



# TECHNICAL SUBMITTAL



PROJECT TITLE:

Brookfield WPCA - 133 Pump Station

REVISION NO:

2

DATE:

7/25/24

CONTRACT NO:

SPECIFICATION:

Pump Replacement

LOCATION:

Brookfield, CT

FLEET JOB NO:

DE-03-1318

CUSTOMER PO NO:

20031 Pump Replacement



TAG NO.	MODEL	DESCRIPTION
TBA	Primex Control Panel	(1) Primex Duplex Wastewater Control Panel w/ NEMA 12 Enclosure

OWNER:

Brookfield, CT

G.A FLEET ASSOCIATES CONTACT:

New York & Connecticut Office:  
6 International Drive, 2nd Floor Suite# 210  
Rye Brook, NY 10573  
Phone: (914) 835-4000  
Fax: (914) 939-4850

FLEET PUMP & SERVICE CONTACT:

455 Knollwood Rd, White Plains, NY 10603  
NY/NJ Phone: (914) 835-3801  
NY/NJ Fax: (914) 835-2946  
CT: (203) 661-2680



# TECHNICAL SUBMITTAL

## Brookfield WPCA - 133 Pump Station Control Panel Submittal

### TABLE OF CONTENTS

Contacts

Equipment Information

Scope Clarifications

Equipment Warranty

#### CONTROL PANEL DOCUMENTATION FOR REVIEW/APPROVAL

G.A. Fleet Associates Sales Engineer's Submittal Sign-off Page

#### KEYSTONE ENGINEERING GROUP SHOP DRAWING REVIEW

Keystone's review is with respect to the design concept of the project and the information given in the Contract Documents only. The Contractor is still responsible for compliance with the Drawings and Specifications including all details pertaining to the work and equipment to be supplied for a complete and operable system. This shop drawing submittal is:

- |  |  |
|--|--|
| <input type="checkbox"/> Approved  | <input type="checkbox"/> Approved as Noted<br>(Resubmittal Required)               |
| <input type="checkbox"/> Revise/Resubmit   | <input type="checkbox"/> Approved as Noted<br>(Provide Requested Information Only) |
| <input checked="" type="checkbox"/> Approved as Noted<br>(No Resubmittal Required) |  |

Reviewed by Luis Ruiz 999 Date 08/09/2024

- P. 4 Confirm dimensions are 48"H x 30W" x 10"D per page 16 of this submittal



## Brookfield WPCA - 133 Pump Station Control Panel Submittal

### CONTACTS

**Engineer**

TBA

**Contractor**

Brookfield  
53A Commerce Rd., Unit 1  
Brookfield, CT 06804

**Representative**

G. A. Fleet Associates, Inc.  
6 International Drive, 2nd Floor Suite # 210  
Rye Brook, NY 10573  
Phone: 914-835-4000  
Fax: 914-939-4850

**Service & Parts**

Fleet Pump & Service  
455 Knollwood Rd.  
White Plains, NY 10603  
Phone: 914-835-3801  
Fax: 914-835-2946

**Equipment Manufacturer**

SJE  
2221 Ford Drive  
Ashland, OH 44805  
Phone:

## EQUIPMENT INFORMATION

### **CONTROL PANEL:**

- (1) Primex Duplex Control Panel
- Enclosure, NEMA12, 42"H X 36" W X 8" D, SS316

confirm dimensions  
are 48"H x 30W" x  
10"D per page 16 of  
this submittal

### **Control Panel Instrumentation:**

- (2) Level Transducers P/N GA-L100-0-400-100-PUR
- (5) Backup Floats P/N GSI5NONC
- (2) MiniCas Units 24/120vac P/N 14-407129
- (2) MiniCas Unit Sockets P/N 14-407130





## Brookfield WPCA - 133 Pump Station Control Panel Submittal

### G.A. FLEET CLARIFICATIONS

- Controls to be installed by others.

**NOTE:**

Please contact GA Fleet's Technical Services Department at [techservices@gafleet.com](mailto:techservices@gafleet.com) with a minimum of 3 weeks notice to schedule Start-up, Commissioning, Training, or other service appointments.

Julia French, Technical Services Scheduler  
Sal Rigaglia, Technical Services Manager



TECHNICAL SUBMITTAL

## **CONTROL PANEL DOCUMENTS FOR REVIEW/APPROVAL**



## Control Panel Submittal Documentation

PROJECT	4010400 - BROOKFIELD, CT - BROOKFIELD WCPA DUPLEX TRANSDUCER PANEL
PROPOSAL NO.	20240528
CUSTOMER	GA FLEET ASSOCIATES
PO NO.	PO-058937
DATE	6/20/24
SUBMITTED BY	Tony Shaffer

### Notes:

### Revisions:

A - Updated to 1 XDCR-5 Floats

B - Updated VFD signals

C - Enclosure change, added reset pushbutton, aux contact



WARRANTY: SJE warrants to the buyer that this product shall be free of manufacturing defects for \_\_\_\_ year(s) from the date of shipment. During that time period, SJE will repair or replace, at the sole discretion of SJE and subject to the Terms, Conditions & Warranty provisions found on SJE's website (<https://sjeinc.com/terms-and-conditions/>) and the terms and conditions set forth below, for the buyer, any component which proves to be defective due solely to defective materials or workmanship of SJE. Items that are considered consumable, including, but not limited to, lamps, surge protectors and fuses are not covered under SJE's warranty.

ANY ELECTRICAL WIRING AND SERVICING OF THE PRODUCT MUST BE PERFORMED BY A LICENSED ELECTRICIAN. WARRANTY CLAIMS FOR PRODUCTS WHICH WERE AT ANY TIME WIRED OR SERVICED BY ANYONE OTHER THAN A LICENSED ELECTRICIAN SHALL NOT BE HONORED IN WHOLE OR PART BY SJE.

THIS WARRANTY DOES NOT APPLY TO: (a) damage due to any weather-related or other conditions beyond the reasonable control of SJE; (b) defects or malfunctions resulting from the product not being installed, operated, or maintained in accordance with written instructions provided by SJE; (c) defects or malfunctions resulting from the product not being installed, operated, or maintained in accordance with applicable local codes, ordinances, or accepted trade practices; (d) failures resulting from abuse, misuse, accident, or negligence; (e) products repaired and/or modified without prior written authorization from SJE; or (f) product parts furnished by any party other than SJE.

TO OBTAIN WARRANTY SERVICE: The buyer can contact SJE Service Center at 218-847-1317 or toll free at 888-342-5753 for a Returned Material Authorization, which is required for any product being submitted for a warranty claim. Any products to be repaired or replaced under this warranty must be returned to SJE, or such place as designated by SJE, at the instruction of SJE. The buyer shall assume all responsibility and expense for removal, reinstallation, and freight associated with any warranty service.

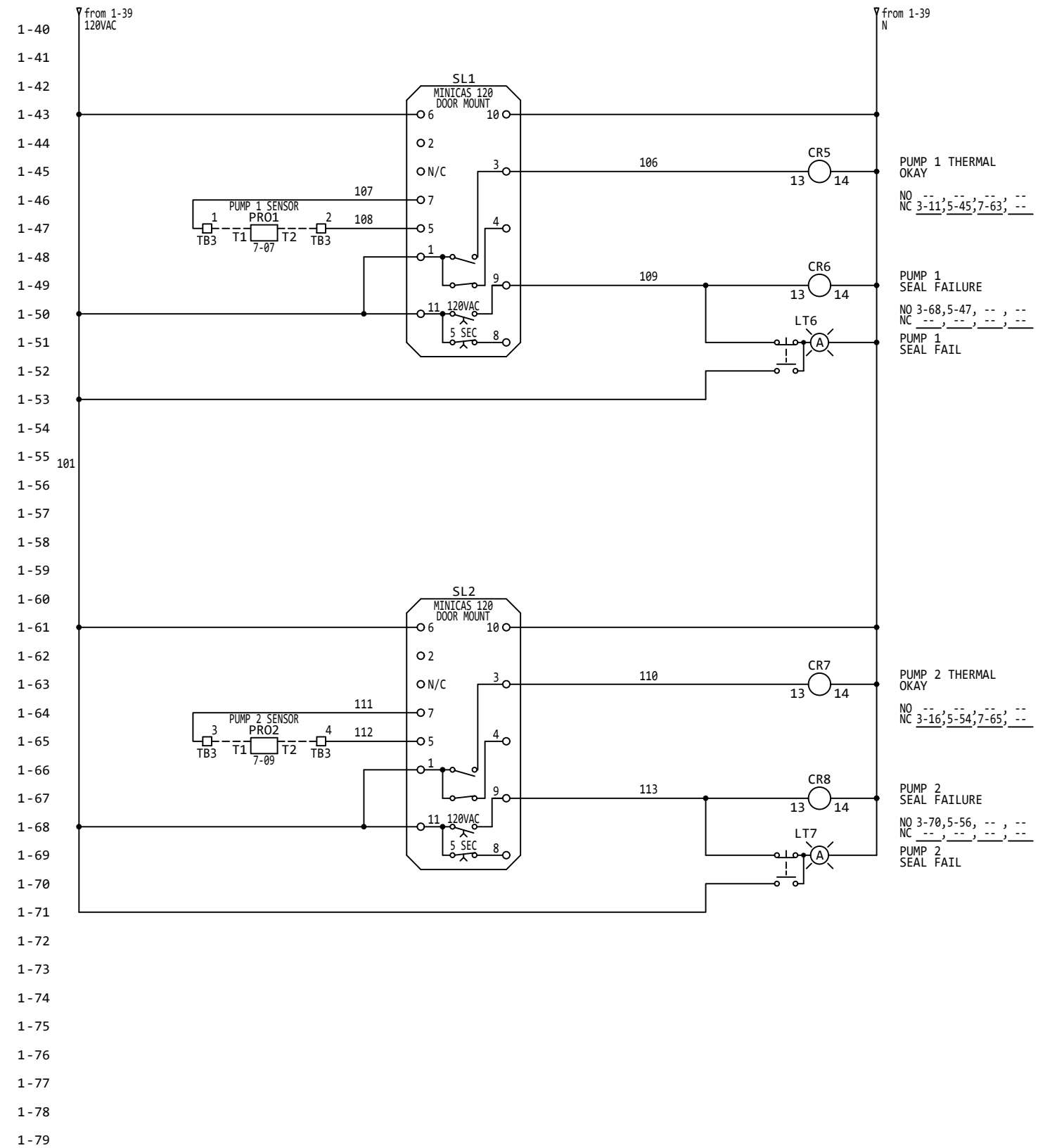
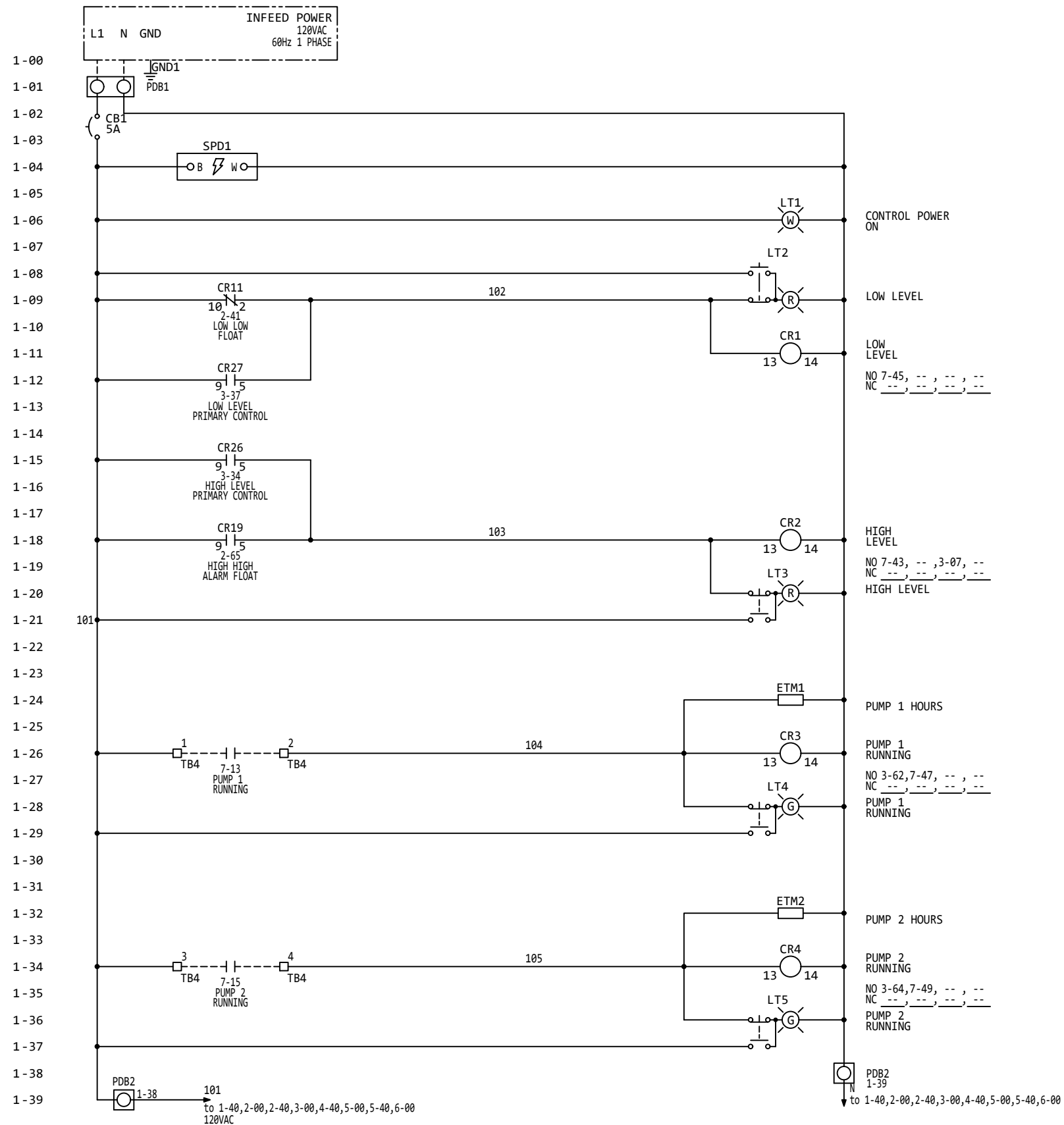
SJE DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SJE SHALL NOT, IN ANY MANNER, BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES AS A RESULT OF A BREACH OF THIS WRITTEN WARRANTY OR ANY IMPLIED WARRANTY.

Some states do not allow limitations on implied warranty duration, as such, this limitation may not apply to the buyer. Some states do not allow the exclusion or limitation of incidental or consequential damages, as such, these limitations or exclusions may not apply to the buyer. The above-described warranty gives the buyer specific legal rights, and the buyer may also have other rights which vary from state to state.

---

For complete terms and conditions, please visit our websites.





THIS DRAWING CONTAINS PROPRIETARY INFORMATION WHICH MUST NOT BE DUPLICATED, USED, OR DISCLOSED IN WHOLE OR IN PART WITHOUT PRIOR WRITTEN CONSENT.

SHEET NUMBER  
**1 OF 8**

NO.	REVISION HISTORY	DATE	BY
C	UPDATED PER COMMENTS	6/20/24	TRS
B	UPDATED PER COMMENTS	5/13/24	TRS
A	UPDATED TO 1 XDCR-5 FLOAT	4/26/24	TRS

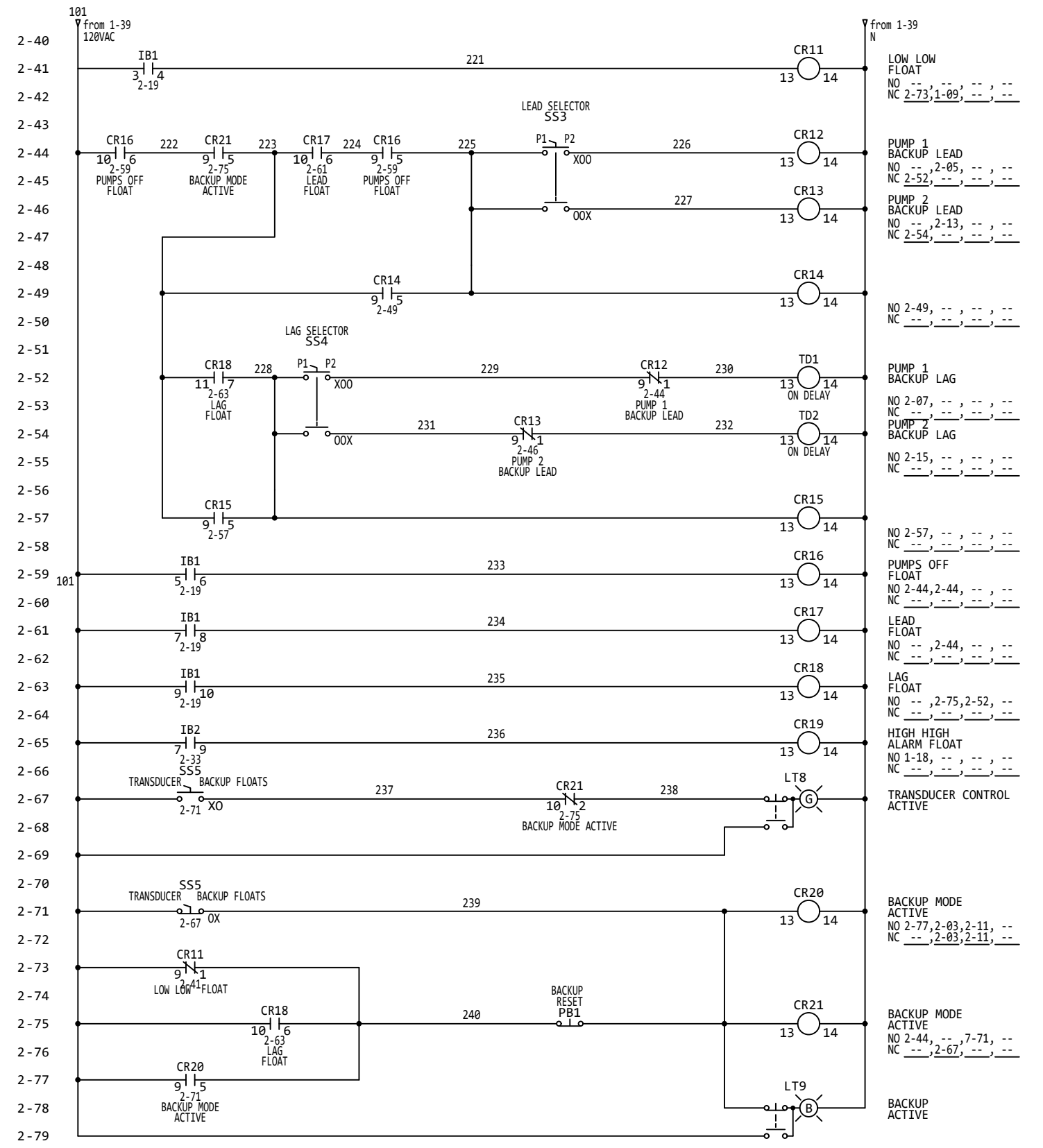
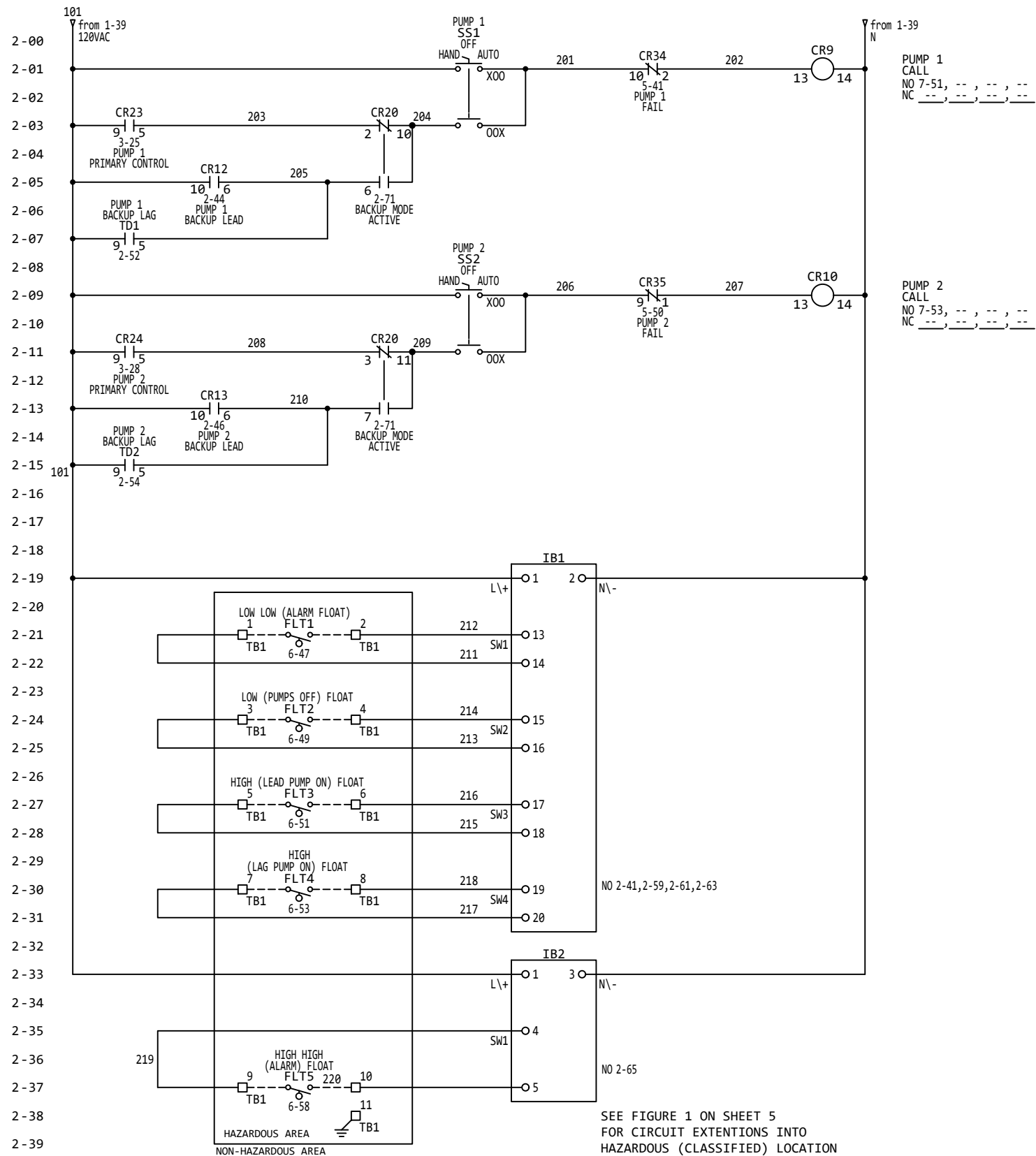


**GA FLEET ASSOCIATES**  
BROOKFIELD WCPA DUPLEX  
BROOKFIELD, CT

DRAWN BY TRS DATE 3/13/24

PANEL REQUIREMENTS	
SYM.	
VOLTAGE	120 VAC
PHASE	1 PHASE
FREQUENCY	60 Hz
SCCR	5 kA RMS SYM
TOTAL FLA	1.8 FLA
TYPE	1

LARGEST MOTOR POWER REQUIREMENTS	
HP	N/A HP
FLA	N/A
PROJECT NUMBER <b>4010400A</b>	



THIS DRAWING CONTAINS PROPRIETARY INFORMATION WHICH MUST NOT BE DUPLICATED, USED, OR DISCLOSED IN WHOLE OR IN PART WITHOUT PRIOR WRITTEN CONSENT.

SHEET NUMBER  
**2 OF 8**

NO.	REVISION HISTORY	DATE	BY
C	UPDATED PER COMMENTS	6/20/24	TRS
B	UPDATED PER COMMENTS	5/13/24	TRS
A	UPDATED TO 1 XDCR-5 FLOAT	4/26/24	TRS

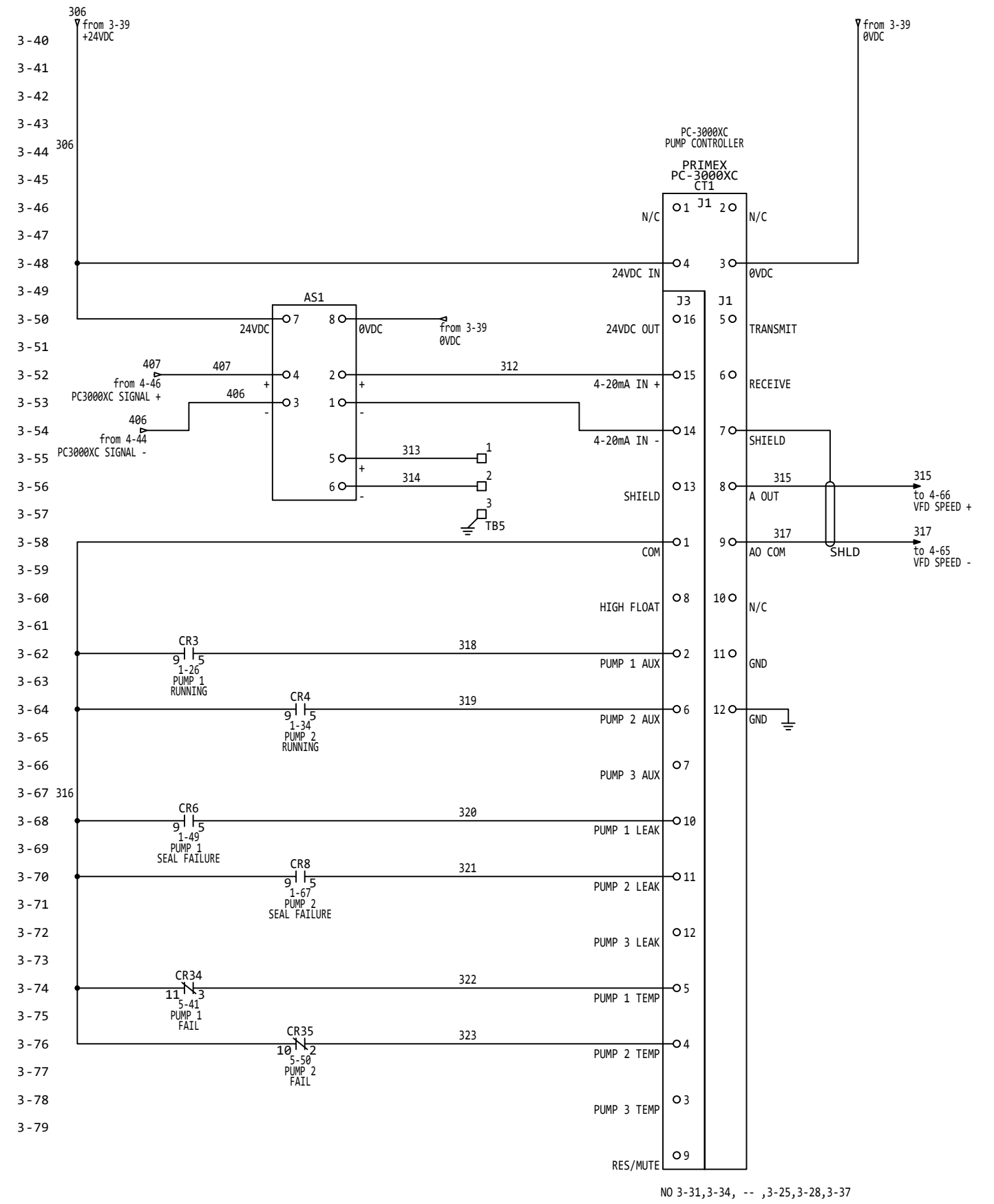
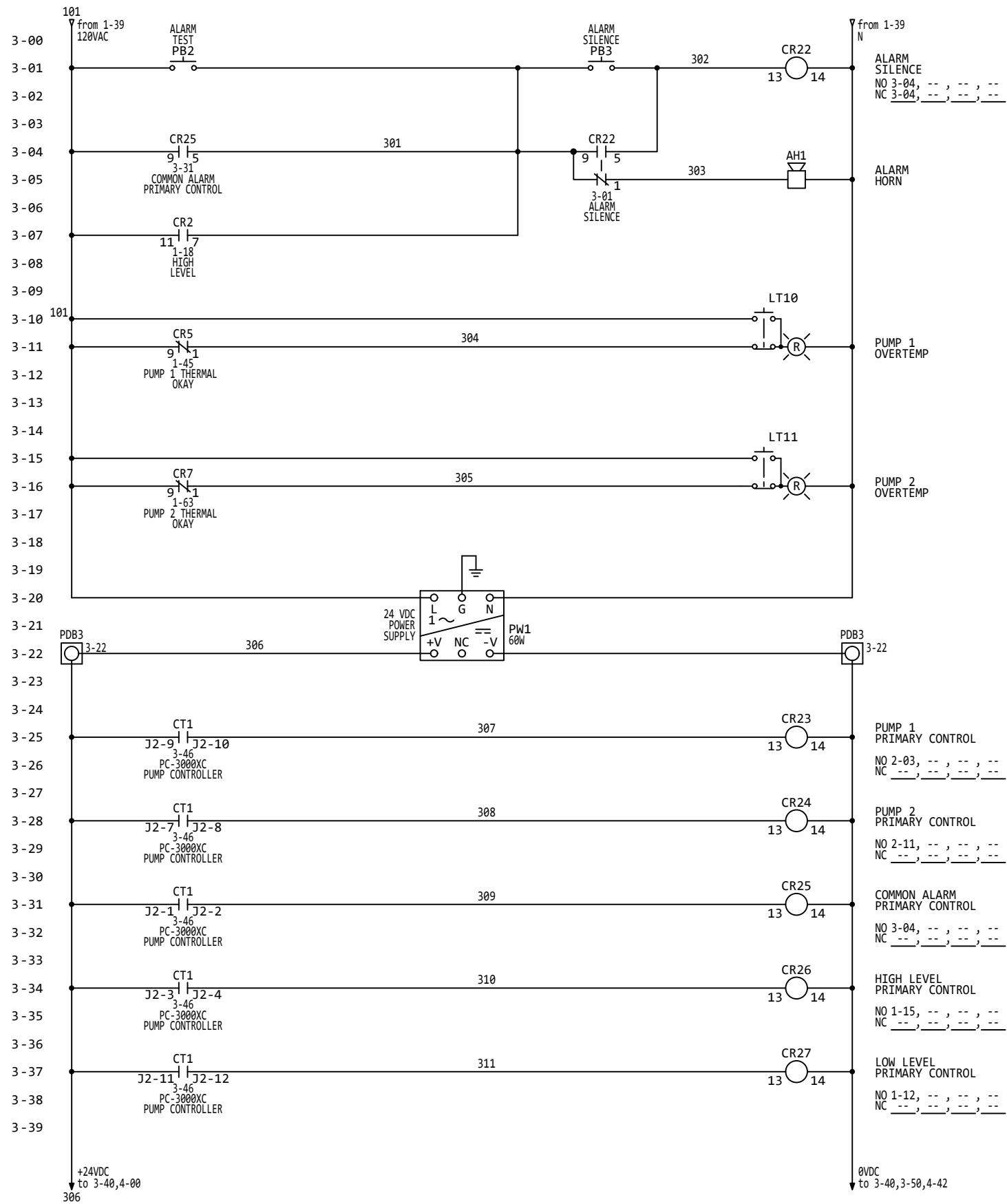


**GA FLEET ASSOCIATES**  
BROOKFIELD WCPA DUPLEX  
BROOKFIELD, CT

DRAWN BY TRS DATE 3/13/24

PANEL REQUIREMENTS	
SYM.	
VOLTAGE	120 VAC
PHASE	1 PHASE
FREQUENCY	60 Hz
SCCR	5 kA RMS SYM
TOTAL FLA	1.8 FLA
TYPE	1

LARGEST MOTOR POWER REQUIREMENTS	
HP	N/A
FLA	N/A
PROJECT NUMBER	
<b>4010400A</b>	



NO 3-31,3-34, -- ,3-25,3-28,3-37

THIS DRAWING CONTAINS PROPRIETARY INFORMATION WHICH MUST NOT BE DUPLICATED, USED, OR DISCLOSED IN WHOLE OR IN PART WITHOUT PRIOR WRITTEN CONSENT.

NO.	REVISION HISTORY	DATE	BY
C	UPDATED PER COMMENTS	6/20/24	TRS
B	UPDATED PER COMMENTS	5/13/24	TRS
A	UPDATED TO 1 XDCR-5 FLOAT	4/26/24	TRS



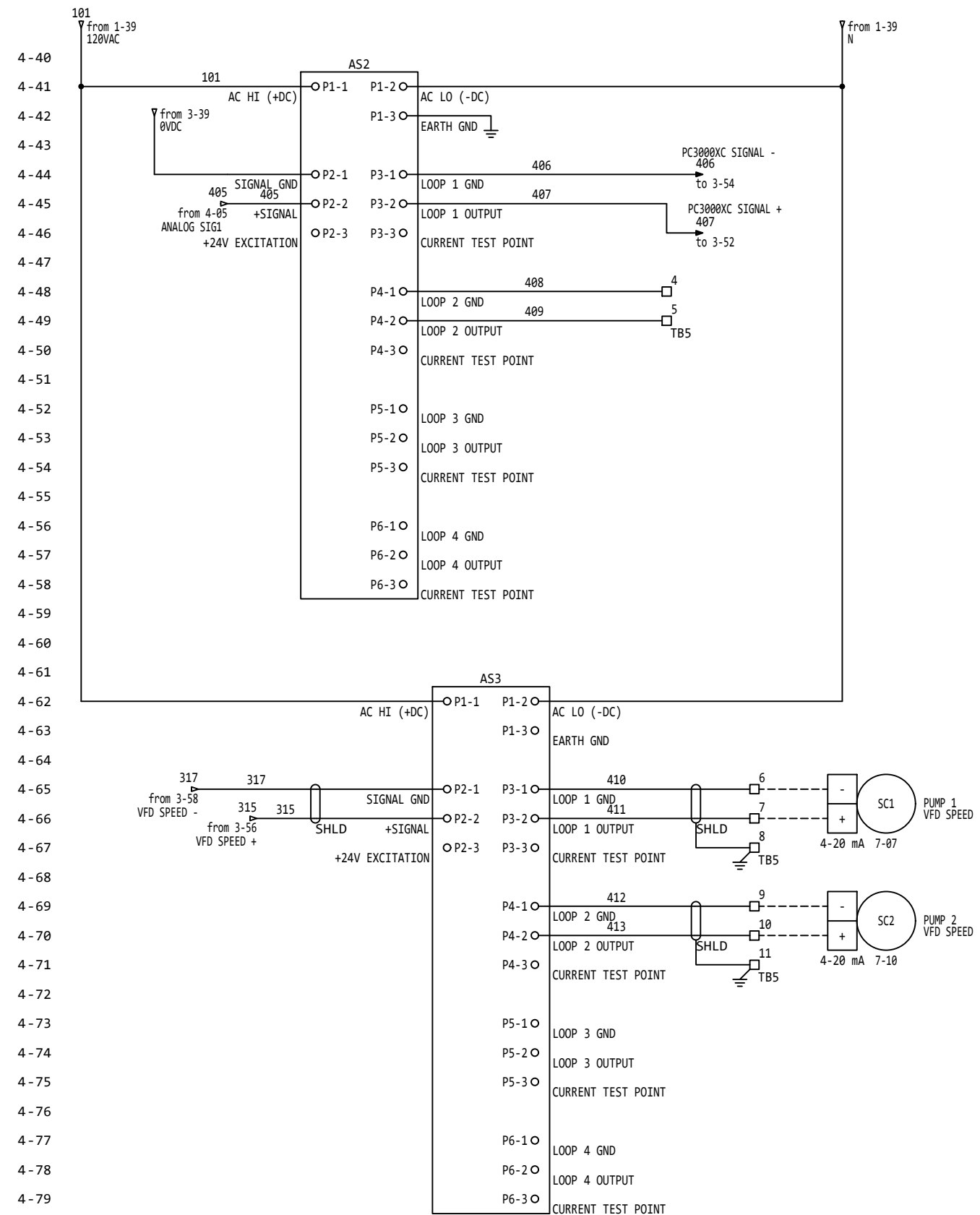
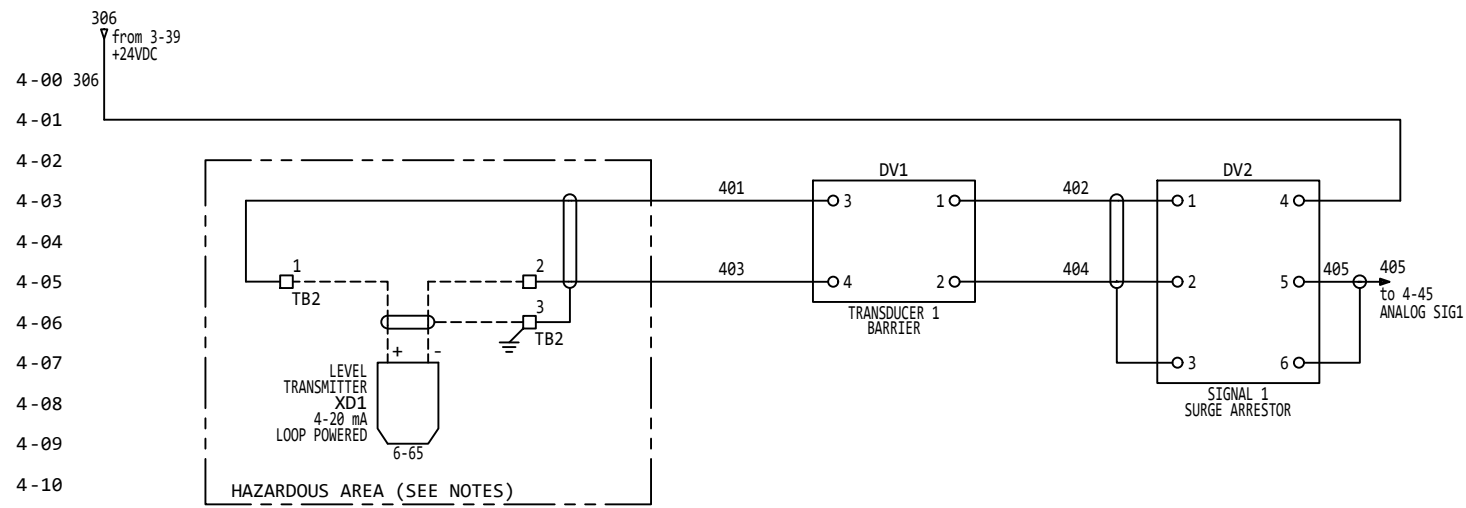
**GA FLEET ASSOCIATES**  
 BROOKFIELD WCPA DUPLEX  
 BROOKFIELD, CT

DRAWN BY TRS DATE 3/13/24

PANEL REQUIREMENTS	
SYM.	
VOLTAGE	120 VAC
PHASE	1 PHASE
FREQUENCY	60 Hz
SCCR	5 kA RMS SYM
TOTAL FLA	1.8 FLA
TYPE	1

LARGEST MOTOR POWER REQUIREMENTS	
HP	N/A HP
FLA	N/A
PROJECT NUMBER	
<b>4010400A</b>	

SHEET NUMBER  
**3 OF 8**



4-00 306  
 4-01  
 4-02  
 4-03  
 4-04  
 4-05  
 4-06  
 4-07  
 4-08  
 4-09  
 4-10  
 4-11  
 4-12  
 4-13  
 4-14  
 4-15  
 4-16  
 4-17  
 4-18  
 4-19  
 4-20  
 4-21  
 4-22  
 4-23  
 4-24  
 4-25  
 4-26  
 4-27  
 4-28  
 4-29  
 4-30  
 4-31  
 4-32  
 4-33  
 4-34  
 4-35  
 4-36  
 4-37  
 4-38  
 4-39

4-40  
 4-41  
 4-42  
 4-43  
 4-44  
 4-45  
 4-46  
 4-47  
 4-48  
 4-49  
 4-50  
 4-51  
 4-52  
 4-53  
 4-54  
 4-55  
 4-56  
 4-57  
 4-58  
 4-59  
 4-60  
 4-61  
 4-62  
 4-63  
 4-64  
 4-65  
 4-66  
 4-67  
 4-68  
 4-69  
 4-70  
 4-71  
 4-72  
 4-73  
 4-74  
 4-75  
 4-76  
 4-77  
 4-78  
 4-79

THIS DRAWING CONTAINS PROPRIETARY INFORMATION WHICH MUST NOT BE DUPLICATED, USED, OR DISCLOSED IN WHOLE OR IN PART WITHOUT PRIOR WRITTEN CONSENT.

SHEET NUMBER  
**4 OF 8**

NO.	REVISION HISTORY	DATE	BY
C	UPDATED PER COMMENTS	6/20/24	TRS
B	UPDATED PER COMMENTS	5/13/24	TRS
A	UPDATED TO 1 XDCR-5 FLOAT	4/26/24	TRS



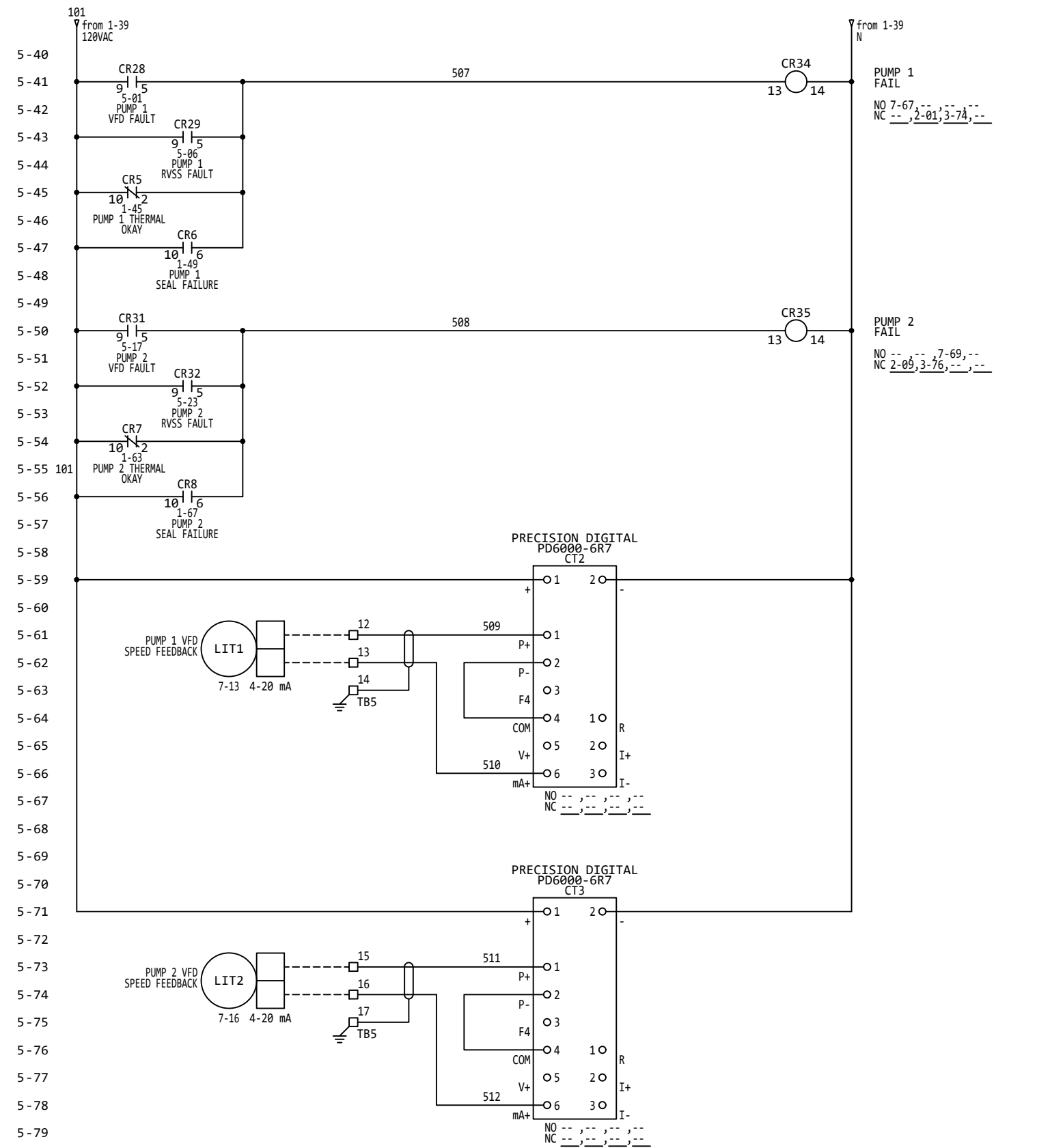
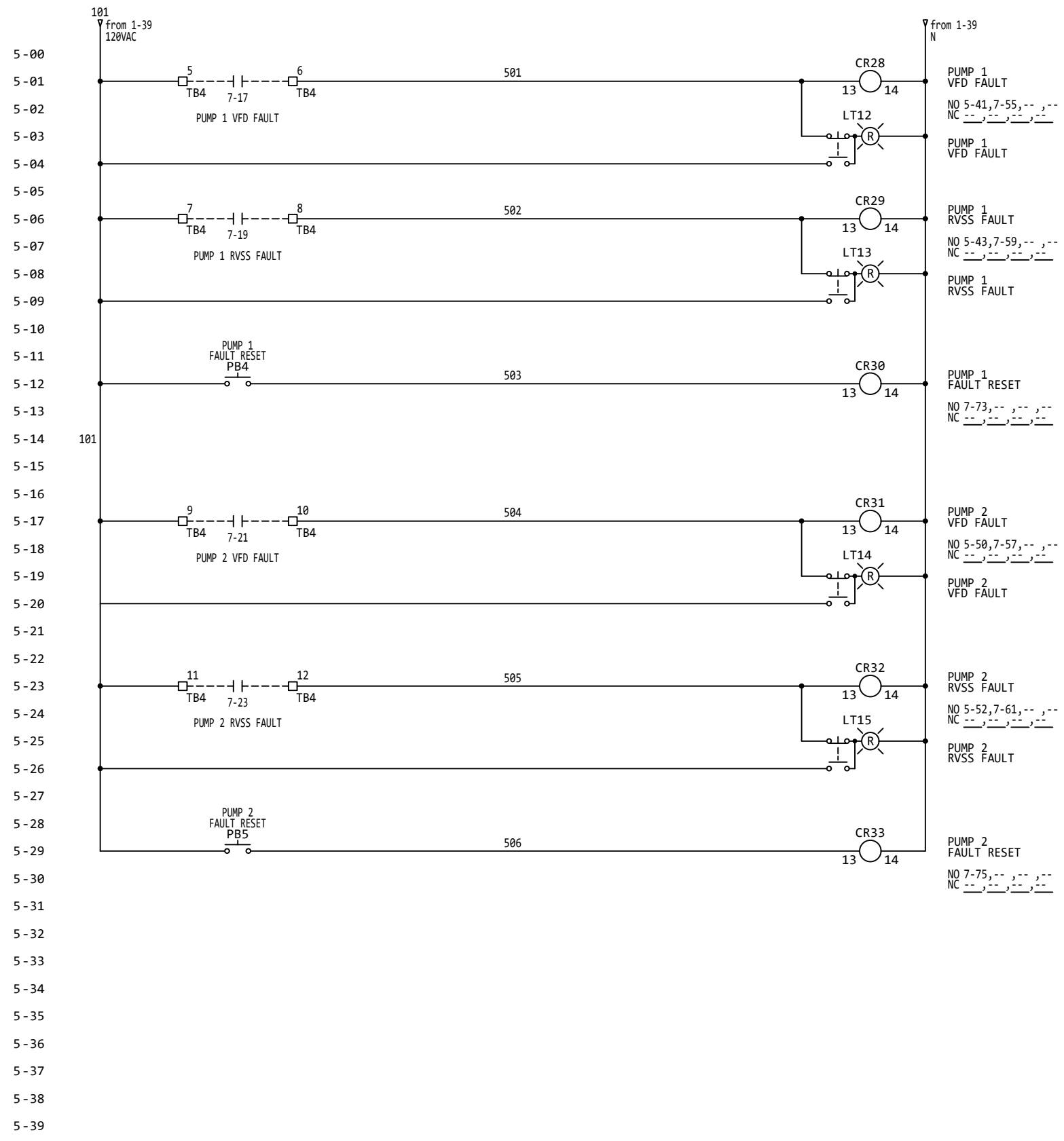
**GA FLEET ASSOCIATES**  
 BROOKFIELD WCPA DUPLEX  
 BROOKFIELD, CT

DRAWN BY TRS  
 DATE 3/13/24

PANEL REQUIREMENTS	
SYM.	
VOLTAGE	120 VAC
PHASE	1 PHASE
FREQUENCY	60 Hz
SCCR	5 kA RMS SYM
TOTAL FLA	1.8 FLA
TYPE	1

LARGEST MOTOR POWER REQUIREMENTS	
HP	N/A HP
FLA	N/A
PROJECT NUMBER <b>4010400A</b>	





THIS DRAWING CONTAINS PROPRIETARY INFORMATION WHICH MUST NOT BE DUPLICATED, USED, OR DISCLOSED IN WHOLE OR IN PART WITHOUT PRIOR WRITTEN CONSENT.

SHEET NUMBER  
**5 OF 8**

NO.	REVISION HISTORY	DATE	BY
C	UPDATED PER COMMENTS	6/20/24	TRS
B	UPDATED PER COMMENTS	5/13/24	TRS
A	UPDATED TO 1 XDCR-5 FLOAT	4/26/24	TRS



**GA FLEET ASSOCIATES**  
BROOKFIELD WCPA DUPLEX  
BROOKFIELD, CT

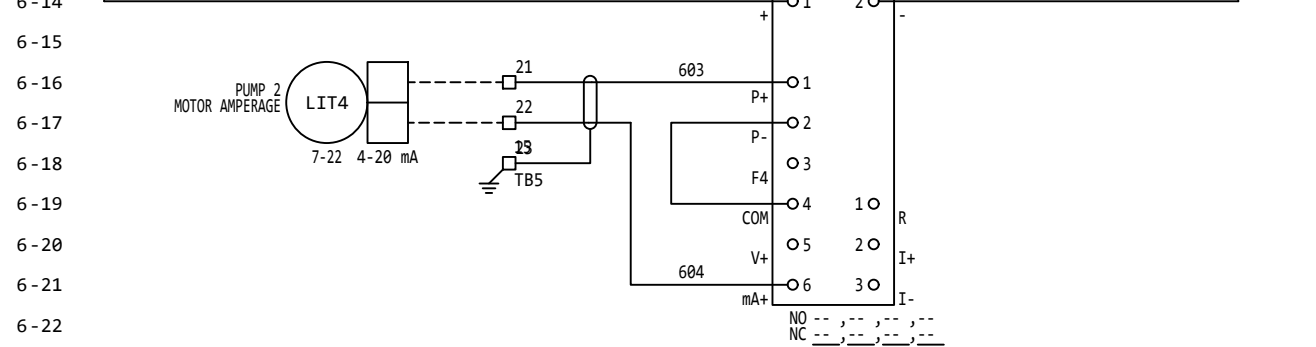
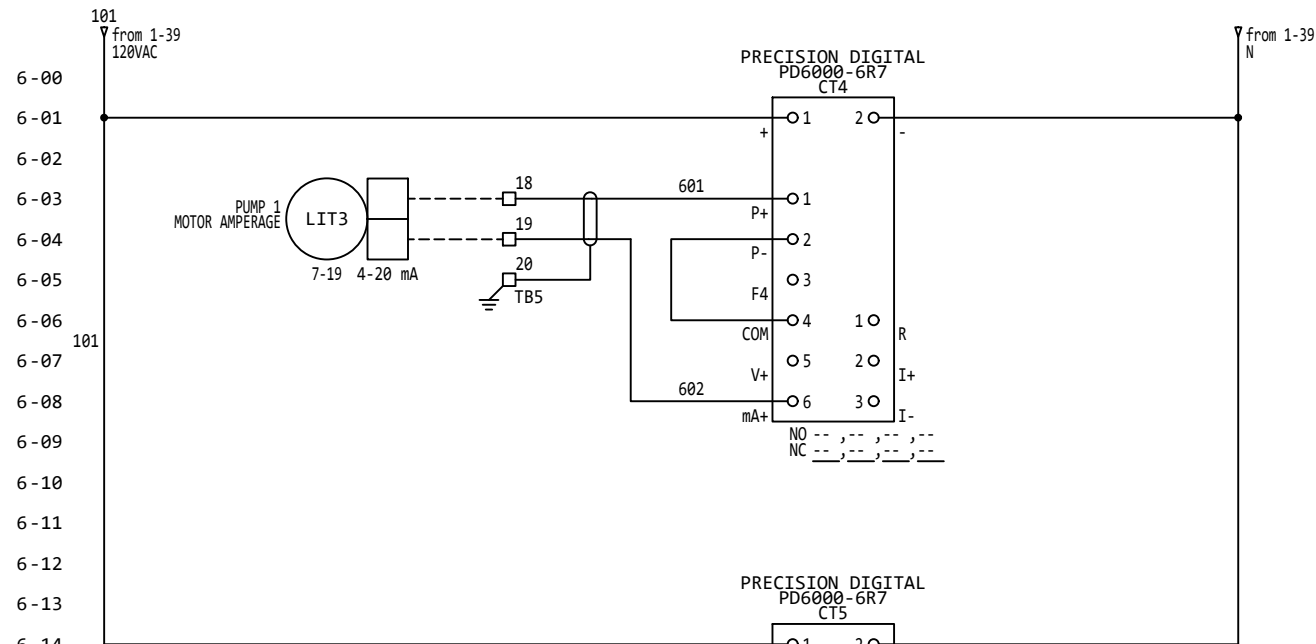
DRAWN BY TRS DATE 3/13/24

PANEL REQUIREMENTS  
SYM. VOLTAGE 120 VAC  
PHASE 1 PHASE  
FREQUENCY 60 Hz  
SCCR 5 kA RMS SYM  
TOTAL FLA 1.8 FLA  
TYPE 1

LARGEST MOTOR POWER REQUIREMENTS  
HP N/A HP  
FLA N/A

PROJECT NUMBER  
**4010400A**

# FIELD WIRING SECTION

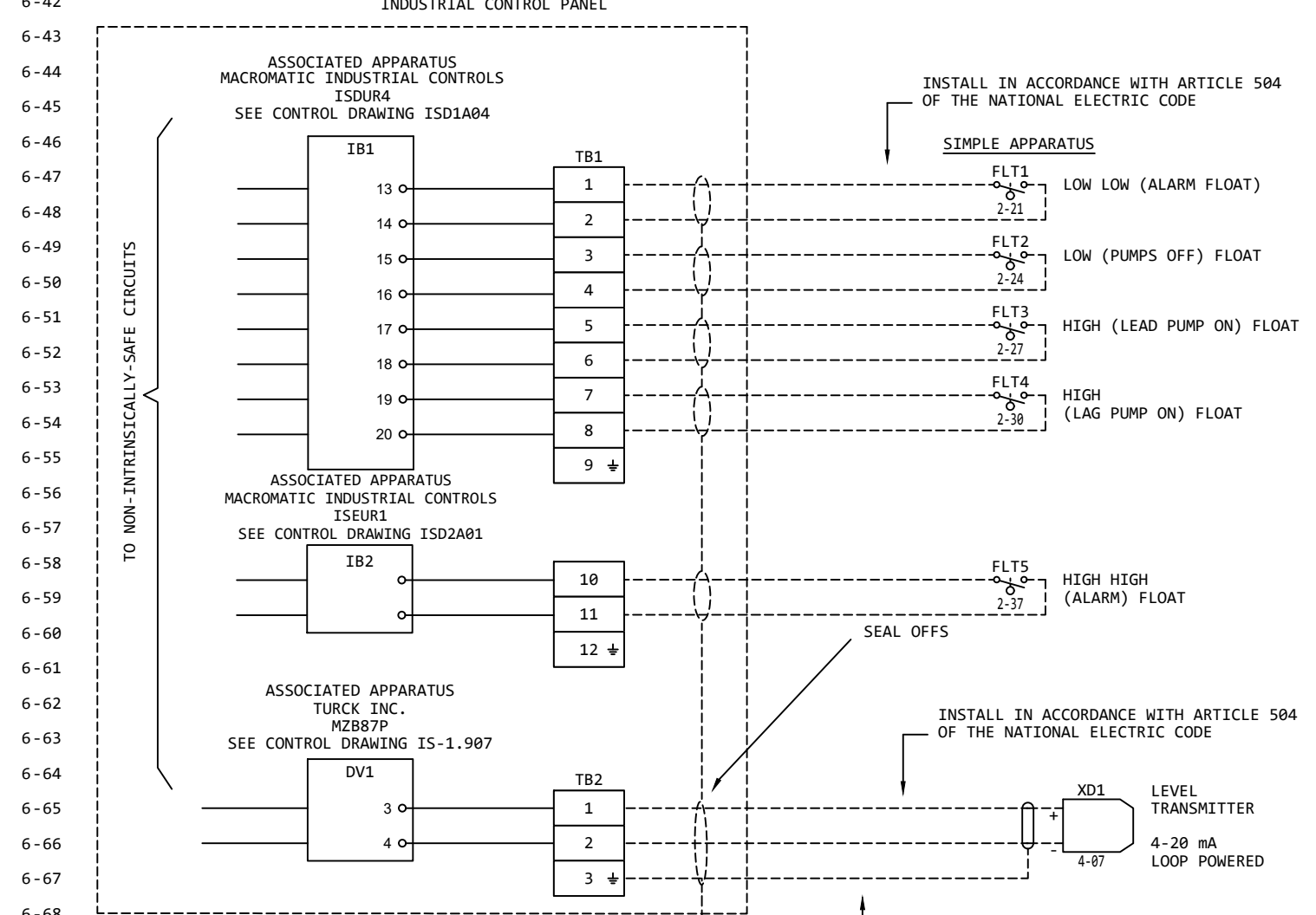


6-40 NON-HAZARDOUS (UNCLASSIFIED) LOCATION

6-41 HAZARDOUS (CLASSIFIED) LOCATION CLASS I, GROUPS A, B, C, D

6-42 CLASS II, GROUPS E, F, G

6-43 CLASS III



6-46

6-47

6-48

6-49

6-50

6-51

6-52

6-53

6-54

6-55

6-56

6-57

6-58

6-59

6-60

6-61

6-62

6-63

6-64

6-65

6-66

6-67

6-68

6-69

6-70

6-71

6-72

6-73

6-74

6-75

6-76

6-77

6-78

6-79

INSTALL IN ACCORDANCE WITH ARTICLE 504 OF THE NATIONAL ELECTRIC CODE

CABLE CAPACITANCE AND INDUCTANCE MUST BE TAKEN INTO ACCOUNT TO DETERMINE MAXIMUM ALLOWABLE CABLE LENGTH. WHERE THE CABLE CAPACITANCE AND INDUCTANCE PER FOOT IS NOT KNOWN, THE FOLLOWING VALUES SHALL BE USED:  
 $C_{cable} = 60\text{pF/foot}$  and  $L_{cable} = 0.2\mu\text{H/foot}$ .

HAZARDOUS AREA (SEE NOTES)

**INTRINSICALLY SAFE APPARATUS**

SELECTED INTRINSICALLY SAFE APPARATUS FOR FIELD CONNECTION TO THE INTRINSIC SAFETY BARRIERS WITHIN PANEL MUST BE UL LISTED AS INTRINSICALLY SAFE FOR THE APPLICATION, AND HAVE INTRINSICALLY SAFE ENTITY PARAMETERS CONFORMING WITH TABLE 1 BELOW.

TABLE 1

UL LISTED I.S. BARRIER ENTITY PARAMETERS	REQUIRED RELATIONSHIP BETWEEN ENTITY PARAMETERS	3RD-PARTY LISTED I.S. EQUIPMENT ENTITY PARAMETERS
$V_{oc}$ or $V_t$ (or $U_o$ )	$\leq$	$V_{max}$ (or $U_i$ )
$I_{sc}$ or $I_t$ (or $I_o$ )	$\leq$	$I_{max}$ (or $I_i$ )
$P_o$	$\leq$	$P_{max}$ (or $P_i$ )
$C_a$ (or $C_o$ )	$\leq$	$C_i + C_{cable}$
$L_a$ (or $L_o$ )	$\leq$	$L_i + L_{cable}$

THIS DRAWING CONTAINS PROPRIETARY INFORMATION WHICH MUST NOT BE DUPLICATED, USED, OR DISCLOSED IN WHOLE OR IN PART WITHOUT PRIOR WRITTEN CONSENT.

SHEET NUMBER  
**6 OF 8**

NO.	REVISION HISTORY	DATE	BY
C	UPDATED PER COMMENTS	6/20/24	TRS
B	UPDATED PER COMMENTS	5/13/24	TRS
A	UPDATED TO 1 XDCR-5 FLOAT	4/26/24	TRS



**GA FLEET ASSOCIATES**  
 BROOKFIELD WCPA DUPLEX  
 BROOKFIELD, CT

DRAWN BY TRS DATE 3/13/24

PANEL REQUIREMENTS

SYM. 120 VAC  
 VOLTAGE 1 PHASE  
 PHASE 60 Hz  
 FREQUENCY 5 kA RMS SYM  
 SCCR 1.8 FLA  
 TOTAL FLA TYPE 1

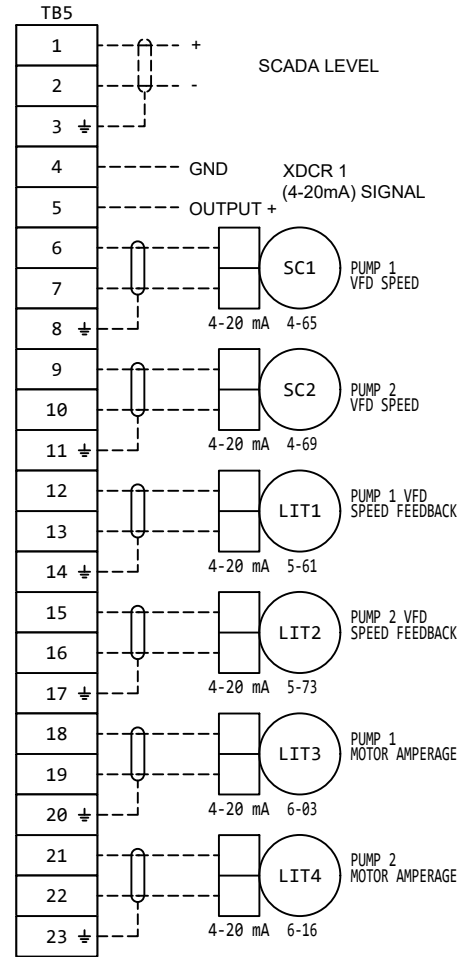
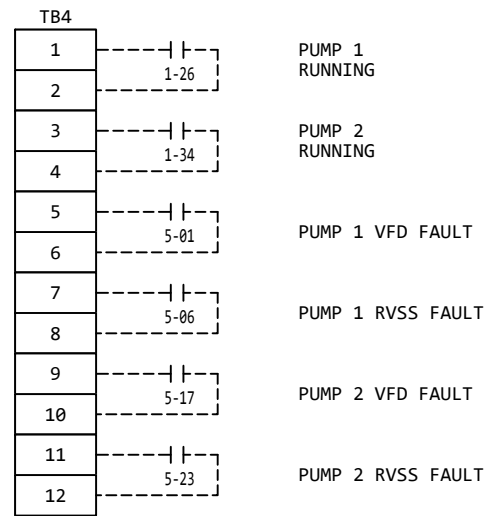
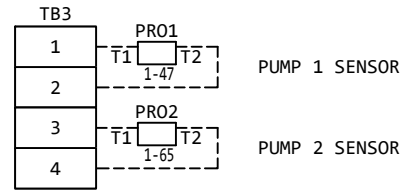
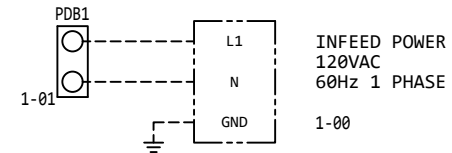
LARGEST MOTOR POWER REQUIREMENTS

HP N/A HP  
 FLA N/A

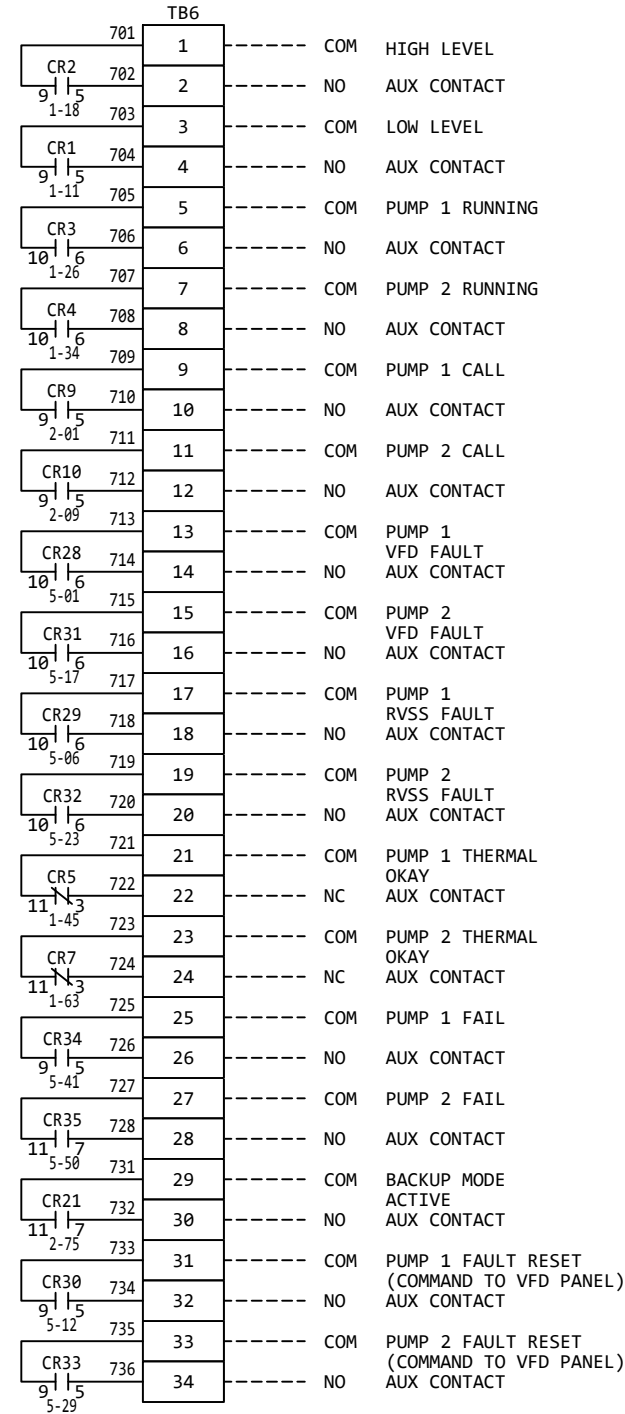
PROJECT NUMBER  
**4010400A**

# FIELD WIRING SECTION

7-00  
7-01  
7-02  
7-03  
7-04  
7-05  
7-06  
7-07  
7-08  
7-09  
7-10  
7-11  
7-12  
7-13  
7-14  
7-15  
7-16  
7-17  
7-18  
7-19  
7-20  
7-21  
7-22  
7-23  
7-24  
7-25  
7-26  
7-27  
7-28  
7-29  
7-30  
7-31  
7-32  
7-33  
7-34  
7-35  
7-36  
7-37  
7-38  
7-39



7-40  
7-41  
7-42  
7-43  
7-44  
7-45  
7-46  
7-47  
7-48  
7-49  
7-50  
7-51  
7-52  
7-53  
7-54  
7-55  
7-56  
7-57  
7-58  
7-59  
7-60  
7-61  
7-62  
7-63  
7-64  
7-65  
7-66  
7-67  
7-68  
7-69  
7-70  
7-71  
7-72  
7-73  
7-74  
7-75  
7-76  
7-77  
7-78  
7-79



AUXILIARY DRY CONTACTS  
RATING:  
6A @ 250VAC, 6A @ 28VDC RESISTIVE

DEVICE ID	Tightening Torque for Wire Size (AWG)
TB1-8	13-16 LB/IN FOR #24 - #8 AWG
GND1	35 LB/IN FOR #14 - #10 AWG, 40 LB/IN FOR #8 AWG, 45 LB/IN FOR #6 - 4 AWG, 50 LB/IN FOR #2 - 1/0 AWG
PDB1	35 LB/IN FOR #14 - #10 AWG, 40 LB/IN FOR #8 AWG, 45 LB/IN FOR #6 - #4 AWG, 50 LB/IN FOR #2 AWG

- NOTES:
- FIELD WIRING IS SHOWN -----
  - TEMPERATURE RATING OF FIELD INSTALLED CONDUCTORS LESS THAN 100 AMPS MUST BE RATED 60 DEG C OR ABOVE. FIELD INSTALLED CONDUCTORS GREATER THAN OR EQUAL TO 100 AMPS MUST BE RATED 75 DEG C OR ABOVE.
  - FIELD WIRING WILL ACCEPT COPPER CONDUCTORS ONLY.
  - INSTALL IN ACCORDANCE WITH ARTICLE 504 OF THE NATIONAL ELECTRIC CODE.
  - MAXIMUM WIRING DISTANCE FROM INTRINSICALLY SAFE BARRIER IS 1,000 FEET.

THIS DRAWING CONTAINS PROPRIETARY INFORMATION WHICH MUST NOT BE DUPLICATED, USED, OR DISCLOSED IN WHOLE OR IN PART WITHOUT PRIOR WRITTEN CONSENT.

SHEET NUMBER  
**7 OF 8**

NO.	REVISION HISTORY	DATE	BY
C	UPDATED PER COMMENTS	6/20/24	TRS
B	UPDATED PER COMMENTS	5/13/24	TRS
A	UPDATED TO 1 XDCR-5 FLOAT	4/26/24	TRS



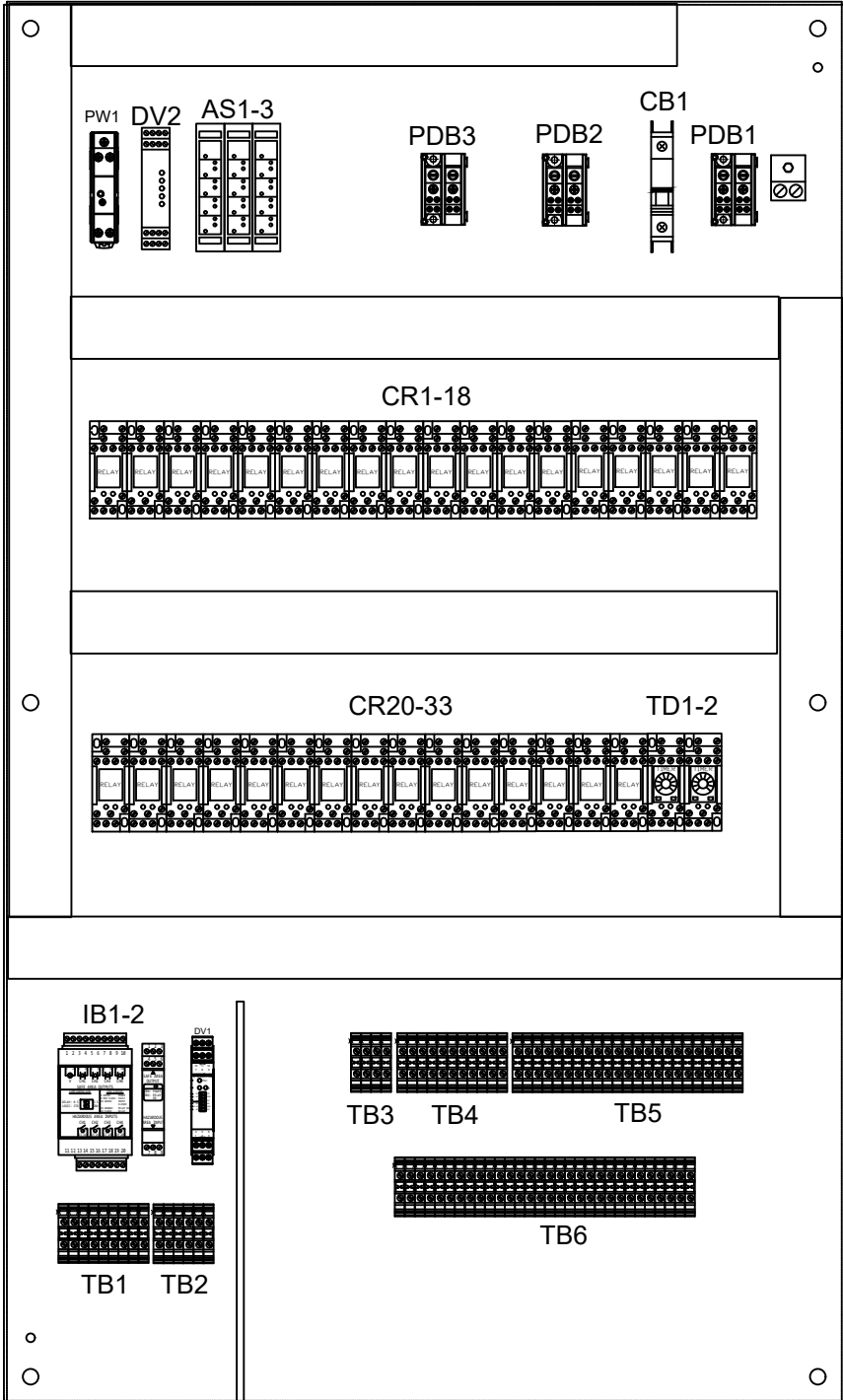
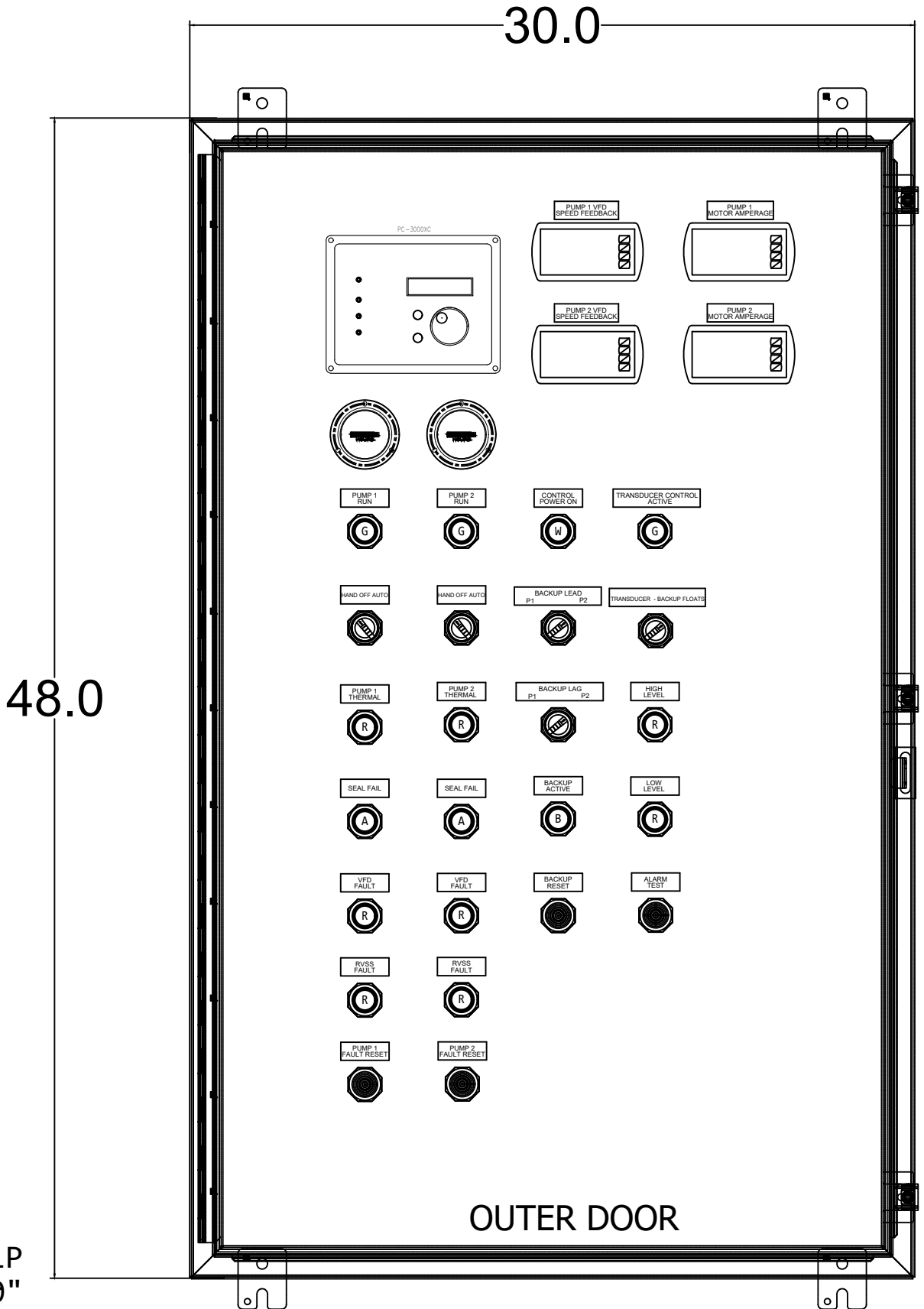
**GA FLEET ASSOCIATES**  
BROOKFIELD WCPA DUPLEX  
BROOKFIELD, CT

DRAWN BY TRS DATE 3/13/24

PANEL REQUIREMENTS  
SYM.  
VOLTAGE 120 VAC  
PHASE 1 PHASE  
FREQUENCY 60 Hz  
SCCR 5 kA RMS SYM  
TOTAL FLA 1.8 FLA  
TYPE 1

LARGEST MOTOR POWER REQUIREMENTS  
HP N/A HP  
FLA N/A

PROJECT NUMBER  
**4010400A**



ENCLOSURE: A483010LP  
 ENCLOSURE DEPTH: 10"  
 MATERIAL: MILD STEEL  
 FINISH: POWDER COATED

THIS DRAWING CONTAINS PROPRIETARY INFORMATION WHICH MUST NOT BE DUPLICATED, USED, OR DISCLOSED IN WHOLE OR IN PART WITHOUT PRIOR WRITTEN CONSENT.

NO.	REVISION HISTORY	DATE	BY
C	UPDATED PER COMMENTS	6/20/24	TRS
B	UPDATED PER COMMENTS	5/13/24	TRS
A	UPDATED TO 1 XDCR-5 FLOAT	4/26/24	TRS



**GA FLEET ASSOCIATES**  
 BROOKFIELD WCPA DUPLEX  
 BROOKFIELD, CT

DRAWN BY TRS      DATE 3/13/24

PANEL REQUIREMENTS	
SYM.	
VOLTAGE	120 VAC
PHASE	1 PHASE
FREQUENCY	60 Hz
SCCR	5 kA RMS SYM
TOTAL FLA	1.8 FLA
TYPE	1

LARGEST MOTOR POWER REQUIREMENTS	
HP	N/A HP
FLA	N/A
PROJECT NUMBER	
<b>4010400A</b>	

ENCLOSURE	1	1033321	A483010LP	HOFFMAN	CONTINUOUS HINGE WITH CLAMP, NEMA 12, 48 x 30 x 10 IN
ENCLOSURE	1	1033322	A48P30	HOFFMAN	PANEL, 45.00 x 27.00 IN, STEEL, WHITE
ENCLOSURE	1512	1027169	54288958	RYERSON	ALUMINUM, 0.125 x 48 x 96, PVC, B/S 3003-H15
ENCLOSURE	2	1029398	1029398	SJE-RHOMBUS	INNER DOOR PARTS ASSEMBLY
PDB1, PDB2, PDB3	3	1047503	CC1412	MARATHON	Cover: 2-pole bloc 115 Amp 141 SERIES
PDB1, PDB2, PDB3	3	6000531	1412400	MARATHON	POWER DISTRIBUTION BLOCK, 2-POLE W/COVER
TB1, TB2, TB4, TB5, TB6	72	1038973	3044131	PHOENIX CONTACT	UNIVERSAL TERMINAL BLOCK - UT 6
TB3	4	1036508	3044102	PHOENIX CONTACT	UNIVERSAL TERMINAL BLOCK - UT 4
TB1, TB2, TB5	9	1039246	3044157	PHOENIX CONTACT	UNIVERSAL GROUND TERMINAL BLOCK - UT 6-PE
GND1	1	1026029	AU-0	ILSCO	GROUND LUG, ALUMINIUM, LUG SIZE 0
SPD1	1	1040333	BC-LAB-1	Earnest Products Inc	PRIMEX BRACKET FOR SQUARE D SDSA SERIES
SPD1	1	1044122	SDSA1175T	SQUARE D	ARREST,SURGE,1PH,120V,SQD W/ PRIMEX MOUNTING BRACKET
PW1	1	1022853	PS5R-VD24	IDEC	UNIVERSAL 24VDC POWER SUPPLY, CLASS 1-DIV2 RATED, NEC CLASS2 UL508
CB1	1	1032140	M9F42105	SCHNEIDER ELECTRIC	MINIATURE CIRCUIT BREAKER MULTI 9 - C60N - 1 POLE - 5AMP - C CURVE
AS2, AS3	2	1036427	QLS-1	LAUREL	QUAD ISOLATED OUTPUT LOOP SPLITTER/RETRANSMITTER, 85-264 VAC
AS1	1	1049125	3108	PR ELECTRONICS	DUAL ISOLATED OUTPUT LOOP SPLITTER,16.8 - 31.2VDC,0-20MA IN/OUT
CT2, CT3, CT4, CT5	4	1037191	PD6000-6R7	PRECISION DIGITAL	PROCESS METER, 4 RELAY OUT, 4-20MA IN, 4-20MA OUT, 24VDC POWER SUPPLY, 85-265VAC
CT1	1	1056307	PC-3000XC	PRIMEX	PREL PC3000XC,ASSEMBLY,BOXED
SL1, SL2	2	1052501	14147-14-407129	FLYGT	GA FLEET, REVERSE DOOR MOUNT ASSEMBLY, MINICAS 120, PUMP MONITOR RELAY, SEAL LEAK ALARM, MOTOR OVER TEMPERATURE, BLUE LEXAN
IB1	1	1060507	ISDUR4	MACROMATIC	INTRINSIC BARRIER, 4 CHANNEL INPUT, SCREW TERMINAL, 4 RELAY OUTPUT

DV1	1	1047680	MZB87P	TURCK	ZENER BARRIER, 1CH, 4-20MA, K1075, MZB87P, TURCK
IB2	1	1061895	ISEUR1	MACROMATIC	INTRINSIC BARRIER, 1 CHANNEL INPUT, SCREW TERMINAL, 1 RELAY OUTPUT
ETM1, ETM2	2	1033953	T50B2	ENM COMPANY	ELAPSED TIME METER, QUARTZ AC HOUR METER II, 5 DIGIT HOURS, 1 DIGIT TENTHS
ETM1, ETM2	2	1033999	B20017	ENM COMPANY	GASKET, ELAPSED TIME METER, ENM T50 SERIES
TD1, TD2	2	1031780	REXL4TMF7	TELEMECANIQUE	MINIATURE PLUG-IN RELAY w/RELAY OUTPUT, SWITCHABLE RANGES 0.1-1-10 SEC, 0.1-1-10 MIN, 0.1-1-10-100 HR W/ RXZE2M114M SOCKET
CR1, CR10, CR11, CR12, CR13, CR14, CR15, CR16, CR17, CR18, CR19, CR2, CR20, CR21, CR22, CR23, CR24, CR25, CR26, CR27, CR28, CR29, CR3, CR30, CR31, CR32, CR33, CR34, CR35, CR4, CR5, CR6, CR7, CR8, CR9, TD1, TD2	37	1028815	RXZE2M114M	SCHNEIDER ELECTRIC	SOCKET FOR RELAYS TYPE RXM
CR1, CR10, CR11, CR12, CR13, CR14, CR15, CR16, CR17, CR18, CR19, CR2, CR20, CR21, CR22, CR28, CR29, CR3, CR30, CR31, CR32, CR33, CR34, CR35, CR4, CR5, CR6, CR7, CR8, CR9	30	1030214	RXM4AB2F7	SCHNEIDER ELECTRIC	PLUG-IN MINIATURE RELAY, TYPE RXM, SOCKET RXZE2M114M, WITH LED
SL1, SL2	2	1028339	SR6P-M11G	IDEC	11 PIN BASE, REVERSE (DOOR MOUNT), OCTAL, RTE SERRIES, SCREW CLAMP
CR23, CR24, CR25, CR26, CR27	5	1030213	RXM4AB2BD	SCHNEIDER ELECTRIC	PLUG-IN MINIATURE RELAY, TYPE RXM, SOCKET RXZE2M114M, WITH LED
SS1, SS2	2	6000650	9001-SKS43BH13	SQD	SELECTOR SW - 3 POS MAINT, NEMA 4X/13
SS3, SS4, SS5	3	6000656	9001-SKS11BH13	SQD	SELECTOR SW - 2 POS MAINT, NEMA 4X/13
SS5	1	1027394	9001-KA2	SQD	CONTROL BUTTON CONTACT BLOCK - 9001-K Ø30 - 1 NO PROTECTED TERMINALS
PB1	1	1040190	9001SKR1BH6	SQD	PUSH BUTTON - MOMENTARY, NEMA 4/4X/13
SS3, SS4	2	6001849	9001-KA1	SQD	CONTROL BUTTON CONTACT BLOCK - 9001-K Ø30 - 1 NO / 1 NC PROTECTED TERMINALS
PB2, PB3	2	1040191	9001SKR1BH5	SQD	PUSH BUTTON - MOMENTARY, NEMA 4/4X/13
LT10, LT11, LT12, LT13, LT14, LT15, LT2, LT3	8	1040203	9001SKT38LRR31	TELEMECANIQUE	PUSH-TO-TEST - LED RED - 120V - LUGS
PB4, PB5	2	1027100	XB4BA21	TELEMECANIQUE	PUSH BUTTON ASSEMBLY, Ø22mm - IP 65 - BLACK

LT4, LT5, LT8	3	1040204	9001SKT38LGG31	TELEMECANIQUE	PUSH-TO-TEST - LED GREEN - 120V - LUGS
LT6, LT7	2	1040607	9001-SKT38LYA31	TELEMECANIQUE	PUSH-TO-TEST - LED AMBER - 120V - LUGS
LT1	1	1027420	9001-W31	TELEMECANIQUE	PLASTIC FRESNEL, CAP FOR Ø30mm PUSHBUTTON - WHITE
LT1	1	1025622	9001-SKP38LW	TELEMECANIQUE	OCTAGONAL PILOT LIGHT BASE Ø30 - IP 66 - WHITE - BA 9S LED - 120V - LUGS
LT9	1	1047213	9001-SKT38LLL31	TELEMECANIQUE	PUSH-TO-TEST - LED BLUE - 120V - LUGS
AH1	1	1034598	AH115A8G	INGRAM	HORN, 120VAC, GRAY
LABEL	1	1039124	1039124	PRIMEX	NAME PLATE, PRIMEX, PANEL OVER 30, STICKER
LABEL	1	1028758	1028758	SJE-RHOMBUS	LABEL, UL698A, ASHLAND, E151538-A
LABEL	1	1005699	1005699	PRIMEX	LABEL, WARNING, DISCONNECT POWER, ENGLISH / FRENCH / SPANISH, LARGE
LITERATURE	1	1028516	PRODUCT SCHEMATIC	SJE-RHOMBUS	LABEL, SCHEMATIC, MATCHES PANEL NUMBER
DV2	1	1029380	SSP030DRSE10	SCHNEIDER ELECTRIC	SURGE,PROTECTOR

# MiniCAS

## Features

- 120 VAC, 24 VAC, or 24 VDC Powered
- Durable Plastic Enclosure with Flange for Mounting
- Leakage & Temperature Alarm Indication
- Power Applied Indication
- Temperature Alarm Reset Mode Select Switch
- Temperature Alarm Reset Push-button
- Sensor Input Transient & Short Circuit Protection

## Operation

The MiniCAS provides Motor Over Temperature and Seal Leakage protection for Flygt Submersible Pumps equipped with FLS or CLS sensors. The unit supplies 12 VDC to the sensor and measures the current through the sensor using protected, noise-filtered electronic circuitry. When sensor current is in the normal range, the Temperature Alarm Relay is activated to allow normal pump operation.

## High Temperature Condition

In a motor High Temperature condition, the pump thermal contacts open and the current becomes zero. The Overtemp Indication is turned on and the Temperature Alarm Relay is deactivated, preventing pump operation. When the motor High Temperature condition has cleared, the unit will reset based on the position of the Alarm Reset Mode Select Switch (Auto or Manual). In the Auto position, the Overtemp Alarm resets automatically. In the Manual position, the Overtemp Reset Push-button must be pushed to clear the alarm.

## Seal Leakage Condition

In a Seal Leakage condition, the Flygt FLS or CLS sensor decreases its internal resistance. The increased current is sensed, the Leakage Indication is turned on, and the Leakage Alarm Relay is activated.

## Shorted Sensor Condition

If the sensor wires are shorted, a Shorted Sensor condition is indicated by activating the Leakage Alarm Relay and alternately flashing both the Leakage and Overtemp LED together with the Power LED. If the short is removed, the fault will automatically reset within 30 seconds.

## Cleared Fault Indication

For both Overtemp and Seal Leakage conditions, a cleared fault indication is provided. If either condition has occurred, but has been automatically cleared, then the corresponding Indication will slowly flash. The flashing indication may be manually removed by pressing the Overtemp Reset Push-button.

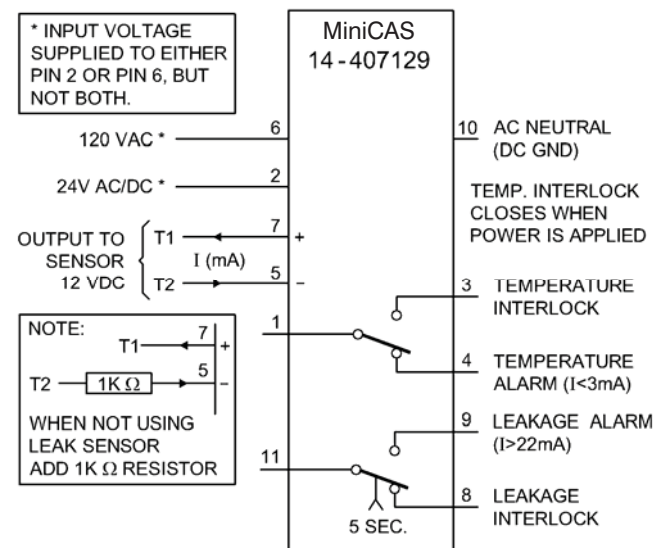
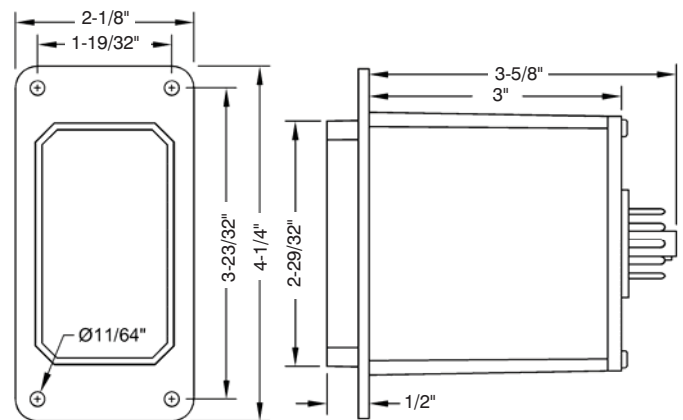
## Specifications

Input Power:	120 VAC ± 10% 3.5 VA max. 24 VAC ± 10% 3.5 VA max. 24 VDC ± 10% 125 mA max.
Output Rating:	NEMA B300 Pilot Duty, 1/6th HP, 3A @ 240 VAC Form C
Operating Temp:	-20°C to 60°C
Storage Temp:	-40°C to 80°C
Sensor Voltage:	12 VDC ± 10%
Temp. Alarm Trip Point:	<3.0 mA ± 5%
Leak Alarm Trip Point:	>22 mA ± 5%
Shorted Sensor Trip Point:	>64 mA ± 5%
Enclosure:	Lexan
Base:	Phenolic



UL FILE # 222351

**MADE IN THE U.S.A.**



**ORDERING INFORMATION**  
Part Number – 14-407129





# MiniCAS

## Description:

The Flygt MiniCAS modules are relays especially designed to simultaneously supervise pump motor thermal switches and Flygt pump leakage detectors FLS (Stator housing) and/or CLS (Water-in-oil) installed in each small to medium Flygt pump (Models 3085 through 3300) or mixer (Series 4600).

The MiniCAS is using only two wires for two or more sensors connected in series and actually includes two current sensitive mini-relays. The principle of operation is: a 12 VDC voltage is sent to the pump sensors and the current through the input circuit is fed through the current mini-relays. One mini-relay is an overcurrent relay, the other is an undercurrent relay.

- If a normally closed thermal switch, installed into the stator winding, opens due to overheating, or one of the connecting leads is broken, the undercurrent relay will de-energize, changing its contacts status. The MiniCAS will shut down the pump.
- If the Flygt leakage sensor (FLS or CLS) is activated, the current through the sensor will increase and the overcurrent relay will be energized, changing the status of its contacts. The MiniCAS will send a "Leakage" signal or shut down the pump, depending on the MiniCAS external connections.

Flygt MiniCAS relays are available in two interchangeable variants:

- **CURRENT PRODUCT** - MiniCAS/FUS produced in the U.S. with a "Manual/Auto Reset" selector switch, which allows the pump to restart in "Auto Reset" position after the stator cools down and the thermal switches re-close. (See Technical Data next page).

14-40 71 29 (MiniCAS/FUS -120VAC / 24 VAC / 24 VDC)	←
14-40 70 97 (Socket, 11-pin) – optional	←

- ~~LEGACY PRODUCT~~ - MiniCAS II produced in Sweden with external manual reset after an overtemperature tripping.

<del>83 58 57 (MiniCAS II - 24VAC)</del>
<del>40-50 10 98 (MiniCAS II - 120VAC)</del>
<del>14-40 70 97 (Socket, 11-pin) – optional</del>

---

## MiniCAS FUS Technical Data (US version)

Operation Principle:	Current sensing
Environment:	-20 to 60°C (-4 to 140°F)
Supply Voltage:	120 VAC 50-60 Hz $\pm 10\%$ , 24 VAC $\pm 10\%$ , 24 VDC $\pm 10\%$
Relay Contact Rating:	3 A @ 240 VAC Form C
Voltage to Sensor:	12 VDC $\pm 10\%$
Values of Operation:	3.0 mA < I < 22 mA = OK conditions. I $\leq$ 3.0 mA = High temp. $\pm 5\%$ (or interrupt). I $\geq$ 22.0 mA = Leakage $\pm 5\%$ (or short circuit). ( I = current measured by the MiniCAS/FUS). I > 64 mA $\pm 5\%$ = Shorted Sensor Green LED On = Supply Voltage present. Green LED Off = No Supply Voltage present.

### Leakage

Contact:	3 A @ 240 VAC Form C (N.C. contact for interlocking)
Reset:	Automatic (N.O. contact for alarm)
LED Indicators:	Red LED On = Leakage indicated Red LED Off = No leakage indicated

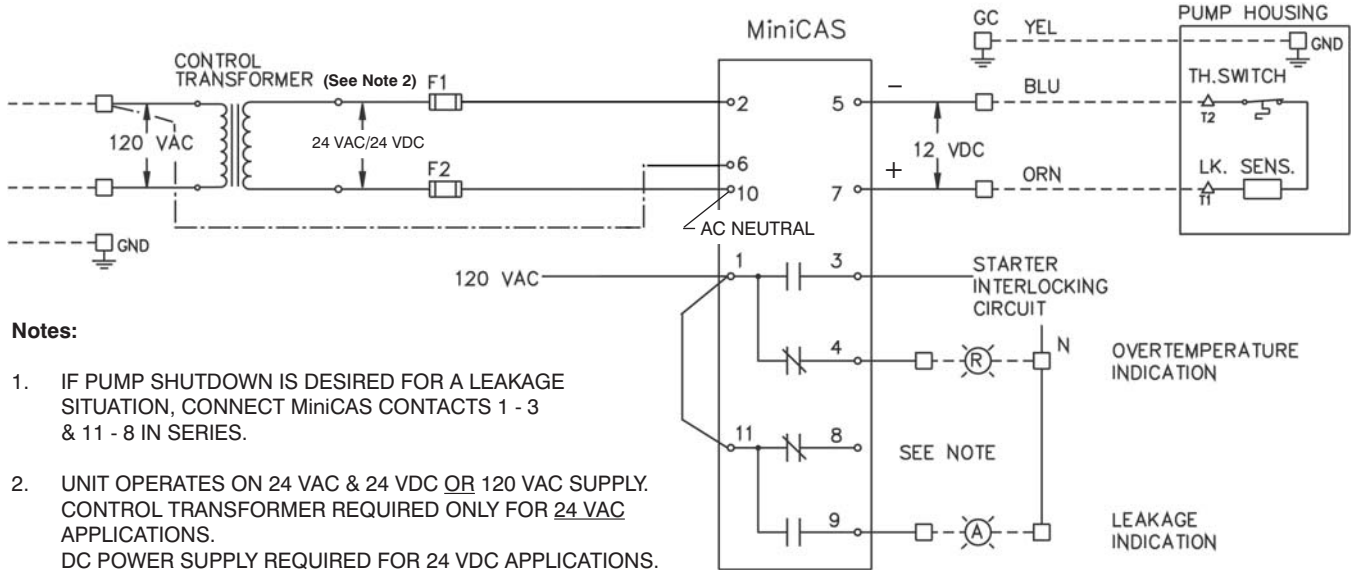
### Temperature

Contact:	3 A @ 240 VAC Form C (N.C. contact for interlocking, N.O. contact for alarm)
Reset:	Manual - by interrupting the supply for 1 sec. or by setting the toggle switch in the "Manual" mode. Automatic - by setting the toggle switch in the "Auto Reset" mode.
LED Indicators:	Red LED On = Over-temperature indicated. Red LED Off = No Over-temperature indicated

Physical Size:	Width: 2-1/8" Height: 4-1/4" Depth: 3-1/2" (+ socket depth)
Part Number:	14-40 71 29 (MiniCAS/FUS) 14-40 70 97 (Socket, 11-pin) - optional
Approvals:	UL - File 222351

# Wiring Diagram MiniCAS FUS (US version)

## Wiring Diagram (MiniCAS/FUS)



### Operation

The MiniCAS provides Motor Over Temperature and Seal Leakage protection for Flygt Submersible Pumps equipped with FLS or CLS sensors. The unit supplies 12 VDC to the sensor and measures the current through the sensor using protected, noise-filtered electronic circuitry. When sensor current is in the normal range, the Temperature Alarm Relay is activated to allow normal pump operation.

### High Temperature Condition

In a motor High Temperature condition, the pump thermal contacts open and the current becomes zero. The Overtemp Indication is turned on and the Temperature Alarm Relay is deactivated, preventing pump operation. When the motor High Temperature condition has cleared, the unit will reset based on the position of the Alarm Reset Mode Select Switch (Auto or Manual). In the Auto position, the Overtemp Alarm resets automatically. In the Manual position, the Overtemp Reset Push-button must be pushed to clear the alarm.

### Seal Leakage Condition

In a Seal Leakage condition, the Flygt FLS or CLS sensor decreases its internal resistance. The increased current is sensed, the Leakage Indication is turned on, and the Leakage Alarm Relay is activated.

### Shorted Sensor Condition

If the sensor wires are shorted, a Shorted Sensor condition is indicated by activating the Leakage Alarm Relay and alternately flashing both the Leakage and Overtemp LED together with the Power LED. If the short is removed, the fault will automatically reset within 30 seconds.

### Cleared Fault Indication

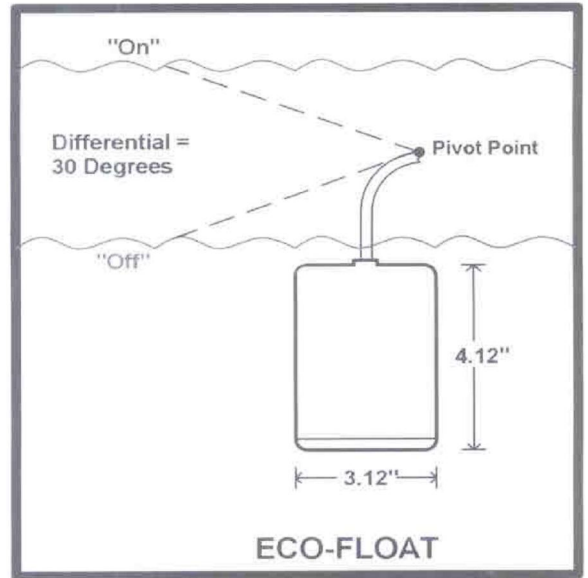
For both Overtemp and Seal Leakage conditions, a cleared fault indication is provided. If either condition has occurred, but has been automatically cleared, then the corresponding Indication will slowly flash. The flashing indication may be manually removed by pressing the Overtemp Reset Push-button.

## MiniCAS Specifications

Furnish and install one Flygt MiniCAS (Mini Control and Status) module to monitor the temperature and leakage detectors installed in each Flygt pump or mixer. The MiniCAS shall be capable of monitoring the thermal switches embedded in the stator end coils, the Flygt FLS (float switch type) water-in-stator-housing sensor, and the Flygt CLS (capacitive type) water-in-oil sensor. The MiniCAS shall monitor both the series connected thermal switches and leakage sensor(s) by outputting 12 VDC on a single two wire circuit. When both CLS and FLS leakage sensors are specified they shall be connected in parallel with each other and then in series with the thermal switches.

The MiniCAS circuitry shall operate on the current sensing principle whereby a change in temperature or leakage condition shall change the resistance of the associated sensor and thus alter the current in the sensing circuit. The MiniCAS shall contain two sets of form C dry contacts, one for overtemperature and one for leakage. The dry

contacts shall change status upon occurrence of an over temperature or leakage condition so as to indicate that condition to other control components in the pump control panel. In the case of an overtemperature, and in keeping with Flygt's warranty policy, the overtemperature dry contacts shall be used to trip the pump off line. The MiniCAS shall be designed to be plugged into a standard 11-pin circular socket. Detailed technical data and wiring connections shall be found in the MiniCAS Manual.



## Eco-Float

### Description

The Eco-Float, ( G style), is a mercury-free level switch for controlling liquid levels in a variety of applications. A snap action switch is activated by a ball rolling back and forth within a switching tube. The entire assembly is enclosed in a plastic float housing. There is a minimum differential between  $\Delta nq$  and  $\Delta ffq$  of approximately 3.5 inches. Greater differentials can be achieved when the pipe mounted, (GP), or externally weighted, (GSE), versions are used. Various cable lengths, mounting styles, and circuit configurations are available and in stock.

### Features

- Mercury Free
- Variety of Mounting Styles
- Variety of Circuit Configurations
- Replaces Mercury Float and Diaphragm Switches
- Differential Between  $\Delta nq$  and  $\Delta ffq$

### Applications

The Eco-Float can be used in a variety of liquid level monitoring applications, including lift stations, sumps, sewage ejectors, septic tanks, vaults, and tanks. Eco-Floats are ruggedly constructed of corrosion resistant material, which enable them to be used in a variety of different liquids. Some applications are subject to additional requirements described in the National Electric Code.

### Specifications

**Cable**  $\delta$  .18-2 or 18-3 SJOW 90° C. 41 x #34 copper .29D- 18-2; .31D- 18-3  
**Housing & Clamp**  $\delta$  ..Polypropylene 3+x 4.25+  
**Electrical Rating**  $\delta$  .Standard 7A@ 120Vac; 3A @ 230Vac Std.  
 Eco-Float **Gold** Rating - .1A@ 120Vac (use **with** intrinsically safe circuits; and very low energy circuits)  
**Temp Limit**  $\delta$  ..60° C. (water)

## Ordering Information:

### Specify

Model Series **G**  
 Mounting Style **SE** Suspended, External weight  
**SI** Susoended, Internal weight  
**P** Pipe mounted  
**W** Wire mounted

Cable Length **10, 15, 20, 30, 40, 50, 60** Ft.  
 Custom lengths available.

\*Circuit configurations **NO** Normally open (SPST)  
**NC** Normally closed (SPST)

**NONC** Normally open/closed

\*For intrinsically safe applications use **NONC-Gold**.

### Example:

**GSI50NONC**

Eco-Float Suspended, Internally weighted, 20 ft. of cable, Normally open contacts.

## Submersible Pressure Sensor Model GA-L100



**Model GA-L100  
with 1/2" conduit connection**

### APPLICATIONS

- Level measurement in vessel and storage systems
- Overfilling and no-load operation monitoring
- Level measurement in rivers and lakes
- Deep well and groundwater monitoring
- Battery-operated level measuring systems

### DESCRIPTION

#### Permanently Reliable

Extensive test cycles not only guarantee a permanent resistance and long service life in all commonly used oils and fuels, including aggressive crude oils and biofuels, but also in flowing and stagnant waters and in wastewater treatment applications.

Thanks to newly developed special cables, components made of high-alloyed stainless steel and an optional overvoltage protection against lightning, the submersible pressure sensor is perfectly suited for the measurement of liquid levels, also in the outdoor area.

#### Precise Level and Temperature Measurement

A measurement uncertainty of max. 0.5 %, a long-term drift of 0.1 % and slight temperature errors make the GA-L100 a reliable measurement solution for the monitoring of storage tanks and bodies of water.

The additional analogue temperature output facilitates the compensation of a temperature-induced density error especially at temperatures of up to -40 ... +80 °C [-40 ... +176 °F].

#### Optimized Electronics for Battery Operation

The modern electronic system guarantees not only a high accuracy in the long term but also ensures a very long battery life thanks to low power supply, low current consumption, fast response time and low-power output signals.





## Measuring Ranges

Base Model Designator Stock Transducers	Measuring Range in W.C" 0-000" W.C	Cable Length in Feet	Temperature Range By Cable Type Standard 14°F to 122°F = PUR High Temp -40°F to 176°F = FEP	Complete Part Number
GA-L100-	0-050"WC-	100'-	PUR=14°F-122°F	GA-L100-0-050-100-PUR
GA-L100-	0-050"WC-	200'-	PUR=14°F-122°F	GA-L100-0-050-200-PUR
GA-L100-	0-120"WC-	100'-	PUR=14°F-122°F	GA-L100-0-120-100-PUR
GA-L100-	0-120"WC-	200'-	PUR=14°F-122°F	GA-L100-0-120-200-PUR
GA-L100-	0-150"WC-	100'-	PUR=14°F-122°F	GA-L100-0-150-100-PUR
GA-L100-	0-250"WC-	100'-	PUR=14°F-122°F	GA-L100-0-250-100-PUR
GA-L100-	0-400"WC-	100'-	PUR=14°F-122°F	GA-L100-0-400-100-PUR
GA-L100-	0-050"WC-	100'-	FEP= -40°F-176°F	GA-L100-0-050-100-FEP
GA-L100-	0-050"WC-	200'-	FEP= -40°F-176°F	GA-L100-0-050-200-FEP
GA-L100-	0-120"WC-	100'-	FEP= -40°F-176°F	GA-L100-0-120-100-FEP
GA-L100-	0-120"WC-	200'-	FEP= -40°F-176°F	GA-L100-0-120-200-FEP
GA-L100-	0-150"WC-	100'-	FEP= -40°F-176°F	GA-L100-0-150-100-FEP
GA-L100-	0-250"WC-	100'-	FEP= -40°F-176°F	GA-L100-0-250-100-FEP
GA-L100-	0-400"WC-	100'-	FEP= -40°F-176°F	GA-L100-0-400-100-FEP

Note: Custom cable lengths available with longer led times

## Temperature Measurement (option)

Measuring Ranges	
Option 1 PUR	-10 ... +50 °C [14 ... 122 °F]
Option 2 FEP	-40 ... +80 °C [-40 ... +176 °F]

The temperature output signal corresponds to the selected medium temperature (see operating conditions).

## Output Signals

Without Temperature Measurement	
Standard	4 ... 20 mA (2-wire)
With Temperature Measurement	
Standard	2 x 4 ... 20 mA (2 x 2-wire, galvanically isolated)

### Permissible Load in $\Omega$

Current output:  $\leq (U+ - (U+\text{min} - 0.5 \text{ V})) / 0.023 \text{ A}$

Voltage output:  $\leq 1\text{mA}$

Additional load of the cable:

$\leq \text{cable length in m} \times 0.084 \Omega$

$[\leq \text{cable length in ft} \times 0.0256 \Omega]$

For voltage outputs, the load must be specified so that the output current does not exceed 1 mA.



# SUBMERSIBLE PRESSURE SENSOR FOR LEVEL AND TEMPERATURE MONITORING

## Voltage Supply

The power supply depends on the selected output signal and the intrinsically safe electronics (Ex approval).  
When being operated in hazardous areas, the submersible pressure sensor must be powered via a repeater power supply (see accessories).

## Power Supply

Output Signal	Standard	With Ex Approval
4 ... 20 mA (2-wire)	DC 8 ... 36 V	DC 9 ... 30 V

## Current Consumption

Current output: max. 25 mA per output  
Voltage output: max. 5 mA

## Reference Conditions (per IEC 61298-1)

### Temperature

15 ... 25 °C [59 ... 77 °F]

### Atmospheric Pressure

860 ... 1,060 mbar [86 ... 106 kPa /12.5 ... 15.4 psig]

### Air Humidity

45 ... 75 % r. h.

## Power Supply

- DC 24 V with current output

## Mounting Position

Calibrated in vertical mounting position with process connection facing downwards.



## Accuracy Specifications

### Accuracy at Reference Conditions (Pressure Sensor)

	Accuracy <sup>1</sup>	Non-Linearity (per IEC 61298-2) BFSL
Standard	≤ 31 % of span	≤ 30.5 % of span
Option	≤ 30.5 % of span	≤ 30.25 % of span

During the adjustment of the voltage signals, the cable length will be compensated. Every shortening of the cable at a later stage results in an offset error of approx. 0.14 % / 10 m [0.13 % / 30 ft].

### Accuracy After Turndown 5:1 via HART®

Standard	≤ 31.25 % of scaled span
Option	≤ 30.75 % of scaled span

By setting a turndown of greater than 5:1, a higher measuring deviation applies.

### Accuracy (Temperature Sensor)

-10 ... +80 °C [14 ... 176 °F]: ≤ 31.8 K

-30 ... -10 °C [-22 ... +14 °F]: ≤ 33.0 K

-40 ... -30 °C [-40 ... -22 °F]: ≤ 34.5 K

### Non-Repeatability

≤ 0.1 % of span

≤ 0.2 % of span (with voltage output and cable length > 100 m [325 ft])

### Long-Term Stability (per DIN 16086:2006-01)

Measuring range > 0 ... 0.1 bar: ≤ 30.1 % of span/year

Measuring range ≤ 0 ... 0.1 bar: ≤ 30.2 % of span/year

### Switch-On Time

Output signals without HART®: ≤ 150 ms

Output signals with HART®: ≤ 250 ms

### Settling Time

Output signals without HART®: ≤ 100 ms

Output signals with HART®: ≤ 250 ms

## Operating Conditions

### Ingress Protection

IP68

### Increased Overvoltage Protection For Lightning Strikes (option)

Nominal discharge current:  $\geq 10$  kA

Rise time: 8/20 Qs

### Immersion Depth

max. 100 m (325 ft)

### Max. Tension Force of the Cable

1,000 N

### Weight

Submersible pressure sensor: approx. 300 g [0.661 lbs]

Cable: approx. 80 g/m [0.538 lbs / 10 ft]

Additional weight: approx. 300 g [0.661 lbs]

### Permissible Temperature Ranges

Medium	Standard	-10 ... +50 °C [14 ... 122 °F]
	Option	-40 ... +80 °C [-40 ... +176 °F]
Ambient	Standard	-40 ... +80 °C [-40 ... +176 °F]
Storage	Standard	-30 ... +80 °C [-22 ... +176 °F]

## Electrical Connection

### Connection Diagram

#### 2 x 4 ... 20 mA (2 x 2-wire, galvanically isolated)

U+ (pressure sensor)	brown (BN)
U- (pressure sensor)	blue (BU)
U+ (temperature sensor)	green (GN)
U- (temperature sensor)	white (WH)
Shield	grey (GY)

### Legend

U+ Positive power supply terminal

U- Negative power supply terminal

S+ analogue output

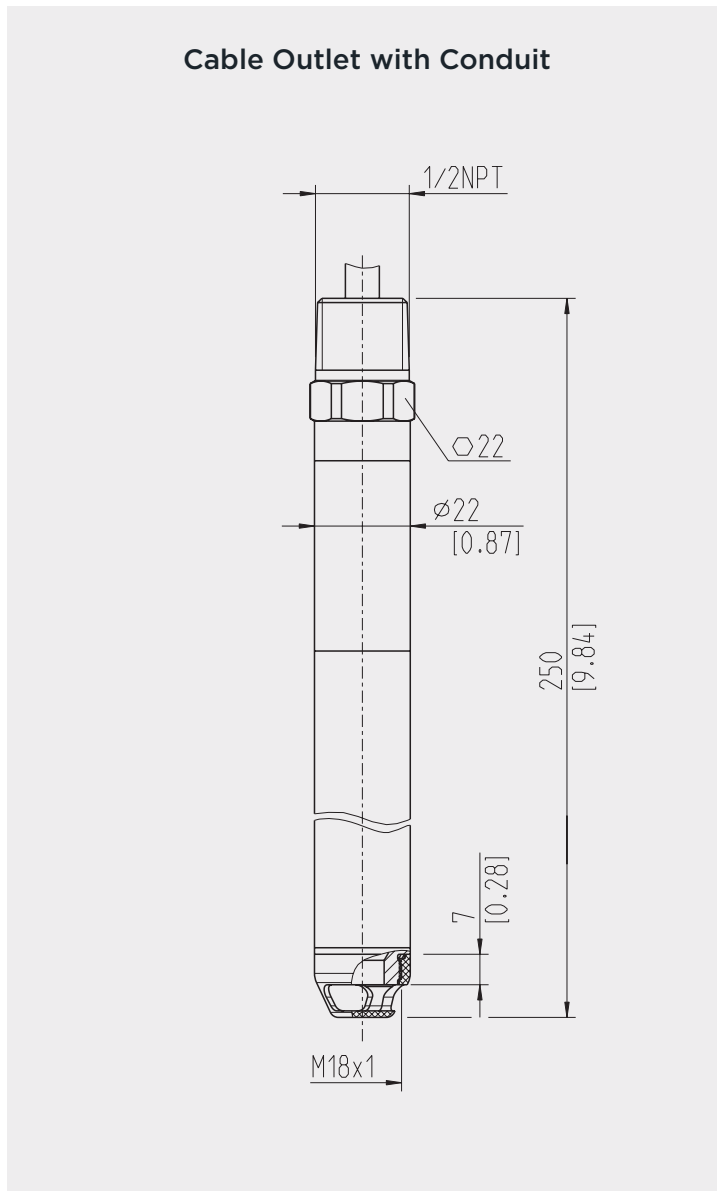
## Manufacturer's Information and Certificates

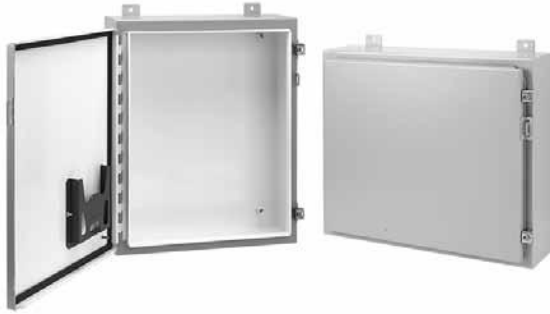
### China RoHS Conformity

SJ/T 11364-2014

Approvals and certificates, see website

## Dimensions in mm [in]



**CONTINUOUS HINGE WITH CLAMPS, TYPE 12**

**INDUSTRY STANDARDS**

 UL 508A Listed; Type 12, 13; File No. E61997  
 cUL Listed per CSA C22.2 No. 94; Type 12, 13; File No. E61997

 NEMA/EEMAC Type 12 and 13  
 CSA, File No. 42186: Type 12  
 IEC 60529, IP65

**APPLICATION**

For applications requiring a bright white interior to increase control visibility, this enclosure includes a padlocking hasp and staple for security and screw-down clamps for secure closure.

**SPECIFICATIONS**

- Enclosure bodies are 14 or 16 gauge steel. Doors are 14 gauge steel.
- Seams continuously welded and ground smooth
- External wall-mounting brackets
- Formed external return flanges around all sides of enclosure opening
- Screw-down door clamps
- Removable heavy-gauge continuous hinge pin
- Hasp and staple for padlocking
- Data pocket is high-impact thermoplastic
- Collar studs provided for mounting optional panels
- Bonding provision on door

**FINISH**

White inside with ANSI 61 gray finish outside.

**ACCESSORIES**
*See also Accessories.*  
 Drip Shield Kit for Type 12 Enclosures  
 Electric Heater  
 Fast-Operating Clamp Assembly  
 Compact Cooling Fans  
 Steel and Stainless Steel Window Kits

**MODIFICATION AND CUSTOMIZATION**

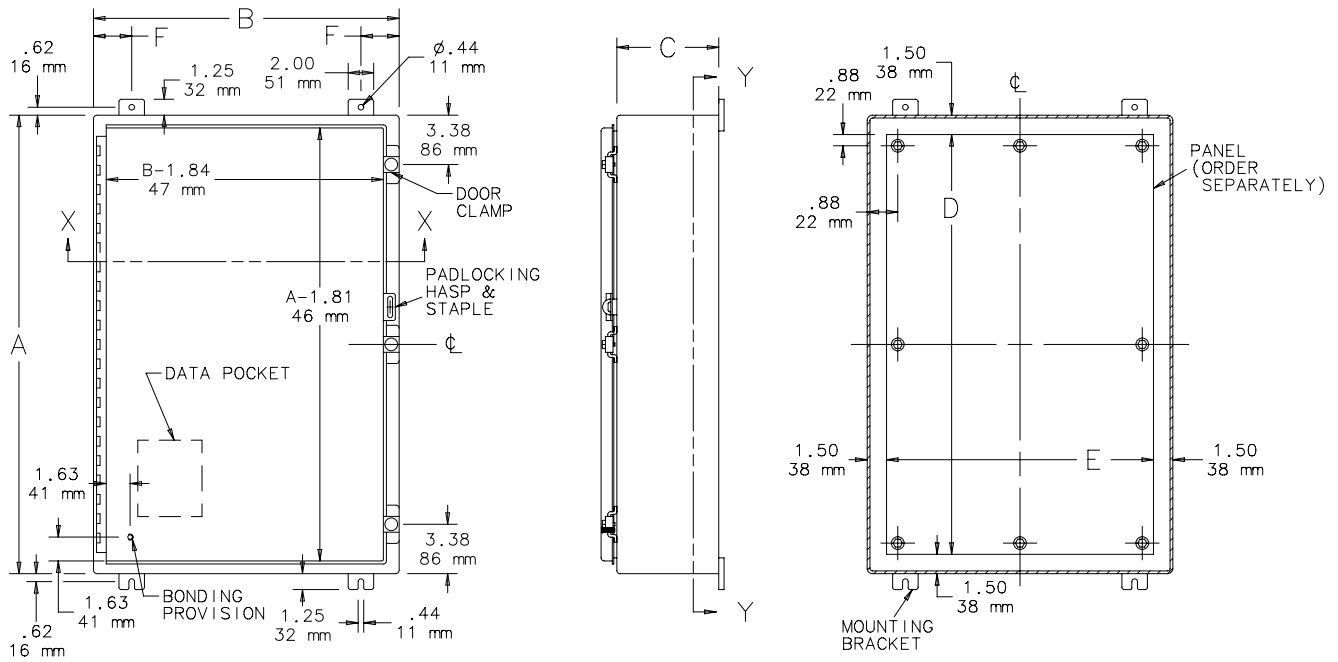
Hoffman excels at modifying and customizing products to your specifications. Contact your local Hoffman sales office or distributor for complete information.

**BULLETIN: A12**

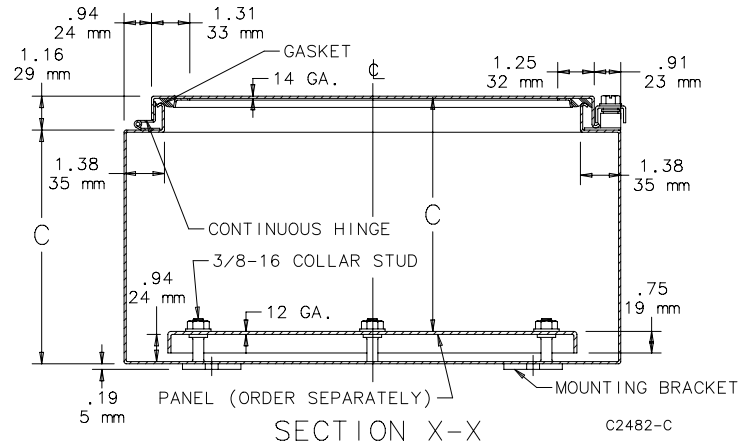
## Standard Product

Catalog Number	AxBxC in./mm	Body Gauge	Panel	Conductive Panel	Panel Size D x E in./mm	F in./mm	Number of Clamps	Data Pocket
A122406LP	12.00 x 24.00 x 6.00 305 x 610 x 152	16	A12P24	A12P24G	9.00 x 21.00 229 x 533	3.00 76	2	Small
A161206LP	16.00 x 12.00 x 6.00 406 x 305 x 152	16	A16P12	A16P12G	13.00 x 9.00 330 x 229	1.25 32	2	Small
A161606LP	16.00 x 16.00 x 6.00 406 x 406 x 152	16	A16P16	A16P16G	13.00 x 13.00 330 x 330	3.00 76	2	Small
A162006LP	16.00 x 20.00 x 6.00 406 x 508 x 152	16	A20P16	A20P16G	17.00 x 13.00 432 x 330	3.00 76	2	Small
A201206LP	20.00 x 12.00 x 6.00 508 x 305 x 152	16	A20P12	A20P12G	17.00 x 9.00 432 x 229	1.25 32	2	Small
A201606LP	20.00 x 16.00 x 6.00 508 x 406 x 152	16	A20P16	A20P16G	17.00 x 13.00 432 x 330	3.00 76	2	Small
A202006LP	20.00 x 20.00 x 6.00 508 x 508 x 152	16	A20P20	A20P20G	17.00 x 17.00 432 x 432	3.00 76	2	Small
A202406LP	20.00 x 24.00 x 6.00 508 x 610 x 152	16	A24P20	A24P20G	21.00 x 17.00 533 x 432	3.00 76	2	Small
A241206LP	24.00 x 12.00 x 6.00 610 x 305 x 152	16	A12P24	A12P24G	9.00 x 21.00 229 x 533	1.25 32	2	Small
A241606LP	24.00 x 16.00 x 6.00 610 x 406 x 152	16	A24P16	A24P16G	21.00 x 13.00 533 x 330	3.00 76	2	Small
A242006LP	24.00 x 20.00 x 6.00 610 x 508 x 152	16	A24P20	A24P20G	21.00 x 17.00 533 x 432	3.00 76	2	Small
A242406LP	24.00 x 24.00 x 6.00 610 x 610 x 152	16	A24P24	A24P24G	21.00 x 21.00 533 x 533	3.00 76	2	Small
A301606LP	30.00 x 16.00 x 6.00 762 x 406 x 152	14	A30P16	A30P16G	27.00 x 13.00 686 x 330	3.00 76	2	Small
A302006LP	30.00 x 20.00 x 6.00 762 x 508 x 152	14	A30P20	A30P20G	27.00 x 17.00 686 x 432	3.00 76	2	Small
A302406LP	30.00 x 24.00 x 6.00 762 x 610 x 152	14	A30P24	A30P24G	27.00 x 21.00 686 x 533	3.00 76	2	Large
A362406LP	36.00 x 24.00 x 6.00 914 x 610 x 152	14	A36P24	A36P24G	33.00 x 21.00 838 x 533	3.00 76	2	Large
A363006LP	36.00 x 30.00 x 6.00 914 x 762 x 152	14	A36P30	A36P30G	33.00 x 27.00 838 x 686	3.00 76	2	Large
A122408LP	12.00 x 24.00 x 8.00 305 x 610 x 203	16	A12P24	A12P24G	9.00 x 21.00 229 x 533	3.00 76	2	Small
A161208LP	16.00 x 12.00 x 8.00 406 x 305 x 203	16	A16P12	A16P12G	13.00 x 9.00 330 x 229	1.25 32	2	Small
A161608LP	16.00 x 16.00 x 8.00 406 x 406 x 203	16	A16P16	A16P16G	13.00 x 13.00 330 x 330	3.00 76	2	Small

Catalog Number	AxBxC in./mm	Body Gauge	Panel	Conductive Panel	Panel Size D x E in./mm	F in./mm	Number of Clamps	Data Pocket
A162008LP	16.00 x 20.00 x 8.00 406 x 508 x 203	16	A20P16	A20P16G	17.00 x 13.00 432 x 330	3.00 76	2	Small
A201208LP	20.00 x 12.00 x 8.00 508 x 305 x 203	16	A20P12	A20P12G	17.00 x 9.00 432 x 229	1.25 32	2	Small
A201608LP	20.00 x 16.00 x 8.00 508 x 406 x 203	16	A20P16	A20P16G	17.00 x 13.00 432 x 330	3.00 76	2	Small
A202008LP	20.00 x 20.00 x 8.00 508 x 508 x 203	16	A20P20	A20P20G	17.00 x 17.00 432 x 432	3.00 76	2	Small
A202408LP	20.00 x 24.00 x 8.00 508 x 610 x 203	16	A24P20	A24P20G	21.00 x 17.00 533 x 432	3.00 76	2	Small
A241208LP	24.00 x 12.00 x 8.00 610 x 305 x 203	16	A12P24	A12P24G	9.00 x 21.00 229 x 533	1.25 32	2	Small
A241608LP	24.00 x 16.00 x 8.00 610 x 406 x 203	16	A24P16	A24P16G	21.00 x 13.00 533 x 330	3.00 76	2	Small
A242008LP	24.00 x 20.00 x 8.00 610 x 508 x 203	14	A24P20	A24P20G	21.00 x 17.00 533 x 432	3.00 76	2	Small
A242408LP	24.00 x 24.00 x 8.00 610 x 610 x 203	16	A24P24	A24P24G	21.00 x 21.00 533 x 533	3.00 76	2	Small
A243008LP	24.00 x 30.00 x 8.00 610 x 762 x 203	14	A30P24G	A30P24G	27.00 x 21.00 686 x 533	3.00 76	2	Small
A302008LP	30.00 x 20.00 x 8.00 762 x 508 x 203	14	A30P20	A30P20G	27.00 x 17.00 686 x 432	3.00 76	2	Small
A302408LP	30.00 x 24.00 x 8.00 762 x 610 x 203	14	A30P24	A30P24G	27.00 x 21.00 686 x 533	3.00 76	2	Large
A303008LP	30.00 x 30.00 x 8.00 762 x 762 x 203	14	A30P30	A30P30G	27.00 x 27.00 686 x 686	3.00 76	2	Large
A303608LP	30.00 x 36.00 x 8.00 762 x 914 x 203	14	A36P30	A36P30G	33.00 x 27.00 838 x 686	3.00 76	2	Large
A362408LP	36.00 x 24.00 x 8.00 914 x 610 x 203	14	A36P24	A36P24G	33.00 x 21.00 838 x 533	3.00 76	2	Large
A363008LP	36.00 x 30.00 x 8.00 914 x 762 x 203	14	A36P30	A36P30G	33.00 x 27.00 838 x 686	3.00 76	2	Large
A363608LP	36.00 x 36.00 x 8.00 914 x 914 x 203	14	A36P36	A36P36G	33.00 x 33.00 838 x 838	3.00 76	2	Large
A422408LP	42.00 x 24.00 x 8.00 1067 x 610 x 203	14	A42P24	A42P24G	39.00 x 21.00 991 x 533	3.00 76	2	Large
A423008LP	42.00 x 30.00 x 8.00 1067 x 762 x 203	14	A42P30	A42P30G	39.00 x 27.00 991 x 686	3.00 76	2	Small
A423608LP	42.00 x 36.00 x 8.00 1067 x 914 x 203	14	A42P36	A42P36G	39.00 x 33.00 991 x 838	3.00 76	2	Large
A482408LP	48.00 x 24.00 x 8.00 1219 x 610 x 203	14	A48P24	A48P24G	45.00 x 21.00 1143 x 533	3.00 76	3	Large
A483008LP	48.00 x 30.00 x 8.00 1219 x 762 x 203	14	A48P30	A48P30G	45.00 x 27.00 1143 x 686	3.00 76	3	Small
A483608LP	48.00 x 36.00 x 8.00 1219 x 914 x 203	14	A48P36	A48P36G	45.00 x 33.00 1143 x 838	3.00 76	3	Large
A603608LP	60.00 x 36.00 x 8.00 1524 x 914 x 203	14	A60P36	A60P36G	57.00 x 33.00 1448 x 838	3.00 76	3	Large
A161210LP	16.00 x 12.00 x 10.00 406 x 305 x 254	14	A16P12	A16P12G	13.00 x 9.00 330 x 229	1.25 32	2	Small
A201610LP	20.00 x 16.00 x 10.00 508 x 406 x 254	14	A20P16	A20P16G	17.00 x 13.00 432 x 330	3.00 76	2	Small
A202010LP	20.00 x 20.00 x 10.00 508 x 508 x 254	14	A20P20	A20P20G	17.00 x 17.00 432 x 432	3.00 76	2	Small
A241210LP	24.00 x 12.00 x 10.00 610 x 305 x 254	14	A12P24	A12P24G	9.00 x 21.00 229 x 533	1.25 32	2	Small
A242010LP	24.00 x 20.00 x 10.00 610 x 508 x 254	14	A24P20	A24P20G	21.00 x 17.00 533 x 432	3.00 76	2	Small
A242410LP	24.00 x 24.00 x 10.00 610 x 610 x 254	14	A24P24G	A24P24G	21.00 x 21.00 533 x 533	3.00 76	2	Small
A302010LP	30.00 x 20.00 x 10.00 762 x 508 x 254	14	A30P20	A30P20G	27.00 x 17.00 686 x 432	3.00 76	2	Small
A302410LP	30.00 x 24.00 x 10.00 762 x 610 x 254	14	A30P24	A30P24G	27.00 x 21.00 686 x 533	3.00 76	2	Large
A362410LP	36.00 x 24.00 x 10.00 914 x 610 x 254	14	A36P24	A36P24G	33.00 x 21.00 838 x 533	3.00 76	2	Large
A363010LP	36.00 x 30.00 x 10.00 914 x 762 x 254	14	A36P30	A36P30G	33.00 x 27.00 838 x 686	3.00 76	2	Large
A423010LP	42.00 x 30.00 x 10.00 1067 x 762 x 254	14	A42P30	A42P30G	39.00 x 27.00 991 x 686	3.00 76	2	Small
A423610LP	42.00 x 36.00 x 10.00 1067 x 914 x 254	14	A42P36	A42P36G	39.00 x 33.00 991 x 838	3.00 76	2	Large
A483010LP	48.00 x 30.00 x 10.00 1219 x 762 x 254	14	A48P30	A48P30G	45.00 x 27.00 1143 x 686	3.00 76	3	Small
A483610LP	48.00 x 36.00 x 10.00 1219 x 914 x 254	14	A48P36	A48P36G	45.00 x 33.00 1143 x 838	3.00 76	3	Large
A603610LP	60.00 x 36.00 x 10.00 1524 x 914 x 254	14	A60P36	A60P36G	57.00 x 33.00 1448 x 838	3.00 76	3	Large



SECTION Y-Y



SECTION X-X

C2482-C

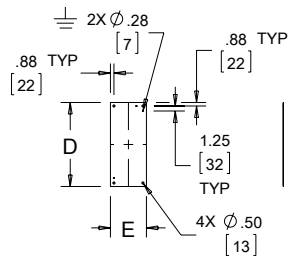
## PANELS FOR TYPE 3R, 4, 4X, 12 AND 13 ENCLOSURES

Steel panels are 11 or 12 gauge, finished with white polyester powder paint or a conductive, corrosion-resistant coating. Larger panels have flanges on two or four sides. Some larger steel panels are 11 gauge and include extra holes for panel lifting. Aluminum panels are 5052-H32 aluminum alloy. Larger panels have flanges on four sides. Aluminum panels are protected on one side with a plastic film. Stainless steel panels are Type 316 stainless steel. Panel mounting hardware is furnished with all enclosures which accept these panels.

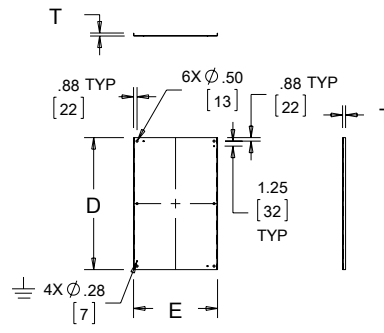
### BULLETIN: PNLFS, PNLJ, PNLWM

Catalog Number	Material	Panel Size D x E (in.)	Panel Size D x E (mm)	Panel Gauge or Thickness	Edge Flanges	T (in.)	T (mm)	Number of Holes
A12P24	Painted steel	9.00 x 21.00	229 x 533	12 ga.	0	—	—	4
A12P24G	Conductive steel	9.00 x 21.00	229 x 533	12 ga.	0	—	—	4
A16P12	Painted steel	13.00 x 9.00	330 x 229	12 ga.	0	—	—	4
A16P12G	Conductive steel	13.00 x 9.00	330 x 229	12 ga.	0	—	—	4
A16P12SS6	Stainless Steel	13.00 x 9.00	330 x 229	12 ga.	0	—	—	4
A16P12AL	Aluminum	13.00 x 9.00	330 x 229	0.10 in./3 mm	0	—	—	4
A16P16	Painted steel	13.00 x 13.00	330 x 330	12 ga.	0	—	—	4
A16P16G	Conductive steel	13.00 x 13.00	330 x 330	12 ga.	0	—	—	4
A16P16SS6	Stainless Steel	13.00 x 13.00	330 x 330	12 ga.	0	—	—	4
A16P16AL	Aluminum	13.00 x 13.00	330 x 330	0.10 in./3 mm	0	—	—	4
A18P18	Painted steel	15.00 x 15.00	381 x 381	12 ga.	0	—	—	4
A18P18G	Conductive steel	15.00 x 15.00	381 x 381	12 ga.	0	—	—	4
A20P12	Painted steel	17.00 x 9.00	432 x 229	12 ga.	0	—	—	4
A20P12G	Conductive steel	17.00 x 9.00	432 x 229	12 ga.	0	—	—	4
A20P16	Painted steel	17.00 x 13.00	432 x 330	12 ga.	0	—	—	4
A20P16G	Conductive steel	17.00 x 13.00	432 x 330	12 ga.	0	—	—	4
A20P16SS6	Stainless Steel	17.00 x 13.00	432 x 330	12 ga.	0	—	—	4
A20P16AL	Aluminum	17.00 x 13.00	432 x 330	0.10 in./3 mm	0	—	—	4
A20P20	Painted steel	17.00 x 17.00	432 x 432	12 ga.	0	—	—	4
A20P20G	Conductive steel	17.00 x 17.00	432 x 432	12 ga.	0	—	—	4
A20P20SS6	Stainless steel	17.00 x 17.00	432 x 432	12 ga.	0	—	—	4
A20P20AL	Aluminum	17.00 x 17.00	432 x 432	0.10 in./3 mm	0	—	—	4
A24P16	Painted steel	21.00 x 13.00	533 x 330	12 ga.	0	—	—	4
A24P16G	Conductive steel	21.00 x 13.00	533 x 330	12 ga.	0	—	—	4
A24P16SS6	Stainless Steel	21.00 x 13.00	533 x 330	12 ga.	0	—	—	4
A24P20	Painted steel	21.00 x 17.00	533 x 432	12 ga.	2	0.75	19	4
A24P20G	Conductive steel	21.00 x 17.00	533 x 432	12 ga.	2	0.75	19	4
A24P20SS6	Stainless Steel	21.00 x 17.00	533 x 432	12 ga.	2	0.75	19	4
A24P20AL	Aluminum	21.00 x 17.00	533 x 432	0.10 in./3 mm	4	0.75	19	4
A24P24	Painted steel	21.00 x 21.00	533 x 533	12 ga.	2	0.75	19	4
A24P24G	Conductive steel	21.00 x 21.00	533 x 533	12 ga.	2	0.75	19	4
A24P24SS6	Stainless Steel	21.00 x 21.00	533 x 533	12 ga.	2	0.75	19	4
A24P24AL	Aluminum	21.00 x 21.00	533 x 533	0.10 in./3 mm	2	0.75	19	4
A30P16	Painted steel	27.00 x 13.00	686 x 330	12 ga.	2	0.75	19	4
A30P16G	Conductive steel	33.00 x 27.00	838 x 686	12 ga.	2	0.75	19	4
A30P20	Painted steel	27.00 x 17.00	686 x 432	12 ga.	2	0.75	19	4
A30P20G	Conductive steel	27.00 x 17.00	686 x 432	12 ga.	2	0.75	19	4
A30P20SS6	Stainless Steel	27.00 x 17.00	686 x 432	12 ga.	2	0.75	19	4
A30P24	Painted steel	27.00 x 21.00	686 x 533	12 ga.	2	0.75	19	4
A30P24G	Conductive steel	27.00 x 21.00	686 x 533	12 ga.	2	0.75	19	4
A30P24SS6	Stainless Steel	27.00 x 21.00	686 x 533	12 ga.	2	0.75	19	4
A30P24AL	Aluminum	27.00 x 21.00	686 x 533	0.10 in./3 mm	2	0.75	19	4
A30P30	Painted steel	27.00 x 27.00	686 x 686	12 ga.	4	0.75	19	4
A30P30G	Conductive steel	27.00 x 27.00	686 x 686	12 ga.	4	0.75	19	4
A30P30SS6	Stainless Steel	27.00 x 27.00	686 x 686	12 ga.	4	0.75	19	4
A36P16	Painted steel	33.00 x 13.00	838 x 330	12 ga.	2	0.75	19	4
A36P16G	Conductive steel	33.00 x 13.00	838 x 330	12 ga.	2	0.75	19	4
A36P24	Painted steel	33.00 x 21.00	838 x 533	12 ga.	2	0.75	19	6
A36P24G	Conductive steel	33.00 x 21.00	838 x 533	12 ga.	2	0.75	19	6
A36P24SS6	Stainless Steel	33.00 x 21.00	838 x 533	12 ga.	2	0.75	19	6
A36P24AL	Aluminum	33.00 x 21.00	838 x 533	0.10 in./3 mm	2	0.75	19	6
A36P30	Painted steel	33.00 x 27.00	838 x 686	12 ga.	4	0.75	19	6
A36P30G	Conductive steel	33.00 x 27.00	838 x 686	12 ga.	4	0.75	19	6
A36P30SS6	Stainless Steel	33.00 x 27.00	838 x 686	12 ga.	4	0.75	19	6
A36P30AL	Aluminum	33.00 x 27.00	838 x 686	0.10 in./3 mm	4	0.75	19	6
A36P36	Painted steel	33.00 x 33.00	838 x 838	12 ga.	4	0.75	19	8
A36P36G	Conductive steel	33.00 x 33.00	838 x 838	12 ga.	4	0.75	19	8
A36P36SS6	Stainless Steel	33.00 x 33.00	838 x 838	12 ga.	4	0.75	19	8
A40P24	Painted steel	37.00 x 21.00	940 x 533	12 ga.	4	0.75	19	6
A40P24G	Conductive steel	37.00 x 21.00	940 x 533	12 ga.	4	0.75	19	6
A40P30	Painted steel	37.00 x 29.00	940 x 737	12 ga.	4	0.75	19	4
A40P30G	Conductive steel	37.00 x 29.00	940 x 737	12 ga.	4	0.75	19	4
A42P24	Painted steel	39.00 x 21.00	991 x 533	12 ga.	2	0.75	19	6
A42P24G	Conductive steel	39.00 x 21.00	991 x 533	12 ga.	2	0.75	19	6
A42P30	Painted steel	39.00 x 27.00	991 x 686	12 ga.	4	0.75	19	6
A42P30G	Conductive steel	39.00 x 27.00	991 x 686	12 ga.	4	0.75	19	6
A42P30SS6	Stainless Steel	39.00 x 27.00	991 x 686	12 ga.	4	0.75	19	6
A42P36	Painted steel	39.00 x 33.00	991 x 838	12 ga.	4	0.75	19	8
A42P36G	Conductive steel	39.00 x 33.00	991 x 838	12 ga.	4	0.75	19	8
A42P36SS6	Stainless Steel	39.00 x 33.00	991 x 838	12 ga.	4	0.75	19	8
A42P42	Painted steel	39.00 x 39.00	991 x 991	12 ga.	4	0.75	19	8

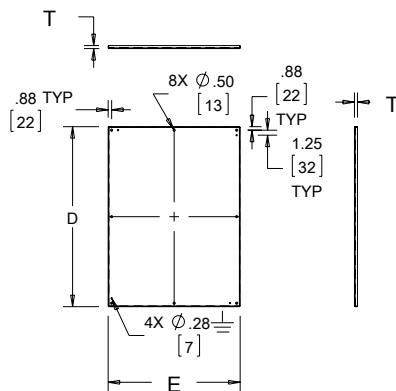
Catalog Number	Material	Panel Size D x E (in.)	Panel Size D x E (mm)	Panel Gauge or Thickness	Edge Flanges	T (in.)	T (mm)	Number of Holes
A42P42G	Conductive steel	39.00 x 39.00	991 x 991	12 ga.	4	0.75	19	8
A48P24	Painted steel	45.00 x 21.00	1143 x 533	12 ga.	2	0.75	19	6
A48P24G	Conductive steel	45.00 x 21.00	1143 x 533	12 ga.	2	0.75	19	6
A48P30	Painted steel	45.00 x 27.00	1143 x 686	12 ga.	4	0.75	19	6
A48P30G	Conductive steel	45.00 x 27.00	1143 x 686	12 ga.	4	0.75	19	6
A48P36	Painted steel	45.00 x 33.00	1143 x 838	12 ga.	4	0.75	19	8
A48P36G	Conductive steel	45.00 x 33.00	1143 x 838	12 ga.	4	0.75	19	8
A48P36SS6	Stainless Steel	45.00 x 33.00	1143 x 838	12 ga.	4	0.75	19	8
A48P36AL	Aluminum	45.00 x 33.00	1143 x 838	0.10 in./3 mm	4	0.75	19	8
A48P42	Painted steel	45.00 x 39.00	1143 x 991	12 ga.	4	0.75	19	8
A48P42G	Conductive steel	45.00 x 39.00	1143 x 991	12 ga.	4	0.75	19	8
A48P48	Painted steel	44.00 x 44.00	1118 x 1118	11 ga.	4	0.84	21	10
A48P48G	Conductive steel	44.00 x 44.00	1118 x 1118	11 ga.	4	0.84	21	10
A54P42	Painted steel	50.00 x 38.00	1270 x 965	11 ga.	4	0.84	21	10
A54P42G	Conductive steel	50.00 x 38.00	1270 x 965	11 ga.	4	0.84	21	10
A60P24	Painted steel	57.00 x 21.00	1448 x 533	12 ga.	4	0.75	19	6
A60P24G	Conductive steel	57.00 x 21.00	1448 x 533	12 ga.	4	0.75	19	6
A60P30	Painted steel	57.00 x 27.00	1448 x 686	12 ga.	4	0.75	19	6
A60P30G	Conductive steel	57.00 x 27.00	1448 x 686	12 ga.	4	0.75	19	6
A60P36	Painted steel	57.00 x 33.00	1448 x 838	12 ga.	4	0.75	19	8
A60P36G	Conductive steel	57.00 x 33.00	1448 x 838	12 ga.	4	0.75	19	8
A60P36SS6	Stainless Steel	57.00 x 33.00	1448 x 838	12 ga.	4	0.75	19	8
A60P36AL	Aluminum	57.00 x 33.00	1448 x 838	0.10 in./3 mm	4	0.75	19	8
A60BFP42	Painted steel	56.00 x 38.00	1422 x 965	11 ga.	4	0.84	21	10
A60BFP42G	Conductive steel	56.00 x 38.00	1422 x 965	11 ga.	4	0.84	21	10
A60P48	Painted steel	56.00 x 44.00	1422 x 1118	11 ga.	4	0.84	21	10
A60P48G	Conductive steel	56.00 x 44.00	1422 x 1118	11 ga.	4	0.84	21	10
A60P60	Painted steel	56.00 x 56.00	1422 x 1422	11 ga.	4	0.84	21	10
A60P60G	Conductive steel	56.00 x 56.00	1422 x 1422	11 ga.	4	0.84	21	10
A72P36	Painted steel	69.00 x 33.00	1753 x 838	12 ga.	4	0.75	19	8
A72P36G	Conductive steel	69.00 x 33.00	1753 x 838	12 ga.	4	0.75	19	8
A72P60	Painted steel	68.00 x 56.00	1727 x 1422	11 ga.	4	0.84	21	10
A72P60G	Conductive steel	68.00 x 56.00	1727 x 1422	11 ga.	4	0.84	21	10
A72P72	Painted steel	68.00 x 68.00	1727 x 1727	11 ga.	4	0.84	21	10
A72P72G	Conductive steel	68.00 x 68.00	1727 x 1727	11 ga.	4	0.84	21	10



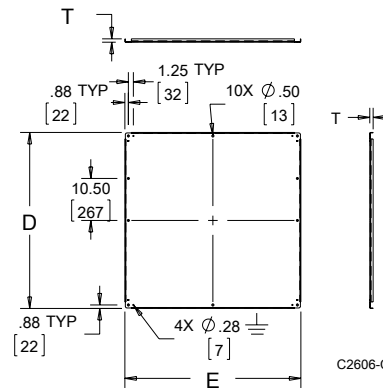
NUMBER OF HOLES = 4



NUMBER OF HOLES = 6



NUMBER OF HOLES = 8



NUMBER OF HOLES = 10

C2606-C



## GUIDE TO SELECTION

### ALUMINUM COIL/SHEET/PLATE

#### NON-HEAT TREATABLE (COMMON) ALLOYS

**1100** (UNS A91100) is commercially pure aluminum (99.00% minimum). Excellent corrosion resistance, workability and weldability; high thermal conductivity. Tensile strength range 14 to 24 KSI. Uses include deep drawing, spinning, sheet metal work, decorative and architectural applications, air ducts, name plates, fan blades, etc. Conforms to AMS QQ-A-250/1 and ASTM B209.

**3003** (UNS A93003) is alloyed with 1.2% manganese to provide a tensile strength range of 17 to 30 KSI. Excellent workability, weldability, and corrosion resistance. Used for drawing, spinning, fuel tanks, sheet metal work and other applications where slightly higher strength than 1100 is required. Conforms to AMS QQ-A-250/2 and ASTM B209.

**5005** (UNS A95005) is alloyed with .8% magnesium. Tensile strength range 18 to 30 KSI. Excellent workability, weldability, and corrosion resistance. Specified for applications comparable to 1100 and 3003 — where anodizing is required. Anodized finish matches that of architectural alloy 6063. Conforms to Federal specification ASTM B209.

**5052** (UNS A95052) is alloyed with 2.5% magnesium. Tensile strength range 31 to 44 KSI. Very good corrosion resistance, good workability, weldability and strength. Used for aircraft fuel tanks, storm shutters, refrigerator liners; utensils, electronic mounting plates and panels, fan blades, etc. Conforms to AMS QQ-A-250/8 and ASTM B209.

**5083** (UNS A95083) is alloyed with 4.45% magnesium, 0.65% manganese and 0.15% chromium. Tensile strength range: 40 to 59 KSI. For use in structures requiring high weld efficiency for maximum joint strength — plus light weight and corrosion resistance. Applications: marine components, truck bodies, construction equipment, tanks, structural towers, drilling rigs, cryogenic applications, etc. Conforms to ASTM B209 and AMS QQ-A-250/6.

**5086** (UNS A95086) is alloyed with 4.0% magnesium, .45% manganese and 0.15% chromium. This alloy has a typical tensile strength range of 40 to 54 KSI. It offers resistance to stress corrosion and superior resistance to atmospheric corrosion plus good general workability. Applications include tanks (stationary, trailer and rail-car), marine components and welded assemblies of all kinds. Conforms to AMS QQ-A-250/7 and ASTM B209.

**5454** (UNS A95454) is alloyed with 2.7% magnesium, 0.8% manganese and 0.12% chromium. Tensile strength range 36 to 47 KSI. Good formability, weldability and corrosion resistance. Uses include pressure vessels (ASME code approved for up to 400° F.), tanks dumptruck bodies, welded structures, etc. Conforms to AMS QQ-A-250/10 and ASTM B209.

*(Continued)*

### HEAT TREATABLE (STRONG) ALLOYS

**2024** (UNS A92024) is alloyed with 4.5% copper. Tensile strength range 30 to 63 KSI. Fair workability and corrosion resistance. Forming operations are limited. Used for high strength structural and aircraft applications. Also available as Alclad for improved corrosion resistance. 2024 conforms to AMS QQ-A-250/4 and ASTM B209.

**6061** (UNS A96061) is alloyed with 1.0% magnesium and .6% silicon. Tensile strength range 20 to 42 KSI. Good formability, weldability and corrosion resistance. Used for engineering and structural applications, boats, furniture, transportation equipment, etc. Conforms to AMS QQ-A-250/11 and ASTM B209.

**7050** is alloyed with zinc (5.7-6.7%), copper (2.0-2.6%) and magnesium (1.9-2.6%) to offer superior strength, stress corrosion resistance and toughness. Stocked in T7451, a temper intermediate to T3 and T76. Used in aircraft and missile applications. Conforms to AMS 4050, MMS 1420, BAC 5439 Class A, BMS 7-323 and MIL-STD 2154.

**7075** (UNS A97075) and *Alclad 7075* are heavily alloyed with zinc with lesser amounts of magnesium, copper and chromium. One of the strongest of the aluminum alloys, its use parallels that of 2024 with 7075 selected when higher mechanical properties are desired. Forming operations are limited. Also available as Alclad for improved corrosion resistance. All 7075 flat products conform to ASTM B209; 7075 Bare conforms to AMS QQ-A-250/12, Alclad 7075, AMS QQ-A-250/13.

**QC-7** This high-strength aluminum alloy is fully heat treated and stress relieved. It has outstanding thermal conductivity along with high strength and surface hardness and as such it is suitable for polishing and texturing. Used in production injection molds, blow molds, structural foam molds, RIM molds and aluminum die sets, it is weldable and highly machinable. Conforms to ANSI H35.2.

### CAST ALUMINUM PLATE

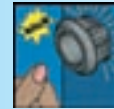
**M-1** An extraordinarily dense, dimensionally stable high strength aluminum plate designed especially for the high temp plastic molding industry. 100% ultrasonically inspected to insure a porosity-free condition. Superior machinability and high Brinell hardness without heat treatment make M-1 a cost saving alternative in a variety of mold applications. Conforms to ANSI H35.2.

### WEIGHT CONVERSION FACTORS

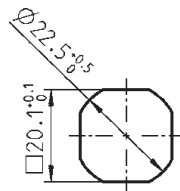
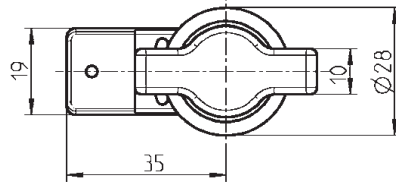
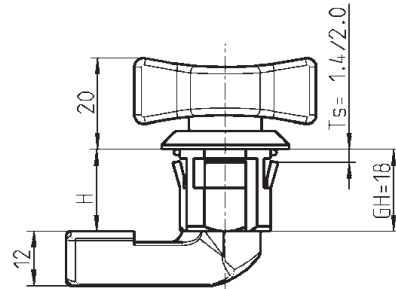
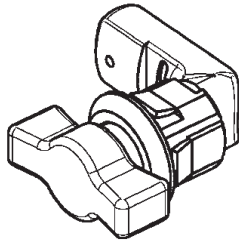
Once you know the weight of a particular size of sheet or plate in a given alloy, it is easy to determine the appropriate weight for alternative alloys by using these conversion factors.

	1100		5083	2014	2024	7005	
	5005	5052	5086	Alclad	Alclad	Alclad	
	6061	3003	5454	5456	2014	2024	7075
Conversion							
Factor:	1.00	1.01	0.98	0.979	1.03	1.02	1.03
	(.098)	(.099)	(.097)	(.096)	(.101)	(.100)	(.101)

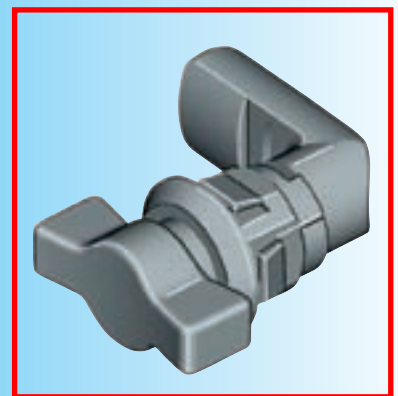
**Note:** Densities in lbs./cubic inch are indicated in parentheses.



### Clip-in fixing



Cut out



Housing polyamide GF black with nut or spring fixing AISI 301		Housing polyamide black with O-ring	
*nut fixing	Spring fixing	Ts	clip-in
1000-U675	1000-U709	1,4**	1000-U695
		2,0	1000-U696
Insert polyamide black, wave washer and self cutting screw m.s. zinc plated			
Square 7		1000-U666	
Square 8		1000-U676	
Triangular 8		1000-U667	
Double bit 3		1000-U677	
Double bit 5		1000-U678	
Slot 2 x 4		1000-U679	
Eastern Europe Ø 13		1000-U680	
Wing knob (IP 50), IP 65 upon request		1000-U711	
Cam on choice			
H	m.s. zinc plate, t=4	polyamide black	
18	1000-5046	1000-386-18	
20	1000-5161	1000-386-20	
22	1000-5119	1000-386-22	
24	-	1000-386-24	
28	1000-5164	1000-386-28	
30	-	1000-386-30	
IP 65 (see housing) with:			
Flat seal (nut fixing only)		1000-23	
O-ring		1000-24	

**Note:**

Quarter turn assembling 1B-105

**Further parts see page**

- Insert with wing knob 1B-720
- Handle (only nut fixing) 1C-320
- Dust cap (only nut fixing) 1C-320
- Key 12B-120

# Power Block Covers

## Specifications:

- Material UL Recognized, QMFZ2, 125°C, .06 Clear Protective Plastic
- Two Thread Cutting Screws Furnished Per Cover
- Covers Are Slotted For Easy Installation
- Covers Are Available For The 140, 141, 142, 143, 144, 145

## 132 and 133 Series Power Blocks:

- Snap On, Hinged Cover, Thermoplastic, UL Recognized, QMFZ2, 125°C

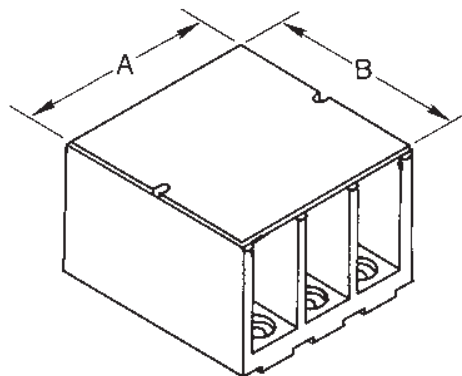


Figure 1

## Dimensions (IN):

Catalog #	A	B	Figure #
CC1402	2.75	2.25	1
CC1403	4.00	2.25	1
CC1411	.77	2.40	2
CC1412	1.42	2.40	2
CC1413	2.05	2.40	2
CC1414	2.68	2.40	2
CC1421	1.06	2.75	1
CC1422	1.87	2.75	1
CC1423	2.68	2.75	1
CC1431	1.78	3.38	1
CC1432	3.31	3.38	1
CC1433	4.84	3.38	1
CC1441	2.12	4.00	1
CC1442	4.00	4.00	1
CC1443	5.87	4.00	1
CC1451	2.87	4.50	1
CC1452	5.56	4.50	1
CC1453	8.28	4.50	1
CH1321	-	-	3
CH1322	-	-	3
CH1323	-	-	3
CH1331	-	-	3
CH1332	-	-	3
CH1333	-	-	3

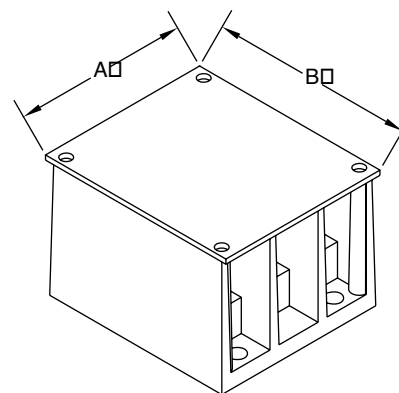


Figure 2

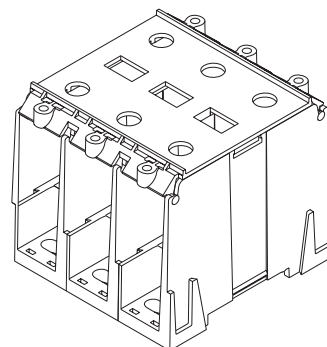


Figure 3  
(Hinged Cover)

# Power Distribution Blocks

## 600 Volts

### Specifications:

- Connector, High Conductive Aluminum, Tin Plated
- Amp Rating Based on NEC Table 310-16 Using 75° C Copper Wire
- \*Wire Connector Rated 90° C
- UL Recognized File No. E62806
- CSA Certified File No. LR19766
- CE



\*\* Openings rated for #4-14 AWG are multiple wire rated:  
(2) #10 CU Str, (2 to 4) #12 CU Str, and (2 to 4) #14 CU Str.

\*\*\* Openings rated for #2-14 AWG are multiple wire rated:  
(2) #8 CU Str, (2) #10 CU Str, (2) #12 CU Str, And  
(2) #14 CU Str

Catalog #	Poles	Amps	Material	Connector Configuration	Line Wire Range	Openings Per Pole	Connector Configuration	Load Wire Range	Openings Per Pole
1411403	1	60	Thermoplastic		#2-#14 AWG	1		#10-#18 AWG	2
1412403	2								
1413403	3								
1414403	4								
1411400	1	115	Thermoplastic		#2-#14 AWG	1		#10-#18 AWG	4
1412400	2								
1413400	3								
1414400	4								
1320570	Adder	175	Thermoplastic		2/0-#14 AWG	1		** #4-#14 AWG	4
1321570	1								
1322570	2								
1323570	3								
1421570	1	175	Phenolic		2/0-#14 AWG	1		** #4-#14 AWG	4
1422570	2								
1423570	3								
1320580	Adder								
1321580	1								
1322580	2								
1323580	3								
1402402	2	175	Phenolic		2/0-#14 AWG	1		** #4-#14 AWG	4
1403402	3								
1402401	2	175	Phenolic		2/0-#14 AWG	1		** #4-#14 AWG	6
1403401	3								
1402404	2	310	Phenolic		350 kcmil - #6 AWG	1		#2/0-#14 AWG	6
1403404	3								
1331554	1	310	Thermoplastic		350 kcmil - #6 AWG	1		#2/0-#14 AWG	2
1332554	2								
1333554	3								
1441401	1	335	Phenolic		400 kcmil - #6 AWG	1		#2-#14 AWG	6
1442401	2								
1443401	3								
1431552	1	335	Phenolic		400 kcmil - #6 AWG	1		#2-#14 AWG	4
1432552	2								
1433552	3								
1431553	1	335	Phenolic		400 kcmil - #6 AWG	1		#2-#14 AWG	6
1432553	2								
1433553	3								
1441560	1	335	Phenolic		400 kcmil - #6 AWG	1		#2-#14 AWG	8
1442560	2								
1443560	3								
1331552	1	335	Thermoplastic		400 kcmil - #6 AWG	1		*** #2-#14 AWG	4
1332552	2								
1333552	3								

Power Blocks

## Feed-through terminal block - UT 6 - 3044131

Please be informed that the data shown in this PDF Document is generated from our Online Catalog. Please find the complete data in the user's documentation. Our General Terms of Use for Downloads are valid (<http://phoenixcontact.com/download>)



Feed-through terminal block, Connection method: Screw connection, Cross section: 0.2 mm<sup>2</sup> - 10 mm<sup>2</sup>, AWG: 24 - 8, Width: 8.2 mm, Color: gray, Mounting type: NS 35/7,5, NS 35/15

### Product Features

- ✓ The large wiring space enables the connection of solid and stranded conductors without ferrules, even above the nominal cross section
- ✓ Tested for railway applications
- ✓ As well as saving space, the compact design enables user-friendly wiring in a small amount of space
- ✓ Optimum screwdriver guidance through closed screw shafts
- ✓ The multi-conductor connection offers maximum flexibility and wiring density
- ✓ The cable entry funnel enables the use of conductors with ferrules and plastic collars within the nominal cross section



### Key commercial data

Packing unit	1 pc
Weight per Piece (excluding packing)	14.8 GRM
Custom tariff number	85369010
Country of origin	Germany

### Technical data

#### General

Number of levels	1
Number of connections	2
Color	gray
Insulating material	PA
Inflammability class according to UL 94	V0
Area of application	Railway industry
	Mechanical engineering

# Feed-through terminal block - UT 4 - 3044102

## Technical data

### General

Nominal cross section	4 mm <sup>2</sup>
Color	gray
Insulating material	PA
Flammability rating according to UL 94	V0
Area of application	Railway industry
	Machine building
	Plant engineering
	Process industry
Rated surge voltage	8 kV
Degree of pollution	3
Overvoltage category	III
Insulating material group	I
Maximum power dissipation for nominal condition	1.02 W
Maximum load current	41 A (with 6 mm <sup>2</sup> conductor cross section)
Nominal current I <sub>N</sub>	32 A (with 4 mm <sup>2</sup> conductor cross section)
Nominal voltage U <sub>N</sub>	1000 V
Open side panel	Yes
Shock protection test specification	DIN EN 50274 (VDE 0660-514):2002-11
Back of the hand protection	guaranteed
Finger protection	guaranteed
Result of surge voltage test	Test passed
Surge voltage test setpoint	9.8 kV
Result of power-frequency withstand voltage test	Test passed
Power frequency withstand voltage setpoint	2.2 kV
Result of the test for mechanical stability of terminal points (5 x conductor connection)	Test passed
Result of bending test	Test passed
Bending test rotation speed	10 rpm
Bending test turns	135
Bending test conductor cross section/weight	0.14 mm <sup>2</sup> / 0.2 kg
	4 mm <sup>2</sup> / 0.9 kg
	6 mm <sup>2</sup> / 1.4 kg
Tensile test result	Test passed
Conductor cross section tensile test	0.14 mm <sup>2</sup>
Tractive force setpoint	10 N
Conductor cross section tensile test	4 mm <sup>2</sup>
Tractive force setpoint	60 N

# Feed-through terminal block - UT 4 - 3044102

## Technical data

### General

Conductor cross section tensile test	6 mm <sup>2</sup>
Tractive force setpoint	80 N
Result of tight fit on support	Test passed
Tight fit on carrier	NS 35
Setpoint	1 N
Result of voltage-drop test	Test passed
Requirements, voltage drop	≤ 3.2 mV
Result of temperature-rise test	Test passed
Short circuit stability result	Test passed
Conductor cross section short circuit testing	4 mm <sup>2</sup>
Short-time current	0.48 kA
Conductor cross section short circuit testing	6 mm <sup>2</sup>
Short-time current	0.72 kA
Result of thermal test	Test passed
Proof of thermal characteristics (needle flame) effective duration	30 s
Oscillation, broadband noise test result	Test passed
Test specification, oscillation, broadband noise	DIN EN 50155 (VDE 0115-200):2008-03
Test spectrum	Service life test category 1, class B, body mounted
Test frequency	f <sub>1</sub> = 5 Hz to f <sub>2</sub> = 150 Hz
ASD level	1.857 (m/s <sup>2</sup> ) <sup>2</sup> /Hz
Acceleration	0,8 g
Test duration per axis	5 h
Test directions	X-, Y- and Z-axis
Shock test result	Test passed
Test specification, shock test	DIN EN 50155 (VDE 0115-200):2008-03
Shock form	Half-sine
Acceleration	5 g
Shock duration	30 ms
Number of shocks per direction	3
Test directions	X-, Y- and Z-axis (pos. and neg.)
Relative insulation material temperature index (Elec., UL 746 B)	130 °C
Temperature index of insulation material (DIN EN 60216-1 (VDE 0304-21))	125 °C
Static insulating material application in cold	-60 °C
Behavior in fire for rail vehicles (DIN 5510-2)	Test passed
Flame test method (DIN EN 60695-11-10)	V0
Oxygen index (DIN EN ISO 4589-2)	>32 %
NF F16-101, NF F10-102 Class I	2



## Ground modular terminal block - UT 6-PE - 3044157

Please be informed that the data shown in this PDF Document is generated from our Online Catalog. Please find the complete data in the user's documentation. Our General Terms of Use for Downloads are valid (<http://download.phoenixcontact.com>)



Ground modular terminal block, Connection method: Screw connection, Cross section: 0.2 mm<sup>2</sup> - 10 mm<sup>2</sup>, AWG: 24 - 8, Width: 8.2 mm, Color: green-yellow, Mounting type: NS 35/7,5, NS 35/15

### Product Features

- ✓ The large wiring space enables the connection of solid and stranded conductors without ferrules, even above the nominal cross section
- ✓ Tested for railway applications
- ✓ As well as saving space, the compact design enables user-friendly wiring in a small amount of space
- ✓ Optimum screwdriver guidance through closed screw shafts
- ✓ The multi-conductor connection offers maximum flexibility and wiring density
- ✓ The cable entry funnel enables the use of conductors with ferrules and plastic collars within the nominal cross section



### Key commercial data

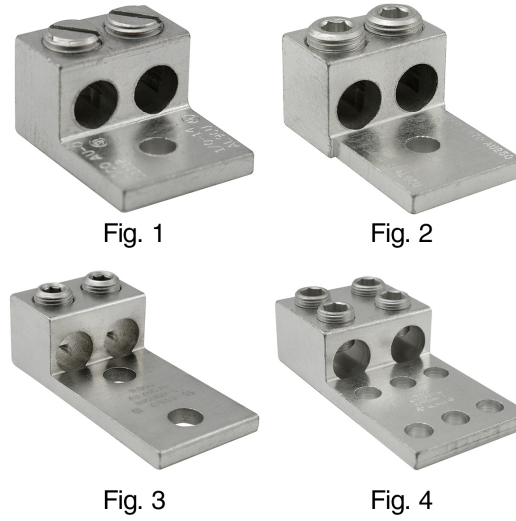
Packing unit	1 pc
Weight per Piece (excluding packing)	22.74 GRM
Custom tariff number	85369010
Country of origin	Germany

### Technical data

#### General

Number of levels	1
Number of connections	2
Color	green-yellow
Insulating material	PA
Inflammability class according to UL 94	V0
Area of application	Railway industry
	Mechanical engineering

## AU 2 CONDUCTOR AL/CU



- Manufactured from high strength 6061-T6 aluminum alloy.
- Electro-Tin plated.
- Suitable for use in circuits rated at 35 KV or less; proper high voltage spacing and insulation techniques must be used.
- Suitable for use with either copper or aluminum conductors.
- Chamfered wire entry provides ease of installation.
- CSA Certified.
- Rated to 90° C.
- UL 486A/B Listed, UL File E6207.
- AU-0 through AU-350 Listed to UL 467, UL File E6207
- Fig #4 mounting hole spacing from side to side, hole to hole is .875".

Item ID	Figure Number	Conductor Range	Bolt/Stud Size	Mounting Hole Spacing	Length	Width	Height	Hex Size	Standard Package	NAED/UPC Number
AU-0	1	1/0-14 AWG	1/4		1.4688	1.1250	0.7940	S	12	0783669000665
AU-2/0	2	2/0-14 AWG	1/4		1.4688	1.2500	0.7940	3/16	12	0783669000740
AU-250	2	250 kcmil-6 AWG	3/8		2.5620	1.6480	1.1870	5/16	6	0783669003307
AU-350	2	350 kcmil-6 AWG	1/2		2.8750	1.8906	1.2500	5/16	6	0783669003819
AU-350-N	4	350 kcmil-6 AWG	1/2	1-3/4	5.5000	2.7500	1.5000	5/16	3	0783669005752
AU-350-2N	3	350 kcmil-6 AWG	1/2	1-3/4	4.3125	2.0000	1.3750	5/16	3	0783669005745

# Product data sheet

Specifications

**SQUARE D**



Surge protection device, Surgelogic, 36kA, 120 VAC, 1 phase, 3 wire, 25kA SCCR, NEMA 4X

SDSA1175T

Product availability : Stock - Normally stocked in distribution facility

**Price\* : 95.68 USD**

## Main

Product	Surge protection device
Range	Surgelogic

## Complementary

Surge Current	36 kA
Voltage Rating	120 V AC
Number of Phases	1 phase
Wiring Configuration	3-wire
Connection	Wire
MCOV	150 V
Nominal Discharge Current	10 kA
SCCR	25 kA
Local Signalling	Status LED
Height	2.25 in (57.15 mm)
Width	2.25 in (57.15 mm)
Depth	1.935 in (49.15 mm)
Cable length	24 in (609.60 mm)

## Environment

Enclosure Rating	NEMA 4X
Enclosure Material	Black Plastic
Standards	CSA C22.2 No 8 UL 1449:ed. 4

## Ordering and shipping details

Category	08462 - SURGE PROTECTION SDSA
Discount Schedule	DE1B
GTIN	785901984092
Nbr. of units in pkg.	1

\* Price is "List Price" and may be subject to a trade discount – check with your local distributor or retailer for actual price.

Package weight(Lbs)	10.56 oz (299.371 g)
Returnability	Yes
Country of origin	MX

### Packing Units

Unit Type of Package 1	PCE
Package 1 Height	2.60 in (6.604 cm)
Package 1 width	2.60 in (6.604 cm)
Package 1 Length	6.90 in (17.526 cm)

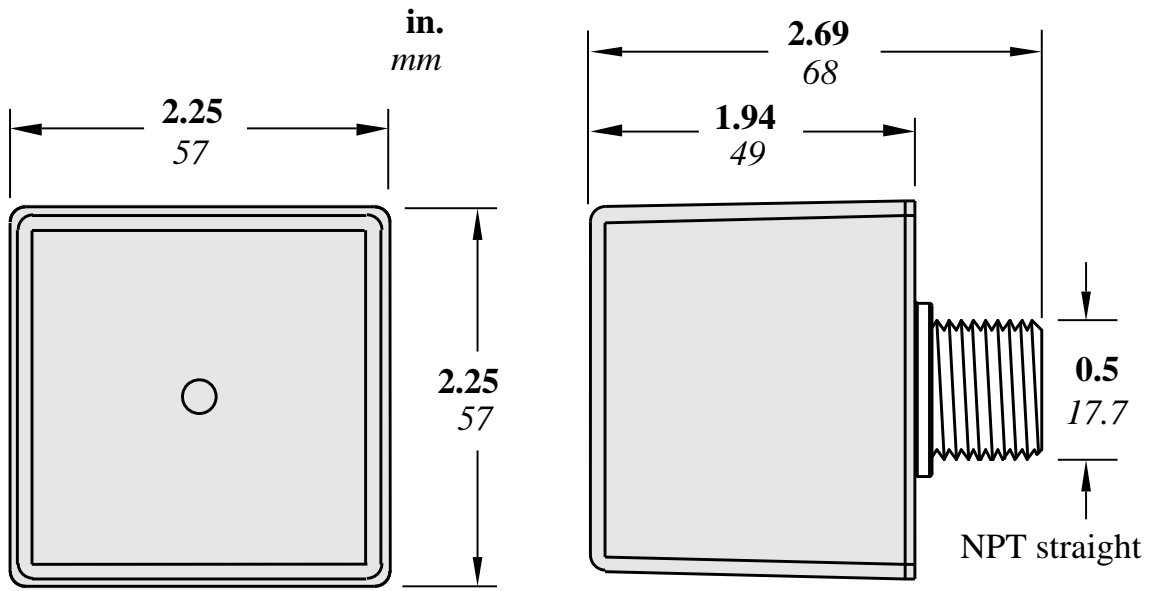
### Offer Sustainability

REACH Regulation	<a href="#">REACH Declaration</a>
EU RoHS Directive	Compliant <a href="#">EU RoHS Declaration</a>
Mercury free	Yes
RoHS exemption information	Yes
China RoHS Regulation	<a href="#">China RoHS declaration</a> Product out of China RoHS scope. Substance declaration for your information.

### Contractual warranty

Warranty	18 months
----------	-----------

Dimensions



# Switching Power Supplies

## PS5R-V Series



### STANDARDS COMPLIANCE

Applicable Standards	Mark	File No. or Organization
UL508 UL1310 <sup>1</sup> ANSI/ISA 12.12.01 CSA C22.2 No.107.1 CSA C22.2 No.213 CSA C22.2 No.223 <sup>1</sup>		UL/c-UL Listed File No. E467154, E177168
EN60950-1 EN50178 EN61204-3 EN50581		TÜV SÜD <sup>2</sup> EU Low Voltage Directive EMC Directive RoHS Directive
SEMI F47	—	EPRI

Note 1: PS5R-VA/VB/VC/VD/VE only

Note 2: EN60950-1, EN50178 only

### POWER SUPPLY PART NUMBERS

Output Capacity	Part Number	Input Voltage	Output Voltage	Output Current
7.5W	PS5R-VA05	100 to 240V AC (Voltage range: 85 to 264V AC / 100 to 370V DC)	5V	1.5A
	PS5R-VA12		12V	0.6A
	PS5R-VA24		24V	0.3A
10W	PS5R-VB05		5V	2.0A
	PS5R-VB12		12V	1.3A
15W	PS5R-VB24		24V	0.65A
	PS5R-VC12		12V	2.5A
30W	PS5R-VC24		24V	1.3A
	PS5R-VD24		24V	2.5A
90W	PS5R-VE24		24V	3.75A
120W	PS5R-VF24	24V	5.0A	
240W	PS5R-VG24	24V	10.0A	

#### Part Number Structure

PS5R - V □ □

Output Voltage

05: 5V<sup>3</sup>  
12: 12V<sup>4</sup>  
24: 24V

Output Capacity

A: 7.5W  
B: 10W/15W  
C: 30W  
D: 60W

E: 90W

F: 120W

G: 240W

Note 3: PS5R-VA/VB only

Note 4: PS5R-VA/VB/VC only

Use only for interpreting part numbers.

Do not use for developing part numbers.

### PRODUCT DESCRIPTION

DIN-rail mount switching power supplies with global approvals for both industrial and hazardous locations

### KEY FEATURES

- Compact size preserves panel space
- Slim size (width):  
22.5mm (10W/15W/30W)  
36mm (60W/90W)  
45mm (7.5W)  
46mm (120W)  
60mm (240W)
- Universal Voltage Input:  
85-264V AC/100-370V DC
- Wide operating temperature range
- Spring-up terminals accept ring & fork terminals
- Approved for use in Class I Division 2 hazardous locations
- Can be installed in 6 directions
- 7.5W ~ 90W meet NEC Class 2 output ratings
- Overcurrent protection with auto-reset
- Meets SEMI F47 Sag Immunity (208V AC input)
- RoHS compliant
- Five-year factory warranty



# SPECIFICATIONS

Model	5V DC output	PS5R-VA05	PS5R-VB05	-	-	-	-	-	
	12V DC output	PS5R-VA12	PS5R-VB12	PS5R-VC12	PS5R-VD24	PS5R-VE24	PS5R-VF24	PS5R-VG24	
	24V DC output	PS5R-VA24	PS5R-VB24	PS5R-VC24	PS5R-VD24	PS5R-VE24	PS5R-VF24	PS5R-VG24	
Output Capacity		7.5W	15W (5V Model is 10W)	30W	60W	90W	120W	240W	
Rated Input Voltage (Single-phase two-wire) <sup>1</sup>		100 to 240V AC (Voltage range: 85 to 264V AC/100 to 370V DC) (Load ≤ 80% at 100-105V DC)							
Frequency		50/60 Hz							
Input	Input Current (Typ.)	100V AC	5V: 0.20A 12V, 24V: 0.18A	5V: 0.25A 12V, 24V: 0.35A	0.7A	1.3A	1.1A	1.4A	2.7A
		230V AC	5V: 0.12A 12V, 24V: 0.10A	5V: 0.14A 12V, 24V: 0.19A	0.3A	0.8A	0.6A	0.7A	1.2A
	Inrush Current (Typ.) (Ta=25°C, cold start)	100V AC	15A			18A			14A
		230V AC	36A		45A			41A	30A
	Leakage Current	120V AC	0.5mA max.						
		230V AC	1.0mA max.						
	Efficiency (Typ.) (at rated output) <sup>2</sup>	100V AC	5V: 74%, 12V: 79%, 24V: 80%	5V: 77%, 12V: 82%, 24V: 84%	12V: 83%, 24V: 85%	86%		88% 89%	89%
230V AC		5V: 73%, 12V: 77%, 24V: 76%	5V: 73%, 12V: 80%, 24V: 81%	12V: 85%, 24V: 87%	86%			90%	
Power Factor (Typ.)	100V AC	—	—	—	—	—	0.99	—	
	230V AC	—	—	—	—	0.86	0.92	0.96	
Rated Voltage/Current		5V/1.5A, 12V/0.6A, 24V/0.3A	5V/2.0A <sup>3</sup> , 12V/1.3A, 24V/0.65A	12V/2.5A, 24V/1.3A	24V/2.5A	24V/3.75A	24V/5A	24V/10A	
Adjustable Voltage Range		±10%							
Output Holding Time (Typ.) (at rated output)	100V AC	5V: 45ms, 12V: 45ms, 24V: 47ms	5V: 53ms, 12V: 34ms, 24V: 36ms	12V: 13ms, 24V: 15ms	13ms	20ms	30ms		
	230V AC	5V: 289ms 12V: 294ms 24V: 282ms	5V: 330ms 12V: 215ms 24V: 230ms	12V: 110ms 24V: 110ms	105ms	30ms	33ms	40ms	
Start Time (at rated input and output)		450ms max.	500ms max.	600ms max.	800ms max.	700ms max.	800ms max.		
Rise Time (at rated input and output)		220ms max	5V, 12V: 200ms max. 24V: 250ms max.	200ms max.					
Output	Input Fluctuation		0.4% max.						
	Load Fluctuation		5V: 2.5% max. 12V, 24V: 1.0% max.						
	Temperature Change		0.04%/°C max. (-10 to +65°C)	0.05%/°C max. (-10 to +65°C)	12V: 0.05%/°C max. (-10 to +50°C) 24V: 0.05%/°C max. (-10 to +55°C)	0.05%/°C max. (-10 to +55°C)	0.05%/°C max. (-10 to +50°C)	0.05%/°C max. (-25 to +55°C)	0.05%/°C max. (-25 to +50°C)
	Regulation	Ripple (including noise)	5V: 8% p-p max. (-25 to -10°C) 12V: 6% p-p max. (-25 to -10°C) 24V: 4% p-p max. (-25 to -10°C)	5V: 8% p-p max. (-25 to -10°C) 12V: 6% p-p max. (-25 to -10°C) 24V: 4% p-p max. (-25 to -10°C)	12V: 6% p-p max. (-25 to -10°C) 24V: 4% p-p max. (-25 to -10°C)	4% p-p max. (-25 to -10°C)			
			5V: 5% p-p max. (-10 to +0°C) 12V: 2.5% p-p max. (-10 to +0°C) 24V: 1.5% p-p max. (-10 to +0°C)	5V: 5% p-p max. (-10 to +0°C) 12V: 2.5% p-p max. (-10 to +0°C) 24V: 1.5% p-p max. (-10 to +0°C)	12V: 2.5% p-p max. (-10 to +0°C) 24V: 1.5% p-p max. (-10 to +0°C)	1.5% p-p max. (-10 to +0°C)			
			5V: 2.5% p-p max. (0 to +65°C) 12V: 1.5% p-p max. (0 to +65°C) 24V: 1% p-p max. (0 to +65°C)	5V: 2.5% p-p max. (0 to +65°C) 12V: 1.5% p-p max. (0 to +65°C) 24V: 1% p-p max. (0 to +65°C)	12V: 1.5% p-p max. (0 to +50°C) 24V: 1% p-p max. (0 to +55°C)	1% p-p max. (0 to +55°C)	1% p-p max. (0 to +50°C)	1% p-p max. (0 to +55°C)	1% p-p max. (0 to +50°C)
Overcurrent Protection		105% min. (auto reset)				101% min. (auto reset)	105% min. (auto reset)		
Operation Indicator		LED (green)							
Dielectric Strength	Between input and output terminals		3,000V AC, 1 minute						
	Between input and ground terminals		2,000V AC, 1 minute						
	Between output and ground terminals		500V AC, 1 minute						
Insulation Resistance		Between input and output terminals: 100MΩ min. (500V DC megger) Between input and ground terminals: 100MΩ min. (500V DC megger)							
Operating Temperature <sup>4</sup> (No freezing)		-25 to +75°C			-25 to +70°C		-25 to +65°C		
Operating Humidity		20 to 90% RH (no condensation)							
Storage Temperature (No freezing)		-25 to +75°C							
Storage Humidity		20 to 90% RH (no condensation)							
Vibration Resistance		10 to 55Hz, amplitude 0.375mm, 2 hours each in 3 axes (when used with BNL6 end clips)			10 to 55Hz, amplitude 0.33mm, 2 hours each in 3 axes (when used with BNL6 end clips)	10 to 55Hz, amplitude 0.21mm, 2 hours each in 3 axes (when used with BNL6 end clips)	10 to 55Hz, amplitude 0.375mm, 2 hours each in 3 axes (when used with part no. BNL6 mounting clips)		
Shock Resistance		300 m/s <sup>2</sup> (30G), 3 times each in 6 directions							
Expected Life <sup>5</sup>		8 years minimum (at the rated input, 50% load, operating temperature +40°C, standard mounting direction)							
EMC	EMI	EN61204-3 (Class B)							
	EMS	EN61204-3 (industrial)							
Safety Standards		UL508 (Listing), UL1310 Class 2, ANSI/ISA-12.12.01 CSA C22.2 No. 107.1, 213, 223 EN60950-1, EN50178				UL508 (Listing) ANSI/ISA-12.12.01 107.1, 213 EN60950-1, EN50178			CSA C22.2 No.
Other Standard		SEMI F47 (at 208V AC input only)							
Degree of Protection		IP20 (EN60529)							
Dimensions (mm)		75H × 45W × 70D	90H × 22.5W × 95D	95H × 36W × 108D	115H × 46W × 121D	125H × 60W × 125D			
Weight (approx.)		130g	140g	150g	260g	310g	470g	960g	
Terminal Screw		M3.5							

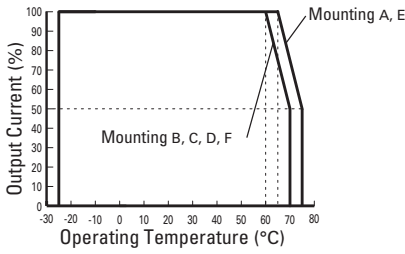
\*At normal temperature and humidity unless otherwise specified. Notes: 1: DC input voltage is not subject to safety standards. When using on DC input, connect a fuse to the input terminal for DC input protection. 2: Under stable state. 3: PS5R-VB05 (5V DC/2.0A) is 10W (Up to 3.0A at Ta = 0 to 40°C. Not subject to safety standards above 2.0A.) 4: See the output derating curves on page 3. 5: Calculation of the expected life is based on the actual life of the aluminum electrolytic capacitor. The expected life depends on operating conditions.

# CHARACTERISTICS

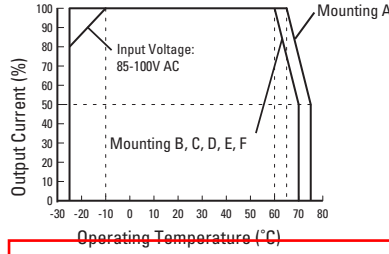
## Operating Temperature vs. Output Current (Derating Curves)

Conditions: Natural air cooling (Operating temperature is the temperature around the switching power supply.)

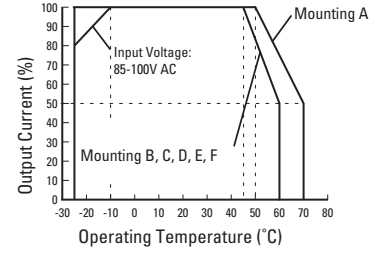
**PS5R-VA05, -VA12, -VA24**



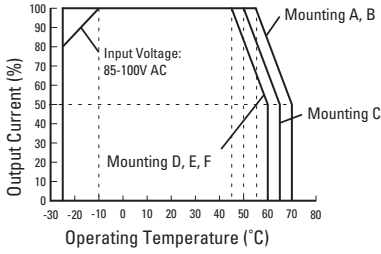
**PS5R-VB05, -VB12, -VB24**



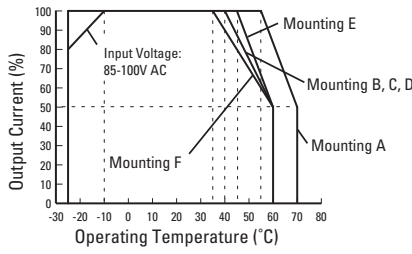
**PS5R-VC12**



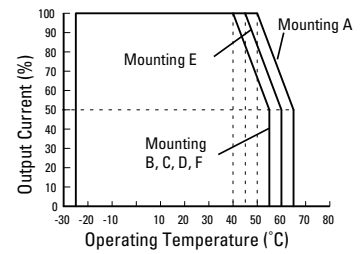
**PS5R-VC24**



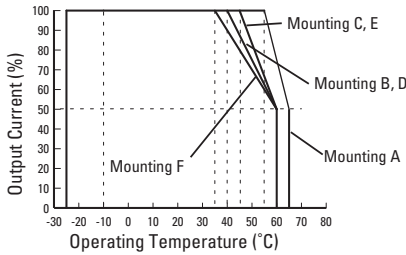
**PS5R-VD24**



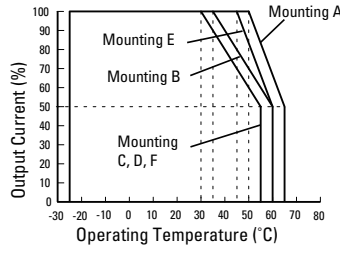
**PS5R-VE24**



**PS5R-VF24**



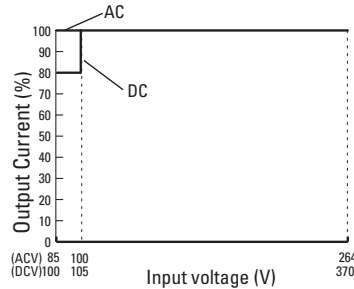
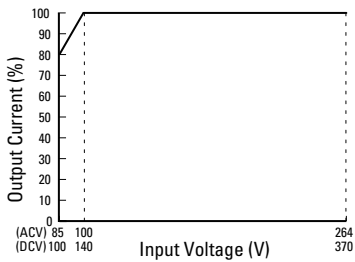
**PS5R-VG24**



## Input Voltage vs. Output Current (Derating Curves) (Ta=25°C)

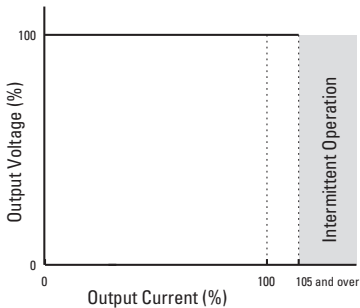
**PS5R-VA05, VA12, VA24, -VB05, -VB12, -VB24, -VC12, -VC24, -VD24, -VE24, -VF24**

**PS5R-VG24**

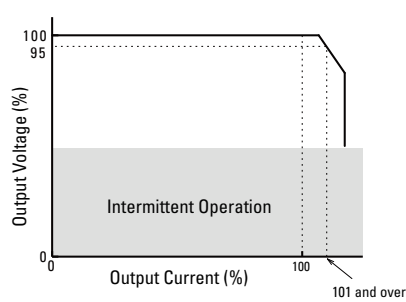


## Overcurrent Protection Characteristics

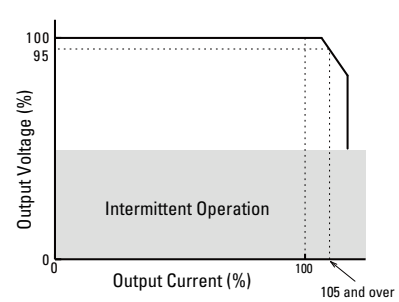
**PS5R-VA/VB/VC/VD/VF**



**PS5R-VE24**



**PS5R-VG24**

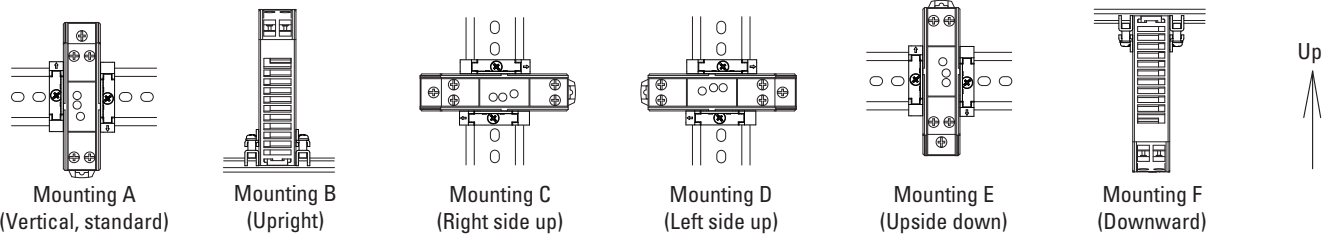




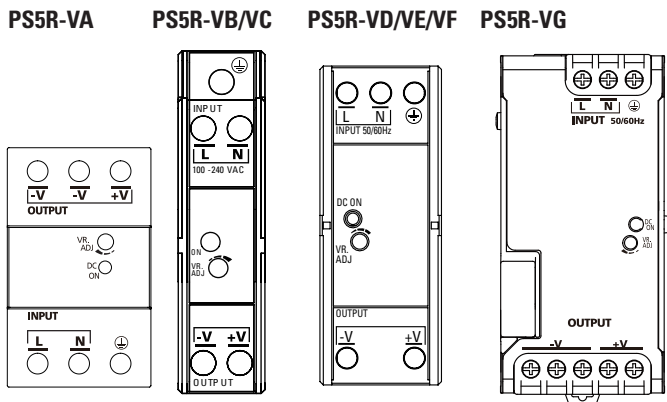
## Operating Temperature Approved by Safety Standards

Part Number	UL508, CSA C22.2 No.107.1, ANSI/ISA12.12.01, EN60950-1, EN50178					
	Mounting A	Mounting B	Mounting C	Mounting D	Mounting E	Mounting F
PS5R-A05, -VB12, -VB24	65	60	60	60	65	60
PS5R-VB05, -VB12, -VB24	65	60	60	60	60	60
PS5R-VC12	50	45	45	45	45	45
PS5R-VC24	55	55	50	45	45	45
PS5R-VD24	55	40	40	40	45	35
PS5R-VE24	50	40	40	40	45	40
PS5R-VF24	55	40	45	40	45	35
PS5R-VG24	50	35	30	30	45	30

## MOUNTING STYLE



## FRONT PANEL



Marking	Name	Description
L, N	AC Input Terminal	Voltage range: 85 to 264V AC/100 to 370V DC
⊕	Ground Terminal	Be sure to connect this terminal to a proper ground.
+V, -V	DC Output Terminals	+V: Positive output terminal -V: Negative output terminal
VR.ADJ	Output Voltage Adjustment	Allows adjustment within $\pm 10\%$ . (VE = $\pm 5\%$ ) Turning clockwise increases the output voltage. Turning counterclockwise decreases the output voltage.
DC ON	Operation Indicator (green)	Illuminates when the output voltage is on.

## ACCESSORIES

### Panel Mounting Bracket<sup>2</sup>

Applicable Switching Power Supply	Part Number	Remarks
PS5R-VB	PS9Z-5R1B	—
PS5R-VC	PS9Z-5R2B	For side mounting
PS5R-VD	PS9Z-5R1C	—
PS5R-VE	PS9Z-5R1E	—
PS5R-VF	PS9Z-5R1E	—
PS5R-VG	PS9Z-6R1F	—
	PS9Z-6R2F	For side mounting

Note 2: Used when installing on a panel directly.

### DIN Rail (35mm-wide)

Length	Part Number	Material
1000mm	BNDN1000	Aluminum

### End Clip

Part Number
BNL6
BNL8



### Main

Range	Multi 9
Product name	Multi 9 C60
Product or component type	Miniature circuit-breaker
Device short name	C60BP
Device application	Distribution
Poles description	1P
Number of protected poles	1
[In] rated current	5 A at 25 °C conforming to EN/IEC 60947-2
Network type	AC DC
Trip unit technology	Thermal-magnetic
Curve code	C
Breaking capacity	Icu 3 kA at 415 V AC conforming to EN/IEC 60947-2 Icu 10 kA at 240 V AC conforming to EN/IEC 60947-2 Icu 20 kA at 60 V DC conforming to EN/IEC 60947-2 Icu 3 kA at 415 V AC conforming to GB 14048.2 Icu 10 kA at 240 V AC conforming to GB 14048.2 Icu 20 kA at 60 V DC conforming to GB 14048.2 AIR 10 kA at 277 V AC conforming to UL 489 AIR 14 kA at 240 V AC conforming to UL 489 AIR 14 kA at 120 V AC conforming to UL 489 AIR 10 kA at 60 V DC conforming to UL 489 AIR 10 kA at 277 V AC conforming to CSA C22.2 No 5 AIR 14 kA at 240 V AC conforming to CSA C22.2 No 5 AIR 14 kA at 120 V AC conforming to CSA C22.2 No 5 AIR 10 kA at 60 V DC conforming to CSA C22.2 No 5
Suitability for isolation	Yes conforming to EN/IEC 60947-2
Standards	UL 489 CSA C22.2 No 5 GB 14048.2 EN/IEC 60947-2
Product certifications	UL CSA

Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications


## Complementary

[Ue] rated operational voltage	240 V AC 50/60 Hz 415 V AC 50/60 Hz 60 V DC
Magnetic tripping limit	8.5 x In +/- 20% AC 12 x In +/- 20% DC
[Ics] rated service breaking capacity	2.25 kA 75 % x Icu at 415 V AC conforming to EN/IEC 60947-2 7.5 kA 75 % x Icu at 240 V AC conforming to EN/IEC 60947-2 2.25 kA 75 % x Icu at 415 V AC conforming to GB 14048.2 7.5 kA 75 % x Icu at 240 V AC conforming to GB 14048.2 15 kA 75 % x Icu at 60 V DC conforming to GB 14048.2 15 kA 75 % x Icu at 60 V DC conforming to EN/IEC 60947-2
[Ui] rated insulation voltage	500 V AC conforming to EN/IEC 60947-2
[Uimp] rated impulse withstand voltage	6 kV conforming to EN/IEC 60947-2
Contact position indicator	Yes
Control type	Toggle
Local signalling	ON/OFF indication
Mounting mode	Clip-on
Mounting support	DIN rail
9 mm pitches	2
Height	103 mm
Width	18 mm
Depth	72 mm
Colour	Grey
Mechanical durability	20000 cycles
Electrical durability	10000 cycles
Provision for padlocking	Padlockable
Connections - terminals	Tunnel type terminal, top or bottom flexible with ferrule wire(s) 1...16 mm <sup>2</sup> max (AWG 18...AWG 8) Tunnel type terminal, top or bottom rigid wire(s) 1...25 mm <sup>2</sup> max (AWG 18...AWG 8) Tunnel type terminal, top or bottom flexible wire(s) 1...16 mm <sup>2</sup> max (AWG 18...AWG 8)
Wire stripping length	14 mm (top or bottom)
Tightening torque	2.5 N.m (top or bottom)
Earth-leakage protection	Without

## Environment

IP degree of protection	IP40 for modular enclosure conforming to IEC 60529 IP20 conforming to IEC 60529
Pollution degree	3 conforming to EN/IEC 60947-2
Tropicalisation	2 conforming to IEC 60068-1
Relative humidity	95 % ( 55 °C )
Operating altitude	0...2000 m
Ambient air temperature for operation	-30...70 °C
Ambient air temperature for storage	-40...80 °C

## Offer Sustainability

Sustainable offer status	Green Premium product
RoHS (date code: YYWW)	Compliant - since 1719 - Schneider Electric declaration of conformity  <a href="#">Schneider Electric declaration of conformity</a>
REACH	Reference not containing SVHC above the threshold <a href="#">Reference not containing SVHC above the threshold</a>
Product environmental profile	Available
Product end of life instructions	Need no specific recycling operations

# QLS Quad Output 4-20 mA Current Loop Splitter / Retransmitter

With  $\pm 10V$  common mode isolation  
between input & outputs



**LAUREL Electronics Inc.**

3183-G Airway Ave, Costa Mesa, CA, 92626, USA

Tel: (714) 434-6131 Fax: (714) 434-3766 Website: [www.laurels.com](http://www.laurels.com)



**Intertek**  
4006497

## 1. ORDERING GUIDE

- QLS-1** Quad isolated output loop splitter/ retransmitter, 85-264 Vac power.
- QLS-2** Quad isolated output loop splitter/ retransmitter, 10-48 Vdc or 12-32 Vac power.

## 3. PRODUCT DESCRIPTION

**Model QLS** sources up to four (4) independently adjustable 4-20 mA outputs from a single input, which can be 4-20 mA, 1-5V, 0-5V or 0-10V, as selected by jumpers. The outputs can share a common ground. The input and outputs are mutually isolated to +10V / -20V at 600 ohm load by means of active circuitry to accommodate differences in local grounds. If any device in an output loop is removed from the loop or fails, or if a wiring fault occurs, the other loops continue to operate properly. Each loop only drives a single load, avoiding compliance problems.

**Model QLS** overcomes problems of simply placing loads in series in a single 4-20 mA loop. In such a configuration, the devices in the loop cannot share a common ground, but must be electrically floating, which is often not possible. When any device in a single loop is removed, fails or if a wiring fault occurs, all other devices in the loop lose their 4-20 mA signal. The transmitter voltage compliance limit may be exceeded, since the voltage drops across loads in series are additive. Also, the 4-20 mA signal to each load device cannot be individually adjusted for calibration purposes.

**Power** for the loop splitter can be 85-264 Vac (Model QLS-1) or low voltage 10-48 Vdc or 12-32 Vac (Model QLS-2). An excitation output is provided on the signal input side to drive a 2- or 3-wire transmitter at 24 Vdc and up to 30 mA. The output loads have to be passive or sinking. Active or sourcing loads which apply 24 Vdc to an output will burn out the QLS.

**Each output loop** provides two potentiometers for  $\pm 10\%$  fine adjustment of zero and span, a yellow LED lamp to indicate loop continuity, and a current test point across a 10-ohm series resistor, where 200 mV corresponds to 20 mA. This allows a multimeter to be used to measure the loop current without breaking the loop.





## 4. RECEIVING & UNPACKING

Your QLS loop splitter / retransmitter was carefully tested and inspected prior to shipment. Should the unit be damaged in shipment, notify the freight carrier immediately. Inspect the label on the unit for the type of input power: QLS-1 for 85-264 Vac power, or QLS-2 for 10-48 Vdc or 12-32 Vac power. In the event the unit is not as ordered or is inoperable, return it to the place of purchase for repair or replacement. Please include a description of the problem.







## 5. SAFETY CONSIDERATIONS

**Warning:** Use of this unit in a manner other than specified in this manual may impair the protection of the unit and subject the user to a hazard. Do not attempt to operate if the unit shows visible damage.

### Cautions:

-  This unit may be powered from 85-264 Vac with the worldwide voltage power supply (Model QLS-1) or from 12-30 Vac or 10-48 Vdc (Model QLS-2). Verify that you have the proper model for the power to be used. The 85-264 Vac power connector (P1 Pins 1-3) is colored **Green** to differentiate it from other input and output connectors. The 12-30 Vac or 10-48 Vdc power connector is colored **Black**. This unit has no power switch. It will be in operation as soon as power is applied.
-  The unit's four 4-20 mA analog outputs are **sourcing**. The loads have to be **sinking** (or passive). Active loads designed to power a two-wire sensor with 24 Vdc will burn out the QLS.
-  To avoid dangers of electrocution and/or short circuit, do not attempt to open the case while the unit is under power
-  To prevent an electrical or fire hazard, do not expose the unit to excessive moisture. Do not operate the unit in the presence of flammable gases or fumes, as such an environment constitutes an explosion hazard.

### Symbols used:

- |   |   |   |                                      |
|---|---|---|--------------------------------------|
|  | Caution (refer to accompanying documents)                                     |  | Earth ground                         |
|  | Caution, risk of electric shock   |  | Signal or loop ground                |
|  | Equipment protected throughout by double insulation or reinforced insulation. |  | Both direct and alternating current. |

### Operating environment:

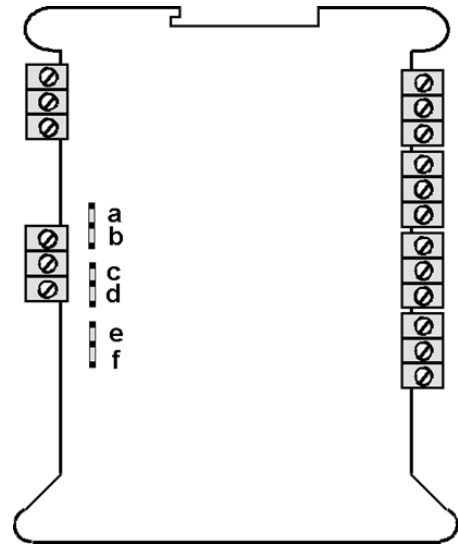
-  Class II (double insulated) equipment designed for use in Pollution degree 2.

## 6. JUMPER SETTINGS

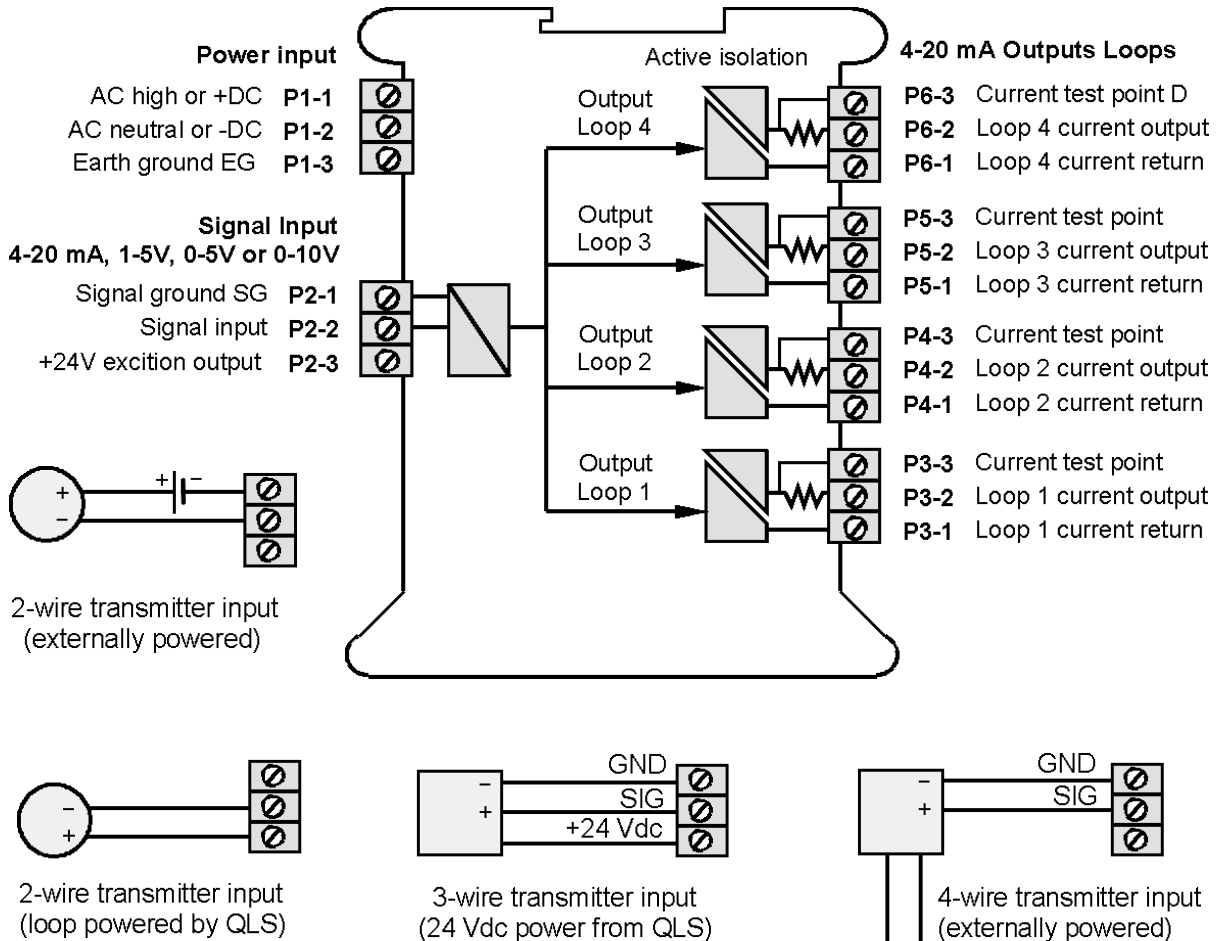
The four outputs are always 4-20 mA process loops. The signal input can be 4-20 mA, 1-5V, 0-5V or 0-10V, as set by jumpers adjacent to the signal input connector on the circuit board. The factory default input setting is 4-20 mA. To change jumpers, remove power, then open the case by removing the screws at the four corners of the case. Store the unused jumper, if any, on an unused pin.

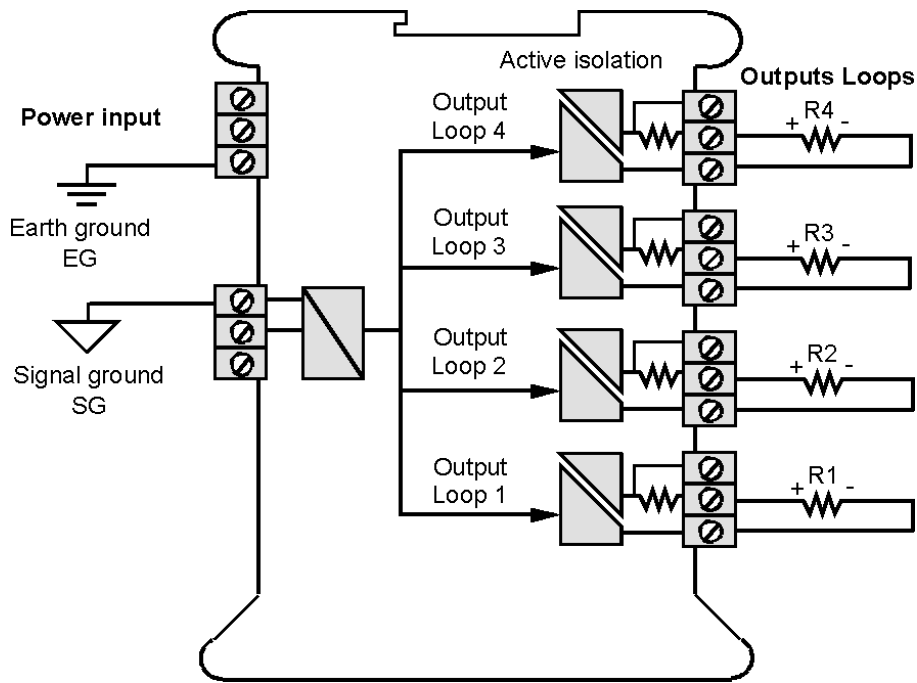
### Jumper Positions:

4-20 mA .....	<b>a + c</b>
1-5V .....	<b>d</b>
0-5V .....	<b>b + f</b>
0-10V .....	<b>a + e</b>

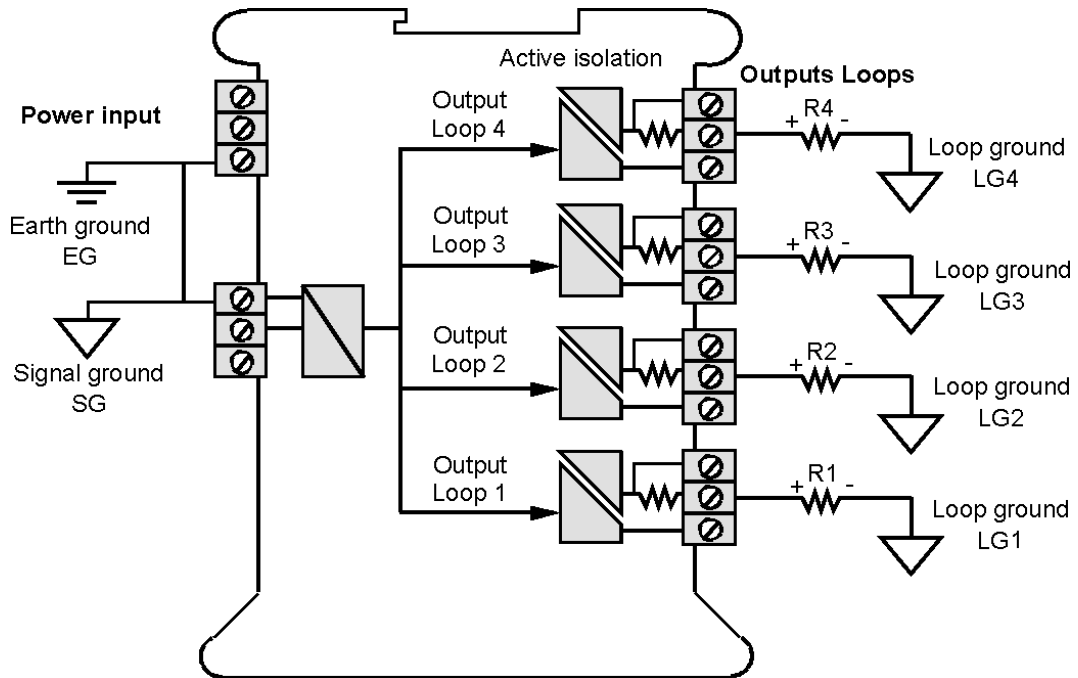


## 7. ELECTRICAL CONNECTIONS





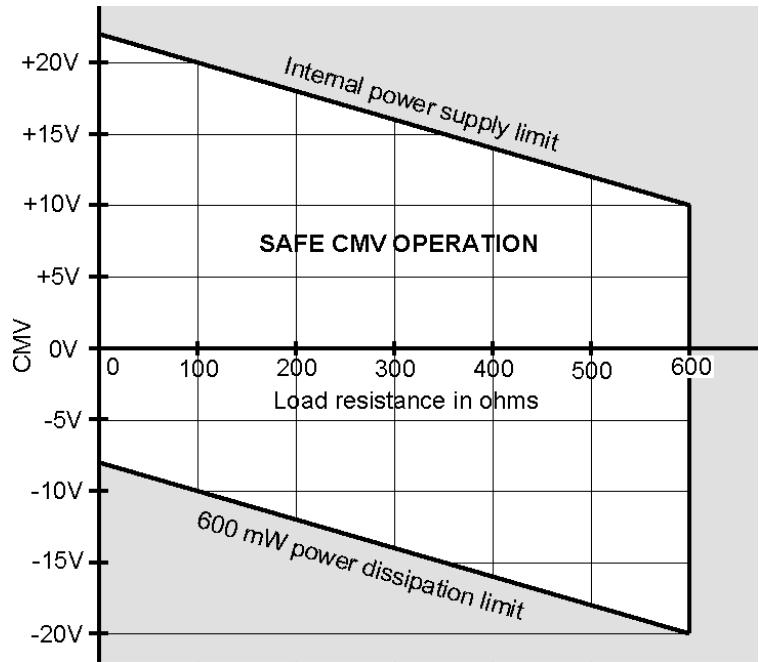
**Floating loads:** Any output load  $R$  that is floating (not connected to a local ground or earth ground) can be connected between current output (Pin 1) and current return (Pin 2). Current return is internally tied to signal ground  $SG$ , which can be floating or be connected to earth ground. Loads have to be passive (or sinking).



**Grounded loads:** Any output load  $R$  can be connected to a local loop ground  $LG$  instead of current return. The loop grounds  $LG$  can each be different, but can only differ from signal ground  $SG$  by a common mode voltage  $CMV$ , which is defined as  $V_{LG} - V_{SG}$ . Signal ground  $SG$  must be tied to earth ground  $EG$  or be within 1 Volt of  $EG$ .



If a load R is grounded to a local loop ground LG, the available common mode voltage CMV is limited on the positive side by the unit's internal power supply and on the negative side by the 600 mW power dissipation limit of an output transistor. The diagram to the right shows allowable CMV as a function of output load resistance R. For example, with a 250 ohm load, CMV can range from -13V to +17V. With a 500 ohm load, CMV can range from -18V to +12V. The unit will not work correctly if CMV limits are exceeded or load resistance is greater than 600 ohms. Loads have to be passive (or sinking).

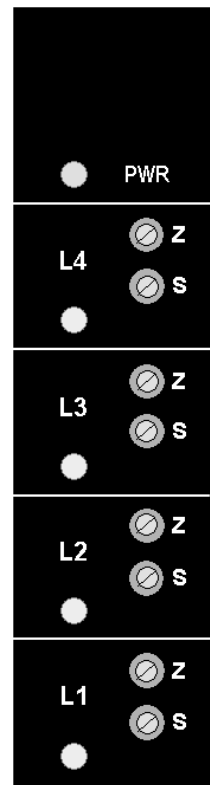


## 8. SETTING & CALIBRATION

Zero and span of the four output loops (**L1**, **L2**, **L3**, **L4**) are set by means of precision 25-turn potentiometers marked **Z** (for zero) and **S** (for span) on the front panel. The unit is factory jumpered and calibrated so that 4-20 mA in produces 4-20 mA out on all output channels.

To set or calibrate an output channel, apply the low input signal (4 mA, 0V or 1V) which should produce the 4 mA low output. Measure the actual output (e.g., 4.218 mA). Then apply the high input signal (20 mA, 5V or 10V) which should produce the 20 mA high output. Adjust the **S** potentiometer until actual output current equals the just-measured low output plus 16 mA (e.g., 4.218 mA + 16 mA = 20.218 mA). Then reapply the low input which should produce a 4 mA output, and adjust the **Z** potentiometer until the actual output current equals 4.000 mA.

Since electronic components may change as they age, annual recalibration of the output channels is recommended using the **Z** and **S** potentiometers. The input channel does not require calibration.



## 9. SPECIFICATIONS

### Mechanical

Mounting .....	35 mm DIN rail per EN50 022
Dimensions.....	22.5 x 103 x 128 mm (0.9" x 4.1" x 5.0") W x H x D
Weight .....	140 g (5 oz)
Connectors .....	Detachable plug-in screw-clamp connectors
Wire Size.....	28-12 AWG, 2.5 sq. mm max

### Signal Input

Signal Type .....	4-20 mA, 1-5V, 0-5V, 0-10V (jumper selectable)
Input Resistance .....	50 $\Omega$ for 4-20 mA, 500 k $\Omega$ for 1-5V & 0-5V, 1 M $\Omega$ for 0-10V
Transmitter Excitation.....	24 Vdc nominal, 30 mA max

### Signal Outputs

Number of Outputs .....	4
Signal Type .....	4-20 mA sourcing
Zero & Span Adjustment.....	$\pm 10\%$ for each output with 25-turn potentiometers
Signal Isolation .....	Please see graph on page 6
Voltage Compliance .....	12V (600 $\Omega$ per loop at 20 mA)
Load Regulation.....	$\pm 0.005\%$ of span from 0 to 600 $\Omega$
Accuracy .....	$\pm 0.02\%$ max span error at 23 $^{\circ}$ C
Span Tempco.....	$\pm 10$ ppm/ $^{\circ}$ C (0.16 $\mu$ A/ $^{\circ}$ C) typical, $\pm 25$ ppm/ $^{\circ}$ C (0.4 $\mu$ A/ $^{\circ}$ C) max
AC Rejection .....	90 dB from DC to 60 Hz
Response Speed .....	2 ms risetime, 7 ms settling time to 0.1% of final value
Current Test Point.....	10 $\Omega$ $\pm 0.5\%$ series resistor drops 200 mV at 20 mA
Loop Continuity Indication .....	Yellow LED lamp per loop, brightness increases with current

### Power Input

Standard Power (QLS-1) .....	85-264 Vac or 90-300 Vdc (DC operation not UL approved)
Low Power Option (QLS-2) .....	10-48 Vdc or 12-32 Vac
Power Frequency .....	DC or 47-63 Hz
Power Isolation.....	250V rms working, 2.3 kV rms per 1 min test
Power Consumption .....	3.5 W max, all loops delivering 20 mA
Power On Indication .....	Green LED lamp

### Environmental

Operating Temperature .....	-40 $^{\circ}$ C to 70 $^{\circ}$ C
Storage Temperature .....	-40 $^{\circ}$ C to 85 $^{\circ}$ C
Relative Humidity.....	95% at 40 $^{\circ}$ C, non-condensing
Cooling Required .....	Mount units with ventilation holes at top and bottom. Leave 6 mm (1/4") between units, or force air with a fan.

## 10. WARRANTY

Laurel Electronics Inc. warrants its products against defects in materials or workmanship for a period of one year from the date of purchase.

In the event of a defect during the warranty period, the defective unit may be returned to the seller, which may be Laurel or a Laurel distributor. The seller may then repair or replace the defective unit at its option. In the event of such a return, freight charges from the buyer shall be paid by the buyer, and freight charges from the seller shall be paid by the seller.

### **LIMITATION OF WARRANTY**

The foregoing warranty shall not apply to defects resulting from:

1. Improper installation or miswiring.
2. Improper or inadequate maintenance.
3. Unauthorized modification or misuse.
4. Operation outside the environmental specifications.
5. Mishandling or abuse.

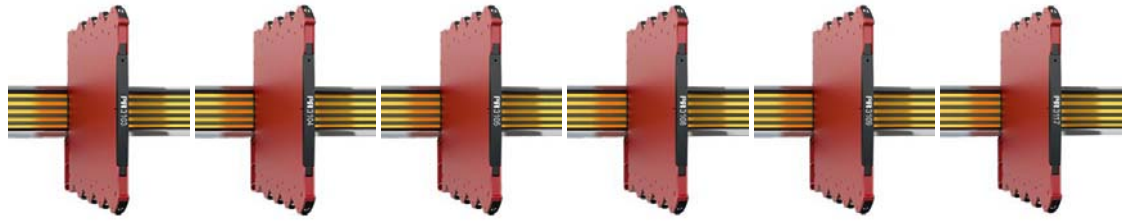
The warranty set forth above is exclusive and no other warranty, whether written or oral, is expressed or implied. Laurel specifically disclaims implied warranties of merchantability and fitness for a particular purpose.

Any electronic product may fail or malfunction over time. To minimize risks associated with reliance on Laurel products, users are expected to provide adequate system-level design and operating safeguards. Laurel's products are intended for general purpose industrial or laboratory use. They are not intended nor certified for use in life-critical medical, nuclear, or aerospace applications, or for use in hazardous locations.

### **EXCLUSIVE REMEDIES**

The remedies provided herein are Buyer's sole and exclusive remedies. In no event shall Laurel be liable for direct, indirect, incidental or consequential damages (including loss of profits) whether based on contract, tort, or any other legal theory.

# ISOLATORS



TYPE	3103	3104	3105	3108	3109	3117
	Isolated repeater	Isolated converter	Isolated converter	Isolated repeater / splitter	Isolated converter / splitter	Bipolar isolated converter
<b>INPUT:</b> mA, V, potentiometer						
<b>OUTPUT:</b> mA, V						
<b>INPUT:</b>						
mA, measurement range / min. span	0...23 mA / 1:1	0...23 mA / 16 mA	0...23 mA / 16 mA	0...23 mA / 1:1	0...23 mA / 16 mA	-23...+23 mA
V, measurement range / min. span		0...10.25 VDC / 4 VDC	0...10.25 VDC / 4 VDC		0...10.25 VDC / 4 VDC	±5 and ±10 VDC
Reference voltage / 2-wire supply		- / > 17 V			- / > 17 V	
<b>OUTPUT:</b>						
mA, signal range / min. span	0...23 mA / 1:1	0...23 mA / 16 mA	0...23 mA / 16 mA	0...23 mA / 1:1	0...23 mA / 16 mA	0...23 mA / 16 mA
Load (@ current output)	≤ 600 Ω	≤ 600 Ω	≤ 600 Ω	≤ 300 Ω per channel	≤ 300 Ω per channel	≤ 600 Ω
V, signal range / min. span		0...10 VDC / 4 VDC	0...10 VDC / 4 VDC		0...10 VDC / 4 VDC	0...10 VDC / 4 VDC
Load (@ voltage output)		≥ 10 kΩ	≥ 10 kΩ		≥ 10 kΩ	≥ 10 kΩ
<b>TECHNICAL SPECIFICATIONS:</b>						
Ambient temperature	-25...+70°C	-25...+70°C	0...+70°C	-25...+70°C	-25...+70°C	-25...+70°C
Supply voltage, AC / DC	- / 16.8...31.2 VDC	- / 16.8...31.2 VDC	- / 16.8...31.2 VDC	- / 16.8...31.2 VDC	- / 16.8...31.2 VDC	- / 16.8...31.2 VDC
Max. required power*	0.65 W	1.2 W	0.8 W	0.75 W	1.2 W	0.8 W
Isolation voltage, test / operation	2.5 kVAC / 250 VAC	2.5 kVAC / 250 VAC	2.5 kVAC / 250 VAC	2.5 kVAC / 250 VAC	2.5 kVAC / 250 VAC	2.5 kVAC / 250 VAC
Response time	< 7 ms	< 7 ms	< 7 ms	< 7 ms	< 7 ms	< 7 ms
Signal dynamics, input / output	Analog signal chain	Analog signal chain	Analog signal chain	Analog signal chain	Analog signal chain	Analog signal chain
Accuracy	< ±0.05% of span	< ±0.05% of span	< ±0.2% of span	< ±0.05% of span	< ±0.05% of span	< ±0.05% of span
Temperature coefficient	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.015% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C	< ±0.01% of span / °C
NAMUR	NE 21	NE 21	NE 21	NE 21	NE 21	NE 21
Channels	1	1	1	1	1	1
Programming	No	DIP switch	DIP switch	No	DIP switch	DIP switch
<b>APPROVALS:</b>						
ATEX, Zone 2	✓	✓		✓	✓	✓
IECEX, Zone 2	✓	✓		✓	✓	✓
FM, Zone 2 - DIV 2	✓	✓		✓	✓	✓
CCOE	✓	✓		✓	✓	✓
UL 61010 / 508	✓ / -	✓ / -	✓ / -	✓ / -	✓ / -	✓ / -
DNV-GL	✓	✓	✓	✓	✓	✓
EAC	✓	✓	✓	✓	✓	✓
<b>APPLICATION GUIDE:</b>						
Signal repeater	✓			✓		
Signal converter		✓			✓	✓
Signal splitter			✓	✓	✓	
mA / V bipolar input						✓
4...20 mA Tx input		✓			✓	
Buffered voltage output		✓	✓		✓	✓
mA / V output	✓ / -	✓ / ✓	✓ / ✓	✓ / -	✓ / ✓	✓ / ✓
Active / passive mA output	✓ / -	✓ / -	✓ / -	✓ / -	✓ / -	✓ / -
Mounting in Zone 2 / Div 2	✓	✓	✓	✓	✓	✓
Power rail option	✓	✓	✓	✓	✓	✓

\* = @ 24 VDC

Of span = Of the presently selected range

# PD6000

PROVU® Dual-Line 6-Digit Process Meter



**PROVU®**  
SERIES



**PROCESS**

- 0-20 mA, 4-20 mA, 0-5 V, 1-5 V, and  $\pm 10$  V Inputs
- NEMA 4X, IP65 Front
- Universal 85-265 VAC or 12/24 VDC Input Power
- Large Dual-Line 6-Digit Display, 0.60" & 0.46"
- Dual-Scale for Level Applications – Single Input
- Sunlight Readable Display Models
- Isolated 24 VDC @ 200 mA Transmitter Power Supply
- Signal Input Conditioning for Flow & Round Horizontal Tanks
- Programmable Displays & Function Keys
- 32-Point, Square Root, or Exponential Linearization
- Multi-Pump Alternation Control
- 2 or 4 Relays + Isolated 4-20 mA Output Options
- External 4-Relay & Digital I/O Expansion Modules
- USB, RS-232, & RS-485 Serial Communication Options
- Tare Function
- Modbus® RTU Communication Protocol Standard
- On-Board Digital Input
- Configure, Monitor, and Datalog from a PC with Free MeterView® Pro Software

**PRECISION  
DIGITAL**

[www.predig.com](http://www.predig.com)

**PRECISION DIGITAL CORPORATION**

# PD6000 PROVU® Dual-Line 6-Digit Process Meter



UV Resistant  
Sunlight Readable Models



Front Panel  
NEMA 4X Rated



## FEATURE RICH AND FLEXIBLE

The PROVU® meter boasts specifications and functionality that clearly make it one of the most advanced process meters available. Its dual-line 6-digit display (999,999), advanced signal input conditioning, function keys, Modbus RTU serial communications, and optional expansion modules are only a few of the features found on the PROVU PD6000.

## KEY FEATURES

### Precise, Accurate, and More Informative

PROVU's large 0.6" upper display provides a highly accurate and precise 6-digit view of the process measurement. Its 24-bit A/D is accurate to  $\pm 0.03\%$  of calibrated span  $\pm 1$  count.

## Optional SunBright Display Models

PROVU's SunBright display models have an extraordinarily bright LED display. They are perfect for applications where the meter is in direct sunlight or in applications where visibility may be impaired by smoke, fog, dust, or distance. Option is available on all PROVU models.

## Function Keys

There are three function keys available to the user. These keys can be programmed to trigger certain events (i.e. acknowledge alarms, reset max and/or min, disable/enable output relays, or hold current relay states), provide direct menu access points, and more.

Learn more about using the PROVU's Function Keys by watching a video at [predig.com/videos](http://predig.com/videos)



## Rugged

A unique front panel design makes the PROVU nearly impenetrable in typical applications. Here, the PROVU easily survives a direct hit on the display from a heavy 2" solid stainless steel ball dropped from eight feet.

## Easy to Use

The user friendly dual-line display makes the PROVU easy to set up & program. No jumpers to set for input selection. All setup & programming are done via the front panel. Three levels of password protection help maintain the reliability of the programming.



Flow in CFH



Gallons & Setpoint



Level in Feet



Pressure Indication

## Configurable

The upper display can be programmed to indicate PV, maximum (peak), minimum (valley), alternating maximum/minimum, one of eight alarm set points, or Modbus input. The lower display can also be configured to display engineering units, set points, user defined legends, or simply turned off.



Input Setup



Display Setup

# PD6000 PROVu® Dual-Line 6-Digit Process Meter

## Dual-Scale Display Feature

The PROVu PD6000 has a rather unique, and very flexible dual-scale capability; a second scaled display can represent the measured input in a different form (i.e. gallons & height). This is of particular value in level applications. Please see the examples shown below. Both displays are independently scaled and are based on the 4-20 mA input signal. Beyond level, this function has been used for pressure & force, current & power, feet & meters, GPM & CFM, and more.



Gallons & mA



Gallons & Height



Gallons & Percent



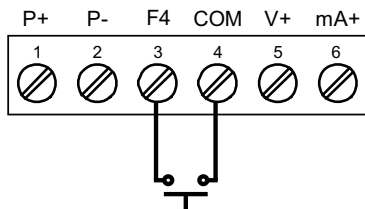
Gallons & Head PSI

## Advanced Linearization Capability

The PROVu includes a 32-point linearizer. In non-linear level applications (i.e. some pumping or lift stations), it can easily compensate for submerged equipment or plumbing that displace usable volume. A second independent 8-point linearizer is available for a second scaled display (PV2) when "Level" function is enabled. Precision Digital's free MeterView Pro PC-based software greatly simplifies the construction of the linearization tables. The software can save this data to the meter and/or PC.

## On-Board Digital Input

The PD6000 includes a digital input as standard. This digital input can operate with the tare, reset tare, or interlock relays feature, force relays on from a signal from a PLC or relay on other equipment, and much more. This is ideal for installations where the meter is inaccessible behind a cover, or where an additional function key is needed for customized operation.



## Rounding

The rounding feature is used to give the user a steadier display with fluctuating signals. It causes the display to round to the nearest value according to the rounding value selected (1, 2, 5, 10, 20, 50, or 100). For example, with a rounding value of 10, and an input of 12346, the display would indicate 12350.

## Max/Min Display

Max/Min (or Peak/Valley) is standard on the PROVu PD6000. Either display can be configured to show either maximum or minimum excursion since last reset. The displays can also be configured to toggle between Max and Min values. Both values can be simply reset from the front panel.

## DIGITAL COMMUNICATIONS

### Modbus® RTU Serial Communications

With the purchase of a serial communication adapter, PROVu meters can communicate with any Modbus Master device using the ever-popular Modbus communications protocol that is included in every PROVu. This greatly increases the flexibility of the meter. Modbus provides much more capability than read PV and write set points. Below are some examples of other things that can be done with PROVu's Modbus communications.

- Send a 6-character message to the lower display upon an event
- Convert a digital value to a 4-20 mA signal
- Remote user control (i.e. change set points, acknowledge alarms)
- Input a Modbus digital PV (in place of analog input)
- Remote override of any, or all, relays and analog outputs



Modbus PV Input



Remote Message

## Meter Copy

The Copy feature is used to copy (or clone) all the settings from one PROVu to other PROVu meters in about 20 seconds! The Copy function is a standard feature on all meters. It does not require a communications adapter, only an optional cable assembly, P/N PDA1200. See the ordering information for complete details.



## PROVu VIDEOS

Watch a quick demonstration on how the PROVu works and also how the function keys can simplify functionality. These and other videos are available at [www.predig.com/videos](http://www.predig.com/videos).





# PD6000 PROVU® Dual-Line 6-Digit Process Meter

## FIELD EXPANSION MODULES

Add functionality to the PROVU in the field with easy-to-install external expansion modules. Add USB, RS-232, or RS-485 communications, I/O modules (up to 2), and 4-relay expansion module. The menu items for these modules do not appear until the module is connected, simplifying the basic menu. Relay and digital I/O modules are shown below with optional DIN rail mounting kit, P/N PDA1002.



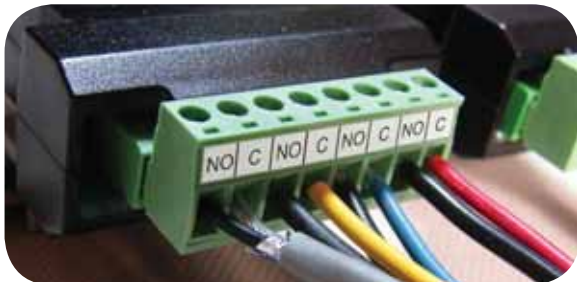
### PDA1044 I/O Expansion Module

Four digital inputs and four digital outputs are available per expansion module. The PROVU meter will accept two of these modules. External digital inputs can function similarly to the front panel function keys or on-board digital input F4. They can be configured to trigger certain events (i.e. acknowledge/reset alarms, reset max and/or min values, disable/enable all output relays, and hold current relay states), provide direct menu access point, or mimic front panel keys. The I/O module can be used to configure the PROVU remotely, in essence giving the user control of the four front panel push buttons. This feature is particularly useful if the meter is mounted inside an explosion-proof enclosure.

Digital outputs can be used to remotely monitor PROVU's alarm relay output states, or the states of a variety of actions and functions executed by the meter.

### PDA1004 Relay Expansion Module

An external module containing four 3 A Form A (SPST) relays can be added to the PROVU at anytime. Removable screw terminal blocks accept 12 to 22 AWG wire.



### PDA1232, PDA1485, & PDA8008 Communication Modules

Serial communications on the PROVU can be added anytime with external PDA1232 (RS-232), PDA1485 (RS-485), or PDA8008 (USB) communication adapters.

Free Modbus protocol with purchase of PROVU serial communications modules.

## METERVIEW® PRO SOFTWARE

Configure, monitor, and datalog a PROVU PD6000 from a PC using MeterView Pro Software (available for download at [www.predig.com](http://www.predig.com)) and a serial adapter.

Monitor & Datalog



Linearization Utility



Setup



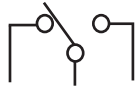
Relays





## OUTPUTS

### Relay Outputs



The PROVU has up to four 3 A Form C relays (SPDT) with multiple power loss fail-safe options. Relays can be configured for proper protective action upon input loop break. Relay ON and OFF delay times are user adjustable. Up to eight front panel indicators show alarm and/or relay state. All relays can be configured for 0-100% deadband.

### Relay Operation/Configuration

There are powerful relay functions that can be configured in the PROVU meter, including:

- Automatic reset only (non-latching)
- Automatic + manual reset at any time (non-latching)
- Latching (manual reset only)
- Latching with clear (manual reset only after alarm condition has cleared)
- Pump alternation control (automatic reset only)
- Sampling (activated for a user-specified time)
- User selectable fail-safe operation
- Relay action for loss (break) of 4-20 mA input signal
- Time delay (on and off), independent for each relay
- Manual control mode
- Interlock relay mode

### Analog Output

The isolated analog retransmission signal can be configured to represent the process variable (PV), maximum (peak) value, minimum (valley) value, the value for any of the eight relay set points, or Modbus input. While the output is nominally 4-20 mA, the signal will accurately accommodate under- and over-ranges from 1 to 23 mA.

### Manual Output Control

Take control of any output with this feature. All relays can be forced ON or OFF, and the 4-20 mA output signal can be set to any value within its range. When the relays and 4-20 mA output are controlled manually, an LED labeled "M" is turned on and the associated Alarm LEDs (1-8) flash every 10 seconds indicating that the meter is in manual control mode.



### Isolated Transmitter Power Supplies

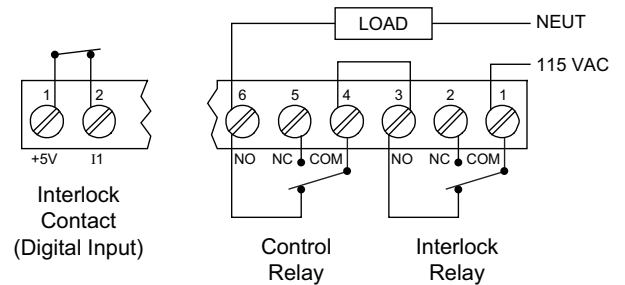
A powerful 24 V @ 200 mA power supply is a standard feature on the PROVU meter. It can be configured for 5, 10, or 24 V (default) by means of a simple internal jumper (see manual). An additional power supply (24 V @ 40 mA) is standard with the 4-20 mA output option.

### Sampling Function (PV Triggered Timed Relay)

The sampling function allows the operator to set a set point for a "sampling" relay. When the PV reaches that set point, it will close that relay's contacts for a preset period of time (0.1 to 5999.9 seconds). An example of its use may be for beer/ale fermentation. When the batch reaches a certain pH, the relay contacts would close and by some means (light, horn, etc.) alert someone to take a sample, or provide the trigger to automatically take a sample of the batch. The utility of this function can, of course, be expanded beyond sampling and be used whenever a timed relay output closure is required when the PV reaches a certain set point.

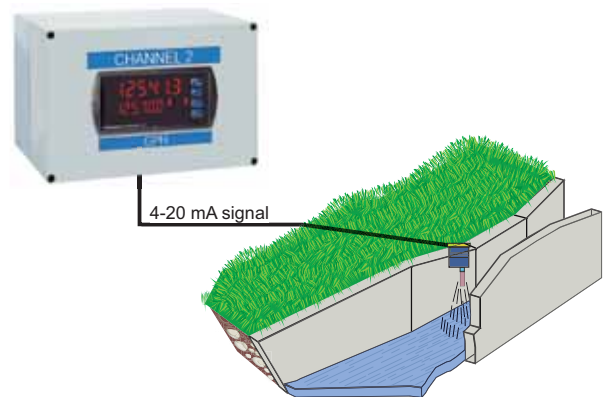
### Interlock Relay(s)

This function allows a process to use one or more very low voltage input signals or simple switch contacts to control the state of one or more internal "interlock" relays. A violation (i.e. loss of input, open switch, or open circuit) forces one or more N/O interlock relay contacts to open. One input can be used in series with a number of interlock switches, or up to eight inputs can be required to force-on one (or more) internal interlock relays. Please see Application Note AN-1008 on our website for more information. Requires PDA1044 Digital I/O module or use of on-board digital input F4.

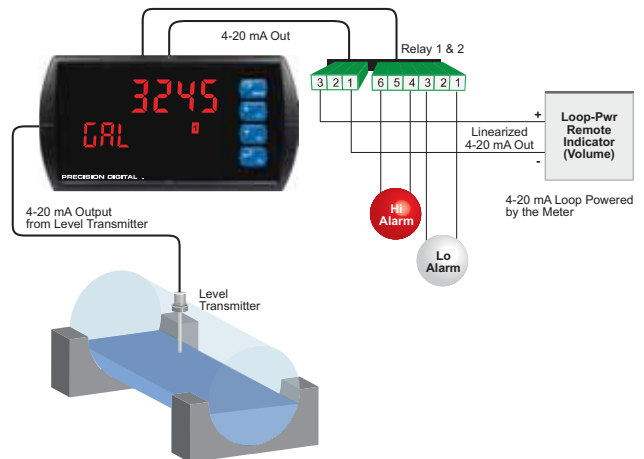


## SIGNAL INPUT CONDITIONING

Non-linear input signals (i.e. weirs & flumes, differential pressure, etc.) can be linearized with the PROVU's simple to use built-in signal input conditioners, such as: square-root extractor, exponential linearizer, horizontal round tank linearizer, or the PROVU's powerful general purpose 32-point linearizer.



Weir Flow Calculated Using Exponential Signal Input Conditioner

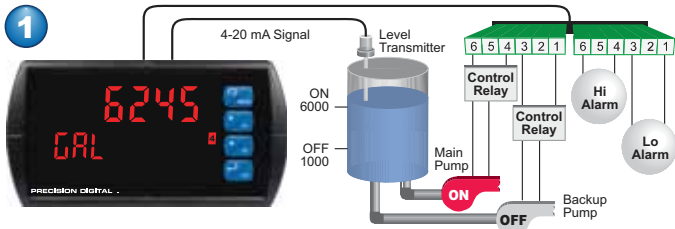


Round Horizontal Tank Signal Input Conditioner

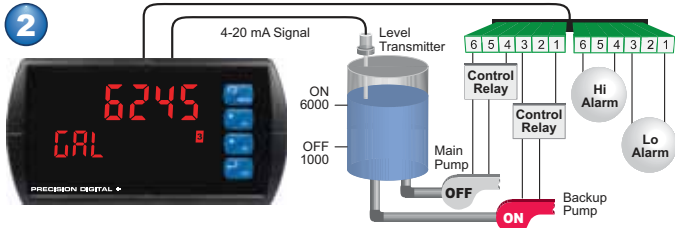
# PD6000 ProVu® Dual-Line 6-Digit Process Meter

## Multi-Pump Alternation

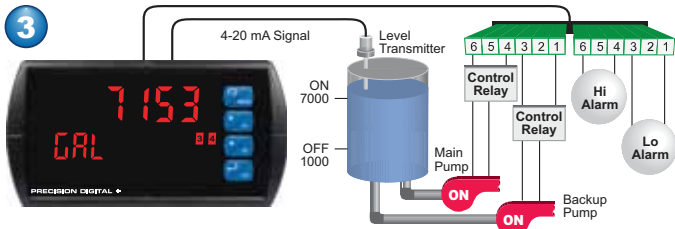
Up to 8 pumps can be alternated/sequenced.



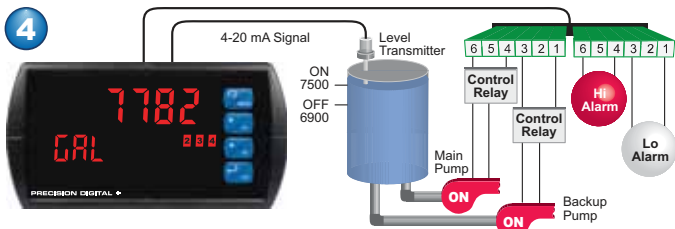
Relay #4 turns the main pump on at 6000 gallons and turns it off at 1000 gallons.



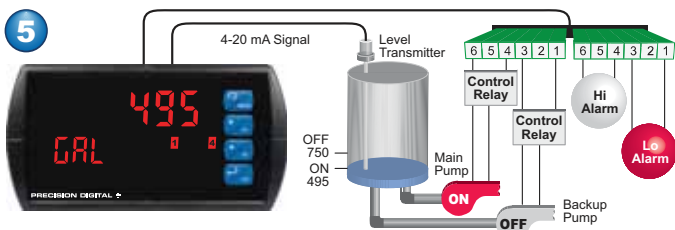
With the Pump Alternation feature activated, the next time the level reaches 6000 gallons, relay #3 transfers and starts the backup pump.



If the backup pump is not able to keep up, and the level reaches 7000 gallons, relay #4 transfers and starts the main pump as well.



Relay #2 trips the High Level Alarm at 7500 gallons and resets at 6900 gallons.



Relay #1 trips the Low Level Alarm at 495 gallons and resets at 750 gallons.

## PROTEX-MAX EXPLOSION-PROOF



All the proven features of the ProVu brought into your hazardous areas! Go to [www.predig.com/pd8](http://www.predig.com/pd8)

**PD8-6000**  
ProtEX-MAX Explosion-Proof

## NEMA 4 & 4X FIELD ENCLOSURES

Thermoplastic and stainless steel NEMA 4X, and painted steel NEMA 4 enclosures for up to 10 ProVu meters are available. Please visit our Enclosure Selection Utility at [www.predig.com/esu](http://www.predig.com/esu) for an easy way to find the right enclosure.



**PDA2302**  
Plastic Economical



**PDA2811**  
Plastic Low-Cost



**PDA2444**  
Explosion-Proof



**PDA2706**  
Steel

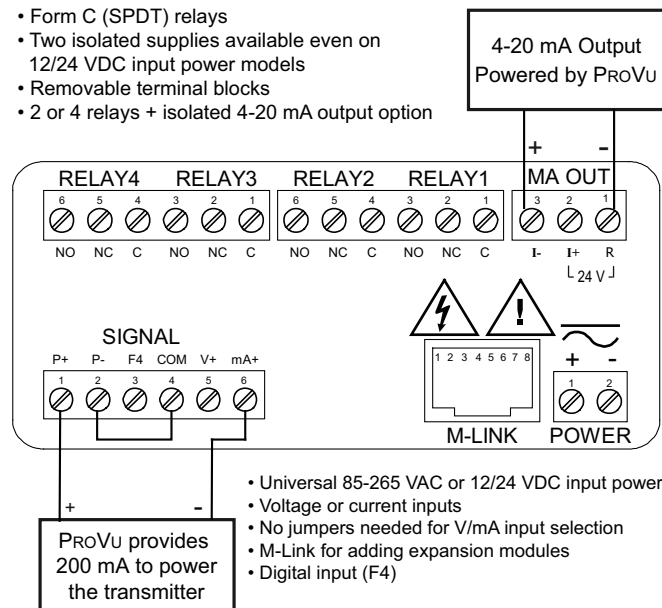


**PDA2812**  
Plastic Low-Cost

See our complete offering at [www.predig.com/esu](http://www.predig.com/esu)

## CONNECTIONS

- Form C (SPDT) relays
- Two isolated supplies available even on 12/24 VDC input power models
- Removable terminal blocks
- 2 or 4 relays + isolated 4-20 mA output option



- Universal 85-265 VAC or 12/24 VDC input power
- Voltage or current inputs
- No jumpers needed for V/mA input selection
- M-Link for adding expansion modules
- Digital input (F4)

## SPECIFICATIONS

Except where noted all specifications apply to operation at +25°C.

### General

**Display:** Upper display: 0.60" (15 mm) high. Lower display: 0.46" (12 mm) high. Both are 6 digits (-99999 to 999999), red LEDs.

**Display Intensity:** Eight intensity levels

**Display Update Rate:** 5/second (200 ms)

**Overrange:** Display flashes 999999

**Underrange:** Display flashes -99999

**Display Assignment:** The upper and lower displays may be assigned to PV1, PV2, PCT (percent), d r-u, d gross, d nt-g, max/min, alternate max & min, set points, units (lower display only), or Modbus input.

**Front Panel:** NEMA 4X, IP65

**Programming Methods:** Four front panel buttons, digital inputs, PC and MeterView Pro software, Modbus registers, or cloning using Copy function.

**F4 Digital Input Contacts:** 3.3 VDC on contact. Connect normally open contacts across F4 to COM.

**F4 Digital Input Logic Levels:** Logic High: 3 to 5 VDC  
Logic Low: 0 to 1.25 VDC

**Noise filter:** Programmable from 2 to 199 (0 will disable filter)

**Filter Bypass:** Programmable from 0.1 to 99.9% of calibrated span

**Recalibration:** Calibrated at the factory. Recalibration is recommended at least every 12 months.

**Max/Min Display:** Max / min readings reached by the process are stored until reset by the user or until power to the meter is turned off.

**Password:** Three programmable passwords restrict modification of programmed settings.

**Non-Volatile Memory:** All programmed settings are stored in non-volatile memory for a minimum of ten years if power is lost.

**Power Options:** 85-265 VAC 50/60 Hz, 90-265 VDC, 20 W max, or jumper selectable 12/24 VDC  $\pm 10\%$ , 15 W max.

**Fuse:** Required external fuse: UL Recognized, 5 A max, slow blow; up to 6 meters may share one 5 A fuse.

**Isolated Transmitter Power Supply:** Terminals P+ & P-: 24 VDC  $\pm 10\%$ . 12/24 VDC powered models selectable for 24, 10, or 5 VDC supply (internal jumper J4).

*PROVu Series (PD6000):*

85-265 VAC models rated @ 200 mA max, 12/24 VDC powered models rated @ 100 mA max, @ 50 mA max for 5 or 10 VDC supply.

*ProtEX-MAX (PD8 Series):*

All models transmitter supply rated @ 25mA max.

**Normal Mode Rejection:** Greater than 60 dB at 50/60 Hz

**Isolation:** 4 kV input/output-to-power line. 500 V input-to-output or output-to-P+ supply.

**Overvoltage Category:** Installation Overvoltage Category II: Local level with smaller transient overvoltages than Installation Overvoltage Category III.

### Environmental:

*PROVu Series (PD6000):*

Operating temperature range: -40 to 65°C

Storage temperature range: -40 to 85°C

Relative humidity: 0 to 90% non-condensing

*ProtEX-MAX (PD8 Series):*

T6 Class operating temperature range Ta = -40 to 60°C

T5 Class operating temperature range Ta = -40 to 65°C

See LIM8 ProtEX-MAX instruction manual for additional details.

**Max Power Dissipation:** PD8 Series: Maximum power dissipation limited to 15.1 W. See PD8 instruction manual for additional details.

**Connections:** Removable screw terminal blocks accept 12 to 22 AWG wire, RJ45 for external relays, digital I/O, and serial communication adapters.

**Enclosure:** 1/8 DIN, high impact plastic, UL 94V-0, color: black

**Mounting:** 1/8 DIN panel cutout required: 3.622" x 1.772"

(92 mm x 45 mm). Two panel mounting bracket assemblies are provided.

**Tightening Torque:** Screw terminal connectors: 5 lb-in (0.56 Nm)

**Dimensions:** 4.68" x 2.45" x 5.64" (119 mm x 62 mm x 143 mm) (W x H x D)

**Weight:** 9.5 oz (269 g)

**UL File Number:** UL & C-UL Listed. E160849; 508 Industrial Control Equipment.

**Warranty:** 3 years parts & labor

### Process Input

**Inputs:** Field selectable: 0-20, 4-20 mA,  $\pm 10$  VDC (0-5, 1-5, 0-10 V), Modbus PV (Slave)

**Accuracy:**  $\pm 0.03\%$  of calibrated span  $\pm 1$  count, square root & programmable exponent accuracy range: 10-100% of calibrated span

**Temperature Drift:** 0.005% of calibrated span/ $^{\circ}$ C max from 0 to 65 $^{\circ}$ C ambient, 0.01% of calibrated span/ $^{\circ}$ C max from -40 to 0 $^{\circ}$ C ambient

**Signal Input Conditioning:** Linear, square root, programmable exponent, or round horizontal tank volume calculation.

**Multi-Point Linearization:** 2 to 32 points for PV or PV1. 2 to 8 points for PV2 (Dual-Scale Level feature)

**Programmable Exponent:** 1.0001 to 2.9999

**Low-Flow Cutoff:** 0-999999 (0 disables cutoff function)

**Decimal Point:** Up to five decimal places or none: *d.ddddd, dd.dddd, ddd.ddd, dddd.dd, ddddd.d, or dddddd.*

**Calibration Range:** 4-20 mA: minimum span input 1 & input 2: 0.15 mA.  $\pm 10$  V: minimum span input 1 & 2: 0.10 V. An Error message will appear if input 1 and input 2 signals are too close together.

**Input Impedance:** Voltage ranges: greater than 1 M $\Omega$ . Current ranges: 50 - 100  $\Omega$  (depending on resettable fuse impedance).

**Input Overload:** Current input protected by resettable fuse, 30 VDC max. Fuse resets automatically after fault is removed.

### Relays

**Rating:** 2 or 4 SPDT (Form C) internal and/or 4 SPST (Form A) external; rated 3 A @ 30 VDC and 125/250 VAC resistive load; 1/14 HP ( $\approx 50$  watts) @ 125/250 VAC for inductive loads such as contactors, solenoids, etc.

**Noise Suppression:** Noise suppression is recommended for each relay contact switching inductive loads.

**Deadband:** 0-100% of span, user programmable

**High or Low Alarm:** User may program any alarm for high or low trip point. Unused alarm LEDs and relays may be disabled (turned off).

**Relay Operation:** automatic (non-latching), latching (requires manual acknowledge), sampling (based on time), pump alternation control (2 to 8 relays), Off (disable unused relays and enable interlock feature, manual on/off control mode).

**Relay Reset:** User selectable via front panel buttons or digital inputs.

1. Automatic reset only (non-latching), when input passes the reset point.
2. Automatic + manual reset at any time (non-latching).
3. Manual reset only, at any time (latching).
4. Manual reset only after alarm condition has cleared (latching).

*Note: Front panel button or digital input may be assigned to acknowledge relays programmed for manual reset.*

**Time Delay:** 0 to 999.9 seconds, on & off relay time delays.

Programmable and independent for each relay.

**Fail-Safe Operation:** Programmable and independent for each relay.

*Note: Relay coil is energized in non-alarm condition. In case of power failure, relay will go to alarm state.*

**Auto Initialization:** When power is applied to the meter, relays will reflect the state of the input to the meter.

### Serial Communications

**Protocol:** Modbus® RTU

**Meter Address/Slave ID:** 1 - 247

**Baud Rate:** 300 - 19,200 bps

**Transmit Time Delay:** Programmable between 0 and 199 ms or transmitter always on for RS-422 communication

**Data:** 8 bit (1 start bit, 1 or 2 stop bits)

**Parity:** Even, odd, or none with 1 or 2 stop bits

**Byte-to-Byte Timeout:** 0.01 - 2.54 seconds

**Turn Around Delay:** Less than 2 ms (fixed)

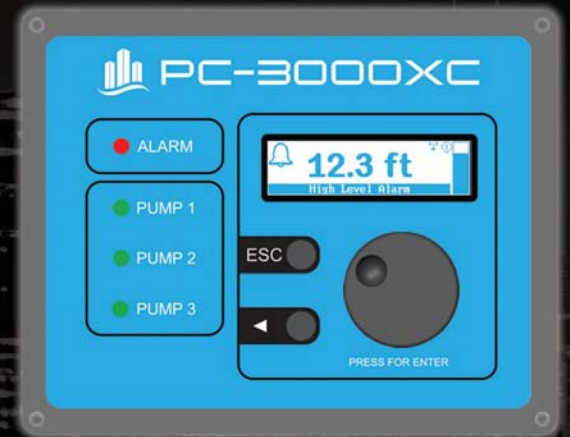
*Note: Refer to the PROVu® Register Tables located at [www.predig.com](http://www.predig.com) for details.*





# PC-3000XC

## CONTROLLER WITH REMOTE COMMUNICATION



### OVERVIEW

The PC-3000XC controller is designed to operate up to 3 pumps in pump up or pump down applications. The controllers sequence pumps ON and OFF in response to a change in level input. The easy-to-read blue OLED display provides the operating status, featuring fast and intuitive menu navigation and setup. The PC-3000XC provides for advanced communication functionality for integration to open architecture telemetry/SCADA systems.

### FEATURES

- Configurable front panel; no programming software required
- Red LED indicates an active alarm
- Green LEDs indicate pumps required
- Multiple alternation/sequence configurations
- High visibility blue OLED backlit 64x256 pixel display
- Process/level displayed digitally and via bar graph
- Communications established indicator
- Built in pump failure detection
- Sensor failure detection with backup float switch to activate pump control override timer and alarm
- User selectable process/level units
- Level simulation, I/O, and relay output status screens to aid in setup and system troubleshooting
- Continuous level monitoring, 4-20 mA level sensor input
- Flow monitoring (volumetric)
- Modbus communication via RS-485 comm port
- Station design data

### COMMUNICATION

- RS-485 terminal connections
- Modbus RTU protocol
- Designed to work with Pump Watch™ Express gateway remote monitoring system (default)

#### Advanced Communication

Full bidirectional communication SCADA interface and access to Modbus register addresses to include:

- Configurable node address
- Configurable baud rate
- Read/Write access to level set points
- Remote LEAD Pump selection
- Remote Pump Start
- Remote Pump inhibit
- Pump ETM and cycle counts
- Alarm counts
- And more



844-4PRIMEX (477-4639)  
WWW.PRIMEXCONTROLS.COM

# PC-3000XC

CONTROLLER WITH REMOTE COMMUNICATION



## SPECIFICATIONS

### Pump Control and Monitoring:

- Automatic pump alternation: Simplex, Duplex or Triplex
- Pump alternation selection
- Pump over temperature monitoring
- Pump seal fail monitoring
- Pump run monitoring
- Pump fail to start monitoring
- Low-level and high-level alarms
- Flow monitoring (volumetric): inflow & discharge

### System:

- Pump cycle counter
- Pump elapsed time meters
- Alarm counts
- Level simulation mode
- Selectable level measure units

### Electrical:

- 24 VDC supply power (19-28 VDC, 325 mA max)
- Optional battery backup
- 6 Relay outputs (120 VAC, 3 A max)
- 4-20mA analog level input, 14-bit resolution
- 4-20 mA scalable analog level output 12-bit resolution
- 11 Digital Inputs (12 VDC, 16mA each)

### Serial Communication Port

- RS-485 3-wire
- Modbus RTU protocol
- Fixed: 1-stop bit, no parity, and 8 data bits
- Adjustable baud rate: 1200, 2400, 4800, 9600, 19,200, and 38,400
- Adjustable node address: 1-247

### Mechanical:

- Overall dimensions: 7.2" x 5.3" x 2.0"
- Screen dimensions: 2.7" diagonal
- Panel Mount with 4 mounting holes
- Pluggable terminal blocks
- Fits legacy PC-3000 installations

### Environment:

- Operating temperature: 0 to 50°C (32 to 122°F)
- Storage temperature: -20 to 60°C (-4 to 140°F)
- Relative humidity (RH): 5% to 95% (non-condensing)
- Indoor rated: for use indoors or mounted inside of an outdoor rated enclosure



844-4PRIMEX (477-4639)  
WWW.PRIMEXCONTROLS.COM

# 4-CHANNEL INTRINSICALLY SAFE RELAYS

## ISD SERIES



- ◆ Approved for use in Class I, Class II, and Class III Hazardous Locations (Zones 0 & 1 in Canada)
- ◆ 4-Channel
- ◆ Isolated input terminals
- ◆ Isolated 5A relay outputs
- ◆ Pluggable terminals offer easy installation & replacement
- ◆ Universal input voltage of 102-132V AC & 10-125V DC
- ◆ Compact 60mm wide enclosure for both DIN-rail or panel-mount
- ◆ Standard & inverse logic
- ◆ Instantaneous & delayed response times
- ◆ LED status indicator



Better. By Design.

**800.238.7474**  
**WWW.MACROMATIC.COM**  
**SALES@MACROMATIC.COM**

The ISD Series of Intrinsically Safe Relays provide a safe and reliable method to control up to four loads (motor starters, relays, etc.) with up to four input devices (switches, sensors, etc.) located in a hazardous area. These products are approved for use in Class I Groups A, B, C, D, Class II Groups E, F, G, and Class III Hazardous Locations (Zones 0 & 1 in Canada). The ISD Series relay must be mounted in safe area, following Macromatic Control Drawing Number ISD1A04.

The ISD Series relays utilize a compact 60mm wide enclosure that can be both mounted on 35mm DIN rail or panel-mounted with two screws. Terminals for the input devices from the hazardous area are on the bottom of the unit for easy access in the enclosure to incoming wiring from the hazardous area. Pluggable terminal blocks on both the input and output sides allow for easy initial wiring of the unit as well as replacement without having to remove any wires. Each input has two terminals, which eliminates the need to mount a separate terminal block to connect multiple incoming COM wires. Each output relay has two terminals for isolation from the others, allowing outputs to be at different voltages, i.e., contactor coils at 120V AC and an alarm circuit at 24V DC. A universal input voltage of 102-132V AC & 10-125V DC covers a variety of applications with one device.

### Operation

Each ISD Series product consists of 4 intrinsically safe inputs and 4 corresponding electromechanical relay outputs. With input voltage applied, the V LED will be ON (GREEN) to indicate power is applied. When the input device is closed, the input LED is ON (GREEN). When the output relay is energized, the output LED is ON (ORANGE).

These products offer four operating configurations to meet a wide variety of applications. Each configuration is user-selectable using two DIP-switches easily accessible and clearly marked on the top of the product. Each setting will apply to all channels:



### Standard Logic (DIP Switch set to "STD"):

When the input device in the hazardous area is closed, the corresponding output relay is energized. When the input device opens, the corresponding output relay will de-energize.

### Inverse Logic (DIP Switch set to "INV"):

When the input device in the hazardous area is open, the corresponding output relay is energized. When the input device closes, the corresponding output relay will de-energize.

### No Time Delay (DIP Switch set to "0 S"):

The output relay will have an immediate change in status in response to the input device closing or opening.

### Fixed 2 Second Delay (DIP Switch set to "2 S"):

The output relay will delay 2 seconds before a change of status in response to the input device closing or opening.

INPUT VOLTAGE	NUMBER OF CHANNELS	CATALOG NUMBER	WIRING
102-132V AC (50/60Hz) & 10-125V DC	4	ISDUR4	<p><b>DIAGRAM 814</b></p>



# 4-CHANNEL INTRINSICALLY SAFE RELAYS

## ISD SERIES

### APPLICATION DATA

**Input Voltage:** 102-132V AC (50/60Hz.) & 10-125V DC

**Load Burden :** 2VA Maximum

**Input Switch Open Circuit Voltage:** 10V DC

**Output Contacts:**

SPST-NO (Form A) 3A Resistive @ 125V AC @60°C & 30V DC Resistive, Pilot Duty Rating D300

SPST-NO (Form A) 5A Resistive @ 125V AC @40°C & 30V DC Resistive, Pilot Duty Rating D300

**Life:** Electrical: 50,000 Closures @ Full Load AC  
Mechanical: 5 Million Closures @ No Load

**Response Times:**

Standard (DIP Switch set to "0S"): < 50ms  
Delay (DIP Switch set to "2S"): Fixed 2 Seconds

**Temperature:**

Operating: -28° to + 60° C (-18° F to +140° F)  
Storage: -55° to +85° C (-67° to 185° F)

**LED Indication:**

V: ON (Green); Inputs: ON (Green); Outputs: ON (Orange)

**Insulation Voltage:**

1500 V AC between coil & contacts  
750 V AC between open contacts  
1500 V AC between contacts of different output channels  
1500 V AC between hazardous and safe circuits

**Wire Sizes:**

One #14-24 AWG Conductor or  
Two #16 or 18 AWG Conductors

**Mounting:** Mounts on 35mm DIN-rail or panel-mounted with two #8 screws when DIN-rail clips are fully extended from under the enclosure.

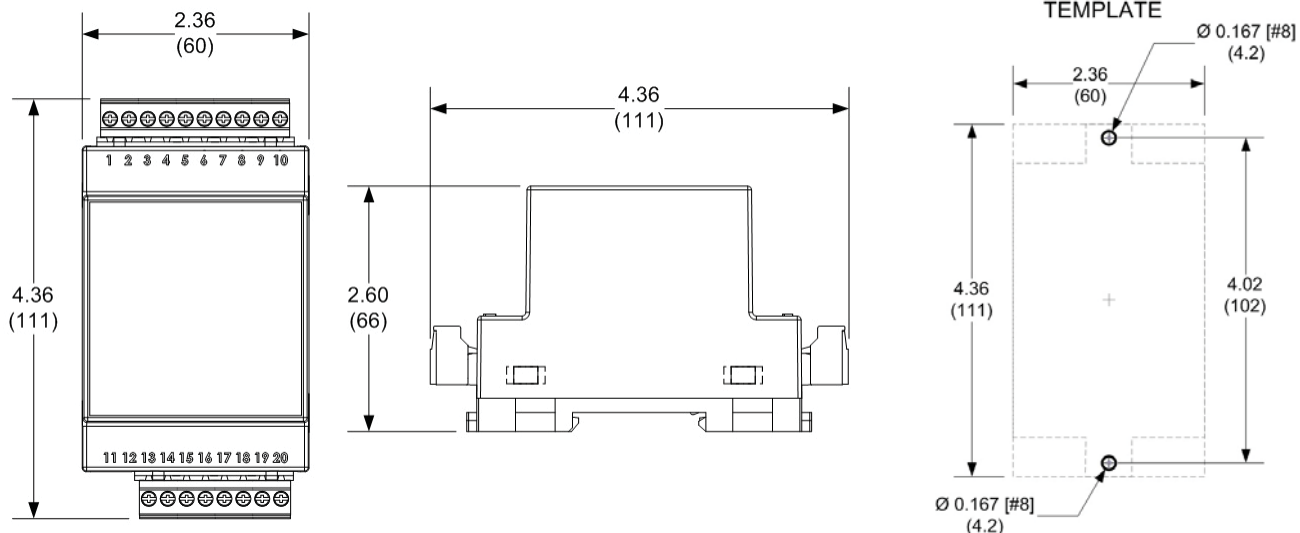
**Control Drawing:** Visit [www.macromatic.com/isd1a04](http://www.macromatic.com/isd1a04) to view Macromatic Control Drawing ISD1A04.

Approvals:



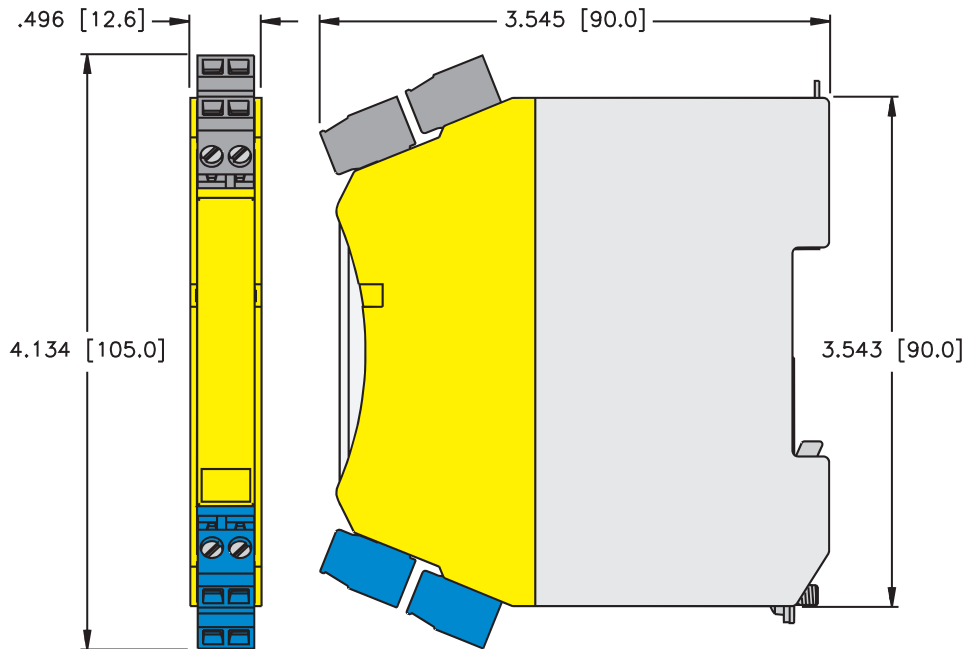
L 13 8th Edition  
E318075

### DIMENSIONS



All Dimensions in Inches (Millimeters)





**General Specifications**

**Ambient temperature and humidity limits**

- 20 to +60°C continuous working
- 40 to +80°C storage
- 5-95% RH

**Weight**

140 g approx.

**Mounting and earthing**

By 35 mm top hat DIN rail

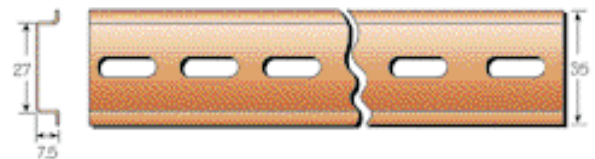
**Terminations**

Removable terminals accommodate conductors up to 2.5 mm<sup>2</sup> (13 AWG). Hazardous-area terminals are identified by blue labels. Removal force >15N.

**Mounting / Grounding**

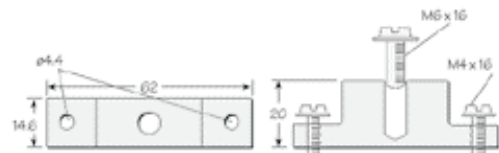
**DIN 35S standard DIN rail      6943000**

The MZ-series barriers mount easily and quickly onto standard DIN rails (35 X 7.5 mm), which also act as the intrinsically safe ground. Made of steel with chromated cadmium finish, the DIN rail withstands use in potentially corrosive atmospheres. Supplied in 1 meter lengths.



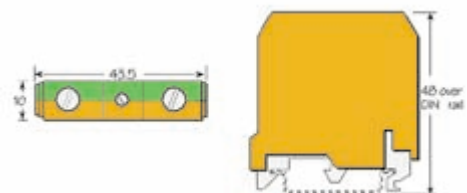
**MZSP Insulating Spacer      K1035**

Attaches to the base of a DIN rail at either end or at intervals (depending upon DIN-rail length) to isolate the IS ground from panel ground.



**MZGT Ground Terminal      K1036**

Provides connections for routing the IS ground from the DIN rail to an appropriate ground electrode. Two recommended per discrete length of DIN rail.



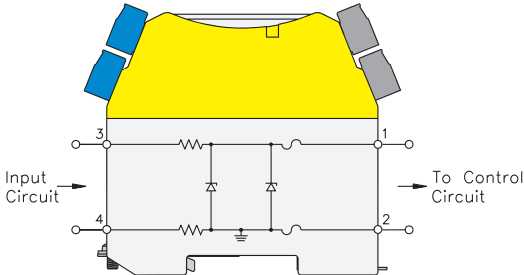
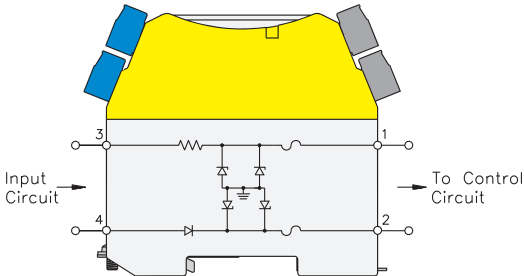
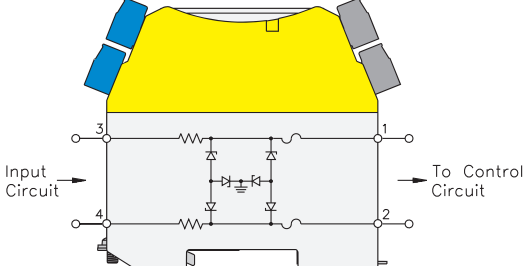
# TURCK

## MZB Series

Single Channel							
Part Number	ID Number	Channel	Max. End-To-End Resistance ( $\Omega$ )	$V_{WKG}$ @10 $\mu$ A (V)	$V_{MAX}$ (V)	Fuse Rating (mA)	Drawing #
MZB10P	K1053	1	75	6.0	7.0	50	1
MZB15P	K1054	1	119	12.0	13.1	100	1
MZB15PX	K1055	1	64	12.6	13.7	100	1
MZB28P	K1056	1	333	25.9	26.5	50	1
MZB28PX	K1057	1	252	24.9	25.9	100	1
MZB29PX	K1058	1	184	24.9	25.9	100	1

2 Channel							
Part Number	ID Number	Channel	Max end-to-end Resistance	V (working) @ 10 $\mu$ A	V (max)	Fuse Rating (mA)	Drawing #
MZB87P	K1075	1	300	26.6	27.2	50	2
		2	0.9 V + 26 $\Omega$	26.6	27.2	50	
MZB87PX	K1076	1	253	26.4	27.2	80	2
		2	0.9 V + 21 $\Omega$	26.4	27.2	80	

2 Channel							
Part Number	ID Number	Channel	Max. End-To-End Resistance ( $\Omega$ )	$V_{WKG}$ @10 $\mu$ A (V)	$V_{MAX}$ (V)	Fuse Rating (mA)	Drawing #
MZB60A	K1066	1	75	6.0	6.7	50	3
		2	75	6.0	6.7	50	
MZB65A	K1070	1	124	12.0	12.5	50	3
		2	124	12.0	12.5	50	

<p><b>Drawing #1</b></p> 	<p>These are Single Channel, Grounded (-) return, devices. These devices are available in several options dependent on the voltage and current requirements of the field circuit .</p>
<p><b>Drawing #2</b></p> 	<p>These are 2 channel diode return devices designed for use with 2-wire analog transmitters or common grounded analog output circuits. The diode return leg provides a path for the return current in one direction only. The 2 channels provide a floating circuit that is free from ground.</p>
<p><b>Drawing #3</b></p> 	<p>These are 2 channel, double dual polarity devices. These devices are available with options that are dependent on the voltage and current requirements of the field circuit. These devices are designed to be used for AC +/- voltage sources and can be used with 2 independent field circuits. These circuits are also known as STAR connected circuits.</p>

# 1-CHANNEL INTRINSICALLY SAFE RELAYS

## ISE SERIES



- ◆ Approved for use in Class I, Class II, and Class III Hazardous Locations (Zones 0 & 1 in Canada)
- ◆ 1-Channel
- ◆ 5A relay output
- ◆ Universal input voltage of 102-132V AC & 10-125V DC
- ◆ Compact 17.5mm wide enclosure for both DIN-rail or panel-mount
- ◆ LED status indicator



The ISE Series of Intrinsically Safe Relays provide a safe and reliable method to control a single load (motor starters, relays, etc.) with a single input device (switches, sensors, etc.) located in a hazardous area. These products are approved for use in Class I Groups A, B, C, D, Class II Groups E, F, G, and Class III Hazardous Locations (Zones 0 & 1 in Canada). The ISE Series relay must be mounted in a safe area, following Macromatic Control Drawing Number ISD2A01.

The ISE Series relays utilize a compact 17.5mm wide enclosure that can be both mounted on 35mm DIN rail or panel-mounted with two screws. Hazardous terminals are on the bottom of the unit for easy access in the enclosure to incoming wiring from the hazardous area and are clearly marked.

### Operation

Each ISE Series relay consists of an intrinsically safe input and a corresponding electromechanical relay output. There is one bi-color LED for status indication. With input voltage applied, the LED will be ON (Green) to indicate power is applied. When the input device from the hazardous area is closed, the output relay is energized and the LED is ON (Orange). When the input device opens, the output relay will de-energize and the LED will be ON (Green).

INPUT VOLTAGE	NUMBER OF CHANNELS	CATALOG NUMBER	WIRING
102-132V AC (50/60Hz) & 10-125V DC	1	ISEUR1	<p>DIAGRAM 811</p>



Better. By Design.

**800.238.7474**

[WWW.MACROMATIC.COM](http://WWW.MACROMATIC.COM)

[SALES@MACROMATIC.COM](mailto:SALES@MACROMATIC.COM)

# 1-CHANNEL INTRINSICALLY SAFE RELAYS

## ISE SERIES

### APPLICATION DATA

**Input Voltage:** 102-132V AC (50/60Hz.) & 10-125V DC

**Load Burden :** 2VA Maximum

**Input Switch Open Circuit Voltage:** 10V DC

**Output Contacts:**

SPST-NO (Form A) 3A Resistive @ 125V AC @ 60°C & 30V DC Resistive, Pilot Duty Rating D300

SPST-NO (Form A) 5A Resistive @ 125V AC @ 40°C & 30V DC Resistive, Pilot Duty Rating D300

**Life:** Electrical: 50,000 Closures @ Full Load AC  
Mechanical: 5 Million Closures @ No Load

**Response Times:** < 50ms

**Temperature:**

Operating: -28° to + 60° C (-18° F to +140° F)

Storage: -55° to +85° C (-67° to 185° F)

**LED Indication:**

ON (Green) - Input voltage; ON (Orange) - Input closed and relay energized

**Insulation Voltage:**

1500 V AC between coil & contacts

750 V AC between open contacts

1500 V AC between hazardous and safe circuits

**Wire Sizes:**

One #14-24 AWG Conductor or

Two #16 or 18 AWG Conductors

**Mounting:** Mounts on 35mm DIN-rail or panel-mounted with two #8 screws when DIN-rail clips are fully extended from under the enclosure.

**Control Drawing:** Visit [www.macromatic.com/isd2a01](http://www.macromatic.com/isd2a01) to view Macromatic Control Drawing ISD2A01.

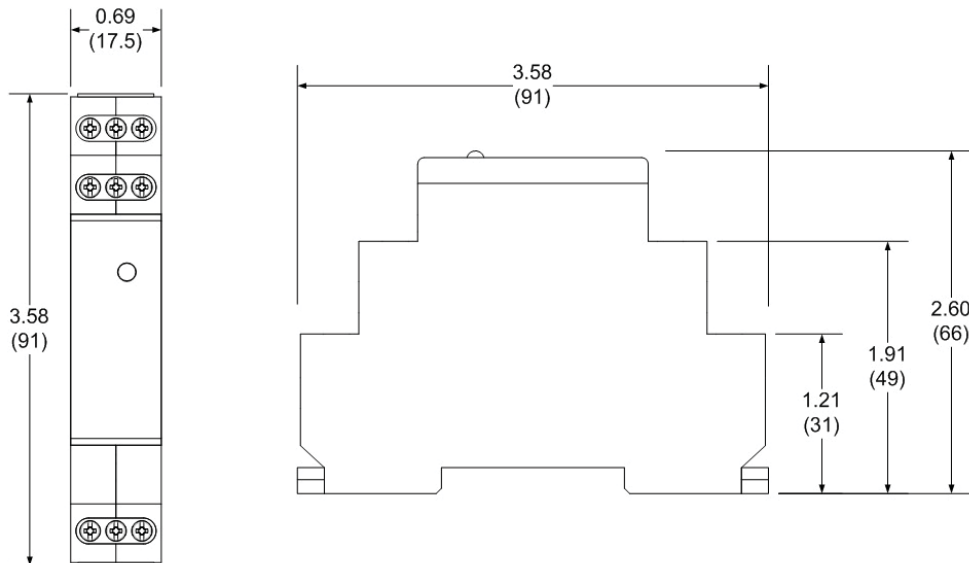
Approvals:



L 13 8th Edition  
E318075



### DIMENSIONS



All Dimensions in Inches (Millimeters)

## Electronic Hour Meter, AC Hour Meter T50 Series



T50A2 T50B2

### Features

- Low Power Consumption
- Solid State Electronic Drive Circuit
- Quartz-Crystal for Accurate Timing
- Non-reset
- UL/cUL Recognized, CE & RoHS Compliant
- High Impact, Tamperproof Plastic Case
- IP65
- Indicates Operating Time in Hours and Tenths
- No Battery Back-Up Required
- Quiet operation
- MADE IN THE U.S.A.

ENM's Series T50 electronic AC hour meter is a low cost reliable hour meter incorporating the latest state-of-the-art in electronics. It's quartz-crystal time base insures accurate long term time-keeping. A reliable electromechanical wheel-type indicator is used to store accumulated hours.

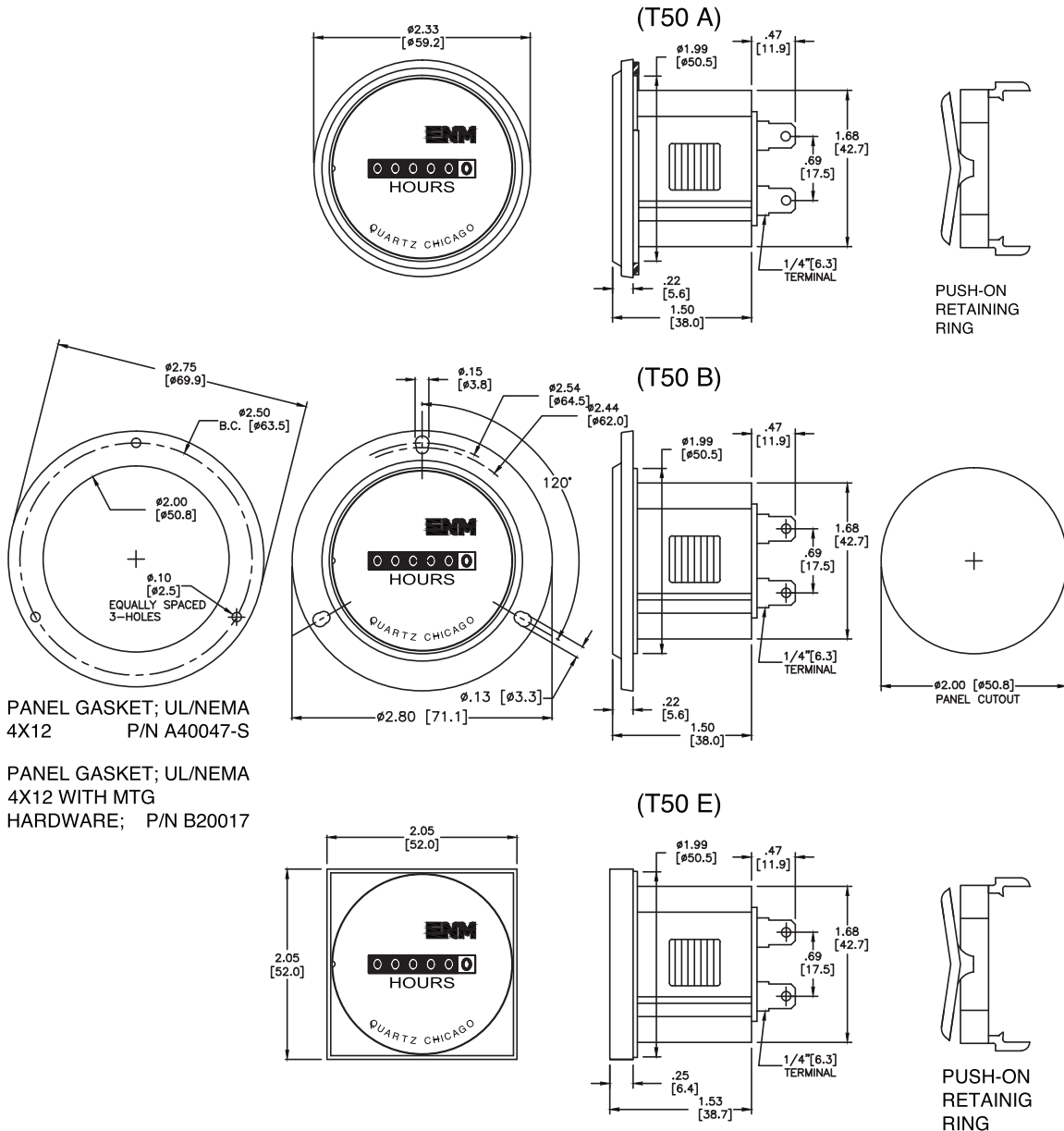
This compact tamperproof meter is sealed against the environment to provide years of service.

The T50 elapsed time indicator was designed for use on test and recording equipment, for providing maintenance control, for establishing warranty programs, for measuring machine utilization and production time, or for any application where time-in-use is to be determined.

### Specifications

Time Scale:	6-digits 99,999.9 Hours Automatic recycle to zero
Figures:	Hours - White on black Tenths - Red on white Height - 0.140"
Operation Voltage:	230, 115, 48, 24 VAC $\pm 10\%$ 50/60 Hz Other voltage available
Power Consumption:	Less than 0.4 Watts
Accuracy:	Better than $\pm 0.02\%$ over entire range
Temperature:	-40°F to +185°F (-40°C to +85°C)
Vibration Resistance:	Withstands 10-80 Hz at 20g's max. (SAE J1378)
Shock:	55g at 9-13 ms (SAE J1378)
Humidity:	95% (SAE J1378)
Terminations:	1/4" male blade terminals
Configuration:	Round SAE Bezel with new push-on retaining ring Round 3-Hole Bezel

### T50 Series



2013 ENM Co.®

#### LIMITED WARRANTY

ENM Company resettable electromechanical counters are warranted to the consumer to be free from defects in material and workmanship for a period of 3 years. All ENM products which fall within the warranty period due to defects in material or workmanship will be repaired or replaced, at ENM's option, without charge to the consumer when returned with proof of purchase to any authorized ENM dealer in the United States, transportation charges prepaid, provided there is no evidence of improper installation, tampering, or other abuse. All implied warranties, including any implied warranty of merchantability or fitness for a particular purpose, shall be limited in duration to the express warranty period specified above. ENM disclaims any liability for consequential damages due to breach of any written or implied warranty on its products. Datasheet information subject to change.

Item # B20017, Panel Gasket UL/NEMA 4X, 12



**Panel Gasket UL/NEMA 4X, 12**

Panel Gasket UL/NEMA 4X, 12 NEMA Gasket w/mounting Hardware

[larger image](#)





## Main

Range of product	Zelio Time
Product or component type	Miniature timing relay
Fixing mode	Plug-in socket
Discrete output type	Relay
Contacts type and composition	4 C/O
Component name	REXL
Time delay type	A
Time delay range	0.1...1 s 1...10 h 1...10 min 1...10 s 10...100 h 6...60 min 6...60 s

## Complementary

Contacts material	Cadmium free
[Us] rated supply voltage	120 V ACat 50/60 Hz
Voltage range	0.85...1.15 Us
[In] rated current	5 A AC
Repeat accuracy	+/- 0.5 %
Setting accuracy of time delay	10 % at full scaleat 25 °C conforming to EN/IEC 61812-1
Temperature drift	0.05 %/°C
Reset time	250 ms after time delay, on de-energisation 50 ms during time delay, on de-energisation
Voltage drift	+/- 0.2 %/V
Maximum switching capacity	4 x 5 A
Temporary permissible current	10 Afor < 10 s
Minimum switching current	100 mA
Electrical durability	100000 cyclesat 250 V AC resistive
Mechanical durability	10000000 cycles
Power consumption in VA	2.6 VA

[Ui] rated insulation voltage	250 V conforming to IEC 255 Group C 250 V conforming to VDE 0010
Output overvoltage protection	2 J
Surge withstand	2 kV conforming to EN/IEC 61000-4-5 level 3
Creepage distance	4 kV/3 conforming to IEC 60664-1
Local signalling	1 LED red output in operation 1 LED yellow power ON
Product weight	0.11 lb(US) (0.05 kg)
Time delay type	A
Functionality	On-delay timing

## Environment

Immunity to microbreaks	<= 5 ms
Dielectric strength	2 kV 1 mA/1 minute 50 Hz conforming to EN/IEC 60601-1 2 kV 1 mA/1 minute 50 Hz conforming to EN/IEC 61812-1
Standards	73/23/EEC 89/336/EEC 93/68/EEC EN 50081-2 EN 61000-6-2 EN/IEC 60601-1 EN/IEC 60601-2 EN/IEC 61812-1
Product certifications	CUL UL
Ambient air temperature for operation	-4...140 °F (-20...60 °C)
Ambient air temperature for storage	-40...158 °F (-40...70 °C)
IP degree of protection	IP50 conforming to IEC 60529
Vibration resistance	0.35 mm (f = 10...55 Hz) conforming to IEC 60068-2-6
Relative humidity	95 % without condensation conforming to IEC 60068-2-6
Resistance to electrostatic discharge	6 kV (in contact) conforming to EN/IEC 61000-4-2 level 3 8 kV (in air) conforming to EN/IEC 61000-4-2 level 3
Resistance to electromagnetic fields	9.14 V/yd (10 V/m) conforming to EN/IEC 61000-4-3 level 3
Resistance to fast transients	2 kV conforming to EN/IEC 61000-4-4 level 3
Immunity to radioelectric fields	10 V (0.15...80 MHz) conforming to EN/IEC 61000-4-6 level 3
Immunity to voltage dips	>= 95 % / 1 s conforming to EN/IEC 61000-4-11 30 % / 10 ms conforming to EN/IEC 61000-4-11 60 % / 100 ms conforming to EN/IEC 61000-4-11
Disturbance radiated/conducted	Class B conforming to EN 55022 (EN 55011 group 1)

## Ordering and shipping details

Category	22370 - RE, RM MISC TIMERS & COUNTERS
Discount Schedule	CP2
GTIN	00785901590569
Nbr. of units in pkg.	1
Package weight(Lbs)	0.12
Returnability	Y
Country of origin	ID

## Contractual warranty

Warranty period	18 months
-----------------	-----------

# RXZE2M114M

socket RXZ - mixed contact - 10A - < 250V -  
connector - for relay RXM2.., RXM4..

Product availability : Stock - Normally stocked in distribution facility



## Main

Range of product	Zelio Relay
Product or component type	Socket
Contact terminal arrangement	Mixed
Product compatibility	Plug-in relay RXM (2 C/O) Plug-in relay RXM (4 C/O)
Shape of pin	Flat
Device short name	RXZ
Sale per indivisible quantity	10

## Complementary

[I <sub>th</sub> ] conventional free air thermal current	12 A 6 A
System Voltage	< 250 V
Tightening torque	<= 8.85 lbf.in (1 N.m) (M3 screw(s))
Fixing mode	By screw panel Clip-on 35 mm symmetrical DIN rail
Marking	CE
Width	1.06 in (27 mm)
Product weight	0.12 lb(US) (0.056 kg)

## Environment

Connections - terminals	Connector, flexible cable with cable end 1 x 0.25...1 x 2.5 mm <sup>2</sup> / AWG 22...AWG 14 Connector, flexible cable with cable end 2 x 0.25...2 x 1 mm <sup>2</sup> / AWG 22...AWG 17 Connector, solid cable without cable end 1 x 0.5...1 x 2.5 mm <sup>2</sup> / AWG 20...AWG 14 Connector, solid cable without cable end 2 x 0.5...2 x 1.5 mm <sup>2</sup> / AWG 20...AWG 16
Standards	IEC 61984
Product certifications	CSA UL Lloyd's
Ambient air temperature for storage	-40...185 °F (-40...85 °C)
Ambient air temperature for operation	-40...131 °F (-40...55 °C)
IP degree of protection	IP20 conforming to EN/IEC 60529



### Main

Range of product	Zelio Relay
Series name	Miniature
Product or component type	Plug-in relay
Device short name	RXM
Contacts type and composition	4 C/O
[Uc] control circuit voltage	120 V AC, 50/60 Hz
[Ithe] conventional enclosed thermal current	6 A at -40...131 °F (-40...55 °C)
Status LED	With
Control type	Lockable test button
Utilisation coefficient	20 %

### Complementary

Shape of pin	Flat
[Ui] rated insulation voltage	250 V conforming to IEC 300 V conforming to UL 300 V conforming to CSA
[Uimp] rated impulse withstand voltage	2.5 kV for 1.2/50 µs
Contacts material	AgNi
[Ie] rated operational current	3 A at 28 V DC (NC) conforming to IEC 3 A at 250 V AC (NC) conforming to IEC 6 A at 28 V DC (NO) conforming to IEC 6 A at 250 V AC (NO) conforming to IEC 6 A at 277 V AC conforming to UL 8 A at 30 V DC conforming to UL
Maximum switching voltage	250 V conforming to IEC
Load current	6 A at 250 V AC 6 A at 28 V DC

Maximum switching capacity	1500 VA/168 W
Minimum switching capacity	170 mW at 10 mA, 17 V
Operating rate	<= 18000 cycles/hour no-load <= 1200 cycles/hour under load
Mechanical durability	10000000 cycles
Electrical durability	100000 cycles resistive load
Average consumption	1.2 VA 60 Hz
Average coil consumption in VA	1.2 at 60 Hz
Drop-out voltage threshold	>= 0.15 Uc
Operating time	20 ms
Reset time	20 ms
Average resistance	3630 Ohm at 20 °C +/- 15 %
Rated operational voltage limits	96...132 V AC
Safety reliability data	B10d = 100000
Protection category	RT I
Operating position	Any position
Product weight	0.08 lb(US) (0.037 kg)
Device presentation	Complete product

## Environment

Dielectric strength	1300 V AC between contacts with micro disconnection insulation 2000 V AC between coil and contact with reinforced insulation 2000 V AC between poles with basic insulation
Product certifications	CSA RoHS Lloyd's REACH CE GOST UL
Standards	EN/IEC 61810-1 UL 508 CSA C22.2 No 14
Ambient air temperature for storage	-40...185 °F (-40...85 °C)
Ambient air temperature for operation	-40...131 °F (-40...55 °C)
Vibration resistance	3 gn (f = 10...150 Hz), amplitude +/- 1 mm (on 5 cycles in operation) 5 gn (f = 10...150 Hz), amplitude +/- 1 mm (on 5 cycles not operating)
IP degree of protection	IP40 conforming to EN/IEC 60529
Shock resistance	10 gn in operation 30 gn not operating
Pollution degree	2

## Ordering and shipping details

Category	21127 - ZELIO ICE CUBE RELAYS
Discount Schedule	CP2
GTIN	00785901646464
Nbr. of units in pkg.	10
Package weight(Lbs)	8.0000000000000002E-2
Returnability	Y
Country of origin	CN

## Offer Sustainability

Sustainable offer status	Green Premium product
RoHS (date code: YYWW)	Compliant - since 0801 - Schneider Electric declaration of conformity <a href="#">Schneider Electric declaration of conformity</a>
REACH	Reference not containing SVHC above the threshold

**Relay and Timer Socket Selection Guide**

**Relay and Timer Socket**

Mounting	Series	Page	Part No.	No. of Poles	Receptacle	Terminal	Compatible IDEC Relay and Timer	
DIN Rail Snap/Surface-Mount 	SU	F-6	SU2S-11L	2	8-Blade	Spring Clamp Terminals	RU2, RM2	
			SU4S-11L	4	14-Blade		RU4, RU42, RY4, RY42	
	SR	F-11	SR2P-05 SR2P-05C SR2P-06	2	8-Pin	M3.5 Screw	RR2P, GT5P, RTE-P1, GT3 (8-pin)	
			SR3P-05 SR3P-05C SR3P-06	3	11-Pin		RR3PA, RR2KP, RTE-P2 GT3 (11-pin)	
			SR3B-05	3	11-Blade		RR1BA, RR2BA, RR3B, RTE-B	
	SH	F-14	SH1B-05 SH1B-05C	1	5-Blade	M3.5 Screw Coil Terminal: M3	RH1B	
			SH2B-05 SH2B-05C	2	8-Blade	M3.5 Screw	RH2B	
			SH3B-05 SH3B-05C	3	11-Blade		RH3B, RH2LB	
			SH4B-05 SH4B-05C	4	14-Blade		RH4B	
	SY	F-18	SY2S-05 SY2S-05C	2	8-Blade		M3 Screw	RY2S, RY22S
			SY4S-05 SY4S-05C	4	14-Blade	RU4S, RU42S, RY4S, RY42S, RY2KS, RM2S, GT5Y		
	SM	F-20	SM2S-05 SM2S-05C	2	8-Blade	M3 Screw	RU2S, RM2S	
	SJ	F-9	SJ1S-05B SJ1S-07L	1	5-Blade	M3 Screw	RJ1S	
			SJ2S-05B SJ2S-07L	2	8-Blade		RJ2S	
	SQ	F-10	SQ1V-07B	1	5-Blade	M3 Screw	RQ1V-CM	
			SQ2V-07B	2	8-Blade		RQ2V-CN RQ1V-CH	
	Through Panel Mount 	SR	F-21	SR2P-51	2	8-Pin	Solder	RR2P, GT5P, RTE-P1, GT3 (8-pin)
				SR3P-51	3	11-Pin		RR3PA, RR2KP, RTE-P2, GT3 (11-pin)
SR3B-51				3	11-Blade	RR1BA, RR2BA, RR3B		
SH		F-22	SH1B-51	1	5-Blade	Solder	RH1B	
			SH2B-51	2	8-Blade		RH2B	
			SH3B-51	3	11-Blade		RH3B, RH2LB	
			SH4B-51	4	14-Blade		RH4B	
SY		F-24	SY2S-51	2	8-Blade	Solder	RY2S, RY22S	
	SY4S-51		4	14-Blade	RY4S, RY42S, RU4S, RU42S, RY2KS, RM2S, GT5Y			
PCB Mount 	SH	F3-25	SH1B-62	1	5-Blade	PC Board	RH1B	
			SH2B-62	2	8-Blade		RH2B	
			SH3B-62	3	11-Blade		RH3B, RH2LB	
			SH4B-62	4	14-Blade		RH4B	
	SY	F3-26	SY2S-61	2	8-Blade	PC Board	RY2S, RY22S	
			SY4S-61	4	14-Blade		RY4S, RY42S, RU4S, RU42S, RY2KS, RM2S, GT5Y	
			SY4S-62	4	14-Blade		RY4S, RY42S, RU4S, RU42S, RY2KS, RM2S, GT5Y	
<b>For Panel Mounted Timers</b>								
	SR	F-28	SR6P-M08G	2	8-pin	M3.5 Screw	GE1A; RTE-P1; GT3 (8-pin);	
			SR6P-M11G		11-pin		RTE-P2; GT3 (11-pin)	



For relay mounting accessories, see page F-29.

Sockets F

## Specifications

### SU, SR, SH, SM, SY

<b>Specifications</b>	<b>Rated Insulation Voltage</b>	300V; except SH1B, SU and SY4S-62: 250V
	<b>Rated Current</b>	SU2/SR/SH/SM: 10A, SY: 7A, SU4: 6A with RU4, SU4: 10A with RU2 (SH1B: 7A)
	<b>Insulation Resistance</b>	100MΩ minimum
	<b>Dielectric Strength</b>	2,000V AC, 1 minute
	<b>Material Grade</b>	UL94V-0
	<b>Terminal Torque</b>	3.5mm Screws, 9-11.5 in•lbs 3mm screws, 5.5-9 in•lbs



1. \* Applicable to DIN rail sockets only.



File No. BL950813332307

### SJ, SQ

Specifications	SJ Series	SQ Series
<b>Rated Current</b>	SJ1S: 12A Max; SJ2S: 8A Max	SQ1V: 12A Max; SQ2V: 10A Max
<b>Rated Voltage</b>	250V	300V
<b>Applicable Wire</b>	2x #14 (2.5mm <sup>2</sup> )	2x #14 (2.5mm <sup>2</sup> )
<b>Applicable Crimping Terminal</b>	2mm <sup>2</sup> x 2	1.5mm <sup>2</sup> x 2
<b>Terminal Torque</b>	0.6 to 1.0Nm	1.0Nm Max
<b>Screw Size</b>	M3 Slotted Phillip Captive Screw	M3 Slotted Phillip Captive Screw
<b>Dielectric Strength (Coil/Contact)</b>	4,000VAC	3,000VAC
<b>Insulation Resistance</b>	≥100 MΩ Minimum	≥100 MΩ Minimum
<b>Operating Temperature</b>	-40 to 70°C (no freezing)	-25 to +85°C
<b>Operating Humidity</b>	5-85% RH (no condensation)	45-85% RH



# Product datasheet

Specifications



miniature plug in relay, Harmony Electromechanical Relays, 6A, 4CO, with LED, lockable test but to n, 24V DC

RXM4AB2BD

## Main

Range of product	Harmony Electromechanical Relays
Series name	Miniature
Product or component type	Plug-in relay
Device short name	RXM
Contacts type and composition	4 C/O
[Uc] control circuit voltage	24 V DC
Status LED	With
Control type	Lockable test button
Utilisation coefficient	20 %

## Complementary

Shape of pin	Flat
[Ui] rated insulation voltage	250 V conforming to IEC 300 V conforming to CSA 300 V conforming to UL
[Uimp] rated impulse withstand voltage	2.5 kV during 1.2/50 $\mu$ s
Contacts material	AgNi
[Ie] rated operational current	3 A at 28 V (DC) NC conforming to IEC 3 A at 250 V (AC) NC conforming to IEC 6 A at 28 V (DC) NO conforming to IEC 6 A at 250 V (AC) NO conforming to IEC 6 A at 277 V (AC) conforming to UL 8 A at 30 V (DC) conforming to UL
Continuous output current	5 A
Maximum switching voltage	250 V conforming to IEC
Resistive rated load	6 A at 250 V AC 6 A at 28 V DC
Maximum switching capacity	1500 VA/168 W
Minimum switching capacity	170 mW at 10 mA, 17 V
Operating rate	$\leq$ 1200 cycles/hour under load $\leq$ 18000 cycles/hour no-load
Mechanical durability	10000000 cycles
Electrical durability	100000 cycles for resistive load



<b>Average coil consumption</b>	0.9 W
<b>Drop-out voltage threshold</b>	$\geq 0.1 U_c$
<b>Operate time</b>	20 ms
<b>Release time</b>	20 ms
<b>Average coil resistance</b>	650 Ohm at 20 °C +/- 10 %
<b>Rated operational voltage limits</b>	19.2...26.4 V DC
<b>Safety reliability data</b>	B10d = 100000
<b>Protection category</b>	RT I
<b>Test levels</b>	Level A group mounting
<b>Operating position</b>	Any position
<b>CAD overall height</b>	82.8 mm
<b>CAD overall depth</b>	80.35 mm
<b>Net weight</b>	0.037 kg
<b>Device presentation</b>	Complete product

## Environment

<b>Dielectric strength</b>	1300 V AC between contacts with micro disconnection 2000 V AC between coil and contact with basic insulation 2000 V AC between poles with basic insulation
<b>Product certifications</b>	UL CSA GOST CE Lloyd's
<b>Standards</b>	IEC 61810-1 UL 508 CSA C22.2 No 14
<b>Ambient air temperature for storage</b>	-40...85 °C
<b>Ambient air temperature for operation</b>	-40...55 °C
<b>Vibration resistance</b>	3 gn, amplitude = +/- 1 mm (f = 10...150 Hz)5 cycles in operation 5 gn, amplitude = +/- 1 mm (f = 10...150 Hz)5 cycles not operating
<b>IP degree of protection</b>	IP40 conforming to IEC 60529
<b>Shock resistance</b>	10 gn for in operation 30 gn for not operating
<b>Pollution degree</b>	2

## Packing Units

<b>Unit Type of Package 1</b>	PCE
<b>Number of Units in Package 1</b>	1
<b>Package 1 Height</b>	2.200 cm
<b>Package 1 Width</b>	2.800 cm
<b>Package 1 Length</b>	5.000 cm
<b>Package 1 Weight</b>	36.000 g
<b>Unit Type of Package 2</b>	BB1
<b>Number of Units in Package 2</b>	10
<b>Package 2 Height</b>	3.300 cm
<b>Package 2 Width</b>	10.500 cm
<b>Package 2 Length</b>	13.000 cm

Package 2 Weight	390.000 g
Unit Type of Package 3	S02
Number of Units in Package 3	240
Package 3 Height	15.000 cm
Package 3 Width	30.000 cm
Package 3 Length	40.000 cm
Package 3 Weight	9.750 kg

## Offer Sustainability

Sustainable offer status	Green Premium product
REACH Regulation	<a href="#">REACH Declaration</a>
REACH free of SVHC	Yes
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope) <a href="#">EU RoHS Declaration</a>
Toxic heavy metal free	Yes
Mercury free	Yes
China RoHS Regulation	<a href="#">China RoHS declaration</a>
RoHS exemption information	Yes
Environmental Disclosure	<a href="#">Product Environmental Profile</a>
Circularity Profile	<a href="#">End of Life Information</a>
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins

## Contractual warranty

Warranty	18 months
----------	-----------



### Main

Range of product	Harmony 9001SK
Product or component type	Selector switch
Device short name	9001SK
Type of operator	Stay put
Operator profile	Black standard knob

### Complementary

Bezel material	Plastic
Mounting diameter	30 mm
Operator position information	3 positions
Contacts type and composition	1 C/O
Product compatibility	9001KA1, mounting on side 1 or 2
Device presentation	Complete product
Compatibility code	9001SK

### Environment

Protective treatment	TC
Ambient air temperature for storage	-40...70 °C
Ambient air temperature for operation	-25...70 °C
Electrical shock protection class	Class II conforming to IEC 61140
IP degree of protection	IP66 conforming to IEC 60529
NEMA degree of protection	NEMA 1/2/3/3R/4/4X/6/12/13
Product certifications	CE UL listed file E42259 CCN NKCR CSA LR24590 class 3211 03

### Offer Sustainability

RoHS (date code: YYWW)	Compliant - since 0921 - Schneider Electric declaration of conformity <a href="#">Schneider Electric declaration of conformity</a>
REACH	Reference not containing SVHC above the threshold <a href="#">Reference not containing SVHC above the threshold</a>



Product availability: Stock - Normally stocked in distribution facility



### Main

Range of product	Harmony 9001SK
Product or component type	Selector switch
Device short name	9001SK
Type of operator	Stay put
Operator profile	Black standard knob

### Complementary

Bezel material	Plastic
Mounting diameter	1.18 in (30 mm)
Operator position information	2 positions
Contacts type and composition	1 C/O
Product compatibility	9001KA1 side 1 or 2
Device presentation	Complete product

### Environment

Protective treatment	TC
Ambient air temperature for storage	-40...158 °F (-40...70 °C)
Ambient air temperature for operation	-13...158 °F (-25...70 °C)
Electrical shock protection class	Class II IEC 61140
IP degree of protection	IP66 IEC 60529
NEMA degree of protection	NEMA 1/2/3/3R/4/4X/6/12/13
Product certifications	UL listed file E42259 CCN NKCR CE CSA LR24590 class 3211 03

### Ordering and shipping details

Category	21429 - 9001 SK,SKY
Discount Schedule	CS1
GTIN	00785901043393
Package weight(Lbs)	0.09 kg (0.19 lb(US))
Returnability	Yes
Country of origin	MX

### Offer Sustainability

Sustainable offer status	Green Premium product
REACH Regulation	REACH Declaration
REACH free of SVHC	Yes
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope)  EU RoHS Declaration
Toxic heavy metal free	Yes
Mercury free	Yes

RoHS exemption information	<a href="#">Yes</a>
China RoHS Regulation	<a href="#">China RoHS Declaration</a>
Environmental Disclosure	<a href="#">Product Environmental Profile</a>
Circularity Profile	No need of specific recycling operations
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins.

### Contractual warranty

Warranty	18 months
----------	-----------

# 9001KA2

## 30MM CONTACT BLOCK 1N/O



List Price \$21.50 USD

Availability **Stock Item: This item is normally stocked in our distribution facility.**

### Technical Characteristics

Ampere Rating	10A
Approvals	UL File Number E42259 CCN NKCR - CSA File Number LR24590 Class 3211-03 - CE Marked
Contact Configuration	1 NO
Contact Type	Standard (Fingersafe)
Maximum Voltage Rating	600V
Size	30mm
Terminal Type	Screw Clamp
Type	K

### Shipping and Ordering

Category	21434 - Blocks, Contact, Type KA
Discount Schedule	CS1
GTIN	00785901880011
Package Quantity	1
Weight	0.05 lbs.
Availability Code	Stock Item: This item is normally stocked in our distribution facility.
Returnability	Y
Country of Origin	MX

As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this document.

List Price \$66.00 USD

Availability **Stock Item: This item is normally stocked in our distribution facility.****Technical Characteristics**

Ampere Rating	10A
Approvals	UL File Number E42259 CCN NKCR - CSA File Number LR24590 Class 3211-03 - CE Marked
Bezel Material	Black Plastic
Button/Cap Color	Black
Button Type	Standard Pushbutton
Guard Type	Full Guard (Black Plastic)
Contact Configuration	1 NC
Contact Block Code	H6
Contact Type	Standard (Fingersafe)
Enclosure Type	Water tight, Dust tight, Oil tight and Corrosion Resistant (Indoor/Outdoor)
Enclosure Rating	NEMA 1/2/3/3R/4/4X/6/12/13
Head Type	Round
Light Module Supply Voltage	n/a
Light Module Type	n/a
Markings	None
Maximum Voltage Rating	600V
Mounting Type	Panel
Number of Operators	1
Number of Positions	2
Operator Action	Momentary
Size	30mm
Operator Type	Non-Illuminated
Terminal Type	Screw Clamp
Type	K
Utilization Category	AC15 - DC13

**Shipping and Ordering**

Category	21429 - Push Buttons, Corrosion Resistant, Type SK & SKY
Discount Schedule	CS1
GTIN	00785901042037
Package Quantity	1
Weight	0.15 lbs.
Availability Code	Stock Item: This item is normally stocked in our distribution facility.
Returnability	Y
Country of Origin	MX

As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this document.

Product availability : Stock - Normally stocked in distribution facility



Price\* : 42.80 USD



### Main

Range of product	Harmony 9001K
Product or component type	Contact block with protected terminals
Device short name	9001K

### Complementary

Product weight	0.06 lb(US) (0.027 kg)
Contacts type and composition	1 C/O
Contact operation	Standard
Positive opening	Without
Connections - terminals	Screw clamp terminals (1 x 0.22...2 x 1.5 mm <sup>2</sup> ) conforming to IEC 60947-1
Tightening torque	7.08 lbf.in (0.8 N.m) conforming to IEC 60947-1
Shape of screw head	Cross slotted head
Contacts material	Silver alloy contacts
Short-circuit protection	10 A cartridge fuse conforming to IEC 60947-5-1
[I <sub>th</sub> ] conventional free air thermal current	10 A
[U <sub>i</sub> ] rated insulation voltage	250 V (degree of pollution: 3) conforming to IEC 60947-1
[U <sub>imp</sub> ] rated impulse withstand voltage	2.5 kV conforming to IEC 60947-1
[I <sub>e</sub> ] rated operational current	3 A at 240 V AC-15, A600-Q600 conforming to NEMA 0.55 A at 125 V DC-13, A600-Q600 conforming to NEMA
[I <sub>cm</sub> ] rated short-circuit making capacity	<= 12 kA at 600 V AC-15, 7200 VA <= 15 kA at 480 V AC-15, 7200 VA <= 30 kA at 240 V AC-15, 7200 VA <= 60 kA at 120 V AC-15, 7200 VA <= 0.1 kA at 600 V DC-13, 7200 VA <= 0.27 kA at 250 V DC-13, 7200 VA <= 0.55 kA at 125 V DC-13
Rated breaking capacity	<= 3 kA at 240 V AC-15, 720 VA <= 6 kA at 120 V AC-15, 720 VA <= 0.1 kA at 600 V DC-13

Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications



<= 0.27 kA at 250 V DC-13  
<= 0.55 kA at 125 V DC-13  
<= 1.2 kA at 600 V AC-15, 720 VA  
<= 1.5 kA at 480 V AC-15, 720 VA

## Environment

Protective treatment	TC
Ambient air temperature for storage	-40...158 °F (-40...70 °C)
Ambient air temperature for operation	-13...158 °F (-25...70 °C)
Electrical shock protection class	Class II conforming to IEC 61140
IP degree of protection	IP20 conforming to IEC 60529
Standards	CSA C22.2 No 14 EN/IEC 60947-1 EN/IEC 60947-5-1 JIS C 4520 EN/IEC 60947-5-4 JIS C 852 UL 508
Product certifications	NEMA UL 508
Vibration resistance	7 gn (f = 2...500 Hz) conforming to IEC 60068-2-6
Shock resistance	50 gn conforming to IEC 60068-2-27

## Ordering and shipping details

Category	21434 - 9001 KA CONTACT BLOCKS
Discount Schedule	CS1
GTIN	00785901880004
Nbr. of units in pkg.	1
Package weight(Lbs)	5.9999999999999998E-2
Returnability	Y
Country of origin	MX

## Offer Sustainability

RoHS (date code: YYWW)	Compliant - since 0921 - Schneider Electric declaration of conformity <a href="#">Schneider Electric declaration of conformity</a>
REACH	Reference not containing SVHC above the threshold <a href="#">Reference not containing SVHC above the threshold</a>

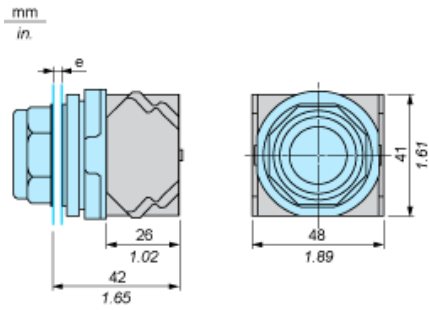
## Contractual warranty

Warranty period	18 months
-----------------	-----------

---

Dimensions

---



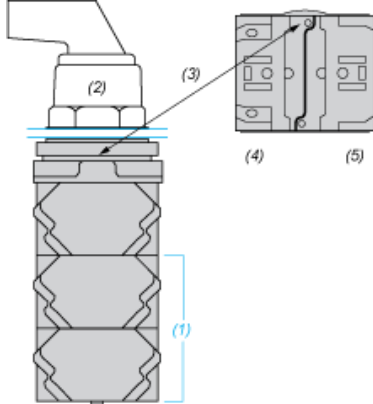
e panel thickness: 1 to 6 mm / 0.04 to 0.24 in.

---

Contact Block Mounting Position

---

Top and Rear views



- (1) It is possible to mount up to 3 levels of contacts blocks (maximum of 6 contacts blocks)
- (2) Operator
- (3) Locating notch
- (4) Side 1
- (5) Side 2

List Price \$66.00 USD

Availability **Stock Item: This item is normally stocked in our distribution facility.****Technical Characteristics**

Ampere Rating	10A
Approvals	UL File Number E42259 CCN NKCR - CSA File Number LR24590 Class 3211-03 - CE Marked
Bezel Material	Black Plastic
Button/Cap Color	Black
Button Type	Standard Pushbutton
Guard Type	Full Guard (Black Plastic)
Contact Configuration	1 NO
Contact Block Code	H5
Contact Type	Standard (Fingersafe)
Enclosure Type	Water tight, Dust tight, Oil tight and Corrosion Resistant (Indoor/Outdoor)
Enclosure Rating	NEMA 1/2/3/3R/4/4X/6/12/13
Head Type	Round
Light Module Supply Voltage	n/a
Light Module Type	n/a
Markings	None
Maximum Voltage Rating	600V
Mounting Type	Panel
Number of Operators	1
Number of Positions	2
Operator Action	Momentary
Size	30mm
Operator Type	Non-Illuminated
Terminal Type	Screw Clamp
Type	K
Utilization Category	AC15 - DC13

**Shipping and Ordering**

Category	21429 - Push Buttons, Corrosion Resistant, Type SK & SKY
Discount Schedule	CS1
GTIN	00785901041979
Package Quantity	1
Weight	0.15 lbs.
Availability Code	Stock Item: This item is normally stocked in our distribution facility.
Returnability	Y
Country of Origin	MX

As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this document.

Generated: 10/16/2014 08:43:00



### Main

Range of product	Harmony 9001SK
Product or component type	Illuminated push to test pushbutton
Device short name	9001SK
Type of operator	Spring return
Operator profile	Red projecting unmarked

### Complementary

Bezel material	Plastic
Mounting diameter	30 mm
Shape of signaling unit head	Octagonal
Light source	High luminosity LED
Bulb base	BA 9s
Light block supply	Direct
[Us] rated supply voltage	120 V AC/DC
Connections - terminals	Screw clamp terminals (1 x 0.22...2 x 1.5 mm <sup>2</sup> ) conforming to EN/IEC 60947-1
Tightening torque	0.8 N.m conforming to EN/IEC 60947-1
Shape of screw head	Cross slotted
Mechanical durability	5000000 cycles
Operating position	Any position
[Ie] rated operational current	0.55 A 125 V DC-13 A600-Q600 NEMA
[Ui] rated insulation voltage	250 V (degree of pollution: 3) conforming to EN/IEC 60947-1
[Uimp] rated impulse withstand voltage	2.5 kV conforming to EN/IEC 60947-1
Contacts material	Silver alloy contacts
Positive opening	Without
Short circuit protection	10 A cartridge fuse conforming to EN/IEC 60947-5-1
[Ith] conventional free air thermal current	10 A
[Icm] rated short-circuit making capacity	<= 60 kA at 120 V (AC-15) 7200 VA <= 30 kA at 240 V (AC-15) 7200 VA <= 15 kA at 480 V (AC-15) 7200 VA <= 12 kA at 600 V (AC-15) 7200 VA
Rated breaking capacity	<= 6 kA at 120 V (AC-15) 720 VA <= 3 kA at 240 V (AC-15) 720 VA <= 1.5 kA at 480 V (AC-15) 720 VA <= 1.2 kA at 600 V (AC-15) 720 VA <= 0.55 kA at 125 V (DC-13) <= 0.1 kA at 600 V (DC-13)
Product weight	0.195 kg

## Environment

Standards	CSA C22-2 No 14 EN/IEC 60947-1 EN/IEC 60947-5-1 EN/IEC 60947-5-4 JIS C 4520 JIS C 852 UL 508
Product certifications	NEMA UL 508
Protective treatment	TC
Ambient air temperature for storage	-40...70 °C
Ambient air temperature for operation	-25...70 °C
Vibration resistance	7 gn (f = 2...500 Hz) conforming to IEC 60068-2-6
Shock resistance	50 gn conforming to IEC 60068-2-27
Class of protection against electric shock	Class II conforming to IEC 61140
IP degree of protection	IP66 conforming to IEC 60529
NEMA degree of protection	NEMA 4X NEMA 4 NEMA 3R NEMA 3 NEMA 2 NEMA 13 NEMA 12 NEMA 1

## Offer Sustainability

Sustainable offer status	Not Green Premium product
RoHS	Compliant - since 0921 - Schneider Electric declaration of conformity <a href="#">download declaration of conformity</a>

# XB4BA21

## Non-Illuminated Pushbutton



List Price \$38.50 USD

Availability **Stock Item: This item is normally stocked in our distribution facility.**

### Technical Characteristics

Ampere Rating	10A
Approvals	UL Listed File Number E164353 CCN NKCR - CSA Certified File Number LR44087 Class 321103 - CE Marked
Bezel Material	Chromium Plated Metal
Style	Standard: Flush
Enclosure Type	Water tight, Dust tight and Corrosion Resistant (Indoor/Outdoor)
Markings	None
Enclosure Rating	NEMA 4/4X/13
Maximum Voltage Rating	600V
Mounting Type	Panel
Operator Action	Momentary
Operator Type	Non-Illuminated
Size	22mm
Terminal Type	Screw Clamp
Type	XB4
Utilization Category	AC15 - DC13
Button/Cap Color	Black
Head Type	Round
Contact Configuration	1 NO

### Shipping and Ordering

Category	22468 - Push Buttons, Metal, 22mm, ZB4, XB4
Discount Schedule	I
GTIN	00785901371113
Package Quantity	1
Weight	0.16 lbs.
Availability Code	Stock Item: This item is normally stocked in our distribution facility.
Returnability	Y
Country of Origin	FR

As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this document.

# Product data sheet

## Characteristics

# 9001SKT38LGG31

green illuminated pushbutton Ø 30 - projecting  
spring return - 120 V - 1 OC

Product availability: Stock - Normally stocked in distribution facility

Price\*: 197.00 USD



### Main

Commercial Status	Commercialised
Range of product	Harmony 9001SK
Product or component type	Illuminated push to test pushbutton
Device short name	9001SK
Type of operator	Spring return
Operator profile	Green projecting unmarked

### Complementary

Bezel material	Plastic
Mounting diameter	1.18 in (30 mm)
Shape of signaling unit head	Octagonal
Light source	High luminosity LED
Bulb base	BA 9s
Light block supply	Direct
[Us] rated supply voltage	120 V AC/DC
Connections - terminals	Screw clamp terminals (1 x 0.22...2 x 1.5 mm <sup>2</sup> ) conforming to EN/IEC 60947-1
Tightening torque	7.08 lbf.in (0.8 N.m) conforming to EN/IEC 60947-1
Shape of screw head	Cross slotted
Mechanical durability	5000000 cycles
Operating position	Any position
[Ie] rated operational current	0.55 A 125 V DC-13 A600-Q600 NEMA
[Ui] rated insulation voltage	250 V (degree of pollution: 3) conforming to EN/IEC 60947-1
[Uimp] rated impulse withstand voltage	2.5 kV conforming to EN/IEC 60947-1
Contacts material	Silver alloy contacts
Positive opening	Without
Short circuit protection	10 A cartridge fuse conforming to EN/IEC 60947-5-1
[Ith] conventional free air thermal current	10 A
[Icm] rated short-circuit making capacity	<= 60 kA at 120 V (AC-15) 7200 VA <= 30 kA at 240 V (AC-15) 7200 VA <= 15 kA at 480 V (AC-15) 7200 VA <= 12 kA at 600 V (AC-15) 7200 VA
Rated breaking capacity	<= 6 kA at 120 V (AC-15) 720 VA <= 3 kA at 240 V (AC-15) 720 VA <= 1.5 kA at 480 V (AC-15) 720 VA <= 1.2 kA at 600 V (AC-15) 720 VA <= 0.55 kA at 125 V (DC-13) <= 0.27 kA at 250 V (DC-13) <= 0.1 kA at 600 V (DC-13)
Product weight	0.43 lb(US) (0.195 kg)

The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric Industries SAS nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein. \*Prices are indicative



## Environment

Standards	EN/IEC 60947-1 EN/IEC 60947-5-1 EN/IEC 60947-5-4 JIS C 4520 JIS C 852 UL 508 CSA C22.2 No 14
Product certifications	NEMA UL 508
Protective treatment	TC
Ambient air temperature for storage	-40...158 °F (-40...70 °C)
Ambient air temperature for operation	-13...158 °F (-25...70 °C)
Vibration resistance	7 gn (f = 2...500 Hz) conforming to IEC 60068-2-6
Shock resistance	50 gn conforming to IEC 60068-2-27
Class of protection against electric shock	Class II
IP degree of protection	IP66 conforming to IEC 60529
NEMA degree of protection	NEMA 4X NEMA 4 NEMA 3R NEMA 3 NEMA 2 NEMA 13 NEMA 12 NEMA 1

## Ordering and shipping details

Category	21429 - 9001 SK,SKY
Discount Schedule	CS1
GTIN	00785901044482
Nbr. of units in pkg.	1
Package weight(Lbs)	0.27
Product availability	Stock - Normally stocked in distribution facility
Returnability	Y
Country of origin	MX

## Offer Sustainability

Sustainable offer status	Not Green Premium product
RoHS	Compliant - since 0921 - <a href="#">Schneider Electric declaration of conformity</a>
REACH	Reference not containing SVHC above the threshold

## Contractual warranty

Period	18 months
--------	-----------



### Main

Range of product	Harmony 9001SK
Product or component type	Illuminated push to test push-button
Device short name	9001SK
Type of operator	Spring return
Operator profile	Amber projecting unmarked

### Complementary

Bezel material	Plastic
Mounting diameter	1.18 in (30 mm)
Shape of signaling unit head	Octagonal
Light source	LED
Light source	LED
Bulb base	BA 9s
Light block supply	Direct
[Us] rated supply voltage	120 V AC/DC
[Us] rated supply voltage	120 V AC/DC
Connections - terminals	Screw clamp terminals (1 x 0.22...2 x 1.5 mm <sup>2</sup> ) conforming to EN/IEC 60947-1
Tightening torque	7.08 lbf.in (0.8 N.m) conforming to EN/IEC 60947-1
Shape of screw head	Cross slotted
Mechanical durability	5000000 cycles
Operating position	Any position
[Ie] rated operational current	0.55 A 125 V DC-13 A600-Q600 NEMA
[Ui] rated insulation voltage	250 V (degree of pollution: 3) conforming to EN/IEC 60947-1
[Uimp] rated impulse withstand voltage	2.5 kV conforming to EN/IEC 60947-1
Contacts material	Silver alloy contacts
Positive opening	Without
Short-circuit protection	10 A cartridge fuse conforming to EN/IEC 60947-5-1

[Ith] conventional free air thermal current	10 A
[Icm] rated short-circuit making capacity	<= 12 kA at 600 V (AC-15) 7200 VA <= 30 kA at 480 V (AC-15) 7200 VA <= 60 kA at 120 V (AC-15) 7200 VA
Rated breaking capacity	<= 0.27 kA at 250 V (DC-13) <= 0.55 kA at 125 V (DC-13) <= 1.2 kA at 600 V (AC-15) 720 VA <= 3 kA at 480 V (AC-15) 720 VA <= 6 kA at 120 V (AC-15) 720 VA
Product weight	0.43 lb(US) (0.195 kg)
Device presentation	Complete product
Compatibility code	9001SK

## Environment

Standards	JIS C 4520 EN/IEC 60947-5-4 EN/IEC 60947-5-1 JIS C 852 CSA C22.2 No 14 UL 508 EN/IEC 60947-1
Product certifications	NEMA UL 508
Protective treatment	TC
Ambient air temperature for storage	-40...158 °F (-40...70 °C)
Ambient air temperature for operation	-13...158 °F (-25...70 °C)
Vibration resistance	7 gn (f = 2...500 Hz) conforming to IEC 60068-2-6
Shock resistance	50 gn conforming to IEC 60068-2-27
Electrical shock protection class	Class II conforming to IEC 61140
IP degree of protection	IP66 conforming to IEC 60529
NEMA degree of protection	NEMA 1 NEMA 12 NEMA 13 NEMA 2 NEMA 3 NEMA 3R NEMA 4 NEMA 4X

## Ordering and shipping details

Category	21429 - 9001 SK,SKY
Discount Schedule	CS1
GTIN	00785901500582
Nbr. of units in pkg.	1
Package weight(Lbs)	0.28000000000000003
Returnability	Y
Country of origin	MX

## Offer Sustainability

RoHS (date code: YYWW)	Compliant - since 0921 - Schneider Electric declaration of conformity <a href="#">Schneider Electric declaration of conformity</a>
REACH	Reference not containing SVHC above the threshold <a href="#">Reference not containing SVHC above the threshold</a>

## Contractual warranty

Warranty period	18 months
-----------------	-----------



### Main

Range of product	Harmony 9001K Harmony 9001SK
Accessory / separate part designation	Fresnel lens cap
Accessory / separate part type	Lens cap
Accessory / separate part category	Spare parts
Accessory / separate part destination	Pilot light

### Complementary

Mounting diameter	30 mm
Cap/Operator or lens colour	White
Product weight	0.005 kg

### Offer Sustainability

Sustainable offer status	Not Green Premium product
RoHS	Compliant - since 0921 - Schneider Electric declaration of conformity <a href="#">download declaration of conformity</a>

# 9001SKP38LW

Pilot Light , Standard, No Lens, No Lens, Screw Clamp, LED (White), 120V

List Price \$143.00 USD

Availability **Non-Stock Item: This item is not normally stocked in our distribution facility.**

## Technical Characteristics

Approvals	UL File Number E42259 CCN NKCR - CSA File Number LR24590 Class 3211-03 - CE Marked
Bezel Material	Black Plastic
Enclosure Type	Water tight, Dust tight, Oil tight and Corrosion Resistant (Indoor/Outdoor)
Enclosure Rating	NEMA 1/2/3/3R/4/4X/6/12/13
Head Type	Round
Lens Type	No Lens
Lens Color	No Lens
Light Module Supply Voltage	120V
Light Module Type	LED (White)
Operator Type	Standard
Size	30mm
Terminal Type	Screw Clamp
Type	K

## Shipping and Ordering

Category	21429 - Push Buttons, Corrosion Resistant, Type SK & SKY
Discount Schedule	CP1
GTIN	00785901791003
Package Quantity	1
Weight	0.18 lbs.
Availability Code	Non-Stock Item: This item is not normally stocked in our distribution facility.
Returnability	N
Country of Origin	MX

As standards, specifications, and designs change from time to time, please ask for confirmation of the information given in this document.



## Main

Range of product	Harmony 9001SK
Product or component type	Pilot light
Device short name	9001SK
Lens type	Fresnel plastic
Light block supply	Direct

## Complementary

Bezel material	Plastic
Mounting diameter	1.18 in (30 mm)
Shape of signaling unit head	Round
Cap/operator or lens colour	Blue
Light source	Blue LED
Bulb base	BA 9s
[Us] rated supply voltage	120 V AC/DC
Tightening torque	7.08 lbf.in (0.8 N.m) conforming to EN/IEC 60947-1
Shape of screw head	Cross slotted head
Connections - terminals	Screw clamp terminals (1 x 0.22...2 x 1.5 mm <sup>2</sup> ) conforming to EN/IEC 60947-1
[Ith] conventional free air thermal current	10 A
Short-circuit protection	10 A cartridge fuse conforming to EN/IEC 60947-5-1
[U <sub>i</sub> ] rated insulation voltage	250 V (degree of pollution: 2) conforming to EN/IEC 60947-1
[U <sub>imp</sub> ] rated impulse withstand voltage	2.5 kV conforming to EN/IEC 60947-1
Operating position	Any position
Operating mode	Push-to-test
CAD overall width	2.13 in (54 mm)
CAD overall height	2.76 in (70 mm)
CAD overall depth	1.65 in (42 mm)
Product weight	0.4 lb(US) (0.181 kg)

## Environment

electrical shock protection class	Class II conforming to IEC 61140
protective treatment	TC
IP degree of protection	IP66 conforming to IEC 60529
NEMA degree of protection	NEMA 1 NEMA 12 NEMA 13 NEMA 2 NEMA 3 NEMA 3R NEMA 4 NEMA 4X
vibration resistance	7 gn (f = 2...500 Hz) conforming to IEC 60068-2-6
shock resistance	50 gn conforming to IEC 60068-2-27
ambient air temperature for operation	-13...158 °F (-25...70 °C)
ambient air temperature for storage	-40...158 °F (-40...70 °C)
standards	EN/IEC 60947-1 EN/IEC 60947-5-1 EN/IEC 60947-5-4

The information provided in this documentation contains general descriptions and/or technical characteristics of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric Industries SAS nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein.

JIS C 4520  
JIS C 852  
UL 508  
CSA C22.2 No 14

---

product certifications

NEMA  
UL 508

---

---

Contractual warranty

---

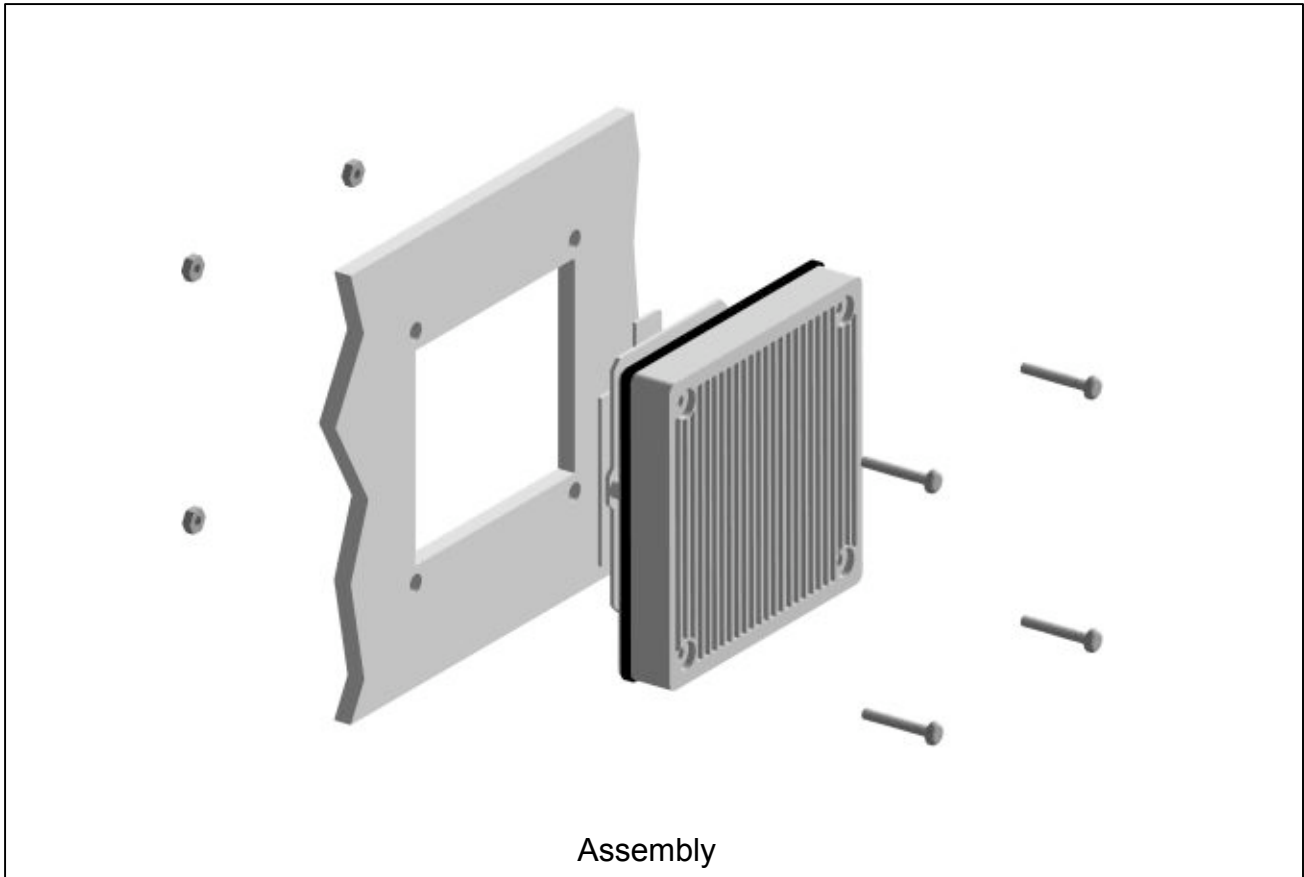
Warranty period

18 months




---















**To Set Desired DBA Sound Output Level:**

-  SWITCH SETTING
-  High Level Output (factory settings)
-  Standard Level Output

**To Set Desired Alarm tone:**

- |   |   |
|---|---|
|  Horn  |  March Time Horn |
|  Bell  |  Code 3 Horn     |
|  Siren |  Code 3 Tone     |
|  Hi/Lo |  Slow Whoop      |

Note: The code-3 Horn and Tone alert sounds are reserved for emergency evacuation signaling. They should not be used for any other purpose!

# Product data sheet

## Characteristics

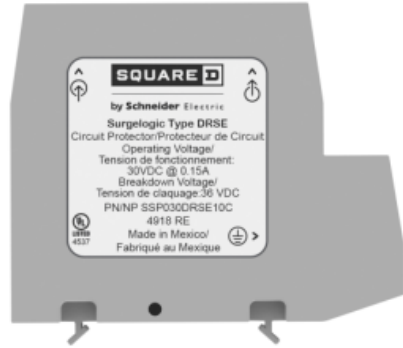
# SSP030DRSE10

Surge protection device, Surgelogic, type DRSE, 0.15A, 30 VDC, 10 kA, DIN rail mount

Product availability : Non-Stock - Not normally stocked in distribution facility



Price\* : 199.90 USD



## Main

Product	Surge protection device
---------	-------------------------

## Complementary

Clamping Voltage	36 V DC
Surge Current	10 kA
Voltage Rating	30 V DC
Rated Current	0.15 A
Device Mounting	DIN rail
Height	2.25 in (57.2 mm)
Width	0.80 in (20.3 mm)
Depth	1.10 in (27.9 mm)

## Ordering and shipping details

Category	08466 - SURGE PROTECTION HWA
Discount Schedule	DE1B
GTIN	00785901292760
Nbr. of units in pkg.	10
Package weight(Lbs)	10 lb(US) (4.54 kg)
Returnability	Yes

\* Price is "List Price" and may be subject to a trade discount – check with your local distributor or retailer for actual price.



# TECHNICAL SUBMITTAL

Brookfield WPCA - 133 Pump Station  
Control Panel Submittal

## SIGN-OFF/APPROVAL

7/25/24

NAME:

Serdar Umur

TITLE:

Sales Engineer

PREPARED BY:

Isaiah Russell

irussell@gafleet.com // 914-381-7949