

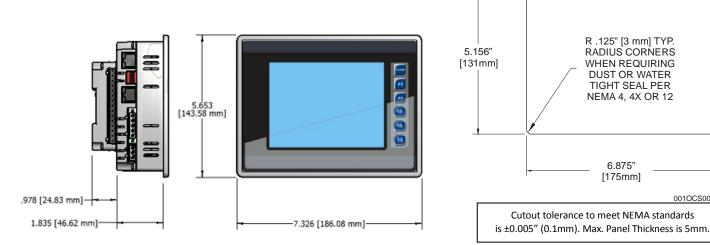
EXL6 OCS Datasheet for

HE-EXL1EO, HE-EXL1E2, HE- EXL1E3, HE- EXL1E4, HE- EXL1E5, HE-EXL1E6 HEXT371C100, HEXT371C112, HEXT371C113, HEXT371C114, HEXT371C115, HEXT371C116

1. Specifications

Control & Logic Specifications Required Power (Steady state) 420mA @ 12VDC / 230 mA @ 24VDC Control Language Support Advanced Ladder Logic Full IEC 1131-3 Languages Required Power (Inrush) 25A for <1 ms @ 24 VDC Logic Spramize IMB, maximum (Inrush) DC Switched & Logic Spramize 0.013m5/K Primary Power Range 10-30VDC Online Programming Changes Supported in Advanced Ladde Relative Humidity 510 95% Non-condensing Clock Accuracy +/- 20 ppm maximum at 25° C (+/-1 Minutes per Month) I/O Support Digital Outputs 2048 Analog Outputs 512 Surrounding Air Temp -1:0°C to +60°C Analog Outputs 512 Analog Outputs 512 Surge Temp -4:0°C to +60°C So.000 (words) Retentive 16,384 (bits) Non-retentive 16,384 (bits) Non-retentive UL / CE USA: http://www.henga.com/Pass/TEASJO USB mini-B USB 2.0 (480MHz) Programming & Data Access Color 16-bit (65,536) USB mini-B USB 2.0 (480MHz) Programming & Data Access Screen Memory 27 MB CAN Remote I/O SmartBal, SmartSloc, SmartModu Screen Upda				a 14				_						
(Steady state) 420mA @ 12VDC / 230 mA @ 24VDC Control Language Support Full IEC 1131-3 Language Support Required Power (Inrush) DSA for <1 ms @ 24 VDC				General Spec	ifications						Control & Logic			
Inrush DC Switched & Logic Scan Rate 0.013mS/K Primary Power Range 10-30VD Online Programming Changes Supported in Advanced Ladde Relative Humidity 510 55% Non-condensing Digital Inputs 2048 Clock Accuracy +/-20 ppm maximum at 25° C (+/-1 Minutes per Month) I/O Support Digital Dutputs 2048 Surrounding Air Temp -10°C to +60°C Analog Outputs 512 Analog Outputs 512 Storage Temp -40°C to +60°C Sourounding Air Temp 50,000 (words) Retentive 16,384 (bits) Retentive 532 UL / Ct USA: http://www.heage.com/Paeu/TechSupport/ProducCert.html Energial Purpose Registers 50,000 (words) Retentive 16,384 (bits) Retentive 18,5-435 on first Modular Jack (MU1/2) 178,5-232 on 18,5-485 on first Modular Jack (MU1/2) 178,5-232 on 18,5-485 on first Modular Jack (MU1/2) 18,5-232 or 18,5-485 on first Modular Jack (MU1/2) 18,5-232			r	42	0mA @ 12VI	DC / 230 mA	@24VDC		C	Control Lang	uage Support			
Primary Power Range 10-30VDC Online Programming Changes Supported in Advanced Ladde Relative Humidity 5 to 55% Non-condensing Digital Inputs 2048 Clock Accuracy +/-20 ppm maximum at 25° C (+/-1 Minutes per Month) J/O Support Digital Inputs 2048 Surrounding Air Temp 10°C to -60°C Analog Duputs 512 Surge Temp 40°C to -60°C Analog Outputs 512 UL / CE USA: http://www.hage.com/?ages/Tecisupport/indu/ctCert.html General Purpose Registers 50,000 (words) Retentive 16,384 (bits) Retentive Display Specifications Connectivity Serial Ports I 185-232 or 1 RS-485 on sic Modular Jack (M11/2 1 RS-232 or 1 RS-485 on second Modular Jack (M11/2 1 RS-232 or 1 RS-485 on second Modular Jack (M11/2 1 RS-232 or 1 RS-485 on second Modular Jack (M11/2 1 RS-232 or 1 RS-485 on second Modular Jack (M11/2 1 RS-232 or 1 RS-485 on second Modular Jack (M11/2 1 RS-232 or 1 RS-485 on second Modular Jack (M11/2 1 RS-232 or 1 RS-485 on second Modular Jack (M11/2 1 RS-232 or 1 RS-485 on second Modular Jack (M11/2 1 RS-232 or 1 RS-485 on second Modular Jack (M11/2 1 RS-232 or 1 RS-485 on second Modular Jack (M11/2 1 RS-232 or 1 RS-485 on second Modular Jack (M11/2 1 RS-232 or 1 RS-485 on second Modular Jack (M11/2 1 RS-232 or 1 RS-485 on second Modular Jack (M11/2 1 RS-232 or 1 RS-485 on second Modular Jack (M11/2 1 RS-232 or 1 RS-485 on second Modular Jack (M11/2 1 RS-232 or 1 RS-485 on second Modular Jack (M11/2 1 RS-232 or 1	Req	uired Powe	r		25A for <1	ms @ 24 VD(C			Logic Pro	gram Size	,		
Relative Humidity 5 to 95% Non-condensing Digital Inputs 2048 Clock Accuracy +/-2 00 ppm maximum at 25° C I/O Support Digital Inputs 2048 Surrounding Air Temp -10°C to +60°C Analog Outputs 512 Storage Temp -40°C to +60°C Analog Outputs 512 UL / CE USA: http://www.heage.com/Pages/Ted/Support/ProductCert.html General Purpose Registers 50,000 (words) Retentive Display Specifications Display Specifications Connectivity 16-334 (bits) Retentive 16.334 (bits) Non-retentive Display Type 5.7" VGA TFT (450 nit typical) Serial Ports 185-232 & 1 R5-485 on first Modular Jack (MJ1/2 1 RS-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232		(Inrush)			DC	Switched				& Logic :	Scan Rate			
Clock Accuracy +/- 20 ppm maximum at 25° C (+/- 1 Minutes per Month) I/O Support Digital Outputs 2048 Analog inputs Surrounding Air Temp	Primar	y Power Ra	nge		10	–30VDC			On	line Prograi	mming Changes	Supporte	ed in Advar	iced Ladder
Clock Accuracy (4/-1 Minutes per Month) I/O Support Analog Inputs 512 Surrounding Air Temp -10°C to +60°C Analog (nputs) 512 Storage Temp -40°C to +60°C Solod (words) Retentive 16,334 (bits) Retentive UL / CE USA: http://www.heage.com/Pages/TechSupport/ProductCert.html General Purpose Registers 50,000 (words) Retentive 10,334 (bits) Non-retentive 16,334 (bits) Retentive 16,334 (bits) Retentive 16,334 (bits) Retentive 10splay Specifications Serial Ports 1 RS-232 & 1 RS-485 on first Modular Jack (M112) Resolution 640x480 USB anin-B USB 2.0 (480MHz) Programming & Data Access Color 16-bit (65,536) USB A USB A USB 2.0 (480MHz) for USB FLASH Drives (2TB) Screen Memory 27 MB CAN Remote I/O, Peer-to-Peer Comms, (Scape User-Programmable Screens 1023 Ethernet 10/100 Mb (Auto-MDX), Modbus TCP C/S, HTTP, FI Screen Update Rate User Configurable within the scan time. (perceived as instantaneous in many cases) Removable MicroSD, support for 32GB max. Application Updates, Datalogging, more Model DC In DC Relays HS In HS Out mA/V In MA/V Maximum Frequency 500 kHz each Model 12 12 4	Relat	tive Humidi	ty		5 to 95% N	Non-condens	ing				Digital Inputs 204			
Surrounding Air Temp (1/- 1 Minutes per Month) Analog (inputs) 512 Surrounding Air Temp -10°C to +60°C Analog Outputs 512 Storage Temp -40°C to +60°C Senard Minutes per Month) 50,000 (words) Retentive 16,384 (bits) Retentive UL / CE USA: http://www.homer-apg.com/Pages/Ted/Support/ProductCert.html General Purpose Registers 50,000 (words) Retentive Display Type 5.7" VGA TFT (450 nit typical) Serial Ports 1 RS-232 or 1 RS-485 on first Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MI1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MI1/2 1 RS-485 on fir	Clos	ck Accuracy	,		+/- 20 ppm r	maximum at	25° C			1/05	upport	Digital Out	puts	2048
Storage Temp -40°C to +60°C Weight 4.375 lbs (<i>without I/O</i>) UL / CE USA: http://www.heage.com/Pages/TechSupport/PoductCert.html Europe: http://www.heage.com/Pages/TechSupport/PoductCert.html General Purpose Registers 50,000 (words) Retentive Display Specifications Connectivity 16,384 (bits) Non-retentive 16,384 (bits) Retentive Display Type 5.7" VGA TFT (450 nit typical) Serial Ports 1 R5-232 at 1 R5-485 on second Modular Jack (MI1/2 Resolution 640x480 USB mini-B USB 2.0 (480MHz) Programming & Data Access Color 16-bit (65,536) USB A USB 2.0 (480MHz) for USB FLASH Drives (2TB) Screen Memory 27 MB CAN Remote I/O, Peer-to-Peer Comms, Cscape User-Programmable Screens 1023 Ethernet 10/100 Mb (Auto-MDX), Modbus TCP C/S, HTP, FI Screen Update Rate User Configurable within the scan time. (perceived as instantaneous in many cases) Removable Memory Mumber of Counters 2 Model DC In DC Relays HS In HS Out mA/V In mA/V Number of Counters 2 Model 12 12 4 2 2 Totalizer		,								1/03	αρροιτ	0 1		512
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Weight 4.375 lbs (without I/O) General Purpose Registers 16,384 (bits) Retentive UL / CE USA: http://www.heaga.com/Pages/TechSupport/ProductCertIfication.aspx General Purpose Registers 16,384 (bits) Retentive Display Type 5.7" VGA TFT (450 nit typical) Serial Ports 185-232 cl 185-485 on second Modular Jack (MI1/2) Resolution 640x480 USB mini-B USB 2.0 (480MHz) Programming & Data Access Color 16-bit (65,536) USB A USB 2.0 (480MHz) for USB FLASH Drives (2TB) Screen Memory 27 MB CAN Remote I/O, Peer-to-Peer Comms, Scsape User-Programmable Screens 1023 Ethernet SMTP, Cscape, Ethernet IP Backlight LED - 30,000 hour life Remote I/O SmartBaick, SmartMod Screen Update Rate (perceived as instantaneous in many cases) Memory Application Updates, Datalogging, more Model DC In DC Relays HS Nn MS Nn MA/V MA/V Memory Application Updates, Datalogging, more 10/100 Mb (Auto-MDX), Modus TCP C/S, HTTP, F SMTP, Cscape, Ethernet IP SMTP, Cscape, Ethernet IP Backlight <td>Sto</td> <td>orage Temp</td> <td></td> <td></td> <td>-40°</td> <td>C to +60°C</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>50.000</td> <td>(words) R</td> <td>etentive</td>	Sto	orage Temp			-40°	C to +60°C						50.000	(words) R	etentive
UL / CE USA: http://www.heage.com/Pages/Ted/support/ProductCert.html 16,384 (bits) Non-retentive Lisplay Specifications Connectivity Display Type S.7" VGA TFT (450 nit typical) Serial Ports 18-232 & 1 RS-485 on first Modular Jack (MJ1/2 1 RS-232 & 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on second Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MJ1/2 1 RS-232 or 1 RS-485 on first Modular Jack (MJ1/2 NGT, MJ1/2 NGT, MJ		Weight				· /			Ģ	ieneral Purr	oose Registers			
Europe: http://www.homer-apg.com/en/support/certification.aspx Connectivity Display Type 5.7" VGA TFT (450 nit typical) Serial Ports 1 R5-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-232 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-23 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-23 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-23 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-23 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-23 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-23 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-23 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-23 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-23 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-23 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-23 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-23 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-23 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-23 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-23 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-23 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-23 or 1 R5-485 on second Modular Jack (MJ1/2 1 R5-25 or 1 R5-485	UL / CE									ienerani ar	in the second seco	, , ,		
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Display Type S. 7' VGA IFT (450 nt typical) 1 RS-232 or 1 RS-485 on second Modular Jack (MJ: Resolution 640x480 USB mini-B USB 2.0 (480MHz) Programming & Data Access Color 16-bit (65,536) USB A USB 2.0 (480MHz) for USB FLASH Drives (ZTB) Screen Memory 27 MB CAN Remote 1/0, Peer-to-Peer Comms, Cscape User-Programmable Screens 1023 Ethernet 10/100 Mb (Auto-MDX), Modbus TCP C/S, HTTP, FISMTP, Cscape, Ethernet IP Backlight LED – 30,000 hour life Remote 1/0 SmartRail, SmartStix, SmartBlock, SmartMod Screen Update Rate User Configurable within the scan time. (perceived as instantaneous in many cases) Memory Mplication Updates, Datalogging, more Model DC In DC Out Relays HS In HS Out mA/V in MA/V in MV RTD/Tc mA/V Out Maximum Frequency 500 kHz each Model3 12 12 4 2 2 Maximum Frequency 500 kHz each Model6 12 12 4 2 2 C Maximum Frequency 500 kHz each Model6 12 12 4 2 2 Totalizer Quadrature				Display Spec	ifications									
$ \begin{array}{ c c c c } \hline Color & 16-bit (65,536) & USB A & USB 2.0 (480MHz) for USB FLASH Drives (2TB) \\ \hline Screen Memory & 27 MB & CAN & Remote I/O, Peer-to-Peer Comms, Cscape \\ \hline User-Programmable Screens & 1023 & Ethernet & 10/100 Mb (Auto-MDX), Modbus TCP C/S, HTTP, FT SMTP, Cscape, Ethernet IP \\ \hline Backlight & LED - 30,000 hour life & Remote I/O & SmartRail, SmartStix, SmartBlock, SmartMod \\ \hline Screen Update Rate & User Configurable within the scan time. (perceived as instantaneous in many cases) & Memory & Application Updates, Datalogging, more \\ \hline & & & & & & & & & & & & & & & & & &$	Di	splay Type			5.7″ VGA TI	T (450 nit ty	pical)		Ser	ial Ports				
Screen Memory 27 MB CAN Remote I/O, Peer-to-Peer Comms, Cscape User-Programmable Screens 1023 Ethernet 10/100 Mb (Auto-MDX), Modbus TCP C/S, HTTP, FT SMTP, Cscape, Ethernet IP Backlight LED – 30,000 hour life Remote I/O SmartRail, SmartStix, SmartBlock, SmartMod Screen Update Rate User Configurable within the scan time. (perceived as instantaneous in many cases) Removable MicroSD, support for 32GB max. Application Updates, Datalogging, more Model DC In DC Out Relays HS In HS Out mA/V mA/V mA/V RTD/Tc MA/V Maximum Frequency 500 kHz each Model 2 12 6 4 2 2 Maximum Frequency 500 kHz each Model 3 12 12 4 2 2 Accumulator Size 32-bits each Model 4 24 16 4 2 2 Totalizer Quadrature Model 5 12 12 4 2 2 Z Totalizer Quadrature Model 6 12 12 4 2 2 Pulse Measurement Frequency	R	esolution			6	40x480			USE	3 mini-B	USB 2.0 (480N	1Hz) Program	ming & Da	ta Access
User-Programmable Screens 1023 Ethernet 10/100 Mb (Auto-MDX), Modbus TCP C/S, HTTP, F Backlight LED – 30,000 hour life Remote I/O SmartRail, SmartStix, SmartBlock, SmartMod Screen Update Rate User Configurable within the scan time. (perceived as instantaneous in many cases) Removable MicroSD, support for 32GB max. Application Updates, Datalogging, more Model DC In DC Out Relays HS In HS Out mA/V In RD/Tc mA/V RTD/Tc MA/V Out Maximum Frequency 500 kHz each Model 2 12 6 4 4 Maximum Frequency 500 kHz each Model 3 12 12 4 2 2 Models Supported Model 5 12 12 4 2 2 Z Totalizer Quadrature Model 6 12 12 4 2 6* 4* Maximum Frequency Maximum Frequency Maximum Frequency		Color			16-b	it (65,536)			ι	JSB A	USB 2.0 (480N	ИHz) for USB	FLASH Driv	ves (2TB)
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Backlight LED - 30,000 hour life Remote I/O SmartRail, SmartBlock, SmartBlock, SmartMod Screen Update Rate User Configurable within the scan time. (perceived as instantaneous in many cases) Removable Memory MicroSD, support for 32GB max. Application Updates, Datalogging, more Memory Memory Memory Application Updates, Datalogging, more Model DC In Out DC Relays HS In Out HS Out mA/V RD/C mA/V RD/C MA/V Out Maximum Frequency 500 kHz each Model 2 12 6 4 2 2 Maximum Frequency 500 kHz each Model 3 12 12 4 2 2 Maximum Frequency 500 kHz each Model 4 24 16 4 2 2 C Models Supported Model 5 12 12 4 2 2 Z Totalizer Quadrature Model 6 12 12 4 2 6* 4* Frequency Frequency Model 6 12 12 4 2 6* 4* Frequency Maximum Frequenct Maximum Frequenct </td <td>User-Prog</td> <td>rammableS</td> <td>creens</td> <td></td> <td></td> <td>1023</td> <td></td> <td></td> <td>Et</td> <td>hernet</td> <td colspan="3"></td> <td>S, HTTP, FTP,</td>	User-Prog	rammableS	creens			1023			Et	hernet				S, HTTP, FTP,
Screen Update Rate (perceived as instantaneous in many cases) Memory Application Updates, Datalogging, more Memory Application Updates, Datalogging, more Image: Constraint of the constraint	l	Backlight									nartMod			
Memory Application Updates, Datalogging, more Memory Application Updates, Datalogging, more Model Image: Second Se	Scroo	n Lindata Pr	User Configurable within the scan time Remova					novable	MicroS	D, support fo	or 32GB ma	ax.		
ModelDC In OutDC OutRelaysHS InHS OutmA/V mA/V InmA/V RTD/TcmA/V OutmA/V OutmA/V High-Speed CountersModel 212644Maximum Frequency500 kHz eachModel 31212422Accumulator Size32-bits eachModel 42416422Modes SupportedModel 51212426*4*Model 61212426*4*There are 4 high-speed inputs of the total DC Inputs. There are 2 high-speed outputs of the total DCPulse MeasurementFrequency Maximum Frequency	301001	n opuate na	ndate Rate					emory	Application	n Updates, Da	atalogging,	more		
ModelDC In OutDC OutRelaysHS InHS OutmA/V mA/V InmA/V RTD/TcmA/V OutmA/V OutmA/V High-Speed CountersModel 212644Maximum Frequency500 kHz eachModel 31212422Accumulator Size32-bits eachModel 42416422Modes SupportedModel 51212426*4*Model 61212426*4*There are 4 high-speed inputs of the total DC Inputs. There are 2 high-speed outputs of the total DCPulse MeasurementFrequency Maximum Frequency														
ModelDC In OutDC OutRelaysHS InHS OutmA/V mA/VmA/V RTD/TcmA/V OutmA/V High-Speed CountersModel 212644Maximum Frequency500 kHz eachModel 31212422Accumulator Size32-bits eachModel 42416422Models SupportedModel 51212422TotalizerQuadratureModel 61212426*4*FrequencyThere are 4 high-speed inputs of the total DC Inputs. There are 2 high-speed outputs of the total DCPulse MeasurementFrequency Maximum Frequency														
ModelDC inOutRelaysHS inHS OutmA/V inRTD/TcOutNumber of Counters2Model 212644Maximum Frequency500 kHz eachModel 31212422Accumulator Size32-bits eachModel 42416422Modes SupportedModel 51212422TotalizerQuadratureModel 61212426*4*FrequencyThere are 4 high-speed inputs of the total DC Inputs. There are 2 high-speed outputs of the total DCPulse MeasurementFrequencyMax<			DC							mA/V	н	ligh-Speed Co	ounters	
Model 2 12 6 4 4 Maximum Frequency 500 kHz each Model 3 12 12 4 2 2 Accumulator Size 32-bits each Model 4 24 16 4 2 2 Models Supported Model 5 12 12 4 2 2 Z Totalizer Quadrature Model 6 12 12 4 2 6* 4* Frequency Frequency There are 4 high-speed inputs of the total DC Inputs. There are 2 high-speed outputs of the total DC Pulse Measurement Frequency Maximum product	Model	DC In	-	Relays	HS In	HS Out	mA/V In					<u> </u>		2
Model 4 24 16 4 2 2 Model Supported Model 5 12 12 4 2 2 2 Totalizer Quadrature Model 6 12 12 4 2 6* 4* Frequency There are 4 high-speed inputs of the total DC Inputs. There are 2 high-speed outputs of the total DC Pulse Measurement Frequency	Model 2	12		6	4		4				Maximum Frequ	uency	500 kl	Hz each
Model 5 12 12 4 2 2 2 Totalizer Quadrature Model 6 12 12 4 2 6* 4*	Model 3	12	12		4	2	2				Accumulator	Size	32-bi	ts each
Model 5 12 12 4 2 2 2 Totalizer Quadrature Model 6 12 12 4 2 6* 4* There are 4 high-speed inputs of the total DC Inputs. There are 2 high-speed outputs of the total DC Pulse Measurement Frequency	Model 4	24	16		4	2	2					Modes Supp	orted	
There are 4 high-speed inputs of the total DC Inputs. There are 2 high-speed outputs of the total DC Pulse Measurement	Model 5	12	12		4	2				2	Totalizer			Irature
There are 4 high-speed inputs of the total DC inputs. There are 2 high-speed outputs of the total DC Puise Measurement	Model 6	12	12		4	2		6	*	4*				
		There are 4 high-speed inputs of the total DC Inputs. There are 2 high-speed outputs of the total DC outputs. Model 2, 3 & 4 feature 12-bit Analog I/O. Model 5 features 14/16-bit Analog I/O. High-speed								Philse Measurement				
Outputs: Nodel 2, 5 & 4 feature 12-bit Analog 1/0. Model 3 features 14 forbit Analog 1/0. High-speed Outputs can be used for PWM and Pulse Train Outputs, currently limited to <65kHz Model 6 Features a 14/17 bit Analog I/O	Outputs can be used for PWM and Pulse Train Outputs, currently limited to <65kHz Mode								2 Position Controlled Outputs					
*Up To six mA/V In, mA/V RTD/Tc, and mA/V Out			*Up	To six mA/V	In, mA/V RTI	D/Tc, and mA	A/V Out							

2. Dimensions & Panel Cutout



0010CS003-R1



3. Installation Procedures

1. Carefully locate an appropriate place to mount the EXL6. Be sure to leave enough room at the top of the unit for insertion and removal of the microSD card. Also leave enough room at the bottom for the insertion and removal of USB FLASH drives and wiring

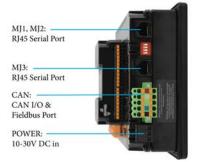
2. Carefully cut the host panel per the diagram above, creating a 175mm x 216 ± 0.1 mm opening into which the EXL6 may be installed. If the opening is too large, water may leak into the enclosure, potentially damaging the OCS. If the opening is too small, the OCS may not fit through the hole without damage.

3. Remove all Removable Terminals from the OCS. Insert the OCS through the panel cutout (from the front). The gasket needs to be between the host panel and the OCS.

- 4. Install and tighten the mounting clips (provided in the box) until the gasket forms a tight seal (max torque 7-10 lb-in. [0.8 1.13 Nm])
- 5. Reinstall the I/O Removable Terminal Blocks. Connect communications cables to the serial port, USB ports, Ethernet port, and CAN port as required.

4. Ports & Connectors



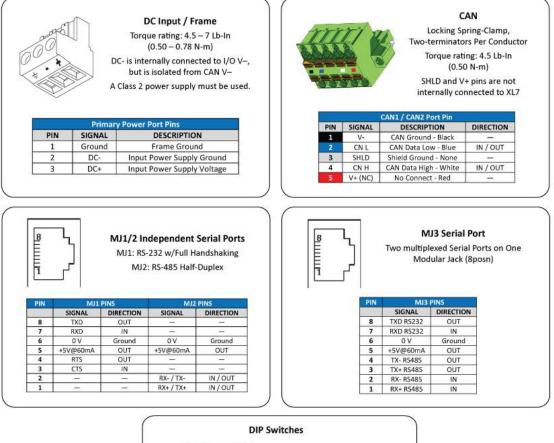


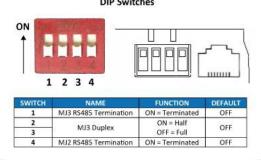












5. Built-in I/O (Model 2, 3, 4, 5 & 6)

All EXL6 models (except the HE-EXL1E0) feature built-in I/O. The I/O is mapped into OCS Register space, in three separate areas – Digital/Analog I/O, High-Speed Counter I/O, and High-speed Output I/O. Digital/Analog I/O location is fixed starting at 1, but the High- speed Counter and High-speed Output references may be mapped to any open register location. For more details on using the High-Speed Counter and High-Speed Outputs, see the EXL6 OCS User's Manual (MAN0974-01).

Fixed	Digital/Analog		EXL10	e Model			Default	High-Speed	EXL10e		Default	High-Speed Output	EXL10e	
Address	I/O Function	2	3	4	5	6	Address*	Counter Function	Models 2-6		Address*	Function	Models 2-6	
	Digital Inputs	1-12	1-12	1-24	1-12	1-12	%11601	Status Bits	1-8		%11617	Status Bits	1-8	
%11	Reserved	13-32	13-31	25-31	13-31	13-31	%Q1601	Command Bits	1-32		%Q1**	Command Bits	1-2	
	ESCP Alarm	n/a	32	32	32	32		Accumulator 1 &	4.0		n/a	n/a	n/a	
%Q1	Digital Outputs	1-6	1-12	1-16	1-12	1-12	%AI0401	2	1-8			PWM or Pulse-Train		
	Reserved	7-24	13-24	17-24	13-24	13-24	%AQ0401	Preload & Match	4.42		%AQ421	Parameters	1-20	
%AI1	Analog Inputs	1-4	1-2	1-2	1-2	1-4 ; 33-38	%AQ0401	%AQ0401 Values 1-12			*Starting Address locations for %I & %AQ may be			
	Reserved	5-12	3-12	3-12	3-12	n/a	*Starting Address locations for %I, %Q, %AI & remapped by user							
%AQ1	Reserved	n/a	1-8	1-8	1-8	1-12	%AQ may be re-mapped by user **Q1-Q2 are part of the Fixed I/O Map.				p. In High-			
2000	Analog Outputs	n/a	n/a	n/a	9-10	n/a							to initiate a	
	Reserved areas main with other XL			atibility								Stepper/PTO Move		



				Specifications			
	Digital D	OC Inputs		Digit	al Relay Outputs		
Inputs per Mo	odule		ing 4 configurable SC inputs	Outputs per Module	6 Re	elay	
Commons per Module			1	Commons per Module	6	6	
Input Voltage Range		12 V	DC / 24 VDC	Max Output Current per Relay	3A @ 250 VA	AC, resistive	
Absolute Max. Voltage		35	VDC Max.	Max. Total Output Current	5A continuous		
Input Impedance			10 kΩ	Max. Output Voltage	275VAC,	30 VDC	
Jpper Threshold 0.8 mA -1.6		Negative Logic -1.6 mA -2.1 mA	Max Switched Power	1250VA0	C, 150W		
Max Upper Threshold		·	8 VDC	Contact Isolation to Ground	1000VAC		
Min Lower Threshold			3 VDC	Max. Voltage Drop at Related Current	0.5V		
OFF to ON Response			1 ms	Expected life (see below derating chart for detail)	No Load: 5,000,000 Rated Load: 100,000		
ON to OFF Response			1 ms	Max. Switching Rate	300 CPM 3 20CPM at		
		10 kHz Tot	alizer/Pulse, Edges	Туре	Mechanica	al Contact	
HSC Max. Switching Rate		5 kHz Frequency/Pulse, Width 2.5 kHz Quadrature		Response Time	One update per ladder scan plus 10ms		
			A	nalog Inputs, Medium Resolution			
Number of channels		4		Input Ranges	0-10 ' 0-20 4-20	mA	
Safe input voltage range		-0	.5V to 12V	Input impedance (clamped @ -0.5VDC to 12 VDC	Current Mode: 100 Ω	Voltage Mode: 500 k Ω	
Nominal Resolution			10 Bits	%AI full Scale	32,0	000	
Max. Over Current			35 mA	Conversion Speed	Once per La	adder Scan	
Max. Error at 25°C (excluding zero) Adjusting filtering may tighten		4-20 m 0-20 m 0-10 VI	A 1.00%	Filtering	160 Hz hash 1-128 scan digital ru		

.12

(Black)

C6

R6

C5

R5

C4

R4

C3

R3

C2

R2

C1

R1

H4

H3

H₂

Name

Relay 6 COM

Relay 6 NO

Relay 5 COM

Relay 5 NO

Relay 4 COM

Relay 4 NO

Relay 3 COM

Relay 3 NO

Relay 2 COM

Relay 2 NO

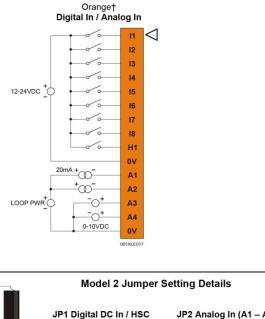
Relay 1 COM

Relay 1 NO

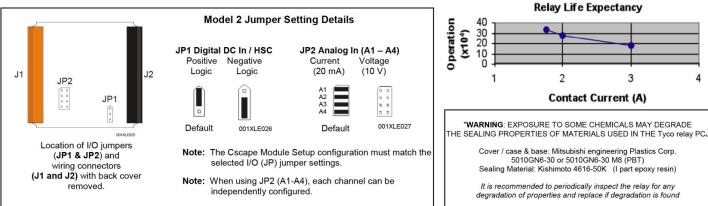
HSC4 / IN12

HSC3 / IN11

HSC2 / IN10







Black Relay Out / Digital In

LOAD

LOAD

LOAD

LOAD

C6

R6

C5

R5

C4

R4

C3

R3

C2

R2

C1

R1

H4

H3

Н2 <

001XLE015

230VAC OR 25VDC

230VAC OR 25VDC

230VAC

OR ON 25VDC +

230VAC OR 25VDC

230VAC

OR 25VDC

230VAC OR 25VDC

12-24VDC

+YL

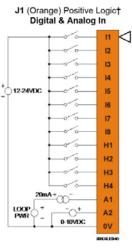
+LL



Model 3 & 4 - I/O

			Specifications			
Digital DC Inputs	Model 3	Model 4	Digital DC Outputs	Model 3	Model 4	
Inputs per Module	12 including 4 24 including 4 Iodule configurable HSC inputs configurable HSC inputs		Outputs per Module	12 including 2 configurable PWM outputs	16 including 2 configurable PWM outputs	
Commons per Module	1		Commons per Module	1		
Input Voltage Range	12 VDC / 24 VDC		Output Type	Sourcing / 10 K Pull-Down		
Absolute Max. Voltage	35 VDC Max.		Absolute Max. Voltage	28 VDC Max.		
Input Impedance	10 kΩ		Output Protection	Short Circuit		
Input Current	Positive Logic Negative Logic		Max. Output Current per point	0.	5 A	
Upper Threshold	0.8 mA -1.6 mA		Max. Total Current	4 A Continuous		
Lower Threshold	0.3 mA	-2.1 mA	Max. Output Supply Voltage	30 VDC		
Max Upper Threshold	8 VDC		Minimum Output Supply Voltage	10 VDC		
Min Lower Threshold	3 VDC		Max. Voltage Drop at Rated Current	0.25 VDC		
OFF to ON Response	1 ms		Max. Inrush Current	650 mA per channel		
ON to OFF Response	1 m	IS	Min. Load	None		
HSC Max. Switching Rate	500KHz	each	OFF to ON Response	1	ms	
ON to OFF Response	1 m	IS	Output Characteristics	Current Sour	cing (Pos logic)	

J1 (Orange)	Model 3 & 4 Signal Name
11	IN1
12	IN2
13	IN3
14	IN4
15	IN5
16	IN6
17	IN7
18	IN8
H1	HSC1 / IN9
H2	HSC2 / IN10
H3	HSC3 / IN11
H4	HSC4 / IN12
A1	Analog IN1
A2	Analog IN2
0V	Common



J2 Black Positive Logic **Digital Out**

10 - 30VDC

LOAD

LOAD

LOAD

- toat

LOAD

LOAD

LOAD

LOAD

- +

- LOAD +

LOAD

- tOAD +

LOAD

J4 Orange Positive Logic Digital Out

10-30VDC

LOAD

- 1040

- +

0٧

Q11

Q10

Q9

Q8

Q6

05

Q4

Q2

001XLE024

J2

0ν

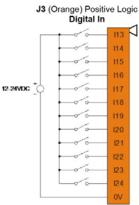
v+

J4

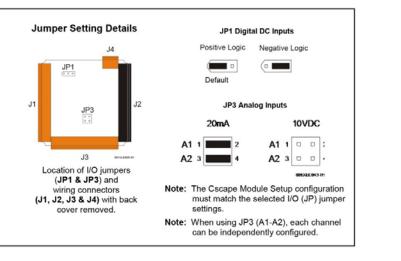
Q16

Q14

J3	Model 4 on
(Orange)	Signal Nam
113	IN13
114	IN14
115	IN15
116	IN16
117	IN17
118	IN18
I19	IN19
120	IN20
121	IN21
122	IN22
123	IN23
124	IN24
0V	Common



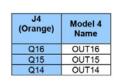
001XLE047



Note: Model 3 uses J1 & and J2 only.

Model 4 uses J1, J2, J3 & J4.

J2 (Black)	(Black) Name Name							
0V	Com	mon						
V+	V-	۰× .						
NC	No Connect OUT13							
Q12 OUT12								
Q11	OUT11							
Q10	OUT10							
Q9	OUT9							
Q8	OUT8							
Q7	OUT7							
Q6	OUT6							
Q5	OU	JT5						
Q4	OUT4							
Q3	OUT3							
Q2	OUT2 /	OUT2 / PWM2						
Q1	OUT1 /	PWM1						
*V+ Sup	oly for Sourcin	ng Outputs						

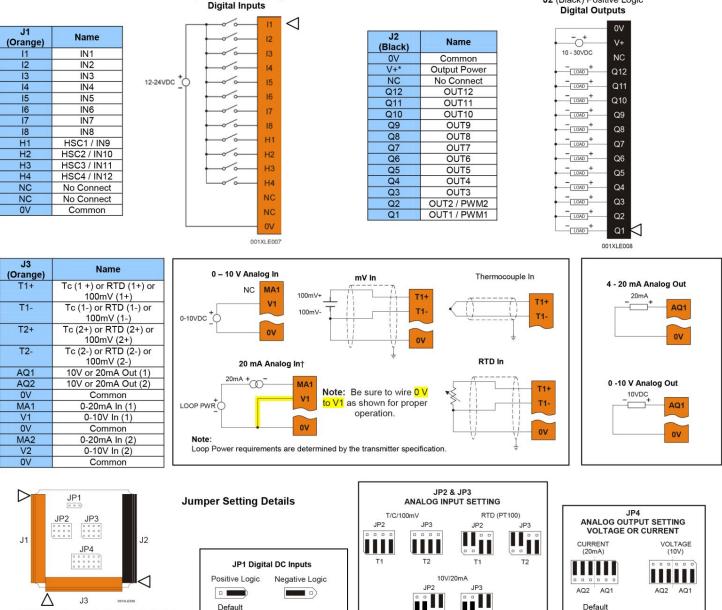




Di	gital DC Inputs			Digital DC Outputs					
Inputs per Module	-	onfigurable HSC		Outputs per Modu	ule	12	including 2 configurable PWM outputs		
Commons per Module		1		Commons per Moo	dule		1		
Input Voltage Range		/ 24 VDC		Output Type			Sourcing / 10 K Pull-Down		
Absolute Max. Voltage		C Max.		Absolute Max. Volt			28 VDC Max.		
Input Impedance		kΩ		Output Protectio			Short Circuit		
Input Current	Positive Logic	Negative Logic	Ma	ax. Output Current p	er point		0.5 A		
Upper Threshold	0.8 mA	0.8 mA -1.6 mA		Max. Total Current			4 A Continuous		
Lower Threshold	0.3 mA -2.1 mA		Ν	Max. Output Supply Voltage			30 VDC		
Max Upper Threshold	8 VDC		Min	imum Output Supply	/ Voltage		10 VDC		
Min Lower Threshold	3 VDC		Max.	Voltage Drop at Rat			0.25 VDC		
OFF to ON Response	1 ms			Max. Inrush Current			650 mA per channel		
ON to OFF Response	1 ms			Min. Load			None		
HSC Max. Switching	Max. Switching 10 kHz Totalizer/Pulse, Edges 5 kHz Frequency/Pulse, Width			OFF to ON Response ON to OFF Response			<u>1 ms</u> 1 ms		
Rate	Rate 2.5 kHz Quadrature			Output Characteristics			Current Sourcing (Positive Logic)		
	2.0 14 12 3		og Inpu	its, High Resolution			Content Couroing (Fositive Edgio)		
Number of Channels		2		Thermocouple			Temperature Range		
Input Ranges (Selectable)	PT and J, K, N, T, E,	0 - 10 VDC, 0 – 20 mA, 4 – 20 mA, 100 PT100 RTD, and J, K, N, T, E, R, S, B Thermocoup		E 1652°F to -328 T 752.0°F to -400 J 1382.0°F to -34			D°F (1600°C to 0°C) 8°F (900°C to -200°C) 90.0°F (400°C to -240°C) 346.0°F (750°C to -210°C) 400°F (1370°C to -240°C)		
Safe input voltage range	20 mA: RTD / T	-0.5 V to +15 V -0.5 V to +6 V VC: ±24 VDC		Thermocouple Common Mode Range			±10V		
Nominal Resolution		A, 100mV: 14 Bits mocouple: 16 Bits		Converter Type			Delta Sigma		
Input Impedance (Clamped @ -0.5 VDC to 12 VDC)	<u>Cur</u> 100 Ω, 35m <u>Vol</u> t	<u>Current Mode:</u> 100 Ω, 35mA Max. Continuous Voltage Mode:			or at 25°C ing zero)		*4-20 mA ±0.10%* *0-20 mA ±0.10%* *0-10 VDC ±0.10%* RTD (PT100) ±1.0 °C 0-100 mV ±0.05%		
		A Max. Continuous		Max Thermo (After Warm Up T	couple Error	our)	±0.2% (±0.3% below -100°C)		
%AI full scale) mV: 32,000 counts scale. C: 20 counts / °C	s full	Conversion Spee Conv	ed, Both Chani verted	nels	10V, 20mA, 100mV: 30 Times/Second RTD, Thermocouple: 7.5 Times/Second		
Max. Over-Current		35 mA		Conversion Tir	ne per Chann	el	10V, 20mA, 100mV: 16.7mS RTD, Thermocouple: 66.7mS		
Open Thermocouple Detect Current		50 nA		RTD Excita	tion Current		250 μA		

J2 (Black) Positive Logic





MA1/V1

Default

MA2/V2

J1 (Orange) Positive Logic

Location of I/O jumpers (JP1-JP4) and wiring connectors (J1-J4) with back cover removed.



5.4 Model 6 – I/O

5.4.1 Hardware Specification

		Digital DC Outputs	
12			12
1			1
0 VDC - 24 VDC)	Output Type	Sourcing / 10 K Pull-Down
			30 VDC Max.
			Short Circuit & Overvoltage
Positive Logic	Negative Logic	Max. Output Current per point	0.5 A
0.3 mA	-2.1 mA	Max. Total Current per driver (Q1-4, Q5-8, Q9-12).	2A Continuous
8 VDC		Max. Output Supply Voltage	30 VDC
3 VDC		Minimum Output Supply Voltage	10 VDC
1 ms		Max. Voltage Drop at Rated Current	0.25 VDC
1 ms		Min. Load	None
None.		I/O Indication	None
Positive and Ne		Galvanic Isolation	None
None.		OFF to ON Response	150nS
4 - DIN 8-12			150nS
XLE/T/6/10 / XL		PWM Out*	XLE/T/6/10 / XL4/7 65KHz / 500KHz
		Output Characteristics	Current Sourcing (Pos logic)
6		Absolute max Input Voltage	-0.5 -12V dc. (+/-30Vdc)
0-60mV, 0-10V dc. T/C - J, K, N, T, E, R, S, B		Input Impedance (Clamped @ -0.5 to 10.23VDC).	T/C / RTD / mV > 2 MΩ mA: 15 Ω + 1.5 V V: 1.1 MΩ
14 - 17 Bits (va	riable depending	Galvanic Isolation	None
		1	Accuracy
		00°C / -184 to 1832°F	± 0.2% FS ± 1°C
			± 0.2% FS ± 1°C
			± 0.2% FS ± 1°C
			± 0.2% FS ± 1°C
			± 0.2% FS ± 1°C
			± 0.2% FS ± 3°C
			± 0.2% FS ± 3°C
			± 0.15% FS
		n approx 150mS	± 0.107010
			l
1		Minimum Current load	500Ω
4 0 – 10Vdc. 0 – 20mA, 4-20mA dc		Galvanic Isolation	None
1 U - ZUIIIA, 4-ZUI			
12 Bits		Conversion Speed	Min all channels once per
	ladder scan	Conversion Speed	scan.
	1 0 VDC - 24 VDC 35 VDC Max. 10 kΩ Positive Logic 0.8 mA 0.3 mA 8 VDC 3 VDC 1 ms None. Positive and Ne Common pin lev None. 4 - DIN 8-12 XLE/T/6/10 / XI 10KHz / 500KH 3.5mm Pluggab connector 6 0-20mA, 4-20 n 0-60mV, 0-10V T/C - J, K, N, T, RTD - PT100, P 14 - 17 Bits (val on inp Input Type TC J TC K TC T TC E TC N TC R, S TC B PT100/1000 0-20mA 0-60mV 0-10V Minimum all cha	1 0 VDC - 24 VDC 35 VDC Max. 10 kΩ Positive Logic 0.8 mA -1.6 mA 0.3 mA -2.1 mA 8 VDC 3 VDC 1 ms None. Positive and Negative based on Common pin level. None. 4 - DIN 8-12 XLE/T/6/10 / XL4/7 10KHz / 500KHz 3.5mm Pluggable cage clamp connector 6 0-20mA, 4-20 mA dc. 0-60mV, 0-10V dc. T/C - J, K, N, T, E, R, S, B RTD - PT100, PT1000 14 - 17 Bits (variable depending on input type) Input Type Range TC J -120 to 100 TC K -130 to 133 TC T -130 to 133 TC R, S 20 to 1768 TC B 100 to 182 PT100/1000 -200 to 850 0-20mA 0-20mA 0-20mA 0-20mA 0-20mA 0-20mA 0-20mA 0-20mA 0-20mA 0-20mA 0-20mA 0-20mA <	1 Commons per Module 0 VDC - 24 VDC Output Type 35 VDC Max. Absolute Max. Voltage 10 kΩ Output Protection Positive Logic 0.8 mA Negative Logic -1.6 mA Max. Output Current per point 0.3 mA -2.1 mA Max. Output Supply Voltage 3 VDC Max. Output Supply Voltage 3 VDC Max. Output Supply Voltage 1 ms Minimum Output Supply Voltage 1 ms Min. Load None. I/O Indication Positive and Negative based on Common pin level. OFF to ON Response A - DIN 8-12 ON to OFF Response None. OFF to ON Response 4 - DIN 8-12 ON to OFF Response 3.5mm Pluggable cage clamp connector Output Characteristics 6 Absolute max Input Voltage 0-20mA, 4-20 mA dc. Input Impedance (Clamped @ -0.5 to 10.23VDC). 14 - 17 Bits (variable depending on input type) Galvanic Isolation Input Type Range TC K -130 to 1300°C / -184 to 1832°F TC K -130 to 1300°C / -202 to 2501.6°F TC R -130 to 1780°C / -202 to 2501.6°F <

*see I/O information below for detail regarding HSC and PWM



5.4.2 Connection Details

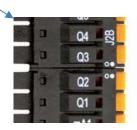






For ease of operability, the high density terminals are divided into more manageable pairs of connectors (J1A + J1B, J2A + J2B, J3A + J3B)

To ensure proper installation, connector symbols must match as seen below:

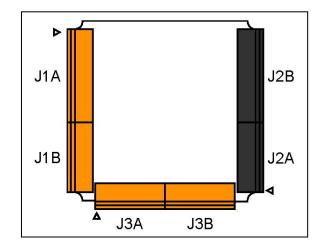


						-			-		-					-	-
		_	-		-	1	-				-	-	-	-	-	-	-
ä	×.	8	2	2		2		1		3	2		2	8	2	2	2

11 V IN1 12 V IN2 13 V IN3 14 V IN4 15 V IN5 14 V IN6 17 V IN7 18 V IN8 H1 HSC1 / V IN9 H2 HSC2 / V IN10 H3 HSC3 / V IN11 H4 HSC4 / V IN12 0V Common A1A Univ. Al 1 pin 1 A1B Univ. Al 1 pin 3 N/C No Connection A2A Univ. Al 2 pin 1 A2B Univ. Al 2 pin 2		J1 range/ Green)	Signal Name	
13 V IN3 15 V IN4 16 14 V IN5 16 V IN5 16 15 V IN5 17 16 V IN6 17 V IN7 18 V IN8 H1 HSC1 / V IN9 H2 HSC2 / V IN10 H3 HSC3 / V IN11 H4 HSC4 / V IN12 0V Common A1A Univ. Al 1 pin 1 A1B Univ. Al 1 pin 3 N/C N/C No Connection A2A A2B Univ. Al 2 pin 1 A2	\geq	l1	V IN1	0 0 13
J1A I5 V IN4 I5 V IN5 I5 V IN5 I7 V IN7 I8 V IN8 H1 H2 H2 H2 H2 H2 H2 H2 H2 H2 H2	-	12	V IN2	8 · · · · · · · · · · · · · · · · · · ·
J1A I5 V IN5 I5 V IN5 I7 V IN7 I8 V IN6 I7 V IN7 I8 V IN8 H1 H2 H2 H2 H2 H2 H2 H2 H2 H2 H2		13	V IN3	³ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
J1A 16 V IN6 17 V IN7 18 V IN8 H1 HSC1 / V IN9 H2 HSC2 / V IN10 H3 HSC3 / V IN11 H4 HSC4 / V IN12 0V Common A1A Univ. AI 1 pin 1 A1B Univ. AI 1 pin 2 A1C Univ. AI 1 pin 3 N/C No Connection A2A Univ. AI 2 pin 1 A2B Univ. AI 2 pin 2		14	V IN4	⁶¹
ID V INO 17 V INO 18 V INA H1 HSC1 / V IN9 H2 HSC2 / V IN10 H3 HSC3 / V IN11 H4 HSC3 / V IN11 H4 HSC4 / V IN12 OV Common A1A Univ. AI 1 pin 1 A1B Univ. AI 1 pin 2 A1C Univ. AI 1 pin 3 N/C No Connection A2B Univ. AI 2 pin 2		15	V IN5	
I8 V IN8 H1 HSC1 / V IN9 H2 HSC2 / V IN10 H3 HSC3 / V IN11 H4 HSC3 / V IN11 H4 HSC4 / V IN12 OV Common A1A Univ. AI 1 pin 1 A1B Univ. AI 1 pin 2 A1C Univ. AI 1 pin 3 N/C No Connection A2B Univ. AI 2 pin 2	J1A	16	V IN6	
H1 HSC1 / V IN9 H2 HSC2 / V IN10 H3 HSC3 / V IN11 H4 HSC4 / V IN12 0V Common A1A Univ. Al 1 pin 1 A1B Univ. Al 1 pin 2 A1C Univ. Al 1 pin 3 N/C No Connection A2A Univ. Al 2 pin 1 A2B Univ. Al 2 pin 2			V IN7	-о о H1
H1 HSC1 / V IN9 H2 HSC2 / V IN10 H3 HSC3 / V IN11 H4 HSC4 / V IN12 0V Common A1A Univ. Al 1 pin 1 A1B Univ. Al 1 pin 2 A1C Univ. Al 1 pin 3 N/C No Connection A2B Univ. Al 2 pin 2		-	V IN8	
H2 HSC2 / V IN10 H3 HSC3 / V IN11 H4 HSC3 / V IN11 H4 HSC4 / V IN12 0V Common A1A Univ. Al 1 pin 1 A1B Univ. Al 1 pin 2 A1C Univ. Al 1 pin 3 N/C No Connection A2B Univ. Al 2 pin 1				
H3 HSC3 / V IN11 H4 HSC4 / V IN12 0V Common A1A Univ. Al 1 pin 1 A1B Univ. Al 1 pin 1 A1B Univ. Al 1 pin 1 A1C Univ. Al 1 pin 3 N/C No Connection A2A Univ. Al 2 pin 1 A2B Univ. Al 2 pin 2				
H4 HSC4 / V IN12 0V Common A1A Univ. Al 1 pin 1 A1B Univ. Al 1 pin 2 A1C Univ. Al 1 pin 3 N/C No Connection A2A Univ. Al 2 pin 1 A2B Univ. Al 2 pin 2		-	HSC3 / V IN11	
OV Common 200A 200A 41 A1A Univ. Al 1 pin 1 1 <t< th=""><th></th><th></th><th>HSC4 / V IN12</th><th></th></t<>			HSC4 / V IN12	
A1A Univ. Al 1 pin 1 A1 A1B Univ. Al 1 pin 2 A1 J1B A1C Univ. Al 1 pin 3 A1 N/C No Connection No A2 A2B Univ. Al 2 pin 2 A2		-		20mA
J1B A1C Univ. AI 1 pin 3 N/C No Connection A2A Univ. AI 2 pin 1 A2B Univ. AI 2 pin 2				Transmitter * A1B
J1B N/C No Connection A2A Univ. AI 2 pin 1 A2B Univ. AI 2 pin 2				— A1C
A2A Univ. AI 2 pin 1 A2B Univ. AI 2 pin 2	14.5	-		— N/C
A2A Univ. AI 2 pin 1 A2 A2B Univ. AI 2 pin 2 A2	JIB			- A2A
				1/C (+ A2B
				— A2C
		A2C	Univ. AI 2 pin 3	— N/C
N/C No Connection		N/C	No Connection	

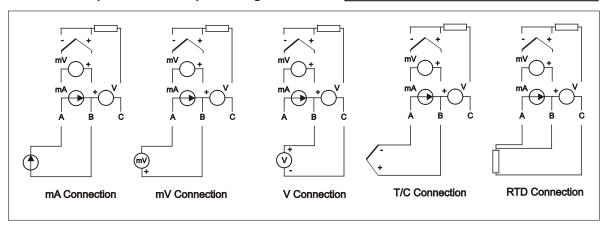
	(Black/ Green)	Signal Name	V3
	V3	V OUT 3*	V2 + LOAD -
	V2	V OUT 2*	V1 * LOAD 0-20mA Out
	V1	V OUT 1*	mA4 + LOAD
	mA4	mA Out 4*	mA3 + LOAD
2A	mA3	mA Out 3*	mA2
	mA2	mA Out 2*	mA1
	mA1	mA Out 1*	Q1 LOAD
	Q1	OUT 1 / PWM1	Q2 LOAD
	Q2	OUT 2 / PWM2	Q3 LOAD
	Q3	OUT 3	Q4 LOAD
	Q4	OUT 4	Q5 [LOAD]-
	Q5	OUT 5	
	Q6	OUT 6	
0.0	Q7	OUT 7	Q7 LOAD
2B	Q8	OUT 8	Q8 LOAD
	Q9	OUT 9	Q9 LOAD
	Q10	OUT 10	Q10 LOAD
	Q11	OUT 11	Q11 LOAD
_	Q12	OUT 12	Q12 LOAD
	V+	V External+	V+
	0V	Common	ov

J3 (Orange/ Green)		Signal Name	— N/C — АЗА
\geq	N/C	No Connection	A3B
٢	A3A	Univ. AI 3 pin 1	A3C
	A3B	Univ. AI 3 pin 2	
	A3C	Univ. AI 3 pin 3	N/C
Univ.	N/C	No Connection	A4A
AI	A4A	Univ. AI 4 pin 1	A4B
	A4B	Univ. AI 4 pin 2	RTD A4C
	A4C	Univ. AI 4 pin 3	
	N/C	No Connection	N/C
	A5A	Univ. AI 5 pin 1	20mA A5A
	A5B	Univ. AI 5 pin 2	Transmitter A5B
	A5C	Univ. AI 5 pin 3	A5C
Univ.	N/C	No Connection	
AI	A6A	Univ. AI 6 pin 1	— N/C
	A6B	Univ. AI 6 pin 2	T/C - A6A
	A6C	Univ. AI 6 pin 3	170 + A6B
	0V	Common	AGC
	V4	V OUT4*	0V





5.4.3 Example Universal Input Wiring Schematic



Configuration

The data registers are as follows:

Digital Inputs	Digital Outputs	Analogue Inputs	Analogue Outputs		
%l1-12	%Q1-12	%AI1-4, %AI33-38	%AQ9-12		

Note * Both mA & V outputs are active for each output channel, however, only the configured output type is calibrated (maximum 4 channels simultaneously).

Note that the first four analogue inputs are mapped to both %Al1-4 and %Al33-36, analogue input channels 5 & 6 are mapped to %Al37 and %Al38 respectively only.

5.4.4 Data values:

The analogue inputs return data types as follows:

Input Mode	Data format	Comment
0-2mA, 4-20mA	0-32000	
0-10V, 0-60mV	0-32000	
T/C, RTD	Temperature in °C or °F to 1 decimal place xxx.y	°C or °F may be selected in the I/O config section. The value is an integer, the user should divide by 10.

5.4.5 Status Register

Register	Description											
%R1	Bit-wise status register enable – R1.1 – R1.9 enable for registers R2 to R9											
%R2	Firmware version											
%R3	Watchdog c	Watchdog count – cleared on power-up.										
%R4	Status bits -					3		2		1		
				Reserved		Normal	nal Config		Ca		libration	
%R5	Scan rate of	Scan rate of the 106 board (average) in units of 100µS.										
%R6	Scan rate of	Scan rate of the 106 board (max) in units of 100µS.										
%R7	Channel Sta	tatus Channel 2				Channel 1	Channel 1					
	8	7	6		5	4	3		2		1	
	Open RTD	Out of	Shorte	d	Open T/C	Open RTD	Ou	t of	Shorte	d	Open T/C	
		Limits	RTD			L		nits	RTD			
%R8	R8Channel StatusChannel 48765		Channel 3	Channel 3								
				5	4	3	3 2			1		
	Open RTD	Out of	Shorted		Open T/C	Open RTD	Ou	t of	Shorted		Open T/C	
		Limits	RTD				Lin	nits	RTD			
%R9	Channel Status Channel 6		Channel 5	Channel 5								
	8	7	6		5	4	3		2		1	
	Open RTD	Out of	Shorte	d	Open T/C	Open RTD	Ou	t of	Shorte	d	Open T/C	
		Limits	RTD				Lin	nits	RTD			
%R10-14	Reserved											

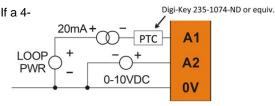
Note: For the purposes of the example, the block is shown starting at %R1, but it can be set to anywhere in the %R memory map.



6. Safety

 WARNING: Battery may explode if mistreated. Do not recharge, disassemble or dispose of in fire. WARNING: EXPLOSION HAZARD – BATTERIES MUST ONLY BE CHANGED IN AN AREA KNOWN TO BE NON-HAZARDOUS Power input and output (I/O) wiring must be in accordance with Class I, Division 2 wiring methods of the National Electric Code, NFPA 70 for installations in the U.S., or as specified in Section 18-1J2 of the Canadian Electrical Code for installations within Canada and in accordance with the authority having jurisdiction. This equipment is suitable for use in Class I, Division 2, Groups A, B, C, and D or Non-hazardous locations only. WARNING: EXPLOSION HAZARD – Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous. 	 WARNING: Only qualified electrical personnel familiar with the construction and operation of this equipment and the hazards involved should install, adjust, operate, or service this equipment. Read and understand this manual and other applicable manuals in their entirety before proceeding. Failure to observe this precaution could result in severe bodily injury or loss of life. WARNING: To avoid the risk of electric shock or burns, always connect the earth ground before making any other connections. WARNING: To reduce the risk of fire, electrical shock, or physical injury it is strongly recommended to fuse all Power Sources connected to the OCS. Be sure to locate fuses as close to the source as possible. WARNING: Replace fuse with the same type and rating to provide protection against risk of fire and shock hazards. WARNING: In the event of repeated failure, do not replace the fuse again as 					
r Non-hazardous locations only. RNING: EXPLOSION HAZARD – Do not disconnect equipment unless	WARNING: Replace fuse with the same type and rating to provide protection against risk of fire and shock hazards.					
WARNING: EXPLOSION HAZARD – Substitution of components may impair suitability for Class 1, Division 2.	a repeated failure indicates a defective condition that will not clear by replacing the fuse.					
Digital outputs shall be supplied from the same source as the Operator Control Station.	the circuit is live unless the area is known to be free of ignitable concentrations of flammable gasses or vapors.					

7. Common Cause of Analog Input Tranzorb Failure A common cause of Analog Input Tranzorb Failure on Analog Inputs Model 2, 3, 4 & 5: If a 4-20mA circuit is initially wired with loop power, but without a load, the Analog input could see 24Vdc. This is higher than the rating of the tranzorb. This can be solved by NOT connecting loop power prior to load connection, or by installing a low-cost PTC in series between the load and Analog input.



NOTE†: Refers to Model 2 - orange (pg.5,) Models 3 & 4 - J1 (pg.6) and Model 5 - 20mA Analog In (pg.7.)

8. Technical Support

For assistance and manual updates, contact Technical Support at the following locations:

North America

(317) 916-4274 Toll Free: 877-665-5666 http://www.heapg.com e-mail: techsppt@heapg.com

Europe (+) 353-21-4321-266 http://www.horner-apg.com e-mail: tech.support@horner-apg.com