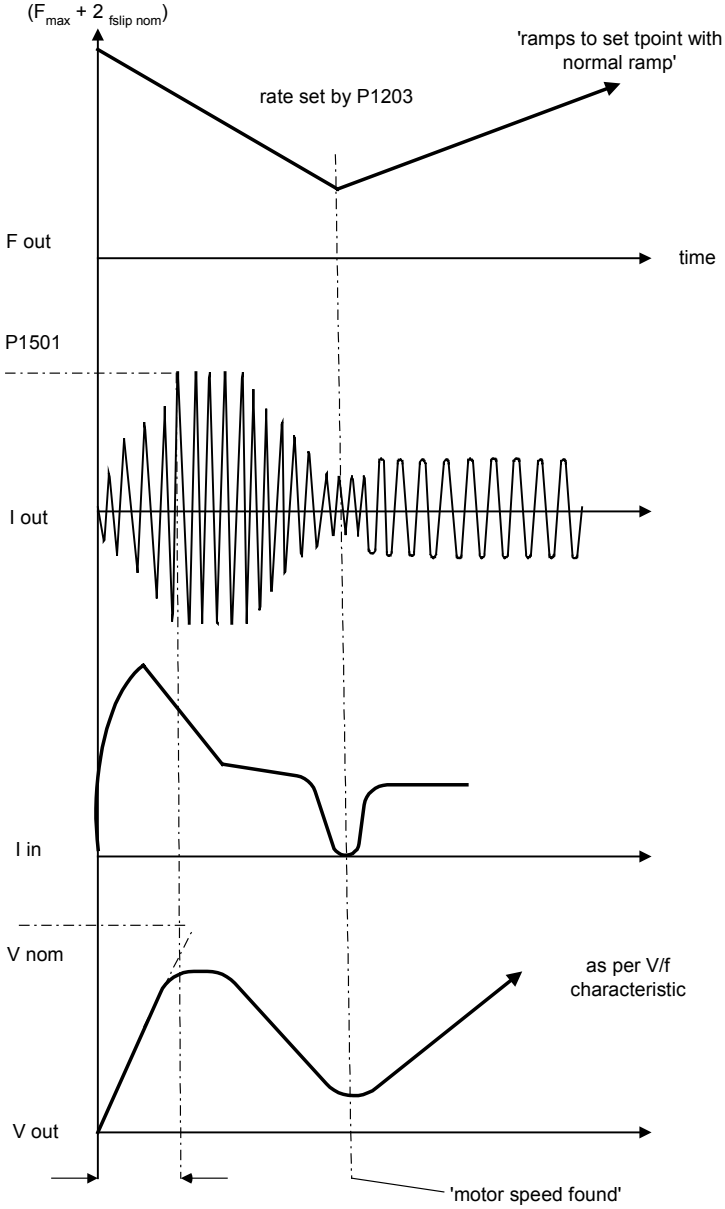
This time may be exceeded if the VDC_max. level is reached.

r1170	CO: Frequency setpoint				Min:	-	Level:
	CStat:	-	Datatype: Float	Unit: Hz	Def:	-	3
	P-Group:	SETPOINT	active: -	QuickComm. -	Max:	-	

Displays overall frequency setpoint after ramp generator.

P1200	**Flying start**				**Min:** 0	Level:
	CStat: CUT	**Datatype:** U16	**Unit:** -		**Def:** 0	**2**
	P-Group: FUNC	**active:** Immediately	**QuickComm.** -		**Max:** 6	

Starts inverter onto a spinning motor by rapidly changing the output frequency of the inverter until the actual motor speed has been found. Then, the motor runs up to setpoint using the normal ramp time.



Possible Settings:

0	Flying start disabled
1	Flying start is always active, start in direction of setpoint
2	Flying start is active if power on, fault, OFF2, start in direction of setpoint
3	Flying start is active if fault, OFF2, start in direction of setpoint
4	Flying start is always active, only in direction of setpoint
5	Flying start is active if power on, fault, OFF2, only in direction of setpoint
6	Flying start is active if fault, OFF2, only in direction of setpoint

Note:

Useful for motors with high inertia loads.
Settings 1 to 3 search in both directions.
Settings 4 to 6 search only in direction of setpoint.

Notice:

Flying start must be used in cases where the motor may still be turning (e.g. after a short mains break) or can be driven by the load. Otherwise, overcurrent trips will occur.

P1202	**Motor-current: Flying start**			**Min:**	50	Level:
	CStat: CUT	**Datatype:** U16	**Unit:** %	**Def:**	100	**3**
	P-Group: FUNC	**active:** Immediately	**QuickComm.** -	**Max:**	200	

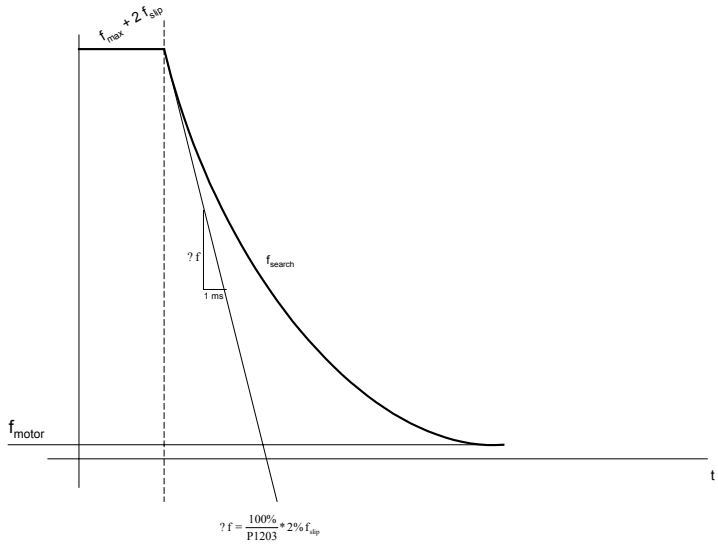
Defines search current used for flying start.
Value is in [%] based on nominal motor current (P0305).

Note:

Reducing the search current may improve performance for flying start if the inertia of the system is not very high.

P1203	**Search rate: Flying start**			**Min:**	50	Level:
	CStat: CUT	**Datatype:** U16	**Unit:** %	**Def:**	100	**3**
	P-Group: FUNC	**active:** Immediately	**QuickComm.** -	**Max:**	200	

Sets factor by which the output frequency changes during flying start to synchronize with turning motor. This factor defines the initial gradient in the curve below (and thus influences the time taken to search for the motor frequency):



The search time is the time taken to search through all frequencies between f_max + 2 x f_slip to 0 Hz.
100 % is defined as giving a rate of 2 % of f_slip,nom / [ms]
200 % would result in a rate of frequency change of 1 % of f_slip,nom / [ms]

Example:

For a motor with 50 Hz, 1350 [rpm], 100 % would produce a maximum search time of 600 ms. If the motor is turning, the motor frequency is found in a shorter time.

Note:

A higher value produces a flatter gradient and thus a longer search time. A lower value has the opposite effect.

P1210	**Automatic restart**			**Min:**	0	Level:
	CStat: CUT	**Datatype:** U16	**Unit:** -	**Def:**	1	**2**
	P-Group: FUNC	**active:** Immediately	**QuickComm.** -	**Max:**	5	

Enables restart after a mains break or after a fault.

Dependency:

Auto restart requires constant ON command (e.g. via a digital input wire link).

Possible Settings:

0	Disabled
1	Trip reset after power on: P1211 disabled
2	Restart mains break; power on: P1211 disabled
3	Restart after fault/mains break: P1211 enabled
4	Restart after mains break: P1211 enabled
5	Restart mains break/fault/power on: P1211 disabled

Caution:

Settings 2 to 5 can cause the motor to restart unexpectedly !

Notice:

Flying start must be used in cases where the motor may still be turning (e.g. after a short mains break) or can be driven by the load (P1200).

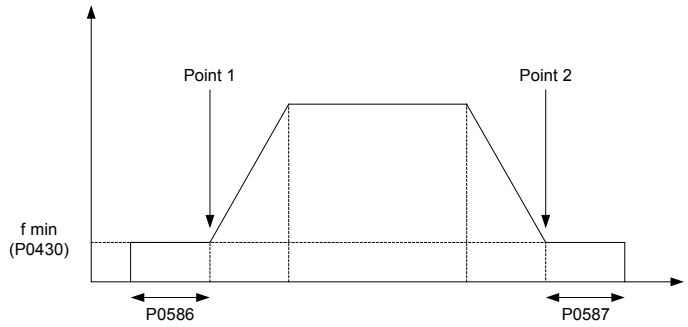
P1211	**Number of restart attempts**			**Min:**	0	Level:
	CStat: CUT	**Datatype:** U16	**Unit:** -	**Def:**	3	**3**
	P-Group: FUNC	**active:** Immediately	**QuickComm.** -	**Max:**	10	

Specifies number of times inverter will attempt to restart if P1210 (flying start) is activated.

P1215 **Holding brake enable** Level: **2**

CStat:	T	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	FUNC	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	1

Enables/disables holding brake function. This function applies the following profile to the inverter:
Relay switching is also possible at point 1 and point 2 (if programmed in P0731 = 52.C) to control a brake.



Possible Settings:

0 Motor holding brake disabled
1 Motor holding brake enabled

Note:

The brake relay opens at point 1, if enabled using P0731 (function of digital output), and closes at point 2.

P1216 **Holding brake release delay** Level: **2**

CStat:	T	**Datatype:** Float	**Unit:** s	**Min:**	0
P-Group:	FUNC	**active:** Immediately	**QuickComm.** -	**Def:**	1.0
				Max:	20.0

Defines period during which inverter runs at f_min before ramping up at point 1 (as shown in P1215 - holding brake enable). Inverter starts at f_min on this profile, i.e. it does not use a ramp.

Note:

A typical value of f_min for this type of application is the slip frequency of the motor.
You can calculate the rated slip frequency by using the following formula:

Value:

$$\frac{Nsyn - Nrated}{n_{syn}} * frated$$

Notice:

If used to hold the motor at a certain frequency against a mechanical brake (i.e. you are using a relay to control mechanical brake), it is important that f_min < 5 Hz; otherwise, the current drawn may be too high and the relay may not open.

P1217 **Holding time after ramp down** Level: **2**

CStat:	T	**Datatype:** Float	**Unit:** s	**Min:**	0
P-Group:	FUNC	**active:** Immediately	**QuickComm.** -	**Def:**	1.0
				Max:	20.0

Defines time for which inverter runs at minimum frequency (P1080) after ramping down at point 2.

Details:

See diagram P1215 (holding brake enable)

P1230 **BI: Enable DC braking** Level: **3**

CStat:	CUT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	0:0
				Max:	4000:0

Enables DC braking via a signal applied from an external source. Function remains active while external input signal is active.
DC braking causes the motor to stop rapidly by applying a DC braking current (current applied also holds shaft stationary).
When the DC braking signal is applied, the inverter output pulses are blocked and the DC current is not applied until the motor has been sufficiently demagnetized.

Most Common Settings:

722.0 = Digital input 1
722.1 = Digital input 2
722.2 = Digital input 3

Caution:

Frequent use of long periods of DC braking can cause the motor to overheat.

Notice:

This delay time is set in P0347 (demagnetization time). If this delay is too short, overcurrent trips can occur.

P1232 **DC braking current** Level: **2**

CStat:	CUT	**Datatype:** U16	**Unit:** %	**Min:**	0
P-Group:	FUNC	**active:** Cornfirm	**QuickComm.** -	**Def:**	100
				Max:	250

Defines level of DC current as [%] of nominal motor current (P0305).

P1233 **Duration of DC braking** Level: **2**

CStat:	CUT	**Datatype:** U16	**Unit:** s	**Min:**	0
P-Group:	FUNC	**active:** Cornfirm	**QuickComm.** -	**Def:**	0
				Max:	250

Defines duration for which DC injection braking is to be active following an OFF1 command.

Value:

0 = not active following OFF1
1 - 250 = active for the specified duration

Caution:

Frequent use of long periods of DC braking can cause the motor to overheat.

Notice:

The DC braking function causes the motor to stop rapidly by applying a DC braking current (the current applied also holds the shaft stationary). When the DC braking signal is applied, the inverter output pulses are blocked and the DC current not applied until the motor has been sufficiently demagnetized (demagnetization time is calculated automatically from motor data).

P1236 **Compound braking current** Level: **2**

CStat:	CUT	**Datatype:** U16	**Unit:** %	**Min:**	0
P-Group:	FUNC	**active:** Cornfirm	**QuickComm.** -	**Def:**	0
				Max:	250

Defines DC level superimposed on AC waveform.

Dependency:

Active after OFF1 / OFF3 command.

Value:

0 = Compound braking disabled
1 - 250 = Level of DC braking current defined as a [%] of rated motor current (P0305).

Notice:

Increasing the value will generally improve braking performance; however, if you set the value too high, an overvoltage trip may result.

P1240 **Configuration of Vdc controller** Level: **3**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	FUNC	**active:** Cornfirm	**QuickComm.** -	**Def:**	1
				Max:	1

Enables / disables Vdc max controller.

Possible Settings:

0 Vdc controller disabled
1 Vdc-max controller enabled

Note:

The Vdc controller dynamically controls the DC link voltage to prevent overvoltage trips (Vdc max).
The Vdc max controller increases output frequency and extends ramp-down time to avoid overvoltage trips.

r1242 **CO: Switch-on level of Vdc-max** Level: **3**

CStat:	-	**Datatype:** Float	**Unit:** V	**Min:**	-
P-Group:	FUNC	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays switch-on level of Vdc max controller.

P1243 **Dynamic factor of Vdc-max** Level: **3**

CStat:	CUT	**Datatype:** U16	**Unit:** %	**Min:**	10
P-Group:	FUNC	**active:** Cornfirm	**QuickComm.** -	**Def:**	100
				Max:	200

Defines dynamic factor for DC link controller.

Dependency:

100 % means parameters P1250, P1251 and P1252 (integration time, differential time and output limitation) are used as set.Otherwise, these are multiplied by P1243 (dynamic factor of Vdc-max).

Note:

Vdc controller adjustment is calculated automatically from motor and inverter data.

P1253 **Vdc-controller output limitation** Level: **3**

CStat:	CUT	**Datatype:** Float	**Unit:** Hz	**Min:**	0
P-Group:	FUNC	**active:** Cornfirm	**QuickComm.** -	**Def:**	10
				Max:	600

Limits maximum effect of Vdc max controller.

P1254 **Auto detect Vdc switch-on levels** Level: **3**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	FUNC	**active:** Cornfirm	**QuickComm.** -	**Def:**	1
				Max:	1

Enables/disables auto-detection of switch-on levels for Vdc max controller.

Possible Settings:

0 Disabled
1 Enabled

P1300	Control mode				Min:	0	Level:
	CStat:	CT	Datatype: U16	Unit: -	Def:	1	2
	P-Group:	CONTROL	active: Immediately	QuickComm. Y	Max:	3	

Controls relationship between speed of motor and voltage supplied by inverter.

Possible Settings:

0	V/F with linear charac.
1	V/F with FCC
2	V/F with parabolic charac.
3	V/F with programmable charac.

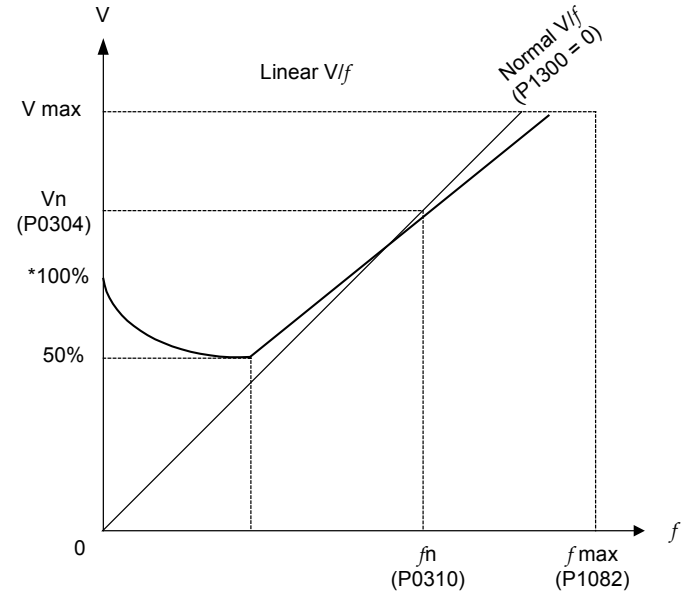
Note:

P1300 = 1 : V/F with FCC
* Maintains motor flux current for improved efficiency
* If FCC is chosen, linear V/F is active at low frequencies.

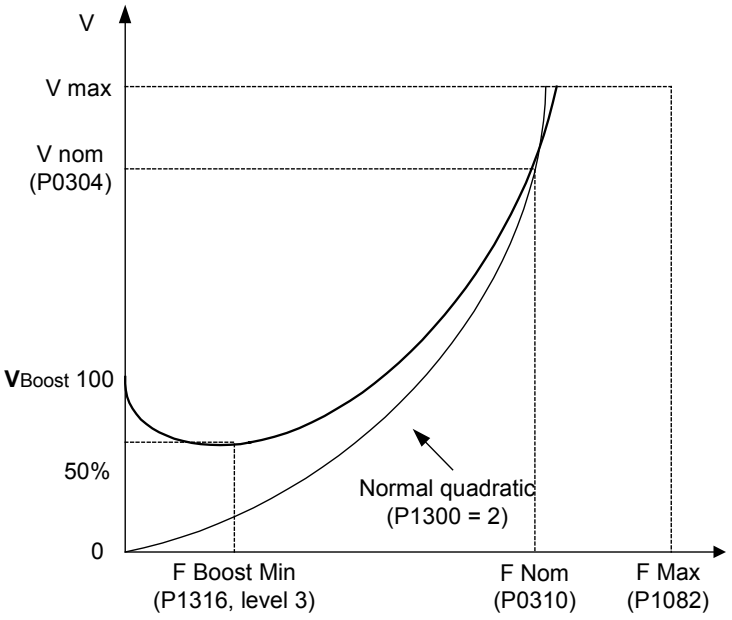
P1300 = 2 : V/F with a parabolic characteristic
* Suitable for centrifugal fans / pumps

P1310	Continuous boost				Min:	0.0	Level:
	CStat: CUT	Datatype: Float	Unit: %		Def:	50.0	2
	P-Group: CONTROL	active: Cornfirm	QuickComm. -		Max:	250.0	

Defines boost level applicable to both linear and quadratic V/f curves according to the diagram below:



Quadratic



where V_Boost,100 = voltage given by rated motor current (P0305) * Stator resistance (P0350)

Dependency:

Setting in P0640 (motor overload factor [%]) limits the boost.

Note:

The boots values are combined when continuous boost (P1310) used in conjunction with other boost parameters (acceleration boost P1311 and starting boost P1312). However priorities are allocated to these parameters as follows:
P1310 > P1311 > P1312

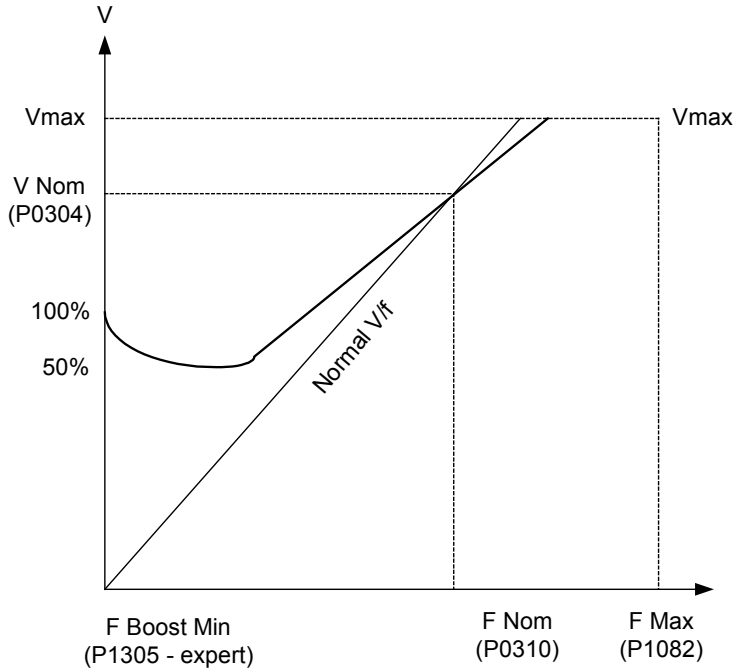
Notice:

Increasing the boost levels increases motor heating (especially at standstill).

$$Boosts \leq 300/I_{mot} * R_S$$

P1311	**Acceleration boost**				**Min:** 0.0	Level:
	CStat: CUT	**Datatype:** Float	**Unit:** %		**Def:** 0.0	**2**
	P-Group: CONTROL	**active:** Cornfirm	**QuickComm.** -		**Max:** 250.0	

Applies boost following a positive setpoint change and drops back out once the setpoint is reached.



Dependency:

Setting in P0640 (motor overload factor [%]) limits boost.

Note:

Acceleration boots can help to improve response to small positive setpoint changes.

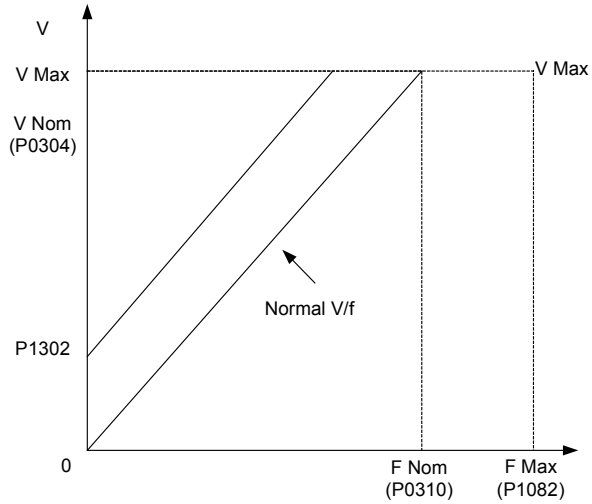
$$Boosts \leq 300/I_{mot} * R_S$$

Notice:

Increasing the boost level increases motor heating.

P1312	**Starting boost**				**Min:**	0.0	Level:
	CStat:	CUT	**Datatype:** Float	**Unit:** %	**Def:**	0.0	**2**
	P-Group:	CONTROL	**active:** Cornfirm	**QuickComm.** -	**Max:**	250.0	

Applies a constant linear offset to active V/f curve (either linear or quadratic) after an ON command and is active until setpoint is reached for the first time. This is useful for starting loads with high inertia.
Setting the starting boost (P1312) too high will cause the inverter to limit the current, which will in turn restrict the output frequency to below the setpoint frequency.



Dependency:

Setting in P0640 (motor overload factor [%]) limits boost.

Notice:

Increasing the boost levels increases the heating of the motor.

$$Boosts \leq 300/I_{mot} * R_S$$

P1316	**Boost end frequency**				**Min:**	0.0	Level:
	CStat:	CUT	**Datatype:** Float	**Unit:** %	**Def:**	20.0	**3**
	P-Group:	CONTROL	**active:** Cornfirm	**QuickComm.** -	**Max:**	100.0	

Defines point at which programmed boost reaches 50 % of its value.
This frequency is defined as follows:

$f_{boost\ \min} = 2 * ((153 / \sqrt{Pmotor}) + 3)$ It is displayed as [%] value of the f_nominal.

Note:

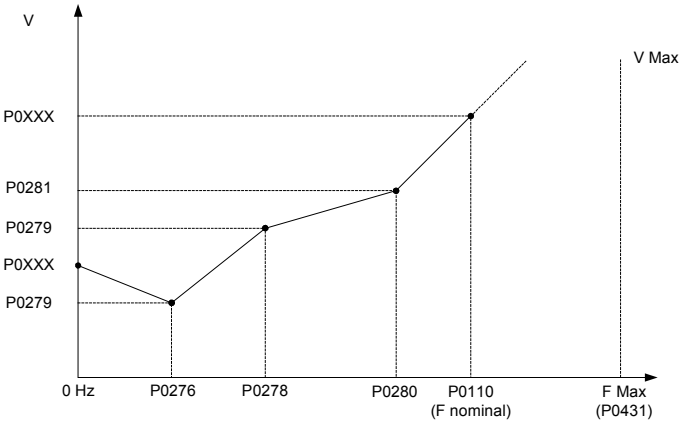
The expert user may change this value to alter the shape of the curve, e.g. to increase torque at a particular frequency.

P1320	**Programmable V/F freq. coord. 1**			**Min:**	0.00	Level:
	CStat: CT	**Datatype:** Float	**Unit:** Hz	**Def:**	0.00	**3**
	P-Group: CONTROL	**active:** Cornfirm	**QuickComm.** -	**Max:**	650.00	

Sets V/F coordinates (P1320/1321 to P1324/1325) to define V/F characteristic

Example:

This parameter can be used to provide correct torque at correct frequency and is useful when used with synchronous motors.



Dependency:

To set parameter, select P1300 = 3 (V/F with programmable characteristic)

Note:

Linear interpolation will be applied between points set from P1320/1321 to P1324/1325.
V/F with programmable characteristic (P1300 = 3) has 3 programmable points. The two non-programmable points are:
Zero boost voltage at zero 0 Hz
Nominal voltage at nominal frequency
The acceleration boost and starting boost defined in P1311 and P1312 are applied to V/F with programmable characteristic.

P1321	**Programmable V/F volt. coord. 1**			**Min:**	0.0	Level:
	CStat: CUT	**Datatype:** Float	**Unit:** V	**Def:**	0.0	**3**
	P-Group: CONTROL	**active:** Cornfirm	**QuickComm.** -	**Max:**	3000.0	

See P1320 (programmable V/F freq. coord. 1).

P1322	**Programmable V/F freq. coord. 2**			**Min:**	0.00	Level:
	CStat: CT	**Datatype:** Float	**Unit:** Hz	**Def:**	0.00	**3**
	P-Group: CONTROL	**active:** Cornfirm	**QuickComm.** -	**Max:**	650.00	

See P1320 (programmable V/F freq. coord. 1).

P1323	**Programmable V/F volt. coord. 2**			**Min:**	0.0	Level:
	CStat: CUT	**Datatype:** Float	**Unit:** V	**Def:**	0.0	**3**
	P-Group: CONTROL	**active:** Cornfirm	**QuickComm.** -	**Max:**	3000.0	

See P1320 (programmable V/F freq. coord. 1).

P1324	**Programmable V/F freq. coord. 3**			**Min:**	0.00	Level:
	CStat: CT	**Datatype:** Float	**Unit:** Hz	**Def:**	0.00	**3**
	P-Group: CONTROL	**active:** Cornfirm	**QuickComm.** -	**Max:**	650.00	

See P1320 (programmable V/F freq. coord. 1).

P1325	**Programmable V/F volt. coord. 3**			**Min:**	0.0	Level:
	CStat: CUT	**Datatype:** Float	**Unit:** V	**Def:**	0.0	**3**
	P-Group: CONTROL	**active:** Cornfirm	**QuickComm.** -	**Max:**	3000.0	

See P1320 (programmable V/F freq. coord. 1).

P1333	**Start frequency for FCC**			**Min:**	0.0	Level:
	CStat: CUT	**Datatype:** Float	**Unit:** %	**Def:**	10.0	**3**
	P-Group: CONTROL	**active:** Cornfirm	**QuickComm.** -	**Max:**	100.0	

Defines start frequency at which FCC (flux current control) is enabled as [%] of rated motor frequency (P0310).

Notice:

If this value is too low, the system may become unstable.

P1335 **Slip compensation** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** %	**Min:**	0.0
P-Group:	CONTROL	**active:** Cornfirm	**QuickComm.** -	**Def:**	0.0
				Max:	600.0

Dynamically adjusts output frequency of inverter so that motor speed is kept constant independent of motor load.

Value:

0 % = Slip compensation disabled
100 % = This uses the motor data and motor model to add the rated slip frequency rated motor speed and rated motor current.

Note:

Gain adjustment is possible to fine-tune the actual motor speed (P1460 - gain speed control).

P1336 **Slip limit** Level: **2**

CStat:	CUT	**Datatype:** U16	**Unit:** %	**Min:**	0
P-Group:	CONTROL	**active:** Cornfirm	**QuickComm.** -	**Def:**	250
				Max:	600

Limits compensation slip added to frequency setpoint

Dependency:

Slip compensation (P1335) active.

r1337 **CO: Slip frequency** Level: **3**

CStat:	-	**Datatype:** Float	**Unit:** %	**Min:**	-
P-Group:	CONTROL	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays actual compensated motor slip as [%]

Dependency:

Slip compensation (P1335) active.

P1338 **Resonance damping gain V/F** Level: **3**

CStat:	CUT	**Datatype:** Float	**Unit:** -	**Min:**	0.00
P-Group:	CONTROL	**active:** Cornfirm	**QuickComm.** -	**Def:**	0.00
				Max:	10.00

Defines resonance damping gain for V/F.

Note:

The resonance circuit damps oscillations of the active current which frequently occur during no-load operation.
In V/F modes (see P1300), the resonant damping circuit is active in a range from approx. 5 % to 70 % of rated motor frequency (P0310).

P1340 **Imax controller prop. gain** Level: **3**

CStat:	CUT	**Datatype:** Float	**Unit:** -	**Min:**	0.000
P-Group:	CONTROL	**active:** Cornfirm	**QuickComm.** -	**Def:**	0.000
				Max:	0.499

Dynamically controls the inverter if the output current exceeds the maximum current (P0660). It does this by first limiting the inverter output frequency (to a possible minimum of the nominal slip frequency). If this action does not successfully remove the overcurrent condition, the inverter output voltage is reduced. When the overcurrent condition has been removed successfully, frequency limiting is removed using the ramp-up time set in P1120.

P1341 **Imax controller integral time** Level: **3**

CStat:	CUT	**Datatype:** Float	**Unit:** s	**Min:**	0.000
P-Group:	CONTROL	**active:** Cornfirm	**QuickComm.** -	**Def:**	0.300
				Max:	32.000

Integral time constant of the I_max controller. P1340 = 0 and P1341 = 0 : Imax controller disabled
P1340 = 0 and P1341 > 0 : enhanced integral P1340 > 0 and P1341 > 0 : normal PI control

r1343 **CO: Imax controller freq. output** Level: **3**

CStat:	-	**Datatype:** Float	**Unit:** Hz	**Min:**	-
P-Group:	CONTROL	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays effective frequency limitation.

Dependency:

If I_max controller not in operation, parameter normally shows f_max (P1082).

r1344 **CO: Imax controller volt. output** Level: **3**

CStat:	-	**Datatype:** Float	**Unit:** V	**Min:**	-
P-Group:	CONTROL	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays amount by which the I_max controller is reducing the inverter output voltage.

P1350 **Voltage soft start** Level: **3**

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	CONTROL	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	1

Sets whether voltage is built up smoothly during magnetization time (ON) or whether it simply jumps to boost voltage (OFF)

Possible Settings:

0 OFF
1 ON

Note:

The settings for this parameter bring benefits and drawbacks:
0 = OFF (jump to boots voltage)
Benefit: flux is built up quickly
Drawback: motor may move
1 = ON (smooth voltage build-up)
Benefit: motor less likely to move
Drawback: flux build-up takes longer

P1800 **Pulse frequency** Level: **2**

CStat:	CUT	**Datatype:** U16	**Unit:** kHz	**Min:**	2
P-Group:	INVERTER	**active:** Cornfirm	**QuickComm.** -	**Def:**	4
				Max:	16

Sets pulse frequency of power switches in inverter. The frequency can be changed in steps of 2 kHz.
Pulse frequencies > 4 kHz selected on 380-480 V units reduce the maximum continuous motor current.
The required derating is shown in the table below.
Maximum continuous motor current [A] for 380-480 V units

Inverter Power	4 kHz	6 kHz	8 kHz	10 kHz	12 kHz	14 kHz	16 kHz
0.37	1.2	1.2	1.2	1.2	1.2	1.2	1.1
0.55	1.6	1.6	1.6	1.6	1.6	1.6	1.1
0.75	2.1	2.1	2.1	2.1	1.6	1.6	1.1
1.1	3.0	3.0	2.7	2.7	1.6	1.6	1.1
1.5	4.0	4.0	2.7	2.7	1.6	1.6	1.1
2.2	5.9	5.9	5.1	5.1	3.6	3.6	2.6
3	7.7	7.7	5.1	5.1	3.6	3.6	2.6
4	10.2	10.2	6.7	6.7	4.8	4.8	3.6
5.5	13.2	13.2	13.2	13.2	9.6	9.6	7.5
7.5	18.4	18.4	13.2	13.2	9.6	9.6	7.5
11	26.0	26.0	17.9	17.9	13.5	13.5	10.4

Dependency:

Minimum pulse frequency depends on P1082 (maximum frequency) and P0310 (rated motor frequency).
</DEPEENDENCY>

Note:

If silent operation is not absolutely necessary, lower pulse frequencies may be selected to reduce inverter losses and radio-frequency emissions.
Under certain circumstances, the inverter may reduce the switching frequency to provide protection against over-temperature (see P0290, Level 3).

r1801 **CO: Act. switching frequency** Level: **3**

CStat:	-	**Datatype:** U16	**Unit:** kHz	**Min:**	-
P-Group:	INVERTER	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Actual pulse frequency of power switches in inverter.

Notice:

Under certain conditions (inverter overtemperature, see P0290), this can differ from the values selected in P1800 (pulse frequency).

P1802 **Modulator mode** Level: **3**

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	INVERTER	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	3

Selects inverter modulator mode.

Possible Settings:

0 SVM/FLB automatic mode
1 Lower loss modulation
2 Overmodulated SVM
3 Space vector modulation

Notice:

FLB modulation produces lower switching losses than SVM, but may cause jerky rotation at very low speeds.
SVM with over-modulation may produce current waveform distortion at high output voltages.
SVM without over-modulation will reduce maximum output voltage available to motor.

P1820 **Reverse output phase sequence** Level: **2**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	INVERTER	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	1

Changes direction of motor rotation without changing setpoint polarity.

Possible Settings:

0 OFF
1 ON

P1910 **Select motor data identification** Level: **2**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	MOTOR	**active:** Immediately	**QuickComm.** Y	**Def:**	0
				Max:	2

Performs stator resistance measuring.

Dependency:

No measurement if motor data incorrect.
Setting 1 = calculated value for stator resistance (see P0350) is overwritten.
Setting 2 = values already calculated are not overwritten.

Possible Settings:

0 Disabled
1 Identification of Rs with parameter change
2 Identification of Rs without parameter change

Note:

Once enabled (P1910 = 1), A0541 generates warning that next ON command will initiate measurement of stator resistance.

r1912 **Identified stator resistance** Level: **2**

CStat:	-	**Datatype:** Float	**Unit:** Ohm	**Min:**	-
P-Group:	MOTOR	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays measured stator resistance value (line-to-line) in [Ohms]

Note:

This value is measured using P1910 = 1 or 2 , i.e., identification of all parameters with/without change.

P2000 **Reference frequency** Level: **2**

CStat:	CT	**Datatype:** Float	**Unit:** Hz	**Min:**	1.00
P-Group:	COMM	**active:** Immediately	**QuickComm.** -	**Def:**	50.00
				Max:	650.00

Full-scale frequency setting used by serial link (corresponds to 4000H), analog I/O and P/D controller.

P2001 **Reference voltage** Level: **3**

CStat:	CT	**Datatype:** U16	**Unit:** V	**Min:**	10
P-Group:	COMM	**active:** Immediately	**QuickComm.** -	**Def:**	1000
				Max:	2000

Full-scale output voltage (i.e. 100%) used over serial link (corresponds to 4000H).

Example:

P0201 = 230 specifies that 4000H received via USS denotes 230 V.

P2002 **Reference current** Level: **3**

CStat:	CT	**Datatype:** Float	**Unit:** A	**Min:**	0.10
P-Group:	COMM	**active:** Immediately	**QuickComm.** -	**Def:**	0.10
				Max:	10000.00

Full-scale output current used over serial link (corresponds to 4000H).

P2009[2] **USS normalization** Level: **3**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	COMM	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	1

Enables special normalization for USS.

Possible Settings:

0 Disabled
1 Enabled

Index:

P2009[0] : Serial interface COM link
P2009[1] : Serial interface BOP link

Note:

If enabled, the main setpoint (word 2 in PZD) is not interpreted as 100 % = 4000H, but as "absolute" instead (e.g. 4000H = 16384 means 163.84 Hz).

P2010[2] USS baudrate Level: **2**

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	3
P-Group:	COMM	**active:** Immediately	**QuickComm.** -	**Def:**	6
				Max:	9

Sets baud rate for USS communication.

Possible Settings:

3 1200 baud
4 2400 baud
5 4800 baud
6 9600 baud
7 19200 baud
8 38400 baud
9 57600 baud

Index:

P2010[0] : Serial interface COM link
P2010[1] : Serial interface BOP link

P2011[2] USS address Level: **2**

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	COMM	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	31

Sets unique address for inverter.

Index:

P2011[0] : Serial interface COM link
P2011[1] : Serial interface BOP link

Note:

You can connect up to a further 31 inverters via the serial link (i.e. 32 inverters in total) and control them with the USS serial bus protocol.

P2012[2] USS PZD length Level: **3**

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	COMM	**active:** Immediately	**QuickComm.** -	**Def:**	2
				Max:	4

Defines the number of 16-bit words in PZD part of USS telegram. The PZD part of the USS telegram is used for the main setpoint, and to control the inverter

Index:

P2012[0] : Serial interface COM link
P2012[1] : Serial interface BOP link

P2013[2] USS PKW length Level: **3**

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	COMM	**active:** Immediately	**QuickComm.** -	**Def:**	127
				Max:	127

Defines the number of 16-bit words in PKW part of USS telegram. The PKW part of the USS telegram is used to read and write individual parameter values

Possible Settings:

0 No Words
3 3 Words
4 4 Words
27 Variable

Index:

P2013[0] : Serial interface COM link
P2013[1] : Serial interface BOP link

Notice:

Setting P2013 has implications for the PKW word order, please refer to the USS description / FAQ at the following Siemens sites: http://www.con.siemens.co.uk (external customers)
http://intramaster.con.siemens.co.uk (internal customers).

P2014[2] USS telegram off time Level: **3**

CStat:	CT	**Datatype:** U16	**Unit:** ms	**Min:**	0
P-Group:	COMM	**active:** Cornfirm	**QuickComm.** -	**Def:**	0
				Max:	65535

Defines a time after which a fault will be generated (F0070) if no telegram is received via the USS channels.

Dependency:

Setting 0 = watchdog disabled.

Index:

P2014[0] : Serial interface COM link
P2014[1] : Serial interface BOP link

r2015[4] CO: PZD from BOP link (USS) Level: **3**

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	COMM	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays status of Control word 1 on BOP link (RS232 USS).

Index:

r2015[0] : Received word 0
r2015[1] : Received word 1
r2015[2] : Received word 2
r2015[3] : Received word 3

Note:

The control words can be viewed as bit parameters r2032 and r2033.

P2016[4] **CI: PZD to BOP link (USS)** Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMM	**active:** Cornfirm	**QuickComm.** -	**Def:**	52:0
				Max:	4000:0

Selects signals to be transmitted to serial interface via BOP link

Example:

P2016[0] = 52.0 (default). In this case, the value of r0052[0] (CO/BO: Status word) is transmitted as 1st PZD to the BOP link.

This parameter allows the user to define the source of the status words and actual values for the reply PZD.**Index:**

P2016[0] : Transmitted word 0
P2016[1] : Transmitted word 1
P2016[2] : Transmitted word 2
P2016[3] : Transmitted word 3

Note:

If r0052 not indexed, display does not show an index (".0").

r2018[4] **CO: PZD from COM link (USS)** Level: **3**

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	COMM	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays process data received via USS on COM link

Index:

r2018[0] : Received word 0
r2018[1] : Received word 1
r2018[2] : Received word 2
r2018[3] : Received word 3

Note:

The control words can be viewed as bit parameters r2032 and r2033.

P2019[4] **CI: PZD to COM link (USS)** Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMM	**active:** Cornfirm	**QuickComm.** -	**Def:**	52:0
				Max:	4000:0

Details:

See r2016 (PZD to BOP link)

Index:

P2019[0] : Transmitted word 0
P2019[1] : Transmitted word 1
P2019[2] : Transmitted word 2
P2019[3] : Transmitted word 3

r2024[2] **USS error-free telegrams** Level: **3**

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	COMM	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays number of error-free USS telegrams received.

Index:

r2024[0] : Serial interface COM link
r2024[1] : Serial interface BOP link

r2025[2] **USS rejected telegrams** Level: **3**

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	COMM	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays number of USS telegrams rejected.

Index:

r2025[0] : Serial interface COM link
r2025[1] : Serial interface BOP link

r2026[2] **USS character frame error** Level: **3**

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	COMM	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays number of USS character frame errors.

Index:

r2026[0] : Serial interface COM link
r2026[1] : Serial interface BOP link

r2027[2] **USS overrun error** Level: **3**

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	COMM	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays number of USS telegrams with overrun error.

Index:

r2027[0] : Serial interface COM link
r2027[1] : Serial interface BOP link

r2028[2] **USS parity error** Level: **3**

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	COMM	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays number of USS telegrams with parity error.

Index:

r2028[0] : Serial interface COM link
r2028[1] : Serial interface BOP link

r2029[2] **USS start not identified** Level: **3**

CStat: - **Datatype:** U16 **Unit:** - **Min:** - **Def:** - **Max:** -
P-Group: COMM **active:** - **QuickComm.** -

Displays number of USS telegrams with unidentified start.

Index:

r2029[0] : Serial interface COM link
r2029[1] : Serial interface BOP link

r2030[2] **USS BCC error** Level: **3**

CStat: - **Datatype:** U16 **Unit:** - **Min:** - **Def:** - **Max:** -
P-Group: COMM **active:** - **QuickComm.** -

Displays number of USS telegrams with BCC error.

Index:

r2030[0] : Serial interface COM link
r2030[1] : Serial interface BOP link

r2031[2] **USS length error** Level: **3**

CStat: - **Datatype:** U16 **Unit:** - **Min:** - **Def:** - **Max:** -
P-Group: COMM **active:** - **QuickComm.** -

Displays number of USS telegrams with incorrect length.

Index:

r2031[0] : Serial interface COM link
r2031[1] : Serial interface BOP link

r2032 **BO: CtrlWrd1 from BOP link (USS)** Level: **3**

CStat: - **Datatype:** U16 **Unit:** - **Min:** - **Def:** - **Max:** -
P-Group: COMM **active:** - **QuickComm.** -

Displays control word 1 from BOP link (word 1 within USS).

Bitfields:

Bit00	ON/OFF1	0	NO
		1	YES
Bit01	OFF2: Electrical stop	0	YES
		1	NO
Bit02	OFF3: Fast stop	0	YES
		1	NO
Bit03	Pulse enable	0	NO
		1	YES
Bit04	RFG enable	0	NO
		1	YES
Bit05	RFG start	0	NO
		1	YES
Bit06	Setpoint enable	0	NO
		1	YES
Bit07	Fault acknowledge	0	NO
		1	YES
Bit08	JOG right	0	NO
		1	YES
Bit09	JOG left	0	NO
		1	YES
Bit10	Control from PLC	0	NO
		1	YES
Bit11	Reverse (setpoint inversion)	0	NO
		1	YES
Bit13	Motorpoti (MOP) up	0	NO
		1	YES
Bit14	Motorpoti (MOP) down	0	NO
		1	YES
Bit15	Local / Remote	0	NO
		1	YES

r2033 **BO: CtrlWrd2 from BOP link (USS)** Level: **3**

CStat: - **Datatype:** U16 **Unit:** - **Min:** -
P-Group: COMM **active:** - **QuickComm.** - **Def:** - **Max:** -

Displays control word 2 from BOP link (i.e. word 4 within USS)

Dependency:

P0700 = 5 (COMM link selected as command source) and P0719 = 0 (remote selection of command/setpoint source).

Bitfields:

Bit00	Fixed frequency Bit 0	0	NO
		1	YES
Bit01	Fixed frequency Bit 1	0	NO
		1	YES
Bit02	Fixed frequency Bit 2	0	NO
		1	YES
Bit08	PID release	0	NO
		1	YES
Bit09	DC brake enable	0	NO
		1	YES
Bit13	External fault 1	0	YES
		1	NO

r2036 **BO: CtrlWrd1 from COM link (USS)** Level: **3**

CStat: - **Datatype:** U16 **Unit:** - **Min:** -
P-Group: COMM **active:** - **QuickComm.** - **Def:** - **Max:** -

Displays control word 1 from COM link (i.e. word 1 within USS)

Details:

See r2033 (control word 2 from BOP link)

Bitfields:

Bit00	ON/OFF1	0	NO
		1	YES
Bit01	OFF2: Electrical stop	0	YES
		1	NO
Bit02	OFF3: Fast stop	0	YES
		1	NO
Bit03	Pulse enable	0	NO
		1	YES
Bit04	RFG enable	0	NO
		1	YES
Bit05	RFG start	0	NO
		1	YES
Bit06	Setpoint enable	0	NO
		1	YES
Bit07	Fault acknowledge	0	NO
		1	YES
Bit08	JOG right	0	NO
		1	YES
Bit09	JOG left	0	NO
		1	YES
Bit10	Control from PLC	0	NO
		1	YES
Bit11	Reverse (setpoint inversion)	0	NO
		1	YES
Bit13	Motorpoti (MOP) up	0	NO
		1	YES
Bit14	Motorpoti (MOP) down	0	NO
		1	YES
Bit15	Local / Remote	0	NO
		1	YES

r2037 **BO: CtrlWrd2 from COM link (USS)** Level: **3**

CStat: - **Datatype:** U16 **Unit:** - **Min:** -
P-Group: COMM **active:** - **QuickComm.** - **Def:** - **Max:** -

Displays control word 2 from COM link (i.e. word 4 within USS)

Details:

See r2033 (control word 2 from BOP link)

Bitfields:

Bit00	Fixed frequency Bit 0	0	NO
		1	YES
Bit01	Fixed frequency Bit 1	0	NO
		1	YES
Bit02	Fixed frequency Bit 2	0	NO
		1	YES
Bit08	PID release	0	NO
		1	YES
Bit09	DC brake enable	0	NO
		1	YES
Bit13	External fault 1	0	YES
		1	NO

P2040 **CB telegram off time** Level: **3**

CStat:	CT	**Datatype:** U16	**Unit:** ms	**Min:**	0
P-Group:	COMM	**active:** Cornfirm	**QuickComm.** -	**Def:**	20
				Max:	65535

Defines time after which a fault will be generated (F0070) if no telegram is received via the link (SOL).

Dependency:

Setting 0 = watchdog disabled

P2041[5] **CB parameter** Level: **3**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	COMM	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	65535

Configures a communication board (CB).

Details:

See relevant communication board manual for protocol definition and appropriate settings

Index:

P2041[0] : CB parameter 0
P2041[1] : CB parameter 1
P2041[2] : CB parameter 2
P2041[3] : CB parameter 3
P2041[4] : CB parameter 4

r2050[4] **CO: PZD from CB** Level: **3**

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	COMM	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays PZD received from communication board (CB).

Index:

r2050[0] : Received word 0
r2050[1] : Received word 1
r2050[2] : Received word 2
r2050[3] : Received word 3

Note:

The control words can be viewed as bit parameters r2032 and r2033.

P2051[4] **CI: PZD to CB** Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMM	**active:** Cornfirm	**QuickComm.** -	**Def:**	52:0
				Max:	4000:0

Connects PZD to CB.

This parameter allows the user to define the source of status words and actual values for the reply PZD.

Most Common Settings:

Status word 1 = 52 (see r0052 for details)
Actual value 1 = 21 inverter output frequency (see r0021)

Other BICO settings are possible

Index:

P2051[0] : Transmitted word 0
P2051[1] : Transmitted word 1
P2051[2] : Transmitted word 2
P2051[3] : Transmitted word 3

r2053[5] **CB identification** Level: **3**

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	COMM	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays identification data of communication board (CB).

Index:

r2053[0] : CB type (PROFIBUS = 1)
r2053[1] : Firmware version
r2053[2] : Firmware version detail
r2053[3] : Firmware date (year)
r2053[4] : Firmware date (day/month)

r2054[7] **CB diagnosis** Level: **3**

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	COMM	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays diagnostic information of communication board (CB).

Details:

See relevant communications board manual.

Index:

r2054[0] : CB diagnosis 0
r2054[1] : CB diagnosis 1
r2054[2] : CB diagnosis 2
r2054[3] : CB diagnosis 3
r2054[4] : CB diagnosis 4
r2054[5] : CB diagnosis 5
r2054[6] : CB diagnosis 6

r2090 **BO: Control word 1 from CB** Level: **3**

CStat: - **Datatype:** U16 **Unit:** - **Min:** -
P-Group: COMM **active:** - **QuickComm.** - **Def:** - **Max:** -

Displays control word 1 received from communication board (CB).

Details:

See relevant communication board manual for protocol definition and appropriate settings

Bitfields:

Bit00	ON/OFF1	0	NO
		1	YES
Bit01	OFF2: Electrical stop	0	YES
		1	NO
Bit02	OFF3: Fast stop	0	YES
		1	NO
Bit03	Pulse enable	0	NO
		1	YES
Bit04	RFG enable	0	NO
		1	YES
Bit05	RFG start	0	NO
		1	YES
Bit06	Setpoint enable	0	NO
		1	YES
Bit07	Fault acknowledge	0	NO
		1	YES
Bit08	JOG right	0	NO
		1	YES
Bit09	JOG left	0	NO
		1	YES
Bit10	Control from PLC	0	NO
		1	YES
Bit11	Reverse (setpoint inversion)	0	NO
		1	YES
Bit13	Motorpoti (MOP) up	0	NO
		1	YES
Bit14	Motorpoti (MOP) down	0	NO
		1	YES
Bit15	Local / Remote	0	NO
		1	YES

r2091 **BO: Control word 2 from CB** Level: **3**

CStat: - **Datatype:** U16 **Unit:** - **Min:** -
P-Group: COMM **active:** - **QuickComm.** - **Def:** - **Max:** -

Displays control word 2 received from communication board (CB).

Details:

See relevant communication board manual for protocol definition and appropriate settings

Bitfields:

Bit00	Fixed frequency Bit 0	0	NO
		1	YES
Bit01	Fixed frequency Bit 1	0	NO
		1	YES
Bit02	Fixed frequency Bit 2	0	NO
		1	YES
Bit08	PID release	0	NO
		1	YES
Bit09	DC brake enable	0	NO
		1	YES
Bit13	External fault 1	0	YES
		1	NO

P2100[3] **Alarm number stop reaction** Level: **3**

CStat: CT **Datatype:** U16 **Unit:** - **Min:** 0
P-Group: ALARMS **active:** Immediately **QuickComm.** - **Def:** 0 **Max:** 65535

Selects up to 3 faults or warnings for non-default reactions.

Example:

If you want F0005 to perform an OFF3 instead of an OFF2, set P2100[0] = 5, then select the desired reaction in P2101[0] (in this case, set P2101[0] = 3).

Note:

All fault codes have a default reaction to OFF2. Some fault codes caused by hardware trips (e.g. overcurrent) cannot be changed from the default reactions.

P2101[3] Stop reaction value — Level: **3**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	ALARMS	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	4

Sets drive stop reaction values for fault selected by P2100 (alarm number stop reaction).
This indexed parameter specifies the special reaction to the faults/warnings defined in P2100 indices 0 to 2.

Possible Settings:

0 No reaction, no display
1 OFF1 stop reaction
2 OFF2 stop reaction
3 OFF3 stop reaction
4 No reaction warning only

Note:

Settings 0 - 3 only are available for fault codes
Settings 0 and 4 only are available for warnings
Index 0 (P2101) refers to fault/warning in index 0 (P2100)

P2103 BI: 1. Faults acknowledgement — Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	722:2
				Max:	4000:0

Defines source of fault acknowledgement, e.g. keypad/DIN, etc. (depending on setting).

Most Common Settings:

722.0 = Digital input 1
722.1 = Digital input 2
722.2 = Digital input 3
722.3 = Digital input 4 (via analog input)

P2104 BI: 2. Faults acknowledgement — Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	0:0
				Max:	4000:0

Selects second source of fault acknowledgement.

Most Common Settings:

722.0 = Digital input 1
722.1 = Digital input 2
722.2 = Digital input 3
722.3 = Digital input 4 (via analog input)

P2106 BI: External fault — Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	1:0
				Max:	4000:0

Selects source of external faults.

Most Common Settings:

722.0 = Digital input 1
722.1 = Digital input 2
722.2 = Digital input 3
722.3 = Digital input 4 (via analogue input)

r2110[4] Warning number — Level: **2**

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	ALARMS	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays warning information.
A maximum of 2 active warnings (indices 0 and 1) and 2 historical warnings (indices 2 and 3) may be viewed.

Index:

r2110[0] : Recent Warnings --, warns 1 & 2
r2110[2] : Recent Warnings -1, warns 3 & 4

Note:

The keypad will flash while a warning is active. The LEDs indicate the warning status in this case.
If an AOP is in use, the display will show number and text of the active warning.

Notice:

Indices 0 and 1 are not stored.

P2111 Total number of warnings — Level: **3**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	ALARMS	**active:** Immediately	**QuickComm.** -	**Def:**	0
				Max:	4

Displays number of warning (up to 4) since last reset. Set to 0 to reset the warning history.

r2114[2] Run time counter — Level: 3

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	ALARMS	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays run time counter

Details:
See P0948 (fault time)

P2115[3] AOP real time clock — Level: 3

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	ALARMS	**active:** Cornfirm	**QuickComm.** -	**Def:**	0
				Max:	65535

Displays AOP real time.

Details:
See P0948 (fault time)

P2150 Hysteresis frequency f,hys — Level: 3

CStat:	CUT	**Datatype:** Float	**Unit:** Hz	**Min:**	0.00
P-Group:	ALARMS	**active:** Cornfirm	**QuickComm.** -	**Def:**	3.00
				Max:	10.00

Defines hysteresis level applied for comparing frequency and speed to threshold.

P2155 Threshold frequency f1 — Level: 3

CStat:	CUT	**Datatype:** Float	**Unit:** Hz	**Min:**	0.00
P-Group:	ALARMS	**active:** Cornfirm	**QuickComm.** -	**Def:**	30.00
				Max:	650.00

Sets a threshold for comparing actual speed or frequency to thresholds (controls status bit 53.4 and 53.5).

P2156 Delay time f1 — Level: 3

CStat:	CUT	**Datatype:** U16	**Unit:** ms	**Min:**	0
P-Group:	ALARMS	**active:** Cornfirm	**QuickComm.** -	**Def:**	10
				Max:	10000

Sets time delay prior to threshold frequency comparison (P2155).

P2164 Hysteresis freq.-deviation — Level: 3

CStat:	CUT	**Datatype:** Float	**Unit:** Hz	**Min:**	0.00
P-Group:	ALARMS	**active:** Cornfirm	**QuickComm.** -	**Def:**	3.00
				Max:	10.00

Hysteresis frequency for detecting permitted deviation (from setpoint) or frequency or speed (controls status bits 52.8 and 53.6)

P2167 Switch-off frequency f,off — Level: 3

CStat:	CUT	**Datatype:** Float	**Unit:** Hz	**Min:**	0.00
P-Group:	ALARMS	**active:** Cornfirm	**QuickComm.** -	**Def:**	1.00
				Max:	10.00

Sets frequency threshold below which inverter switches off.

Dependency:
Switched off only if OFF1 or OFF3 active.

P2168 Delay Toff (inverter switch-off) — Level: 3

CStat:	CUT	**Datatype:** U16	**Unit:** ms	**Min:**	0
P-Group:	ALARMS	**active:** Cornfirm	**QuickComm.** -	**Def:**	10
				Max:	10000

Defines time for which the inverter may operate below switch-off frequency (P2167) before switch off occurs.

P2170 Threshold current I,thresh — Level: 3

CStat:	CUT	**Datatype:** Float	**Unit:** %	**Min:**	0.0
P-Group:	ALARMS	**active:** Cornfirm	**QuickComm.** -	**Def:**	100.0
				Max:	400.0

Defines threshold current to be used in comparisons of I_act and I_Thresh (controls status bit 53.3).

P2171 Delay time current — Level: 3

CStat:	CUT	**Datatype:** U16	**Unit:** ms	**Min:**	0
P-Group:	ALARMS	**active:** Cornfirm	**QuickComm.** -	**Def:**	10
				Max:	10000

Defines delay time prior to activation of current comparison.

P2172 Threshold voltage Vdc,thresh — Level: 3

CStat:	CUT	**Datatype:** U16	**Unit:** V	**Min:**	0
P-Group:	ALARMS	**active:** Cornfirm	**QuickComm.** -	**Def:**	800
				Max:	2000

Defines DC link voltage to be compared to actual voltage (controls bits 53.7 and 53.8).

P2173 Delay time Vdc — Level: 3

CStat:	CUT	**Datatype:** U16	**Unit:** ms	**Min:**	0
P-Group:	ALARMS	**active:** Cornfirm	**QuickComm.** -	**Def:**	10
				Max:	10000

Defines delay time prior to activation of threshold comparison.

P2179 Current limit for no load ident. — Level: 3

CStat:	CUT	**Datatype:** Float	**Unit:** %	**Min:**	0.0
P-Group:	ALARMS	**active:** Cornfirm	**QuickComm.** -	**Def:**	3.0
				Max:	10.0

Threshold current load missing

Note:
It may be that the motor is not connected (load missing) or a phase could be missing.

Notice:
If a motor setpoint cannot be entered and the current limit (P2179) is not exceeded, Alarm A0922 (no load applied) is issued when delay time (P2180) expires.

P2180 **Delay time for no load ident.** Level: **3**

CStat:	CUT	**Datatype:** U16	**Unit:** ms	**Min:**	0
P-Group:	ALARMS	**active:** Cornfirm	**QuickComm.** -	**Def:**	2000
				Max:	10000

Delay time load missing

Note:

It may be that the motor is not connected (load missing) or a phase could be missing.

Notice:

If a motor setpoint cannot be entered and the current limit (P2179) is not exceeded, Alarm A0922 (no load applied) is issued when delay time (P2180) expires.

r2197 **CO/BO: Status word 1 of monitor** Level: **2**

CStat:	-	**Datatype:** U16	**Unit:** -	**Min:**	-
P-Group:	ALARMS	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Status bits (status word 1) of status monitor.

Bitfields:

Bit00	Act. freq. <= P1080	0	NO
		1	YES
Bit01	Act. freq. <= P2155	0	NO
		1	YES
Bit02	Act. freq. > P2155	0	NO
		1	YES
Bit03	Act. freq. > zero	0	NO
		1	YES
Bit04	Act. freq. >= setpoint	0	NO
		1	YES
Bit05	Act. freq. <= P2167	0	NO
		1	YES
Bit06	Act. freq. >= P1082	0	NO
		1	YES
Bit07	Act. freq. == setpoint	0	NO
		1	YES
Bit08	Act. current >= P2170	0	NO
		1	YES
Bit09	Act. voltage < P2172	0	NO
		1	YES
Bit10	Act. voltage > P2172	0	NO
		1	YES
Bit11	No load condition	0	NO
		1	YES

P2200 **BI: Enable PID controller** Level: **2**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	TECH	**active:** Immediately	**QuickComm.** -	**Def:**	0:0
				Max:	4000:0

PID mode Allows user to enable/disable the PID controller. Setting to 1 enables the PID closed-loop controller.

Dependency:

Setting 1 automatically disables normal ramp times set in P1120 and P1121 and the normal frequency setpoints.
Following an OFF1 or OFF3 command, however, the inverter frequency will ramp down to zero using the ramp time set in P1121 (P1135 for OFF3).

Note:

The PID setpoint source is selected using P2253. The PID setpoint and the PID feedback signal are interpreted as [%] values (not [Hz]). The output of the PID controller is displayed as [%] and then normalized into [Hz] through P2000 when PID is enabled.
In level 3, the PID controller source enable can also come from the digital inputs in settings 722.0 to 722.2 for DIN1 to DIN3 or from any other BiCo source

Notice:

The minimum and maximum motor frequencies (P1080 and P1082) as well as the skip frequencies (P1091 to P1094) remain active on the inverter output. However, enabling skip frequencies with PID control can produce to instabilities.

P2201 **Fixed PID setpoint 1** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** %	**Min:**	-130.00
P-Group:	TECH	**active:** Cornfirm	**QuickComm.** -	**Def:**	0.00
				Max:	130.00

Defines Fixed PID Setpoint 1
In addition, you can set any of the digital input parameters to Fixed PID Setpoint via the digital inputs (P0701 - P0703).
There are three selection modes for the PID fixed setpoint:
1 Direct selection (P0701 = 15 or P0702 = 15, etc)
In this mode of operation, 1 digital input selects one PID fixed setpoint.
2 Direct selection with ON command (P0701 = 16 or P0702 = 16, etc.)
Description as for 1), except that this type of selection issues an ON commandcoincident with any setpoint selection.
3 Binary Coded Decimal selection (P0701 - P0703 = 17)
Using this method to select the PID Fixed Setpoint allows you to choose up to 7 different PID setpoints. The setpoints are selected according to the following table:

	DIN3	DIN2	DIN1

	OFF	Inactive	Inactive	Inactive
P2201	FS. 1	Inactive	Inactive	Active
P2202	FS. 2	Inactive	Active	Inactive
P2203	FS. 3	Inactive	Active	Active
P2204	FS. 4	Active	Inactive	Inactive
P2205	FS. 5	Active	Inactive	Active
P2205	FS. 6	Active	Active	Inactive
P2207	FS. 7	Active	Active	Active

Dependency:

P2000 = 1 required in user access level 2 to enable setpoint source.
In mode 1 (above): ON command required to start motor (enable pulses).
In mode 2 (above): If inputs programmed to PID fixed setpoint and selected together, the selected setpoints are summed.

Note:

You may mix different types of frequencies; however, remember that they will be summed if selected together.

P2202 Fixed PID setpoint 2

CStat: CUT **Datatype:** Float **Unit:** % **Min:** -130.00
P-Group: TECH **active:** Cornfirm **QuickComm.** - **Def:** 10.00
Max: 130.00
Level: **2**

Details:

See P2201 (Fixed Setpoint 1).

P2203 Fixed PID setpoint 3

CStat: CUT **Datatype:** Float **Unit:** % **Min:** -130.00
P-Group: TECH **active:** Cornfirm **QuickComm.** - **Def:** 20.00
Max: 130.00
Level: **2**

Details:

See P2201 (Fixed Setpoint 1).

P2204 Fixed PID setpoint 4

CStat: CUT **Datatype:** Float **Unit:** % **Min:** -130.00
P-Group: TECH **active:** Cornfirm **QuickComm.** - **Def:** 30.00
Max: 130.00
Level: **2**

Details:

See P2201 (Fixed Setpoint 1).

P2205 Fixed PID setpoint 5

CStat: CUT **Datatype:** Float **Unit:** % **Min:** -130.00
P-Group: TECH **active:** Cornfirm **QuickComm.** - **Def:** 40.00
Max: 130.00
Level: **2**

Details:

See P2201 (Fixed Setpoint 1).

P2206 Fixed PID setpoint 6

CStat: CUT **Datatype:** Float **Unit:** % **Min:** -130.00
P-Group: TECH **active:** Cornfirm **QuickComm.** - **Def:** 50.00
Max: 130.00
Level: **2**

Details:

See P2201 (Fixed Setpoint 1).

P2207 Fixed PID setpoint 7

CStat: CUT **Datatype:** Float **Unit:** % **Min:** -130.00
P-Group: TECH **active:** Cornfirm **QuickComm.** - **Def:** 60.00
Max: 130.00
Level: **2**

Details:

See P2201 (Fixed Setpoint 1).

P2216 Fixed PID setpoint mode - Bit 0

CStat: CT **Datatype:** U16 **Unit:** - **Min:** 1
P-Group: TECH **active:** Cornfirm **QuickComm.** - **Def:** 1
Max: 3
Level: **3**

BCD or direct selection Bit 0 for PID setpoint.

Possible Settings:

1 Selection of fixed frequency is binary coded
2 Selection of fixed frequency is binary coded + ON
3 Selection of fixed frequency is binary coded decimal (BCD)

P2217 Fixed PID setpoint mode - Bit 1

CStat: CT **Datatype:** U16 **Unit:** - **Min:** 1
P-Group: TECH **active:** Cornfirm **QuickComm.** - **Def:** 1
Max: 3
Level: **3**

BCD or direct selection Bit 1 for PID setpoint.

Possible Settings:

1 Selection of fixed frequency is binary coded
2 Selection of fixed frequency is binary coded + ON
3 Selection of fixed frequency is binary coded decimal (BCD)

P2218 **Fixed PID setpoint mode - Bit 2** Level: **3**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	1
P-Group:	TECH	**active:** Cornfirm	**QuickComm.** -	**Def:**	1
				Max:	3

BCD or direct selection Bit 2 for PID setpoint.

Possible Settings:

1 Selection of fixed frequency is binary coded
2 Selection of fixed frequency is binary coded + ON
3 Selection of fixed frequency is binary coded decimal (BCD)

P2220 **BI: Fixed PID setp. select Bit 0** Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	0:0
				Max:	4000:0

Defines command source of fixed PID setpoint selection Bit 0

P2221 **BI: Fixed PID setp. select Bit 1** Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	0:0
				Max:	4000:0

Defines command source of fixed PID setpoint selection Bit 1.

Most Common Settings:

722.0 = Digital input 1
722.1 = Digital input 2
722.2 = Digital input 3
722.3 = Digital input 4 (via analog input)

P2222 **BI: Fixed PID setp. select Bit 2** Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	0:0
				Max:	4000:0

Defines command source of fixed PID setpoint selection Bit 2

Most Common Settings:

722.0 = Digital input 1
722.1 = Digital input 2
722.2 = Digital input 3
722.3 = Digital input 4 (via analog input)

r2224 **CO: Act. fixed PID setpoint** Level: **2**

CStat:	-	**Datatype:** Float	**Unit:** %	**Min:**	-
P-Group:	TECH	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays total output of PID fixed setpoint selection.

P2231 **Setpoint memory of PID-MOP** Level: **2**

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	TECH	**active:** Cornfirm	**QuickComm.** -	**Def:**	0
				Max:	1

Setpoint memory

Dependency:

If 0 selected, setpoint returns to value set in P2240 after an OFF command
If 1 is selected, active setpoint is 'remembered' ad P2240 updated with current value.

Details:

See P2240 (setpoint of PID-MOP)

Possible Settings:

0 OFF: MOP setpoint will not be stored
1 OFF: MOP setpoint will be stored (P1040 is updated)

P2232 **Inhibit rev. direct. of PID-MOP** Level: **2**

CStat:	CT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	TECH	**active:** Immediately	**QuickComm.** -	**Def:**	1
				Max:	1

Inhibits reverse setpoint selection when PID motor potentiometer (PID-MOP) is chosen either as a main setpoint of additional setpoint (using P1000)

Possible Settings:

0 Reserve direction is allowed
1 Reserve direction inhibited

Note:

Setting 0 enables a change of motor direction using the MOP setpoint (increase/decrease frequency either by using digital inputs or MOP up/down buttons.

P2235 **BI: Enable PID-MOP (UP-cmd)** Level: **3**

CStat:	CT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	COMMANDS	**active:** Immediately	**QuickComm.** -	**Def:**	19:13
				Max:	4000:0

Defines definition of UP command source.

Most Common Settings:

722.0 = Digital input 1
722.1 = Digital input 2
722.2 = Digital input 3
722.3 = Digital input 4 (via analog input)

19.d = Keypad UP cursor

P2236	**BI: Enable PID-MOP (DOWN-cmd)**			**Min:**	0:0	Level:
	CStat: CT	**Datatype:** U32	**Unit:** -	**Def:**	19:14	**3**
	P-Group: COMMANDS	**active:** Immediately	**QuickComm.** -	**Max:**	4000:0	

Defines definition of DOWN command source.

Most Common Settings:

722.0 = Digital input 1
722.1 = Digital input 2
722.2 = Digital input 3
722.3 = Digital input 4 (via analog input)
19.e = Keypad DOWN cursor

P2240	**Setpoint of PID-MOP**			**Min:**	-130.00	Level:
	CStat: CUT	**Datatype:** Float	**Unit:** %	**Def:**	10.00	**2**
	P-Group: TECH	**active:** Cornfirm	**QuickComm.** -	**Max:**	130.00	

Setpoint of the motor potentiometer.
Allows user to set a digital PID setpoint in [%].

Dependency:

To change setpoint:
1. Use UP / DOWN key on BOP or
2. Set P0702/P0703 = 13/14 (function of digital inputs 2 and 3)

Most Common Settings:

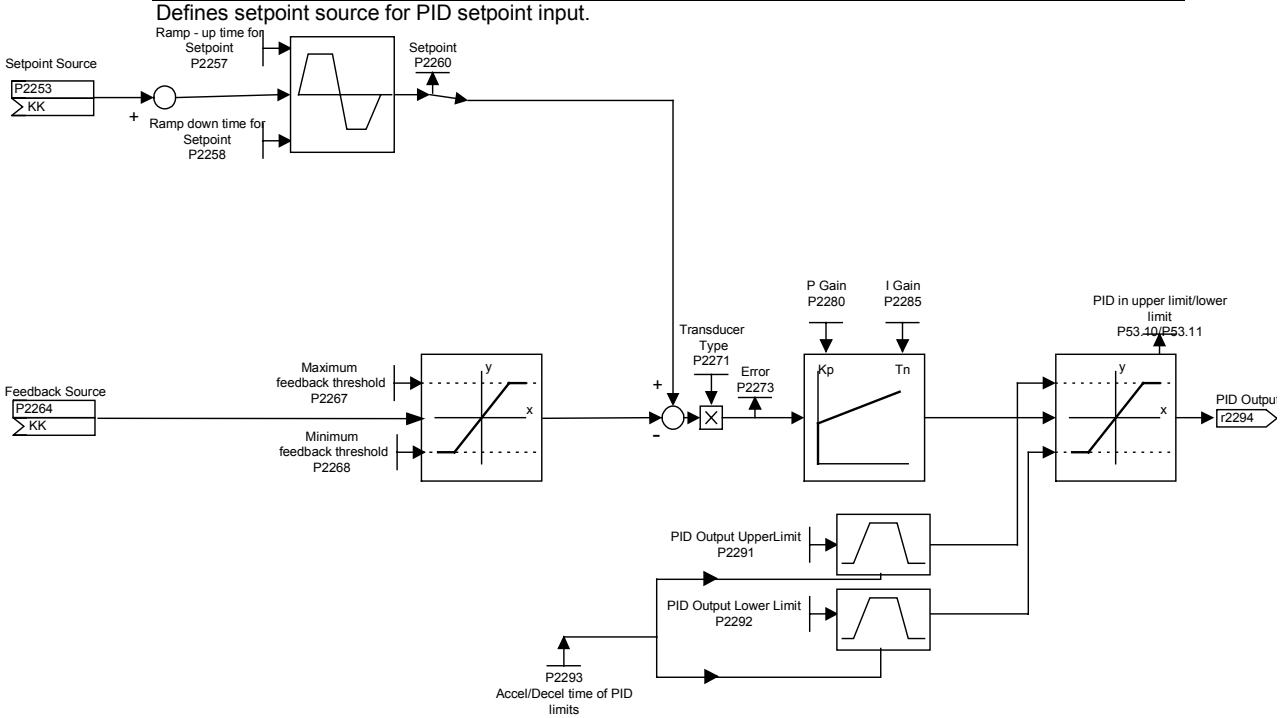
722.0 = Digital input 1
722.1 = Digital input 2
722.2 = Digital input 3
722.3 = Digital input 4 (via analog input)
19.d = Keypad UP cursor

r2250	**CO: Output setpoint of PID-MOP**			**Min:**	-	Level:
	CStat: -	**Datatype:** Float	**Unit:** %	**Def:**	-	**2**
	P-Group: TECH	**active:** -	**QuickComm.** -	**Max:**	-	

Displays output setpoint of motor potentiometer

P2253	**CI: PID setpoint**			**Min:**	0:0	Level:
	CStat: CUT	**Datatype:** U32	**Unit:** -	**Def:**	0:0	**2**
	P-Group: TECH	**active:** Immediately	**QuickComm.** -	**Max:**	4000:0	

Defines setpoint source for PID setpoint input.



This parameter allows the user to select the source of the PID setpoint. Normally, a digital setpoint is selected either using a fixed PID setpoint or an active setpoint.

Most Common Settings:

755 = Analog input 1
2224 = Fixed PI setpoint (see P2201 to P2207)
2250 = Active PI setpoint (see P2240)

P2254 **CI: PID trim source**

CStat:	CUT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	TECH	**active:** Immediately	**QuickComm.** -	**Def:**	0:0
				Max:	4000:0

Level: **3**

Selects trim source for PID setpoint.

Details:

See "Using BICO"

P2255 **PID setpoint gain factor**

CStat:	CUT	**Datatype:** Float	**Unit:** -	**Min:**	0.00
P-Group:	TECH	**active:** Cornfirm	**QuickComm.** -	**Def:**	100.00
				Max:	100.00

Level: **3**

Function parameter of the gain factor for PID setpoint. The trim input is multiplied by this gain factor to produce a suitable ratio between setpoint and trim.

Note:

Default = 100 %

P2256 **PID trim gain factor**

CStat:	CUT	**Datatype:** Float	**Unit:** -	**Min:**	0.00
P-Group:	TECH	**active:** Cornfirm	**QuickComm.** -	**Def:**	100.00
				Max:	100.00

Level: **3**

Gain factor for PID trim. This gain factor scales the trim signal, which is added to the main PID setpoint.

Note:

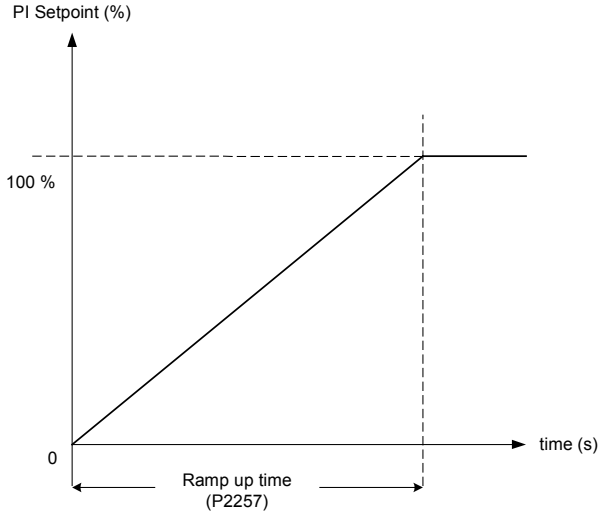
Default = 100 %

P2257 **Ramp-up time for PID setpoint**

CStat:	CUT	**Datatype:** Float	**Unit:** s	**Min:**	0.00
P-Group:	TECH	**active:** Cornfirm	**QuickComm.** -	**Def:**	1.00
				Max:	650.00

Level: **2**

Sets the ramp-up time for the PID setpoint.



Dependency:

P2200 = 1 (PID control is enabled) disable normal ramp-up time (P1120).
PID ramp time effective only on PID setpoint and only active when PID setpoint is changed or when RUN command is given (when PID uses this ramp to reach its value from 0 %).

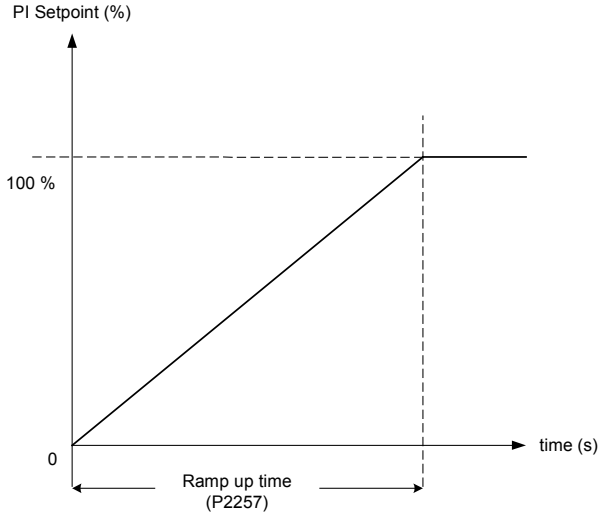
Notice:

Setting the ramp-up time too short may cause the inverter to trip, on overcurrent for example.

P2258 **Ramp-down time for PID setpoint** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** s	**Min:**	0.00
P-Group:	TECH	**active:** Cornfirm	**QuickComm.** -	**Def:**	1.00
				Max:	650.00

Sets ramp-down time for PID setpoint.



Dependency:

P2200 = 1 (PID control is enabled) disables normal ramp-up time (P1120).
PID setpoint ramp effective only on PID setpoint changes.
P1121 (ramp-down time) and P1135 (OFF3 ramp-down time) define the ramp times used after OFF1 and OFF2 respectively.

Notice:

Setting the ramp-down time too short can cause the inverter to trip on overvoltage (F0002) / overcurrent (F0001).

r2260 **CO: Act. PID setpoint** Level: **2**

CStat:	-	**Datatype:** Float	**Unit:** %	**Min:**	-
P-Group:	TECH	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays total active PID setpoint.

P2261 **PID setpoint filter timeconstant** Level: **3**

CStat:	CUT	**Datatype:** Float	**Unit:** s	**Min:**	0.00
P-Group:	TECH	**active:** Cornfirm	**QuickComm.** -	**Def:**	0.00
				Max:	60.00

Sets a time constant for smooting the PID setpoint.

Notice:

Default setting = 0, i.e. no smoothing

r2262 **CO: Act. PID filtered setpoint** Level: **3**

CStat:	-	**Datatype:** Float	**Unit:** %	**Min:**	-
P-Group:	TECH	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays PID setpoint in [%] after smoothing.

P2264 **CI: PID feedback** Level: **2**

CStat:	CUT	**Datatype:** U32	**Unit:** -	**Min:**	0:0
P-Group:	TECH	**active:** Immediately	**QuickComm.** -	**Def:**	755:0
				Max:	4000:0

Selects the source of the PID feedback signal.

755 = Analog input 1 setpoint
2224 = Fixed PID setpoint
2250 = Output setpoint of PID-MOP

Note:

When analog input is selected, offset and gain can be implemented using parameters P0756 to P0760.

P2265 **PID feedback filter timeconstant** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** s	**Min:**	0.00
P-Group:	TECH	**active:** Cornfirm	**QuickComm.** -	**Def:**	0.00
				Max:	60.00

Defines time constant for PID feedback filter.

r2266 **CO: PID filtered feedback** Level: **2**

CStat:	-	**Datatype:** Float	**Unit:** %	**Min:**	-
P-Group:	TECH	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays PID feedback signal (in [%]).

P2267 **Max. value for PID feedback** Level: **3**

CStat:	CUT	**Datatype:** Float	**Unit:** %	**Min:**	-200.00
P-Group:	TECH	**active:** Cornfirm	**QuickComm.** -	**Def:**	100.00
				Max:	200.00

Sets the upper limit for the value of the feedback signal.

Notice:

When PID is enabled (P2700 = 1) and the signal rises above this value, the inverter will trip with F0222 .

P2268 **Min. value for PID feedback** Level: **3**

CStat:	CUT	**Datatype:** Float	**Unit:** %	**Min:**	-200.00
P-Group:	TECH	**active:** Cornfirm	**QuickComm.** -	**Def:**	0.00
				Max:	200.00

Sets lower limit for value of feedback signal.

Notice:

When PID is enabled (P2700 = 1) and the signal rises above this value, the inverter will trip with F0221.

P2269 **Gain applied to PID feedback** Level: **3**

CStat:	CUT	**Datatype:** Float	**Unit:** -	**Min:**	0.00
P-Group:	TECH	**active:** Cornfirm	**QuickComm.** -	**Def:**	100.00
				Max:	500.00

Allows the user to scale the PID feedback as a percentage value [%].
A gain of 100.0 % means that feedback signal has not changed from its default value.

P2270 **PID feedback function selector** Level: **3**

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	TECH	**active:** Cornfirm	**QuickComm.** -	**Def:**	0
				Max:	3

Applies mathematical functions to the PID feedback signal, allowing multiplication of the result by P2269 (gain applied to PID feedback).

Possible Settings:

0 Disabled
1 Square root (root(x))
2 Square (x*x)
3 Cube (x*x*x)

P2271 **PID tranducer type** Level: **2**

CStat:	CUT	**Datatype:** U16	**Unit:** -	**Min:**	0
P-Group:	TECH	**active:** Cornfirm	**QuickComm.** -	**Def:**	0
				Max:	1

Allows the user to select the transducer type for the PID feedback signal.

Value:

0: = [default] If the feedback signal is less than the PID setpoint, the PID controller will increase motor speed to correct this.
1: = If the feedback signal is greater than the PID setpoint, the PID controller will reduce motor speed to correct this.

Possible Settings:

0 Disabled
1 Inversion of PID feedback signal

Notice:

It is essential that you select the correct tranducer type.
If you are unsure whether 0 or 1 is applicable, you can determine the correct type as follows:
1 Disable the PID function (P2200 = 0).
2 Increase the motor frequency while measuring the feedback signal.
3 If the feedback signal increases with an increase in motor frequency, the PID transducer type should be 0.
4 If the feedback signal decreases with an increase in motor frequency the PID transducer type should be set to 1.

r2272 **CO: PID scaled feedback** Level: **2**

CStat:	-	**Datatype:** Float	**Unit:** %	**Min:**	-
P-Group:	TECH	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays PID scaled feedback signal.

r2273 **CO: PID error** Level: **2**

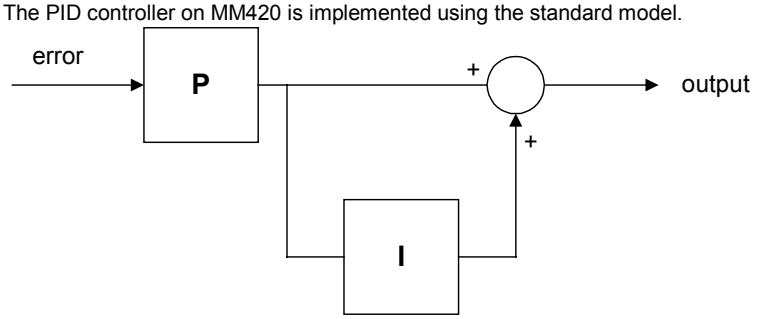
CStat:	-	**Datatype:** Float	**Unit:** %	**Min:**	-
P-Group:	TECH	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays PID error (difference) signal between setpoint and feedback signals in [%].

P2280 **PID proportional gain** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** -	**Min:**	0.00
P-Group:	TECH	**active:** Cornfirm	**QuickComm.** -	**Def:**	3.00
				Max:	125.00

Allows user to set proportional gain for PID controller.
The PID controller on MM420 is implemented using the standard model.



For best results, enable both P an I terms.

Dependency:
If P term = 0, I term acts on the square of the error signal.

Note:
If the system is prone to sudden step changes in the feedback signal, P term should normally be set to a small value (0.5) with a faster I term for optimum performance.

P2285 **PID integral time** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** s	**Min:**	0.00
P-Group:	TECH	**active:** Cornfirm	**QuickComm.** -	**Def:**	0.00
				Max:	100.00

Allows user to set integral time constant for PID controller.

Details:
See P2280 (PID proportional gain).

P2291 **PID output upper limit** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** %	**Min:**	-200.00
P-Group:	TECH	**active:** Cornfirm	**QuickComm.** -	**Def:**	100.00
				Max:	200.00

Sets upper limit for PID controller output.

Dependency:
If F max (P1082) is greater than P2000 (reference frequency), either P2000 or P2291 (PID output upper limit) must be changed to achieve F max.

Note:
The default figure of 100% is defined by P2000 (reference frequency).

P2292 **PID output lower limit** Level: **2**

CStat:	CUT	**Datatype:** Float	**Unit:** %	**Min:**	-200.00
P-Group:	TECH	**active:** Cornfirm	**QuickComm.** -	**Def:**	0.00
				Max:	200.00

Sets lower limit for the PID controller output.

Dependency:
A negative value allows bipolar operation of PID controller.

P2293 **Ramp-up /-down time of PID limit** Level: **3**

CStat:	CUT	**Datatype:** Float	**Unit:** s	**Min:**	0.00
P-Group:	TECH	**active:** Cornfirm	**QuickComm.** -	**Def:**	1.00
				Max:	100.00

Sets maximum ramp rate on output of PID.
When PI is enabled, the output limits are ramped up from 0 to the limits set in P2291 (PID output upper limit) and P2292 (PID output lower limit). Limits prevent large step changes appearing on the output of the PID when the inverter is started. Once the limits have been reached, the PID controller output is instantaneous.
These ramp times are used whenever a RUN command is issued.

Note:
If an OFF1 or OFF 3 are issued, the inverter output frequency ramps down as set in P1121 (ramp-down time) or P1135 (OFF3 ramp-down time).

r2294 **CO: Act. PID output** Level: **2**

CStat:	-	**Datatype:** Float	**Unit:** %	**Min:**	-
P-Group:	TECH	**active:** -	**QuickComm.** -	**Def:**	-
				Max:	-

Displays PID output in [%]

P3900	**End of quick commissioning**			**Min:**	0	Level:
	CStat: C	**Datatype:** U16	**Unit:** -	**Def:**	0	**1**
	P-Group: QUICK	**active:** Immediately	**QuickComm.** Y	**Max:**	3	

Performs calculations necessary for optimized motor operation.
After completion of calculation, P3900 and P0010 (parameter groups for commissioning) are automatically reset to their original value 0.

Dependency:

Changeable only when P0010 = 1 (quick commissioning)

Possible Settings:

0	No quick commissioning
1	Start quick commissioning with factory reset
2	Start quick commissioning
3	Start quick commissioning only for motor data

Note:

When setting 1 is selected, only the parameter settings carried out via the commissioning menu "Quick commissioning", are retained; all other parameter changes, including the I/O settings, are lost. Motor calculations are also performed.
When setting 2 is selected, only those parameters, which depend on the parameters in the commissioning menu "Quick commissioning" (P0010 = 1) are calculated. The I/O settings are also reset to default and the motor calculations performed.
When setting 3 is selected, only the motor calculations are performed.
Calculates a variety of motor parameters, overwriting previous values. These include P0344 (Level 3, motor weight), P0350 (Level 3, demagnetization time), P2000 (reference frequency), P2002 (Level 3, reference current)