



Cygnus motor drives come with a powerful integrated motion controller and a wide range of connectivity options. This makes the Cygnus the ideal choice for many applications. Due to its integrated input / output filtering, the Cygnus can operate with a minimal number of external components. The drive can be commanded via Ethernet or by using the CiA402 compatible EtherCAT interface.

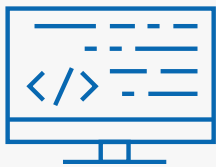
The Cygnus drives make use of the programmable Prodrive Motion Platform (PMP). PMP is a highly flexible platform which is currently used across multiple industries. The motion controller can be integrated in the most demanding systems via the powerful Motion API (C++/C#). Custom real-time code can be deployed via Simulink code generation. The PMP tooling ensures fast and effortless commissioning by offering advanced signal tracing capabilities and a fully customizable HMI interface.

Cygnus D3-400/4

- Rated phase current (continuous)
- Rated supply voltage
- Number of output phases
- Number of outputs (Single/Dual/Quad)
- Drive series



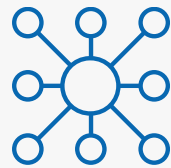
Integrated filtering



Programmable PMP motion controller via MATLAB Simulink integration




SBC/STO functions



Wide range of connectivity options

CYGNUS LINE – FEATURES



External brake resistor interface for systems with high braking energy

CiA402-compliant EtherCAT slave

An integrated thermal solution with optional fan enables reliable operation at high ambient temperatures


Integrated RS485 and CAN interfaces enable direct communication with external systems

An embedded GbE diagnostic port allows real-time tracing of internal parameters and sensor values, even when connected to a 3rd-party EtherCAT master

Integrated Safe Torque Off (STO) and Safe Brake Control (SBC) functions reduce overall system complexity

Slew-rate limited outputs combined with internal filtering enables the use of unshielded connectors

Single, dual and quad output versions cover a range from 500W up to 7kW_{PK} per axis

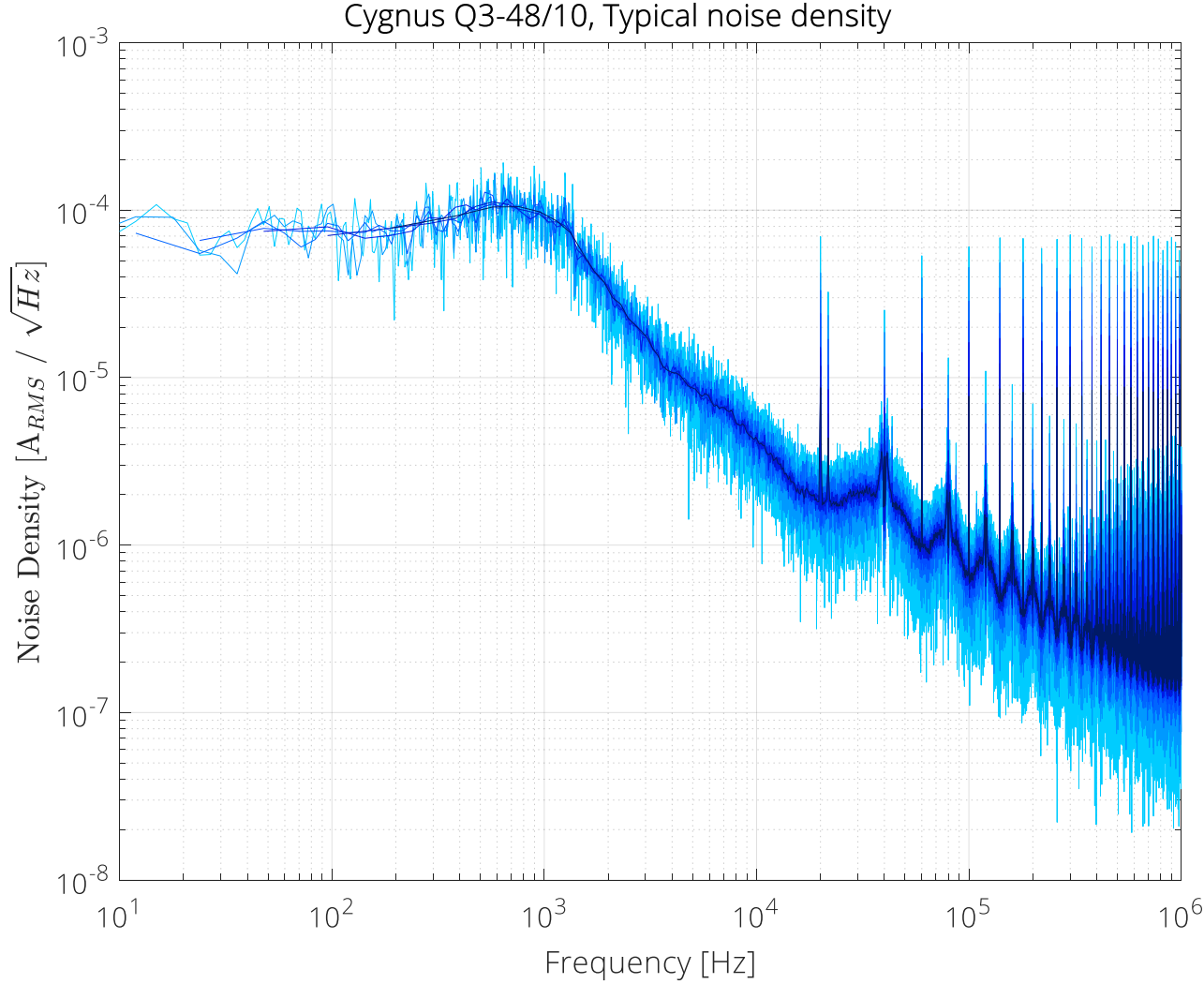


Cygnus S3-400/8 Cygnus D3-400/4 Cygnus Q3-48/10

Cygnus Q3-48/10, overview

CYGNUS LINE – PERFORMANCE SPECIFICATIONS

	Parameter	Symbol	Unit	S3-400/8	D3-400/4	Q3-48/10	Remark
Input	Supply input voltage	V _{SUPPLY}	V	390 - 410	390 - 410	17 - 54	
	Supply input voltage, abs. max	V _{SUPPLY_ABS_MAX}	V _{DC}	450	450	60	
	Peak input current	I _{SUPPLY_PEAK}	A _{PK}	max 20	max 20	max 50	
	Continuous input current	I _{SUPPLY_CONT}	A _{RMS}	max 10	max 10	max 30	
	Auxiliary input voltage	V _{SUPPLY_AUX}	V	21 - 26			
	Auxiliary input current	I _{AUX_RMS}	A _{RMS}	max 3			
Output	Number of motor outputs	n _{MOT}	-	1	2	4	
	Supported motor types		-	PMSM / BLDC / Stepper / Induction			
	Peak phase current	I _{PH_PK}	A _{PK}	22,6	11,3	28,2	
	Continuous phase current	I _{PH_CONT}	A _{RMS}	8,0	4,0	10,0	
	Peak phase-phase voltage range	V _{PHPH_PEAK}	V _{PK}	0 - 355	0 - 355	0 - 43	Input voltage 400V _{DC} /48V _{DC}
			V _{RMS}	0 - 250	0 - 250	0 - 30	
	Current loop, small signal bandwidth	f _{-3dB}	kHz	1			-3dB, typical value
	Rated switching frequency	f _{PWM}	kHz	20			
	Output frequency	f _{MOT}	Hz	0 - 595			dual use limited, see note
	Electrical braking function		-	No			
Accuracy	External brake resistor		-	No			
	Internal brake resistor		-	Yes			
	Offset	E _{MOT_OFFSET}	% of I _{PH_PK}	<1,0			
	Offset drift	E _{MOT_OFFSET_DRIFT}	% of I _{PH_PK}	<1,0			
	Gain error	E _{MOT_GAIN}	% of I _{PH_PK}	<4,0			
Noise	Gain error drift	E _{MOT_GAIN_DRIFT}	ppm of I _{PK}	<8000			
	Non-linearity	E _{MOT_NONL}	ppm of I _{PK}	<5000			
	Noise (spectral density @100Hz)	I _{NOISE_LF}	µA/√Hz	50	20	100	typical value at 0A setpoint
	Noise (rms, 1Hz-10kHz)	I _{NOISE_100kHz}	µA _{RMS}	-			
Control	Ripple	I _{MOT_RIPPLE}	µA _{RMS}	-			
	Interface type		-	GbE			
				EtherCAT			
				RS485			50Mbps max
	Update rate	f _{ECAT}	-	100Hz - 20kHz			
	Diagnostic interface		-	GbE			



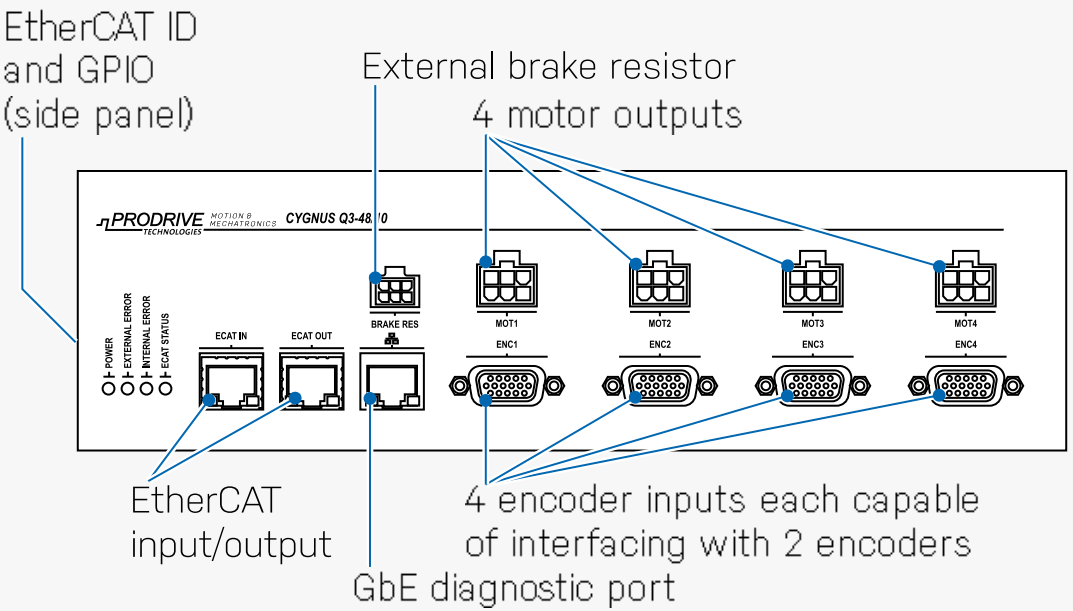
	Parameter	Symbol	Unit	S3-400/8	D3-400/4	Q3-48/10	Remark
Safety	Applicable standard		-	IEC/UL61800-5-1			pending certification
	Pollution degree	PD	-	2			
	Overvoltage category	OVC	-	III			II
	IP-protection class / enclosure type		-	IP20 / open type			
	Max operating altitude	h _{OP_max}	m	2000			
	STO / SBC outputs		-	IEC61508, SIL3			pending certification
EMC	Applicable standard						
	Input filtering			Cat C2, 2nd env			use with listed supply
	Output filtering			Clamped LC filter (dV/dt limiting)			

Notes:

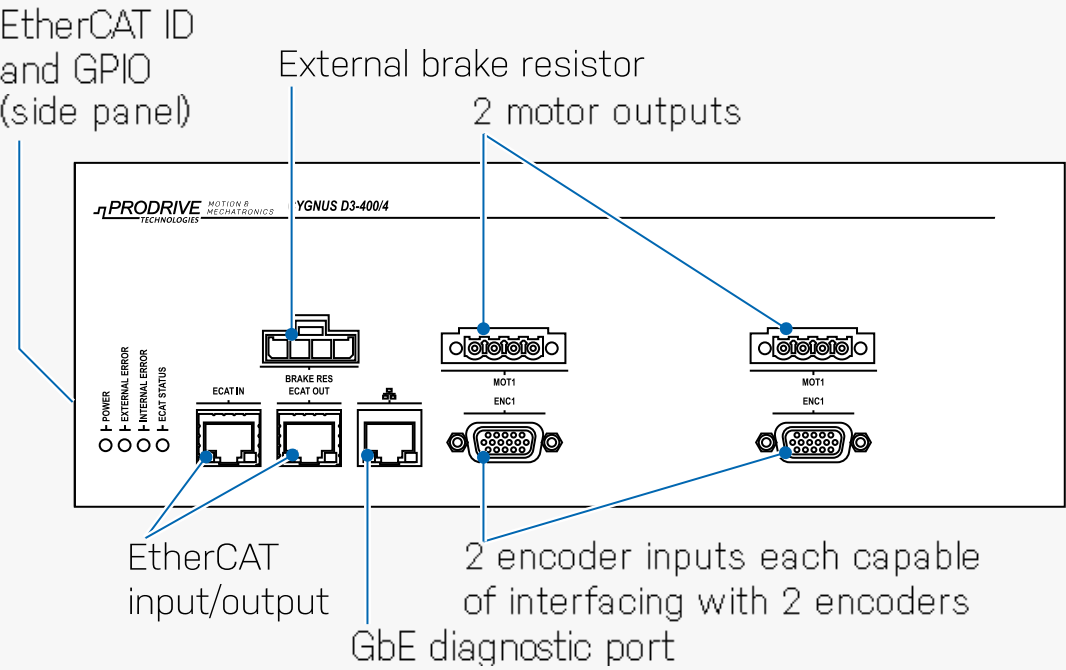
- All performance specifications are validated at an input voltage of 400VDC (Cygnus S3-400/8 & Cygnus D3-400/4) or 48VDC (Cygnus Q3-48/10)
- Dual use limited: output frequencies above 600Hz are subject to export control and require an export permit (EU 2021/821, 3A225)

CYGNUS LINE – INTERFACES & MECHANICAL SPECIFICATIONS

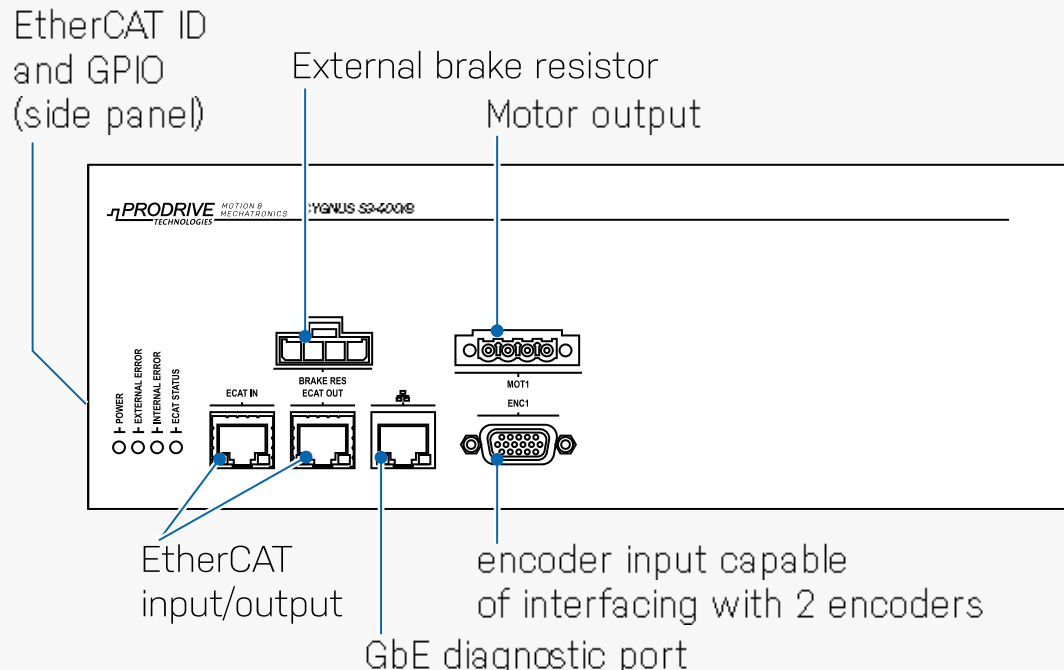
Q3-48/10



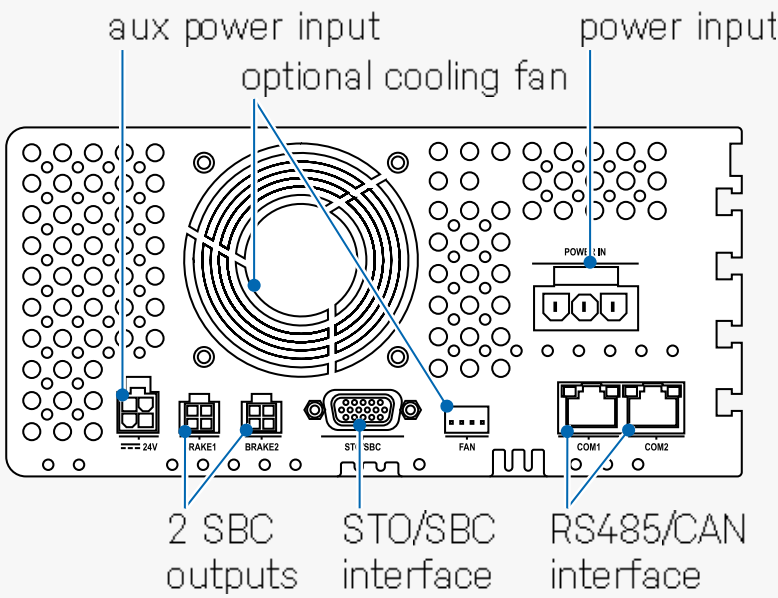
D3-400/4



S3-400/8



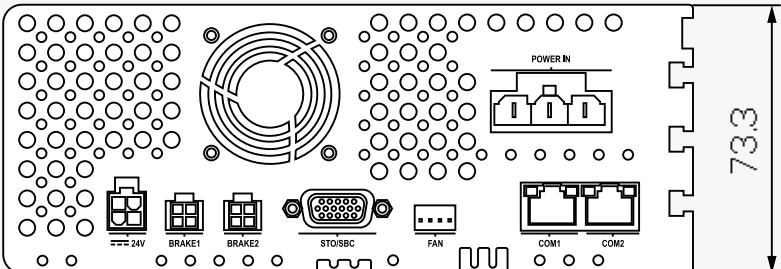
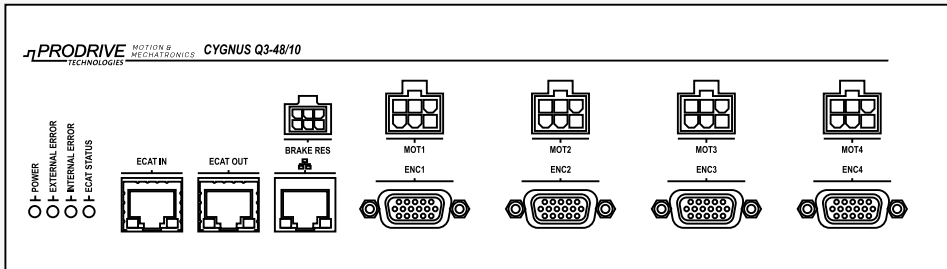
Q3, D3, S3 side



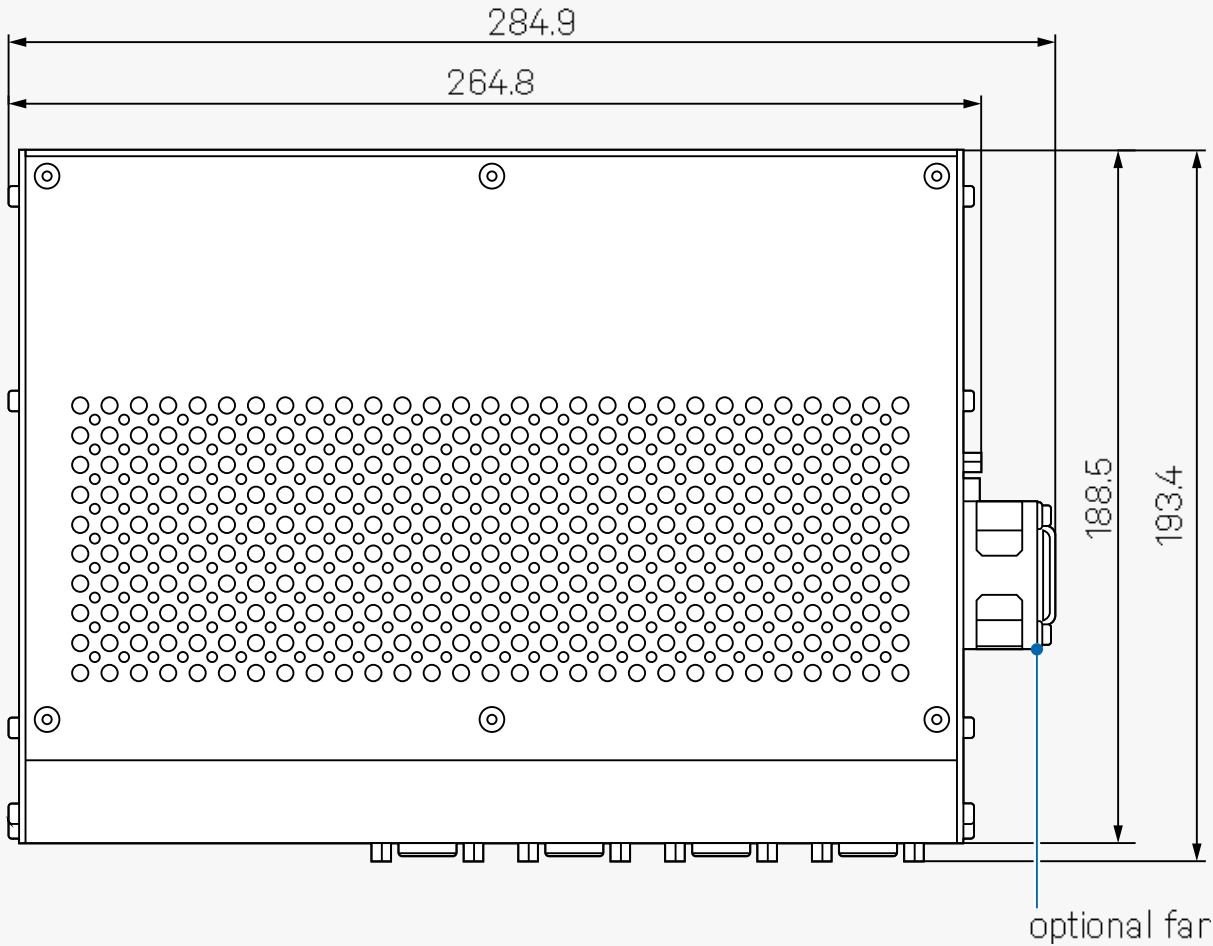
	Parameter	Symbol	Unit	S3-400/8	D3-400/4	Q3-48/10	Remark
Encoder inputs	Number of encoder inputs	n_{ENC}	-	1	2	4	
	Supported types		-	Quadrature Analog Sin/Cos Digital hall Endat 2.1/2.2 HiPerface DSL (2W/4W) SSI / BiSS C			
	Max signal frequency	f_{sincos_max}	-	1MHz - 4M counts/s			No missing pulses
	Maximum baudrate (digital encoders)	f_{rs422_max}	MHz	10			
	Encoder supply voltage	$V_{ENC SUP}$	V	5 / 10			software selectable
General purpose I/O	Encoder supply current	$I_{ENC SUP}$	mA	max 250			
	Isolated digital inputs		-	4 x 24V input			($V_{IH} \geq 11V$, $V_{IL} \leq 5V$, $I_{IN} < 15mA$)
	Isolated digital outputs		-				
	Non-isolated digital inputs		-	3 x TTL			
	Non-isolated digital outputs		-	4x 24V -2A			
	Analog inputs		-	4 x $\pm 10V$ (12-bit) + 1x 0-10V (10bit)			
	Analog output		-				
	Brake outputs		-	2x 24V - 2A			

CYGNUS LINE – INTERFACES & MECHANICAL SPECIFICATIONS

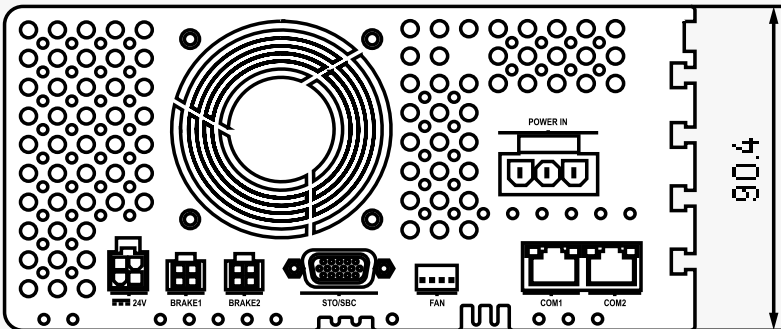
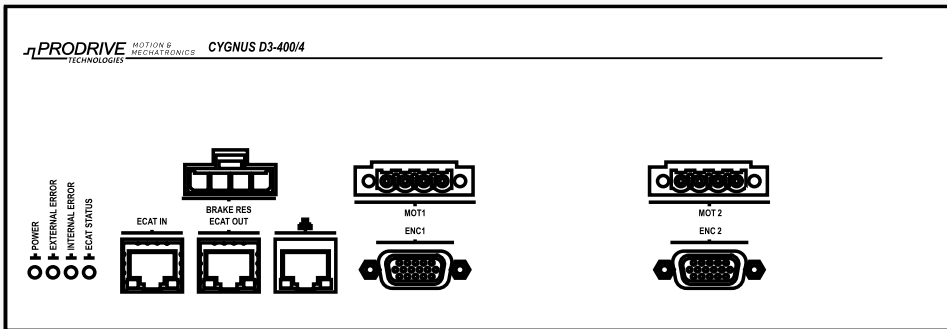
Q3



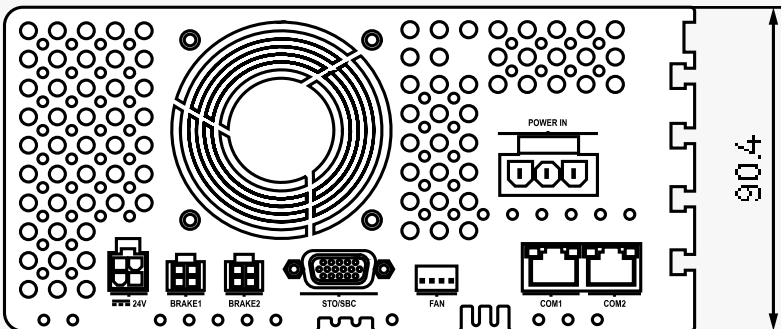
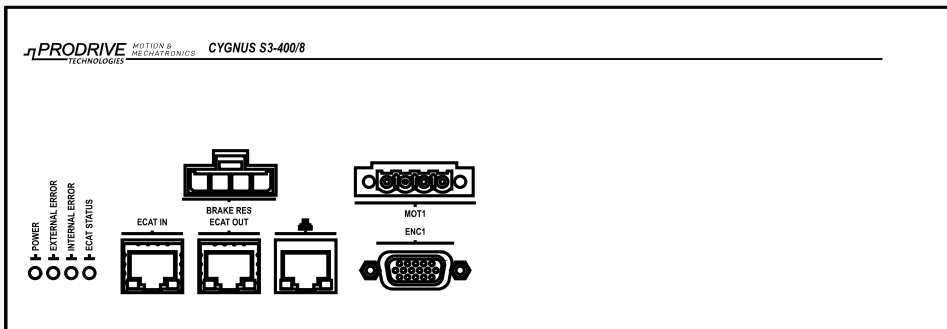
S3, D3, Q3



D3



S3



Mechanical	Parameter	Symbol	Unit	S3-400/8	D3-400/4	Q3-48/10	Remark
	Width	d_w	mm	90	90	73	
	Depth	d_D	mm	195	195	195	
	Height	d_H	mm	265	265	265	
	Operating temperature range	T_{OP}	°C	5 - 45			
	Operating humidity range	h_{OP}	%	0 - 90			non-condensing
	Shock & Vibration		-	IEC60068-2-6 (Fc)			
	Lifetime		-	>10 years			
	Mass	mass	kg	3,3	3,3	3,0	typical value