SIMOVERT MASTERDRIVES CUVC

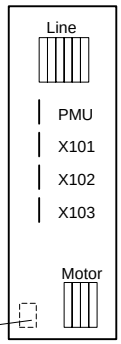
Short Guide to the Basic Functions

(Please pay attention to the Operating Instruction (BA) chapter and diagram references)

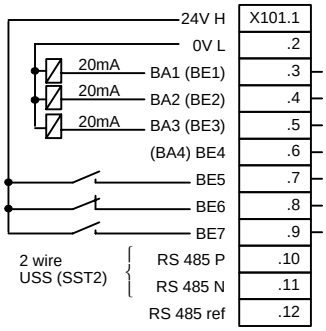
General:
BA = Operating instruction
WR = Inverter
PW = Pulse resistor or regenerative feedback
BEx = Binary input
BAx = Binary output
AEx = Analog input
AAx = Analog output
Bxxx = Number of a binary signal (binector) B0=0, B1=1
Kxxx = Number of an analog signal (connector) K0=0%, K1=100%
Pxxx = Number of a parameter (Index = 1, if present and not otherwise designated)

Ref. values for analog signals:
10 V = 100 % Ref Value
P350 = Ref Amps
P352 = Ref Frequency
P353 = Ref Speed
P353 = P352 * 60 / No. of pole pairs
Ref values can be changed only in P60=5 Drive Setting

Connections 1
(BA Power Connections):



Connections 2
(BA Control Connections):



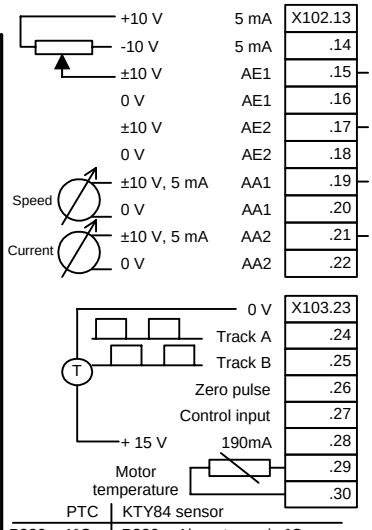
Control commands:

		Default for P368 = 1 Terminal strip	P368=0,7 PMU, OP1S
P651	=B107	No fault	=B107
P652	=B104	Operation	=B104
P653	=B115	No alarm	**BE3** P590=14
B016	INV enable	P561=16	P561=1
B018	ACK	P567=18	P567=0
B020	OFF2	P555=20	P555=1
B022	ON/OFF1	P554=22	P554=5, 2100

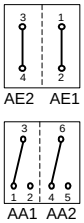
Switch S2
Bus termination

IMPORTANT:
Dual connecting of terminals X101.3 ... .6 as BAx and BEx not allowed!

Setpoints / analog outputs are shown below



K11 K13 P640.1 P640.2



Switch S3 **P632.1, .2**
open: ± 10 V 0
0 ... 10 V 1
closed: ± 20 mA 2
0 ... 20 mA 3
4 ... 20 mA 4

Switch S4
left : ± 10 V
right : ± 20 mA
20 ... 0 mA
20 ... 4 mA

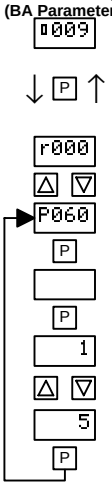
Current outputs with reversed sign
Calculation: Diagram a0

Note:
The screen of the tacho lead must be earthed to the motor and converter housings over a wide area.

In P60=5 (Drive setting):
P130=11=Pulse encoder
P151=Increment (1024)

P380 = 1°C	P380 = Alarm temp. in °C
P381 = 1°C	P381 = Fault temp. in °C

Parameterizing
(BA Parameterizing):



Operator display
005 : Drive setting
008 : Switch-on inhibit
009 : Ready for switching on
014 : Operation

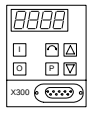
Monitoring parameters

Variable parameters

Index (not all parameters)

Change parameter value

Save new value



Operation via PMU:

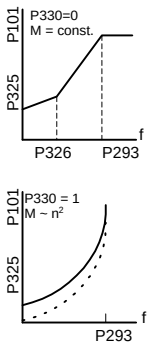
P554	= B005
Acknowledge fault	
P571	= B006
P572	= B007
P573	= B008
P574	= B009

Operation via OP1S:

P554	= B2100
P565	= B2107
P568	= B2108
P571	= B2111
P572	= B2112
P573	= B2113
P574	= B2114

For binectors: see control commands

v/f characteristics:
(P100=0, 1, 2)
Diagram r0, r1, r2
BA Quick parameterizing



Quick parameterization (BA Parameterizing steps)

P021

P060: Menu Select → 3 indications:
P071: Line Volts (AC or DC, depending on unit)

	(IEC=10	NEMA=11	ROTEC=02 *)
P095: Type of Motor			
P097: Motor Number	---	---	1PH7(=1PA6) 1PL6 1PH4
P100: Control Mode	see right	see right	see right
P101: Motor Rtd V	Voltage (V)	Voltage (V)	---
P102: Motor Rtd A	Current (A)	Current (A)	---
P104: MotPwrFactor	cos PHI	---	---
P105: Mot Rtd Power	---	Power (hp)	---
P106: Mot Rtd Effic.	---	Efficiency %	---
P107: Mot Rtd Freq	Frequency	Frequency (Hz)	---
P108: Mot Rtd Speed	Speed	Speed (1/min)	---

P109: Motor #PolePairs is automatically calculated from P107 and P108
P114: Technol. Cond. (vector control only) = Standard → 0
with pumps/fans: = Part-load optimization → 5

P368: Setpoint source **0 = PMU + motor potentiometer** (diagram s0);
1 = Analog input + terminal strip (diagram s1);
7 = OPS1 + Fixed setpoints (diagrams s7 and s71)
continued at right

* List for ROTEC induction motors in BA Quick Parameterization

P382, P383 for i²t calculation with ROTEC induction motors (P95 = 2, P97 > 0) assigned automatically.
P382: Motor Cooling (0=self-ventilated, 1=separately ventilated)
P383: Motor thermal time constant (0s=n protection; value ≥ 100s: Table BA Quick parameterization)
P370: **Start quick parameterization** → 1 (All reference values P350. .P354 are set to motor rated values)
P60=0 (User menu)
Type of control: t(1=v/f curve; 2=v/f curve, textile; 3=Vector ctrl without encoder (f-Reg.); 4=Vector control with pulse encoder)
(diagram r1) (diagram r2) (diagram r3) (diagram r4)

P462 : Acceleration time on P352=reference frequency or P353=reference speed
P464 : Deceleration time on P352 or P353 on 0Hz
P60= 5 (Drive setting)
P330 : v/f type of characteristic -> 0=linear,
1=parabolic (pump, fan)
Fans, pumps in the case of vector control (P60=1): see P291, P295, P303

P452 : Maximum frequency FWD speed in % of P352 or P353
P453 : Maximum frequency REV speed in % of P352 or P353
P60=0 (User menu)
PMU displays by P and ↑ key:
Motor identification at standstill (motor gets organized): P115=2* (also in the case of v/f characteristic) P A078 °009 ↑ °018 °009
Unit is ready for power up from now onwards
No-load measurement (motor rotating !): P115=4* (not in the case of v/f characteristic) P A080 °009 ↑ °019 °009
Controller optimization (if no gear backlash !): P115=5* (not in the case of v/f characteristic) P A080 °009 ↑ °019 °009
P471 : Precontrol, acceleration
*The ON command must be given within 20s!

Further parameters (P60 = 0 = user menu):
Parameters visible when P60=0 are defined in P360

Current limitation	P128	in A
Slip compensation (P100=1)	P336	in %
Static/dyn. torque (P100=3) defines the current magnitude at f<10%	P278/P279	in % *
Torque limits (P100=3,4)	P492/P498	in % *
Speed controller Kp, Tn (P100=0,3,4)	P235 P240	in ms

When P60=1 (parameter menü) more parameters are accessible than on diagrams ax, sx, rx of the BA (P60=0).

Further parameters (P60 = 1 = parameter menu):

Deceleration time for quick stop (OFF3)	P466	in s
Prot ramp gen. gain Kp (P100<=3, f<15%)	P467	
Ramp end/ramp start smooth	P469 P470	in s
Minimum frequency	P457	in % *
Skip frequency	P455	in % *
Fixed setpoint 5 in Hz (K045)	P405	in Hz
Excitation/de-magnetize time	P602 P603	in s

Further parameters (P60 = 1):

Motor load limits i²t (i001=alarm,i002=fault)	P384.x	in %
Flying restart (e.g. for fans)	P583	(1=ON)
Fly search speed	P526	in Hz/s
DC bus volts reg. (if no pulse resistor)	P515	(1=ON)
Frequency limit for turn-off value OFF1	P800	in % *

* % values are referred to P352, P353 or P354/P113

Control commands:

	Default for...	(P368=0 diagrm s0)	(P368=1 s1)	(P368=7 diag s7)
ON/OFF1 command	P554	B005 (PMU)	B022 (BE7)	B2100
Coast (OFF2)	P555, 556, 557	B001 = 1	B020 (BE6)	1
Quick stop (OFF3)	P558, 559, 560	1	1	1
INV release	P561	1	B016 (BE4)	1
Setpoint release	P564	1	1	1
Fault reset	P565, 566, 567	B2107 (OP1S)	B018 (BE5)	B2107
Jog (n/f: P448 in %)	P568	B000 = 0	0	B2108
FWD speed	P571	1 (B006 = PMU)	1	B2111
REV speed	P572	1 (B007 = PMU)	1	B2112
Motor pot. raise	P573	B008 (PMU)	0	0
Motor pot. lower	P574	B009 (PMU)	0	0
External fault	P575	1	1	1

Note: 0 = continuous 0 = L = 0V = terminal X101.2; 1 = continuous 1 = H = 24V = terminal X101.1
Example: ON/OFF1 command (P554) setpoint source P368=1 from BE7 (binector B022): P554=22

Setpoints:

	Default for...	(368=0 diag. s0)	(368=1 diag. s1)	(368=7 diag. s71)
Main setpoint	**P443 =**	**K058** (=Motor pot.)	**K011** = Analog input1 (K013 = AE2)	**K040** = Fxd setpoint (P405=FSW 5 in Hz & P417=1)
Additional setpoint 1: P433				(P401=FSW 1 in % & P417=0)

Analog outputs P640.x (Index 1: AA 1; Index 2: AA 2) (see diagram a0 of Operating Instruction):
Default setting: **P640.1** = speed = K148 (Speed n: **P002** in Hz (K020))
P640.2 = output current = K022 (Current I: **P004** in A (K022))
Gain: P643.x Output voltage Ua: **P003** in V (K021)
Offset: P644.x DC link voltage Ud: **P006** in V (K025)

The control command defaults in the cass of P368=0 apply when:
BE3=0=BICO data set 1=basic data set!
BICO data set changeover (basic/reserve data set): P590 = B014 = BE3
BA3 can only be used when P590=0 ! BE3 can only be used when P653=0 !

Problems?
- Drive does not behave as it should:
Parameter settings lost; repeat quick parameterization (contains factory settings); Check motor rating plate data and type of connection (e.g.star/delta); then reset parameters.
- Drive does not start:
Where P100=1, 2 : Use P325 to increase the voltage boost at 0 Hz.
Where P100=3 : Use P278,P279 to increase the current at low speeds, or increase P467
Where P100=3,4 : Use P492 to increase the torque limit. If P100=4: check tachometer wiring

- Fault : Indication Fxxx (see Operating Instruction, Faults)
Reset : Clear the cause of the fault, then P
Return to parameterizing level : Press P and △ at the same time

- Alarm : Indication Axxx (see Operating Instruction, Alarms)
Disappears automatically when the cause has been eliminated.

The diagrams in the Operating instruction for quick parameterization refer to the detailed diagrams of all functions and parameters in the "Compendium", e.g.: Sheet 90 terminal strip