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THE GLOBAL EXPERT IN **SOLID STATE RELAY** TECHNOLOGY



■ 3 Phase AC Contactors



■ AC Motor Reversing
Contactors



■ DC Motor Reversing
Contactors



crydom[®]

DRA Series Contactors

ABOUT US

Crydom, a brand of Custom Sensors & Technologies (CST) and **global expert in Solid State Relay Technology**, has a distinguished record of providing high quality, world class Solid State Relay and Control Products for a variety of heating, lighting and motion control applications. Crydom products, coupled with **unparalleled technical support, timely delivery and competitive pricing**, provide Crydom's clients with the innovative products and support necessary to succeed in today's competitive and fast paced global markets.

Crydom's extensive selection of standard off-the-shelf products is constantly being updated and expanded through its continuous improvement and aggressive new product development programs. Utilizing state of the art designs, materials and technology, Crydom offers a wide range of AC and DC output SSRs in industry standard Panel Mount, PCB Mount and DIN Rail packages, all **meeting global safety and standards agency requirements** such as CE, RoHS, UL, IEC, etc.

Bolstered by four decades of Solid State Relay operations experience, Crydom also specializes and encourages **adapted and fully custom-designed SSR products** for nearly any application where unique specifications and optimized performance are critical for success.

Crydom's modern purpose-built **100,000 square foot manufacturing facility** houses all aspects of its ISO certified operation including Design and Development Engineering, Manufacturing Operations and Quality Assurance, Customer Service, Finance, Marketing and General Management, permitting close coordination of all aspects of Crydom's activities. Applications Engineering and Sales support are both performed in the field to provide Crydom's Customers with the unparalleled technical and commercial support.

Following rigid design guidelines and standards, Crydom products have set the bench mark for SSR performance and reliability world wide. In addition to **award winning designs**, Crydom has acquired an impressive list of **patents** related to SSRs and Solid State Controls, while continuing to develop new circuit and technology-related inventions as part of **extensive R&D programs**.

To learn more about Crydom SSR technology and products, or how an alliance with Crydom can contribute to the success of your project, visit **www.crydom.com** or contact your authorized Crydom Distributor or Crydom Customer Service Representative today.

DRA SERIES CONTACTORS

DIN Rail Mounted Solid State Contactors

The 35 mm DIN Rail has become a world standard for mounting various components in most control cabinets, and now joining Crydom's extensive line of high power DIN Rail mounted Solid State Relays is the new **DRA Series** of 3 Phase AC Contactors and AC and DC Motor Reversing Contactors.

DIN Rail Mounted 3 Phase AC Contactors & AC Motor Reversing Contactors

The **DRA Series** 3 Phase AC output Solid State Contactors and 3 Phase AC Motor Reversing contactors combine Crydom's proven state-of-the-art solid state AC switching technology with convenient DIN Rail mounting. Available in either a 3 Phase AC "on/off" Contactor or 3 Phase AC Motor Reversing Contactor configuration, the **DRA Series** AC Solid State Contactors and Motor Reversers are UL rated for 1 or 2 horse power at 480 VAC. The 3 Phase Contactor is also UL rated for 2.4 or 4.2 amps per phase Resistive Load rating. AC Motor Reversing models feature 4 kV optical isolation, AC or DC input control and status indicator, and protective interlock; 3.75 kV optical isolation for 3 Phase models. IEC 60947 ratings are available for all part numbers.

DIN Rail Mounted DC Motor Reversing Contactors

The **DRA Series** DC Motor Reversing Contactors utilize Crydom's advanced solid state DC switching technology to provide an integrated "H Bridge" type DC switching contactor for DC motor reversing applications. Featuring FET outputs UL rated for ¼ horse power at 90 or 180 VDC and 6 A @ 180 V and 12 A @ 90 V resistive ratings, all solid state 2500 VAC optical isolation, logic compatible DC input control with status indicator and interlock, the **DRA Series** provides a simple and easy to use control solution for DC motor reversing.

For more information, technical support or questions about the Crydom **DRA Series** Contactors or other Crydom products, contact your nearest Crydom Distributor, Representative or Local Crydom Sales Office, or visit our website at www.crydom.com.

DRA Series Contactors



DRA Series

3 Phase AC Contactors & AC Motor Reversing Contactors

- Ideal for applications up to 2 Horse Power
- 45 mm wide 3 phase & 62 mm wide motor reversing DIN rail mountable versions available
- 480 VAC Operating Voltage
- 5 VDC, 24 VDC, 48 VAC, 120 VAC & 230 VAC Input Control Voltage options available
- Protective Forward/Reverse interlock built-in function for Motor Reversing
- UL and IEC Resistive & Motor ratings available
- LED Status indicator for Input Control Voltage
- No heat sink required & cage style screw terminals for easy installation & reliable wire connection



Output Specifications (A)	DRA3P48xx	DRA3R48xx
Operating Range (47-63 Hz) [Vrms]	48-510 VAC	48-510 VAC
Rated Operating Voltage [Vrms]	480 VAC	480 VAC
Blocking Voltage [Vpk] (B)	1200	1600
Maximum Off-State Leakage Current @ Rated Voltage [mA rms]	1	3
Minimum Off-State dv/dt @ Rated Voltage [V/μsec] (C)	500	500

	DRA3P48x2	DRA3P48x4	DRA3R48x2	DRA3R48x4
Load Current, Resistive/AC-51 @ 40 °C [Arms] (D, E)	2.4/2.4	4.2 (F)/2.4	2.4/2.4	4.2/2.4
Load Current, Motor Controller/AC-53a @ 480 VAC [FLA] (D, E)	2.1/2.1 (G)	3.4/2.1	2.1/2.1	3.4/3.4
Maximum Surge Current [Apk] 1Cycle 60Hz	300	300	300	300
Maximum Surge Current [Apk] 1Cycle 50Hz	285	285	285	285
Maximum P _t for Fusing (8.33 msec) [A ² sec]	375	375	375	375
Maximum P _t for Fusing (10 msec) [A ² sec]	410	410	410	410
Maximum On-State Voltage Drop @ Rated Current [Vpk] (H)	1.3 per channel	1.3 per channel	1.3 per channel	1.3 per channel
Minimum Power Factor (with Maximum Load)	0.5	0.5	0.5	0.5
Ratings according to UL 508/IEC60947-4-2 [HP/KW]: 240 VAC	½ / 0.37 (I)	¾ / 0.37	½ / 0.37	1 / 0.75
380 VAC	1 / 0.75 (I)	1½ / 0.75	1 / 0.75	1½ / 1.1
480 VAC	1 / 0.75 (I)	2 / 0.75	1 / 0.75	2 / 1.5

Input Specifications (A)	DRA3P48Dx	DRA3P48Ex	DRA3P48Cx	DRA3P48Bx	DRA3P48Ax	DRA3R48Dx	DRA3R48Ex	DRA3R48Cx	DRA3R48Bx	DRA3R48Ax
Input Control Voltage Range	4-6 VDC	18-28 VDC	36-60 VAC	90-140 VAC	200-265 VAC	4-6 VDC	18-32 VDC	36-60 VAC	90-140 VAC	200-265 VAC
Rated Input Control Voltage	5 VDC	24 VDC	48 VAC	120 VAC	230 VAC	5 VDC	24 VDC	48 VAC	120 VAC	230 VAC
Minimum Turn-On Voltage	4 VDC	18 VDC	36 VAC	90 VAC	200 VAC	4 VDC	18 VDC	36 VAC	90 VAC	200 VAC
Must Turn-Off Voltage	2 VDC	4 VDC	10 VAC	20 VAC	100 VAC	2 VDC	4 VDC	10 VAC	20 VAC	90 VAC
Maximum Reverse Voltage	6 VDC	28 VDC	N/A	N/A	N/A	6 VDC	32 VDC	N/A	N/A	N/A
Input Control Current Range [mA]	17-35	15-25	7.5-13.5	5-8	4.5-5.7	15-30	15-18	6-10	5-8	5.5-7.7
Nominal Input Impedance [Ohm]	120	1.2 K	4.2 K	16 K	46 K	100	1.2 K	4.8 K	16.4 K	36 K
Maximum Turn-On Time (J)	1/2 cycle	1/2 cycle	20 msec	20 msec	20 msec	100 ± 20 msec	100 ± 20 msec	100 ± 30 msec	100 ± 30 msec	100 ± 30 msec
Maximum Turn-Off Time	1/2 cycle	1/2 cycle	30 msec	30 msec	30 msec	10 msec	10 msec	20 msec	20 msec	20 msec

General Specifications (A)	Parameters	Parameters
Dielectric Strength, Input to Output (50/60 Hz)	3750 Vrms	4000 Vrms
Minimum Insulation Resistance @ 500 VDC	10 ⁹ Ohm	10 ⁹ Ohm
Maximum Capacitance, Input to Output [pF]	20	20
Ambient Operating Temperature [°C] (K)	-20 to 60	-20 to 60
Ambient Storage Temperature [°C]	-40 to 85	-30 to 85
LED Status Indicator for Control Input	On: Green	Forward: Green / Reverse: Yellow
Weight (typical) [oz] (gr)	4.75 (135)	6.5 (185)
Maximum Input Terminal Screw Torque [lbs in] (Nm)	4.3 (0.5)	4.3 (0.5)
Maximum Output Terminal Screw Torque [lbs in] (Nm)	12.0 (1.37)	12.0 (1.37)
Input Terminal Wire Capacity (stranded & solid)	24-12 AWG (IEC 0.5-2.5 mm ²)	24-12 AWG (IEC 0.5-2.5 mm ²)
Output Terminal Wire Capacity	24-10 AWG (IEC 0.5-4.0 mm ²)	24-10 AWG (IEC 0.5-4.0 mm ²)
Housing Material Class V0 (UL94)	Backside-PVC / Side Covers-Polyamide	Backside-PVC / Side Covers-Polyamide

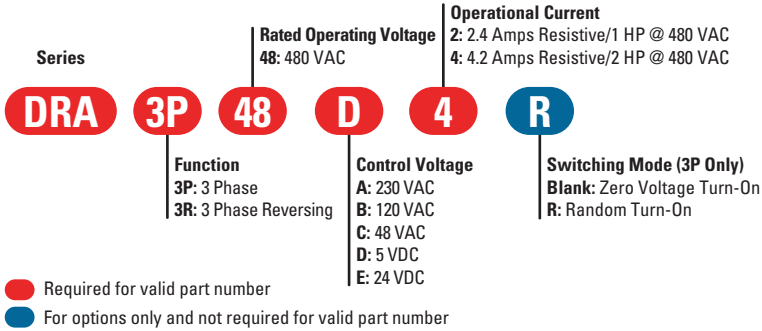
General Notes

- (A) All parameters at 25°C unless otherwise specified
- (B) Overvoltage protection included
- (C) Off-State dv/dt test method per EIA/NARM standard RS-443, paragraph 13.11.1
- (D) Based on a vertical mounting position operation
- (E) Ratings are for 0 mm air gap to adjacent similar parts unless otherwise specified
- (F) Resistive Load Current rating for DRA3P48x4 (A, B & C suffix only) is 3.4 A
- (G) AC-53a Load Current rating for DRA3P48x2 (A, B & C suffix only) is 1.6 A
- (H) 3 Channels operate simultaneously on DRA3P48xx models. 2 Channels operate simultaneously on DRA3R48xx models
- (I) AC-53a ratings for DRA3P48x2 (A, B & C suffix) are 0.25 KW @ 240 VAC, 0.37 KW @ 380 VAC & 0.55 KW @ 480 VAC
- (J) Random switching Turn-On time is 0.1 msec (3P with E or D suffix only)
- (K) For low ambient temperature operation use Rated Input Control Voltage

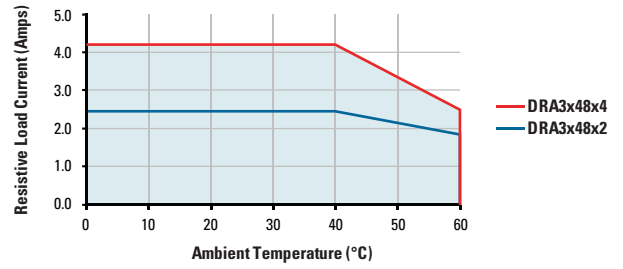
DRA Series Contactors



Part Number Nomenclature



Derating Curve

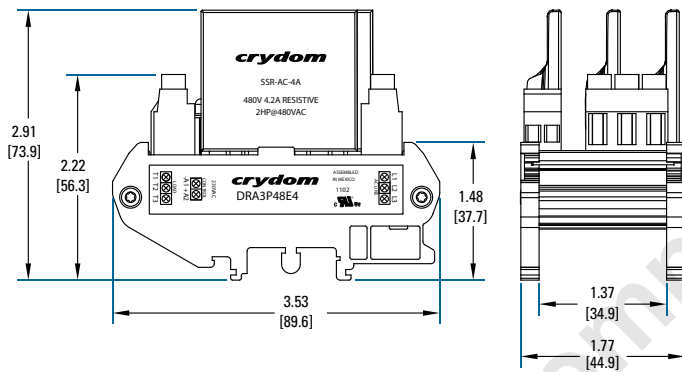


Temp.	DRA3P48x2	DRA3P48x4	DRA3R48x2	DRA3R48x4
40°C	1 HP (0.75 KW (I))	2 HP (0.75 KW)	1 HP (0.75 KW)	2 HP (1.5 KW)
60°C	¾ HP (0.55 KW)	1 HP (0.37 KW)	¾ HP (0.55 KW)	1 HP (0.75 KW)

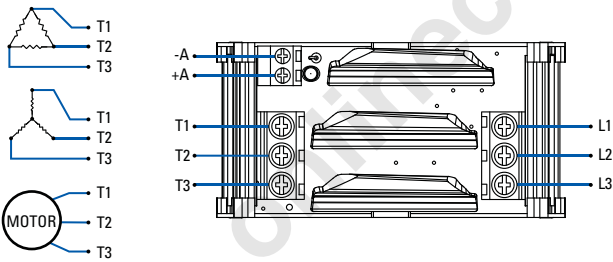
DRA3P48xx

Mechanical Dimensions

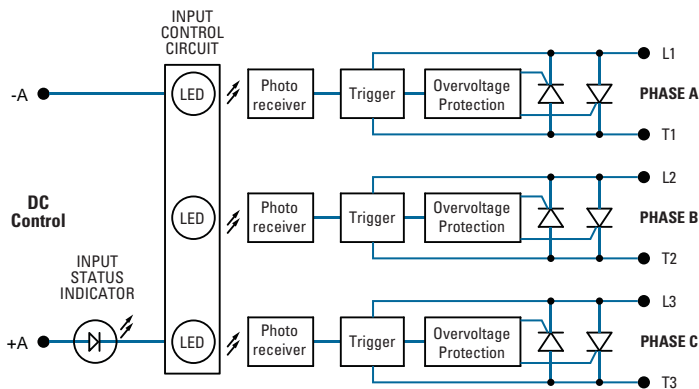
Tolerances: ± 0.02 in / 0.5 mm - All dimensions are in: inches [millimeters]



Wiring Diagram



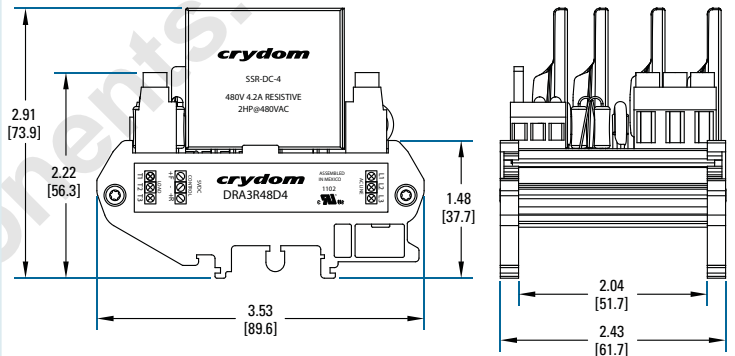
Block Diagram



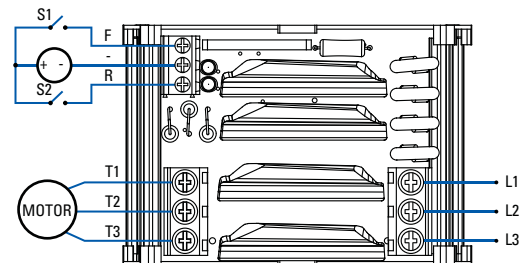
DRA3R48xx

Mechanical Dimensions

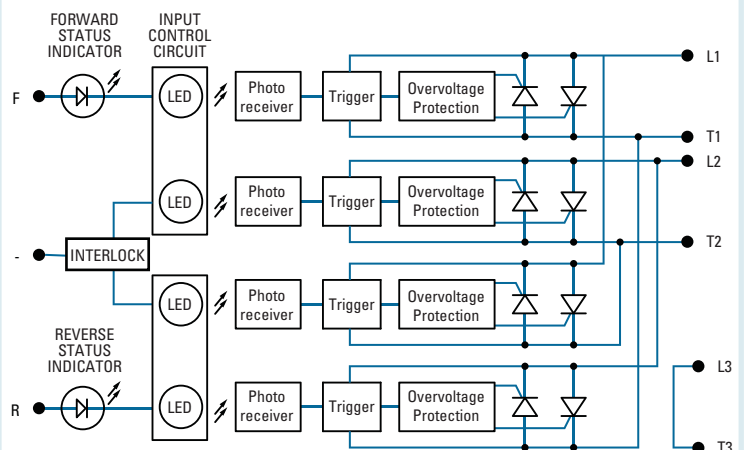
Tolerances: ± 0.02 in / 0.5 mm - All dimensions are in: inches [millimeters]



Wiring Diagram



Block Diagram



Questions?
Call or e-mail:

America Tel.: +1 (877)502 5500
e-mail: sales@crydom.com

EMEA Tel.: +44 (0) 1202 606030
e-mail: sales-europe@crydom.com

Asia Tel.: +86 (0) 21 2401 7766
e-mail: sales-cn@crydom.com

DRA Series Contactors



DRA Series DC Motor Reversing Contactors

- 54 mm wide motor reversing DIN rail mountable contactor package
- 90 VDC & 180 VDC Rated Operating Voltage
- 5 to 15 VDC & 15 to 32 VDC Input Control Voltage options available
- Convenient FET switches in H-bridge configuration for Motor Reversing applications
- Protective Forward/Reverse interlock built-in function
- UL ratings for Resistive & Motor loads
- LED Status indicator for Input Control Voltage
- No heat sink required & cage style screw terminals for easy installation & reliable wire connection



Output Specifications (A)	DRA4D100x12	DRA4D250x6
Operating Voltage Range [VDC]	1-100	1-250
Rated Operating Voltage [VDC]	90	180
Resistive Load Current (UL508/IEC 60947, DC-1) @ 40 °C [A] (E)	12/12	6 (L)/6
Maximum Off-State Leakage Current @ Rated Voltage [mA]	0.001	0.02
Maximum Surge Current (10 ms) [A]	110	91
Maximum On-State Voltage Drop @ Rated Current [VDC]	0.1	0.1
Maximum On-State Resistance (R _{DS-ON}) [mOhms]	10.5	48
Maximum Operations per sec	5	5
Ratings per UL508 [HP]	¼ HP, 4 FLA @ 90 VDC	¼ HP, 2 FLA @ 180 VDC
Ratings per IEC 60947, DC-3 [KW]	0.36 KW, 4 FLA @ 90 VDC	0.36 KW, 2 FLA @ 180 VDC

Input Specifications (A)	DRA4DxxxDxx	DRA4DxxxExx
Input Control Voltage Range [VDC]	5-15	15-32
Rated Input Control Voltage [VDC]	5	24
Minimum Turn-On Voltage [VDC]	5	15
Must Turn-Off Voltage [VDC]	2.5	2.9
Input Control Current Range [mA]	16-24.5	20.5-22
Nominal Input Impedance	see note (M)	see note (M)
Maximum Turn-On Time [msec]	20 ± 2	20 ± 2
Maximum Turn-Off Time [msec]	0.24 ± 0.02	0.30 ± 0.03

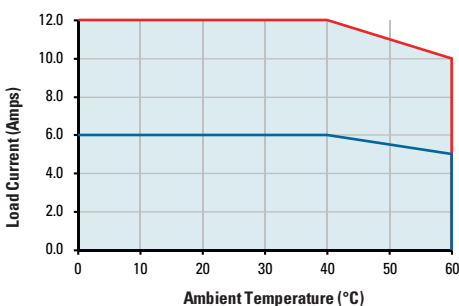
General Specifications (A)	Parameters
Dielectric Strength, Input to Output (50/60Hz)	2500 V
Maximum Capacitance, Input to Output @ 1KHz [pF]	35
Ambient Operating Temperature Range [°C] (J)	-30 to 60
Ambient Storage Temperature Range [°C]	-30 to 85
LED Status Indicator for Control Input	Forward: Green / Reverse: Yellow
Weight (typical) [oz] (gr)	5.28 (150)
Maximum Input/Output Terminal Screw Torque [lbs in] (Nm)	4.3 (0.5)
Input/Output Terminal Wire Capacity (stranded & solid)	24-12 AWG (IEC 0.5-2.5 mm ²)
Housing Material Class V0 (UL94)	Backside-PVC / Side Covers-Polyamide

General Notes

- (A) All parameters at 25°C unless otherwise specified
- (E) Ratings are for 0 mm air gap to adjacent similar parts, except for DRA4D250x6 (see note K)
- (J) For low ambient temperature operation use Rated Input Control Voltage
- (L) Resistive Load Current rating for DRA4D250x6 is 5.5 A @ 0 mm air gap. For maximum ratings use 45 mm air gap
- (M) Input circuit incorporates active current limitation

Derating Curve

Temp.	DRA4D100x12	DRA4D250x6
40°C	¼ HP 4 FLA @ 90 VDC	¼ HP 2 FLA @ 180 VDC
60°C	¼ HP 3 FLA @ 90 VDC	¼ HP 1 FLA @ 180 VDC



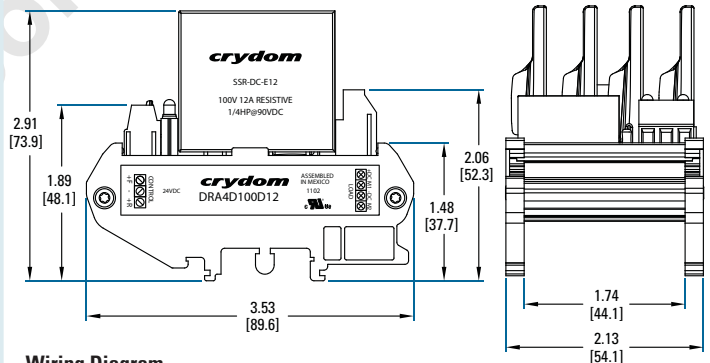
Part Number Nomenclature

Series: **DRA** Function: **4D** (H-Bridge) Operating Voltage Range: **100** (1-100 VDC) / **250** (1-250 VDC) Control Voltage: **D** (5 VDC) / **E** (24 VDC) Operational Current: **6** (6 Amps/¼ HP @ 180 VDC (250 suffix only)) / **12** (12 Amps/¼ HP @ 90 VDC (100 suffix only))

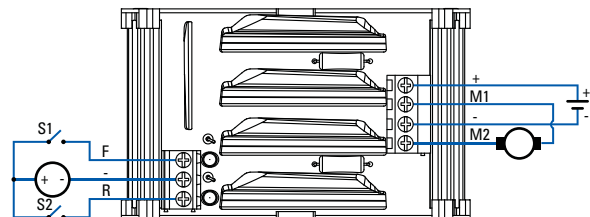
DRA4Dxxxxxx

Mechanical Dimensions

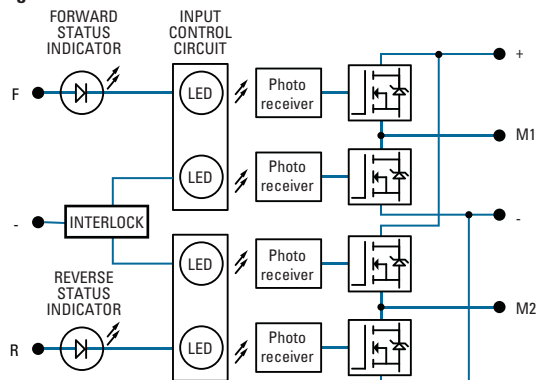
Tolerances: ± 0.02 in / 0.5 mm - All dimensions are in: inches [millimeters]



Wiring Diagram



Block Diagram



crydom®

crydom®
Across the Globe



AMERICA

USA & CANADA

Crydom Inc
2320 Paseo de las Americas,
Suite 201
San Diego CA 92154
Sales Support
Tel.: +1 (877) 502 5500
Fax: +1 (619) 710 8540
sales@crydom.com
Tech Support
Tel.: +1 (877) 702 7700
support@crydom.com

MEXICO

**Automatismo Crouzet
S.A. de C.V.**
Calzada Zavaleta 2505 - C
Col Sta Cruz Buenavista
C.P. 72150 - Puebla
MEXICO
Sales Support
Toll free: 01 800 087 6333
Fax: +52 (222) 409 7810
Tel.: +52 (222) 409 7000
sales-mx@crydom.com
Tech Support
Toll free: 01 800 838 3736

SOUTHERN AND CENTRAL AMERICAN COUNTRIES

CST Latinoamerica
Alameda Rio Negro, 1030,
18º andar – Conjunto 1803
CEP: 06454-000
Barueri - SP
BRASIL
Tel.: +55 (11) 2505 7500
Fax: +55 (11) 2505 7507
info@cst-latinoamerica.com

EUROPE MIDDLE EAST AFRICA

UNITED KINGDOM

Crydom SSR Ltd
Arena Business Centre
Holyrood, Close
Poole, Dorset BH17 7FJ
Sales Support
Tel.: +44 (0) 1202 606030
Fax: +44 (0) 1202 606035
sales-europe@crydom.com
Tech Support
support-europe@crydom.com

AUSTRIA & SWITZERLAND

Tel.: +44 (0) 1202 606030
Fax: +44 (0) 1202 606035
vertrieb@crydom.com

GERMANY

Tel.: +49 (0) 180 3000 506
Fax: +49 (0) 180 3205 227
vertrieb@crydom.com

BELGIUM

Tel.: +32 (0) 2 460 4413
Fax: +32 (0) 2 461 2614
sales-europe@crydom.com

FRANCE

Tel.: +33 (0) 810 123 963
Fax: +33 (0) 810 057 605
sales-europe@crydom.com

ITALY

Tel.: +39 (0) 2 665 99 260
Fax: +39 (0) 2 665 99 268
sales-europe@crydom.com

NETHERLANDS

Tel.: +31 (0) 71 582 0068
Fax: +31 (0) 71 542 1648
sales-europe@crydom.com

SPAIN

Tel.: +34 902 876 217
Fax: +34 902 876 219
sales-europe@crydom.com

MIDDLE EAST, AFRICA AND OTHER EUROPEAN COUNTRIES

Tel.: +44 (0) 1202 606030
Fax: +44 (0) 1202 606035
sales-europe@crydom.com

ASIA PACIFIC

CHINA & HONG KONG

**Custom Sensors &
Technologies Asia
(Shanghai) Ltd.**
5th - 14th floor,
Chang Feng International Tower,
89 Yunling Road (East),
Putuo District,
Shanghai, 200062
Sales Support
Tel.: +86 (0) 21 6065 6699
Fax: +86 (0) 21 6065 7749
sales-cn@crydom.com
Tech Support
support-cn@crydom.com

TAIWAN & JAPAN

**Custom Sensors &
Technologies**
2F, No. 39, Ji-Hu Road
Nei-Hu Dist.
Taipei 114, Taiwan
Tel.: +886 2 8751 6388
Fax: +886 2 2657 8725
taiwan@cstsensors.com

SOUTH KOREA

**Custom Sensors &
Technologies**
2F, Jeil Bldg.,
94-46 Youngdeungpo-dong 7-ga
Youngdeungpo-gu,
Seoul, 150-037
South Korea
Tel.: +82 2 2629 8312
Fax: +82 2 2629 8310
korea@cstsensors.com

INDIA

CST Sensors India Pvt Ltd
Unit 1301 and 1302 Prestige
Meridian II
30 M.G.Road,
Bangalore - 560001
INDIA
Tel.: +91 (80) 4113 2204/05
Fax: +91 (80) 4113 2206
india@cstsensors.com

SOUTH EAST ASIAN AND PACIFIC COUNTRIES

**Custom Sensors &
Technologies**
2F, No. 39, Ji-Hu Road
Nei-Hu Dist.
Taipei 114, Taiwan
Tel.: +886 2 8751 6388
Fax: +886 2 2657 8725
eap@cstsensors.com

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