INTERNATIONAL STANDARD ISO 10303-108:2005
TECHNICAL CORRIGENDUM 2

Published 2014-07-01

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Industrial automation systems and integration — Product data representation and exchange —

Part 108:

Integrated generic resource: Parameterization and constraints for explicit geometric product models

TECHNICAL CORRIGENDUM 2

Systèmes d' automatisation industrielle et intégration – Représentation et échange de données de produits - Partie 108 Ressources génériques intégrées: Paramétrage et contraintes pour les modèles de produits géométriques explicites

RECTIFICATIF TECHNIQUE 2

Technical Corrigendum 2 to International Standard ISO 10303-108:2005 was prepared by Technical Committee ISO/ TC 184, *Automation systems and integration,* Subcommittee SC 4, *Industrial data.*

This Technical Corrigendum is intended to be used in conjunction with ISO 10303-108:2005/Cor.1: order of their publication. The purpose of the modifications to the text of ISO 10303-108:2005 is to, corrections and improvements to its EXPRESS code. The changes are mainly in the more s, qualification of attributes in the WHERE rules of entity specifications and in the coding of some functions

ICS 25.040.40 **Ref. No. ISO 10303-108:2005/Cor.2:2014(E)**

Published in Switzerland

Modifications to the text of ISO 10303-108:2004

Clause 4.1, Introduction, p. 15

Replace `ISO13584_generic_expressions_schema` *with* `iso13584_generic_expressions_schema` *in the fifth* `REFERENCE FROM` *statement, and make the corresponding change in Note 1.*

Clause 5.1, Introduction, p. 30

Replace `ISO13584_generic_expressions_schema` *with* `iso13584_generic_expressions_schema` *in the sixth* `REFERENCE FROM` *statement, and replace* `ISO13584_expressions_schema` *with* `iso13584_expressions_schema` *in the seventh* `REFERENCE FROM` *statement. Make the corresponding changes in Note 1.*

Clause 5.4.7, **simultaneous_constraint_group***, pp. 40 - 42*

Replace the EXPRESS code on p. 41 with the following, in which WR1 has has been modified:

EXPRESS specification:

```
*)
ENTITY simultaneous_constraint_group
  SUBTYPE OF (variational_representation_item);
  constraint_group : SET[2:?] OF constraint_group_member;
WHERE
  WR1: SIZEOF(QUERY(q <* using_representations(SELF) |
    SIZEOF(QUERY(r <* q.items |
    ('EXPLICIT_CONSTRAINT_SCHEMA.SIMULTANEOUS_CONSTRAINT_GROUP'
    IN TYPEOF(r)) AND (SIZEOF(QUERY(s <* constraint_group |
    (s IN r\simultaneous_constraint_group.constraint_group)
    AND NOT (r :=: SELF))) > 0))) > 0)) = 0;
  WR2: SIZEOF(QUERY(q <* using_representations(constraint_group[1]) |
    (SIZEOF(QUERY(r <* constraint_group |
    item_in_context(r,q.context_of_items)))
    = SIZEOF(constraint_group)))) > 0;
  WR3: SIZEOF(QUERY(q <* constraint_group |
    (('EXPLICIT_CONSTRAINT_SCHEMA.EXPLICIT_CONSTRAINT' IN TYPEOF(q))
    AND (SIZEOF(QUERY(r <* q.constrained_elements |
    SIZEOF(QUERY(s <* constraint_group |
    r IN s.reference_elements)) > 0)) > 0)))) = 0;
END_ENTITY;
(*
```

NOTE 1 Some changes were made to clause 5.4.7 by Technical Corrigendum 1 for ISO 10303-108:2004, but the original EXPRESS code of this entity was not affected by those changes.

Clause 6.1, Introduction, p. 43

Replace the sixth `REFERENCE FROM` *statement on p. 43 with the following, which references two additional entities from the ISO 13584* **generic_expressions_schema** *which are required by the function* **invalidate_vrep_item** *defined on pp. 49 - 51*:

```
REFERENCE FROM iso13584_generic_expressions_schema    -- ISO 13584-20
  (environment,
   generic_variable,
   variable_semantics);
```


Also, replace ISO13584_generic_expressions_schema *with* iso13584_generic_expressions_schema *in Note 1.*

Clause 8.4.9, neutral_sketch_representation, *pp. 102 - 103*

Replace the EXPRESS code on p. 102 with the following, in which WR1 has been corrected:

EXPRESS specification:

```
*)
ENTITY neutral_sketch_representation
  SUBTYPE OF (shape_representation);
  neutral_sketch_semantics  : curves_or_area;
  SELF\representation.items : SET[1:?] OF sketch_element_select;
WHERE
  WR1: SIZEOF(QUERY(q <* items |
         NOT('GEOMETRY_SCHEMA.GEOMETRIC_REPRESENTATION_ITEM' IN TYPEOF(q)
         AND (q\geometric_representation_item.dim = 3)))) = 0;
END_ENTITY;
(*
```

Clause 8.5.2, check_curve_planarity, *pp. 109 - 110*

Replace the EXPRESS code on pp. 109 and 110 with the following, in which the local variable **result** *has been retyped as BOOLEAN and several attributes have been correctly qualified:*

EXPRESS specification:

```
*)
FUNCTION check_curve_planarity (checked_curve: curve) : BOOLEAN;

  LOCAL
    crv    : curve   := checked_curve;
    i,j    : INTEGER;
    result : BOOLEAN := FALSE;
  END_LOCAL;

  -- Determine whether the curve lies on a plane, according to its type

  IF (SIZEOF(['GEOMETRY_SCHEMA.CONIC','GEOMETRY_SCHEMA.LINE'] *
    TYPEOF(crv)) > 0)
  THEN result := TRUE;
  ELSE
    IF (('GEOMETRY_SCHEMA.TRIMMED_CURVE' IN TYPEOF(crv))
      AND check_curve_planarity(crv\trimmed_curve.basis_curve))
    THEN result := TRUE;
    ELSE
      IF (('GEOMETRY_SCHEMA.PCURVE' IN TYPEOF(crv))
        AND ('GEOMETRY_SCHEMA.PLANE' IN TYPEOF(crv\pcurve.basis_surface)))
      THEN result := TRUE;
      ELSE
        IF ('GEOMETRY_SCHEMA.SURFACE_CURVE' IN TYPEOF(crv))
        THEN
        BEGIN
          REPEAT j := 1 TO HIINDEX(crv\surface_curve.basis_surface);
```



```
            IF ('GEOMETRY_SCHEMA.PLANE'
              IN TYPEOF(crv\surface_curve.basis_surface[j]))
            THEN result := TRUE;
            END_IF;
          END_REPEAT;
        END;
        END_IF;
      END_IF;
    END_IF;
  END_IF;
  RETURN(result);

END_FUNCTION;
(*
```

Clause 8.5.3, get_plane_of_implicit_geometry, *pp. 110 - 112*

Replace the EXPRESS code on pp. 110, 111 and 112 with the following, in which several attribute qualifications have been disambiguated:

EXPRESS specification:

```
*)
FUNCTION get_plane_of_implicit_geometry
         (ps : positioned_sketch) : plane;

  LOCAL
    sb     : sketch_basis_select := ps.sketch_basis;
    result : plane := ?;
  END_LOCAL;

  -- determine plane of implicit geometry from the underlying entity data
  -- type of its owning instance of positioned_sketch_representation.  If
  -- the sketch basis is of type planar_curve_select then the planarity
  -- of the curve is guaranteed by a WHERE rule on the SELECT type of that
  -- name.

  IF ('TOPOLOGY_SCHEMA.FACE_SURFACE' IN TYPEOF(sb)) THEN
    result := sb\face_surface.face_geometry;
  ELSE
    IF ('GEOMETRY_SCHEMA.CURVE_BOUNDED_SURFACE' IN TYPEOF(sb)) THEN
      result := sb\curve_bounded_surface.basis_surface;
    ELSE
      IF ('SKETCH_SCHEMA.PLANAR_CURVE_SELECT' IN TYPEOF(sb)) THEN
      BEGIN
         IF ('GEOMETRY_SCHEMA.CONIC' IN TYPEOF(sb))
          THEN result := dummy_gri || surface() ||
            elementary_surface(sb\conic.position) || plane();
        END_IF;
        IF ('GEOMETRY_SCHEMA.TRIMMED_CURVE' IN TYPEOF(sb))
          THEN
          BEGIN
            result := get_plane_of_implicit_geometry(dummy_gri ||
              positioned_sketch(sb\trimmed_curve.basis_curve,[]));
          END;
        END_IF;
        IF ('GEOMETRY_SCHEMA.PCURVE' IN TYPEOF(sb))
```



```
          THEN result := sb\pcurve.basis_surface;
        END_IF;
        IF ('GEOMETRY_SCHEMA.SURFACE_CURVE' IN TYPEOF(sb)) THEN
        BEGIN
          IF ((SIZEOF(sb\surface_curve.basis_surface) = 1)
            -- case of one basis surface
            AND ('GEOMETRY_SCHEMA.PLANE'
              IN TYPEOF(sb\surface_curve.basis_surface[1])))
          THEN result := sb\surface_curve.basis_surface[1];
          ELSE -- case of two basis surfaces
            IF (('GEOMETRY_SCHEMA.PLANE'
              IN TYPEOF(sb\surface_curve.basis_surface[1]))
              AND ('GEOMETRY_SCHEMA.PLANE'
              IN TYPEOF(sb\surface_curve.basis_surface[2])))
            THEN result := ?;
              -- both basis surfaces are planes, their intersection curve
              -- is a line, and no unique plane is defined
            ELSE -- only one of the two basis surfaces is a plane
              IF ('GEOMETRY_SCHEMA.PLANE'
                IN TYPEOF(sb\surface_curve.basis_surface[1]))
              THEN result := sb\surface_curve.basis_surface[1];
              ELSE result := sb\surface_curve.basis_surface[2];
              END_IF;
            END_IF;
          END_IF;
        END;
        END_IF;
      END;
      END_IF;
    END_IF;
  END_IF;
  RETURN(result);

END_FUNCTION;
(*
```

Annex B, pp. 115 - 116

The changes made in this Technical Corrigendum require the object identifiers in Annex B to be updated. Replace the content of clause B.1 with the following:

To provide for unambiguous identification of an information object in an open system, the object identifier

```
iso standard 10303 part(108) version(3)
```

is assigned to this part of ISO 10303. The meaning of this value is defined in ISO/IEC 8824-1, and is described in ISO 10303-1.

Replace the content of clause B.2 with the following:

B.2.1 parameterization schema identification

To provide for unambiguous identification of the parameterization-schema in an open information system, the object identifier


```
iso standard 10303 part(108) version(3) schema(1)
            parameterization-schema(1)
```

is assigned to the **parameterization_schema** (see clause 4). The meaning of this value is defined in ISO/IEC 8824-1, and is described in ISO 10303-1.

B.2.2 explicit constraint schema identification

To provide for unambiguous identification of the explicit-constraint-schema in an open information system, the object identifier

```
iso standard 10303 part(108) version(3) schema(1)
          explicit-constraint-schema(2)
```

is assigned to the **explicit_constraint_schema** (see clause 5). The meaning of this value is defined in ISO/IEC 8824-1, and is described in ISO 10303-1.

B.2.3 variational representation schema identification

To provide for unambiguous identification of the variational-representation-schema in an open information system, the object identifier

```
iso standard 10303 part(108) version(3) schema(1)
       variational-representation-schema(3)
```

is assigned to the **variational_representation_schema** (see clause 6). The meaning of this value is defined in ISO/IEC 8824-1, and is described in ISO 10303-1.

B.2.4 explicit geometric constraint schema identification

To provide for unambiguous identification of the explicit-geometric-constraint-schema in an open information system, the object identifier

```
iso standard 10303 part(108) version(3) schema(1)
     explicit-geometric-constraint-schema(4)
```

is assigned to the **explicit_geometric_constraint_schema** (see clause 7). The meaning of this value is defined in ISO/IEC 8824-1, and is described in ISO 10303-1.

B.2.5 sketch schema identification

To provide for unambiguous identification of the sketch-schema in an open information system, the object identifier

```
iso standard 10303 part(108) version(3) schema(1)
                 sketch-schema(5)
```

is assigned to the **sketch_schema** (see clause 8). The meaning of this value is defined in ISO/IEC 8824-1, and is described in ISO 10303-1.

