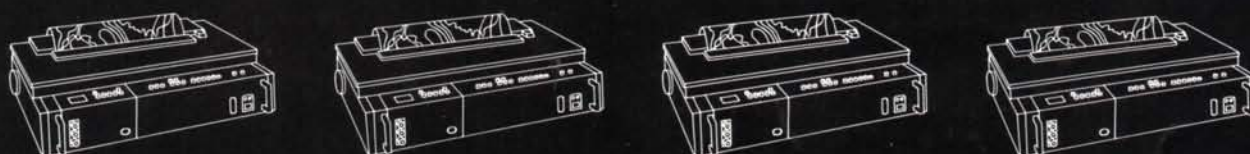


HELL

Hellfax Weather Chart Recorder BS 114



Hellfax Weather Chart Recorder BS 114

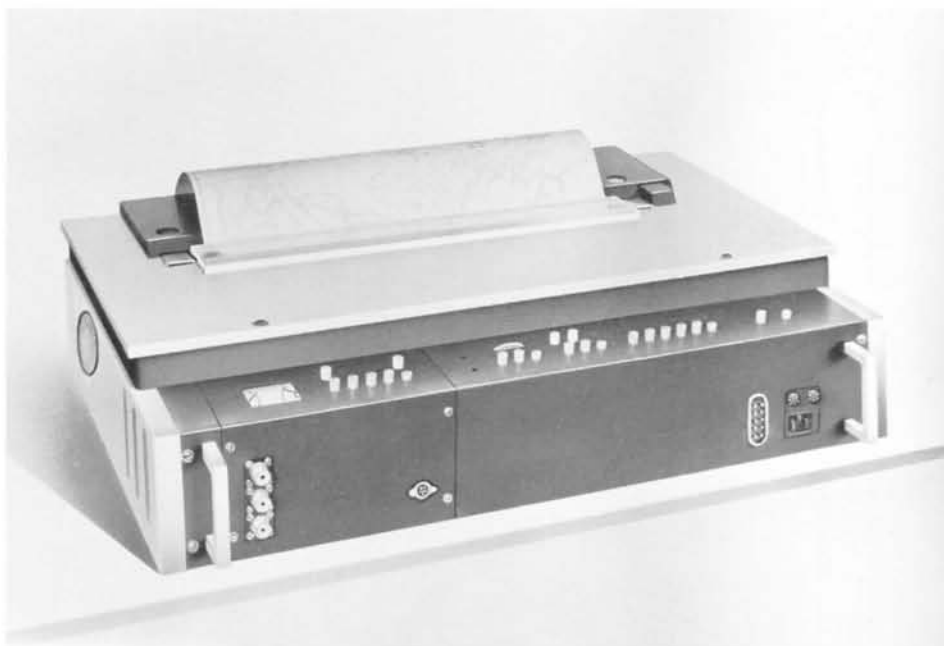
Application

The Hellfax Weather Chart Recorder BS 114 is a continuous facsimile recorder. Based on the latest electronic techniques, the equipment is particularly suitable for reception of facsimile weather chart transmissions of the international meteorological services, but can also be used for reception of other drawn or printed originals transmitted with facsimile transmitters.

The operating principle and technical data of the BS 114 conform to WMO and CCITT recommendations. The recorder is supplied for line operation with an LER 142 input stage. Provision of a combined converter and long-wave radio-receiver CLR 144 as input stage eliminates the need for separate radio receivers with long-wave operation. The CLR 144 acts as a converter during short-wave operation.

Where space is restricted (e. g., on board ship), the Hellfax weather chart recorder BS 114 can be used with the FEP 313 remote-controlled all-wave receiver. In this case the input stage of the BS 114 is replaced by a remote control unit.

Hellfax
Weather Chart Recorder
BS 114



The Recorder is equipped with the unit CLR 144, which is supplied instead of the LER 142 on request.

Construction

The Hellfax Weather Chart Recorder BS 114 is a compact facsimile recorder incorporating the modern electronic circuitry in its chassis. The standard input stage LER 142 for line operation contains an automatic level device. An optional combined converter or long-wave receiver CLR 144 (instead of the LER 142) permits reception of weather chart transmissions by radio. Line operation is also possible if the converter is equipped with an automatic level device.

The completely new recording system processes electro-sensitive reels of paper, which are completely dry and can be stored for virtually unlimited periods. The recording system does not use liquid ink, not affected by rolling motions, which are unavoidable e.g. in ships on the high seas.

All push-buttons required for operation are clearly arranged on the top of the chassis. The power and aerial sockets are on the front of the equipment.

The Hellfax Weather Chart Recorder BS 114 can also be mounted and operated vertically for better utilisation of space in land vehicles and ships.



Electronic function and kind of operation

Hellfax Weather Chart Recorder BS 114

The demodulated input signal is evaluated by an automatic start/stop system and automatic selector. 300 Hz prepare the equipment for starting and select index of co-operation 576. Starting with index of co-operation 288 corresponds to 675 Hz. Phase-in signals start the equipment and the automatic speed device selects the speed by changing over a divider stage. During reception of the phase-in signal phasing-in is effected by an automatic system. The subsequent picture signals are amplified in the final recording stage.

The new recording system of the BS 114 does not contain liquid ink, and consists of a rotating serrated belt on which three equidistant styluses are arranged. The stylus voltage penetrates the recording paper and blackens it corresponding to the drawing of the original weather chart scanned by the transmitter. A facsimile of the original is produced line by line.

After the end of the transmission the automatic start/stop system evaluates the 450 Hz signal from the transmitter in such a way that the equipment is stopped and switched back to readiness for reception.

If the BS 114 is switched on while a transmission is in progress, electronic phase correction is immediately possible.

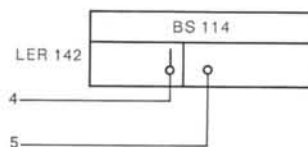
International facsimile transmissions

The meteorological services of most countries transmit weather charts by radio. Our station list contains the transmission times of more than 200 transmitting stations.

As all these stations operate with high-frequency modulation, method of operation F 4 (FSK), a converter must be connected between the radio receiver and weather chart recorder.

Our CLR 144 or CLR 145 can be used as a converter for short-wave reception or as a combined radio receiver and converter for long-wave reception.

Line operation

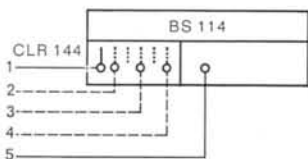


BS 114 with LER 142

(Standard equipment)

4. Standard telephone line or A 1 output external converter.
5. Data input according to V 24 interface.

Short-wave radio operation

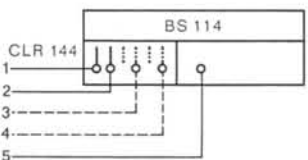


BS 114 with CLR 144

(without additional plates)

1. Short-wave radio receiver with final intermediate frequency = 30 kHz (e.g. Siemens E 311 or E 401).
5. Data input according to V 24 interface.

Short-wave radio operation

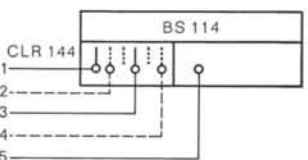


BS 114 with CLR 144

(with 1 additional plate)

1. Short-wave radio receiver with final intermediate frequency = 30 kHz (e.g. Siemens E 311 or E 401).
2. Short-wave radio receiver with other intermediate frequency (adapted plate also inserted) max. 4 intermediate frequency inputs.
5. Data input according to V 24 interface

Short-wave radio operation

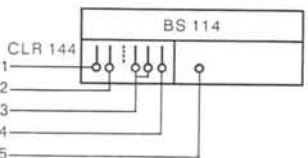


BS 114 with CLR 144

(with 1 additional plate)

3. Long-wave fixed frequency radio receiver (adapted plate also inserted) max. 4 long-wave inputs.
5. Data input according to V 24 interface.

Mixed operation



BS 114 with CLR 144

(with 2 additional plates and level device)

1. Short-wave radio receiver with final intermediate frequency = 30 kHz (e.g. Siemens E 311 or E 401)
2. Short-wave radio receiver with other intermediate frequency (adapted plate also inserted) max. 2 intermediate frequency inputs.
3. Long-wave fixed frequency radio receiver (adapted plate also inserted) max. 2 long-wave inputs.
4. Standard telephone line or A 1 output external converter.
5. Data input according to V 24 interface.

Types of operation of the BS 114

By virtue of its construction and optional equipment with different input stages, the Hellfax BS 114 weather chart recorder can be operated as a fixed installation or in land vehicles and on ships.

Line operation

The LER 142 input stage enables line reception. For this purpose it is equipped with an automatic level device with a control range from 20 mV_{eff} to 1.5 V. This input stage is a standard feature.

Radio operation

The CLR 144 input stage can be used instead of the LER 142, and is a combined long-wave radio receiver and converter. It enables reception of long-wave and short-wave facsimile weather chart transmissions. On request the CLR 144 can be supplied with an automatic level device for optional line operation.

Data operation

A special input socket is provided for connection of a data line. The BS 114 can evaluate d.c. signals according to V 24 interface between ± 5 V and ± 25 V at 3 to 7 k Ω .

Connection facilities of the CLR 144/145

The CLR 144 can be equipped for connection of

- 1 intermediate frequency = 30 kHz and 4 other intermediate frequencies

or

- 1 intermediate frequency and 4 long-wave frequencies

or

- 1 intermediate frequency = 30 kHz, 2 other intermediate frequencies and 2 long-wave frequencies with a maximum of 4 plates,

and, on special request,

with 1 automatic level device for line transmissions.

The intermediate frequency of 30 kHz is always provided in the CLR 144.

Connection of the data line in accordance with the V 24 interface is made at BS 114; it is a standard feature regardless of the type of input stage.

The CLR 144 can also be supplied as a separated independently operating unit in its own casing under the type designation CLR 145.

Technical data

Hellfax Weather Chart Recorder

Continuous facsimile recorder
 Indices of co-operation (switchable)
 Recording speeds
 Recording definition
 Recording times
 at recording speed of
 index 576
 index 288
 Recording method
 Recording paper
 reel length
 reel width
 recording width (WMO standard)
 Synchronisation
 Frequencies for remote control (WMO)

Phase-in signals (WMO)

High-speed phasing-in

Speed selection

Index selection

Power supply

 mains voltages (switchable)
 mains frequency
 power requirement

Dimensions

 height
 width
 depth

Weight of equipment ready for operation

Data input

D. C. voltage signal
 according to V 24 interface
 Line impedance

Input stage

Type of modulation
 Input level (control range)

Line impedance

Carrier frequency

Input stage

1 intermediate frequency
 connection
 Input sensitivity
 4 intermediate frequency
 connections (max.)
 as additional plug-in boards
 Input sensitivity or
 1 intermediate frequency
 connection
 Input sensitivity
 4 long-wave connections (max.)
 as additional plug-in boards
 Input sensitivity
 4 aerial matching devices

BS 114

± 5 V to ± 25 V
 3 to 7 k Ω

LER 142 (for line operation)
 amplitude modulation (A 1)
 20 mV_{rms} to 1.5 V_{rms}

600 Ω

1800 to 5000 Hz

CLR 144 CLR 145
 (for radio operation)

30 kHz (permanent)
 105 mV to 1.3 V

between 60 and 1500 kHz
 ≥ 10 mV

30 kHz (permanent)
 105 mV to 1.3 V

between 60 and 150 kHz
 ≥ 1 μ V
 1 for coaxial cable and
 3 for long wire aeriels

The CLR 144 can also be equipped for mixed operation (short- and long-wave reception). The number of plug-in boards must not exceed four.

Optional feature level regulator for line operation

BS 114

mainly for the meteorological service
 576 and 288 in accordance with WMO and CCITT
 60/90/120/180/240 lines/min or rev/min
 3.8 and 1.9 lines/mm
 for a weather chart of 559 x 457 mm (18 x 22 in.)
 60 90 120 180 240 lines/min.
 36 24 18 12 9 min
 18 12 9 6 4.5 min
 electrosensitive
 dry Hellfax paper, storage unlimited
 100 m (110 yards)
 483 mm (19 inches)
 457 mm (18 inches)
 quartz
 300 Hz = start for index 576
 675 Hz = start for index 288
 450 Hz = stop
 95 % black and 5 % white
 or
 50 % black and 50 % white
 electronic (with connection to transmissions in progress)
 by automatic system or manual
 by automatic system or manual

 105/115/125/200/220/240 V
 50 to 60 Hz
 approx. 160 VA

 221 mm; with raised hood 540 mm
 751 mm; including filter 773 mm
 473 mm; including cover and handles 543 mm
 approx. 40 kg



Combined Converter and Long-wave Radio Receiver
 Type CLR 145

DR.-ING. RUDOLF HELL GMBH - D 2300 KIEL 14

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