CTF-Xtra Single Phase Advanced SCR Power Controller Quick Start Manual 0037-75560 (PK538)

This manual is intended to be a quick reference guide for basic installation requirements and an overview of the connections, wiring considerations, and general specifications for the CTF-Xtra Advanced SCR Power Controller. For complete installation, operation, programming and configuration, please refer to the following manuals: PK535 CTF-Xtra Hardware Instruction Manual; PK534 CTF & CTF-Xtra Controller Programming Manual; PK537 C-PWR Configuration Software Manual. The most current revisions may be found on the Chromalox website: www.chromalox.com.

1. IMPORTANT SAFEGUARDS

⚠WARNING

ELECTRIC SHOCK HAZARD: Read and understand all instructions before installing, servicing or operating this controller. Failure to do so could result in equipment or property damage as well as personal injury and even death.

⚠WARNING

HIGH VOLTAGE is used in the operation of this equipment; DEATH ON CONTACT may result if personnel fail to observe safety precautions. Learn the areas containing high-voltage connections when installing or operating this equipment.

⚠WARNING

Be careful not to contact high-voltage connections when installing or operating this equipment. Before working inside the equipment, turn power off and ground all points of high potential before touching them.

⚠WARNING

ELECTRIC SHOCK HAZARD: Any installation involving control equipment must be performed by a qualified person and must be effectively grounded in accordance with the National Electrical Code or local governing electrical code/authority, to eliminate shock hazard.

⚠CAUTION

The owner/installer must provide all necessary safety and protection devices and follow all current electrical wiring standards and regulations. Failure to do so may compromise the integrity of the controller and/or cause product failure resulting in a safety risk to operational and service personnel.

⚠CAUTION

This controller utilizes a heat sink which is designed to cool the unit during operation. Under no circumstance should air flow around the controller be compromised in any way. Failure to do so may result in the overheating of the controller, product failure, product temperatures and even fire.

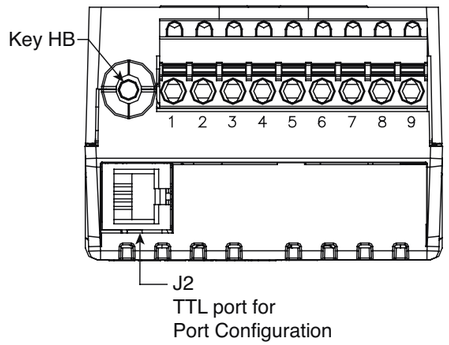
⚠WARNING

During continuous operation, the heat sink can reach very high temperatures, and keeps a high temperature even after the unit is turned off due to its high thermal inertia.

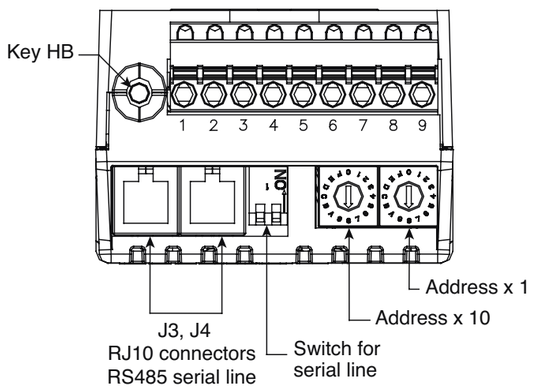
2. INSTALLATION

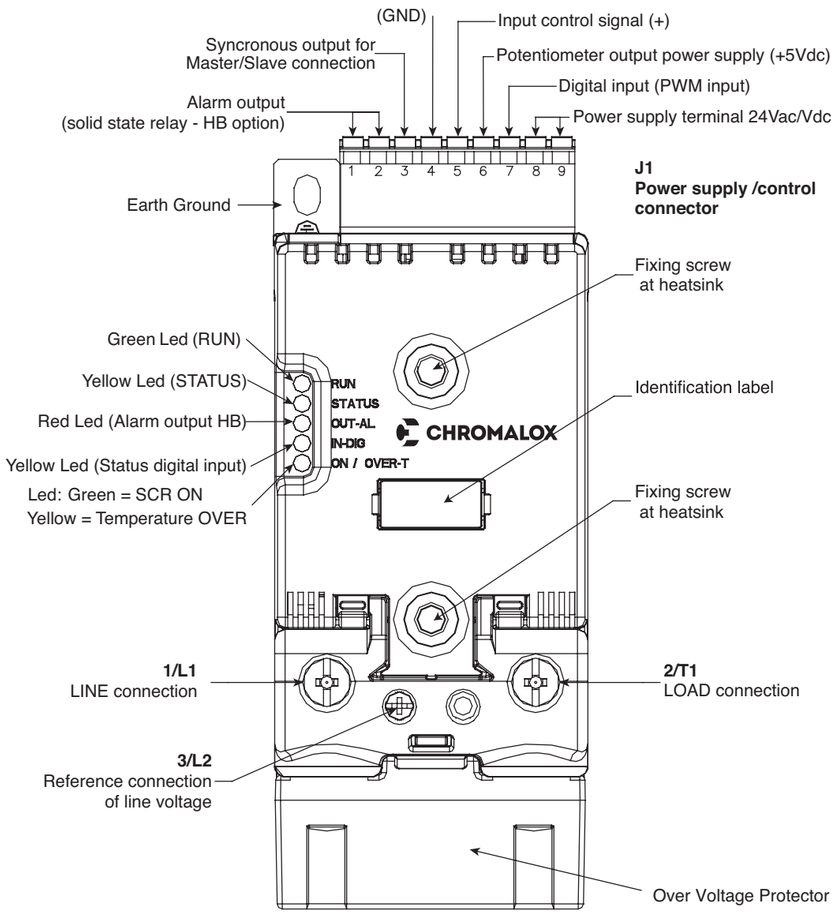
Input & Output Connections: CTF-Xtra 25 – 60 Amp Models

Top view
WITHOUT Modbus Option



Top view
WITH Modbus Option





Installation Wiring Note:
Use the extra rapid fuses as indicated in the CTF-Xtra Hardware Instruction Manual PK535, according to the wiring schematic examples and controller rating. Additionally, the applications with solid state units require a safety automatic switch to disengage the load power line during certain alarm events.

EMC Filter
EMC Filters are required in Phase Angle firing mode. The filter model and current level depend on the configuration and load used. The power filter MUST be connected as close as possible to the CTF. You can use a filter connected between the power line and CTF or an LC group connected between the CTF output and the load.

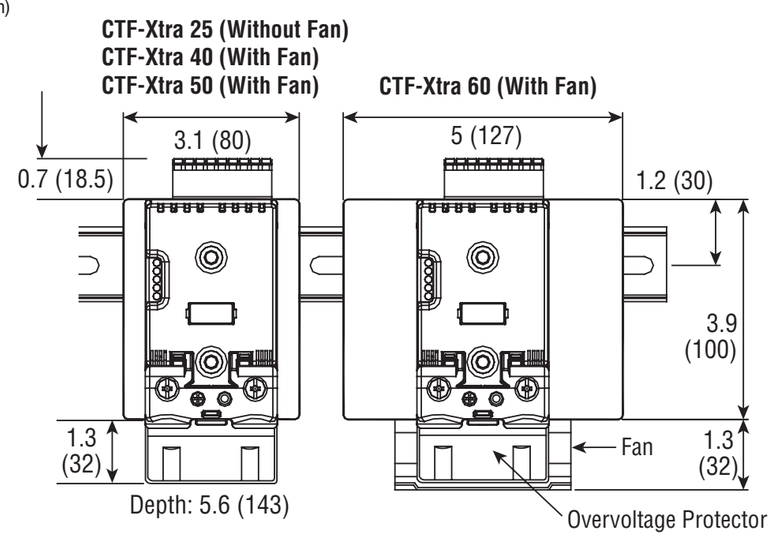
Recommended Wire Gauges

CTF-Xtra Current Level	Terminal	Cable Wire	Wire Terminal	Tightening Torque / Tool
25A	1/L1, 2/T1, PE	4 mm² 10 AWG	Wire terminal / Eye D. 6mm	2.5 Nm / Phillips screwdriver PH2 - PH3
40A	1/L1, 2/T1, PE	10 mm² 7 AWG	Wire terminal / Eye D. 6mm	2.5 Nm / Phillips screwdriver PH2 - PH3
50A	1/L1, 2/T1, PE	10 mm² 7 AWG	Wire terminal / Eye D. 6mm	2.5 Nm / Phillips screwdriver PH2 - PH3
60A	1/L1, 2/T1, PE	16 mm² 5 AWG	Wire terminal / Eye D. 6mm	2.5 Nm / Phillips screwdriver PH2 - PH3
-	3/L2 (Ref. Vline)	0.25 ...2.5 mm² 23...14 AWG	Wire stripped for 8 mm or with tag terminal	0.5 ...0.6 Nm / Flat-head screwdriver tip 0.6 x 3.5 mm

NOTE: Cables must be Copper “Stranded Wire” or “Compact-Stranded Wire” type with max. operating temp. 60/75°C

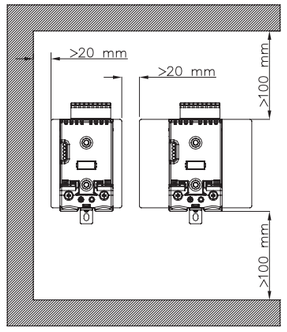
3. INSTALLATION CONSIDERATIONS: DIMENSIONS & WEIGHTS, MOUNTING & SPACING REQUIREMENTS

Dimensions in Inches (mm)



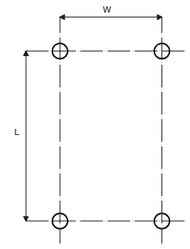
CTF-Xtra 25: 2.1 lbs (970 g) Depth: 5.6 (143)
CTF-Xtra 40, 50: 2.4 lbs (1,100 g) Weight: 3.3 lbs (1,500 g)

Minimum Spacing Requirements

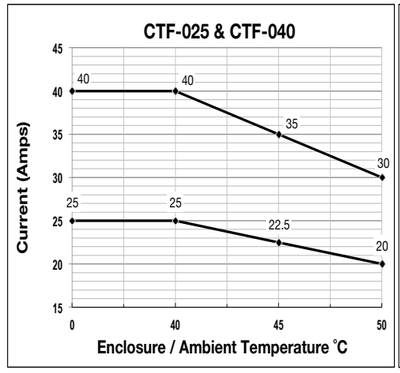


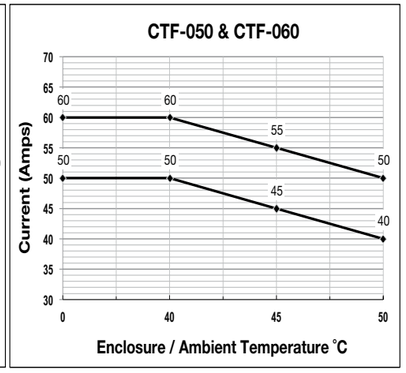
Rear Panel Mounting Template

Model	Length In. (mm)	Width In. (mm)
CTF 25A/40A/50A	4.4 (112)	1.7 (44)
CTF 60A	4.4 (112)	4.4 (113)



4. DERATING CURVES





5. GENERAL TECHNICAL DATA & SPECIFICATIONS

LOAD, FIRING, DIAGNOSTICS & RATINGS				
CATEGORY OF USE (Tab. 2 EN60947-4-3)	AC 51 resistive or low inductance loads AC 55b infrared lamps AC 56a: transformer loads			
Trigger Mode	**PA** - Load management by adjusting the firing angle (only configuration single-phase or delta open) **ZC** - Zero Crossing with constant cycle time (settable in range 1-200sec) **BF** - Burst Firing, or D.O.T. with variable cycle time optimized min. **HSC** - Half Single Cycle corresponds to Burst Firing that includes ON and OFF half-cycles. Useful for reducing flicker with short-wave IR loads (applied only to single-phase resistive or 3-phase 6-wire open delta loads).			
Feedback Mode	**V, V²:** Voltage feedback proportional to RMS voltage value on load (useful to compensate possible variations in line voltage). **I, I²:** Current feedback: bound to RMS current value on load to compensate variations in line voltage and/or variations in load impedance. **P:** Power feedback: proportional to real power value on load (useful to keep constant values of electrical power assigned regardless of load impedance or line voltage variations).			
Max rated voltage	480 Vac			
Work voltage range	90 - 530 Vac			
Non-repetitive voltage	1200 Vp			
Rated Frequency	50/60Hz Auto-Synchronization			
CTF MODEL	**CTF-025**	**CTF-040**	**CTF-050**	**CTF-060**
Rated Current, AC51 - AC55b Resistive Load (@ 40˚C contin. service)	25A	40A	50A	60A
Rated current AC56A permitted trigger modes: **ZC, BF/DOT** with **DT** (Delay Trigger), **PA** with softstart (@ Tamb = 40 °C)	20A	32A	40A	50A
Maximum Surge Current (t = 10 ms) A	400A	520A	520A	1150A
Maximum I²t for fusing (blowout) A²s	450	1,800	1,800	6,600
Critical dV/dt Off-state (minimum)	1,000 V/µs			
Nom. Impulse Voltage	4 KV			
Nominal SCCR	5 KA / 480 V **WARNING:** Max. Permissable inductance loop impedance is 500 µh			

FUNCTION	
Diagnostics	Detection of shorted load circuit, absence of line voltage, HB alarm (partial break of load)
OPTIONS	
Options	- Timed Soft-Start firing ramp, with or without peak current control - Soft-Start firing ramp (specific for infrared lamps) - Timed shut-off ramp - Limitation of RMS current in load - 0-90° Delay-Triggering for firing inductive loads in ZC & BF/DOT modes.
Diagnostic	- SCR in short circuit (presence of current with OFF control) - Absence of SCR current when under load. - Overtemperature alarm Current read • HB alarm: interrupted or partially interrupted load • Automatic calibration of HB alarm setpoint starting from current value in load • Alarm for load in short circuit or overcurrent Voltage read • No line voltage
GENERAL DATA	
Power Supply	CTF 25-60 A: 24 Vac 50-60 Hz / Vdc ± 25%, max 3 VA
Power Supply for external fan (only for CTF-120A model)	24 Vdc ± 10%, max 200mA
Signals	5 leds: RUN: run state of CPU STATUS: operating state ALARM: state of alarm output DIGITAL INPUT: state of digital inputs ON / OVER-TEMP.: state of SCR power / Alarm for overheating
Load Type & Connection	Single phase load, Independent single-phase load in open delta 3-phase load; 3-phase load (star without neutral or closed triangle) w/ 2-leg control
Protection	IP20
Ambient Temp.	0 to 50˚C (32 to 122˚F) (Per EN 60947-4-3 § 7.1.1: Average Temperature over 24 hour period shal not exceed 35˚C (95˚F)
Storage Temp.	-20˚C to 70˚C (-4˚F to 158˚F)
Relative Humidity	20…85% RH non-condensing
Ambient Cond. for use	Indoor use, altitude up to 2000 m
Installation	DIN Rail EN50022 or panel with screws
Installation Requirements	Installation category II, pollution level 2, double isolation (only for model >120A): - Max. temp. of air surrounding device 40°C; for temp. >40°C refer at derating curves - Device type: “UL Open Type”

6. FUSES & FUSE HOLDERS

	I²t Extra Rapid Fuses						Fuse Holder		
CTF Model	Fuse Rating, Amps	I²t	Power Dissipation	Fuse Size	Manufacturer's Model Code	Part No.	Part No.	Fuse Holder Rating (UL)	Fuse Holder Rating (IEC)
CTF-25	25A	390 A²s	6W	10x38	FWC25A10F	0024-07815	0024-12124	30A@600V	32A@690V
CTF-40	50A	1,600 A²s	9.5W	22x58	FWP50A22F	0024-07816	0024-12199	100A@600V	125A@690V
CTF-50	50A	1,600 A²s	9.5W	22x58	FWP50A22F	0024-07816	0024-12199	100A@600V	125A@690V
CTF-60	63A	3,080 A²s	11W	22x58	FWP63A22F	0024-07817	0024-12199	100A@600V	125A@690V

	Instrument Fuse						Fuse Holder		
CTF Model	Fuse Rating, Amps	I²t	Power Dissipaton	Fuse Size	Manufacturer's Model Code	Part No.	Part No.	Fuse Holder Rating (UL)	Fuse Holder Rating (IEC)
All Models	1A	N/A	N/A	10x38	KTK-1	0024-01113	0024-12124	30A@600V	32A@690V

CHROMALOX
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