

SMART DRIVE VT

Variable Torque

Dedicated to control of fans and pumps requiring standard duty

AC Variable Speed Drive 1.5–160 kW

Smart Drive VT provides ease of use plus simple installation and commissioning, making it the lowest cost solution for virtually all variable torque applications.

Innovative and compact the Smart Drive VT range combines good looks with robustness, reliability and effortless performance.

Energy saving is maximised using the sleep mode and the automatic energy optimiser function, which reduces the motor voltage to match the load.

Coherent operation using a unified control interface across the entire range and with only 14 standard parameters to adjust, Smart Drive's legendary ease of use could not be easier or quicker to get started with. For the more advanced user the extended parameter set gives access to powerful additional functionality.

Smart Drive VT's optical interface allows communication with other control equipment and also with the unique SW-Manager CE Plus for fast and accurate product configuration.

Key Benefits

- True evolution of range, maintaining same footprint and connector arrangement as original
- Fast and accurate parameter configuration using unique SW-Manager CE Plus and SW-Manager PC Plus
- Small mechanical envelope
- Rugged industrial operation 50 °C ambient rating
- Simple mechanical & electrical installation
- Simple operation, powerful features & easy to use
- Fast setup, 14 basic parameters
- Real time motor current, motor speed and kW indication
- Debugging using troubleshooting & P0
- Standard duty 110% overload for 60 secs
- Keypad control
- Spin start
- Built in PID controller for feedback control systems
- Automatic energy optimiser
- Sleep mode
- Intelligent fire mode
- Dual high speed serial communication interfaces
 - Optical (IrDA) interface for commissioning and low bandwidth control systems (115 kbps)
 - RS485 / Modbus RTU interface for high bandwidth control (9k6 to 115 kbps); optional BACnet and Metasys N2 protocols



Key Physical Features

- Pluggable control terminals
- Easy access key slots for simple installation
- Easy access contactor style power terminals for intuitive easy wiring
- Help card for basic parameter description and terminal layout
- Easy to use keypad with bright LED display
- IP20
- Integral RFI filter
- Integral braking transistor
- 3 phase line choke (size 4, 5 & 6)

Key Control I/O Features

- Programmable I/O for flexible control
- 12 bit bipolar analogue input, 8 ms sample time
- 2nd analogue input for PID feedback control systems
- Positive logic digital inputs (active high), 8 ms sampling
- 24 V / 100 mA user supply output
- 0..10 V & 4..20 mA analog output, 8 ms update
- Galvanically isolated and short circuit proof

Key Programming Features

- Silent motor running with 32 kHz ultra-quiet switching
- 8 preset speeds
- Mains dip ride through
- Skip frequency
- Last 4 trips stored
- 120 Hz output frequency
- Parameter lock
- Hours run & kWh meters
- Speed scaling factor for master-slave arrangements
- 2nd deceleration ramp for rapid stop

ELECTRICAL DATA

SMART DRIVE VT SIZE 2 (Integral RFI Filter, braking transistor)

Model	SWPL-xxxxxxH12	200015	200022	400015	400022	400040
Motor output rating	kW	1.5	2.2	1.5	2.2	4
Motor output rating	HP	2.0	3.0	2.0	3.0	5.0
Supply voltage/ phases	V +/- 10%	220-240 / 1Ø		380-480 / 3Ø		
Supply fuse or MCB rating	A	20	30	10	10	20
Output voltage/ phases	V	0-240 / 3Ø		0-480 / 3Ø		
Output current – 110% overload	A	7	10.5	4.1	5.8	9.5
Max motor cable length	m	100				
Min brake resistor	Ω	33	22	47	47	33

SMART DRIVE VT SIZE 3 (Integral RFI Filter, braking transistor)

Model	SWPL-xxxxxxH12	200030	200040	200055	400055	400075	400110	400150
Motor output rating	kW	3.0	4.0	5.5	5.5	7.5	11.0	15.0
Motor output rating	HP	4	5	7.5	7.5	10.0	15.0	20.0
Supply voltage/ phases	V +/- 10%	220-240 / 3Ø or 1Ø (with 50% derating)			380-480 / 3Ø			
Supply fuse or MCB rating	A	32	32	50	32	32	50	50
Output voltage/ phases	V	0-240 / 3Ø			0-480 / 3Ø			
Output Amps – 110% overload	A	14	18	25	14	18	25	30
Max motor cable length	m	100						
Min brake resistor	Ω	15			22			

SMART DRIVE VT SIZE 4 (Integral RFI Filter, braking transistor, 3 phase line choke)

Model	SWPL-xxxxxxH12	200075	200110	200150	200185	200220
Motor output rating	kW	7.5	11	15	18.5	22
Motor output rating	HP	10	15	20	25	30
Supply voltage/ phases	V +/- 10%	220-240 / 3Ø or 1Ø (with 50% derating)				
Supply fuse or MCB rating	A	80	80-100	100	100-125	160
Output voltage/ phases	V	0-240 / 3Ø				
Output Amps – 110% overload	A	39	46	61	72	90
Max motor cable length	m	100				
Min brake resistor	Ω	6				

Model	SWPL-xxxxxxH12	400185	400220	400300	400370	400450
Motor output rating	kW	18.5	22	30	37	45
Motor output rating	HP	25	30	40	50	60
Supply voltage/ phases	V +/- 10%	380-480 / 3Ø				
Supply fuse or MCB rating	A	80	80-100	100	100-125	160
Output voltage/ phases	V	0-480 / 3Ø				
Output Amps – 110% overload	A	39	46	61	72	90
Max motor cable length	m	100				
Min brake resistor	Ω	12				

SMART DRIVE VT SIZE 5 (Integral RFI Filter, braking transistor, 3 phase line choke)

Model	SWPL-xxxxxxH12	200300	200370	200450	400550	400750	400900
Motor output rating	kW	30	37	45	55	75	90
Motor output rating	HP	40	50	60	75	100	120
Supply voltage/ phases	V +/- 10%	220-240 / 3Ø or 1Ø (with 50% derating)			380-480 / 3Ø		
Supply fuse or MCB rating	A	200	250-300	250-300	200	250-300	250-300
Output voltage/ phases	V	0-240 / 3Ø			0-480 / 3Ø		
Output Amps - 110% overload	A	110	150	180	110	150	180
Max motor cable length	m	100					
Min brake resistor	Ω	3			6		

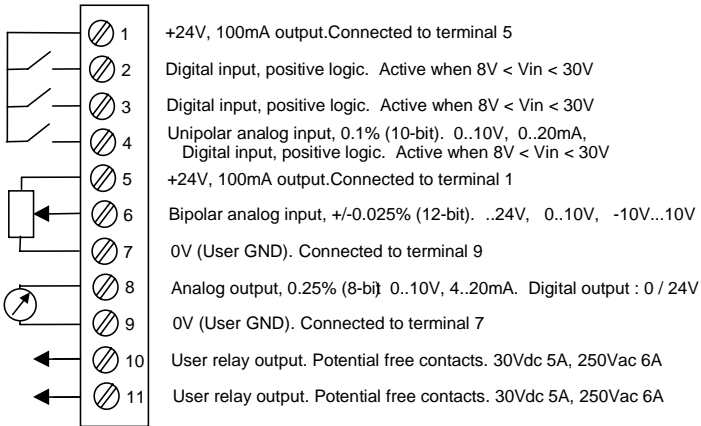
SMART DRIVE VT SIZE 6 (Integral RFI Filter, braking transistor, external 3 phase line choke)

Model	SWPL-xxxxxxH12	401100	401320	401600
Motor output rating	kW	110	132	160
Motor output rating	HP	150	175	250
Supply voltage/ phases	V +/- 10%	380-480 / 3Ø		
Supply fuse or MCB	A	315	350	400
Output voltage/ phases	V	0-480 / 3Ø		
Output Amps - 110% overload	A	202	240	300
Max motor cable length	m	100		
Min brake resistor	Ω	6		

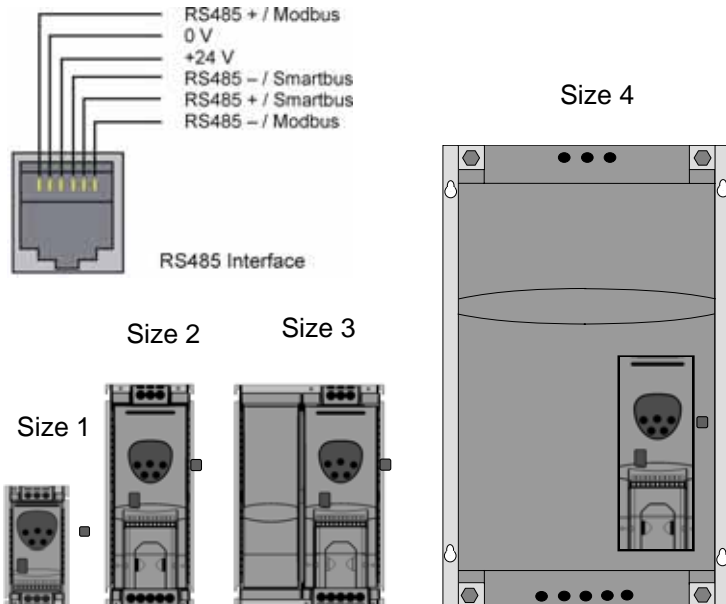
SPECIFICATION

- Supply frequency 48 to 62 Hz
- Max. permissible 3-phase supply imbalance 3%
- Max. ambient temperature 50 °C
- Max. altitude 2000 m
- Derate above 1000 m, 1% / 100 m
- For higher switching frequencies, derate output current 5% / °C above max. ambient up to 50 °C
- I x t protection above 100% output current
- 110% overload protection for 60 sec
- 125% overload allowable for 2 sec
- Storage temperature -40 to +60 °C
- Options:
 - SW-Manager CE Plus & SW-Manager PC Plus
 - Smartport Plus
 - RS485 data cables and accessories
 - Smartlink
 - Gateway options
 - 3ROUT (3 Relay Output)
 - Isolated USB to RS485 adaptor
 - Smartfilter
 - Smartbrake
 - Input Chokes
 - Output Filters

CONTROL TERMINAL ARRANGEMENT



COMMUNICATION INTERFACE



SMART DRIVE DIMENSIONS

	Size 2	Size 3	Size 4	Size 5 *	Size 5**	Size 6
Length / mm	260	260	520	1045	1100	1100
Width / mm	100	171	340	340	340	340
Depth / mm	175	175	220	220	330	330
Weight/ kg	2.6	5.3	28	67	68	55***
Fixings	2 * M4	4 * M4	4 * M8			
Power Terminal torque settings	1 Nm		4 Nm	8 Nm		

- * Size 5 - 90 A and 110 A ratings
- ** Size 5 - 150 A and 180 A ratings
- *** Size 6 has external line choke weighing 27 kg

ENCLOSURE - NON VENTED DIMENSIONS (mm)

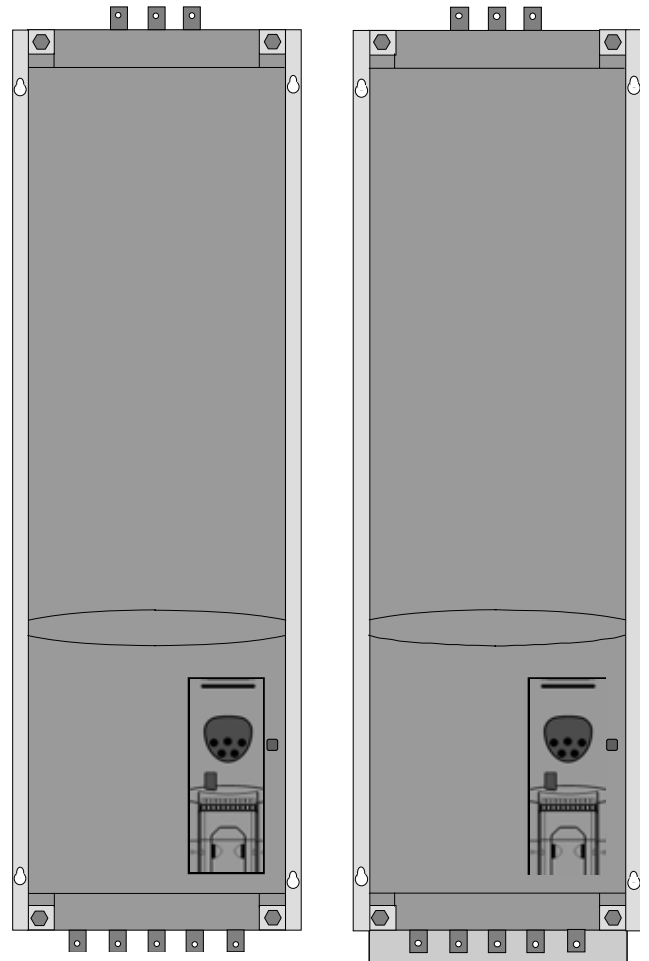
DRIVE POWER RATING	SEALED UNIT		
	W	H	D
Size 2 1.5 kW 200 V / 2.2 kW 400 V	300	400	300
Size 2 2.2 kW 200 V / 4 kW 400 V	450	600	300

ENCLOSURE - VENTED DIMENSIONS (mm)


DRIVE POWER RATING	VENTED UNIT			FORCE VENTED (WITH FAN)			
	W	H	D	W	H	D	Air Flow
Size 2 (4 kW)	400	600	250	300	400	250	> 45 m ³ / h
Size 3 (15 kW)	600	800	300	400	600	250	> 80 m ³ / h
Size 4 (22 kW)	600	1000	300	600	800	300	> 300 m ³ / h
Size 4 (45 kW)	N/A	N/A	N/A	600	800	300	> 300 m ³ / h
Size 5 (90 kW)	N/A	N/A	N/A	800	1600	300	> 900 m ³ / h
Size 6 (160 kW)	N/A	N/A	N/A	800	2000	300	> 1000 m ³ / h

Size 5*

Size 5 & 6

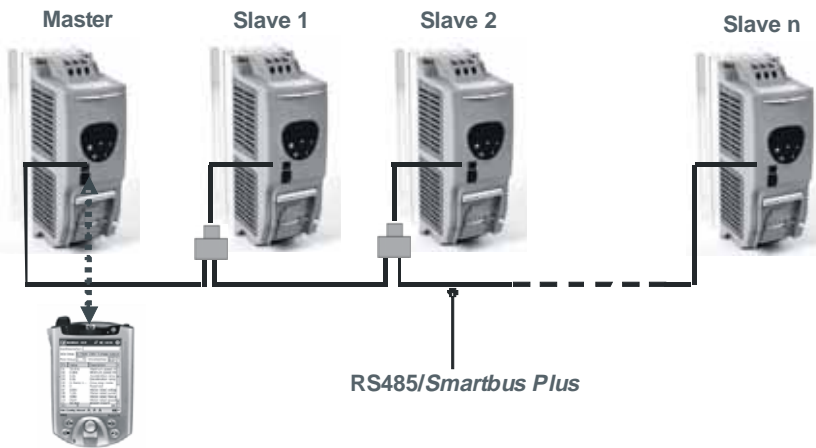


Communication Interfaces

	Interface	Protocol	Baud (bps)	Purpose	Connections
	RS485	Modbus RTU	9k6 – 115k	High bandwidth control systems	<ul style="list-style-type: none"> • Drive to plc • Drive to fieldbus gateway
		Smartbus Plus	115k	Low bandwidth control systems	<ul style="list-style-type: none"> • Drive to pc (PC Software) • Drive to drive (unlimited slaves)
	Optical	IrdA	115k	Small, low bandwidth control systems	Drive to drive (max. 2 slaves)
				Commissioning	Commissioning

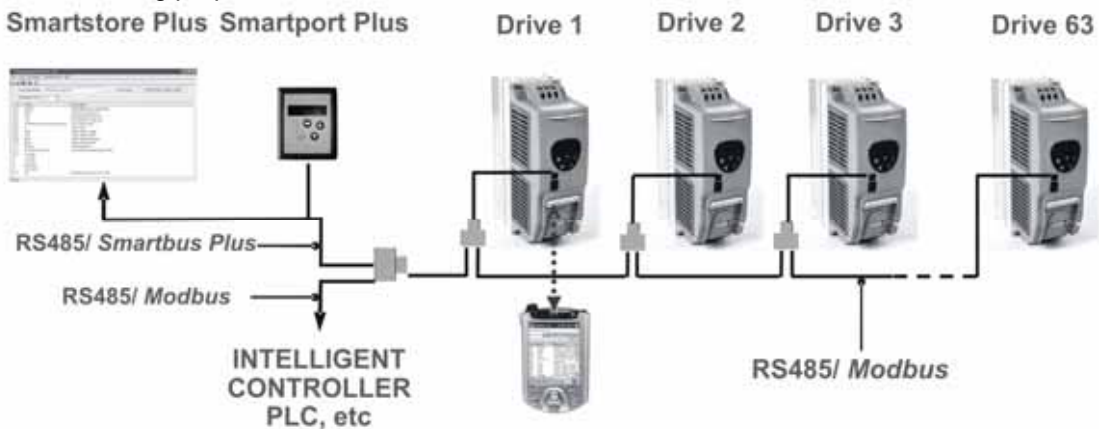
Master – Slave/ Drive to Drive Communication

Master – slave networks can be easily created by connecting the communication ports. SW-Manager CE Plus can be used for commissioning individual drives through the optical port even when the drives are connected in an RS485 network.



Drive Networks to Intelligent Controllers

High bandwidth control systems can be created for up to 63 drives connected to an intelligent network with RS485/Modbus RTU. Smartport Plus and/or SW-Manager Plus can run on the same network using an RS485/Smartbus Plus connection for monitoring purposes, but not for control.



Fieldbus Communication

Smart Drive Plus connects to high speed communication networks via a gateway.

1 DeviceNet gateway can connect with up to 4 Smart Drives.

1 Profibus gateway can connect with up to 8 Smart Drives.

