SIEMENS

SED2 Variable Frequency Drives

Parameter Reference Guide

Item Number 125-3214, Rev. 010

SED2 Easy Drive

SIEMENS

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Overview

The SED2 uses parameters to define the required operating characteristics, such as motor data, ramp times, and maximum and minimum frequency. Users enter and modify the SED2 parameters using the Basic Operator Panel, the Advanced Operator Panel, or a serial interface.

Each parameter consists of the letter "r" or "P", followed by four numbers, such as r0000 or P0010. The letter "r" identifies read-only parameters. The letter "P" identifies programmable parameters.

Parameter Structure

Figure 1 depicts the structure of the SED2 parameters.

- User Access Level parameter P0003 selects the access level for using the parameters (1=standard, 2=extended, or 3=expert). The access level selected via parameter P0003 determines the number of parameters that are accessible by the user. For most applications, the Standard (1) and Extended (2) levels are sufficient. The factory default setting is P0003=1 (Standard).

- The *filters* of Parameter Filter P0004 categorize the parameters that are available via the access level according to functionality. The filters/categories enable a more focused operational approach. If Parameter P0004=0 for no filter/category, then all parameters for a selected user access level are available.

NOTE: Some parameters are intended for commissioning only and can be viewed as a function of this filter. In order to set these parameters, P0010 must be set to **1** (quick commissioning).

Parameter Indexes

Certain parameters have indexes. The indexes provide subsets of a particular parameter function and group together closely related parameter type information.

The following indexes are associated with P0700, P1000, and digital input and output parameters:

IN000 (AUTO), 1st command data set (CDS)
IN001 (HAND), 2nd command data set (CDS)

The following indexes are associated with analog input and output parameters:

IN000, Analog input 1
IN001, Analog input 2

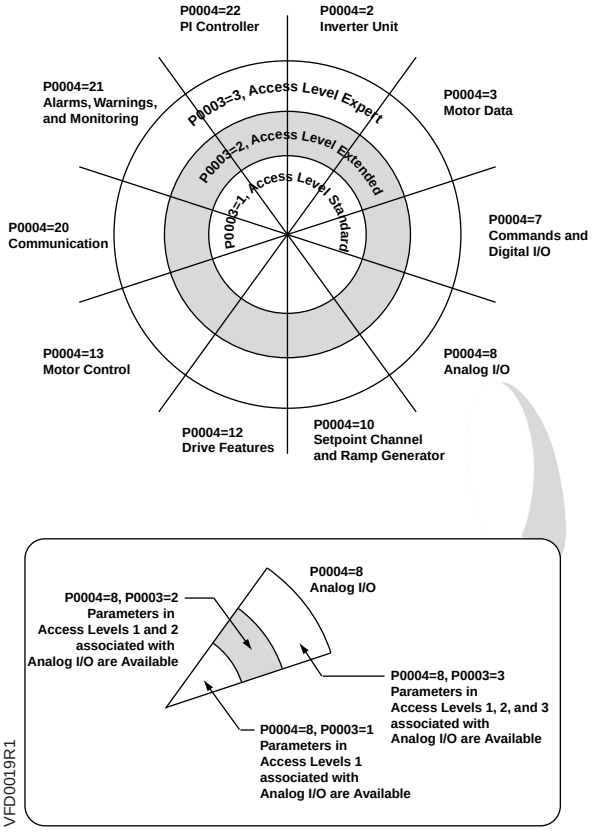


Figure 1. SED2 Parameter Access Levels and Filters.

P0004 Parameter Filters/Categories

Quick Commissioning (P0010=1)

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
r0000	Drive display (defined in P0005)	—		—	—	—	All
P0003	User access level to parameters	—		0	1	4	1
P0010	Commissioning parameter filter	—		0	0	30	1
P0100	Europe/North America power settings (kW or hp)	—		0	0	2	1
P0304	Rated motor voltage	V		10	Varies	2000	1
P0305	Rated motor current	A		0.01	Varies	10000.00	1
P0307	Rated motor power	—		0.01	Varies	2000.00	1
P0308	Rated motor cosPhi	—		0.000	0.000	1.000	3
P0309	Rated motor efficiency	%		0.0	Varies	99.9	3
P0310	Rated motor frequency	Hz		12.00	50.00 or 60.00	650.00	1
P0311	Rated motor speed	1/min		0	Varies	40000	1
P0640	Motor overload factor	%		10.0	110.0	400.0	3
P0700	Selection of command source	—		0	[0] 2, [1] 1	6	1
P1000	Selection of frequency setpoint	—		0	2	77	1
P1080	Minimum frequency	Hz		0.00	0.00	650.00	1
P1082	Maximum frequency	Hz		0.00	50.00/ 60.00, Varies	650.00	1
P1120	Ramp—up time	s		0.00	10.00	650.00	1
P1121	Ramp—down time	s		0.00	30.00	650.00	1
P3900	End of quick commissioning	—		0	0	3	1

Inverter (VFD) Unit (P0004=2)

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
r0000	Drive display (defined in P0005)	—		—	—	—	All
P0003	User access level to parameters	—		0	1	4	1
P0004	Parameter filter	—		0	0	22	1
P0010	Commissioning parameter filter	—		0	0	30	1
r0018	Firmware version	—		—	—	—	3
r0026	CO: Actual DC link output voltage	V		—	—	—	3
r0039	CO: Energy consumption meter	kWh		—	—	—	3
P0040	Reset energy consumption meter	—		0	0	1	3
r0200	Actual power stack code number	—		—	—	—	3
r0206	Rated inverter (VFD) power (kW/hp)	—		—	—	—	3
r0207	Rated inverter (VFD) current	A		—	—	—	3
r0208	Rated inverter (VFD) voltage	V		—	—	—	3
r0209	Maximum inverter (VFD) current	A		—	—	—	3
P1800	Pulse frequency	kHz		2	Varies	16	2
r1801	CO: Actual switching frequency	kHz		—	—	—	3
P1820	Reverse output phase sequence	—		0	0	1	3

Motor Data (P0004=3)

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
r0000	Drive display (defined in P0005)	—		—	—	—	All
P0003	User access level to parameters	—		0	1	4	1
P0004	Parameter filter	—		0	0	22	1
P0010	Commissioning parameter filter	—		0	0	30	1
r0035	CO: Actual Motor temperature	°C		—	—	—	3
P0304	Rated motor voltage	V		10	Varies	2000	1
P0305	Rated motor current	A		0.01	Varies	10000.00	1

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
P0307	Rated motor power	—		0.01	Varies	2000.00	1
P0308	Rated motor cosPhi	—		0.000	0.000	1.000	3
P0309	Rated motor efficiency	%		0.0	Varies	99.9	3
P0310	Rated motor frequency	Hz		12.00	50.00 or 60.00	650.00	1
P0311	**Rated motor speed**	1/min		0	Varies	40000	1
r0313	Motor pole pairs	—		—	—	—	3
P0340	Calculation of motor parameters	—		0	0	4	3
P0350	Stator resistance (line—to—line)	ohm		0.00001	Varies	2000.0	3
r0395	CO: Total stator resistance	%		—	—	—	3
P0601	Motor temp. sensor	—		0	0	2	3
P0610	Motor I2t temperature reaction	—		0	2	2	3
P0640	Motor overload factor	%		10.0	110.0	400.0	3
P1910	Select motor data identification	ohm		0	0	20	3
r1912	Identified stator resistance	—		—	—	—	3

Commands and Digital I/O (P0004=7)

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
r0000	Drive display (defined in P0005)	—		—	—	—	All
r0002	Drive state (actual)	—		—	—	—	3
P0003	User access level to parameters	—		0	1	4	1
P0004	Parameter filter	—		0	0	22	1
P0010	Commissioning parameter filter	—		0	0	30	1
r0019	CO/BO: BOP control word	—		—	—	—	3
r0050	CO: Active command data set	—		—	—	—	3
r0052	CO/BO: Actual status word 1	—		—	—	—	3
r0053	CO/BO: Actual status word 2	—		—	—	—	3
r0054	CO/BO: Actual control word 1	—		—	—	—	3
r0055	CO/BO: Additional actual control word	—		—	—	—	3
P0700	Selection of command source	—		0	[0] 2, [1] 1	6	1

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
P0701	Function of digital input 1	—		0	[0] 1, [1] 0	99	2
P0702	Function of digital input 2	—		0	[0] 12, [1] 0	99	2
P0703	Function of digital input 3	—		0	9	99	2
P0704	Function of digital input 4	—		0	15	99	2
P0705	Function of digital input 5	—		0	15	99	2
P0706	Function of digital input 6	—		0	15	99	2
P0707	Function of digital input 7	—		0	0	99	3
P0708	Function of digital input 8	—		0	0	99	3
P0718	CO/BO: Hand/Auto	—		0	0	1	3
r0722	CO/BO: Binary input values	—		—	—	—	3
P0725	PNP/NPN digital inputs	—		0	1	1	3
P0731	BI: Function of digital output 1	—		0:0	52:3	4000:0	2
P0732	BI: Function of digital output 2	—		0:0	52:2	4000:0	2
r0747	CO/BO: State of digital outputs	—		—	—	—	3
P0748	Invert digital outputs	—		0	0	7	3
P0809	Copy Command Data Set	—		0	0	2	3
P0810	BI: Command Data Set bit 0 (Local/Remote)	—		0:0	718:0	4095:0	3
P1020	BI: Fixed frequency selection Bit 0	—		0:0	0:0	4000:0	3
P1021	BI: Fixed frequency selection Bit 1	—		0:0	0:0	4000:0	3
P1022	BI: Fixed frequency selection Bit 2	—		0:0	0:0	4000:0	3
P1023	BI: Fixed frequency selection Bit 3	—		0:0	722:3	4000:0	3
P1026	BI: Fixed frequency selection Bit 4	—		0:0	722:4	4000:0	3
P1028	BI: Fixed frequency selection Bit 5	—		0:0	722:5	4000:0	3
P1110	BI: Inhibit negative frequency setpoint	—		0:0	1	4000:0	3
P1140	BI: RFG enable	—		0.00	1.0	4000.0	3
P1141	RFG status	—		0.00	1.0	4000.0	3
P1142	RFG enable	—		0.00	1.0	4000.0	3
P1230	BI: Enable DC braking	—		0:0	0:0	4000:0	3
P1270	BI: Enable essential service	—		0:0	0:0	4000:0	3

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
P2220	BI: Fixed PID setpoint select Bit 0	—		0:0	0:0	4000:0	3
P2221	BI: Fixed PID setpoint select Bit 1	—		0:0	0:0	4000:0	3
P2222	BI: Fixed PID setpoint select Bit 2	—		0:0	0:0	4000:0	3
P2223	BI: Fixed PID setpoint select Bit 3	—		0:0	722:3	4000:0	3
P2226	BI: Fixed PID setpoint select Bit 4	—		0:0	722:4	4000:0	3
P2228	BI: Fixed PID setpoint select Bit 5	—		0:0	722:4	4000:0	3

Analog I/O (P0004=8)

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
r0000	Drive display (defined in P0005)	—		—	—	—	All
P0003	User access level to parameters	—		0	1	4	1
P0004	Parameter filter	—		0	0	22	1
P0010	Commissioning parameter filter	—		0	0	30	1
P0501	Type of sensor	—		0	0	29	2
r0752	Actual input of analog input (V or mA)	—		—	—	—	2
P0753	Smooth time analog input	ms		0	100	10000	3
r0754	Actual analog input value after scaling	%		—	—	—	2
r0755	CO: Actual analog input after scaling (4000h)	—		—	—	—	3
P0756	Type of analog input	—		0	0	5	2
P0757	Value x1 of analog input scaling (V/mA)	—		-50.00	0	150.0	2
P0758	Value y1 of analog input scaling	%		— 99999.9	0.0	99999.9	2
P0759	Value x2 of analog input scaling (V/mA)	—		-50.0	150.0	150.0	2
P0760	Value y2 of analog input scaling	%		— 99999.9	100.0	99999.9	2
P0761	Width of analog input deadband (V/mA)	—		0	0	150.0	3
P0771	CI: Analog output	—		0:0	21:0	4000:0	2
P0773	Smooth time analog output	ms		0	100	1000	3

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
r0774	Actual analog output value (V or mA)	—		—	—	—	3
P0776	Type of analog output	—		0	1	1	3
P0777	Value x1 of analog output scaling	%		— 99999.0	0.0	99999.0	2
P0778	Value y1 of analog output scaling	—		0	0	20	2
P0779	Value x2 of analog output scaling	%		— 99999.0	100.0	99999.0	2
P0780	Value y2 of analog output scaling	—		0	10	20	2
P0781	Width of analog output deadband	—		0	0	20	3

Setpoint Channel and Ramp Generator (P0004=10)

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
r0000	Drive display (defined in P0005)	—		—	—	—	All
P0003	User access level to parameters	—		0	1	4	1
P0004	Parameter filter	—		0	0	22	1
P0010	Commissioning parameter filter	—		0	0	30	1
P1000	Selection of frequency setpoint	—		0	2	77	1
P1001	Fixed frequency 1	Hz		—650.0	0.00	650.00	2
P1002	Fixed frequency 2	Hz		—650.0	5.00	650.00	3
P1003	Fixed frequency 3	Hz		—650.0	10.00	650.00	3
P1004	Fixed frequency 4	Hz		—650.0	15.00	650.00	3
P1005	Fixed frequency 5	Hz		—650.0	20.00	650.00	3
P1006	Fixed frequency 6	Hz		—650.0	25.00	650.00	3
P1007	Fixed frequency 7	Hz		—650.0	30.00	650.00	3
P1008	Fixed frequency 8	Hz		—650.0	35.00	650.00	3
P1009	Fixed frequency 9	Hz		—650.0	40.00	650.00	3
P1010	Fixed frequency 10	Hz		—650.0	45.00	650.00	3
P1011	Fixed frequency 11	Hz		—650.0	50.00	650.00	3
P1012	Fixed frequency 12	Hz		—650.0	55.00	650.00	3
P1013	Fixed frequency 13	Hz		—650.0	60.00	650.00	3
P1014	Fixed frequency 14	Hz		—650.0	65.00	650.00	3

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
P1015	Fixed frequency 15	Hz		—650.0	65.00	650.00	3
P1016	Fixed frequency mode—Bit 0	—		1	1	3	3
P1017	Fixed frequency mode—Bit 1	—		1	1	3	3
P1018	Fixed frequency mode—Bit 2	—		1	1	3	3
P1019	Fixed frequency mode—Bit 3	—		1	1	3	3
r1024	CO: Actual fixed frequency	Hz		—	—	—	3
P1025	Fixed frequency mode – Bit 4	—		1	1	3	3
P1027	Fixed frequency mode – Bit 5	—		1	1	2	3
P1031	Setpoint memory of the motor potentiometer	—		0	1	1	3
P1032	Inhibit reverse direction of motor potentiometer	—		0	1	1	3
P1040	Setpoint of the motor potentiometer	Hz		—650.00	10.00	650.00	2
r1050	CO: Actual Output frequency of the motor potentiometer	—		—	—	—	3
r1078	CO: Total frequency setpoint	Hz		—	—	—	3
P1080	Minimum frequency	Hz		0.00	10.00	650.00	1
P1082	Maximum frequency	Hz		0.00	50.00/ 60.00, Varies	150.00	1
P1091	Skip frequency 1	Hz		0.00	0.00	650.00	3
P1092	Skip frequency 2	Hz		0.00	0.00	650.00	3
P1093	Skip frequency 3	Hz		0.00	0.00	650.00	3
P1094	Skip frequency 4	Hz		0.00	0.00	650.00	3
P1101	Skip frequency bandwidth	Hz		0.00	2.00	10.00	3
P1120	Ramp—up time	s		0.00	10.00	650.00	1
P1121	Ramp—down time	s		0.00	30.00	650.00	1
P1135	OFF3 ramp—down time	s		0.00	5.00	650.00	3

Drive Features (P0004=12)

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
r0000	Drive display (defined in P0005)	—		—	—	—	All
P0003	User access level to parameters	—		0	1	4	1
P0004	Parameter filter	—		0	0	22	1
P0005	Display selection for r0000	—		2	21	2294	2
P0006	Display mode for r0000	—		0	2	4	3

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
P0010	Commissioning parameter filter	—		0	0	30	1
P0011	Lock for user-defined parameter	—		0	0	65535	3
P0012	Key for user-defined parameter	—		0	0	65535	3
P0013	User-defined parameter	—		0	0	65535	3
P1200	Flying start	—		0	0	6	3
P1202	Motor-current: Flying start	%		10	100	200	3
P1203	Search rate: Flying start	%		10	100	200	3
P1210	Automatic restart	—		0	1	5	3
P1211	Number of restart attempts	—		0	3	10	3
P1212	Time to first restart	s		0	30	1000	3
P1213	Restart time increment	s		0	30	1000	3
P1232	DC braking current	%		0	100	250	3
P1233	Duration of DC braking	s		0	0	250	3
P1236	Compound braking current	%		0	0	250	3
P1240	Configuration of Vdc controller	—		0	1	3	3

Motor Control (P0004=13)

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
r0000	Drive display (defined in P0005)	—		—	—	—	All
P0003	User access level to parameters	—		0	1	4	1
P0004	Parameter filter	—		0	0	22	1
P0010	Commissioning parameter filter	—		0	0	30	1
r0020	CO: Actual frequency setpoint	Hz		—	—	—	3
r0021	CO: Actual frequency	Hz		—	—	—	3
r0022	Actual rotor speed	1/min		—	—	—	3
r0024	CO: Actual output frequency	Hz		—	—	—	3
r0025	CO: Actual output voltage	V		—	—	—	3
r0027	CO: Actual output current	A		—	—	—	3
r0031	Actual torque	—		—	—	—	3
r0032	Actual power	Nm		—	—	—	3
r0056	CO/BO: Status of motor control	—		—	—	—	3

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
r0061	Actual rotor speed	—		—	—	—	3
r0086	CO: Actual active current	A		—	—	—	3
P1300	Control mode	—		0	2	23	3
P1310	Continuous boost	%		0.0	50.0	250.0	3
P1311	Acceleration boost	%		0.0	0.0	250.0	3
P1312	Starting boost	%		0.0	0.0	250.0	3
P1335	Slip compensation	%		0.0	0.0	600.0	3
P1336	Slip limit	%		0	250	600	3
r1337	CO: V/f slip frequency	%		—	—	—	3

Communication (P0010=20)

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
r0000	Drive display (defined in P0005)	—		—	—	—	All
P0003	User access level to parameters	—		0	1	4	1
P0004	Parameter filter	—		0	0	22	1
P0010	Commissioning parameter filter	—		0	0	30	1
P0918	Communication board address	—		0	3	65535	3
P0927	Parameter changeable via	—		0	—	15	3
r0967	Control word 1	—		—	—	—	3
r0968	Status word 1	—		—	—	—	3
P0971	Transfer data from RAM to EEPROM	—		0	0	1	3
P2000	Reference frequency	Hz		1.00	50/60	650.00	2
P2001	Reference voltage	V		10	1000	2000	3
P2002	Reference current	A		0.10	Varies	10000.00	3
P2009	USS normalization	—		0	0	1	3
P2010	USS baud rate	—		4	6	12	3
P2011	USS address	—		0	0	31	3
P2014	USS telegram off time	ms		0	0	65535	3
P2040	CB telegram off time	ms		0	20	65535	3
P2041	CB parameter	—		0	0	65535	3
r2050	PZD from CB	—		—	—	—	3
P2051	CI: PZD to CB	—		0:0	52:0	4000:0	3
r2053	Communication board identification	—		—	—	—	3

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
r2054	Communication board diagnosis	—		—	—	—	3

Alarms, Warnings and Monitoring (P0010=21)

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
r0000	Drive display (defined in P0005)	—		—	—	—	All
P0003	User access level to parameters	—		0	1	4	1
P0004	Parameter filter	—		0	0	22	1
P0010	Commissioning parameter filter	—		0	0	30	1
r0947	Last fault code	—		—	—	—	3
r0948	Fault time	—		—	—	—	3
r0949	Fault value	—		—	—	—	3
P0952	Total number of faults	—		0	0	8	3
P2100	Alarm number selection	—		0	0	65535	3
P2101	Stop reaction value	—		0	0	5	3
r2110	Warning number	—		—	—	—	3
P2111	Total number of warnings	—		0	0	4	3
r2114	Run time counter	—		—	—	—	3
P2115	AOP real time clock	—		0	0	65535	3
P2155	Threshold frequency f_1	Hz		0.00	30.00	650.00	3
P2156	Delay time of threshold frequency f_1	ms		0	10	10000	3
P2167	Switch-off frequency f_off	Hz		0.00	1.00	10.00	3
P2168	Delay time T_off	ms		0	10	10000	3
P2181	Belt failure detection mode	—		0	0	6	3
P2182	Belt threshold frequency 1	Hz		0.00	5.00	650.00	3
P2183	Belt threshold frequency 2	Hz		0.00	30.00	650.00	3
P2184	Belt threshold frequency 3	Hz		0.00	50.00	650.00	3
P2185	Upper torque threshold 1	Nm		0.0	99999.0	99999.0	3
P2186	Lower torque threshold 1	Nm		0.0	0.0	99999.0	3
P2187	Upper torque threshold 2	Nm		0.0	99999.0	99999.0	3
P2188	Lower torque threshold 2	Nm		0.0	0.0	99999.0	3
P2189	Upper torque threshold 3	Nm		0.0	99999.0	99999.0	3
P2190	Lower torque threshold 3	Nm		0.0	0.0	99999.0	3

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
P2191	Belt failure speed tolerance	Hz		0.00	3.00	20.00	3
P2192	Time delay for belt failure	s		0	10	65	3
r2197	CO/BO: Monitoring word 1	—		—	—	—	3
r2198	CO/BO: Monitoring word 2	—		—	—	—	3

PI Controller (P0004=22)

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
r0000	Drive display (defined in P0005)	—		—	—	—	All
P0003	User access level to parameters	—		0	1	4	1
P0004	Parameter filter	—		0	0	22	1
P0010	Commissioning parameter filter	—		0	0	30	1
P2200	BI: Enable PID controller	—		0:0	0:0	4000:0	2
P2201	Fixed PID setpoint 1	%		—200.00	0.00	200.00	3
P2202	Fixed PID setpoint 2	%		—200.00	10.00	200.00	3
P2203	Fixed PID setpoint 3	%		—200.00	20.00	200.00	3
P2204	Fixed PID setpoint 4	%		—200.00	30.00	200.00	3
P2205	Fixed PID setpoint 5	%		—200.00	40.00	200.00	3
P2206	Fixed PID setpoint 6	%		—200.00	50.00	200.00	3
P2207	Fixed PID setpoint 7	%		—200.00	60.00	200.00	3
P2208	Fixed PID setpoint 8	%		—200.00	70.00	200.00	3
P2209	Fixed PID setpoint 9	%		—200.00	80.00	200.00	3
P2210	Fixed PID setpoint 10	%		—200.00	90.00	200.00	3
P2211	Fixed PID setpoint 11	%		—200.00	100.00	200.00	3
P2212	Fixed PID setpoint 12	%		—200.00	110.00	200.00	3
P2213	Fixed PID setpoint 13	%		—200.00	120.00	200.00	3
P2214	Fixed PID setpoint 14	%		—200.00	130.00	200.00	3
P2215	Fixed PID setpoint 15	%		—200.00	130.00	200.00	3
P2216	Fixed PID setpoint mode— Bit 0	—		1	1	3	3
P2217	Fixed PID setpoint mode— Bit 1	—		1	1	3	3
P2218	Fixed PID setpoint mode— Bit 2	—		1	1	3	3
P2219	Fixed PID setpoint mode— Bit 3	—		1	1	3	3
r2224	CO: Actual fixed PID setpoint	%		—	—	—	3

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
P2225	Fixed PID setpoint mode—Bit 4	—		1	1	2	3
P2227	Fixed PID setpoint mode—Bit 5	—		1	1	2	3
P2231	Setpoint memory of PID—MOP	—		0	1	1	3
P2232	Inhibit rev. direct. of PID—MOP	—		0	1	1	3
P2240	Setpoint of PID—MOP	%		—200.00	10.00	200.00	3
r2250	CO: Output setpoint of PID—MOP	%		—	—	—	3
P2253	CI: PID setpoint	—		0:0	2250:0	4000:0	3
P2254	CI: PID trim	—		0:0	0:0	4000:0	3
P2261	PID setpoint filter	—		0.00	0.00	60.00	3
r2262	CO: Actual PID filtered setpoint	%		—	—	—	3
P2264	CI: PID feedback	—		0:0	755:1	4000:0	3
P2265	PID feedback filter time constant	s		0.00	0.00	60.00	3
P2267	Maximum value for PID feedback	%		—200.00	150.00	200.00	3
P2268	Minimum value for PID feedback	%		—200.00	0.00	200.00	3
P2269	Gain applied to PID feedback	—		0.00	100.00	500.00	3
P2270	PID feedback function selector	—		0	0	3	3
P2271	PID transducer type	—		0	0	1	3
r2272	CO: PID scaled feedback	%		—	—	—	3
r2273	CO: PID error	%		—	—	—	3
P2274	PID derivative time	s		0	0	65535	2
P2279	PID neutral zone	%		0.00	0.00	100.00	3
P2280	PID proportional gain	—		0.000	1.200	65.000	2
P2285	PID integral time	s		0	30	65535	2
P2291	PID output upper limit	%		0.00	100.00	100.00	2
P2292	PID output lower limit	%		—200.00	0.00	200.00	2
P2293	PID limit ramp time	s		0.00	0.00	100.00	3
r2294	CO: Actual PID output	%		—	—	—	3
P2303	PID output offset	—		0.0	0.0	4000.0	2
P2304	PID opening time	—		0	0	65535	2
P2305	PID closing time	—		0	0	65535	2
P2306	PID action	—		0	1	1	2

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
P2370	Selection of motor staging stop mode	—		0	0	1	3
P2371	Selection of external motor configuration	—		0	0	8	3
P2372	Enable motor cycling	—		0	0	1	3
P2373	Motor staging hysteresis	%		0.0	20.0	200.0	3
P2374	Motor staging delay	s		0	30	650	3
P2375	Motor destaging delay	s		0	30	650	3
P2376	Delay override	%		0.0	25.0	200.0	3
P2377	Delay override lockout timer	s		0	30	650	3
P2378	Staging frequency f, $\%f_{max}$	%		0.0	50.0	120.0	3
r2379	CO/BO: Status of motor staging	—		—	—	—	3
P2380	Motor hours run	h		0	0	100000	3
P2390	Hibernation setpoint	%		-200.00	0.00	200.00	3
P2391	Hibernation timer	s		0	0	254	3
P2392	Restart PID error	%		-200.00	0.00	200.00	3

Restore Factory Settings

Parameter	Description	Unit	User Setting	Min	Default	Max	Access Level
P0003	User access level	—		0	1	4	1
P0010	Commissioning parameter filter	—		0	0	30	1
P0970	Factory reset	—		0	0	1	1

Parameter Details (Numeric Listing)

r0000 **Drive display** **Level 1**
Min: - **Def:** - **Max:** -
Unit: -

Details:
Displays user-selected output, defined via P0005.

Note:
Pressing the **Fn** button for 2 seconds allows you to view the values of DC link voltage, output frequency, output current, and the selected r0000 setting (defined via P0005).

r0002 **Drive state** **Level 3**
Min: - **Def:** - **Max:** -
Unit: -

Details:
Displays actual SED2 state.

Enum:
0 Commissioning mode (P0010=0)
1 SED2 ready
2 SED2 fault active
3 SED2 starting (DC-link precharging)
4 SED2 running
5 Stopping (ramping down)

Dependency:
State 3 is visible only while precharging the DC link and when an externally powered communications module is installed.

P0003 **User access level** **Level 1**
Min: 0 **Def:** 1 **Max:** 4
Unit: -

Details:
Defines user access level to parameters. The default setting (standard) is sufficient for most simple applications.

Enum:
0 User-defined parameter list; see *P0013* for details.
1 Standard: For access to the most frequently used parameters.
2 Extended: For access to additional parameters for supplemental operations such as SED2 I/O functions.
3 Expert: For skilled, authorized users familiar with SED2 operations and functions.
4 Service: For use by trained, authorized service personal only; password protected.

P0004 Parameter filter — Level 1

Min: 0 **Def:** 0 **Max:** 22
Unit: -

Details:

Filters available parameters according to functionality to enable a more focused operational approach.

Enum:

0 All parameters
2 SED2 drive
3 Motor
4 Speed sensor
5 Technology application/units
7 Commands, binary I/O
8 Analog inputs and analog outputs
10 Setpoint channel/remote frequency generator
12 SED2 features
13 Motor control
20 Communication
21 Alarms/warnings/monitoring
22 Technology controller (such as PID controller)

Example:

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

Note:

The SED2 will start with any setting of P0004.

P0005 Display selection — Level 2

Min: 2 **Def:** 21 **Max:** 2294
Unit: -

Details:

Selects display for parameter r0000 (SED2 display).

Settings:

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

Note:

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

Reference:

See relevant "rxxxx" parameter descriptions.

P0006 Display mode — Level 3

Min: 0 **Def:** 2 **Max:** 4
Unit: -

Details:

Defines mode of display for r0000 (SED2 display).

Enum:

0 In ready state, display alternates between setpoint and output frequency. In run state, display shows output frequency.
1 In ready state, display shows setpoint. In run state, display shows output frequency.
2 In ready state, display alternates between P0005 value and r0020 value. In run state, display shows P0005 value.
3 In ready state, display alternates between r0002 value and r0020 value. In run state, display shows r0002 value.
4 In all states, display shows P0005 value.

Note:

When SED2 is not running, the display alternates between the values for "Not Running" and "Running".

P0010 Commissioning parameter filter — Level 1

Min: 0 **Def:** 0 **Max:** 30
Unit: -

Details:

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

Enum:

0 Ready
1 Quick commissioning
2 SED2
29 Download
30 Factory setting

Dependency:

Reset to **0** for SED2 to run.

P0003 (user access level) determines access to commissioning parameters.

Note:

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

P0011 Lock for user-defined parameter — Level 3

Min: 0 **Def:** 0 **Max:** 65535
Unit: -

Details:

See *P0013* (user-defined parameter).

P0012 Key for user-defined parameter — Level 3

Min: 0 **Def:** 0 **Max:** 65535
Unit: -

Details:

See *P0013* (user-defined parameter).

P0013[20] User-defined parameter — Level 3

Min: 0 **Def:** 0 **Max:** 65535
Unit: -

Details:

Defines a limited set of parameters to which the end user will have access.

To use, do the following:

1. Set P0003=3 (expert user access level).
2. Access P0013 indexes 0 to 16 (user-defined parameter list).
3. In P0013 index 0 to 16, enter the parameters required to be visible in the user-defined parameter 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 (expert user access level)

4. Set P0003=0 to activate the user-defined parameter list.

Index:

P0013[0]=1st user parameter
P0013[1]=2nd user parameter
P0013[2]=3rd user parameter
P0013[3]=4th user parameter
P0013[4]=5th user parameter
P0013[5]=6th user parameter
P0013[6]=7th user parameter
P0013[7]=8th user parameter
P0013[8]=9th user parameter
P0013[9]=10th user parameter
P0013[10]=11th user parameter
P0013[11]=12th user parameter
P0013[12]=13th user parameter
P0013[13]=14th user parameter
P0013[14]=15th user parameter
P0013[15]=16th user parameter
P0013[16]=17th user parameter
P0013[17]=18th user parameter
P0013[18]=19th user parameter
P0013[19]=20th user parameter

Dependency:

First, set P0011 ("lock") to a different value than P0012 ("key") to prevent changes to user-defined parameter list. Then, set P0003=0 to activate the user-defined parameter list.

When locked and when the user-defined parameter is activated, the only way to exit the user-defined parameter list (and to 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 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

Displays version number of installed firmware.

r0019 CO/BO: BOP control word — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

Displays status of operator panel commands.

The following settings are used as the "source" codes for keypad control when connecting to BiCo input parameters.

Bitfields:

Bit00	ON/OFF1	0 NO	1 YES
Bit02	Reserved		
Bit03	Reserved		
Bit01	OFF2: Electrical stop	0 YES	1 NO
Bit08	JOG right	0 NO	1 YES
Bit11	Reverse (setpoint inversion)	0 NO	1 YES
Bit12	Hand Operation	0 NO	1 YES
Bit13	Motor potentiometer up	0 NO	1 YES
Bit14	Motor potentiometer down	0 NO	1 YES
Bit15	Auto Operation	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: Actual frequency setpoint** **Level 3**
Min: - **Def:** - **Max:** -
Unit: Hz

Details:
Displays actual frequency setpoint (output from ramp function generator).

r0021 **CO: Actual frequency** **Level 3**
Min: - **Def:** - **Max:** -
Unit: Hz

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

r0022 **Actual rotor speed** **Level 3**
Min: - **Def:** - **Max:** -
Unit: 1/min

Details:
Displays calculated rotor speed based on SED2 output frequency Hz x 120/number of poles.

Note:
This calculation makes no allowance for load-dependent slip.

r0024 **CO: Actual output frequency** **Level 3**
Min: - **Def:** - **Max:** -
Unit: Hz

Details:
Displays actual output frequency, *including* slip compensation, resonance damping, and frequency limitation.

r0025 **CO: Actual output voltage** **Level 3**
Min: - **Def:** - **Max:** -
Unit: V

Details:
Displays rms voltage applied to motor.

r0026[2] **CO: Actual DC-link voltage** **Level 3**
Min: - **Def:** - **Max:** -
Unit: V

Details:
Displays DC-link voltage.

r0027 CO: Actual output current **Level 3**

Min: - **Def:** - **Max:** -
Unit: A

Details:

Displays rms value of motor current (A).

Note:

For asynchonous motors, a limit is calculated for the torque generating current component to prevent motor stalling. This limit is calculated in conjunction with the maximum possible output voltage, motor leakage, and current field weakening.

r0031 CO: Actual torque **Level 3**

Min: - **Def:** - **Max:** -
Unit: Nm

Details:

Displays motor torque.

r0032 CO: Actual power **Level 3**

Min: - **Def:** - **Max:** -
Unit: -

Details:

Displays motor power.

Dependency:

Value displays in kW or hp depending on setting for P0100 (operation for Europe/North America).

r0035 CO: Actual motor temperature **Level 3**

Min: - **Def:** - **Max:** -
Unit: °C

Details:

Displays measured motor temperature.

r0039 CO: Energy consumption meter (kWh) **Level 3**

Min: - **Def:** - **Max:** -
Unit: kWh

Details:

Displays electrical energy used by SED2 since display was last reset (see *P0040*, reset energy consumption meter).

Dependency:

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

P0040 Reset energy consumption meter — Level 3

Min: 0 **Def:** 0 **Max:** 1
Unit: -

Details:

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

Enum:

0 No reset
1 Reset r0039 to 0

Dependency:

No reset until you press **P**.

r0050 CO/BO Active command data set — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

Displays currently selected and active binector and connector (BiCo) data set.

Enum:

0 1st Command data set (CDS)
1 2nd Command data set (CDS)

r0052 CO/BO: Actual status word 1 — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

Displays first status word of SED2 (bit format). Can be used to diagnose SED2 status.

Bitfields:

Bit00	SED2 ready	0 NO	1 YES
Bit01	SED2 ready to run	0 NO	1 YES
Bit02	SED2 running	0 NO	1 YES
Bit03	SED2 fault active	0 NO	1 YES
Bit04	OFF2 active	0 YES	1 NO
Bit05	OFF3 active	0 YES	1 NO
Bit06	ON inhibit active	0 NO	1 YES
Bit07	SED2 warning active	0 NO	1 YES
Bit08	Deviation setpoint/Actual 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	SED2 overload	0 YES	1 NO

Note:

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

r0053 CO/BO: Actual status word 2 — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

Displays second status word of SED2 (bit format).

Bitfields:

Bit00	DC brake active	0 NO	1 YES
Bit01	Actual frequency r0021>P2167 (f_off)	0 NO	1 YES
Bit02	Actual frequency r0021>P1080 (f_min)	0 NO	1 YES
Bit03	Actual current r0027>=P0305	0 NO	1 YES
Bit04	Actual frequency r0021>=P2155 (f_1)	0 NO	1 YES
Bit05	Actual frequency r0021<P2155 (f_1)	0 NO	1 YES
Bit06	Actual frequency r0021>=setpoint	0 NO	1 YES
Bit07	Actual Vdc r0026<800V	0 NO	1 YES
Bit08	Actual Vdc r0026>800V	0 NO	1 YES
Bit09	Ramping finished	0 NO	1 YES
Bit10	PID output r2294 == P2292 (PID_min)	0 NO	1 YES
Bit11	PID output r2294 == P2291 (PID_max)	0 NO	1 YES
Bit12	Reserved		
Bit13	Reserved		
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: Actual control word 1 — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

Displays first control word of SED2 and can be used to diagnose which commands are active.

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 (ramp function gen.) enable	0 NO	1 YES
Bit05	RFG (ramp function gen.) start	0 NO	1 YES
Bit06	Setpoint enable	0 NO	1 YES
Bit07	Fault acknowledge	0 NO	1 YES
Bit08	JOG righ	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	Motor potentiometer MOP up	0 NO	1 YES
Bit14	Motor potentiometer MOP down	0 NO	1 YES
Bit15	CDS Bit 0 (Local/Remote)	0 NO	1 YES

r0055 CO/BO: Additional Actual control word — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

Displays additional control word of SED2.

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
Bit03	Fixed frequency Bit 3	0 NO	1 YES
Bit08	PID enabled	0 NO	1 YES
Bit09	DC brake enabled	0 NO	1 YES
Bit11	Droop	0 NO	1 YES
Bit12	Torque control	0 NO	1 YES
Bit13	External fault 1	0 YES	1 NO

r0056 CO/BO: Status of motor control — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

Displays status of motor control and can be used to diagnose SED2 status.

Bitfields:

Bit00	Initial 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 Frequency 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

r0061 CO: Actual rotor speed — Level 3

Min: - **Def:** - **Max:** -
Unit: Hz

Details:

Displays current speed detected by encoder.

r0086 CO: Actual active current — Level 3

Min: - **Def:** - **Max:** -
Unit: A

Details:

Displays active (real part) of motor current.

Dependency:

Applies when V/f control is selected in P1300 (control mode); otherwise, the display shows the value zero.

P0100 Europe/North America — Level 1

Min: 0 **Def:** 0 **Max:** 2
Unit: -

Details:

Determines whether power settings (such as, P0307 rated motor power) are expressed in kW or hp.

The setting of P100 automatically determines the default settings for P0310 nominal rating plate frequency, P1082 maximum motor frequency, and P2000 reference frequency.

Enum:

0 Europe (kW), frequency 50 Hz, default
1 North America (hp), frequency 60 Hz
2 North America (kW), frequency 60 Hz

Dependency:

The setting of DIP switch 2 on the control module (under the I/O module) determines the validity of P0100 settings 0 and 1 according to the following table:

DIP Switch 2 Position	Power and Frequency		P0100 Setting	Power and Frequency
Off	kW, 50 Hz	Overwrites	1	hp, 60 Hz
On	hp, 60 Hz	Overwrites	0	kW, 50 Hz

Before you change this parameter, stop the SED2 (that is, disable all pulses).

P0010=1 (commissioning mode) enables changes to be made.

Changing P0100 resets all rated motor parameters as well as other parameters that depend on the rated motor parameters (see *P0340*, calculation of motor parameters).

Note:

P0100 setting 2 (North America kW, frequency default 60 Hz) is not overwritten by the setting of DIP switch 2.

r0200 **Actual power stack code number** **Level 3**
Min: - **Def:** - **Max:** -
Unit: -

Details:
Identifies hardware variant.
Note:
Parameter r0200=0 indicates that no power stack has been identified.

r0206 **Rated SED2 power (kW)/(hp)** **Level 3**
Min: - **Def:** - **Max:**
Unit: -

Details:
Displays nominal rated motor power from SED2.
Dependency:
Value displayse in kW or hp depending on setting for P0100 (operation for Europe/North America).

r0207 **Rated SED2 current** **Level 3**
Min: - **Def:** - **Max:** -
Unit: A

Details:
Displays maximum continuous output current of SED2.

r0208 **Rated SED2 voltage** **Level 3**
Min: - **Def:** - **Max:** -
Unit: V

Details:
Displays nominal AC supply voltage of SED2.
Value:
r0208=230 : 200 to 240V +/- 10%
r0208=400 : 380 to 480V +/- 10%
r0208=575 : 500 to 600V +/- 10%

r0209 **Maximum SED2 current** **Level 3**
Min: - **Def:** - **Max:**
Unit: A

Details:
Displays maximum output current of SED2.

P0304 Rated motor voltage — Level 1

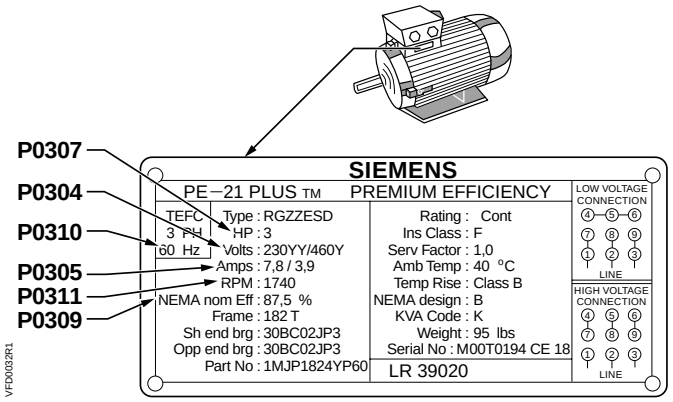
Min: 10 **Def:** Varies **Max:** 2000
Unit: V

Details:

Defines nominal motor voltage (V) from rating plate. The following diagram shows a typical rating plate with the locations of relevant motor data.

Dependency:

Changeable only when P0010=1 (quick commissioning).



P0305 Rated motor current — Level 1

Min: 0.01 **Def:** Varies **Max:** 10000.00
Unit: A

Details:

Defines nominal motor current (A) from rating plate; see diagram in *P0304*.

Dependency:

Changeable only when P0010=1 (quick commissioning).

Note:

For asynchronous motors, the maximum value is the maximum SED2 current (r0209).

For synchronous motors, the maximum value is twice the maximum SED2 current (r0209).

The minimum value is 1/32 times SED2 rated current (r0207).

P0307 **Rated motor power** **Level 1**
Min: 0.01 Def: Varies Max: 2000.00
Unit: -

Details:
Defines nominal motor power (kW/hp) from rating plate; see diagram in *P0304*.
Dependency:
If P0100=1 (hp, frequency 60 Hz), values will be in hp, see diagram *P0304* (rating plate).

Changeable only when P0010=1 (quick commissioning).

P0308 **Rated motor cosPhi** **Level 3**
Min: 0.000 Def: 0.000 Max: 1.000
Unit: -

Details:
Defines nominal motor power factor (cosPhi) from rating plate.
Dependency:
Changeable only when P0010=1 (quick commissioning).

Visible only when P0100=0 or 2 (motor power entered in kW).

Setting 0 causes internal calculation of value.

P0309 **Rated motor efficiency** **Level 3**
Min: 0.0 Def: Varies Max: 99.9
Unit: %

Details:
Defines nominal motor efficiency in % from rating plate; see diagram in P0304.
Dependency:
Changeable only when P0003=3 (expert user access level) and P0010=1 (quick commissioning).

Visible only when P0100=1 (motor power entered in hp).

Setting 0 causes internal calculation of value.
Note:
P0309=100% corresponds to superconducting.

P0310 **Rated motor frequency** **Level 1**
Min: 12.00 Def: 50.00 Max: 650.00
Unit: Hz or 60.00

Details:
Defines nominal motor frequency (Hz) from rating plate; see diagram in *P0304*.
Dependency:
Changeable only when P0010=1 (quick commissioning).
Pole pair number is recalculated automatically if parameter is changed.

P0311 Rated motor speed — Level 1

Min: 0 **Def:** Varies **Max:** 40000
Unit: 1/min

Details:

Defines nominal motor speed (rpm) from rating plate; see diagram in P0304.

Dependency:

Changeable only when P0010=1 (quick commissioning).

Setting 0 causes an internal calculation of the 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 is recalculated automatically if parameter is changed.

r0313 Motor pole pairs — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

Displays number of motor pole pairs that the SED2 is currently using for internal calculations.

Value:

r0313=1 : 2-pole motor
r0313=2 : 4-pole motor

Dependency:

Pole pair number is recalculated automatically if P0310 rated motor frequency or P0311 rated motor speed is changed.

P0340 Calculation of motor parameters — Level 3

Min: 0 **Def:** 0 **Max:** 4
Unit: -

Details:

Calculates various motor parameters, including:

P0350 stator resistance
P2000 reference frequency
P2002 reference current

Enum:

0 No calculation
1 Complete programming
2 Calculate equivalent circuit data
3 Calculate V/f and vector control
4 Calculate only controller setting

Note:

This parameter is required during commissioning to optimize SED2 performance.

P0350 Stator resistance (line-to-line) Level 3

Min: 0.00001 **Def:** Varies **Max:** 2000.0
Unit: Ohm

Details:

Stator resistance value (ohms) for connected motor (from line-to-line). The value includes the cable resistance.

There are three ways to determine the value for this parameter:

- Calculate using P0340=1 (data entered from rating plate) or P3900=1, 2, or 3 (end of quick commissioning).
- Measure using P1910=1 (motor data identification; value for stator resistance is overwritten).
- Measure manually using an ohmmeter.

Note:

Since measured line-to-line, this value may appear to be up to two times higher than expected.

The value entered in P0350 stator resistance is the value obtained by the most-recently used method.

r0395 CO: Total stator resistance, % Level 3

Min: - **Def:** - **Max:** -
Unit: %

Details:

Displays stator resistance of motor as a % of combined stator/cable resistance.

P0400 Select encoder type Level 3

Min: 0 **Def:** 0 **Max:** 12
Unit: -

Details:

Selects encoder type.

The term "quadrature" in settings 2 and 12 refers to two periodic functions separated by a quarter cycle or 90 degrees.

Enum:

0 Disabled
1 Single channel encoder
2 Quadrature encoder without zero pulse
3 External pulse train
12 Quadrature encoder with zero pulse

P0409 Pulses per second at rated frequency Level 3

Min: 1 **Def:** 25 **Max:** 500
Unit: -

Details:

Sets number of pulses per second at rated speed.

P0501[2] Type of Sensor — Level 2

Min: 0 **Def:** 0 **Max:** 29
Unit: -

Details:

Configures each analog input for a type of process variable sensor. Setting P0501 also sets P0756, type of analog input.

Switching between voltage and current input types also requires that I/O module DIP switches are set accordingly.

Enum:

0	No sensor selected	16	Sensor type 0 to 2 inch-wc
1	Sensor type QBE620 P1	17	Sensor type 0 to 2.5 inch-wc
2	Sensor type QBE620 P10	18	Sensor type 0 to 3 inch-wc
3	Sensor type QBE620 P16	19	Sensor type 0 to 5 inch-wc
4	Sensor type QBE620 P25	20	Sensor type 0 to 10 inch-wc
5	Sensor type QBE620 P40	21	Sensor type 0 to 10 psi
6	Sensor type QBE620 P4	22	Sensor type 0 to 15 psi
7	Sensor type QBE620 P5	23	Sensor type 0 to 25 psi
8	Sensor type QBE621 P10U	24	Sensor type 0 to 30 psi
9	Sensor type QBE621 P25U	25	Sensor type 0 to 50 psi
10	Sensor type QBE63 DP01	26	Sensor type 0 to 60 psi
11	Sensor type QBE63 DP02	27	Sensor type 0 to 100 psi
12	Sensor type QBE63 DP05	28	Sensor type 0 to 150 psi
13	Sensor type QBE63 DP1	29	Sensor type Ni 1000: -50 to 150 °C
14	Sensor type QBE64 DP4		
15	Sensor type 0 to 1 inch-wc		

Reference:

See *P0753*, and *P0756* to *P0762* (analog input conditioning).

P0506[10] Parameter List — Level 3

Min: 0 **Def:** - **Max:** 4000
Unit: -

Details:

This parameter performs no function within the SED2. It is a storage place for use with the AOP for a list of parameters to scale.

Index:

P0506[0]: Parameter 1
P0506[1]: Parameter 2
P0506[2]: Parameter 3
P0506[3]: Parameter 4
P0506[4]: Parameter 5
P0506[5]: Parameter 6
P0506[6]: Parameter 7
P0506[7]: Parameter 8
P0506[8]: Parameter 9
P0506[9]: Parameter 10

P0507[3] Scalar Values — Level 3

Min: 0 **Def:** 1.0 **Max:** 9999.9
Unit: -

Details:

This parameter performs no function within the SED2. It is a storage place for use with the AOP to scale particular parameters.

Index:

P0507[0]: Scalar Numerator
P0507[1]: Scalar Denominator
P0507[2]: Scalar Offset

P0508[4] Unit — Level 3

Min: 0 **Def:** 0 **Max:** 65535
Unit: -

Details:

This parameter performs no function within the SED2. It is a storage place for use with the AOP to store a string for unit.

Index:

P0508[0]: Unit Character 1
P0508[1]: Unit Character 2
P0508[2]: Unit Character 3
P0508[3]: Unit Character 4

P0509[12] String — Level 3

Min: 0 **Def:** 0 **Max:** 65535
Unit: -

Details:

This parameter performs no function within the SED2. It is a storage place for use with the AOP to store a string for parameter unit description.

Index:

P0509[0]: String Character 1
P0509[1]: String Character 2
P0509[2]: String Character 3
P0509[3]: String Character 4
P0509[4]: String Character 5
P0509[5]: String Character 6
P0509[6]: String Character 7
P0509[7]: String Character 8
P0509[8]: String Character 9
P0509[9]: String Character 10
P0509[10]: String Character 11
P0509[11]: String Character 12

P0601 Motor temperature sensor — Level 3

Min: 0 **Def:** 0 **Max:** 2
Unit: -

Details:

Selects motor temperature sensor.

Enum:

0 No sensor
1 PTC thermistor
2 KTY84

Dependency:

If P0601=0 (no sensor) is selected, motor temperature is based on the estimated value of the thermal motor model.

P0610 Motor I^2t temperature reaction — Level 3

Min: 0 **Def:** 2 **Max:** 2
Unit: -

Details:

Defines reaction when the motor temperature reaches a warning threshold.

Enum:

0 No reaction, warning only
1 Warning and Imax reduction (results in reduced output frequency)
2 Warning and trip (F0010)

Dependency:

Trip level=Motor temperature warning level * 105%.

P0640 Motor overload factor, % — Level 3

Min: 10.0 **Def:** 110.0 **Max:** 400.0
Unit: %

Details:

Defines motor overload current limit in % relative to P0305 rated motor current.

Dependency:

Limited to maximum SED2 current or to 400% of P0305 rated motor current, whichever is lower.

P0700[2] Selection of command source — Level 1

Min: 0 **Def:** [0] 2 **Max:** 6
Unit: - [1] 1

Details:

Selects digital command source.

Enum:

0 Factory default setting
1 BOP (keypad)
2 Terminal digital input
4 USS on BOP link
5 USS on COM link
6 CB (Communications Board/Module) on COM link

Index:

P0700[0]: 1st Command data set (CDS)
P0700[1]: 2nd Command data set (CDS)

Note:

Changing this parameter resets (to default) all settings on the selected item. For example, changing from 1 to 2 resets all digital inputs to default settings.

P0701[2] Function of digital input 1 — Level 2

Min: 0 **Def:** [0] 1 **Max:** 99
Unit: - [1] 0

Details:

Selects function of digital input 1.

Enum:

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 (motor potentiometer) (increase frequency)
14 MOP down (motor potentiometer) (decrease frequency)
15 Fixed setpoint (Direct selection)
16 Fixed setpoint (Direct selection + ON)
17 Fixed setpoint (Binary coded selection + ON)
25 DC brake enable
26 Enable Essential Service
27 Enable PID
28 Bypass mode command input
29 External trip
33 Disable additional freq setpoint
99 Enable BiCo programming

Index:

P0701[0]: 1st Command data set (CDS)
P0701[1]: 2nd Command data set (CDS)

Dependency:

Setting 99 (enable BiCo programming) requires P0700 command source or P3900 (end of quick commissioning=1, 2 or P0970 factory reset=1, in order to reset.

Note:

Setting 99 (BiCo) is for expert use only.

P0702[2] Function of digital input 2 — Level 2

Min: 0 **Def:** [0] 12 **Max:** 99
Unit: - [1] 0

Details:

Selects function of digital input 2.

Enum:

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 (motor potentiometer) up (increase frequency)
14 MOP (motor potentiometer) down (decrease frequency)
15 Fixed setpoint (Direct selection)
16 Fixed setpoint (Direct selection + ON)
17 Fixed setpoint (Binary coded selection + ON)
25 DC brake enable
26 Enable Essential Service
27 Enable PID
28 Bypass mode command input
29 External trip
33 Disable additional freq setpoint
99 Enable BiCo programming

Index:

P0702[0]: 1st Command data set (CDS)
P0702[1]: 2nd Command data set (CDS)

Reference:

See *P0701* (function of digital input1).

P0703[2] Function of digital input 3 **Level 2**

Min: 0 Def: 9 Max: 99
Unit: -

Details:

Selects function of digital input 3.

Enum:

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 (motor potentiometer) up (increase frequency)
14 MOP (motor potentiometer) down (decrease frequency)
15 Fixed setpoint (Direct selection)
16 Fixed setpoint (Direct selection + ON)
17 Fixed setpoint (Binary coded selection + ON)
25 DC brake enable
26 Enable Essential Service
27 Enable PID
28 Bypass mode command input
29 External trip
33 Disable additional freq setpoint
99 Enable BiCo programming

Index:

P0703[0]: 1st Command data set (CDS)
P0703[1]: 2nd Command data set (CDS)

Reference:

See *P0701* (function of digital input 1).

P0704[2] Function of digital input 4 — Level 2

Min: 0 **Def:** 15 **Max:** 99
Unit: -

Details:

Selects function of digital input 4.

Enum:

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 (motor potentiometer) up (increase frequency)
14 MOP (motor potentiometer) down (decrease frequency)
15 Fixed setpoint (Direct selection)
16 Fixed setpoint (Direct selection + ON)
17 Fixed setpoint (Binary coded selection + ON)
25 DC brake enable
26 Enable Essential Service
27 Enable PID
28 Bypass mode command input
29 External trip
33 Disable additional freq setpoint
99 Enable BiCo programming

Index:

P0704[0]: 1st Command data set (CDS)
P0704[1]: 2nd Command data set (CDS)

Reference:

See *P0701* (function of digital input 1).

P0705[2] Function of digital input 5 — Level 2

Min: 0 **Def:** 15 **Max:** 99
Unit: -

Details:

Selects function of digital input 5 (via analog input).

Enum:

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 (motor potentiometer) up (increase frequency)
14 MOP (motor potentiometer) down (decrease frequency)
15 Fixed setpoint (Direct selection)
16 Fixed setpoint (Direct selection + ON)
17 Fixed setpoint (Binary coded selection + ON)
25 DC brake enable
26 Enable Essential Service
27 Enable PID
28 Bypass mode command input
29 External trip
33 Disable additional freq setpoint
99 Enable BiCo programming

Index:

P0705[0]: 1st Command data set (CDS)
P0705[1]: 2nd Command data set (CDS)

Note:

Selection 17 (Binary coded selection + ON) is identical to selection 15.

Reference:

See *P0701* (function of digital input 1).

P0706[2] Function of digital input 6 — Level 2

Min: 0 **Def:** 15 **Max:** 99
Unit: -

Details:

Selects function of digital input 6 (via analog input).

Enum:

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 (motor potentiometer) up (increase frequency)
14 MOP (motor potentiometer) down (decrease frequency)
15 Fixed setpoint (Direct selection)
16 Fixed setpoint (Direct selection + ON)
17 Fixed setpoint (Binary coded selection + ON)
25 DC brake enable
26 Enable Essential Service
27 Enable PID
28 Bypass mode command input
29 External trip
33 Disable additional freq setpoint
99 Enable BiCo programming

Index:

P0706[0]: 1st Command data set (CDS)
P0706[1]: 2nd Command data set (CDS)

Note:

Selection 17 (Binary coded selection + ON) is identical to selection 15.

Reference:

See *P0701* (function of digital input 1).

P0707[2] Function of digital input 7 — Level 3

Min: 0 **Def:** 0 **Max:** 99
Unit: -

Details:

Selects function of digital input 7 (via analog input).

Enum:

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 (motor potentiometer) up (increase frequency)
14 MOP (motor potentiometer) down (decrease frequency)
25 DC brake enable
26 Enable Essential Service
28 Bypass mode command input
29 External trip
33 Disable additional freq setpoint
99 Enable BiCo programming

Index:

P0707[0]: 1st Command data set (CDS)
P0707[1]: 2nd Command data set (CDS)

Note:

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

Reference:

See *P0701* (function of digital input 1).

P0708[2] Function of digital input 8 — Level 3

Min: 0 **Def:** 0 **Max:** 99
Unit: -

Details:

Selects function of digital input 8 (via analog input).

Enum:

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 (motor potentiometer) up (increase frequency)
14 MOP (motor potentiometer) down (decrease frequency)
25 DC brake enable
26 Enable Essential Service
28 Bypass mode command input
29 External trip
33 Disable additional freq setpoint
99 Enable BiCo programming

Index:

P0708[0]: 1st Command data set (CDS)
P0708[1]: 2nd Command data set (CDS)

Note:

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

Reference:

See *P0701* (function of digital input 1).

P0718 CO/BO: Hand/Auto — Level 3

Min: 0 **Def:** 0 **Max:** 1
Unit: -

Details:

Defines whether SED2 starts in Hand or Auto mode.

Enum:

0 Auto
1 Hand

r0722 CO/BO: Binary input values — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

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	0 OFF	1 ON
Bit04	Digital input 5	0 OFF	1 ON
Bit05	Digital input 6	0 OFF	1 ON
Bit06	Digital input 7 (via AI1)	0 OFF	1 ON
Bit07	Digital input 8 (via AI2)	0 OFF	1 ON

Note:

Segment is lit when signal is active.

P0725 PNP/NPN digital inputs — Level 3

Min: 0 **Def:** 1 **Max:** 1
Unit: -

Details:

Switches between active high (PNP) and active low (NPN). This is valid for all digital inputs simultaneously.

The following is valid by using the internal supply:

If defined as BCB:
NPN: Terminals 5, 6, and 7 must be connected via terminal 9 (0V).
PNP: Terminals 5, 6, and 7 must be connected via terminal 8 (24V).

If defined as VCB:
NPN: Terminals 5, 6, 7, 8, 16, and 17 must be connected via terminal 28 (0V).
PNP: Terminals 5, 6, 7, 8, 16, and 17 must be connected via terminal 9 (24V).

Enum:

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

P0731[2] BI: Function of digital output 1 — Level 2

Min: 0:0 **Def:** 52:3 **Max:** 4000:0
Unit: -

Details:

Defines source of digital output 1.

Index:

P0731[0]: 1st Command data set (CDS)
P0731[1]: 2nd Command data set (CDS)

Settings:

52.0	SED2 ready	0 Closed
52.1	SED2 ready to run	0 Closed
52.2	SED2 running	0 Closed
52.3	SED2 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	SED2 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	SED2 overload	1 Closed
53.0	DC brake active	0 Closed
53.1	SED2 frequency less switch off limit	0 Closed
53.2	SED2 frequency less minimum frequency	0 Closed
53.3	Current greater or equal than limit	0 Closed
53.4	Actual frequency greater comparison freq.	0 Closed
53.5	Actual frequency less comparison freq.	0 Closed
53.6	Actual frequency 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

P0732[2] BI: Function of digital output 2 Level 2

Min: 0:0 **Def:** 52:2 **Max:** 4000:0
Unit: -

Details:

Defines source of digital output 2.

Index:

P0732[0]: 1st Command data set (CDS)
P0732[1]: 2nd Command data set (CDS)

Settings:

52.0	SED2 ready	0 Closed
52.1	SED2 ready to run	0 Closed
52.2	SED2 running	0 Closed
52.3	SED2 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	SED2 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	SED2 overload	1 Closed
53.0	DC brake active	0 Closed
53.1	SED2 frequency less switch off limit	0 Closed
53.2	SED2 frequency less minimum frequency	0 Closed
53.3	Current greater or equal than limit	0 Closed
53.4	Actual frequency greater comparison freq.	0 Closed
53.5	Actual frequency less comparison freq.	0 Closed
53.6	Actual frequency 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 when P0003=3, expert user access level.

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

Min: - **Def:** - **Max:** -
Unit: -

Details:

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

Bitfields:

Bit00	Digital output 1 energized	0 NO	1 YES
Bit01	Digital output 2 energized	0 NO	1 YES
Bit02	Digital output 3 energized	0 NO	1 YES

Dependency:

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

P0748 Invert digital outputs — Level 3

Min: 0 **Def:** 0 **Max:** 7
Unit: -

Details:

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

Bitfields:

Bit00	Invert digital output 1	0 NO	1 YES
Bit01	Invert digital output 2	0 NO	1 YES
Bit02	Invert digital output 3	0 NO	1 YES

r0752[2] Actual analog input, V or mA — Level 2

Min: - **Def:** - **Max:** -
Unit: -

Details:

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

Index:

r0752[0]: Analog input 1 (AI1)
r0752[1]: Analog input 2 (AI2)

P0753[2] Smooth time analog input — Level 3

Min: 0 **Def:** 100 **Max:** 10000
Unit: ms

Details:

Defines filter time (PT1 filter) in ms for an analog input.

Index:

P0753[0]: Analog input 1 (AI1)
P0753[1]: Analog input 2 (AI2)

Note:

Increasing this time (smooth) reduces jitter but slows down response to the analog input.

P0753=0 : No filtering

r0754[2] Actual AI value after scaling, % — Level 2

Min: - **Def:** - **Max:** -
Unit: %

Details:

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

Index:

r0754[0]: Analog input 1 (AI1)
r0754[1]: Analog input 2 (AI2)

Dependency:

P0757 to P0760 define the range (analog input scaling).

r0755[2] CO: Actual AI after scaling (4000h) — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

Displays analog input, scaled using ASPmin and ASPmax.

Analog setpoint (ASP) from the analog scaling block can vary from a minimum analog setpoint (ASPmin) to a maximum analog setpoint (ASPmax) as shown in P0757 (analog input scaling).

The largest magnitude (value without sign) of ASPmin and ASPmax defines the scaling of 16384.

Index:

r0755[0]: Analog input 1 (AI1)
r0755[1]: Analog input 2 (AI2)

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 10V).

ASPmin represents the lowest analog setpoint (this may be at 0V).

Reference:

See *P0757* to *P0760* (analog input scaling).

P0756[2] Type of analog input — Level 2

Min: 0 **Def:** 0 **Max:** 5
Unit: -

Details:

Defines type of analog input and also enables analog input monitoring.

To change from a voltage to a current analog input, modify parameter P0756 as well as set I/O module DIP switches to the appropriate position. The DIP switch settings are as follows:

- OFF=voltage input (10V)
- ON=current input (20 mA)

Allocation of DIP switches to analog inputs is as follows:

- DIP switch on left (DIP1)=Analog input 1
- DIP switch on right (DIP2)=Analog input 2

Enum:

0 Unipolar voltage input (0V to +10V)
1 Unipolar voltage input with monitoring (0 to 10V)
2 Unipolar current input (0 mA to 20 mA)
3 Unipolar current input with monitoring (0 to 20 mA)
5 L+S NI1000 sensor input

Index:

P0756[0]: Analog input 1 (AI1)
P0756[1]: Analog input 2 (AI2)

Dependency:

This function is disabled if the analog scaling block is programmed to output negative setpoints (see *P0757* to *P0760* for analog input scaling).

Note:

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

When using a value of 5, any PID setpoint needs to be in degrees C.

Reference:

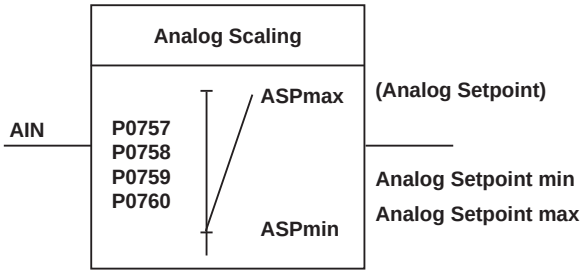
See *P0757* to *P0760* (analog input scaling).

P0757[2] Value x1 of AI scaling, V/mA — Level 2

Min: -50.0 **Def:** - **Max:** 150.0
Unit: -

Details:

Parameters P0757 to P0760 configure analog input scaling as follows:



Where:

- Analog setpoints represent a % of the normalized frequency in P2000.
- Analog setpoints may be larger than 100%
- ASPmax represents the highest analog setpoint (this may be 10V or 20 mA).
- ASPmin represents the lowest analog setpoint (this may be 0V or 0 mA).
- Default values provide a scaling of 0V or 0 mA=0%, and 10V or 20 mA=100%.

Index:

P0757[0]: Analog input 1 (AI1)
P0757[1]: Analog input 2 (AI2)

P0758[2] Value y1 of AI scaling — Level 2

Min: -99999.9 **Def:** 0.0 **Max:** 99999.9
Unit: %

Details:

Sets value of Y1 in % as described in P0757 (analog input scaling)

Index:

P0758[0]: Analog input 1 (AI1)
P0758[1]: Analog input 2 (AI2)

Dependency:

Affects P2000 to P2002 (reference frequency, voltage, current or torque) depending on which setpoint is to be generated.

P0759[2] Value x2 of AI scaling, V/mA — Level 2

Min: -50.0 **Def:** 10 **Max:** 150.0
Unit: -

Details:

Sets value of X2 as described in P0757 (analog input scaling).

Index:

P0759[0]: Analog input 1 (AI1)
P0759[1]: Analog input 2 (AI2)

P0760[2] Value y2 of AI scaling — Level 2

Min: -99999.9 **Def:** 100.0 **Max:** 99999.9
Unit: %

Details:

Sets value of Y2 in % as described in P0757 (analog input scaling).

Index:

P0760[0]: Analog input 1 (AI1)
P0760[1]: Analog input 2 (AI2)

Dependency:

Affects P2000 to P2002 (reference frequency, voltage, current or torque) depending on which setpoint is to be generated.

P0761[2] Width of AI deadband, V/mA — Level 3

Min: 0 **Def:** 0 **Max:** 150.0
Unit: -

Details:

Defines width of analog input deadband. The examples explain the use of P0761.

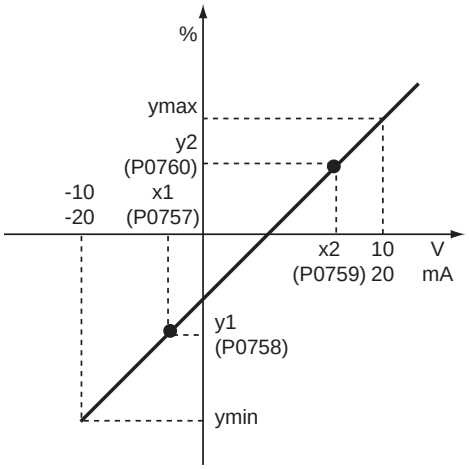
Index:

P0761[0]: Analog input 1 (AI1)
P0761[1]: Analog input 2 (AI2)

Example:

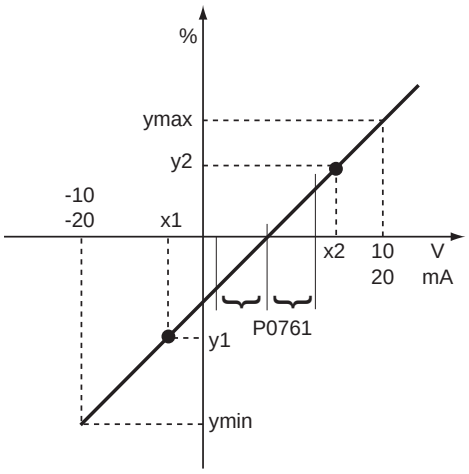
Example of analog input value 2V to 10V (0 Hz to 50 Hz):

P0756=0 or 1
P0757=2V
P0758=0%
P0759=8V
P0760=75%
P0761=2V
P2000=50 Hz



Example of analog input value 0V to 10V (-50 Hz to +50 Hz) with center zero and a "holding point" 0.2V wide (0.1V to each side of center):

P0756=0 or 1
P0757=2V
P0758=-75%
P0759=8V
P0760=75%
P0761=0.1V
P2000=50 Hz



Note:

P0761[x]=0 : No deadband active.

If both values of P0758 and P0760 (y coordinates of analog input scaling) are positive or negative respectively, the deadband starts from 0V to the value of P0761. However, the deadband is active in both directions from the point of intersection (x axis with analog input scaling curve), if the sign of P0758 and P0760 are opposite.

Fmin (P1080) should be zero when using center zero setup. There is no hysteresis at the end of the deadband.

P0771[2] CI: Analog output — Level 2

Min: 0:0 **Def:** 21:0 **Max:** 4000:0
Unit: -

Details:

Defines function of 0 mA to 20 mA analog output.

Index:

P0771[0]: Analog output 1 (AO1)
P0771[1]: Analog output 2 (AO2)

Settings:

21	CO: Actual frequency	(scaled to P2000)
24	CO: Actual output frequency	(scaled to P2000)
25	CO: Actual output voltage	(scaled to P2001)
26	CO: Actual DC-link voltage	(scaled to P2001)
27	CO: Actual output current	(scaled to P2002)

P0773[2] Smooth time analog output — Level 3

Min: 0 **Def:** 100 **Max:** 1000
Unit: ms

Details:

Defines smoothing time (ms) for analog output signal. This parameter enables smoothing for the input of the analog output using a PT1 filter.

Index:

P0773[0]: Analog output 1 (AO1)
P0773[1]: Analog output 2 (AO2)

Dependency:

P0773=0: Deactivates filter.

r0774[2] Actual Analog output value, V or mA — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

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

Index:

r0774[0]: Analog output 1 (AO1)
r0774[1]: Analog output 2 (AO2)

P0776 Type of Analog Output — Level 3

Min: 0 **Def:** 1 **Max:** 1
Unit: -

Details:

Defines type of analog output.

Enum:

0 Current output
1 Voltage output

Note:

The analog output is designed as a current output with a range of 0 mA to 20 mA.

The two analog output channels must be defined as the same type. That is, both channels are current outputs with a range of 0 mA to 20 mA, or both channels are voltage outputs with a range of 0V to 10V.

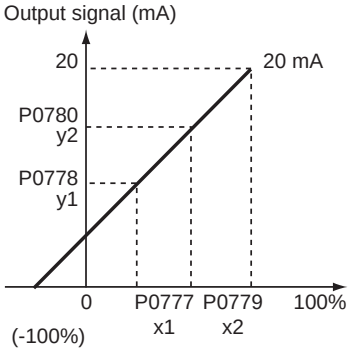
P0777[2] Value x1 of analog output scaling — Level 2

Min: -99999.9 **Def:** 0.0 **Max:** 99999.0
Unit: %

Details:

Defines x1 output characteristic in %. The scaling block is responsible for adjustment of the analog output value defined in P0771 (analog output).

Parameters of the analog output scaling block (P0777 to P0781) work as follows:



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

Index:

P0777[0]: Analog output 1 (AO1)
P0777[1]: Analog output 2 (AO2)

Example:

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

Dependency:

Effects P2000 to P2002 (referency frequency, voltage, current or torque) depending on which setpoint is to be generated.

P0778[2] Value y1 of analog output scaling — Level 2

Min: 0 **Def:** 0 **Max:** 20
Unit: -

Details:

Defines y1 of output characteristic.

Index:

P0778[0]: Analog output 1 (AO1)
P0778[1]: Analog output 2 (AO2)

P0779[2] Value x2 of analog output scaling — Level 2

Min: -99999.9 **Def:** 100.0 **Max:** 99999.0
Unit: %

Details:

Defines x2 of output characteristic in %.

Index:

P0779[0]: Analog output 1 (AO1)
P0779[1]: Analog output 2 (AO2)

Dependency:

Effects P2000 to P2002 (referency frequency, voltage, current or torque) depending on which setpoint is to be generated.

P0780[2] Value y2 of analog output scaling — Level 2

Min: 0 **Def:** 10 **Max:** 20
Unit: -

Details:

Defines y2 of output characteristic.

Index:

P0780[0]: Analog output 1 (AO1)
P0780[1]: Analog output 2 (AO2)

P0781[2] Width of analog output deadband — Level 3

Min: 0 **Def:** 0 **Max:** 20
Unit: -

Details:

Sets width of deadband in mA or V for analog output.

Index:

P0781[0]: Analog output 1 (AO1)
P0781[1]: Analog output 2 (AO2)

P0809[3] Copy Command Data Set — Level 3

Min: 0 **Def:** 0 **Max:** 2
Unit: -

Details:

Calls 'Copy command data set' function.

Index:

P0809[0]: Copy from command data set (CDS)
P0809[1]: Copy to command data set (CDS)
P0809[2]: Start copy

Note:

Start copy value in index 2 is automatically reset to 0 after execution of the function.

P0810 BI: CDS bit 0 (Local/Remote) Level 3

Min: 0:0 **Def:** 718:0 **Max:** 4095:0
Unit: -

Details:

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.

P0918 CB address Level 3

Min: 0 **Def:** 3 **Max:** 65535
Unit: -

Details:

Defines address of CB (communication board/module) or address of the other option modules.

There are two ways to set the bus address:

- Via DIP switches on the PROFIBUS module
- Via a user-entered value

Note:

Possible PROFIBUS settings:

1 to 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 Level 3

Min: 0 **Def:** - **Max:** 15
Unit: -

Details:

Specifies interfaces which can be used to change parameters.

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

Example:

"b - - n n" (bits 0, 1, 2 and 3 set) in the default setting means that parameters can be changed via any interface.

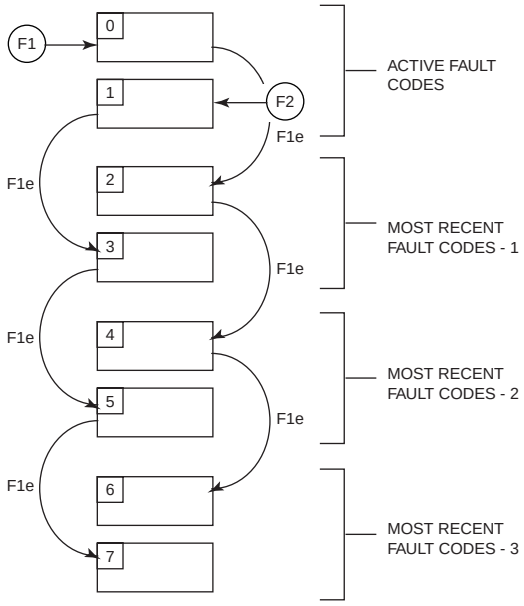
"b - - r n" (bits 0, 1 and 3 set) would specify that parameters can be changed via PROFIBUS/CB, BOP and USS on COM link (RS-485 USS) but not via USS on BOP link (RS-232).

r0947[8] Last fault code — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

Displays fault history as follows:



Where:

F1= The first active fault (not yet acknowledged).
F2= The second active fault (not yet acknowledged).
F1e= The occurrence of the fault acknowledgement for F1 and F2.

This moves the value in the 2 indexes down to the next pair of indexes, where they are stored. Indexes 0 and 1 contain the active faults. When faults are acknowledged, indexes 0 and 1 are reset to 0.

Index:

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

Example:

If the SED2 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 preceding diagram.

Dependency:

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

r0948[12] Fault time — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

Time stamp to indicate when a fault has occurred. P2114 (run-time counter) or P2115 (real time clock) are possible sources of the time stamp.

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

Example:

The time is taken from P2115 if this parameter has been updated with the real time. If not, P2114 is used.

Note:

P2115 can be updated via the AOP.

r0949[8] Fault value — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

Displays SED2 fault values. This parameter is for service purposes and indicates the type of fault reported. The values are not documented. They are listed in the code where faults are reported.

Index:

r0949[0]: Recent fault trip --, fault value 1
r0949[1]: Recent fault trip --, fault value 2
r0949[2]: Recent fault trip -1, fault value 3
r0949[3]: Recent fault trip -1, fault value 4
r0949[4]: Recent fault trip -2, fault value 5
r0949[5]: Recent fault trip -2, fault value 6
r0949[6]: Recent fault trip -3, fault value 7
r0949[7]: Recent fault trip -3, fault value 8

P0952 Total number of faults — Level 3

Min: 0 **Def:** 0 **Max:** 8
Unit: -

Details:

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

Dependency:

Setting 0 resets fault history (changing to 0 also resets parameter r0948, fault time).

r0967 Control word 1 — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

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 (ramp function gen.) enable	0 NO	1 YES
Bit05	RFG (ramp function gen.) 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	Motor potentiometer MOP up	0 NO	1 YES
Bit14	Motor potentiometer MOP down	0 NO	1 YES
Bit15	CDS Bit 0 (Local/Remote)	0 NO	1 YES

r0968 Status word 1 — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

Displays active status word of SED2 (in binary) and can be used to diagnose which commands are active.

Bitfields:

Bit00	SED2 ready	0 NO	1 YES
Bit01	SED2 ready to run	0 NO	1 YES
Bit02	SED2 running	0 NO	1 YES
Bit03	SED2 fault active	0 NO	1 YES
Bit04	OFF2 active	0 YES	1 NO
Bit05	OFF3 active	0 YES	1 NO
Bit06	ON inhibit active	0 NO	1 YES
Bit07	SED2 warning active	0 NO	1 YES
Bit08	Deviation setpoint/Actual 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	SED2 overload	0 YES	1 NO

P0970 Factory reset — Level 1

Min: 0 **Def:** 0 **Max:** 1
Unit: -

Details:

Resets all parameters to their default values.

Enum:

0 Disabled
1 Reset all parameters

Dependency:

First set P0010=30 (factory settings).

You must stop the SED2 (that is, disable all pulses) before you can reset parameters to default values.

Note:

The following parameters retain their values after a factory reset:

P0918 (CB address)
P2010 (USS baud rate)
P2011 (USS address)

P0971 Transfer data from RAM to EEPROM — Level 3

Min: 0 **Def:** 0 **Max:** 1
Unit: -

Details:

Transfers values from RAM to EEPROM.

Enum:

0 Disabled
1 Start transfer

Note:

All values in RAM are transferred to EEPROM.
P0971 is automatically reset to 0 (default) after successful transfer.

P1000[2] Selection of frequency setpoint — Level 1

Min: 0 **Def:** 2 **Max:** 77
Unit: -

Details:

Selects frequency setpoint source. In the following Enum list of possible settings, the main setpoint is selected from the least significant digit (that is, 0 to 7) and any additional setpoint is selected from the most significant digit (that is, x0 through to x7).

Example:

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

Note:

Single digits denote main setpoints that have no additional setpoint.

Index:

P1000[0]: 1st Command data set (CDS)
P1000[1]: 2nd Command data set (CDS)

Enum:

0 No main setpoint
1 MOP (motor potentiometer) setpoint
2 Analog setpoint
3 Fixed frequency
4 USS on BOP link
5 USS on COM link
6 CB on COM link
7 Analog setpoint 2

10 No main setpoint + MOP (motor potentiometer) setpoint
11 MOP setpoint + MOP (motor potentiometer) setpoint
12 Analog setpoint + MOP (motor potentiometer) setpoint
13 Fixed frequency + MOP (motor potentiometer) setpoint
14 USS on BOP link + MOP (motor potentiometer) setpoint
15 USS on COM link + MOP (motor potentiometer) setpoint
16 CB on COM link + MOP (motor potentiometer) setpoint
17 Analog setpoint 2 + MOP (motor potentiometer) setpoint

20 No main setpoint + Analog setpoint
21 MOP (motor potentiometer) 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
27 Analog setpoint 2 + Analog setpoint

30 No main setpoint + Fixed frequency
31 MOP (motor potentiometer) 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
37 Analog setpoint 2 + Fixed frequency

40 No main setpoint + USS on BOP link
41 MOP (motor potentiometer) 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 link + USS on BOP link
47 Analog setpoint 2 + USS on BOP link

50 No main setpoint + USS on COM link
51 MOP (motor potentiometer) 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
57 Analog setpoint 2 + USS on COM link

60 No main setpoint + CB on COM link
61 MOP (motor potentiometer) 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
67 Analog setpoint 2 + CB on COM link

70 No main setpoint + Analog setpoint 2
71 MOP (motor potentiometer) setpoint + Analog setpoint 2
72 Analog setpoint + Analog setpoint 2
73 Fixed frequency + Analog setpoint 2
74 USS on BOP link + Analog setpoint 2
75 USS on COM link + Analog setpoint 2
76 CB on COM link + Analog setpoint 2
77 Analog setpoint 2 + Analog setpoint 2

P1001 Fixed frequency 1 — Level 3

Min: -650.00 **Def:** 0.00 **Max:** 650.00
Unit: Hz

Details:

Defines fixed frequency setpoint 1.There are three types of fixed frequencies:

1. Direct selection (P0701 to P0706=15).

   In this mode of operation 1 digital input selects 1 fixed frequency.
   If several inputs are active together, the selected frequencies are summed.
   For example: FF1 + FF2 + FF3 + FF4 + FF5 + FF6=r1024.
   Enabled digital inputs will add to the selected frequencies even when programming for other operation.
   Clear all values in P1002 through P1015 that are not needed.

2. Direct selection + ON command (P0701 to P0706=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.
   For example: FF1 + FF2 + FF3 + FF4 + FF5 + FF6=r1024.
   Enabled digital inputs will add to the selected frequencies even when programming for other operation.
   Clear all values in P1002 through P1015 that are not needed.

3. Binary coded selection + ON command (P0701 to P0704=17).

   Select up to 16 fixed frequencies using this method. Select the fixed frequencies (FF1 to FF15) according to the following table:
   Enabled digital inputs will add to the selected frequencies even when programming for other operation.
   Clear all values in P1002 through P1015 that are not needed.

		Digital Input 4	Digital Input 3	Digital Input 2	Digital Input 1
	OFF	Inactive	Inactive	Inactive	Inactive
P1001	FF1	Inactive	Inactive	Inactive	**Active**
P1002	FF2	Inactive	Inactive	**Active**	Inactive
P1003	FF3	Inactive	Inactive	**Active**	**Active**
P1004	FF4	Inactive	**Active**	Inactive	Inactive
P1005	FF5	Inactive	**Active**	Inactive	**Active**
P1006	FF6	Inactive	**Active**	**Active**	Inactive
P1007	FF7	Inactive	**Active**	**Active**	**Active**
P1008	FF8	**Active**	Inactive	Inactive	Inactive
P1009	FF9	**Active**	Inactive	Inactive	**Active**
P1010	FF10	**Active**	Inactive	**Active**	Inactive
P1011	FF11	**Active**	Inactive	**Active**	**Active**
P1012	FF12	**Active**	**Active**	Inactive	Inactive
P1013	FF13	**Active**	**Active**	Inactive	**Active**
P1014	FF14	**Active**	**Active**	**Active**	Inactive
P1015	FF15	**Active**	**Active**	**Active**	**Active**

Dependency:

Select fixed frequency operation (using P1000).

SED2 requires ON command to start in the case of direct selection (P0701 to P0706=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 3

Min: -650.00 Def: 5.00 Max: 650.00
Unit: Hz

Details:

Defines fixed frequency setpoint 2.

Reference:

See *P1001* (fixed frequency 1).

Note:

Clear all unused fixed frequencies.

P1003 Fixed frequency 3 — Level 3

Min: -650.00 Def: 10.00 Max: 650.00
Unit: Hz

Details:

Defines fixed frequency setpoint 3.

Reference:

See *P1001* (fixed frequency 1).

Note:

Clear all unused fixed frequencies.

P1004 Fixed frequency 4 — Level 3

Min: -650.00 Def: 15.00 Max: 650.00
Unit: Hz

Details:

Defines fixed frequency setpoint 4.

Reference:

See *P1001* (fixed frequency 1).

Note:

Clear all unused fixed frequencies.

P1005 Fixed frequency 5 — Level 3

Min: -650.00 Def: 20.00 Max: 650.00
Unit: Hz

Details:

Defines fixed frequency setpoint 5.

Reference:

See *P1001* (fixed frequency 1).

Note:

Clear all unused fixed frequencies.

P1006 **Fixed frequency 6** **Level 3**
Min: -650.00 Def: 25.00 Max: 650.00
Unit: Hz

Details:
Defines fixed frequency setpoint 6.
Reference:
See P1001 (fixed frequency 1).
Note:
Clear all unused fixed frequencies.

P1007 **Fixed frequency 7** **Level 3**
Min: -650.00 Def: 30.00 Max: 650.00
Unit: Hz

Details:
Defines fixed frequency setpoint 7.
Reference:
See P1001 (fixed frequency 1).
Note:
Clear all unused fixed frequencies.

P1008 **Fixed frequency 8** **Level 3**
Min: -650.00 Def: 35.00 Max: 650.00
Unit: Hz

Details:
Defines fixed frequency setpoint 8.
Reference:
See P1001 (fixed frequency 1).
Note:
Clear all unused fixed frequencies.

P1009 **Fixed frequency 9** **Level 3**
Min: -650.00 Def: 40.00 Max: 650.00
Unit: Hz

Details:
Defines fixed frequency setpoint 9.
Reference:
See P1001 (fixed frequency 1).
Note:
Clear all unused fixed frequencies.

P1010 **Fixed frequency 10** **Level 3**
Min: -650.00 Def: 45.00 Max: 650.00
Unit: Hz

Details:
Defines fixed frequency setpoint 10.
Reference:
See *P1001* (fixed frequency 1).
Note:
Clear all unused fixed frequencies.

P1011 **Fixed frequency 11** **Level 3**
Min: -650.00 Def: 50.00 Max: 650.00
Unit: Hz

Details:
Defines fixed frequency setpoint 11.
Reference:
See P1001 (fixed frequency 1).
Note:
Clear all unused fixed frequencies.

P1012 **Fixed frequency 12** **Level 3**
Min: -650.00 Def: 55.00 Max: 650.00
Unit: Hz

Details:
Defines fixed frequency setpoint 12.
Reference:
See *P1001* (fixed frequency 1).
Note:
Clear all unused fixed frequencies.

P1013 **Fixed frequency 13** **Level 3**
Min: -650.00 Def: 60.00 Max: 650.00
Unit: Hz

Details:
Defines fixed frequency setpoint 13.
Reference:
See *P1001* (fixed frequency 1).
Note:
Clear all unused fixed frequencies.

P1014 **Fixed frequency 14** **Level 3**
Min: -650.00 Def: 65.00 Max: 650.00
Unit: Hz

Details:
Defines fixed frequency setpoint 14.
Reference:
See *P1001* (fixed frequency 1).
Note:
Clear all unused fixed frequencies.

P1015 **Fixed frequency 15** **Level 3**
Min: -650.00 Def: 65.00 Max: 650.00
Unit: Hz

Details:
Defines fixed frequency setpoint 15.
Reference:
See *P1001* (fixed frequency 1).
Note:
Clear all unused fixed frequencies.

P1016 Fixed frequency mode - Bit 0 Level 3

Min: 1 **Def:** 1 **Max:** 3
Unit: -

Details:

Defines fixed frequency mode for selection Bit 0.

Enum:

1 Direct selection
2 Direct selection + ON command
3 Binary coded selection + ON command

Reference:

See table in *P1001* (fixed frequency 1) for description of how to use fixed frequencies.

P1017 Fixed frequency mode - Bit 1 Level 3

Min: 1 **Def:** 1 **Max:** 3
Unit: -

Details:

Defines fixed frequency mode for selection Bit 1.

Enum:

1 Direct selection
2 Direct selection + ON command
3 Binary coded selection + ON command

Reference:

See table in *P1001* (fixed frequency 1) for description of how to use fixed frequencies.

P1018 Fixed frequency mode - Bit 2 Level 3

Min: 1 **Def:** 1 **Max:** 3
Unit: -

Details:

Defines fixed frequency mode for selection Bit 2.

Enum:

1 Direct selection
2 Direct selection + ON command
3 Binary coded selection + ON command

Reference:

See table in *P1001* (fixed frequency 1) for a description of how to use fixed frequencies.

P1019 Fixed frequency mode - Bit 3 — Level 3

Min: 1 **Def:** 1 **Max:** 3
Unit: -

Details:
Defines fixed frequency mode for selection Bit 3.

Enum:
1 Direct selection
2 Direct selection + ON command
3 Binary coded selection + ON command

Reference:
See table in *P1001* (fixed frequency 1) for a description of how to use fixed frequencies.

P1020[2] BI: Fixed frequency selection Bit 0 — Level 3

Min: 0:0 **Def:** 0:0 **Max:** 4000:0
Unit: -

Details:
Defines origin of fixed frequency selection Bit 0.

Index:
P1020[0]: 1st Command data set (CDS)
P1020[1]: 2nd Command data set (CDS)

Settings:
P1020=722.0 ==> Digital input 1
P1021=722.1 ==> Digital input 2
P1022=722.2 ==> Digital input 3
P1023=722.3 ==> Digital input 4
P1026=722.4 ==> Digital input 5
P1028=722.5 ==> Digital input 6

Dependency:
Accessible only if P0701 to P0706=99 (function of digital inputs= BiCo).

P1021[2] BI: Fixed frequency selection Bit 1 — Level 3

Min: 0:0 **Def:** 0:0 **Max:** 4000:0
Unit: -

Details:
Defines origin of fixed frequency selection Bit 1.

Index:
P1021[0]: 1st Command data set (CDS)
P1021[1]: 2nd Command data set (CDS)

Dependency:
Accessible only if P0701 to P0706=99 (function of digital inputs= BiCo).

Reference:
See *P1020* (fixed frequency selection bit 0) for most common settings.

P1022[2] BI: Fixed frequency selection Bit 2 Level 3

Min: 0:0 **Def:** 0:0 **Max:** 4000:0
Unit: -

Details:
Defines origin of fixed frequency selection Bit 2.

Index:
P1022[0]: 1st Command data set (CDS)
P1022[1]: 2nd Command data set (CDS)

Dependency:
Accessible only if P0701 to P0706=99 (function of digital inputs= BiCo)

Reference:
See *P1020* (fixed frequency selection Bit 0) for most common settings.

P1023[2] BI: Fixed frequency selection Bit 3 Level 3

Min: 0:0 **Def:** 722:3 **Max:** 4000:0
Unit: -

Details:
Defines origin of fixed frequency selection Bit 3.

Index:
P1023[0]: 1st Command data set (CDS)
P1023[1]: 2nd Command data set (CDS)

Dependency:
Accessible only if P0701 to P0706=99 (function of digital inputs= BiCo).

Reference:
See *P1020* (fixed frequency selection bit 0) for most common settings.

r1024 CO: Actual fixed frequency Level 3

Min: - **Def:** - **Max:** -
Unit: Hz

Details:
Displays sum total of selected fixed frequencies.

P1025 Fixed frequency mode - Bit 4 Level 3

Min: 1 **Def:** 1 **Max:** 2
Unit: -

Details:
Defines fixed frequency mode for selection Bit 4.

Enum:
1 Direct selection
2 Direct selection + ON command

Reference:
See *P1001* for description of how to use fixed frequencies.

P1026[2] BI: Fixed frequency selection Bit 4 — Level 3

Min: 0:0 **Def:** 722:4 **Max:** 4000:0
Unit: -

Details:
Defines origin of fixed frequency selection Bit 4.

Index:
P1026[0]: 1st Command data set (CDS)
P1026[1]: 2nd Command data set (CDS)

Dependency:
Accessible only if P0701 to P0706=99 (function of digital inputs= BiCo).

Reference:
See *P1020* (fixed frequency selection bit 0) for most common settings.

P1027 Fixed frequency mode - Bit 5 — Level 3

Min: 1 **Def:** 1 **Max:** 2
Unit: -

Details:
Defines fixed frequency mode for selection Bit 5.

Enum:
1 Direct selection
2 Direct selection + ON command

Reference:
See *P1001* for description of how to use fixed frequencies.

P1028[2] BI: Fixed frequency selection Bit 5 — Level 3

Min: 0:0 **Def:** 722:5 **Max:** 4000:0
Unit: -

Details:
Defines origin of fixed frequency selection Bit 5.

Index:
P1028[0]: 1st Command data set (CDS)
P1028[1]: 2nd Command data set (CDS)

Dependency:
Accessible only if P0701 to P0706=99 (function of digital inputs= BiCo).

Reference:
See *P1020* (fixed frequency selection bit 0) for most common settings.

P1031 Setpoint memory of the MOP — Level 3

Min: 0 **Def:** 1 **Max:** 1
Unit: -

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

Enum:
0 MOP (motor potentiometer) setpoint will not be stored
1 MOP (motor potentiometer) setpoint will be stored (P1040 is updated)

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

P1032 Inhibit reverse direction of MOP — Level 3

Min: 0 **Def:** 1 **Max:** 1
Unit: -

Details:

Inhibits reverse motor potentiometer (MOP) setpoint selection.

Enum:

0 Reserve direction is allowed
1 Reserve direction inhibited

Dependency:

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

Note:

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

P1040 Setpoint of the MOP — Level 2

Min: -650.00 **Def:** 10.00 **Max:** 650.00
Unit: Hz

Details:

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

Note:

If motor potentiometer setpoint is selected either as main setpoint or additional setpoint, the reverse direction will be inhibited by default of P1032 (inhibit reverse direction of motor potentiometer, MOP).

To re-enable reverse direction, set P1032=0.

r1050 CO: Actual Output frequency of the MOP — Level 3

Min: - **Def:** - **Max:** -
Unit: Hz

Details:

Displays output frequency of motor potentiometer(MOP) setpoint (Hz).

r1078 CO: Total frequency setpoint — Level 3

Min: - **Def:** - **Max:** -
Unit: Hz

Details:

Displays sum of main and additional setpoints in Hz.

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

Min: 0.00 **Def:** 10.00 **Max:** 650.00
Unit: Hz

Details:

Sets minimum motor frequency (Hz) at which motor will run irrespective of frequency setpoint.

Note:

The value set here is valid both for clockwise and for counterclockwise rotation.

Under certain conditions (such as, ramping, current limiting), motor can run below minimum frequency.

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

Min: 0.00 **Def:** 50.00/ **Max:** 150.00
Unit: Hz 60.00, Varies

Details:

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 counterclockwise rotation.

Maximum motor speed is subject to mechanical limitations.

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

Min: 0.00 **Def:** 0.00 **Max:** 650.00
Unit: Hz

Details:

Defines skip frequency 1 which avoids effects of mechanical resonance and suppresses frequencies within +/- P1101 (skip frequency bandwidth).

Note:

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 (that is, between 8 and 12 Hz).

P1092 **Skip frequency 2** **Level 3**
Min: **0.00** **Def:** **0.00** **Max:** **650.00**
Unit: **Hz**

Details:
Defines skip frequency 2 which avoids effects of mechanical resonance and suppresses frequencies within +/- P1101 (skip frequency bandwidth).

Reference:
See *P1091* (skip frequency 1).

P1093 **Skip frequency 3** **Level 3**
Min: **0.00** **Def:** **0.00** **Max:** **650.00**
Unit: **Hz**

Details:
Defines skip frequency 3 which avoids effects of mechanical resonance and suppresses frequencies within +/- P1101 (skip frequency bandwidth).

Reference:
See *P1091* (skip frequency 1).

P1094 **Skip frequency 4** **Level 3**
Min: **0.00** **Def:** **0.00** **Max:** **650.00**
Unit: **Hz**

Details:
Defines skip frequency 4 which avoids effects of mechanical resonance and suppresses frequencies within +/- P1101 (skip frequency bandwidth).

Reference:
See *P1091* (skip frequency 1).

P1101 **Skip frequency bandwidth** **Level 3**
Min: **0.00** **Def:** **2.00** **Max:** **10.00**
Unit: **Hz**

Details:
Delivers frequency bandwidth (Hz) to be applied to skip frequencies.

Reference:
See *P1091* (skip frequency 1).

P1110[2] BI: Inhibit negative frequency setpoint — Level 3

Min: 0:0 **Def:** 1 **Max:** 4000:0
Unit: -

Details:

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

Index:

P1110[0]: 1st Command data set (CDS)
P1110[1]: 2nd Command data set (CDS)

Settings:

0=Disabled
1=Enabled

Note:

It is possible to disable all reverse commands (that is, the command is ignored).

This function does not disable the "reverse" command function; rather, a reverse command causes the motor to run at minimum frequency (P1080) in the normal direction.

P1120 Ramp-up time — Level 1

Min: 0.00 **Def:** 10.00 **Max:** 650.00
Unit: s

Details:

Time allowed 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 SED2 to trip (overcurrent, F0001).

Note:

If using an external frequency setpoint with set ramp rates (such as from a PLC), the best way to achieve optimum SED2 performance is to set ramp times in P1120 and P1121 slightly shorter than those of the PLC.

Ramp times is used as follows:

P1060/P1061: JOG mode is active
P1120/P1121: Normal mode (ON/OFF) is active
P1060/P1061: Normal mode (ON/OFF) and P1124 is active

P1121 **Ramp-down time** **Level 1**
Min: 10.00 **Def:** 30.00 **Max:** 650.00
Unit: s

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

Note:
Setting the ramp-down time too short can cause the SED2 to trip (overcurrent, F0001/overvoltage, F0002).

Ramp times is used as follows:

P1060/P1061: JOG mode is active
P1120/P1121: Normal mode (ON/OFF) is active
P1060/P1061: Normal mode (ON/OFF) and P1124 is active

P1135 **OFF3 ramp-down time** **Level 3**
Min: 0.00 **Def:** 5.00 **Max:** 650.00
Unit: s

Details:
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.

P1140[2] **BI: RFG enable** **Level 3**
Min: 0:0 **Def:** 1:0 **Max:** 4000:0
Unit: -

Details:
Defines command source of RFG (ramp function generator) enable command.

Index:
P1140[0]: 1st Command data set (CDS)
P1140[1]: 2nd Command data set (CDS)

P1141[2] **BI: RFG start** **Level 3**
Min: 0:0 **Def:** 1:0 **Max:** 4000:0
Unit: -

Details:
Defines command source of RFG (ramp function generator) start command.

Index:
P1141[0]: 1st Command data set (CDS)
P1141[1]: 2nd Command data set (CDS)

P1142[2] BI: RFG enable setpoint — Level 3

Min: 0:0 **Def:** 1:0 **Max:** 4000:0
Unit: -

Details:

Defines command source of RFG (ramp function generator) enable setpoint command.

Index:

P1142[0]: 1st Command data set (CDS)
P1142[1]: 2nd Command data set (CDS)

P1200 Flying start — Level 3

Min: 0 **Def:** 0 **Max:** 6
Unit: -

Details:

Starts SED2 onto a spinning motor by rapidly changing the output frequency of the SED2 until the actual motor speed has been found. Then, the motor runs up to setpoint using the normal ramp time.

Enum:

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:

P1200 is 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.

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

P1202 Motor-current: Flying start — Level 3

Min: 10 **Def:** 100 **Max:** 200
Unit: %

Details:

Defines search current used for flying start.

Value is in % based on rated 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 — Level 3

Min: 10 **Def:** 100 **Max:** 200
Unit: %

Details:

Sets factor by which the output frequency changes during flying start to synchronize with turning motor. This value, is entered in % relative to the default time factor, defines the initial gradient (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 × f_slip to 0 Hz.

P1203=100% is defined as giving a rate of 2% of f_slip,nom/ms.

P1203=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 — Level 3

Min: 0 **Def:** 1 **Max:** 5
Unit: -

Details:

Enables restart after a supply power break or after a fault.

Enum:

0	Disabled	
1	Trip reset after power on	P1211 disabled
2	Restart after supply power blackout	P1211 disabled
3	Restart after brownout or fault	P1211 enabled
4	Restart after supply power brownout	P1211 disabled
5	Restart supply power after blackout or fault	P1211 disabled

Dependency:

Auto restart requires constant ON command (such as via a digital input wire link).

CAUTION:

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

Note:

P1200 flying start must be used in cases where the motor may still be turning (such as after a short supply power break) or can be driven by the load.

A **supply power brownout** is when the power is interrupted and reapplied before the operator panel display has gone dark. It is a very short supply power break where the DC link has not fully collapsed.

A **supply power blackout** is when the operator panel display has gone dark before the power is reapplied. It is a long supply power break where the DC link has fully collapsed.

P1211 **Number of restart attempts** **Level 3**

Min: 0 **Def: 3** **Max: 10**

Unit: -

Details:

Specifies number of times SED2 will attempt to restart after supply power brownout or fault, if P1210 automatic restart is activated.

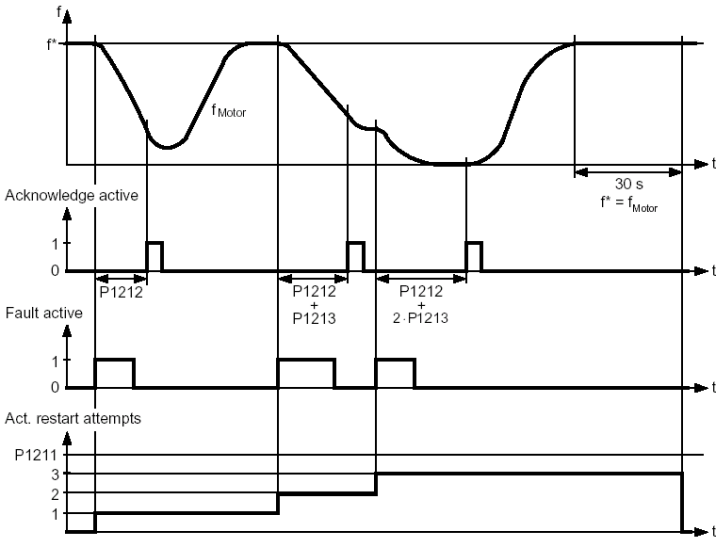
P1212 **Time to first restart** **Level 3**

Min: 0 **Def: 30** **Max: 1000**

Unit: s

Details:

Selects the time before the SED2 is restarted for the first time if P1210 automatic restart is activated.



P1213 **Restart time increment** **Level 3**

Min: 0 **Def: 30** **Max: 1000**

Unit: s

Details:

Selects the amount (seconds) that the restart time is incremented for each restart of the SED2 if P1210 automatic restart is activated.

P1230[2] BI: Enable DC braking — Level 3

Min: 0:0 **Def:** 0:0 **Max:** 4000:0
Unit: -

Details:

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 SED2 output pulses are blocked and the DC current is not applied until the motor has been sufficiently demagnetized.

Index:

P1230[0]: 1st Command data set (CDS)
P1230[1]: 2nd Command data set (CDS)

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)
722.3= Digital input 4 (requires P0704 to be set to 99, BiCo)
722.4= Digital input 5 (requires P0705 to be set to 99, BiCo)
722.5= Digital input 6 (requires P0706 to be set to 99, BiCo)
722.6= Digital input 7 (via analog input 1, requires P0707 to be set to 99)
722.7= Digital input 8 (via analog input 2, requires P0708 to be set to 99)

CAUTION:

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

Note:

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

P1232 DC braking current — Level 3

Min: 0 **Def:** 100 **Max:** 250
Unit: %

Details:

Defines level of DC current in % relative to rated motor current (P0305).

P1233 Duration of DC braking — Level 3

Min: 0 **Def:** 0 **Max:** 250
Unit: s

Details:

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

Value:

P1233=0: Not active following OFF1.
P1233=1 to 250: Active for the specified duration.

Caution:

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

Note:

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 SED2 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 3

Min: 0 **Def:** 0 **Max:** 250
Unit: %

Defines DC level superimposed on AC waveform. The value is entered in % relative to rated motor current (P0305).

Value:

P1236=0 : Compound braking disabled.
P1236=1 to 250 : Level of DC braking current defined as a % of rated motor current (P0305).

Dependency:

Active after OFF1/OFF3 command.

Note:

Increasing the value generally improves braking performance; however, if you set the value too high, an overcurrent trip may result.

P1240 Configuration of Vdc controller — Level 3

Min: 0 **Def:** 1 **Max:** 3
Unit: -

Details:

Enables/disables Vdc controller.

The Vdc controller dynamically controls the DC link voltage to prevent overvoltage trips on high inertia systems.

Enum:

0 Vdc controller disabled
1 Vdc-max controller enabled
2 Reserved
3 Reserved

Note:

Vdc-max automatically increases ramp-down times to keep the DC link voltage (r0026) within limits.

P1260	**Reserved**			**Level 2**
	Min:	**Def:**	**Max:**	
	Unit:			

r1261	**Reserved**			**Level 2**
	Min:	**Def:**	**Max:**	
	Unit:			

P1262	**Reserved**			**Level 2**
	Min:	**Def:**	**Max:**	
	Unit:			

P1263	**Reserved**			**Level 2**
	Min:	**Def:**	**Max:**	
	Unit:			

P1264	**Reserved**			**Level 2**
	Min:	**Def:**	**Max:**	
	Unit:			

P1265	**Reserved**			**Level 2**
	Min:	**Def:**	**Max:**	
	Unit:			

P1266[2]	**Reserved**			**Level 2**
	Min:	**Def:**	**Max:**	
	Unit:			

P1270[2]	**BI: Enable essential service**			**Level 3**
	Min: **0:0**	**Def:** **0:0**	**Max:** **4000:0**	
	Unit: **-**			

Details:

Enables essential service.

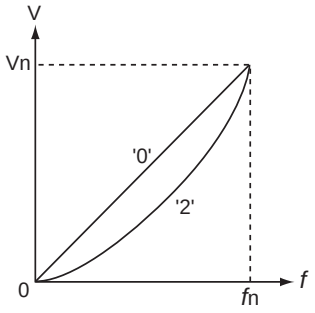
Index:

P1270[0]: 1st Command data set (CDS)
P1270[1]: 2nd Command data set (CDS)

P1300	Control mode	Level 3
	Min: 0 Def: 2 Max: 23	
	Unit: -	

Details:

Controls relationship between speed of motor and voltage supplied by SED2 as follows:



Enum:

0 V/f with linear charac.
1 V/f with FCC
2 V/f with parabolic characteristic
3 Reserved
4 Reserved
5 Reserved
6 Reserved
19 Reserved
20 Reserved
21 Reserved
22 Reserved
23 Reserved

Note:

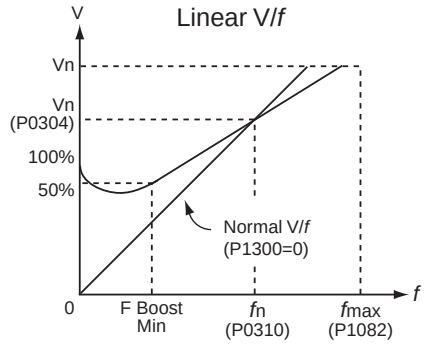
P1300=1: V/f with FCC
* Maintains motor flux current for improved efficiency.
* If FCC is chosen, linear V/f is active at low frequencies.

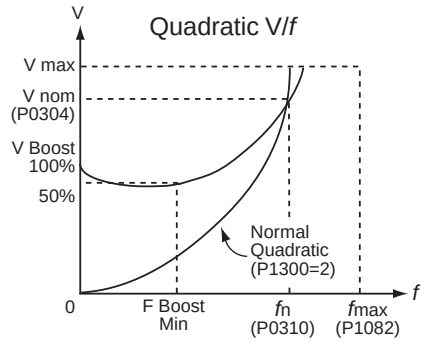
P1300=2: V/f with a quadratic curve.
* Suitable for centrifugal fans/pumps.

P1310 **Continuous boost** **Level 3**
Min: 0.0 Def: 50.0 Max: 250.0
Unit: %

Details:

Defines boost level in % relative to P0305 (rated motor current) applicable to both linear and quadratic V/f curves as follows:





where

V_Boost,100=
Voltage from rated motor current (P0305) * Stator resistance (P0350)

Dependency:

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

Note:

The boost values are combined when continuous boost (P1310) is 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

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

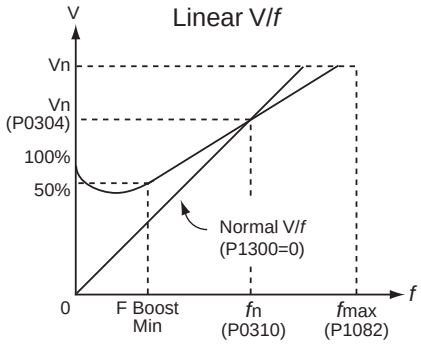
$\sum$ Boosts ≤ (300 / I_{mot}) * R_s

P1311 Acceleration boost — Level 3

Min: 0.0 **Def:** 0.0 **Max:** 250.00
Unit: %

Details:

Applies boost in % relative to P0305 (rated motor current) 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 boost can help to improve response to small positive setpoint changes.

$\sum$ Boosts ≤ (300 / I_{mot}) * R_s

Increasing the boost level increases motor heating.

Reference:

See note in *P1310* for boost priorities.

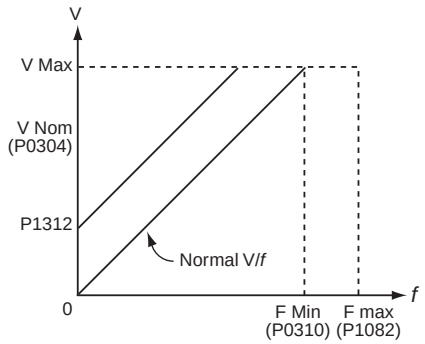
P1312 Starting boost — Level 3

Min: 0.0 **Def:** 0.0 **Max:** 250.00
Unit: %

Details:

Applies a constant linear offset (in % relative to P0305, rated motor current) to an active V/f curve (either linear or quadratic) after an ON command and is active until the setpoint is reached for the first time. This is useful for starting loads with high inertia.

Setting the starting boost (P1312) too high causes the SED2 to limit the current, which in turn restricts the output frequency to below the setpoint frequency.



Dependency:

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

Note:

Increasing the boost levels increases motor heating.

$\sum$ Boosts ≤ (300 / I_{mot}) * R_s

Reference:

See note in *P1310* for boost priorities.

P1335 Slip compensation — Level 3

Min: 0.0 **Def:** 0.0 **Max:** 600.0
Unit: %

Details:

Dynamically adjusts SED2 output frequency so that motor speed is kept constantly independent of motor load.

Value:

P1335=0% : Slip compensation disabled.
P1335=100% : Uses the motor data and the motor model to add the rated slip frequency, rated motor speed, and rated motor current.

Note:

Gain adjustment enables fine-tuning of the actual motor speed.

100%=standard setting for warm stator.

P1336 **Slip limit** **Level 3**
Min: 0 **Def:** 250 **Max:** 600
Unit: %

Details:
Compensation slip limit in % relative to the rated motor slip, which is added to frequency setpoint.
Dependency:
Slip compensation (P1335) active.

r1337 **CO: V/f slip frequency** **Level 3**
Min: - **Def:** - **Max:** -
Unit: %

Details:
Displays actual compensated motor slip as %.
Dependency:
Slip compensation (P1335) active.

P1800 **Pulse frequency** **Level 2**
Min: 2 **Def:** Varies **Max:** 16
Unit: kHz

Details:
Sets pulse frequency of power switches in SED2. The frequency can be changed in increments of 2 kHz.

Pulse frequencies > 4 kHz selected on 380V to 480V units reduce the maximum continuous motor current.
Dependency:
Minimum pulse frequency depends on P1082 (maximum frequency) and P0310 (rated motor frequency).
Note:
At 4 kHz, full output current is obtained up to 40 degrees C.

If silent operation is not absolutely necessary, lower pulse frequencies may be selected to reduce SED2 losses and radio-frequency emissions.

Under certain circumstances, the SED2 may reduce the switching frequency to provide protection against over-temperature.

r1801 **CO: Actual switching frequency** **Level 3**
Min: - **Def:** - **Max:** -
Unit: kHz

Details:
Actual pulse frequency of power switches in SED2.
Note:
Under certain conditions (such as SED2 overtemperature), this can differ from the values selected in P1800 (pulse frequency).

P1820 Reverse output phase sequence — Level 3

Min: 0 **Def:** 0 **Max:** 1
Unit: -

Changes direction of motor rotation without changing setpoint polarity.

Enum:

0 OFF
1 ON

Dependency:

If positive and negative revolution is enabled, frequency setpoint is directly used. If both positive and negative revolution are disabled, reference value is set to zero.

Reference:

See *P1000* (select frequency setpoint).

P1910 Select motor data identification — Level 3

Min: 0 **Def:** 0 **Max:** 20
Unit: -

Details:

Performs stator resistance measuring.

Enum:

0 Disabled
1 Identification of Rs with parameter change
2 Identification of Rs without parameter change
20 Set voltage vector

Reference:

See *P1001* (fixed frequency 1).

Dependency:

No measurement if motor data is incorrect.

P1910=1 Calculated value for stator resistance (P0350) is overwritten.
P1910=2 Values already calculated are not overwritten.

Note:

Before selecting motor data identification, perform quick commissioning (P0010).

Once enabled (P1910=1), A0541 outputs a warning that the next ON command will initiate measurement of motor parameters.

When choosing the setting for measurement, observe the following:

- Enum selection 1, "with parameter change", means that the value is actually adopted as P0350 parameter setting and applied to the control as well as being shown in the read-only parameters below.

- Enum selection 2, "without parameter change", means that the value is only displayed, that is, shown for checking purposes in the read-only parameter r1912 (identified stator resistance). The value is not applied to the control.

r1912[3] Identified stator resistance **Level 3**

Min: **-** **Def:** **-** **Max:** **-**
Unit: **Ohm**

Details:

Displays measured stator resistance value (line-to-line) in ohms.

Index:

r1912[0]: U_phase
r1912[1]: V_phase
r1912[2]: W_phase

Note:

This value is measured using P1910=1 or 2; that is, identification of all parameters with/without change.

P2000 Reference frequency **Level 2**

Min: **1.00** **Def:** **50.00/ 60.00** **Max:** **650.00**
Unit: **Hz**

Details:

Full-scale frequency setting used by serial link (corresponds to 4000H), analog I/O and PID controller.

P2001 Reference voltage **Level 3**

Min: **10** **Def:** **1000** **Max:** **2000**
Unit: **V**

Details:

Full-scale output voltage (that is 100%) used over serial link (corresponds to 4000H).

Example:

P2001=230 specifies that 4000H received via USS denotes 230V.

P2002 Reference current **Level 3**

Min: **0.10** **Def:** **Varies** **Max:** **10000.00**
Unit: **A**

Details:

Full-scale output current used over serial link (corresponds to 4000H).

r2004 Reference power **Level 3**

Min: **-** **Def:** **-** **Max:** **-**
Unit: **-**

Details:

Full-scale reference power used over the serial link (corresponds to 4000H).

P2009[2] USS normalization — Level 3

Min: 0 **Def:** 0 **Max:** 1
Unit: -

Details:

Enables special normalization for USS.

Enum:

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 (such as 4000H=16384 means 163.84 Hz).

P2010[2] USS baudrate — Level 3

Min: 4 **Def:** 6 **Max:** 12
Unit: -

Details:

Sets baud rate for USS communication (not for use on other protocols).

Enum:

4 2400 baud
5 4800 baud
6 9600 baud
7 19200 baud
8 38400 baud
9 57600 baud
10 76800 baud
11 93750 baud
12 115200 baud

Index:

P2010[0]: Serial interface COM link
P2010[1]: Serial interface BOP link

P2011[2] USS address — Level 3

Min: 0 **Def:** 0 **Max:** 31
Unit: -

Details:

Sets unique address for SED2.

Index:

P2011[0]: Serial interface COM link
P2011[1]: Serial interface BOP link

Note:

You can connect up to a further 30 SED2s via the serial link (that is, 31 SED2s in total) and control them with the USS serial bus protocol.

P2014[2] USS telegram off time **Level 3**

Min: 0 **Def:** 0 **Max:** 65535
Unit: ms

Details:
Defines a time T_off after which a fault will be generated (F0070) if no telegram is received via the USS channels.

Index:
P2014[0]: Serial interface COM link
P2014[1]: Serial interface BOP link

Note:
By default (time set to 0), no fault is generated (that is, watchdog disabled).

P2040 CB telegram off time **Level 3**

Min: 0 **Def:** 20 **Max:** 65535
Unit: ms

Details:
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**

Min: 0 **Def:** 0 **Max:** 65535
Unit: -

Details:
Configures a CB (communication board/module).

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[8] CO: PZD from CB **Level 3**

Min: - **Def:** - **Max:** -
Unit: -

Details:
Displays PZD received from CB (communication board/module).

Index:
r2050[0]: Received word 0
r2050[1]: Received word 1
r2050[2]: Received word 2
r2050[3]: Received word 3
r2050[4]: Received word 4
r2050[5]: Received word 5
r2050[6]: Received word 6
r2050[7]: Received word 7

Note:
The control words can be viewed as bit parameters.

P2051[8] CI: PZD to CB — Level 3

Min: 0:0 **Def:** 52:0 **Max:** 4000:0
Unit: -

Details:

Connects PZD to CB (communication board/module).

This parameter allows you to define the source of status words and actual values for the reply PZD.

Index:

P2051[0]: Transmitted word 0
P2051[1]: Transmitted word 1
P2051[2]: Transmitted word 2
P2051[3]: Transmitted word 3
P2051[4]: Transmitted word 4
P2051[5]: Transmitted word 5
P2051[6]: Transmitted word 6
P2051[7]: Transmitted word 7

Settings:

Status word 1=52
CO/BO: Actual status word 1 (see r0052)
Actual value 1=21 SED2 output frequency (see r0021)

Other BiCo settings are possible.

r2053[5] CB identification — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

Displays identification data of the CB (communication board/module). The different CB types are given in the Enum listing.

Enum:

0 No CB option board
1 PROFIBUS DP
2 DeviceNet
56 not defined

Index:

r2053[0]: CB type (see *Enum* description)
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

Min: - **Def:** - **Max:** -
Unit: -

Details:

Displays diagnostic information of (communication board/module).

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

P2100[3] Alarm number selection — Level 3

Min: 0 **Def:** 0 **Max:** 65535
Unit: -

Details:

Selects up to three faults or warnings for non-default reactions.

Index:

P2100[0]: Fault Number 1
P2100[1]: Fault Number 2
P2100[2]: Fault Number 3

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 (such as overcurrent) cannot be changed from the default reactions.

P2101[3] Stop reaction value — Level 3

Min: 0 **Def:** 0 **Max:** 5
Unit: -

Details:

Sets SED2 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 indexes 0 to 2.

Enum:

0 No reaction, no display
1 OFF1 stop reaction
2 OFF2 stop reaction
3 OFF3 stop reaction
4 No reaction warning only
5 Go to fixed frequency 15

Index:

P2101[0]: Stop reaction value 1
P2101[1]: Stop reaction value 2
P2101[2]: Stop reaction value 3

Note:

Settings 0 to 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).

r2110[4] Warning number — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

Displays warning information.

A maximum of two active warnings (indexes 0 and 1) and two historical warnings (indexes 2 and 3) may be viewed.

Index:

r2110[0]: Recent Warnings --, warning 1
r2110[1]: Recent Warnings --, warning 2
r2110[2]: Recent Warnings -1, warning 3
r2110[3]: Recent Warnings -1, warning 4

Note:

The keypad flashes while a warning is active. The LEDs indicate the warning status in this case.

If using an AOP, the display shows number and text of the active warning.

Indexes 0 and 1 are not stored.

P2111 **Total number of warnings** **Level 3**
Min: **0** **Def:** **0** **Max:** **4**
Unit: **-**

Details:

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**
Min: **-** **Def:** **-** **Max:** **-**
Unit: **-**

Details:

Displays run time counter, which is the total time the SED2 has been powered up. Every time you cycle SED2 power, it will save the value and then restore it and the counter continues counting.

r2114[0]=high word
r2114[1]=low word

When AOP is not connected, the time in this parameter is used by r0948 to indicate when a fault has occured.

Index:

r2114[0]: System Time, Seconds, Upper Word
r2114[1]: System Time, Seconds, Lower Word

Reference:

See *r0948* (fault time).

P2115[3] **AOP real time clock** **Level 3**
Min: **0** **Def:** **0** **Max:** **65535**
Unit: **-**

Details:

Displays AOP real time.

Index:

P2115[0]: Real Time, Seconds+Minutes
P2115[1]: Real Time, Hours+Days
P2115[2]: Real Time, Month+Year

Reference:

See *r0948* (fault time).

P2155 **Threshold frequency f_1** **Level 3**
Min: **0.00** **Def:** **30.00** **Max:** **650.00**
Unit: **Hz**

Details:

Sets a threshold for comparing actual speed or frequency to threshold values f_1.

This threshold controls status bits 04 and 05 in status word 2 (r0053) and bits 01 and 02 in r2197.

P2156 Delay time of threshold freq f_1 — Level 3

Min: 0 **Def:** 10 **Max:** 10000
Unit: ms

Details:

Sets delay time prior to threshold frequency f_1 comparison (P2155).

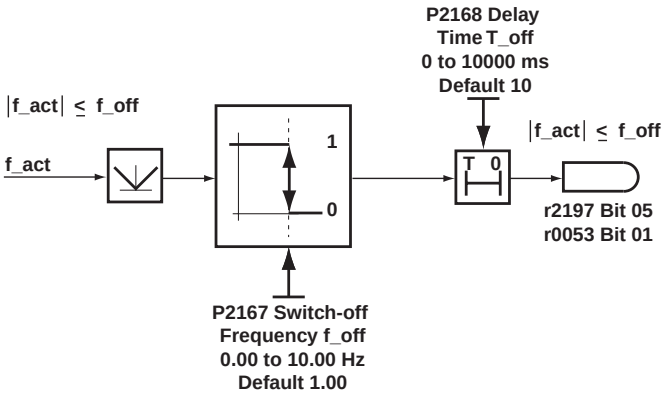
P2167 Switch-off frequency, f_off — Level 3

Min: 0.00 **Def:** 1.00 **Max:** 10.00
Unit: Hz

Details:

Sets frequency threshold below which SED2 switches off.

If the frequency falls below this threshold, bit 01 in status word 2 (r0053) and bit 05 is r2197 are set.



Dependency:

Effective only when OFF1 or OFF3 are active.

P2168 Delay time T_off — Level 3

Min: 0 **Def:** 10 **Max:** 10000
Unit: ms

Details:

Defines time for which the SED2 may operate below switch-off frequency (P2167) before switch off occurs.

Note:

See diagram in *P2167* (switch-off frequency).

P2181 Belt failure detection mode — Level 3

Min: 0 **Def:** 0 **Max:** 6
Unit: -

Details:

Sets belt failure detection mode. This function allows detection of mechanical failure of the SED2 train, such as a broken belt. It can also detect conditions which cause an overload, such as a jam.

Two alternative modes are provided for detecting the failure.

- Belt failure detection without sensor: This is achieved by comparing the actual frequency/torque curve with a programmed envelope (see *P2182* to *P2190*). If the curve falls outside the envelope, a warning or trip is generated.

- Belt failure detection with sensor: This method uses a pulse train from a simple sensor on the driven machine that connected via digital input 5 (DI5) to the encoder circuit within the drive ASIC. The pulse train, normally detecting one pulse per revolution of the driven machine (can be adjusted via P0409), is converted to a frequency reference and compared with the actual VFD output frequency. The encoder needs to be connected to DI5 and is parameterized via P0409 and setting P0400=3. This maximum permissible frequency deviation between inverter frequency and frequency of the pulse train is set via P2191. If the deviation is exceeded, a warning or trip is generated. Note that parameters P2182 through P2190 have no effect in this mode.

Enum:

0 Belt failure detection disabled
1 Warn low torque/speed
2 Warn high torque/speed
3 Warn high/low torque/speed
4 Trip low torque/speed
5 Trip high torque/speed
6 Trip high/low torque/speed

P2182 Belt threshold frequency 1 Level 3

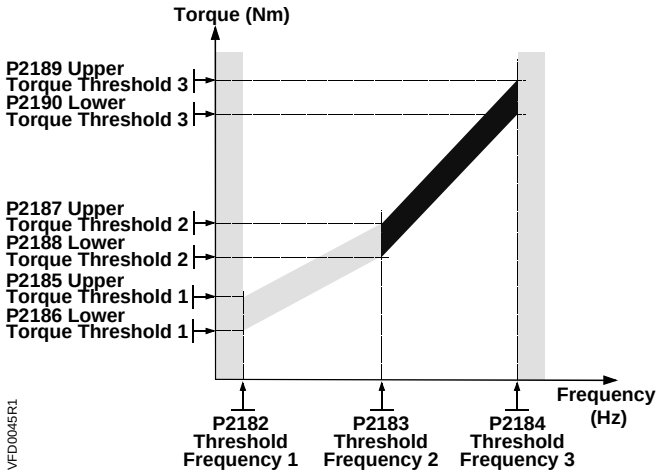
Min: 0.00 **Def:** 5.00 **Max:** 650.00
Unit: Hz

Details:

Sets a frequency threshold F1 for comparing actual torque to the torque envelope for belt failure detection.

The frequency torque envelope is defined by nine parameters (see the following diagram); three are frequency parameters (P2182 to P2184), and the other six define the low and high torque limits (P2185 to P2190) for each frequency.

In the following diagram, the allowed frequency/torque region is defined by the shaded area. When the torque falls outside the area shown, a trip or warning occurs (see *P2181*).



Note:

The torque is unlimited below P2182, and above P2184.
Normally P2182<=lower torque limit (P1521), and
P2184 >=upper torque limit (P1520).

P2183 **Belt threshold frequency 2** **Level 3**
Min: 0.00 Def: 30.00 Max: 650.00
Unit: Hz

Details:
Sets a threshold F2 for comparing actual torque to torque the envelope for belt failure detection.
Reference:
See *P2182* (belt threshold frequency 1).

P2184 **Belt threshold frequency 3** **Level 3**
Min: 0.00 Def: 50.00 Max: 650.00
Unit: Hz

Details:
Sets a threshold F3 for comparing actual torque to torque the envelope for belt failure detection.
Reference:
See *P2182* (belt threshold frequency 1).

P2185 **Upper torque threshold 1** **Level 3**
Min: 0.0 Def: 99999.0 Max: 99999.0
Unit: Nm

Details:
Upper limit threshold value 1 for comparing actual torque.
Reference:
See *P2182* (belt threshold frequency 1).

P2186 **Lower torque threshold 1** **Level 3**
Min: 0.0 Def: 0.0 Max: 99999.0
Unit: Nm

Details:
Lower limit threshold value 1 for comparing actual torque.
Reference:
See *P2182* (belt threshold frequency 1).

P2187 **Upper torque threshold 2** **Level 3**
Min: 0.0 Def: 99999.0 Max: 99999.0
Unit: Nm

Details:
Upper limit threshold value 2 for comparing actual torque.
Reference:
See *P2182* (belt threshold frequency 1).

P2188 **Lower torque threshold 2** **Level 3**

Min: 0.0 **Def:** 0.0 **Max:** 99999.0
Unit: Nm

Details:

Lower limit threshold value 2 for comparing actual torque.

Reference:

See *P2182* (belt threshold frequency 1).

P2189 **Upper torque threshold 3** **Level 3**

Min: 0.0 **Def:** 99999.0 **Max:** 99999.0
Unit: Nm

Details:

Upper limit threshold value 3 for comparing actual torque.

Reference:

See *P2182* (belt threshold frequency 1).

P2190 **Lower torque threshold 3** **Level 3**

Min: 0.0 **Def:** 0.0 **Max:** 99999.0
Unit: Nm

Details:

Lower limit threshold value 3 for comparing actual torque.

Reference:

See *P2182* (belt threshold frequency 1).

P2191 **Belt failure speed tolerance** **Level 3**

Min: 0.00 **Def:** 3.00 **Max:** 20.00
Unit: Hz

Details:

P2191 defines the allowed speed variation bandwidth between the SED2 frequency, and the speed reference from the pulse train. When the speed of the SED2 varies by more than this amount, a trip or warning occurs.

P2192 **Time delay for belt failure** **Level 3**

Min: 0 **Def:** 10 **Max:** 65
Unit: s

Details:

P2192 defines a delay before a warning/trip becomes active. It is used to eliminate events caused by transient conditions. It is used for both methods of fault detection.

r2197 CO/BO: Monitoring word 1 — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

Monitoring word 1 which indicates the state of monitor functions. Each bit represents one monitor function.

Bitfields:

Bit00	Actual frequency r0021 <=P1080	0 NO	1 YES
Bit01	Actual frequency r0021 <=P2155	0 NO	1 YES
Bit02	Actual frequency r0021 > P2155	0 NO	1 YES
Bit03	Actual frequency r0021 > zero	0 NO	1 YES
Bit04	Actual frequency r0021 >=setpoint	0 NO	1 YES
Bit05	Actual frequency r0021 <=P2167	0 NO	1 YES
Bit06	Actual frequency r0021 >=P1082	0 NO	1 YES
Bit07	Actual frequency r0021 ==setpoint	0 NO	1 YES
Bit08	Reserved		
Bit09	Actual unfiltered Vdc < 800V	0 NO	1 YES
Bit10	Actual unfiltered Vdc > 800V	0 NO	1 YES
Bit11	No load condition	0 NO	1 YES

r2198 CO/BO: Monitoring word 2 — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

Monitoring word 2 which indicates the state of monitor functions. Each bit represents one monitor function.

Bitfields:

Bit00	Reserved		
Bit01	Reserved		
Bit02	Reserved		
Bit03	Reserved		
Bit04	|n,set| < 3 Hz	0 NO	1 YES
Bit05	n, set > 0	0 NO	1 YES
Bit06	Motor blocked	0 NO	1 YES
Bit07	Motor pulled out	0 NO	1 YES
Bit08	Reserved		
Bit09	|T,act| > T,rated and setpoint reached	0 NO	1 YES
Bit10	|T,act| > T,rated	0 NO	1 YES
Bit11	Belt failure warning	0 NO	1 YES
Bit12	Belt failure trip	0 NO	1 YES

Note:

Bit 12 (belt failure trip) will only be reset after fault quitting and applying a new ON command.

T, rated is calculated from the machine data during quick commissioning.

P2200[2] BI: Enable PID controller — Level 2

Min: 0:0 **Def:** 0:0 **Max:** 4000:0
Unit: -

Details:

PID mode allows you to enable/disable the PID controller. Setting P2200 to 1 enables the PID closed-loop controller.

Index:

P2200[0]: 1st Command data set (CDS)
P2200[1]: 2nd Command data set (CDS)

Dependency:

Setting 1 does not disable the normal ramp times set in P1120 and P1121. However, the normal frequency setpoints are disabled. A PID setpoint change will be limited by P2257 and P2258 (PID setpoint ramp).

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 displays as % and is then normalized into Hz through P2000 (reference frequency) 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 DI1 to DI3 or from any other BiCo source.

The minimum and maximum motor frequencies (P1080 and P1082) as well as the skip frequencies (P1091 to P1094) remain active on the SED2 output. However, enabling skip frequencies with PID control can produce instabilities.

P2201 Fixed PID setpoint 1 — Level 3

Min: -200.00 **Def:** 0.00 **Max:** 200.00
Unit: %

Details:

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 to P0706).

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 fixed PID setpoint.
   Enabled digital inputs will add to the selected frequencies even when programming for other operation.
   Clear all values in P2202 through P2215 that are not needed.

2. Direct selection + ON command (P0701=16 or P0702=16, etc.)
   Description as for selection mode 1, except that this type of selection issues an ON command concurrent with any setpoint selection.
   Enabled digital inputs will add to the selected frequencies even when programming for other operation.
   Clear all values in P2202 through P2215 that are not needed.

3. Binary Coded Decimal selection (P0701 to P0704=17)
   Using this method to select the fixed PID setpoint allows you to choose up to 16 different PID setpoints. The setpoints are selected according to the following table:
   Clear all values in P2202 through P2215 that are not needed.

   NOTE: Enabled digital inputs will add to the selected frequencies even when programming for other operation.

		Digital Input 4	Digital Input 3	Digital Input 2	Digital Input 1
	OFF	Inactive	Inactive	Inactive	Inactive
P2201	FF1	Inactive	Inactive	Inactive	**Active**
P2202	FF2	Inactive	Inactive	**Active**	Inactive
P2203	FF3	Inactive	Inactive	**Active**	**Active**
P2204	FF4	Inactive	**Active**	Inactive	Inactive
P2205	FF5	Inactive	**Active**	Inactive	**Active**
P2206	FF6	Inactive	**Active**	**Active**	Inactive
P2207	FF7	Inactive	**Active**	**Active**	**Active**
P2208	FF8	**Active**	Inactive	Inactive	Inactive
P2209	FF9	**Active**	Inactive	Inactive	**Active**
P2210	FF10	**Active**	Inactive	**Active**	Inactive
P2211	FF11	**Active**	Inactive	**Active**	**Active**
P2212	FF12	**Active**	**Active**	Inactive	Inactive
P2213	FF13	**Active**	**Active**	Inactive	**Active**
P2214	FF14	**Active**	**Active**	**Active**	Inactive
P2215	FF15	**Active**	**Active**	**Active**	**Active**

Dependency:

P2000=1 is required in user access level 2 to enable setpoint source.

Selection mode 1:
An ON command is required to start motor (enable pulses).

Selection mode 2:
If inputs are programmed to PID fixed setpoints 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.

P2201=100% corresponds to 4000 hex.

When using a value of 5, any PID setpoint needs to be in degrees C.

P2202 Fixed PID setpoint 2 — Level 3

Min: -200.00 Def: 10.00 Max: 200.00
Unit: %

Details:

Defines fixed PID setpoint 2.

Reference:

See *P2201* (fixed PID setpoint 1).

P2203 Fixed PID setpoint 3 — Level 3

Min: -200.00 Def: 20.00 Max: 200.00
Unit: %

Details:

Defines fixed PID setpoint 3.

Reference:

See *P2201* (fixed PID setpoint 1).

P2204 Fixed PID setpoint 4 — Level 3

Min: -200.00 Def: 30.00 Max: 200.00
Unit: %

Details:

Defines fixed PID setpoint 4.

Reference:

See *P2201* (fixed PID setpoint 1).

P2205 Fixed PID setpoint 5 — Level 3

Min: -200.00 Def: 40.00 Max: 200.00
Unit: %

Details:

Defines fixed PID setpoint 5.

Reference:

See *P2201* (fixed PID setpoint 1).

P2206 **Fixed PID setpoint 6** **Level 3**
Min: **-200.00** **Def:** **50.00** **Max:** **200.00**
Unit: **%**

Details:
Defines fixed PID setpoint 6.
Reference:
See *P2201* (fixed PID setpoint 1).

P2207 **Fixed PID setpoint 7** **Level 3**
Min: **-200.00** **Def:** **60.00** **Max:** **200.00**
Unit: **%**

Details:
Defines fixed PID setpoint 7.
Reference:
See *P2201* (fixed PID setpoint 1).

P2208 **Fixed PID setpoint 8** **Level 3**
Min: **-200.00** **Def:** **70.00** **Max:** **200.00**
Unit: **%**

Details:
Defines fixed PID setpoint 8.
Reference:
See *P2201* (fixed PID setpoint 1).

P2209 **Fixed PID setpoint 9** **Level 3**
Min: **-200.00** **Def:** **80.00** **Max:** **200.00**
Unit: **%**

Details:
Defines fixed PID setpoint 9.
Reference:
See *P2201* (fixed PID setpoint 1).

P2210 **Fixed PID setpoint 10** **Level 3**
Min: **-200.00** **Def:** **90.00** **Max:** **200.00**
Unit: **%**

Details:
Defines fixed PID setpoint 10.
Reference:
See *P2201* (fixed PID setpoint 1).

P2211 **Fixed PID setpoint 11** **Level 3**
Min: **-200.00** **Def:** **100.00** **Max:** **200.00**
Unit: **%**

Details:
Defines fixed PID setpoint 11.
Reference:
See *P2201* (fixed PID setpoint 1).

P2212 Fixed PID setpoint 12 Level 3
Min: -200.00 Def: 110.00 Max: 200.00
Unit: %

Details:
Defines fixed PID setpoint 12.
Reference:
See *P2201* (fixed PID setpoint 1).

P2213 Fixed PID setpoint 13 Level 3
Min: -200.00 Def: 120.00 Max: 200.00
Unit: %

Details:
Defines fixed PID setpoint 13.
Reference:
See *P2201* (fixed PID setpoint 1).

P2214 Fixed PID setpoint 14 Level 3
Min: -200.00 Def: 130.00 Max: 200.00
Unit: %

Details:
Defines fixed PID setpoint 14.
Reference:
See *P2201* (fixed PID setpoint 1).

P2215 Fixed PID setpoint 15 Level 3
Min: -200.00 Def: 130.00 Max: 200.00
Unit: %

Details:
Defines fixed PID setpoint 15.
Reference:
See *P2201* (fixed PID setpoint 1).

P2216 Fixed PID setpoint mode - Bit 0 Level 3
Min: 1 Def: 1 Max: 3
Unit: -

Details:
Defines fixed PID setpoint mode for selection Bit 0.
Enum:
1 Direct selection
2 Direct selection + ON command
3 Binary coded selection + ON command

P2217 Fixed PID setpoint mode - Bit 1 Level 3
Min: 1 Def: 1 Max: 3
Unit: -

Details:
Defines fixed PID setpoint mode for selection Bit 1.

Enum:
1 Direct selection
2 Direct selection + ON command
3 Binary coded selection + ON command

P2218 Fixed PID setpoint mode - Bit 2 Level 3
Min: 1 Def: 1 Max: 3
Unit: -

Details:
Defines fixed PID setpoint mode for selection Bit 2.

Enum:
1 Direct selection
2 Direct selection + ON command
3 Binary coded selection + ON command

P2219 Fixed PID setpoint mode - Bit 3 Level 3
Min: 1 Def: 1 Max: 3
Unit: -

Details:
Defines fixed PID setpoint mode for selection Bit 3.

Enum:
1 Direct selection
2 Direct selection + ON command
3 Binary coded selection + ON command

P2220[2] BI: Fixed PID setpoint select Bit 0 Level 3
Min: 0:0 Def: 0:0 Max: 4000:0
Unit: -

Details:
Defines command source of fixed PID setpoint selection Bit 0.

Index:
P2220[0]: 1st Command data set (CDS)
P2220[1]: 2nd Command data set (CDS)

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)
722.3= Digital input 4 (requires P0704 to be set to 99, BiCo)
722.4= Digital input 5 (requires P0705 to be set to 99, BiCo)
722.5= Digital input 6 (requires P0706 to be set to 99, BiCo)
722.6= Digital input 7 (via analog input 1, requires P0707 to be set to 99)
722.7= Digital input 8 (via analog input 2, requires P0708 to be set to 99)

P2221[2] BI: Fixed PID setpoint select Bit 1 — Level 3

Min: 0:0 **Def:** 0:0 **Max:** 4000:0
Unit: -

Details:

Defines command source of fixed PID setpoint selection Bit 1.

Index:

P2221[0]: 1st Command data set (CDS)
P2221[1]: 2nd Command data set (CDS)

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)
722.3=Digital input 4 (requires P0704 to be set to 99, BiCo)
722.4=Digital input 5 (requires P0705 to be set to 99, BiCo)
722.5=Digital input 6 (requires P0706 to be set to 99, BiCo)

P2222[2] BI: Fixed PID setpoint select Bit 2 — Level 3

Min: 0:0 **Def:** 0:0 **Max:** 4000:0
Unit: -

Details:

Defines command source of fixed PID setpoint selection Bit 2.

Index:

P2222[0]: 1st Command data set (CDS)
P2222[1]: 2nd Command data set (CDS)

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)
722.3=Digital input 4 (requires P0704 to be set to 99, BiCo)
722.4=Digital input 5 (requires P0705 to be set to 99, BiCo)
722.5=Digital input 6 (requires P0706 to be set to 99, BiCo)

P2223[2] BI: Fixed PID setpoint select Bit 3 — Level 3

Min: 0:0 **Def:** 722:3 **Max:** 4000:0
Unit: -

Details:

Defines command source of fixed PID setpoint selection Bit 3.

Index:

P2223[0]: 1st Command data set (CDS)
P2223[1]: 2nd Command data set (CDS)

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)
722.3=Digital input 4 (requires P0704 to be set to 99, BiCo)
722.4=Digital input 5 (requires P0705 to be set to 99, BiCo)
722.5=Digital input 6 (requires P0706 to be set to 99, BiCo)

r2224 CO: Actual fixed PID setpoint **Level 3**

Min: - Def: - Max: -
Unit: %

Details:
Displays total output of PID fixed setpoint selection.

Note:
r2224=100% corresponds to 4000 hex.

P2225 Fixed PID setpoint mode - Bit 4 **Level 3**

Min: 1 Def: 1 Max: 2
Unit: -

Details:
Defines fixed PID setpoint mode for selection Bit 4.

Enum:
1 Direct selection
2 Direct selection + ON command

P2226[2] BI: Fixed PID setpoint select Bit 4 **Level 3**

Min: 0:0 Def: 722:4 Max: 4000:0
Unit: -

Details:
Defines command source of fixed PID setpoint selection Bit 4.

Index:
P2226[0]: 1st Command data set (CDS)
P2226[1]: 2nd Command data set (CDS)

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)
722.3=Digital input 4 (requires P0704 to be set to 99, BiCo)
722.4=Digital input 5 (requires P0705 to be set to 99, BiCo)
722.5=Digital input 6 (requires P0706 to be set to 99, BiCo)

P2227 Fixed PID setpoint mode - Bit 5 **Level 3**

Min: 1 Def: 1 Max: 2
Unit: -

Details:
Defines fixed PID setpoint mode for selection Bit 5.

Enum:
1 Direct selection
2 Direct selection + ON command

P2228[2] BI: Fixed PID setpoint select Bit 5 — Level 3

Min: 0:0 **Def:** 722:5 **Max:** 4000:0
Unit: -

Details:

Defines command source of fixed PID setpoint selection Bit 5

Index:

P2228[0]: 1st Command data set (CDS)
P2228[1]: 2nd Command data set (CDS)

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)
722.3=Digital input 4 (requires P0704 to be set to 99, BiCo)
722.4=Digital input 5 (requires P0705 to be set to 99, BiCo)
722.5=Digital input 6 (requires P0706 to be set to 99, BiCo)

P2231 Setpoint memory of PID-MOP — Level 3

Min: 0 **Def:** 1 **Max:** 1
Unit: -

Details:

Determines setpoint memory for PID-MOP (motor potentiometer).

Enum:

0 PID-MOP setpoint will not be stored
1 PID-MOP setpoint will be stored (P2240 is updated)

Dependency:

If P2231=0, setpoint returns to value set in P2240 (setpoint of PID-MOP) after an OFF command.

If P2231=1, active setpoint is 'remembered' and P2240 updated with current value.

Reference:

See *P2240* (setpoint of PID-MOP)

P2232 Inhibit rev. direct. of PID-MOP — Level 3

Min: 0 **Def:** 1 **Max:** 1
Unit: -

Details:

Inhibits reverse setpoint selection when PID-MOP (motor potentiometer) is chosen either as a main setpoint or an additional setpoint (using P1000)

Enum:

0 Reserve direction is allowed
1 Reserve direction inhibited

Note:

P2232=0 enables a change of motor direction using the motor potentiometer setpoint (increase/decrease frequency either by using digital inputs or motor potentiometer up/down buttons).

P2240 Setpoint of PID-MOP — Level 3

Min: -200.00 **Def:** 10.00 **Max:** 200.00
Unit: %

Details:

Setpoint of the motor potentiometer.

Allows you to set a digital PID setpoint in %.

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)
722.3= Digital input 4 (requires P0704 to be set to 99, BiCo)
722.4= Digital input 5 (requires P0705 to be set to 99, BiCo)
722.5= Digital input 6 (requires P0706 to be set to 99, BiCo)
722.6= Digital input 7 (via analog input 1, requires P0707 to be set to 99)
722.7= Digital input 8 (via analog input 2, requires P0708 to be set to 99)

19.D=Keypad UP cursor

Dependency:

To change setpoint:

1. Use UP/DOWN key on operator panel
2. Set P0702/P0703=13/14 (function of digital inputs 2 and 3).

Note:

P2240=100% corresponds to 4000 hex

r2250 CO: Output setpoint of PID-MOP — Level 3

Min: - **Def:** - **Max:** -
Unit: %

Displays output setpoint of motor potentiometer in %.

Note:

r2250=100% corresponds to 4000 hex

P2253[2] CI: PID setpoint — Level 2

Min: 0:0 **Def:** 2250:0 **Max:** 4000:0
Unit: -

Details:

Defines setpoint source for PID setpoint input.

This parameter allows you to select the source of the PID setpoint. Normally, a digital setpoint is selected either using a fixed PID setpoint or an active setpoint.

Index:

P2253[0]: 1st Command data set (CDS)
P2253[1]: 2nd Command data set (CDS)

Settings:

755=Analog input 1
2224=Fixed PI setpoint (see P2201 to P2207)
2250=Active PI setpoint (see P2240)

P2254[2] CI: PID trim source **Level 3**

Min: 0:0 Def: 0:0 Max: 4000:0
Unit: -

Details:

Selects trim source for PID setpoint. This signal is multiplied by the trim gain and added to the PID setpoint.

Index:

P2254[0]: 1st Command data set (CDS)
P2254[1]: 2nd Command data set (CDS)

Settings:

755=Analog input 1
2224=Fixed PI setpoint (see P2201 to P2207)
2250=Active PI setpoint (see P2240)

P2261 PID setpoint filter timeconstant **Level 3**

Min: 0.00 Def: 0.00 Max: 60.00
Unit: s

Details:

Sets a time constant for smoothing the PID setpoint.

Note:

0=No smoothing

r2262 CO: Filtered PID setpoint after RFG **Level 3**

Min: - Def: - Max: -
Unit: %

Details:

Displays filtered PID setpoint in % after PID-RFG (ramp function generator).

Note:

r2262=100% corresponds to 4000 hex

P2264[2] CI: PID feedback **Level 2**

Min: 0:0 Def: 755:1 Max: 4000:0
Unit: -

Details:

Selects the source of the PID feedback signal.

Index:

P2264[0]: 1st Command data set (CDS)
P2264[1]: 2nd Command data set (CDS)

Settings:

755=Analog input 1 setpoint
2224=Fixed PID setpoint
2250=Output setpoint of PID-MOP (PID-motor potentiometer)

Note:

When analog input is selected, offset and gain can be implemented using parameters P0756 to P0760 (analog input scaling).

P2265 **PID feedback filter timeconstant** **Level 3**
Min: 0.00 Def: 0.00 Max: 60.00
Unit: s

Details:
Defines time constant for PID feedback filter.

P2267 **Max. value for PID feedback** **Level 3**
Min: -200.00 Def: 150.00 Max: 200.00
Unit: %

Details:
Sets the upper limit for the value of the feedback signal in %.

Note:
P2267=100% corresponds to 4000 hex

When PID is enabled (P2200=1) and the signal rises above this value, the SED2 will trip with F0222 .

P2268 **Min. value for PID feedback** **Level 3**
Min: -200.00 Def: -50.00 Max: 200.00
Unit: %

Details:
Sets lower limit for value of feedback signal in %.

Note:
P2268=100% corresponds to 4000 hex.

When PID is enabled (P2200=1) and the signal rises above this value, the SED2 will trip with F0221.

P2269 **Gain applied to PID feedback** **Level 3**
Min: 0.00 Def: 100.00 Max: 500.00
Unit: -

Details:
Allows you 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**
Min: 0 Def: 0 Max: 3
Unit: -

Details:
Applies mathematical functions to the PID feedback signal, allowing multiplication of the result by P2269 (gain applied to PID feedback).

Enum:
0 Disabled
1 Square root (root(x))
2 Square (x*x)
3 Cube (x*x*x)

P2271 PID transducer type — Level 3

Min: 0 **Def:** 0 **Max:** 1
Unit:-

Details:

Allows you to select the transducer type for the PID feedback signal.

Enum:

0 Disabled
1 Inversion of PID feedback signal

Value:

0 : (default) If the feedback signal is less than the PID setpoint, the PID controller will increase motor speed.

1 : If the feedback signal is greater than the PID setpoint, the PID controller will reduce motor speed.

Note:

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 by doing the following:

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 1.

r2272 CO: PID scaled feedback — Level 3

Min: - **Def:** - **Max:** -
Unit: %

Details:

Displays PID scaled feedback signal in %.

Note:

r2272=100% corresponds to 4000 hex.

r2273 CO: PID error — Level 3

Min: - **Def:** - **Max:** -
Unit: %

Details:

Displays PID error (difference) signal between setpoint and feedback signals in %.

Note:

r2273=100% corresponds to 4000 hex.

P2274 PID derivative time — Level 2

Min: 0 **Def:** 0 **Max:** 65535
Unit: s

Sets PID derivative time.

P2279 PID Neutral Zone **Level 3**

Min: 0.00 Def: 0.00 Max: 100.00

Unit: %

Details:

Defines PID neutral zone.

P2280 PID proportional gain **Level 2**

Min: 0.000 Def: 1.200 Max: 65.000

Unit: -

Details:

Allows you to set proportional gain for PID controller.

The PID controller is implemented using the standard model.

For best results, enable both P and I terms.

Dependency:

If P term=0, I term acts on the square of the error signal. If I term=0, PID controller acts as a P or PD controller respectively.

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.

The D term (P2274) multiplies the difference between the present and previous feedback signal thus accelerating the controller reaction to an error that suddenly appears.

The D term should be used carefully, since it can cause the controller output to fluctuate as every change in the feedback signal is amplified by the controller derivative action.

P2285 PID integral time **Level 2**

Min: 0 Def: 30 Max: 65535

Unit: s

Details:

Sets integral time constant for PID controller.

Note:

In case of P2285=0, the I-term is disabled resulting in a PD or P controller respectively.

Reference:

See *P2280* (PID proportional gain).

P2291 PID output upper limit — Level 2

Min: 0.00 **Def:** 100.00 **Max:** 100.00
Unit: %

Details:

Sets upper limit for PID controller output in %.

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:

P2291=100% corresponds to 4000 hex (as defined by P2000, reference frequency).

P2292 PID output lower limit — Level 2

Min: 0.00 **Def:** 0.00 **Max:** 100.00
Unit: %

Details:

Sets lower limit for the PID controller output in %.

Dependency:

A negative value allows bipolar operation of PID controller.

Note:

P2292=100% corresponds to 4000 hex.

P2293 Ramp-up/down time of PID limit — Level 3

Min: 0.00 **Def:** 0.00 **Max:** 100.00
Unit: s

Details:

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 SED2 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 OFF3 are issued, the SED2 output frequency ramps down as set in P1121 (ramp-down time) or P1135 (OFF3 ramp-down time).

r2294 CO: Actual PID output — Level 3

Min: - **Def:** - **Max:** -
Unit: %

Details:

Displays PID output in %.

Note:

r2294=100% corresponds to 4000 hex

P2303[2] CI: PID output offset — Level 2

Min: 0.0 **Def:** 0.0 **Max:** 4000.0
Unit: -

Details:
Selects the source of the PID output offset signal.

Index:
P2303[0]: 1st Command data set (CDS)
P2303[1]: 2nd Command data set (CDS)

Settings:
755=Analog input 1 setpoint
2224=Fixed PID setpoint
2250=Output setpoint of PID-MOP (motor potentiometer)

Note:
The offset correction P2303 only works when the integral gain of the PID controller is zero (P2285=0). On selection of an analog input, offset and gain can be implemented using parameters P0756 to P0760 (analog input scaling).

P2304 PID opening time — Level 2

Min: 0 **Def:** 0 **Max:** 65535
Unit: s

Details:
Sets actuator opening time constant for PID controller.

Reference:
See *P2305* (PID closing time).

P2305 PID closing time — Level 2

Min: 0 **Def:** 0.00 **Max:** 65535
Unit: s

Details:
Sets actuator closing time constant for PID controller.

Reference:
See *P2304* (PID opening time).

P2306 PID Action — Level 2

Min: 0 **Def:** 1 **Max:** 1
Unit: -

Details:
Direct=0=increasing plant output causes increasing controller output
Indirect=1=increasing plant output causes decreasing controller output.

Enum:
0 Direct acting
1 Reverse acting

P2370 Motor staging stop mode — Level 3

Min: 0 **Def:** 0 **Max:** 1
Unit: -

Details:

Selects stop mode for external motors when motor staging is in use.

Enum:

0 Normal stop
1 Sequence stop

P2371 External motor configuration — Level 3

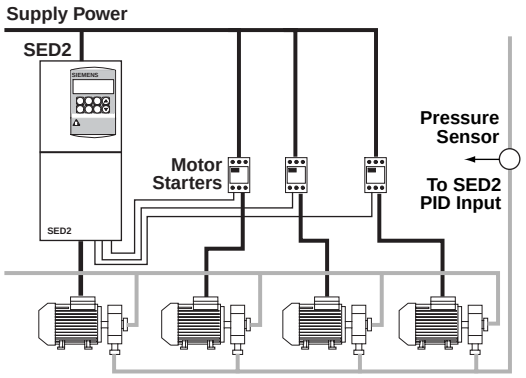
Min: 0 **Def:** 0 **Max:** 8
Unit: -

Settings:

0 Motor staging disabled
1 M1=1X, M2= , M3 =
2 M1=1X, M2=1X, M3 =
3 M1=1X, M2=2X, M3 =
4 M1=1X, M2=1X, M3=1X
5 M1=1X, M2=1X, M3=2X
6 M1=1X, M2=2X, M3=3X
7 M1=1X, M2=1X, M3=3X
8 M1=1X, M2=2X, M3=3X

Details:

Motor staging allows the control of up to three additional staged pumps or fans (M1 through M3), based on a PID control system. The complete system consists of one pump controlled by the SED2 with up to three further pumps/fans controlled from contactors or motor starters. The contactors or motor starter are controlled by outputs from the SED2. The following diagram shows a typical pumping system. A similar system could be set up using fans and air ducts, instead of pumps and pipes.



By default the motor starts are controlled from digital relay outputs (DO).

The following text uses these terms:

MV - Variable speed (SED2 controlled motor)
M1 - Motor switched with relay 1 (DO1)
M2 - Motor switched with relay 2 (DO2)
M3 - Motor switched with relay 3 (DO3)

Staging: The process of starting one of the fixed speed motors.
De-staging: The process of stopping one of the fixed speed motors.

When the SED2 is running at maximum frequency, and the PID feedback indicates that a higher speed is required, the SED2 switches on (stages) one of the relay controlled motors M1 to M3. At the same time, to keep the controlled variable as constant as possible, the SED2 must ramp down to minimum frequency. Therefore, during the staging process, PID control must be suspended.

When the SED2 is running at minimum frequency, and the PID feedback indicates that a lower speed is required, the SED2 switches off (de-stages) one of the relay controlled motors M1 to M3. In this case, the SED2 must ramp from minimum frequency to maximum frequency outside of PID control.

P2372 Enable motor cycling — Level 3

Min: 0 **Def:** 0 **Max:** 1
Unit: -

Details:

Enables motor cycling for the motor staging feature.

When enabled, the motor selected for staging/destaging is based on the hours run counter P2380. When staging, the motor with the least hours is switched on. When destaging, the motor with most hours is switched off.

If staged motors are different sizes the the choice of motor is first based on required motor size, and then if there is still a choice, on hours run.

Enum:

0 Disabled
1 Enabled

P2373 Motor staging hysteresis — Level 3

Min: 0.0 **Def:** 20.0 **Max:** 200.0
Unit: %

Details:

P2373 as a percentage of PID setpoint that PID error P2273 must be exceeded before staging delay starts.

Note:

The value of this parameter must always be smaller than delay override lockout timer P2377.

P2374 **Motor staging delay** **Level 3**
Min: 0 Def: 30 Max: 650
Unit: s

Details:
Time that PID error P2273 must exceed motor staging hysteresis P2373 before staging occurs.

P2375 **Motor destaging delay** **Level 3**
Min: 0 Def: 30 Max: 650
Unit: s

Details:
Time that PID error P2273 must exceed motor staging hysteresis P2373 before destaging occurs.

P2376 **Delay override** **Level 3**
Min: 0.0 Def: 25.0 Max: 200.0
Unit: %

Details:
P2376 as a percentage of PID setpoint. When the PID error P2273 exceeds this value, a motor is staged/destaged irrespective of the delay timers.

P2377 **Delay override lockout timer** **Level 3**
Min: 0 Def: 30 Max: 650
Unit: s

Details:
Time for which delay override is prevented after a motor has been staged or destaged.

This prevents a second staging event immediately after a first, being caused by the transient conditions after the first staging event.

Note:
The value of this parameter must always be larger than staging hysteresis P2373.

P2378 **Staging frequency f, %fMax** **Level 3**
Min: 0.0 Def: 50.0 Max: 120.0
Unit: %

Details:
The frequency as a percentage of maximum frequency. During a (de) staging event, as the SED2 ramps from maximum to minimum frequency (or vice versa) this is the frequency at which the relay (DO) is switched.

r2379 CO/BO: Status of motor staging — Level 3

Min: - **Def:** - **Max:** -
Unit: -

Details:

Output word from the motor staging feature that allows external connections to be made.

Bitfields:

Bit00	Start motor 1	0 YES	1 NO
Bit01	Start motor 2	0 YES	1 NO
Bit02	Start motor 3	0 YES	1 NO

P2380[3] Motor hours run — Level 3

Min: 0 **Def:** 0 **Max:** 100000
Unit: h

Details:

Displays hours run for external motors. To reset the running hours, set the value to zero; any other value is ignored.

Index:

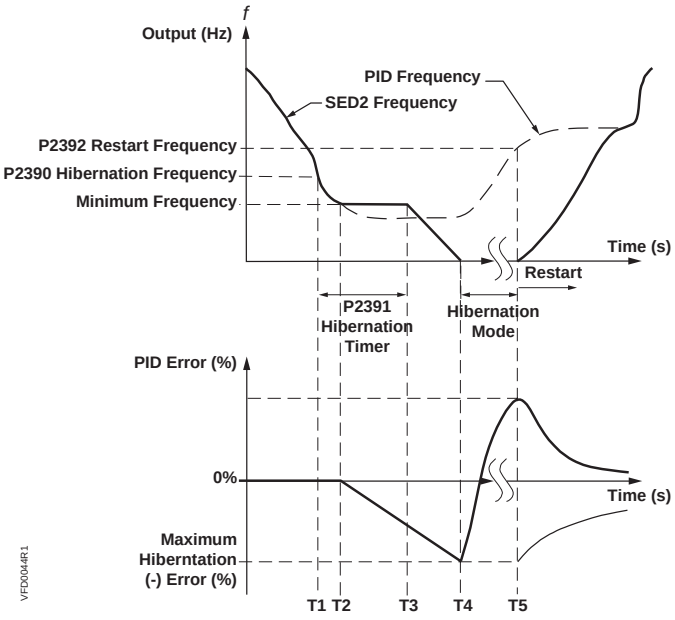
P2380[0]: Motor 1 hrs run
P2380[1]: Motor 2 hrs run
P2380[2]: Motor 3 hrs run

P2390 Hibernation setpoint — Level 3

Min: -200.00 **Def:** 0 **Max:** 200.00
Unit: %

Details:

When the SED2 under PID control drops below hibernation setpoint, the hibernation timer P2391 starts. When the hibernation timer has expired, the SED2 is ramped down to stop and enters hibernation mode.



Note:

If hibernation setpoint is 0, the hibernation function is disabled.

Hibernation mode is an added feature to enhance PID functionality and switches of the motor when the SED2 is running at low setpoint. Note that this is an independent function from staging, although it can be used in conjunction with staging.

P2391 Hibernation timer — Level 3

Min: 0 **Def:** 0 **Max:** 254
Unit: s

Details:

When the hibernation timer P2391 has expired, the SED2 is ramped down to stop and enters hibernation mode (P2390).

P2392 Restart PID error — Level 3

Min: -200.00 **Def:** 0.00 **Max:** 200.00
Unit: %

Details:

While in hibernation mode, the PID controller continues to generate the error P2273. Once this reaches the restart point P2392, the SED2 immediately ramps to the setpoint calculated by the PID controller (P2390).

Once the SED2 has left hibernation mode, it is not possible to go back into hibernation mode until the SED2 output setpoint reaches the restart setpoint.

P3900 End of quick commissioning — Level 1

Min: 0 **Def:** 0 **Max:** 3
Unit: -

Details:

Performs calculations necessary for optimized motor operation.

After completion of calculation, P3900 and P0010 (commissioning parameter filter) are automatically reset to their original value of 0.

Enum:

0 No quick commissioning
1 End quick commissioning with factory reset (drive only)
2 End quick commissioning
3 End quick commissioning only for motor data (drive with bypass)

Dependency:

Changeable only when P0010=1 (quick commissioning).

Note:

When P3900=1, 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 P3900=2, 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 are also performed.

When P3900=3, only the motor and controller calculations are performed. Exiting quick commissioning with this setting saves time (for example, if only motor rating plate data have been changed). Recommended for drive with bypass applications.

P3900 calculates a variety of motor parameters and overwrites previous values, including P2000 (reference frequency) and P2002 (reference current).

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