File created: 15-Aug-90 16:13:26 **{DSK}<usr>local>lde>SOURCES>loops>LIBRARY>GAUGEDIALS.;2**

changes to: (FILES GAUGEBOUNDEDMIXIN)
(VARS GAUGEDIALSCOMS)

previous date: 23-Feb-88 23:29:22 {DSK}<usr>local>lde>SOURCES>loops>LIBRARY>GAUGEDIALS.;1

Read Table: INTERLISP

Package: INTERLISP

Format: XCCS

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;;
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(RPAQQ GAUGEDIALSCOMS ((DECLARE%: DONTCOPY (PROP MAKEFILE-ENVIRONMENT GAUGEDIALS))
                       (FILES (FROM VALUEOF LOOPSLIBRARYDIRECTORY)
                              GAUGEINSTRUMENTS GAUGEBOUNDEDMIXIN)
                       (CLASSES Dial)
                       (METHODS Dial.DrawInstrument Dial.SetParameters Dial.ShowLabels Dial.ShowTicks)))

(DECLARE%: DONTCOPY

(PUTPROPS GAUGEDIALS MAKEFILE-ENVIRONMENT (:PACKAGE "IL" :READTABLE "INTERLISP" :BASE 10))
)

(FILESLOAD (FROM VALUEOF LOOPSLIBRARYDIRECTORY)
       GAUGEINSTRUMENTS GAUGEBOUNDEDMIXIN)

(DEFCLASSES Dial)

(DEFCLASS Dial (MetaClass Class doc "A dial with bounded range, like an auto speedometer" Edited%:
                                                                                (* edited%: "21-May-86 17:43"))
       (Supers BoundedMixin RoundScale)
       (InstanceVariables (labels (0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0)
                                  doc "labels for the instrument")
              (ticks 11 tickLength 5 smallTicks 1 doc "ticks on the instrument; value is number or NIL;
                     smallTicks is number between each large tick")
              (width 10)
              (height 10)
              (displayVal 120 doc "Internal value relative to instrument")
              (lower 120 doc "lower bound for internal displayVal")
              (range -60 doc "range for internal displayVal")))

(\BatchMethodDefs)

(METH Dial DrawInstrument NIL "Does not draw anything" (category (Dial)))

(METH Dial SetParameters NIL "Set up center of circle for dial and needle, and length of radius." (category
                                                                                                    (Internal)))

(METH Dial ShowLabels NIL "If there are any labels, show them on the dial" (category (Dial)))

(METH Dial ShowTicks NIL "Draw ticks in even intervals from angle of 120 down to 60" (category (Dial)))

(Method ((Dial DrawInstrument)
         self)                                                  ; edited: 27-Jan-87 10:36
       "Does not draw anything"                                 ; Draw two concentric circles to contain ticks
       ;; (LET* ((xc (@ xc)) (yc (@ yc)) (2xc (TIMES xc 2)) (ht (PLUS yc (TIMES xc (MINUS (TAN (@ lower)))))) (DRAWCIRCLE (@ xc) (@ yc) (@
       ;; radius) (@ brushWidth) NIL (@ window)) (DRAWCIRCLE (@ xc) (@ yc) (IDIFFERENCE (@ radius) (@ ticks:,tickLength)) (@ brushWidth)
       ;; NIL (@ window)) (FILLPOLYGON (APPEND (COND ((GREATERP yc 0) (LIST (CONS xc 0)))) (LIST (CONS xc yc) (CONS -1 ht) (CONS -1
       ;; 0))) WHITESHADE (@ window)) (FILLPOLYGON (APPEND (COND ((GREATERP yc 0) (LIST (CONS xc 0)))) (LIST (CONS xc yc) (CONS
       ;; 2xc ht) (CONS 2xc 0))) WHITESHADE (@ window)))
       self)

[Method ((Dial SetParameters)
         self)                                                  ; RBGMartin 30-Jan-87 02:44
       "Set up center of circle for dial and needle, and length of radius."
       (PROG [xc halfbaseOfCurve heightOfCurve theta (ms (MAXSTRINGWIDTH (@ labels)
                                                                         (@ font]
             (_Super)
             [_@
              width%:,min
              (WIDTHIFWINDOW (PLUS (TIMES ms (PLUS 2 (@ ticks)))
                                   (TIMES 2 (CHARWIDTH (CHARCODE 0)
                                                       (@ font]
             (_@
              width
              (IMAX (@ width)
                    (@ width%:,min)))
             (_@
              height%:,min
              (HEIGHTIFWINDOW [PLUS (@ spaceForLabelScale)
                                    (@ ticks%:,tickLength)
```

```
                                    (TIMES 2 (FONTHEIGHT (@ font)))
                                    (TIMES (DIFFERENCE (@ width%:,min)
                                                       ms)
                                           (DIFFERENCE 1 (QUOTIENT (SQRT 3)
                                                                   2]
                           (@ title)))
                    (_@
                     height
                     (IMAX (@ height%:,min)
                           (@ height)))
                    (_@
                     xc
                     (SETQ xc (IQUOTIENT (InteriorWidth self)
                                         2)))
                    (SETQ halfbaseOfCurve (QUOTIENT [DIFFERENCE (InteriorWidth self)
                                                                (TIMES 2 (PLUS ms (TIMES 1.5 (CHARWIDTH (CHARCODE 0)
                                                                                                        (@ font]
                                                    2))
                    (SETQ heightOfCurve (MIN [DIFFERENCE (InteriorHeight self)
                                                         (PLUS (@ spaceForLabelScale)
                                                               (@ ticks%:,tickLength)
                                                               (TIMES 2 (FONTHEIGHT (@ font]
                                             halfbaseOfCurve))
                    [_@
                     radius
                     (DIFFERENCE heightOfCurve (QUOTIENT (DIFFERENCE (TIMES heightOfCurve heightOfCurve)
                                                                     (TIMES halfbaseOfCurve halfbaseOfCurve))
                                                         (TIMES 2 heightOfCurve]
                    (SETQ theta (DIFFERENCE (ARCTAN2 halfbaseOfCurve (MINUS heightOfCurve))
                                            90))
                    (_@
                     lower
                     (PLUS 90 (TIMES 2 theta)))
                    (_@
                     range
                     (TIMES -4 theta))
                    [_@
                     needleLength
                     (IDIFFERENCE (@ radius)
                                  (IPLUS 4 (@ ticks%:,tickLength]
                    (_@
                     yc
                     (IDIFFERENCE (PLUS (@ spaceForLabelScale)
                                        (@ ticks%:,tickLength)
                                        heightOfCurve)
                                  (@ radius]

[Method ((Dial ShowLabels)
         self)                                                          ; edited: 22-May-86 00:18
        "If there are any labels, show them on the dial"
        (COND
           ((@ labels)
            (DSPRIGHTMARGIN (IPLUS (@ width)
                                   50)
                   (@ window))                                          (* so that labels on the right won't go to the next line)
            (PROG [(nl (SUB1 (LENGTH (@ labels]
                  (for lab in (@ labels) as i from 0 by 1 do (ShowRayLabel self (PLUS (@ lower)
                                                                                      (QUOTIENT (TIMES i
                                                                                                       (@ range))
                                                                                                nl))
                                                                                      lab]

[Method ((Dial ShowTicks)
         self)                                                          ; edited: 22-May-86 00:21
        "Draw ticks in even intervals from angle of 120 down to 60"
        (for a in (EvenIntervals (@ lower)
                                 (@ range)
                                 (SUB1 (@ ticks)))
           bind [incr _ (FQUOTIENT (@ range)
                                   (SUB1 (@ ticks]
           do (DrawTick self a (@ ticks%:,smallTicks)
                        incr 0.5)
           finally (DrawTick self (PLUS (@ lower)
                                        (@ range]

(\UnbatchMethodDefs)

(PUTPROPS GAUGEDIALS COPYRIGHT ("Venue & Xerox Corporation" 1986 1987 1988 1990))
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PROPERTY INDEX