Safety Limit Switches with reset

R11
Steel plunger with reset

R13
Steel plunger with nylon roller with reset

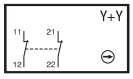
R31
Steel plunger with nylon roller with reset

R32
Steel plunger with nylon roller with reset

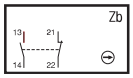
R38
Steel plunger with nylon roller with reset

R41
Lever with nylon roller with reset

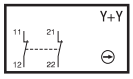
Z02: Snap action 2NC



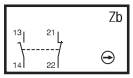
Z11: Snap action 1NO+1NC



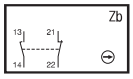
W02: Simultaneous slow action 2NC



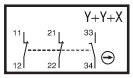
X11: Slow action break before make 1NO+1NC



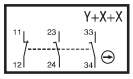
Y11: Slow action make before break 1NO+1NC



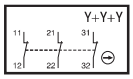
X12P: Slow action break before make 1NO+2NC



X21P: Slow action break before make 2NO+1NC



W03P: Simultaneous slow action 3NC



AP_R series (Plastic)

DP_R series (Plastic)

AM_R series (Metal)

DM_R series (Metal)

Contact blocks
Type: double break, electrically separated
Approvals: UL 508 / CSA C22-2 n. 14

Safety Limit Switches with reset - Description

Applications

Easy to use, the limit switches for safety applications with latch and manual reset offer specific qualities:

- Visible operation (fault memorisation).
- Capability for strong current switching (conventional thermal current 10 A).
- Contact blocks with positive opening operation of the "N.C." normally closed contact(s) (symbol ⊖).
- Electrically separated contacts.
- Precision on operating positions (consistency).
- Immunity to electromagnetic disturbances.

These specific features make the limit switches ideal for detection and monitoring of faults in hoisting machines, electric lifts, freight elevators, escalators, conveyor belts, etc. They comply with the requirements of European Directives (Low Voltage and Machines Directives) and are conform to European and international standards.

Description

Limit switches with latch and manual reset are equipped with operating heads with plunger, roller plunger or roller lever, used to detect rectilinear or angular movements. AP/DP series are made of fibre-glass reinforced UL-V0 thermoplastic material, they offer double insulation ⧈ and a degree of protection IP65.
AM/DM series are made of zinc alloy (zamack) and have a degree of protection IP66. Limit switches with latch and manual reset are equipped with 1NO+1NC, 2NC, 1NO+2NC, 2NO+1NC or 3NC contact blocks with positive opening operation of the "N.C." contact(s). After actuating the control device and overshooting the latching point, the N.C. safety contact(s) remain in the open position. **Return to the initial operating state takes place by voluntary action on the reset button.**

Casing
- 30 mm. width with standardized dimensions acc. to EN 50047
- 50 mm. width with standardized dimensions

Mounting the casing
- 2 x M4 screws on top part for 30 mm. width
- 2 or 4 x M4 screws on top part for 50 mm. width

Contact Block:
- Positive opening operation
- Snap action or slow action
- Contacts are electrically separated

Connecting terminals:
- Block of 2 contacts: M3.5 (+, –) pozidriv 2 screw
- Block of 3 contacts: M3 (+, –) screw
- Screw head with captive cable clamp
- Markings conform with IEC 60947-1, IEC 60947-5-1 standard

A variety of operating heads:
- Metal plunger
- Metal plunger and nylon roller
- Nylon roller lever
- Other levers available upon request

Reset:
- Manual reset button

Cover:
- 1 or 3 screws for 30 mm. casing
- 1 or 4 screws for 50 mm. casing

Electrical connection:
- 1 x cable gland for AP and AM series
- 2 x cable gland for DP series
- 3 x cable gland for DM series

Symbols

Example:	A	P	1	R	41	Z	1	1
Structure:				R				

Casing width:
A = 30 mm width + 1 cable inlet
D = 50 mm width + 2 cable inlets (DP series)
or 3 cable inlets (DM series)

P: Plastic casing M: Metal casing

Electrical connection
1: cable inlets for PG13.5 cable gland
2: cable inlets for 1/2 NPT cable gland *
3: cable inlets for PG11 cable gland
4: cable inlets for M16 x 1,5 cable gland
5: cable inlets for M20 x 1,5 cable gland

Manual reset version

Operating heads: codes 11-13-31-32-38-41
- Other levers available upon request

Contact block

11: 1 NO + 1 NC contacts
02: 2 NC contacts
12P: 1 NO + 2 NC contacts
21P: 2 NO + 1 NC contacts
03P: 3 NC contacts

Z: Snap action
W: Slow action (contact dependent)
X: Slow action non-overlapping late make
Y: Slow action overlapping early make

* In AP... and DP... series, the 1/2" NPT thread is obtained by the use of a plastic adapter (delivered not mounted).

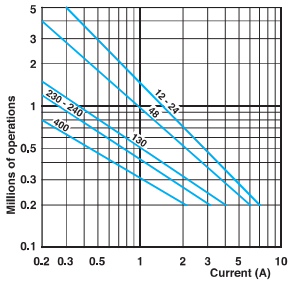
Technical Data

			AP / DP Series	AM / DM Series
Standards			IEC 60947-5-1 EN 60947-5-1	
Certifications - Approvals			UL - CSA - IMQ - EAC	
Air temperature near the device				
– during operation		°C	– 25 ... + 70	
– for storage		°C	– 30 ... + 80	
Mounting positions			All positions are authorised	
Protection against electrical shocks (acc. to IEC 61140)			Class II	Class I
Degree of protection (according to IEC 60529 and EN 60529)			IP 65	IP 66

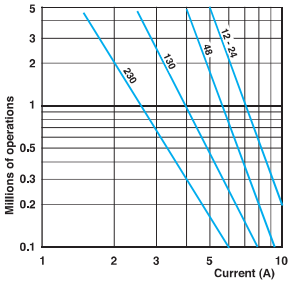
Electrical Data

Rated insulation voltage U_i - according to IEC 60947-1 and EN 60947-1 - according to UL 508 and CSA C22-2 n° 14			500 V (degree of pollution 3) (400 V for contacts type X12P, X21P, W03P) A 600, Q 600 (A 300, Q 300 for AM/DM series and contacts type X12P, X21P, W03P)	
Rated impulse withstand voltage U_{imp} (according to IEC 60947-1 and EN 60947-1)		kV	6 (4 kV for contacts type X12P, X21P, W03P)	
Conventional free air thermal current I_{th} (according to IEC 60947-5-1) $\theta < 40$ °C		A	10	
Short-circuit protection $U_e < 500$ V a.c. - gG (gI) type fuses		A	10	
Rated operational current				
I_e / AC-15 (according to IEC 60947-5-1)	24 V - 50/60 Hz	A	10	
	120 V - 50/60 Hz	A	6	
	400 V - 50/60 Hz	A	4	
I_e / DC-13 (according to IEC 60947-5-1)	24 V - d.c.	A	2.8	
	125 V - d.c.	A	0.55	
	250 V - d.c.	A	0.27	
Switching frequency		Cycles/h	3600	
Load factor			0.5	
Resistance between contacts		mΩ	25	
Connecting terminals			M3.5 (+, –) pozidriv 2 screw with cable clamp (M3 for 3 poles contacts type)	
Terminal for protective conductor			–	M3.5 (+, –) pozidriv 2 screw with cable clamp
Connecting capacity		1 or 2 x mm^2	0.75 ... 2.5 (0.34... 1.5 for 3 poles contacts type)	
Terminal marking			According to IEC 60947-5-1	
Mechanical durability			1 million of operations	
Electrical durability (according to IEC 60947-5-1)			Utilization categories AC-15 and DC-13 (Load factor of 0.5 according to curves below)	
B10d = 2.000.000 cycles				

AC-15 - Snap action



AC-15 - Slow action



DC-13		Snap action	Slow action
		Power breaking for a durability of 5 million operating cycles	
Voltage	24 V	9.5 W	12 W
Voltage	48 V	6.8 W	9 W
Voltage	110 V	3.6 W	6 W

• Ordering details ..... page 32 - 35
• Additional Technical Data ..... page 52

Technical Data

Technical data approved by IMQ

Standards		Devices conform with international IEC 60947-5-1 and European EN 60947-5-1 standards
Degree of protection		IP 65 (AP/DP series) , IP 66 (AM/DM series)

Contact blocks type Z11, X11, Y11, W02 and Z02

Rated insulation voltage U_i		500 V (degree of pollution 3)
Rated impulse withstand voltage U_{imp}		6 kV
Conventional free air thermal current I_{th}		10 A
Short-circuit protection - gG (gl) type fuses		10 A
Rated operational current		
I_e / AC-15	24 V - 50/60 Hz	10 A
	400 V - 50/60 Hz	1,8 A
I_e / DC-13	24 V - d.c.	2.8 A
	125 V - d.c.	0.55 A
	250 V - d.c.	0.27 A

Technical data approved by UL

Standards	Devices conform with UL 508

Contact blocks type Z11, X11, Y11, W02 and Z02

Utilization categories	A600, Q600 (A300, Q300 when installed in AM/DM series)

Contact blocks type X12P, X21P and W03P

Utilization categories	A300, Q300

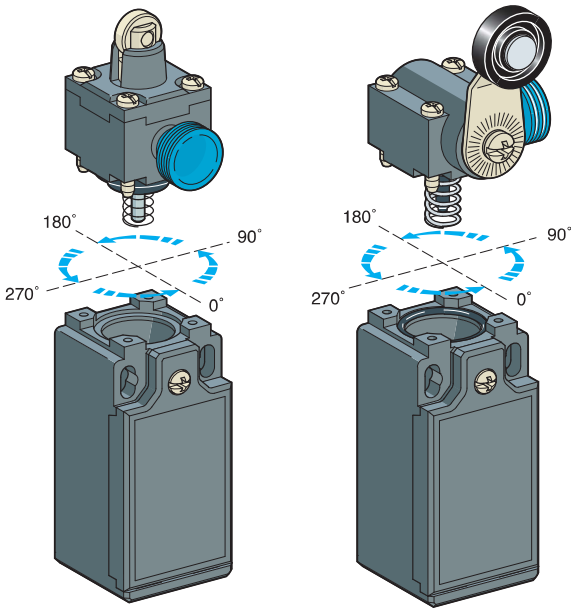
Use 60/75°C copper (Cu) conductor only. Wire rages 14-18 AWG stranded or solid. The terminal tightening torque of 7 lbs-in / 0.78 Nm. Suitable for conduit connection only with use of adapter sleeve optionally provided or recommended by the manufacturer.

For the complete list of approved products, contact our technical department

Implementation

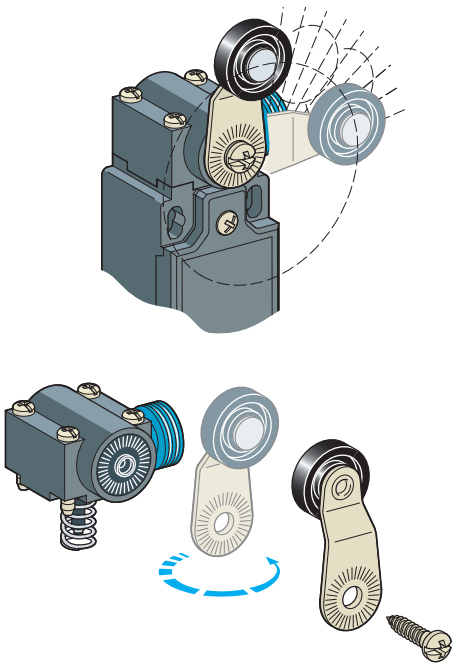
Operating head orientation

The head can be rotated each 90°.
Recommended tightening torque 0,5 Nm (max 0,8 Nm).



Lever adjustment

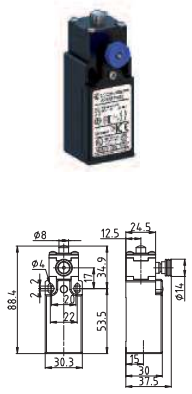
The lever of the head model R41 can ber adjusted every 10° and round turned in order to, obtain the maximum flexibility on the working plan
Recommended tightening torque 0,5 Nm (max 0,8 Nm).



Polymeric casing. Polymer head. 30 mm width. 1 cable inlet - IP65

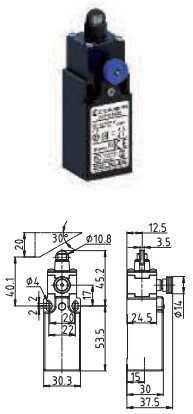
Electrical connection:
Replace the symbol "•" with the number of the thread desired
1: Cable gland PG 13.5
2: Cable gland 1/2" NPT (with adapter)
3: Cable gland PG 11
4: Cable gland M16 x 1,5
5: Cable gland M20 x 1,5

R11 Steel plunger with reset



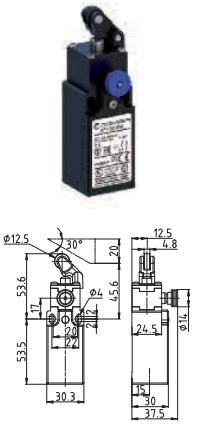
Min. actuating force	15 N (30N ⊖)
Weight	90 g
Operating diagram	Page 52

R13 Steel plunger with nylon roller with reset



Min. actuating force	12 N (30N ⊖)
Weight	90 g
Operating diagram	Page 52

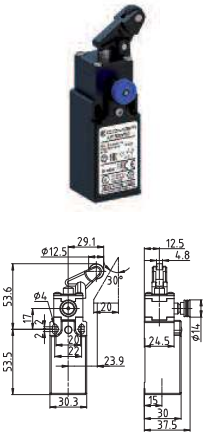
R31 Steel plunger with nylon roller with reset



Min. actuating force	7 N (24N ⊖)
Weight	95 g
Operating diagram	Page 52

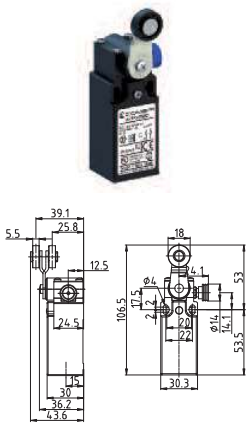
Contact Blocks			
Z11	(1NO+1NC)	AP•R11Z11	AP•R13Z11	AP•R31Z11
X11	(1NO+1NC)	AP•R11X11	AP•R13X11	AP•R31X11
Y11	(1NO+1NC)	AP•R11Y11	AP•R13Y11	AP•R31Y11
W02	(2NC)	AP•R11W02	AP•R13W02	AP•R31W02
Z02	(2NC)	AP•R11Z02	AP•R13Z02	AP•R31Z02
X12P	(1NO+2NC)	AP•R11X12P	AP•R13X12P	AP•R31X12P
X21P	(2NO+1NC)	AP•R11X21P	AP•R13X21P	AP•R31X21P
W03P	(3NC)	AP•R11W03P	AP•R13W03P	AP•R31W03P

R32 Steel plunger with nylon roller with reset



Min. actuating force	7 N (24N ⊖)
Weight	95 g
Operating diagram	Page 52

R41 Lever with nylon roller with reset



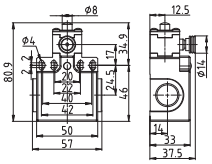
Min. actuating torque	0,10 Nm (0,32 Nm ⊖)
Weight	95 g
Operating diagram	Page 52

Contact Blocks			
Z11	(1NO+1NC)	AP•R32Z11	AP•R41Z11
X11	(1NO+1NC)	AP•R32X11	AP•R41X11
Y11	(1NO+1NC)	AP•R32Y11	AP•R41Y11
W02	(2NC)	AP•R32W02	AP•R41W02
Z02	(2NC)	AP•R32Z02	AP•R41Z02
X12P	(1NO+2NC)	AP•R32X12P	AP•R41X12P
X21P	(2NO+1NC)	AP•R32X21P	AP•R41X21P
W03P	(3NC)	AP•R32W03P	AP•R41W03P

Polymeric casing. Polymer head. 50 mm width. 2 cable inlets - IP65

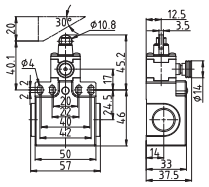
Electrical connection:
Replace the symbol "•" with the number of the thread desired
1: Cable gland PG 13.5
2: Cable gland 1/2" NPT (with adapter)
3: Cable gland PG 11
4: Cable gland M16 x 1,5
5: Cable gland M20 x 1,5

R11 Steel plunger with reset



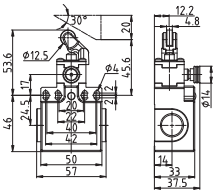
Min. actuating force	15 N (30N ⊖)
Weight	120 g
Operating diagram	Page 52

R13 Steel plunger with nylon roller with reset



Min. actuating force	12 N (30N ⊖)
Weight	120 g
Operating diagram	Page 52

R31 Steel plunger with nylon roller with reset

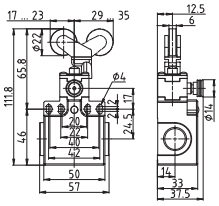


Min. actuating force	7 N (24N ⊖)
Weight	125 g
Operating diagram	Page 52

Contact Blocks

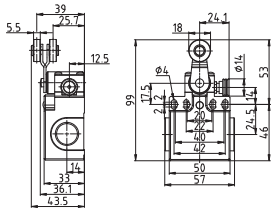
Z11	(1NO+1NC)	DP•R11Z11	DP•R13Z11	DP•R31Z11
X11	(1NO+1NC)	DP•R11X11	DP•R13X11	DP•R31X11
Y11	(1NO+1NC)	DP•R11Y11	DP•R13Y11	DP•R31Y11
W02	(2NC)	DP•R11W02	DP•R13W02	DP•R31W02
Z02	(2NC)	DP•R11Z02	DP•R13Z02	DP•R31Z02
X12P	(1NO+2NC)	DP•R11X12P	DP•R13X12P	DP•R31X12P
X21P	(2NO+1NC)	DP•R11X21P	DP•R13X21P	DP•R31X21P
W03P	(3NC)	DP•R11W03P	DP•R13W03P	DP•R31W03P

R38 Steel plunger with nylon roller with reset



Min. actuating force	7 N (24N ⊖)
Weight	125 g
Operating diagram	Page 52

R41 Lever with nylon roller with reset



Min. actuating torque	0,10 Nm (0,32 Nm ⊖)
Weight	125 g
Operating diagram	Page 52

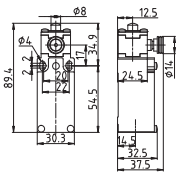
Contact Blocks

Z11	(1NO+1NC)	DP•R38Z11	DP•R41Z11
X11	(1NO+1NC)	DP•R38X11	DP•R41X11
Y11	(1NO+1NC)	DP•R38Y11	DP•R41Y11
W02	(2NC)	DP•R38W02	DP•R41W02
Z02	(2NC)	DP•R38Z02	DP•R41Z02
X12P	(1NO+2NC)	DP•R38X12P	DP•R41X12P
X21P	(2NO+1NC)	DP•R38X21P	DP•R41X21P
W03P	(3NC)	DP•R38W03P	DP•R41W03P

Metal casing. Polymer head. 30 mm width. 1 cable inlet - IP66

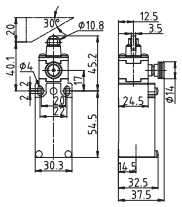
Electrical connection:
Replace the symbol "•" with the number of the thread desired
1: Cable gland PG 13.5
2: Cable gland 1/2" NPT
3: Cable gland PG 11
4: Cable gland M16 x 1,5
5: Cable gland M20 x 1,5

R11 Steel plunger with reset



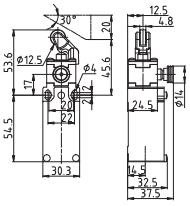
Min. actuating force	15 N (30N ⊖)
Weight	185 g
Operating diagram	Page 52

R13 Steel plunger with nylon roller with reset



Min. actuating force	12 N (30N ⊖)
Weight	185 g
Operating diagram	Page 52

R31 Steel plunger with nylon roller with reset

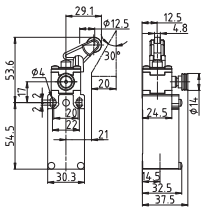


Min. actuating force	7 N (24N ⊖)
Weight	190 g
Operating diagram	Page 52

Contact Blocks

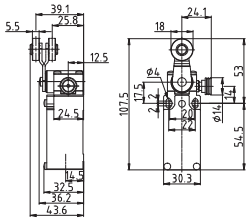
Z11	(1NO+1NC)	AM•R11Z11	AM•R13Z11	AM•R31Z11
X11	(1NO+1NC)	AM•R11X11	AM•R13X11	AM•R31X11
Y11	(1NO+1NC)	AM•R11Y11	AM•R13Y11	AM•R31Y11
W02	(2NC)	AM•R11W02	AM•R13W02	AM•R31W02
Z02	(2NC)	AM•R11Z02	AM•R13Z02	AM•R31Z02
X12P	(1NO+2NC)	AM•R11X12P	AM•R13X12P	AM•R31X12P
X21P	(2NO+1NC)	AM•R11X21P	AM•R13X21P	AM•R31X21P
W03P	(3NC)	AM•R11W03P	AM•R13W03P	AM•R31W03P

R32 Steel plunger with nylon roller with reset



Min. actuating force	7 N (24N ⊖)
Weight	190 g
Operating diagram	Page 52

R41 Lever with nylon roller with reset



Min. actuating torque	0,10 Nm (0,32 Nm ⊖)
Weight	190 g
Operating diagram	Page 52

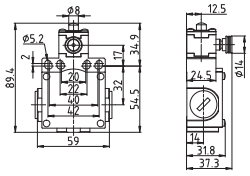
Contact Blocks

Z11	(1NO+1NC)	AM•R32Z11	AM•R41Z11
X11	(1NO+1NC)	AM•R32X11	AM•R41X11
Y11	(1NO+1NC)	AM•R32Y11	AM•R41Y11
W02	(2NC)	AM•R32W02	AM•R41W02
Z02	(2NC)	AM•R32Z02	AM•R41Z02
X12P	(1NO+2NC)	AM•R32X12P	AM•R41X12P
X21P	(2NO+1NC)	AM•R32X21P	AM•R41X21P
W03P	(3NC)	AM•R32W03P	AM•R41W03P

Metal casing. Polymer head. 50 mm width. 3 cable inlets - IP66

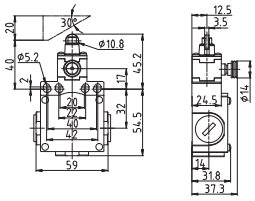
Electrical connection:
Replace the symbol "•" with the number of the thread desired
1: Cable gland PG 13.5
2: Cable gland 1/2" NPT
3: Cable gland PG 11
4: Cable gland M16 x 1,5
5: Cable gland M20 x 1,5

R11 Steel plunger with reset



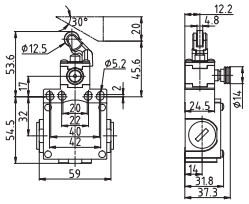
Min. actuating force	15 N (30N ⊖)
Weight	245 g
Operating diagram	Page 52

R13 Steel plunger with nylon roller with reset



Min. actuating force	12 N (30N ⊖)
Weight	245 g
Operating diagram	Page 52

R31 Steel plunger with nylon roller with reset

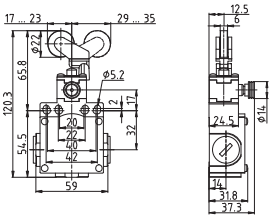


Min. actuating force	7 N (24N ⊖)
Weight	250 g
Operating diagram	Page 52

Contact Blocks

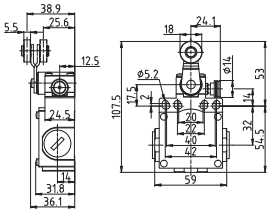
Z11	(1NO+1NC)	DM•R11Z11	DM•R13Z11	DM•R31Z11
X11	(1NO+1NC)	DM•R11X11	DM•R13X11	DM•R31X11
Y11	(1NO+1NC)	DM•R11Y11	DM•R13Y11	DM•R31Y11
W02	(2NC)	DM•R11W02	DM•R13W02	DM•R31W02
Z02	(2NC)	DM•R11Z02	DM•R13Z02	DM•R31Z02
X12P	(1NO+2NC)	DM•R11X12P	DM•R13X12P	DM•R31X12P
X21P	(2NO+1NC)	DM•R11X21P	DM•R13X21P	DM•R31X21P
W03P	(3NC)	DM•R11W03P	DM•R13W03P	DM•R31W03P

R38 Steel plunger with nylon roller with reset



Min. actuating force	7 N (24N ⊖)
Weight	250 g
Operating diagram	Page 52

R41 Lever with nylon roller with reset



Min. actuating torque	0,10 Nm (0,32 Nm ⊖)
Weight	250 g
Operating diagram	Page 52

Contact Blocks

Z11	(1NO+1NC)	DM•R38Z11	DM•R41Z11
X11	(1NO+1NC)	DM•R38X11	DM•R41X11
Y11	(1NO+1NC)	DM•R38Y11	DM•R41Y11
W02	(2NC)	DM•R38W02	DM•R41W02
Z02	(2NC)	DM•R38Z02	DM•R41Z02
X12P	(1NO+2NC)	DM•R38X12P	DM•R41X12P
X21P	(2NO+1NC)	DM•R38X21P	DM•R41X21P
W03P	(3NC)	DM•R38W03P	DM•R41W03P