

Control Drawings F0-series, Rev. 1.1

The Fluidwell F0-series are currently certified according to FM and CSA standards.

FM project ID: 3033306

CSA Certificate number: CSA.08.2059461

With the addition of two terminals to 4 out of 6 versions of the F0-series, the control drawings change.

The following pages show the updated control drawings for models

F0xx-A

F0xx-A-PL

F0xx-P

F0xx-U

For types F0xx –T and F0xx –H there are no updated control drawings; they have not changed with respect to their previous certification and maintain their 1.0 Revision Number. Their original control drawings are shown here for the sake of completeness.

Control drawing F0xx-A-XI

Certification F0-SERIES – Type -XI



Certificate number: CSA.08.2059461
 Intrinsically Safe for Class I/II/III, Division 1
 Groups A,B,C,D,E,F,G. Temperature class T4
 Class I, Zone 0, AEx ia IIC T4



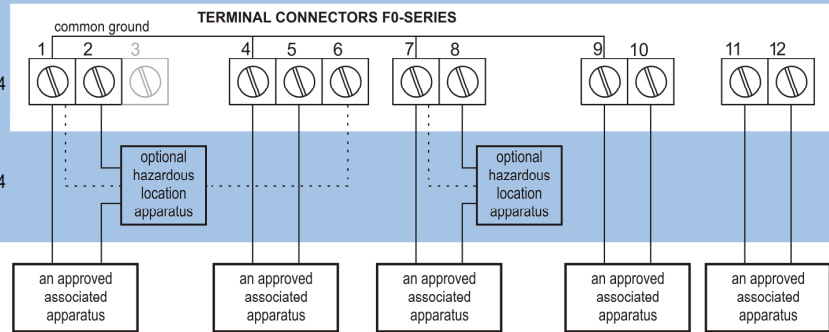
Project ID: 3033306
 Intrinsically Safe for Class I/II/III, Division 1
 Groups A,B,C,D,E,F,G. Temperature class T4
 Class I, Zone 0, AEx ia IIC T4

HAZARDOUS AREA
SAFE AREA

Control drawing number: FWCD-0001

Revision: 1.1

Date: May 5th, 2014



- ◆ The installation must comply with national requirements (e.g. in Canada, the Canadian Electrical Code, Part 1 Appendix F and in USA, the National Electrical Code, NFPA 70, Article 504 and ANSI/ISA-RP 12.6).
- ◆ Warning: Substitution of components may impair intrinsic safety.
- ◆ For the circuits connected to terminals 1 and 2, 4 and 5, 7 and 8, 9 and 10, the output parameters of the connected barriers (up to 4) or hazardous location apparatus must meet the following requirements:
 - $V_{oc} \leq$ The lowest V_{max} of the CSA / FM Approved apparatus in the circuit
 - $I_{sc} \leq$ The lowest I_{max} of the CSA / FM Approved apparatus in the circuit
 - $P_{max} \leq$ The lowest P_{max} of the CSA / FM Approved apparatus in the circuit
 - $C_a \geq$ The sum of the cable capacitance and the internal capacitance C_i of each CSA / FM Approved apparatus installed in the circuit
 - $L_a \geq$ The sum of the cable inductance and the internal inductance L_i of each CSA / FM Approved apparatus installed in the circuit
- ◆ For the circuits connected to terminals 1 and 2, 4 and 6, 7 and 8, 11 and 12, the input parameters of the connected hazardous location apparatus must meet the following requirements:
 - $V_{max} \geq$ The V_{oc} of the of the circuit
 - $I_{max} \geq$ The I_{sc} of the circuit
 - $P_{max} \geq$ The P_{max} of the circuit
 - $C_i \leq$ The difference between the C_a of the circuit and the sum of the cable capacitance and the internal capacitance C_i of all other CSA / FM Approved apparatus installed in the circuit
 - $L_i \leq$ The difference between the L_a of the circuit and the sum of the cable inductance and the internal inductance L_i of all other CSA / FM Approved apparatus installed in the circuit
- ◆ Hazardous Location Apparatus – switches, thermocouples or non-inductive resistance devices, or CSA / FM – Certified Apparatus – should be connected in accordance with the manufacturer’s installation instructions.
- ◆ The cable parameters are determined by the parameters of the system into which the F0-Series General Purpose Indicators is connected.
- ◆ Only certified Intrinsically Safe Fluidwell battery type FW-LiBat-0xx may be used and replaced in hazardous area.

The entity parameters for F0-Series General Purpose Indicators, model F0xx-A-XI, are as follows:

Terminals 1 and 2 – Input parameters: $V_{max} = 30V$ $C_i = 0nF$
 $I_{max} = 150mA$ $L_i = 0mH$
 $P_{max} = 0.92W$

Terminal 3 – Internally not connected

Terminal 4 and 5 – Input parameters – Type -PD/-PX $V_{max} = 30V$ $C_i = 0nF$
 $I_{max} = 200mA$ $L_i = 0mH$
 $P_{max} = 1.2W$

Terminal 4 and 6 – Output parameters – Type -PD V_{oc} , I_{sc} , P_{max} , C_a and L_a are equal to those of the circuitry connected between terminals 4 and 5.

Terminal 7 and 8 – Input parameters – Type -OT $V_{max} = 30V$ $C_i = 0nF$
 $I_{max} = 200mA$ $L_i = 0mH$
 $P_{max} = 1.2W$

Terminal 9 and 10 – Input parameters – Type -ZB $V_{max} = 30V$ $C_i = 0nF$
 $I_{max} = 200mA$ $L_i = 0mH$
 $P_{max} = 0.75W$

Terminal 11 and 12 – Input parameters – Type -AH $V_{max} = 30V$ $C_i = 6.1nF$
 $I_{max} = 100mA$ $L_i = 0mH$
 $P_{max} = 0.75W$

Control drawing F0xx-A-PL-XI

Certification F0-SERIES – Type -XI



Certificate number: CSA.08.2059461
 Intrinsically Safe for Class I/II/III, Division 1
 Groups A,B,C,D,E,F,G. Temperature class T4
 Class I, Zone 0, AEx ia IIC T4



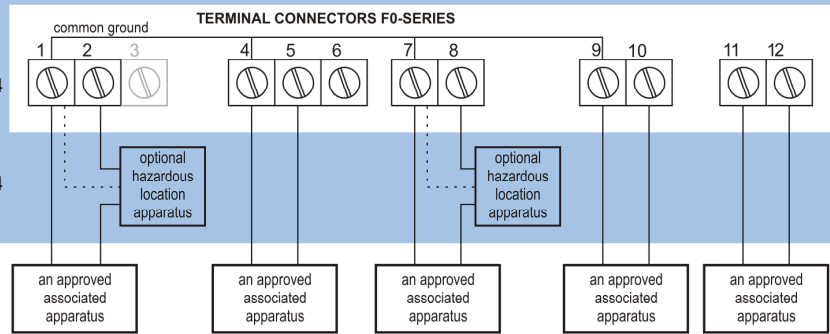
Project ID: 3033306
 Intrinsically Safe for Class I/II/III, Division 1
 Groups A,B,C,D,E,F,G. Temperature class T4
 Class I, Zone 0, AEx ia IIC T4

HAZARDOUS AREA
 SAFE AREA

Control drawing number: FWCD-0002

Revision: 1.1

Date: May 5th, 2014



- ◆ The installation must comply with national requirements (e.g. in Canada, the Canadian Electrical Code, Part 1 Appendix F and in USA, the National Electrical Code, NFPA 70, Article 504 and ANSI/ISA-RP 12.6).
- ◆ Warning: Substitution of components may impair intrinsic safety.
- ◆ For the circuits connected to terminals 1 and 2, 4 and 5, 7 and 8, 9 and 10, the output parameters of the connected barriers (up to 4) or hazardous location apparatus must meet the following requirements:
 - $V_{oc} \leq$ The lowest V_{max} of the CSA / FM Approved apparatus in the circuit
 - $I_{sc} \leq$ The lowest I_{max} of the CSA / FM Approved apparatus in the circuit
 - $P_{max} \leq$ The lowest P_{max} of the CSA / FM Approved apparatus in the circuit
 - $C_a \geq$ The sum of the cable capacitance and the internal capacitance C_i of each CSA / FM Approved apparatus installed in the circuit
 - $L_a \geq$ The sum of the cable inductance and the internal inductance L_i of each CSA / FM Approved apparatus installed in the circuit
- ◆ For the circuits connected to terminals 1 and 2, 4 and 6, 7 and 8, 11 and 12 the input parameters of the connected hazardous location apparatus must meet the following requirements:
 - $V_{max} \geq$ The V_{oc} of the of the circuit
 - $I_{max} \geq$ The I_{sc} of the circuit
 - $P_{max} \geq$ The P_{max} of the circuit
 - $C_i \leq$ The difference between the C_a of the circuit and the sum of the cable capacitance and the internal capacitance C_i of all other CSA / FM Approved apparatus installed in the circuit
 - $L_i \leq$ The difference between the L_a of the circuit and the sum of the cable inductance and the internal inductance L_i of all other CSA / FM Approved apparatus installed in the circuit
- ◆ Hazardous Location Apparatus – switches, thermocouples or non-inductive resistance devices, or CSA / FM – Certified Apparatus – should be connected in accordance with the manufacturer’s installation instructions.
- ◆ The cable parameters are determined by the parameters of the system into which the F0-Series General Purpose Indicators is connected.
- ◆ Only certified Intrinsically Safe Fluidwell battery type FW-LiBat-0xx may be used and replaced in hazardous area.

The entity parameters for F0-Series General Purpose Indicators, model F0xx-A-PL-XI, are as follows:

Terminals 1 and 2 – Input parameters:	$V_{max} = 30V$ $I_{max} = 93mA$ $P_{max} = 0.75W$	$C_i = 0nF$ $L_i = 0mH$
Terminal 3 – Internally not connected		
Terminal 4 and 5 – Input parameters – Type -PD/-PX	$V_{max} = 30V$ $I_{max} = 200mA$ $P_{max} = 1.2W$	$C_i = 0nF$ $L_i = 0mH$
Terminal 4 and 6 – Output parameters – Type -PD	V_{oc} , I_{sc} , P_{max} , C_a and L_a are equal to those of the circuitry connected between terminals 4 and 5.	
Terminal 7 and 8 – Input parameters – Type -OT	$V_{max} = 30V$ $I_{max} = 200mA$ $P_{max} = 1.2W$	$C_i = 0nF$ $L_i = 0mH$
Terminal 9 and 10 – Input parameters – Type -ZB	$V_{max} = 30V$ $I_{max} = 200mA$ $P_{max} = 0.75W$	$C_i = 0nF$ $L_i = 0mH$
Terminal 11 and 12 – Input parameters – Type -AH	$V_{max} = 30V$ $I_{max} = 100mA$ $P_{max} = 0.75W$	$C_i = 6.1nF$ $L_i = 0mH$

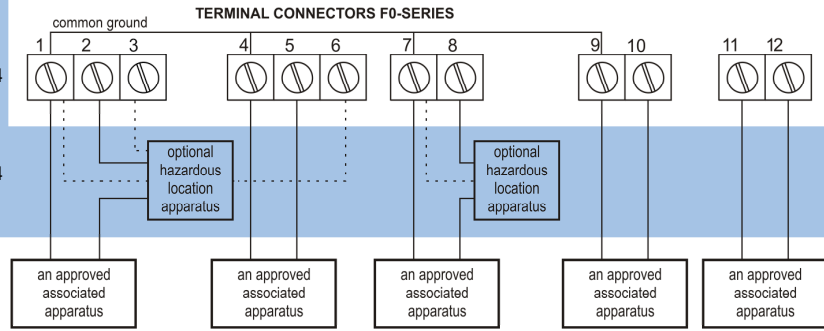
Control drawing F0xx-P-XI

Certification F0-SERIES – Type -XI

Certificate number: CSA.08.2059461
 Intrinsically Safe for Class I/II/III, Division 1
 Groups A,B,C,D,E,F,G. Temperature class T4
 Class I, Zone 0, AEx ia IIC T4

Project ID: 3033306
 Intrinsically Safe for Class I/II/III, Division 1
 Groups A,B,C,D,E,F,G. Temperature class T4
 Class I, Zone 0, AEx ia IIC T4

Control drawing number: FWCD-0003
 Revision: 1.1 Date: May 5th, 2014

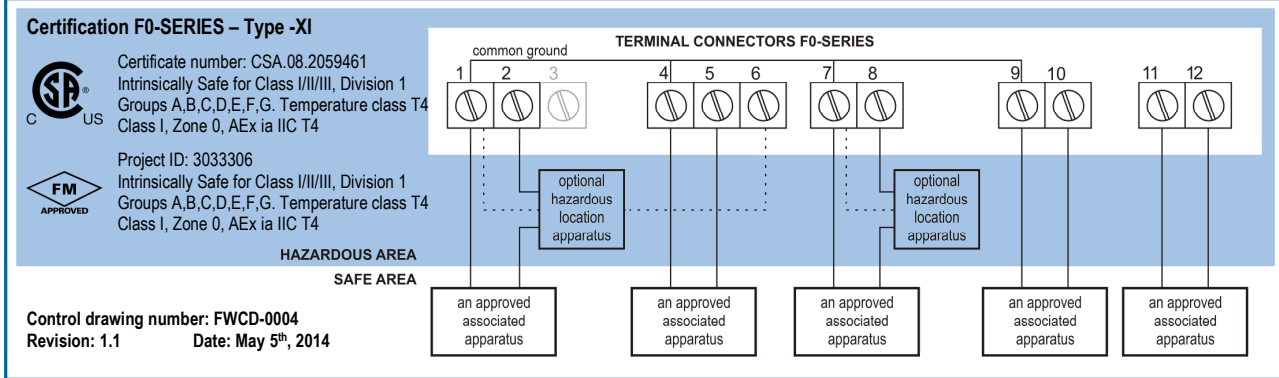


- ◆ The installation must comply with national requirements (e.g. in Canada, the Canadian Electrical Code, Part 1 Appendix F and in USA, the National Electrical Code, NFPA 70, Article 504 and ANSI/ISA-RP 12.6).
- ◆ Warning: Substitution of components may impair intrinsic safety.
- ◆ For the circuits connected to terminals 1, 2 and 3, 4 and 5, 7 and 8, 9 and 10, the output parameters of the connected barriers (up to 4) or hazardous location apparatus must meet the following requirements:
 - Voc ≤ The lowest Vmax of the CSA / FM Approved apparatus in the circuit
 - Isc ≤ The lowest Imax of the CSA / FM Approved apparatus in the circuit
 - Pmax ≤ The lowest Pmax of the CSA / FM Approved apparatus in the circuit
 - Ca ≥ The sum of the cable capacitance and the internal capacitance Ci of each CSA / FM Approved apparatus installed in the circuit
 - La ≥ The sum of the cable inductance and the internal inductance Li of each CSA / FM Approved apparatus installed in the circuit
- ◆ For the circuits connected to terminals 1, 2 and 3, 4 and 6, 7 and 8, 11 and 12, the input parameters of the connected hazardous location apparatus must meet the following requirements:
 - Vmax ≥ The Voc of the of the circuit
 - Imax ≥ The Isc of the circuit
 - Pmax ≥ The Pmax of the circuit
 - Ci ≤ The difference between the Ca of the circuit and the sum of the cable capacitance and the internal capacitance Ci of all other CSA / FM Approved apparatus installed in the circuit
 - Li ≤ The difference between the La of the circuit and the sum of the cable inductance and the internal inductance Li of all other CSA / FM Approved apparatus installed in the circuit
- ◆ Hazardous Location Apparatus – switches, thermocouples or non-inductive resistance devices, or CSA / FM – Certified Apparatus – should be connected in accordance with the manufacturer’s installation instructions.
- ◆ The cable parameters are determined by the parameters of the system into which the F0-Series General Purpose Indicators is connected.
- ◆ Only certified Intrinsically Safe Fluidwell battery type FW-LiBat-0xx may be used and replaced in hazardous area.

The entity parameters for F0-Series General Purpose Indicators, model F0xx-P-XI, are as follows:

Terminals 1 and 2 – Input parameters:	Vmax = 30V	Ci = 0nF
	Imax = 150mA	Li = 0mH
	Pmax = 0.92W	
Terminals 1 and 2 – Output parameters:	Voc = 5.4V	Ca = 65 µF
	Isc = 2.4mA	La = 1 H
	Pmax = 3.2mW	
Terminal 1 and 3 – Output parameters:	Voc = 5.4V	Ca = 65 µF
	Isc = 2.1mA	La = 1 H
	Pmax = 2.9mW	
Terminal 4 and 5 – Input parameters – Type -PD/-PX	Vmax = 30V	Ci = 0nF
	Imax = 200mA	Li = 0mH
	Pmax = 1.2W	
Terminal 4 and 6 – Output parameters – Type -PD	Voc = 8.7V	Ca = 5.9 µF
	Isc = 12mA	La = 240 mH
	Pmax = 72mW	
Terminal 7 and 8 – Input parameters – Type -OT	Vmax = 30V	Ci = 0nF
	Imax = 200mA	Li = 0mH
	Pmax = 1.2W	
Terminal 9 and 10 – Input parameters – Type -ZB	Vmax = 30V	Ci = 0nF
	Imax = 200mA	Li = 0mH
	Pmax = 0.75W	
Terminal 11 and 12 – Input parameters – Type -AH	Vmax = 30V	Ci = 6.1nF
	Imax = 100mA	Li = 0mH
	Pmax = 0.75W	

Control drawing F0xx-U-XI



- ◆ The installation must comply with national requirements (e.g. in Canada, the Canadian Electrical Code, Part 1 Appendix F and in USA, the National Electrical Code, NFPA 70, Article 504 and ANSI/ISA-RP 12.6).
- ◆ Warning: Substitution of components may impair intrinsic safety.
- ◆ For the circuits connected to terminals 1 and 2, 4 and 5, 7 and 8, 9 and 10, the output parameters of the connected barriers (up to 4) or hazardous location apparatus must meet the following requirements:
 - Voc ≤ The lowest Vmax of the CSA / FM Approved apparatus in the circuit
 - Isc ≤ The lowest Imax of the CSA / FM Approved apparatus in the circuit
 - Pmax ≤ The lowest Pmax of the CSA / FM Approved apparatus in the circuit
 - Ca ≥ The sum of the cable capacitance and the internal capacitance Ci of each CSA / FM Approved apparatus installed in the circuit
 - La ≥ The sum of the cable inductance and the internal inductance Li of each CSA / FM Approved apparatus installed in the circuit
- ◆ For the circuits connected to terminals 1 and 2, 4 and 6, 7 and 8, 11 and 12, the input parameters of the connected hazardous location apparatus must meet the following requirements:
 - Vmax ≥ The Voc of the of the circuit
 - Imax ≥ The Isc of the circuit
 - Pmax ≥ The Pmax of the circuit
 - Ci ≤ The difference between the Ca of the circuit and the sum of the cable capacitance and the internal capacitance Ci of all other CSA / FM Approved apparatus installed in the circuit
 - Li ≤ The difference between the La of the circuit and the sum of the cable inductance and the internal inductance Li of all other CSA / FM Approved apparatus installed in the circuit
- ◆ Hazardous Location Apparatus – switches, thermocouples or non-inductive resistance devices, or CSA / FM – Certified Apparatus – should be connected in accordance with the manufacturer’s installation instructions.
- ◆ The cable parameters are determined by the parameters of the system into which the F0-Series General Purpose Indicators is connected.
- ◆ Only certified Intrinsically Safe Fluidwell battery type FW-LiBat-0xx may be used and replaced in hazardous area.

The entity parameters for F0-Series General Purpose Indicators, model F0xx-U-XI, are as follows:

Terminals 1 and 2 – Input parameters:	Vmax = 30V	Ci = 0nF	
	Imax = 150mA	Li = 0mH	
	Pmax = 0.92W		
Terminal 3 – Internally not connected			
Terminal 4 and 5 – Input parameters – Type -PD/-PX	Vmax = 30V	Ci = 0nF	
	Imax = 200mA	Li = 0mH	
	Pmax = 1.2W		
Terminal 4 and 6 – Output parameters – Type -PD	Voc, Isc, Pmax, Ca and La are equal to those of the circuitry connected between terminals 4 and 5.		
Terminal 7 and 8 – Input parameters – Type -OT	Vmax = 30V	Ci = 0nF	
	Imax = 200mA	Li = 0mH	
	Pmax = 1.2W		
Terminal 9 and 10 – Input parameters – Type -ZB	Vmax = 30V	Ci = 0nF	
	Imax = 200mA	Li = 0mH	
	Pmax = 0.75W		
Terminal 11 and 12 – Input parameters – Type -AH	Vmax = 30V	Ci = 6.1nF	
	Imax = 100mA	Li = 0mH	
	Pmax = 0.75W		

Control drawing F0xx-T-XI

Certification F0-SERIES – Type -XI

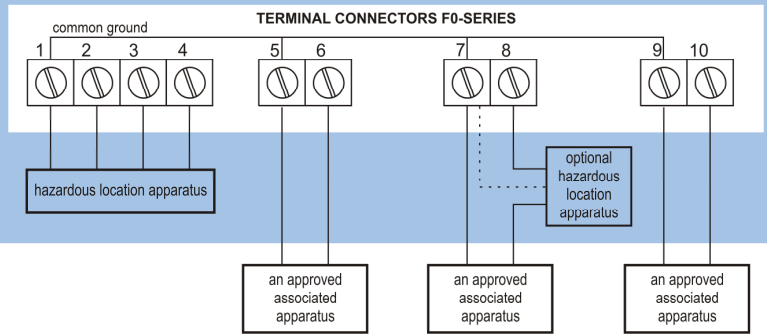


Certificate number: CSA.08.2059461
 Intrinsically Safe for Class I/II/III, Division 1
 Groups A,B,C,D,E,F,G. Temperature class T4
 Class I, Zone 0, AEx ia IIC T4



Project ID: 3033306
 Intrinsically Safe for Class I/II/III, Division 1
 Groups A,B,C,D,E,F,G. Temperature class T4
 Class I, Zone 0, AEx ia IIC T4

HAZARDOUS AREA
SAFE AREA



Control drawing number: FWCD-0005
 Revision: 1.0

- ◆ The installation must comply with national requirements (e.g. in Canada, the Canadian Electrical Code, Part 1 Appendix F and in USA, the National Electrical Code, NFPA 70, Article 504 and ANSI/ISA-RP 12.6).
- ◆ Warning: Substitution of components may impair intrinsic safety.
- ◆ For the circuits connected to terminals 5 and 6, 7 and 8, 9 and 10, the output parameters of the connected barriers (up to 3) or hazardous location apparatus must meet the following requirements:
 - $V_{oc} \leq$ The lowest V_{max} of the CSA / FM Approved apparatus in the circuit
 - $I_{sc} \leq$ The lowest I_{max} of the CSA / FM Approved apparatus in the circuit
 - $P_{max} \leq$ The lowest P_{max} of the CSA / FM Approved apparatus in the circuit
 - $C_a \geq$ The sum of the cable capacitance and the internal capacitance C_i of each CSA / FM Approved apparatus installed in the circuit
 - $L_a \geq$ The sum of the cable inductance and the internal inductance L_i of each CSA / FM Approved apparatus installed in the circuit
- ◆ For the circuits connected to terminals 1, 2, 3 and 4, 7 and 8, the input parameters of the connected hazardous location apparatus must meet the following requirements:
 - $V_{max} \geq$ The V_{oc} of the of the circuit
 - $I_{max} \geq$ The I_{sc} of the circuit
 - $P_{max} \geq$ The P_{max} of the circuit
 - $C_i \leq$ The difference between the C_a of the circuit and the sum of the cable capacitance and the internal capacitance C_i of all other CSA / FM Approved apparatus installed in the circuit
 - $L_i \leq$ The difference between the L_a of the circuit and the sum of the cable inductance and the internal inductance L_i of all other CSA / FM Approved apparatus installed in the circuit
- ◆ Hazardous Location Apparatus – switches, thermocouples or non-inductive resistance devices, or CSA / FM – Certified Apparatus – should be connected in accordance with the manufacturer’s installation instructions.
- ◆ The cable parameters are determined by the parameters of the system into which the F0-Series General Purpose Indicators is connected.
- ◆ Only certified Intrinsically Safe Fluidwell battery type FW-LiBat-0xx may be used and replaced in hazardous area.

The entity parameters for F0-Series General Purpose Indicators, model F0xx-T-XI, are as follows:

Terminal 1, 2, 3 and 4 – Output parameters:	$V_{oc} = 5.4V$ $I_{sc} = 62mA$ $P_{max} = 252mW$ $C_a = 65\mu F$ $L_a = 20mH$
Terminal 5 and 6 – Input parameters – Type -PX	$V_{max} = 30V$ $I_{max} = 200mA$ $P_{max} = 1.2W$ $C_i = 0nF$ $L_i = 0mH$
Terminal 7 and 8 – Input parameters – Type -OT	$V_{max} = 30V$ $I_{max} = 200mA$ $P_{max} = 1.2W$ $C_i = 0nF$ $L_i = 0mH$
Terminal 9 and 10 – Input parameters – Type -ZB	$V_{max} = 30V$ $I_{max} = 200mA$ $P_{max} = 0.75W$ $C_i = 0nF$ $L_i = 0mH$

Control drawing F0xx-H-XI

Certification F0-SERIES – Type -XI



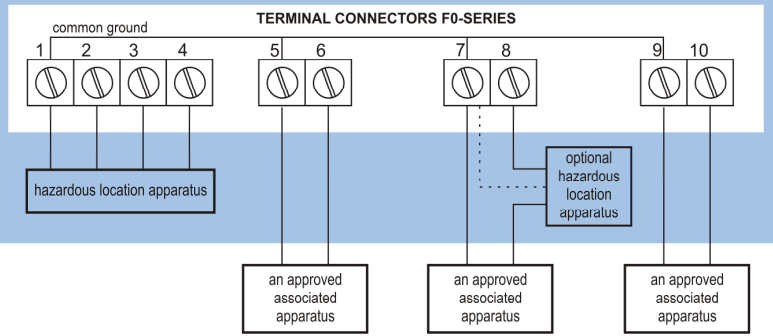
Certificate number: CSA.08.2059461
 Intrinsically Safe for Class I/II/III, Division 1
 Groups A,B,C,D,E,F,G. Temperature class T4
 Class I, Zone 0, AEx ia IIC T4



Project ID: 3033306
 Intrinsically Safe for Class I/II/III, Division 1
 Groups A,B,C,D,E,F,G. Temperature class T4
 Class I, Zone 0, AEx ia IIC T4

HAZARDOUS AREA
 SAFE AREA

Control drawing number: FWCD-0006
 Revision: 1.0



- ◆ The installation must comply with national requirements (e.g. in Canada, the Canadian Electrical Code, Part 1 Appendix F and in USA, the National Electrical Code, NFPA 70, Article 504 and ANSI/ISA-RP 12.6).
- ◆ Warning: Substitution of components may impair intrinsic safety.
- ◆ For the circuits connected to terminals 5 and 6, 7 and 8, 9 and 10, the output parameters of the connected barriers (up to 3) or hazardous location apparatus must meet the following requirements:
 - $V_{oc} \leq$ The lowest V_{max} of the CSA / FM Approved apparatus in the circuit
 - $I_{sc} \leq$ The lowest I_{max} of the CSA / FM Approved apparatus in the circuit
 - $P_{max} \leq$ The lowest P_{max} of the CSA / FM Approved apparatus in the circuit
 - $C_a \geq$ The sum of the cable capacitance and the internal capacitance C_i of each CSA / FM Approved apparatus installed in the circuit
 - $L_a \geq$ The sum of the cable inductance and the internal inductance L_i of each CSA / FM Approved apparatus installed in the circuit
- ◆ For the circuits connected to terminals 1, 2, 3 and 4, 7 and 8, the input parameters of the connected hazardous location apparatus must meet the following requirements:
 - $V_{max} \geq$ The V_{oc} of the of the circuit
 - $I_{max} \geq$ The I_{sc} of the circuit
 - $P_{max} \geq$ The P_{max} of the circuit
 - $C_i \leq$ The difference between the C_a of the circuit and the sum of the cable capacitance and the internal capacitance C_i of all other CSA / FM Approved apparatus installed in the circuit
 - $L_i \leq$ The difference between the L_a of the circuit and the sum of the cable inductance and the internal inductance L_i of all other CSA / FM Approved apparatus installed in the circuit
- ◆ Hazardous Location Apparatus – switches, thermocouples or non-inductive resistance devices, or CSA / FM – Certified Apparatus – should be connected in accordance with the manufacturer’s installation instructions.
- ◆ The cable parameters are determined by the parameters of the system into which the F0-Series General Purpose Indicators is connected.
- ◆ Only certified Intrinsically Safe Fluidwell battery type FW-LiBat-0xx may be used and replaced in hazardous area.

The entity parameters for F0-Series General Purpose Indicators, model F0xx-H-XI, are as follows:

Terminal 1, 2, 3 and 4 – Output parameters:	$V_{oc} = 5.4V$ $I_{sc} = 62mA$ $P_{max} = 252mW$ $C_a = 65\mu F$ $L_a = 20mH$
Terminal 5 and 6 – Input parameters – Type -PX	$V_{max} = 30V$ $I_{max} = 200mA$ $P_{max} = 1.2W$ $C_i = 0nF$ $L_i = 0mH$
Terminal 7 and 8 – Input parameters – Type -OT	$V_{max} = 30V$ $I_{max} = 200mA$ $P_{max} = 1.2W$ $C_i = 0nF$ $L_i = 0mH$
Terminal 9 and 10 – Input parameters – Type -ZB	$V_{max} = 30V$ $I_{max} = 200mA$ $P_{max} = 0.75W$ $C_i = 0nF$ $L_i = 0mH$