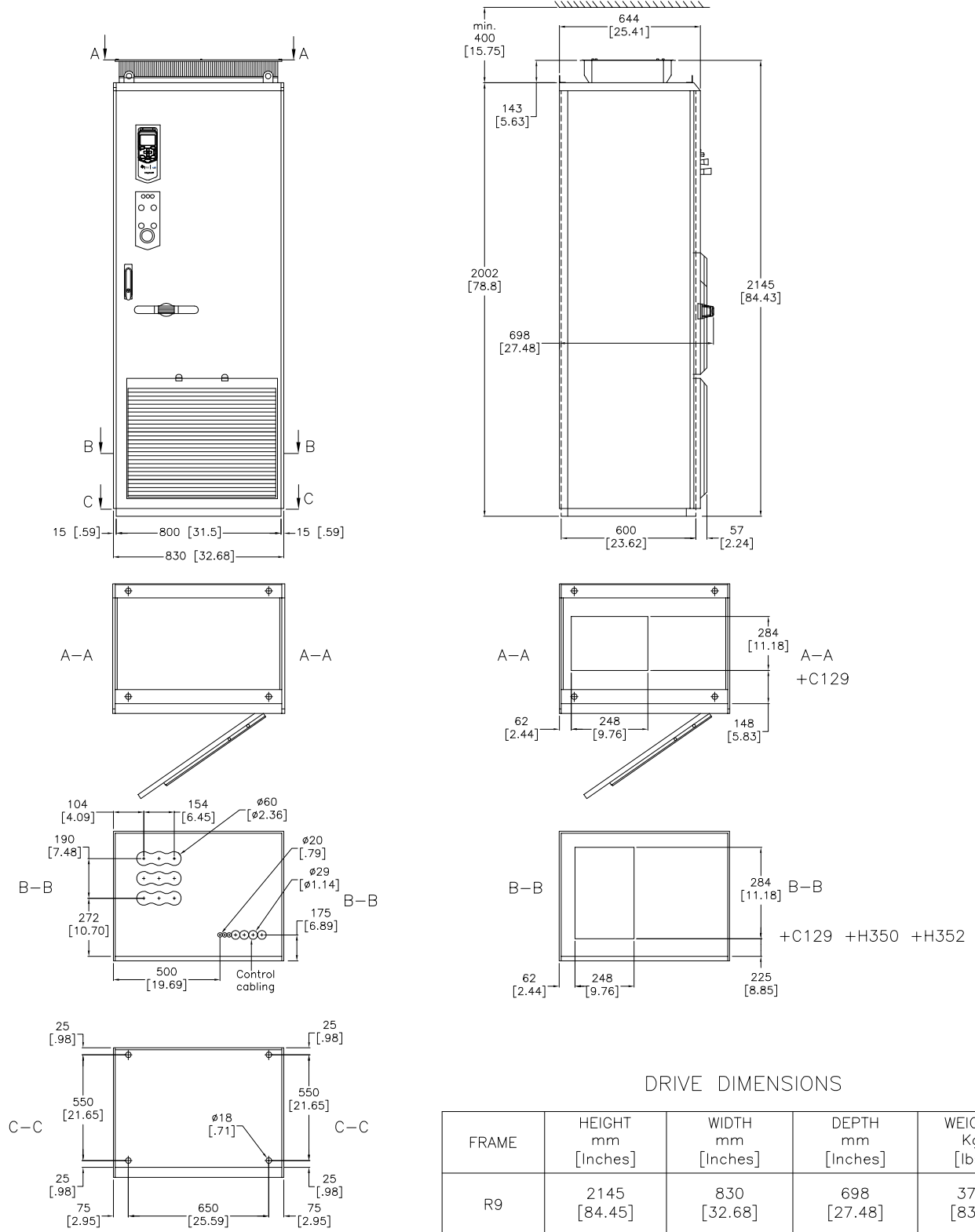


PumpSmart PS220 pump and motor Control System

The PumpSmart PS220 is a pump and motor control system that provides integral starting, right-sizing, pump protection and process control for all pumping applications. The PumpSmart PS220 is based upon the ABB ACS880-07 variable frequency drive platform. PumpSmart Control Solutions has worked with ABB to incorporate proprietary pump protection, process control and configuration algorithms into the drive to make it more suitable for pumping applications



DRIVE DIMENSIONS

FRAME	HEIGHT mm [Inches]	WIDTH mm [Inches]	DEPTH mm [Inches]	WEIGHT Kg [lbs]
R9	2145 [84.45]	830 [32.68]	698 [27.48]	375 [830]

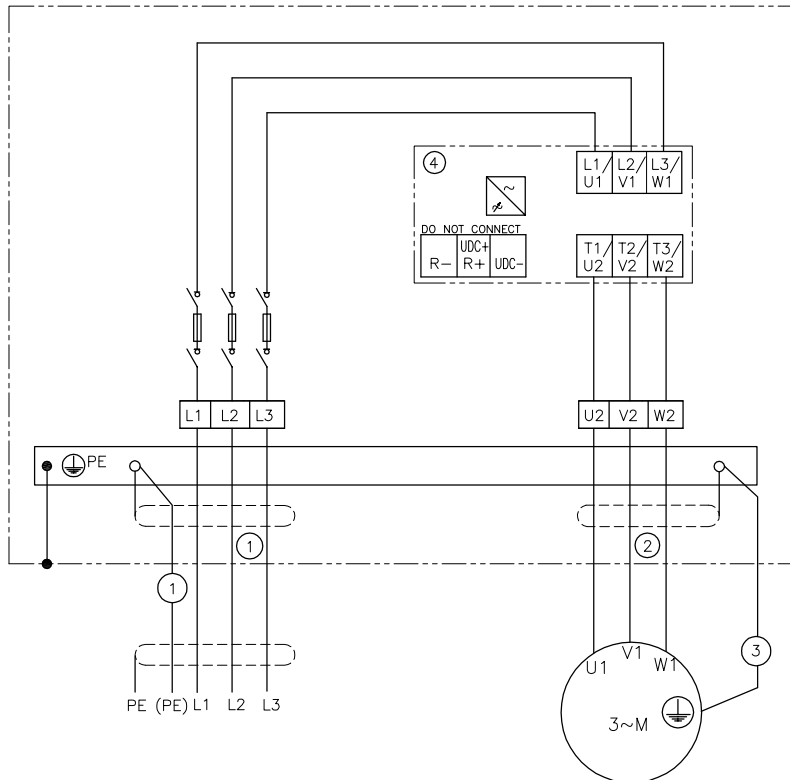
- 1-For marine construction (option +C121) extra height is 10 mm (0.39 in.) due to the fastening bars at the bottom of the cabinet.
- 2-Extra width with brake resistors (option +D151): SAFURxxxFxxx 400 mm (15.75in.), 2xSAFURxxxFxxx 800mm(31.49 in.). Extra width for frames R6 to R8 with EMC filter (option +E202): 200mm (7.87in.). Total width of R6 to R9 frame sizes with molded case circuit breaker (option +F289) is 830mm (32.68in.)
- 3-For drives with marine fastening bars (option +C121): Depth is 757 mm.

### Drive Ratings

ITT P/N	ABB P/N	Input Voltage (VAC)	Power1		Rated Current2 (A)	Heat Dissipation		Air Flow		Frame	Enclosure Rating	Recommended Main Fuses	
			HP	kW		Watts	BTU/hr	m3/hr	CFM			UL Type Bussmann	IEC Type Bussmann
K03556A06	ACS880-07-0302A-5	380 - 500	250	160	247	4700	16037	1150	667	R9	NEMA 2 IP22	170M6410	170M6410
K03556A07	ACS880-07-0361A-5	380 - 500	300	200	343	5300	18084					170M6410	170M6410
K03556A08	ACS880-07-0414A-5	380 - 500	350	250	393	6500	22179					170M6411	170M6411
K03558A07	ACS880-07-0210A-7	525 - 690	250	200	200	4700	16037					170M4410	170M4410
K03558A08	ACS880-07-0271A-7	525 - 690	250	250	257	5300	18084					170M5410	170M5410

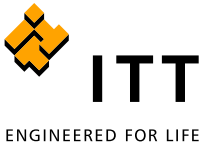
- 1- Nominal Power Rating at listed voltage rating  
2- Continuous base current with 10% overload for 1 min/5 minutes

### Power Cabling Schematic



- 360-degree grounding is recommended if shielded cable is used. Ground the other end of the input cable shield or PE conductor at the distribution board.
- 360-degree grounding is required.
- Use a separate grounding cable if the shield does not meet the requirements of IEC 61439-1 and there is no symmetrically constructed grounding conductor in the cable.
- Drive module.

Frame size	Terminals L1,L2,L3,U2,V2,W2				Earthing PE Terminal			
	Max. Wire Size AWG (mm <sup>2</sup> )	Screw	Torque		Max. Wire Size AWG (mm <sup>2</sup> )	Screw	Torque	
			N-m	Lb-ft			N-m	Lb-ft
R9	2 X 500 MCM (3 X 240)	M12	50...75	37...55	350 MCM (185)	M10	30...44	22...32



PumpSmart® PS220  
Drive Dimensions and Ratings  
Frame R9 - NEMA2 / IP22  
ACS880-07

PumpSmart®

**PumpSmart® PS220**  
Drive Hardware: ABB ACS880-07

**CERTIFICATIONS**

600VAC and Below  
UL Listed  
Canadian UL Listed

**INPUT POWER**

Voltage.....380...690 VAC 3 Phase  $\pm 10\%$ -15%  
Overload.....110% for 1min/5 min,  
140-150% for 10 sec at startup  
Frequency.....48...63Hz  
Fundamental Power  
Factor(Cos $\Phi$ ) .....0.98 at nominal load  
Efficiency.....98% (at nominal power)

**MOTOR CONNECTION**

Voltage.....0 to U1, 3-Phase Symmetrical,  
U<sub>max</sub> at the field weakening point  
Frequency.....0...500Hz  
Field Weakening Point.....5...500Hz  
Switching Frequency .....2.7KHz (typically)  
Short Circuit Withstand Rating.....  
.....100,000AIC(UL) R1-R9  
when protected by fuses given  
in the hardware manual.  
Connection .....U2, V2, W2

**ENVIRONMENTAL LIMITS**

Enclosures.....NEMA2/IP22  
Temperature.....32°to122°F(0°to50°C)Standard  
104..122°F(40-50C) with  
de-rating (1%/1C)  
Humidity.....5..95% Relative Humidity  
Altitude.....0..3300 Ft(0-1000M) Standard  
3300..13,123Ft (1000..4000M) with  
de-rating (1%/100M)  
Vibration.....Max.1mm(0.04 in.) 5-13.2 Hz  
Max.7 m/s<sup>2</sup> (23ft/s<sup>2</sup>) (13.2-100Hz)  
Sinusoidal  
Shock, Free Fall.....Not Allowed

**ANALOG INPUTS**

Two (2) Programmable Differential Inputs  
Two (2) Current or Voltage Signals.....0(4) to 20 mA, Input Resistance  
R<sub>I</sub>>= 100 ohms or  
-10Vdc /0(2) to+10Vdc,  
Input Resistance R<sub>I</sub>>= 200 Kohms  
Common Mode Voltage.....+/-15Vdc,max.  
Common Mode Rejection Ratio.....> 60dB at 50Hz  
Resolution.....0.025% (12bit) (11 bit+Sign bit)  
Accuracy.....+/-0.5% of full Scale Range  
Input Updating Time.....1 ms (Primary Control Program)  
Optional Isolation.....Available through optional external  
module

**ANALOG OUTPUTS**

Two (2) Programmable Current Outputs  
Signal Level.....0(4) to 20mA  
Resolution.....0.025% (12bit) (11 bit+Sign bit)  
Accuracy.....+/-1% of Full Scale Range  
Maximum Load Impedance....500 ohms  
Output Updating Time.....1 ms (primary Control Program)  
Frequency Range.....0-300Hz

**DIGITAL INPUTS**

Six(6) Programmable Digital Inputs(Common Grounds), plus One(1)  
Start Interlock  
Isolation.....Isolated  
Isolation Test Voltage.....500VAC, 1 minute  
Input Type.....NPN/PNP (DI1...D15), NPN (D16)  
Signal Level.....24Vdc  
R<sub>in</sub>.....2.0 kOhms  
Logical switch thresholds.....<5Vdc at "0",>15Vdc at "1"  
Input Current.....15mA, Digital Input 1 to Digital Input  
5, 5mA Digital Input 6  
Filtering Time Constant.....Hardware Filter .04ms.  
Input Updating Time.....Digital Filtering up to 8ms.(Primary  
Control Program)  
Internal 24Vdc Supply for Digital Inputs  
Voltage.....24Vdc  
Maximum Current.....200mA  
Connector.....XD24.2 and XD24.4  
Protection.....Short Circuit Proof  
An external 24 Vdc supply may be used instead of the Internal  
supply

**DIGITAL INPUTS/OUTPUTS**

Two(2) programmable Digital Inputs/Outputs  
Isolation.....Isolated  
Input Configuration.....DIO1 frequency input(0...16KHz  
with 4 microsecond hardware filtering)  
Output Configuration.....DIO2 frequency output(0...16KHz  
with 4 microsecond hardware filtering)  
Signal Level.....24Vdc  
R<sub>in</sub>.....2.0Kohm  
Logical Input switch thresholds...<5Vdc at "0",>15Vdc at "1"  
Filtering Time Constant.....0.25ms  
As output.....Total output current from  
+24VD is limited to 200ma.

**RELAY OUTPUTS**

Three Programmable Relay Outputs  
Switching Capacity.....2 A at 30Vdc or 250Vac  
Maximum Continuous Current.....I<sub>C</sub>=2 Amps RMS  
Protection .....Varistors (250V)  
Output Updating Time.....1 ms (Primary Control  
Program)

**REFERENCE POWER SUPPLY**

Voltage.....+10Vdc,0,-10Vdc+/-0.5% at  
25°C (77°F)  
Maximum Load.....10mA  
Applicable Potentiometer..1 k-ohm to 10 k-ohm

**FIELDBUS**

Communication Modbus, Profibus DP  
Modules..... Ethernet, DeviceNet