EXB30 48V SERIES

Single output

- High efficiency topology, 92% typical at 5V
- Industry standard footprint
- Wide operating temperature, -40˚C to +85˚C (natural convection)
- 80% to 110% output trim
- No minimum load
- Overvoltage and overtemperature protection
- Remote on/off
- Remote sense
- Approvals to EN60950 and UL/cUL1950
- Complies with ETS 300 019-1-3/2-3
- Complies with ETS 300 132-2 input voltage and current requirements
- Complies with ETS 300 386-1

The EXB30 is a new high efficiency single output open frame isolated 30 Watt converter series in an industry standard footprint. The first five models in the series feature a 2:1 input voltage range of 36 to 75VDC and are available in output voltages of 12V, 5V, 3.3V, 2.5V and 2V. The output voltage is trimmable from 80 to 110% except the 12V model which has a wider trim range of 60 to 110%. The sub 5V models have an output current rating of 8A. Typical efficiencies for the models are 92% for the 5V, 90% for the 3.3V and 12V, 88% for the 2.5V and 87% for the 2V version. The EXB30 series offers remote on/off and remote sense compensation to correct for voltage drops at the load. Overcurrent, overvoltage and overtemperature protection features are included as standard.

With full international safety approval including EN60950 and cUL1950, the EXB30 reduces compliance costs and time to market.

The series complies with ETS 300 386-1 EMC requirements, ETS 300 132-2 concerning the power supply interface at the input to telecommunications equipment and ETS 300 019-1-3 concerning environmental conditions. The EXB30 single is primarily targeted at the networking, telecom and wireless markets.

[2 YEAR WARRANTY]

ARTESYN® TECHNOLOGIES

Stresses in excess of the maximum ratings can cause permanent damage to the device. Operation of the device is not implied at these or any other conditions in excess of those given in the specification. Exposure to absolute maximum ratings can adversely affect device reliability.

Absolute Maximum Ratings

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Input voltage - continuous	Vin (cont)	-0.3		80	VDC	Vin(+) - Vin(-)
Input voltage - peak/surge or standard/level	Vin (peak)	-0.3		100	VDC	2s max. non repetitive
Input voltage remote pin	Vrem (peak)	-0.3		75	VDC	Peaks of any duration
Operating temperature	Top	-40		+120	˚C	Measured at thermal reference points, see Note 1
Storage temperature	Tstorage	-40		+125	˚C	
Ambient temperature	Tambient	-40		+85	˚C	See Note 6 and Figure 1

All specifications are typical at nominal input Vin = 48V, full load under any resistive load combination at 25˚C unless otherwise specified.

Input Characteristics

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Input voltage - operating	Vin (oper)	36	48	75	VDC	
Input current - no load	Iin			50	mADC	Vin (min) - Vin (max), enabled
Input current - Quiescent	Iin (off)		2	5	mADC	Converter disabled
Input voltage rise/fall time	dv/dt			5	V/ms	As per ETS300 132 Part 4.4
Inrush current (i^2t or peak)	Iinrush		0.003		A^2s	As per ETS300 132 Part 4.7 with recommended LISN
Input ripple rejection			60	-	dB	Frequency <1 kHz
	Input fuse			2	A	Slow blow/anti-surge, HRC recommended, 200 V rated

Turn On/Off

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Input voltage - turn on	Vin (on)		33.8	36	VDC	
Input voltage - turn off	Vin (off)	29.9	31.7		VDC	
Hysteresis			2.1		VDC	
Turn on delay - enabled, then power applied	Tdelay (power)		30	50	msec	With the enable signal asserted, this is the time from when the input voltage reaches the minimum specified operating voltage until the output voltage is within the total regulation band
Turn on delay - power applied, then enabled	Tdelay (enable)		30	50	msec	Vin = Vin (nom), then enabled. This is the time taken until the output voltage is within the total error band
Rise time	Trise	-	25	45	msec	From 10% to 90%; full resistive load, no external capacitance

Signal Electrical Interface

Characteristic - Signal Name	Symbol	Min	Typ	Max	Units	Notes and Conditions
At remote/control ON/OFF pin						**See Notes 2 and 3**
Control pin open circuit voltage	Vih	3	4	5	V	Iih = 0µA; open circuit voltage
High level input voltage	Vih	2			V	Converter guaranteed on when control pin is greater than Vih (min)
High level input current	Iih			10	µA	Current flowing into control pin when pin is pulled high (max. at Vih = 75V)
Acceptable high level leakage current	Iih (leakage)			-50	µA	Acceptable leakage current from signal pin into the open collector driver (neg = from converter)
Low level input voltage	Vil	0		1.2	V	Converter guaranteed off when control pin is less than Vil (max)
Low level input current	Iil			-100	µA	Vil = 0.4 V
Low level input current	Iil (max)			-100	µA	Vil = 0.0 V; maximum source current from converter with short circuit

Common Protection/Control

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Overtemperature shutdown threshold (singles)	Tots		125		˚C	PCB temperature at SRs, non-latching shutdown protection
Overtemperature shutdown - restart hysteresis	-	-	5	-	˚C	
Remote sense compensation				10	%	Compensation includes trim

Reliability and Service Life

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Mean time between failure	MTBF	300,000			Hours	MIL-HDBK-217F, Vin = Vin (nom); Iout = Iout (max); ambient 25˚C; ground benign environment
Mean time between failure	MTBF	TBD			Hours	Demonstrated

Isolation

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Input to output test voltage				1500	VDC	Test duration 1s
Input to output capacitance			2200		pF	
Input to output resistance		100			MΩ	Measured with 500 VDC
Input to output insulation system			Basic			

Other Specifications

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Switching frequency	Fsw	-	300	-	kHz	Fixed frequency
Weight	-		40		g	

Environmental Requirements

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Thermal performance		-40		+85	˚C	See Notes 1, 5 and Figures 1, 2 and 8
Altitude				3,000	m	Derate total max. output
				9,864	ft	current by 20%
				10,000	m	Derate total max. output
				32,821	ft	current by 50%

Characteristic	Parameter	Reference	Test Level	Notes and Conditions
Air temperature	Low	IEC 68-2-1	-40˚C	All characteristics and parameters
	High	IEC 68-2-2	+70˚C	extracted from ETS 300 019
	Change	IEC 68-2-14	-40˚C to +70˚C	classes 3.1, 3.2, 3.3, 3.4 and 3.5
Relative humidity	Low	-	10%	
	High	IEC 68-2-56	100%	
	Condensation	IEC 68-2-30	90 to 100%	
Vibration IEC class 3M5	Displacement	IEC 68-2-6	5-9Hz 5mm/s	
	Acceleration	IEC 68-2-6	9-200Hz 1g	
		MIL-STD-202F	Method 204D cond. A	
Shocks IEC class 3M5	Acceleration	IEC 68-2-29	10g	
		MIL-STD-202F	Method 213B cond. A	

Referenced ETSI standards:

ETS 300 019: Environmental conditions and environmental tests for telecommunications equipment
ETS 300 019: Part 1-3 (1997) Classification of environmental conditions stationary use at weather protected locations
ETS 300 019: Part 2-3 (1997) Specification of environmental tests stationary use at weather protected locations

EMC
Electromagnetic Compatibility

Phenomenon	Port	Standard	Test level	Criteria	Notes and conditions
Immunity:					
ESD	Enclosure	EN61000-4-2	6kV cont	NP	As per ETS 300 386-1 table 5
			8kV air	NP	
			8kV cont	RP	
			15kV air	RP	
EFT	DC Power	EN61000-4-4	2kV	NP	As per ETS 300 386-1 table 5
			4kV	LFS	
	Signal	EN61000-4-4	1kV	NP	As per ETS 300 386-1 table 5
			2kVr	LFS	
Radiated field	Enclosure	EN61000-4-3	10V/m	NP	As per ETS 300 386-1 table 5
Conducted	DC power	EN61000-4-6	10V	NP	As per ETS 300 386-1 table 5
	Signal	EN61000-4-6	10V	NP	
Input transients	DC power				ETS 300 132, ETR 283

EMC
Electromagnetic Compatibility

Phenomenon	Port	Standard	Test level	Criteria	Notes and conditions
Emission:					
Conducted	DC power	EN55022	Level A		See recommended external filter for compliance bandwidth 20 kHz to 30 MHz, as per ETS 300 386-1
		EN55022	Level B		See recommended external filter for compliance bandwidth 20 kHz to 30 MHz, as per ETS 300 386-1
	Signal	EN55022	Level B		Bandwidth 150kHz to 30MHz, as per ETS 300 386-1
Radiated		EN55022	Level B		Bandwidth 30 MHz to 1 GHz, as per ETS 300 386-1, with Cu ground plane

Performance criteria:

NP: Normal Performance: EUT shall withstand applied test and operate within relevant limits as specified without damage.
RP: Reduced Performance: EUT shall withstand applied test. Reduced performance is permitted within specified limits, resumption to normal performance shall occur at the cessation of the test.
LFS: Loss of Function (self recovery): EUT shall withstand applied test without damage, temporary loss of function permitted during test. Unit will self recover to normal performance after test.

Referenced ETSI standards:

ETS 300 386-1 table 5 (1997): Public telecommunication network equipment, EMC requirements
ETS 300 132-2 (1996): Power supply interface at the input to telecommunication equipment: Part 2 operated by direct current (DC)
ETR 283 (1997): Transient voltages at interface A on telecommunications direct current (DC) power distributions

Safety Agency Approvals

Characteristic	
UL/cUL 1950 File Number	E136005
VDE File Number	10401-3336-0157/31HJK
VDE License Number	Approval number pending

Standards Compliance List

Standard	Category
EN60950	
UL/cUL1950	3rd edition
VDE	EN60950 (VDE0805) : 1997 + A11

Material Ratings

Characteristic - Signal Name	Notes and Conditions
Flammability rating	UL94V-0
Material type	FR4 PCB

Model Numbers

Model Number	Input Voltage	Output Voltage	Overvoltage Protection	Output Current (Max.)	Typical Efficiency	Max. Load Regulation
EXB30-48S05	36-75 VDC	5.0V	5.65	6A	92%	±0.2%
EXB30-48S3V3	36-75 VDC	3.3V	3.80	8A	90%	±0.2%
EXB30-48S2V5	36-75 VDC	2.5V	3.0	8A	88%	±0.2%
EXB30-48S2V0	36-75 VDC	2.0V	2.3	8A	87%	±0.2%
EXB30-48S12	36-75 VDC	12.0V	14.2	3A	90%	±0.2%

EXB30-48S05 Model

Input Characteristics

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Input current - operating	Iin		0.68	0.69	ADC	Vin = Vin (nom); Iout = Iout (max.); Vo = Vo (nom)
Input current - maximum	Iin (max.)		0.91	0.92	ADC	Vin = Vin (min); Iout = Iout (max.); Vo = nom
Reflected ripple current	Iin (ripple)		10		mA RMS	Iout - Iout (max.), measured with Class A filter. See Apps Note
Reflected ripple current	Iin (ripple)		5		mA pk-pk	Iout - Iout (max.), measured with Class A filter. See Apps Note
Input capacitance - internal filter	Cinput		1.5		µF	Internal to converter (ceramic)

EXB30-48S05 Model

Electrical Characteristics - O/P

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Nominal set-point voltage	Vout (nom)	4.925	5.00	5.075	VDC	Vin = Vin (Nom); Iout = Iout (nom); T = 25°C
Total regulation band	Vout	4.85	-	5.15	VDC	For all line, static load and temperature until end of life.
Line regulation		-	0.05	0.10	%	Vin (min) - Vin (max)
Load regulation		-	0.10	0.20	%	Iout (min) - Iout (max)
Temperature regulation		-	0.01	0.02	±%/°C	Vin = Vin (Nom), Iout = Iout (nom)
Output current continuous	Iout	0.00		6.00	ADC	
Output current - short circuit	Isc			11.00	A RMS	Continuous, unit auto recovers from short, Vout < 100mV
Output voltage - noise	Vp-p Vrms		80 10	150 20	mV pk-pk mV RMS	Measurement bandwidth 20 MHz Measurement bandwidth 20 MHz See Application Note for Set-up

EXB30-48S05 Model

Electrical Characteristics - O/P

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Load transient response - peak deviation	Vdynamic		2.0		%	Peak deviation for 50% to 75% step load, di/dt = 100 mA/µsec
Load transient response - recovery	Trecovery		300		µsec	Settling time to within 1% of output set point voltage for 50% to 75% step load
External load capacitance	Cext	0		10,000	µF	Operation with more than the max. value is possible, but please consult Artesyn before doing so

EXB30-48S05 Model

Protection and Control Features

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Overvoltage clamp voltage	Vov	5.55	5.65	6.50	VDC	Non-latching. Refer to Application Note
Overcurrent limit inception	Ioc		7.5		ADC	Vout = 90% of Vout (nom)
Output voltage trim range		10 20			% %	Trim up Trim down
Open sense voltage			5.65		VDC	

EXB30-48S05 Model

Efficiency

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Efficiency	η	91.0	92.0		%	Iout = 100% Iout (max), Vin = Vin (nom)
Efficiency	η	89.5	90.5		%	Iout = 50% Iout (max), Vin = Vin (nom)

EXB30-48S3V3 Model

Input Characteristics

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Input current - operating	Iin		0.61	0.62	ADC	Vin = Vin (nom); Iout = Iout (max.); Vo = Vo (nom)
Input current - maximum	Iin (max.)		0.82	0.83	ADC	Vin = Vin (min); Iout = Iout (max.); Vo = nom
Reflected ripple current	Iin (ripple)		10		mA RMS	Iout - Iout (max.), measured with Class A filter. See Apps Note
Reflected ripple current	Iin (ripple)		35		mA pk-pk	Iout - Iout (max.), measured with Class A filter. See Apps Note
Input capacitance - internal filter	Cinput		1.5		µF	Internal to converter (ceramic)

EXB30-48S3V3 Model

Electrical Characteristics - O/P

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Nominal set-point voltage	Vout (nom)	3.25	3.30	3.35	VDC	Vin = Vin (Nom); Iout = Iout (nom); T = 25°C
Total regulation band	Vout	3.20		3.40	VDC	For all line, static load and temperature until end of life
Line regulation			0.05	0.10	%	Vin (min) - Vin (max)
Load regulation			0.10	0.20	%	Iout (min) - Iout (max)
Temperature regulation			0.01	0.02	±%/°C	Vin = Vin (nom), Iout = Iout (nom)
Output current continuous	Iout	0		8.00	ADC	
Output current - short circuit	Isc			13.00	A RMS	Continuous, unit auto recovers from short, Vout < 100mV
Output voltage - noise	Vp-p		100	150	mV pk-pk	Measurement bandwidth: 20 MHz; See Application Note for measurement set-up details
	Vrms		10	20	mV RMS	Measurement bandwidth 20 MHz See Application Note for set-up

EXB30-48S3V3 Model

Electrical Characteristics - O/P

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Load transient response - peak deviation	Vdynamic		2.0		%	Peak deviation for 50% to 75% step load, di/dt = 100 mA/µsec
Load transient response - recovery	Trecovery		300		µsec	Settling time to within 1% of output set point voltage for 50% to 75% step load
External load capacitance	Cext	0		10,000	µF	Operation with more than the maximum value is possible, but please consult Artesyn before doing so

EXB30-48S3V3 Model

Protection and Control Features

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Overvoltage clamp voltage	Vov	3.66	3.80	4.29	VDC	Non-latching Refer to Application Note
Overcurrent limit inception	Ioc		9.2		ADC	Vout = 90% of Vout (nom)
Output voltage trim range		10 20			% %	Trim up Trim down
Open sense voltage			3.8		VDC	

EXB30-48S3V3 Model

Efficiency

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Efficiency	η	88.5	90.0		%	Iout = 100% Iout (max), Vin = Vin (nom)
Efficiency	η	87.0	88.0		%	Iout = 50% Iout (max), Vin = Vin (nom)

EXB30-48S2V5 Model

Input Characteristics

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Input current - operating	Iin		0.48	0.485	ADC	Vin = Vin (nom); Iout = Iout (max.); Vo = Vo (nom)
Input current - maximum	Iin (max.)		0.635	0.64	ADC	Vin = Vin (min); Iout = Iout (max.); Vo = nom
Reflected ripple current	Iin (ripple)		10		mA RMS	Iout - Iout (max.), measured with Class A filter. See Apps Note
Reflected ripple current	Iin (ripple)		35		mA pk-pk	Iout - Iout (max.), measured with Class A filter. See Apps Note
Input capacitance - internal filter	Cinput		1.5		µF	Internal to converter (ceramic)

EXB30-48S2V5 Model

Electrical Characteristics - O/P

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Nominal set-point voltage	Vout (nom.)	2.462	2.50	2.537	VDC	Vin = Vin (Nom); Iout = Iout (nom); T = 25°C
Total regulation band	Vout	2.425		2.575	VDC	For all line, static load and temperature until end of life
Line regulation			0.05	0.10	%	Vin (nom) - Vin (max)
Load regulation (all models)			0.10	0.20	%	Iout (min) - Iout (max)
Temperature regulation (all models)			0.01	0.02	±%/°C	Vin = Vin (nom), Iout = Iout (nom)
Output current continuous	Iout	0.00		8.00	ADC	
Output current - short circuit	Isc			13.0	A RMS	Continuous, unit auto recovers from short, Vout < 100mV
Output voltage - noise	Vp-p Vrms		80 12	150 20	mV pk-pk mV RMS	Measurement bandwidth 20 MHz Measurement bandwidth 20 MHz See Application Note for set-up

EXB30-48S2V5 Model

Electrical Characteristics - O/P

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Load transient response - peak deviation	Vdynamic		5		%	Peak deviation for 50% to 75% step load, di/dt = 100 mA/µsec
Load transient response - recovery	Trecovery		300		µsec	Settling time to within 1% of output set point voltage for 50% to 75% step load
External load capacitance	Cext	0		10,000	µF	Operation with more than the max. value is possible, but please consult Artesyn before doing so

EXB30-48S2V5 Model

Protection and Control Features

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Overvoltage clamp voltage	Vov	2.78	2.90	3.25	VDC	Non-latching Refer to Application Note
Overcurrent limit inception	Ioc		9.2		ADC	Vout = 90% of Vout (nom)
Output voltage trim range		10 20			% %	Trim up Trim down
Open sense voltage			2.9		VDC	

EXB30-48S2V5 Model

Efficiency

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Efficiency	η	87.0	88.0		%	Iout = 100% Iout (max), Vin = Vin (nom)
Efficiency	η	86.0	87.2		%	Iout = 50% Iout (max), Vin = Vin (nom)

EXB30-48S2V0 Model

Input Characteristics

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Input current - operating	Iin		0.39	0.40	ADC	Vin = Vin (nom); Iout = Iout (max.); Vo = Vo (nom)
Input current - maximum	Iin (max.)		0.52	0.53	ADC	Vin = Vin (min); Iout = Iout (max.); Vo = nom
Reflected ripple current	Iin (ripple)		10		mA RMS	Iout - Iout (max.), measured with Class A filter. See Apps Note
Reflected ripple current	Iin (ripple)		35		mA pk-pk	Iout - Iout (max.), measured with Class A filter. See Apps Note
Input capacitance - internal filter	Cinput		1.5		µF	Internal to converter (ceramic)

EXB30-48S2V0 Model

Electrical Characteristics - O/P

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Nominal set-point voltage	Vout	1.97	2.00	2.03	VDC	Vin = Vin (Nom); Iout = Iout (nom); T = 25˚C
Total regulation band	Vout (1)	1.94		2.06	VDC	For all line, static load and temperature until end of life. Does not include cross regulation
Line regulation	Vout		0.05	0.10	%	Iout = Iout (nom); Vin (min) to Vin (max);
Load regulation	Vout		0.10	0.20	%	Vin = Vin (nom), Iout (min) to Iout (max)
Temperature regulation			0.01	0.02	±%/˚C	Vin = Vin (nom), Iout = Iout (nom)
Output current continuous	Iout	0.00		8.00	ADC	

EXB30-48S2V0 Model

Electrical Characteristics - O/P

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Output current - short circuit	Isc			13.0	A RMS	Continuous, unit auto recovers from short, Vout = 100mV
Output voltage - noise	Vp-p		80	150	mV pk-pk	Measurement bandwidth: 20 MHz See application Note for set-up
	Vrms		12	20	mV RMS	Measurement bandwidth: 20 MHz
Load transient response - peak deviation	Vdynamic		5.0		%	Peak deviation for 50% to 75% Step load, di/dt = 100 mA/µsec
Load transient response - recovery	Trecovery		300		µsec	Settling time to within 1% of output set point voltage for 50% to 75% step load
External load capacitance	Cext	0		10,000	µF	Operation with more than the max. value is possible, but please consult Artesyn before doing so. Unit spec. compliant with no external output capacitance

EXB30-48S2V0 Model

Protection and Control Features

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Overvoltage clamp voltage	Vov	2.22	2.3	2.60	VDC	Non-latching, refer to Application Note
Overcurrent limit inception	Ioc		9.2		ADC	Vout = 90% of Vout (nom),
Output voltage trim range		10 20			% %	Trim up Trim down
Open sense voltage			2.3		VDC	

EXB30-48S2V0 Model

Efficiency

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Efficiency	η	85.5	86.5		%	Iout = 100% Iout (max), Vin = Vin (nom)
Efficiency	η	84.5	85.5		%	Iout = 50% Iout (max), Vin = Vin (nom)

EXB30-48S12 Model

Input Characteristics

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Input current - operating	Iin		0.84	0.86	ADC	Vin = Vin (nom); Iout = Iout (max.); Vo = Vo (nom)
Input current - maximum	Iin (max.)		1.12	1.14	ADC	Vin = Vin (min); Iout = Iout (max.); Vo = nom
Reflected ripple current	Iin (ripple)		10		mA RMS	Iout - Iout (max.), measured with Class A filter. See App Note
Reflected ripple current	Iin (ripple)		5		mA pk-pk	Iout - Iout (max.), measured with Class A filter. See App Note
Input capacitance - internal filter	Cinput		1.5		µF	Internal to converter (ceramic)

EXB30-48S12 Model

Electrical Characteristics - O/P

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Nominal set-point voltage	Vout (nom)	11.82	12.00	12.18	VDC	Vin = Vin (Nom); Iout = Iout (nom); T = 25˚C
Total regulation band	Vout	11.64	-	12.36	VDC	For all line, static load and temperature until end of life.
Line regulation		-	0.05	0.10	%	Vin (min) - Vin (max)
Load regulation		-	0.10	0.20	%	Iout (min) - Iout (max)
Temperature regulation		-	0.01	0.02	±%/˚C	Vin = Vin (Nom), Iout = Iout (nom)
Output current continuous	Iout	0.00		3.00	ADC	
Output current - short circuit	Isc			5.00	A RMS	Continuous, unit auto recovers from short, Vout < 100mV
Output voltage - noise	Vp-p Vrms		80 10	150 20	mV pk-pk mV RMS	Measurement bandwidth 20 MHz Measurement bandwidth 20 MHz See Application Note for Set-up

EXB30-48S12 Model

Electrical Characteristics - O/P

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Load transient response - peak deviation	Vdynamic		2.0		%	Peak deviation for 50% to 75% step load, di/dt = 100 mA/µsec
Load transient response - recovery	Trecovery		300		µsec	Settling time to within 1% of output set point voltage for 50% to 75% step load
External load capacitance	Cext	0		2,000	µF	Operation with more than the max. value is possible, but please consult Artesyn before doing so

EXB30-48S12 Model

Protection and Control Features

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Overvoltage clamp voltage	Vov				VDC	Non-latching. Refer to Application Note
Overcurrent limit inception	Ioc		3.5		ADC	Vout = 90% of Vout (nom)
Output voltage trim range		10 40			% %	Trim up Trim down
Open sense voltage			12.63		VDC	

EXB30-48S12 Model

Efficiency

Characteristic	Symbol	Min	Typ	Max	Units	Notes and Conditions
Efficiency	η	89.0	90.0		%	Iout = 100% Iout (max), Vin = Vin (nom)
Efficiency	η	89.0	90.0		%	Iout = 50% Iout (max), Vin = Vin (nom)

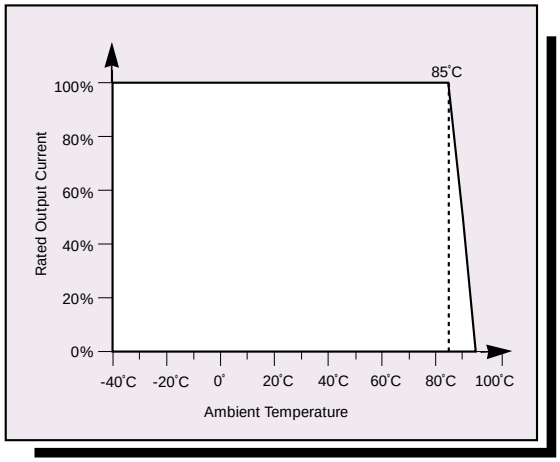


Figure 1: Derating Curve Output Current vs Temperature S3V3 Natural Convection (<0.1m/s airflow) for S05, S3V3, S2V5 and S2V0 models

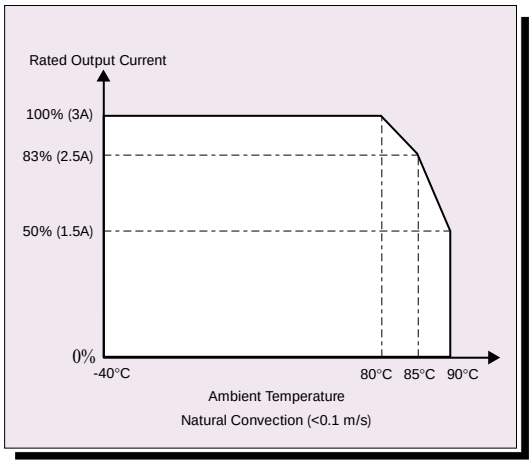


Figure 1B: Derating Curve Output Current vs Temperature Natural Convection (<0.1m/s airflow) for S12 model

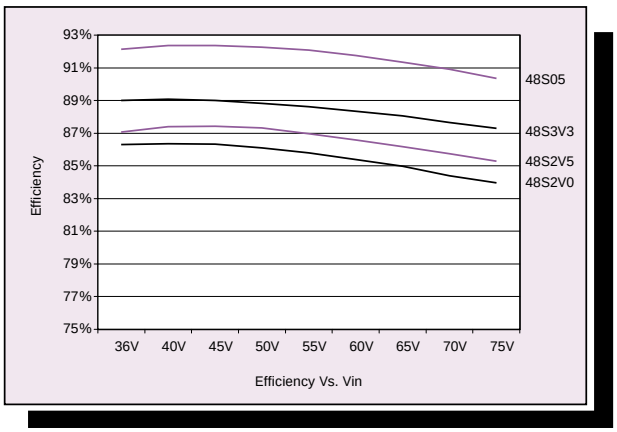


Figure 2: Typical Efficiency vs Vin

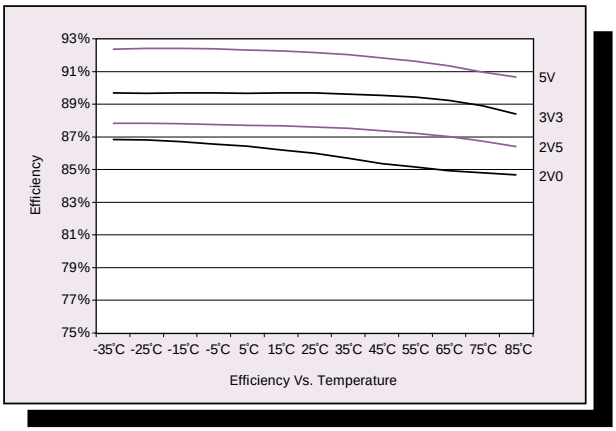


Figure 3: Typical Efficiency vs Ambient Temperature

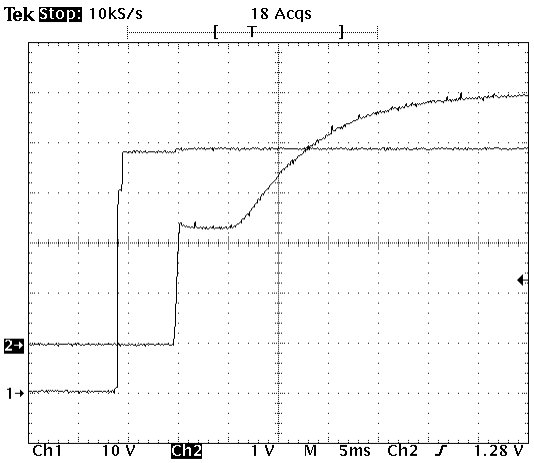


Figure 4: Typical Power-up Characteristic S05
(Ch1 : Input V, Ch2 : Vout), Vin = 48V, Load = 6A

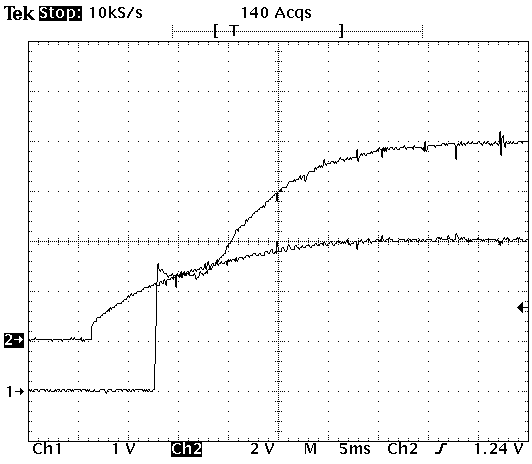


Figure 5: Control On/Off Characteristic S05
(Ch1 : Vout, Ch2 : Control), Vin = 48V, Load = 6A

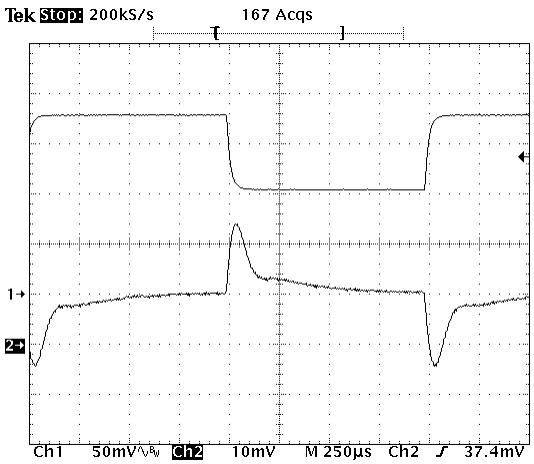


Figure 6.1: Typical Transient Response of S05
(Ch1 : Iout, Ch2 : Vout), Vin = 48V, Iout = 3A to 4.5A

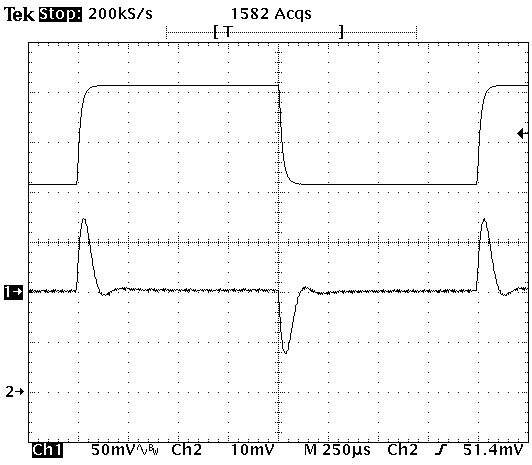


Figure 6.2: Typical Transient Response of S3V3
(Ch1 : Vout, Ch2 : Iout), Vin = 48V, Iout = 4A to 6A

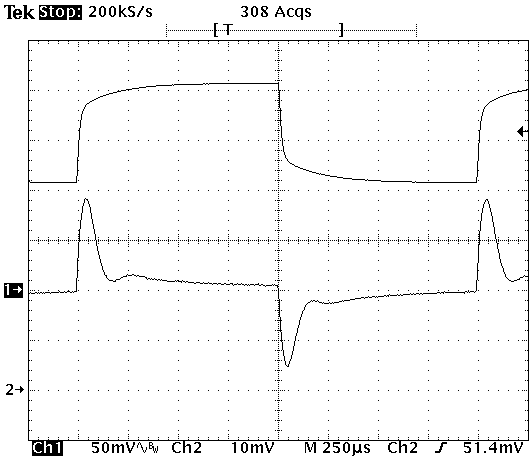


Figure 6.3: Typical Transient Response of S2V5
(Ch1 : Vout, Ch2 : Iout), Vin = 48V, Iout = 4A to 6A

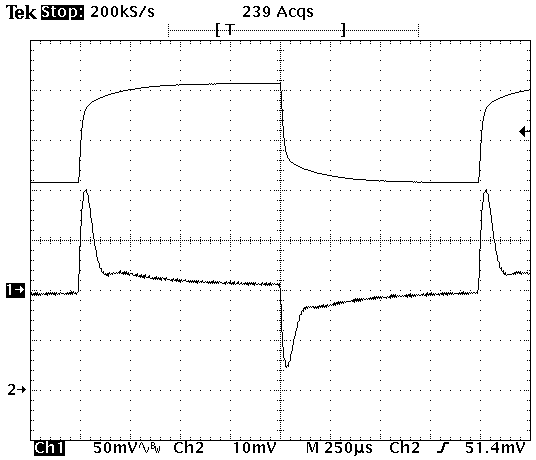


Figure 6.4: Typical Transient Response of S2V0
(Ch1 : Vout, Ch2 : Iout), Vin = 48V, Iout = 4A to 6A

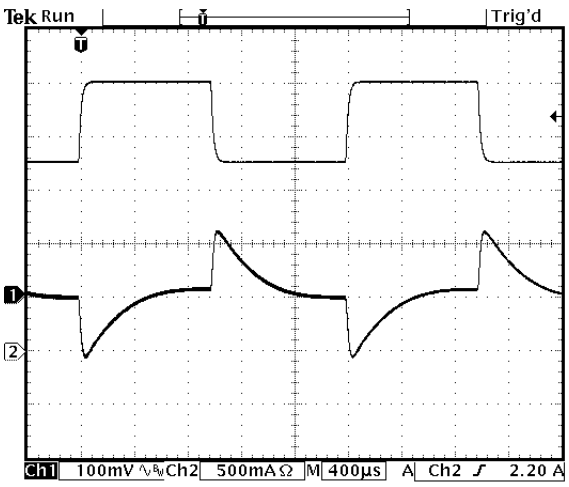


Figure 6.5: Typical Transient Response on S12
(Ch1 : Vout, Ch2 : Iout) Vin = 48V, Iout = 1.5A to 2.25A

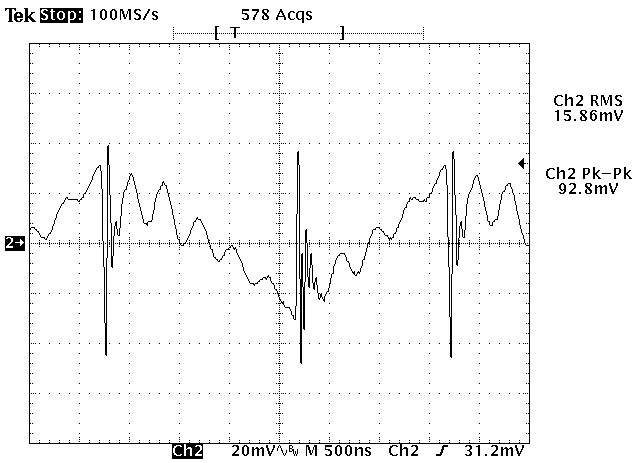


Figure 7.1: Typical Ripple and Noise S05 on Test Card at Nominal Conditions

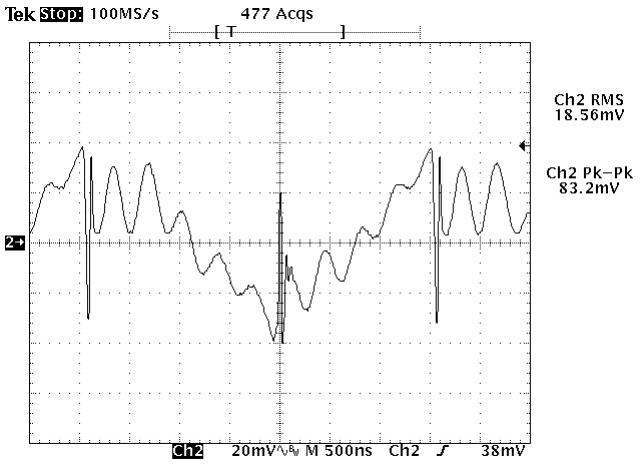


Figure 7.2: Typical Ripple and Noise S3V3 on Test Card at Nominal Conditions

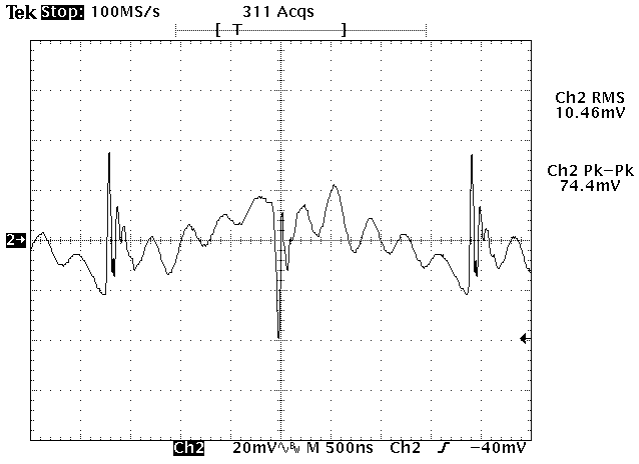


Figure 7.3: Typical Ripple and Noise S2V5 on Test Card at Nominal Conditions

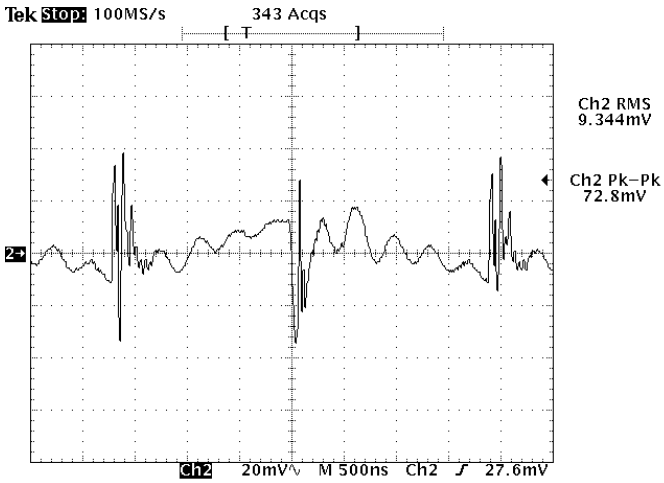


Figure 7.4: Typical Ripple and Noise S2V0 on Test Card at Nominal Conditions

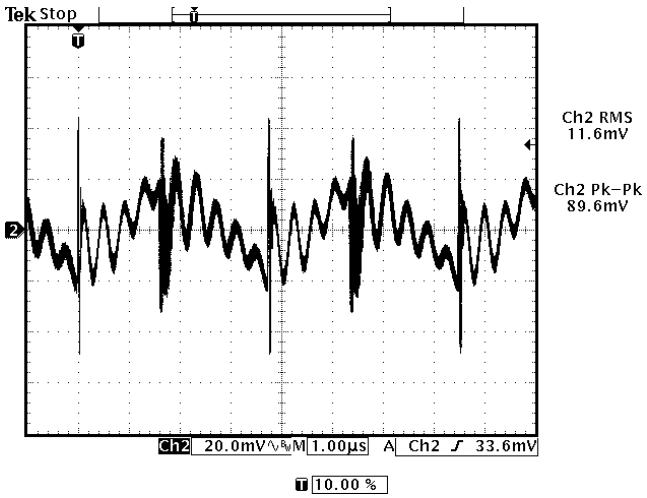


Figure 7.5 Typical Ripple and Noise on S12 on Test Card at Nominal Conditions

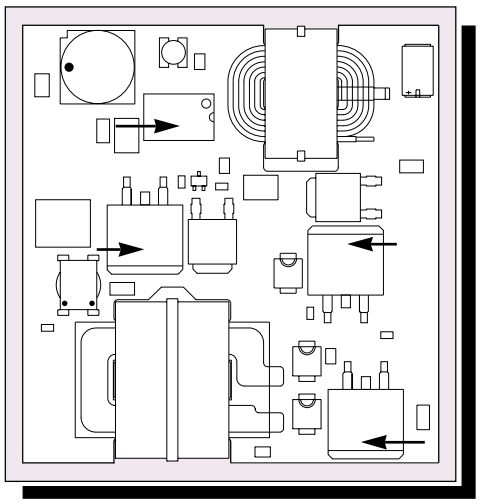


Figure 8A: Hot Spot Locations on S05, S3V3, S2V5 and S2V0

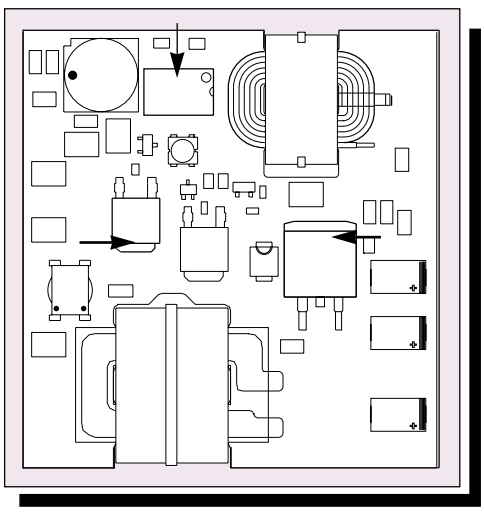
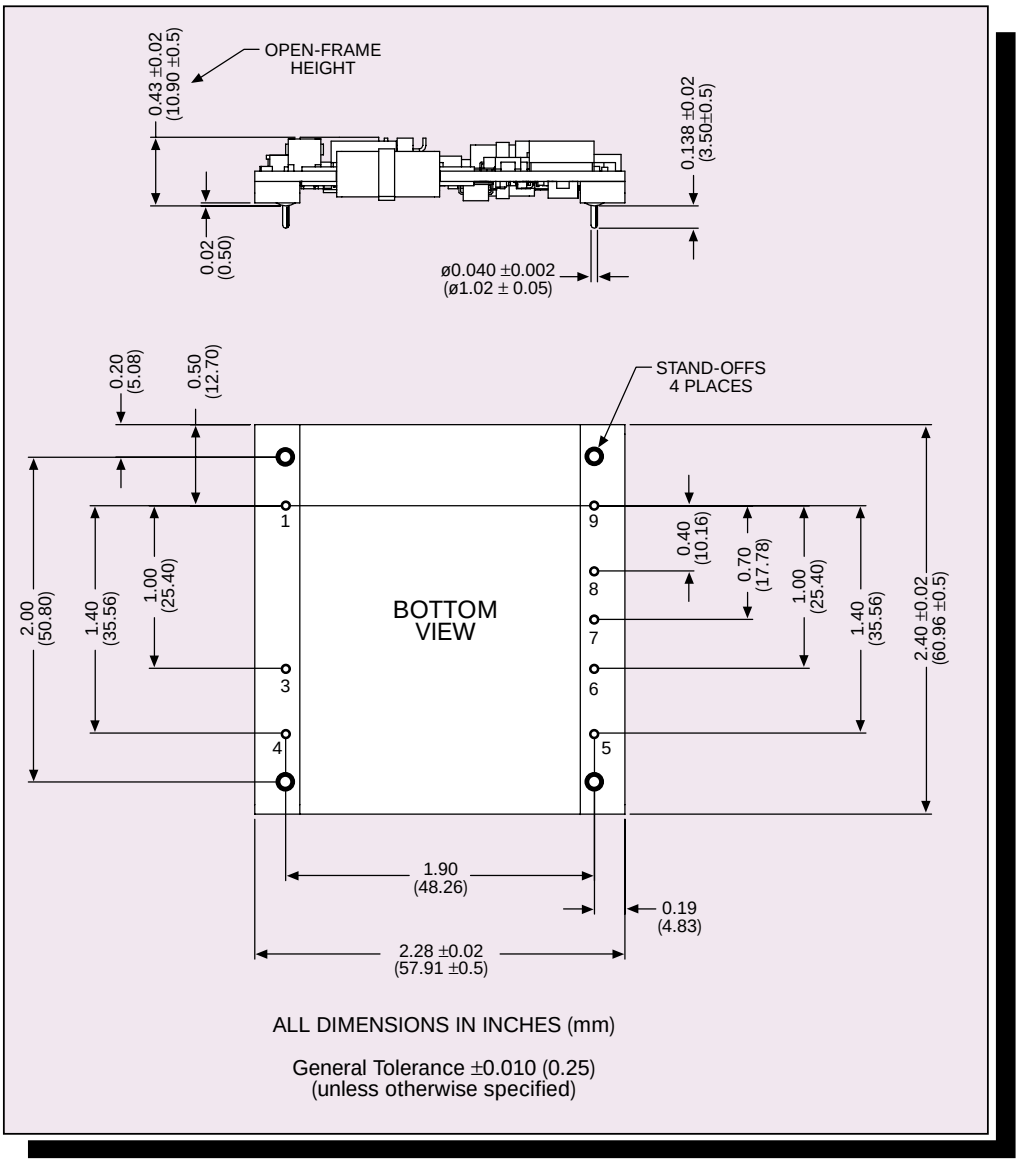


Figure 8B: Hot Spot Locations on S12



Pin Connections

Pin No.	*Function*
1	Vin -
2	No Pin
3	Remote On/Off
4	Vin +
5	Vo +
6	Vsense +
7	Trim
8	Vsense -
9	Vo -

Figure 9: Dimensions and Pinout

Note 1

Hot spot temperature is defined as the highest temperature measured at any one of the specified temperature hotspot checkpoints. See Figure 8: Hotspot temperature check points.

Note 2

The control pin is referenced to Vin-.

Note 3

The EXB30 is supplied as standard with active high logic.
Control input pulled low: unit disabled.
Control input floating: unit enabled.
The unit can be supplied with active low logic.

Note 4

The outputs of these converters should not be connected in parallel.

Note 5

Thermal reference set up: Unit mounted centrally on a 200mm x 240 mm testboard. Testboard is mounted vertically in a fully enclosed 300mm x 300mm x 300mm testbox. Ambient temperature measured at the bottom of the textbox. Altitude sea level.

Note 6

12V model is rated at 30W and 36W for maximum ambient temperatures of 85˚C and 80˚C respectively.

CAUTION: Hazardous internal voltages and high temperatures. Ensure that unit is accessible only to trained personnel. The user must provide the recommended fusing in order to comply with safety approvals.

NORTH AMERICA
e-mail: sales.us@artesyn.com
800 769 7274
+508 628 5600

EUROPEAN LOCATIONS
e-mail: sales.europe@artesyn.com
IRELAND
+353 24 93130

AUSTRIA
+43 1 80150

FAR EAST LOCATIONS
e-mail: sales.asia@artesyn.com
HONG KONG
+852 2699 2868

DS_EXB30S48_20020115.PDF

ARTESYN® TECHNOLOGIES