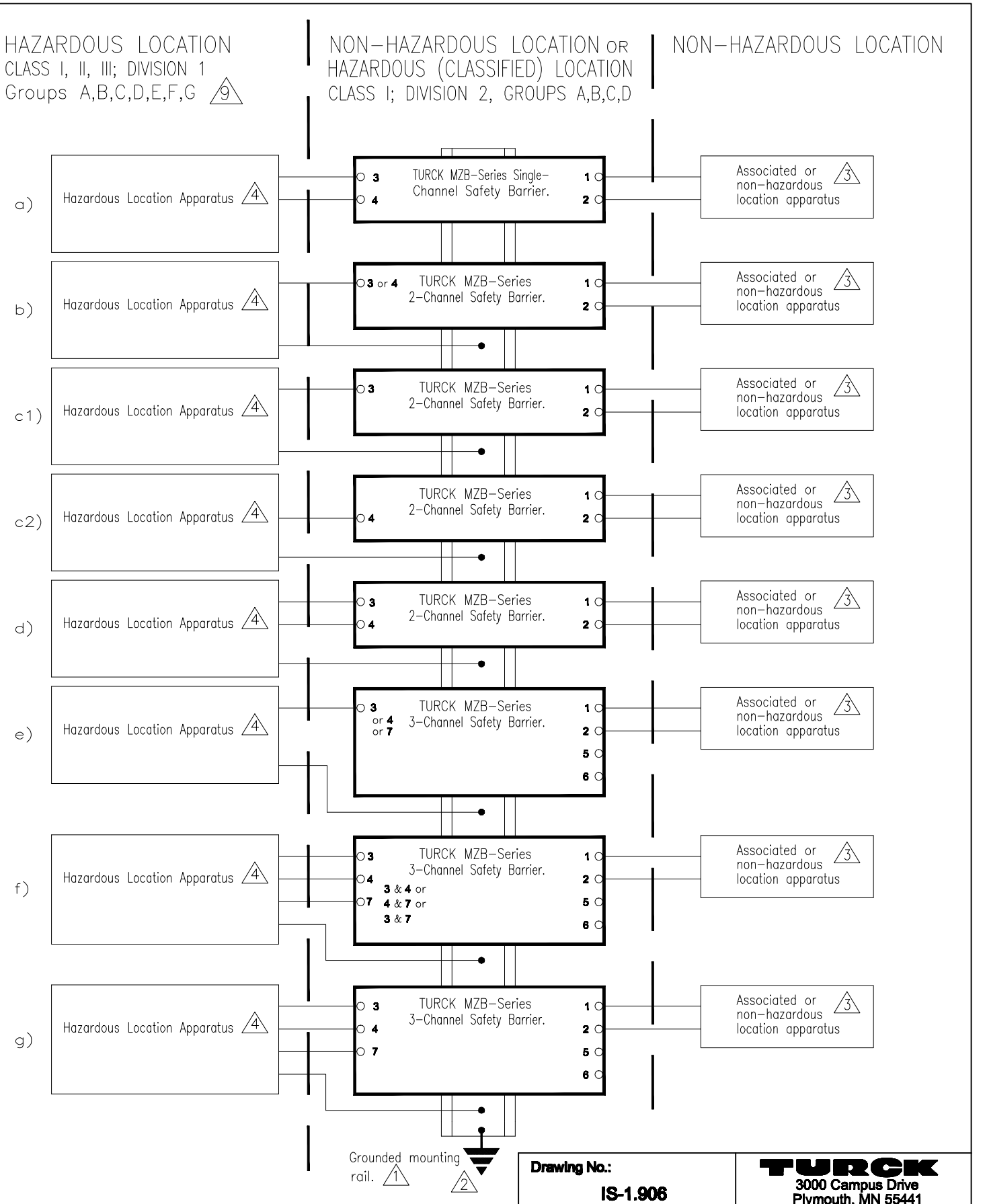
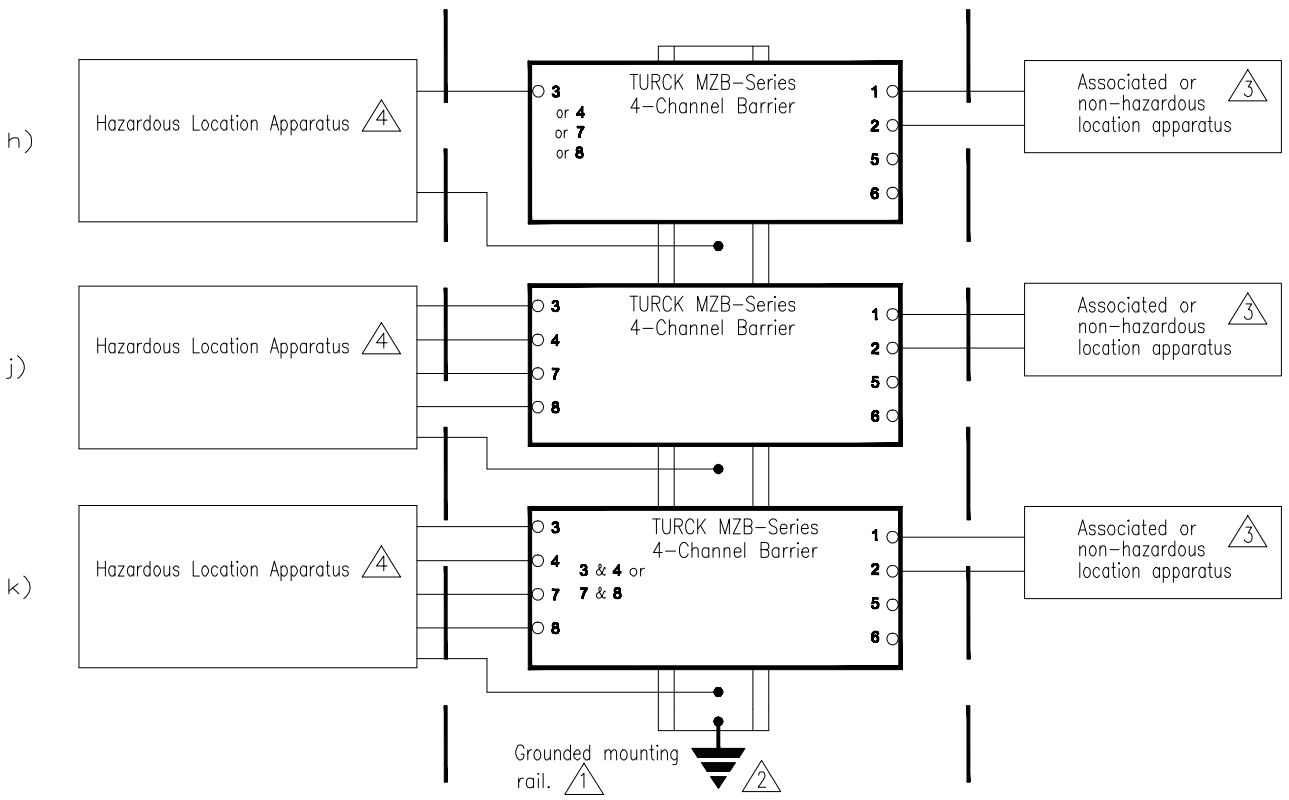


Drawing No.:	TURCK
IS-1.906	3000 Campus Drive Plymouth, MN 55441 Phone: (763) 553-7300

Title: **Control Drawing for UL Listed MZB Series Barriers**

Scale: NONE | Sheet 1 of 6

Rev	Description	Drft	Date
A	Release	BVL	7/17/08



CONFIGURATIONS

a) Single channel barrier to one device with ground return.
b) Dual channel barrier, each channel to separate devices with separate ground returns.
c1) Dual channel barrier, first channel (power channel on diode return barriers) to separate device with separate ground return.
c2) Dual channel barrier, second channel (power channel on diode return barriers) to separate device with separate ground return.
d) Dual channel barrier, both channels to the same device with or without ground return.
e) Three channel barrier, each channel to separate devices with separate ground returns.
f) Three channel barrier, two channels to same device with or without ground return and one channel to separate device with separate ground return.
g) Three channel barrier, three channels to same device with or without ground return.
h) 1st, 2nd, 3rd, or 4th channel of a four channel barrier, each channel to separate devices with separate ground returns.
j) Four channel barrier, all channels to same device with or without ground return.
k) Four channel barrier, channels 1 and 2 or channels 3 and 4 to same device with or without ground return.

Notes:

1. Turck MZB Series shunt diode barriers must be secured to a DIN 'T' section (35x27x7.5mm) mounting rail. Rails constructed of aluminum or aluminum-based alloys must not be used. The mounting rail must be provided with at least one grounding terminal (two are recommended) which should be situated at each end of the rail. These terminals are to be used for the intrinsic safety grounding and must be capable of accommodating conductors up to 12 AWG (4mm in cross-section).
2. The intrinsic safety grounding system must be such that when installed the ground loop impedance (including the mounting rail) does not exceed 1.0 ohm.
3. The nonhazardous (safe) location or Division 2/Zone 2 equipment must not generate or use voltages (U_m) in excess of 250V rms or dc with respect to earth.

Notes (continued):

4. The hazardous location equipment may be UL Listed devices suitable for the locations in which it is to be installed and whith correct Entity parameters or Simple Apparatus.

   If the simple apparatus consists only of switches, then the entity parameter table on subsequent sheets of this drawing applies without any temperature limitation.

   If the simple apparatus consists of thermocouples (TC), light emitting diodes (LEDs) or resistance temperture devices (RTDs), with or without switches, then the maximum output power (P_o) from the barrier connected to simple apparatus must not exceed the following:

Maximum barrier output power (Po)	Maximum ambient Temperature (Ta) where simple apparatus is located
1.3 Watts	40°C

5. Barriers must be installed in suitable equipment that complies with the enclosure, mounting, spacing and segregation requirements of the ultimate application.

6. MZB Series shunt diode safety barriers are associated apparatus, and when mounted in an appropriate enclosure may be installed in the following locations:

   i Nonhazardous locations
   ii Class I, Division 2, Groups A, B, C or D; T4 temperature Code

   When installed in a Listed, dust–ignitionproof enclosure, the barriers may also be installed in the following locations:

   iii Class II, Division 2, Groups F or G hazardous locations, T4 temperature code
   iv Class III, Division 2, hazardous locations, T4 temperature code

7. Barriers must be installed in accordance with the barrier manufacturer's control drawing and Article 504 of the National Electrical Code (ANSI/NFPA 70) for installation in the United States.

8. Entity parameters for barriers listed in the parameters table must be used to determine the suitability of the barrier for connection to hazardous location apparatus. The following must be observed:

   V_{oc} or $V_t (U_o) \leq V_{max} (U_i)$

   I_{sc} or $I_t (I_o) \leq I_{max} (I_i)$

   $P_o \leq P_i$

   $C_a (C_o) \geq C_{cable} + C_i$

   $L_a (L_o) \geq L_{cable} + L_i$ or $L_a/R_a(L_o/R_o) \geq L_{cable}/R_{cable}$ and $L_a/R_a(L_o/R_o) \geq L_i/R_i$

9. Certain barriers are not permitted as associated apparatus for Div 1, Groups A, B or Zones 0,1 Group IIC. Refer to entries with asterisks in the following table.

10. When fitted in a nonhazardous locaton, the barriers may be used at the same maximum ambient temperature as when installed in Division 2.

    WARNING

    The following precautions must be taken when MZB Series shunt diode barriers are installed in in Division 2 hazardous locations:

    i Barriers must not be fitted to or removed from the DIN rail unless power is off or the location is known to be free of flammable vapors.

    ii Plug in terminals on nonhazardous side of the barriers as well as the bus power terminal jumper of barriers fitted with the bus power feature, must not be inserted or removed unless power is off or the location is known to be free of flammable vapors.

Barrier Model Terminals	Configuration	V_{oc} or U_o (V)	I_{sc} or I_o (mA)	R_o (Ohms)	P_o (W)	C_a or C_o (uF) AB/CE/DFG)	L_a or L_o (mH) AB/CE/DFG)	L_a/R_a or L_o/R_o (uH/Ohms) AB/CE/DFG)
MZB06 3 – 4	a	28	93	300	0.65	0.083/0.65/2.15	4.2/12.6/33.6	56/210/444
MZB10P 3 – 4	a	10	200	50	0.5	3.0/20/100	0.91/2.72/7.25	74/310/627
MZB15P 3 – 4	a	15	150	100	0.56	0.58/3.55/14.0	1.45/7.22/14	66/263/544
MZB15PX 3 – 4	a	15	291	51	1.09	0.58/3.55/14.0	0.33/0.99/2.64	28/140/280
MZB28P 3 – 4	a	28	93	300	0.65	0.083/0.65/2.15	4.2/12.6/33.6	56/210/444
MZB28PX 3 – 4	a	28	119	234.6	0.83	0.083/0.65/2.15	2.5/7.53/20	44/168/354
MZB29PX 3 – 4	a	28	170	164	1.19	*/0.65/2.15	*/5.65/11.34	*/127/260
MZB41R 3 – 4	d	10	19	–	0.039	2.86/20.0/100	96/365/696	658/1900/1900
MZB42T 3 – 4	d	10	19	–	0.039	2.86/20.0/100	96/365/696	658/1900/1900
MZB43R 3 – 4 or 7 – 8	k	10	19	–	0.039	2.86/20.0/100	96/365/696	658/1900/1900
MZB43R 3–4–7–8	j	10	38	–	0.078	2.73/19.9/100	25/91/193	184/694/1323
MZB44T 3 – 4 or 7 – 8	k	10	19	–	0.039	2.86/20.0/100	96/365/696	658/1900/1900
MZB44T 3–4–7–8	j	10	38	–	0.078	2.73/19.9/100	25/91/193	184/694/1323
MZB45R 3 – 4	d	10	19	–	0.039	2.86/20.0/100	96/365/696	658/1900/1900
MZB56A 3–gnd or 4–gnd or 7–gnd	e	3	300	10	0.225	100/1000/1000	0.46/1.37/3.66	145/722/1442
MZB56A 3–4 or 4–7 or 3–7	f	6	600	5	0.45	40/1000/1000	0.13/0.39/1.03	69/206/548
MZB56A 3–4–7	g	6	900	3.3	0.675	40/1000/1000	0.06/0.19/0.49	44/131/349
MZB58P 3 – gnd	c1	7.5	750	10	1.4	11.1/174/1000	0.07/0.20/0.54	26/77/206
MZB58P 4 – gnd	c2	7.5	750	10	1.4	11.1/174/1000	0.07/0.20/0.54	26/77/206
MZB58P 3 – 4	d	8	1500	5	2.8	8.4/100/1000	0.02/0.05/0.14	10/30/81
MZB60A 3–gnd or 4–gnd	b	10	200	50	0.5	3.0/20.2/100	0.91/2.72/7.25	74/308/617
MZB60A 3 – 4	d	10	400	25	1.0	3.0/20.2/100	0.2/1.0/1.8	35.6/142.2/284.4
MZB61A 3–gnd or 4–gnd	b	9	100	90	0.225	4.9/40/500	3.65/14.6/29.2	160/616/1281

* Not permitted for Groups A/B

Barrier Model Terminals	Configuration	V_{oc} or U_o (V)	I_{sc} or I_o (mA)	R_o (Ohms)	P_o (W)	C_a or C_o (uF) AB/CE/DFG)	L_a or L_o (mH) AB/CE/DFG)	L_a/R_a or L_o/R_o (uH/Ohms) AB/CE/DFG)
MZB61A 3 – 4	d	18	200	45	0.45	0.31/1.78/7.6	0.91/2.72/7.2	62/258/522
MZB61AX 3–gnd or 4–gnd	b	9	26	351	0.58	4.9/40/500	54/208/419	613/2382/2778
MZB61AX 3 – 4	d	18	52	175	0.115	0.31/1.78/7.6	13.5/52.6/105.2	236/870/1747
MZB64A 3–gnd or 4–gnd	b	12	12	1000	0.036	1.41/9/36	240/932/1000	1000/1000/1000
MZB64A 3 – 4	d	24	24	500	0.072	0.125/0.93/3.35	61/226/452	360/1398/1500
MZB65A 3–gnd or 4–gnd	b	15	150	100	0.56	0.58/3.55/14.0	1.45/7.16/14.3	66/263/544
MZB65A 3 – 4	d	15	300	50	1.12	0.58/3.55/14.0	0.32/0.95/2.54	31.6/126.4/252.8
MZB66A 3–gnd or 4–gnd	b	12	80	150	0.24	1.41/9/36	5.6/22.4/44.9	149/556/1174
MZB66A 3 – 4	d	24	160	75	0.48	0.125/0.93/3.35	1.41/4.4/11	58/234/481
MZB66AX 3–gnd or 4–gnd	b	12	157	76.4	0.471	1.41/9/36	1.47/4.4/11	78/313/644
MZB66AX 3 – 4	d	24	314	38.2	0.942	0.125/0.93/3.35	0.34/1.02/2.71	29/87/231
MZB67P 3–gnd or 4–gnd	b	15	150	100	0.56	0.58/3.55/14	1.45/7.22/14	66/263/544
MZB67P 3 – 4	d	15	300	50	1.125	0.58/3.55/14	0.32/095/2.54	22/108/216
MZB79P 3–gnd or 4–gnd	b	28	93	300	0.65	0.083/0.65/2.15	4.2/12.6/33.6	56/210/444
MZB79P 3 – 4	d	28.5	188	150	1.3	*/0.627/2.05	*/4.1/7.9	*/108/212
MZB87P 3 – gnd	c1	28	93	300	0.65	0.083/0.65/2.15	4.2/12.6/33.6	56/210/444
MZB87P 4 – gnd	c2	28	0	diode	–	0.083/0.65/2.15	–	–
MZB87P 3 – 4	d	29.6	94	300	0.698	0.07/0.578/1.88	3.99/12.6/31.9	50/203/407
MZB87PX 3 – gnd	c1	28	119	234.6	0.835	0.083/0.65/2.15	2.5/7.53/20	44/168/354
MZB87PX 4 – gnd	c2	28	0	diode	–	0.083/0.65/2.15	–	–
MZB87PX 3 – 4	d	30.7	122	252	0.934	0.061/0.524/1.7	2.4/7.53/19.2	38.1/152/304.5
MZB89P 3–gnd or 7–gnd	h	28	46.5	600	0.33	0.083/0.65/2.15	16/63/133	106/393/781

* Not permitted for Groups A/B

Barrier Model Terminals	Configuration	V_{oc} or U_o (V)	I_{sc} or I_o (mA)	R_o (Ohms)	P_o (W)	C_a or C_o (uF) AB/CE/DFG)	L_a or L_o (mH) AB/CE/DFG)	L_a/R_a or L_o/R_o (uH/Ohms) AB/CE/DFG)
MZB89P 4–gnd or 8–gnd	h	28	0	diode	0	0.083/0.65/2.15	–	–
MZB89P 3–4 & 7–8	j	29.6	96	300	0.72	0.07/0.587/1.88	3.8/15.4/30.8	50.8/200.7/401
MZB89P 3–4 or 7–8	k	29.6	48	600	0.36	0.07/0.587/1.88	15.4/61.7/123.5	100.7/393/781