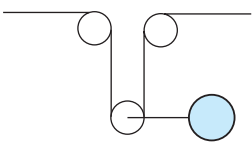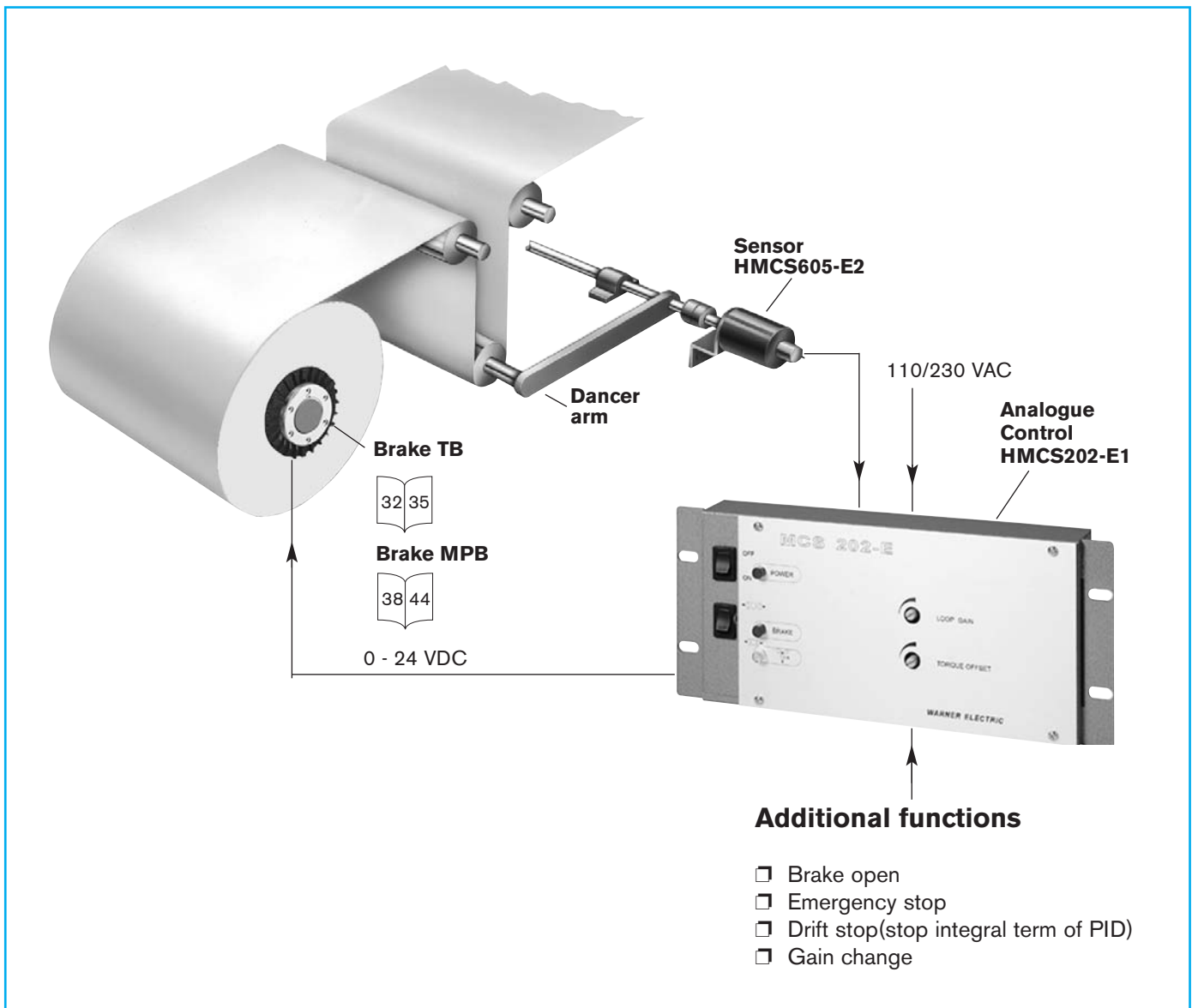# I - Simple tension control in closed loop

If your machine requires a very accurate web tension control, then you need to work in closed loop. An important unit in the loop is the sensor. Several possibilities are offered. The choice now depends on the kind of machine you are building, the mechanical construction and the max tension value you desire to control.

MAIN APPLICATIONS - ADVANTAGE

Setting type	Where, When, Why ?	Advantage
Dancer arm	❐ Printing machines ❐ Intermittent function ❐ Flying splice need	❐ Absorb tension peak ❐ Can act as store ❐ Easy flying splice ❐ Accel / decel machine phase well absorbed ❐ Flexibility

Sensor HMCS605-E2

Dancer arm

Brake TB

32 35

Brake MPB

38 44

0 - 24 VDC

110/230 VAC

Analogue Control HMCS202-E1

MCS 202-E

OFF / ON POWER / BRAKE / LOOP GAIN / TORQUE OFFSET / WARNER ELECTRIC

Additional functions

❐ Brake open
❐ Emergency stop
❐ Drift stop(stop integral term of PID)
❐ Gain change

Automatic setting by dancer arm

ROTARY SENSOR HMCS605-E2 (see pages 20 and 21)

ANALOGUE CONTROL HMCS202-E1
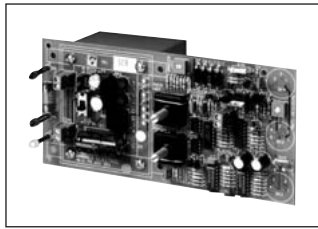
❒ **HMCS202-E1**   Standard execution

❒ **HMCS202-E54**   Standard IP54 protected

❒ **HMCS202-EC1**   Open frame execution

Technical characteristics – valid for 3 executions

	Range - Values	Comments
Power supply	110-220 VAC selectable	Open front face to access
Output current capability	Max 2, 5 Amps, short circuit protected	Able to power 2 TB in parallel
User settings	Loop gain	Front face potentiometer
	Offset torque	Front face potentiometer
Output voltage brakes	0-24 VDC	Compatible all elec. Warner Electric
Housing	Metal rugged housing	Only HMCS202-E1 and –E54
Loop gain	2 adjustable range selection	Can be change during operation
Accessories	HMCS-KIT1, 2, 3, 5 and 6	See details on page 21
Sensor compatible	Dancer arm with HMCS605-E2	See details on pages 20 and 21
Service manual	MC403	

Technical information

HMCS202 control is based on classical and fixed PID terms. The loop gain can be set on front face potentiometer. Due to the fixed PID terms, its use is limited in terms of roll diameter ratio. One input is provided to change the loop gain and has to be used when diameter ratio exceeds 8. To ensure proper operation it is important to wire the function "Drift Stop". This function releases the Integral term as soon as the machine runs.
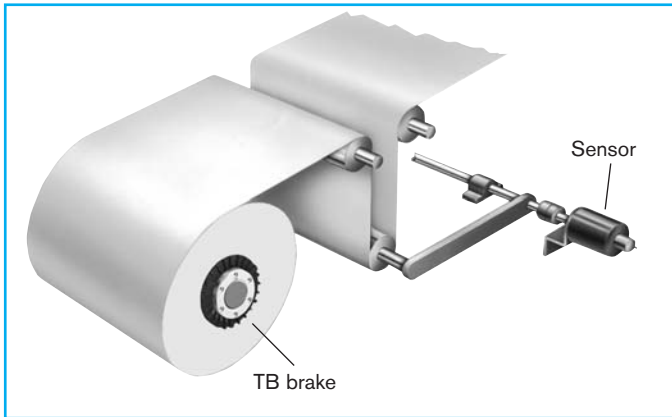
Dimensions (mm)
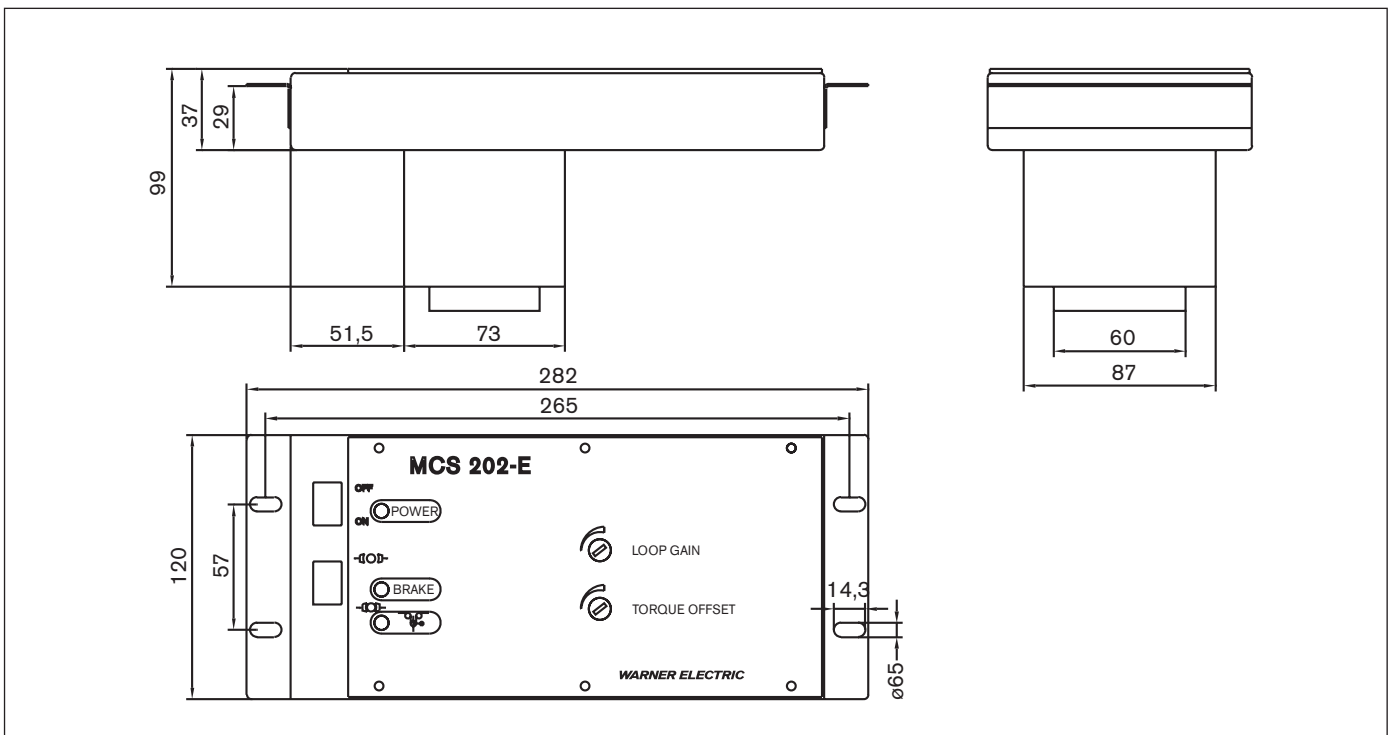
Automatic setting by dancer arm

ROTARY SENSOR HMCS605-E2

A position sensor is used in 2 possible ways:

❐ *To detect dancer moving in the closed loop installation working on dancer principle.*

❐ *To sense the diameter of the roll to operate open loop control or make PID compensation in closed loop installation.*

Sensor

TB brake

HMCS605-E2 is ideal for easy mounting. It is encapsulated in rugged metal housing preventing mechanical shocks. Furthermore it is provided with built in switch in order to change the signal output polarity.

	HMCS605-E2
Power supply	10 to 30 VDC / 30 mA (or ± 5 to 15 VDC)
Max. detection angle	200° or ± 100°
Sensitivity	2,5 mV / V / °
Service manual	MC483

Dimensions (mm) – Mounting
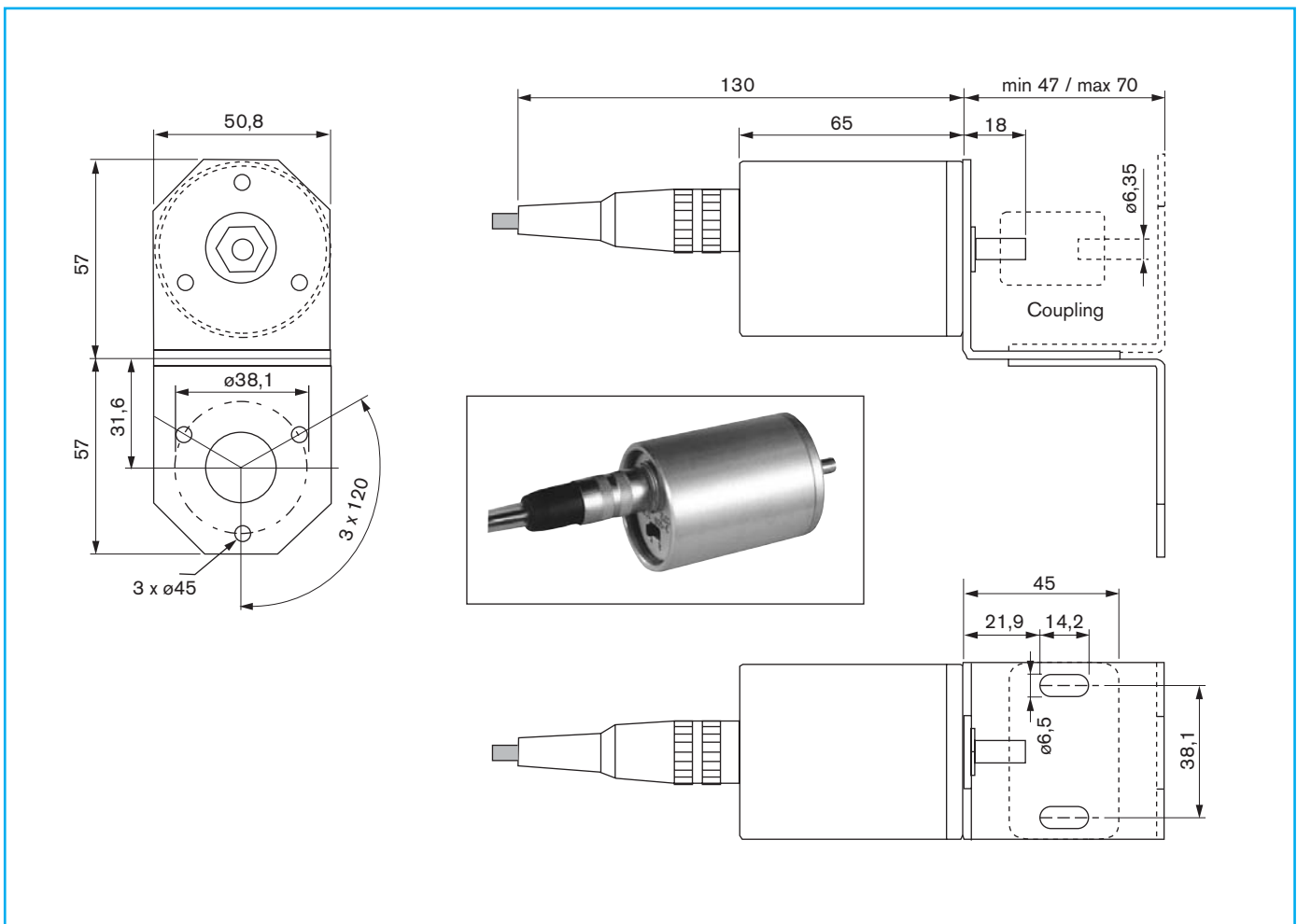
Automatic setting by dancer arm

HMCS605-E2 - MOUNTING KIT

The **HMCS202-Exx** is designed to work with dancer arm principle. Usually the sensor is a rotary type.

Warner Electric sensor **HMCS605-E2** are delivered without mounting kit.

Mounting kit comprises of **CABLE WITH CONNECTOR(S), COUPLING, MOUNTING BRACKETS** and all necessary **SCREWS**. Various KITS have various lengths of cable and cable with or without connector at control end side.

HMCS2000 line requires free leads (HMCS2000 control line is provided with terminal block).

HMCS202-Exx requires a connector (HMCS202-Exx is provided with the connector).

Old kit 3 wires	New kit 4 wires	Cable length	1 or 2 connectors	Compatibility	Wiring
HMCS-KIT1	**HMCS-KIT1A**	3 m	2	HMCS202-E1	A
HMCS-KIT2	**HMCS-KIT2A**	3 m	1	HMCS2000-ECA/CTDA	B
HMCS-KIT3	**HMCS-KIT3A**	4,5 m	2	HMCS202-E1	A
HMCS-KIT4	**HMCS-KIT4A**	4,5 m	1	HMCS2000-ECA/CTDA	B
HMCS-KIT7	**HMCS-KIT7A**	6 m	2	HMCS202-E1	A
HMCS-KIT8	**HMCS-KIT8A**	8 m	1	HMCS2000-ECA/CTDA	B

ELECTRICAL CONNECTIONS

A (New kit)

Shield
BROWN

SIGNAL /**1**
0V /**2**
-15VDC (0V) /**3**
+15VDC /**4**

YELLOW

GREEN
WHITE

MALE CONNECTOR
Front view

FEMALE CONNECTOR
Front view

B (New kit)

Shield

-15VDC (0V) /**3**
BROWN

0V /**2**
YELLOW

SIGNAL /**1**
GREEN

+15VDC /**4**
WHITE

MALE CONNECTOR
Front view

FEMALE CONNECTOR
Front view